

IXYS Модули igbt, транзисторы, тиристоры, диоды

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радиодетали электронные компоненты продажа в Минске



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> New
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IXBOD 1-24RD	96	IXBOD 2-42R	98	IXFB 52N90P	45	IXFH 120N15P	43
IXBOD 1-25R	96	IXBOD 2-42RD	98	IXFB 60N80P	45	IXFH 120N20P	43
IXBOD 1-25RD	96	IXBOD 2-43R	98	IXFB 62N80Q3	50	IXFH 120N25T	38
IXBOD 1-26R	96	IXBOD 2-44R	98	IXFB 82N60P	44	IXFH 140N10P	43
IXBOD 1-26RD	96	IXBOD 2-45R	98	IXFB 82N60Q3	50	IXFH 150N15P	43
IXBOD 1-28R	96	IXBOD 2-46R	98	IXFB 100N50P	44	IXFH 150N17T2	40
IXBOD 1-28RD	96	IXBOD 2-47R	98	IXFB 100N50Q3	50	IXFH 150N20T	38
IXBOD 1-30R	96	IXBOD 2-48R	98	IXFB 110N60P3	48	IXFH 160N15T	38
IXBOD 1-30RD	96	IXBOD 2-49R	98	IXFB 120N50P2	47	IXFH 160N15T2	40
IXBOD 1-32R	96	IXBOD 2-50R	98	IXFB 132N50P3	48	IXFH 170N10P	43
IXBOD 1-32RD	96	IXBOD 2-51R	98	IXFB 170N30P	43	IXFH 230N075T2	40
IXBOD 1-34R	96	IXBOD 2-52R	98	IXFB 210N20P	43	IXFH 230N10T	38
IXBOD 1-36R	96	IXBOD 2-53R	98	IXFB 210N30P3	47	IXFH 320N10T2	40
IXBOD 1-38R	96	IXBOD 2-54R	98	IXFB 300N10P	43	IXFH 340N075T2	40
IXBOD 1-40R	96	IXBOD 2-55R	98	IXFH 5N100P	46	IXFH 400N075T2	40
IXBOD 1-42R	96	IXBOD 2-56R	98	IXFH 6N120P	46	IXFJ 26N50P3	3, 48
IXBOD 2-01	97	IXBP 5N160G	25	IXFH 7N100P	46	IXFK 20N120P	46
IXBOD 2-02	97	IXBR 42N170	25	IXFH 10N80P	45	IXFK 24N80P	45
IXBOD 2-03	97	IXBT 6N170	25	IXFH 10N100P	46	IXFK 24N100Q3	50
IXBOD 2-04	97	IXBT 10N170	25	IXFH 12N80P	45	IXFK 26N100P	46
IXBOD 2-05	97	IXBT 12N300HV	3	IXFH 12N90P	45	IXFK 26N120P	46
IXBOD 2-06	97	IXBT 16N170	25	IXFH 12N100P	46	IXFK 32N80P	45
IXBOD 2-07	97	IXBT 16N170A	25	IXFH 12N120P	46	IXFK 32N80Q3	50
IXBOD 2-08	97	> IXBT 16N170AHV	3, 25	IXFH 14N60P	44	IXFK 32N90P	45
IXBOD 2-09	97	IXBT 20N300HV	3	IXFH 14N60P3	48	IXFK 32N100P	46
IXBOD 2-10	97	> IXBT 20N360HV	3, 26	IXFH 14N80P	45	IXFK 32N100Q3	50
IXBOD 2-11	97	> IXBT 22N300HV	3, 26	IXFH 15N100P	46	IXFK 36N60P	44
IXBOD 2-12	97	IXBT 24N170	25	IXFH 15N100Q3	50	IXFK 40N90P	45
IXBOD 2-13	97	IXBT 32N300	26	IXFH 16N50P	44	IXFK 44N50P	44
IXBOD 2-14	97	IXBT 42N170	25	IXFH 16N50P3	48	IXFK 44N80P	45
IXBOD 2-15R	97	IXBT 42N170A	25	IXFH 16N60P3	48	IXFK 44N80Q3	50
IXBOD 2-15RD	97	IXBT 42N300HV	3, 26	IXFH 16N80P	45	IXFK 48N60P	44
IXBOD 2-16R	97	IXBX 28N300HV	1, 26	IXFH 16N120P	46	IXFK 48N60Q3	50
IXBOD 2-16RD	97	IXBX 50N360HV	1, 26	IXFH 18N60P	44	IXFK 64N50P	44
IXBOD 2-17R	97	IXBX 55N300	26	> IXFH 18N60X	49	IXFK 64N50Q3	50
IXBOD 2-17RD	97	IXBX 64N250	25	IXFH 18N90P	45	IXFK 64N60P	44
IXBOD 2-18R	97	IXBX 75N170	25	IXFH 18N100Q3	50	IXFK 64N60P3	48
IXBOD 2-18RD	97	IXBX 75N170A	25	IXFH 20N50P3	48	IXFK 64N60Q3	50
IXBOD 2-19R	97	IXCH 36N250	25	IXFH 20N80P	45	IXFK 74N50P2	47
IXBOD 2-19RD	97	IXCK 36N250	25	IXFH 20N100P	46	IXFK 78N50P3	48
IXBOD 2-20R	97	○ IXDH 20N120	21	IXFH 22N50P	44	IXFK 80N50P	44
IXBOD 2-20RD	97	○ IXDH 20N120D1	21	IXFH 22N60P	44	IXFK 80N50Q3	50
IXBOD 2-21R	97	○ IXDH 30N120	21	IXFH 22N60P3	48	IXFK 80N60P3	48
IXBOD 2-21RD	97	○ IXDH 30N120D1	21	> IXFH 24N60X	49	IXFK 88N30P	43
IXBOD 2-22R	97	○ IXDH 35N60B	21	IXFH 24N80P	45	> IXFK 90N60X	49
IXBOD 2-22RD	97	○ IXDH 35N60BD1	21	IXFH 24N90P	45	IXFK 94N50P2	47
IXBOD 2-23R	97	IXDN 55N120D1	21	IXFH 26N50P	44	IXFK 98N50P3	48
IXBOD 2-23RD	97	IXDN 75N120	21	IXFH 26N50P3	48	IXFK 102N30P	43
IXBOD 2-24R	97	○ IXDP 20N60B	21	IXFH 26N60P	44	IXFK 120N20P	43
IXBOD 2-24RD	97	○ IXDP 20N60BD1	21	IXFH 28N60P3	48	IXFK 120N25P	43
IXBOD 2-25R	97	○ IXDP 35N60B	21	IXFH 30N50P	44	IXFK 120N30P3	47
IXBOD 2-25RD	97	○ IXDR 30N120D1	21	IXFH 30N50Q3	50	IXFK 120N30T	38
IXBOD 2-26R	97	IXEL 40N400	24	IXFH 30N60P	44	IXFK 140N20P	43
IXBOD 2-26RD	97	IXFA 4N100P	46	> IXFH 30N60X	49	IXFK 140N25T	38
IXBOD 2-27R	97	IXFA 5N100P	46	IXFH 34N50P3	48	IXFK 140N30P	43
IXBOD 2-27RD	97	IXFA 6N120P	46	IXFH 36N50P	44	IXFK 150N15P	43
IXBOD 2-28R	97	IXFA 7N80P	45	IXFH 36N60P	44	IXFK 150N30P3	47
IXBOD 2-28RD	97	IXFA 7N100P	46	IXFH 42N50P2	47	IXFK 160N30T	38

- New
- Not for new design
- ✦ Under development

IXFK 170N10P	43	IXFP 7N100P	46	IXFT 24N90P	45	IXFZ 520N075T2	40
IXFK 170N20P	43	IXFP 10N60P	44	IXFT 26N60P	44	IXGA 12N120A3	22
IXFK 170N20T	38	IXFP 10N80P	45	IXFT 30N50P	44	IXGA 20N120A3	22
IXFK 180N15P	43	IXFP 12N50P	44	IXFT 30N50Q3	50	IXGA 20N120B3	22
IXFK 180N25T	38	IXFP 14N60P	44	IXFT 30N60P	44	IXGA 20N250HV	2, 24
IXFK 200N10P	43	IXFP 14N60P3	48	IXFT 30N60X	49	IXGA 36N60A3	22
IXFK 220N15P	43	IXFP 16N50P	44	IXFT 36N50P	44	IXGA 48N60A3	22
IXFK 220N17T2	40	IXFP 16N50P3	48	IXFT 36N60P	44	IXGF 20N250	12, 24
IXFK 230N20T	38	IXFP 16N60P3	48	IXFT 42N50P2	47	IXGF 20N300	12, 24
IXFK 240N15T2	40	IXFP 18N60X	49	IXFT 44N50P	44	IXGF 25N250	12, 24
IXFK 250N10P	43	IXFP 20N50P3	48	IXFT 44N50Q3	50	IXGF 25N300	12, 24
IXFK 320N17T2	40	IXFP 22N60P3	48	IXFT 46N30T	38	IXGF 30N400	12
IXFK 360N10T	38	IXFP 24N60X	49	IXFT 50N30Q3	50	IXGF 32N170	12, 22
IXFK 360N15T2	40	IXFP 26N50P3	48	IXFT 50N50P3	48	IXGF 36N300	12, 24
IXFK 420N10T	38	IXFP 36N30P3	47	IXFT 50N60P3	48	IXGH 6N170	22
IXFK 520N075T2	40	IXFP 76N15T2	40	IXFT 50N60X	49	IXGH 6N170A	22
IXFL 30N120P	46	IXFP 102N15T	38	IXFT 52N50P2	47	IXGH 10N170	22
IXFL 32N120P	46	IXFP 110N15T2	40	IXFT 60N50P3	48	IXGH 10N170A	22
IXFL 36N110P	46	IXFP 130N10T	38	IXFT 69N30P	43	IXGH 10N300	24
IXFL 38N100P	46	IXFP 130N10T2	40	IXFT 70N20Q3	50	IXGH 12N120A3	22
IXFL 40N110P	46	IXFP 180N10T2	40	IXFT 70N30Q3	50	IXGH 16N170	22
IXFL 44N100P	46	IXFP 230N075T2	40	IXFT 86N30T	38	IXGH 16N170A	22
IXFL 60N80P	45	IXFQ 10N80P	45	IXFT 88N30P	43	IXGH 16N170AH1	22
IXFL 82N60P	44	IXFQ 12N80P	45	IXFT 94N30P3	47	IXGH 20N120A3	22
IXFL 100N50P	44	IXFQ 14N80P	45	IXFT 94N30T	38	IXGH 24N170	22
IXFL 132N50P3	48	IXFQ 20N50P3	48	IXFT 96N20P	43	IXGH 24N170A	22
IXFL 210N30P3	47	IXFQ 22N60P3	48	IXFT 120N15P	43	IXGH 24N170AH1	22
IXFN 20N120P	46	IXFQ 24N50P2	47	IXFT 120N25T	38	IXGH 25N250	24
IXFN 26N100P	46	IXFQ 24N60X	49	IXFT 140N10P	43	IXGH 32N100A3	22
IXFN 26N120P	46	IXFQ 26N50P3	48	IXFT 150N17T2	40	IXGH 32N120A3	22
IXFN 30N120P	46	IXFQ 28N60P3	48	IXFT 150N20T	38	IXGH 32N170	22
IXFN 32N80P	45	IXFQ 30N60X	49	IXFT 320N10T2	40	IXGH 32N170A	22
IXFN 32N100P	46	IXFQ 34N50P3	48	IXFT 340N075T2	40	IXGH 36N60A3	22
IXFN 32N100Q3	50	IXFQ 50N50P3	48	IXFT 400N075T2	40	IXGH 36N60A3D4	22
IXFN 32N120P	46	IXFQ 50N60P3	48	IXFX 20N120P	46	IXGH 48N60A3	22
IXFN 38N100P	46	IXFQ 50N60X	49	IXFX 24N100Q3	50	IXGH 48N60A3D1	22
IXFN 40N90P	45	IXFQ 60N50P3	48	IXFX 26N100P	46	IXGH 56N60A3	22
IXFN 40N110P	46	IXFQ 94N30P3	47	IXFX 26N120P	46	IXGH 64N60A3	22
IXFN 40N110Q3	50	IXFR 15N100Q3	50	IXFX 32N80P	45	IXGH 72N60A3	22
IXFN 44N80P	45	IXFR 16N120P	46	IXFX 32N80Q3	50	IXGJ 50N60C4D1	3
IXFN 44N80Q3	50	IXFR 18N90P	45	IXFX 32N90P	45	IXGK 55N120A3H1	22
IXFN 44N100P	46	IXFR 20N80P	45	IXFX 32N100P	46	IXGK 72N60A3H1	22
IXFN 44N100Q3	50	IXFR 20N100P	46	IXFX 32N100Q3	50	IXGK 75N250	24
IXFN 48N60P	44	IXFR 20N120P	46	IXFX 40N90P	45	IXGK 82N120A3	22
IXFN 50N120SiC	49	IXFR 24N80P	45	IXFX 44N80P	45	IXGK 100N170	22
IXFN 52N90P	45	IXFR 24N90P	45	IXFX 44N80Q3	50	IXGK 120N60A3	22
IXFN 56N90P	45	IXFR 24N100Q3	50	IXFX 48N60P	44	IXGK 120N120A3	22
IXFN 60N80P	45	IXFR 26N100P	46	IXFX 48N60Q3	50	IXGK 320N60A3	22
IXFN 62N80Q3	50	IXFR 26N120P	46	IXFX 64N50P	44	IXGL 75N250	24
IXFN 64N50P	44	IXFR 30N60P	44	IXFX 64N50Q3	50	IXGN 72N60A3	22
IXFN 64N60P	44	IXFR 32N80P	45	IXFX 64N60P	44	IXGN 100N170	22
IXFN 80N50P	44	IXFR 32N80Q3	50	IXFX 64N60P3	48	IXGN 120N60A3	22
IXFN 80N50Q3	50	IXFR 32N100P	46	IXFX 64N60Q3	50	IXGN 120N60A3D1	22
IXFN 80N60P3	48	IXFR 32N100Q3	50	IXFX 74N50P2	47	IXGN 320N60A3	22
IXFN 82N60P	44	IXFR 36N50P	44	IXFX 78N50P3	48	IXGN 400N60A3	22
IXFN 82N60Q3	50	IXFR 36N60P	44	IXFX 80N50P	44	IXGP 12N120A3	22
IXFN 94N50P2	47	IXFR 40N90P	45	IXFX 80N50Q3	50	IXGP 20N120A3	22
IXFN 100N50P	44	IXFR 44N50P	44	IXFX 80N60P3	48	IXGP 20N120B3	22
IXFN 100N50Q3	50	IXFR 44N50Q3	50	IXFX 90N60X	49	IXGP 36N60A3	22
IXFN 102N30P	43	IXFR 44N80P	45	IXFX 94N50P2	47	IXGP 48N60A3	22
IXFN 110N60P3	48	IXFR 48N60P	44	IXFX 98N50P3	48	IXGR 6N170A	22
IXFN 132N50P3	48	IXFR 48N60Q3	50	IXFX 120N25P	43	IXGR 16N170AH1	22
IXFN 140N20P	43	IXFR 64N50P	44	IXFX 120N30P3	47	IXGR 32N170AH1	22
IXFN 140N25T	38	IXFR 64N50Q3	50	IXFX 120N30T	38	IXGR 32N170H1	22
IXFN 140N30P	43	IXFR 64N60P	44	IXFX 140N25T	38	IXGR 55N120A3H1	22
IXFN 160N30T	38	IXFR 64N60Q3	50	IXFX 140N30P	43	IXGR 64N60A3	22
IXFN 170N30P	43	IXFR 80N50P	44	IXFX 150N30P3	47	IXGR 72N60A3	22
IXFN 180N15P	43	IXFR 80N50Q3	50	IXFX 160N30T	38	IXGR 72N60A3H1	22
IXFN 180N25T	38	IXFR 80N60P3	48	IXFX 170N20P	43	IXGT 6N170	22
IXFN 200N10P	43	IXFR 102N30P	43	IXFX 170N20T	38	IXGT 6N170A	22
IXFN 210N20P	43	IXFR 140N20P	43	IXFX 180N15P	43	IXGT 10N170	22
IXFN 210N30P3	47	IXFR 140N30P	43	IXFX 180N25T	38	IXGT 10N170A	22
IXFN 230N20T	38	IXFR 180N15P	43	IXFX 200N10P	43	IXGT 16N170	22
IXFN 240N15T2	40	IXFR 200N10P	43	IXFX 220N15P	43	IXGT 16N170A	22
IXFN 300N10P	43	IXFR 230N20T	38	IXFX 220N17T2	40	IXGT 16N170AH1	22
IXFN 320N17T2	40	IXFT 14N80P	45	IXFX 230N20T	38	IXGT 24N170	22
IXFN 360N10T	38	IXFT 15N100Q3	50	IXFX 240N15T2	40	IXGT 24N170A	22
IXFN 360N15T2	40	IXFT 16N80P	45	IXFX 250N10P	43	IXGT 24N170AH1	22
IXFN 420N10T	38	IXFT 16N120P	46	IXFX 320N17T2	40	IXGT 25N250	24
IXFN 520N075T2	40	IXFT 18N90P	45	IXFX 360N10T	38	IXGT 25N250HV	3, 24
IXFP 4N100P	46	IXFT 18N100Q3	50	IXFX 360N15T2	40	IXGT 32N100A3	22
IXFP 5N100P	46	IXFT 20N80P	45	IXFX 420N10T	38	IXGT 32N120A3	22
IXFP 6N120P	46	IXFT 20N100P	46	IXFX 520N075T2	40	IXGT 32N170	22
IXFP 7N80P	45	IXFT 24N80P	45	IXFZ 140N25T	38	IXGT 32N170A	22

> New
 ○ Not for new design
 ◇ Under development

IXGT 64N60A3	22	IXTA 36N30P	41	IXTH 30N60P	42	IXTN 550N055T2	39
IXGT 72N60A3	22	IXTA 36P15P	54	> IXTH 32N65X	49	IXTN 600N04T2	39
IXGT 72N60B3	22	IXTA 42N25P	41	IXTH 32P20T	55	I XTP 1N100	51
IXGX 32N170AH1	22	IXTA 44P15T	55	IXTH 36N50P	42	I XTP 1N100P	42
IXGX 32N170H1	22	IXTA 48N20T	37	IXTH 36P15P	54	I XTP 1N120P	42
IXGX 55N120A3H1	22	IXTA 48P05T	55	IXTH 40N50L2	52	I XTP 1R4N100P	42
IXGX 72N60A3H1	22	IXTA 50N20P	41	IXTH 44P15T	55	I XTP 1R4N120P	42
IXGX 75N250	24	IXTA 50N25T	37	IXTH 48P20P	54	I XTP 1R6N100D2	53
IXGX 82N120A3	22	IXTA 52P10P	54	IXTH 50N25T	37	I XTP 1R6N50D2	53
IXGX 100N170	22	IXTA 60N10T	37	IXTH 52P10P	54	> I XTP 2N65X2	49
IXGX 120N60A3	22	IXTA 60N20T	37	IXTH 60N20L2	52	I XTP 2N100	51
IXGX 120N120A3	22	IXTA 62N15P	41	> IXTH 64N10L2	52	I XTP 2N100P	42
IXGX 320N60A3	22	> IXTA 64N10L2	52	IXTH 68P20T	55	I XTP 02N120P	42
IXKC 13N80C	56	IXTA 70N075T2	39	IXTH 75N10L2	52	I XTP 2R4N120P	42
IXKC 20N60C	56	IXTA 75N10P	41	IXTH 76N25T	37	I XTP 3N50D2	53
IXKC 23N60C5	56	IXTA 76N25T	37	IXTH 76P10T	55	I XTP 3N100D2	53
IXKC 25N80C	56	IXTA 76P10T	55	> IXTH 80N075L2	52	I XTP 3N100P	42
IXKC 40N60C	56	> IXTA 80N075L2	52	IXTH 86N25T	37	I XTP 3N120	51
IXKF 40N60SCD1	12, 56	IXTA 80N10T	37	IXTH 88N30P	41	> I XTP 4N65X2	49
IXKF 40N60SCH1	12, 56	IXTA 80N12T2	39	IXTH 90P10P	54	I XTP 05N100	51
○ IXKH 20N60C5	56	IXTA 86N20T	37	IXTH 96N20P	41	I XTP 05N100P	42
IXKH 30N60C5	56	IXTA 90N055T2	39	IXTH 96N25T	37	I XTP 6N50D2	53
IXKH 35N60C5	56	IXTA 90N075T2	39	IXTH 96P085T	55	I XTP 6N100D2	53
IXKH 70N60C5	56	IXTA 96P085T	55	IXTH 102N20T	37	I XTP 06N120P	42
○ IXKK 85N60C	56	IXTA 100N04T2	39	IXTH 110N10L2	52	I XTP 08N50D2	53
IXKN 40N60C	56	IXTA 110N055T2	39	IXTH 110N25T	37	> I XTP 8N65X2	49
IXKN 45N80C	56	IXTA 120N04T2	39	IXTH 120P065T	55	I XTP 08N100D2	53
IXKN 75N60C	56	IXTA 120N075T2	39	IXTH 130N10T	37	I XTP 08N100P	42
IXKP 24N60C5	56	IXTA 120P065T	55	IXTH 130N20T	37	I XTP 08N120P	42
IXKR 25N80C	56	IXTA 130N065T2	39	IXTH 140P05T	55	I XTP 10N60P	42
IXKR 40N60C	56	IXTA 130N10T	37	IXTH 140P10T	55	I XTP 10P15T	55
IXKR 47N60C5	56	IXTA 140N055T2	39	IXTH 180N10T	37	I XTP 10P50P	54
IXKT 70N60C5	56	IXTA 140P05T	55	IXTH 200N10T	37	I XTP 12N50P	42
IXLF 19N250A	12, 24	IXTA 160N04T2	39	IXTH 260N055T2	39	I XTP 14N60P	42
IXTA 1N100	51	IXTA 170N075T2	39	IXTH 300N04T2	39	I XTP 15N50L2	52
IXTA 1N100P	42	IXTA 180N10T	37	IXTH 360N055T2	39	I XTP 15P15T	55
IXTA 1N120P	42	IXTA 200N055T2	39	IXTH 420N04T2	39	I XTP 16N50P	42
> IXTA 1N170DHV	2, 53	IXTA 220N04T2	39	IXTH 440N055T2	39	I XTP 18P10T	55
> IXTA 1N200P3HV	2, 51	IXTA 230N075T2	39	IXTH 450P2	47	> I XTP 20N65X	49
IXTA 1R4N100P	42	IXTA 260N055T2	39	IXTH 460P2	47	> I XTP 20N65XM	49
IXTA 1R4N120P	42	IXTA 300N04T2	39	IXTH 500N04T2	39	I XTP 24P085T	55
IXTA 1R6N100D2	53	IXTA 460P2	47	> IXTJ 3N150	3, 51	I XTP 26P10T	55
IXTA 1R6N50D2	53	IXTF 1N250	12, 51	> IXTJ 4N150	3, 51	I XTP 26P20P	54
IXTA 2N100	51	IXTF 1N450	12, 51	> IXTJ 6N150	3, 51	I XTP 28P065T	55
IXTA 2N100P	42	IXTF 02N450	12, 51	IXTK 5N250	51	> I XTP 32N65X	49
IXTA 02N250HV	2, 51	IXTF 200N10T	12, 37	IXTK 32P60P	54	> I XTP 32N65XM	49
IXTA 2R4N120P	42	IXTH 1N170DHV	1, 53	IXTK 40P50P	54	I XTP 32P05T	55
IXTA 3N50D2	53	> IXTH 1N200P3	51	IXTK 60N50L2	52	I XTP 32P20T	55
IXTA 3N100D2	53	IXTH 1N200P3HV	1, 51	IXTK 82N25P	41	I XTP 36N30P	41
IXTA 3N100D2HV	2, 53	IXTH 1N250	51	IXTK 88N30P	41	I XTP 36P15P	54
IXTA 3N100P	42	IXTH 1N300P3HV	1, 51	IXTK 90N25L2	52	I XTP 42N25P	41
IXTA 3N120	51	IXTH 1N450HV	1, 51	IXTK 90P20P	54	I XTP 44N10T	37
> IXTA 3N120HV	2, 51	IXTH 1R4N250P3	51	IXTK 100N25P	41	I XTP 44P15T	55
> IXTA 3N150HV	2, 51	> IXTH 1R8N220P3HV	51	IXTK 102N30P	41	I XTP 48N20T	37
> IXTA 4N65X2	49	IXTH 2N170D2	53	> IXTK 102N65X2	49	I XTP 48P05T	55
> IXTA 4N150HV	2, 51	IXTH 02N250	51	IXTK 110N20L2	52	I XTP 50N20P	41
IXTA 05N100	51	IXTH 02N450HV	1, 51	IXTK 120N20P	41	I XTP 50N25T	37
> IXTA 05N100HV	2, 51	IXTH 2R4N120P	42	IXTK 120N25P	41	I XTP 52P10P	54
IXTA 05N100P	42	IXTH 3N100P	42	IXTK 120P20T	55	I XTP 60N10T	37
IXTA 6N50D2	53	IXTH 3N120	51	IXTK 140N20P	41	I XTP 60N20T	37
IXTA 6N100D2	53	IXTH 3N150	51	IXTK 140N30P	41	I XTP 62N15P	41
IXTA 06N120P	42	IXTH 4N150	51	IXTK 150N15P	41	> I XTP 64N10L2	52
IXTA 08N50D2	53	> IXTH 04N300P3HV	51	IXTK 170N10P	41	I XTP 70N075T2	39
> IXTA 8N65X2	49	IXTH 05N250P3HV	51	IXTK 170P10P	54	I XTP 75N10P	41
IXTA 08N100D2	53	IXTH 6N50D2	53	IXTK 180N15P	41	I XTP 76N25T	37
> IXTA 08N100D2HV	2, 53	IXTH 6N100D2	53	IXTK 200N10L2	52	I XTP 76P10T	55
IXTA 08N100P	42	IXTH 6N120	51	IXTK 200N10P	41	> I XTP 80N075L2	52
IXTA 08N120P	42	IXTH 6N150	51	IXTK 210P10T	55	I XTP 80N10T	37
IXTA 10N60P	42	> IXTH 06N220P3HV	51	IXTK 550N055T2	39	I XTP 80N12T2	39
IXTA 10P15T	55	IXTH 10N100D2	53	IXTK 600N04T2	39	I XTP 86N20T	37
IXTA 10P50P	54	IXTH 10P50P	54	IXTL 2N450	51	I XTP 90N055T2	39
IXTA 12N50P	42	IXTH 15N50L2	52	IXTL 2x180N10T	37	I XTP 90N075T2	39
IXTA 14N60P	42	> IXTH 16N10D2	53	IXTN 5N250	51	I XTP 96P085T	55
IXTA 15N50L2	52	IXTH 16N20D2	53	IXTN 32P60P	54	I XTP 100N04T2	39
IXTA 15P15T	55	IXTH 16N50D2	53	IXTN 40P50P	54	I XTP 110N055T2	39
IXTA 16N50P	42	IXTH 16P60P	54	IXTN 60N50L2	52	I XTP 120N04T2	39
IXTA 18P10T	55	> IXTH 20N65X	49	IXTN 90N25L2	52	I XTP 120N075T2	39
> IXTA 20N65X	49	IXTH 20P50P	54	IXTN 90P20P	54	I XTP 120P065T	55
IXTA 24P085T	55	IXTH 22N50P	42	IXTN 110N20L2	52	I XTP 130N065T2	39
IXTA 26P10T	55	IXTH 26N60P	42	IXTN 120P20T	55	I XTP 130N10T	37
IXTA 26P20P	54	IXTH 26P20P	54	IXTN 170P10P	54	I XTP 140N055T2	39
IXTA 28P065T	55	IXTH 30N50L2	52	IXTN 200N10L2	52	I XTP 140P05T	55
IXTA 32P05T	55	IXTH 30N50P	42	IXTN 200N10T	37	I XTP 160N04T2	39
IXTA 32P20T	55	IXTH 30N60L2	52	IXTN 210P10T	55	I XTP 170N075T2	39

- New
- Not for new design
- ✦ Under development

IXTP 180N10T	37	IXTT 02N450HV	3, 51	IXXH 30N60B3	16	IXYH 50N65C3H1	17
IXTP 200N055T2	39	➤ IXTT 4N150HV	3, 51	IXXH 30N60B3D1	16	IXYH 50N120C3	20
IXTP 220N04T2	39	IXTT 6N120	51	➤ IXXH 30N60C3	16	IXYH 50N120C3D1	20
IXTP 230N075T2	39	IXTT 6N150	51	IXXH 30N60C3D1	16	➤ IXYH 60N90C3	19
IXTP 260N055T2	39	IXTT 10N100D2	53	IXXH 30N65B4	18	IXYH 75N65C3	17
IXTP 300N04T2	39	➤ IXTT 12N150HV	3, 51	IXXH 40N65B4	18	IXYH 75N65C3D1	17
IXTP 450P2	47	IXTT 16N10D2	53	➤ IXXH 40N65B4H1	18	IXYH 75N65C3H1	17
IXTP 460P2	47	IXTT 16N20D2	53	IXXH 50N60B3	16	➤ IXYH 80N90C3	19
IXTQ 10P50P	54	IXTT 16N50D2	53	IXXH 50N60B3D1	16	IXYH 82N120C3	20
IXTQ 14N60P	42	IXTT 16P60P	54	IXXH 50N60C3	16	IXYH 100N65B3	17
IXTQ 16N50P	42	IXTT 20P50P	54	IXXH 50N60C3D1	16	IXYH 100N65C3	17
IXTQ 18N60P	42	IXTT 26N50P	42	IXXH 60N65B4	18	IXYJ 20N120C3D1	3, 20
IXTQ 22N50P	42	IXTT 26N60P	42	IXXH 60N65B4H1	18	➤ IXYJ 30N120C3D1	3, 20
IXTQ 22N60P	42	IXTT 30N50L2	52	IXXH 60N65C4	18	IXYK 100N65B3D1	17
IXTQ 26N50P	42	IXTT 30N50P	42	IXXH 75N60B3	16	IXYK 100N65C3D1	17
IXTQ 26N60P	42	IXTT 30N60L2	52	IXXH 75N60B3D1	16	IXYK 100N120B3	20
IXTQ 26P20P	54	IXTT 30N60P	42	IXXH 75N60C3	16	IXYK 100N120C3	20
IXTQ 30N50L2	52	IXTT 36N50P	42	IXXH 75N60C3D1	16	IXYK 120N120C3	20, 20
IXTQ 30N50P	42	IXTT 40N50L2	52	IXXH 80N65B4	18	➤ IXYK 140N90C3	19
IXTQ 30N60L2	52	IXTT 48P20P	54	IXXH 80N65B4H1	18	➤ IXYL 60N450	24
IXTQ 30N60P	42	IXTT 52N30P	41	IXXH 100N60B3	16	➤ IXYN 75N65C3D1	17
➤ IXTQ 32N65X	49	IXTT 60N20L2	52	IXXH 100N60C3	16	➤ IXYN 80N90C3H1	19
IXTQ 32P20T	55	IXTT 64N25P	41	IXXH 110N65C4	18	IXYN 82N120C3	20
IXTQ 36N30P	41	IXTT 68P20T	55	IXXK 100N60B3H1	16	IXYN 82N120C3H1	20
IXTQ 36N50P	42	IXTT 69N30P	41	IXXK 100N60C3H1	16	IXYN 100N65A3	17
IXTQ 36P15P	54	IXTT 74N20P	41	IXXK 110N65B4H1	18	IXYN 100N65C3H1	17
IXTQ 40N50L2	52	IXTT 75N10L2	52	IXXK 160N65B4	18	IXYN 100N120B3H1	20
IXTQ 42N25P	41	IXTT 82N25P	41	IXXK 160N65C4	18	IXYN 100N120C3H1	20
IXTQ 44N50P	42	IXTT 88N30P	41	IXXK 200N60B3	16	➤ IXYN 120N120C3	20
IXTQ 44P15T	55	IXTT 90P10P	54	IXXK 200N60C3	16	IXYN1 00N120C3	20
IXTQ 48N20T	37	IXTT 96N15P	41	IXXK 200N65B4	18	➤ IXYP 8N90C3	19
IXTQ 50N20P	41	IXTT 96N20P	41	IXXK 300N60B3	16	➤ IXYP 8N90C3D1	19
IXTQ 50N25T	37	IXTT 100N25P	41	IXXK 300N60C3	16	IXYP 10N65C3	17
IXTQ 52N30P	41	IXTT 110N10L2	52	IXXN 100N60B3H1	16	IXYP 10N65C3D1	17
IXTQ 52P10P	54	IXTT 110N10P	41	IXXN 110N65B4H1	18	IXYP 10N65C3D1M	17
IXTQ 60N10T	37	IXTT 120N15P	41	IXXN 110N65C4H1	18	IXYP 15N65C3	17
IXTQ 60N20L2	52	IXTT 140N10P	41	IXXN 200N60B3	16	IXYP 15N65C3D1	17
IXTQ 60N20T	37	IXTT 140P10T	55	IXXN 200N60B3H1	16	IXYP 15N65C3D1M	17
IXTQ 62N15P	41	IXTT 170N10P	41	IXXN 200N60C3H1	16	IXYP 20N65C3D1	17
IXTQ 64N25P	41	IXTT 360N055T2	39	IXXP 50N60B3	16	IXYP 20N65C3D1M	17
IXTQ 69N30P	41	IXTT 440N055T2	39	➤ IXXQ 30N60B3M	16	IXYP 20N120C3	20
IXTQ 74N20P	41	IXTT 500N04T2	39	IXXR 100N60B3H1	16	IXYP 30N65C3	17
IXTQ 75N10P	41	IXTU 01N100	51	IXXR 110N65B4H1	18	IXYP 30N120C3	20
IXTQ 76N25T	37	IXTU 05N100	51	IXXX 100N60B3H1	16	IXYP 50N65C3	17
IXTQ 82N25P	41	IXTX 5N250	51	IXXX 100N60C3H1	16	IXYQ 30N65B3D1	17
IXTQ 86N20T	37	IXTX 24N100	51	IXXX 110N65B4H1	18	IXYQ 40N65B3D1	17
IXTQ 86N25T	37	IXTX 32P60P	54	IXXX 160N65B4	18	IXYQ 40N65C3D1	17
IXTQ 88N30P	41	IXTX 40P50P	54	IXXX 160N65C4	18	IXYR 50N120C3D1	20
IXTQ 96N15P	41	IXTX 60N50L2	52	IXXX 200N60B3	16	IXYR 100N120C3	20
IXTQ 96N20P	41	IXTX 90N25L2	52	IXXX 200N60C3	16	IXYT 20N120C3D1HV	3, 20
IXTQ 96N25T	37	IXTX 90P20P	54	IXXX 200N65B4	18	IXYT 30N65C3H1HV	3, 17
IXTQ 100N25P	41	➤ IXTX 102N65X2	49	IXXX 300N60B3	16	➤ IXYT 30N450HV	3, 24
IXTQ 102N20T	37	IXTX 110N20L2	52	IXXX 300N60C3	16	➤ IXYT 80N90C3	19
IXTQ 110N10P	41	IXTX 120P20T	55	➤ IXYA 8N90C3D1	19	➤ IXYX 40N450HV	1, 24
IXTQ 120N15P	41	IXTX 170P10P	54	IXYA 20N65C3	17	IXYX 100N65B3D1	17
IXTQ 120N20P	41	IXTX 200N10L2	52	➤ IXYA 20N120C3HV	2, 20	IXYX 100N65C3D1	17
IXTQ 130N10T	37	IXTX 210P10T	55	IXYA 50N65C3	17	IXYX 100N120B3	20
IXTQ 140N10P	41	IXTX 550N055T2	39	IXYB 82N120C3H1	20	IXYX 100N120C3	20
IXTQ 150N15P	41	IXTX 600N04T2	39	➤ IXYF 30N450	24	IXYX 120N120C3	20, 20
IXTQ 170N10P	41	IXTY 01N100	51	➤ IXYF 40N450	24	➤ IXYX 140N90C3	19
IXTQ 180N10T	37	IXTY 1N100P	42	IXYH 20N65C3	17	➤ IXYX 8N90C3	19
IXTQ 200N10T	37	IXTY 1R4N100P	42	IXYH 20N120C3	20	L	
IXTQ 450P2	47	IXTY 1R6N100D2	53	IXYH 20N120C3D1	20	LKK 47-06C5	56
IXTQ 460P2	47	IXTY 1R6N50D2	53	➤ IXYH 24N90C3	19	M	
IXTQ 470P2	47	➤ IXTY 2N65X2	49	➤ IXYH 24N90C3D1	19	➤ MCC 60I1200TZ	3, 49
IXTQ 480P2	47	IXTY 2N100P	42	IXYH 30N65B3D1	17	MCC 19-08io1B	81
IXTR 16P60P	54	IXTY 02N120P	42	IXYH 30N65C3	17	MCC 19-08io8B	81
IXTR 20P50P	54	➤ IXTY 4N65X2	49	IXYH 30N65C3H1	17	MCC 19-12io1B	81
IXTR 32P60P	54	IXTY 05N100	51	IXYH 30N120C3	20	MCC 19-12io8B	81
IXTR 36P15P	54	IXTY 08N50D2	53	IXYH 30N120C3D1	20	MCC 19-14io1B	81
IXTR 40P50P	54	➤ IXTY 8N65X2	49	➤ IXYH 30N450HV	24	MCC 19-14io8B	81
IXTR 48P20P	54	IXTY 08N100D2	53	IXYH 40N65B3	17	MCC 19-16io1B	81
IXTR 68P20T	55	IXTY 08N100P	42	IXYH 40N65B3D1	17	MCC 19-16io8B	81
IXTR 90P10P	54	IXTY 10P15T	55	IXYH 40N65C3	17	MCC 21-08io8B	81
IXTR 90P20P	54	IXTY 15P15T	55	IXYH 40N65C3D1	17	MCC 21-12io8B	81
IXTR 120P20T	55	IXTY 18P10T	55	IXYH 40N65C3H1	17	MCC 21-14io8B	81
IXTR 140P10T	55	IXTY 26P10T	55	➤ IXYH 40N90C3	19	MCC 21-16io8B	81
IXTR 170P10P	54	IXTY 32P05T	55	➤ IXYH 40N90C3D1	19	MCC 26-08io1B	81
IXTR 200N10P	41	IXTY 44N10T	37	IXYH 40N120B3	20	MCC 26-08io8B	81
IXTR 210P10T	55	IXTY 48P05T	55	IXYH 40N120B3D1	20	MCC 26-12io1B	81
IXTT 1N250HV	3, 51	IXTY 90N055T2	39	IXYH 40N120C3	20	MCC 26-12io8B	81
➤ IXTT 1N300P3HV	3, 51	IXTZ 550N055T2	39	IXYH 40N120C3D1	20	MCC 26-14io1B	81
IXTT 1N450HV	3, 51	IXXA 30N65C3HV	2, 16	IXYH 50N65C3	17	MCC 26-14io8B	81
IXTT 2N170D2	53	IXXA 50N60B3	16	IXYH 50N65C3D1	17	MCC 26-16io1B	81

> New
 ○ Not for new design
 ◇ Under development

MCC 26-16io8B	81	MCC 310-18io1	83	MCD 250-14io1	80	MCNA 120P2200TA	82
MCC 44-08io1B	81	MCC 312-12io1	83	MCD 250-16io1	80	MCNA 120PD2200TB	79
MCC 44-08io8B	81	MCC 312-14io1	83	MCD 250-18io1	80	MCNA 120UI2200TED	92
MCC 44-12io1B	81	MCC 312-16io1	83	MCD 255-12io1	80	> MCNA 650P2200CA	83
MCC 44-12io8B	81	MCC 312-18io1	83	MCD 255-14io1	80	> MCNA 650PD2200CB	80
MCC 44-14io1B	81	MCD 26-08io1B	78	MCD 255-16io1	80	MCO 25-12io1	84
MCC 44-14io8B	81	MCD 26-08io8B	78	MCD 255-18io1	80	MCO 25-16io1	84
MCC 44-16io1B	81	MCD 26-12io1B	78	MCD 310-08io1	80	MCO 50-12io1	84
MCC 44-16io8B	81	MCD 26-12io8B	78	MCD 310-12io1	80	MCO 50-16io1	84
MCC 44-18io1B	81	MCD 26-14io1B	78	MCD 310-14io1	80	MCO 75-12io1	84
MCC 44-18io8B	81	MCD 26-14io8B	78	MCD 310-16io1	80	MCO 75-16io1	84
MCC 56-08io1B	81	MCD 26-16io1B	78	MCD 310-18io1	80	MCO 100-12io1	84
MCC 56-08io8B	81	MCD 26-16io8B	78	MCD 310-20io1	80	MCO 100-16io1	84
MCC 56-12io1B	81	MCD 40-12io6	78	MCD 310-22io1	80	MCO 150-12io1	84
MCC 56-12io8B	81	MCD 40-16io6	78	MCD 312-12io1	80	MCO 150-16io1	84
MCC 56-14io1B	81	MCD 44-08io1B	78	MCD 312-14io1	80	MCO 450-20io1	84
MCC 56-14io8B	81	MCD 44-08io8B	78	MCD 312-16io1	80	MCO 450-22io1	84
MCC 56-16io1B	81	MCD 44-12io1B	78	MCD 312-18io1	80	MCO 500-12io1	84
MCC 56-16io8B	81	MCD 44-12io8B	78	MCK 200-18io1	83	MCO 500-14io1	84
MCC 56-18io1B	81	MCD 44-14io1B	78	MCMA 25P1200TA	81	MCO 500-16io1	84
MCC 56-18io8B	81	MCD 44-14io8B	78	MCMA 25P1600TA	81	MCO 500-18io1	84
MCC 72-08io1B	82	MCD 44-16io1B	78	MCMA 25PD1200TB	78	MCO 600-16io1	84
MCC 72-08io8B	82	MCD 44-16io8B	78	MCMA 25PD1600TB	78	MCO 600-18io1	84
MCC 72-12io1B	82	MCD 44-18io1B	78	MCMA 35P1200TA	81	MCO 600-20io1	84
MCC 72-12io8B	82	MCD 44-18io8B	78	MCMA 35P1600TA	81	MCO 600-22io1	84
MCC 72-14io1B	82	MCD 56-08io1B	78	MCMA 35PD1200TB	78	MDA 95-22N1B	76
MCC 72-14io8B	82	MCD 56-08io8B	78	MCMA 35PD1600TB	78	MDD 26-08N1B	75
MCC 72-16io1B	82	MCD 56-12io1B	78	MCMA 50P1200TA	81	MDD 26-12N1B	75
MCC 72-16io8B	82	MCD 56-12io8B	78	MCMA 50P1600TA	81	MDD 26-14N1B	75
MCC 72-18io1B	82	MCD 56-14io1B	78	MCMA 50PD1200TB	78	MDD 26-16N1B	75
MCC 72-18io8B	82	MCD 56-14io8B	78	MCMA 50PD1600TB	78	MDD 26-18N1B	75
MCC 94-20io1B	82	MCD 56-16io1B	78	MCMA 65P1200TA	82	MDD 44-08N1B	75
MCC 94-22io1B	82	MCD 56-16io8B	78	MCMA 65P1600TA	82	MDD 44-12N1B	75
MCC 94-24io1B	82	MCD 56-18io1B	78	> MCMA 65P1800TA	82	MDD 44-14N1B	75
MCC 95-08io1B	82	MCD 56-18io8B	78	MCMA 65PD1200TB	78	MDD 44-16N1B	75
MCC 95-08io8B	82	MCD 72-08io1B	79	MCMA 65PD1600TB	78	MDD 44-18N1B	75
MCC 95-12io1B	82	MCD 72-08io8B	79	> MCMA 65PD1800TB	78	MDD 56-08N1B	75
MCC 95-12io8B	82	MCD 72-12io1B	79	MCMA 85P1200TA	82	MDD 56-12N1B	75
MCC 95-14io1B	82	MCD 72-12io8B	79	MCMA 85P1600TA	82	MDD 56-14N1B	75
MCC 95-14io8B	82	MCD 72-14io1B	79	> MCMA 85P1800TA	82	MDD 56-16N1B	75
MCC 95-16io1B	82	MCD 72-14io8B	79	MCMA 85PD1200TB	79	MDD 56-18N1B	75
MCC 95-16io8B	82	MCD 72-16io1B	79	MCMA 85PD1600TB	79	MDD 72-08N1B	75
MCC 95-18io1B	82	MCD 72-16io8B	79	> MCMA 85PD1800TB	79	MDD 72-12N1B	75
MCC 95-18io8B	82	MCD 72-18io1B	79	MCMA 110P1200TA	82	MDD 72-14N1B	75
MCC 132-08io1	82	MCD 72-18io8B	79	MCMA 110P1600TA	82	MDD 72-16N1B	75
MCC 132-12io1	82	MCD 94-20io1B	79	> MCMA 110P1800TA	82	MDD 72-18N1B	75
MCC 132-14io1	82	MCD 94-22io1B	79	MCMA 110PD1200TB	79	MDD 95-08N1B	76
MCC 132-16io1	82	MCD 95-08io1B	79	MCMA 110PD1600TB	79	MDD 95-12N1B	76
MCC 132-18io1	82	MCD 95-08io8B	79	> MCMA 110PD1800TB	79	MDD 95-14N1B	76
MCC 161-20io1	82	MCD 95-12io1B	79	MCMA 120UI1800ED	93	MDD 95-16N1B	76
MCC 161-22io1	82	MCD 95-12io8B	79	MCMA 140P1200TA	82	MDD 95-18N1B	76
MCC 162-08io1	82	MCD 95-14io1B	79	MCMA 140P1400TA	82	MDD 95-20N1B	76
MCC 162-12io1	82	MCD 95-14io8B	79	MCMA 140P1600TA	82	MDD 95-22N1B	76
MCC 162-14io1	82	MCD 95-16io1B	79	MCMA 140P1800TA	82	MDD 142-08N1	76
MCC 162-16io1	82	MCD 95-16io8B	79	MCMA 140PD1200TB	79	MDD 142-12N1	76
MCC 162-18io1	82	MCD 95-18io1B	79	MCMA 140PD1600TB	79	MDD 142-14N1	76
MCC 200-14io1	83	MCD 95-18io8B	79	> MCMA 140PD1800TB	79	MDD 142-16N1	76
MCC 200-16io1	83	MCD 132-08io1	79	MCMA 200P1600SA	83	MDD 142-18N1	76
MCC 200-18io1	83	MCD 132-12io1	79	MCMA 200PD1600SA	80	MDD 172-08N1	76
MCC 220-08io1	83	MCD 132-14io1	79	MCMA 240UI1600ED	92	MDD 172-12N1	76
MCC 220-12io1	83	MCD 132-16io1	79	MCMA 240UI1600PED	1, 92	MDD 172-14N1	76
MCC 220-14io1	83	MCD 132-18io1	79	MCMA 260P1600YA	83	MDD 172-16N1	76
MCC 220-16io1	83	MCD 161-20io1	79	> MCMA 260P1800YA	83	MDD 172-18N1	76
MCC 220-18io1	83	MCD 161-22io1	79	MCMA 260PD1600YB	80	MDD 175-28N1	76
MCC 224-20io1	83	MCD 162-08io1	80	> MCMA 260PD1800YB	80	MDD 175-34N1	76
MCC 224-22io1	83	MCD 162-12io1	80	MCMA 265P1600KA	83	MDD 200-14N1	76
MCC 224-24io1	83	MCD 162-14io1	80	> MCMA 265P1800KA	83	MDD 200-16N1	76
MCC 225-12io1	83	MCD 162-16io1	80	MCMA 265PD1600KB	80	MDD 200-18N1	76
MCC 225-14io1	83	MCD 162-18io1	80	> MCMA 265PD1800KB	80	MDD 200-22N1	76
MCC 225-16io1	83	MCD 200-14io1	80	> MCMA 650MT1800NKB	94	MDD 220-08N1	76
MCC 225-18io1	83	MCD 200-16io1	80	MCMA 700P1600CA	83	MDD 220-12N1	76
MCC 250-08io1	83	MCD 200-18io1	80	> MCMA 700P1600NCA	83	MDD 220-14N1	76
MCC 250-12io1	83	MCD 220-08io1	80	> MCMA 700P1800CA	83	MDD 220-16N1	76
MCC 250-14io1	83	MCD 220-12io1	80	> MCMA 700P1800NCA	83	MDD 220-18N1	76
MCC 250-16io1	83	MCD 220-14io1	80	MCMA 700PD1600CB	80	MDD 250-08N1	76
MCC 250-18io1	83	MCD 220-16io1	80	> MCMA 700PD1800CB	80	MDD 250-12N1	76
MCC 255-12io1	83	MCD 224-20io1	80	MCNA 40P2200TA	81	MDD 250-14N1	76
MCC 255-14io1	83	MCD 224-22io1	80	> MCNA 40PD2200TB	78	MDD 250-16N1	76
MCC 255-16io1	83	MCD 225-12io1	80	> MCNA 55P2200TA	82	MDD 255-12N1	77
MCC 255-18io1	83	MCD 225-14io1	80	> MCNA 55PD2200TB	78	MDD 255-14N1	77
MCC 310-08io1	83	MCD 225-16io1	80	> MCNA 75P2200TA	82	MDD 255-16N1	77
MCC 310-12io1	83	MCD 225-18io1	80	> MCNA 75PD2200TB	79	MDD 255-18N1	77
MCC 310-14io1	83	MCD 250-08io1	80	> MCNA 95P2200TA	82	MDD 255-20N1	77
MCC 310-16io1	83	MCD 250-12io1	80	> MCNA 95PD2200TB	79	MDD 255-22N1	77

- New
- Not for new design
- ✦ Under development

MDD 310-08N1	77	MEK 150-04DA	68	✦ MIXG 300PF1700TSF	32	MUBW 15-06A6K	27
MDD 310-12N1	77	MEK 250-12DA	68	➤ MIXG 330PF1200TSF	32	○ MUBW 15-06A7	27
MDD 310-14N1	77	MEK 300-06DA	68	✦ MIXG 450PF1200TLP	34	MUBW 15-12A6K	27
MDD 310-16N1	77	MEK 350-02DA	68	✦ MIXG 450PF1700TSF	32	MUBW 15-12A7	27
MDD 310-18N1	77	MEK 600-04DA	68	➤ MIXG 490PF1200TSF	32	○ MUBW 15-12T7	27
MDD 310-20N1	77	MEO 450-12DA	68	MKE 11R600DCGFC	12, 56, 58	MUBW 20-06A6K	27
MDD 310-22N1	77	MEO 500-06DA	68	MKE 38P600LB	7	MUBW 20-06A7	27
MDD 312-12N1	77	MEO 550-02DA	68	MKE 38RK600DFELB	7, 58	○ MUBW 25-06A6K	27
MDD 312-14N1	77	MID 75-12A3	34	✦ MKG 17RK600DCGLB	58	MUBW 25-12A7	27
MDD 312-16N1	77	MID 100-12A3	34	➤ MKG 40RK600LB	7, 58	MUBW 30-06A7	27
MDD 312-18N1	77	MID 145-12A3	34	✦ MKH 17RP650DCGLB	7	MUBW 30-12A6K	27
MDD 312-20N1	77	○ MID 150-12A4	34	✦ MKH 22P650LB	7	MUBW 35-06A6K	27
MDD 312-22N1	77	MID 200-12A4	34	➤ MKH 24I650HR	3, 56	MUBW 35-12A7	27
MDI 75-12A3	34	MID 300-12A4	34	✦ MKH 40P650LB	7	○ MUBW 35-12A8	28
MDI 100-12A3	34	MID 550-12A4	34	○ MKI 50-06A7	33	MUBW 45-12T6K	27
MDI 145-12A3	34	MIEB 100W1200DPFTEH	30	○ MKI 50-06A7T	33	MUBW 50-06A7	27
○ MDI 150-12A4	34	○ MIEB 101H1200EH	33	○ MKI 50-12F7	33	○ MUBW 50-06A8	28
MDI 200-12A4	34	MIEB 101W1200DPFEH	30	○ MKI 65-06A7T	33	MUBW 50-12A8	28
MDI 300-12A4	34	MIEB 101W1200EH	30	○ MKI 75-06A7	33	MUBW 50-12T8	28
MDI 550-12A4	34	MII 75-12A3	34	MKI 75-06A7T	33	MUBW 50-17T8	28
MDMA 25P1200TG	75	MII 100-12A3	34	○ MKI 80-06T6K	33	MUBW 75-06A8	28
MDMA 25P1600TG	75	MII 145-12A3	34	MKI 100-12F8	33	MUBW 75-12T8	28
➤ MDMA 25P1800TG	75	MII 150-12A4	34	➤ MMIX 1B15N300C	8	MUBW 75-17T8	28
MDMA 35P1200TG	75	MII 200-12A4	34	➤ MMIX 1B20N300C	8	○ MUBW 100-06A8	28
MDMA 35P1600TG	75	MII 300-12A4	34	MMIX 1F40N110P	7	○ MWI 15-12A7	29
➤ MDMA 35P1800TG	75	➤ MITA 150H1700TEH	33	MMIX 1F44N100Q3	7	○ MWI 25-12A7	29
MDMA 50P1200TG	75	○ MIXA 10W1200TML	29	MMIX 1F132N50P3	7	○ MWI 25-12A7T	29
MDMA 50P1600TG	75	MIXA 10WB1200TED	27	MMIX 1F160N30T	7	○ MWI 30-06A7	29
➤ MDMA 50P1800TG	75	MIXA 10WB1200TML	27	MMIX 1F180N25T	7	MWI 30-06A7T	29
MDMA 60UC1600VC	93	○ MIXA 20W1200TML	29	MMIX 1F210N30P3	7	MWI 35-12T7T	29
MDMA 65P1200TG	75	MIXA 20WB1200TED	27	MMIX 1F230N20T	7	○ MWI 50-06A7	29
MDMA 65P1600TG	75	MIXA 20WB1200TMI	31	MMIX 1F360N15T2	7	○ MWI 50-06A7T	29
➤ MDMA 65P1800TG	75	MIXA 20WB1200TML	27	MMIX 1F420N10T	7	○ MWI 50-12A7	29
MDMA 85P1200TG	75	MIXA 30W1200TED	29	MMIX 1F520N075T2	7, 40	○ MWI 50-12A7T	29
MDMA 85P1600TG	75	○ MIXA 30W1200TML	29	MMIX 1G75N250	8	MWI 50-12T7T	29
➤ MDMA 85P1800TG	75	MIXA 30WB1200TED	27	MMIX 1G120N120A3V1	8	MWI 60-12T6K	29
MDMA 110P1200TG	76	MIXA 30WB1200TMI	31	➤ MMIX 1H60N150V1	9	○ MWI 75-06A7	29
MDMA 110P1600TG	76	MIXA 40W1200TED	29	MMIX 1T550N055T2	7, 40	MWI 75-06A7T	29
➤ MDMA 110P1800TG	76	✦ MIXA 40W1200TMI	31	MMIX 1T600N04T2	7, 40	○ MWI 75-12A8	30
MDMA 140P1200TG	76	○ MIXA 40W1200TML	29	MMIX 1Y82N120C3H1	8	MWI 75-12T7T	29
MDMA 140P1600TG	76	MIXA 40WB1200TED	27	MMIX 1Y100N120C3H1	8	○ MWI 75-12T8T	30
MDMA 140P1800TG	76	MIXA 50PM650TMI	31	➤ MMIX 2F60N50P3	7	MWI 80-12T6K	29
MDMA 200P1600SA	76	➤ MIXA 50W650TED	29	➤ MMIX 2F94N30T	7	MWI 100-06A8	30
MDMA 210UB1600PTED	1, 92	➤ MIXA 50WB600TED	27	➤ MMIX 2F150N20T	7	○ MWI 100-12A8	30
MDMA 240UB1600ED	92	MIXA 60HU1200VA	34	➤ MMIX 4B22N300	8	MWI 150-06A8	30
MDMA 280UB1600PTED	1, 92	MIXA 60W1200TED	29	MMIX 4G20N250	8	○ MWI 150-12T8T	30
MDMA 360UB1600PTED	1, 92	✦ MIXA 60W1200TMI	31	MMIX 1X100N60B3H1	8	○ MWI 200-06A8	30
MDMA 380P1600KC	77	MIXA 60WB1200TEH	28	MMIX 1X200N60B3	8	U	
➤ MDMA 380P1800KC	77	MIXA 60WH1200TEH	28	MMIX 1X200N60B3H1	8	UGB 3132AD	95
MDMA 660U1600PTEH	1, 91	MIXA 61H1200ED	33	➤ MMIX 1X340N65B4	8	UGB 6124AG	95
MDMA 700P1600CC	77	➤ MIXA 75W650TED	29	➤ MMJX 1H40N150	9	UGD 6123AG	95
➤ MDMA 700P1800CC	77	MIXA 80R1200VA	34	MMO 62-12io6	94	UGD 8124AG	95
MDMA 900U1600PTEH	1, 91	MIXA 80W1200TED	29	MMO 62-16io6	94	UGE 0221AY4	95
➤ MDNA 25P2200TG	75	MIXA 80W1200TEH	30	MMO 74-12io6	94	UGE 0421AY4	95
➤ MDNA 35P2200TG	75	MIXA 80WB1200TEH	28	MMO 74-16io6	94	UGE 1112AY4	95
➤ MDNA 50P2200TG	75	MIXA 81H1200EH	33	MMO 90-12io6	94	UGE 3126AY4	95
➤ MDNA 65P2200TG	75	MIXA 81WB1200TEH	28	MMO 90-14io6	94	V	
➤ MDNA 85P2200TG	75	✦ MIXA 100PF650YI	34	MMO 90-16io6	94	VBE 17-06NO7	86
➤ MDNA 110P2200TG	76	MIXA 100PM650TMI	31	MMO 110-08io7	94	VBE 17-12NO7	86
MDNA 140P2200TG	76	MIXA 100W1200TEH	30	MMO 110-12io7	94	VBE 20-20NO1	86
➤ MDNA 210UB2200PTED	92	MIXA 150Q1200VA	34	MMO 110-14io7	94	VBE 26-06NO7	86
➤ MDNA 240U2200ED	91	MIXA 150R1200VA	34	MMO 140-08io7	94	VBE 26-12NO7	86
➤ MDNA 280UB2200PTED	92	MIXA 150W1200TEH	30	MMO 140-12io7	94	VBE 55-06NO7	86
➤ MDNA 360UB2200PTED	92	MIXA 225PF1200TSF	32	MMO 140-16io7	94	VBE 55-12NO7	86
➤ MDNA 380P2200KC	77	MIXA 225RF1200TSF	32	MMO 175-08io7	94	VBE 60-06A	86
MDNA 660U2200PTEH	1, 91	✦ MIXA 300PF1200TLP	34	MMO 175-12io7	94	VBE 60-12A	86
➤ MDNA 700P2200CC	77	MIXA 300PF1200TSF	32	MMO 175-16io7	94	VBE 100-06NO7	86
MDO 500-12N1	77	✦ MIXA 430LD1200TSF	32	MMO 230-08io7	94	VBE 100-12NO7	86
MDO 500-14N1	77	MIXA 450PF1200TSF	32	MMO 230-12io7	94	VBO 13-08NO2	87
MDO 500-16N1	77	✦ MIXA 600AF650TSF	32	MMO 230-14io7	94	VBO 13-12AO2	87
MDO 500-18N1	77	✦ MIXA 600CF650TSF	32	MMO 230-16io7	94	VBO 13-12NO2	87
MDO 500-20N1	77	MIXA 600PF650TSF	32	MMO 230-18io7	94	VBO 13-16AO2	87
MDO 500-22N1	77	MIXB 52HR600DCGED	33	MPK 95-06DA	68	VBO 13-16NO2	87
MDO 600-16N1	77	MIXB 52HR600ED	33	➤ MTC 120W55GC	10	VBO 20-08NO2	87
MEA 75-12DA	68	✦ MIXD 80PM650TMI	31	➤ MTC 120WX55GD	10	VBO 20-12AO2	87
MEA 95-06DA	68	✦ MIXD 200W650TEH	30	➤ MTC 120WX75GD	10	VBO 20-12NO2	87
MEA 250-12DA	68	✦ MIXG 85W1200TED	29	✦ MTC 840X75TGD	10	VBO 20-16AO2	87
MEA 300-06DA	68	✦ MIXG 85WB1200TEH	28	✦ MTC 960X55TGD	10	VBO 20-16NO2	87
MEE 75-12DA	68	MIXG 120W1200PTEH	1	MTI 85W100GC	10	VBO 21-08NO7	87
MEE 95-06DA	68	✦ MIXG 120W1200TEH	30	MTI 145WX100GD	10	VBO 21-12NO7	87
MEE 250-12DA	68	MIXG 180W1200PTEH	1	MTI 200WX75GD	10	VBO 22-08NO8	87
MEE 300-06DA	68	✦ MIXG 180W1200TEH	30	MUBW 10-06A6K	27	VBO 22-12NO8	87
MEK 75-12DA	68	✦ MIXG 200PF1200YI	34	○ MUBW 10-06A7	27	VBO 22-16NO8	87
MEK 95-06DA	68	✦ MIXG 300PF1700TLP	34	○ MUBW 10-12A7	27	VBO 22-18NO8	87

> New
 ○ Not for new design
 ◇ Under development

VBO 25-08NO2	87	VHFD 16-16io1	88	VUO 52-18NO1	89	VW 2x60-12io1	94
VBO 25-12AO2	87	VHFD 29-08io1	88	VUO 52-20NO1	89	VW 2x60-14io1	94
VBO 25-12NO2	87	VHFD 29-12io1	88	VUO 52-22NO1	89	VW 2x60-16io1	94
VBO 25-16AO2	87	VHFD 29-16io1	88	VUO 55-12NO7	90	VVO 35-08ho7	94
VBO 25-16NO2	87	VHFD 37-08io1	88	VUO 55-14NO7	90	VVO 35-12ho7	94
VBO 30-08NO7	87	VHFD 37-12io1	88	VUO 55-16NO7	90		
VBO 30-12NO7	87	VHFD 37-16io1	88	VUO 55-18NO7	90		
VBO 30-16NO7	87	VKM 40-06P1	57	VUO 60-12NO3	90		
VBO 30-18NO7	87	VMM 90-09F	57	VUO 60-14NO3	90		
VBO 36-08NO8	87	○ VMO 550-01F	57	VUO 60-16NO3	90		
VBO 36-12NO8	87	○ VMO 580-02F	57	VUO 60-18NO3	90		
VBO 36-16NO8	87	○ VMO 650-01F	57	VUO 62-08NO7	90		
VBO 36-18NO8	87	VMO 1200-01F	57	VUO 62-12NO7	90		
VBO 40-08NO6	87	VTO 39-08ho7	93	VUO 62-14NO7	90		
VBO 40-12NO6	87	VTO 39-12ho7	93	VUO 62-16NO7	90		
VBO 40-16NO6	87	VUB 72-12NOXT	92	VUO 62-18NO7	90		
VBO 50-08NO7	87	VUB 72-16NOXT	92	VUO 64-16NO7	90		
VBO 50-12NO7	87	VUB 116-16NOXT	92	VUO 68-08NO7	90		
VBO 50-16NO7	87	VUB 120-16NOX	92	VUO 68-12NO7	90		
VBO 50-18NO7	87	VUB 120-16NOXT	92	VUO 68-14NO7	90		
VBO 52-08NO7	87	VUB 135-22NO1	92	VUO 68-16NO7	90		
VBO 52-12NO7	87	VUB 145-16NOXT	92	○ VUO 70-16NO7	90		
VBO 52-16NO7	87	VUB 160-16NOX	92	VUO 80-08NO1	90		
VBO 52-18NO7	87	VUB 160-16NOXT	92	VUO 80-12NO1	90		
VBO 54-08NO7	87	VUC 36-12go2	93	VUO 80-14NO1	90		
VBO 54-12NO7	87	VUC 36-16go2	93	VUO 80-16NO1	90		
VBO 54-16NO7	87	VUE 22-06NO7	86	VUO 80-18NO1	90		
VBO 68-08NO7	87	VUE 22-12NO7	86	VUO 82-08NO7	90		
VBO 68-12NO7	87	VUE 30-20NO1	86	VUO 82-12NO7	90		
VBO 68-16NO7	87	VUE 35-06NO7	86	VUO 82-14NO7	90		
VBO 72-08NO7	87	VUE 35-12NO7	86	VUO 82-16NO7	90		
VBO 72-12NO7	87	VUE 50-12NO1	86	VUO 82-18NO7	90		
VBO 72-16NO7	87	VUE 75-06NO7	86	VUO 84-16NO7	90		
VBO 72-18NO7	87	VUE 75-12NO7	86	VUO 86-08NO7	90		
VBO 78-08NO7	88	VUE 130-06NO7	86	VUO 86-12NO7	90		
VBO 78-12NO7	88	VUE 130-12NO7	86	VUO 86-14NO7	90		
VBO 78-16NO7	88	VUI 30-12N1	58	VUO 86-16NO7	90		
VBO 88-08NO7	88	VUI 72-16NOXT	92	VUO 98-08NO7	90		
VBO 88-12NO7	88	○ VUM 24-05N	58	VUO 98-12NO7	90		
VBO 88-16NO7	88	VUM 25-05E	58	VUO 98-14NO7	90		
VBO 105-08NO7	88	○ VUM 33-05N	58	VUO 98-16NO7	90		
VBO 105-12NO7	88	VUM 33-06PH	58	VUO 105-12NO7	90		
VBO 105-16NO7	88	VUM 85-05A	58	VUO 105-14NO7	90		
VBO 125-08NO7	88	VUO 22-08NO1	89	VUO 105-16NO7	90		
VBO 125-12NO7	88	VUO 22-12NO1	89	VUO 105-18NO7	90		
VBO 125-16NO7	88	VUO 22-14NO1	89	VUO 110-08NO7	91		
VBO 130-08NO7	88	VUO 22-16NO1	89	VUO 110-12NO7	91		
VBO 130-12NO7	88	VUO 22-18NO1	89	VUO 110-14NO7	91		
VBO 130-16NO7	88	VUO 25-08NO8	89	VUO 110-16NO7	91		
VBO 130-18NO7	88	VUO 25-12NO8	89	VUO 110-18NO7	91		
VBO 160-08NO7	88	VUO 25-14NO8	89	VUO 120-12NO2T	91		
VBO 160-12NO7	88	VUO 25-16NO8	89	VUO 120-16NO2T	91		
VBO 160-16NO7	88	VUO 25-18NO8	89	VUO 121-16NO1	91		
VBO 160-18NO7	88	VUO 28-08NO7	89	VUO 122-08NO7	91		
VCO 132-08io7	84	VUO 28-12NO7	89	VUO 122-12NO7	91		
VCO 132-12io7	84	VUO 30-08NO3	89	VUO 122-14NO7	91		
VCO 132-14io7	84	VUO 30-12NO3	89	VUO 122-16NO7	91		
VCO 132-16io7	84	VUO 30-14NO3	89	VUO 125-12NO7	91		
VCO 132-18io7	84	VUO 30-16NO3	89	VUO 125-14NO7	91		
VCO 180-08io7	84	VUO 30-18NO3	89	VUO 125-16NO7	91		
VCO 180-12io7	84	VUO 34-08NO1	89	VUO 125-18NO7	91		
VCO 180-14io7	84	VUO 34-12NO1	89	VUO 160-08NO7	91		
VCO 180-16io7	84	VUO 34-14NO1	89	VUO 160-12NO7	91		
VCO 180-18io7	84	VUO 34-16NO1	89	VUO 160-14NO7	91		
VGB 0124AY7a	95	VUO 34-18NO1	89	VUO 160-16NO7	91		
VGf 0136AB	95	VUO 35-08NO7	89	VUO 160-18NO7	91		
VGf 0136AH	95	VUO 35-12NO7	89	VUO 162-16NO7	91		
VGO 36-16io7	88	VUO 35-14NO7	89	VUO 190-08NO7	91		
VHF 15-08io5	88	VUO 35-16NO7	89	VUO 190-12NO7	91		
VHF 15-12io5	88	VUO 35-18NO7	89	VUO 190-14NO7	91		
VHF 15-14io5	88	VUO 36-08NO8	89	VUO 190-16NO7	91		
VHF 15-16io5	88	VUO 36-12NO8	89	VUO 190-18NO7	91		
VHF 25-08io7	88	VUO 36-14NO8	89	VUO 192-16NO7	91		
VHF 25-12io7	88	VUO 36-16NO8	89	VVZ 39-08ho7	93		
VHF 28-08io5	88	VUO 36-18NO8	89	VVZ 39-12ho7	93		
VHF 28-12io5	88	VUO 50-08NO3	89	VVZ 40-12io1	93		
VHF 28-14io5	88	VUO 50-12NO3	89	VVZ 40-16io1	93		
VHF 28-16io5	88	VUO 50-14NO3	89	VVZ 110-12io7	93		
VHF 36-08io5	88	VUO 50-16NO3	89	VVZ 175-12io7	93		
VHF 36-12io5	88	VUO 50-18NO3	89	VVZ 175-16io7	93		
VHF 36-14io5	88	VUO 52-08NO1	89	VVZB 120-16ioX	92		
VHF 36-16io5	88	VUO 52-12NO1	89	VVZB 135-16ioXT	92		
VHFD 16-08io1	88	VUO 52-14NO1	89	VVZB 170-16ioXT	92		
VHFD 16-12io1	88	VUO 52-16NO1	89	○ VVZF 70-16io7	93		

IXYS ICD

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CPC1580	105
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CPC1706Y	99
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CPC1718J	99
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CPC1727J	99
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CPC1786J	99
CPC1788J	99
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CPC1916Y	99
CPC1918J	99
CPC1926Y	99
CPC1927J	99
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> CPC1964G	100
> CPC1964Y	100
CPC1965G	100
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CPC1966	100
CPC1966B	100
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CPC1967J	99
> CPC1968J	99
CPC1972	100
CPC1973Y	99
CPC1976	100
> CPC1976YX6	100
CPC1977J	99
CPC1978J	99
CPC1979J	99
CPC1981Y	99
> CPC1983B	99
CPC1983Y	99
> CPC1983YE	99
CPC1986J	99
CPC1988J	99
CPC1998J	100
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FDA215	105
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IX2113	102
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> New
 ○ Not for new design
 ◇ Under development

M0334SC120	113	M1565VC450	115	MCC720-14io7	136	MDC431-24io2	137
M0334SC200	113	M1565VF360	115	MCC720-18io7	136	○ MDC500-14io1	137
M0334SJ120	113	M1565VF400	115	> MCD160-14io3	137	○ MDC500-18io1	137
M0334SJ200	113	M1565VF450	115	> MCD160-18io3	137	○ MDC500-22io1	137
M0336RA120	113	M1583VC400	112	> MCD220-28io3	137	MDC500-30io7	137
M0336RA140	113	M1583VC450	112	> MCD265-24io3	137	MDC500-36io7	137
M0336SA120	113	M1583VF400	112	MCD320-30io2	137	MDC501-12io2	137
M0336SA140	113	M1583VF450	112	MCD320-36io2	137	MDC501-14io2	137
M0347WC200	114	M1609NC200	112	> MCD325-14io3	137	MDC501-16io2	137
M0347WC250	114	M1609NC260	112	> MCD325-18io3	137	MDC501-18io2	137
M0358WC120	114	M1609ND200	112	> MCD380-28io2	137	MDC552-12io2	137
M0358WC180	114	M1609ND260	112	MCD431-20io2	137	MDC552-14io2	137
M0367WC220	114	M1858NC120	115	MCD431-22io2	137	MDC552-16io2	137
M0367WC280	114	M1858NC160	115	MCD431-24io2	137	MDC580-28io7	137
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M0371YH450	114	M1858ND160	115	○ MCD500-18io1	137	MDC650-24io7	137
M0433WC120	114	M2273VC300	112	○ MCD500-22io1	137	MDC700-14io1W	140
M0433WC160	114	M2273VC360	112	MCD500-30io7	137	MDC700-18io1W	140
M0433WC200	114	M2273VF300	112	MCD500-36io7	137	MDC700-14io7	137
M0437WC080	114	M2273VF360	112	MCD501-12io2	137	MDC720-18io7	137
M0437WC140	114	M2322ZC300	115	MCD501-14io2	137	MDD 710-22N2	138
M0588LC400	112	M2322ZC400	115	MCD501-16io2	137	MDD 710-26N2	138
M0588LC450	112	M2322ZD300	115	MCD501-18io2	137	MDD 810-12N2	138
M0659LC400	114	M2322ZD400	115	MCD552-12io2	137	MDD 810-16N2	138
M0659LC450	114	M2408NC020	112	MCD552-14io2	137	MDD 810-18N2	138
M0710LC560	114	M2408NC060	112	MCD552-16io2	137	MDD1080-18N7	139
M0710LC600	114	M2408ND020	112	MCD580-28io7	137	MDD1080-24N7	139
M0736LC400	114	M2408ND060	112	MCD600-22io1W	140	MDD1080-28N7	139
M0736LC450	114	M2413VC200	115	MCD650-24io7	137	> MDD275-30N3	138
M0759YC120	114	M2413VC250	115	MCD700-14io1W	140	> MDD275-36N3	138
M0759YC160	114	M2413VF200	115	MCD700-18io1W	140	> MDD410-24N3	138
M0759YH120	114	M2413VF250	115	MCD720-14io7	137	> MDD410-28N3	138
M0759YH160	114	M2639ZC420	112	MCD720-18io7	137	> MDD510-14N3	138
M0790YC200	112	M2639ZC450	112	○ MCK500-14io1	136	> MDD510-18N3	138
M0790YC250	112	M2639ZD420	112	○ MCK500-18io1	136	○ MDD600-14N1	138
M0790YH200	112	M2639ZD450	112	○ MCK500-22io1	136	○ MDD600-18N1	138
M0790YH250	112	M2698ZC250	112	MCK600-22io1W	140	○ MDD600-22N1	138
M0859LC140	114	M2698ZC280	112	MCK700-14io1W	140	MDD630-30N2	138
M0859LC160	114	M2698ZC350	112	MCK700-18io1W	140	MDD630-36N2	138
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M0863LC300	114	M2698ZD280	112	> MCO560-36io1	136	MDD950-18N1W	140
M0863LC360	114	M2698ZD350	112	> MCO635-28io1	136	MDD950-22N1W	140
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M0872LC180	114	M2837VC250	112	MCO801-14io1	136	MDK 710-26N2	138
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M0914LC250	112	M3770ZC200	112	MCR500-36io7	136	MDK 810-18N2	139
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M0955LC250	114	M3770ZC300	112	MCR650-24io7	136	MDK1080-24N7	139
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M1010NC450	112	M3770ZD240	112	MCR720-18io7	136	> MDK275-30N3	138
M1010ND400	112	M3770ZD300	112	MDA 710-22N2	138	> MDK275-36N3	138
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M1022LC120	114	MCA700-14io1W	140	MDA 810-12N2	139	> MDK410-28N3	138
M1022LC160	114	MCA700-18io1W	140	MDA 810-16N2	139	> MDK510-14N3	138
M1022LC200	114	> MCC160-30io3	136	MDA 810-18N2	139	> MDK510-18N3	138
M1080LC100	114	> MCC160-36io3	136	MDA1080-18N7	139	○ MDK600-14N1	138
M1080LC120	114	> MCC220-28io3	136	MDA1080-24N7	139	○ MDK600-18N1	138
M1102NC500	115	> MCC265-24io3	136	MDA1080-28N7	139	○ MDK600-22N1	138
M1102NC600	115	MCC320-30io2	136	> MDA275-30N3	138	MDK630-30N2	138
M1102ND500	115	MCC320-36io2	136	> MDA275-36N3	138	MDK630-36N2	138
M1102ND600	115	> MCC325-14io3	136	> MDA410-24N3	138	MDK950-14N1W	140
M1104NC400	115	> MCC325-18io3	136	> MDA410-28N3	138	MDK950-18N1W	140
M1104NC450	115	> MCC380-28io2	136	> MDA510-14N3	138	MDK950-22N1W	140
M1104ND400	115	MCC431-20io2	136	> MDA510-18N3	138	> MDO1120-24N1	139
M1104ND450	115	MCC431-22io2	136	○ MDA600-14N1	138	> MDO1120-28N1	139
M1163NC400	112	MCC431-24io2	136	○ MDA600-18N1	138	MDO1201-14N1	139
M1163NC450	112	○ MCC500-14io1	136	○ MDA600-22N1	138	MDO1201-18N1	139
M1163ND400	112	○ MCC500-18io1	136	MDA630-30N2	138	MDO1201-22N1	139
M1163ND450	112	○ MCC500-22io1	136	MDA630-36N2	138	N	
M1242NC260	115	MCC500-30io7	136	MDA950-14N1W	140	N0180SH120	118
M1242NC360	115	MCC500-36io7	136	MDA950-18N1W	140	N0180SH160	118
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M1242ND360	115	MCC501-14io2	136	> MDC160-14io3	137	N0335SC160	118
M1494NC160	115	MCC501-16io2	136	> MDC160-18io3	137	N0416SC040	118
M1494NC250	115	MCC501-18io2	136	> MDC220-28io3	137	N0416SC080	118
M1494ND160	115	MCC552-12io2	136	> MDC265-24io3	137	N0465WN140	119
M1494ND250	115	MCC552-14io2	136	MDC320-30io2	137	N0465WN160	119
M1502NC200	112	MCC552-16io2	136	MDC320-36io2	137	N0530YN220	119
M1502NC250	112	MCC580-28io7	136	> MDC325-14io3	137	N0530YN250	119
M1502ND200	112	MCC600-22io1W	140	> MDC325-18io3	137	N0616LC400	119
M1502ND250	112	MCC650-24io7	136	> MDC380-28io2	137	N0616LC450	119
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N0795YN140	119	N2520ML120	120	N5177FC280	122	P1007LC08E	126
N0795YN180	119	N2520ML140	120	N5177FD200	122	P1007LC08F	126
N0882NC400	119	N2543ZC240	121	N5177FD280	122	P1007LC12D	126
N0882NC450	119	N2543ZC300	121	N5946FC180	122	P1007LC12E	126
N0910LC200	119	N2543ZD240	121	N5946FC220	122	P1007LC12F	126
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N1010NC300	119	N2593MK160	121	N5946FD220	122	R0472YC12E	127
N1010NC380	119	N2593MK180	121	N6012ZD020	122	R0472YC12F	127
N1075LN180	119	N2600MC160	121	N6012ZD040	122	R0472YC16E	127
N1132NC300	119	N2600MC180	121	N6012ZD060	122	R0472YC16F	127
N1132NC320	119	N2825TE400	121	N6974HK020	122	R0487YC12D	127
N1140LN140	119	N2825TE450	121	N6974HK040	122	R0487YC12E	127
N1159NC380	119	N2825TJ400	121	N6974HK060	122	R0487YC14D	127
N1159NC420	119	N2825TJ450	121	P		R0487YC14E	127
N1174JK200	119	➤ N2830HE260	121	P0128SH10C	125	R0577YC12C	127
N1174JK220	119	➤ N2830HE280	121	P0128SH10D	125	R0577YC12D	127
N1263JK160	119	N2900QL020	121	P0128SH10E	125	R0577YC12E	127
N1263JK180	119	N2900QL040	121	P0128SH12C	125	R0633YC12D	127
N1351VC400	119	N2900QL060	121	P0128SH12D	125	R0633YC12E	127
N1351VC450	119	N3012ZC200	121	P0128SH12E	125	R0633YC12F	127
N1351VF400	119	N3012ZC260	121	P0128SJ10C	125	R0717LC14G	127
N1351VF450	119	N3012ZD200	121	P0128SJ10D	125	➤ R0717LC18G	127
N1366JK080	119	N3012ZD260	121	P0128SJ10E	125	R0736LC20J	127
N1366JK120	119	N3022MK080	121	P0128SJ12C	125	R0736LC20K	127
N1366JK140	119	N3022MK120	121	P0128SJ12D	125	R0736LC22J	127
N1449QL200	119	N3022MK140	121	P0128SJ12E	125	R0736LC22K	127
N1449QL220	119	N3029ZC240	121	P0248SC12D	125	R0736LC25J	127
N1467NC200	119	N3029ZC280	121	P0248SC12E	125	R0736LC25K	127
N1467NC260	119	N3029ZD240	121	P0273SC12D	125	R0736LC25L	127
N1547NC160	119	N3029ZD280	121	P0273SC12E	125	R0736LC25M	127
N1547NC200	119	➤ N3165HA260	121	P0273SC12F	125	R0809LC10A	127
N1581QL160	119	➤ N3165HA280	121	P0295WC12D	126	R0809LC10B	127
N1581QL180	119	➤ N3175HE160	121	P0295WC12E	126	R0830LC12C	127
N1651QK200	119	➤ N3175HE180	121	P0306SC08A	125	R0830LC12D	127
N1651QK220	119	N3229QK020	121	P0306SC08B	125	R0830LC12E	127
N1661VC300	119	N3229QK040	121	P0306SC08C	125	R0830LC12F	127
N1661VC360	119	N3229QK060	121	P0311SC12E	125	R0830LC14C	127
N1661VF300	119	N3533ZC180	121	P0311SC12F	125	R0830LC14D	127
N1661VF360	119	N3533ZC220	121	P0327WC08C	126	R0830LC14E	127
N1718NC120	120	N3533ZD180	121	P0327WC08D	126	R0830LC14F	127
N1718NC180	120	N3533ZD220	121	P0327WC08E	126	R0878LC18K	127
N1718NC200	120	➤ N3565HA160	121	P0327WC08F	126	R0878LC18L	127
➤ N1725MC320	120	➤ N3565HA180	121	P0327WC12C	126	R0878LC18M	127
➤ N1725MC360	120	N3597ML020	121	P0327WC12D	126	R0878LC20K	127
N1802NC120	120	N3597ML040	121	P0327WC12E	126	R0878LC20L	127
N1802NC160	120	N3597ML060	121	P0327WC12F	126	R0878LC20M	127
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N1806QK180	120	N3790TE280	121	P0330SC04C	125	R0878LC21L	127
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N1817QL120	120	N3790TJ280	121	P0330SC06C	125	R0929LC10A	127
N1817QL140	120	N3839TC300	122	P0330SC08A	125	R0929LC10B	127
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N2015ML220	120	N3839TD300	122	P0366WC04A	126	R0929LC12A	127
➤ N2055MC260	120	N3839TD350	122	P0366WC04B	126	R0929LC12B	127
➤ N2055MC280	120	N3880ZD160	122	P0366WC04C	126	R0929LC12C	127
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N2083QK140	120	N3904HK220	122	P0366WC06C	126	R0964LC10C	127
N2086NC060	120	N3930ZC120	122	P0366WC08A	126	R0964LC10D	127
N2086NC100	120	N3930ZC160	122	P0366WC08B	126	R0964LC10E	127
N2154JK020	120	N3930ZD120	122	P0366WC08C	126	R0964LC12C	128
N2154JK040	120	N3930ZD160	122	P0367WC12E	126	R0964LC12D	128
N2154JK060	120	N4085ZC080	122	P0367WC12F	126	R0964LC12E	128
N2172ZC400	120	N4085ZC120	122	P0389WC04B	126	R0990LC08A	128
N2172ZC450	120	N4085ZD080	122	P0389WC04C	126	R0990LC08B	128
N2172ZD400	120	N4085ZD120	122	P0389WC08B	126	R0990LC08C	128
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N2191ML160	120	N4151FC420	122	P0431SC04B	125	R1124NC18K	128
N2191ML180	120	N4151FD360	122	P0431SC04C	125	R1124NC18L	128
○ N2293VC180	120	N4151FD420	122	P0431SC06B	125	R1124NC18M	128
○ N2293VC220	120	N4316MK020	122	P0431SC06C	125	R1124NC20J	128
○ N2293VF180	120	N4316MK040	122	P0515WC04B	126	R1124NC20K	128
○ N2293VF220	120	N4316MK060	122	P0515WC04C	126	R1124NC20L	128
N2367MK200	120	➤ N4340TE180	122	P0515WC04D	126	R1124NC20M	128
N2367MK220	120	➤ N4340TE220	122	P0515WC06B	126	R1124NC21J	128
N2418ZC300	120	➤ N4340TJ180	122	P0515WC06C	126	R1124NC21K	128
N2418ZC360	120	➤ N4340TJ220	122	P0515WC06D	126	R1124NC21L	128
N2418ZD300	120	N4472HK160	122	P0838LC06B	126	R1124NC21M	128
N2418ZD360	120	N4472HK180	122	P0838LC06C	126	R1127NC32P	128
○ N2500VC120	120	N4803FC300	122	P0848YC04B	126	R1127NC32R	128
○ N2500VC160	120	N4803FC350	122	P0848YC04C	126	R1127NC32S	128
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R1127NC34T	128	> R2075MC12A	129	R3559TD16M	131	T0240NB45E	134
R1127NC36R	128	> R2075MC12B	129	R3559TD16N	131	T0258HF65G	134
R1127NC36S	128	> R2075MC12C	129	R3559TD20K	131	T0340VB45G	134
R1127NC36T	128	R2475ZC28M	129	R3559TD20M	131	T0360ND25A	134
R1158NC26N	128	R2475ZC28N	129	R3559TD20N	131	T0385HF65E	134
R1158NC26P	128	R2475ZC28R	129	R3636EC16K	131	T0500ND25E	134
R1158NC26T	128	R2475ZD28M	130	R3636EC16M	131	T0510VB45E	134
R1178NC14E	128	R2475ZD28N	130	R3636EC16N	131	T0570VD25G	134
R1178NC14F	128	R2475ZD28R	130	R3636EC20K	131	T0600AF65G	134
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R1211NC12E	128	R2619ZC20J	130	R3708FC45W	131	T0850VD25E	134
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R1280NC21J	129	R2620ZC25K	130	S0700KC17D	133	W0428SF280	108
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R1280NC22K	129	R2620ZD25K	130	S1000NC36Y	133	W0503SC160	108
R1280NC22L	129	R2620ZD25L	130	S1200NC200	133	W0503SC200	108
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R1446NC12D	129	R3047TC24K	130	SXB3120FG	144	W1032LC600	109
R1446NC12F	129	R3047TC24L	130	SXB3442B	144	W1074YC200	109
R1448NC14H	129	R3047TC24M	130	SXB3529HEXT	144	W1074YC260	109
R1448NC14J	129	R3047TC24N	130	SXB3840HEX	144	W1074YC320	109
R1448NC18H	129	R3047TC28K	131	SXB4264B	144	W1074YH200	109
R1448NC18J	129	R3047TC28L	131	SXB4649HEXT	144	W1074YH260	109
R1448NC20H	129	R3047TC28M	131	SXB4869G	144	W1074YH320	109
R1448NC20J	129	R3047TC28N	131	SXB5877HEX	144	W1185LC300	109
R1448NC20K	129	R3047TD24K	131	SXB5993G	144	W1185LC380	109
R1448NC20L	129	R3047TD24L	131	SXB6240HEXT	144	W1185LC450	109
R1448NC20M	129	R3047TD24M	131	SXB9737HEX	144	W1185LC450KBN	149
R1700MC18E	129	R3047TD24N	131	SXC1076FB	147	W1185LC450KBR	149
R1700MC18F	129	R3047TD28K	131	SXC1195FR	147	W1185LC450KCN	149
R1700MC18G	129	R3047TD28L	131	SXC1318FB	147	W1185LC450KCR	149
R1700MC18H	129	R3047TD28M	131	SXC1464FR	147	W1263YC160	109
R1700MC18J	129	R3047TD28N	131	SXC1517FG	147	W1263YC200	109
R1700MC21E	129	R3370ZC12C	131	SXC1609FB	147	W1263YC250	109
R1700MC21F	129	R3370ZC12D	131	SXC1788FR	147	W1263YH160	109
R1700MC21G	129	R3370ZC12E	131	SXC1871FG	147	W1263YH200	109
R1700MC21H	129	R3559TC16K	131	SXC2319FG	147	W1263YH250	109
R1700MC21J	129	R3559TC16M	131	SXF30xxxxAN	155	W1411LC300	109
R1955MC14D	129	R3559TC16N	131	SXF46xxxxAN	155	W1411LC360	109
R1955MC14E	129	R3559TC20K	131	SXFLPxxxxAN	155	W1411LC360KBN	149
R1955MC14F	129	R3559TC20M	131				
R1955MC16D	129						

Alphanumeric Index

- New
- Not for new design
- ✦ Under development

W1411LC360KBR	149	W3864QK180	110	XK0450BB025M	155	XSK065	152
W1411LC360KCN	149	W4096ZC340	110	XK0450DA056M	150	XSK065	152
W1411LC360KCR	149	W4096ZC450	110	XK0450DT056M	150	XSK075	152
W1520NC500	109	W4096ZD340	110	XK0450SA056M	150	XSK075	152
W1520NC600	109	W4096ZD450	110	XK0550DA056M	150	XSK087	152
W1524LC240	109	➤ W4205TE520	110	XK0550SA056M	150	XSK087	152
W1524LC300	109	➤ W4205TE560	110	XK0600DA074M	150	XSK103	152
W1524LC300KBN	149	➤ W4205TE600	110	XK0600SA074M	150	XSK103	152
W1524LC300KBR	149	➤ W4205TJ520	110	○ XK0900DA056M	150	XSK112	152
W1524LC300KCN	149	➤ W4205TJ560	110	○ XK0900DT056M	150	XSK112	152
W1524LC300KCR	149	➤ W4205TJ600	110	XK0900SA056M	150	XSK120	152
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W1748LC220	109	W4534NC060	110	XK1000DA074M	150	XSK126	152
W1748LC220KBN	149	W4693QK050	110	XK1000SA074M	150	XSK126	152
W1748LC220KBR	149	W4693QK080	110	XK1100DA076M	150	XSK1500DA076038	154
W1748LC220KCN	149	W4693QR050	110	XK1130DA076M	150	XSK1500DA076076	154
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W1748LC250	109	W4713HL300	110	XK1130SA076M	150	XSK2000DA076038	154
W2054NC360	109	W4713HL350	110	XK1130SB076M	149	XSK2000DA076076	154
W2054NC450	109	W4713HM300	110	XK1500BA025M	155	XSK2000DA076101	154
W2058LC100	109	W4713HM350	110	XK1500BA034M	155	XSK3000DA076038	154
W2058LC120	109	W4767MC180	110	XK1500CB034M	149	XSK3000DA076076	154
W2058LC120KBN	149	W4767MC220	110	XK1800DA076M	150	XSK3000DA076101	154
W2058LC120KBR	149	W5092ZC320	110	XK1800DT076M	150	XSK3400DA076038	154
W2058LC120KCN	149	W5092ZC350	110	XK1800SA076M	150	XSK3400DA076076	154
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W2058LC140	109	W5092ZD350	110	XK2000SA114M	150	XSK3800DA116M076	154
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W2115MC560	109	W5130MK280	111	XK2100DA076ML	150	XSK4400DA116M076	154
W2115MC600	109	W5139TE400	111	XK2100SA076M	150	XSK4400DA116M101	154
W2134NC300	109	W5139TE480	111	XK2100SA076ML	150	XSK6000DA116M076	154
W2134NC400	109	W5139TJ400	111	○ XK2140DA076M	150	XSK6000DA116M101	154
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W2820VC450	109	W5282ZC240	111	○ XK2140DT076M	150	XSL1000C2WRT	148
W2820VF360	109	W5282ZC300	111	○ XK2140DT076ML	150	XSL1100C2WRT	148
W2820VF450	109	W5282ZD240	111	XK2140SA076M	150	XSL200D8WRC	148
W2899MC420	109	W5282ZD300	111	XK2140SA076ML	150	XSL200D8WRCP	148
W2899MC460	109	W5334MK200	111	XK2140SB076M	149	XSL220C2WRT	148
W2899MC480	109	W5334MK220	111	XK2500DA114M	150	XSL300C2WRP	148
W3082MC420	109	W5636MC120	111	XK2500DA116M	150	XSL300C2WS	148
W3082MC440	109	W5636MC140	111	XK2500DA116ML	150	XSL350C2WRP	148
W3082MC450	109	W5636MC150	111	XK2500SA114M	150	XSL400C2WRP	148
W3082MC450KDN	149	W5636MC150KDN	149	XK2500SA116M	150	XSL500C2WRP	148
W3082MC450KDR	149	W5636MC150KDR	149	XK2500SA116ML	150	XSL600C2WRP	148
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W3128VC400	109	W5696VC140	111	XK2700DT076M	150	XSNM12H10S	156
W3128VF300	109	W5696VF100	111	XK2700SA076M	150	XSNM12H12S	156
W3128VF400	109	W5696VF140	111	○ XK3000DA116M	150	XST1000M08P	148
W3270NC200	110	W5838ZC180	111	○ XK3000DA116ML	150	XST1000M10P	148
W3270NC20A	110	W5838ZC220	111	XK3000SA116M	150	XST1000M12P	148
W3270NC220	110	W5838ZD180	111	XK3000SA116ML	150	XST1000M16P	148
W3270NC22A	110	W5838ZD220	111	XK3060DA140ML	151	XW076NC16A	156
➤ W3305QK240	110	W5984TE360	111	XK3060SA140ML	151	XW076NC16B	156
➤ W3305QK280	110	W5984TE400	111	XK3500DA116M	150	XW076NC16BS	156
W3455QK200	110	W5984TJ360	111	XK3500DA116ML	150	XW076NC16BT	156
W3455QK220	110	W5984TJ400	111	XK3500SA116M	150	XW076NC16C	156
W3477MC360	110	W6262ZC200	111	XK3500SA116ML	150	XW076NC16CT	156
W3477MC380	110	W6262ZC240	111	○ XK4000DA116M	150	XW076NC16R	156
W3477MC400	110	W6262ZD200	111	○ XK4000DA116ML	150	XW076NC16W	156
W3697VC220	110	W6262ZD240	111	XK4000SA116M	150	XW116ZC20A	156
W3697VC280	110	W6908FC450	111	XK4000SA116ML	150	XW116ZC20B	156
W3697VF220	110	W6908FC500	111	XK5000DA128M	151	XW116ZC20C	156
W3697VF280	110	W6908FD450	111	XK5000DA128ML	151	XW116ZC20R	156
W3708MC300	110	W6908FD500	111	XK6120DA180ML	151	XW116ZC20W	156
W3708MC320	110	➤ W7032DB020	111	XK6120SA180ML	151	XW127EA25A	156
W3708MC350	110	➤ W7032DB040	111	XK7000DA128M	151	XW127EA25B	156
W3708MC350KDN	149	W7045MC030	111	XK7000DA128ML	151	XW127EC25A	156
W3708MC350KDR	149	W7045MC060	111	XK9000DA160M	151	XW127EC25B	156
W3743ZC400	110	W8405ZC100	111	XK9000DA160ML	151	XW127EN15A	156
W3743ZC450	110	W8405ZC140	111	XK9000SA160M	151	XW127EN15B	156
W3743ZC500	110	W8405ZD100	111	XK9000SA160ML	151	XW160FC25A	156
W3743ZD400	110	W8405ZD140	111	XSFGAxxxxAN	155	XW160FC25B	156
W3743ZD450	110	W8570TE180	111	XSFGxxxxAN	155	XW180GA34A	156
W3743ZD500	110	W8570TE220	111	XSFGxxxxAN	155	XW180GA34B	156
W3841VC300	110	W8570TJ180	111	XSFTBxxxxAN	155	XW180GC34A	156
W3841VC340	110	W8570TJ220	111	XSFTCxxxxAN	155	XW180GC34B	156
W3841VF300	110	W9830TE120	111	XSFTxxxxAN	155	XW180GN25A	156
W3841VF340	110	W9830TE150	111	XSGSCX13	148	XW270QA25A	156
W3842MC240	110	W9830TJ120	111	XSK042	152	Y	
W3842MC280	110	W9830TJ150	111	XSK042	152	Y200CKC250	132
W3842MC280KDN	149	X		XSK054	152	Y500CNC250	132
W3842MC280KDR	149	XK0450BA019M	155	XSK054	152		
W3864QK120	110	XK0450BA025M	155	XSK056	152		
W3864QK150	110	XK0450BB019M	155	XSK056	152		

Symbols and Terms

a	Acceleration	I_{FM}	Maximum forward current
BV_{CES}	Collector emitter breakdown voltage	I_{FAV}	Average forward current
BV_{DSS}	Drain source breakdown voltage	I_{F(AV)M}, I_{T(AV)M}	Maximum average forward current
C_{ies}, C_{iss}	Input capacitance	I_{FLT}	Sink current of fault terminal
C_{oes}, C_{oss}	Output capacitance	I_{FRM}	Maximum repetitive forward current
C_{res}, C_{rfs}	Reverse transfer (Miller) capacitance	I_{F(RMS)}, I_{T(RMS)}	RMS forward current
d	Duty cycle	I_{FSM}, I_{TSM}	Maximum surge forward current
d_A	Strike distance through air	I_G, I_{GT}	Trigger gate current
di/dt, - di/dt	Rate of change of current	I_{GD}	Non-trigger gate current
(di/dt)_{cr}	Critical rate of rise of current	I_{GES}	Gate emitter leakage current
di_F/dt, -di_F/dt	Rate of change of forward current	I_H	Holding current
d_s	Creep distance on surface	I_{IN(H)}	Signal input current (high level)
dv/dt	Rate of rise of voltage	I_{IN(L)}	Signal input current (low level)
(dv/dt)_{cr}	Critical rate of rise of voltage	I_{ISOL}	RMS current for isolation test
E_{AR}	Repetitive avalanche energy	I_L	Latching current
E_{AS}	Non-repetitive avalanche energy	I_R	Reverse current
E_{off}	Turn-off energy per pulse	I_{RM}	Maximum reverse recovery current
E_{on}	Turn-on energy per pulse	I_{RMS}	RMS current
E_{rec(off)}	Reverse recovery losses at turn-off	I_{RRM}	Maximum repetitive reverse current
F_(mounting)	Required force to mount hole-less discretes on heat sink	I_S	Continuous source current
g_{fs}	Forward transconductance	I_{SM}	Maximum pulsed source current
I_{AR}	Repetitive avalanche current	I²t	I ² t value for fusing
I_{AVM}	Maximum average forward current	I_{TSM}	Maximum surge on-state current
I_{BO}	Breakover current	K_f	Characteristic factor
I_{C(on)}	Short circuit current	K_p	Coeff. for energy per pulse Ep (material constant)
I_C	Collector current	K_T	Temperature coefficient of VBO
I_{C25}	Continuous DC collector current at T _C = 25°C	L	Series stray inductance
I_{C90}	Continuous DC collector current at T _C = 90°C	M_d	Mounting torque
I_{CES}	Collector emitter leakage current	P_C	Collector power dissipation
I_{CM}	Maximum pulsed collector current	P_D	Power dissipation
I_D	Drain current	P_{GAV}	Average gate power dissipation
I_{DD}	Module supply current, operating mode	P_{G(AV)M}	Maximum average gate power dissipation
I_{DD0}	Module supply current, standby mode	P_{GM}	Maximum gate power dissipation
I_{D(cont)}	Continuous drain current	P_{RSM}	Maximum surge reverse power dissipation
I_{D25}	Continuous drain current at T _C = 25°C	P_T, P_{tot}	Total power dissipation
I_{DAV}	Average DC output current	Q_g	Total gate charge
I_{D(AV)M}	Maximum average DC output current	Q_{gc}	Gate collector (Miller) charge
I_{DM}	Maximum pulsed drain current	Q_{gd}	Gate drain (Miller) charge
I_{DRM}	Maximum repetitive off-state current	Q_{ge}	Gate emitter charge
I_{D(RMS)}	RMS output current	Q_{gs}	Gate source charge
I_{DSS}	Drain source leakage current	Q_r	Reverse recovery charge
I_F, I_T	Forward current	Q_{RM}	Reverse recovery charge (intrinsic diode)
		Q_s	Recovered charge to IRM

Symbols and Terms

RBSOA	Reverse Bias Safe Operating Area
$R_{DS(on)}$	Static drain source on resistance
R_{FI}	Radio frequency interference (= EMI)
R_G	Gate resistance
R_{GE}	Gate emitter resistance
rT	Slope resistance (for power loss calculation only)
$R_{thCK}; R_{thCH}$	Thermal resistance case to heatsink
R_{thJA}	Thermal resistance junction to ambient
R_{thJC}	Thermal resistance junction to case
$R_{thJK}; R_{thJH}$	Thermal resistance junction to heatsink
R_{thJS}	Thermal resistance junction to heatsink
R_{thJW}	Thermal resistance junction to water
R_{thKA}	Thermal resistance heatsink to ambient
SCSOA	Short Circuit Safe Operating Area
$T_{amb}; T_A$	Ambient (cooling medium) temperature
$T_C; T_{case}$	Case temperature
$t_{d(off)}$	Turn-off delay time
$t_{d(on)}$	Turn-on delay time
t_{fi}	Current fall time (inductive load)
t_{fr}	Forward recovery time
t_{FLT}	Overcurrent or short circuit trip delay time
t_{gd}	Gate controlled delay time
$T_J; T_{VJ}$	Virtual junction temperature
$T_{JM}; T_{VJM}$	Maximum virtual junction temperature
$T_K; T_H; T_S$	Heatsink temperature
T_L	Lead temperature
$T_{S(max)}$	Maximum allowable heatsink temperature
T_{stg}	Storage temperature
t_p	Pulse time
t_q	Turn-off time
t_r	Current rise time
t_{rr}	Reverse recovery time
t_{rv}	Rise time of collector emitter voltage
t_{SC}	Short circuit duration
V_{BO}	Breakover voltage
V_{CE}	Collector emitter voltage
$V_{CE(sat)}$	Collector emitter saturation voltage
$V_{CE(sat)FLT}$	Collector emitter saturation voltage to indicate fault
V_{CEK}	Collector emitter clamp voltage on chip level
V_{CES}	Collector emitter voltage
V_{CGR}	Collector gate voltage
V_{DD}	Module supply voltage
$V_{DD FLT}$	Module supply voltage without fault
V_{DGR}	Drain gate voltage
V_{DRM}	Maximum repetitive forward blocking voltage
V_{DS}	Drain source voltage

V_{DSM}	Max. non-repetitive forward blocking voltage
V_{DSS}	Drain source breakdown voltage
Version	Various construction designs of products
V_F	Forward voltage
V_{FLT}	Voltage at fault terminal
V_{FR}	Forward recovery voltage
V_{GD}	Gate non-trigger voltage
V_{GE}	Gate emitter voltage
$V_{GE(th)}$	Gate emitter threshold voltage
V_{GEM}	Maximum transient collector gate voltage
V_{GES}	Maximum DC gate voltage
V_{GS}	Gate source voltage
$V_{GS(th)}$	Gate threshold voltage
V_{GSM}	Maximum transient gate source voltage
V_{GT}	Gate trigger voltage
V_H	Holding voltage
V_{IN}	Input control voltage
$V_{IN(H)}$	Input voltage threshold for IGBT turn-on
$V_{IN(L)}$	Input voltage threshold for IGBT turn-off
V_{ISOL}	Isolation voltage
V_R	Reverse voltage
V_{RES}	Input voltage threshold for Reset = active
V_{RGM}	Maximum reverse gate voltage
V_{RRM}	Maximum repetitive reverse voltage
V_{RSM}	Maximum non-repetitive reverse voltage
VSD	Forward voltage drop
V_T	Forward voltage
V_{TO}	Threshold voltage (for power loss calculation)
Z_{thJC}	Transient thermal impedance junction to case
$Z_{thJK}; Z_{thJH}$	Transient thermal impedance junction to heatsink

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Note

As far as patents or other rights of third parties are concerned, liability is only assumed for components per se, not for applications, processes and circuits implemented with components or assemblies. The information describes the type of component and shall not be considered as assured characteristics.

Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability. Terms of delivery and rights to change design or specifications are reserved. Changes have been made to earlier published specifications. The data herein supersedes all previously published informations.

Life support applications

IXYS products used in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury must be expressly authorized for such purposes.

Nomenclature



CAPSULE DEVICES

W 0646 W C 15 0

W
M
F
E
N
R
P
K
A
S
H
G
Y

0646
*

W
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V
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Z
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F
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A
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C
D
E
F
G
H
J
K
L
M
R

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Device type

- Rectifier diode
- Fast/soft recovery diode
- Extra fast diode
- HP Sonic-FRD™
- Phase control thyristor
- Distributed gate thyristor
- Fast turn-off thyristor
- Medium voltage thyristor
- Asymmetric thyristor
- Symmetrical gate turn-off thyristor
- Fast symmetrical gate turn-off thyristor
- Asymmetric gate turn-off thyristor
- Pulse Thyristor

Device nominal current rating

For devices exceeding 9999 Amperes, digit 5 of the part number changes to C (x100)

Electrode diameter

- 19mm
- 25mm
- 29mm
- 32mm
- 34mm
- 38mm
- 44mm
- 47mm
- 50mm
- 57mm
- 63mm
- 66mm/68mm
- 73mm
- 75mm
- 85mm
- 99mm
- 125mm

Housing type (electrode diameter in brackets)

- 26mm reverse build
- 8mm (D)
- Standard outline - 14mm (W, Y), 16mm (K), 26mm (L, Q, M, T, E), 26.5mm (N), 33mm (V), 36mm (F, G), 37mm (Z)
- 21mm (N), 24mm (V, Z), 26mm (F, G)
- 35mm inverse build (T, M, Q, L)
- 19.5mm (L), 26mm (K, N, V), 35mm (6.5kV Sonic diode)
- 35mm (L, N)
- 14mm (N), 26mm (Y), slotted 32mm (V)
- 19.5mm (N), 25.8mm (V), 26mm (T)
- Wespack 14.5mm (J, Q, M, H)
- Wespack 26mm (Q, M)
- Wespack 33mm (H)
- Wespack 14mm (Q), 26mm (N)

Voltage grade - V_{RRM} VDRM/100

Special code

- 0 t_q code (thyristors), V_{RRM} % of V_{DRM} for Gate turn-off thyristors - See relevant tables
- P PIN diode (Product groups: W, M, F, E)
- R Rotating package (N, K, W)
- A Avalanche rated diode (W)

t_q Code			
0	No code		
A	10	M	70
B	12	N	100
C	15	P	120
D	20	R	140
E	25	S	160
F	30	T	200
G	35	V	250
H	40	W	300
J	50	X	400
K	60	Y	500
L	65	Z	1000

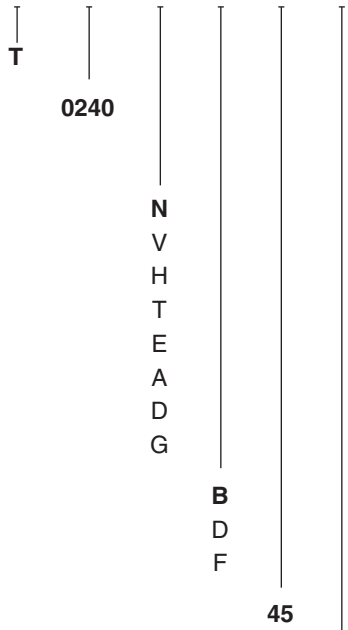
V_{RRM} % of V_{DRM} for GTO's (S and H types only)	
0	100
D	80
Y	100 V

Nomenclature



PRESS-PACK IGBT CAPSULE DEVICES

T 0240 N B 45 E



Device type

Press-pack IGBT

Device pulse current rating

Electrode diameter

- N 47mm
- V 63mm
- H 66mm
- T 75mm
- E 85mm
- A 96mm
- D 110mm
- G 125mm

Die series

- B
- D
- F

Voltage grade - $V_{RRM}/100$

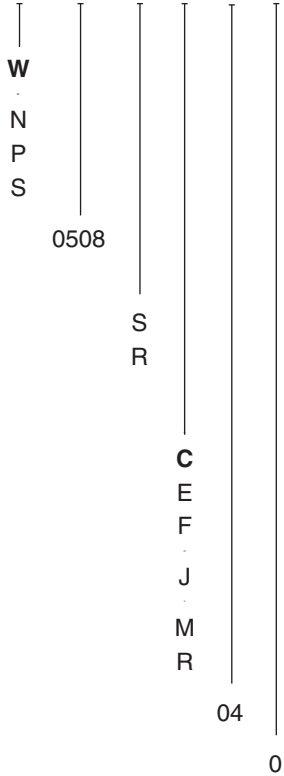
45

Build description for multiple square die

- A Reverse conducting
- E Asymmetric
- G Reverse Conducting (IGBT to diode ratio of 2:1)

STUD DEVICES

W 0508 S A 04 0



Device type

Rectifier diode

Phase control thyristor

Fast turn-off thyristor

Symmetrical Gate turn-off thyristor

Device nominal current rating

Device polarity

Stud Anode

Stud Cathode

Package

3/4" stud ceramic

3/4" HV ceramic stud with lug

3/4" HV ceramic stud

1/2" ceramic stud with flag

3/8" stud ceramic

M20 stud ceramic with lug & gate leads

Voltage grade - $V_{RRM}, V_{DRM}/100$

0 tq code - See table for relevant code

All IXYS UK stud devices are available with or without leads, sleeving and nuts and washers

When ordering a stud based device, please add one of the following three-letter codes to the part number

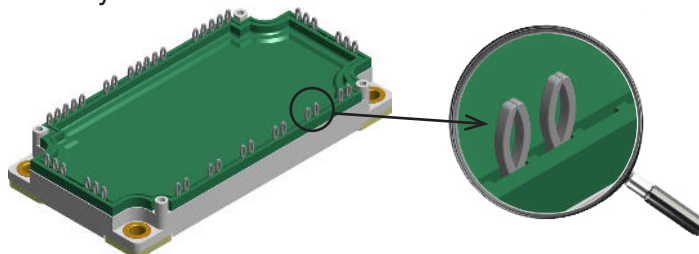
- 000 - Ledded stud, no sleeving, no nuts and washers supplied (Default option)
- S0L - Ledded stud, with blue sleeving, nuts and washers supplied loose ('S' polarity studs only)
- R0L - Ledded stud, with red sleeving, nuts and washers supplied loose ('R' polarity studs only)
- 00L - Ledded stud, no sleeving, nuts and washers supplied loose
- NLL - Non-ledded stud, nuts and washers supplied loose
- S0F - Ledded stud, with blue sleeving, nuts and washers fitted ('S' polarity studs only)
- R0F - Ledded stud, with red sleeving, nuts and washers fitted ('R' polarity studs only)
- 00F - Ledded stud, no sleeving, nuts and washers fitted
- NLF - Non-ledded stud, nuts and washers fitted
- S00 - Ledded stud, with blue sleeving, no nuts and washers supplied ('S' polarity studs only)
- R00 - Ledded stud, with red sleeving, no nuts and washers supplied ('R' polarity studs only)
- NLS - Non-ledded stud, no sleeving, no nuts and washers supplied

NEW PACKAGES

Pressfit Pin for E2 and E3 Module Package

IXYS presents a new Press-Fit-Pin for E2 and E3 module packages. Modules equipped with those pins can be connected to the PCB without a further solder process. For the pressing process either hand tools or pressing machines can be used. Benefits for the assembly are:

- simplified process
- reduced mounting time
- no risk of bad solder contacts
- reduced aging of pin contact
- no thermal stress for the PCB assembly
- press out possible for maintenance

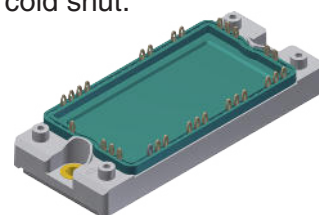


The pin concept is based on the proven „Bizon“-Pin concept.

Pressing process is a plastic deformation of pin and via of the board ending in a cold shut.

Pin features are:

- Pin concept based on successfully proven „Bizon“-Pin concept
- Pin qualification according to IEC 60352-5
- High conductive Cu alloy with Ni / gal. Tin surface
- Very low contact resistance
- Low press-in force per pin and PCB hole diameter independent press-out force
- Press-Fit-Pin usable for PCB’s designed for competitor devices



Board and Via Requirements			
	min.	typical	max.
Drill hole diameter		2.35 mm	
Final hole diameter	2.14 mm	2.20 mm	2.29 mm
Cu thickness inside the hole	>25 μm		
Metallization thickness in hole			<15 μm
Cu thickness for tracks	35 μm	70 μm 105 μm	
PCB thickness	1.60 mm	2.00 mm	
Metallization PCB	chem. Tin		

First planned modules are:



MIXG 120W1200PTEH
MIXG 180W1200PTEH

MCMA 240U11600PED
MDMA 210UB1600PTED
MDMA 280UB1600PTED
MDMA 360UB1600PTED

MDMA 660U1600PTEH
MDMA 900U1600PTEH
MDNA 660U2200PTEH

NEW High Voltage TO-247HV and PLUS247HV packages

- ✓ improved pin spacing for high potential
- ✓ creepage distance pins to copper of backside: > 5.7 mm
- ✓ creepage distance between high voltage pins (collector/emitter or drain/source): > 7.0 mm

Type	Technology	V _{CES} / V _{DSS} V	I _{C25} / I _{D25} A	V _{CEsat} V	R _{DS(on)} Ω	Fig. No.	
IXTH 1N170DHV	MOSFET	1700	1.0	-	16	X014c	X014c TO-247HV 
IXTH 1N200P3HV	Polar 3	2000	1.0	-	40		
IXTH 1N300P3HV	Polar 3	3000	1.0	-	50		
IXBH 10N300HV	BiMOSFET		34	2.8	-		
IXBH 14N300HV	BiMOSFET		38	2.7	-		
IXBH 22N300HV	BiMOSFET		60	2.7	-		
IXBX 28N300HV	BiMOSFET		32	2.7	-	X015c	X015c PLUS247HV 
IXBH 20N360HV	BiMOSFET	3600	70	3.4	-	X014c	
IXBX 50N360HV	BiMOSFET		125	2.9	-	X015c	
IXTH 02N450HV	MOSFET	4500	0.2	-	625	X014c	
IXTH 1N450HV	MOSFET		1.0	-	80		
IXYX 40N450HV	HV IGBT		35	3.9	-	X015c	

NEW PACKAGES High Voltage TO-263 (D²-Pak)

High Voltage TO-263 (D²-Pak) and TO-268 (D³-Pak) packages

- ✓ improved pin spacing (no middle pin)
- ✓ creepage distance pins to copper of backside:
 - 4.7 mm for new TO-263ABHV package
 - 5.8 mm for new TO-268AAHV package

Products in High Voltage TO-263 (D²-Pak) package

Diode	Technology	Config.	V _{RRM} V	I _{FAV} / I _{TAV} A	@ T _C °C
➤ New					
DMA 10P1600PZ	Standard	Phase leg	2x 1600	10	150
DMA 30IM1600PZ	Standard	Single	1600	30	140
DAA 10EM1800PZ	Avalanche	Single	1800	10	150
DAA 10P1800PZ	Avalanche	Phase leg	2x 1800	10	150
DMA 10P1800PZ	Standard	Phase leg	2x 1800	10	150
DNA 30E2200PZ	Standard	Single	2200	30	140
DNA 30EM2200PZ	Standard	Single	2200	30	140

FRED / HiPerFRED					
DSEI12-12AZ	FRED	Single	1200	11	100
DSEP12-12AZ	High Performance	Single		12	135
DSEP12-12BZ	High Performance	Single		15	130
Thyristor					
➤ CLA 5E1200PZ	High Efficiency	Single	1200	5	135
➤ CLA 30E1200NPZ	High Efficiency	Single		30	115
➤ CLB 30I1200PZ	HE Anode Gated	Single		30	115
➤ CMA 20E1600PZ	Standard	Single	1600	20	115
CMA 30E1600PZ	Standard	Single		30	115
➤ CME 30E1600PZ	Fast	Single		30	80
Triac					
➤ CLA 30MT1200NPZ	High Efficiency	Triac	1200	15	120
➤ CLA 40MT1200NPZ	High Efficiency	Triac		20	115

X011c

TO-263ABHV



Creepage (min):

pin/pin: 4.0 mm
pin/Cu back-side: 4.7 mm

For more details see
outline drawings

IGBT & BiMOS	Technology	Config.	V _{CES} V	I _{C25} A	V _{CEsat} V
◇ under development					
IXXA 30N65C3HV	GenX3™ XPT IGBT	Single	650	52	2.2
◇ IXA 4IF1200PZ	XPT IGBT	Copack	1200	9	1.8
◇ IXA 20I1200PZ	XPT IGBT	Single		38	1.8
➤ IXYA 20N120C3HV	Fast XPT IGBT	Single	1200	40	3.4
➤ IXGA 20N250HV	High Voltage NPT IGBT	Single	2500	30	3.1
➤ IXBA 16N170AHV	High Voltage BiMOS	Single	3000	16	6.0
➤ IXBA 10N300HV	High Voltage BiMOS	Single		34	2.8
IXBA 12N300HV	High Voltage BiMOS	Single		30	3.2
➤ IXBA 14N300HV	High Voltage BiMOS	Single		38	2.7

MOSFET	Technology	Config.	V _{DSS} V	I _{D25} A	R _{DSon} Ω
➤ New					
➤ IXTA 05N100HV	High Voltage MOSFET	Single	1000	0.75	17
➤ IXTA 08N100D2HV	Depletion Mode MOSFET	Single		0.8	21
IXTA 3N100D2HV	Depletion Mode MOSFET	Single		3.0	6
➤ IXTA 3N120HV	High Voltage MOSFET	Single	1200	3.0	4.5
➤ IXTA 3N150HV	High Voltage MOSFET	Single		1500	2.0
➤ IXTA 4N150HV	High Voltage MOSFET	Single	4.0		6
➤ IXTA 1N170DHV	High Voltage MOSFET	Single	1700		1.0
➤ IXTA 1N200P3HV	High Voltage MOSFET	Single	2000	1.0	40
IXTA 02N250HV	High Voltage MOSFET	Single	2500	0.2	450

NEW PACKAGES High Voltage TO-268 (D³-Pak) and ISO247

Products in High Voltage TO-268 (D³-Pak) package

Rectifier	Technology	Config.	V _{RRM} V	I _{DAV} / I _{TAV} A	@ T _c °C
➤ New					
DSP 45-12AZ	Standard	Phase leg	2x 1200	45	130
DSP 45-16AZ	Standard	Phase leg	2x 1600	45	130
Triac					
CLA 60MT1200NTZ	High Efficiency	Triac	1200	30	120
➤ CMA 60MT1600NHR	Standard	Triac	1600	66	90
Thyristor					
CMA 50E1600TZ	Standard	Single	1600	50	110

IGBT & MOSFET	Technology	Config.	V _{CES} / V _{DSS} V	I _{C25} / I _{D25} A	V _{CEsat} V	R _{DSon} Ω
➤ New						
IXYT 30N65C3H1HV	GenX3™ XPT IGBT	Single	650	60	2.7	
IXYT 20N120C3D1HV	GenX3™ XPT IGBT	Single	1200	36	3.4	
IXGT 25N250HV	High Voltage NPT IGBT	Single	2500	60	2.9	
➤ IXYT 30N450HV	High Voltage IGBT	Single	4500	60	3.9	
➤ IXBT 16N170AHV	High Voltage BIMOS	Single	1700	16	6.0	
IXBT 12N300HV	High Voltage BIMOS	Single	3000	30	3.2	
IXBT 20N300HV	High Voltage BIMOS	Single		20	3.2	
➤ IXBT 22N300HV	High Voltage BIMOS	Single		60	2.7	
IXBT 42N300HV	High Voltage BIMOS	Single		104	3.0	
➤ IXBT 20N360HV	High Voltage BIMOS	Single	3600	70	3.4	
➤ MCB 60I1200TZ	SiC MOSFET	Single	1200	90		0.034
➤ IXTT 4N150HV	High Voltage MOSFET	Single	1500	4		6
➤ IXTT 12N150HV	High Voltage MOSFET	Single		12		2
IXTT 1N250HV	High Voltage MOSFET	Single	2500	1.5		40
➤ IXTT 1N300P3HV	High Voltage MOSFET	Single	3000	1		50
IXTT 02N450HV	High Voltage MOSFET	Single	4500	0.2		625
IXTT 1N450HV	High Voltage MOSFET	Single		1		80

X019a TO-268AAHV



Creepage (min):

pin/pin: 9.4 mm
pin/Cu back-side: 5.8 mm

For more details see outline drawings

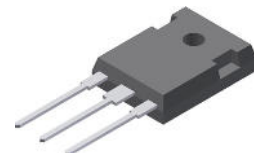
ISO247 package (ISOPLUS Technology with Screw Hole)

- ✓ 3000V isolation
- ✓ Excellent thermal performance
- ✓ 100% mechanical fit to TO-247

Diode	Technology	Configuration	V _{RRM} V	I _{DAV} / I _{TAV} A	@ T _c °C
➤ New					
DSA 90C200HR	Schottky Diode	Common Cathode	200	2x 45	145
➤ DMA 50P1200HR	Standard	Phase leg	2x 1200	50	105
➤ DMA 30P1600HR	Standard	Phase leg	2x 1600	30	105
Thyristor					
➤ CLA 40E1200HR	High Efficiency	Single	1200	40	95
➤ CMA 40E1600HR	Standard	Single	1600	40	90
Triac					
➤ CLA 40MT1200NHR	Thyristor	Triac	1200	20	110
CLA 60MT1200NHR	Thyristor	Triac		30	100
➤ CLA 80MT1200NHR	Thyristor	Triac		40	100

IGBT & MOSFET	Technology	Config.	V _{CES} / V _{DSS} V	I _{C25} / I _{D25} A	V _{CEsat} V	R _{DSon} Ω
➤ New						
IXFJ 26N50P3	Polar3™ HiperFET™	Single	500	14		0.265
IXGJ 50N60C4D1	High Gain IGBT	Copack	600	52	2.5	
➤ MKH 24I650HR	CoolMOS™ CFD	Single	650	25		0.08
IXYJ 20N120C3D1	Gen X3 XPT IGBT	Single	1200	21	3.4	
➤ IXYJ 30N120C3D1	Gen X3 XPT IGBT	Single		32	3.3	
➤ IXTJ 3N150	High Voltage MOSFET	Single	1500	2.3		8.0
➤ IXTJ 4N150	High Voltage MOSFET	Single		2.5		6.0
➤ IXTJ 6N150	High Voltage MOSFET	Single		3.0		3.85

X016c ISO247™



ISOPLUS™ Family

ISOPLUS-SMPD™

ISOPLUS-DIL™

ISOPLUS i4-PAC™

ISOPLUS264™

ISO247™

ISOPLUS247™

ISOPLUS220™

Isolated Discrete Packages

ISOPLUS247™ is the DCB isolated version of the PLUS247™ package (TO-247 without a mounting hole). The design of this patented package is revolutionary: the silicon chip is soft soldered onto a Direct Copper Bond (DCB) substrate instead of the usual copper lead frame. The DCB ceramic, the same substrate material as used in the high power modules, not only provides high isolation capability (2500 V_{RMS}) but also unbeatable low thermal resistance compared to conventioal, extertly mounted isolation materials.

Advantages:

- Isolation capability from leads to back-side 2500 V_{RMS} – no extert isolation foil needed
- Thermal resistance from Junction to Case only slightly higher as for non-isolated version
- Increased power- and temperature cycling capability
- DCB can be patterned like printed circuit boards – allowing special functions to be realized

types available.

Another interesting feature is the capability to pattern the DCB substrate like a printed circuit board. Now additional special functions can be realized, e.g. the **series connection of single** diode chips within one package.

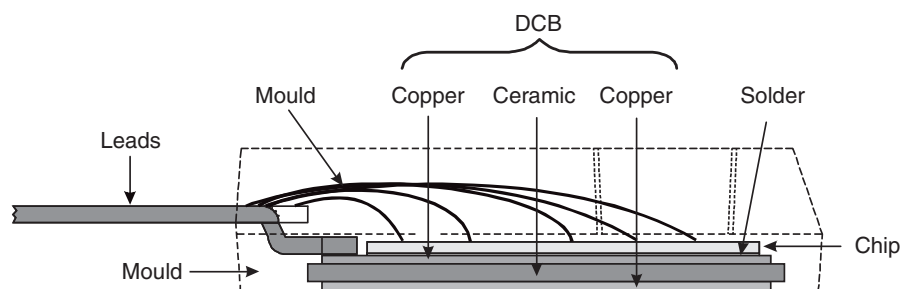
ISOPLUS220™, ISOPLUS247™ and ISOPLUS264™ are the DCB substitutes for the corresponding standard packages.

A larger version of this packaging technology is med **ISOPLUS i4-PAC™**. It has up to five termil pins, making it possible to build up full diode bridges, phase-leg transistor configurations, buck and boost converters and much more within one isolated discrete package.

ISOPLUS-DIL™ 37.5 mm long and 25 mm wide provides the largest mounting area within the ISOLPLUS™ family. It is available in 2 pin out version: „GWM“ configuration with plar power pins for 300 A RMS on one side and 12 control pins on the oposite side and the „GMM“ configuration with 12 pins on either side. The package is intented for high current low voltage (< 200 V) applications either as single switch or 6-pack. With highest power density and high reliability ISOPLUS-DIL™ is recommended for the use in automotive designs.

ISOPLUS-SMPD™ is the latest member of IXYS ISOPLUS™ family and provides an increased creepage distance between pins to DCB (>4 mm) and pin to pin (up to 7 mm).

Package cross section



While the junction-to-case thermal resistance is higher than an equivalent, non-isolated device, what really matters is the total thermal resistance from junction-to-heatsink (R_{thJC}). Comparing a device in ISOPLUS247™ to its companion in the non-isolated package with an extert isolation foil, one can see that the overall R_{th} is now lower for the part in the already isolated package (see example).

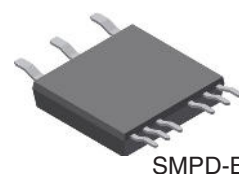
cycling is reduced so that reliability is improved. Mounting is done with clips, which not only saves time but also guarantees constant pressure force over the whole lifetime of the assembly.

Parts in the **ISOPLUS247™** housing can be identified by the letter “R” in the IXYS part number. Potentially all devices now encapsulated in TO-247, TO-264 and PLUS247™ housings can be molded in the ISOPLUS247™. There are already more than 100 different ISOPLUS247™

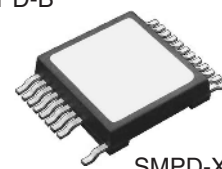
Due to the matched thermal expansion coefficients of silicon and DCB ceramic, mechanical stress to the die and solder caused by power and temperature

Example: ISOPLUS247™ compared to conventioal isolated device

Type	Package	Isolation	R _{thJC} K/W	R _{thCK} K/W	Total K/W	Factor
IXFR 180N10	ISOPLUS247™	internal DCB	0.3	0.15	0.45	1
IXFX 180N10	PLUS247™	external foil	0.22	1.02	1.24	2.8



SMPD-B



SMPD-X

ISOPLUS-SMPD™

DCB isolated SMPD package for simplified mounting and high circuit flexibility

Reducing assembly costs is a continual demand of the semiconductor user. One of the various approaches is the usage of SMD packages which is successfully introduced by utilization of Power Semiconductors packaged in TO-263 (D²Pak) or TO-268 (D³Pak). If heat sinking is required designers have to look for solutions providing isolation and creepage distance.

ISOPLUS-SMPD™ package is the IXYS answer to the challenge to make designer's life easier as it provides an SMD device featuring:

- 2.5 kV isolation to heatsink (UL rating)
- low thermal impedance for good cooling by only 0.38 mm thick ceramic
- more than 4 mm creepage distance from pin to mounting surface
- up to 7 mm creepage from pin to pin (depending on package type)
- high integration such as phase leg or 3~ input rectifier in one package
- automatic mounting by pick & place possible (packaged in Tape & Reel)

This enables the engineer to make flat designs with a concept of distributed power dissipation. The latter allows utilization of heatsinks with a thinner base reducing weight and cost.

The new ISOPLUS-SMPD™ package is small and light weight with two rows of pins, resembling an IC. It allows the assembly to the board in standard SMD pick & place equipment, together with other standard SMD components. ISOPLUS-SMPD™ devices are available in Tape & Reel or in a Blister Tray option.

The complete board including the power components can run through a standard SMD soldering process.

Two types are available, ISOPLUS-SMPD™-B (Fig. 1) is optimized for implementing more complex configurations like phase-legs, buck and boost chopper as well as single – or 3-phase input rectifier bridges, which can ideally be used as building blocks for inverters. ISOPLUS-SMPD™-X (Fig. 2) with a larger number of pins on either side allows the integration of large dies for very high current capability up to 600 A per unit.

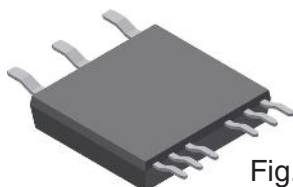


Fig. 1 SMPD-B

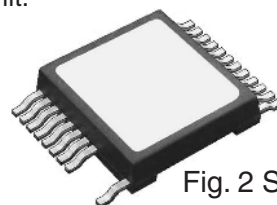


Fig. 2 SMPD-X

Both designs benefit from the ISOPLUS™ construction with low mechanical stress for the die because of a good match in the thermal expansion coefficient of die and DCB resulting in long term reliability.

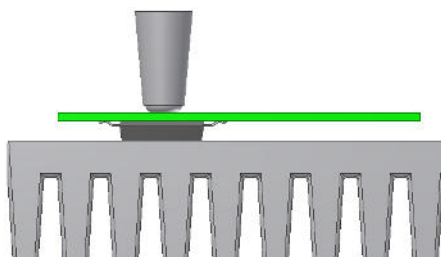


Fig. 3 Mounting example

As normal these devices require a layer of thermal interface material (heat transfer paste) to be applied to the backside of the power devices (or to the heat sink surface alternatively). Then the devices can be mounted together with the PCB to a heat sink.

These power devices need to be pressed down to the heat sink to ensure low thermal resistances. Pressure can be applied in different ways, for example using a mounting clip or a post, applying pressure via the PCB directly to the power device (see Fig. 3 and Fig. 4).

The high package flexibility allows to offer

- high current single Trench MOSFET
- high current single IGBT
- buck and boost converters
- phase-legs with desaturation diodes for switch control
- 1~ or 3~ input rectifiers
- multiple boost stages
- cascade configurations

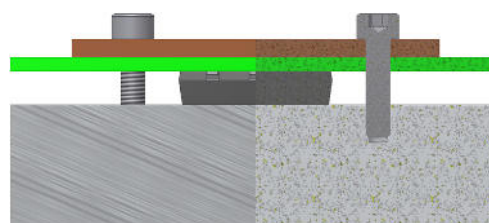
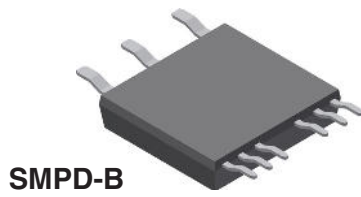


Fig. 4 Mounting example

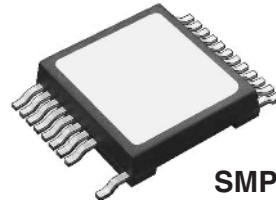
Customer specific designs are feasible.

IGBT Modules – SMPD Converter Building Blocks

ISOPLUS™ Technology



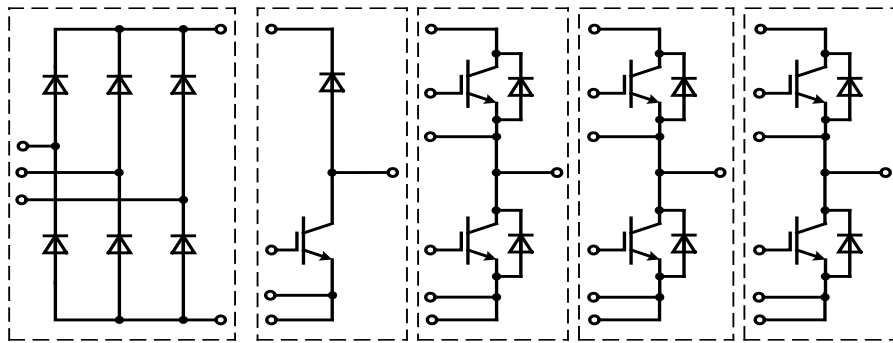
SMPD-B



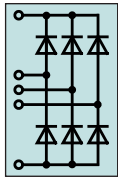
SMPD-X

- 2500 V UL rated electrical isolation
- low thermal resistance
- increased power & temperature cycling
- saves space

- replaces multiple discretes
- reduces parasitic inductance & capacitance
- reduces EMI
- heat spreading

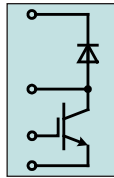


Rectifier



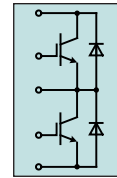
Line Rectifier
DMA90U1800LB
SONIC-FRD
DHG60U1200LB

Brake & Boost

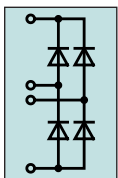


XPT-IGBT
IXA20RG1200DHGLB
IXA30RG1200DHGLB
IXA40RG1200DHGLB

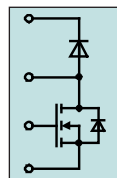
Inverter



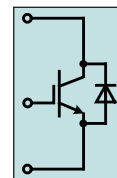
XPT-IGBT
IXA20PG1200DHGLB
IXA30PG1200DHGLB
IXA40PG1200DHGLB
ITF40PF1200DHGTLB



Line Rectifier
DLA100U1200LB
DLA100U800LB
Fast Rectifier
DPG60B600LB HiPerFRED
DCG20B650LB SiC
DHG50B1200LB SONIC
DCG20B1200LB SiC



CoolMOS™ Boost
MKE38RK600DFELB & FRED Diode
MKG40RK600LB & SONIC Diode
MKH17RP650DCGLB Dual Boost & SiC



XPT-IGBT
MMIX1X100N60B3H1
MMIX1X200N60B3H1
MMIX1Y82N120C3H1
MMIX1Y100N120C3H1
IXA60IF1200DHGLB
IXA80IF1200DHGLB

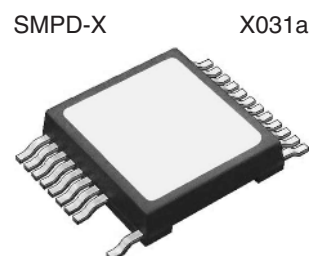
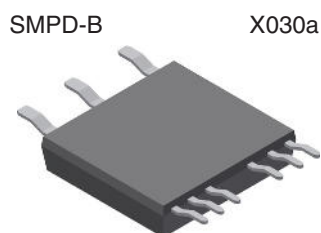
ISOPLUS-SMPD™

MOSFETs

Type ➤ New ◇ under development	Circuit diagram / Technology	V _{DSS} V	I _{D25} T _C = 25°C A	R _{DS(on)} max. T _C = 25°C mΩ	Q _G nC	Fig. No.	Circuit Diagram
SINGLE							
MMIX 1T600N04T2	A Trench2	40	600	1.3	590	X031a	
MMIX 1T550N055T2	A Trench2	55	550	1.3	595		
MMIX 1F520N075T2	A Trench2 HiPerFET™	75	500	1.6	545		
MMIX 1F420N10T	A Trench HiPerFET™	100	334	2.6	670		
MMIX 1F360N15T2	A Trench2 HiPerFET™	150	235	4.4	715		
MMIX 1F230N20T	A Trench HiPerFET™	200	168	8.3	378		
MMIX 1F180N25T	A Trench HiPerFET™	250	132	13	364		
MMIX 1F160N30T	A Trench HiPerFET™	300	102	20	376		
MMIX 1F210N30P3	A Polar3 HiPerFET™		108	16	286		
MMIX 1F132N50P3	A Polar3 HiPerFET™	500	63	43	250		
MMIX 1F44N100Q3	A Q3 HiPerFET™	1000	30	245	264		
MMIX 1F40N110P	A Polar HiPerFET™	1100	24	290	310		
BUCK / BOOST							
MKE 38RK600DFELB	C CoolMOS™ CP & FRED	600	50	40	150	X030a	
➤ MKG 40RK600LB	C CoolMOS™ C6 & SONIC		52	37	290		
◇ MKH 17RP650DCGLB	Y Dual CoolMOS™ CFD & SiC		22	110	118		
PHASE-LEG							
➤ MMIX 2F150N20T	B Trench™ HiPerFET™	200	84	16.5	177	X031a	
➤ MMIX 2F94N30T	B Trench™ HiPerFET™	300	52	40	305		
➤ MMIX 2F60N50P3	B Trench™ HiPerFET™	500	30	110	96		
MKE 38P600LB	B CoolMOS™ CP	600	50	40	150	X030a	
◇ MKH 22P650LB	B CoolMOS™ CFD	650	31	80	170		
◇ MKH 40P650LB	B CoolMOS™ CFD		57	41	300		

CoolMOS™ is a trademark of Infineon Technologies

Outline drawings on pages O-31...O-52

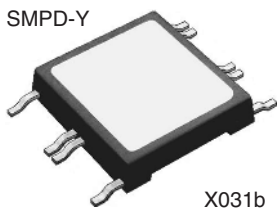


See data sheet for pin arrangement

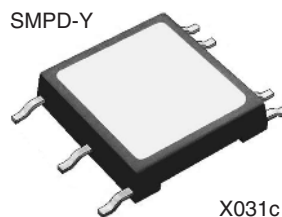
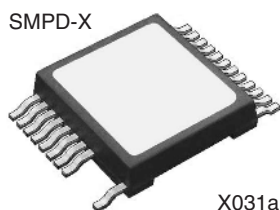
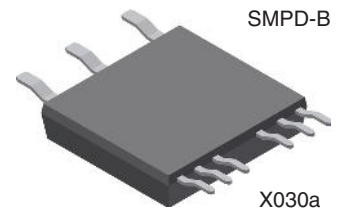
ISOPLUS-SMPD™

IGBTs

Type	Circuit Diagram No. / Technology	V _{CES}	I _{C25} T _C = 25°C	V _{CE(sat)} typ. T _C = 25°C	E _{off} typ. T _J = 150°C (125°C)	Fig. No.	Circuit Diagram
▶ New ✦ under development		V	A	V	mJ		
SINGLE and COPACK							
MMIX 1X200N60B3	D XPT	600	223	1.4	3.45	X031a	
MMIX 1X100N60B3H1	E XPT & SONIC		145	1.5	2.80		
MMIX 1X200N60B3H1	E XPT & SONIC		175	1.4	3.45		
✦ IXA 100XF650LB	2xE 2 x XPT	650	2x 72	1.8	1.20	X030a	
▶ MMIX 1X340N65B4	D XPT™ IGBT GenX4™		450	1.4	2.54	X031a	
MMIX 1Y82N120C3H1	E XPT fast & SONIC	1200	78	2.9	(3.70)	X030a	
MMIX 1Y100N120C3H1	E XPT fast & SONIC		92	2.9	3.55		
✦ IXA 60IF1200DHGLB	E XPT & SONIC		85	1.8	5.5	X031a	
✦ IXA 85IF1200DHGLB	E XPT & SONIC		120	1.8	8.3		
MMIX 1G120N120A3V1	E GenX3 IGBT @ SONIC		110	1.85	58		
MMIX 1G75N250	D IGBT for cap discharge	2500	110	2.5	-		
▶ MMIX 1B15N300C	E BiMOSFET™	3000	37	4.7	-		
▶ MMIX 1B20N300C	E BiMOSFET™		50	4.5	-		
BOOST							
IXA 20RG1200DHGLB	I XPT & SONIC	1200	32	1.8	1.7	X030a	
IXA 30RG1200DHGLB	I XPT & SONIC		43	1.9	3.0		
IXA 40RG1200DHGLB	I XPT & SONIC		63	1.85	4.1		
PHASE-LEG							
IXA 20PG1200DHGLB	G XPT & SONIC	1200	32	1.8	1.7	X030a	
IXA 30PG1200DHGLB	G XPT & SONIC		43	1.9	3.0		
IXA 40PG1200DHGLB	G XPT & SONIC		63	1.85	4.1		
✦ ITF 40PF1200DHGTLB	H Trench IGBT & SONIC & NTC		56	2.05	2.6		
✦ ITF 40PG1200DHGLB	G Trench IGBT & SONIC		56	2.05	2.6		
▶ IXA 20PT1200LB	K XPT & Thyristor		28	1.8	1.7		
FULL-BRIDGE							
MMIX 4G20N250	L IGBT for cap discharge	2500	23	3.1 max	-	X031b	
▶ MMIX 4B22N300	L BiMOS		38	2.2	-		

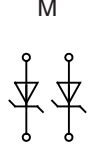
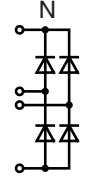
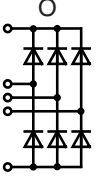


Outline drawings on pages O-31...O-52



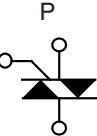
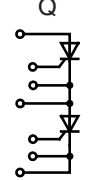
ISOPLUS-SMPD™

Diodes

Type ➤ New ◇ under development	Circuit diagram / Diode type	V_{RRM} V	$I_{D(AV)M}$ A	@ T_C °C	Fig. No.	Circuit Diagram
DUAL						
DSA 120X150LB	M Schottky	150	2 x 60	150	X030a	
DSA 120X200LB	M Schottky	200	2 x 60	150		
1~ BRIDGE						
DPG 60B600LB	N HiPerFRED	600	60	110	X030a	
➤ DCG 20B650LB	N SiC	650	20	*		
➤ DLA 100B800LB	N Rectifier	800	124	135		
DLA 100B1200LB	N Rectifier	1200	124	80		
◇ DHG 40B1200LB	N SONIC		40	*		
◇ DHG 50B1200LB	N SONIC		50	*		
◇ DCG 20B1200LB	N SiC		20	*		
3~ BRIDGE						
DHG 60U1200LB	O SONIC	1200	62	80	X030a	
DMA 90U1800LB	O Rectifier	1800	99	80		

* in progress

Thyristors, Triacs

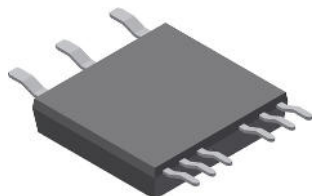
Type ➤ New ◇ under development	Circuit diagram / Bipolar type	V_{RRM} V	I_{TAV} A	@ T_C °C	Fig. No.	Circuit Diagram
DUAL						
◇ CLA 60MU1200LB	2 x P Triac	1200	2 x 30	100	X030a	
PHASE-LEG						
◇ CMA 50P1600LB	Q Thyristor	2x 1600	50	90		

MOS-Gated Thyristors

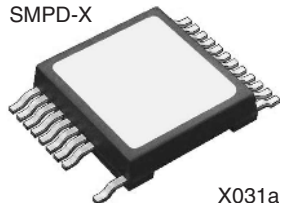
Type	V_{DM}	I_{TSM} 1μs $T_C = 25°C$	I_{TSM} 10μs $T_C = 25°C$	r_T typ	V_T max	$Q_{g(on)}$ typ	t_{ri} typ $T_C = 25°C$	$V_{GK(th)}$ max	Circuit Diagram	Fig. No.
➤ MMJX 1H40N150	V	kA	kA	mΩ	V	nC	ns	V	R	X032
➤ MMIX 1H60N150V1	V	kA	kA	mΩ	V	nC	ns	V	S	X031a

Outline drawings on pages O-31...O-52

SMPD-B X030a



SMPD-X

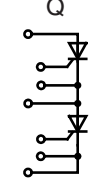
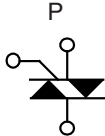
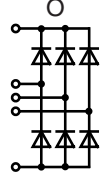
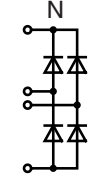
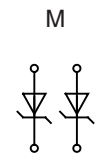


X031a

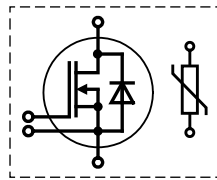
See data sheet for pin arrangement

MiniSMPD

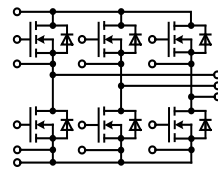
X032



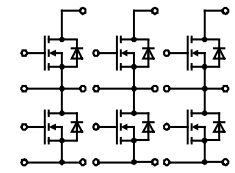
ISOPLUS-DIL™



MTC...X...TGD



MTI..W...GC



MTI...WX...GD / GMM

Single high current Switch with NTC

Type	V _{DSS}	I _{D25}	I _{D90}	R _{DSon} typ.	C _{iss}	Q _g	R _{thJC}	Fig. No.
◇ under development		T _C = 25°C	T _C = 90°C	T _J = 25°C	typ	typ		
➤ new	V	A	A	mΩ	nF	nC	K/W	
◇ MTC 960X55TGD	55	2x 640	2x 480	1.1	2x 40	2x 595	0.16	X026d
◇ MTC 840X75TGD	75	2x 550	2x 420	1.3	2x 40	2x 545	0.16	

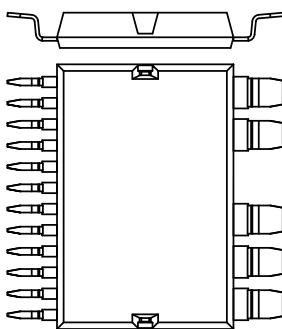
Six-Pack Trench MOSFET

Type	V _{DS}	I _{D25}	I _{D90}	R _{DS(on)} typ.	C _{iss}	Q _g	R _{thJC}	Fig. No.
◇ under development	max.	T _C = 25°C	T _C = 90°C	T _C = 25°C	typ	typ		
➤ New	V	A	A	mΩ	nF	nC	K/W	
➤ MTC 120W55GC	55	160	120	2.2	7.0	110	1.00	X026c
MTI 85W100GC	100	110	83	3.2	6.3	90	1.45	

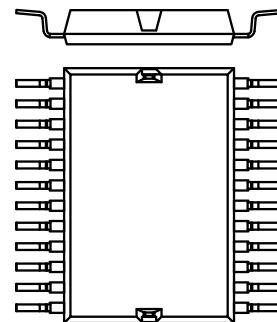
Six-Pack 3x phaseleg

➤ MTC 120WX55GD	55	160	120	2.2	7.0	110	1.00	X026d
➤ MTC 120WX75GD	75	160	120	2.2	10.5	178	0.80	
MTI 200WX75GD	75	265	200	1.1	10.8	155	0.85	
MTI 145WX100GD	100	190	145	1.7	11.0	155	0.85	
GMM 3x60-015X2	150	50	38	19.0	5.8	97	1.00	

Customized configurations possible

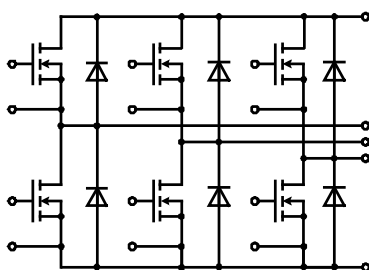


MTI..W...GC
SURFACE MOUNT DEVICE

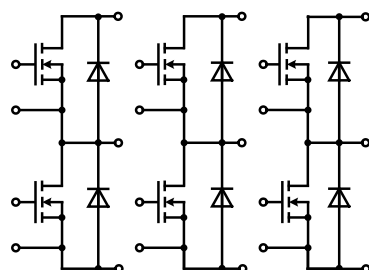


MTI...WX...GD; MTC...X...TGD; GMM...
SURFACE MOUNT DEVICE

Outline drawings on pages O-31...O-52



X026c ISOPLUS-DIL™



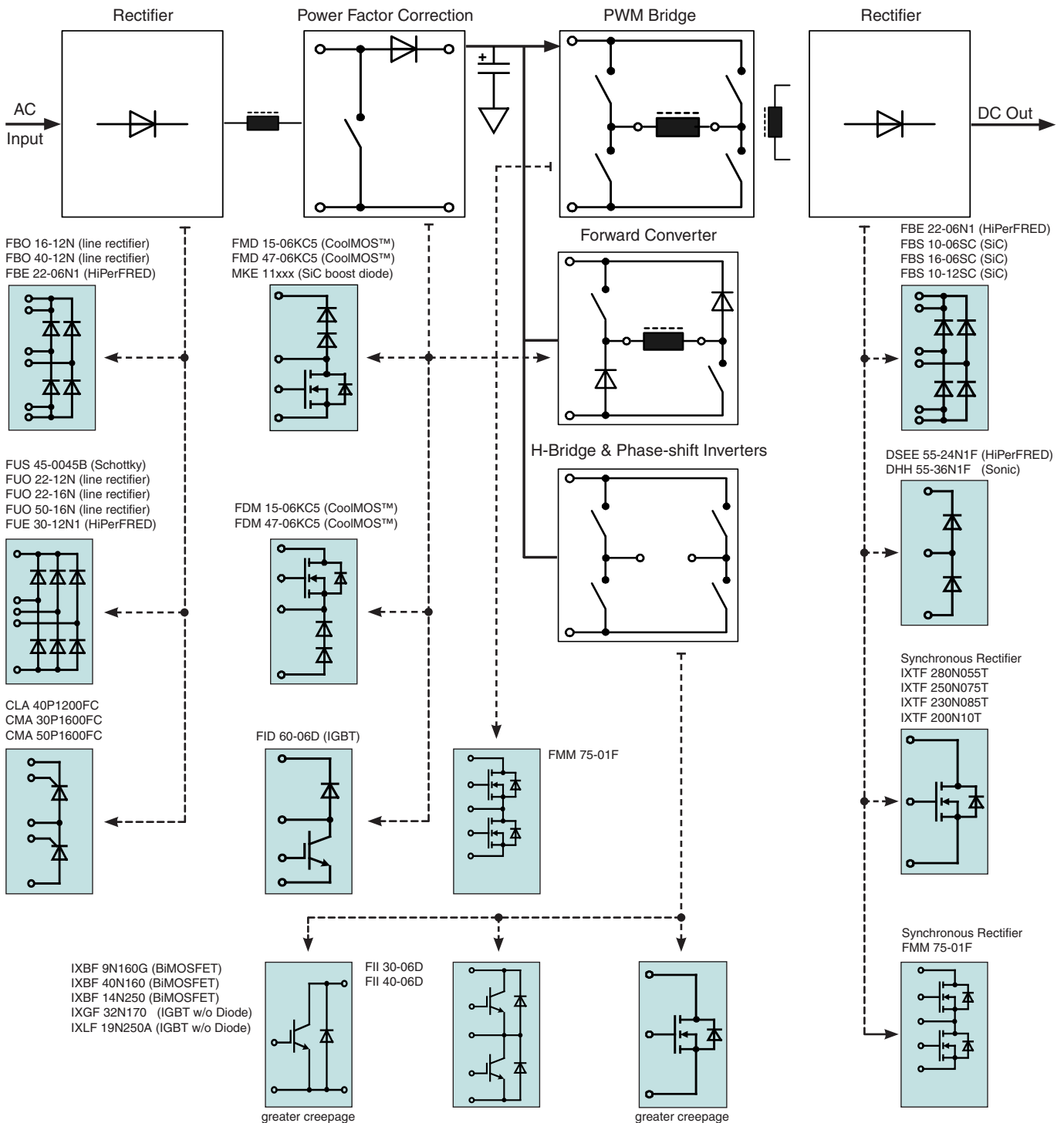
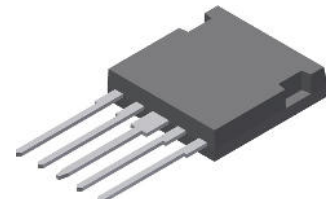
X026d ISOPLUS-DIL™

ISOPLUS™ i4-PAC™

3, 4 and 5 leaded packages for various circuit topologies

DCB base plate - 2500 V electrical isolation

- low thermal resistance
- increased power & temperature cycling
- saves space
- replaces multiple discretes
- reduces parasitic inductance and capacitance
- reduces EMI
- less weight



See application note „Combining the features of modules and discretes in a new Power Semiconductor packages“ for general description of the packaging technologies.

See alphanumeric index for the page number of the particular product.

ISOPLUS™ i4-PAC™

IGBTs / MOSFETs

Type	Configuration	Circuit diagram / Technology	V _{DSS}	I _{D25} T _C = 25°C	I _{D90} T _C = 90°C	R _{DS(on)} typ. T _C = 25°C	Fig. No.	Circuit Diagram	
○ Not for new design ➤ New			V	A	A	mΩ			
IXTF 200N10T	single	A Trench MOSFET	100	90	*	70	X024d		
IXKF 40N60SCD1		G CoolMOS™ & serial Schottky & HiPerFRED free wheeling Diode	600	41	29	60	X024a		
IXKF 40N60SCH1		G CoolMOS™ & serial Schottky & SONIC free wheeling Diode		41	29	60			
IXTF 1N250		A High Voltage MOSFET	2500	1	*	40Ω	X024c		
IXTF 02N450		A High Voltage MOSFET	4500	0.2	*	750Ω			
IXTF 1N450		A High Voltage MOSFET		0.9	*	85Ω			
FDM 47-06KC5	buck	E CoolMOS™ & HiPerDynFRED	600	47	32	40	X024a		
○ FMD 21-05QC	boost	E HiPerFET & HiPerDynFRED	500	21	15	180			
MKE 11R600DCGFC		C CoolMOS™ & SiC Diode	600	15	11	150			C
FMD 15-06KC5		D CoolMOS™ & HiPerDynFRED		15	11	150			
FMD 40-06KC		D CoolMOS™ & HiPerDynFRED		38	25	60			
FMD 47-06KC5		D CoolMOS™ & HiPerDynFRED		47	32	40	D		
FMM 150-0075X2F	phase leg	B Trench MOSFET	75	120	90	5.8	E		
FMM 75-01F		B HiPerFET	100	75	55	25			
FMP 76-010T ①		L Trench™ P & N-Channel	±100	-54 / 62	*	24 / 11			
FMP 36-015P ①		L Polar™ P & N-Channel	±150	-22 / 36	*	110 / 40			
FMP 26-02P ①		L Polar™ P & N-Channel	±200	-17 / 26	*	170 / 60			
FMM 60-02TF		B Trench HiPerFET	200	33	-	40			
FMM 50-025TF		B Trench HiPerFET	250	30	-	50			
FMM 22-05PF		B PolarHV™ HiPerFET	500	13	-	270			
FMM 22-06PF		B PolarHV™ HiPerFET	600	12	-	350			
								G	

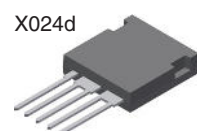
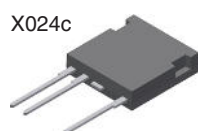
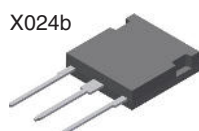
Type	Configuration	Circuit diagram / Technology	V _{CES}	I _{C25} T _C = 25°C	I _{C90} T _C = 90°C (110°C)	V _{CE(sat)} typ. T _C = 25°C	Fig. No.	Circuit Diagram
			V	A	A	mΩ		
IXBF 9N160G	single	I BiMOSFET	1600	7	4	4.9	X024c	
IXBF 40N160		I BiMOSFET		28	16	6.2		
IXGF 32N170		H High voltage IGBT	1700	44	(19)	max 3.5		
IXGF 20N250		H High voltage IGBT	2500	23	14	max 3.1		
IXGF 25N250		H High voltage IGBT		30	15	max 2.9		
IXLF 19N250A		H High voltage IGBT		32	19	max 3.9		
IXGF 20N300	H High voltage IGBT		22	(14)	max 3.2			
IXBF 12N300		I BiMOSFET	3000	26	(11)	2.8	X024a	
IXGF 25N300		H High voltage IGBT		27	(16)	max 3.0		
➤ IXBF 14N300		I BiMOSFET		28	14	2.2		
IXBF 20N300		I BiMOSFET		34	(14)	2.7		
IXGF 36N300		H High voltage IGBT		36	18	max 2.7		
➤ IXBF 15N300C		I BiMOSFET		37	(15)	4.7		
➤ IXBF 22N300		I BiMOSFET		38	22	2.2		
IXBF 32N300		I BiMOSFET		40	22	2.8		
➤ IXBF 28N300		I BiMOSFET		50	28	2.3		
IXBF 42N300		I BiMOSFET		60	(24)	2.5		
IXBF 55N300		I BiMOSFET		86	(34)	2.7		
➤ IXBF 20N360		I BiMOSFET		3600	45	(18)		2.9
➤ IXBF 50N360	I BiMOSFET		92	(28)	2.4			
IXGF 30N400	H High voltage IGBT	4000	30	15	max 3.1			
FID 60-06D	boost	K NPT IGBT & HiPerFRED	600	65	40	1.6	X024a	
FII 30-06D	phase leg	J NPT IGBT	600	30	18	1.9		
FII 40-06D		J NPT IGBT		40	25	1.8		

* in progress

CoolMOS™ is a trademark of Infineon Technologies

① high side switch: p-channel; low side switch: n-channel

Outline drawings on pages O-31...O-52



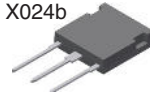
ISOPLUS™ i4-PAC™

Bipolar

X024a



X024b



X024c



X024e



Type	Configuration	Circuit diagram / Diode type	Voltage V	$I_{D(AV)M}$ $T_c = 90^\circ C$ A	Fig. No.	Circuit Diagram
➤ New						
CS 20-22moF1	single part. high voltage	S Thyristor	2200	18	X024c	
➤ CNA 30E2200FB		S Thyristor		30	X024e	
DNA 30E2200FE		T Rectifier		30		
CS 20-25mo1F		S Thyristor		18	X024c	
CLA 40P1200FC	phase leg	R Thyristor	2x 1200	40	X024a	
DSEE 55-24N1F		M HiPerFRED		55	X024b	
CMA 30P1600FC		R Thyristor	2x 1600	30	X024a	
CMA 50P1600FC		R Thyristor		50		
DHH 55-36N1F	M Sonic-FRD	2x 1800	50	X024b		
FBS 10-06SC	1-phase bridge	N Si-Carbide	600	6.6	X024a	
FBS 16-06SC		N Si-Carbide		11		
FBE 22-06N1		O HiPerFRED		20		
FBS 10-12SC		N Si-Carbide		1200		10
FBO 16-12N	O Rectifier	1200	22			
FBO 40-12N	O Rectifier		40			
FUS 45-0045B	3-phase bridge	Q Schottky	45	45		
FUO 22-12N		P Rectifier	1200	27		
FUE 30-12N1		P HiPerFRED	30			
FUO 22-16N		P Rectifier	1600	27		
FUO 50-16N	P Rectifier	P Rectifier	50			



Insulated Gate Bipolar Transistors (IGBT)

The Insulated Gate Bipolar Transistor (IGBT) is a three terminal device combining high efficiency with fast switching capabilities. IXYS offers various IGBT technologies optimized for the many topologies, circuits and requirements in today's varied power semiconductor applications. As a guide to the multiple technologies of IGBT on offer from IXYS please refer to the following characteristics.

$V_{CE(sat)}$ – a measure of on-state losses, i.e. power dissipation when the device is passing forward current. The higher the $V_{CE(sat)}$ the higher the losses in the forward direction.

Switching Speed – an IGBT with fast switching speed will have higher efficiency during the transition from on to the off state and vice versa. Low switching speed versions are often combined with low $V_{CE(sat)}$ for low frequency applications. Higher speed IGBT tend to have higher $V_{CE(sat)}$.

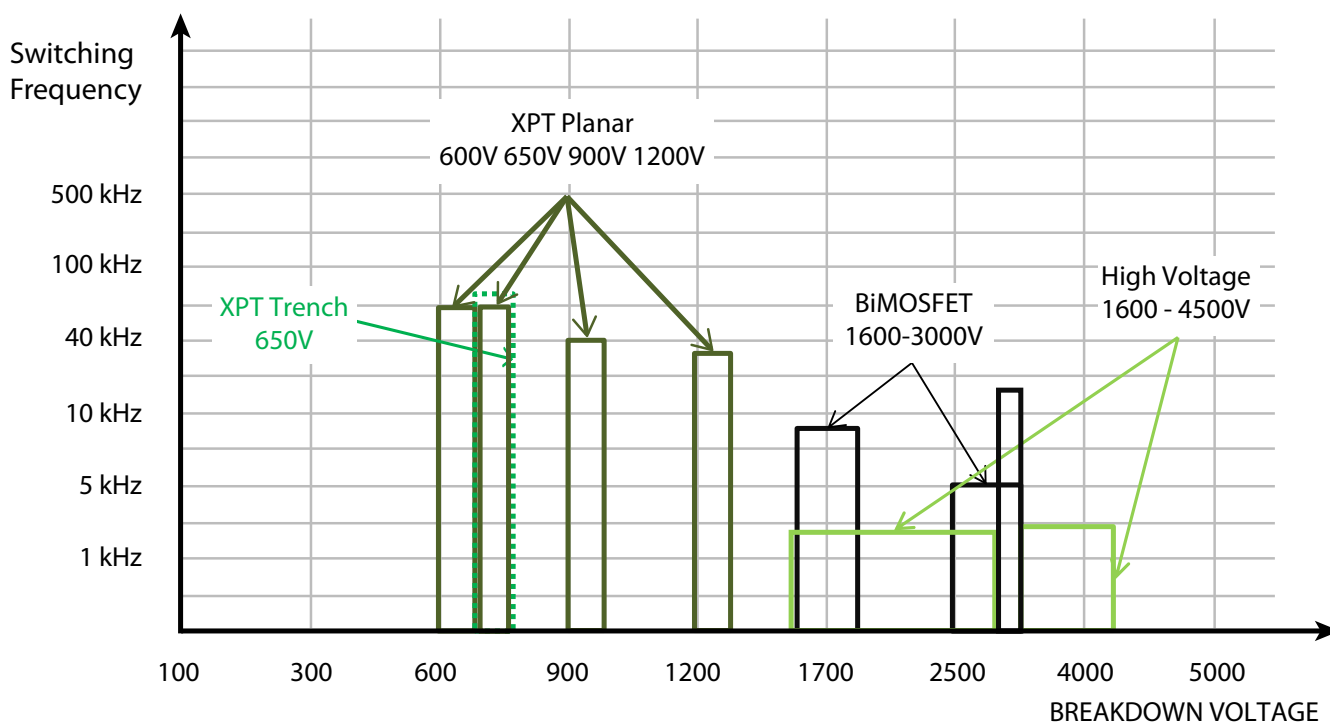
Temperature Coefficient – this determines the device $V_{CE(sat)}$ trend against temperature. A device is said to have a positive temperature coefficient if the $V_{CE(sat)}$ rises when the junction temperature increases. Likewise a negative temperature coefficient is when the devices $V_{CE(sat)}$ reduces when the junction temperature increases. A positive temperature coefficient is required when operating IGBT in parallel. A negative temperature coefficient device cannot be operated in parallel but may have lower losses at higher temperatures.

Safe Operating Area (SOA) – the ability for an IGBT to sustain voltage and current in shorter time scales without failure. Forward bias (FBSOA) is SOA when turning the IGBT into the on-state. Reverse Bias (RBSOA) is SOA when turning to the off-state. Short circuit SOA (SCSOA) is an indication of ability to withstand surge currents in operation.

Avalanche Rated – the ruggedness of the IGBT in the avalanche region. An avalanche rated devices is far more rugged than altertive devices during operation and is an indication of reliability.

IGBT technology

IGBT Characteristic	Non-Punch Through (NPT)	XPT Planar	XPT GenX3		XPT Trench		BiMOSFET (RC IGBT)			High voltage IGBT		
Discrete Part No. Prefix	IXD..	IXA..	IXY..		IXX..		IXB..			IXG..		
Discrete Part No. Suffix	NONE	NONE	B3	C3	B4	C4	NONE	A (1700V)	C	NONE	A	C
$V_{CE(sat)}$	MEDIUM	MEDIUM	MED.	HIGH	LOW	MED.	LOW	MED.	HIGH	LOW	MED.	HIGH
Switching Speed	MEDIUM	MEDIUM	MED.	HIGH	MED.	HIGH	LOW	MED.	MED.	LOW	MED.	MED.
Temperature Coefficient	POSITIVE	POSITIVE	POSITIVE		POSITIVE		POSITIVE			POSITIVE		
Safe Operating Area	SCSOA RBSOA FBSOA	SCSOA RBSOA FBSOA	SCSOA RBSOA FBSOA		SCSOA RBSOA		SCSOA RBSOA			SCSOA RBSOA FBSOA		
Avalanche Rated	YES	YES	YES		NO		NO			YES		
Voltage Range	600-1700V	600-1200V	650 / 650 / 900 / 1200V		650V		1600-3000V			1600-4500V		



Insulated Gate Bipolar Transistors (IGBT)

IGBT product families

Xtreme Light Punch Through (XPT™) Planar IGBTs

are an extremely rugged technology platform of IGBTs, which are ideal for critical applications that require low conduction and low switching losses with a 10 μ s short circuit withstand capability. Either discrete or co-packaged with ultrafast soft recovery Sonic diodes. IXYS XPT IGBTs have lower saturation voltage $V_{CE(sat)}$ and low total switching energy ($E_{on} + E_{off}$). A large portfolio of module packed Planar XPTs are available for applications such as UPS, Motor Drive and solar inverters.

Xtreme Light Punch Through (X2PT™) Planar IGBTs

are the second generation of XPT IGBTs. Features are 10 μ s short circuit capability, 175°C max junction temperature, further reduced $V_{CE(sat)}$ and lower turn-off losses (E_{off}) resulting in a competitive performance to latest trench devices at reduced R_{th} . Thus they are ideally suited for Motor Drive inverters.

Xtreme Light Punch Through (XPT™) Trench IGBTs

are the latest development from IXYS starting at 650 V. This range features not only a low $V_{CE(sat)}$ but extremely low switching losses making the platform attractive for fast switching applications whilst retaining good SOA rating and a positive temperature coefficient. Either discrete or co-packaged with ultrafast soft recovery Sonic diodes. IXYS XPT IGBTs have industry leading efficiency at medium to high switching frequency.

1600 V & 1700 V Low Sat IGBTs

These rugged High Voltage NPT devices are designed for capacitor discharge applications. featuring a low saturation voltage, high power density & high peak current capability. These High Voltage NPT IGBTs enable the elimination of more costly, lower performance solutions such as thyristors or series connected MOSFETs or IGBTs typically used at voltages above 1200 V. Offered as co-packs, they provide a more complete solution for power conversion applications.

1600 V & 1700 V High Speed IGBTs

This family of 1600/1700 V IGBTs are rugged NPT devices targeted for high voltage applications, requiring 10 μ s short circuit withstand capability. They are particularly suitable for high voltage switching applications. IXYS offers its fast switching "A" version 1700 V NPT IGBTs in co-pack and phase-leg configurations for PWM applications with switching frequencies upwards of 50 kHz.

Very High Voltage (2500 V - 4000 V) IGBTs

IXYS offers a unique portfolio of discrete 2500 V, 3000 V and 4000 V VHV IGBTs with collector current ratings spanning from 2 A to 75 A ($T_c = 110^\circ\text{C}$). The voltage and current ratings of these devices, coupled with simplified MOS gate-control, allow the system designer to greatly reduce the complexity of many high voltage switching designs. These IGBTs enable the use of a single device in systems whose circuits previously used multiple, cascaded, lower-voltage switches.

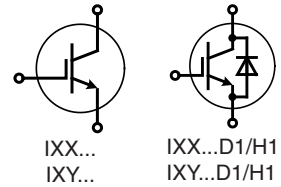
B-series (BiMOSFET) IGBTs

IXYS BiMOSFETs are devices which have combined strengths of MOSFETs and IGBTs. BiMOSFETs feature a monolithic intrinsic diode which can reduce die count in many applications.

Discrete XPT™

600V XPT™ Planar IGBTs

XPT = Xtreme light Punch Through. short-circuit rated IGBTs



Part Number	V _{CES}	I _{C25} T _C = 25°C	I _{C110} T _C = 110°C	V _{CE(sat)} T _C = 25°C	t _{fi} typ. T _J = 150°C	E _{off} typ. T _J = 150°C	R _{thJC}	Diode	I _{F110} Diode T _C = 110°C	R _{thJC} max. Diode	P _C	Fig. No.	Package style
➤ New	V	A	A	V	ns	mJ	K/W		A	K/W	W		Outline drawings on pages O-31...O-52
B3 Class (5-30 kHz switching)													
➤ IXXQ 30N60B3M	600	33	19	1.85	180	0.7	1.66				90	X017c	X005a TO-220AB
IXXH 30N60B3		60	30	1.85	180	0.7	0.55				270	X014a	
IXXH 30N60B3D1		60	30	1.85	180	0.7	0.55	• 30	0.90		270	X014a	
IXXA 50N60B3		120	50	1.8	190	1.2	0.25				600	X011b	
IXXH 50N60B3		120	50	1.8	190	1.2	0.25				600	X014a	
IXXH 50N60B3D1		120	50	1.8	190	1.2	0.25	• 30	0.90		600	X014a	
IXXP 50N60B3		120	50	1.8	190	1.2	0.25				600	X005a	
IXXR 100N60B3H1		145	68	1.8	200	2.8	0.31	• -	0.62		400	X016a	
IXXH 75N60B3		160	75	1.85	170	2.2	0.20				750	X014a	
IXXH 75N60B3D1		160	75	1.85	170	2.2	0.20	• 30	0.90		750	X014a	
IXXN 100N60B3H1		170	-	1.8	200	2.8	0.25	• 50	0.42		500	X027a	
IXXK 100N60B3H1		200	-	1.8	200	2.8	0.18	• 65	0.30		695	X020a	
IXXN 200N60B3H1		200	98	1.7	215	3.45	0.16	• 30	0.70		780	X027a	
IXXX 100N60B3H1		200	-	1.8	200	2.8	0.18	• 65	0.30		695	X015a	
IXXH 100N60B3		220	100	1.8	200	2.8	0.18				830	X014a	
IXXN 200N60B3		280	160	1.7	215	3.45	0.16				940	X027a	
IXXK 200N60B3		380	200	1.7	215	3.45	0.092				1630	X020a	
IXXX 200N60B3		380	200	1.7	215	3.45	0.092				1630	X015a	
IXXK 300N60B3		550	300	1.6	200	3.7	0.065				2300	X020a	
IXXX 300N60B3		550	300	1.6	200	3.7	0.065				2300	X015a	X014a TO-247AD
C3 Class (20-60 kHz switching)													
➤ IXXH 30N60C3	600	60	30	2.2	32	0.4	0.55				270	X014a	
IXXH 30N60C3D1		60	30	2.2	78	0.4	0.55	• 30	0.90		270	X014a	
IXXH 50N60C3		100	50	2.3	90	0.48	0.25				600	X014a	
IXXH 50N60C3D1		100	50	2.3	90	0.48	0.25	• 30	0.90		600	X014a	
IXXH 75N60C3		150	75	2.3	80	1.07	0.20				750	X014a	
IXXH 75N60C3D1		150	75	2.3	80	1.07	0.20	• 30	0.90		750	X014a	
IXXK 100N60C3H1		170	-	2.2	115	1.4	0.18	• 65	0.30		695	X020a	
IXXX 100N60C3H1		170	-	2.2	115	1.4	0.18	• 65	0.30		695	X015a	
IXXH 100N60C3		190	100	2.2	115	1.4	0.18				830	X014a	
IXXN 200N60C3H1		200	98	2.1	90	2.1	0.16	• 30	0.70		780	X027a	
IXXK 200N60C3		340	200	2.1	90	2.1	0.092				1630	X020a	
IXXX 200N60C3		340	200	2.1	90	2.1	0.092				1630	X015a	
IXXK 300N60C3		510	300	2	90	2.35	0.065				2300	X020a	
IXXX 300N60C3		510	300	2	90	2.35	0.065				2300	X015a	
IXXA 30N65C3HV	650	52	30	2.2	78	0.4	0.65				230	X011c	

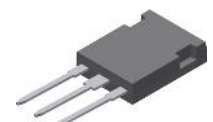
X027a **SOT-227B miniBLOC**



X020a **TO-264**



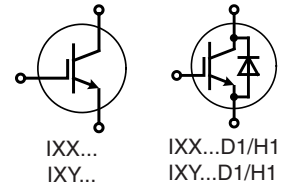
X016a **ISOPLUS247™**



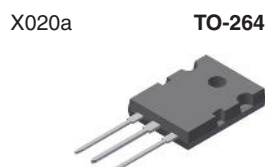
Discrete XPT™

650V XPT™ Planar IGBTs

XPT = Xtreme light Punch Through. short-circuit rated IGBTs



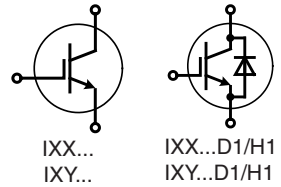
Part Number	V _{CE(sat)}	I _{C25} T _C = 25°C	I _{C110} T _C = 110°C	V _{CE(sat)} T _C = 25°C	t _{fi} typ. T _J = 150°C	E _{off} typ. T _J = 150°C	R _{thJC}	Diode	I _{F110} Diode T _C = 110°C	R _{thJC} max. Diode	P _C	Fig. No.	Package style
A3 Class (up to 5kHz switching)													
IXYN 100N65A3	650	170	110	1.8	160	2.40	0.25				600	X027a	X005a TO-220AB
B3 Class (10-30 kHz switching)													
IXYQ 30N65B3D1	650	70	30	2.1	93	1.00	0.55	•	50	0.60	270	X017a	
IXYH 30N65B3D1		70	30	2.1	93	1.00	0.55	•	50	0.60	270	X014a	
IXYH 40N65B3		86	40	2.0	174	1.15	0.50				300	X014a	
IXYQ 40N65B3D1		86	40	2.0	174	1.15	0.50	•	50	0.60	300	X017a	
IXYH 40N65B3D1		86	40	2.0	174	1.15	0.50	•	50	0.60	300	X014a	
IXYH 100N65B3		225	100	1.85	160	2.16	0.18				830	X014a	
IXYK 100N65B3D1	225	100	1.85	160	2.16	0.18	•	67	0.36	830	X020a		
IXYX 100N65B3D1	225	100	1.85	160	2.16	0.18	•	67	0.36	830	X015a		
C3 Class (20-60 kHz switching)													
IXYP 10N65C3D1M	650	15	7	2.6	38	0.15	2.83	•	13	4.0	53	X007a	
IXYP 20N65C3D1M		18	9	2.5	36	0.40	3.00	•	13	4.0	50	X007a	
IXYP 15N65C3D1M		18	9	2.5	42	0.24	2.63	•	13	4.0	57	X007a	
IXYP 10N65C3		30	10	2.5	38	0.15	0.94				160	X005a	
IXYP 10N65C3D1		30	10	2.5	38	0.15	0.94	•	23	1.85	160	X005a	
IXYP 15N65C3		38	15	2.5	42	0.24	0.75				200	X005a	
IXYP 15N65C3D1		38	23	2.5	42	0.24	0.75	•	23	1.85	200	X005a	
IXYA 20N65C3		50	20	2.5	36	0.40	0.65				230	X011b	
IXYH 20N65C3		50	20	2.5	36	0.40	0.65				230	X014a	
IXYP 20N65C3D1		50	20	2.5	36	0.40	0.65	•	23	1.85	200	X005a	
IXYH 30N65C3H1		60	30	2.7	30	0.41	0.55	•	29	0.80	270	X014a	
IXYH 30N65C3		60	30	2.7	30	0.41	0.55				270	X014a	
IXYT 30N65C3H1HV		60	30	2.7	30	0.41	0.55	•	29	0.80	270	X019a	
IXYP 30N65C3		60	30	2.7	30	0.41	0.55				270	X005a	
IXYQ 40N65C3D1		80	40	2.35	30	0.53	0.50	•	50	0.60	300	X017a	
IXYH 40N65C3		80	40	2.35	30	0.53	0.50				300	X014a	
IXYH 40N65C3H1		80	40	2.35	80	0.46	0.50	•	40	0.60	300	X014a	
IXYH 40N65C3D1		80	40	2.35	30	0.53	0.50	•	50	0.60	300	X014a	
IXYH 50N65C3H1	130	50	2.1	42	0.56	0.25	•	40	0.60	600	X014a		
IXYP 50N65C3	132	50	2.1	32	0.70	0.25				600	X005a		
IXYH 50N65C3D1	132	50	2.1	32	0.70	0.25	•	50	0.60	600	X014a		
IXYH 50N65C3	132	50	2.1	32	0.70	0.25				600	X014a		
IXYA 50N65C3	132	50	2.1	32	0.70	0.25				600	X011b		
IXYN 75N65C3D1	140	67	2.3	64	1.30	0.28	•	46	0.53	535	X027a		
IXYN 100N65C3H1	160	90	2.3	66	1.15	0.25	•	50	0.42	600	X027a		
IXYH 75N65C3H1	175	75	2.3	58	1.30	0.20	•	62	0.45	750	X014a		
IXYH 75N65C3	175	75	2.3	64	1.30	0.20				750	X014a		
IXYH 75N65C3D1	175	75	2.3	64	1.30	0.20	•	62	0.45	750	X014a		
IXYX 100N65C3D1	200	100	2.3	66	1.15	0.18	•	67	0.36	830	X015a		
IXYH 100N65C3	200	100	2.3	66	1.15	0.18				830	X014a		
IXYK 100N65C3D1	200	100	2.3	66	1.15	0.18	•	67	0.36	830	X020a		


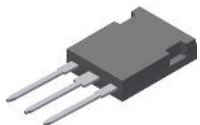


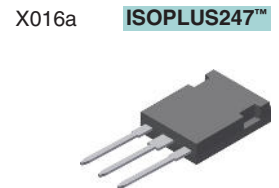
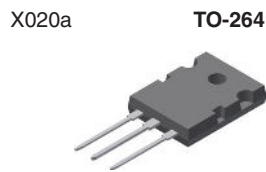
Discrete XPT™

650V XPT™ Trench IGBTs

XPT = Xtreme light Punch Through. short-circuit rated IGBTs





Part Number	V _{CES}	I _{C25} T _C = 25°C	I _{C110} T _C = 110°C	V _{CE(sat)} T _C = 25°C	t _{fi} typ. T _J = 150°C	E _{off} typ. T _J = 150°C	R _{thJC}	Diode	I _{F110} Diode T _C = 110°C	R _{thJC} max. Diode	P _C	Fig. No.	Package style
▶ New	V	A	A	V	ns	mJ	K/W		A	K/W	W		Outline drawings on pages O-31...O-52
B4 Class (10-30 kHz switching)													
IXXH 30N65B4	650	65	30	2.0	100	0.6	0.65				230	X014a	X014a TO-247AD 
IXXH 60N65B4H1		116	60	2.2	94	1.34	0.33	• 40	0.60	455	X014a		
IXXH 60N65B4		116	60	2.2	94	1.34	0.33			455	X014a		
IXXH 40N65B4		120	40	2.0	73	0.78	0.33			455	X014a		
▶ IXXH 40N65B4H1		120	40	2.0	73	0.78	0.33	• 40	0.60	455	X014a		
IXXR 110N65B4H1		150	70	2.2	105	1.40	0.33	• 48	0.70	455	X016a		
IXXH 80N65B4		160	80	2.0	65	1.65	0.24			625	X014a		
IXXH 80N65B4H1		160	80	2.0	65	1.65	0.24	• 62	0.45	625	X014a		
IXXN 110N65B4H1		215	110	2.1	105	1.40	0.20	• 70	0.42	750	X027a		
IXXK 110N65B4H1		240	110	2.1	105	1.40	0.17	• 78	0.38	880	X020a		
IXXX 110N65B4H1		240	110	2.1	105	1.40	0.17	• 78	0.38	880	X015a		
IXXK 160N65B4		310	160	1.8	160	2.36	0.16			940	X020a		
IXXX 160N65B4		310	160	1.8	160	2.36	0.16			940	X015a		
IXXK 200N65B4		480	200	1.7	110	2.54	0.092			1630	X020a		
IXXX 200N65B4		480	200	1.7	110	2.54	0.092			1630	X015a		
C4 Class (20-60 kHz switching)													
IXXH 60N65C4	650	118	60	2.4	47	0.93	0.33				455	X014a	X015a PLUS247 
IXXN 110N65C4H1		210	110	2.35	43	0.77	0.20	• 70	0.42	750	X027a		
IXXH 110N65C4		234	110	2.35	43	0.77	0.17			880	X014a		
IXXK 160N65C4		290	160	2.1	57	1.30	0.16			940	X020a		
IXXX 160N65C4		290	160	2.1	57	1.30	0.16			940	X015a		



Discrete XPT™

900V XPT™ IGBT

XPT = Xtreme light Punch Through

Part Number	V _{CES}	I _{C25} T _C = 25°C	I _{C110} T _C = 110°C (90°C)	V _{CE(sat)} T _C = 25°C	t _{fi} typ. T _J = 125°C (150°C)	E _{off} typ. T _J = 125°C (150°C)	R _{thJC}	Diode	I _{F110} Diode T _C = 110°C	R _{thJC} max. Diode	P _C	Fig. No.	Package style	
➤ New	V	A	A	V	ns	mJ	K/W		A	K/W	W		Outline drawings on pages O-31...O-52	
900V GenX3™ XPT™ IGBTs														
➤ IXYA 8N90C3D1	900	20	8	2.5	163	0.22	1.2	•	12	2.50	125	X011b	X004 TO-252AA 	
➤ IXYP 8N90C3		20	8	2.5	163	0.22	1.2				125	X007a		
➤ IXYP 8N90C3D1		20	8	2.5	163	0.22	1.2	•	12	2.50	125	X007a		
➤ IXYY 8N90C3		20	8	2.5	163	0.22	1.2				125	X004		
➤ IXYH 24N90C3		44	24	2.7	130	0.55	0.62				240	X014a		
➤ IXYH 24N90C3D1		44	(24)	2.7	130	0.55	0.62	•	15	1.60	200	X014a		
➤ IXYH 40N90C3D1		90	40	2.5	150	1.2	0.25	•	25	0.90	500	X014a		
➤ IXYH 40N90C3		105	40	2.5	150	1.2	0.25				600	X014a		
➤ IXYN 80N90C3H1		115	(70)	2.7	(98)	(2.5)	0.25	•	42	0.42	500	X027a		X007a TO-220ABFP 
➤ IXYH 60N90C3		140	60	2.7	(165)	(2.15)	0.2				750	X014a		
➤ IXYH 80N90C3		165	80	2.7	(98)	(2.5)	0.18				830	X014a		
➤ IXYT 80N90C3		165	80	2.7	(98)	(2.5)	0.18				830	X019		
➤ IXYK 140N90C3	310	140	2.7	(125)	(5)	0.092				1630	X020a			
➤ IXYX 140N90C3	310	140	2.7	(125)	(5)	0.092				1630	X015a			

X027a **SOT-227B miniBLOC**



X014a **TO-247AD**



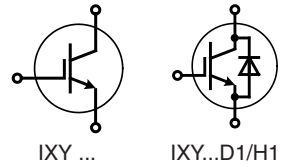
X011b **TO-263AB**



Discrete XPT™

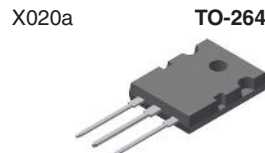
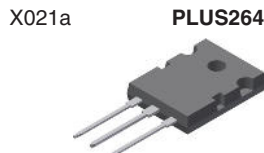
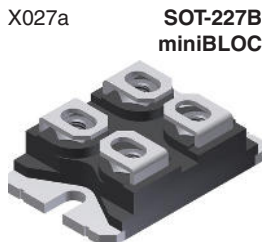
1200V XPT™ IGBT

XPT = Xtreme light Punch Through



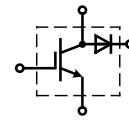
Part Number	V _{CES}	I _{C25} T _C = 25°C	I _{C110} T _C = 110°C	V _{CE(sat)} T _C = 25°C	t _{fi} typ. T _J = 125°C	E _{off} typ. T _J = 125°C	R _{thJC}	Diode	I _{F110} Diode T _C = 110°C	R _{thJC} max. Diode	P _C	Fig. No.	Package style
1200V GenX3™ XPT™ IGBTs													
B3 Class (5-30 kHz switching)													
IXYH 40N120B3D1	1200	86	40	2.9	206	2.05	0.26	•	25	0.90	480	X014a	X005a TO-220AB
IXYH 40N120B3		96	40	2.9	206	2.05	0.26				577	X014a	
IXYN 100N120B3H1		165	76	2.6	° 260	10.1 °	0.18	•	42	0.42	690	X027a	
IXYK 100N120B3		225	100	2.6	° 260	10.1 °	0.13				1150	X020a	
IXYX 100N120B3		225	100	2.6	° 260	10.1 °	0.13				1150	X015a	
C3 Class (20-50 kHz switching)													
IXYJ 20N120C3D1	1200	21	9	3.4	° 105	0.7 °	1.19	•	15	1.25	105	X016c	X011c TO-263ABHV
IXYJ 30N120C3D1		32	14	3.3	° 140	1.6 °	0.89	•	15	1.25	140	X016c	
IXYH 20N120C3D1		36	17	3.4	° 105	0.7 °	0.54	•	23	0.90	230	X014a	X014a TO-247AD
IXYT 20N120C3D1HV		36	17	3.4	° 105	0.7 °	0.54	•	23	0.90	230	X019a	
IXYA 20N120C3HV		40	20	3.4	° 105	0.7 °	0.54				278	X011c	X014a PLUS247
IXYH 20N120C3		40	20	3.4	° 105	0.7 °	0.54				278	X014a	
IXYP 20N120C3		40	20	3.4	° 105	0.7 °	0.54				278	X005a	X015a ISOPLUS247™
IXYR 50N120C3D1		56	* 32	4.0	° 60	1.4 °	0.43	•	25	0.90	290	X016a	
IXYH 40N120C3D1		64	* 40	4.0	38	0.7	0.26	•	25	0.90	480	X014a	X016a ISO247™
IXYH 30N120C3		66	30	4.0	88	0.9	0.3				416	X014a	
IXYH 30N120C3D1		66	30	4.0	88	0.9	0.3	•	25	0.90	416	X014a	X027a SOT-227B miniBLOC
IXYP 30N120C3		66	30	4.0	88	0.9	0.3				416	X005a	
IXYH 40N120C3		70	40	4.0	38	0.7	0.26				577	X014a	X020a TO-264
IXYH 50N120C3D1		90	**50	4.0	° 60	1.4 °	0.2	•	25	0.90	625	X014a	
IXYH 50N120C3		100	50	3.5	60	1.4	0.2				750	X014a	X019a TO-268AAHV
IXYR 100N120C3		104	58	3.5	125	3.55	0.31				484	X016a	
IXYN 82N120C3		105	46	3.2	95	3.7	0.25				500	X027a	X016a ISOPLUS247™
IXYN 82N120C3H1		105	46	3.2	95	3.7	0.25	•	42	0.42	500	X027a	
IXYN 100N120C3H1		134	62	3.5	125	3.55	0.18	•	42	0.42	690	X027a	X016a ISO247™
IXYN1 00N120C3		152	86	3.5	125	3.55	0.18				830	X027a	
IXYB 82N120C3H1		160	82	3.2	95	3.7	0.12	•	42	0.35	1040	X021a	X020a TO-264
IXYH 82N120C3		160	82	3.2	95	3.7	0.12					X014a	
IXYK 100N120C3		188	100	3.5	125	3.55	0.13					X020a	X015a ISO247™
IXYX 100N120C3		188	100	3.5	125	3.55	0.13					X015a	
IXYK 120N120C3		220	120	3.5	° 120	5.3 °	0.1				1500	X020a	X016c ISO247™
IXYX 120N120C3		220	120	3.5	° 120	5.3 °	0.1				1500	X015a	
IXYK 120N120C3		240	120	3.2	° 120	7.2 °	0.1				1500	X020a	X015a ISO247™
IXYX 120N120C3		240	120	3.2	° 120	7.2 °	0.1				1500	X015a	
IXYN 120N120C3		240	120	3.2	° 120	7.2 °	0.125				1200	X027a	

* T_C = 90°C ° T_J = 150°C
** T_C = 100°C

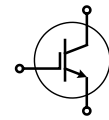


Discrete XPT™ / NPT IGBT

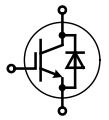
XPT IGBT XPT = Xtreme light Punch Through










IXA...R...



IXA...I...
IXD..

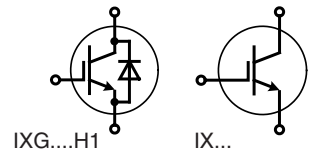


IXA...IF...
IXD ...D1

Type	V _{CES}	I _{C25} IGBT	I _{C90} IGBT	V _{CEsat typ} IGBT	E _{off} IGBT	R _{thJC} IGBT	Diode	I _{F90} Diode	Fig. No.	Package style
> New ○ Not for new design ◇ under development	V	T _C = 25°C A	T _C = 90°C A	T _J = 25°C V	T _J = 125°C mJ	K/W		T _C = 90°C A		Outline drawings on pages O-31...O-52
650 V XPT IGBT										
> IXA 220I650NA	650	335	220	*	*	*		-	X027a	X004 TO-252AA 
1200 V XPT IGBT										
> IXA 4I1200UC	1200	9	(100) 5	1.8	0.30	2.70		-	X004	X005a TO-220AB 
IXA 4IF1200UC		9	5	1.8	0.25	2.70	•	6	X004	
◇ IXA 4IF1200PZ		9	5	1.8	0.25	2.70	•	6	X011c	
IXA 4IF1200TC		9	5	1.8	0.25	2.70	•	6	X019	
IXA 12IF1200HB		20	13	1.8	1.10	1.50	•	14	X014a	
IXA 12IF1200PB		20	13	1.8	1.10	1.50	•	14	X005a	
IXA 12IF1200TC		20	13	1.8	1.10	1.50	•	14	X019	
IXA 17IF1200HJ		28	18	1.8	1.70	1.26	•	19	X016a	
IXA 20IF1200HB		38	22	1.8	1.70	0.76	•	24	X014a	
IXA 20I1200PB		38	22	1.8	1.70	0.76		-	X005a	
◇ IXA 20I1200PZ		38	22	1.8	1.70	0.76		-	X011c	X011c TO-263ABHV 
IXA 27IF1200HJ		43	27	1.8	3.00	0.84	•	25	X016a	
IXA 33IF1200HB		58	34	1.8	3.00	0.50	•	33	X014a	
IXA 37IF1200HJ		58	37	1.8	4.10	0.64	•	25	X016a	
IXA 45IF1200HB		78	45	1.8	4.10	0.38	•	33	X014a	
IXA 55I1200HJ		84	54	1.8	5.50	0.43		-	X016a	
IXA 60IF1200NA		88	56	1.8	5.50	0.43	•	51	X027a	X014a TO-247AD 
IXA 70I1200NA		100	65	1.8	5.50	0.35		-	X027a	
IXA 70R1200NA *		100	65	1.8	5.50	0.35	•	55	X027a	
1200 V Fast Trench IGBT										
> ITF 38IF1200HJ	1200	52	38 (80°C)	2.05	2 (175°C)	0.68	•	42	X016a	
* boost configuration										
NPT IGBT NPT = Non Punch Through										
600 V NPT IGBT										
○ IXDP 20N60B	600	32	20	2.2	0.4	0.90		-	X005a	X016a ISOPLUS247™ 
○ IXDP 20N60BD1		32	20	2.2	0.4	0.90	•	14	X005a	
○ IXDP 35N60B		60	35	2.1	0.8	0.50		-	X005a	
○ IXDH 35N60B		60	35	2.1	0.8	0.50		-	X014a	
○ IXDH 35N60BD1		60	35	2.1	0.8	0.50	•	21	X014a	
1200 V NPT IGBT										
○ IXDH 20N120		38	25	2.4	2.4	0.63		-	X014a	X019 TO-268AA 
○ IXDH 20N120D1		38	25	2.4	2.4	0.63	•	20	X014a	
○ IXDH 30N120		60	38	2.4	3.4	0.42		-	X014a	X027a SOT-227B miniBLOC 
○ IXDH 30N120D1		60	38	2.4	3.4	0.42	•	35	X014a	
○ IXDR 30N120D1		50	30	2.4	3.4	0.60	•	27	X016a	
IXDN 55N120D1		100	62	2.3	6.2	0.28	•	60	X027a	
IXDN 75N120		150	95	2.2	10.5	0.19		-	X027a	

G-Series PT IGBTs

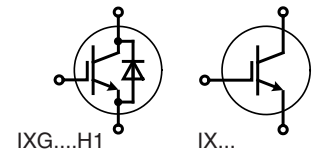
600 and 1200 V IGBTs


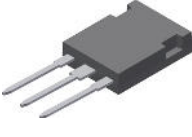
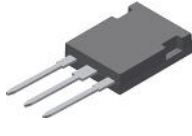


Part Number	V _{CES} V	I _{C25} T _C = 25°C A	I _{C110} T _C = 110°C A	V _{CE(sat)} max. T _J = 25°C V	t _{fi} typ. T _J = 25°C ns	E _{off} typ. T _J = 125°C mJ	R _{thJC} max. K/W	Diode	I _{F110} Diode T _C = 110°C A	R _{thJC} max. Diode K/W	PC W	Fig. No.	Package style
➤ New													
A3 Class (up to 5kHz switching)													
IXGH 36N60A3D4	600	75	36	1.40	325	5.3	0.56	• -	-	2.5	220	X014a	X005a TO-220AB
IXGH 48N60A3D1		75	48	1.35	224	5.6	0.42	• -	0.9	300	X014a		
IXGH 72N60A3		75	72	1.35	250	6.5	0.23	- -	-	540	X014a		
IXGK 72N60A3H1		75	72	1.35	250	6.5	0.23	• -	0.3	540	X020a		
IXGR 72N60A3H1		75	72	1.35	250	6.5	0.62	• -	0.8	200	X016a		
IXGT 72N60A3		75	72	1.35	250	6.5	0.23	- -	-	540	X019	X011b TO-263AB 	
IXGT 72N60B3		75	72	1.8	90	2.2	0.23	- -	-	540	X019		
IXGX 72N60A3H1		75	72	1.35	250	6.5	0.23	• -	0.3	540	X015a		
IXGH 56N60A3	150	56	56	1.35	315	6.75	0.375	- -	-	330	X014a	X014a TO-247AD 	
IXGN 72N60A3	160	68	68	1.35	250	6.5	0.35	- -	-	360	X027a		
IXGK 120N60A3	200	120	120	1.35	260	10.4	0.16	- -	-	780	X020a		
IXGN 120N60A3	200	120	120	1.35	260	10.4	0.21	- -	-	595	X027a		
IXGN 120N60A3D1	200	120	120	1.35	260	10.4	0.21	• -	0.85	595	X027a		
IXGX 120N60A3	200	120	120	1.35	260	10.4	0.16	- -	-	780	X015a		
IXGK 320N60A3	320	210	210	1.25	740	na	0.125	- -	-	1000	X020a		
IXGN 320N60A3	320	170	170	1.25	740	na	0.17	- -	-	735	X027a		
IXGX 320N60A3	320	210	210	1.25	740	na	0.125	- -	-	1000	X015a		
IXGN 400N60A3	400	190	190	1.25	270	na	0.15	- -	-	830	X027a	X015a PLUS247 	
IXGA 36N60A3	na	36	36	1.40	325	5.3	0.56	- -	-	220	X011b		
IXGA 48N60A3	na	48	48	1.35	224	5.6	0.42	- -	-	300	X011b		
IXGH 36N60A3	na	36	36	1.40	325	5.3	0.56	- -	-	220	X014a		
IXGH 48N60A3	na	48	48	1.35	2.24	5.6	0.42	- -	-	300	X014a		
IXGH 64N60A3	na	64	64	1.35	222	6.0	0.27	- -	-	460	X014a		
IXGP 36N60A3	na	36	36	1.40	325	5.3	0.56	- -	-	220	X005a	X016a ISOPLUS247™ 	
IXGP 48N60A3	na	48	48	1.35	224	5.6	0.42	- -	-	300	X005a		
IXGR 64N60A3		na	47	1.35	222	6.03	0.62	- -	-	200	X016a		
IXGR 72N60A3		na	52	1.35	250	6.5	0.62	- -	-	200	X016a		
IXGT 64N60A3		na	64	1.35	222	6.0	0.27	- -	-	460	X019		
IXGH 32N100A3	1000	75	32	2.20	540	13.0	0.42	- -	-	300	X014a		
IXGT 32N100A3		75	32	2.20	540	13.0	0.42	- -	-	300	X019	X019 TO-268AA 	
IXGA 12N120A3	1200	22	na	3.00	1035	na	1.25	- -	-	100	X011b		
IXGH 12N120A3		22	na	3.00	1035	na	1.25	- -	-	100	X014a		
IXGP 12N120A3		22	na	3.00	1035	na	1.25	- -	-	100	X005a		
IXGA 20N120B3		36	na	3.10	155	1.63	0.69	- -	-	180	X011b		
IXGP 20N120B3		36	na	3.10	155	1.63	0.69	- -	-	180	X005a	X020a TO-264 	
IXGA 20N120A3		40	20	2.50	715	10.1	0.69	- -	-	180	X011b		
IXGH 20N120A3		40	20	2.50	715	10.1	0.69	- -	-	180	X014a		
IXGP 20N120A3		40	20	2.50	715	10.1	0.69	- -	-	180	X005a		
IXGR 55N120A3H1		70	30	2.35	282	29.0	0.62	• -	0.42	200	X016a		
IXGH 32N120A3		75	na	2.35	1240	na	0.42	- -	-	300	X014a		
IXGT 32N120A3		75	32	2.35	1240	na	0.42	- -	-	300	X019	X027a SOT-227B miniBLOC 	
IXGK 55N120A3H1		125	55	2.30	282	29.0	0.27	• -	0.42	460	X020a		
IXGX 55N120A3H1		125	55	2.30	282	29.0	0.27	• -	0.42	460	X015a		
IXGK 120N120A3		240	120	2.20	325	58.0	0.15	- -	-	830	X020a		
IXGX 120N120A3		240	120	2.20	325	58.0	0.15	- -	-	830	X015a		
IXGK 82N120A3		260	82	2.05	780	22.5	0.10	- -	-	1250	X020a		
IXGX 82N120A3		260	82	2.05	780	22.5	0.10	- -	-	1250	X015a		



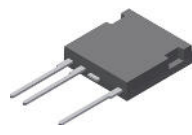

High Voltage NPT IGBTs

1700 V Low On-State Voltage NPT IGBTs

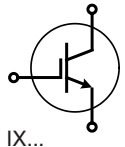


Part Type	V _{CES} V	I _C T _C = 25°C A	I _C T _C = 90°C (110°C) A	V _{CE(sat)} T _C = 25°C V	E _{off} typ T _J = 125°C mJ	R _{thJC} K/W	Diode	Fig. No.	Package style Outline drawings on pages O-31...O-52
IXGH 6N170	1700	12	6	4.0	2	1.65		X014a	X014a TO-247AD 
IXGT 6N170		12	6	4.0	2	1.65		X019	
IXGH 10N170		20	10	4.0		1.10		X014a	
IXGT 10N170		20	10	4.0		1.10		X019	
IXGH 16N170		32	16	3.5	11.2	0.65		X014a	
IXGT 16N170		32	16	3.5	11.2	0.65		X019	
IXGR 32N170H1		38	20	3.5	13.6	0.65	•	X016a	X015a PLUS247  X016a ISOPLUS247™ 
IXGF 32N170	44	(19)	3.5	13.5	0.62		X024c		
IXGH 24N170		50	24	3.3	12	0.50		X014a	
IXGT 24N170		50	24	3.3	12	0.50		X019	
IXGH 32N170		75	32	3.3	14	0.35		X014a	
IXGT 32N170		75	32	3.3	14	0.35		X019	
IXGX 32N170H1		75	32	3.3	22	0.35	•	X015a	
IXGN 100N170		160	95	3.0		0.17		X027a	
IXGX 100N170		170	100	3.0		0.15		X015a	
IXGK 100N170		170	100	3.0		0.15		X020a	

1700 V NPT IGBTs

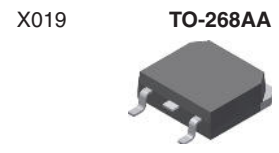
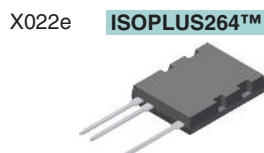
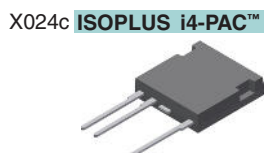
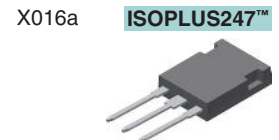
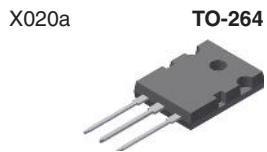
Part Type	V _{CES} V	I _C T _C = 25°C A	I _C T _C = 90°C (110°C) A	V _{CE(sat)} T _C = 25°C V	t _{fi} typ T _J = 25°C ns	E _{off} typ T _J = 125°C mJ	R _{thJC} K/W	Diode	I _{F90} Diode T _C = 90°C A	R _{thJC} Diode K/W	Fig. No.	Package style
➤ New												
IXGR 6N170A	1700	5.5	(2.5)	7	32	0.25	2.5				X016a	X019 TO-268AA 
IXGH 6N170A		6	3	7	32	0.26	1.65				X014a	X020a TO-264 
IXGT 6N170A		6	3	7	32	0.26	1.65				X019	
IXGH 10N170A		10	5	6	35	0.6	0.89				X014a	X024c ISOPLUS i4-PAC™ 
IXGT 10N170A		10	5	6	35	0.6	0.89				X019	
IXGH 16N170A		16	11	5	70	2.0	0.65				X014a	X027a SOT-227B miniBLOC 
IXGH 16N170AH1		16	11	5	70	2.0	0.65	•	17	0.90	X014a	
IXGR 16N170AH1		16	8	5	40	1.1	1.04	•	15	1.50	X016a	
IXGT 16N170A		16	11	5	70	2.0	0.65				X019	
IXGT 16N170AH1		16	11	5	70	2.0	0.65	•	17	0.90	X019	
IXGH 24N170A		24	16	6	40	1.47	0.5				X014a	
IXGH 24N170AH1		24	16	6	40	1.47	0.5	•	16	0.90	X014a	
IXGT 24N170A		24	16	6	40	1.47	0.5				X019	
IXGT 24N170AH1		24	16	6	40	1.47	0.5	•	16	0.90	X019	
IXGR 32N170AH1		26	14	5.2	50	2.4	0.65	•	14	1.50	X016a	
IXGH 32N170A		32	21	5	50	2.4	0.35				X014a	
IXGT 32N170A		32	21	5	50	2.4	0.35				X019	
IXGX 32N170AH1		32	21	5	50	1.7	0.35	•	18	0.35	X015a	

Very High Voltage NPT IGBTs

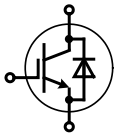


2.5 kV - 4 kV NPT IGBT










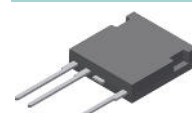



Part Type	V _{CES}	I _{C25} T _C = 25°C	I _{C110} T _C = 110°C (90°C)	V _{CE(sat)} T _C = 25°C	t _{ri} typ T _J = 25°C	E _{off} typ T _J = 125°C	R _{thJC} IGBT	P _c	Fig. No.	Package style
➤ New	V	A	A	V	ns	mJ	K/W	W		Outline drawings on pages O-31...O-52
IXGF 20N250	2500	23	(14)	3.1	930	na	1.25	100	X024c	X011c TO-263ABHV
IXGA 20N250HV		30	12	3.1	930	na	0.83	150	X011c	
IXGF 25N250		30	15	2.9	200	na	1.10	114	X024c	
IXLF 19N250A		32	19	3.9	250	30	0.50	250	X024c	
IXGH 25N250		60	25	2.9	200	na	0.50	250	X014a	
IXGT 25N250		60	25	2.9	200	na	0.50	250	X019	
IXGT 25N250HV		60	25	2.9	200	na	0.50	250	X019a	
IXGL 75N250		110	(65)	2.9	455	na	0.29	430	X022e	X014a TO-247AD
IXGK 75N250		170	75	2.7	455	na	0.16	780	X020a	
IXGX 75N250		170	75	2.7	455	na	0.16	780	X015a	
IXGH 10N300	3000	18	(10)	3.5	530	na	1.25	100	X014a	X014c TO-247HV
IXGF 20N300		22	(14)	3.2	210	na	1.25	100	X024c	
IXGF 25N300		27	(16)	3.0	500	na	1.10	114	X024c	
IXGF 36N300		36	18	2.7	540	na	0.78	160	X024c	
IXEL 40N400	4000	90	40	3.5	425	205	0.26	380	X022e	X015a PLUS247
➤ IXA 40I4000KN		80	40	2.7	200	125	0.28	450	X022e	
➤ IXYF 30N450	4500	23	17	3.9	1220	na	0.54	230	X024c	X015a PLUS247
➤ IXYT 30N450HV		60	30	3.9	1220	na	0.29	430	X019a	
➤ IXYF 40N450		60	32	3.9	1120	na	0.43	290	X024c	
➤ IXYH 30N450HV		60	30	3.9	1220	na	0.29	430	X014c	
➤ IXYL 60N450		90	38	3.3	1360	na	0.3	417	X022e	
➤ IXYX 40N450HV		95	40	3.9	1120	na	0.19	660	X015c	



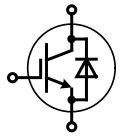
BiMOSFETs (Monolithic Bipolar MOS Transistors)







1.6 kV - 2.5 kV

Type	V _{CES}	I _{C25} T _C = 25°C	I _{C90} T _C = 90°C (110°C)	V _{CE(sat)} typ (max) T _C = 25°C (110°C)	Q _G typ	t _f (t _{fi}) typ T _C = 125°C	R _{thJC} max.	Fig. No.	Package style	
➤ New	V	A	A	V	nC	ns	K/W		Outline drawings on pages O-31...O-52	
IXBH 5N160G	1600	5.7	3.5	4.9	26	(70)	1.85	X014a	X005a TO-220AB 	
IXBP 5N160G		5.7	3.5	4.9	26	(70)	1.85	X005a		
IXBF 9N160G		7	4	4.9	34	(70)	1.75	X024c		
IXBH 9N160G		9	5	4.9	34	(70)	1.25	X014a		
IXBF 40N160		28	16	6.2	130	(40)	0.50	X024c		
IXBH 40N160		33	20	6.2	130	(40)	0.35	X014a		
IXBH 6N170	1700	12	6	2.84	17	600	1.65	X014a	X011c TO-263ABHV 	
IXBT 6N170		12	6	2.84	17	600	1.65	X019		
➤ IXBA 16N170AHV		16	10	(6)	65	(150)	0.83	X011c	X014a TO-247AD 	
IXBH 16N170A		16	10	(6)	65	(150)	0.83	X014a		
IXBT 16N170A		16	10	(6)	65	(150)	0.83	X019		
➤ IXBT 16N170AHV		16	10	(6)	65	(150)	0.83	X019a		
IXBH 10N170		20	10	3.4	30	(150)	0.89	X014a	X015a PLUS247 	
IXBT 10N170		20	10	3.4	30	(150)	0.89	X019		
IXBN 42N170A		38	21	5.2	188	(82)	0.40	X027a	X016a ISOPLUS247™ 	
IXBH 16N170		40	16	(3.3)	72	705	0.50	X014a		
IXBT 16N170		40	16	(3.3)	72	705	0.50	X019	X019 TO-268AA 	
IXBH 42N170A		42	21	5.2	188	(82)	0.35	X014a		
IXBT 42N170A		42	21	5.2	188	(82)	0.35	X019	X019a TO-268AAHV 	
IXBR 42N170		57	32	(2.9)	188	740	0.62	X016a		
IXBH 24N170		2500	60	24	(2.5)	140	960	0.50	X014a	X020a TO-264 
IXBT 24N170			60	24	(2.5)	140	960	0.50	X019	
IXBN 75N170A			75	42	4.95	358	(175)	0.20	X027a	X027a SOT-227B miniBLOC 
IXBH 42N170			80	42	(2.8)	188	740	0.35	X014a	
IXBT 42N170			80	42	(2.8)	188	740	0.35	X019	X024c ISOPLUS i4-PAC™ 
IXBK 75N170A			110	65	4.95	358	(175)	0.12	X020a	
IXBX 75N170A	110		65	4.95	358	(175)	0.12	X015	X022e ISOPLUS264™ 	
IXBN 75N170	145		75	2.6	350	580	0.20	X027a		
IXBK 75N170	200		(75)	2.6	350	580	0.12	X020a	X020a TO-264 	
IXBX 75N170	200		(75)	2.6	350	580	0.12	X015a		
IXCH 36N250	2500	73	(36)	2.6	177	900	0.21	X014a	X019a TO-268AAHV 	
IXCK 36N250		73	(36)	2.6	177	900	0.21	X020a		
IXBL 64N250		116	(46)	2.5	400	175	0.25	X022e		
IXBK 64N250		156	(64)	2.5	400	175	0.17	X020a		
IXBX 64N250		156	(64)	2.5	400	175	0.17	X015a		

BiMOSFETs (Monolithic Bipolar MOS Transistors)



3 kV - 3.6 kV

Type	V_{CES}	I_{C25} $T_C = 25^\circ C$	I_{C90} $T_C = 90^\circ C$ (110°C)	$V_{CE(sat)}$ typ (max) $T_C = 25^\circ C$ (110°C)	Q_G typ	t_r typ $T_C = 125^\circ C$	R_{thJC} max.	Fig. No.	Package style
➤ New	V	A	A	V	nC	ns	K/W		Outline drawings on pages O-31...O-52
➤ IXBF 14N300		28	14	2.2	62	1730	1.04	X024c	X011c TO-263ABHV 
➤ IXBF 10N300C		29	(10)	4.6	208	165 (t_{fi})	0.52	X024c	
➤ IXBH 10N300		30	(10)	2.8	45	1030	0.69	X014a	
➤ IXBA 10N300HV		34	(10)	2.2	46	2010	0.69	X011c	
➤ IXBH 10N300HV		34	(10)	2.2	46	2010	0.69	X014c	
➤ IXBF 15N300C		37	(15)	4.7	267	150 (t_{fi})	0.42	X024c	
➤ IXBF 22N300		38	22	2.2	110	1650	0.83	X024c	
➤ IXBA 14N300HV		38	(14)	2.2	62	1730	0.62	X011c	X014a TO-247AD 
➤ IXBH 14N300HV		38	(14)	2.2	62	1730	0.62	X014c	
IXBF 32N300		40	22	2.8	142	630	0.78	X024c	X014c TO-247HV 
➤ IXBF 28N300		50	28	2.3	110	3280	0.58	X024c	
➤ IXBL 20N300C		50	(20)	4.5	425	175 (t_{fi})	0.30	X022e	
IXBF 42N300		60	(20)	2.5	200	490	0.52	X024c	
➤ IXBT 22N300HV		60	(22)	2.2	110	1650	0.43	X019a	
➤ IXBH 22N300HV		60	(22)	2.2	110	1650	0.43	X014c	
➤ IXBX 28N300HV		62	(28)	2.3	110	3280	0.36	X015c	
IXBH 32N300		80	(32)	2.8	142	630	0.31	X014a	
IXBT 32N300		80	(32)	2.8	142	630	0.31	X019	
IXBF 55N300		86	(34)	2.7	335	260	0.35	X024c	
➤ IXBH 42N300HV		104	(42)	2.5	200	490	0.25	X014c	X015a PLUS247 
IXBT 42N300HV		104	(42)	2.5	200	490	0.25	X019a	
IXBK 55N300		130	(55)	2.7	335	260	0.20	X020a	
IXBX 55N300		130	(55)	3.2	335	260	0.20	X015a	
➤ IXBF 20N360	3600	45	(18)	2.9	110	1100	0.54	X024c	
➤ IXBH 20N360HV		70	(20)	2.9	110	1100	0.29	X014c	
➤ IXBT 20N360HV		70	(20)	2.9	110	1100	0.29	X019a	
➤ IXBF 50N360		70	(28)	2.4	210	1670	0.43	X024c	
➤ IXBL 60N360		92	(36)	2.8	450	1025	0.30	X022e	
➤ IXBX 50N360HV		125	(50)	2.4	210	1670	0.19	X015c	

X019a **TO-268AAHV**



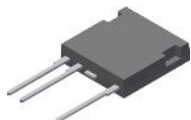
X019 **TO-268AA**



X015c **PLUS247HV**



X024c **ISOPLUS i4-PAC™**



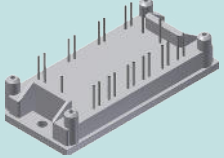
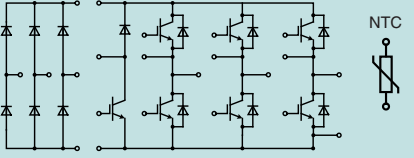
X022e **ISOPLUS264™**

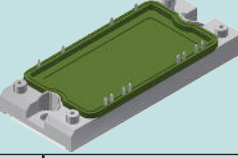
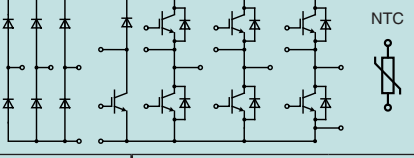


X020a **TO-264**



IGBT Modules – CBI Configuration

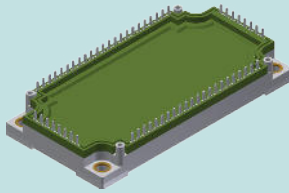
CBI 1 IGBT Modules				X111 E1-Pack Outline drawings on pages O-31...O-52 See data sheet for pin arrangement							
Type	Rectifier 3~			Inverter 3~				Brake chopper			
	V_{RRM}	I_{DAVM} $T_C = 80^\circ C$	R_{thJC} typ.	V_{CES}	I_C $T_C = 25^\circ C$	I_C $T_C = 80^\circ C$	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C $T_C = 80^\circ C$	R_{thJC} typ.
○ Not for new design											
➤ New	V	A	K/W	V	A	A	V	K/W	V	A	K/W
600 V NPT IGBT											
MUBW 10-06A6K	1600	61	2.10	600	12	8	2.5	2.80	600	8	2.80
MUBW 15-06A6K		65	1.90		19	14	2.4	1.70		8	2.80
MUBW 20-06A6K		65	1.90		25	17	2.0	1.50		8	2.80
○ MUBW 25-06A6K		65	1.90		31	21	2.1	1.25		14	1.70
MUBW 35-06A6K		89	1.40		42	29	2.3	0.95		17	1.50
1200 V NPT IGBT											
MUBW 15-12A6K	1600	89	1.40	1200	19	13	3.0	1.35	1200	13	1.35
MUBW 30-12A6K		89	1.40		30	21	3.0	0.95		13	1.35
1200 V Trench IGBT											
MUBW 45-12T6K	1600	104	1.10	1200	43	31	2.5	0.80	1200	13	1.35
1200 V XPT IGBT											
MIXA 10WB1200TML	1600	69	1.80	1200	17	12	1.8	2.00	1200	12	2.00
MIXA 20WB1200TML		105	1.10		28	20	1.8	1.26		12	2.00

CBI 2 IGBT Modules				X112 E2-Pack Outline drawings on pages O-30...O-55 See data sheet for pin arrangement							
Type	Rectifier 3~			Inverter 3~				Brake chopper			
	V_{RRM}	I_{DAVM} $T_C = 80^\circ C$	R_{thJC} typ.	V_{CES}	I_C $T_C = 25^\circ C$	I_C $T_C = 80^\circ C$	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C $T_C = 80^\circ C$	R_{thJC} typ.
○ Not for new design											
➤ New	V	A	K/W	V	A	A	V	K/W	V	A	K/W
600 V NPT IGBT											
○ MUBW 10-06A7	1600	18	1.5	600	20	15	1.9	1.5	600	15	1.5
○ MUBW 15-06A7		18	1.5		25	18	1.9	1.3		15	1.5
MUBW 20-06A7		24	1.3		35	25	1.9	1.0		18	1.4
MUBW 30-06A7		24	1.3		50	35	1.9	0.7		18	1.3
MUBW 50-06A7		29	1.1		75	50	1.9	0.5		25	1.0
600 V XPT IGBT											
➤ MIXA 50WB600TED	1200	119	1.2	600	64	43	1.6	0.8	600	20	1.26
1200 V NPT IGBT											
○ MUBW 10-12A7	1600	18	1.5	1200	20	15	2.3	1.2	1200	15	1.2
MUBW 15-12A7		24	1.3		35	25	2.0	0.7		15	1.2
MUBW 25-12A7		24	1.3		50	35	2.2	0.55		15	1.2
MUBW 35-12A7		29	1.1		50	35	2.5	0.55		25	0.7
1200 V Trench IGBT											
○ MUBW 15-12T7	1600	24	1.3	1200	25	15	1.7	1.2	1200	15	1.2
1200 V XPT IGBT											
MIXA 10WB1200TED	1600	105	1.1	1200	17	12	1.8	2.0	1200	12	2.0
MIXA 20WB1200TED		105	1.1		28	20	1.8	1.26		12	2.0
MIXA 30WB1200TED		105	1.1		43	30	1.8	0.84		12	2.0
MIXA 40WB1200TED		105	1.1		50	40	1.8	0.64		20	1.26

IGBT Modules – CBI Configuration

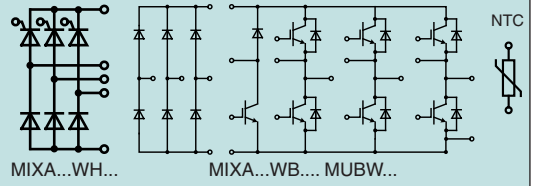
CBI 3

IGBT Modules



X113 E3-Pack

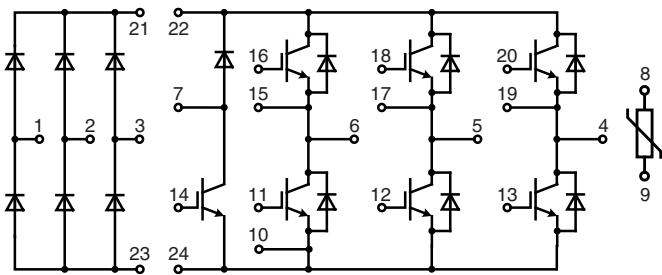
Outline drawings on pages O-31...O-52
See data sheet for pin arrangement



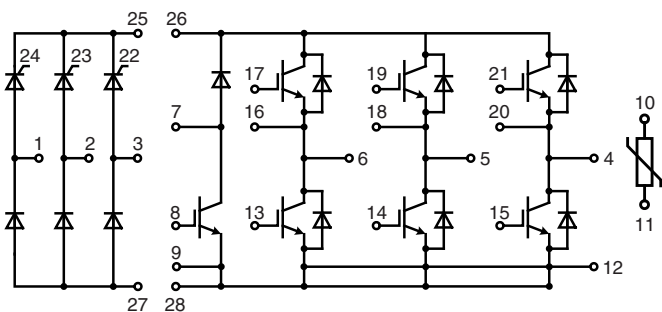
Type	Rectifier 3~			Inverter 3~					Brake chopper			Layout
	V_{RRM}	I_{DAVM} $T_H = 80^\circ C$	R_{thJC} typ.	V_{CES}	I_C $T_C = 25^\circ C$	I_C $T_C = 80^\circ C$	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C $T_C = 80^\circ C$	R_{thJC} typ.	
○ Not for new design ◇ under development	V	A	K/W	V	A	A	V	K/W	V	A	K/W	
600 V NPT IGBT												
○ MUBW 50-06A8	1600	40	1.10	600	75	50	1.9	0.50	600	25	1.00	A
MUBW 75-06A8		46	0.94		100	65	2.0	0.39		35	0.75	A
○ MUBW 100-06A8		60	0.73		125	85	1.9	0.30		50	0.55	A
1200 V NPT IGBT												
○ MUBW 35-12A8	1600	27	1.30	1200	50	35	2.5	0.55	1200	25	0.70	A
MUBW 50-12A8		46	0.94		85	60	2.2	0.35		35	0.55	A
1200 V Trench IGBT												
MUBW 50-12T8	1600	50	0.94	1200	75	50	1.7	0.45	1200	35	0.55	A
MUBW 75-12T8		50	0.94		105	75	1.7	0.35		35	0.55	A
1200 V XPT IGBT												
MIXA 60WB1200TEH	1600	190	0.65	1200	85	60	1.8	0.43	1200	40	0.64	A
MIXA 60WH1200TEH ¹		135	0.65		85	60	1.8	0.43		40	0.64	C
MIXA 80WB1200TEH		265	0.50		120	84	1.8	0.32		40	0.64	A
MIXA 81WB1200TEH		290	0.45		120	84	1.8	0.32		60	0.43	B
1200 V X2PT IGBT												
◇ MIXG 85WB1200TEH	1600	290	0.45	1200	140	85	1.7		1200	60	0.43	B
1700 V Trench IGBT												
MUBW 50-17T8	2200	120	1.10	1700	74	53	2.0	0.43	1700	34	0.62	A
MUBW 75-17T8		140	0.95		113	80	2.0	0.48		34	0.62	A

¹ input rectifier half-controlled

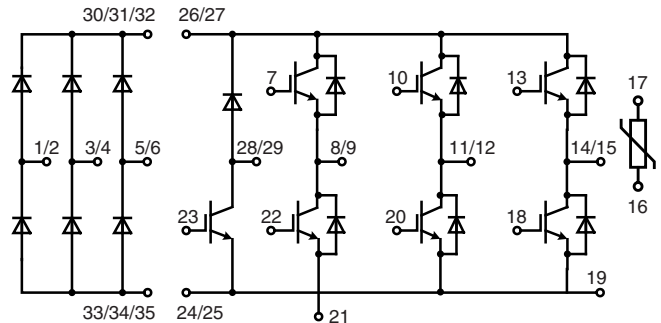
Layout A



Layout C



Layout B

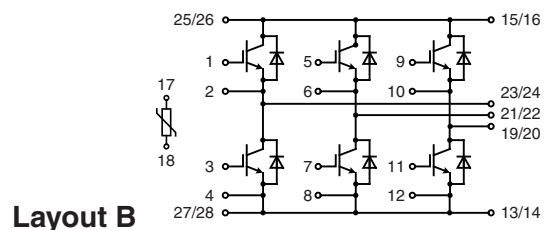
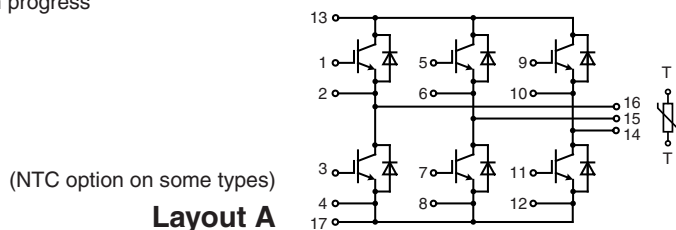


IGBT Modules – Six-Pack configuration

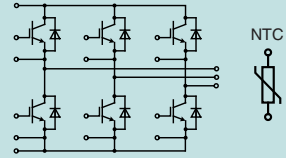
Six-Pack IGBT Modules				X111 E1-Pack Outline drawings on pages O-31...O-52 See data sheet for pin arrangement						
Type	V _{CES}	I _{C25} IGBT T _C = 25°C	I _{C80} IGBT T _C = 80°C	V _{CE(sat)} typ IGBT T _J = 25°C	E _{off} IGBT T _J = 125°C	R _{thJC} IGBT	I _{F25} Diode T _C = 25°C	I _{F80} Diode T _C = 80°C	NTC	
○ Not for new design ➤ New	V	A	A	V	mJ	K/W	A	A		
1200 V Trench IGBT										
MWI 60-12T6K		58	41	1.9	4.8	0.62	49	32	•	
MWI 80-12T6K		80	56	2.0	6.5	0.46	80	51	•	
1200 V XPT IGBT										
○ MIXA 10W1200TML	1200	17	12	1.8	1.1	2.00	19	13	•	
○ MIXA 20W1200TML		28	20	1.8	1.7	1.26	33	22	•	
○ MIXA 30W1200TML		43	30	1.8	3.0	0.84	44	29	•	
○ MIXA 40W1200TML		60	40	1.8	4.1	0.64	44	29	•	

Six-Pack IGBT Modules				X112 E2-Pack Outline drawings on pages O-30...O-55 See data sheet for pin arrangement							
Type	V _{CES}	I _{C25} IGBT T _C = 25°C	I _{C80} IGBT T _C = 80°C	V _{CE(sat)} typ IGBT T _J = 25°C	E _{off} IGBT T _J = 125°C	R _{thJC} IGBT	I _{F25} Diode T _C = 25°C	I _{F80} Diode T _C = 80°C	NTC	Layout	
◇ under development ○ Not for new design ➤ New	V	A	A	V	mJ	K/W	A	A			
600 V NPT IGBT											
○ MWI 30-06A7	600	45	30	1.9	1.0	0.88	36	24		A	
MWI 30-06A7T		45	30	1.9	1.0	0.88	36	24	•	A	
○ MWI 50-06A7		75	50	1.9	1.7	0.55	72	45		A	
MWI 50-06A7T		75	50	1.9	1.7	0.55	72	45	•	A	
○ MWI 75-06A7		90	60	2.1	2.5	0.44	140	85		A	
MWI 75-06A7T		90	60	2.1	2.5	0.44	140	85	•	A	
650 V XPT IGBT											
➤ MIXA 50W650TED	650	*	50	1.5	1.2 (150°C)	*	*	*	•	B	
➤ MIXA 75W650TED		*	75	1.5	1.7 (150°C)	*	*	*	•	B	
1200 V NPT IGBT											
○ MWI 15-12A7	1200	30	20	1.0	1.8	0.88	25	17		A	
○ MWI 25-12A7		50	35	2.2	2.8	0.55	50	33		A	
○ MWI 25-12A7T		50	35	2.2	2.8	0.55	50	33	•	A	
○ MWI 50-12A7		85	60	2.2	5.6	0.35	110	70		A	
○ MWI 50-12A7T		85	60	2.2	5.6	0.35	110	70	•	A	
1200 V Trench IGBT											
MWI 35-12T7T	1200	60	35	1.7	4.1	0.62	50	33	•	B	
MWI 50-12T7T		75	50	1.7	6.5	0.49	110	70	•	B	
MWI 75-12T7T		105	75	1.7	9.5	0.35	150	100	•	B	
1200 V XPT IGBT											
MIXA 30W1200TED	1200	43	30	1.8	3.0	0.84	44	29	•	B	
MIXA 40W1200TED		60	40	1.8	4.1	0.64	44	29	•	B	
MIXA 60W1200TED		85	60	1.8	5.5	0.43	88	59	•	B	
MIXA 80W1200TED		120	84	1.8	8.3	0.32	135	90	•	B	
1200 V X2PT IGBT											
◇ MIXG 85W1200TED	1200	140	85	1.7	7.7		135	90	•	B	

* in progress

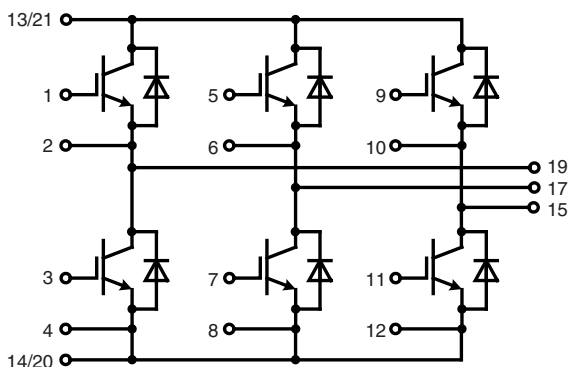


IGBT Modules – Six-Pack configuration

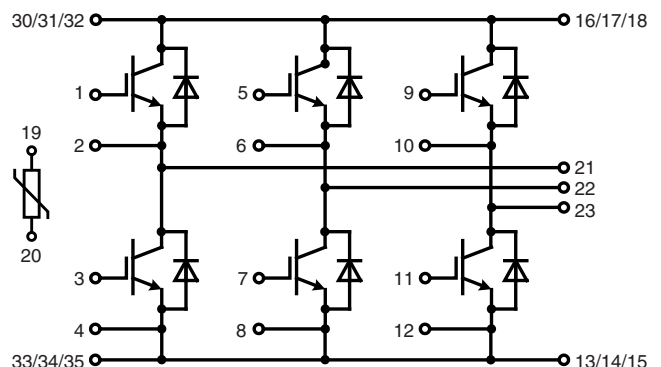
Six-Pack IGBT Modules		X113 E3-Pack										
Outline drawings on pages O-31...O-52 See data sheet for pin arrangement		Type	V_{CES}	I_{C25} IGBT $T_C = 25^\circ C$	I_{C80} IGBT $T_C = 80^\circ C$	$V_{CE(sat)}$ typ IGBT $T_J = 25^\circ C$	E_{off} IGBT $T_J = 125^\circ C$	R_{thJC} IGBT	I_{F25} Diode $T_C = 25^\circ C$	I_{F80} Diode $T_C = 80^\circ C$	NTC	Layout
◇ under development ○ Not for new design ➤ New	V	A	A	V	mJ	K/W	A	A				
600 V NPT IGBT												
	600	130	88	2.0	2.9	0.30	140	88			A	
		170	115	2.0	4.6	0.24	210	130			A	
○ MWI 200-06A8		215	155	2.0	6.3	0.18	260	165			A	
650 V XPT TRENCH IGBT												
◇ MIXD 200W650TEH	650	*	200	1.6	7.5 (150°C)	*	*	*	•		B	
1200 V NPT IGBT												
○ MWI 75-12A8	1200	125	85	2.2	10.5	0.25	150	100			A	
○ MWI 100-12A8		160	110	2.2	14.6	0.19	200	130			A	
1200 V SPT+ IGBT												
MIEB 100W1200DPFTEH		183	128	1.8	9.7	0.20	135	90	•		B	
MIEB 101W1200EH		183	128	1.8	9.7	0.20	135	90			A	
MIEB 101W1200DPFEH		183	128	1.8	9.7	0.20	135	90			A	
1200 V Trench IGBT												
○ MWI 75-12T8T	1200	100	75	1.7	9.5	0.35	150	100	•		B	
○ MWI 150-12T8T		200	150	1.7	17.0	0.18	196	132	•		B	
1200 V XPT IGBT												
MIXA 80W1200TEH	1200	120	84	1.8	8.3	0.32	135	90	•		B	
MIXA 100W1200TEH		155	108	1.8	11.0	0.25	135	90	•		B	
MIXA 150W1200TEH		220	150	1.8	16.0	0.18	190	130	•		B	
1200 V X2PT												
◇ MIXG 120W1200TEH	1200	170	120	1.7	8.5		135	90	•		B	
◇ MIXG 180W1200TEH		230	170	1.7	12.0		230	145	•		B	

* in progress

Layout A



Layout B



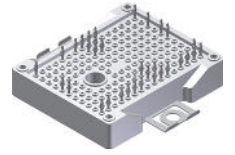
IGBT Modules in MiniPack2B package

MiniPack2B with PressFIT Pins

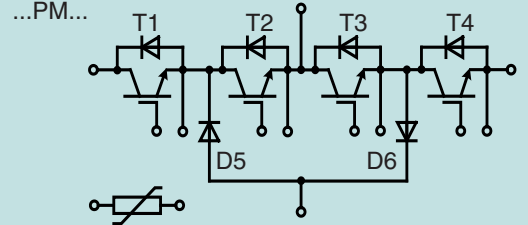
X109 MiniPack2B

Outline drawings on
pages O-31...O-52

See data sheet for pin arrangement

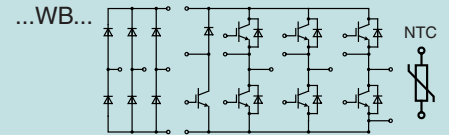


Multi Level Configuration



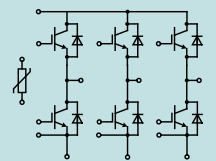
Type	V_{RRM}	IGBTs T1 & T4				IGBTs T2 & T3				Diodes D5 & D6			
		I_C $T_C = 25^\circ C$	I_C $T_C = 80^\circ C$	$V_{CE(sat)}$ typ.	R_{thJC} typ.	I_C $T_C = 25^\circ C$	I_C $T_C = 80^\circ C$	$V_{CE(sat)}$ typ.	R_{thJC} typ.	I_D $T_C = 25^\circ C$	I_D $T_C = 80^\circ C$	V_F typ.	R_{thJC} typ.
◇ under development													
➤ New	V	A	A	V	K/W	A	A	V	K/W	A	A	V	K/W
MIXA 50PM650TMI	650	75	50	1.6	0.80	75	50	1.6	0.80	55	40	1.8	1.2
MIXA 100PM650TMI		150	100	1.6	0.35	150	100	1.6	0.35	130	100	1.8	0.6
◇ MIXD 80PM650TMI		108	82	1.5	0.55	147	110	1.5	0.40	114	83	1.7	0.6

CBI Configuration



Type	Rectifier 3~			Inverter 3~					Brake chopper		
	V_{RRM}	I_{DAVM} $T_C = 80^\circ C$	R_{thJC} typ.	V_{CES}	I_C $T_C = 25^\circ C$	I_C $T_C = 80^\circ C$	$V_{CE(sat)}$ typ.	R_{thJC} typ.	V_{CES}	I_C $T_C = 80^\circ C$	R_{thJC} typ.
MIXA 20WB1200TMI	1600	105	1.5	1200	28	20	1.8	1.26	1200	12	2.00
MIXA 30WB1200TMI		105	1.1	1200	43	30	1.8	0.84	1200	20	1.26

Six-Pack Configuration



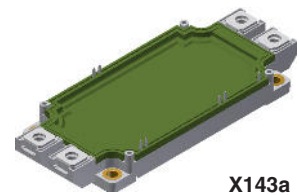
Type	V_{CES}	I_{C25} IGBT $T_C = 25^\circ C$	I_{C80} IGBT $T_C = 80^\circ C$	$V_{CE(sat)}$ typ IGBT $T_J = 25^\circ C$	E_{off} IGBT $T_J = 125^\circ C$	R_{thJC} IGBT	I_{F25} Diode $T_C = 25^\circ C$	I_{F80} Diode $T_C = 80^\circ C$	NTC
◇ under development	V	A	A	V	mJ	K/W	A	A	
◇ MIXA 40W1200TMI	1200	60	40	1.8	4.1	0.64	44	29	•
◇ MIXA 60W1200TMI		85	60	1.8	5.5	0.43	88	59	•

IGBT XPT™ Modules in SimBus F package

- space savings
- reduced protection circuits
- package designed for wave soldering

Package style

Outline drawings
on pages
O-31...O-52

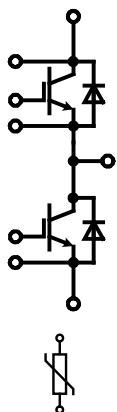


X143a

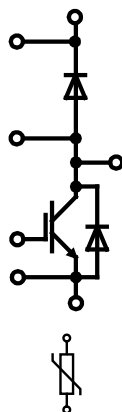
Type	V _{CES}	I _{C80} IGBT	V _{CE(sat) typ} IGBT	E _{on} IGBT	E _{off} IGBT	R _{thJC} IGBT	I _{F80} Diode	R _{thJC} Diode	Fig. No.
▶ New ✧ under development	V	T _C = 80°C A	T _J = 25°C V	T _J = 125°C mJ	T _J = 125°C mJ	K/W	T _C = 80°C A	K/W	
Phase-Leg									
MIXA 600PF650TSF	650	490	1.65	6	23	0.085	340	0.095	X143a
MIXA 225PF1200TSF	1200	250	1.80	20	27	0.115	185	0.145	
MIXA 300PF1200TSF		325	1.80	20	42	0.085	185	0.145	
▶ MIXG 330PF1200TSF		330	1.70	*	30	*	265	0.095	
MIXA 450PF1200TSF	450	1.80	22	68	0.060	265	0.095		
▶ MIXG 490PF1200TSF	490	1.70	*	45	*	265	0.095		
✧ MIXG 300PF1700TSF	1700	425	300	*	*	*	*	•	
✧ MIXG 450PF1700TSF		635	450	*	*	*	*	•	
Brake / Boost									
MIXA 225RF1200TSF	1200	250	1.80	20	27	0.115	185	0.145	
Common Emitter									
✧ MIXA 600AF650TSF	650	490	1.65	6	23	0.085	340	0.095	
Common Collector									
✧ MIXA 600CF650TSF	650	490	1.65	6	23	0.085	340	0.095	
Multi Level (one half)									
✧ MIXA 430LD1200TSF ¹	1200	430	1.80	34	44	0.064	265	0.110	
	650	345	1.65	6.5	15	0.100	200	0.145	

* in progress ¹ two MIXA 430DL1200TSF build a T-type (NPC2 type) multi level circuit

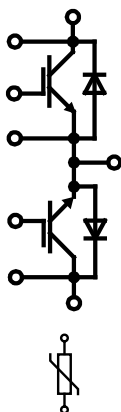
...PF...
phase-leg



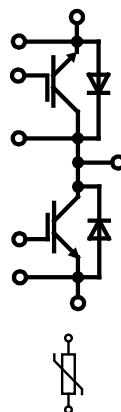
...RF...
brake / boost



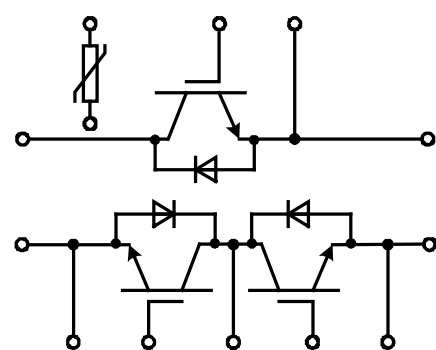
...AF...
common emitter



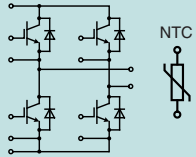
...CF...
common collector

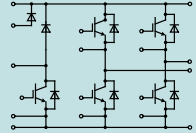


...LD...
multi level (one half)



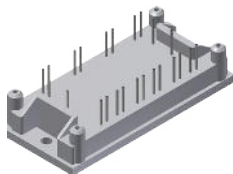
IGBT Full Bridge and SOLAR Inverter Modules

Full Bridge										
IGBT Modules										
Type	Technology	V_{CES}	I_{C25} IGBT $T_C = 25^\circ C$	I_{C80} IGBT $T_C = 80^\circ C$	$V_{CE(sat)}$ typ IGBT $T_J = 25^\circ C$	E_{off} IGBT $T_J = 125^\circ C$	I_{F80} Diode $T_C = 80^\circ C$	NTC	Fig. No.	
○ Not for new design ➤ New		V	A	A	V	mJ	A			
○ MKI 80-06T6K	Trench	600	89	67	1.8	2.8	67	•	X111	
○ MKI 50-06A7	NPT	600	72	50	1.9	1.7	45	•	X112	
○ MKI 50-06A7T			72	50	1.9	1.7	45	•		
○ MKI 65-06A7T			100	67	2.0	2.3	85	•		
○ MKI 75-06A7			90	60	2.5	6.3	85	•		
○ MKI 75-06A7T			90	60	2.5	6.3	85	•		
○ MKI 50-12F7	Fast NPT	1200	65	45	3.2	2.5	70		X113	
○ MKI 100-12F8			65	45	3.2	2.5	70			
○ MIXA 61H1200ED	XPT	1200	85	60	1.8	5.5	59		X112	
○ MIXA 81H1200EH			120	84	1.8	8.3	90			
○ MIEB 101H1200EH			183	128	1.8	9.7	90			
➤ MITA 150H1700TEH	Trench	1700	210	145	2.0	47	120	•		

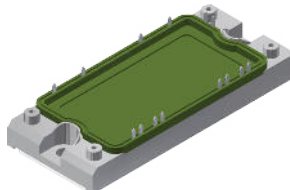
SOLAR Inverter Modules										
Fast XPT IGBT										
Full Bridge & Boost Stage & Bypass Diode										
Type	Technology	V_{CES}	I_{C25} IGBT $T_C = 25^\circ C$	I_{C80} IGBT $T_C = 80^\circ C$	$V_{CE(sat)}$ typ IGBT $T_J = 25^\circ C$	E_{on} IGBT $T_J = 150^\circ C$	E_{off} IGBT $T_J = 150^\circ C$	I_{F80} Diode $T_C = 80^\circ C$	Fig. No.	
➤ New		V	A	A	V	mJ	mJ	A		
MIXB 52HR600ED	fast XPT & SONIC	600	78	52	1.8	1.38	0.8	29	X112	
MIXB 52HR600DCGED	fast XPT & SiC		78	52	1.8	0.67	0.8	20		

Outline drawings on pages O-31...O-52

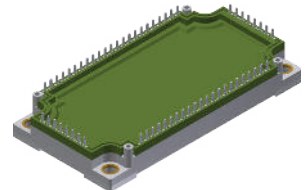
X111 E1-Pack



X112 E2-Pack



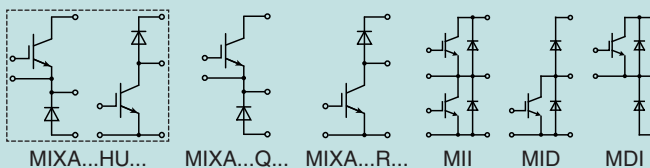
X113 E3-Pack



IGBT Modules

NPT / XPT / X2PT

IGBT Modules

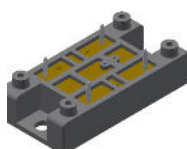


Type	V _{CES}	I _{C25} IGBT T _C = 25°C	I _{C80} IGBT T _C = 80°C	V _{CE(sat)} typ IGBT T _J = 25°C	E _{off} IGBT T _J = 125°C	R _{thJC} IGBT	I _{F25} Diode T _C = 25°C	I _{F80} Diode T _C = 80°C	Fig. No.
○ Not for new design ◇ under development	V	A	A	V	mJ	K/W	A	A	
Half Bridge. XPT. X2PT									
◇ MIXA 100PF650YI	650	144	107	1.6	(150°C) 3.7	0.40	91	67	X127a
◇ MIXG 200PF1200YI	1200	280	210	1.7	(150°C) 17	0.16	230	165	X128a
◇ MIXA 300PF1200TLP		440	310	1.75	32	0.09	340	250	
◇ MIXG 450PF1200TLP		820	620	1.7	(150°C) 50	0.055	680	500	
◇ MIXG 300PF1700TLP	1700	420	330	1.95	85	0.06	340	260	
1200 V Half Bridge. NPT									
MII 75-12A3	1200	90	60	2.2	5.6	0.33	100	60	X127a
MII 100-12A3		135	90	2.2	10.5	0.22	150	100	X128a
MII 145-12A3		160	110	2.2	15.0	0.18	150	100	
MII 150-12A4		180	120	2.2	11.5	0.17	200	130	
MII 200-12A4		270	180	2.2	21.0	0.11	300	200	
MII 300-12A4		330	220	2.2	29.0	0.09	450	270	
1200 V Boost Chopper. NPT									
MID 75-12A3	1200	90	60	2.2	5.6	0.33	100	60	X127b
MID 100-12A3		135	90	2.2	10.5	0.22	150	100	X128b
MID 145-12A3		160	110	2.2	15.0	0.18	150	100	
○ MID 150-12A4		180	120	2.2	11.5	0.17	200	130	
MID 200-12A4		270	180	2.2	21.0	0.11	300	200	
MID 300-12A4		330	220	2.2	29.0	0.09	450	270	
MID 550-12A4		670	460	2.3	59.0	0.05	750	460	
1200 V XPT IGBT Brake / Boost Chopper									
MIXA 80R1200VA	1200	120	84	1.9	8.3	0.32	135	90	X103
MIXA 150R1200VA		220	150	1.8	16	0.18	190	130	
1200 V Buck Chopper. NPT									
MDI 75-12A3	1200	90	60	2.2	5.6	0.33	100	60	X127c
MDI 100-12A3		135	90	2.2	10.5	0.22	150	100	X128c
MDI 145-12A3		160	110	2.2	15.0	0.18	150	100	
○ MDI 150-12A4		180	120	2.2	11.5	0.17	200	130	
MDI 200-12A4		270	180	2.2	21.0	0.11	300	200	
MDI 300-12A4		330	220	2.2	29.0	0.09	450	270	
MDI 550-12A4		670	460	2.3	59.0	0.05	750	460	
1200 V XPT IGBT Buck Chopper									
MIXA 150Q1200VA	1200	220	150	1.8	16	0.18	190	130	X103
1200 V XPT IGBT Buck / Boost switched reluctance Chopper									
MIXA 60HU1200VA	1200	85	60	1.8	5.5	0.43	88	59	X103

Outline drawings on pages O-31...O-52

X103

V1-Pack



X128a/b/c 62mm width

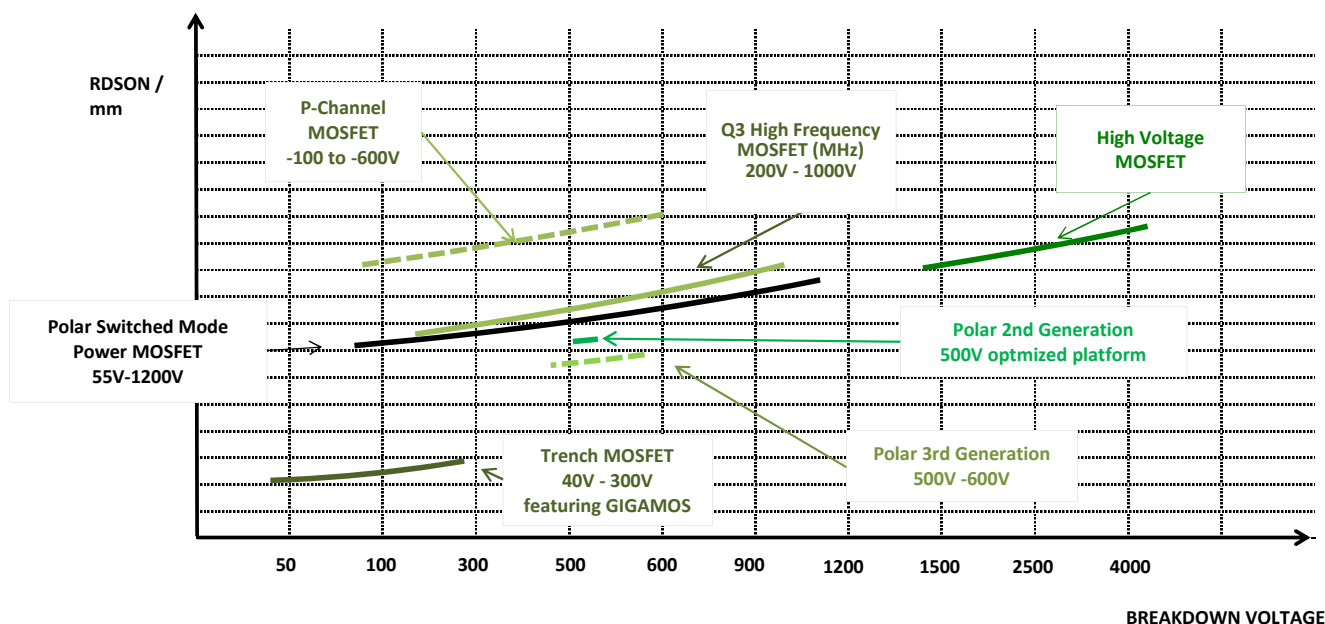


X127a/b/c 34mm width



Power MOSFETs and MOSFET Modules

The Metal Oxide Semiconductor Field Effect Transistor (MOSFET) is a transistor that is used for high frequency switching control of power electronic systems. IXYS offer various MOSFET technology based on the customer requirement for voltage, switching frequency. A table giving a diagrammatic representation of our basic MOSFET offerings is given below.



Trench and Trench2 Power MOSFETs

IXYS Trench Power MOSFETs are ideally suited for low-voltage, high-current applications. These MOSFETs feature an exceptionally low $R_{DS(on)}$, thus guaranteeing low power dissipation. Trench HiPerFET™ versions feature all of the advantages presented by IXYS' Trench Standard Power MOSFETs with an added benefit of a fast intrinsic rectifier which provides low reverse recovery charge (Q_{rr}) and excellent commutating dV/dt ratings for enhanced power switching capabilities and device ruggedness.

Polar™ Power MOSFETs

Polar™ MOSFETs (IXT..) feature a proprietary cell design and process that has resulted in a MOSFET with a 30% reduction in $R_{DS(on)}$ per unit area along with a decrease in gate charge. IXYS has also reduced the wafer thickness, which substantially reduces the thermal resistance. The combination of lower $R_{DS(on)}$, lower gate charge Q_g and higher power dissipation capability has resulted in a new class of MOSFETs, which will increase the cost effectiveness in switch mode power supply (SMPS) applications. IXYS' Polar™ HiPerFETs (IXF..) combine the strengths of the Polar Standard product family with a faster body diode, whose reverse recovery time (t_{rr}) is reduced to make them suitable for phase-shift bridges, motor control and uninterruptible power supply applications (UPS). This family of HiPerFETs provide lowest $R_{DS(on)}$, low R_{thJC} , low Q_g , and enhanced DV/DT capability.

PolarP2™ Power MOSFETs

PolarP2™ devices are an optimized range of the standard Polar platform for 500V device rating.

PolarP3™ HiPerFET Power MOSFETs

The PolarP3™ HiPerFET product family is the latest addition to IXYS' benchmark high-performance Polar-Series product line for our product portfolio between 500V and 600V. Its high Figure of Merit (FOM) being the multiplication of Q_g and in $R_{DS(on)}$ provide an excellent alternative to weaker super junction technologies. All IXYS Polar MOSFETs are tested 100% for avalanche energy providing the industries standard for reliability and ruggedness.

X-Class Power MOSFETs

These devices are developed using a charge compensation principle and proprietary process technology, resulting in Power MOSFETs with significantly reduced resistance $R_{DS(on)}$ and gate charge Q_g . They also exhibit a superior dv/dt performance. Designed for such applications as switched-mode and resonant-mode power supplies, DC-DC converters, PFC circuits, AC and DC motor drives, and robotic and servo control, these MOSFETs enable higher efficiency, along with high power density and cooler system performance. The X2-Class Power MOSFETs, devices with fast body diodes and avalanche ratings, are also available.

Q3-Class HiPerFET™ MOSFETs

Q3-Class HiPerFET™ MOSFETs (Identified by the suffix letter Q3) is the direct result of a revolutionary new chip design, which decreases the MOSFETs total gate charge (Q_g) and the Miller capacitance (C_{rss}), while maintaining the ruggedness and fast switching intrinsic diode of the company's current HiPerFET™ product line. The result is a MOSFET with dramatically improved switching efficiencies and thus enabling higher frequency operation and smaller power supplies.

Power MOSFETs and MOSFET Modules

Extended FBSOA Linear Power MOSFETs

IXYS' Extended FBSOA Linear Power MOSFETs are a class of rugged Power MOSFETs tailored specifically for applications that require Power MOSFETs to operate in their current saturation region. These new devices feature low static drain to source on-resistances and provide unparalleled performance and reliability in controlled current output applications. Typical applications that stand to benefit from this new class of extended FBSOA power MOSFETs include circuit breakers, current sources, programmable loads, power controllers, power regulators, motor control, power amplifiers and soft start applications. In the linear mode, a power MOSFET is subjected to high thermo-electrical stress caused by the simultaneous occurrence of high drain voltage and current resulting in high power dissipation. IXYS has optimized the internal structure of these MOSFETs achieving an extended "forward bias safe operating area" (FBSOA) capability to overcome the limitations posed by conventional power MOSFETs operating in current saturation region. These extended FBSOA Power MOSFETs are not intended for high speed switching applications.

Depletion-Mode MOSFET

Depletion-Mode Power MOSFETs operate in a 'normally-on' mode, not requiring energy or gate voltage for turn on. Unlike the regular enhancement type MOSFETs these Depletion-Mode MOSFETs require a negative gate bias to turn off. Consequently they remain on at or above zero gate bias voltage but otherwise have similar MOSFET characteristics. The "normally-on" operational mode of these devices combined with an enhanced linear operating capability allows for an ideal device selection in current sources, current regulators, solid-state relays, level shifting, active loads, start-up circuits and active power filters. Since these devices require no energy or gate voltage for turn-on, high energy efficiency can be achieved through device implementation in zero power "normally on" load switch applications. With the high degree of current regulation, these devices can also act as active inductors with high dynamic impedance in power filter applications to limit voltage and current noise and spikes. Furthermore these devices can provide active circuit protection to limit the surge of current during short-circuit or overload conditions.

PolarP™ P-Channel Power MOSFETs

IXYS' Polar technology platform employed in our PolarP™ P-Channel MOSFETs utilizes a proprietary cell design that improves overall device efficiency and performance. This technology platform reduces on-state resistance by as much as 30% and gate charge by 40% compared to legacy counterparts. With such low onstate resistances, these devices offer low conduction and switching losses while a low input capacitance. The combination of low $R_{DS(on)}$ and gate charge allow for improved energy efficiency. These P-Channel MOSFETs are dynamic dV/dt and avalanche rated making them extremely rugged in demanding operating environments and can easily be paralleled due to an on-state resistance with a positive temperature coefficient. They are ideal for 'high side' switching where a simple drive circuit referenced to ground can be used, circumventing additional 'high side' driver circuitry commonly involved when using an N-Channel MOSFET. This will help designers to reduce component count and improve reliability. Furthermore it allows for the design of a complementary power output stage. with a corresponding IXYS N-Channel MOSFET. for a power half bridge stage with a simple drive circuit.

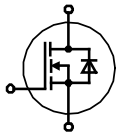
TrenchP™ P-Channel Power MOSFETs





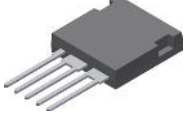
This family of P-Channel devices benefit from technological advances derived from IXYS' robust Trench cell design commonly implemented in their wide portfolio of industry recognized power devices. They feature an ultra low $R_{DS(on)}$, minimizing conduction losses and promoting improved operating and thermal efficiencies. These TrenchP™ P-Channel MOSFETs are suitable for 'high side' switching where a simple drive circuit referenced to ground can be employed, circumventing additional 'high side' driver circuitry commonly involved when using an N-Channel MOSFET. This enables designers to reduce component count, thereby improving drive circuit simplicity and cost structure. Furthermore it allows for the design of a complementary power output stage, with a corresponding IXYS N-Channel MOSFET, for a power half bridge stage with a simple drive circuit. Common applications that will greatly benefit from these devices include high side switching, high current regulators, DC Choppers, CMOS high power amplifiers, push-pull amplifiers and power solid state relays.

Very High Voltage Power MOSFETs

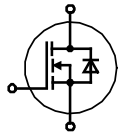
IXYS' VHV N-Channel Power MOSFETs are specifically designed to address demanding, fast-switching applications requiring blocking capabilities of 2.5kV to 4.5kV. These VHV Power MOSFETs are also ideally suited for parallel operation due to the positive temperature coefficient of their on-state resistance. Parallel operation with these devices provides a more cost-effective solution than employing series-connected, lower-voltage MOSFETs. The reduction or replacement of multiple series-connected devices and the associated gate drive circuitry commonly involved, simplifies design, improves reliability and reduces over-all system cost. These VHV MOSFETs represent an optimal solution in applications such as laser and x-ray generation systems, high-voltage power supplies, pulse circuits, high voltage automated test equipment and capacitor discharge circuits. 4.5kV device offerings feature high isolation capability with superior thermal performance.






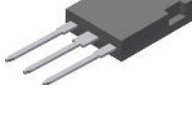







Trench Power MOSFETs



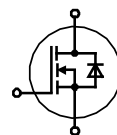
Part Type	V _{DSS}	I _{D(cont)} ^{Chip} T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss}	Q _g	t _{rr}	R _{thJC}	P _D	Fig. No.	Package style
➤ New	V	A	Ω	typ. ns	typ. ns	typ. ns	K/W	W		Outline drawings on pages O-31...O-52
IXTP 44N10T	100	44	0.03	1567	27.4	60	1.15	130	X005a	X004 TO-252AA 
IXTY 44N10T		44	0.03	1567	27.4	60	1.15	130	X004	
IXTP 60N10T		60	0.018	2650	49	59	0.85	176	X005a	
IXTA 60N10T		60	0.018	2650	49	59	0.85	176	X011b	
IXTQ 60N10T		60	0.018	2650	49	59	0.85	176	X017a	
IXTP 80N10T		80	0.014	3040	60	100	0.65	230	X005a	
IXTA 80N10T		80	0.014	3040	60	100	0.65	230	X011b	
IXTF 200N10T		90	0.007	9400	152	76	0.96	156	X024d	X005a TO-220AB 
IXTL 2x180N10T		100	0.0074	6900	151	60	1.00	150	X022c	
IXTP 130N10T		130	0.0091	5080	104	67	0.42	360	X005a	X011b TO-263AB 
IXTH 130N10T		130	0.0091	5080	104	67	0.42	360	X014a	
IXTA 130N10T		130	0.0091	5080	104	67	0.42	360	X011b	
IXTQ 130N10T		130	0.0091	5080	104	67	0.42	360	X017a	
IXTP 180N10T		180	0.0064	6900	151	72	0.31	480	X005a	
IXTH 180N10T		180	0.0064	6900	151	100	0.31	480	X014a	
IXTA 180N10T		180	0.0064	6900	151	72	0.31	480	X011b	
IXTQ 180N10T		180	0.0064	6900	151	100	0.31	480	X017a	
IXTN 200N10T		200	0.0055	9400	152	76	0.30	550	X027a	
IXTH 200N10T		200	0.0055	9400	152	76	0.27	550	X014a	
IXTQ 200N10T		200	0.0055	9400	152	76	0.27	550	X017a	
IXTP 48N20T	200	48	0.05	3090	60	130	0.5	250	X005a	X017a TO-3P 
IXTA 48N20T		48	0.05	3090	60	130	0.5	250	X011b	
IXTQ 48N20T		48	0.05	3090	60	130	0.5	250	X017a	
IXTP 60N20T		60	0.04	4530	73	118	0.3	500	X005a	
IXTA 60N20T		60	0.04	4530	73	118	0.3	500	X011b	
IXTQ 60N20T		60	0.04	4530	73	118	0.3	500	X017a	
IXTP 86N20T		86	0.029	4500	90	140	0.31	480	X005a	
IXTA 86N20T		86	0.029	4500	90	140	0.31	480	X011b	
IXTQ 86N20T		86	0.029	4500	90	140	0.31	480	X017a	
IXTH 102N20T		102	0.023	6800	114	130	0.2	750	X014a	
IXTQ 102N20T		102	0.023	6800	114	130	0.2	750	X017a	
IXTH 130N20T	130	0.016	8800	150	150	0.18	830	X014a		
IXTP 50N25T	250	50	0.06	4000	78	166	0.31	400	X005a	X024d ISOPLUS i4-PAC™ 
IXTH 50N25T		50	0.06	4000	78	166	0.31	400	X014a	
IXTA 50N25T		50	0.06	4000	78	166	0.31	400	X011b	
IXTQ 50N25T		50	0.06	4000	78	166	0.31	400	X017a	
IXTP 76N25T		76	0.039	4920	92	148	0.27	460	X005a	
IXTH 76N25T		76	0.039	4920	92	148	0.27	460	X014a	
IXTA 76N25T		76	0.039	4920	92	148	0.27	460	X011b	
IXTQ 76N25T		76	0.039	4920	92	148	0.27	460	X017a	
IXTH 86N25T		86	0.037	5330	105	156	0.23	540	X014a	
IXTQ 86N25T		86	0.037	5330	105	156	0.23	540	X017a	
IXTH 96N25T		96	0.029	6100	114	158	0.2	625	X014a	
IXTQ 96N25T		96	0.029	6100	114	158	0.2	625	X017a	
IXTH 110N25T		110	0.024	9400	157	170	0.18	694	X014a	



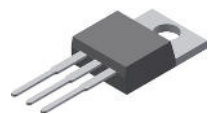

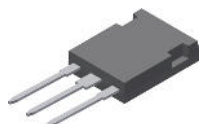


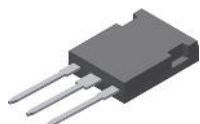
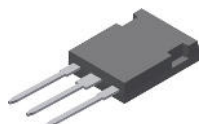





Trench HiPerFETs with Fast Intrinsic Diode



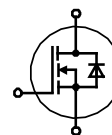
Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _C = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} max. (typ.)	R _{thJC}	P _D	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	Ω	pF	nC	ns	K/W	W		
IXFA 130N10T	100	130	0.0091	5080	104	67	0.42	360	X011b	D5 DE 475  X005a TO-220AB 
IXFP 130N10T		130	0.0091	5080	104	67	0.42	360	X005a	
IXFH 230N10T		230	0.0047	15300	250	(82)	0.23	650	X014a	
IXFX 360N10T		360	0.0029	33000	525	130	0.12	1250	X015a	
IXFN 360N10T		360	0.0026	33000	525	130	0.18	830	X027a	
IXFK 360N10T		360	0.0029	33000	525	130	0.12	1250	X020a	
IXFX 420N10T		420	0.0026	47000	670	140	0.09	1670	X015a	
IXFN 420N10T		420	0.0023	47000	670	140	0.14	1070	X027a	
IXFK 420N10T		420	0.0026	47000	670	140	0.09	1670	X020a	
IXFA 102N15T	150	102	0.018	5220	87	120	0.33	455	X011b	X011b TO-263AB 
IXFH 102N15T		102	0.018	5220	87	120	0.33	455	X014a	
IXFP 102N15T		102	0.018	5220	87	120	0.33	455	X005a	
IXFH 160N15T		160	0.0096	8800	160	90	0.18	830	X014a	
IXFH 150N20T	200	150	0.015	11700	177	(100)	0.14	890	X014a	X014a TO-247AD  X015a PLUS247 
IXFT 150N20T		150	0.015	11700	177	(100)	0.14	890	X019	
IXFR 230N20T		156	0.008	28000	378	200	0.25	600	X016a	
IXFX 170N20T		170	0.011	19600	265	200	0.13	1150	X015a	
IXFK 170N20T		170	0.011	19600	265	200	0.13	1150	X020a	
IXFN 230N20T		220	0.0075	28000	378	200	0.138	1090	X027a	
IXFX 230N20T		230	0.0075	28000	378	200	0.09	1670	X015a	
IXFK 230N20T		230	0.0075	28000	378	200	0.9	1670	X020a	
IXFZ 140N25T	250	100	0.017	19000	255	200	0.28	445	D5	D5  X014a ISOPLUS247™  X016a TO-268AA  X019 TO-264  X020a SOT-227B miniBLOC 
IXFH 110N25T		110	0.024	9400	157	170	0.18	694	X014a	
IXFH 120N25T		120	0.023	11300	180	(108)	0.14	890	X014a	
IXFT 120N25T		120	0.023	11300	180	(108)	0.14	890	X019	
IXFN 140N25T		120	0.017	19000	255	200	0.18	690	X027a	
IXFX 140N25T		140	0.017	19000	255	200	0.13	960	X015a	
IXFK 140N25T		140	0.017	19000	255	200	0.13	960	X020a	
IXFN 180N25T		164	0.0129	28000	345	200	0.138	900	X027a	
IXFX 180N25T		180	0.0129	28000	345	200	0.09	1390	X015a	
IXFK 180N25T		180	0.0129	28000	345	200	0.09	1390	X020a	
➤ IXFH 46N30T	300	46	0.08	4770	86	150	0.27	460	X014a	X014a  X019 TO-264  X020a SOT-227B miniBLOC 
➤ IXFT 46N30T		46	0.08	4770	86	150	0.27	460	X019	
IXFH 86N30T		86	0.043	11300	180	150	0.15	830	X014a	
IXFT 86N30T		86	0.043	11300	180	150	0.15	830	X019	
IXFH 94N30T		94	0.036	11400	190	(155)	0.14	890	X014a	
IXFT 94N30T		94	0.036	11400	190	(155)	0.14	890	X019	
IXFX 120N30T		120	0.024	20000	265	200	0.13	960	X015a	
IXFK 120N30T		120	0.024	20000	265	200	0.13	960	X020a	
IXFN 160N30T		130	0.019	28000	335	200	0.138	900	X027a	
IXFX 160N30T		160	0.019	28000	335	200	0.09	1390	X015a	
IXFK 160N30T		160	0.019	28000	335	200	0.09	1390	X020a	

TrenchT2™ Power MOSFETs




Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _C = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} typ.	R _{thJC}	P _D	Fig. No.	Package style Outline drawings on pages O-31...O-52	
➤ New	V	A	Ω	pF	nC	ns	K/W	W			
IXTP 100N04T2	40	100	0.007	2690	25.5	34	1	150	X005a	D5 DE 475 	
IXTA 100N04T2		100	0.007	2690	25.5	34	1	150	X011b		
IXTP 120N04T2		120	0.0061	3240	58	35	0.75	200	X005a		
IXTA 120N04T2		120	0.0061	3240	58	35	0.75	200	X011b	X004 TO-252AA 	
IXTP 160N04T2		160	0.005	4640	79	40	0.6	250	X005a		
IXTA 160N04T2		160	0.005	4640	79	40	0.6	250	X011b		
IXTP 220N04T2		220	0.0035	6820	112	45	45	0.42	360	X005a	X005a TO-220AB 
IXTA 220N04T2		220	0.0035	6820	112	45	45	0.42	360	X011b	
IXTP 300N04T2		300	0.0025	10700	145	53	53	0.31	480	X005a	
IXTH 300N04T2		300	0.0025	10700	145	53	53	0.31	480	X014a	X011b TO-263AB 
IXTA 300N04T2		300	0.0025	10700	145	53	53	0.31	480	X011b	
IXTH 420N04T2		420	0.002	19700	315	74	74	0.16	935	X014a	
IXTH 500N04T2		500	0.0016	25000	405	84	84	0.15	1000	X014a	X019 PLUS247 
IXTT 500N04T2		500	0.0016	25000	405	84	84	0.15	1000	X019	
IXTX 600N04T2		600	0.0015	40000	590	100	100	0.12	1250	X015a	
IXTN 600N04T2	600	0.00105	40000	590	100	100	0.16	940	X027a	X020a TO-268AA 	
IXTK 600N04T2	600	0.0015	40000	590	100	100	0.12	1250	X020a		
IXTA 90N055T2	55	90	0.0084	2770	42	37	1	150	X011b		
IXTP 90N055T2		90	0.0084	2770	42	37	1	150	X005a		
IXTY 90N055T2		90	0.0084	2770	42	37	1	150	X004		
IXTP 110N055T2		110	0.0066	3060	57	38	0.82	180	X005a	X014a TO-247AD 	
IXTA 110N055T2		110	0.0066	3060	57	38	0.82	180	X011b		
IXTP 140N055T2		140	0.0054	4760	82	40	40	0.6	250		X005a
IXTA 140N055T2		140	0.0054	4760	82	40	40	0.6	250	X011b	X015a PLUS247 
IXTP 200N055T2		200	0.0042	6970	109	49	49	0.42	360	X005a	
IXTA 200N055T2		200	0.0042	6970	109	49	49	0.42	360	X011b	
IXTP 260N055T2		260	0.0033	10800	140	60	60	0.31	480	X005a	X014a PLUS247 
IXTH 260N055T2		260	0.0033	10800	140	60	60	0.31	480	X014a	
IXTA 260N055T2		260	0.0033	10800	140	60	60	0.31	480	X011b	
IXTH 360N055T2		360	0.0024	20000	330	78	78	0.16	935	X014a	X019 TO-268AA 
IXTT 360N055T2		360	0.0024	20000	330	78	78	0.16	935	X019	
IXTH 440N055T2		440	0.0018	25000	405	76	76	0.15	1000	X014a	
IXTT 440N055T2	440	0.0018	25000	405	76	76	0.15	1000	X019	X020a TO-264 	
IXTX 550N055T2	550	0.0016	40000	595	100	100	0.12	1250	X015a		
IXTN 550N055T2	550	0.0013	40000	595	100	100	0.16	940	X027a		
IXTK 550N055T2	550	0.0016	40000	595	100	100	0.12	1250	X020a	X027a SOT-227B miniBLOC 	
IXTZ 550N055T2	550	0.001	40000	595	100	100	0.25	600	D5		
IXTP 130N065T2	65	130	0.0066	4800	79	41	0.6	250	X005a		
IXTA 130N065T2		130	0.0066	4800	79	41	0.6	250	X011b		
IXTP 70N075T2	75	70	0.012	2580	46	48	1	150	X005a	X020a TO-264 	
IXTA 70N075T2		70	0.012	2580	46	48	1	150	X011b		
IXTP 90N075T2		90	0.01	3290	54	50	0.82	180	X005a	X027a SOT-227B miniBLOC 	
IXTA 90N075T2		90	0.01	3290	54	50	0.82	180	X011b		
IXTP 120N075T2		120	0.0077	4740	78	50	0.6	250	X005a		
IXTA 120N075T2		120	0.0077	4740	78	50	0.6	250	X011b		
IXTP 170N075T2		170	0.0054	6860	109	63	0.42	360	X005a		
IXTA 170N075T2		170	0.0054	6860	109	63	0.42	360	X011b		
IXTP 230N075T2		230	0.0042	10.5	178	66	0.31	480	X005a		
IXTA 230N075T2		230	0.0042	10.5	178	66	0.31	480	X011b		
IXTP 80N12T2	120	80	0.017	4740	80	90	0.46	325	X005a		
IXTA 80N12T2		80	0.017	4740	80	90	0.46	325	X011b		








TrenchT2™ Power MOSFETs



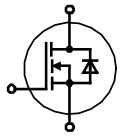
TrenchT2™ in SMPD Package

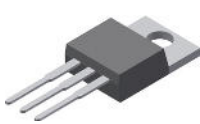


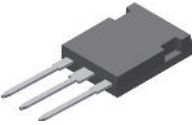



Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _C = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} typ.	R _{thJC}	P _D	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	Ω	pF	nC	ns	K/W	W		
➤ MMIX 1T600N04T2	40	600	0.0013	40000	590	100	0.18	830	X031a	
➤ MMIX 1T550N055T2	55	550	0.0013	40000	595	100	0.18	830		
➤ MMIX 1F520N075T2	75	500	0.0016	41000	545	150	0.18	830		

TrenchT2™ HiPerFETs

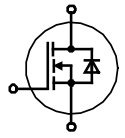
IXFP 230N075T2	75	230	0.0042	10500	178	59	0.31	480	X007a			
IXFH 230N075T2		230	0.0042	10500	178	59	0.31	480	X014a			
IXFA 230N075T2		230	0.0042	10500	178	59	0.31	480	X011b			
IXFH 340N075T2		340	0.0032	19000	300	75	0.16	935	X014a			
IXFT 340N075T2		340	0.0032	19000	300	75	0.16	935	X019			
IXFH 400N075T2		400	0.0023	24000	420	77	0.15	1000	X014a			
IXFT 400N075T2		400	0.0023	24000	420	77	0.15	1000	X019			
IXFZ 520N075T2		465	0.0013	41000	545	n/a	0.25	600	D5			
IXFN 520N075T2		480	0.0019	41000	545	n/a	0.16	940	X027a			
IXFX 520N075T2		520	0.0022	41000	545	n/a	0.12	1250	X015a			
IXFK 520N075T2		520	0.0022	41000	545	n/a	0.12	1250	X020a			
IXFP 130N10T2	100	130	0.0091	6600	130	n/a	0.42	360	X007a			
IXFA 130N10T2		130	0.0091	6600	130	n/a	0.42	360	X011b			
IXFP 180N10T2		180	0.006	10500	185	66	0.31	480	X007a			
IXFA 180N10T2		180	0.006	10500	185	66	0.31	480	X011b			
IXFH 320N10T2		320	0.0035	25000	430	98	0.15	1000	X014a			
IXFT 320N10T2		320	0.0035	26000	430	98	0.15	1000	X019			
IXFP 76N15T2		150	76	0.02	5800	97	69	0.43	350		X007a	
IXFA 76N15T2	76		0.02	5800	97	69	0.43	350	X011b			
IXFP 110N15T2	110		0.013	8600	150	85	0.31	480	X007a			
IXFH 110N15T2	110		0.013	8600	150	85	0.31	480	X014a			
IXFA 110N15T2	110		0.013	8600	150	85	0.31	480	X011b			
IXFH 160N15T2	160		0.009	15000	253	n/a	0.17	880	X014a			
IXFX 240N15T2	240		0.0052	32000	460	n/a	0.12	1250	X015a			
IXFN 240N15T2	240		0.0052	32000	460	n/a	0.18	830	X027a			
IXFK 240N15T2	240		0.0052	32000	460	n/a	0.12	1250	X020a			
IXFN 360N15T2	310		0.004	47500	715	n/a	0.14	1070	X027a			
IXFX 360N15T2	360		0.004	47500	715	n/a	0.09	1670	X015a			
IXFK 360N15T2	360		0.004	47500	715	n/a	0.09	1670	X020a			
IXFX 220N17T2	170		220	0.0063	31000	500	n/a	0.12	1250	X015a		
IXFK 220N17T2			220	0.0063	31000	500	n/a	0.12	1250	X020a		
IXFN 320N17T2		260	0.0052	45000	640	n/a	0.14	1070	X027a			
IXFX 320N17T2		320	0.0052	45000	640	n/a	0.09	1670	X015a			
IXFK 320N17T2		320	0.0052	45000	640	n/a	0.09	1670	X020a			
IXFH 150N17T2	175	150	0.012	14600	233	n/a	0.17	880	X014a			
IXFT 150N17T2		150	0.012	14600	233	n/a	0.17	880	X019			
									X027a			





Polar™ Standard MOSFETs



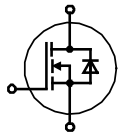
Part Type	V _{DSS}	I _{D(cont)} Chip T _J = 25°C	R _{DS(on)} T _J = 25°C	C _{iss} typ	Q _g typ	t _{rr} typ	R _{thJC}	P _D	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	Ω	pF	nC	ns	K/W	W		
IXTP 75N10P	100	75	0.025	2250	74	120	0.42	360	X005a	X005a TO-220AB 
IXTA 75N10P		75	0.025	2250	74	120	0.42	360	X011b	
IXTQ 75N10P		75	0.025	2250	74	120	0.42	360	X017a	
IXTT 110N10P		110	0.015	3550	110	130	0.31	480	X019	
IXTQ 110N10P		110	0.015	3550	110	130	0.31	480	X017a	
IXTR 200N10P		120	0.008	7600	235	100	0.5	300	X016a	
IXTT 140N10P		140	0.011	4700	155	120	0.25	600	X019	X011b TO-263AB 
IXTQ 140N10P		140	0.011	4700	155	120	0.25	600	X017a	
IXTK 170N10P		170	0.009	6000	198	120	0.21	715	X020a	
IXTT 170N10P		170	0.009	6000	198	120	0.21	715	X019	
IXTQ 170N10P		170	0.009	6000	198	120	0.21	715	X017a	
IXTK 200N10P		200	0.0075	7600	240	100	0.18	800	X020a	
IXTP 62N15P	150	62	0.04	2250	70	150	0.42	350	X005a	X014a TO-247AD 
IXTA 62N15P		62	0.04	2250	70	150	0.42	350	X011b	
IXTQ 62N15P		62	0.04	2250	70	150	0.42	350	X017a	
IXTT 96N15P		96	0.024	3500	110	150	0.31	480	X019	
IXTQ 96N15P		96	0.024	3500	110	150	0.31	480	X017a	
IXTT 120N15P		120	0.016	4900	150	150	0.25	600	X019	
IXTQ 120N15P	120	0.016	4900	150	150	0.25	600	X017a	X016a ISOPLUS247™ 	
IXTK 150N15P	150	0.013	5800	190	150	0.21	714	X020a		
IXTQ 150N15P	150	0.013	5800	190	150	0.21	714	X017a		
IXTK 180N15P	180	0.01	7000	240	150	0.18	800	X020a		
IXTP 50N20P	200	50	0.06	2720	70	150	0.42	360		X005a
IXTA 50N20P		50	0.06	2720	70	150	0.42	360		X011b
IXTQ 50N20P		50	0.06	2720	70	150	0.42	360	X017a	
IXTT 74N20P		74	0.034	3300	107	160	0.31	480	X019	
IXTQ 74N20P		74	0.034	3300	107	160	0.31	480	X017a	
IXTH 96N20P		96	0.024	4800	145	160	0.25	600	X014a	
IXTT 96N20P	96	0.024	4800	145	160	0.25	600	X019	X017a TO-3P 	
IXTQ 96N20P	96	0.024	4800	145	160	0.25	600	X017a		
IXTK 120N20P	120	0.022	6000	152	180	0.21	714	X020a		
IXTQ 120N20P	120	0.022	6000	152	180	0.21	714	X017a		
IXTK 140N20P	140	0.018	7500	240	180	0.18	800	X020a		
IXTP 42N25P	250	42	0.084	2300	70	200	0.42	300		X005a
IXTA 42N25P		42	0.084	2300	70	200	0.42	300	X011b	
IXTQ 42N25P		42	0.084	2300	70	200	0.42	300	X017a	
IXTT 64N25P		64	0.049	3450	105	200	0.31	400	X019	
IXTQ 64N25P		64	0.049	3450	105	200	0.31	400	X017a	
IXTK 82N25P		82	0.035	4800	142	200	0.25	500	X020a	
IXTT 82N25P	82	0.035	4800	142	200	0.25	500	X019	X019 TO-268AA 	
IXTQ 82N25P	82	0.035	4800	142	200	0.25	500	X017a		
IXTK 100N25P	100	0.027	6300	185	200	0.21	600	X020a		
IXTT 100N25P	100	0.027	6300	185	200	0.21	600	X019		
IXTQ 100N25P	100	0.027	6300	185	200	0.21	600	X017a		
IXTK 120N25P	120	0.024	8700	185	200	0.18	700	X020a		
IXTP 36N30P	300	36	0.11	2250	70	250	0.42	300	X005a	X020a TO-264 
IXTA 36N30P		36	0.11	2250	70	250	0.42	300	X011b	
IXTQ 36N30P		36	0.11	2250	70	250	0.42	300	X017a	
IXTT 52N30P		52	0.066	3490	110	250	0.31	400	X019	
IXTQ 52N30P		52	0.066	3490	110	250	0.31	400	X017a	
IXTT 69N30P		69	0.049	4960	156	330	0.25	500	X019	
IXTQ 69N30P	69	0.049	4960	156	330	0.25	500	X017a	X014a	
IXTH 88N30P	88	0.04	6300	180	250	0.21	600	X014a		
IXTK 88N30P	88	0.04	6300	180	250	0.21	600	X020a		
IXTT 88N30P	88	0.04	6300	180	250	0.21	600	X019		
IXTQ 88N30P	88	0.04	6300	180	250	0.21	600	X017a		
IXTK 102N30P	102	0.033	7500	224	250	0.18	700	X020a		
IXTK 140N30P	140	0.24	14800	185	250	0.12	1040	X020a		


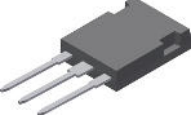




Polar™ Standard MOSFETs



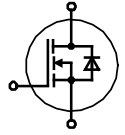
Part Type	V _{DSS} V	I _{D(cont)} Chip T _C = 25°C A	R _{DS(on)} T _J = 25°C Ω	C _{iss} typ pF	Q _g typ nC	t _{rr} typ ns	R _{thJC} K/W	P _D W	Fig. No.	Package style Outline drawings on pages O-31...O-52		
IXTP 12N50P	500	12	0.5	1830	29	300	0.62	200	X005a	X004 TO-252AA 		
IXTA 12N50P		12	0.5	1830	29	300	0.62	200	X011b			
IXTP 16N50P		16	0.4	2480	43	400	0.42	300	X005a			
IXTA 16N50P		16	0.4	2480	43	400	0.42	300	X011b			
IXTQ 16N50P		16	0.4	2480	43	400	0.42	300	X017a			
IXTH 22N50P		22	0.27	2880	50	400	0.35	350	X014a			
IXTQ 22N50P		22	0.27	2880	50	400	0.35	350	X017a			
IXTT 26N50P		26	0.23	3600	65	300	0.31	400	X019			
IXTQ 26N50P		26	0.23	3600	65	300	0.31	400	X017a			
IXTH 30N50P		30	0.2	4150	70	400	0.27	460	X014a			
IXTT 30N50P		30	0.2	4150	70	400	0.27	460	X019			
IXTQ 30N50P		30	0.2	4150	70	400	0.27	460	X017a			
IXTH 36N50P		36	0.17	4700	82	400	0.23	540	X014a			
IXTT 36N50P		36	0.17	4700	82	400	0.23	540	X019			
IXTQ 36N50P		36	0.17	4700	82	400	0.23	540	X017a			
IXTQ 44N50P		44	0.14	5440	98	400	0.19	650	X017a			
IXTP 10N60P	600	10	0.74	1720	32	500	0.62	200	X005a	X005a TO-220AB 		
IXTA 10N60P		10	0.74	1720	32	500	0.62	200	X011b			
IXTP 14N60P		14	0.55	2500	36	500	0.42	300	X005a			
IXTA 14N60P		14	0.55	2500	36	500	0.42	300	X011b			
IXTQ 14N60P		14	0.55	2500	36	500	0.42	300	X017a			
IXTQ 18N60P		18	0.42	2500	49	500	0.35	360	X017a			
IXTQ 22N60P		22	0.35	3600	62	500	0.31	400	X017a			
IXTH 26N60P		26	0.27	4150	72	500	0.27	460	X014a			
IXTT 26N60P		26	0.27	4150	72	500	0.27	460	X019			
IXTQ 26N60P		26	0.27	4150	72	500	0.27	460	X017a			
IXTH 30N60P		30	0.24	5050	82	500	0.23	540	X014a			
IXTT 30N60P		30	0.24	5050	82	500	0.23	540	X019			
IXTQ 30N60P	30	0.24	5050	82	500	0.23	540	X017a				
IXTP 05N100P	1000	0.5	30	196	8.1	750	2.5	50	X005a	X014a TO-247AD 		
IXTA 05N100P		0.5	30	196	8.1	750	2.5	50	X011b			
IXTP 08N100P		0.8	20	240	11.3	750	3.0	42	X005a			
IXTY 08N100P		0.8	20	240	11.3	750	3.0	42	X004			
IXTA 08N100P		0.8	20	240	11.3	750	3.0	42	X011b			
IXTP 1N100P		1	15	331	15.5	750	2.5	50	X005a			
IXTY 1N100P		1	15	331	15.5	750	2.5	50	X004			
IXTA 1N100P		1	15	331	15.5	750	2.5	50	X011b			
IXTP 1R4N100P		1.4	11	450	17.8	750	2.0	63	X005a			
IXTY 1R4N100P		1.4	11	450	17.8	750	2.0	63	X004			
IXTA 1R4N100P		1.4	11	666	17.8	750	2.0	63	X011b			
IXTP 2N100P		2	7.5	655	24.3	800	1.45	86	X005a			
IXTY 2N100P		2	7.5	655	24.3	800	1.45	86	X004			
IXTA 2N100P		2	7.5	655	24.3	800	1.45	86	X011b			
IXTP 3N100P		3	4.8	1100	39	820	1.0	125	X005a			
IXTH 3N100P		3	4.8	1100	39	820	1.0	125	X014a			
IXTA 3N100P		3	4.8	1100	39	820	1.0	125	X011b			
IXTP 02N120P		1200	0.2	75	104	4.7	1600	3.8	33		X005a	X019 TO-268AA 
IXTY 02N120P			0.2	75	104	4.7	1600	3.8	33		X004	
IXTP 06N120P			0.6	34	236	13.3	900	3.0	42		X005a	
IXTA 06N120P	0.6		34	236	13.3	900	3.0	42	X011b			
IXTP 08N120P	0.8		25	333	14	900	2.5	50	X005a			
IXTA 08N120P	0.8		25	333	14	900	2.5	50	X011b			
IXTP 1N120P	1		20	445	17.6	900	2.0	63	X005a			
IXTA 1N120P	1		20	445	17.6	900	2.0	63	X011b			
IXTP 1R4N120P	1.4		13	666	24.8	900	1.45	86	X005a			
IXTA 1R4N120P	1.4		13	725	24.8	900	1.45	86	X011b			
IXTP 2R4N120P	2.4		7.5	1207	37	920	1.0	125	X005a			
IXTH 2R4N120P	2.4		7.5	1207	37	920	1.0	125	X014a			
IXTA 2R4N120P	2.4		7.5	1207	37	920	1.0	125	X011b			





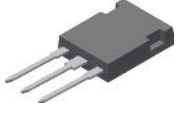





Polar™ HiPerFETs with Fast Intrinsic Diode



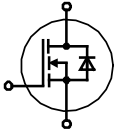
Part Type	V _{DSS} V	I _{D(cont)} Chip T _C = 25°C A	R _{DS(on)} T _J = 25°C Ω	C _{iss} typ pF	Q _g typ nC	t _{rr} typ ns	R _{thJC} K/W	P _D W	Fig. No.	Package style Outline drawings on pages O-31...O-52	
IXFH 110N10P	100	110	0.015	3550	110	150	0.31	480	X014a	X014a TO-247AD 	
IXFR 200N10P		133	0.009	7600	235	150	0.5	300	X016a		
IXFH 140N10P		140	0.011	4700	155	150	0.25	600	X014a		
IXFT 140N10P		140	0.011	4700	155	150	0.25	600	X019		
IXFH 170N10P		170	0.009	6000	198	150	0.21	715	X014a		
IXFK 170N10P		170	0.009	6000	198	150	0.21	715	X020a		
IXFX 200N10P		200	0.0075	7600	235	150	0.18	830	X015a		
IXFN 200N10P		200	0.0075	7600	235	150	0.22	680	X027a		
IXFK 200N10P		200	0.0075	7600	235	150	0.18	830	X020a		
IXFX 250N10P		250	0.0065	16000	205	200	0.12	1250	X015a		
IXFK 250N10P		250	0.0065	16000	205	200	0.12	1250	X020a		
IXFN 300N10P		295	0.0055	23	279	200	0.14	1070	X027a		
IXFB 300N10P		300	0.0055	23	279	200	0.10	1500	X021a		
IXFH 96N15P	150	96	0.024	3500	110	200	0.31	480	X014a	X015a PLUS247 	
IXFR 180N15P		100	0.013	7000	240	200	0.5	300	X016a		
IXFH 120N15P		120	0.016	4900	150	200	0.25	600	X014a		
IXFT 120N15P		120	0.016	4900	150	200	0.25	600	X019		
IXFN 180N15P		150	0.011	7000	240	200	0.22	680	X027a		
IXFH 150N15P		150	0.013	5800	190	200	0.21	714	X014a		
IXFK 150N15P		150	0.013	5800	190	200	0.21	714	X020a		
IXFX 180N15P		180	0.011	7000	240	200	0.18	830	X015a		
IXFK 180N15P		180	0.011	7000	240	200	0.18	830	X020a		
IXFX 220N15P		220	0.009	15.4	162	200	0.12	1250	X015a		
IXFK 220N15P		220	0.009	15.4	162	200	0.12	1250	X020a		
IXFH 74N20P	200	74	0.034	3300	107	200	0.31	480	X014a		X016a ISOPLUS247™ 
IXFR 140N20P		90	0.022	7500	240	200	0.50	300	X016a		
IXFH 96N20P		96	0.024	4800	145	200	0.25	600	X014a		
IXFT 96N20P		96	0.024	4800	145	200	0.25	600	X019		
IXFN 140N20P		115	0.018	7500	240	200	0.22	680	X027a		
IXFH 120N20P		120	0.022	6000	152	200	0.21	714	X014a		
IXFK 120N20P		120	0.022	6000	152	200	0.21	714	X020a		
IXFK 140N20P		140	0.018	7500	240	200	0.18	830	X020a		
IXFX 170N20P		170	0.014	11.4	185	200	0.12	1250	X015a		
IXFK 170N20P		170	0.014	11.4	185	200	0.12	1250	X020a		
IXFN 210N20P		188	0.0105	18.6	255	200	0.14	1070	X027a		
IXFB 210N20P		210	0.0105	18.6	255	200	0.10	1500	X021a		
IXFH 100N25P	250	100	0.027	6300	185	200	0.21	600	X014a	X019 TO-268AA 	
IXFX 120N25P		120	0.024	8700	185	200	0.18	700	X015a		
IXFK 120N25P		120	0.024	8700	185	200	0.18	700	X020a		
IXFH 52N30P	300	52	0.066	3490	110	200	0.31	400	X014a		X020a TO-264 
IXFR 102N30P		60	0.036	7500	224	200	0.50	250	X016a		
IXFH 69N30P		69	0.049	4960	156	200	0.25	500	X014a		
IXFT 69N30P		69	0.049	4960	156	200	0.25	500	X019		
IXFR 140N30P		70	0.026	14800	185	200	0.35	360	X016a		
IXFN 102N30P		86	0.033	7500	224	200	0.22	570	X027a		
IXFH 88N30P		88	0.04	6300	180	200	0.21	600	X014a		
IXFK 88N30P		88	0.04	6300	180	200	0.21	600	X020a		
IXFT 88N30P		88	0.04	6300	180	200	0.21	600	X019		
IXFK 102N30P		102	0.033	7500	224	200	0.18	700	X020a		
IXFN 140N30P		110	0.024	14800	185	200	0.18	700	X027a		
IXFN 170N30P		138	0.0018	20	258	200	0.14	890	X027a		
IXFX 140N30P		140	0.024	14800	185	200	0.12	1040	X015a		
IXFK 140N30P		140	0.024	14800	185	200	0.12	1040	X020a		
IXFB 170N30P		170	0.018	20	258	200	0.10	1250	X021a		
										X027a SOT-227B miniBLOC 	

Polar™ HiPerFETs with Fast Intrinsic Diode



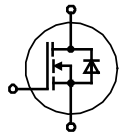
Part Type	V _{DSS}	I _{D(cont)} Chip	R _{DS(on)}	C _{iss}	Q _g	t _{rr}	R _{th(jc)}	P _D	Fig. No.	Package style Outline drawings on pages O-31...O-52
	V	T _C = 25°C A	T _J = 25°C Ω	typ pF	typ nC	typ ns	K/W	W		
IXFP 12N50P	500	12	0.5	1830	29	200	0.62	200	X005a	X005a TO-220AB 
IXFA 12N50P		12	0.5	1830	29	200	0.62	200	X011b	
IXFP 16N50P		16	0.4	2480	43	200	0.42	300	X005a	
IXFH 16N50P		16	0.4	2480	43	200	0.42	300	X014a	
IXFA 16N50P		16	0.4	2480	43	200	0.42	300	X011b	
IXFR 36N50P		19	0.19	5500	93	200	0.75	156	X016a	X011b TO-263AB 
IXFH 22N50P		22	0.27	2880	50	200	0.35	350	X014a	
IXFR 44N50P		24	0.15	5440	98	200	0.6	208	X016a	X014a TO-247AD 
IXFH 26N50P		26	0.23	3600	60	200	0.31	400	X014a	
IXFH 30N50P		30	0.2	4150	70	200	0.27	460	X014a	
IXFT 30N50P		30	0.2	4150	70	200	0.27	460	X019	
IXFH 36N50P		36	0.17	5500	93	200	0.23	540	X014a	
IXFT 36N50P		36	0.17	5500	93	200	0.23	540	X019	X015a PLUS247 
IXFR 64N50P		37	0.095	9700	150	200	0.42	300	X016a	
IXFH 44N50P		44	0.14	5440	98	200	0.19	650	X014a	
IXFK 44N50P		44	0.14	5440	98	200	0.19	650	X020a	
IXFT 44N50P		44	0.14	5440	98	200	0.19	650	X019	
IXFR 80N50P		45	0.072	12700	197	200	0.35	360	X016a	X016a ISOPLUS247™ 
IXFN 64N50P		50	0.085	9700	150	200	0.2	625	X027a	
IXFX 64N50P		64	0.085	9700	150	200	0.15	830	X015a	
IXFK 64N50P		64	0.085	9700	150	200	0.15	830	X020a	
IXFN 80N50P		66	0.065	12700	195	200	0.18	700	X027a	
IXFL 100N50P		70	0.052	20000	240	200	0.2	625	X022a	X019 TO-268AA 
IXFX 80N50P		80	0.065	12700	197	200	0.12	1040	X015a	
IXFK 80N50P		80	0.065	12700	197	200	0.12	1040	X020a	
IXFN 100N50P		90	0.049	20000	240	200	0.12	1040	X027a	
IXFB 100N50P		100	0.049	20000	240	200	0.1	1250	X021a	
IXFP 10N60P	600	10	0.74	1720	32	200	0.62	200	X005a	X020a TO-264 
IXFA 10N60P		10	0.74	1720	32	200	0.62	200	X011b	
IXFP 14N60P		14	0.55	2500	36	200	0.42	300	X005a	
IXFH 14N60P		14	0.55	2500	36	200	0.42	300	X014a	
IXFA 14N60P		14	0.55	2500	36	200	0.42	300	X011b	
IXFR 30N60P		15	0.25	3820	85	200	0.75	166	X016a	X021a PLUS264 
IXFH 18N60P		18	0.4	2500	50	200	0.35	360	X014a	
IXFR 36N60P		20	0.2	5800	102	200	0.6	208	X016a	X022a ISOPLUS264™ 
IXFH 22N60P		22	0.35	3600	58	200	0.31	400	X014a	
IXFH 26N60P		26	0.27	4150	72	200	0.27	460	X014a	
IXFT 26N60P		26	0.27	4150	72	200	0.27	460	X019	
IXFH 30N60P		30	0.24	4000	82	200	0.25	500	X014a	
IXFT 30N60P		30	0.24	4000	82	200	0.25	500	X019	X027a SOT-227B miniBLOC 
IXFR 48N60P		32	0.15	8860	150	200	0.42	300	X016a	
IXFR 64N60P		36	0.105	12000	200	200	0.35	360	X016a	
IXFH 36N60P		36	0.19	5800	102	200	0.19	650	X014a	
IXFK 36N60P		36	0.19	5800	102	200	0.19	650	X020a	
IXFT 36N60P		36	0.19	5800	102	200	0.19	650	X019	X027a
IXFN 48N60P		40	0.14	8860	150	200	0.2	625	X027a	
IXFX 48N60P		48	0.135	8860	150	200	0.15	830	X015a	
IXFK 48N60P		48	0.135	8860	150	200	0.15	830	X020a	
IXFN 64N60P		50	0.096	12000	200	200	0.18	700	X027a	
IXFL 82N60P		54	0.08	23000	240	200	0.2	625	X022a	X027a
IXFX 64N60P		64	0.096	12000	200	200	0.12	1040	X015a	
IXFK 64N60P		64	0.096	12000	200	200	0.12	1040	X020a	
IXFB 82N60P		82	0.075	23000	240	200	0.1	1250	X021a	
IXFN 82N60P		82	0.75	23000	240	200	0.12	1040	X027a	

Polar™ HiPerFETs with Fast Intrinsic Diode



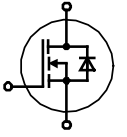
Part Type	V _{DSS} V	I _{D(cont)} Chip T _C = 25°C A	R _{DS(on)} T _J = 25°C Ω	C _{iss} typ pF	Q _g typ nC	t _{rr} typ ns	R _{thJC} K/W	P _D W	Fig. No.	Package style Outline drawings on pages O-31...O-52
IXFP 7N80P	800	7	1.44	1800	32	250	0.62	200	X005a	X005a TO-220AB
IXFA 7N80P		7	1.44	1800	32	250	0.62	200	X011b	
IXFR 20N80P		10	0.57	4685	86	250	0.8	160	X016a	
IXFP 10N80P		10	1.1	2050	40	250	0.42	300	X005a	X011b TO-263AB
IXFH 10N80P		10	1.1	2050	40	250	0.42	300	X014a	
IXFA 10N80P		10	1.1	2050	40	250	0.42	300	X011b	
IXFQ 10N80P		10	1.1	2050	40	250	0.42	300	X017a	X014a TO-247AD
IXFH 12N80P		12	0.85	2800	51	250	0.35	360	X014a	
IXFQ 12N80P		12	0.85	2800	51	250	0.35	360	X017a	
IXFR 24N80P		13	0.42	7200	105	250	0.6	208	X016a	X015a PLUS247
IXFH 14N80P		14	0.72	3900	61	250	0.31	400	X014a	
IXFT 14N80P		14	0.72	3900	61	250	0.31	400	X019	
IXFQ 14N80P		14	0.72	3900	61	250	0.31	400	X017a	X016a ISOPLUS247™
IXFH 16N80P		16	0.6	4000	70	250	0.27	460	X014a	
IXFT 16N80P		16	0.6	4000	70	250	0.27	460	X019	
IXFR 32N80P		20	0.29	8800	150	250	0.42	300	X016a	X019 TO-268AA
IXFH 20N80P		20	0.52	4685	86	250	0.25	500	X014a	
IXFT 20N80P		20	0.52	4685	86	250	0.25	500	X019	
IXFH 24N80P		24	0.4	5800	100	250	0.19	650	X014a	X020a TO-264
IXFK 24N80P		24	0.4	7200	105	250	0.19	650	X020a	
IXFT 24N80P		24	0.4	5800	100	250	0.19	650	X019	
IXFR 44N80P		26	0.19	12000	200	250	0.35	360	X016a	X021a PLUS264
IXFN 32N80P		29	0.27	8820	150	250	0.2	625	X027a	
IXFX 32N80P		32	0.27	8800	150	250	0.15	830	X015a	
IXFK 32N80P		32	0.27	8800	150	250	0.15	830	X020a	X022a ISOPLUS264™
IXFN 44N80P		36	0.19	12000	200	250	0.12	1200	X027a	
IXFL 60N80P		40	0.15	18000	250	250	0.2	625	X022a	
IXFX 44N80P		44	0.19	12000	198	250	0.12	1200	X015a	X027a SOT-227B miniBLOC
IXFK 44N80P		44	0.19	12000	198	250	0.12	1200	X020a	
IXFN 60N80P		53	0.14	18000	250	250	0.12	1040	X027a	
IXFB 60N80P		60	0.14	18000	250	250	0.1	1250	X021a	
IXFR 18N90P	900	10.5	0.66	5230	97	300	0.62	200	X016a	X021a PLUS264
IXFH 12N90P		12	0.9	3080	56	300	0.33	380	X014a	
IXFR 24N90P		13	0.46	7200	130	300	0.54	230	X016a	
IXFH 18N90P		18	0.6	5230	97	300	0.23	540	X014a	X022a ISOPLUS264™
IXFT 18N90P		18	0.6	5230	97	300	0.23	540	X019	
IXFR 40N90P		21	0.23	14000	230	300	0.42	300	X016a	
IXFH 24N90P		24	0.42	7200	130	300	0.19	660	X014a	X027a SOT-227B miniBLOC
IXFT 24N90P		24	0.42	7200	130	300	0.19	660	X019	
IXFK 32N90P		32	0.3	10600	215	300	0.13	960	X020a	
IXFX 32N90P		32	0.3	10600	215	300	0.13	960	X015a	X027a SOT-227B miniBLOC
IXFN 40N90P		33	0.21	14000	230	300	0.18	695	X027a	
IXFX 40N90P		40	0.21	14000	230	300	0.13	960	X015a	
IXFK 40N90P		40	0.21	14000	230	300	0.13	960	X020a	X027a SOT-227B miniBLOC
IXFN 52N90P		43	0.16	19000	308	300	0.14	890	X027a	
IXFB 52N90P		52	0.16	19000	308	300	0.1	1250	X021a	
IXFN 56N90P		56	0.145	23000	375	300	0.125	1000	X027a	

Polar™ HiPerFETs with Fast Intrinsic Diode



Part Type	V _{DSS} V	I _{D(cont)} Chip T _C = 25°C A	R _{DS(on)} T _J = 25°C Ω	C _{iss} typ pF	Q _g typ nC	t _{rr} typ ns	R _{thJC} K/W	P _D W	Fig. No.	Package style Outline drawings on pages O-31...O-52	
IXFP 4N100P	1000	4	3.3	1456	26	300	0.83	150	X005a	X005a TO-220AB 	
IXFA 4N100P		4	3.3	1456	26	300	0.83	150	X011b		
IXFP 5N100P		5	2.8	1830	33.4	200	0.5	250	X005a		
IXFH 5N100P		5	2.8	1830	33.4	200	0.5	250	X014a	X011b TO-263AB 	
IXFA 5N100P		5	2.8	1830	33.4	200	0.5	250	X011b		
IXFA 7N100P		7	1.9	2590	47	300	0.42	300	X011b		
IXFH 7N100P		7	1.9	2590	47	300	0.42	300	X014a	X005a TO-247AD 	
IXFP 7N100P		7	1.9	2590	47	300	0.42	300	X005a		
IXFH 10N100P		10	1.4	3030	56	300	0.33	380	X014a		
IXFR 20N100P	1100	11	0.64	7300	126	300	0.54	230	X016a	X014a PLUS247 	
IXFH 12N100P		12	1.05	4080	80	300	0.27	463	X014a		
IXFR 26N100P		15	0.43	11900	197	300	0.43	290	X016a		
IXFH 15N100P		15	0.76	5140	97	300	0.23	543	X014a	X015a ISOPLUS247™ 	
IXFR 32N100P		18	0.34	14200	225	300	0.39	320	X016a		
IXFH 20N100P		20	0.57	7300	126	300	0.19	660	X014a		
IXFT 20N100P		20	0.57	7300	126	300	0.19	660	X019	X016a TO-268AA 	
IXFL 44N100P		22	0.24	19000	305	300	0.35	357	X022a		
IXFN 26N100P		23	0.39	11900	197	300	0.21	595	X027a		
IXFX 26N100P		26	0.39	11900	197	300	0.16	780	X015a	X019 TO-264 	
IXFK 26N100P		26	0.39	11900	197	300	0.16	780	X020a		
IXFN 32N100P		27	0.32	14200	225	300	0.18	690	X027a		
IXFL 38N100P	1200	29	0.23	24000	350	300	0.24	520	X022e	X020a PLUS264 	
IXFX 32N100P		32	0.32	14200	225	300	0.13	960	X015a		
IXFK 32N100P		32	0.32	14200	225	300	0.13	960	X020a		
IXFN 44N100P		37	0.22	19000	305	300	0.14	890	X027a	X021a ISOPLUS264™ 	
IXFN 38N100P		38	0.21	24000	350	300	0.125	1000	X027a		
IXFB 44N100P		44	0.22	19000	305	300	0.1	1250	X021a		
IXFL 40N110P		1100	21	0.28	19000	310	300	0.35	357	X022a	X022a ISOPLUS264/i5-pac
IXFL 36N110P			26	0.26	23000	350	300	0.24	520	X022a	
IXFN 40N110P			34	0.26	19000	310	300	0.14	890	X027a	
IXFB 40N110P	1200	40	0.26	19000	310	300	0.1	1250	X021a	X022e SOT-227B miniBLOC 	
IXFP 6N120P		6	2.4	2830	92	300	0.5	250	X005a		
IXFH 6N120P		6	2.4	2830	92	300	0.5	250	X014a		
IXFA 6N120P		6	2.4	2830	92	300	0.5	250	X011b	X022a ISOPLUS264™ 	
IXFR 16N120P		9	1.04	6900	120	300	0.54	230	X016a		
IXFH 12N120P		12	1.35	5400	103	300	0.23	543	X014a		
IXFR 20N120P		1200	13	0.63	12900	193	300	0.43	290	X016a	X022a ISOPLUS264™
IXFR 26N120P			15	0.5	14000	225	300	0.39	320	X016a	
IXFH 16N120P			16	0.95	6900	120	300	0.19	660	X014a	
IXFT 16N120P			16	0.95	6900	120	300	0.19	660	X019	X022e ISOPLUS264/i5-pac
IXFL 30N120P			18	0.38	19000	310	300	0.35	357	X022a	
IXFX 20N120P			20	0.57	11100	193	300	0.16	780	X015a	
IXFN 20N120P	20		0.57	11100	193	300	0.21	595	X027a	X027a SOT-227B miniBLOC 	
IXFK 20N120P	20		0.57	11100	193	300	0.16	780	X020a		
IXFN 26N120P	23		0.46	14000	225	300	0.18	695	X027a		
IXFL 32N120P	1200		24	0.34	21000	360	300	0.24	520	X022e	X027a SOT-227B miniBLOC
IXFX 26N120P			26	0.46	14000	225	300	0.13	960	X015a	
IXFK 26N120P			26	0.46	14000	225	300	0.13	960	X020a	
IXFB 30N120P		30	0.35	22500	310	300	0.1	1250	X021a		
IXFN 30N120P		30	0.35	19000	310	300	0.14	890	X027a		
IXFN 32N120P		32	0.31	21000	360	300	0.125	1000	X027a		

PolarP2™ Power MOSFETs

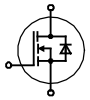


Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss}	Q _g	t _{rr}	R _{thJC}	P _D	Fig. No.	Package style			
➤ New	V	A	Ω	typ. pF	typ. nC	typ. ns	K/W	W		Outline drawings on pages O-31...O-52			
PolarP2™ Standard Power MOSFETs										X005a	TO-220AB		
IXTH 450P2	500	16	0.33	2530	43	400	0.42	300	X014a				
IXTP 450P2		16	0.33	2530	43	400	0.42	300	X005a				
IXTQ 450P2		16	0.33	2530	43	400	0.42	300	X017a				
IXTA 460P2		24	0.27	2890	48	400	0.26	480	X011b				
IXTH 460P2		24	0.27	2890	48	400	0.26	480	X014a				
IXTP 460P2		24	0.27	2890	48	400	0.26	480	X005a				
IXTQ 460P2		24	0.27	2890	48	400	0.26	480	X017a				
IXTQ 470P2		42	0.145	5400	88	400	0.15	830	X017a				
IXTQ 480P2		52	0.12	6800	108	400	0.13	960	X017a	X014a	TO-247AD		
PolarP2™ HiPerFETs with Fast Intrinsic Diode										X015a	PLUS247		
IXFQ 24N50P2	500	24	0.27	2890	48	200	0.26	480	X017a				
IXFH 42N50P2		42	0.145	5300	92	250	0.15	830	X014a				
IXFT 42N50P2		42	0.145	5300	92	250	0.15	830	X019				
IXFH 52N50P2		52	0.12	6800	113	250	0.13	960	X014a				
IXFT 52N50P2		52	0.12	6800	113	250	0.13	960	X019				
➤ IXFN 94N50P2		68	0.055	13700	220	250	0.16	780	X027a				
IXFK 74N50P2		74	0.077	9900	165	250	0.089	1400	X020a				
IXFX 74N50P2		74	0.077	9900	165	250	0.089	1400	X015a				
IXFK 94N50P2		94	0.055	14200	228	250	0.096	1300	X020a				
IXFX 94N50P2		94	0.055	14200	228	250	0.096	1300	X015a				
IXFB 120N50P2		120	0.043	19000	300	300	0.066	1890	X021a				
											X017a	TO-3P	
											X019	TO-268AA	
											X020a	TO-264	

PolarP3™ HiPerFETs

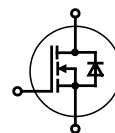
Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss}	Q _g	t _{rr} max. (typ.) ns	R _{thJC}	P _D	Fig. No.	Package style			
➤ New	V	A	Ω	typ. pF	typ. nC		K/W	W					
➤ IXFP 36N30P3	300	36	0.11	2040	30	(125)	0.36	347	X005a				
➤ IXFA 36N30P3		36	0.11	2040	30	(125)	0.36	347	X011b				
IXFH 94N30P3		94	0.036	5510	102	250	0.12	1040	X014a				
IXFQ 94N30P3		94	0.036	5510	102	250	0.12	1040	X017a				
IXFT 94N30P3		94	0.036	5510	102	250	0.12	1040	X019				
IXFL 210N30P3		108	0.016	16200	268	250	0.24	520	X022e				
IXFK 120N30P3		120	0.027	8630	150	250	0.11	1130	X020a				
IXFX 120N30P3		120	0.027	8630	150	250	0.11	1130	X015a				
IXFK 150N30P3		150	0.019	12100	197	250	0.096	1300	X020a				
IXFX 150N30P3		150	0.019	12100	197	250	0.096	1300	X015a				
IXFN 210N30P3		192	0.0145	16200	268	250	0.083	1500	X027a				
IXFB 210N30P3		210	0.0145	16200	268	250	0.066	1890	X021a				
											X021a	PLUS264	
											X022e	ISOPLUS264™	
											X027a	SOT-227B miniBLOC	

PolarP3™ HiPerFETs



Part Type	V _{DSS} V	I _{D(cont)} Chip T _C = 25°C A	R _{DS(on)} T _J = 25°C Ω	C _{iss} typ. pF	Q _g typ. nC	t _{rr} typ. ns	R _{thJC} K/W	P _D W	Fig. No.	Package style Outline drawings on pages O-31...O-52
IXFJ 26N50P3	500	14	0.265	2220	42	250	0.69	180	X016c	X005a TO-220AB
IXFA 16N50P3		16	0.36	1515	29	250	0.38	330	X011b	X011b TO-263AB
IXFH 16N50P3		16	0.36	1515	29	250	0.38	330	X014a	
IXFP 16N50P3		16	0.36	1515	29	250	0.38	330	X005a	X011b TO-263AB
IXFA 20N50P3		20	0.3	1800	36	250	0.36	380	X011b	
IXFH 20N50P3		20	0.3	1800	36	250	0.36	380	X014a	X014a TO-247AD
IXFP 20N50P3		20	0.3	1800	36	250	0.36	380	X005a	
IXFQ 20N50P3		20	0.3	1800	36	250	0.36	380	X017a	X014a TO-247AD
IXFA 26N50P3		26	0.23	2220	42	250	0.25	500	X011b	
IXFH 26N50P3		26	0.23	2220	42	250	0.25	500	X014a	X014a TO-247AD
IXFP 26N50P3		26	0.23	2220	42	250	0.25	500	X005a	
IXFQ 26N50P3		26	0.23	2220	42	250	0.25	500	X017a	X015a PLUS247
IXFH 34N50P3		34	0.17	3260	60	250	0.18	695	X014a	
IXFQ 34N50P3		34	0.17	3260	60	250	0.18	695	X017a	X015a PLUS247
IXFH 50N50P3		50	0.12	4335	85	250	0.13	960	X014a	
IXFQ 50N50P3		50	0.12	4335	85	250	0.13	960	X017a	X016a ISOPLUS247™
IXFT 50N50P3		50	0.12	4335	85	250	0.13	960	X019	
IXFH 60N50P3		60	0.1	6250	96	250	0.12	1040	X014a	X016a ISOPLUS247™
IXFQ 60N50P3		60	0.1	6250	96	250	0.12	1040	X017a	
IXFT 60N50P3		60	0.1	6250	96	250	0.12	1040	X019	X016c ISO247™
IXFL 132N50P3		63	0.043	18600	250	250	0.24	520	X022e	
IXFK 78N50P3		78	0.068	9900	147	250	0.11	1130	X020a	X016c ISO247™
IXFX 78N50P3		78	0.068	9900	147	250	0.11	1130	X015a	
IXFK 98N50P3		98	0.05	13100	197	250	0.096	1300	X020a	X017a TO-3P
IXFX 98N50P3		98	0.05	13100	197	250	0.096	1300	X015a	
IXFN 132N50P3		112	0.039	18600	250	250	0.083	1500	X027a	X017a TO-3P
IXFB 132N50P3		132	0.039	18600	250	250	0.066	1890	X021a	
IXFA 14N60P3	600	14	0.54	1480	25	250	0.38	327	X011b	X019 TO-268AA
IXFH 14N60P3		14	0.54	1480	25	250	0.38	327	X014a	
IXFP 14N60P3		14	0.54	1480	25	250	0.38	327	X005a	X020a TO-264
IXFA 16N60P3		16	0.44	1830	36	250	0.36	347	X011b	
IXFH 16N60P3		16	0.44	1830	36	250	0.36	347	X014a	X020a TO-264
IXFP 16N60P3		16	0.44	1830	36	250	0.36	347	X005a	
IXFA 22N60P3		22	0.36	2600	38	250	0.25	500	X011b	X021a PLUS264
IXFH 22N60P3		22	0.36	2600	38	250	0.25	500	X014a	
IXFP 22N60P3		22	0.36	2600	38	250	0.25	500	X005a	X021a PLUS264
IXFQ 22N60P3		22	0.36	2600	38	250	0.25	500	X017a	
IXFH 28N60P3		28	0.26	3560	50	250	0.18	695	X014a	X021a PLUS264
IXFQ 28N60P3		28	0.26	3560	50	250	0.18	695	X017a	
IXFH 42N60P3		42	0.185	5150	78	250	0.15	830	X014a	X022e ISOPLUS264™
IXFR 80N60P3		48	0.076	13100	190	250	0.23	540	X016a	
IXFH 50N60P3		50	0.145	6300	94	250	0.12	1040	X014a	X027a SOT-227B miniBLOC
IXFQ 50N60P3		50	0.145	6300	94	250	0.12	1040	X017a	
IXFT 50N60P3		50	0.145	6300	94	250	0.12	1040	X019	X027a SOT-227B miniBLOC
IXFK 64N60P3		64	0.095	9900	145	250	0.11	1130	X020a	
IXFX 64N60P3		64	0.095	9900	145	250	0.11	1130	X015a	X027a SOT-227B miniBLOC
IXFN 80N60P3		66	0.077	13100	190	250	0.13	960	X027a	
IXFK 80N60P3		80	0.07	13100	190	250	0.096	1300	X020a	X027a SOT-227B miniBLOC
IXFX 80N60P3		80	0.07	13100	190	250	0.096	1300	X015a	
IXFN 110N60P3		90	0.056	18000	245	250	0.083	1500	X027a	X021a
IXFB 110N60P3		110	0.056	18000	245	250	0.066	1890	X021a	

X-Class Power MOSFETs

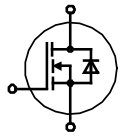



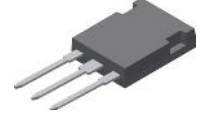




Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} typ.	R _{thJC}	P _D	Fig. No.	Package style	
➤ New	V	A	Ω	pF	nC	ns	K/W	W		Outline drawings on pages O-31...O-52	
X-Class Standard Types										X004	TO-252AA
➤ IXTP 20N65XM	650	9	0.210	1390	35	350	2.00	63	X007a		
➤ IXTP 32N65XM		14	0.135	2206	54	400	1.60	78	X007a		
➤ IXTP 20N65X		20	0.210	1390	35	350	0.39	320	X005a		
➤ IXTA 20N65X		20	0.210	1390	35	350	0.39	320	X011b		
➤ IXTH 20N65X		20	0.210	1390	35	350	0.39	320	X014a		
➤ IXTQ 32N65X		32	0.135	2205	54	400	0.25	500	X017a		
➤ IXTH 32N65X		32	0.135	2205	54	400	0.25	500	X014a		
➤ IXTP 32N65X		32	0.135	2206	54	400	0.25	500	X005a		
X-Class Power MOSFETs with Fast Body Diode										X007a	TO-220FPAB
➤ IXFA 18N60X	600	18	0.23	1440	35	127	0.39	320	X011b		
➤ IXFH 18N60X		18	0.23	1440	35	127	0.39	320	X014a		
➤ IXFP 18N60X		18	0.23	1440	35	127	0.39	320	X005a		
➤ IXFA 24N60X		24	0.175	1910	47	140	0.31	400	X011b		
➤ IXFH 24N60X		24	0.175	1910	47	140	0.31	400	X014a		
➤ IXFP 24N60X		24	0.175	1910	47	140	0.31	400	X005a		
➤ IXFQ 24N60X		24	0.175	1910	47	140	0.31	400	X017a		
➤ IXFH 30N60X		30	0.155	2270	56	145	0.25	500	X014a		
➤ IXFT 30N60X		30	0.155	2270	56	145	0.25	500	X019		
➤ IXFQ 30N60X		30	0.155	2270	56	145	0.25	500	X017a		
➤ IXFH 50N60X		50	0.073	4660	116	195	0.19	660	X014a		
➤ IXFT 50N60X		50	0.073	4660	116	195	0.19	660	X019		
➤ IXFQ 50N60X		50	0.073	4660	116	195	0.19	660	X017a		
➤ IXFK 90N60X		90	0.038	8500	210	210	0.113	1100	X020a		
➤ IXFX 90N60X		90	0.038	8500	210	210	0.113	1100	X015a		
X2-Class Power MOSFETs										X017a	TO-3P
➤ IXTY 2N65X2	650	2	2.3	176	4.3	137	2.27	55	X004		
➤ IXTP 2N65X2		2	2.3	176	4.3	137	2.27	55	X005a		
➤ IXTA 4N65X2		4	0.85	455	8.3	160	1.56	80	X011b		
➤ IXTY 4N65X2		4	0.85	455	8.3	160	1.56	80	X004		
➤ IXTP 4N65X2		4	0.85	455	8.3	160	1.56	80	X005a		
➤ IXTA 8N65X2		8	0.5	800	12	200	0.83	150	X011b		
➤ IXTP 8N65X2		8	0.5	800	12	200	0.83	150	X005a		
➤ IXTY 8N65X2		8	0.5	800	12	200	0.83	150	X004		
➤ IXTX 102N65X2		102	0.03	11000	152	450	0.12	1040	X015a		
➤ IXTK 102N65X2		102	0.03	11000	152	450	0.12	1040	X020a		
										X019	TO-268AA
										X020a	TO-264

SiC Power MOSFETs

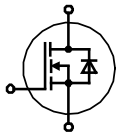
Part Type	V _{DSS}	I _{D25} T _C = 25°C	R _{DS(on)} T _C = 25°C	C _{iss} typ.	Q _g typ.	R _{thJC}	t _{rr} Diode typ ns	V _{SD} Diode typ V	Fig. No.	Package style
➤ New	V	A	mΩ	pF	nC	K/W				
➤ IXFN 50N120SiC	1200	47	50	1900	100	0.55	40	3.3	X027a	
➤ MCB 60I1200TZ	1200	90	34	2790	160	0.27	45	3.3	X019	




Q3-Class HiPerFET™ Power MOSFETs



Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} max. (typ.) ns	R _{thJC}	P _D	Fig. No.	Package style Outline drawings on pages O-31...O-52	
➤ New	V	A	Ω	pF	nC		K/W	W			
IXFH 70N20Q3 IXFT 70N20Q3	200	70	0.04	3150	67	250	0.18	690	X014a X019	X014a TO-247AD 	
IXFH 50N30Q3 IXFT 50N30Q3 IXFT 70N30Q3 IXFH 70N30Q3	300	50	0.08	3160	65	250	0.18	690	X014a X019 X019 X014a		
IXFR 44N50Q3 IXFT 30N50Q3 IXFH 30N50Q3 IXFH 44N50Q3 IXFT 44N50Q3	500	25	0.154	4800	93	250	0.41	300	X016a X019 X014a X014a X019		X015a PLUS247 
IXFR 64N50Q3 IXFR 80N50Q3		45	0.094	6950	145	250	0.25	500	X016a X016a		
IXFN 80N50Q3 IXFK 64N50Q3 IXFX 64N50Q3 IXFX 80N50Q3 IXFK 80N50Q3 IXFN 100N50Q3 IXFB 100N50Q3		63	0.065	10000	200	250	0.16	780	X027a X020a X015a X015a X020a X027a X021a		
IXFR 48N60Q3 IXFR 64N60Q3	600	32	0.154	7020	140	300	0.25	500	X016a X016a		
IXFK 48N60Q3 IXFX 48N60Q3 IXFK 64N60Q3 IXFX 64N60Q3 IXFN 82N60Q3 IXFB 82N60Q3		48	0.14	7020	140	300	0.125	1000	X020a X015a X020a X015a X027a X021a	X019 TO-268AA  X019a TO-268AAHV 	
IXFR 32N80Q3 IXFK 32N80Q3 IXFX 32N80Q3 IXFN 44N80Q3 IXFX 44N80Q3 IXFK 44N80Q3 IXFN 62N80Q3 IXFB 62N80Q3	800	24	0.30	6940	140	300	0.25	500	X016a X020a X015a X027a X015a X020a X027a X021a		
IXFR 15N100Q3 IXFT 15N100Q3 IXFH 15N100Q3 IXFH 18N100Q3 IXFT 18N100Q3	1000	10	1.20	3250	64	250	0.31	400	X027a X019 X014a X014a X019		X020a TO-264  X021a PLUS264 
IXFR 24N100Q3 IXFR 32N100Q3		18	0.49	7200	140	300	0.25	500	X027a X027a		
IXFK 24N100Q3 IXFX 24N100Q3 IXFN 32N100Q3 IXFK 32N100Q3 IXFX 32N100Q3 IXFN 44N100Q3 IXFB 44N100Q3		24	0.44	7200	140	300	0.125	1000	X020a X015a X027a X020a X015a X027a X021a		
IXFN 40N110Q3 IXFB 40N110Q3	1100	35	0.26	14000	300	(434)	0.13	960	X027a X021a		
		40	0.26	14000	300	(434)	0.08	1560	X021a		

Very High Voltage Power MOSFETs (2 - 4.5 kV)

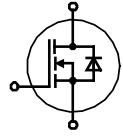









Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} typ.	R _{thJC}	P _D	Fig. No.	Package style Outline drawings on pages O-31...O-52	
➤ New	V	A	Ω	pF	nC	ns	K/W	W			
➤ IXTH 1N200P3	2000	1.0	40	646	23.5	2300	1.0	125	X014a	X003 TO-251AA	
➤ IXTH 1N200P3HV		1.0	40	646	23.5	2300	1.0	125	X014c		
➤ IXTA 1N200P3HV		1.0	40	646	23.5	2300	1.0	125	X011c		
➤ IXTH 06N220P3HV	2200	0.6	80	290	10.4	1100	1.2	104	X014c		
➤ IXTH 1R8N220P3HV		1.8	21.5	965	31	1300	0.64	194	X014c		
IXTA 02N250HV	2500	0.2	450	116	7.4	1500	1.5	83	X011c	X004 TO-252AA	
IXTH 02N250		0.2	450	116	7.4	1500	1.5	83	X014a		
IXTH 05N250P3HV		0.5	110	303	10.5	1200	1.2	104	X014c		
IXTF 1N250		1.0	40	1660	41	2500	1.13	110	X024c		
IXTH 1R4N250P3		1.4	28	960	33	1800	0.64	195	X014a		
IXTH 1N250		1.5	40	1660	41	2500	0.5	250	X014a		
IXTT 1N250HV		1.5	40	1660	41	2500	0.5	250	X019a		
IXTN 5N250		5.0	8.8	8560	200	1200	0.18	700	X027a		
IXTK 5N250		5.0	8.8	8560	200	1200	0.13	960	X020a		
IXTX 5N250		5.0	8.8	8560	200	1200	0.13	960	X015a		
➤ IXTH 04N300P3HV	3000	0.4	190	283	13	1100	1.2	104	X014c		X005a TO-220AB
➤ IXTT 1N300P3HV		1.0	50	895	30.6	1800	0.64	195	X019a		
➤ IXTH 1N300P3HV		1.0	50	895	30.6	1800	0.64	195	X014c		
IXTH 02N450HV	4500	0.2	625	246	10.6	1600	1.1	113	X014c	X011c TO-263ABHV	
IXTF 02N450		0.2	625	246	10.6	1600	1.6	78	X024c		
IXTT 02N450HV		0.2	625	246	10.6	1600	1.1	113	X019a		
IXTF 1N450		0.9	80	1700	46	1750	0.77	165	X024c		
IXTT 1N450HV		1.0	80	1700	46	1750	0.24	520	X019a		
➤ IXTH 1N450HV		1.0	80	1700	46	1750	0.24	520	X014c		
IXTL 2N450		2.0	20	6860	180	1750	0.56	220	X022e		

Legacy (Standard) Power MOSFETs

Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} typ.	R _{thJC}	P _D	Fig. No.	Package style
➤ New	V	A	Ω	pF	nC	ns	K/W	W		
IXTU 01N100	1000	0.1	80	60	8.0	1500	3.0	25	X003	X015a PLUS247
IXTY 01N100		0.1	80	60	8.0	1500	3.0	25	X004	
IXTP 05N100		0.75	17	260	7.8	710	3.1	40	X005a	
IXTU 05N100		0.75	17	260	7.8	710	3.1	40	X003	
IXTY 05N100		0.75	17	260	7.8	710	3.1	40	X004	
IXTA 05N100		0.75	17	260	7.8	710	3.1	40	X011b	
➤ IXTA 05N100HV		0.75	17	260	7.8	710	3.1	40	X011c	
IXTP 1N100		1.5	11	480	23.0	710	2.3	54	X005a	
IXTA 1N100		1.5	11	480	23.0	710	2.3	54	X011b	
IXTP 2N100		2.0	7.0	825	18.0	800	1.25	100	X005a	
IXTA 2N100	2.0	7.0	825	18.0	800	1.25	100	X011b		
IXTX 24N100		24.0	0.4	8700	267	850	0.22	568	X015a	
IXTP 3N120	1200	3.0	4.5	1050	39.0	700	0.62	200	X005a	X022e ISOPLUS264/i5-Pak
IXTH 3N120		3.0	4.5	1050	39.0	700	0.80	100	X014a	
IXTA 3N120		3.0	4.5	1050	39.0	700	0.62	200	X011b	
➤ IXTA 3N120HV		3.0	4.5	1050	39.0	700	0.62	200	X011c	
IXTH 6N120		6.0	2.4	1950	56.0	850	0.42	300	X014a	
IXTT 6N120	6.0	2.4	1950	56.0	850	0.42	300	X019		
➤ IXTA 3N150HV	1500	3.0	7.3	1375	38.6	900	0.50	110	X011c	X016c ISOPLUS i4-PAC™
IXTH 3N150		3.0	7.3	1375	38.6	900	0.50	250	X014a	
➤ IXTJ 3N150		2.5	8.0	1375	38.6	900	1.13	250	X016c	
➤ IXTA 4N150HV		4.0	6.0	1576	44.5	900	0.45	280	X011c	
IXTH 4N150		4.0	6.0	1576	44.5	900	0.45	280	X014a	
➤ IXTJ 4N150		2.5	6.0	1576	44.5	900	1.13	110	X016c	
➤ IXTT 4N150HV		4.0	6.0	1576	44.5	900	0.45	280	X019a	
IXTH 6N150		6.0	3.5	2230	67.0	1500	0.23	540	X014a	
➤ IXTJ 6N150		3.0	3.85	2230	67.0	1500	1.0	125	X016c	
IXTT 6N150		6.0	3.5	2230	67.0	1500	0.23	540	X014a	
➤ IXTT 12N150HV		12.0	2.0	3720	106	1200	0.14	890	X019a	

LinearL2™ Power MOSFETs with Extended FBSOAs



Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} typ.	R _{thJC}	P _D	Fig. No.	Package style
➤ New	V	A	Ω	pF	nC	ns	K/W	W		Outline drawings on pages O-31...O-52
➤ IXTP 80N075L2	75	80	0.024	3600	103	160	0.35	357	X005a	X005a TO-220AB 
➤ IXTA 80N075L2		80	0.024	3600	103	160	0.35	357	X011b	
➤ IXTH 80N075L2		80	0.024	3600	103	160	0.35	357	X014a	
➤ IXTA 64N10L2	100	64	0.032	3620	100	180	0.35	357	X011b	X011b TO-263AB 
➤ IXTH 64N10L2		64	0.032	3620	100	180	0.35	357	X014a	
➤ IXTP 64N10L2		64	0.032	3620	100	180	0.35	357	X005a	
IXTH 75N10L2	200	75	0.021	8100	215	180	0.31	400	X014a	X014a TO-247AD 
IXTT 75N10L2		75	0.021	8100	215	180	0.31	400	X019	
IXTH 110N10L2		110	0.018	10500	260	230	0.21	600	X014a	
IXTT 110N10L2		110	0.018	10500	260	230	0.21	600	X019	
IXTN 200N10L2		178	0.011	23000	540	245	0.15	830	X027a	
IXTX 200N10L2		200	0.011	23000	540	245	0.12	1040	X015a	
IXTK 200N10L2	200	0.011	23000	540	245	0.12	1040	X020a	X015a PLUS247 	
IXTH 60N20L2	60	0.045	10500	255	330	0.23	540	X014a		
IXTT 60N20L2	60	0.045	10500	255	330	0.23	540	X019		
IXTQ 60N20L2	60	0.045	10500	255	330	0.23	540	X017a		
IXTN 110N20L2	100	0.024	23000	500	420	0.17	735	X027a		
IXTX 110N20L2	110	0.024	23000	500	420	0.13	960	X015a		
IXTK 110N20L2	110	0.024	23000	500	420	0.13	960	X020a	X014a TO-247AD 	
IXTX 90N25L2	250	90	0.033	23000	640	266	0.13	960		X015a
IXTN 90N25L2		90	0.033	23000	640	266	0.17	735		X027a
IXTK 90N25L2		90	0.033	23000	640	266	0.13	960	X020a	
IXTA 15N50L2	500	15	0.48	4080	123	570	0.42	300	X011b	X011b TO-268AA 
IXTP 15N50L2		15	0.48	4080	123	570	0.42	300	X005a	
IXTH 15N50L2		15	0.48	4080	123	570	0.42	300	X014a	
IXTH 30N50L2		30	0.2	8100	240	500	0.31	400	X014a	
IXTT 30N50L2		30	0.2	8100	240	500	0.31	400	X019	
IXTQ 30N50L2		30	0.2	8100	240	500	0.31	400	X017a	
IXTH 40N50L2		40	0.17	10400	320	500	0.23	540	X014a	
IXTT 40N50L2		40	0.17	10400	320	500	0.23	540	X019	
IXTQ 40N50L2		40	0.17	10400	320	500	0.23	540	X017a	
IXTN 60N50L2		53	0.1	24000	610	980	0.17	735	X027a	
IXTX 60N50L2		60	0.1	24000	610	980	0.13	960	X015a	
IXTK 60N50L2	60	0.1	24000	610	980	0.13	960	X020a		
IXTH 30N60L2	600	30	0.24	10700	335	710	0.23	540	X014a	X019 TO-264 
IXTT 30N60L2		30	0.24	10700	335	710	0.23	540	X019	
IXTQ 30N60L2		30	0.24	10700	335	710	0.23	540	X017a	

X027a **SOT-227B miniBLOC**



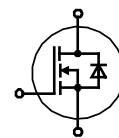
X020a **TO-264**







X019 **TO-268AA**



Depletion-Mode MOSFETs



Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	V _{GS(off)} max.	C _{iss} typ.	C _{rss} typ.	Q _g typ.	P _D	Fig. No.	Package style				
➤ New	V	A	Ω	V	pF	pF	nC	W		Outline drawings on pages O-31...O-52				
➤ IXTH 16N10D2	100	16	0.064	-4	5700	940	225	695	X014a	X004	TO-252AA 			
IXTT 16N10D2		16	0.064	-4	5700	940	225	695	X019					
IXTH 16N20D2	200	16	0.073	-4	5500	607	208	695	X014a					
IXTT 16N20D2		16	0.073	-4	5500	607	208	695	X019					
IXTP 08N50D2	500	0.8	4.6	-4	312	11	12.7	60	X005a	X005a	TO-220AB 			
IXTY 08N50D2		0.8	4.6	-4	312	11	12.7	60	X004					
IXTA 08N50D2		0.8	4.6	-4	312	11	12.7	60	X011b					
IXTP 1R6N50D2		1.6	2.3	-4	645	16.5	23.7	100	X005a					
IXTY 1R6N50D2		1.6	2.3	-4	645	16.5	23.7	100	X004					
IXTA 1R6N50D2		1.6	2.3	-4	645	16.5	23.7	100	X011b					
IXTP 3N50D2		3	1.5	-4	1070	24	40	125	X005a					
IXTA 3N50D2		3	1.5	-4	1070	24	40	125	X011b					
IXTP 6N50D2		6	0.5	-4	2800	64	96	300	X005a					
IXTH 6N50D2		6	0.5	-4	2800	64	96	300	X014a					
IXTA 6N50D2		6	0.5	-4	2800	64	96	300	X011b					
IXTH 16N50D2		16	0.24	-4	5250	130	199	695	X014a					
IXTT 16N50D2		16	0.24	-4	5250	130	199	695	X019					
IXTP 08N100D2		1000	0.8	21	-4	325	6.5	14.6	60			X005a	X011b	TO-263AB 
IXTY 08N100D2	0.8		21	-4	325	6.5	14.6	60	X004					
IXTA 08N100D2	0.8		21	-4	325	6.5	14.6	60	X011b					
➤ IXTA 08N100D2HV	0.8		21	-4	325	6.5	14.6	60	X011c					
IXTP 1R6N100D2	1.6		10	-4.5	645	11	27	100	X005a					
IXTY 1R6N100D2	1.6		10	-4.5	645	11	27	100	X004					
IXTA 1R6N100D2	1.6		10	-4.5	645	11	27	100	X011b					
IXTP 3N100D2	3		5.5	-4.5	1020	17	37.5	125	X005a					
IXTA 3N100D2	3		5.5	-4.5	1020	17	37.5	125	X011b					
IXTA 3N100D2HV	3		6	-4.5	1020	17	37.5	125	X011c					
IXTP 6N100D2	6		2.2	-4.5	2650	41	95	300	X005a					
IXTH 6N100D2	6		2.2	-4.5	2650	41	95	300	X014a					
IXTA 6N100D2	6		2.2	-4.5	2650	41	95	300	X011b					
IXTT 10N100D2	10		1.5	-4.5	5320	70	200	695	X019					
IXTH 10N100D2	10		1.5	-4.5	5320	70	200	695	X014a					
➤ IXTA 1N170DHV	1700		1	16	-4.5	3090	30	47	290	X011c	X011c	TO-263ABHV 		
➤ IXTH 1N170DHV			1	16	-4.5	3090	30	47	290	X014c				
IXTT 2N170D2			2	6.5	-4	3650	80	110	568	X019				
IXTH 2N170D2		2	6.5	-4	3650	80	110	568	X014a					

X019

TO-268AA



X014c

TO-247HV

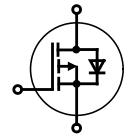


X014a

TO-247AD

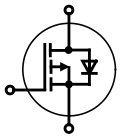


PolarP™ P-Channel Power MOSFETs



Part Type	V _{DSS} V	I _{D(cont)} Chip T _C = 25°C A	R _{DS(on)} T _J = 25°C Ω	C _{iss} typ. pF	Q _g typ. nC	t _{rr} typ. ns	R _{thJC} K/W	P _D W	Fig. No.	Package style Outline drawings on pages O-31...O-52
IXTX 32P60P	-600	-32	0.35	11100	196	480	0.14	890	X015a	X005a TO-220AB 
IXTN 32P60P	-600	-32	0.35	11100	196	480	0.14	890	X027a	
IXTK 32P60P	-600	-32	0.35	11100	196	480	0.14	890	X020a	
IXTR 32P60P	-600	-18	0.385	11100	196	480	0.4	310	X016a	
IXTH 16P60P	-600	-16	0.72	5120	92	440	0.27	460	X005a	X011b TO-263AB 
IXTT 16P60P	-600	-16	0.72	5120	92	440	0.27	460	X019	
IXTR 16P60P	-600	-10	0.79	5120	92	440	0.66	190	X016a	
IXTX 40P50P	-500	-40	0.23	11.5	205	477	0.14	890	X015a	X014a TO-247AD 
IXTN 40P50P	-500	-40	0.23	11500	205	477	0.14	890	X027a	
IXTK 40P50P	-500	-40	0.23	11500	205	477	0.14	890	X020a	
IXTR 40P50P	-500	-22	0.26	11500	205	477	0.4	312	X016a	
IXTH 20P50P	-500	-20	0.45	5120	103	406	0.27	460	X014a	X015a PLUS247 
IXTT 20P50P	-500	-20	0.45	5120	103	406	0.27	460	X019	
IXTR 20P50P	-500	-13	0.49	5120	103	406	0.66	190	X016a	
IXTP 10P50P	-500	-10	1	2670	50	414	0.5	300	X005a	X016a ISOPLUS247™ 
IXTH 10P50P	-500	-10	1	2670	50	414	0.5	300	X005a	
IXTA 10P50P	-500	-10	1	2670	50	414	0.5	300	X011b	
IXTQ 10P50P	-500	-10	1	2670	50	414	0.5	300	X017a	
IXTX 90P20P	-200	-90	0.044	12000	205	315	0.14	890	X015a	X017a TO-3P 
IXTN 90P20P	-200	-90	0.044	12000	205	315	0.14	890	X027a	
IXTK 90P20P	-200	-90	0.044	12000	205	315	0.14	890	X020a	
IXTR 90P20P	-200	-53	0.048	12000	205	315	0.4	312	X016a	
IXTH 48P20P	-200	-48	0.085	5400	103	260	0.27	462	X014a	X019 TO-268AA 
IXTT 48P20P	-200	-48	0.085	5400	103	260	0.27	462	X019	
IXTR 48P20P	-200	-30	0.093	5400	103	260	0.66	190	X016a	
IXTP 26P20P	-200	-26	0.17	2740	56	240	0.42	300	X005a	
IXTH 26P20P	-200	-26	0.17	2740	56	240	0.42	300	X014a	X020a TO-264 
IXTA 26P20P	-200	-26	0.17	2740	56	240	0.42	300	X011b	
IXTQ 26P20P	-200	-26	0.17	2740	56	240	0.42	300	X017a	
IXTR 36P15P	-150	-36	0.11	3100	55	228	0.42	300	X005a	
IXTH 36P15P	-150	-36	0.11	3100	55	228	0.42	300	X014a	X027a SOT-227B miniBLOC 
IXTA 36P15P	-150	-36	0.11	3100	55	228	0.42	300	X011b	
IXTQ 36P15P	-150	-36	0.11	3100	55	228	0.42	300	X017a	
IXTR 36P15P	-150	-22	0.12	2950	55	150	1	150	X016a	
IXTX 170P10P	-100	-170	0.012	12600	240	176	0.14	890	X015a	
IXTN 170P10P	-100	-170	0.012	12600	240	176	0.14	890	X027a	
IXTK 170P10P	-100	-170	0.012	12600	240	176	0.14	890	X020a	
IXTR 170P10P	-100	-108	0.013	12600	240	176	0.4	312	X016a	
IXTH 90P10P	-100	-90	0.025	5800	120	144	0.27	462	X014a	
IXTT 90P10P	-100	-90	0.025	5800	120	144	0.27	462	X019	
IXTR 90P10P	-100	-57	0.027	5800	120	144	0.66	190	X016a	
IXTP 52P10P	-100	-52	0.05	2845	60	120	0.42	300	X005a	
IXTH 52P10P	-100	-52	0.05	2845	60	120	0.42	300	X014a	
IXTA 52P10P	-100	-52	0.05	2845	60	120	0.42	300	X011b	
IXTQ 52P10P	-100	-52	0.05	2845	60	120	0.42	300	X017a	

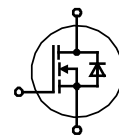
TrenchP™ P-Channel MOSFETs



Part Type	V _{DSS}	I _{D(cont)} Chip T _C = 25°C	R _{DS(on)} T _J = 25°C	C _{iss} typ.	Q _g typ.	t _{rr} typ. (max)	R _{thJC}	P _D	Fig. No.	Package style Outline drawings on pages O-31...O-52	
➤ New	V	A	Ω	pF	nC	ns	K/W	W			
IXTK 120P20T	-200	-120	0.03	73000	740	(300)	0.12	1040	X020a	X004	TO-252AA
IXTX 120P20T		-120	0.03	73000	740	(301)	0.12	1040	X015a		
IXTN 120P20T		-106	0.03	73000	740	(302)	0.15	830	X027a		
IXTR 120P20T		-90	0.032	73000	740	(303)	0.21	595	X016a		
IXTH 68P20T		-68	0.055	33400	380	245	0.22	568	X014a	X005a	TO-220AB
IXTT 68P20T		-68	0.055	33400	380	245	0.22	568	X019		
IXTR 68P20T		-44	0.064	33400	380	245	0.46	270	X016a		
IXTA 32P20T		-32	0.13	14500	185	190	0.42	300	X011b	X011b	TO-263AB
IXTP 32P20T		-32	0.13	14500	185	190	0.42	300	X005a		
IXTH 32P20T		-32	0.13	14500	185	190	0.42	300	X014a		
IXTQ 32P20T		-32	0.13	14500	185	190	0.42	300	X017a		
IXTP 44P15T	-150	-44	0.065	13400	175	140	0.42	298	X005a	X014a	TO-247AD
IXTH 44P15T		-44	0.065	13400	175	140	0.42	298	X014a		
IXTA 44P15T		-44	0.065	13400	175	140	0.42	298	X011b		
IXTQ 44P15T		-44	0.065	13400	175	140	0.42	298	X017a		
IXTP 15P15T		-15	0.24	3650	48	116	0.83	150	X005a		
IXTY 15P15T		-15	0.24	3650	48	116	0.83	150	X004		
IXTA 15P15T		-15	0.24	3650	48	116	0.83	150	X011b		
IXTP 10P15T		-10	0.35	2210	36	120	1.50	83	X005a		
IXTY 10P15T		-10	0.35	2210	36	120	1.50	83	X004		
IXTA 10P15T		-10	0.35	2210	36	120	1.50	83	X011b		
IXTK 210P10T	-100	-210	0.0075	69500	740	(200)	0.12	1040	X020a	X015a	PLUS247
IXTN 210P10T		-210	0.0075	69500	740	(201)	0.15	830	X027a		
IXTX 210P10T		-210	0.0075	69500	740	(202)	0.12	1040	X015a		
IXTR 210P10T		-195	0.008	69500	740	(203)	0.32	390	X016a		
IXTH 140P10T		-140	0.012	31400	400	130	0.22	568	X014a	X016a	ISOPLUS247™
IXTT 140P10T		-140	0.012	31400	400	130	0.22	568	X019		
IXTR 140P10T		-90	0.013	31400	400	130	0.46	270	X016a		
IXTP 76P10T		-76	0.025	13700	197	70	0.42	298	X005a	X017a	TO-3P
IXTH 76P10T		-76	0.025	13700	197	70	0.42	298	X014a		
IXTA 76P10T		-76	0.025	13700	197	70	0.42	298	X011b		
IXTP 26P10T		-26	0.09	3820	52	70	0.83	150	X005a		
IXTY 26P10T		-26	0.09	3820	52	70	0.83	150	X004		
IXTA 26P10T		-26	0.09	3820	52	70	0.83	150	X011b		
IXTP 18P10T		-18	0.12	2100	39	62	1.50	83	X005a		
IXTY 18P10T		-18	0.12	2100	39	62	1.50	83	X004		
IXTA 18P10T		-18	0.12	2100	39	62	1.50	83	X011b		
IXTP 96P085T		-85	-96	0.013	13100	180	55	0.42	298		
IXTH 96P085T	-96		0.013	13100	180	55	0.42	298	X014a		
IXTA 96P085T	-96		0.013	13100	180	55	0.42	298	X011b		
IXTP 24P085T	-24		0.065	2090	41	40	1.50	83	X005a		
IXTA 24P085T	-24		0.065	2090	41	40	1.50	83	X011b		
IXTP 120P065T	-65	-120	0.01	13200	185	53	0.42	298	X005a	X020a	TO-264
IXTH 120P065T		-120	0.01	13200	185	53	0.42	298	X014a		
IXTA 120P065T		-120	0.01	13200	185	53	0.42	298	X011b		
IXTP 28P065T		-28	0.045	2030	46	31	1.50	83	X005a		
IXTA 28P065T		-28	0.045	2030	46	31	1.50	83	X011b		
IXTP 140P05T	-50	-140	0.009	13500	200	53	0.42	298	X005a	X027a	SOT-227B miniBLOC
IXTH 140P05T		-140	0.009	13500	200	53	0.42	298	X014a		
IXTA 140P05T		-140	0.009	13500	200	53	0.42	298	X011b		
IXTP 48P05T		-48	0.03	3660	53	30	0.83	150	X005a		
IXTY 48P05T		-48	0.03	3660	53	30	0.83	150	X004		
IXTA 48P05T		-48	0.03	3660	53	30	0.83	150	X011b		
IXTP 32P05T		-32	0.039	1975	46	26	1.50	83	X005a		
IXTY 32P05T		-32	0.039	1975	46	26	1.50	83	X004		
IXTA 32P05T		-32	0.039	1975	46	26	1.50	83	X011b		

CoolMOS™ Power MOSFETs

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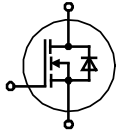
K Series - CoolMOS™

Part Type ○ Not for new design ➤ New	V _{DSS} V	I _{D25} T _C = 25°C A	R _{DS(on)} T _J = 25°C Ω	Q _g typ. nC	R _{thJC} K/W	V _{ISOL} RMS V	Fig. No.	Package style Outline drawings on pages O-31...O-52
C3 Series								
IXKC 20N60C	600	14	0.19	80	1.00	2500	X010a	X005a TO-220AB
IXKC 40N60C		24	0.096	160	0.50	2500	X010a	
IXKR 40N60C		38	0.07	250	0.45	2500	X016a	
IXKN 40N60C		40	0.07	250	0.43	2500	X027a	
IXKN 75N60C		75	0.036	500	0.22	2500	X027a	
○ IXKK 85N60C		85	0.036	540	0.18	-	X020a	X009a PLUS220
IXKC 13N80C	800	13	0.29	85	0.96	2500	X010a	X010a ISOPLUS220™
IXKC 25N80C		20	0.15	180	0.90	2500	X010a	
IXKR 25N80C		25	0.15	170	0.50	2500	X016a	
IXKN 45N80C		44	0.074	335	0.33	2500	X027a	
C5 Series								
○ IXKH 20N60C5	600	20	0.2	32	0.60	-	X014a	X010a ISOPLUS220™
IXKC 23N60C5		23	0.1	60	0.85	2500	X010a	
IXKP 24N60C5		24	0.165	40	0.50	-	X005a	
IXKH 30N60C5		30	0.125	53	0.40	-	X014a	
IXKH 35N60C5		35	0.1	60	0.35	-	X014a	
IXKR 47N60C5		47	0.045	150	0.45	2500	X016a	
IXKH 70N60C5		70	0.045	150	0.20	-	X014a	
IXKT 70N60C5		66	0.045	150	0.23	-	X019	X013 PLUS220SMD
CFD Series with fast Body Diode								
➤ MKH 24I650HR	650	25	0.8	170	0.65	3000	X016c	X014a TO-247AD
<p>CoolMOS™ Configurations in i4-PAC™</p> <p>MKE..R..DCG.. IXKF FDM FMD LKK</p>								
Configuration in ISOPLUS264™ Package								
Part Type	V _{DSS} V	I _{D25} T _C = 25°C A	R _{DS(on) max.} T _J = 25°C Ω	Q _g typ. nC	R _{thJC} K/W	Config.	Fig. No.	X016a ISOPLUS247™
IXKF 40N60SCD1	600	38	0.07	250	0.45	single	X024c	X016c ISO247™
IXKF 40N60SCH1		41	0.07	250	0.45	single	X024c	
MKE 11R600DCGFC ¹⁾	600	15	0.165	40	1.1	boost	X024a	X020a TO-264
FMD 15-06KC5		15	0.165	40	1.1	boost	X024a	
FMD 40-06KC		38	0.07	250	0.45	boost	X024a	
FMD 47-06KC5		47	0.045	150	0.45	boost	X024a	
FDM 47-06KC5	600	47	0.045	150	0.45	buck	X022c	X020a TO-264
¹⁾ with SiC Boost Diode								
Configuration in ISOPLUS264™ Package								
LKK 47-06C5	600	2 x 47	0.045	150	0.45	dual	X022c	X022c ISOPLUS264
<p>X027a SOT-227B miniBLOC</p> <p>X024c ISOPLUS i4-PAC™</p> <p>X024a ISOPLUS i4-PAC™</p> <p>X022c ISOPLUS264</p>								

MOSFET Modules

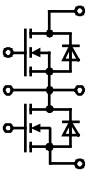
HiPerFET and Polar MOSFET Technology

- low R_{DSon}
- fast body diode
- rugged



Suffix „F“ = HiPerFET™ Technology with Fast Intrinsic Diode

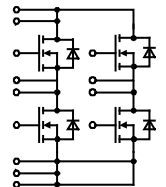
Part Type	V_{DSS}	I_{D25} $T_C = 25^\circ C$	I_{D80} $T_C = 80^\circ C$	R_{DSon} typ. $T_J = 25^\circ C$	t_r	t_f	R_{thJC}	Fig. No.	Package style Outline drawings on pages O-31...O-52		
○ Not for new design											
➤ New	V	A	A	mΩ	ns	ns	K/W				
Single Switch Modules									X128d Y3		
○ VMO 550-01F	100	590	contact factory					X128d	X128d		
○ VMO 650-01F			contact factory								X130d
VMO 1200-01F			930	1.35	200	500	0.039				
○ VMO 580-02F	200	580	contact factory					X130d	X130d Y3		



Part Type	V_{DSS}	I_{D25} $T_C = 25^\circ C$	R_{DSon} typ. $T_J = 25^\circ C$	t_r	t_f	R_{thJC}	Config	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	mΩ	ns	ns	K/W			
MOSFET Modules – Phase Leg Configuration									X130e Y3
VMM 90-09F	900	85	65	76	140	0.08	Phase Leg	X130e	

CoolMOS™ MOSFET Technology

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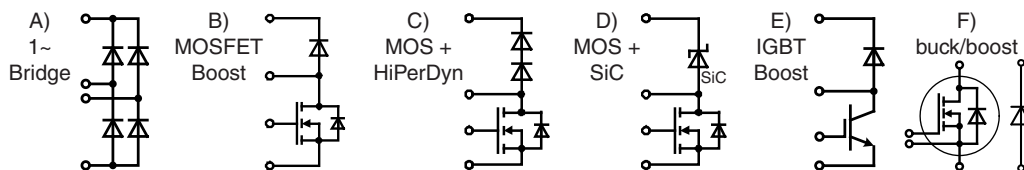


Part Type	V_{DSS}	I_{D25} $T_C = 25^\circ C$	I_{D80} $T_C = 90^\circ C$	R_{DSon} typ. $T_J = 25^\circ C$	t_r	t_f	R_{thJC}	Fig. No.	Package style Outline drawings on pages O-31...O-52
◇ Under development									
➤ New	V	A	A	mΩ	ns	ns	K/W		
MOSFET Modules – H Bridge Configuration									X102 ECO-PAC2
VKM 40-06P1	600	38		70	10	95	0.45	X102	

Rectifier Bridges for Power Factor Correction

Power Stage for Boost Converters (Power Factor Correction)

1-phase PFC



Type	Circuit and Technology	V _{DSS} max	I _D T _C = 25°C	R _{DS(on)} max	V _{RRM} Boost Diode	V _{RRM} Rectifier	Fig. No.	Package style
○ Not for new design ◇ Under development ➤ New		V	A	Ω	V	V		Outline drawings on pages O-31...O-52
MOSFET								
○ FMD 21-05QC	C HiPerFET	500	21	0.220	600	-	X024a	X024a ISOPLUS i4-PAC
MKE 11R600DCGFC	D CoolMOS™ CP + SiC	600	15	0.165		-	X030a	
FMD 15-06KC5	C CoolMOS™ CP		15	0.165		-		
FMD 40-06KC	C CoolMOS™ C3		38	0.070		-		
FMD 47-06KC5	C CoolMOS™ CP		47	0.045		-		
MKE 38RK600DFELB	B CoolMOS™ CP		50	0.045		-		
◇ MKG 40RK600LB	F CoolMOS™ C6		52	0.037		-		
◇ MKG 17RK600DCGLB	2xD CoolMOS™ C6 + SiC		52	0.037		-		
○ VUM 24-05N	A+B HiPerFET	500	35	0.120	600	800	X105b	X030a SMPD-B
○ VUM 33-05N			47			1200		
VUM 33-06PH	A+B Polar	600	50			1600		

Type	Circuit and Technology	V _{CES} max	I _C T _C = 25°C	V _{CESat} @ I _C		V _{RRM} Rectifier	Fig. No.
		V	A	V	A	V	
IGBT							
FID 60-06D	E NPT	600	65	1.6	30	-	X024a

Type	Circuit and Technology	V _{RRM} V	I _{DAV} A	@ T _C °C	Fig. No.
Rectifier					
FBO 16-12N *	A Standard	1200	22	90	X024a
FBO 40-12N *			40	90	
DLA 100B800LB **	A low V _F	800	124	135	X030a
DLA 100B1200LB **	A low V _F	1200	124	135	

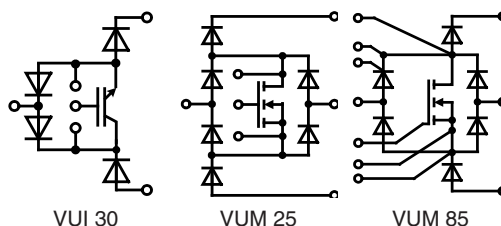
* Recommended in combination with FMD and FID
** Recommended in combination with MKE and MKG

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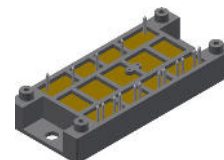
3-phase PFC

“Vienna Rectifier” circuit

- wide input voltage range
- sinusoidal mains input currents in phase with mains
- boost converter operation:
 - input: 3~ AC mains without neutral conductor
 - output: stabilized DC link with center point
- one module used per phase



X104 **V2-Pack**



Type	PN / kW	Configuration	Fig. No.
	3 ~ 400V. T _C = 80°C		
VUM 25-05E ①	10	Vienna rectifier current	X103
VUM 85-05A ①	30	Vienna rectifier current	X104
VUI 30-12N1 ①	15	IGBT stage for buck @ boost PWM converter	X103

X105b **V1-B-Pack**



① contact factory

Diodes

Diodes for High Switching Frequencies

Fast Recovery Epitaxial Diodes (HiPerFRED, FRED) and FRD (SONIC)

Power switches (IGBT, MOSFET, BJT, GTO) for applications in electronics are only as good as their associated free-wheeling diodes. At increasing switching frequencies, the proper functioning and efficiency of the power switch, aside from conduction losses, is determined by the turn-off behavior of the diode (characterized by Q_r , I_{RM} and t_{rr} - Fig. 1). With optimized ultra-fast switching diodes, the development engineer has various possibilities: either higher pulse rate or higher current load or smaller heatsink or more conservative operation due to „cooler“ chips.

The reverse current characteristic following the peak reverse current I_{RM} is another very important property. The slope of the decaying reverse current di_r/dt results from design parameters (technology and diffusion of the diode chips). In a circuit this current slope, in conjunction with parasitic inductances (e.g. connecting leads), causes over-voltage spikes and high frequency in-

terference voltages. The higher the di_r/dt („hard recovery“ or „snap-off“ behavior) the higher is the resulting additional stress for both the diode and the paralleled switch. A slow decay of the reverse current („soft recovery“ behavior), is the most desirable characteristic, and this is designed into all diodes. The wide range of available blocking voltages makes it possible to apply these diodes as output rectifiers in switch-mode power supplies (SMPS) as well as protective and free-wheeling diodes for power switches in inverters.

Diodes for General Purpose Applications

Rectifier Diodes

Diodes of the DS-series (anode on stud) and of the DSI-series (cathode on stud) are mainly used for rectifying 50 or 60 Hz mains currents. Discrete diodes in plastic and metal housings and also different diode bridges are available for standard line voltages (from 110 V to 690 V AC).

Avalanche Diodes

Avalanche diodes or surge-voltage-proof rectifier diodes of the series DSA (anode on stud) and DSAI (cathode on stud) differ from standard diodes of the series DS and DSI in the following manner: the operation in avalanche breakdown above the normal reverse blocking voltage (V_{RRM}) can be tolerated as long as the power is within the specified maximum permissible non-repetitive reverse surge dissipation P_{RSM} at the specified pulse width. In order to have technologically good control of the avalanche breakdown, it is important to ensure homogeneous doping of the middle zone of the silicon chip and suitable junction termination and passivation at the edges where PN-junctions are exposed to the surface (high field strength at the edge). Because of this ruggedness against periodically occurring short-term voltage surges in the blocking direction, the user frequently can do without protective overvoltage networks. In addition, if avalanche diodes are put in series for high voltage applications, the sharp avalanche breakdown of the blocking characteristic ensures static and dynamic voltage distribution uniformly across each device. Thus, in general, none of the series diodes will be overstressed by reverse voltages which are substantially above the avalanche voltage. All high voltage rectifier modules manufactured in quantity are assembled with avalanche diodes.

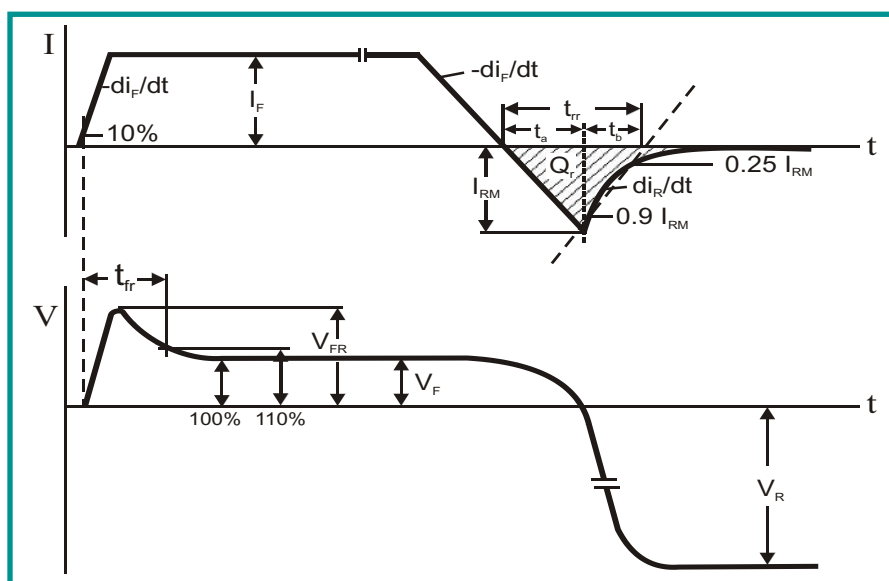
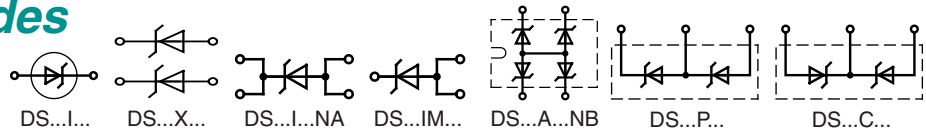


Fig. 1: Current and voltage during turn-on and turn-off switching of fast diodes

Schottky Gen² Diodes

$I_{FAV} = 10 - 300 \text{ A}$

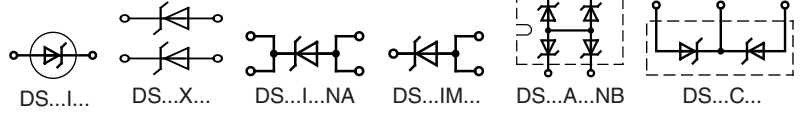


Type	V_{RRM}	I_{FAV}	@ T_C	V_F	@ I_F	T_{VJM}	R_{thJC}	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	$d = 0.5$ °C	$T_{VJ} = 125^\circ\text{C}$ V	A	°C	K/W		
DSB 20I15PA DSB 40C15PB	15	20 2x 20	130 130	0.39 0.39	20 20	150 150	1.75 1.75	X005b X005a	X005a TO-220AB
DSB 30C30PB DSB 60C30PB DSB 60C30HB	30	2x 15 2x 30 2x 30	130 130 125	0.44 0.49 0.47	15 30 30	150 150 150	1.75 0.85 0.95	X005a X005a X014a	
DSB 10I45PM DSA 20C45PB DSA 15I45PA DSA 15IM45IB DSB 15IM45IB DSA 30C45PB DSA 30C45PC DSB 30C45PB DSA 30C45HB DSB 30C45HB DSA 60C45PB DSB 60C45PB DSA 60C45HB DSB 60C45HB DSA 80C45HB DSB 80C45HB DSA 300I45NA	45	10 2x 10 15 15 15 2x 15 2x 15 2x 15 2x 15 2x 15 2x 30 2x 30 2x 30 2x 30 2x 40 2x 40 300	115 155 155 155 125 155 155 125 155 125 150 125 150 125 150 120 95	0.52 0.62 0.63 0.63 0.55 0.63 0.63 0.55 0.62 0.54 0.67 0.60 0.66 0.58 0.69 0.59 0.70	10 10 15 15 15 15 15 15 15 15 30 30 30 30 40 40 300	150 175 175 175 150 175 175 150 175 150 175 150 175 150 175 150 150	4.50 2.40 1.75 1.75 1.75 1.75 1.75 1.75 1.75 1.75 0.85 0.85 0.95 0.95 0.70 0.70 0.20	X007b X005a X005b X008a X008a X005a X011b X005a X014a X014a X005a X005a X014a X014a X014a X014a X027a	X005b TO-220AC X007a TO-220ABFP X007b TO-220ACFP X008a TO-262AA (I²-PAK)
DSB 10P60PN DSA 20C60PN DSB 20C60PN DSA 30C60PB DSB 30C60PB DSA 60C60PB DSB 60C60PB DSA 60C60HB DSB 60C60HB	2x 60 60	10 2x 10 2x 10 2x 15 2x 15 2x 30 2x 30 2x 30 2x 30	110 140 110 150 125 150 125 150 125	0.62 0.70 0.62 0.72 0.64 0.77 0.69 0.75 0.67	10 10 10 15 15 30 30 30 30	150 175 150 175 150 175 150 175 150	4.50 4.50 4.50 1.75 1.75 0.85 0.85 0.95 0.95	X007a X007a X007a X005a X005a X005a X005a X014a X014a	X007a TO-263AB X014a TO-247AD
DSA 10I100PM DSA 20C100PB DSA 20C100PN DSA 30C100PB DSA 30C100PN DSA 30C100HB DSA 30C100QB DSA 50C100HB DSA 50C100QB DSA 30I100PA DSA 60C100PB DSA 70C100HB DSA 80C100PB DSA 320A100NB ① DSA 300I100NA	100	10 2x 10 2x 10 2x 15 2x 15 2x 15 2x 15 2x 25 2x 25 30 2x 30 2x 35 2x 40 4x 80 300	135 155 135 150 120 150 150 155 155 150 150 150 150 85 90	0.71 0.71 0.71 0.73 0.73 0.72 0.72 0.72 0.72 0.78 0.78 0.74 0.80 0.77 0.79	10 10 10 15 15 15 15 25 25 30 30 35 40 80 300	175 175 175 175 175 175 175 175 175 175 175 175 175 150 150	4.50 2.40 4.50 1.75 4.25 1.75 1.75 0.95 0.95 0.85 0.85 0.70 0.60 0.80 0.20	X007b X005a X007a X005a X007a X014a X017a X014a X017a X005b X005a X014a X005a X027b X027a	X017a TO-3P X027a/b SOT-227B miniBLOC

① Non isolated base plate

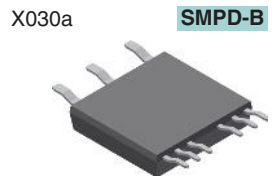
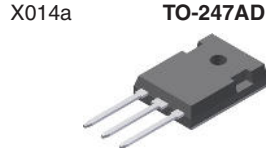
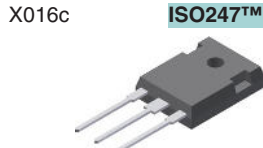
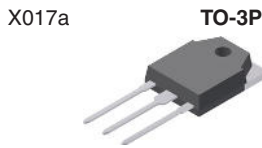
Schottky Gen² Diodes

$I_{FAV} = 5 - 300 \text{ A}$



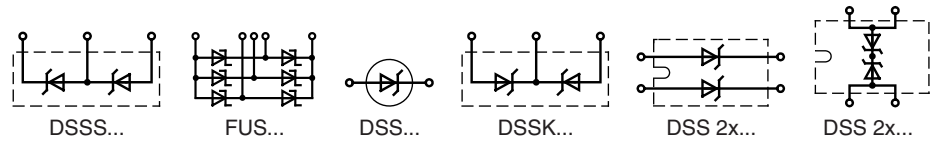
Type	V_{RRM}	I_{FAV}	@ T_C	V_F	@ I_F	T_{VJM}	R_{thJC}	Fig. No.	Package style	
➤ New	V	A	$d = 0.5$ °C	$T_{VJ} = 125^\circ\text{C}$ V	A	°C	K/W		Outline drawings on pages O-31...O-52	
DSA 10C150PB	150	2x 5	155	0.71	5	175	4.80	X005a	X004 TO-252AA 	
DSA 20C150PB		2x 10	155	0.73	10	175	2.40	X005a		
DSA 20C150PN		2x 10	135	0.73	10	175	4.50	X007a		
DSA 30C150PB		2x 15	150	0.75	15	175	1.75	X005a		
DSA 30C150HB		2x 15	150	0.74	15	175	1.75	X014a		
DSA 50C150HB		2x 25	155	0.74	25	175	0.95	X014a		
DSA 30I150PA		30	150	0.80	30	175	0.85	X005b		X005a TO-220AB
DSA 60C150PB		2x 30	150	0.80	30	175	0.85	X005a		
DSA 70C150HB		2x 35	150	0.77	35	175	0.70	X014a		
DSA 120C150QB		2x 60	150	0.80	60	175	0.40	X017a		
DSA 120X150LB		2x 60	150	0.80	60	175	0.80	X030a		
DSA 600A150NB ①		4x 150	115	0.93	150	150	0.30	X027b	X005b TO-220AC 	
DSA 240X150NA		2x 120	95	0.85	120	150	0.40	X027a		
DSA 15IM200UC	200	15	145	0.78	15	175	2.00	X004	X007a TO-220ABFP 	
DSA 30C200IB		2x 15	150	0.78	15	175	1.75	X008a		
DSA 30C200PB		2x 15	150	0.78	15	175	1.75	X005a		
DSA 70C200HB		2x 35	150	0.79	35	175	0.70	X014a		
DSA 90C200HB		2x 45	145	0.86	45	175	0.55	X014a		
DSA 90C200HR		2x 45	140	0.79	45	175	0.70	X016c		
DSA 120X200LB		2x 60	150	0.87	60	175	0.80	X030a		
➤ DSA 240X200LB		2x 120	150	0.87	120	175	0.40	X030a		
DSA 240X200NA		2x 120	90	0.87	120	150	0.40	X027a	X008a TO-262AA (I²-PAK) 	
DSA 300I200NA		300	80	0.88	300	150	0.20	X027a		

① Non isolated base plate



Schottky Diodes

$I_{FAV} = 6 - 2x 200 A$

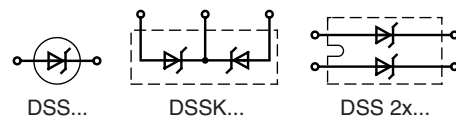


Type	V_{RRM} V	I_{FAV} A d = 0.5	@ T_C °C	V_F V $T_{VJ} = 125^\circ C$	@ I_F A	T_{VJM} °C	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-31...O-52
DSS 40-0008D DSSK 80-0008D DSS 2x200-0008D ①	8	40 2x 40 2x 200	130 130 90	0.28 0.28 0.28	40 40 100	150 150 150	0.80 0.80 0.40	X014a X014a X027b	X004 TO-252AA
DSS 20-0015B DSSK 40-0015B DSSK 70-0015B	15	20 2x 20 2x 35	135 135 130	0.33 0.32 0.35	20 20 35	150 150 150	1.40 1.40 1.10	X005b X014a X014a	X005a TO-220AB
DSS 6-0025BS DSS 25-0025B DSSK 18-0025BS DSSK 38-0025B DSSK 38-0025BS DSSK 48-0025B DSSK 50-0025B DSSK 80-0025B	25	6 25 2x 10 2x 20 2x 20 2x 25 2x 25 2x 40	140 125 140 130 130 130 125 130	0.30 0.45 0.37 0.40 0.40 0.35 0.43 0.39	6 25 10 20 20 20 25 40	150 150 150 150 150 150 150 150	3.00 1.40 1.70 1.40 1.40 1.20 1.40 0.80	X004 X005b X011b X005a X011b X005a X014a X014a	X005b TO-220AC
DSSK 48-003B DSSK 48-003BS DSSK 70-003B DSSK 80-003B	30	2x 25 2x 25 2x 35 2x 40	130 130 125 130	0.35 0.35 0.39 0.39	20 20 35 40	150 150 150 150	1.20 1.20 1.10 0.80	X005a X011b X014a X014a	X010b ISOPLUS220™
DSS 6-0045AS DSS 10-0045B DSS 16-0045A DSS 16-0045AS DSS 25-0045A DSS 60-0045B DSSK 20-0045B DSSK 28-0045BS DSSK 60-0045A DSSK 60-0045B DSSK 80-0045B DSS 2x61-0045A DSS 2x81-0045B DSS 2x121-0045B DSS 2x160-0045A ① FUS 45-0045B	45	6 10 16 16 25 60 2x 10 2x 15 2x 30 2x 30 2x 40 2x 60 2x 80 2x 120 2x 160 45	165 135 160 160 155 105 135 135 150 125 125 110 85 100 90 90	0.50 0.46 0.56 0.56 0.56 0.57 0.46 0.43 0.58 0.45 0.46 0.65 0.63 0.59 0.72 0.54	6 10 16 16 25 60 10 15 30 30 40 60 80 120 160 15	175 150 175 175 175 150 150 150 175 150 150 150 150 150 150 150	3.00 1.70 1.40 1.40 1.10 0.80 1.70 1.40 1.10 1.10 0.80 0.80 0.80 0.40 0.40 3.10	X004 X005b X005b X011b X005b X014b X005a X011b X014a X014a X014a X027a X027a X027a X027b X024a	X011b TO-263AB
DSS 10-006A DSSK 28-006BS DSSK 40-006B DSSK 80-006B DSSK 80-006BR	60	10 2x 15 2x 20 2x 40 2x 40	160 135 135 120 120	0.65 0.52 0.46 0.51 0.51	10 15 20 40 40	175 150 150 150 150	1.70 1.40 1.10 0.80 0.80	X005b X011b X014a X014a X016a	X014a TO-247AD
DSSK 40-008B DSSS 35-008AR DSSK 70-008A DSSK 70-008AR DSS 2x111-008A	80 2x 80	2x 20 35 2x 35 2x 35 2x 110	130 150 150 150 105	0.52 0.68 0.64 0.64 0.72	20 35 35 35 100	150 175 175 175 150	1.10 0.80 0.80 0.80 0.40	X014a X016a X014a X016a X027a	X016a ISOPLUS247™
DSS 10-01A DSS 10-01AS DSS 16-01A DSS 16-01AS DSS 20-01AC DSSS 30-01AR	100 2x 100	10 10 16 16 20 30	160 160 155 155 140 155	0.66 0.66 0.65 0.65 0.80 0.63	10 10 16 16 20 30	175 175 175 175 175 175	1.70 1.70 1.40 1.40 1.70 0.80	X005b X011b X005b X011b X010b X016a	X024a ISOPLUS i4-PAC™
DSSK 16-01A DSSK 16-01AS DSSK 28-01AS DSSK 30-01A DSSK 50-01A DSS 2x41-01A DSS 2x61-01A DSS 2x160-01A ①		2x 8 2x 8 2x 15 2x 15 2x 25 2x 40 2x 60 2x 160	165 165 160 160 155 110 105 80	0.63 0.63 0.64 0.63 0.64 0.70 0.74 0.81	8 8 15 15 25 40 60 160	175 175 175 175 175 150 150 150	1.70 1.70 1.40 1.40 1.10 1.10 0.80 0.40	X005a X011b X011b X014a X014a X027a X027a X027b	X027a/b SOT-227B/UI miniBLOC

① Non isolated base plate

Schottky Diodes

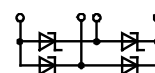
$I_{FAV} = 6 - 2x 100 A$



Type	V_{RRM} V	I_{FAV} d = 0.5 A	@ T_C °C	V_F $T_{VJ} = 125^\circ C$ V	@ I_F A	T_{VJM} °C	R_{thJC} K/W	Fig. No.	Package style Outline drawings on pages O-31...O-52
DSS 6-015AS	150	6	160	0.62	6	175	3.00	X004	TO-252AA
DSSK 20-015A		2x 10	165	0.61	10	175	1.40	X005a	
DSSK 50-015A		2x 25	150	0.68	25	175	1.10	X014a	
DSSK 60-015A		2x 30	155	0.66	30	175	0.80	X014a	
DSSK 60-015AR		2x 30	155	0.66	30	175	0.80	X016a	
DSS 2x101-015A		2x 100	110	0.77	100	150	0.40	X027a	
DSSK 10-018A	180	2x 5	165	0.60	5	175	1.70	X005a	TO-220AB
DSSK 30-018A		2x 15	150	0.74	15	175	1.70	X014a	
DSSK 60-02A	200	2x 30	155	0.70	30	175	0.80	X014a	ISOPLUS220™
DSSK 60-02AR		2x 30	155	0.70	30	175	0.80	X016a	
DSS 2x101-02A		2x 100	105	0.84	100	150	0.40	X027a	

Silicon Carbide Schottky Diodes

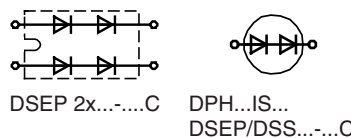
No reverse recovery



Type	V_{RRM} V	I_{FAV} d = 0.5 A	@ T_C °C	V_F typ., $T_{VJ} = 125^\circ C$ V	@ I_F A	C_J pF	R_{thJC} K/W	Fig. No.	Package style
➤ New									
FBS 10-06SC	600	3.0	90	1.70	4.0	9	8.00	X024a	TO-247AD
FBS 16-06SC		5.0	90	1.50	6.0	21	5.60		
FBS 10-12SC	1200	4.5	80	2.61	5.0	33	7.00		

HiPerDyn™ FRED

Series connected diodes for high switching frequencies; packages isolated (2500 V_{RMS})

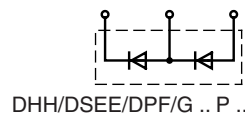


Type	V_{RRM} V	I_{FAV} d = 0.5 A	@ T_C °C	V_F $I_F = I_{FAV}$ V	@ T_{VJ} °C	t_{rr} typ. $T_{VJ} = 25^\circ C$ ns	I_{RM} typ. A	@ -di/dt A/μs	T_{VJM} °C	R_{thJC} K/W	Fig. No.	Package style
➤ New												
DSS 17-06CR *	600	17	95	2.71	125	45	2.0	100	175	1.40	X016b	ISOPLUS247™
DPH 30IS600HI		30	140	1.89	150	35	3.0	200	175	0.55		
DSEP 15-12CR	1200	15	135	2.67	150	15	10.0	600	175	1.00	X016c	ISO247™
DSEP 30-12CR		30	120	3.18	150	15	5.5	600	175	0.60		
DSEP 2x25-12C	1200	2x 25	90	2.95	150	15	5.5	600	150	0.60	X027a	
➤ DPJ 50XS1800NA	1800	2x 25	90	4.33	150	15	4.0	600	150	0.40	X024a	ISOPLUS i4-PAC™

* series connected Schottky Diodes

Dual Ultrafast Diodes

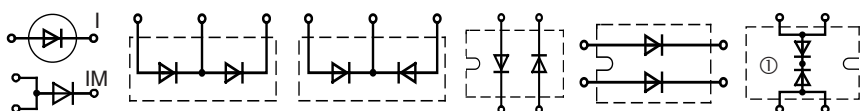
Series connected diodes for high switching frequencies with middle connection; packages isolated (2500 V_{RMS})



DPG 30P300PJ	2x 300	30	135	0.99	150	35	3.0	200	175	1.05	X010a	
DPG 10P400PJ	2x 400	10	145	1.03	150	45	4.0	200	175	2.50		
DSEE 15-12CC	2x 600	15	100	1.50	125	35	4.0	100	175	1.60	X016c	
DSEE 29-12CC		30	90	1.75	125	30	4.0	100	175	0.90		
DPF 30P600HR		30	130	1.27	150	35	17	600	175	0.90	X014a	
DSEE 30-12A ①		30	90	1.78	125	30	4.0	100	175	0.90	X014a	
DSEE 55-24N1F	2x 1200	60	110	1.56	150	75	35	600	175	0.60	X024b	
DHH 55-36N1F	2x 1800	60	50	2.06	125	230	60	800	150	0.60	X027a	SOT-227B miniBLOC

① Non isolated base plate

HiPerFRED²™ Diodes



$I_{FAV} = 10 - 2x 200 A$

DPF/G/H...I*...

DPG...P...

DPF/G...C...

DPF...XA...

DPF...X...

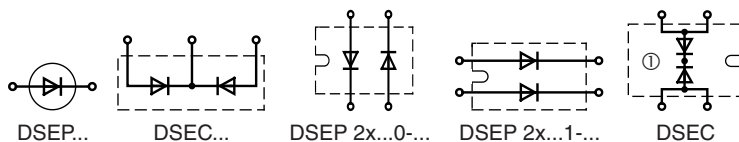
DPF...C...












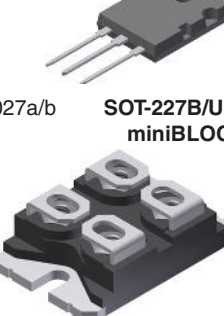
Type	V_{RRM}	I_{FAV}	@ T_C	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	$-di/dt$	T_{VJM}	R_{thJC}	Fig. No.	Package style	
➤ New	V	A	d = 0.5 °C	10 ms 45°C A	$T_{VJ} = 150°C$ V	A	ns	typ. $T_{VJ} = 25°C$ A	A/ μ s	°C	K/W		Outline drawings on pages O-31...O-52	
DPG 10I200PA	200	10	145	140	0.98	10	35	3.0	200	175	2.30	X005b	X004 TO-252AA X007b TO-220AB X005a TO-220AC X007a TO-220ABFP X007b TO-220ACFP X010a ISOPLUS220™ X011b TO-263AB X014a TO-247AD X014b TO-247AD X017a TO-3P X027a/b SOT-227B/UI miniBLOC 	
DPG 10I200PM		10	125	140	0.98	10	35	3.0	200	175	4.40	X007b		
DPG 20C200PB		2x 10	145	140	0.98	10	35	3.0	200	175	2.30	X005a		
DPG 20C200PN		2x 10	125	140	0.98	10	35	3.0	200	175	4.40	X007a		
DPG 15I200PA		15	140	240	1.01	15	35	3.0	200	175	1.70	X005b		
DPG 30C200PB		2x 15	140	240	1.01	15	35	3.0	200	175	1.70	X005a		
DPG 30C200PC		2x 15	140	240	1.01	15	35	3.0	130	175	1.70	X011b		
DPG 30C200HB		2x 15	140	240	1.00	15	35	3.0	200	175	1.70	X014a		
DPF 60C200HB		2x 30	130	400	0.98	30	35	4.0	200	175	0.95	X014a		
DPF 60C200HJ		2x 30	130	560	0.88	30	35	4.0	200	175	1.05	X016a		
DPG 60C200HB		2x 30	135	360	1.06	30	35	3.0	200	175	0.95	X014a		
DPG 60C200QB		2x 30	135	360	1.06	30	35	3.0	200	175	0.95	X017a		
DPF 80C200HB		2x 40	140	560	0.95	40	35	4.0	200	175	0.70	X014a		
DPF 60I200HA		60	135	650	0.98	60	35	4.0	200	175	0.55	X014b		
➤ DPF 120X200NA	2x 60	120	1200	0.90	60	35	4.0	200	175	0.60	X027a			
DPF 240X200NA	2x 120	120	1800	0.90	120	35	4.0	200	175	0.45	X027a			
DPG 10I300PA	300	10	145	140	0.98	10	35	3.0	200	175	2.30	X005b	X007b TO-220ACFP X010a ISOPLUS220™ X011b TO-263AB X014a TO-247AD X014b TO-247AD X017a TO-3P X027a/b SOT-227B/UI miniBLOC 	
DPG 10I300UC		10	150	140	0.98	10	35	3.0	200	175	2.30	X004		
DPG 20C300PB		2x 10	145	140	0.98	10	35	3.0	200	175	2.30	X005a		
DPG 20C300PN		2x 10	125	140	0.98	10	35	3.0	200	175	4.40	X007a		
DPG 15I300PA		15	140	240	1.01	15	35	3.0	200	175	1.70	X005b		
DPG 30C300PB		2x 15	140	240	1.01	15	35	3.0	200	175	1.70	X005a		
DPG 30C300PC		2x 15	140	240	1.01	15	35	3.0	200	175	1.70	X011b		
DPG 30C300HB		2x 15	140	240	1.00	15	35	3.0	200	175	1.70	X014a		
DPF 30I300PA		30	145	390	0.98	30	55	6.0	200	175	0.85	X005b		
DPG 30I300HA		30	135	360	1.06	30	35	3.0	200	175	0.95	X014b		
DPG 30I300PA		30	140	360	1.08	30	35	3.0	200	175	0.85	X005b		
DPG 30I300PC		30	140	360	1.08	30	35	3.0	200	175	0.85	X011b		
DPG 30P300PJ		2x 300	30	135	450	0.99	30	35	3.0	200	175	1.05		X010a
DPF 60C300HB		2x 30	140	400	0.97	30	55	6.0	200	175	0.95	X014a		
DPG 60C300HB	2x 30	135	360	1.06	30	35	3.0	200	175	0.95	X014a			
DPG 60C300HJ	2x 30	135	450	0.96	30	35	3.0	200	175	1.05	X016a			
DPG 60C300PC	2x 30	140	360	1.08	30	35	3.0	200	175	0.85	X011b			
DPG 60C300QB	2x 30	135	360	1.06	30	35	3.0	200	175	0.95	X017a			
DPG 80C300HB	2x 40	135	450	1.07	40	35	3.0	200	175	0.70	X014a			
DPG 60I300HA	60	125	450	1.10	60	35	3.5	200	175	0.55	X014b			
DPG 60I300PC	60	135	450	1.14	60	35	3.5	200	175	0.45	X011b			
DPG 120C300QB	2x 60	125	450	1.10	60	35	3.5	200	175	0.55	X017a			
DPG 10I400PA	400	10	145	150	1.03	10	45	4.0	200	175	2.30	X005b	X016a ISOPLUS247™ X016b ISOPLUS247™ X017a TO-3P X027a/b SOT-227B/UI miniBLOC 	
DPG 10I400PM		10	120	150	1.03	10	45	4.0	200	175	4.40	X007b		
DPG 10P400PJ		2x 400	10	145	130	1.03	10	45	4.0	200	175	2.50		X010a
DPG 20C400PB		2x 10	145	150	1.03	10	45	4.0	200	175	2.30	X005a		
DPG 20C400PC		2x 10	145	150	1.03	10	45	4.0	200	175	2.30	X011b		
DPG 20C400PN		2x 10	120	150	1.03	10	45	4.0	200	175	4.40	X007a		
DPG 15I400PM		15	90	190	1.14	15	45	4.0	200	175	4.20	X007b		
DPG 30C400PB		2x 15	140	190	1.14	15	45	4.0	200	175	1.70	X005a		
DPG 30C400HB		2x 15	140	190	1.13	15	45	4.0	200	175	1.70	X014a		
DPG 30I400HA		30	135	360	1.13	30	45	4.0	200	175	0.95	X014b		
➤ DPG 30I400PC		30	145	300	1.16	30	45	4.0	200	175	0.85	X011b		
➤ DPF 60XA400NA		2x 30	130	400	1.00	30	60	6.0	200	175	1.15	X027a		
DPG 60C400HB		2x 30	135	360	1.13	30	45	4.0	200	175	0.95	X014a		
DPG 60C400QB		2x 30	135	360	1.13	30	45	4.0	200	175	0.95	X017a		
DPG 80C400HB	2x 40	135	400	1.14	40	45	4.0	200	175	0.70	X014a			
DPG 60I400HA	60	120	450	1.22	60	45	4.0	200	175	0.55	X014b			
DPF 60I400HB	60	130	600	1.09	60	60	6.0	200	175	0.55	X014a			
DPG 60I400QB	60	120	450	1.22	60	45	4.0	200	175	0.55	X017a			
➤ DPF 120X400NA	2x 60	120	530	0.95	60	60	6.0	200	175	0.60	X027a			
DPF 240X400NA	2x 120	120	1100	0.95	120	60	6.0	200	175	0.45	X027a			
➤ DPF 400C400NB ①	2x 200	130	1600	0.90	200	60	6.0	200	175	0.20	X027b			
DPH 30IS600HI	600	30	140	450	1.89	30	35	3.0	200	175	0.55	X016b		

① Non isolated base plate

HiPerFRED™ Diodes

$I_{FAV} = 8 - 2x 120 A$

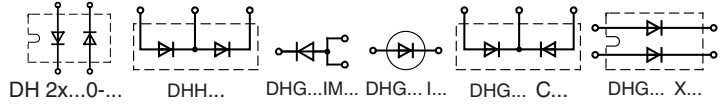


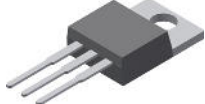






Type	V_{RRM}	I_{FAV}	T_C	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	-di/dt	T_{VJM}	R_{thJC}	Fig. No.	Package style
➤ New	V	A	°C	10 ms 45°C	$T_{VJ} = 150°C$	A	$T_{VJ} = 25°C$	typ. $T_{VJ} = 100°C$	typ.	°C	K/W		Outline drawings on pages O-31...O-52
DSEP 40-03AS	300	40	125	340	1.18	40	35	3.5	200	175	0.85	X011b	X004 TO-252AA
DSEP 6-06AS	600	6	150	40	1.34	6	20	3.5	100	175	2.80	X004	 X005a TO-220AB  X005b TO-220AC  X010a ISOPLUS220™  X011b TO-263AB  X011c TO-263ABHV  X014a TO-247AD  X014b TO-247AD  X016a/b ISOPLUS247™  X019 TO-268AA  X020a TO-264  X027a/b SOT-227B/UI miniBLOC  X027b
DSEP 6-06BS		6	140	40	1.77	6	15	2.0	100	175	2.80	X004	
DSEP 8-06A		10	145	50	1.42	10	35	3.5	100	175	2.50	X005b	
DSEP 8-06B		10	130	50	1.85	10	30	2.0	100	175	2.50	X005b	
DSEP 15-06A		15	140	110	1.35	15	35	4.0	100	175	1.60	X005b	
DSEP 15-06AS		15	140	110	1.35	15	35	4.0	100	175	1.60	X011b	
DSEP 15-06B		15	130	110	1.59	15	25	2.0	100	175	1.60	X005b	
DSEP 15-06BS		15	130	110	1.59	15	25	2.0	100	175	1.60	X011b	
DSEP 29-06A		30	135	250	1.26	30	35	5.5	100	175	0.90	X005b	
DSEP 29-06AS		30	135	250	1.26	30	35	5.5	100	175	0.90	X011b	
DSEP 29-06B		30	120	250	1.63	30	30	3.0	100	175	0.90	X005b	
DSEP 30-06A		30	135	250	1.25	30	35	5.5	100	175	0.90	X014b	
DSEP 30-06B		30	120	250	1.61	30	30	3.0	100	175	0.90	X014b	
DSEP 30-06BR		30	100	250	1.61	30	30	3.0	100	175	1.10	X016b	
DSEP 60-06A	60	110	600	1.39	60	35	5.5	100	175	0.65	X014b		
DSEP 60-06AT	60	110	600	1.39	60	35	5.5	100	175	0.65	X019		
➤ DSEP 75-06AR	75	115	1000	1.38	75	35	6.5	200	175	0.50	X016a		
DSEP 8-12A	1200	10	130	40	1.96	10	40	4.0	100	175	2.50	X005b	
DSEP 12-12A		15	130	90	1.87	15	40	4.5	100	175	1.60	X005b	
DSEP 12-12AZ		15	130	90	1.87	15	40	4.5	100	175	1.60	X011c	
DSEP 12-12B		15	130	90	2.06	15	35	3.0	100	175	1.60	X005b	
DSEP 12-12BZ		15	130	90	2.06	15	35	3.0	100	175	1.60	X011c	
DSEP 29-12A		30	120	200	1.81	30	40	8.5	100	175	0.90	X005b	
DSEP 30-12A		30	115	200	1.79	30	40	8.5	100	175	0.90	X014b	
DSEP 30-12AR		30	100	200	1.79	30	40	8.5	100	175	1.10	X016b	
DSEP 60-12A		60	85	500	1.81	60	40	7.0	100	175	0.65	X014b	
DSEP 60-12AR		60	60	500	1.81	60	40	7.0	100	175	0.80	X016b	
DSEC 16-06A		600	2x 10	145	50	1.42	10	35	3.5	100	175	2.50	X005a
DSEC 16-06AC			2x 8	85	50	1.20	10	35	3.5	100	175	3.00	X010a
DSEC 29-06AC			2x 15	140	110	1.34	15	35	4.0	100	175	1.60	X010a
DSEC 30-06A			2x 15	140	110	1.34	15	35	4.0	100	175	1.60	X014a
DSEC 30-06B	2x 15		130	110	1.58	15	25	2.0	100	175	1.60	X014a	
DSEC 59-06BC	2x 30		105	200	1.56	30	30	4.0	100	175	1.10	X010a	
DSEC 60-06A	2x 30		135	250	1.25	30	35	5.5	100	175	0.90	X014a	
DSEC 60-06B	2x 30		120	250	1.61	30	30	3.0	100	175	0.90	X014a	
DSEC 16-12A	1200		2x 10	130	40	1.96	10	40	4.0	100	175	2.50	X005a
DSEC 16-12AS			2x 10	130	40	1.96	10	40	4.0	100	175	2.50	X011b
DSEC 30-12A			2x 15	115	90	1.86	15	40	4.5	100	175	1.60	X014a
DSEC 60-12A			2x 30	115	200	1.79	30	40	8.5	100	175	0.90	X014a
DSEC 120-12AK			2x 60	85	500	1.81	60	40	7.0	100	175	0.65	X020a
DSEP 2x31-03A	300		2x 30	110	300	0.90	30	30	4.5	100	150	1.15	X027a
DSEP 2x61-03A		2x 60	75	600	1.26	60	30	4.0	100	150	0.85	X020a	
DSEP 2x91-03A		2x 90	70	1000	1.10	90	30	4.5	100	150	0.60		
DSEP 2x31-06A	600	2x 30	95	250	1.23	30	35	5.5	100	150	1.15		X027a/b
DSEP 2x31-06B		2x 30	75	250	1.59	30	30	3.0	100	150	1.15		
DSEP 2x61-06A		2x 60	65	600	1.48	60	35	5.5	100	150	0.85		
DSEP 2x91-06A		2x 90	55	1000	1.39	90	35	8.0	100	150	0.60		
DSEP 2x31-12A	1200	2x 30	70	200	1.77	30	40	8.5	100	150	1.15	X027a/b	
DSEP 2x60-12A		2x 60	80	800	1.52	60	40	8.0	100	150	0.60		
DSEP 2x61-12A		2x 60	80	800	1.52	60	40	8.0	100	150	0.60		
DSEP 2x101-04A	400	2x 100	45	1000	1.22	125	30	5.5	100	150	0.60	X027b	
DSEC 240-04A ①		2x 120	75	2000	1.00	120	30	5.5	100	150	0.45		
DSEC 240-06A ①	600	2x 120	75	2000	1.26	120	35	8.0	100	150	0.40		

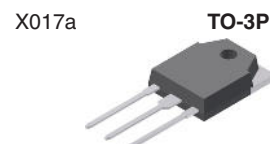
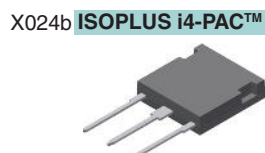
① Non isolated base plate

SONIC-FRD™ Diodes

$I_{FAV} = 5 - 2x 60 A$ • ultrasoft and fast recovery
• very low temperature dependence



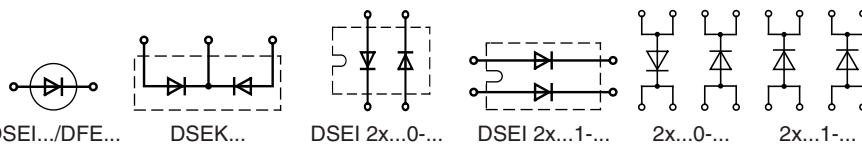
Type	V_{RRM}	I_{FAV}	@ T_C	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	$-di/dt$	T_{VJM}	R_{thJC}	Fig. No.	Package style				
														$d = 0.5$	10 ms 45°C	$T_{VJ} = 125°C$	typ. $T_{VJ} = 25°C$
➤ New	V	A	°C	A	V	A	ns	A	A/μs	°C	K/W		Outline drawings on pages O-31...O-52				
DHG 5I600PA	600	5	105	40	2.17	5	35	2	100	150	3.15	X005b	 TO-220AB				
DHG 5I600PM		5	85	40	2.17	5		2	100		4.20	X007b					
DHG 10C600PB		2x 5	105	40	2.17	5		2	100		3.15	X005a					
DHG 10I600PA		10	95	80	2.18	10		4	200		1.80	X005b					
DHG 10I600PM		10	25	80	2.18	10		4	200		4.00	X007b					
DHG 20C600PB		2x 10	95	80	2.18	10		4	200		1.80	X005a					
DHG 20C600QB		2x 10	95	80	2.17	10		4	200		1.80	X017a					
DHG 20I600PA		20	100	150	2.21	20		8	400		0.80	X005b					
DHG 20I600HA		20	95	150	2.19	20		8	400		0.90	X014b		X005b	 TO-220AC		
DHG 40C600PB		2x 20	100	150	2.21	20		8	400		0.80	X005a					
DHG 40C600HB		2x 20	95	150	2.19	20		8	400		0.90	X014a					
DHG 50X600NA		1200	2x 25	70	200	2.03		25	75		12	600		150	1.20	X027a	 TO-220ACFP
DHG 30I600PA			30	95	200	2.24		30			12	600			0.60	X005b	
DHG 30IM600PC			30	95	200	2.22		30			12	600			0.60	X011b	
DHG 30I600HA			30	85	200	2.21		30			12	600			0.70	X014b	
DHG 60C600HB	2x 30		85	200	2.21	30	12	600		0.70	X014a						
DHG 100X600NA	2x 50		80	430	2.00	50	20	1200		0.60	X027a						
DHG 60I600HA	60		95	430	2.10	60	24	1200		0.30	X014b						
DHG 10I1200PA	10		95	65	2.13	10	8	350		1.80	X005b						
DHG 10I1200PM	10		30	65	2.13	10	8	350		4.00	X007b						
DHG 20C1200PB	2x 10		95	65	2.13	10	8	350		1.80	X005a						
DHG 20I1200PA	20	105	135	2.16	20	19	750	0.80	X005b	X011b	 TO-263AB						
DHG 20I1200HA	20	95	135	2.14	20	19	750	0.90	X014b								
DHG 40C1200HB	2x 20	95	135	2.14	20	19	750	0.90	X014a								
DHG 50X1200NA	2x 25	70	180	2.00	25	25	1000	1.20	X027a								
DHG 30I1200HA	30	90	180	2.16	30	25	1000	0.70	X014b								
DHG 100X1200NA	2x 50	65	430	2.05	50	50	2500	0.60	X027a								
DHG 60I1200HA	60	95	430	2.22	60	50	2500	0.30	X014b	X014a	 TO-247AD						
DHG 10I1800PA	1800	10	85	65	2.30	10	150	8	200	150		2.15	X005b				
DH 20-18A	1800	20	80	150	2.94	20		16	300		0.90	X014b					
DH 40-18A	1800	40	85	350	2.69	40		33	400		0.45	X014b					
DH 60-14A	1400	60	100	700	2.05	60		60	800		0.30	X014b					
DH 60-16A	1600	60	100	700	2.05	60		60	800		0.30	X014b					
DH 60-18A	1800	60	100	700	2.05	60		60	800		0.30	X014b					
DHG 55-36N1F	2x 1800	60	50	700	2.05	60		60	800		0.60	X024b		X014b	 TO-247AD		
DH 2x60-18A	1800	2x 60	55	700	2.02	60		60	800		0.60	X027a					
DH 2x61-16A	1600	2x 60	55	700	2.02	60		60	800		0.60	X027a					
DH 2x61-18A	1800	2x 60	55	700	2.02	60		60	800		0.60	X027a					



FRED Diodes

Fast Recovery Epitaxial Diodes

$I_{FAV} = 8 - 2x 165 A$









Type	V_{RRM}	I_{FAV}		I_{FRMS}	I_{FSM}	V_F		t_{rr}	I_{RM}	$-di/dt$	R_{thJC}	Fig. No.	Package style	
		@ T_C				@ I_F								
		d = 0.5			10 ms 45°C	$T_{VJ} = 150°C$		typ. $T_{VJ} = 25°C$	typ. $T_{VJ} = 100°C$				Outline drawings on pages O-31...O-52	
➤ New	V	A	°C	A	A	V	A	ns	A	A/ μ s	K/W			
DSEI 8-06A	600	8	115	16	100	1.30	8	35	2.5	64	2.50	X005b	X014a	TO-247AD
DSEI 8-06AS	600	8	115	16	100	1.30	8	35	2.5	64	2.50	X011b		
DFE 10I600PM	600	10	100	16	100	1.30	10	35	2.5	64	4.20	X007b		
DSEI 12-06A	600	14	100	25	100	1.50	16	35	4.0	100	2.00	X005b	X014b	TO-247AD
DSEI 12-06AS	600	14	100	25	100	1.50	16	35	4.0	100	2.00	X011b		
DSEI 12-10A	1000	12	100	25	75	2.10	12	50	6.5	100	1.60	X005b		
DSEI 12-12A	1200	11	100	25	75	2.20	12	50	6.5	100	1.60	X005b		
DSEI 12-12AZ	1200	11	100	25	75	2.20	12	50	6.5	100	1.60	X011c		
DSEI 20-12A	1200	17	85	70	130	1.87	12	40	7.0	100	1.60	X005b		
DSEI 19-06AS	600	20	65	25	100	1.50	16	35	4.0	100	2.00	X011b		
DSEI 36-06AS	600	37	85	70	300	1.40	37	35	10.0	240	1.00			
➤ DFE 30I600QA	600	30	90	70	300	135	30	35	10.0	240	1.00	X017b	X016a	ISOPLUS247™
➤ DFE 30I600QM	600	30	45	70	300	135	30	35	10.0	240	2.50	X017d		
DSEI 30-06A	600	37	85	70	300	1.40	37	35	10.0	240	1.00	X014b	X016b	ISOPLUS247™
DSEI 30-10A	1000	30	85	70	200	2.00	36	35	16.0	240	0.90	X014b		
DSEI 30-10AR	1000	30	85	70	200	2.00	36	35	16.0	240	0.90	X016b		
DSEI 30-12A	1200	26	85	70	200	2.20	30	40	16.0	240	0.90	X014b		
DSEI 60-02A	200	69	85	98	600	0.88	60	35	8.0	200	0.75	X014b	X016b	ISOPLUS247™
DSEI 60-06A	600	60	70	100	550	1.50	70	35	19.0	480	0.75	X014b		
DSEI 60-10A	1000	60	60	100	500	1.80	60	35	32.0	480	0.66	X014b		
DSEI 60-12A	1200	52	60	100	500	2.00	60	40	32.0	480	0.66	X014b		
DSEI 120-06A	600	126	70	100	600	1.12	70	35	17.0	200	0.35		X017b	TO-3P
DSEI 120-12A	1200	109	60	100	600	1.55	70	40	25.0	200	0.35			
DSEK 60-02A	200	2x 34	115	50	325	0.85	30	35	4.0	100	1.00	X014a	X017d	TO-3PFP
DSEK 60-02AR	200	2x 34	115	50	325	0.85	30	35	4.0	100	1.00	X016a		
DSEK 60-06A	600	2x 30	85	50	300	1.40	37	35	10.0	240	1.00	X014a		
DSEK 60-12A	1200	2x 26	85	50	200	2.20	30	40	16.0	240	0.90	X014a		
DSEI 2x30-04C	400	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a	X027a	SOT-227B miniBLOC
DSEI 2x30-06C	600	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a		
DSEI 2x30-10B	1000	2x 30	50	70	200	2.00	30	35	16.0	240	1.25	X027a		
DSEI 2x30-12B	1200	2x 28	50	70	200	2.20	30	40	16.0	240	1.25	X027a		
DSEI 2x31-04C	400	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a		
DSEI 2x31-06C	600	2x 30	85	70	300	1.40	30	35	10.0	240	1.25	X027a		
DSEI 2x31-10B	1000	2x 30	50	70	200	2.00	30	35	16.0	240	1.25	X027a		
DSEI 2x31-12B	1200	2x 28	50	70	200	2.20	30	40	16.0	240	1.25	X027a		
DSEI 2x61-02A	200	2x 71	85	100	950	0.88	60	35	8.0	200	0.80	X027a		
DSEI 2x60-04C	400	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X027a		
DSEI 2x61-04C	400	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X027a		
DSEI 2x61-06C	600	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X027a		
DSEI 2x61-10B	1000	2x 60	50	100	500	1.80	60	35	32.0	480	0.70	X027a		
DSEI 2x61-12B	1200	2x 52	50	100	450	2.15	60	40	32.0	480	0.70	X027a		
DSEI 2x61-06P	600	2x 60	70	100	550	1.50	60	35	19.0	480	0.70	X101		
DSEI 2x61-12P	1200	2x 52	50	100	450	2.15	60	40	32.0	540	0.70	X101		
DSEI 2x121-02A	200	2x 123	70	150	1200	0.95	120	35	12.0	200	0.50	X027a	X102	ECO-PAC 1
DSEI 2x101-06A	600	2x 96	70	150	1200	1.17	100	35	19.0	200	0.50	X027a		
DSEI 2x101-12A	1200	2x 91	50	130	900	1.61	100	40	24.0	200	0.50	X027a		
DSEI 2x101-06P	600	2x 96	70	150	1200	1.17	100	40	19.0	200	0.50	X102		
DSEI 2x101-12P	1200	2x 91	50	130	900	1.61	100	40	24.0	200	0.50	X102		See data sheet for pin arrangement
DSEI 2x161-02P	200	2x 165	70	270	1200	1.05	200	35	20.0	200	0.29	X102	X102	ECO-PAC 2
DSEI 2x161-06P	600	2x 147	70	270	1200	1.40	200	35	45.0	200	0.29	X102		
DSEI 2x161-12P	1200	2x 128	70	270	1200	1.75	200	40	48.0	200	0.29	X102		
X005b	TO-220AC	X007b	TO-220ACFP	X011b	TO-263AB	X011c	TO-263ABHV							

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

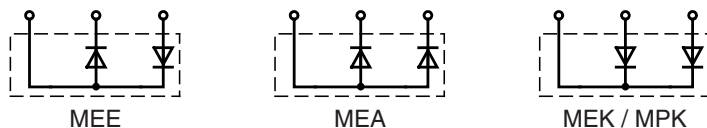
FRED & HiPerFRED™ Modules

$I_{FAV} = 75 - 582 \text{ A}$

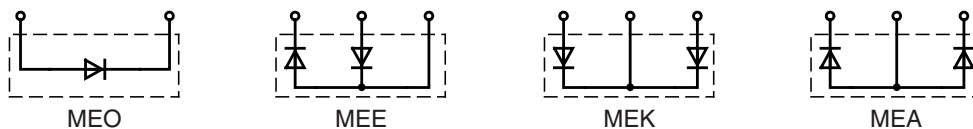
Type	V_{RRM}	I_{FAV}	@ T_C	I_{FRMS}	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	-di/dt	R_{thJC}	P_{tot}	Fig. No.	Package style	
	V	A	°C	A	A	V	A	ns	A	A/ μ s	K/W	W		Outline drawings on pages O-31...O-52	
FRED															
MEO 550-02DA	200	582	75	822	4800	1.08	520	150	15	200	0.071	1750	X126d	X125e TO-240 	
MEO 500-06DA	600	514	75	726	4800	1.41	520	250	132	800	0.071	1750			
MEO 450-12DA	1200	453	75	640	4800	1.76	520	450	165	800	0.071	1750			
MEK 75-12DA	1200	2x 75	75	107	1200	1.85	100	250	33	200	0.45	280	X125e	X125e TO-240 	
MEA 75-12DA	1200	2x 75													
MEE 75-12DA	2x 1200	75													
MEK 95-06DA	600	2x 95	75	142	1200	1.36	100	250	21	200	0.45	280	X125e	X125e TO-240 	
MEA 95-06DA	600	2x 95													
MEE 95-06DA	2x 600	95													
MEK 250-12DA	1200	2x 260	75	367	2400	1.54	260	450	83	400	0.143	875	X126c	X126c Y4 	
MEA 250-12DA	1200	2x 260													
MEE 250-12DA	2x 1200	260													
MEK 300-06DA	600	2x 304	75	430	2400	1.19	260	250	66	400	0.143	875	X126c	X126c Y4 	
MEA 300-06DA	600	2x 304													
MEE 300-06DA	2x 600	304													
MEK 350-02DA	200	2x 356	75	503	2400	0.92	260	150	15	200	0.143	875	X126d	X126d Y4 	
HiPerFRED™															
MEK 150-04DA	400	2x 150	100	200	1200	1.40*	300	300	11	100	0.35	360	X125e		
MEK 600-04DA	400	2x 575	80	800	3000	1.10	400	220	80	900	0.11	1100	X126c		
MPK 95-06DA	600	2x 95	110	200	1200	1.40	100	35	5.5	100	0.575	215	X125e		

* $T_{VJM} = 150^\circ\text{C}$

Diode connections for Fig. X125 (TO-240)

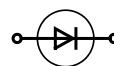


Diode connections for Fig. X126 (Y4: 34 mm package)




SemiFast Diodes

$I_{FAV} = 60 \text{ A}$

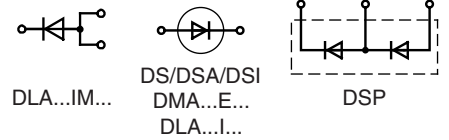


DSDI...

Type	V_{RRM}	I_{FAV}	@ T_C	I_{FRMS}	I_{FSM}	V_F	@ I_F	t_{rr}	I_{RM}	-di/dt	R_{thJC}	Fig. No.	Package style
	V	A	°C	A	A	V	A	ns	A	A/ μ s	K/W		
DSDI 60-14A	1400	63	60	100	500	4.1	70	300	60	500	0.4	X014b	X014b TO-247AD 
DSDI 60-16A	1600												
DSDI 60-18A	1800												

Rectifier Diodes

$I_{FAV} = 2 - 40 \text{ A}$,
Standard & Avalanche Rectifier



Type	V_{RRM}	I_{FAV}	@ T_C	P_{RSM}	I_{FRMS}	I_{FSM} 10 ms 45°C	V_{F0}	r_F	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style
➤ New	V	A	°C	kW	A	A	V	mΩ	°C	K/W	K/W		Outline drawings on pages O-31...O-52
DSA 1-12D DSA 1-16D DSA 1-18D	1200 1600 1800	2.3	T_{amb} 45	1.6	7	110	0.80	67.0	150	R_{thJA} 80		X201	X004 TO-252AA
DLA 5P800UC	2x 800	5	140	-	20	40	0.74	44.0	175	5.50	0.50	X004	
DSP 8-08S DSP 8-12S DSP 8-08A DSP 8-12A DSP 8-08AS DSP 8-12AS	2x 800 2x 1200 2x 800 2x 1200 2x 800 2x 1200	8	160	-	25	100	0.79	33.0	175	1.50	0.25	X011b X005a X011a	X005a TO-220AB
DSP 8-12AC	2x 1200	11	100	-	17	100	0.80	41.0	150	1.80	0.60	X010a	
DLA 10IM800UC	800	10	100	-	20	80	0.80	22.0	175	3.15	0.50	X004	
DMA 10I1600PA	1600	10	150	-	25	120	0.82	37.0	175	1.50	0.50	X005b	
DMA 10P1600PZ	1600	10	150	-	25	120	0.82	37.0	175	1.50	0.50	X011c	X005b TO-220AC
➤ DMA 10P1800PZ	2x 1600	10	150	-	25	120	0.82	37.0	175	1.50	0.25		
DLA 20IM800PC	800	20	100	-	35	200	0.80	19.0	175	1.80	0.25	X011b	
DSP 25-12A DSP 25-16A DSP 25-12AT DSP 25-16AT	2x 1200 2x 1600 2x 1200 2x 1600	25	135	-	70	300	0.81	13.8	175	0.90	0.25	X014a X019	X010a ISOPLUS220™
DSP 25-16AR	2x 1600	25	110	-	70	300	0.81	13.8	175	1.50	0.25	X016a	X010a ISOPLUS220™
DSI 30-08A DSI 30-12A DSI 30-16A	800 1200 1600	30	130	-	35	300	0.82	14.9	175	0.90	0.50	X005b	X010b ISOPLUS220™
DSI 30-08AS DSI 30-12AS DSI 30-16AS	800 1200 1600									0.25		X011b	X010b ISOPLUS220™
DSI 30-08AC	800	30	95	-	35	200	0.80	15.0	150	1.10	0.60	X010b	X010b ISOPLUS220™
➤ DMA 30IM1600PZ	1600	30	140	-	35	300	0.82	14.1	175	0.70	0.25	X011c	
DMA 30E1800HA	1800	30	140	-	70	370	0.88	12.1	175	0.70	0.25	X014b	
➤ DMA 30P1600HR	2x 1600	30	105	-	50	300	0.82	13.5	175	1.30	0.25	X016c	
DLA 40IM800PC	800	40	130	-	35	300	0.81	8.0	175	0.80	0.25	X011b	

X011c **TO-263ABHV**



X011b **TO-263AB**



X011a **TO-263AA**



X016a **ISOPLUS247™**



X014b **TO-247AD**



X014a **TO-247AD**



X201



X019 **TO-268AA**



X016c **ISO247™**








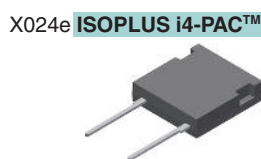
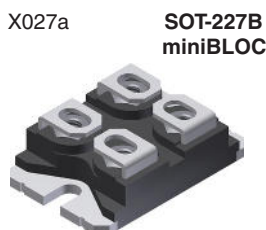
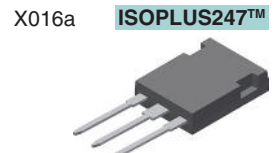
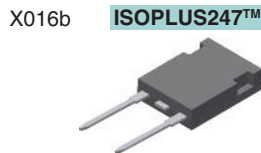
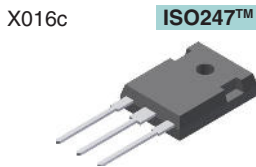
Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Rectifier Diodes

$I_{FAV} = 45 - 150 \text{ A}$,
Standard & Avalanche Rectifier



Type	V_{RRM}	I_{FAV}	@ T_C	P_{RSM}	I_{FRMS}	I_{FSM} 10 ms 45°C	V_{FO}	r_F	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style		
➤ New	V	A	°C	kW	A	A	V	mΩ	°C	K/W	K/W		Outline drawings on pages O-31...O-52		
DSI 45-08A	800	45	130	-	70	480	0.81	9.1	175	0.55	0.25	X014b	X005b TO-220AC 		
DSI 45-12A	1200														
DSI 45-16A	1600														
DSI 45-16AR	1600	45	100	-	70	475	0.81	9.1	175	0.90	0.20	X016b	X008b TO-262AA (I²-PAK) 		
DSIK 45-16AR	1600	2x 45	100	-	70	475	0.81	9.1	175	0.90	0.20	X016a			
DSP 45-12A	2x 1200	45	130	-	70	480	0.81	9.1	175	0.55	0.25	X014a	X011c TO-263ABHV 		
DSP 45-12AZ											0.15	X019a			
DSP 45-16A											0.25	X014a			
DSP 45-16AZ											0.15	X019a			
DSP 45-16AR	2x 1600	45	100	-	70	480	0.81	9.1	175	0.90	0.25	X016a			
➤ DSP 45-18A	2x 1800	45	130	-	70	480	0.81	9.1	175	0.55	0.25	X014a			
➤ DMA 50P1200HR	2x 1200	50	105	-	70	500	0.82	9.0	175	0.70	0.25	X016c			
DLA 60I1200HA	1200	60	150	-	70	850	0.77	4.2	175	0.30	0.25	X014b	X011c TO-263ABHV		
DSI 2x55-12A	1200	2x 60	95	-	120	800	0.83	6.2	150	0.60	0.10	X027a	X014a TO-247AD 		
DSI 2x55-16A	1600														
DMA 150E1600NA	1600	150	90	-	150	3000	0.83	2.0	150	0.25	0.10	X027a			
DNA 30ER2200IY	2200	30	140	-	35	370	0.88	12.9	175	0.70	0.50	X008b	X014a TO-247AD		
DNA 30E2200PA												X005b			
DNA 30E2200PZ												0.25		X011c	
DNA 30EM2200PZ															
DNA 30E2200FE	2200	30	100	-	70	370	0.88	12.2	175	1.35	0.20	X024e			
➤ DAA 10EM1800PZ	1800	10	150	1.6	35	150	0.81	32.0	175	1.50	0.25	X011c	X014b TO-247AD 		
➤ DAA 10P1800PZ	2x 1800	10	150	1.6	35	150	0.82	37.0	175	1.50	0.25				
➤ DMA 200X1600NA	1600	2x 100	100	-	150	1500	0.80	4.0	150	0.30	0.10	X027a	X014b TO-247AD		
➤ DMA 200XA1600NA															
➤ DAA 200X1800NA														1800	20
➤ DAA 200XA1800NA															



Rectifier Diodes











DSI/DSAI..



DS/DSA..

$I_{FAV} = 3 - 110 \text{ A}$, Standard Diodes (DS..), Avalanche Diodes (DSA..)

Type	V_{RRM}	I_{FAV}	@ T_C	P_{RSM}	I_{FRMS}	I_{FSM} 10 ms 45°C	V_{FO}	r_F	T_{VJM}	R_{thJC}	R_{thCH}	Symbol	Fig. No.	Package style		
➤ New	V	A	°C	kW	A	A	V	mΩ	°C	K/W	K/W			Outline drawings on pages O-31...O-52		
DS 2-08A	800	3.6	T_{amb} 45	-	7	120	0.85	43.0	180	R_{thJA} 30		X200	X200	Metal-can 		
DS 2-12A	1200															
DSA 2-12A	1200			2.5	7	120	0.85	43.0	180							
DSA 2-16A	1600															
DSA 2-18A	1800															
DSA 9-12F	1200	11	100	4.5	18	250	0.85	15.0	180	2.00	1.00	⚡	X204	X204 DO-203AA (DO-4) M5 		
DSA 9-16F	1600															
DSA 9-18F	1800															
DS 17-08A	800	25	125	-	40	370	0.85	8.0	180	1.50	0.60	⚡	X205	X205 DO-203AA (DO-4) 10-32 UNF 		
DS 17-12A	1200			7	40	370	0.85	8.0	180	1.50	0.60					
DSA 17-12A	1200	25	125													
DSA 17-16A	1600															
DSA 17-18A	1800															
DSI 17-08A	800	25	125	-	40	370	0.85	8.0	180	1.50	0.60	⚡	X205	X205 DO-203AA (DO-4) 10-32 UNF 		
DSI 17-12A	1200															
DSAI 17-12A	1200	25	100	7	40	370	0.85	8.0	180	1.50	0.60					
DSAI 17-16A	1600															
DSAI 17-18A	1800															
DS 35-08A	800	49	100	-	80	650	0.85	4.5	180	1.05	0.20	⚡	X206a	X206a DO-203AB (DO-5) 		
DS 35-12A	1200															
DSA 35-12A	1200	49	100	11	80	650	0.85	4.5	180	1.05	0.20					
DSA 35-16A	1600															
DSA 35-18A	1800															
DSI 35-08A	800	49	100	-	80	650	0.85	4.5	180	1.05	0.20	⚡	X206a	X206a DO-203AB (DO-5) 		
DSI 35-12A	1200															
DSAI 35-12A	1200	49	100	11	80	650	0.85	4.5	180	1.05	0.20					
DSAI 35-16A	1600															
DSAI 35-18A	1800															
DS 75-08B	800	110	100	-	160	1400	0.75	2.0	180	0.50	0.40	⚡	X207	X207 DO-203AB (DO-5) 		
DS 75-12B	1200															
DSA 75-12B	1200	110	100	20	160	1400	0.75	2.0	180	0.50	0.40					
DSA 75-16B	1600															
DSA 75-18B	1800															
DSI 75-08B	800	110	100	-	160	1400	0.75	2.0	180	0.50	0.40	⚡	X207	X207 DO-203AB (DO-5) 		
DSI 75-12B	1200															
DSAI 75-12B	1200	110	100	20	160	1400	0.75	2.0	180	0.50	0.40					
DSAI 75-16B	1600															
DSAI 75-18B	1800															

X209 **TO-208AC (TO-48)**

Phase Control Thyristors

$I_{TAV} = 25 - 63 \text{ A}$



Type	V_{RRM} V_{DRM}	I_{TAV} $T_C = 85^\circ\text{C}$	$I_{T(RMS)}$	I_{TSM} 45°C 10 ms	$(dv/dt)_{cr}$	V_{TO}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.
	V	A	A	A	V/μs	V	mΩ	°C	K/W	K/W	
CS 23-08io2	800	25	50	450	1000	1.00	10.0	125	1.00	0.60	X209
CS 23-12io2	1200										
CS 23-16io2	1600										
CS 35-08io4	800	63	120	1200	1000	0.85	3.5	125	0.40	0.20	X210
CS 35-12io4	1200										
CS 35-14io4	1400										

X210 **TO-208AC (TO-65)**

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristors, SCRs

(SCR = Silicon Controlled Rectifier)

Phase Control Thyristors

Thyristors are very rugged devices. Compared to all other controlled semiconductor components, they feature the highest current capacity per chip area especially at high voltage. They are mainly used as control devices in 50 and 60 Hz AC mains equipment.

Principal applications are static converter circuits for speed control of DC-drives, or switching and control functions for temperature, lighting, soft-start, etc. in single-phase and three-phase AC switch configurations. Phase control thyristors are designed for optimal forward conduction and reverse blocking characteristics, due to only moderate requirements for turn-on and turn-off parameters.

Phase Control Thyristors







$$I_{TAV} = 5 - 30 \text{ A}$$



CLB...



CS.../CL/MA...E/I...

Type	V _{RRM} V _{DRM}	I _{TAV}	@ T _C	I _{T(RMS)}	I _{TSM} 45°C 10 ms	(dv/dt) _{cr}	V _{TO}	r _T	T _{VJM}	R _{thJC}	R _{thCH}	Fig. No.	Package style
➤ New	V	A	°C	A	A	V/μs	V	mΩ	°C	K/W	K/W		Outline drawings on pages O-31...O-52
CLA 5E1200UC ➤ CLA 5E1200PZ	1200	5	135	8	70	500	0.89	85.0	150	1.50	0.50	X004 X011c	X004 TO-252AA 
CS 19-08ho1 CS 19-12ho1 CS 19-08ho1S CS 19-12ho1S	800 1200 800 1200	20	110	31	160	500	0.86	22.0	125	0.70	0.50	X005a X011b	
➤ CMA 20E1600PB ➤ CMA 20E1600PZ	1600	20	115	31	180	500	0.92	28.0	150		0.50	X005a X011c	X005a TO-220AB 
CS 20-12io1 CS 20-14io1 CS 20-16io1	1200 1400 1600	20	130	31	260	1000	0.87	17.3	150	0.60	0.25	X014a	X007a TO-220ABFP 
CS 20-22moF1 CS 20-25mo1F	2200 2500	18	85	28	200	2500	0.97	17.0	125	0.92	0.15	X024c	
CS 20-25moT1	2500	18	85	28	200	2500	0.97	17.0	125	0.80	0.15	X019	X007a TO-220ABFP 
CS 22-08io1M CS 22-12io1M	800 1200	16	90	25	300	500	0.86	13.2	150	2.50	0.50	X007a	
CLA 30E1200PB CLA 30E1200PC ➤ CLA 30E1200NPZ ➤ CLB 30I1200PZ *	1200	30	115	47	300	500	0.86	13.2	150	0.50	0.50	X005a X011b X011c	X011b TO-263AB 
CLA 30E1200HB CLB 30I1200HB *	1200	30	120	47	300	500	0.86	12.5	150	0.50	0.25	X014a	
CMA 30E1600PB CMA 30E1600PZ CMA 30E1600PN	1600 1600 1600	30 30 30	115 115 40	47 47 47	260 260 260	500 500 500	0.92 0.92 0.92	18.0 18.0 18.0	150 150 150	0.75 0.75 2.50	0.50 0.25 0.50	X005a X011c X007a	X011c TO-263ABHV 
CS 30-12io1 CS 30-14io1 CS 30-16io1	1200 1400 1600	30	120	47	400	1000	0.87	14.2	150	0.50	0.25	X014a	

* Anode gated

X024c **ISOPLUS i4-PAC™**

X019

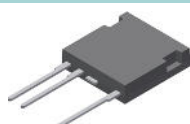
TO-268AA

X014a

TO-247AD

X011c

TO-263ABHV

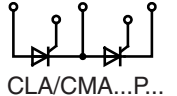
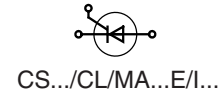


Thyristors, SCRs

(SCR = Silicon Controlled Rectifier)

Phase Control Thyristors

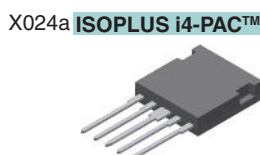
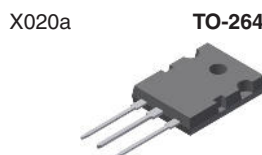
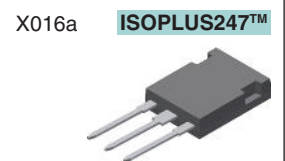
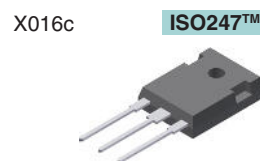
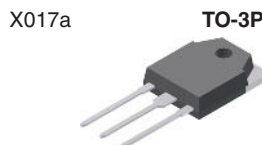
$I_{TAV} = 30 - 100 \text{ A}$



Type	V_{RRM} V_{DRM}	I_{TAV}	@ T_C	$I_{T(RMS)}$	I_{TSM} 45°C 10 ms	$(dv/dt)_{cr}$	V_{TO}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style
➤ New	V	A	°C	A	A	V/μs	V	mΩ	°C	K/W	K/W		Outline drawings on pages O-31...O-52
CMA 30P1600FC	2x 1600	30	90	47	400	1000	0.87	14.2	150	1.00	0.25	X024a	X005a TO-220AB
➤ CLA 40E1200HR	1200	40	95	63	650	1000	0.85	7.9	150	0.80	0.25	X016c	
CLA 40P1200FC	1200	40	95	63	650	1000	0.86	7.9	150	0.80	0.20	X024a	
➤ CMA 40E1600HR	1600	40	90	63	550	1000	0.81	9.8	150	0.80	0.25	X016c	
CS 45-08io1	800	45	110	71	520	1000	0.88	11.0	150	0.40	0.25	X014a	X011b TO-263AB
CS 45-12io1	1200												
CS 45-16io1	1600												
CS 45-16io1R	1600	45	80	71	520	1000	0.88	11.0	150	0.80	0.25	X016a	
CLA 50E1200HB	1200	50	125	79	650	1000	0.88	7.7	150	0.25	0.25	X014a	X011c TO-263ABHV
CLA 50E1200TC											0.15	X019	
➤ CMA 50E1600HB	1600	50	110	79	550	1000	0.83	9.6	150	0.40	0.25	X014a	
➤ CMA 50E1600QB												X017a	
➤ CMA 50E1600TZ											0.15	X019a	
CMA 50P1600FC	2x 1600	50	90	79	720	1000	0.88	6.7	150	0.70	0.20	X024a	X014a TO-247AD
CS 60-12io1	1200	60	110	75	1400	1000	0.82	5.3	140	0.32	0.15	X015a	
CS 60-14io1	1400												
CS 60-16io1	1600												
CLA 80E1200HF	1200	80	115	126	900	1000	0.88	6.3	150	0.20	0.25	X014a	X014a TO-247AD
➤ CMA 80E1600HB	1600	80	115	126	720	1000	0.90	6.4				X014a	
➤ CLA 100E1200HB	1200	100	105	160	1100	1000	0.82	5.2	150	0.20	0.15	X020a	
➤ CLA 100E1200KB													

Fast Phase Control Thyristors

➤ CLE 20E1200PC	1200	20	115	31	160	500	0.92	24	150	0.70	0.25	X011b	X015a PLUS247
➤ CME 30E1600PZ	1600	30	105	47	280	500	0.96	25	150	0.50	0.25	X011c	
➤ CLF 20E1200PB	1200	20	110	31	150	500	0.96	26	150	0.70	0.50	X005a	
➤ CLE 30E1200PB	1200	30	115	47	270	500	0.92	14	150	0.50	0.50		



Thyristor / Diode Modules

One of the essential advantages of power semiconductor modules compared to discrete designs is the electrical isolation between the baseplate of the module and the parts subject to voltage (3.6 - 4.8 kV_{RMS} tested). This makes possible the mount-down of any number of the same or different modules on a common heatsink. It is feasible to use standard housings with appropriate accessories for designing compact power converter operating from AC mains up to 690 V.


Plastic Housing with DCB Substrate

IXYS has succeeded in simplifying the conventional multilayer module construction by the DCB (Direct Copper Bonding) technique.

Other features are:

- top-side electrical terminals with captured nuts;
- series-connected diode/diode, thyristor/ diode and thyristor/thyristor modules;
- easy assembly.

All thyristor modules with DCB ceramic base contacts are available in volume with two standardized twin

plugs (2.8 mm x 0.8 mm) for gate and auxiliary cathode control terminals (version 1). Modules in TO-240 housing of the version 8 are delivered with gate plugs only (without auxiliary cathode terminal; mounting screws available on request). The module housing is designed for adequate clearance and creepage distance resulting in  recognition by Underwriters Laboratories, Inc., USA for all types.

New Generation Silicon Chips

All chips are designed by applying separation diffusion processes such that the zones responsible for the surface field strength are located at the upper chip side. This results in the capability of soldering the entire chip area onto the DCB ceramic substrate without a molybdenum strain buffer, which in turn leads to good stability of the chips as well as to large area heat dissipation if a load is applied. All zones at the edges which are decisive for the blocking stability are coated with passivation glasses the coefficient of expansion of which match that of silicon. Silicon chips increasingly use planar technology with guard rings and channel stoppers to reduce electrical surface fields. This chip design supercedes the design of thyristor chips which

were fabricated with passivation moats so that modules of the new series designed with the updated state-of-the-art utilize planar passivated chips processed by separation diffusion techniques. The contact areas of the chips possess physical vapor deposited metal layers. For the user the improved properties are:

- Excellent long-term stability of blocking currents and blocking voltages,
- increased life time of the internal soldered connections,
- high power cycling capability ($\geq 50\ 000$).

The thyristor/diode chips have been optimized with regard to their turn-off parameters: decreasing the carrier lifetime results in reduced stored charges QS, which in turn significantly reduces requirements for RC-snubbers for over-voltage protection. Cost reduction and improved efficiency are the benefits of these characteristics. By re-developing the silicon chips, improvements of the firing characteristics were achieved by specifying a higher „gate current not to fire“ IGD resulting in substantially less susceptibility to misfiring. This leads to greater safety of operation and higher reliability of the equipment.

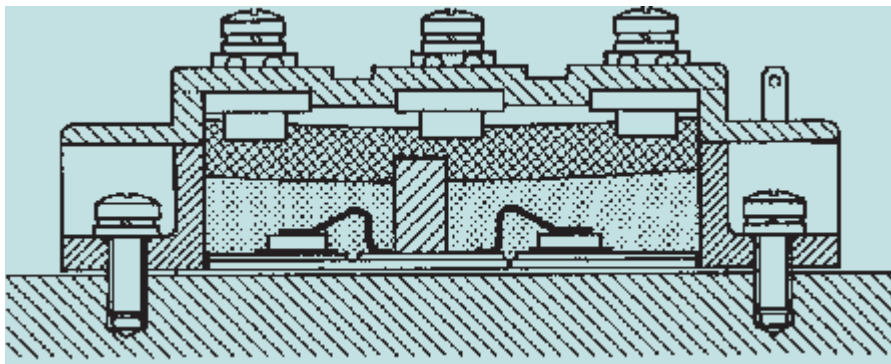
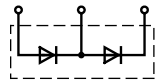


Fig. 1: Principal cross section of an IXYS module with DCB technology

Diode Modules, Dual



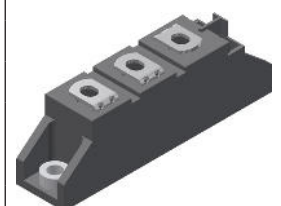
MDD...
MDMA..P..

$I_{FAV} = 25 - 99 \text{ A}$

Type	V_{RRM}	I_{FAV}	T_C	I_{FSM} 45°C 10 ms	V_{FO}	r_F	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	°C	A	V	mΩ	°C	K/W	K/W		
MDMA 25P1200TG	1200	25	100	320	0.85	11.10	150	1.10	0.20	X125e	
MDMA 25P1600TG	1600										
➤ MDMA 25P1800TG	1800										
➤ MDNA 25P2200TG	2200										
MDD 26-08N1B	800	36	100	650	0.80	6.10	150	1.00	0.20		
MDD 26-12N1B	1200										
MDD 26-14N1B	1400										
MDD 26-16N1B	1600										
MDD 26-18N1B	1800										
MDMA 35P1200TG	1200	35	100	500	0.83	7.30	150	0.90	0.20		
MDMA 35P1600TG	1600										
➤ MDMA 35P1800TG	1800										
➤ MDNA 35P2200TG	2200										
MDD 44-08N1B	800	59	100	1150	0.80	4.30	150	0.59	0.20		
MDD 44-12N1B	1200										
MDD 44-14N1B	1400										
MDD 44-16N1B	1600										
MDD 44-18N1B	1800										
MDMA 50P1200TG	1200	50	100	850	0.85	5.70	150	0.65	0.20		
MDMA 50P1600TG	1600										
➤ MDMA 50P1800TG	1800										
➤ MDNA 50P2200TG	2200										
MDD 56-08N1B	800	71	100	1400	0.80	3.00	150	0.51	0.20		
MDD 56-12N1B	1200										
MDD 56-14N1B	1400										
MDD 56-16N1B	1600										
MDD 56-18N1B	1800										
MDMA 65P1200TG	1200	65	100	1100	0.81	4.30	150	0.50	0.20		
MDMA 65P1600TG	1600										
➤ MDMA 65P1800TG	1800										
➤ MDNA 65P2200TG	2200										
MDD 72-08N1B	800	99	100	1700	0.80	2.30	150	0.35	0.20		
MDD 72-12N1B	1200										
MDD 72-14N1B	1400										
MDD 72-16N1B	1600										
MDD 72-18N1B	1800										
MDMA 85P1200TG	1200	85	100	1500	0.79	3.50	150	0.35	0.20		
MDMA 85P1600TG	1600										
➤ MDMA 85P1800TG	1800										
➤ MDNA 85P2200TG	2200										

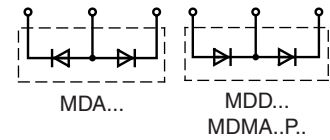
X125e

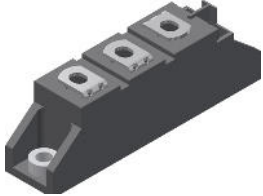

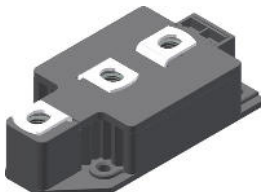
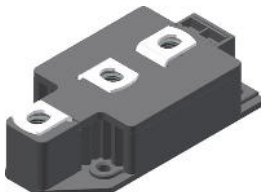




TO-240AA



Diode Modules, Dual

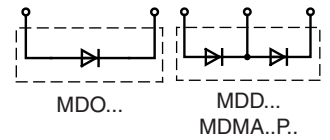
$I_{FAV} = 110 - 290 \text{ A}$



Type	V_{RRM}	I_{FAV}	T_C	I_{FSM} 45°C 10 ms	V_{FO}	r_F	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style
➤ New	V	A	°C	A	V	mΩ	°C	K/W	K/W		Outline drawings on pages O-31...O-52
MDD 95-08N1B	800	120	100	2800	0.75	1.95	150	0.260	0.20	X125e	TO-240AA 
MDD 95-12N1B	1200										
MDD 95-14N1B	1400										
MDD 95-16N1B	1600										
MDD 95-18N1B	1800										
MDD 95-20N1B	2000										
MDD 95-22N1B	2200										
MDA 95-22N1B	2200										
MDMA 110P1200TG	1200	110	100	2000	0.82	2.80	150	0.300	0.20	X126c	Y4 
MDMA 110P1600TG	1600										
➤ MDMA 110P1800TG	1800										
➤ MDNA 110P2200TG	2200										
MDMA 140P1200TG	1200	140	100	2800	0.78	2.20	150	0.230	0.20	X126c	Y2 
MDMA 140P1600TG	1600										
MDMA 140P1800TG	1800										
MDNA 140P2200TG	2200										
MDD 142-08N1	800	165	100	4700	0.80	1.30	150	0.210	0.10	X126c	Y2 
MDD 142-12N1	1200										
MDD 142-14N1	1400										
MDD 142-16N1	1600										
MDD 142-18N1	1800										
MDD 172-08N1	800	190	100	6600	0.80	0.80	150	0.210	0.10	X131c	Y1 
MDD 172-12N1	1200										
MDD 172-14N1	1400										
MDD 172-16N1	1600										
MDD 172-18N1	1800										
MDD 200-14N1	1400	224	100	10500	0.80	0.60	150	0.130	0.10	X131c	Y1 
MDD 200-16N1	1600										
MDD 200-18N1	1800										
MDD 200-22N1	2200										
MDD 175-28N1	2800	240	100	8500	0.74	1.27	150	0.140	0.04	X131c	
MDD 175-34N1	3400										
MDMA 200P1600SA	1600	200	110	6000	0.76	1.40	150	0.150	0.08	X141c	
MDD 220-08N1	800	270	100	8500	0.75	0.90	150	0.129	0.04	X129c	SimBus A 
MDD 220-12N1	1200										
MDD 220-14N1	1400										
MDD 220-16N1	1600										
MDD 220-18N1	1800										
MDD 250-08N1	800	290	100	11000	0.75	0.75	150	0.129	0.04	X129c	SimBus A 
MDD 250-12N1	1200										
MDD 250-14N1	1400										
MDD 250-16N1	1600										

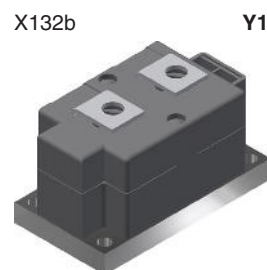
Diode Modules, Single and Dual

$I_{FAV} = 270 - 700 \text{ A}$



Type	V_{RRM}	I_{FAV}	T_C	I_{FSM} 45°C 10 ms	V_{FO}	r_F	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style
➤ New	V	A	°C	A	V	mΩ	°C	K/W	K/W		Outline drawings on pages O-31...O-52
MDD 255-12N1	1200	270	100	9500	0.80	0.60	150	0.140	0.04	X131c	
MDD 255-14N1	1400										
MDD 255-16N1	1600										
MDD 255-18N1	1800										
MDD 255-20N1	2000										
MDD 255-22N1	2200										
MDD 310-08N1	800	305	100	11500	0.75	0.63	150	0.129	0.04	X129c	
MDD 310-12N1	1200										
MDD 310-14N1	1400										
MDD 310-16N1	1600										
MDD 310-18N1	1800										
MDD 310-20N1	2000										
MDD 310-22N1	2200										
MDD 312-12N1	1200	310	100	10500	0.80	0.60	150	0.120	0.04	X131c	
MDD 312-14N1	1400										
MDD 312-16N1	1600										
MDD 312-18N1	1800										
MDD 312-20N1	2000										
MDD 312-22N1	2200										
MDMA 380P1600KC	1600	380	100	11000	0.75	0.53	150	0.110	0.04		
➤ MDMA 380P1800KC	1800										
➤ MDNA 380P2200KC	2200										
MDO 500-12N1	1200	560	85	15000	0.80	0.38	140	0.072	0.02	X132b	
MDO 500-14N1	1400										
MDO 500-16N1	1600										
MDO 500-18N1	1800										
MDO 500-20N1	2000										
MDO 500-22N1	2200										
MDO 600-16N1	1600	608	85	15000	0.76	0.32	140	0.072	0.02		
MDMA 700P1600CC	1600	700	100	20000	0.78	0.35	150	0.055	0.02	X142c	
➤ MDMA 700P1800CC	1800										
➤ MDNA 700P2200CC	2200										

For more single and dual diode modules with higher current, please see pages 138 - 140.



Thyristor / Diode Modules

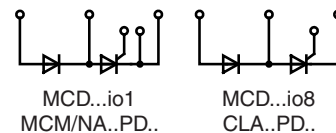
$I_{TAV} = 25 - 80 \text{ A}$



Type	V_{RRM} V_{DRM}	I_{TAV}	T_C	$I_{T(RMS)}$	I_{TSM} 45°C 10 ms	V_{TO}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	°C	A	A	V	mΩ	°C	K/W	K/W		
MCMA 25PD1200TB MCMA 25PD1600TB	1200 1600	25	82	40	400	0.87	13.0	140	1.20	0.20	X125b	 <p>SOT-227B miniBLOC</p>
MCD 26-08io1B MCD 26-12io1B MCD 26-14io1B MCD 26-16io1B	800 1200 1400 1600	27	85	50	520	0.85	11.0	125	0.88	0.20		
MCD 26-08io8B MCD 26-12io8B MCD 26-14io8B MCD 26-16io8B	800 1200 1400 1600	27	85	50	520	0.85	11.0	125	0.88	0.20	X125d	
MCMA 35PD1200TB MCMA 35PD1600TB	1200 1600	35	85	55	520	0.87	9.8	140	0.90	0.20	X125b	
MCD 40-12io6 MCD 40-16io6	1200 1600	40	85	63	500	0.87	10.5	150	0.70	0.10	X027a	
MCD 44-08io1B MCD 44-12io1B MCD 44-14io1B MCD 44-16io1B MCD 44-18io1B	800 1200 1400 1200 1600	49	85	79	1150	0.85	5.3	125	0.53	0.20	X125b	
MCD 44-08io8B MCD 44-12io8B MCD 44-14io8B MCD 44-16io8B MCD 44-18io8B	800 1200 1400 1600 1800	49	85	77	1150	0.85	5.3	125	0.53	0.20	X125d	
➤ MCNA 40PD2200TB	2200	40	85	63	500	0.84	11.4	140	0.70	0.20	X125b	
MCMA 50PD1200TB MCMA 50PD1600TB	1200 1600	50	85	79	800	0.89	5.3	140	0.70	0.20		
CLA 60PD1200NA	1200	60	100	94	1100	0.79	4.8	150	0.55	0.10	X027a	
MCD 56-08io1B MCD 56-12io1B MCD 56-14io1B MCD 56-16io1B MCD 56-18io1B	800 1200 1400 1600 1800	60	85	100	1500	0.85	3.7	125	0.45	0.20	X125b	
MCD 56-08io8B MCD 56-12io8B MCD 56-14io8B MCD 56-16io8B MCD 56-18io8B	800 1200 1400 1600 1800	60	85	100	1500	0.85	3.7	125	0.45	0.20	X125d	
➤ MCNA 55PD2200TB	2200	55	85	86	800	0.90	9.0	150	0.50	0.20	X125b	
MCMA 65PD1200TB MCMA 65PD1600TB	1200 1600	65	85	105	1150	0.85	4.8	140	0.50	0.20		
➤ MCMA 65PD1800TB	1800											
CMA 80PD1600NA	1600	80	80	126	1070	0.86	5.5	150	0.45	0.10	X027a	

Thyristor / Diode Modules

$I_{TAV} = 85 - 165 \text{ A}$



Type	V_{RRM} V_{DRM}	I_{TAV}	T_C	$I_{T(RMS)}$	I_{TSM} 45°C 10 ms	V_{T0}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	°C	A	A	V	mΩ	°C	K/W	K/W		
MCD 72-08io1B	800	85	85	180	1700	0.85	3.20	125	0.30	0.20	X125b	X027a SOT-227B miniBLOC
MCD 72-12io1B	1200											
MCD 72-14io1B	1400											
MCD 72-16io1B	1600											
MCD 72-18io1B	1800											
MCD 72-08io8B	800	85	85	180	1700	0.85	3.20	125	0.30	0.20	X125d	
MCD 72-12io8B	1200											
MCD 72-14io8B	1400											
MCD 72-16io8B	1600											
MCD 72-18io8B	1800											
➤ MCNA 75PD2200TB	2200	75	85	118	1050	0.90	6.50	140	0.38	0.20	X125b	X125b TO-240AA
MCMA 85PD1200TB	1200	85	85	135	1500	0.85	3.90	140	0.38	0.20		
MCMA 85PD1600TB	1600											
➤ MCMA 85PD1800TB	1800											
CLA 100PD1200NA	1200	100	85	150	1500	0.83	3.70	150	0.35	0.10	X027a	
MCD 94-20io1B	2000	104	85	180	1700	0.85	3.20	125	0.22	0.20	X125b	
MCD 94-22io1B	2200											
MCD 95-08io1B	800	116	85	180	2250	0.85	2.40	125	0.22	0.20		
MCD 95-12io1B	1200											
MCD 95-14io1B	1400											
MCD 95-16io1B	1600											
MCD 95-18io1B	1800											
MCD 95-08io8B	800	116	85	180	2250	0.85	2.40	125	0.22	0.20	X125d	X125d TO-240
MCD 95-12io8B	1200											
MCD 95-14io8B	1400											
MCD 95-16io8B	1600											
MCD 95-18io8B	1800											
➤ MCNA 95PD2200TB	2200	95	85	149	1400	0.90	5.00	140	0.30	0.20	X125b	
MCMA 110PD1200TB	1200	110	85	170	1900	0.85	3.30	140	0.30	0.20		
MCMA 110PD1600TB	1600											
➤ MCMA 110PD1800TB	1800											
MCNA 120PD2200TB	2200	120	85	190	1700	0.90	3.70	140	0.22	0.20		
MCMA 140PD1200TB	1200	140	85	200	2400	0.85	2.80	140	0.22	0.20	X125b	X126b Y4
MCMA 140PD1600TB	1600											
➤ MCMA 140PD1800TB	1800											
MCD 132-08io1	800	130	85	300	4750	0.80	1.50	125	0.23	0.10	X126b	
MCD 132-12io1	1200											
MCD 132-14io1	1400											
MCD 132-16io1	1600											
MCD 132-18io1	1800											
MCD 161-20io1	2000	165	85	300	6000	0.80	1.60	125	0.155	0.070	X126b	
MCD 161-22io1	2200											



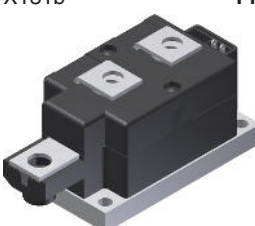
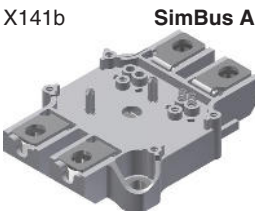


Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor / Diode Modules



MCD...io1
MCM/NA..PD..

$I_{TAV} = 181 - 700 \text{ A}$

Type	V_{RRM} V_{DRM}	I_{TAV}	T_C	$I_{T(RMS)}$	I_{TSM} 45°C 10 ms	V_{TO}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	°C	A	A	V	mΩ	°C	K/W	K/W		
MCD 162-08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.07	X126b	 <p>X126b Y4</p>
MCD 162-12io1	1200											
MCD 162-14io1	1400											
MCD 162-16io1	1600											
MCD 162-18io1	1800											
MCMA 200PD1600SA	1600	200	85	314	6000	0.81	1.60	140	0.150	0.08	X141b	
MCD 200-14io1	1400	216	85	340	8000	0.80	1.40	125	0.130	0.05	X126b	
MCD 200-16io1	1600											
MCD 200-18io1	1800											
MCD 220-08io1	800	250	85	400	8500	0.90	1.00	140	0.139	0.04	X129b	 <p>X129b Y2</p>
MCD 220-12io1	1200											
MCD 220-14io1	1400											
MCD 220-16io1	1600											
MCD 224-20io1	2000	240	85	400	8000	0.80	0.76	130	0.139	0.04	X131b	
MCD 224-22io1	2200											
MCD 225-12io1	1200	221	85	400	8000	0.80	0.76	130	0.157	0.04	X131b	
MCD 225-14io1	1400											
MCD 225-16io1	1600											
MCD 225-18io1	1800											
MCD 250-08io1	800	287	85	450	9000	0.85	0.82	140	0.129	0.04	X129b	 <p>X131b Y1</p>
MCD 250-12io1	1200											
MCD 250-14io1	1400											
MCD 250-16io1	1600											
MCD 250-18io1	1800											
MCD 255-12io1	1200	250	85	450	9000	0.80	0.68	130	0.140	0.04	X131b	
MCD 255-14io1	1400											
MCD 255-16io1	1600											
MCD 255-18io1	1800											
MCMA 260PD1600YB	1600	260	85	408	8300	0.81	1.23	140	0.130	0.08	X126b	 <p>X141b SimBus A</p>
➤ MCMA 260PD1800YB	1800											
MCMA 265PD1600KB	1600	260	85	408	8500	0.80	0.75	140	0.160	0.04	X131b	
➤ MCMA 265PD1800KB	1800											
MCD 310-08io1	800	320	85	500	9200	0.80	0.82	140	0.112	0.04	X129b	
MCD 310-12io1	1200											
MCD 310-14io1	1400											
MCD 310-16io1	1600											
MCD 310-18io1	1800											
MCD 310-20io1	2000	320	85	500	8000	0.80	0.82	140	0.112	0.04		 <p>X142b ComPack</p>
MCD 310-22io1	2200											
MCD 312-12io1	1200	320	85	520	9200	0.80	0.68	140	0.120	0.04	X131b	
MCD 312-14io1	1400											
MCD 312-16io1	1600											
MCD 312-18io1	1800											
➤ MCNA 650PD2200CB	2200	650	85	1020	16000	0.75	0.63	140	0.045	0.02	X142a	
MCMA 700PD1600CB	1600	700	85	1100	19000	0.82	0.40	140	0.05	0.02		
➤ MCMA 700PD1800CB	1800											

For more thyristor / diode modules with higher current, please see pages 137 and 140.

Thyristor Modules, Dual

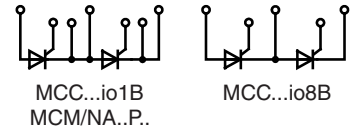


$I_{TAV} = 18 - 60 \text{ A}$

Type	V_{RRM} V_{DRM}	I_{TAV}	T_C	$I_{T(RMS)}$	I_{TSM} 45°C 10 ms	V_{TO}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	°C	A	A	V	mΩ	°C	K/W	K/W		
MCC 19-08io1B	800	18	85	40	400	0.85	18	125	1.30	0.2	X125a	 <p>X125a TO-240AA</p>
MCC 19-12io1B	1200											
MCC 19-14io1B	1400											
MCC 19-16io1B	1600											
MCC 19-08io8B	800	18	85	40	400	0.85	18	125	1.30	0.2	X125c	
MCC 19-12io8B	1200											
MCC 19-14io8B	1400											
MCC 19-16io8B	1600											
MCC 21-08io8B	800	21	85	33	320	0.85	15	125	1.10	0.2		
MCC 21-12io8B	1200											
MCC 21-14io8B	1400											
MCC 21-16io8B	1600											
MCMA 25P1200TA	1200	25	85	40	400	0.87	13	140	1.20	0.2	X125a	
MCMA 25P1600TA	1600											
MCC 26-08io1B	800	27	85	50	520	0.85	11	125	0.88	0.2		
MCC 26-12io1B	1200											
MCC 26-14io1B	1400											
MCC 26-16io1B	1600											
MCC 26-08io8B	800	27	85	50	520	0.85	11	125	0.88	0.2	X125c	
MCC 26-12io8B	1200											
MCC 26-14io8B	1400											
MCC 26-16io8B	1600											
MCMA 35P1200TA	1200	35	85	55	520	0.87	9.8	140	0.90	0.2	X125a	
MCMA 35P1600TA	1600											
MCC 44-08io1B	800	49	85	77	1150	0.85	5.3	125	0.53	0.2		
MCC 44-12io1B	1200											
MCC 44-14io1B	1400											
MCC 44-16io1B	1600											
MCC 44-18io1B	1800											
MCC 44-08io8B	800	49	85	77	1150	0.85	5.3	125	0.53	0.2	X125c	
MCC 44-12io8B	1200											
MCC 44-14io8B	1400											
MCC 44-16io8B	1600											
MCC 44-18io8B	1800											
MCNA 40P2200TA	2200	40	85	63	500	0.84	11.4	140	0.70	0.2	X125a	
MCMA 50P1200TA	1200	50	85	79	800	0.89	5.3	140	0.70	0.2		
MCMA 50P1600TA	1600											
MCC 56-08io1B	800	60	85	100	1500	0.85	3.7	125	0.45	0.2		
MCC 56-12io1B	1200											
MCC 56-14io1B	1400											
MCC 56-16io1B	1600											
MCC 56-18io1B	1800											
MCC 56-08io8B	800	60	85	100	1500	0.85	3.7	125	0.45	0.2	X125c	
MCC 56-12io8B	1200											
MCC 56-14io8B	1400											
MCC 56-16io8B	1600											
MCC 56-18io8B	1800											

Data according to IEC 60747 and refer to a single diode or thyristor unless otherwise stated.

Thyristor Modules, Dual



$I_{TAV} = 55 - 181 \text{ A}$

Type	V_{RRM} V_{DRM}	I_{TAV}	T_C	$I_{T(RMS)}$	I_{TSM} 45°C 10 ms	V_{TO}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	Fig. No.	Package style Outline drawings on pages O-31...O-52
➤ New	V	A	°C	A	A	V	mΩ	°C	K/W	K/W		
➤ MCNA 55P2200TA	2200	55	85	86	800	0.90	9.00	140	0.50	0.20	X125a	
MCMA 65P1200TA	1200	65	85	105	1150	0.85	4.80	140	0.50	0.20		
MCMA 65P1600TA	1600											
➤ MCMA 65P1800TA	1800											
MCC 72-08io1B	800	85	85	180	1700	0.85	3.20	125	0.30	0.20	X125a	TO-240AA
MCC 72-12io1B	1200											
MCC 72-14io1B	1400											
MCC 72-16io1B	1600											
MCC 72-18io1B	1800											
MCC 72-08io8B	800	85	85	180	1700	0.85	3.20	125	0.30	0.20	X125c	
MCC 72-12io8B	1200											
MCC 72-14io8B	1400											
MCC 72-16io8B	1600											
MCC 72-18io8B	1800											
➤ MCNA 75P2200TA	2200	75	85	118	1050	0.90	6.50	140	0,38	0,20	X125a	
MCMA 85P1200TA	1200	85	85	135	1500	0.85	3.90	140	0.38	0.20		
MCMA 85P1600TA	1600											
➤ MCMA 85P1800TA	1800											
MCC 94-20io1B	2000	104	85	180	1700	0.85	3.20	125	0.22	0.20	X125c	TO-240
MCC 94-22io1B	2200											
MCC 94-24io1B	2400											
MCC 95-08io1B	800	116	85	180	2250	0.83	2.40	125	0.22	0.20		
MCC 95-12io1B	1200											
MCC 95-14io1B	1400											
MCC 95-16io1B	1600											
MCC 95-18io1B	1800											
MCC 95-08io8B	800	116	85	180	2250	0.85	2.40	125	0.22	0.20	X125c	
MCC 95-12io8B	1200											
MCC 95-14io8B	1400											
MCC 95-16io8B	1600											
MCC 95-18io8B	1800											
➤ MCNA 95P2200TA	2200	95	85	149	1400	0.90	5.00	140	0.30	0.20	X125a	
MCMA 110P1200TA	1200	110	85	170	1900	0.85	3.30	140	0.30	0.20		
MCMA 110P1600TA	1600											
➤ MCMA 110P1800TA	1800											
MCNA 120P2200TA	2200	120	85	190	1700	0.90	3.70	140	0.22	0.20	X126a	Y4
MCMA 140P1200TA	1200	140	85	220	2400	0.85	2.80	140	0.22	0.20		
MCMA 140P1400TA	1400											
MCMA 140P1600TA	1600											
MCMA 140P1800TA	1800											
MCC 132-08io1	800	130	85	300	4750	0.80	1.50	125	0.23	0.10	X126a	
MCC 132-12io1	1200											
MCC 132-14io1	1400											
MCC 132-16io1	1600											
MCC 132-18io1	1800											
MCC 161-20io1	2000	165	85	300	6000	0.80	1.60	125	0.155	0.07		
MCC 161-22io1	2200											
MCC 162-08io1	800	181	85	300	6000	0.88	1.15	125	0.155	0.07		
MCC 162-12io1	1200											
MCC 162-14io1	1400											
MCC 162-16io1	1600											
MCC 162-18io1	1800											