

## Модуль igbt fuji **каталог, характеристики, datasheet**

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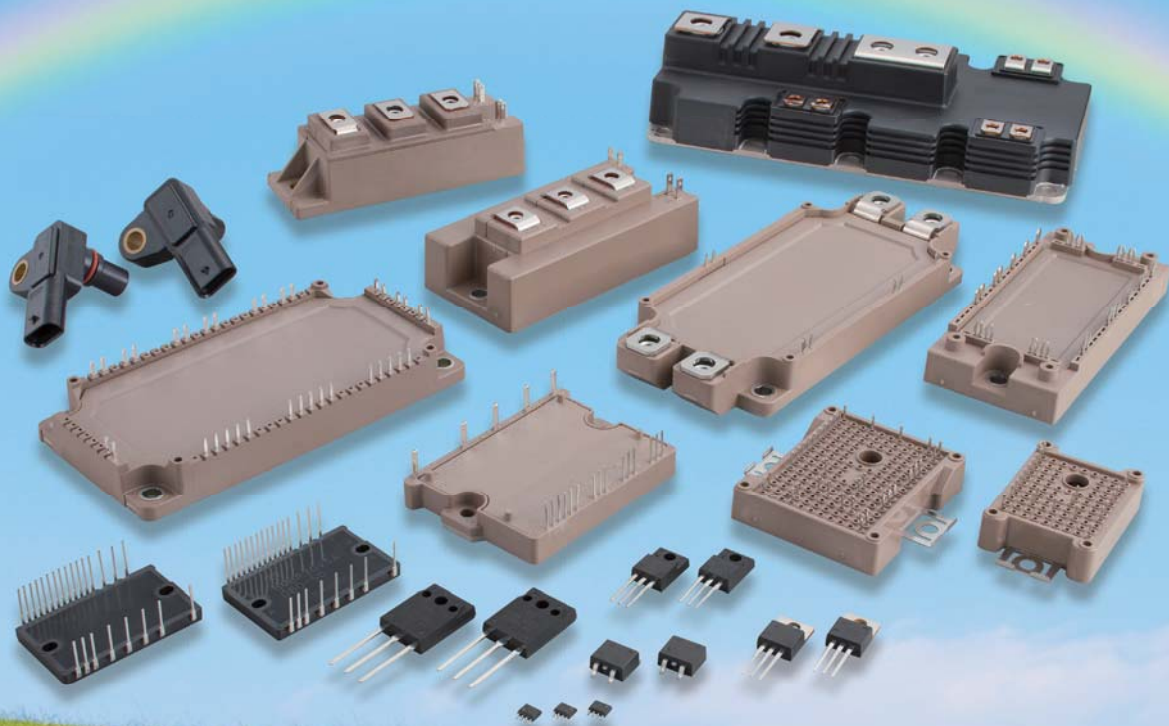
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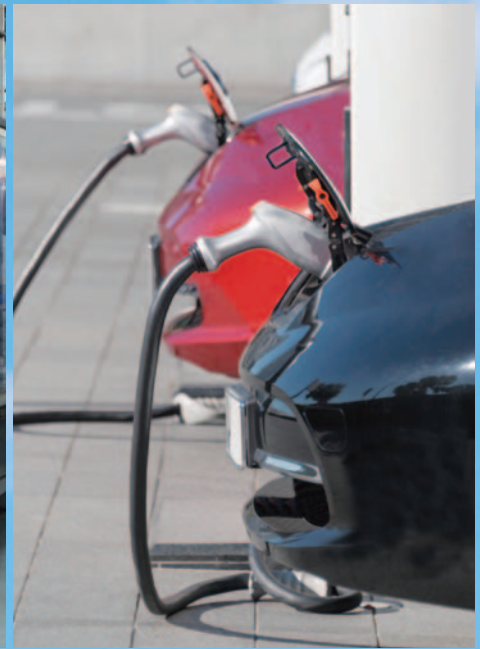
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# FUJI SEMICONDUCTORS

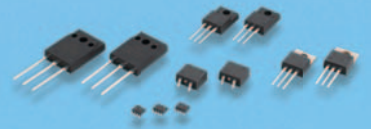
富士電機半導体





# あらゆるシーンでエネルギーマネジメントに 貢献する富士電機のパワー半導体

**Fuji Electric Power Semiconductors**  
contributing Energy Management in various fields



富士電機は、低炭素社会の実現に向け、産業機械、鉄道、自動車、社会インフラ、再生可能エネルギー、家電製品、情報機器など様々な場面で、高いエネルギー利用効率を可能にするパワー半導体を提供します。パワーエレクトロニクス技術のキーデバイスであるパワー半導体の技術革新と製品開発を続け、安全・安心で持続可能な社会の実現に貢献していきます。



Fuji Electric provides Power Semiconductors enabling high-efficiency energy usage in various fields such as industrial machinery, automobile, railroad, social infrastructure, renewable energy, consumer electronics and information equipment in order to achieve low-carbon society.

Fuji Electric contributes to realization of safe and secure sustainable society through continuous technology innovation and product development of Power Semiconductors as key devices in Power Electronics technology.

※ 掲載の写真は当社パワー半導体が使われる様々な用途の一例を示すものであり、写真の製品に必ずしも使用されているものではありません。  
The pictures on this page show examples of various applications which may use Fuji Electric Power Semiconductors, they aren't necessarily used in the products in these pictures.

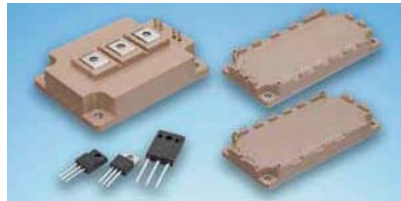




01

▶ 6P

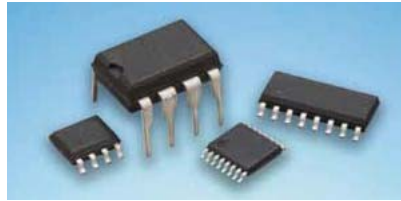
**パワーデバイス**  
Power Devices (IGBT)



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**整流ダイオード**  
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**圧力センサ**  
Pressure Sensors



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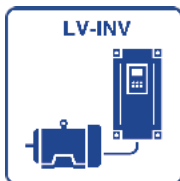
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**富士電機は、各種用途に適したパワー半導体を供給しています。**  
**下に示す各用途の製品情報については以下の弊社パワー半導体Webサイトをご覧ください。**

[www.fujielectric.co.jp/products/semiconductor/usage/](http://www.fujielectric.co.jp/products/semiconductor/usage/)

Fuji Electric provides Power Semiconductors well suited for various applications. You will find more information on products for each application shown below at our Web site.  
[www.fujielectric.com/products/semiconductor/usage/](http://www.fujielectric.com/products/semiconductor/usage/)

### インバータ / Inverters



ベルトコンベヤ、ファン、ポンプなどにおいてモータを可変速運転する汎用インバータに最適な半導体製品。  
 Semiconductor products best suited for general-purpose inverters that carry out variable-speed operation of motors in products such as belt conveyors, fans and pumps

### 高圧インバータ / Medium-Voltage Inverters



鉄鋼・繊維・製紙プラントなどに使われる3相交流3k/6k/6.6kVの高圧電動機を駆動する高圧インバータに最適な半導体製品。  
 Semiconductor products suitable for medium-voltage inverters that drive 3-phase AC 3k/6k/6.6kV high-voltage motors used in iron and steel plants, textile plants and paper mills

### NC・サーボ / NC / Servos



工作機械の位置決めや速度制御を行うNC・サーボと組立・溶接・搬送などに使われ多軸制御機能を持つロボットに最適な半導体製品。  
 Semiconductor products best suited to NC and servos that carry out speed control and positioning of machine tools, as well as robots that have multi-spindle control features used in assembly, welding and conveyance

### 鉄道 / Railroads



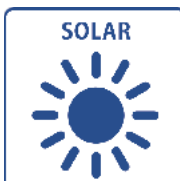
鉄道車両の主電動機駆動、補助電源装置など車両用パワーエレクトロニクスに適した半導体製品。  
 Semiconductor products suited for the power electronics of railroad cars such as the main motor drive and auxiliary power supply equipment of rolling stock

### 風力発電 / Wind Power Generation



風力発電機から出力される交流電力を直流電力に変換するAC/DCコンバータと直流電力を商用周波数の交流電力に変換するインバータに最適な半導体製品。  
 Semiconductor products suitable for AC/DC converters that convert the AC power output from wind turbine generators to DC power, as well as for inverters that convert DC power to the AC power of commercial frequencies

### 太陽光 / Solar



太陽光パネルで発電された直流の電力を家庭で消費したり、電力会社の電源系統に戻すために交流の電力に変換するパワーコンディショナに最適な半導体製品。  
 Semiconductor products best suited for power conditioners that convert solar-panel generated DC power into AC power to enable the residential consumption, as well as to facilitate the recovery of the power to the power systems of power companies

### 溶接機 / Welding Machines



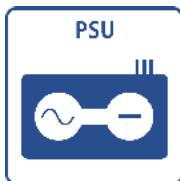
2つ以上の金属部材に熱または圧力を加え溶融一体化する溶接機において抵抗熱を発生させるスイッチング回路に最適な半導体製品。  
 Semiconductor products suitable for switching circuits that generate resistance heat in welding machines to melt and integrate by adding heat or pressure to two or more metallic members

### UPS / UPS



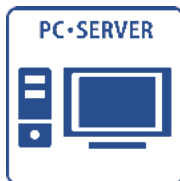
停電や瞬停からシステムダウンを防ぐUPS(無停電電源装置)の電力変換回路に最適な半導体製品。  
 Semiconductor products ideal for the power conversion circuits of UPS (uninterruptible power supply) that prevent system shutdown during power outages and instantaneous power failures

### スイッチング電源 / Switching Power Supplies



民生・OA・通信機器など幅広い用途に使用されている汎用スイッチング電源に最適な半導体製品。  
 Semiconductor products best suited for general-purpose switching power supplies used in a wide variety of applications such as equipment for general consumers and OA and communication devices

### PC・サーバ / PC / Servers



小型・軽量化が進むノートPCと高性能が進むデスクトップPC、サーバの電源に最適な半導体製品。  
 Semiconductor products suitable for the power supplies of increasingly high-performance desktop PCs and servers, as well as of increasingly compact and lightweight notebook PCs

### 薄型TV / Flat-screen TVs



薄型・軽量・大画面化が進む一方、低消費電力化が求められるTVセットの電源に最適な半導体製品。  
 Semiconductor products ideal for the power supplies of TV sets that require low power consumption and large screens that are increasingly thinner and more lightweight

### 自動車 / Automobiles



「Car Electronics Solution ～環境・安全・快適性に貢献～」をテーマとした、IGBTモジュール、パワーIC、MOSFET、圧力センサの自動車用半導体製品。  
 IGBT modules, power ICs, MOSFETs and pressure sensors as semiconductor products for automobiles developed with the theme "Car Electronics Solutions - Contributing to the Environment, Safety and Comfort"

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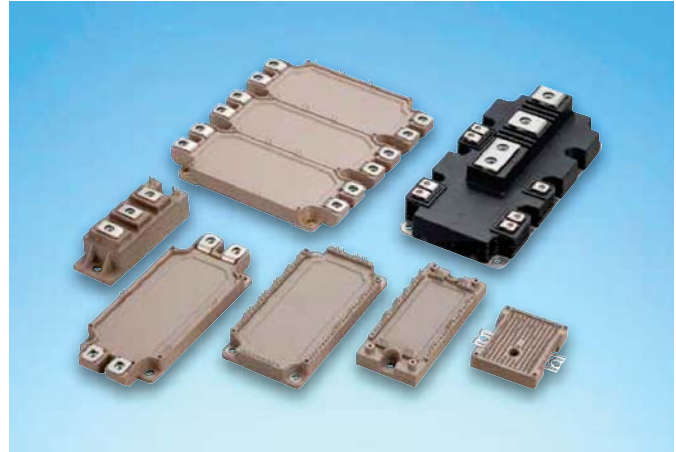


## IGBT モジュール IGBT Module



富士電機の IGBT モジュールはモータの可変速駆動装置や無停電電源装置等の電力変換器のスイッチング素子として開発されてきました。IGBT はパワー MOSFET の高速スイッチング性能とバイポーラトランジスタの高電圧・大電流処理能力とを合わせ持った半導体素子です。

Fuji Electric has been developing IGBT modules designed to be used as switching elements for power converters of variable-speed drives for motors, uninterruptable power supplies, and more. IGBT has superior characteristics combining the high-speed switching performance of a power MOSFET with the high-voltage/high-current handling capabilities of a bipolar transistor.



### IGBTモジュール Xシリーズの特長

#### ● 電力損失を低減し省エネに貢献

当社第7世代「Xシリーズ」は、本モジュールを構成する IGBT 素子およびダイオード素子の厚みをさらに薄くし微細化することで、素子構造を最適化。これにより、従来製品(当社第6世代「Vシリーズ」)に比べてインバータ動作時の電力損失を低減しました。搭載機器の省エネと電力コスト削減に貢献します。

#### ● 機器の小型化を実現

新たに開発した絶縁基板を適用し、モジュールの放熱性を向上。上記(電力損失低減)と併せて発熱を抑制することで、従来製品に比べ約36%の小型化※1を実現しました。さらに連続動作時の最大保証チップ温度を従来の150°Cから175°Cにすることで、搭載機器のサイズを維持しながら出力電流を最大35%※2増やすことが可能となります。これらにより機器の小型化およびトータルコスト削減に寄与します。

※1: 1200V 75A PIM 製品における実装面積比

※2: 当社試算値

#### ● 機器の信頼性向上に寄与

モジュールの構造や使用部材を見直し、高温動作時の安定性や耐久性を高めました。搭載機器の信頼性向上に寄与します。

### Features of the IGBT Module X Series

#### ● Reduces power dissipation to contribute to energy saving

The IGBT and diode devices of Fuji electric's 7th-generation X series that constitute these modules have been made thinner and miniaturized, thereby optimizing the device structure. This has successfully reduced power dissipation in inverter operation compared with conventional products (Fuji Electric's 6th-generation V Series), contributing to energy saving and power cost reduction of the equipment on which the module is installed.

#### ● Achieves equipment size reduction

A newly developed insulating substrate has been applied in order to improve the module's heat dissipation. Combined with the feature described above (reduced power dissipation) to suppress heat generation, an approximately 36%\*1 reduction has been achieved in comparison to the conventional module. In addition, the maximum temperature guaranteed in continuous operation has been increased from the conventional 150°C to 175°C, which allows the output current to be increased by up to 35%\*2 while maintaining the size of the equipment on which the module is installed. This contributes to reducing the size and total cost of the equipment.

\*1: Mounting area ratio with 1200 V 75A PIM models

\*2: Value estimated from simulation results

#### ● Contributes to improving equipment reliability

Newly developed structures and materials of the module have realized to increase its stability and durability in high-temperature operation. This contributes to improving the stability and reliability of the equipment on which the module is installed.

### 製品系列 Product lineup

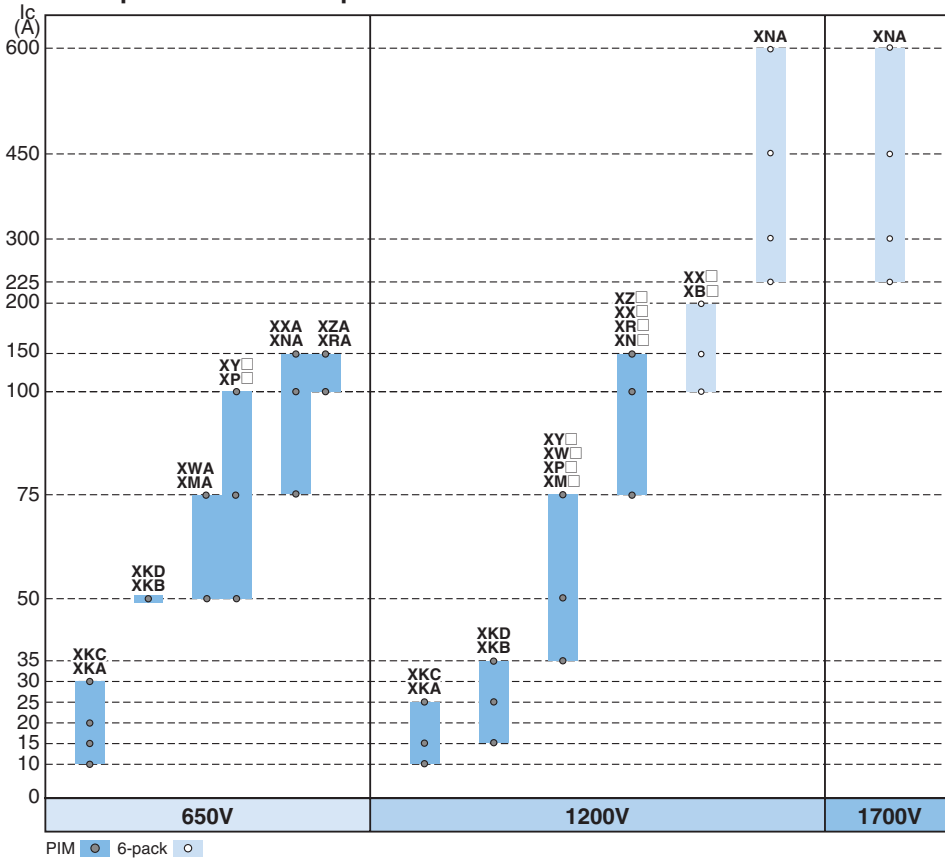
Number of IGBT Switches	Products Category	Page	Internal Configuration				Max V <sub>CE</sub>			Rated Current						
			IGBT Module				Discrete IGBT	650V	1200V	1700V	≤50A	>50A ≤150A	>150A ≤300A	>300A ≤600A	>600A ≤1200A	>1200A
			Standard Module	Power Integrated Module	Intelligent Power Module											
2	Standard 2-pack	14	✓				✓	✓	✓		✓	✓	✓	✓		
		15						✓	✓			✓	✓	✓		
2	PrimePACK™	16	✓					✓	✓			✓	✓	✓		
		12						✓	✓		✓	✓		✓	✓	
6	6-pack	13	✓					✓	✓			✓	✓			
		17			✓			✓	✓			✓	✓			
7	PIM	9		✓			✓	✓	✓	✓						
		10					✓	✓	✓	✓	✓					

注: PrimePACK™はInfineon Technologies社の登録商標です。

Note: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

製品系列マップ Products Map < X series >

● PIM & 6-pack Products Map



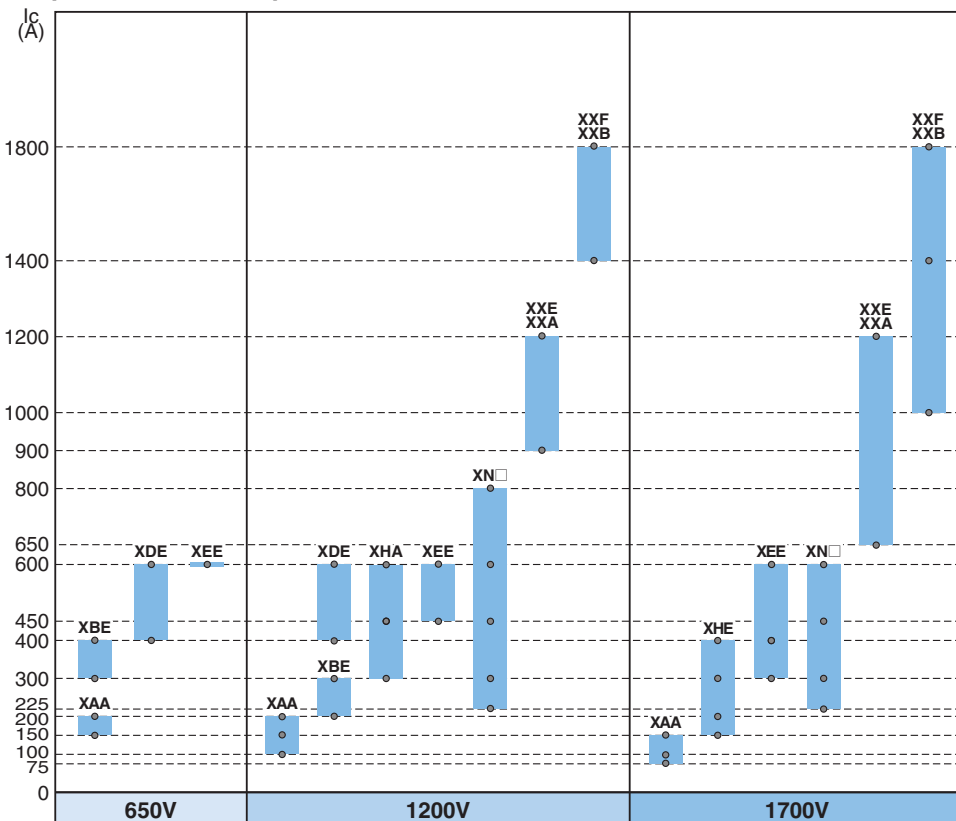
Power Integrated Module

7MBR Ic	IGBT series & Package type	Vces
	XKA, XKC	33.8 × 62.8mm
	XKB, XKD	56.7 × 62.8mm
	XM, XP, XW, XY	45 × 107.5mm
	XN, XR, XX, XZ	62 × 122mm

6-pack

6MBI Ic	IGBT series & Package type	Vces
	XB, XX	62 × 122mm
	XNA	150 × 162mm

● 2-pack Products Map



2-pack

2MBI Ic	IGBT series & Package type	Vces
	XAA	34 × 94 mm
	XBE	45 × 92 mm
	XDE	62 × 108 mm
	XEE	80 × 110 mm
	XHA	62 × 108 mm
	XN	62 × 150 mm
	XXA, XXE	89 × 172 mm
	XXB, XXF	89 × 250 mm

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PrimePACK™ is registered trademark of Infineon Technologies AG, Germany





## 型式の見方 Part numbers < X series >

6MBI100XBA120-50 (example)

6	MB	I	100	X	B	A	120	50
IGBT スイッチ数 Number of IGBT Switches	IGBT モジュール IGBT Module	内部構成 Internal Configuration	定格電流 Rated Current	IGBT デバイス IGBT Device Technology	パッケージ Package Type		最大電圧 Max. V <sub>CE</sub>	RoHS Compliant
		I: Standard Modules R: Power Integrated Modules P: Intelligent Power Modules	× 1	X: X series (7th Generation)	See the Products map	A ~ D : Standard Type E ~ H : Premium Type*	065: 650V 120: 1200V 170: 1700V	50 to 99 RoHS Compliant

\* Premium Type : Low Thermal Impedance Version

## 記号 Letter symbols

### 記号 Letter symbols

V <sub>CE(s)</sub> :	コレクタ・エミッタ間電圧	Collector-to-emitter rated voltage (Gate-to-emitter short-circuited)	V <sub>CE(sat)</sub> :	コレクタ・エミッタ飽和電圧	Collector-to-emitter saturation voltage
V <sub>GE(s)</sub> :	ゲート・エミッタ間電圧	Gate-to-emitter rated voltage (Collector-to-emitter short-circuited)	t <sub>on</sub> :	ターンオン時間	Turn-on time
I <sub>C</sub> :	コレクタ電流	Rated collector current	t <sub>off</sub> :	ターンオフ時間	Turn-off time
P <sub>C</sub> :	最大損失	Maximum power dissipation	t <sub>r</sub> :	立下り時間	Fall time
			t <sub>d(on)</sub> :	ターンオン遅延時間	Turn-on time
			t <sub>d(off)</sub> :	ターンオフ遅延時間	Turn-off time

IGBT モジュール PIM < X series >

■小容量PIM (コンバータ部、ブレーキ部内蔵) 650V, 1200Vクラス  
Small PIM/Built-in converter and brake 650, 1200 volts class

Press fit pins	Thermistor	Ic	650V	1200V
			X series	X series
 M730		10A	7MBR10XKA065-50	7MBR10XKA120-50
		15A	7MBR15XKA065-50	7MBR15XKA120-50
		20A	7MBR20XKA065-50	
		25A		7MBR25XKA120-50
		30A	7MBR30XKA065-50	
 M731		15A		7MBR15XKB120-50
		25A		7MBR25XKB120-50
		35A		7MBR35XKB120-50
		50A	7MBR50XKB065-50	
 M732		10A	7MBR10XKC065-50	7MBR10XKC120-50
		15A	7MBR15XKC065-50	7MBR15XKC120-50
		20A	7MBR20XKC065-50	
		25A		7MBR25XKC120-50
		30A	7MBR30XKC065-50	
 M733		15A		7MBR15XKD120-50
		25A		7MBR25XKD120-50
		35A		7MBR35XKD120-50
		50A	7MBR50XKD065-50	

Dimension [mm]

型 式 Device type	インバータ部 Inverter [IGBT]				ブレーキ部 Brake [IGBT+FWD]			コンバータ部 Converter [Diode]				パッケージ Package	質量 Net mass Grams
	V <sub>CES</sub>	I <sub>c</sub>	P <sub>c</sub>	V <sub>CE(sat)</sub>	V <sub>CES</sub>	I <sub>c</sub>	V <sub>RRM</sub>	V <sub>RRM</sub>	I <sub>o</sub>	V <sub>FM</sub>	I <sub>FSM</sub>		
	Volts	Cont. Amps.	Watts	Typ. Volts	Volts	Cont. Amps.	Volts	Volts	Cont. Amps.	Typ. Volts	Amps.		
● 7MBR10XKA065-50	650	10	90	1.30	650	10	650	800	10	0.90	360	M730	25
● 7MBR15XKA065-50	650	15	110	1.30	650	15	650	800	15	0.95	360	M730	25
● 7MBR20XKA065-50	650	20	135	1.30	650	20	650	800	20	1.00	360	M730	25
● 7MBR30XKA065-50	650	30	180	1.30	650	30	650	800	30	1.05	360	M730	25
● 7MBR50XKB065-50	650	50	270	1.30	650	50	650	800	50	1.10	580	M731	45
● 7MBR10XKC065-50	650	10	90	1.30	650	10	650	800	10	0.90	360	M732	25
● 7MBR15XKC065-50	650	15	110	1.30	650	15	650	800	15	0.95	360	M732	25
● 7MBR20XKC065-50	650	20	135	1.30	650	20	650	800	20	1.00	360	M732	25
● 7MBR30XKC065-50	650	30	180	1.30	650	30	650	800	30	1.05	360	M732	25
● 7MBR50XKD065-50	650	50	270	1.30	650	50	650	800	50	1.10	580	M733	45
● 7MBR10XKA120-50	1200	10	105	1.50	1200	10	1200	1600	10	0.95	295	M730	25
● 7MBR15XKA120-50	1200	15	135	1.50	1200	15	1200	1600	15	1.00	295	M730	25
● 7MBR25XKA120-50	1200	25	160	1.70	1200	25	1200	1600	25	1.05	295	M730	25
● 7MBR15XKB120-50	1200	15	135	1.50	1200	15	1200	1600	15	0.95	470	M731	45
● 7MBR25XKB120-50	1200	25	200	1.50	1200	25	1200	1600	25	1.00	470	M731	45
● 7MBR35XKB120-50	1200	35	255	1.50	1200	35	1200	1600	35	1.05	470	M731	45
● 7MBR10XKC120-50	1200	10	105	1.50	1200	10	1200	1600	10	0.95	295	M732	25
● 7MBR15XKC120-50	1200	15	135	1.50	1200	15	1200	1600	15	1.00	295	M732	25
● 7MBR25XKC120-50	1200	25	160	1.70	1200	25	1200	1600	25	1.05	295	M732	25
● 7MBR15XKD120-50	1200	15	135	1.50	1200	15	1200	1600	15	0.95	470	M733	45
● 7MBR25XKD120-50	1200	25	200	1.50	1200	25	1200	1600	25	1.00	470	M733	45
● 7MBR35XKD120-50	1200	35	255	1.50	1200	35	1200	1600	35	1.05	470	M733	45

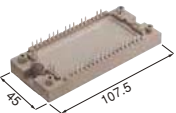
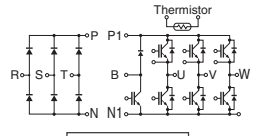
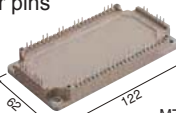
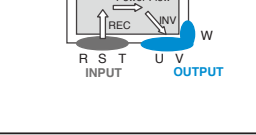
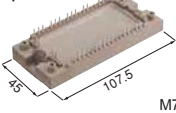
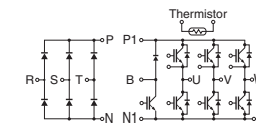

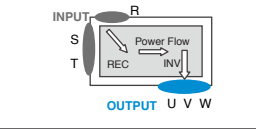
● : 新製品 New products

V<sub>CE(sat)</sub>, V<sub>FM</sub> : at T<sub>J</sub>=25°C, Chip



IGBT モジュール PIM < X series >

■ PIM (コンバータ部、ブレーキ部内蔵) EconoPIM™ 650V, 1200Vクラス  
PIM/Built-in converter and brake EconoPIM™ 650, 1200 volts class

Solder pins	Circuit Diagram	Ic	650V	1200V
			X series	X series
 M719		25A		
		35A		7MBR35XMA120-50
		50A	7MBR50XMA065-50	7MBR50XMA120-50
		75A	7MBR75XMA065-50	7MBR75XME120-50
		50A		
 M720		75A	7MBR75XNA065-50	7MBR75XNA120-50
		100A	7MBR100XNA065-50	7MBR100XNA120-50
		150A	7MBR150XNA065-50	7MBR150XNE120-50
		25A		
		35A		7MBR35XPA120-50
 M719		50A	7MBR50XPA065-50	7MBR50XPA120-50
		75A	7MBR75XPA065-50	7MBR75XPE120-50
		100A	7MBR100XPE065-50	
		50A		
		75A		7MBR75XRA120-50
 M720		100A	7MBR100XRA065-50	7MBR100XRA120-50
		150A	7MBR150XRA065-50	7MBR150XRE120-50

Dimension [mm]

型 式 Device type	インバータ部 Inverter [IGBT]				ブレーキ部 Brake [IGBT+FWD]			コンバータ部 Converter [Diode]				パッケージ Package	質量 Net mass Grams
	V <sub>CES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> Typ. Volts	V <sub>CES</sub> Volts	I <sub>c</sub> Cont. Amps.	V <sub>RRM</sub> Volts	V <sub>RRM</sub> Volts	I <sub>o</sub> Cont. Amps.	V <sub>FM</sub> Typ. Volts	I <sub>FSM</sub> Amps.		
● 7MBR50XMA065-50	650	50	210	1.3	650	30	650	800	50	1.05	545	M719	200
● 7MBR75XMA065-50	650	75	270	1.3	650	50	650	800	75	1.25	545	M719	200
● 7MBR75XNA065-50	650	75	270	1.3	650	50	650	800	75	1.25	545	M720	310
● 7MBR100XNA065-50	650	100	330	1.3	650	50	650	800	100	1.1	770	M720	310
● 7MBR150XNA065-50	650	150	450	1.3	650	75	650	800	150	1.1	1260	M720	310
● 7MBR50XPA065-50	650	50	210	1.3	650	30	650	800	50	1.05	545	M719	200
● 7MBR75XPA065-50	650	75	270	1.3	650	50	650	800	75	1.25	545	M719	200
● 7MBR100XPE065-50	650	100	480	1.3	650	50	650	800	100	1.1	745	M719	200
● 7MBR100XRA065-50	650	100	330	1.3	650	50	650	800	100	1.1	770	M720	310
● 7MBR150XRA065-50	650	150	450	1.3	650	75	650	800	150	1.1	1260	M720	310
● 7MBR35XMA120-50	1200	35	200	1.5	1200	25	1200	1600	35	1.05	450	M719	200
● 7MBR50XMA120-50	1200	50	250	1.5	1200	35	1200	1600	50	1.05	690	M719	200
● 7MBR75XME120-50	1200	75	455	1.55	1200	35	1200	1600	75	1.15	690	M719	200
● 7MBR75XNA120-50	1200	75	335	1.5	1200	50	1200	1600	75	1.15	690	M720	310
● 7MBR100XNA120-50	1200	100	445	1.45	1200	75	1200	1600	100	1.05	970	M720	310
● 7MBR150XNE120-50	1200	150	880	1.5	1200	75	1200	1600	150	1.05	1650	M720	310
● 7MBR35XPA120-50	1200	35	200	1.5	1200	25	1200	1600	35	1.05	450	M719	200
● 7MBR50XPA120-50	1200	50	250	1.5	1200	35	1200	1600	50	1.05	690	M719	200
● 7MBR75XPE120-50	1200	75	455	1.55	1200	35	1200	1600	75	1.15	690	M719	200
● 7MBR75XRA120-50	1200	75	335	1.5	1200	50	1200	1600	75	1.15	690	M720	310
● 7MBR100XRA120-50	1200	100	445	1.45	1200	75	1200	1600	100	1.05	970	M720	310
● 7MBR150XRE120-50	1200	150	880	1.5	1200	75	1200	1600	150	1.05	1650	M720	310

● : 新製品 New products

注: EconoPIM™はInfineon Technologies社の登録商標です。

Note: EconoPIM™ is registered trademarks of Infineon Technologies AG, Germany.

V<sub>CE(sat)</sub>, V<sub>FM</sub>: at T<sub>j</sub>=25°C, Chip

IGBT モジュール PIM < X series >

■ PIM (コンバータ部、ブレーキ部内蔵) EconoPIM™ 650V, 1200Vクラス  
 PIM/Built-in converter and brake EconoPIM™ 650, 1200 volts class

Press fit pins	Circuit Diagram	Ic	650V	1200V
			X series	X series
		25A		
		35A		7MBR35XWA120-50
		50A	7MBR50XWA065-50	7MBR50XWA120-50
		75A	7MBR75XWA065-50	7MBR75XWE120-50
		50A		
		75A	7MBR75XXA065-50	7MBR75XXA120-50
		100A	7MBR100XXA065-50	7MBR100XXA120-50
		150A	7MBR150XXA065-50	7MBR150XXE120-50
		25A		
		35A		7MBR35XYA120-50
		50A	7MBR50XYA065-50	7MBR50XYA120-50
		75A	7MBR75XYA065-50	7MBR75XYE120-50
		100A	7MBR100XYE065-50	
		50A		
		75A		7MBR75XZA120-50
		100A	7MBR100XZA065-50	7MBR100XZA120-50
		150A	7MBR150XZA065-50	7MBR150XZE120-50

Dimension [mm]

型 式 Device type	インバータ部 Inverter [IGBT]				ブレーキ部 Brake [IGBT+FWD]			コンバータ部 Converter [Diode]				パッケージ Package	質量 Net mass Grams
	V <sub>CES</sub>	I <sub>c</sub>	P <sub>c</sub>	V <sub>CE(sat)</sub>	V <sub>CES</sub>	I <sub>c</sub>	V <sub>RRM</sub>	V <sub>RRM</sub>	I <sub>o</sub>	V <sub>FM</sub>	I <sub>FSM</sub>		
	Volts	Amps.	Watts	Volts	Volts	Amps.	Volts	Volts	Amps.	Volts	Amps.		
○ 7MBR50XWA065-50	650	50	210	1.3	650	30	650	800	50	1.05	545	M721	200
○ 7MBR75XWA065-50	650	75	270	1.3	650	50	650	800	75	1.25	545	M721	200
○ 7MBR75XXA065-50	650	75	270	1.3	650	50	650	800	75	1.25	545	M722	310
○ 7MBR100XXA065-50	650	100	330	1.3	650	50	650	800	100	1.1	770	M722	310
○ 7MBR150XXA065-50	650	150	450	1.3	650	75	650	800	150	1.1	1260	M722	310
○ 7MBR50XYA065-50	650	50	210	1.3	650	30	650	800	50	1.05	545	M721	200
○ 7MBR75XYA065-50	650	75	270	1.3	650	50	650	800	75	1.25	545	M721	200
○ 7MBR100XYE065-50	650	100	480	1.3	650	50	650	800	100	1.1	745	M721	200
○ 7MBR100XZA065-50	650	100	330	1.3	650	50	650	800	100	1.1	770	M722	310
○ 7MBR150XZA065-50	650	150	450	1.3	650	75	650	800	150	1.1	1260	M722	310
○ 7MBR35XWA120-50	1200	35	200	1.5	1200	25	1200	1600	35	1.05	450	M721	200
○ 7MBR50XWA120-50	1200	50	250	1.5	1200	35	1200	1600	50	1.05	690	M721	200
○ 7MBR75XWE120-50	1200	75	455	1.55	1200	35	1200	1600	75	1.15	690	M721	200
○ 7MBR75XXA120-50	1200	75	335	1.5	1200	50	1200	1600	75	1.15	690	M722	310
○ 7MBR100XXA120-50	1200	100	445	1.45	1200	75	1200	1600	100	1.05	970	M722	310
○ 7MBR150XXE120-50	1200	150	880	1.5	1200	75	1200	1600	150	1.05	1650	M722	310
○ 7MBR35XYA120-50	1200	35	200	1.5	1200	25	1200	1600	35	1.05	450	M721	200
○ 7MBR50XYA120-50	1200	50	250	1.5	1200	35	1200	1600	50	1.05	690	M721	200
○ 7MBR75XYE120-50	1200	75	455	1.55	1200	35	1200	1600	75	1.15	690	M721	200
○ 7MBR75XZA120-50	1200	75	335	1.5	1200	50	1200	1600	75	1.15	690	M722	310
○ 7MBR100XZA120-50	1200	100	445	1.45	1200	75	1200	1600	100	1.05	970	M722	310
○ 7MBR150XZE120-50	1200	150	880	1.5	1200	75	1200	1600	150	1.05	1650	M722	310

○ : 開発中 Under development

注 : EconoPIM™ は Infineon Technologies 社の登録商標です。

Note: EconoPIM™ is registered trademarks of Infineon Technologies AG, Germany.

V<sub>CE(sat)</sub>, V<sub>FM</sub>: at T<sub>j</sub>=25°C, Chip

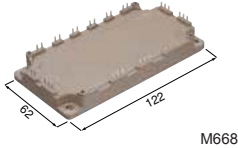


IGBT モジュール 6-Pack < X series >

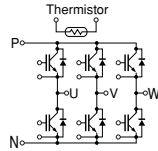
■ 6個組 EconoPACK™ 1200Vクラス

6-Pack EconoPACK™ 1200 volts class

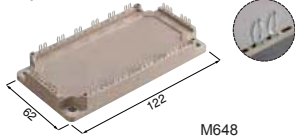
Solder pins



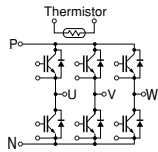
M668



Press fit pins



M648



		1200V	
		X series	
Ic			
100A	<b>6MBI100XBA120-50</b>		
150A	<b>6MBI150XBA120-50</b>		
200A	<b>6MBI200XBA120-50</b>		
	<b>6MBI200XBE120-50</b>		
100A	<b>6MBI100XXA120-50</b>		
150A	<b>6MBI150XXA120-50</b>		
200A	<b>6MBI200XXA120-50</b>		
	<b>6MBI200XXE120-50</b>		

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>C</sub> Cont. Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
					Typ.	I <sub>C</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.		
● <b>6MBI100XBA120-50</b>	1200	±20	100	445	1.45	100	TBD	TBD	TBD	M668	300
● <b>6MBI150XBA120-50</b>	1200	±20	150	625	1.45	150	TBD	TBD	TBD	M668	300
● <b>6MBI200XBA120-50</b>	1200	±20	TBD	750	1.55	200	TBD	TBD	TBD	M668	300
● <b>6MBI200XBE120-50</b>	1200	±20	TBD	1000	1.55	200	TBD	TBD	TBD	M668	300
● <b>6MBI100XXA120-50</b>	1200	±20	100	445	1.45	100	TBD	TBD	TBD	M648	300
● <b>6MBI150XXA120-50</b>	1200	±20	150	625	1.45	150	TBD	TBD	TBD	M648	300
● <b>6MBI200XXA120-50</b>	1200	±20	TBD	750	1.55	200	TBD	TBD	TBD	M648	300
● <b>6MBI200XXE120-50</b>	1200	±20	TBD	1000	1.55	200	TBD	TBD	TBD	M648	300

● : 新製品 New products

注: EconoPACK™はInfineon Technologies社の登録商標です。

6MBI200XBE120-50、6MBI200XXE120-50は低熱抵抗パッケージ適用

Note: EconoPACK™ is registered trademarks of Infineon Technologies AG, Germany.

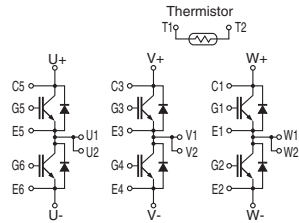
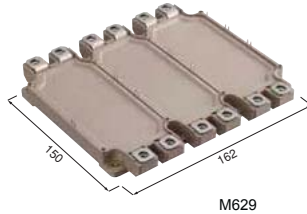
6MBI200XBE120-50、6MBI200XXE120-50; Premium type (Low Thermal Impedance Version)

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

IGBT モジュール 6-Pack < X series >

■ 6個組 EconoPACK™+ 1200V, 1700Vクラス  
6-Pack EconoPACK™+ 1200, 1700 volts class

Solder pins, High power 6-pack



Ic	1200V	1700V
	X series	X series
225A	<b>6MBI225XNA120-50</b>	<b>6MBI225XNA170-50</b>
300A	<b>6MBI300XNA120-50</b>	<b>6MBI300XNA170-50</b>
450A	<b>6MBI450XNA120-50</b>	<b>6MBI450XNA170-50</b>
600A	<b>6MBI600XNA120-50</b>	<b>6MBI600XNA170-50</b>

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ 質量 Package Net mass Grams	
					Typ.	I <sub>c</sub> Amps.	t <sub>d(on)</sub> Typ. μsec.	t <sub>d(off)</sub> Typ. μsec.	t <sub>r</sub> Typ. μsec.		
○ <b>6MBI225XNA120-50</b>	1200	±20	225	TBD	TBD	225	TBD	TBD	TBD	M629	TBD
○ <b>6MBI300XNA120-50</b>	1200	±20	300	TBD	TBD	300	TBD	TBD	TBD	M629	TBD
○ <b>6MBI450XNA120-50</b>	1200	±20	450	TBD	TBD	450	TBD	TBD	TBD	M629	TBD
○ <b>6MBI600XNA120-50</b>	1200	±20	600	TBD	TBD	600	TBD	TBD	TBD	M629	TBD
○ <b>6MBI225XNA170-50</b>	1700	±20	225	TBD	TBD	225	TBD	TBD	TBD	M629	TBD
○ <b>6MBI300XNA170-50</b>	1700	±20	300	TBD	TBD	300	TBD	TBD	TBD	M629	TBD
○ <b>6MBI450XNA170-50</b>	1700	±20	450	TBD	TBD	450	TBD	TBD	TBD	M629	TBD
○ <b>6MBI600XNA170-50</b>	1700	±20	600	TBD	TBD	600	TBD	TBD	TBD	M629	TBD

○: 開発中 Under development

注: EconoPACK™+はInfineon Technologies社の登録商標です。

Note: EconoPACK™+ is registered trademarks of Infineon Technologies AG, Germany.

V<sub>CE(sat)</sub>: at T<sub>J</sub>=25°C, Chip



IGBT モジュール 2-Pack < X series >

■ 2個組 650V, 1200V, 1700Vクラス Standard 2-Pack 650, 1200, 1700 volts class

Module Model	Dimensions [mm]	Circuit Diagram	Ic	650V	1200V	1700V
				X series	X series	X series
M263	34 x 94		75A			2MBI75XAA170-50
			100A		2MBI100XAA120-50	2MBI100XAA170-50
			150A	2MBI150XAA065-50	2MBI150XAA120-50	2MBI150XAA170-50
			200A	2MBI200XAA065-50	2MBI200XAA120-50	
M274	43 x 92		150A			
			200A		2MBI200XBE120-50	
			300A	2MBI300XBE065-50	2MBI300XBE120-50	
			400A	2MBI400XBE065-50		
M275	62 x 108		300A			
			400A	2MBI400XDE065-50	2MBI400XDE120-50	
			600A	2MBI600XDE065-50	2MBI600XDE120-50	
M276	62 x 108		150A			2MBI150XHA170-50
			200A			2MBI200XHA170-50
			300A		2MBI300XHA120-50	2MBI300XHA170-50
			400A			2MBI400XHA170-50
			450A		2MBI450XHA120-50	
			600A		2MBI600XHA120-50	
M277	62 x 110		300A			2MBI300XEE170-50
			400A			2MBI400XEE170-50
			450A		2MBI450XEE120-50	
			600A	2MBI600XEE065-50	2MBI600XEE120-50	2MBI600XEE170-50

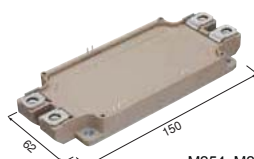
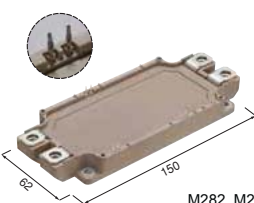
Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
					Typ. Volts	I <sub>c</sub> Amps.	t <sub>d(on)</sub> Typ. μsec.	t <sub>d(off)</sub> Typ. μsec.	t <sub>r</sub> Typ. μsec.		
○ 2MBI150XAA065-50	650	±20	150	TBD	TBD	150	TBD	TBD	TBD	M263	TBD
○ 2MBI200XAA065-50	650	±20	200	TBD	TBD	200	TBD	TBD	TBD	M263	TBD
○ 2MBI300XBE065-50	650	±20	300	TBD	TBD	300	TBD	TBD	TBD	M274	TBD
○ 2MBI400XBE065-50	650	±20	400	TBD	TBD	400	TBD	TBD	TBD	M274	TBD
○ 2MBI400XDE065-50	650	±20	400	TBD	TBD	400	TBD	TBD	TBD	M275	TBD
○ 2MBI600XDE065-50	650	±20	600	TBD	TBD	600	TBD	TBD	TBD	M275	TBD
○ 2MBI600XEE065-50	650	±20	600	TBD	TBD	600	TBD	TBD	TBD	M277	TBD
○ 2MBI100XAA120-50	1200	±20	100	TBD	TBD	100	TBD	TBD	TBD	M263	TBD
○ 2MBI150XAA120-50	1200	±20	150	TBD	TBD	150	TBD	TBD	TBD	M263	TBD
○ 2MBI200XAA120-50	1200	±20	200	TBD	TBD	200	TBD	TBD	TBD	M263	TBD
○ 2MBI200XBE120-50	1200	±20	200	TBD	TBD	200	TBD	TBD	TBD	M274	TBD
○ 2MBI300XBE120-50	1200	±20	300	TBD	TBD	300	TBD	TBD	TBD	M274	TBD
○ 2MBI400XDE120-50	1200	±20	400	TBD	TBD	400	TBD	TBD	TBD	M275	TBD
○ 2MBI600XDE120-50	1200	±20	600	TBD	TBD	600	TBD	TBD	TBD	M275	TBD
○ 2MBI300XHA120-50	1200	±20	300	TBD	TBD	300	TBD	TBD	TBD	M276	TBD
○ 2MBI450XHA120-50	1200	±20	450	TBD	TBD	450	TBD	TBD	TBD	M276	TBD
○ 2MBI600XHA120-50	1200	±20	600	TBD	TBD	600	TBD	TBD	TBD	M276	TBD
○ 2MBI450XEE120-50	1200	±20	450	TBD	TBD	450	TBD	TBD	TBD	M277	TBD
○ 2MBI600XEE120-50	1200	±20	600	TBD	TBD	600	TBD	TBD	TBD	M277	TBD
○ 2MBI75XAA170-50	1700	±20	75	TBD	TBD	75	TBD	TBD	TBD	M263	TBD
○ 2MBI100XAA170-50	1700	±20	100	TBD	TBD	100	TBD	TBD	TBD	M263	TBD
○ 2MBI150XAA170-50	1700	±20	150	TBD	TBD	150	TBD	TBD	TBD	M263	TBD
○ 2MBI150XHA170-50	1700	±20	150	TBD	TBD	150	TBD	TBD	TBD	M276	TBD
○ 2MBI200XHA170-50	1700	±20	200	TBD	TBD	200	TBD	TBD	TBD	M276	TBD
○ 2MBI300XHA170-50	1700	±20	300	TBD	TBD	300	TBD	TBD	TBD	M276	TBD
○ 2MBI400XHA170-50	1700	±20	400	TBD	TBD	400	TBD	TBD	TBD	M276	TBD
○ 2MBI300XEE170-50	1700	±20	300	TBD	TBD	300	TBD	TBD	TBD	M277	TBD
○ 2MBI400XEE170-50	1700	±20	400	TBD	TBD	400	TBD	TBD	TBD	M277	TBD
○ 2MBI600XEE170-50	1700	±20	600	TBD	TBD	600	TBD	TBD	TBD	M277	TBD

○ : 開発中 Under development

IGBT モジュール 2-Pack < X series >

■ 2個組 1200V, 1700Vクラス Standard 2-Pack 1200, 1700 volts class

Solder pins	Ic	1200V	1700V
		X series	X series
 <p>M254, M285</p>	225A	<b>2MBI225XNA120-50</b>	<b>2MBI225XNA170-50</b>
	300A	<b>2MBI300XNA120-50</b>	<b>2MBI300XNA170-50</b>
	450A	<b>2MBI450XNA120-50</b>	<b>2MBI450XNA170-50</b>
	600A	<b>2MBI600XNE120-50</b>	<b>2MBI600XNE170-50</b>
	800A	<b>2MBI800XNE120-50</b>	
 <p>M282, M286</p>	225A	<b>2MBI225XNB120-50</b>	<b>2MBI225XNB170-50</b>
	300A	<b>2MBI300XNB120-50</b>	<b>2MBI300XNB170-50</b>
	450A	<b>2MBI450XNB120-50</b>	<b>2MBI450XNB170-50</b>
	600A	<b>2MBI600XNF120-50</b>	<b>2MBI600XNF170-50</b>
	800A	<b>2MBI800XNF120-50</b>	

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>C</sub> Cont. Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ 質量 Package Net mass	
					Typ. Volts	I <sub>C</sub> Amps.	t <sub>d(on)</sub> Typ. μsec.	t <sub>d(off)</sub> Typ. μsec.	t <sub>r</sub> Typ. μsec.		Grams
○ 2MBI225XNA120-50	1200	±20	225	TBD	TBD	225	TBD	TBD	TBD	M254	350
○ 2MBI300XNA120-50	1200	±20	300	TBD	TBD	300	TBD	TBD	TBD	M254	350
○ 2MBI450XNA120-50	1200	±20	450	TBD	TBD	450	TBD	TBD	TBD	M254	350
○ 2MBI600XNE120-50	1200	±20	600	TBD	TBD	600	TBD	TBD	TBD	M285	350
○ 2MBI800XNE120-50	1200	±20	800	TBD	TBD	800	TBD	TBD	TBD	M285	350
○ 2MBI225XNB120-50	1200	±20	225	TBD	TBD	225	TBD	TBD	TBD	M282	350
○ 2MBI300XNB120-50	1200	±20	300	TBD	TBD	300	TBD	TBD	TBD	M282	350
○ 2MBI450XNB120-50	1200	±20	450	TBD	TBD	450	TBD	TBD	TBD	M282	350
○ 2MBI600XNF120-50	1200	±20	600	TBD	TBD	600	TBD	TBD	TBD	M286	350
○ 2MBI800XNF120-50	1200	±20	800	TBD	TBD	800	TBD	TBD	TBD	M286	350
○ 2MBI225XNA170-50	1700	±20	225	TBD	TBD	225	TBD	TBD	TBD	M254	350
○ 2MBI300XNA170-50	1700	±20	300	TBD	TBD	300	TBD	TBD	TBD	M254	350
○ 2MBI450XNA170-50	1700	±20	450	TBD	TBD	450	TBD	TBD	TBD	M254	350
○ 2MBI600XNE170-50	1700	±20	600	TBD	TBD	600	TBD	TBD	TBD	M285	350
○ 2MBI225XNB170-50	1700	±20	225	TBD	TBD	225	TBD	TBD	TBD	M282	350
○ 2MBI300XNB170-50	1700	±20	300	TBD	TBD	300	TBD	TBD	TBD	M282	350
○ 2MBI450XNB170-50	1700	±20	450	TBD	TBD	450	TBD	TBD	TBD	M282	350
○ 2MBI600XNF170-50	1700	±20	600	TBD	TBD	600	TBD	TBD	TBD	M286	350

○ : 開発中 Under development

V<sub>CE(sat)</sub>: at T<sub>J</sub>=25°C, Chip

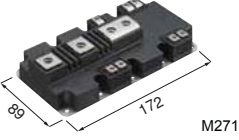
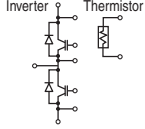




IGBT モジュール 2-Pack < X series >

PrimePACK™ 1200V, 1700Vクラス

PrimePACK™ 1200, 1700 volts class

 M271	 Inverter Thermistor	Ic	1200V		1700V	
			X series		X series	
			Low switching loss	Soft turn off	Low switching loss	Soft turn off
		650A			2MBI650XXA170E-50	
		900A	2MBI900XXA120E-50	2MBI900XXA120P-50		
		1200A	2MBI1200XXE120E-50	2MBI1200XXE120P-50		2MBI1200XXE170P-50
		1000A			2MBI1000XXB170E-50	
		1400A		2MBI1400XXB120P-50		2MBI1400XXB170P-50
		1800A		2MBI1800XXF120P-50		2MBI1800XXF170P-50

Dimension [mm]

型 式 Device type	V <sub>CES</sub>	V <sub>GES</sub>	I <sub>C</sub> Cont.	P <sub>C</sub>	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass
					Typ.	I <sub>C</sub>	t <sub>d(on)</sub> Typ.	t <sub>d(off)</sub> Typ.	t <sub>f</sub> Typ.		
	Volts	Volts	Amps.	Watts	Volts	Amps.	μsec.	μsec.	μsec.		Grams
○ 2MBI900XXA120E-50	1200	±20	900	TBD	TBD	900	TBD	TBD	TBD	M271	850
○ 2MBI900XXA120P-50	1200	±20	900	TBD	TBD	900	TBD	TBD	TBD	M271	850
○ 2MBI1200XXE120E-50	1200	±20	1200	TBD	TBD	1200	TBD	TBD	TBD	M271	850
○ 2MBI1200XXE120P-50	1200	±20	1200	TBD	TBD	1200	TBD	TBD	TBD	M271	850
○ 2MBI1400XXB120P-50	1200	±20	1400	TBD	TBD	1400	TBD	TBD	TBD	M272	1250
○ 2MBI1800XXF120P-50	1200	±20	1800	TBD	TBD	1800	TBD	TBD	TBD	M272	1250
○ 2MBI650XXA170E-50	1700	±20	650	TBD	TBD	650	TBD	TBD	TBD	M271	850
○ 2MBI1200XXE170P-50	1700	±20	1200	TBD	TBD	1200	TBD	TBD	TBD	M271	850
○ 2MBI1000XXB170E-50	1700	±20	1000	TBD	TBD	1000	TBD	TBD	TBD	M272	1250
○ 2MBI1400XXB170P-50	1700	±20	1400	TBD	TBD	1400	TBD	TBD	TBD	M272	1250
○ 2MBI1800XXF170P-50	1700	±20	1800	TBD	TBD	1800	TBD	TBD	TBD	M272	1250

○:開発中 Under development

注: PrimePACK™はInfineon Technologies社の登録商標です。

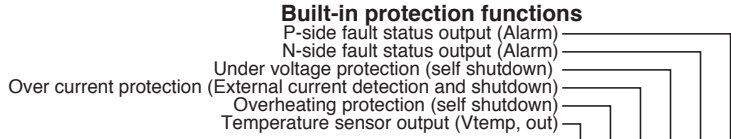
Note: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

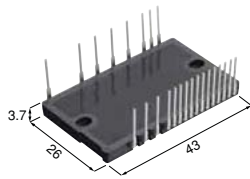
IGBT モジュール IPM < X series >

■小容量IPM (Intelligent Power Module) 600Vクラス

Small IPM (Intelligent Power Module) 600 volts class



Small IPM with High Voltage Driver-IC without Brake-Chopper



P633A

Ic	600V X series	
	15A	6MBP15XSD060-50
20A	6MBP20XSD060-50	✓
30A	6MBP30XSD060-50	✓
35A	6MBP35XSD060-50	✓
15A	6MBP15XSF060-50	✓
20A	6MBP20XSF060-50	✓
30A	6MBP30XSF060-50	✓
35A	6MBP35XSF060-50	✓

Dimension [mm]

型 式 Device type	インバータ部 Inverter			制御部 Control			保護機能 Protection function					パッケージ Package	質量 Net mass Grams
	V <sub>CES</sub>	I <sub>c</sub>	V <sub>CE(sat)</sub>	V <sub>CCL</sub>	Boot-strap	Input signal	UV	OC	Vtemp	TOH	Alarm出力 VFO fault output		
	Volts	Amps.	Typ. Volts	V <sub>CCH</sub>	Diode	Active logic and Voltage level							
● 6MBP15XSD060-50	600	15	1.60	15	Built-in	High(3.3/5V)	P&N-side	N-side	N-side	-	N-side(UV,OC)	P633A	9.3
● 6MBP20XSD060-50	600	20	1.60	15	Built-in	High(3.3/5V)	P&N-side	N-side	N-side	-	N-side(UV,OC)	P633A	9.3
● 6MBP30XSD060-50	600	30	1.60	15	Built-in	High(3.3/5V)	P&N-side	N-side	N-side	-	N-side(UV,OC)	P633A	9.3
● 6MBP35XSD060-50	600	35	1.40	15	Built-in	High(3.3/5V)	P&N-side	N-side	N-side	-	N-side(UV,OC)	P633A	9.3
● 6MBP15XSF060-50	600	15	1.60	15	Built-in	High(3.3/5V)	P&N-side	N-side	N-side	N-side(143±7°C)	N-side(UV,OC,TOH)	P633A	9.3
● 6MBP20XSF060-50	600	20	1.60	15	Built-in	High(3.3/5V)	P&N-side	N-side	N-side	N-side(143±7°C)	N-side(UV,OC,TOH)	P633A	9.3
● 6MBP30XSF060-50	600	30	1.60	15	Built-in	High(3.3/5V)	P&N-side	N-side	N-side	N-side(143±7°C)	N-side(UV,OC,TOH)	P633A	9.3
● 6MBP35XSF060-50	600	35	1.40	15	Built-in	High(3.3/5V)	P&N-side	N-side	N-side	N-side(143±7°C)	N-side(UV,OC,TOH)	P633A	9.3

●:新製品 New Products

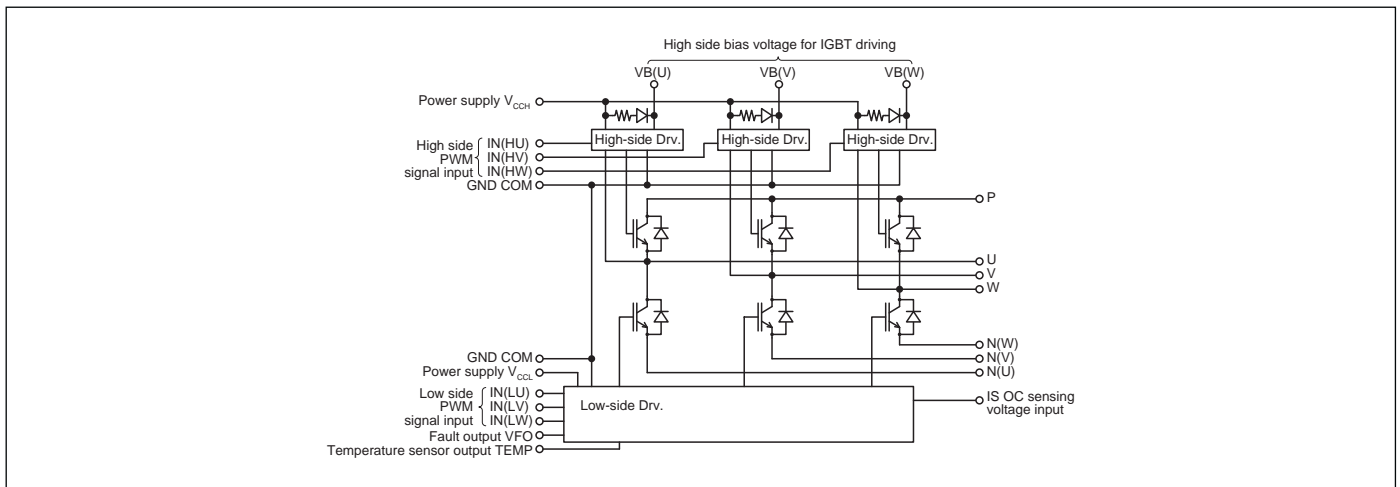
※1 外部電流検出方式

※1 External current detection

※2 LVIC内での温度検出

※2 Temperature detection in LVIC

●ブロック図 Block Diagram





## IGBT モジュール IGBT Module



富士電機の IGBT モジュールはモータの可変速駆動装置や無停電電源装置等の電力変換器のスイッチング素子として開発されてきました。IGBT はパワー MOSFET の高速スイッチング性能とバイポーラトランジスタの高電圧・大電流処理能力とを合わせ持った半導体素子です。

Fuji Electric has been developing IGBT modules designed to be used as switching elements for power converters of variable-speed drives for motors, uninterruptable power supplies, and more. IGBT has superior characteristics combining the high-speed switching performance of a power MOSFET with the high-voltage/high-current handling capabilities of a bipolar transistor.



### IGBTモジュール Vシリーズの特長

- パッケージ小型化と出力のパワー UP を実現！
  - ・高性能、低損失な第 6 世代 V シリーズ IGBT チップ・FWD を使用
  - ・Tj max175°C、連続動作保証 150°C
- 環境に優しいモジュール
  - ・豊富な組立性、ハンダレス組立への対応
  - ・RoHS 対応（一部非対応）
- ターンオン特性
  - ・ノイズ・損失トレードオフの改善
  - ・dv/dt, dic/dt 低減によるノイズ・振動の抑制
- ターンオフ特性
  - ・ソフトスイッチング特性・ターンオフ振動の抑制

### Features of the IGBT Module V Series

- A compact design allows for greater power output
  - ・ High performance 6th-generation V series IGBT/FWD chipset
  - ・ Tj(max.)=175°C, Tj(op)=150°C
- Environmentally friendly modules
  - ・ Easy assemblage, solder free options
  - ・ RoHS compliant (Some parts are Non RoHS.)
- Turn-on switching characteristics
  - ・ Improved noise-loss trade-off
  - ・ Reduced turn-on dv/dt, excellent turn-on dic/dt
- Turn-off switching characteristic
  - ・ Soft switching behavior, turn-off oscillation free

### 製品系列 Product lineup

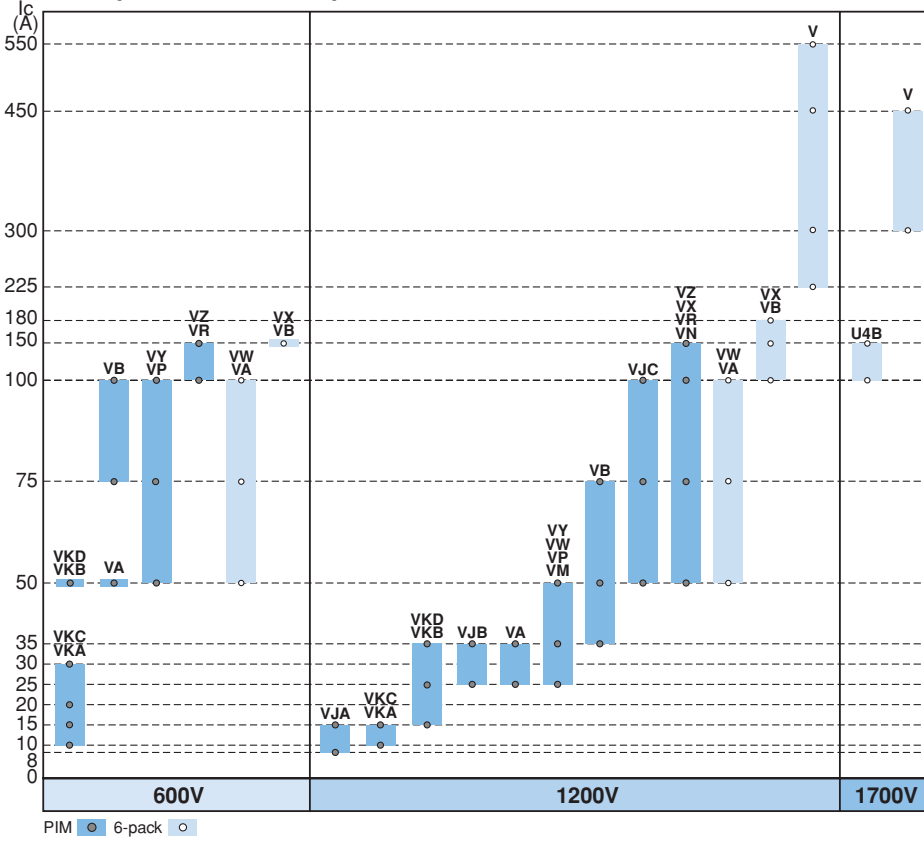
Number of IGBT Switches	Products Category	Page	Internal Configuration				Max V <sub>CE</sub>				Rated Current					
			IGBT Module			Discrete IGBT	600V	1200V	1700V	3300V	≤50A	>50A ≤150A	>150A ≤300A	>300A ≤600A	>600A ≤1200A	>1200A
			Standard Module	Power Integrated Module	Intelligent Power Module											
1	Standard 1-pack	32	✓				✓	✓					✓	✓		
	Chopper	34	✓				✓	✓		✓	✓	✓				
2	Standard 2-pack	28				✓	✓	✓			✓	✓	✓			
		29	✓				✓	✓			✓	✓	✓			
1,2	High Speed Module	36	✓				✓				✓	✓	✓			
	High Power Module	30,33	✓				✓	✓	✓				✓	✓	✓	
	PrimePACK™	31,35	✓				✓	✓					✓	✓	✓	
6	6-pack	25					✓				✓					
		26	✓				✓	✓	✓		✓					
		27					✓	✓				✓	✓			
4,12	AT-NPC 3 level	37	Reverse-Blocking IGBTs are integrated.				✓	✓	✓		✓	✓	✓	✓	✓	
1	Discrete RB-IGBT	42				✓					✓					
7	PIM	21					✓	✓			✓					
		22		✓			✓	✓			✓	✓				
		23					✓	✓			✓	✓				
6,7	IPM	39				✓	✓			✓	✓	✓	✓			
1	Discrete IGBT	42				✓	✓			✓	✓					
2	IPM for EV/HEV	45			✓		✓						✓			
6	6-pack for EV/HEV	45	✓				✓						✓	✓		

注: PrimePACK™ は Infineon Technologies 社の登録商標です。  
Note: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.



製品系列マップ Products Map < V series >

● PIM & 6-pack Products Map



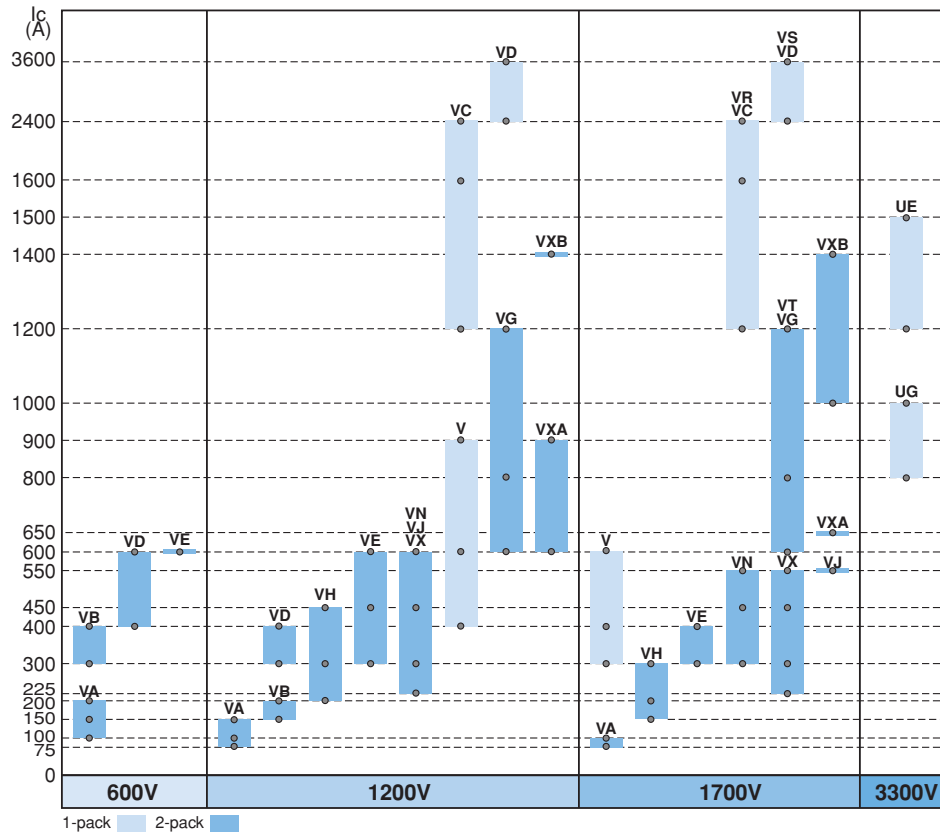
Power Integrated Module

7MBR Ic	IGBT series & Package type	Vces
	VJA	40 x 42 mm
	VJB	52 x 59 mm
	VJC	59 x 82 mm
	VKA, VKC	33.8 x 62.8 mm
	VKB, VKD	56.7 x 62.8 mm
	VA, VM, VP, VW, VY	45 x 107.5 mm
	VB, VN, VR, VX, VZ	62 x 122 mm

6-pack

6MBI Ic	IGBT series & Package type	Vces
	VA, VW	45 x 107.5 mm
	VB, VX, U4B	62 x 122 mm
	V	150 x 162 mm

● 1-pack / 2-pack Products Map



1-pack

1MBI Ic	IGBT series & Package type	Vces
	V	62 x 108 mm   Standard Pack
	VC, VR, UG	140 x 130 mm   High Power Module
	VD, VS, UE	140 x 190 mm   High Power Module

2-pack

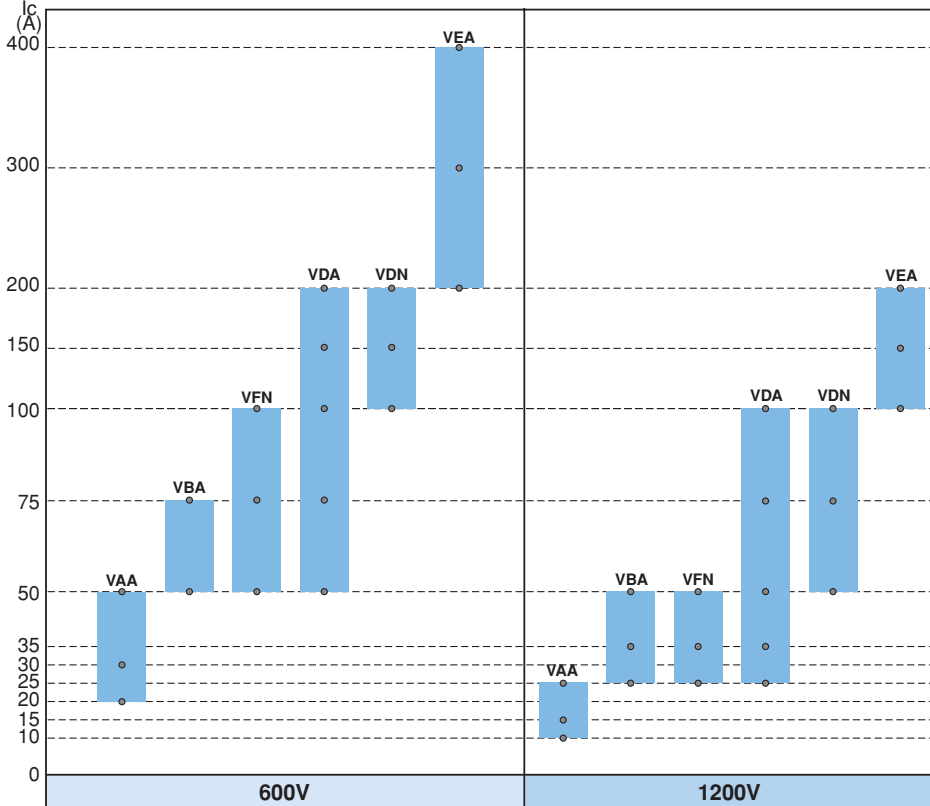
2MBI Ic	IGBT series & Package type	Vces
	VA	34 x 94 mm   Standard Pack
	VB	45 x 92 mm   Standard Pack
	VD	62 x 108 mm   Standard Pack
	VE	80 x 110 mm   Standard Pack
	VH	62 x 108 mm   Standard Pack
	VJ, VN, VX	62 x 150 mm   Standard Pack
	VG, VT	140 x 130 mm   High Power Module
	VXA	89 x 172 mm   PrimePACK™
	VXB	89 x 250 mm   PrimePACK™

PrimePACK™はInfineon Technologies社の登録商標です。  
PrimePACK™ is registered trademark of Infineon Technologies AG, Germany



## 製品系列マップ Products Map < V series >

### ● Intelligent Power Module Products Map



IGBT series & Package type	Vces	7 in 1	6 in 1
VAA	49.5 × 70 mm	—	○
VBA	50.2 × 87 mm	—	○
VDA, VDN	84 × 128.5 mm	○	○
VEA	110 × 142 mm	○	○
VFN*	55 × 90 mm	○	○

Thermal impedance of VDN type is lower than VDA type.

## 型式の見方 Part numbers

2MBI300VH-120-50 (example)

2	MB	I	300	V	H	120	50
IGBT スイッチ数 Number of IGBT Switches	IGBT モジュール IGBT Module	内部構成 Internal Configuration	定格電流 Rated Current	IGBT デバイス IGBT Device Technology	パッケージ Package Type	最大電圧 Max. V <sub>CE</sub>	RoHS Compliant
		I: Standard Modules R: Power Integrated Modules P: Intelligent Power Modules	× 1	V: V series (6th Generation) U: U series (5th Generation)	See the Products Map on the next pages	060: 600V 120: 1200V 170: 1700V 330: 3300V	None, 01 to 49 Non RoHS Compliant 50 to 99 RoHS Compliant

## 記号 Letter symbols

### 記号 Letter symbols

V <sub>CE(sat)</sub> : コレクタ・エミッタ間電圧	Collector-to-emitter rated voltage (Gate-to-emitter short-circuited)	V <sub>CE(sat)</sub> : コレクタ・エミッタ飽和電圧	Collector-to-emitter saturation voltage
V <sub>GES</sub> : ゲート・エミッタ間電圧	Gate-to-emitter rated voltage (Collector-to-emitter short-circuited)	t <sub>on</sub> : ターンオン時間	Turn-on time
I <sub>C</sub> : コレクタ電流	Rated collector current	t <sub>off</sub> : ターンオフ時間	Turn-off time
P <sub>C</sub> : 最大損失	Maximum power dissipation	t <sub>r</sub> : 立下り時間	Fall time
		t <sub>d(on)</sub> : ターンオン遅延時間	Turn-on time
		t <sub>d(off)</sub> : ターンオフ遅延時間	Turn-off time

IGBT モジュール PIM < V series >

■小容量PIM (コンバータ部、ブレーキ部内蔵) 600V, 1200Vクラス  
Small PIM/Built-in converter and brake 600, 1200 volts class

Press fit pins	Thermistor	ic	600V	1200V
			V series	V series
 M726		10A	7MBR10VKA060-50	7MBR10VKA120-50
		15A	7MBR15VKA060-50	7MBR15VKA120-50
		20A	7MBR20VKA060-50	
		30A	7MBR30VKA060-50	
 M727				7MBR15VKB120-50
				7MBR25VKB120-50
				7MBR35VKB120-50
			7MBR50VKB060-50	
 M728		10A	7MBR10VKC060-50	7MBR10VKC120-50
		15A	7MBR15VKC060-50	7MBR15VKC120-50
		20A	7MBR20VKC060-50	
		30A	7MBR30VKC060-50	
 M729				7MBR15VKD120-50
				7MBR25VKD120-50
				7MBR35VKD120-50
			7MBR50VKD060-50	

Dimension [mm]

型 式 Device type	インバータ部 Inverter [IGBT]				ブレーキ部 Brake [IGBT+FWD]			コンバータ部 Converter [Diode]				パッケージ 質量 Package Net mass Grams	
	$V_{CES}$	$I_c$	$P_c$	$V_{CE(sat)}$	$V_{CES}$	$I_c$	$V_{RRM}$	$V_{RRM}$	$I_o$	$V_{FM}$	$I_{FSM}$	Package	Net mass Grams
	Volts	Cont. Amps.	Watts	Typ. Volts	Volts	Cont. Amps.	Volts	Volts	Cont. Amps.	Typ. Volts	Amps.		
7MBR10VKA060-50	600	10	70	1.70	600	10	600	800	10	0.95	360	M726	25
7MBR15VKA060-50	600	15	85	1.75	600	15	600	800	15	1.00	360	M726	25
7MBR20VKA060-50	600	20	100	1.70	600	20	600	800	20	1.05	360	M726	25
7MBR30VKA060-50	600	30	125	1.70	600	30	600	800	30	1.15	360	M726	25
7MBR50VKB060-50	600	50	180	1.60	600	50	600	800	50	1.25	580	M727	45
7MBR10VKC060-50	600	10	70	1.70	600	10	600	800	10	0.95	360	M728	25
7MBR15VKC060-50	600	15	85	1.75	600	15	600	800	15	1.00	360	M728	25
7MBR20VKC060-50	600	20	100	1.70	600	20	600	800	20	1.05	360	M728	25
7MBR30VKC060-50	600	30	125	1.70	600	30	600	800	30	1.15	360	M728	25
7MBR50VKD060-50	600	50	180	1.60	600	50	600	800	50	1.25	580	M729	45
7MBR10VKA120-50	1200	10	110	1.85	1200	10	1200	1600	10	0.95	245	M726	25
7MBR15VKA120-50	1200	15	135	1.90	1200	15	1200	1600	15	1.00	245	M726	25
7MBR15VKB120-50	1200	15	135	1.90	1200	15	1200	1600	15	1.00	245	M727	45
7MBR25VKB120-50	1200	25	180	1.85	1200	25	1200	1600	25	1.00	370	M727	45
7MBR35VKB120-50	1200	35	215	1.85	1200	35	1200	1600	35	1.05	370	M727	45
7MBR10VKC120-50	1200	10	110	1.85	1200	10	1200	1600	10	0.95	245	M728	25
7MBR15VKC120-50	1200	15	135	1.90	1200	15	1200	1600	15	1.00	245	M728	25
7MBR15VKD120-50	1200	15	135	1.90	1200	15	1200	1600	15	1.00	245	M729	45
7MBR25VKD120-50	1200	25	180	1.85	1200	25	1200	1600	25	1.00	370	M729	45
7MBR35VKD120-50	1200	35	215	1.85	1200	35	1200	1600	35	1.05	370	M729	45

$V_{CE(sat)}$ ,  $V_{FM}$  : at  $T_j=25^{\circ}C$ , Chip



IGBT モジュール PIM < V series >

■ MiniSKiiP® (コンバータ部、ブレーキ部内蔵) 1200Vクラス  
MiniSKiiP®/Built-in converter and brake 1200 volts class

M723	M724	M725	Ic	1200V V series	
				Model	Net mass [g]
8A	15A	25A	35A	7MBR8VJA120-50	40
				7MBR8VJA120-53	40
15A	25A	35A	50A	7MBR15VJA120-50	40
				7MBR15VJA120-53	40
25A	35A	50A	75A	7MBR25VJB120-50	65
				7MBR25VJB120-53	65
35A	50A	75A	100A	7MBR35VJB120-50	65
				7MBR35VJB120-53	65
50A	75A	100A	100A	7MBR35VJB120A-50	65
				7MBR35VJB120A-53	65
75A	100A	100A	100A	7MBR50VJC120-50	95
				7MBR50VJC120-53	95
100A	100A	100A	100A	7MBR75VJC120-50	95
				7MBR75VJC120-53	95
100A	100A	100A	100A	7MBR100VJC120-50	95
				7MBR100VJC120-53	95

Dimension [mm]

型 式 Device type	インバータ部 Inverter [IGBT]			ブレーキ部 Brake [IGBT+FWD]			コンバータ部 Converter [Diode]				パッケージ 質量 Package Net mass	
	V <sub>CES</sub>	I <sub>c</sub>	V <sub>CE(sat)</sub> Typ.	V <sub>CES</sub>	I <sub>c</sub>	V <sub>RRM</sub>	V <sub>RRM</sub>	I <sub>o</sub>	V <sub>FM</sub> Typ.	I <sub>FSM</sub>	Package	Net mass Grams
	Volts	Cont. Amps.	Volts	Volts	Cont. Amps.	Volts	Volts	Cont. Amps.	Volts	Amps.		
● 7MBR8VJA120-50	1200	8	1.80	1200	8	1200	1600	8	1.00	220	M723	40
● 7MBR8VJA120-53	1200	8	1.80	1200	8	1200	1600	8	1.00	220	M723	40
● 7MBR15VJA120-50	1200	15	1.85	1200	15	1200	1600	15	1.10	220	M723	40
● 7MBR15VJA120-53	1200	15	1.85	1200	15	1200	1600	15	1.10	220	M723	40
● 7MBR25VJB120-50	1200	25	1.85	1200	25	1200	1600	25	1.10	370	M724	65
● 7MBR25VJB120-53	1200	25	1.85	1200	25	1200	1600	25	1.10	370	M724	65
● 7MBR35VJB120-50	1200	35	1.85	1200	35	1200	1600	35	1.20	370	M724	65
● 7MBR35VJB120-53	1200	35	1.85	1200	35	1200	1600	35	1.20	370	M724	65
● 7MBR35VJB120A-50	1200	35	1.85	1200	35	1200	1600	35	1.05	700	M724	65
● 7MBR35VJB120A-53	1200	35	1.85	1200	35	1200	1600	35	1.05	700	M724	65
● 7MBR50VJC120-50	1200	50	1.85	1200	50	1200	1600	50	1.10	700	M725	95
● 7MBR50VJC120-53	1200	50	1.85	1200	50	1200	1600	50	1.10	700	M725	95
● 7MBR75VJC120-50	1200	75	1.85	1200	75	1200	1600	75	1.25	700	M725	95
● 7MBR75VJC120-53	1200	75	1.85	1200	75	1200	1600	75	1.25	700	M725	95
● 7MBR100VJC120-50	1200	100	1.75	1200	100	1200	1600	100	1.15	1000	M725	95
● 7MBR100VJC120-53	1200	100	1.75	1200	100	1200	1600	100	1.15	1000	M725	95

●: 新製品 New Products

注1: MiniSKiiP®はSEMIKRON INTERNATIONAL 社の登録商標です。

注2: "-50"はStandard Lid使用タイプ、"-53"はSlim Lid使用タイプです。

Note1: MiniSKiiP® is a registered trademark of SEMIKRON INTERNATIONAL GmbH.

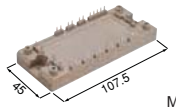
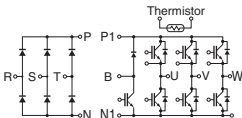

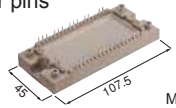
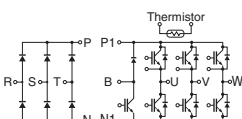
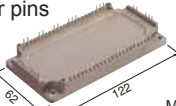
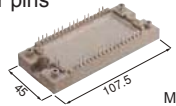
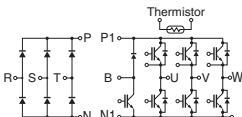
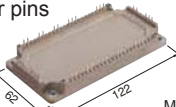
Note2: "-50" indicates Standard Lid types and "-53" indicates Slim Lid types.

V<sub>CE(sat)</sub>, V<sub>FM</sub>: at T<sub>j</sub>=25°C, Chip



IGBT モジュール PIM < V series >

■ PIM (コンバータ部、ブレーキ部内蔵) EconoPIM™ 600V, 1200Vクラス  
PIM/Built-in converter and brake EconoPIM™ 600, 1200 volts class

Solder pins	Thermistor	Ic	600V	1200V
			V series	V series
 M711		25A		7MBR25VA120-50
 M712		35A		7MBR35VA120-50
		50A	7MBR50VA060-50	
		35A		7MBR35VB120-50
		50A		7MBR50VB120-50
		75A	7MBR75VB060-50	7MBR75VB120-50
	100A	7MBR100VB060-50		
 M719		25A		7MBR25VM120-50
 M720		35A		7MBR35VM120-50
		50A		7MBR50VM120-50
		50A		7MBR50VN120-50
		75A		7MBR75VN120-50
		100A		7MBR100VN120-50
	150A		7MBR150VN120-50	
 M719		25A		7MBR25VP120-50
 M720		35A		7MBR35VP120-50
		50A	7MBR50VP060-50	7MBR50VP120-50
		75A	7MBR75VP060-50	
		100A	7MBR100VP060-50	
		50A		7MBR50VR120-50
	75A		7MBR75VR120-50	
	100A	7MBR100VR060-50	7MBR100VR120-50	
	150A	7MBR150VR060-50	7MBR150VR120-50	

Dimension [mm]

型 式 Device type	インバータ部 Inverter [IGBT]				ブレーキ部 Brake [IGBT+FWD]			コンバータ部 Converter [Diode]				パッケージ Package	質量 Net mass Grams
	V <sub>CE(sat)</sub>	I <sub>c</sub> Cont.	P <sub>c</sub>	V <sub>CE(sat)</sub> Typ.	V <sub>CE(sat)</sub>	I <sub>c</sub> Cont.	V <sub>RRM</sub>	V <sub>RRM</sub>	I <sub>o</sub> Cont.	V <sub>FM</sub> Typ.	I <sub>FSM</sub>		
	Volts	Amps.	Watts	Volts	Volts	Amps.	Volts	Volts	Amps.	Volts	Amps.		
7MBR50VA060-50	600	50	200	1.6	600	50	600	800	50	1.3	210	M711	180
7MBR75VB060-50	600	75	300	1.6	600	50	600	800	75	1.25	500	M712	300
7MBR100VB060-50	600	100	335	1.6	600	50	600	800	100	1.25	700	M712	300
7MBR50VP060-50	600	50	200	1.6	600	50	600	800	50	1.3	210	M719	200
7MBR75VP060-50	600	75	300	1.6	600	50	600	800	75	1.25	500	M719	200
7MBR100VP060-50	600	100	430	1.85	600	50	600	800	100	1.25	700	M719	200
7MBR100VR060-50	600	100	335	1.6	600	50	600	800	100	1.25	700	M720	310
7MBR150VR060-50	600	150	485	1.6	600	75	600	800	150	1.25	700	M720	310
7MBR25VA120-50	1200	25	170	1.85	1200	25	1200	1600	25	1.4	155	M711	180
7MBR35VA120-50	1200	35	210	1.85	1200	25	1200	1600	35	1.35	260	M711	180
7MBR35VB120-50	1200	35	210	1.85	1200	25	1200	1600	35	1.35	260	M712	300
7MBR50VB120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M712	300
7MBR75VB120-50	1200	75	385	1.85	1200	50	1200	1600	75	1.4	520	M712	300
7MBR25VM120-50	1200	25	170	1.85	1200	25	1200	1600	25	1.4	155	M719	200
7MBR35VM120-50	1200	35	210	1.85	1200	25	1200	1600	35	1.35	260	M719	200
7MBR50VM120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M719	200
7MBR50VN120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M720	310
7MBR75VN120-50	1200	75	385	1.85	1200	50	1200	1600	75	1.4	520	M720	310
7MBR100VN120-50	1200	100	520	1.75	1200	75	1200	1600	100	1.5	520	M720	310
7MBR150VN120-50	1200	150	885	1.85	1200	100	1200	1600	150	1.4	780	M720	310
7MBR25VP120-50	1200	25	170	1.85	1200	25	1200	1600	25	1.4	155	M719	200
7MBR35VP120-50	1200	35	210	1.85	1200	25	1200	1600	35	1.35	260	M719	200
7MBR50VP120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M719	200
7MBR50VR120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M720	310
7MBR75VR120-50	1200	75	385	1.85	1200	50	1200	1600	75	1.4	520	M720	310
7MBR100VR120-50	1200	100	520	1.75	1200	75	1200	1600	100	1.5	520	M720	310
7MBR150VR120-50	1200	150	885	1.85	1200	100	1200	1600	150	1.4	780	M720	310

注: EconoPIM™はInfineon Technologies社の登録商標です。

Note: EconoPIM™ is registered trademarks of Infineon Technologies AG, Germany.

V<sub>CE(sat)</sub>, V<sub>FM</sub>: at T<sub>j</sub>=25°C, Chip





IGBT モジュール PIM < V series >

■ PIM (コンバータ部、ブレーキ部内蔵) EconoPIM™ 600V, 1200Vクラス  
PIM/Built-in converter and brake EconoPIM™ 600, 1200 volts class

Press fit pins	Diagram	Ic	600V	1200V
			V series	V series
<p>M721</p>		25A		7MBR25VW120-50
		35A		7MBR35VW120-50
		50A		7MBR50VW120-50
<p>M722</p>		50A		7MBR50VX120-50
		75A		7MBR75VX120-50
		100A		7MBR100VX120-50
		150A		7MBR150VX120-50
<p>M721</p>		25A		7MBR25VY120-50
		35A		7MBR35VY120-50
		50A	7MBR50VY060-50	7MBR50VY120-50
		75A	7MBR75VY060-50	
		100A	7MBR100VY060-50	
<p>M722</p>		50A		7MBR50VZ120-50
		75A		7MBR75VZ120-50
		100A	7MBR100VZ060-50	7MBR100VZ120-50
		150A	7MBR150VZ060-50	7MBR150VZ120-50

Dimension [mm]

型 式 Device type	インバータ部 Inverter [IGBT]				ブレーキ部 Brake [IGBT+FWD]			コンバータ部 Converter [Diode]				パッケージ Package	質量 Net mass Grams
	V <sub>CES</sub>	I <sub>c</sub>	P <sub>c</sub>	V <sub>CE(sat)</sub>	V <sub>CES</sub>	I <sub>c</sub>	V <sub>RRM</sub>	V <sub>RRM</sub>	I <sub>o</sub>	V <sub>FM</sub>	I <sub>FSM</sub>		
	Volts	Cont. Amps.	Watts	Typ. Volts	Volts	Cont. Amps.	Volts	Volts	Cont. Amps.	Typ. Volts	Amps.		
7MBR50VY060-50	600	50	215	1.6	600	50	600	800	50	1.3	210	M721	200
7MBR75VY060-50	600	75	300	1.6	600	50	600	800	75	1.25	500	M721	200
7MBR100VY060-50	600	100	430	1.85	600	50	600	800	100	1.25	700	M721	200
7MBR100VZ060-50	600	100	335	1.6	600	50	600	800	100	1.25	700	M722	310
7MBR150VZ060-50	600	150	485	1.6	600	75	600	800	150	1.25	700	M722	310
7MBR25VW120-50	1200	25	170	1.85	1200	25	1200	1600	25	1.4	155	M721	200
7MBR35VW120-50	1200	35	210	1.85	1200	25	1200	1600	35	1.35	260	M721	200
7MBR50VW120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M721	200
7MBR50VX120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M722	310
7MBR75VX120-50	1200	75	385	1.85	1200	50	1200	1600	75	1.4	520	M722	310
7MBR100VX120-50	1200	100	520	1.75	1200	75	1200	1600	100	1.5	520	M722	310
7MBR150VX120-50	1200	150	885	1.85	1200	100	1200	1600	150	1.4	780	M722	310
7MBR25VY120-50	1200	25	170	1.85	1200	25	1200	1600	25	1.4	155	M721	200
7MBR35VY120-50	1200	35	210	1.85	1200	25	1200	1600	35	1.35	260	M721	200
7MBR50VY120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M721	200
7MBR50VZ120-50	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M722	310
7MBR75VZ120-50	1200	75	385	1.85	1200	50	1200	1600	75	1.4	520	M722	310
7MBR100VZ120-50	1200	100	520	1.75	1200	75	1200	1600	100	1.5	520	M722	310
7MBR150VZ120-50	1200	150	885	1.85	1200	100	1200	1600	150	1.4	780	M722	310

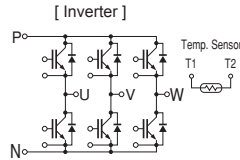
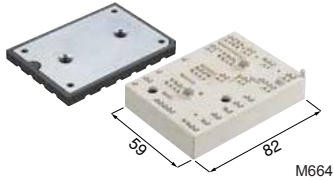
注: EconoPIM™はInfineon Technologies社の登録商標です。  
Note: EconoPIM™ is registered trademarks of Infineon Technologies AG, Germany.

V<sub>CE(sat)</sub>, V<sub>FM</sub>: at T<sub>j</sub>=25°C, Chip

IGBT モジュール 6-Pack < V series >

■6個組MiniSKiiP® 1200Vクラス

6-Pack, MiniSKiiP® 1200 volts class



Ic	1200V
	V series
100A	6MBI100VJC-120-50
	6MBI100VJC-120-53
150A	6MBI150VJC-120-50
	6MBI150VJC-120-53
	6MBI150VJC-120-55
	6MBI150VJC-120-58

Dimension [mm]

型式 Device type	V <sub>CEs</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
					Typ. Volts	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>r</sub> Typ. μsec.		
○ 6MBI100VJC-120-50	1200	±20	100	310	1.75	100	0.44	0.43	0.05	M664	95
○ 6MBI100VJC-120-53	1200	±20	100	310	1.75	100	0.44	0.43	0.05	M664	95
○ 6MBI150VJC-120-50	1200	±20	150	450	1.85	150	0.45	0.43	0.06	M664	95
○ 6MBI150VJC-120-53	1200	±20	150	450	1.85	150	0.45	0.43	0.06	M664	95
○ 6MBI150VJC-120-55	1200	±20	150	710	1.85	150	0.45	0.43	0.06	M664	95
○ 6MBI150VJC-120-58	1200	±20	150	710	1.85	150	0.45	0.43	0.06	M664	95

○:開発中 Under development

注1: MiniSKiiP®はSEMIKRON INTERNATIONAL 社の登録商標です。

注2: 6MBI150VJC-120-55, 6MBI150VJC-120-58は低熱抵抗パッケージ適用

注3: "-50/-55"はStandard Lid使用タイプ, "-53/-58"はSlim Lid使用タイプです。

Note1: MiniSKiiP® is a registered trademark of SEMIKRON INTERNATIONAL GmbH.

Note2: 6MBI150VJC-120-55, 6MBI150VJC-120-58; Premium type (Low Thermal Impedance Version)

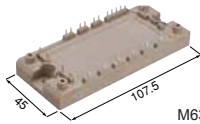
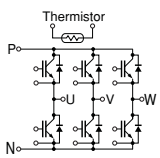
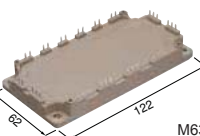
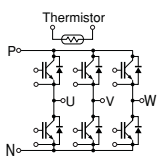
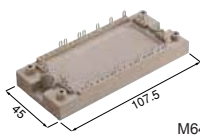
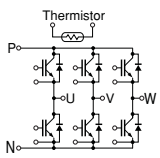

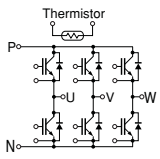
Note3: "-50/-55" indicates Standard Lid types and "-53/-58" indicates Slim Lid types.

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip



IGBT モジュール 6-Pack < V series / U series >

■ 6個組 EconoPACK™ 600V, 1200V, 1700Vクラス  
6-Pack EconoPACK™ 600, 1200, 1700 volts class

Solder pins	Thermistor Pc U V W No	Ic	600V	1200V	1700V
			V series	V series	V / U series
 M636		50A	6MBI50VA-060-50	6MBI50VA-120-50	
		75A	6MBI75VA-060-50	6MBI75VA-120-50	
		100A	6MBI100VA-060-50	6MBI100VA-120-50	
 M633		100A		6MBI100VB-120-50	6MBI100U4B-170-50
		150A	6MBI150VB-060-50	6MBI150VB-120-50	6MBI150U4B-170-50
				6MBI180VB-120-50	
			6MBI180VB-120-55		
 M647		50A	6MBI50VW-060-50	6MBI50VW-120-50	
		75A	6MBI75VW-060-50	6MBI75VW-120-50	
		100A	6MBI100VW-060-50	6MBI100VW-120-50	
 M648		100A		6MBI100VX-120-50	6MBI100VX-170-50
		150A	6MBI150VX-060-50	6MBI150VX-120-50	
					6MBI180VX-120-50
				6MBI180VX-120-55	

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ 質量 Package Net mass Grams
					Typ. Volts	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.	
6MBI50VA-060-50	600	±20	50	200	1.6	50	0.36	0.52	0.03	M636 180
6MBI75VA-060-50	600	±20	75	275	1.6	75	0.36	0.52	0.03	M636 180
6MBI100VA-060-50	600	±20	100	335	1.6	100	0.36	0.52	0.03	M636 180
6MBI150VB-060-50	600	±20	150	485	1.6	150	0.36	0.52	0.03	M633 300
6MBI50VW-060-50	600	±20	50	215	1.6	50	0.36	0.52	0.03	M647 200
6MBI75VW-060-50	600	±20	75	300	1.6	75	0.36	0.52	0.03	M647 200
6MBI100VW-060-50	600	±20	100	335	1.6	100	0.36	0.52	0.03	M647 200
6MBI150VX-060-50	600	±20	150	485	1.6	150	0.36	0.52	0.03	M648 300
6MBI50VA-120-50	1200	±20	50	280	1.85	50	0.39	0.53	0.06	M636 180
6MBI75VA-120-50	1200	±20	75	385	1.85	75	0.39	0.53	0.06	M636 180
6MBI100VA-120-50	1200	±20	100	520	1.75	100	0.39	0.53	0.06	M636 180
6MBI100VB-120-50	1200	±20	100	520	1.75	100	0.39	0.53	0.06	M633 300
6MBI150VB-120-50	1200	±20	150	770	1.75	150	0.39	0.53	0.06	M633 300
6MBI180VB-120-50	1200	±20	150	835	1.85	200	0.39	0.53	0.06	M633 300
6MBI180VB-120-55	1200	±20	150	1075	1.85	200	0.39	0.53	0.06	M633 300
6MBI50VW-120-50	1200	±20	50	280	1.85	50	0.39	0.53	0.06	M647 200
6MBI75VW-120-50	1200	±20	75	385	1.85	75	0.39	0.53	0.06	M647 200
6MBI100VW-120-50	1200	±20	100	520	1.75	100	0.39	0.53	0.06	M647 200
6MBI100VX-120-50	1200	±20	100	520	1.75	100	0.39	0.53	0.06	M648 300
6MBI150VX-120-50	1200	±20	150	770	1.75	150	0.39	0.53	0.06	M648 300
6MBI180VX-120-50	1200	±20	150	835	1.85	200	0.39	0.53	0.06	M648 300
6MBI180VX-120-55	1200	±20	150	1075	1.85	200	0.39	0.53	0.06	M648 300
6MBI100VX-170-50	1700	±20	100	665	2.00	100	0.63	0.70	0.10	M648 300
6MBI100U4B-170-50	1700	±20	100	520	2.25	100	0.62	0.55	0.09	M633 300
6MBI150U4B-170-50	1700	±20	150	735	2.25	150	0.62	0.55	0.09	M633 300

注: EconoPACK™ はInfineon Technologies社の登録商標です。

6MBI180VB-120-55, 6MBI180VX-120-55は低熱抵抗パッケージ適用

Note: EconoPACK™ is registered trademarks of Infineon Technologies AG, Germany.

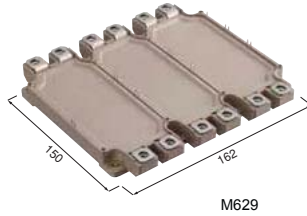
6MBI180VB-120-55, 6MBI180VX-120-55; Premium type (Low Thermal Impedance Version)

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

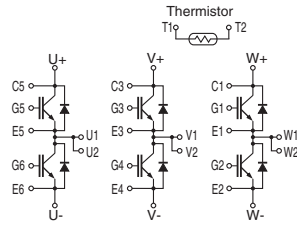
IGBT モジュール 6-Pack < V series >

■ 6個組 EconoPACK™+ 1200V, 1700Vクラス  
6-Pack EconoPACK™+ 1200, 1700 volts class

High power 6-pack



M629



Ic	1200V	1700V
	V series	V series
225A	6MBI225V-120-50	
	6MBI225V-120-80	
300A	6MBI300V-120-50	6MBI300V-170-50
	6MBI300V-120-80	
450A	6MBI450V-120-50	6MBI450V-170-50
	550A	6MBI550V-120-50

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ 質量 Package Net mass Grams
					Typ.	I <sub>c</sub>	t <sub>on</sub>	t <sub>off</sub>	t <sub>r</sub>	
					Volts	Amps.	Typ. μsec.	Typ. μsec.	Typ. μsec.	
6MBI225V-120-50	1200	±20	225	1070	1.85	225	0.55	1.05	0.11	M629 950
6MBI225V-120-80	1200	±20	225	1070	1.85	225	0.55	1.05	0.11	M629 950
6MBI300V-120-50	1200	±20	300	1600	1.75	300	0.55	1.05	0.11	M629 950
6MBI300V-120-80	1200	±20	300	1600	1.75	300	0.55	1.05	0.11	M629 950
6MBI450V-120-50	1200	±20	450	2250	1.75	450	0.55	1.05	0.11	M629 950
6MBI550V-120-50	1200	±20	550	2500	1.85	600	0.55	1.05	0.11	M629 950
6MBI300V-170-50	1700	±20	300	1665	2.00	300	0.90	1.30	0.10	M629 950
6MBI450V-170-50	1700	±20	450	2500	2.00	450	0.90	1.30	0.10	M629 950

注: EconoPACK™+はInfineon Technologies社の登録商標です。  
-80 : 高熱伝導体のTIM (Thermal-Interface-Material) をモジュールベース面に塗布。  
Note: EconoPACK™+ is registered trademarks of Infineon Technologies AG, Germany.  
-80 : Pre-Applied Thermal-Interface-Material

V<sub>CE(sat)</sub>: at T<sub>J</sub>=25°C, Chip



IGBT モジュール 2-Pack < V series >

2個組 600V, 1200V, 1700Vクラス Standard 2-Pack 600, 1200, 1700 volts class

Model	Dimensions [mm]	Circuit Diagram	Ic	600V	1200V	1700V
				V series	V series	V series
M263	34 x 94		75A		2MBI75VA-120-50	2MBI75VA-170-50
			100A	2MBI100VA-060-50	2MBI100VA-120-50	2MBI100VA-170-50
			150A	2MBI150VA-060-50	2MBI150VA-120-50	
			200A	2MBI200VA-060-50		
M274	45 x 92		150A		2MBI150VB-120-50	
			200A		2MBI200VB-120-50	
			300A	2MBI300VB-060-50		
			400A	2MBI400VB-060-50		
M275	82 x 108		300A		2MBI300VD-120-50	
			400A	2MBI400VD-060-50	2MBI400VD-120-50	
			600A	2MBI600VD-060-50		
M276	82 x 108	 * 2MBI450VH-120F-50	150A			2MBI150VH-170-50
			200A		2MBI200VH-120-50	2MBI200VH-170-50
			300A		2MBI300VH-120-50	2MBI300VH-170-50
			450A		2MBI450VH-120-50	
					2MBI450VH-120F-50	
M277	80 x 110		300A		2MBI300VE-120-50	2MBI300VE-170-50
			400A			2MBI400VE-170-50
			450A		2MBI450VE-120-50	
			600A	2MBI600VE-060-50	2MBI600VE-120-50	

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ 質量 Package Net mass
					Typ.	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.	
2MBI100VA-060-50	600	±20	100	330	1.60	100	0.65	0.60	0.04	M263 180
2MBI150VA-060-50	600	±20	150	480	1.60	150	0.65	0.60	0.04	M263 180
2MBI200VA-060-50	600	±20	200	640	1.60	200	0.65	0.60	0.04	M263 180
2MBI300VB-060-50	600	±20	300	1360	1.60	300	0.65	0.60	0.07	M274 240
2MBI400VB-060-50	600	±20	400	1970	1.60	400	0.65	0.60	0.07	M274 240
2MBI400VD-060-50	600	±20	400	1970	1.60	400	0.65	0.60	0.07	M275 370
2MBI600VD-060-50	600	±20	600	2940	1.60	600	0.75	0.75	0.07	M275 370
2MBI600VE-060-50	600	±20	600	2940	1.60	600	0.75	0.75	0.07	M277 470
2MBI75VA-120-50	1200	±20	75	390	1.85	75	0.60	0.60	0.04	M263 180
2MBI100VA-120-50	1200	±20	100	555	1.85	100	0.60	0.60	0.04	M263 180
2MBI150VA-120-50	1200	±20	150	785	1.85	150	0.60	0.60	0.04	M263 180
2MBI150VB-120-50	1200	±20	150	1070	1.85	150	0.60	0.80	0.08	M274 240
2MBI200VB-120-50	1200	±20	200	1500	1.75	200	0.60	0.80	0.08	M274 240
2MBI300VD-120-50	1200	±20	300	2200	1.85	300	0.60	0.80	0.08	M275 370
2MBI400VD-120-50	1200	±20	400	3330	1.75	400	0.60	0.80	0.08	M275 370
2MBI200VH-120-50	1200	±20	200	1110	1.75	200	0.60	0.80	0.08	M276 370
2MBI300VH-120-50	1200	±20	300	1600	1.75	300	0.60	0.80	0.08	M276 370
2MBI450VH-120-50	1200	±20	450	2400	1.80	450	0.60	0.80	0.08	M276 370
2MBI450VH-120F-50	1200	±20	450	2400	1.80	450	0.60	0.80	0.08	M276 370
2MBI300VE-120-50	1200	±20	300	2200	1.85	300	0.60	0.80	0.08	M277 470
2MBI450VE-120-50	1200	±20	450	3350	1.80	450	0.60	0.80	0.08	M277 470
2MBI600VE-120-50	1200	±20	600	4800	1.75	600	0.60	0.80	0.08	M277 470
2MBI75VA-170-50	1700	±20	75	555	2.00	75	1.25	1.30	0.15	M263 180
2MBI100VA-170-50	1700	±20	100	665	2.00	100	1.25	1.30	0.15	M263 180
2MBI150VH-170-50	1700	±20	150	1110	2.00	150	0.95	1.05	0.14	M276 370
2MBI200VH-170-50	1700	±20	200	1250	2.00	200	1.15	1.05	0.14	M276 370
2MBI300VH-170-50	1700	±20	300	1805	2.00	300	1.15	1.05	0.14	M276 370
2MBI300VE-170-50	1700	±20	300	2830	2.00	300	1.15	1.05	0.14	M277 470
2MBI400VE-170-50	1700	±20	400	3840	2.00	400	1.15	1.05	0.14	M277 470

V<sub>CE(sat)</sub>: at T<sub>J</sub>=25°C, Chip

IGBT モジュール 2-Pack < V series >

■ 2個組 1200V, 1700Vクラス Standard 2-Pack 1200, 1700 volts class

Solder pins	Ic	1200V	1700V
		V series	V series
	225A	2MBI225VN-120-50	
		2MBI225VN-120-80	
		2MBI225VN-120S-50	
	300A	2MBI300VN-120-50	2MBI300VN-170-50
		2MBI300VN-120S-50	
	450A	2MBI450VN-120-50	2MBI450VN-170-50
2MBI450VN-120-80			
2MBI450VN-120S-50			
550A		2MBI550VN-170-50	
	600A	2MBI600VN-120-50	
		2MBI600VN-120-80	
	225A	2MBI225VX-120-50	2MBI225VX-170-50
		300A	2MBI300VX-120-50
	450A	2MBI450VX-120-50	2MBI450VX-170-50
	550A		2MBI550VX-170-50
	600A	2MBI600VX-120-50	
	225A	2MBI225VJ-120-50	
		300A	2MBI300VJ-120-50
	450A	2MBI450VJ-120-50	
		2MBI450VJ-120-80	
	550A		2MBI550VJ-170-50
	600A	2MBI600VJ-120-50	
2MBI600VJ-120-80			

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V) Typ.		スイッチングタイム Switching time			パッケージ 質量 Package Net mass Grams
					V <sub>CE(sat)</sub> Volts	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.	
2MBI225VN-120-50	1200	±20	225	1070	1.85	225	0.55	1.05	0.11	M254 300
2MBI225VN-120-80	1200	±20	225	1070	1.85	225	0.55	1.05	0.11	M254 350
2MBI225VN-120S-50	1200	±20	225	1360	1.85	225	0.40	0.55	0.05	M254 300
2MBI300VN-120-50	1200	±20	300	1595	1.75	300	0.55	1.05	0.11	M254 300
2MBI300VN-120S-50	1200	±20	300	2000	1.75	300	0.45	0.65	0.06	M254 300
2MBI450VN-120-50	1200	±20	450	2270	1.75	450	0.55	1.05	0.11	M254 300
2MBI450VN-120-80	1200	±20	450	2270	1.75	450	0.55	1.05	0.11	M254 350
2MBI450VN-120S-50	1200	±20	450	3000	1.75	450	0.47	0.70	0.07	M254 300
2MBI600VN-120-50	1200	±20	600	3750	1.85	600	0.55	1.05	0.11	M254 300
2MBI600VN-120-80	1200	±20	600	3750	1.85	600	0.55	1.05	0.11	M254 350
2MBI225VX-120-50	1200	±20	225	1070	1.85	225	0.55	1.05	0.11	M282 350
2MBI300VX-120-50	1200	±20	300	1595	1.75	300	0.55	1.05	0.11	M282 350
2MBI450VX-120-50	1200	±20	450	2270	1.75	450	0.55	1.05	0.11	M282 350
2MBI600VX-120-50	1200	±20	600	3750	1.85	600	0.55	1.05	0.11	M282 350
2MBI225VJ-120-50	1200	±20	225	1070	1.85	225	0.55	1.05	0.11	M260 300
2MBI300VJ-120-50	1200	±20	300	1595	1.75	300	0.55	1.05	0.11	M260 300
2MBI450VJ-120-50	1200	±20	450	2270	1.75	450	0.55	1.05	0.11	M260 300
2MBI450VJ-120-80	1200	±20	450	2270	1.75	450	0.55	1.05	0.11	M260 360
2MBI600VJ-120-50	1200	±20	600	3750	1.85	600	0.55	1.05	0.11	M260 300
2MBI600VJ-120-80	1200	±20	600	3750	1.85	600	0.55	1.05	0.11	M260 360
2MBI300VN-170-50	1700	±20	300	1665	2.00	300	0.90	1.30	0.10	M254 350
2MBI450VN-170-50	1700	±20	450	2500	2.00	450	0.90	1.30	0.10	M254 350
2MBI550VN-170-50	1700	±20	550	3750	2.15	550	1.00	1.30	0.10	M254 350
2MBI225VX-170-50	1700	±20	225	1500	2.00	225	0.90	1.05	0.08	M282 350
2MBI300VX-170-50	1700	±20	300	1665	2.00	300	0.90	1.30	0.10	M282 350
2MBI450VX-170-50	1700	±20	450	2500	2.00	450	0.90	1.30	0.10	M282 350
2MBI550VX-170-50	1700	±20	550	3750	2.15	550	1.00	1.30	0.10	M282 350
2MBI550VJ-170-50	1700	±20	550	3750	2.15	550	1.00	1.30	0.10	M260 360

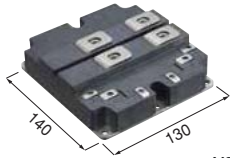
注: -80: 高熱伝導体の TIM (Thermal-Interface-Material) をモジュールベース面に塗布。  
Note: -80: Pre-Applied Thermal-Interface-Material

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

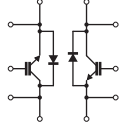


IGBT モジュール 2-Pack < V series >

■ハイパワーモジュール 1200V, 1700Vクラス  
High Power Module 1200, 1700 volts class



M256, M278



Ic	1200V	1700V	
	V series	V series	
	Cu-baseplate	Cu-baseplate	AlSiC-baseplate
600A	<b>2MBI600VG-120P</b>	<b>2MBI600VG-170E</b>	<b>2MBI600VT-170E</b>
800A	<b>2MBI800VG-120P</b>	<b>2MBI800VG-170E</b>	<b>2MBI800VT-170E</b>
1200A	<b>2MBI1200VG-120P</b>	<b>2MBI1200VG-170E</b>	<b>2MBI1200VT-170E</b>

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
					Typ.	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.		
<b>2MBI600VG-120P</b>	1200	±20	600	3940	1.70	600	1.86	1.25	0.12	M256	1500
<b>2MBI800VG-120P</b>	1200	±20	800	5170	1.70	800	1.97	1.33	0.15	M256	1500
<b>2MBI1200VG-120P</b>	1200	±20	1200	6810	1.70	1200	2.55	1.67	0.16	M256	1500
<b>2MBI600VG-170E</b>	1700	±20	600	4410	2.00	600	2.28	2.07	0.58	M256	1500
<b>2MBI800VG-170E</b>	1700	±20	800	5760	2.00	800	2.41	2.13	0.55	M256	1500
<b>2MBI1200VG-170E</b>	1700	±20	1200	7500	2.00	1200	2.76	2.29	0.33	M256	1500
<b>2MBI600VT-170E</b>	1700	±20	600	4280	2.00	600	1.51	2.07	0.58	M278	900
<b>2MBI800VT-170E</b>	1700	±20	800	5370	2.00	800	2.00	2.13	0.55	M278	900
<b>2MBI1200VT-170E</b>	1700	±20	1200	7040	2.00	1200	2.14	2.29	0.33	M278	900

Note: M256: Cu-baseplate M278: AlSiC-baseplate

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip Switching time: at T<sub>j</sub>=125°C

IGBT モジュール 2-Pack < V series >

PrimePACK™ 1200V, 1700Vクラス

PrimePACK™ 1200, 1700 volts class

	Ic	1200V		1700V	
		V series		V series	
		Low switching loss	Soft turn off	Low switching loss	Soft turn off
 M271 	600A	2MBI600VXA-120E-50 2MBI600VXA-120E-54			
	650A			2MBI650VXA-170E-50 2MBI650VXA-170E-54	
				2MBI650VXA-170EA-50 2MBI650VXA-170EA-54	
900A	2MBI900VXA-120E-50 2MBI900VXA-120E-54	2MBI900VXA-120P-50 2MBI900VXA-120P-54			
	1000A			2MBI1000VXB-170E-50 2MBI1000VXB-170E-54	
			2MBI1000VXB-170EA-50 2MBI1000VXB-170EA-54		
1400A	2MBI1400VXB-120E-50 2MBI1400VXB-120E-54	2MBI1400VXB-120P-50 2MBI1400VXB-120P-54	2MBI1400VXB-170E-50 2MBI1400VXB-170E-54	2MBI1400VXB-170P-50 2MBI1400VXB-170P-54	

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V) Typ.		スイッチングタイム Switching time			パッケージ 質量 Package Net mass Grams
					Typ.	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.	
2MBI600VXA-120E-50	1200	±20	600	3350	1.75	600	1.00	1.20	0.15	M271 850
2MBI600VXA-120E-54	1200	±20	600	3350	1.75	600	1.00	1.20	0.15	M271 850
2MBI900VXA-120E-50	1200	±20	900	5100	1.75	900	1.00	1.20	0.15	M271 850
2MBI900VXA-120E-54	1200	±20	900	5100	1.75	900	1.00	1.20	0.15	M271 850
2MBI1400VXB-120E-50	1200	±20	1400	7650	1.75	1400	1.00	1.20	0.15	M272 1250
2MBI1400VXB-120E-54	1200	±20	1400	7650	1.75	1400	1.00	1.20	0.15	M272 1250
2MBI900VXA-120P-50	1200	±20	900	5100	1.65	900	1.00	1.20	0.15	M271 850
2MBI900VXA-120P-54	1200	±20	900	5100	1.65	900	1.00	1.20	0.15	M271 850
2MBI1400VXB-120P-50	1200	±20	1400	7650	1.65	1400	1.00	1.20	0.15	M272 1250
2MBI1400VXB-120P-54	1200	±20	1400	7650	1.65	1400	1.00	1.20	0.15	M272 1250
2MBI650VXA-170E-50	1700	±20	650	4150	2.00	650	1.25	1.55	0.15	M271 850
2MBI650VXA-170E-54	1700	±20	650	4150	2.00	650	1.25	1.55	0.15	M271 850
2MBI650VXA-170EA-50	1700	±20	650	4150	2.00	650	1.70	1.60	0.11	M271 850
2MBI650VXA-170EA-54	1700	±20	650	4150	2.00	650	1.70	1.60	0.11	M271 850
2MBI1000VXB-170E-50	1700	±20	1000	6250	2.00	1000	1.25	1.55	0.15	M272 1250
2MBI1000VXB-170E-54	1700	±20	1000	6250	2.00	1000	1.25	1.55	0.15	M272 1250
2MBI1000VXB-170EA-50	1700	±20	1000	6250	2.00	1000	1.70	1.60	0.11	M272 1250
2MBI1000VXB-170EA-54	1700	±20	1000	6250	2.00	1000	1.70	1.60	0.11	M272 1250
2MBI1400VXB-170E-50	1700	±20	1400	8820	2.15	1400	1.25	1.55	0.15	M272 1250
2MBI1400VXB-170E-54	1700	±20	1400	8820	2.15	1400	1.25	1.55	0.15	M272 1250
2MBI1400VXB-170P-50	1700	±20	1400	8820	1.90	1400	1.35	1.80	0.20	M272 1250
2MBI1400VXB-170P-54	1700	±20	1400	8820	1.90	1400	1.35	1.80	0.20	M272 1250

注: PrimePACK™はInfineon Technologies社の登録商標です。

-54…V<sub>CE(sat)</sub>及びV<sub>F</sub>のランクをラベルに表示

本ページでEAの付く型式は、ダイオードの負荷が厳しいアプリケーションに対応し、FWDを最適化したことにより、V<sub>F</sub>および熱抵抗を低減。

Note: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

The products with suffix '-54' on this page are labeled to specify the rank of V<sub>CE(sat)</sub> and V<sub>F</sub>.

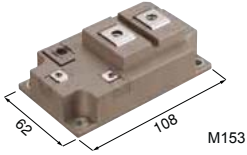
The products with 'EA' on this page have optimized FWD for the application causing heavy load through FWD. The optimized FWD reduces V<sub>F</sub> and thermal resistance.





IGBT モジュール 1-Pack < V series >

■ 1個組 1200V, 1700Vクラス Standard 1-Pack 1200, 1700V volts class



Ic	1200V		1700V
	V series		
	Aluminium oxide DCB	Aluminium nitride DCB	Aluminium oxide DCB
300A			<b>1MBI300V-170-50</b>
400A	<b>1MBI400V-120-50</b>	<b>1MBI400VF-120-50</b>	<b>1MBI400V-170-50</b>
600A	<b>1MBI600V-120-50</b>	<b>1MBI600VF-120-50</b>	<b>1MBI600V-170-50</b>
900A	<b>1MBI900V-120-50</b>		

Dimension [mm]

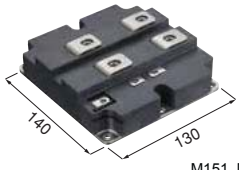
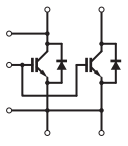
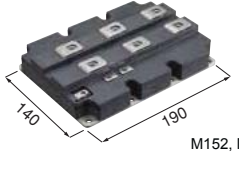
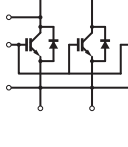
型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
					Typ. Volts	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>r</sub> Typ. μsec.		
<b>1MBI400V-120-50</b>	1200	±20	400	2410	1.75	400	0.60	1.10	0.14	M153	380
<b>1MBI600V-120-50</b>	1200	±20	600	3000	1.75	600	0.70	0.90	0.10	M153	380
<b>1MBI900V-120-50</b>	1200	±20	900	4280	1.90	900	0.70	0.85	0.10	M153	380
<b>1MBI400VF-120-50</b>	1200	±20	400	3330	1.75	400	0.60	1.10	0.14	M153	380
<b>1MBI600VF-120-50</b>	1200	±20	600	4680	1.75	600	0.70	0.90	0.10	M153	380
<b>1MBI300V-170-50</b>	1700	±20	300	1705	2.00	300	0.70	0.80	0.14	M153	380
<b>1MBI400V-170-50</b>	1700	±20	400	2500	2.00	400	0.70	0.80	0.14	M153	380
<b>1MBI600V-170-50</b>	1700	±20	600	3610	2.00	600	0.70	0.80	0.14	M153	380

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

IGBT モジュール 1-Pack < V series / U series >

■ハイパワーモジュール 1200V, 1700V, 3300Vクラス

High Power Module 1200, 1700, 3300 volts class

 M151, M155		1200V		1700V		3300V
		V series		V series		U Series
		Cu-baseplate		Cu-baseplate	AlSiC-baseplate	AlSiC-baseplate
 M152, M156		Ic				
		800A				1MBI800UG-330
		1000A				1MBI1000UG-330
						1MBI1000UG-330B
		1200A	1MBI1200VC-120P	1MBI1200VC-170E	1MBI1200VR-170E	
		1600A	1MBI1600VC-120P	1MBI1600VC-170E	1MBI1600VR-170E	
		2400A	1MBI2400VC-120P	1MBI2400VC-170E	1MBI2400VR-170E	
		1200A				1MBI1200UE-330
		1500A				1MBI1500UE-330
						1MBI1500UE-330B
		2400A	1MBI2400VD-120P	1MBI2400VD-170E	1MBI2400VS-170E	
		3600A	1MBI3600VD-120P	1MBI3600VD-170E	1MBI3600VS-170E	

Dimension [mm]

型式 Device type	V <sub>CEs</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass
					Typ.	I <sub>c</sub>	t <sub>on</sub> Typ.	t <sub>off</sub> Typ.	t <sub>f</sub> Typ.		
					Volts	Amps.	μsec.	μsec.	μsec.		Grams
1MBI1200VC-120P	1200	±20	1200	7890	1.70	1200	1.73	1.52	0.15	M151	1500
1MBI1600VC-120P	1200	±20	1600	10340	1.70	1600	2.22	1.47	0.19	M151	1500
1MBI2400VC-120P	1200	±20	2400	13630	1.70	2400	3.15	1.93	0.24	M151	1500
1MBI2400VD-120P	1200	±20	2400	15780	1.70	2400	2.38	1.64	0.21	M152	2300
1MBI3600VD-120P	1200	±20	3600	20540	1.70	3600	2.98	2.15	0.27	M152	2300
1MBI1200VC-170E	1700	±20	1200	8820	2.00	1200	2.18	2.20	0.45	M151	1500
1MBI1600VC-170E	1700	±20	1600	11700	2.00	1600	2.28	2.17	0.40	M151	1500
1MBI2400VC-170E	1700	±20	2400	15000	2.00	2400	2.63	2.41	0.38	M151	1500
1MBI2400VD-170E	1700	±20	2400	17640	2.00	2400	2.30	2.22	0.43	M152	2300
1MBI3600VD-170E	1700	±20	3600	22380	2.00	3600	2.27	2.67	0.31	M152	2300
1MBI1200VR-170E	1700	±20	1200	8570	2.00	1200	1.51	2.20	0.45	M155	900
1MBI1600VR-170E	1700	±20	1600	10710	2.00	1600	1.83	2.17	0.40	M155	900
1MBI2400VR-170E	1700	±20	2400	14010	2.00	2400	2.51	2.41	0.38	M155	900
1MBI2400VS-170E	1700	±20	2400	16120	2.00	2400	2.09	2.22	0.43	M156	1300
1MBI3600VS-170E	1700	±20	3600	21120	2.00	3600	2.70	2.66	0.32	M156	1300
1MBI800UG-330	3300	±20	800	9600	2.28	800	3.40	2.40	0.40	M155	900
1MBI1000UG-330	3300	±20	1000	10400	2.46	1000	2.50	2.00	0.50	M155	900
● 1MBI1000UG-330B	3300	±20	1000	10400	2.75	1000	3.10	2.35	0.45	M155	900
1MBI1200UE-330	3300	±20	1200	14700	2.28	1200	3.40	2.40	0.40	M156	1300
1MBI1500UE-330	3300	±20	1500	15600	2.46	1500	3.10	2.60	0.50	M156	1300
● 1MBI1500UE-330B	3300	±20	1500	15600	2.75	1500	3.10	2.35	0.45	M156	1300

●: 新製品 New Products

Note1: M151, M152: Cu-baseplate M155, M156: AlSiC-baseplate

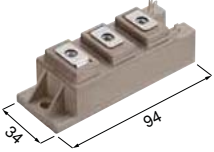
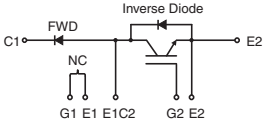
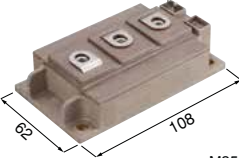
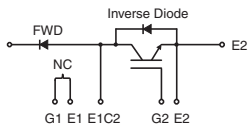
V<sub>CE(sat)</sub>: at T<sub>J</sub>=25°C, Chip Switching time: at T<sub>J</sub>=125°C, at T<sub>J</sub>=150°C (3300V-1000A, 1500A only)

Note2: -330B type: 低スイッチング損失 Low switching losses



IGBT モジュール チョップパ < V series / U series >

■ チョップパ 600V, 1200Vクラス Chopper 600, 1200 volts class

 <p>M262</p>		Ic	600V		1200V		
			U series		U series	V series	
			50A		<b>1MBI50U4F-120L-50</b>		
			75A		<b>1MBI75U4F-120L-50</b>		
			100A		<b>1MBI100U4F-120L-50</b>		
			150A				<b>1MBI150VA-120L-50</b>
200A				<b>1MBI200VA-120L-50</b>			
 <p>M259</p>		200A		<b>1MBI200U4H-120L-50</b>			
		300A	<b>1MBI300U2H-060L-50</b>				

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
					Typ.	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.		
<b>1MBI300U2H-060L-50</b>	600	±20	300	1000	2.45	300	0.40	0.48	0.07	M259	360
<b>1MBI50U4F-120L-50</b>	1200	±20	50	400	2.15	50	0.32	0.41	0.07	M262	180
<b>1MBI75U4F-120L-50</b>	1200	±20	75	400	2.20	75	0.32	0.41	0.07	M262	180
<b>1MBI100U4F-120L-50</b>	1200	±20	100	540	2.20	100	0.32	0.41	0.07	M262	180
<b>1MBI200U4H-120L-50</b>	1200	±20	200	1040	2.25	200	0.32	0.41	0.07	M259	360
<b>1MBI150VA-120L-50</b>	1200	±20	150	785	1.85	150	0.60	0.60	0.04	M262	180
<b>1MBI200VA-120L-50</b>	1200	±20	200	880	1.80	200	0.60	0.60	0.04	M262	180

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

IGBT モジュール チョッパ <V series>

PrimePACK™ 1200V, 1700Vクラス PrimePACK™ 1200, 1700 volts class

Chopper M271	Low Side High Side 	Ic 650A 1000A 1400A	1200V		1700V	
			V series		V series	
Chopper M272			Soft turn off Low side configuration	Soft turn off High side configuration	Low switching loss Low side configuration	Low switching loss High side configuration
					1MBI650VXA-170EL-50	1MBI650VXA-170EH-50
					1MBI650VXA-170EL-54	1MBI650VXA-170EH-54
					1MBI1000VXB-170EL-50	1MBI1000VXB-170EH-50
					1MBI1000VXB-170EL-54	1MBI1000VXB-170EH-54
			1MBI1400VXB-120PL-54	1MBI1400VXB-120PH-54	1MBI1400VXB-170PL-50	1MBI1400VXB-170PH-50
					1MBI1400VXB-170PL-54	1MBI1400VXB-170PH-54

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>C</sub> Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ 質量 Package Net mass	
					Typ.	I <sub>C</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.	Package	Net mass Grams
1MBI1400VXB-120PL-54	1200	±20	1400	7650	1.65	1400	1.00	1.20	0.15	M272	1250
1MBI1400VXB-120PH-54	1200	±20	1400	7650	1.65	1400	1.00	1.20	0.15	M272	1250
1MBI650VXA-170EL-50	1700	±20	650	4150	2.00	650	1.25	1.55	0.15	M271	850
1MBI650VXA-170EL-54	1700	±20	650	4150	2.00	650	1.25	1.55	0.15	M271	850
1MBI1000VXB-170EL-50	1700	±20	1000	6250	2.00	1000	1.25	1.55	0.15	M272	1250
1MBI1000VXB-170EL-54	1700	±20	1000	6250	2.00	1000	1.25	1.55	0.15	M272	1250
● 1MBI1400VXB-170PL-50	1700	±20	1400	8820	2.15	1400	1.25	1.55	0.15	M272	1250
● 1MBI1400VXB-170PL-54	1700	±20	1400	8820	2.15	1400	1.25	1.55	0.15	M272	1250
1MBI650VXA-170EH-50	1700	±20	650	4150	2.00	650	1.25	1.55	0.15	M271	850
1MBI650VXA-170EH-54	1700	±20	650	4150	2.00	650	1.25	1.55	0.15	M271	850
1MBI1000VXB-170EH-50	1700	±20	1000	6250	2.00	1000	1.25	1.55	0.15	M272	1250
1MBI1000VXB-170EH-54	1700	±20	1000	6250	2.00	1000	1.25	1.55	0.15	M272	1250
● 1MBI1400VXB-170PH-50	1700	±20	1400	8820	2.15	1400	1.25	1.55	0.15	M272	1250
● 1MBI1400VXB-170PH-54	1700	±20	1400	8820	2.15	1400	1.25	1.55	0.15	M272	1250

●: 新製品 New products

注: PrimePACK™はInfineon Technologies社の登録商標です。

-54...V<sub>CE(sat)</sub>及びV<sub>F</sub>のランクをラベルに表示

Note: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

The products with suffix '-54' on this page are labeled to specify the rank of V<sub>CE(sat)</sub> and V<sub>F</sub>.

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

Chopper M271	Low Side High Side 	Ic 900A	1200V		1700V	
			V series		V series	
			Boost (Low side) Chopper	Buck (High side) Chopper	Boost (Low side) Chopper	Buck (High side) Chopper
			1MBI900VXA-120PD-50	1MBI900VXA-120PC-50		
			1MBI900VXA-120PD-54	1MBI900VXA-120PC-54		

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>C</sub> Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ 質量 Package Net mass	
					Typ.	I <sub>C</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.	Package	Net mass Grams
1MBI900VXA-120PC-50	1200	±20	900	5100	1.65	900	1.10	1.20	0.15	M271	850
1MBI900VXA-120PC-54	1200	±20	900	5100	1.65	900	1.10	1.20	0.15	M271	850
1MBI900VXA-120PD-50	1200	±20	900	5100	1.65	900	1.10	1.20	0.15	M271	850
1MBI900VXA-120PD-54	1200	±20	900	5100	1.65	900	1.10	1.20	0.15	M271	850

注: PrimePACK™はInfineon Technologies社の登録商標です。

-54...V<sub>CE(sat)</sub>及びV<sub>F</sub>のランクをラベルに表示

逆並列接続ダイオードの電流定格は120Aです。Boost/Buck chopper回路にのみ適用願います。

Note: PrimePACK™ is registered trademark of Infineon Technologies AG, Germany.

The products with suffix '-54' on this page are labeled to specify the rank of V<sub>CE(sat)</sub> and V<sub>F</sub>.

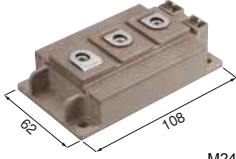
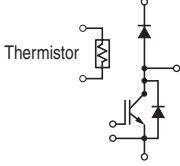
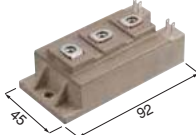
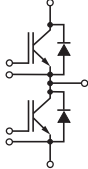
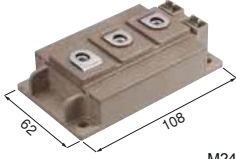
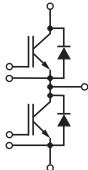
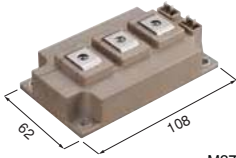
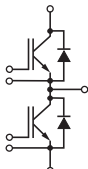
Antiparallel diode current rating is 120A. Application circuit is Boost/Buck chopper only.

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip



IGBT モジュール 高速タイプ

■ 高速IGBTモジュール 1200Vクラス High Speed 1200 volts class

Chopper		1200V High Speed IGBT	
 M249		Ic	
		200A	<b>1MBI200HH-120L-50</b>
		300A	<b>1MBI300HH-120L-50</b>
		400A	<b>1MBI400HH-120L-50</b>
2-pack		100A	<b>2MBI100HB-120-50</b>
 M233			
2-pack		150A	<b>2MBI150HH-120-50</b>
 M249		200A	<b>2MBI200HH-120-50</b>
2-pack		100A	<b>2MBI100HJ-120-50</b>
 M276		150A	<b>2MBI150HJ-120-50</b>
		200A	<b>2MBI200HJ-120-50</b>
		300A	<b>2MBI300HJ-120-50</b>

Dimension [mm]

型 式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>c</sub> Amps.	P <sub>c</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
					Typ.	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.		
<b>1MBI200HH-120L-50</b>	1200	±20	200	1390	3.10	200	0.2	0.3	0.05	M249	370
<b>1MBI300HH-120L-50</b>	1200	±20	300	2090	3.20	300	0.2	0.3	0.05	M249	370
<b>1MBI400HH-120L-50</b>	1200	±20	400	2500	3.10	400	0.2	0.4	0.05	M249	370
<b>2MBI100HB-120-50</b>	1200	±20	100	1040	3.10	100	-	0.30	0.05	M233	240
<b>2MBI150HH-120-50</b>	1200	±20	150	1390	3.20	150	-	0.30	0.05	M249	370
<b>2MBI200HH-120-50</b>	1200	±20	200	1790	3.10	200	-	0.30	0.05	M249	370
<b>2MBI100HJ-120-50</b>	1200	±20	100	655	3.20	100	0.25	0.30	0.05	M276	370
<b>2MBI150HJ-120-50</b>	1200	±20	150	925	3.20	150	0.25	0.30	0.05	M276	370
<b>2MBI200HJ-120-50</b>	1200	±20	200	1385	3.20	200	0.25	0.30	0.05	M276	370
<b>2MBI300HJ-120-50</b>	1200	±20	300	1950	3.20	300	0.25	0.30	0.05	M276	370

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

## IGBT モジュール 3レベル < V series >

### ■ T/IタイプNPC3レベル回路 600V, 1200V, 1700Vクラス

### T/I-type NPC 3-level Circuits 600, 1200, 1700 volts class

#### ■ 特長 Features

- 電力変換効率に優れた T/I タイプ NPC3 レベル回路に対応
- 1レグまたは3レグ (3相分) を1パッケージに搭載、またモジュールの外部配線が容易
- 低パッケージ内部インダクタンスにより低サージ電圧を実現
- T-Type AC-SW 部には RB-IGBT を採用、低損失を実現
- メイン SW 部には第6世代 IGBT, FWD を採用し低損失を実現
- Applicable to T/I-type NPC 3-level circuit, for high power conversion efficiency.
- There are 1-leg or 3-leg (3 phase) circuits in one package and it is easier to makes external wiring of module.
- Lower surge voltage by smaller internal package stray inductance.
- Lower power loss can be achieved by using RB-IGBT as for T-type AC-SW device.
- Lowest power loss can be achieved by using 6th Gen. IGBT and FWD as for Main-SW device.

1-leg T-Type		T1, T2		600V		1200V		1700V	
		T3, T4		600V	600V	900V	1200V	1200V	
		220A							4MBI220VF-170R2-50
		300A			4MBI300VG-120R-50	4MBI300VG-120R1-50			
		340A			4MBI340VF-120R-50				
		400A		4MBI400VG-060R-50	4MBI400VF-120R-50 <sup>※1</sup>				
		450A			4MBI450VF-120RD-50 <sup>※2</sup>				
1-leg T-Type		450A				4MBI450VB-120R1-50			4MBI450VB-170R2-50
		600A							4MBI600VB-170R2-50
		650A				4MBI650VB-120R1-50			
		900A				4MBI900VB-120R1-50			
1-leg I-Type		600A						4MBI600VC-120-50	
1-leg I-Type		600A						4MBI600VM-120-50	

Dimension [mm]

型 式 Device type	T1, T2				V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		T3, T4				パッケージ Package	質量 Net mass Grams
	V <sub>CE(s)</sub>	I <sub>c</sub>	P <sub>c</sub>	Typ. I <sub>c</sub>		V <sub>CE(s)</sub>	I <sub>c</sub>	P <sub>c</sub>	Typ. I <sub>c</sub>			
	Volts	Amps.	Watts	Volts	Amps.	Volts	Amps.	Watts	Volts	Amps.		
● 4MBI400VG-060R-50	600	400	1135	1.60	400	600	400	1560	2.45	400	M403	460
4MBI300VG-120R-50	1200	300	1250	1.85	300	600	300	1250	2.45	300	M403	460
4MBI300VG-120R1-50	1200	300	1500	1.85	300	900	300	1550	2.30	300	M403	460
● 4MBI340VF-120R-50	1200	340	1500	1.85	300	600	340	1500	2.45	300	M403	460
● 4MBI400VF-120R-50 <sup>※1</sup>	1200	400	1835	2.00	400	600	450	2230	2.45	400	M403	460
○ 4MBI450VF-120RD-50 <sup>※2</sup>	1200	-	-	1.75	200	600	450	2230	2.45	400	M403	460
4MBI450VB-120R1-50	1200	450	2205	1.85	450	900	450	1980	2.30	450	M404	1300
4MBI650VB-120R1-50	1200	650	3060	1.80	650	900	650	2660	2.25	650	M404	1300
4MBI900VB-120R1-50	1200	900	3950	1.85	900	900	900	3675	2.30	900	M404	1300
○ 4MBI600VC-120-50	1200	600	2865	1.85	600	1200	600	2865	1.85	600	M404	1300
○ 4MBI600VM-120-50	1200	600	TBD	TBD	600	1200	600	TBD	TBD	600	M639	950
● 4MBI220VF-170R2-50	1700	200	1500	2.00	200	1200	200	1865	2.70	200	M403	460
○ 4MBI450VB-170R2-50	1700	450	2830	2.00	450	1200	450	2660	2.70	450	M404	1300
○ 4MBI600VB-170R2-50	1700	600	3410	2.00	600	1200	600	3680	2.70	600	M404	1300

●: 新製品 New Products, ○: 開発中 Under development

注: 製品名にVFが含まれる型式は低熱抵抗パッケージ適用 Note: VF type is lower thermal impedance version.

※1: インバータ専用 Particular for Inverter ※2: コンバータ専用 Particular for Converter

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

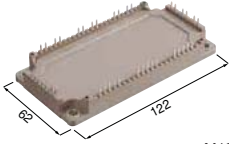


IGBT モジュール 3レベル < V series >

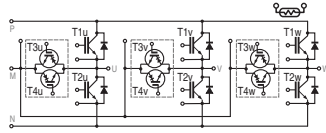
■ T/IタイプNPC 3レベル回路 1200Vクラス

T/I-type NPC 3-level Circuits 1200 volts class

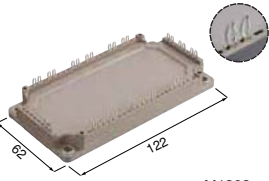
3-leg Solder pins



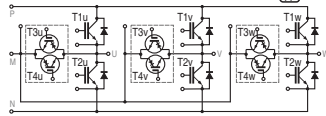
M1203



3-leg Press fit pins



M1202



Ic	T1, T2	1200V
	T3, T4	600V
50A		<b>12MBI50VN-120-50</b>
75A		<b>12MBI75VN-120-50</b>
100A		<b>12MBI100VN-120-50</b>
50A		<b>12MBI50VX-120-50</b>
75A		<b>12MBI75VX-120-50</b>
100A		<b>12MBI100VX-120-50</b>

Dimension [mm]

型 式 Device type	T1, T2					T3, T4					パッケージ Package	質量 Net mass Grams
	V <sub>CE(sat)</sub>	I <sub>c</sub>	P <sub>C</sub>	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		V <sub>CE(sat)</sub>	I <sub>c</sub>	P <sub>C</sub>	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)			
	Volts	Cont. Amps.	Watts	Typ. Volts	I <sub>c</sub> Amps.	Volts	Cont. Amps.	Watts	Typ. Volts	I <sub>c</sub> Amps.		
<b>12MBI50VN-120-50</b>	1200	50	230	1.85	50	600	50	235	2.45	50	M1203	302
<b>12MBI75VN-120-50</b>	1200	75	320	1.85	75	600	75	305	2.45	75	M1203	302
<b>12MBI100VN-120-50</b>	1200	100	430	1.75	100	600	100	400	2.45	100	M1203	302
<b>12MBI50VX-120-50</b>	1200	50	230	1.85	50	600	50	235	2.45	50	M1202	302
<b>12MBI75VX-120-50</b>	1200	75	320	1.85	75	600	75	305	2.45	75	M1202	302
<b>12MBI100VX-120-50</b>	1200	100	430	1.75	100	600	100	400	2.45	100	M1202	302

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

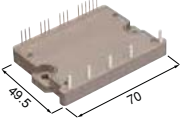
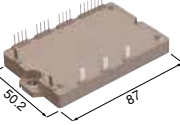
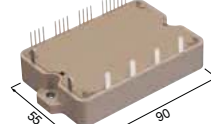
IGBT モジュール IPM < V series >

■ IPM (Intelligent Power Module) 600V, 1200Vクラス

IPM (Intelligent Power Module) 600, 1200 volts class

Built-in protection functions

- P-side fault status output (Alarm)
- N-side fault status output (Alarm)
- Under voltage protection (self shutdown)
- Over current protection (self shutdown)
- Overheating protection (self shutdown)

					Ic	600V		1200V	
						V series		V series	
						Without Brake-Chopper	With Brake-Chopper	Without Brake-Chopper	With Brake-Chopper
 P629	✓	✓	✓	✓	10A			6MBP10VAA120-50	
					15A			6MBP15VAA120-50	
					20A	6MBP20VAA060-50			
					25A			6MBP25VAA120-50	
					30A	6MBP30VAA060-50			
					50A	6MBP50VAA060-50			
 P626	✓	✓	✓	✓	25A			6MBP25VBA120-50	
					35A			6MBP35VBA120-50	
					50A	6MBP50VBA060-50		6MBP50VBA120-50	
					75A	6MBP75VBA060-50			
 P636	✓	✓	✓	✓	25A			6MBP25VFN120-50	7MBP25VFN120-50
					35A			6MBP35VFN120-50	7MBP35VFN120-50
					50A	6MBP50VFN060-50	7MBP50VFN060-50	6MBP50VFN120-50	7MBP50VFN120-50
					75A	6MBP75VFN060-50	7MBP75VFN060-50		
					100A	6MBP100VFN060-50	7MBP100VFN060-50		

Dimension [mm]

型 式 Device type	インバータ部 Inverter			ブレーキ部 Brake		制御部 Control							パッケージ 質量 Package Net mass	
	V <sub>CE(sat)</sub> Volts	I <sub>c</sub> Amps.	V <sub>CE(sat)</sub> Cont. Typ. Volts	V <sub>CE(s)</sub> Volts	I <sub>c</sub> Cont. Amps.	V <sub>cc</sub> Typ. Volts	I <sub>oc</sub> [INV] Min. Amps.	V <sub>uv</sub> Volts	T <sub>JOH</sub> Min. °C	Alarm OC(typ.) ms	UV(typ.) ms	T <sub>JOH</sub> (typ.) ms		
6MBP20VAA060-50	600	20	1.4	-	-	15	30	11.0 to 12.5	150	2	4	8	P629	80
6MBP30VAA060-50	600	30	1.4	-	-	15	45	11.0 to 12.5	150	2	4	8	P629	80
6MBP50VAA060-50	600	50	1.4	-	-	15	75	11.0 to 12.5	150	2	4	8	P629	80
6MBP50VBA060-50	600	50	1.4	-	-	15	75	11.0 to 12.5	150	2	4	8	P626	100
6MBP75VBA060-50	600	75	1.4	-	-	15	113	11.0 to 12.5	150	2	4	8	P626	100
6MBP50VFN060-50	600	50	1.25	-	-	15	100	11.0 to 12.5	150	2	4	8	P636	190
6MBP75VFN060-50	600	75	1.25	-	-	15	150	11.0 to 12.5	150	2	4	8	P636	190
6MBP100VFN060-50	600	100	1.25	-	-	15	200	11.0 to 12.5	150	2	4	8	P636	190
7MBP50VFN060-50	600	50	1.25	600	30	15	100	11.0 to 12.5	150	2	4	8	P636	190
7MBP75VFN060-50	600	75	1.25	600	50	15	150	11.0 to 12.5	150	2	4	8	P636	190
7MBP100VFN060-50	600	100	1.25	600	50	15	200	11.0 to 12.5	150	2	4	8	P636	190
6MBP10VAA120-50	1200	10	1.7	-	-	15	15	11.0 to 12.5	150	2	4	8	P629	80
6MBP15VAA120-50	1200	15	1.7	-	-	15	23	11.0 to 12.5	150	2	4	8	P629	80
6MBP25VAA120-50	1200	25	1.7	-	-	15	38	11.0 to 12.5	150	2	4	8	P629	80
6MBP25VBA120-50	1200	25	1.7	-	-	15	38	11.0 to 12.5	150	2	4	8	P626	100
6MBP35VBA120-50	1200	35	1.7	-	-	15	53	11.0 to 12.5	150	2	4	8	P626	100
6MBP50VBA120-50	1200	50	1.7	-	-	15	75	11.0 to 12.5	150	2	4	8	P626	100
6MBP25VFN120-50	1200	25	1.7	-	-	15	50	11.0 to 12.5	150	2	4	8	P636	190
6MBP35VFN120-50	1200	35	1.7	-	-	15	70	11.0 to 12.5	150	2	4	8	P636	190
6MBP50VFN120-50	1200	50	1.7	-	-	15	100	11.0 to 12.5	150	2	4	8	P636	190
7MBP25VFN120-50	1200	25	1.7	1200	15	15	50	11.0 to 12.5	150	2	4	8	P636	190
7MBP35VFN120-50	1200	35	1.7	1200	25	15	70	11.0 to 12.5	150	2	4	8	P636	190
7MBP50VFN120-50	1200	50	1.7	1200	25	15	100	11.0 to 12.5	150	2	4	8	P636	190





IGBT モジュール IPM < V series >

■ IPM (Intelligent Power Module) 600V, 1200Vクラス  
 IPM (Intelligent Power Module) 600, 1200 volts class

Built-in protection functions

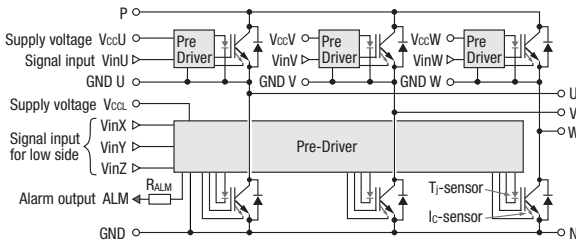
- P-side fault status output (Alarm)
- N-side fault status output (Alarm)
- Under voltage protection (self shutdown)
- Over current protection (self shutdown)
- Overheating protection (self shutdown)

Dimension [mm]	P630	P631	ic	600V		1200V						
				V series		V series						
				Without Brake-Chopper	With Brake-Chopper	Without Brake-Chopper	With Brake-Chopper					
84	128.5	✓	✓	✓	✓	✓	✓	25A			6MBP25VDA120-50	7MBP25VDA120-50
								35A			6MBP35VDA120-50	7MBP35VDA120-50
								50A	6MBP50VDA060-50	7MBP50VDA060-50	6MBP50VDA120-50	7MBP50VDA120-50
											6MBP50VDN120-50	7MBP50VDN120-50
								75A	6MBP75VDA060-50	7MBP75VDA060-50	6MBP75VDA120-50	7MBP75VDA120-50
											6MBP75VDN120-50	7MBP75VDN120-50
								100A	6MBP100VDA060-50	7MBP100VDA060-50	6MBP100VDA120-50	7MBP100VDA120-50
									6MBP100VDN060-50	7MBP100VDN060-50	6MBP100VDN120-50	7MBP100VDN120-50
								150A	6MBP150VDA060-50	7MBP150VDA060-50		
									6MBP150VDN060-50	7MBP150VDN060-50		
110	142	✓	✓	✓	✓	✓	✓	100A			6MBP100VEA120-50	7MBP100VEA120-50
								150A			6MBP150VEA120-50	7MBP150VEA120-50
								200A	6MBP200VEA060-50	7MBP200VEA060-50	6MBP200VEA120-50	7MBP200VEA120-50
								300A	6MBP300VEA060-50	7MBP300VEA060-50		
								400A	6MBP400VEA060-50	7MBP400VEA060-50		

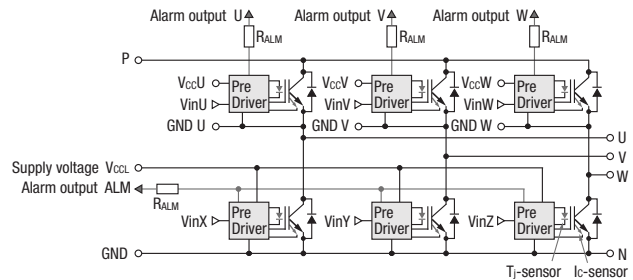
Dimension [mm]

●ブロック図 Block Diagram

- 6MBP□VAA060-50
- 6MBP□VAA120-50

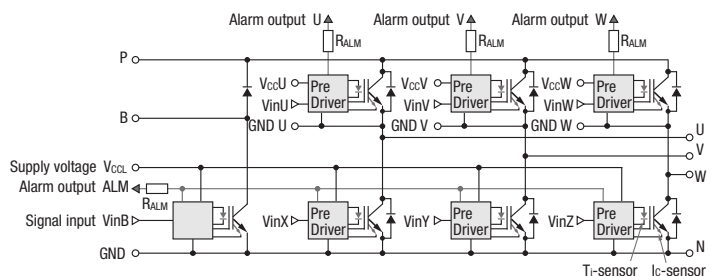
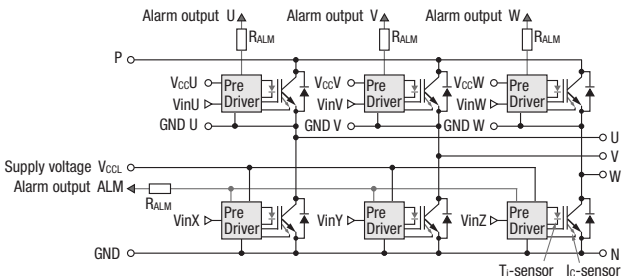


- 6MBP□VBA060-50
- 6MBP□VBA120-50



- 6MBP□VFN□-50
- 6MBP□VDA□-50
- 6MBP□VDN□-50
- 6MBP□VEA□-50

- 7MBP□VFN□-50
- 7MBP□VDA□-50
- 7MBP□VDN□-50
- 7MBP□VEA□-50



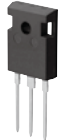


型 式 Device type	インバータ部 Inverter			ブレーキ部 Brake		制御部 Control							パッケージ 質量	
	V <sub>CES</sub>	I <sub>c</sub>	V <sub>CE(sat)</sub>	V <sub>CES</sub>	I <sub>c</sub>	V <sub>CC</sub>	I <sub>oc</sub> [INV]	V <sub>UV</sub>	T <sub>JOH</sub>	Alarm	UV(typ.)	T <sub>JOH</sub> (typ.)	Package	Net
	Volts	Amps.	Typ. Volts	Volts	Amps.	Volts	Amps.	Volts	Min. °C	OC(typ.) ms	ms	ms	mass	mass
6MBP50VDA060-50	600	50	1.4	-	-	15	75	11.0 to 12.5	150	2	4	8	P630	290
6MBP75VDA060-50	600	75	1.4	-	-	15	113	11.0 to 12.5	150	2	4	8	P630	290
6MBP100VDA060-50	600	100	1.4	-	-	15	150	11.0 to 12.5	150	2	4	8	P630	290
6MBP100VDN060-50	600	100	1.4	-	-	15	150	11.0 to 12.5	150	2	4	8	P630	290
6MBP150VDA060-50	600	150	1.4	-	-	15	225	11.0 to 12.5	150	2	4	8	P630	290
6MBP150VDN060-50	600	150	1.4	-	-	15	225	11.0 to 12.5	150	2	4	8	P630	290
6MBP200VDA060-50	600	200	1.4	-	-	15	300	11.0 to 12.5	150	2	4	8	P630	290
6MBP200VDN060-50	600	200	1.4	-	-	15	300	11.0 to 12.5	150	2	4	8	P630	290
7MBP50VDA060-50	600	50	1.4	600	30	15	75	11.0 to 12.5	150	2	4	8	P630	290
7MBP75VDA060-50	600	75	1.4	600	50	15	113	11.0 to 12.5	150	2	4	8	P630	290
7MBP100VDA060-50	600	100	1.4	600	50	15	150	11.0 to 12.5	150	2	4	8	P630	290
7MBP100VDN060-50	600	100	1.4	600	50	15	150	11.0 to 12.5	150	2	4	8	P630	290
7MBP150VDA060-50	600	150	1.4	600	75	15	225	11.0 to 12.5	150	2	4	8	P630	290
7MBP150VDN060-50	600	150	1.4	600	75	15	225	11.0 to 12.5	150	2	4	8	P630	290
7MBP200VDA060-50	600	200	1.4	600	100	15	300	11.0 to 12.5	150	2	4	8	P630	290
7MBP200VDN060-50	600	200	1.4	600	100	15	300	11.0 to 12.5	150	2	4	8	P630	290
6MBP200VEA060-50	600	200	1.25	-	-	15	300	11.0 to 12.5	150	2	4	8	P631	940
6MBP300VEA060-50	600	300	1.25	-	-	15	450	11.0 to 12.5	150	2	4	8	P631	940
6MBP400VEA060-50	600	400	1.25	-	-	15	600	11.0 to 12.5	150	2	4	8	P631	940
7MBP200VEA060-50	600	200	1.25	600	100	15	300	11.0 to 12.5	150	2	4	8	P631	940
7MBP300VEA060-50	600	300	1.25	600	150	15	450	11.0 to 12.5	150	2	4	8	P631	940
7MBP400VEA060-50	600	400	1.25	600	200	15	600	11.0 to 12.5	150	2	4	8	P631	940
6MBP25VDA120-50	1200	25	1.7	-	-	15	38	11.0 to 12.5	150	2	4	8	P630	290
6MBP35VDA120-50	1200	35	1.7	-	-	15	53	11.0 to 12.5	150	2	4	8	P630	290
6MBP50VDA120-50	1200	50	1.7	-	-	15	75	11.0 to 12.5	150	2	4	8	P630	290
6MBP50VDN120-50	1200	50	1.7	-	-	15	75	11.0 to 12.5	150	2	4	8	P630	290
6MBP75VDA120-50	1200	75	1.7	-	-	15	113	11.0 to 12.5	150	2	4	8	P630	290
6MBP75VDN120-50	1200	75	1.7	-	-	15	113	11.0 to 12.5	150	2	4	8	P630	290
6MBP100VDA120-50	1200	100	1.7	-	-	15	150	11.0 to 12.5	150	2	4	8	P630	290
6MBP100VDN120-50	1200	100	1.7	-	-	15	150	11.0 to 12.5	150	2	4	8	P630	290
7MBP25VDA120-50	1200	25	1.7	1200	15	15	38	11.0 to 12.5	150	2	4	8	P630	290
7MBP35VDA120-50	1200	35	1.7	1200	15	15	53	11.0 to 12.5	150	2	4	8	P630	290
7MBP50VDA120-50	1200	50	1.7	1200	25	15	75	11.0 to 12.5	150	2	4	8	P630	290
7MBP50VDN120-50	1200	50	1.7	1200	25	15	75	11.0 to 12.5	150	2	4	8	P630	290
7MBP75VDA120-50	1200	75	1.7	1200	35	15	113	11.0 to 12.5	150	2	4	8	P630	290
7MBP75VDN120-50	1200	75	1.7	1200	35	15	113	11.0 to 12.5	150	2	4	8	P630	290
7MBP100VDA120-50	1200	100	1.7	1200	50	15	150	11.0 to 12.5	150	2	4	8	P630	290
7MBP100VDN120-50	1200	100	1.7	1200	50	15	150	11.0 to 12.5	150	2	4	8	P630	290
6MBP100VEA120-50	1200	100	1.7	-	-	15	150	11.0 to 12.5	150	2	4	8	P631	940
6MBP150VEA120-50	1200	150	1.7	-	-	15	225	11.0 to 12.5	150	2	4	8	P631	940
6MBP200VEA120-50	1200	200	1.7	-	-	15	300	11.0 to 12.5	150	2	4	8	P631	940
7MBP100VEA120-50	1200	100	1.7	1200	50	15	150	11.0 to 12.5	150	2	4	8	P631	940
7MBP150VEA120-50	1200	150	1.7	1200	75	15	225	11.0 to 12.5	150	2	4	8	P631	940
7MBP200VEA120-50	1200	200	1.7	1200	100	15	300	11.0 to 12.5	150	2	4	8	P631	940

注:本ページでVDNの付く型式は高放熱特性。  
 Note: The products with "VDN" on this page have high heat dissipation characteristics.



ディスクリート IGBT Discrete IGBT

Package	V <sub>CES</sub> (V)	I <sub>c</sub> (A)	Trench-FS				RB-IGBT		
			V Series	High-Speed V Series		High-Speed W Series			
 TO-247-P2	600/650	30	FGW30N60VD						
		35		FGW35N60HD FGW35N60HC	FGW35N60H				
		40				FGW40N65WD FGW40N65WE	FGW40N65W		
		50	FGW50N60VD	FGW50N60HD FGW50N60HC	FGW50N60H	FGW50N65WD FGW50N65WE	FGW50N65W		
		60				FGW60N65WD FGW60N65WE	FGW60N65W		
		75		FGW75N60HD FGW75N60HC	FGW75N60H	FGW75N65WD FGW75N65WE	FGW75N65W		
		85						FGW85N60RB	
		1200	15	FGW15N120VD	FGW15N120HD	FGW15N120H			
			25	FGW25N120VD			FGW25N120WD FGW25N120WE	FGW25N120W	
			30		FGW30N120HD	FGW30N120H			
	40		FGW40N120VD	FGW40N120HD	FGW40N120H	FGW40N120WD FGW40N120WE	FGW40N120W		

■ シリーズ別推奨動作周波数 Recommended operating frequency

0~	~10	~20	~30	~40	~50	~60	~70	~80	~90	~100	kHz
V/RB											
High speed V											
			High speed W								

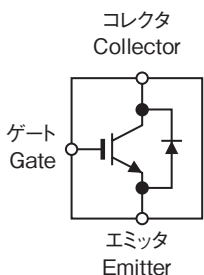
■ 型式の見方 Part numbers

FGW35N60HD (example)

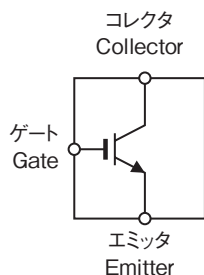
F	G		W		40	N		65		W		D		
社名 Company	機種コード Device code	パッケージコード Package type		定格電流 Current	極性 Polarity		定格電圧 Voltage		シリーズ Series		ダイオードタイプ Diode Type			
Fuji	G	IGBT	W	TO-247	×1	N	N-ch	60	600V	W	High Speed W series		C,E	w/ Diode (Full rated)
								65	650V	H	High Speed V series			
								120	1200V	V	V series		D	w/ Diode
										RB	RB-IGBT		Blank	w/o Diode

■ 等価回路 Equivalent circuit

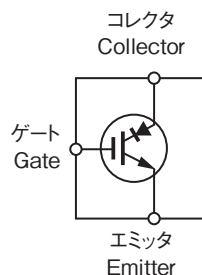
(a) ダイオード内蔵 with Diode



(b) ダイオードなし without Diode



(c) ディスクリート RB-IGBT





## ■ ディスクリートIGBT High Speed Wシリーズ 650V,1200Vクラス Discrete IGBT High Speed W series 650V,1200V class

### ■ 特長 Features

- トレンチゲート、フィールドストップ IGBT
- 低 VCE(sat)、低スイッチング Loss
- 高周波対応 (~100kHz)
- IGBT in Trench-gate structure and Field-stop technology
- Low VCE(sat) and low switching Loss
- High switching frequency (~100kHz)

IGBT in field-stop technology and trench-gate structure with Ultra fast FWD  
650V,1200Vクラス 650,1200 volts class

型 式 Device type	絶対最大定格 Maximum Ratings				V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V) Typ. Volts	E <sub>on</sub> (r <sub>g</sub> =10Ω) typ. mJ	E <sub>off</sub> mJ	Q <sub>G</sub> typ. nC	V <sub>F</sub> typ. Volts	I <sub>F</sub> T <sub>c</sub> =100° C Amps.	Q <sub>rr</sub> typ. μC	パッケージ Package	質量 Net mass Grams
	V <sub>CES</sub> Volts	I <sub>C</sub> T <sub>c</sub> =100° C Amps.	I <sub>CP</sub> Amps.	P <sub>D</sub> IGBT Watts									
● FGW40N65W	650	40	160	155	1.8	0.29	0.29	180	-	-	-	TO-247-P2	6.0
● FGW40N65WD	650	40	160	155	1.8	0.29	0.29	180	2.5	20	0.26	TO-247-P2	6.0
● FGW40N65WE	650	40	160	155	1.8	0.29	0.29	180	2.5	40	0.29	TO-247-P2	6.0
● FGW50N65W	650	50	200	190	1.8	0.42	0.46	215	-	-	-	TO-247-P2	6.0
● FGW50N65WD	650	50	200	190	1.8	0.42	0.46	215	2.5	25	0.32	TO-247-P2	6.0
● FGW50N65WE	650	50	200	190	1.8	0.42	0.46	215	2.5	50	0.35	TO-247-P2	6.0
● FGW60N65W	650	60	240	230	1.8	0.6	0.67	250	-	-	-	TO-247-P2	6.0
● FGW60N65WD	650	60	240	230	1.8	0.6	0.67	250	2.5	30	0.3	TO-247-P2	6.0
● FGW60N65WE	650	60	240	230	1.8	0.6	0.67	250	2.5	60	0.33	TO-247-P2	6.0
● FGW25N120W	1200	25	100	220	2.0	0.9	1.3	80	-	-	-	TO-247-P2	6.0
● FGW25N120WD	1200	25	100	220	2.0	0.9	1.3	80	2.2	12	0.6	TO-247-P2	6.0
○ FGW25N120WE	1200	25	100	220	2.0	0.9	1.3	80	2.2	25	0.6	TO-247-P2	6.0
● FGW40N120W	1200	40	160	360	2.0	2.8	1.6	120	-	-	-	TO-247-P2	6.0
● FGW40N120WD	1200	40	160	360	2.0	2.8	1.6	120	2.2	20	0.95	TO-247-P2	6.0
○ FGW40N120WE	1200	40	160	360	2.0	2.8	1.6	120	2.2	40	0.95	TO-247-P2	6.0

● : 新製品 New Products, ○ : 開発中 Under development



## ディスクリートIGBT V/High Speed Vシリーズ 600V, 1200Vクラス Discrete IGBT V/High Speed V series 600V, 1200V class

### ■特長 Features

- トレンチゲート、フィールドストップ IGBT
- 低 VCE(sat)、低スイッチング Loss (High Speed V シリーズ)
- 短絡保証時間 tsc=10μs (V シリーズ)
- IGBT in Trench-gate structure and Field-stop technology
- Low VCE(sat) and low switching Loss (High Speed V series)
- Short circuit withstand time; tsc=10μs (V series)

IGBT in field-stop technology and trench-gate structure with Ultra fast FWD  
600Vクラス 600 volts class

型 式 Device type	絶対最大定格 Maximum Ratings				VCE(sat) (VGE=15V) Typ. Volts	Eon (rg=10Ω) typ. mJ	Eoff mJ	QG typ. nC	VF		Qrr typ. μC	パッケージ Package	質量 Net mass Grams
	VCEs	IC	ICP	PD					IF				
	Volts	Amps. Tc=100° C	Amps.	Watts IGBT						Volts			
FGW30N60VD	600	30	60	230	1.6	1.2	0.7	225	1.5	25	0.7	TO-247-P2	6.0
FGW35N60H	600	35	105	230	1.5	0.9	0.85	210	-	-	-	TO-247-P2	6.0
FGW35N60HD	600	35	105	230	1.5	0.9	0.85	210	2.0	15	0.06	TO-247-P2	6.0
FGW35N60HC	600	35	105	230	1.5	0.95	0.85	210	2.35	35	0.13	TO-247-P2	6.0
FGW50N60H	600	50	150	360	1.5	1.4	1.7	305	-	-	-	TO-247-P2	6.0
FGW50N60HD	600	50	150	360	1.5	1.4	1.7	305	2.0	25	0.08	TO-247-P2	6.0
FGW50N60HC	600	50	150	360	1.5	1.5	1.7	305	2.3	50	0.07	TO-247-P2	6.0
FGW50N60VD	600	50	100	360	1.6	2.4	1.4	360	1.5	35	0.75	TO-247-P2	6.0
FGW75N60H	600	75	225	500	1.5	3.0	4.2	460	-	-	0.12	TO-247-P2	6.0
FGW75N60HD	600	75	225	500	1.5	3.0	4.2	460	2.0	35	0.13	TO-247-P2	6.0
FGW75N60HC	600	75	225	500	1.5	3.8	4.2	460	2.3	75	0.3	TO-247-P2	6.0

1200Vクラス 1200 volts class

型 式 Device type	絶対最大定格 Maximum Ratings				VCE(sat) (VGE=15V) Typ. Volts	Eon (rg=10Ω) typ. mJ	Eoff mJ	QG typ. nC	VF		Qrr typ. μC	パッケージ Package	質量 Net mass Grams
	VCEs	IC	ICP	PD					IF				
	Volts	Amps. Tc=100° C	Amps.	Watts IGBT						Volts			
FGW15N120H	1200	15	45	155	1.8	0.6	0.8	140	-	-	-	TO-247-P2	6.0
FGW15N120HD	1200	15	45	155	1.8	0.6	0.8	140	2.2	12	0.6	TO-247-P2	6.0
FGW15N120VD	1200	15	30	155	1.85	1.1	0.8	150	1.7	15	0.85	TO-247-P2	6.0
FGW25N120VD	1200	25	50	260	1.85	2.2	1.4	235	1.7	25	1.2	TO-247-P2	6.0
FGW30N120H	1200	30	90	260	1.8	1.6	1.5	230	-	-	-	TO-247-P2	6.0
FGW30N120HD	1200	30	90	260	1.8	1.6	1.5	230	2.2	20	0.95	TO-247-P2	6.0
FGW40N120H	1200	40	120	340	1.8	2.8	1.8	300	-	-	-	TO-247-P2	6.0
FGW40N120HD	1200	40	120	340	1.8	2.8	1.8	300	2.2	30	1.35	TO-247-P2	6.0
FGW40N120VD	1200	40	80	340	1.85	4.3	2.2	320	1.7	30	1.45	TO-247-P2	6.0

## ディスクリートRB-IGBT Discrete RB-IGBT

### ■特長 Features

- 富士電機の独自技術により逆電圧特性を有する IGBT を 1 チップで実現
- 3 レベルインバータ (Tタイプ) への適用で高効率を実現
- Reverse blocking character is realized for 1 chip by Fuji's original technology.
- High efficiency by applying to T-type 3 level inverter circuit.

### ■特性 Characteristics

型 式 Device type	絶対最大定格 Maximum Ratings					VCE(sat) (VGE=15V) Typ. Volts	Eon (rg=10Ω) typ. mJ	Eoff mJ	QG typ. nC	trr typ. n sec	パッケージ Package	質量 Net mass Grams
	VCEs	IC	ICP	tsc	PD							
	Volts	Amps. Tc=100° C	Amps.	μsec.	Watts IGBT							
FGW85N60RB	600	85	170	10	600	2.45	4.7	2.4	300	165	TO-247-P2	6.0

## EV, HEV 用 IGBT モジュール

### EV, HEV用IGBT IPMの特長

#### Features of IGBT IPM for Electric Vehicle and Hybrid Electric Vehicle

##### ■特長 Features

- ドライブ回路、保護機能内蔵
- ・ 光絶縁  
(信号入力、IGBT チップ温度モニター、異常検出時アラーム出力)
- ・ 短絡保護、過熱保護、制御電圧低下保護
- ・ 鉛フリー

- Including circuit board which has IGBT drive and protection function
- ・ Optical isolated  
(signal input, IGBT's temperature monitor, alarm output)
- ・ Detection and protection  
(short-circuit, over-temperature, under-voltage)
- ・ Lead Free Package



##### ■ 特性 Characteristics

(T<sub>j</sub>=25°C)

型 式 Device type	V <sub>CE(s)</sub> Volts	I <sub>C(Cont)</sub> Amps.	V <sub>CE(sat)</sub> Typ. Volts	V <sub>F</sub> Typ. Volts	パッケージ Package	質量 Net mass Grams
2MBP600UN120V	1200	600	2.00	2.20	P401	680g

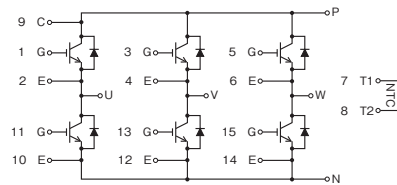
### EV, HEV用IGBTモジュールの特長

#### Features of IGBT Module for Electric Vehicle and Hybrid Electric Vehicle

##### ■特長 Features

- 第6世代 “V シリーズ”  
650V-IGBT
- 直接水冷銅フィンベース
- 高パワー密度および小型  
パッケージ
- RoHS 対応

- 6th Generation “V-series”  
650V-IGBT
- Direct liquid Cooling Fin-  
base with copper
- High power density and  
small package size
- RoHS compliant



##### ■ 特性 Characteristics

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

型 式 Device type	V <sub>CE(s)</sub> Volts	I <sub>C(Cont)</sub> Amps.	I <sub>C(Peak)</sub> Amps.	V <sub>CE(sat)</sub> Typ. Volts	V <sub>F</sub> Typ. Volts	パッケージ Package	質量 Net mass Grams
6MBI600VW-065V	650	300	600	2.00 (I <sub>C</sub> =600A)	1.70 (I <sub>F</sub> =600A)	M652	900g

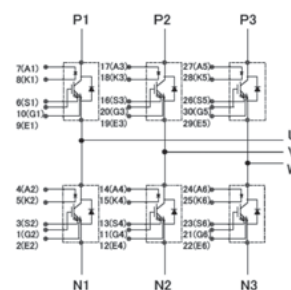
### EV, HEV用IGBTモジュールの特長

#### Features of IGBT Module for Electric Vehicle and Hybrid Electric Vehicle

##### ■特長 Features

- 第7世代 “RC IGBT” 750V-IGBT
- 直接水冷アルミウォータージャケット
- 高パワー密度および小型・軽量  
パッケージ
- 高信頼性：T<sub>jmax</sub> 175°C保証
- RoHS 対応

- 7th Generation “RC-IGBT”  
750V-IGBT
- Direct liquid Cooling AL Water jacket
- High power density ,small and  
light weight package
- High reliability : T<sub>jmax</sub> 175°C guaranteed
- RoHS compliant



##### ■ 特性 Characteristics

V<sub>CE(sat)</sub>: at T<sub>j</sub>=25°C, Chip

型 式 Device type	V <sub>CE(s)</sub> Volts	I <sub>C(Cont)</sub> Amps.	I <sub>C(Peak)</sub> Amps.	V <sub>CE(sat)</sub> Typ. Volts	V <sub>F</sub> Typ. Volts	パッケージ Package	質量 Net mass Grams
6MBI800XV-075V-01	750	720	1600	1.45 (I <sub>C</sub> =800A)	1.50 (I <sub>F</sub> =800A)	M653	572g

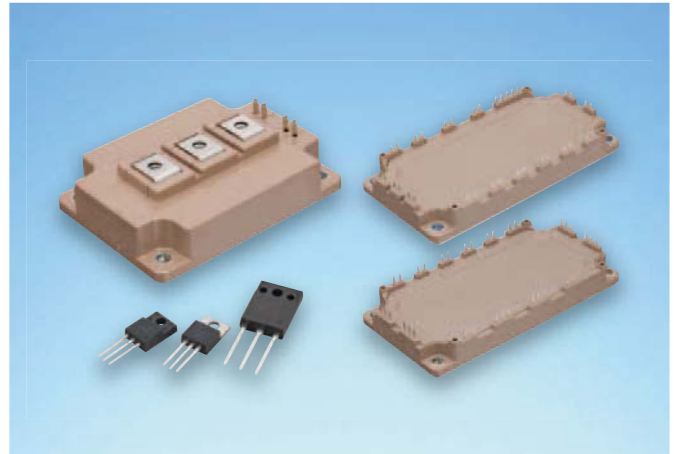
○ : 開発中 Under development

### SiCデバイス SiC Devices



SiC デバイスは、高耐圧、低損失、高周波動作および高温動作を実現する優れた特性を持っています。SiC を適用したパワー半導体は、大幅な省エネと搭載製品の小型・軽量化を実現することができます。

SiC devices have excellent characteristics that realize high blocking voltage, low power dissipation, high-frequency operation and high-temperature operation. Power semiconductors that make use of SiC achieve significant reduction in energy consumption, and can be used to develop smaller and lighter products.



### SiC-SBD搭載IGBTハイブリッドモジュールVシリーズ IGBT Hybrid Modules with SiC-SBD V series



#### ■ 特長 Features

- 高性能チップ適用
- ・ 低損失の V シリーズ IGBT
- ・ 低損失の SiC-SBD
- 従来の Si-IGBT モジュール製品とパッケージ互換
- High performance chips
- ・ V series IGBT for low loss operation
- ・ SiC-SBD for low loss operation
- The same package lineup as the conventional Si-IGBT modules

#### ■ 6個組 EconoPACK™ 1200V クラス 6-pack EconoPACK™ 1200 volts class

Solder pins			1200V	
			IGBT Hybrid Modules with SiC-SBD V series	
			Ic	<b>6MSI100VB-120-50</b>
			100A	

Dimension [mm]

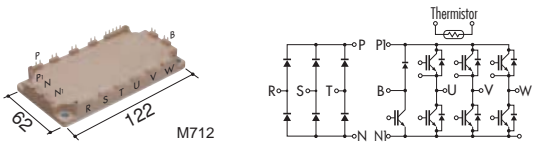
型式 Device type	V <sub>CES</sub> Volts	V <sub>GES</sub> Volts	I <sub>C</sub> Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V)		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
					Typ.	I <sub>C</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.		
● <b>6MSI100VB-120-50</b>	1200	±20	100	520	1.75	100	0.39	0.42	0.05	M633	300

● : 新製品 New Products

注: EconoPACK™はInfineon Technologies社の登録商標です。

Note: EconoPACK™ is registered trademarks of Infineon Technologies AG, Germany.

■ PIM (コンバータ部、ブレーキ部内蔵) EconoPIM™ 600, 1200V クラス  
PIM/Built-in converter and brake EconoPIM™ 600, 1200 volts class

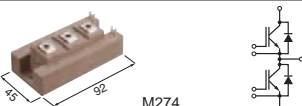
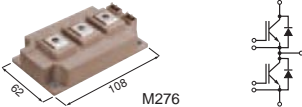
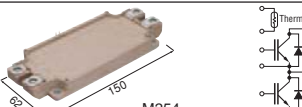
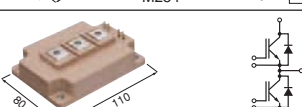
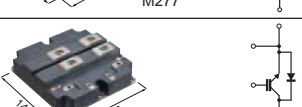
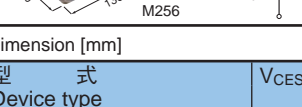
	Ic	600V	1200V	
		IGBT Hybrid Modules with SiC-SBD V series		
		35A	<b>7MSR35VB120-50</b>	
		50A	<b>7MSR50VB060-50</b>	<b>7MSR50VB120-50</b>
		75A	<b>7MSR75VB060-50</b>	
100A	<b>7MSR100VB060-50</b>			

Dimension [mm]

型式 Device type	インバータ部 Inverter [IGBT]				ブレーキ部 Brake [IGBT+FED]			コンバータ部 Converter [Diode]				パッケージ Package	質量 Net mass Grams
	V <sub>CES</sub> Volts	I <sub>c</sub> Cont. Amps.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> Typ. Volts	V <sub>CES</sub> Volts	I <sub>c</sub> Cont. Amps.	V <sub>RRM</sub> Volts	V <sub>RRM</sub> Volts	I <sub>o</sub> Cont. Amps.	V <sub>FM</sub> Typ. Volts	I <sub>FSM</sub> Amps.		
● <b>7MSR50VB060-50</b>	600	50	215	1.6	600	50	600	800	50	1.3	210	M712	330
● <b>7MSR75VB060-50</b>	600	75	300	1.6	600	50	600	800	75	1.25	500	M712	330
● <b>7MSR100VB060-50</b>	600	100	335	1.6	600	50	600	800	100	1.25	700	M712	330
● <b>7MSR35VB120-50</b>	1200	35	210	1.85	1200	25	1200	1600	35	1.35	260	M712	330
● <b>7MSR50VB120-50</b>	1200	50	280	1.85	1200	35	1200	1600	50	1.35	360	M712	330

● : 新製品 New Products  
注: EconoPIM™はInfineon Technologies社の登録商標です。  
Note: EconoPIM™ is registered trademarks of Infineon Technologies AG, Germany.

■ 2個組 1200, 1700V クラス Standard 2-pack 1200, 1700 volts class

	Ic	1200V	1700V	
		IGBT Hybrid Modules with SiC-SBD V series		
	200	<b>2MSI200VAB-120-53</b>		
	300	<b>2MSI300VAH-120C-53</b>		
	300	<b>2MSI300VAN-120-53</b>		
		450	<b>2MSI450VAN-120-53</b>	<b>2MSI450VAN-170-53</b>
		550	<b>2MSI550VAN-170-53</b>	
		600	<b>2MSI600VAN-120-53</b>	
	400	<b>2MSI400VE-170E-53</b>		
	1200	<b>2MSI1200VAT-170PC</b>		
		<b>2MSI1200VAT-170EC</b>		

Dimension [mm]

型式 Device type	V <sub>CES</sub>	V <sub>GES</sub>	I <sub>c</sub> Cont.	P <sub>C</sub> Watts	V <sub>CE(sat)</sub> (V <sub>GE</sub> =15V) Typ.		スイッチングタイム Switching time			パッケージ Package	質量 Net mass Grams
	Volts	Volts	Amps.	Watts	V <sub>CE(sat)</sub> Typ.	I <sub>c</sub> Amps.	t <sub>on</sub> Typ. μsec.	t <sub>off</sub> Typ. μsec.	t <sub>f</sub> Typ. μsec.		
○ <b>2MSI200VAB-120-53</b>	1200	±20	200	1500	1.75	200	T.B.D	T.B.D	T.B.D	M274	270
● <b>2MSI300VAH-120C-53</b>	1200	±20	300	1600	1.75	300	0.82	0.84	0.09	M276	370
○ <b>2MSI300VAN-120-53</b>	1200	±20	300	1595	1.75	300	T.B.D	T.B.D	T.B.D	M254	300
○ <b>2MSI450VAN-120-53</b>	1200	±20	450	2270	1.75	450	T.B.D	T.B.D	T.B.D	M254	300
○ <b>2MSI600VAN-120-53</b>	1200	±20	600	3750	1.85	600	T.B.D	T.B.D	T.B.D	M254	300
○ <b>2MSI450VAN-170-53</b>	1700	±20	450	2500	2.00	450	T.B.D	T.B.D	T.B.D	M254	300
○ <b>2MSI550VAN-170-53</b>	1700	±20	550	3750	2.15	550	T.B.D	T.B.D	T.B.D	M254	300
● <b>2MSI400VE-170-53</b>	1700	±20	400	4540	2.00	400	1.05	1.95	0.09	M277	470
○ <b>2MSI1200VAT-170PC</b>	1700	±20	1200	7040	1.80	1200	T.B.D	T.B.D	T.B.D	M256	900
○ <b>2MSI1200VAT-170EC</b>	1700	±20	1200	7040	2.00	1200	T.B.D	T.B.D	T.B.D	M256	900

● : 新製品 New Products ○ : 開発中 Under development



## SiC ショットキーバリアダイオード

## SiC Schottky-Barrier Diodes (SBD)



### ■特長 Features

- 高速スイッチング特性
  - ・電源の高周波動作、システムの小型軽量化
- 低 VF 特性
- 低 IR 特性
  - ・Tj=175°C保証、電源の高温動作、低損失化、高効率化
- 高逆サージ耐量

- High speed switching
  - ・ High-frequency operation,miniaturization,weight saving
- Low-VF
- Low-IR
  - ・ Tj=175°C Guaranteed, High-temperature operation, Low-Loss, High efficiency
- High avalanche capability

### ■ SiC-SBD シリーズ SiC-SBD Series

SiC-SBD Series			TO-220	TO-220F	TO-247	T-Pack(s)
結線	V <sub>RRM</sub> (V)	I <sub>o</sub> (A)				
シングル Single	650	6	✓	✓		
		8	✓	✓		
		10	✓	✓	✓	✓
		25	✓	✓	✓	✓
デュアル Dual	650	18		✓	✓	
		20	✓	✓	✓	✓
		50			✓	
	1200	36			✓	

型 式 Device type	絶対最大定格 Maximum rating			接合温度 Thermal rating T <sub>j</sub> (°C) MAX	電気的特性 (Ta=25°C) Characteristics		パッケージ Package
	V <sub>RRM</sub> Volts	I <sub>o</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> MAX. Volts	I <sub>RRM</sub> *3 MAX. μA	
○ FDCP06S65	650	6	34	175	1.8	10	TO-220
○ FDCP08S65	650	8	40	175	1.8	10	TO-220
FDCP10S65	650	10	50	175	1.8	10	TO-220
FDCP20C65	650	20	50	175	1.8	10	TO-220
FDCP25S65	650	25	100	175	1.6	10	TO-220
FDCA10S65	650	10	50	175	1.8	10	TO-220F
FDCA20C65	650	20	50	175	1.8	10	TO-220F
FDCA25S65	650	25	100	175	1.6	10	TO-220F
○ FDCA06S65	650	6	34	175	1.8	10	TO-220F
○ FDCA08S65	650	8	40	175	1.8	10	TO-220F
FDCY10S65	650	10	50	175	1.8	10	TO-247
FDCY20C65	650	20	50	175	1.8	10	TO-247
FDCY25S65	650	25	100	175	1.6	10	TO-247
FDCY50C65	650	50	100	175	1.6	10	TO-247
○ FDCC10S65	650	10	50	175	1.8	10	T-Pack(S)
○ FDCC20C65	650	20	50	175	1.8	10	T-Pack(S)
○ FDCC25S65	650	25	100	175	1.6	10	T-Pack(S)
FDCA18S120	1200	18	90	175	1.7	10	TO-220F
FDCY18S120	1200	18	90	175	1.7	10	TO-247
FDCY36C120	1200	36	90	175	1.7	10	TO-247

○ : 開発中 Under development

\*1 50Hz 方形波 duty=1/2

\*1 50Hz Square wave duty=1/2




\*2 正弦波 10ms

\*2 Sine half wave, 10ms

\*3 V<sub>R</sub>=V<sub>RRM</sub>

\*3 V<sub>R</sub>=V<sub>RRM</sub>

### ■自動車用 SiC ショットキーバリアダイオード Automotive SiC Schottky-Barrier Diodes

SiC-SBD Series			TO-220	TO-247	T-Pack(s)
					
結線	V <sub>RRM</sub> (V)	I <sub>o</sub> (A)			
シングル Single	650	10	✓	✓	✓
		25	✓	✓	✓
	1200	18		✓	
デュアル Dual	650	20	✓	✓	✓
		50		✓	
	1200	36		✓	

型 式 Device type	V <sub>RRM</sub> Volts	I <sub>o</sub> Amps.	I <sub>FSM</sub> Amps.	V <sub>F</sub> max. Volts	I <sub>RRM</sub> max. mA	rating T <sub>j</sub> and T <sub>stg</sub> °C	パッケージ Package	質量 Net mass Grams
FDCP10S65A	650	10	100	1.8	0.005	-55 to +175	TO-220	2.0
FDCY10S65A	650	10	100	1.8	0.005	-55 to +175	TO-247	6.4
FDCC10S65A	650	10	100	1.8	0.005	-55 to +175	T-Pack(S)	1.6
FDCP20C65A	650	20 *1	100	1.8	0.005	-55 to +175	TO-220	2.0
FDCY20C65A	650	20 *1	100	1.8	0.005	-55 to +175	TO-247	6.4
FDCC20C65A	650	20 *1	100	1.8	0.005	-55 to +175	T-pack	1.6
FDCP25S65A	650	25	190	1.7	0.01	-55 to +175	TO-220	2.0
FDCY25S65A	650	25	190	1.7	0.01	-55 to +175	TO-247	6.4
FDCC25S65A	650	25	190	1.7	0.01	-55 to +175	T-pack	1.6
FDCY50C65A	650	50 *1	190	1.7	0.01	-55 to +175	TO-247	6.4
FDCY18C120A	1200	18	180	1.8	0.01	-55 to +175	TO-247	6.4
FDCY36C120A	1200	36 *1	180	1.8	0.01	-55 to +175	TO-247	6.4

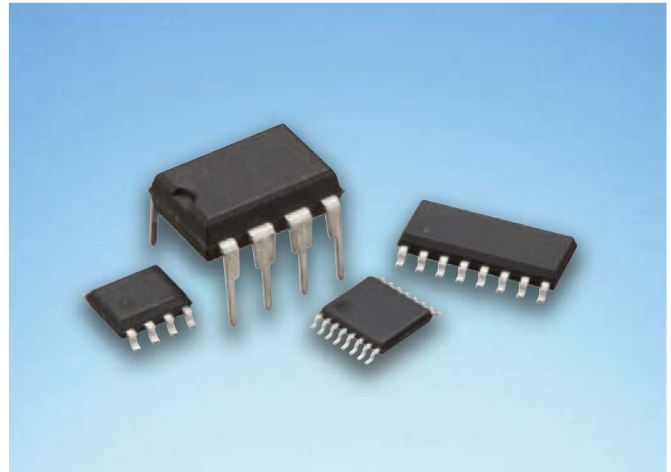
\*1 : 2 in 1 package, IF=0.5I<sub>o</sub>

## 電源制御用IC Integrated Circuits



富士電機の電源制御用ICはAC/DC、DC/DCそれぞれにラインアップを揃えており様々な電源回路に対応が可能です。高効率、低待機電力、低ノイズを実現し、各種環境関連の規制に対応。更に、多くの保護機能をICに内蔵しており、電源回路の小型化も実現できます。

Fuji Electric offers a lineup of AC/DC and DC/DC power supply control ICs that support a variety of power circuits. These highly efficient, low-noise products with low standby power consumption are compatible with environmental regulations. Furthermore, the many protection functions are built into the ICs themselves, allowing for smaller power circuits.



### ■ 電源制御用ICの特長 Features of Power Supply control ICs

#### 低待機電力対応 PWM制御IC Green Mode PWM-ICs

##### ■特長 Features

- 500V / 650V 耐圧起動回路内蔵
- 軽負荷時 スイッチング周波数低減
- 各種保護機能 (過電圧 / ブラウンアウト / 2 段階過電力)
- 周波数拡散機能による低 EMI ノイズ
- Built-in 500/650V withstand voltage start up circuit
- Reduct switching frequency at light load
- Protect functions (Over voltage/Brown out/2 stage Over power)
- Low EMI noise

#### 低待機電力対応 擬似共振制御IC Green Mode Quasi-resonant ICs

##### ■特長 Features

- 500V 耐圧起動回路内蔵
- 低待機電力対応 (間欠動作 / 周波数低減)
- 各種保護機能 (過電圧 / 過負荷など)
- Built-in 500V withstand voltage start up circuit
- Green mode functions (Intermittent Switching/Linerary reduced switching frequency)
- Protect functions (Over voltage/Over load etc.)

#### 力率改善制御IC Power Factor Correction ICs

##### ■特長 Features

- 幅広い電力範囲 (75W ~ 1kW)
- 力率 0.99 以上
- 各種保護機能 (FB ピンオープンショート / 過電圧など)
- Wide electric power range(From 75W to 1kW)
- Power factor  $\geq 0.99$
- Protect functions (FB Pin open short/Over voltage etc.)

## 電流共振IC Current Resonant ICs

## ■特長 Features

- ワールドワイド入力にて、1コンバータの回路構成が可能
- ハイサイド駆動回路内蔵
- 共振はずれ防止機能
- 各種保護機能  
(過電流 / 過電圧 / 過負荷 / 過熱 / ブラウンアウト)
- 低待機電力対応 (間欠動作)
- Realize 1 convertor circuit structure at world wide input power
- Built-in High side driver
- Preventing capacitive region operation
- Protect functions  
(Over current/Over voltage/Over load/Over heat/Brown out)
- Green mode function (Intermittent switching)

## ハイサイド・ローサイドドライバIC High and Low side driver IC

## ■特長

- VS端子の高負電圧耐量
- 30Vまでの広範囲電源電圧 (FA5650/5651)
- 3.3V論理入力に対応
- 電源電圧低下保護を内蔵
- dVs/dt耐量 50kV/usの高ノイズ耐量
- 高速応答: 入出力遅延時間 125ns (Typ)  
(FA5650/5651/5751)

## ■Features

- High negative transient voltage on VS terminal
- Wide range supply voltage up to 30V (FA5650/5651)
- 3.3V logic compatible
- Built-in under voltage lockout
- Allowable offset supply voltage transient dVs/dt up to 50kV/us
- High speed response: Turn on/off delay time 125ns (Typ)  
(FA5650/5651/5751)

## ■型式の見方 Part numbers

## FA8A00N (example)

F		A		8		A		00		N	
社名 Company Symbol		制御方式 Control System		製品シリーズ Series		世代 Generation		系列番号 Number		パッケージコード Package code	
F	Fuji	A	Analog	1	CRMPFC	A	1G	2桁の整数 Two-digit integer	N	SOP	
				6	LLC	B	2G		P	DIP	
				8	PWM	C	3G				
						...	...				

## FA5590N (example)

F		A		55		90		N	
社名 Company Symbol		制御方式 Control System		製品シリーズ Series		系列番号 Number		パッケージコード Package code	
F	Fuji	A	Analog	3X	AC/DC	2桁の整数 Two-digit integer	N/S	SOP	
				5X	AC/DC		P	DIP	
				7X	DC/DC				
				13X	AC/DC				

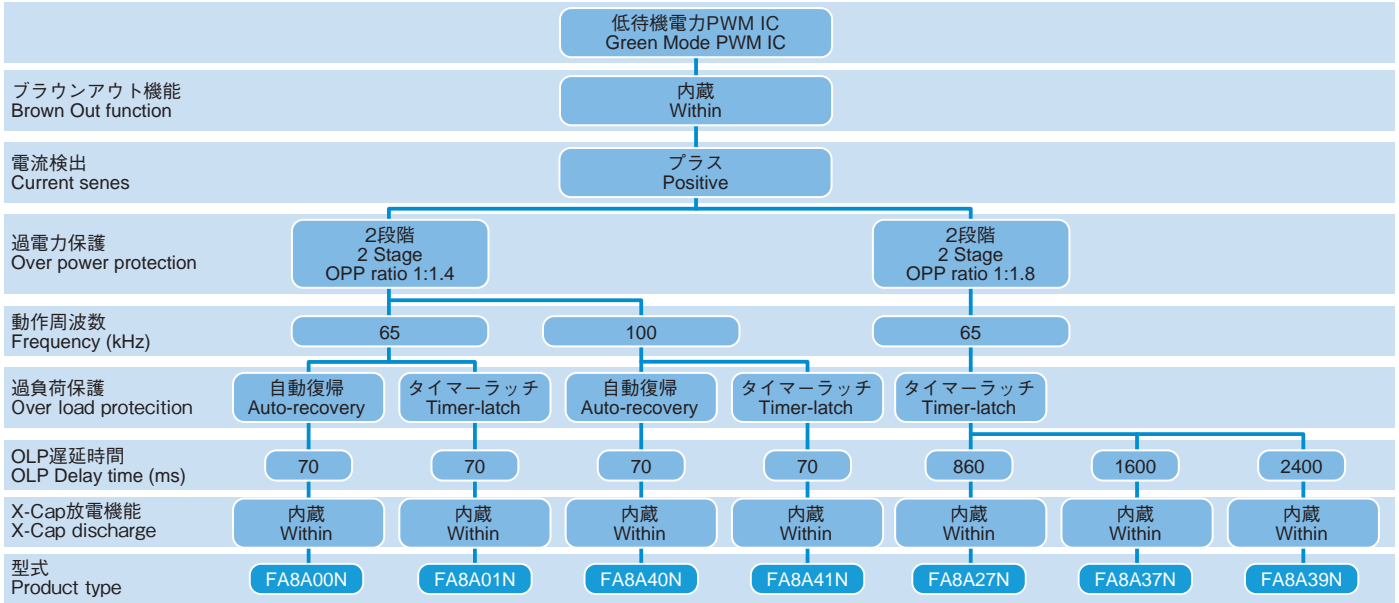
## AC/DC 電源制御用 IC AC/DC Power Supply control ICs

## ● 低待機電力対応 PWM制御IC (電流モード) Green mode PWM-ICs (Current mode)

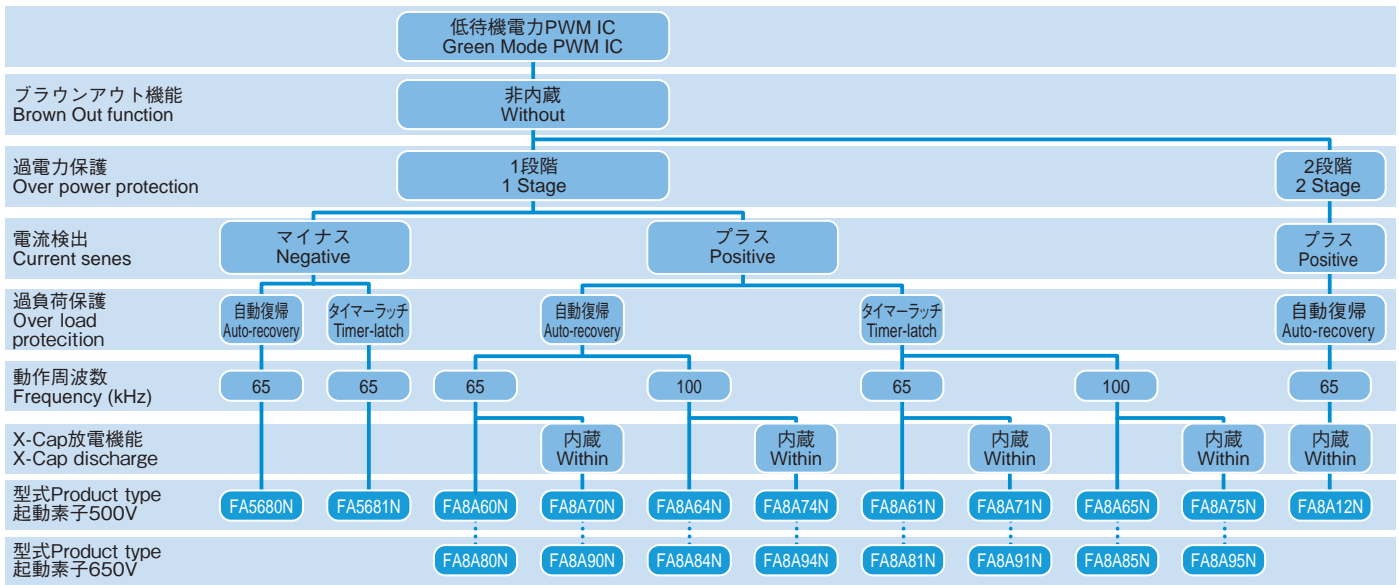
型式 Type Name	デューティ Duty (%)	入力電圧 Input voltage (V)	動作周波数 Frequency (kHz)		電流検出 Current sense	過負荷保護 Over load protection	過電力保護 Over power protection	過電圧保護 Over voltage protection	起動回路 Start up circuit	低待機電力機能 Green mode function	X-Cap 放電機能 X-Cap discharge function	
			65	100								
ブラウンアウト機能 内蔵 Within Brown out function												
FA8A00N	83%	12 - 24V	✓		プラス Positive	自動復帰 Auto-Recovery	2段階 2Stage (OPP ratio 1:1.4)	ラッチ Latch	500V	リニア周波数低減 Lineary frequency reduction 間欠動作 Intermittent opration	✓	
FA8A40N				✓								
FA8A01N			✓									
FA8A41N			✓									
FA8A27N		10 - 28V	✓				タイマーラッチ Timer-latch					2段階 2Stage (OPP ratio 1:1.8)
FA8A37N												
FA8A39N												
ブラウンアウト機能 非内蔵 Without Brown out function												
FA5680N	85%	11 - 24V	✓		マイナス Negative	自動復帰 Auto-Recovery						
FA5681N			✓									タイマーラッチ Timer-latch
FA8A60N	83%	10 - 24V	✓		プラス Positive	自動復帰 Auto-Recovery	1段階 1Stage	ラッチ Latch	500V	リニア周波数低減 Lineary frequency reduction 間欠動作 Intermittent opration	✓	
FA8A64N				✓								タイマーラッチ Timer-latch
FA8A61N			✓									自動復帰 Auto-Recovery
FA8A65N				✓								タイマーラッチ Timer-latch
FA8A70N			✓				自動復帰 Auto-Recovery					
FA8A74N				✓			タイマーラッチ Timer-latch					
FA8A71N			✓				自動復帰 Auto-Recovery					
FA8A75N				✓			タイマーラッチ Timer-latch					
FA8A12N							自動復帰 Auto-Recovery					2段階 2Stage
FA8A80N●			✓				自動復帰 Auto-Recovery					1段階 1Stage
FA8A84N●				✓			タイマーラッチ Timer-latch					
FA8A81N●			✓				自動復帰 Auto-Recovery					
FA8A85N●				✓			タイマーラッチ Timer-latch					
FA8A90N●			✓				自動復帰 Auto-Recovery					
FA8A94N●		✓		タイマーラッチ Timer-latch								
FA8A91N●	✓			自動復帰 Auto-Recovery	1段階 1Stage							
FA8A95N●		✓		タイマーラッチ Timer-latch								

●: 新製品 New Product

## ● 低待機電力対応 PWM-IC系列 (ブラウンアウトあり) Green mode PWM-ICs with Brown Out function

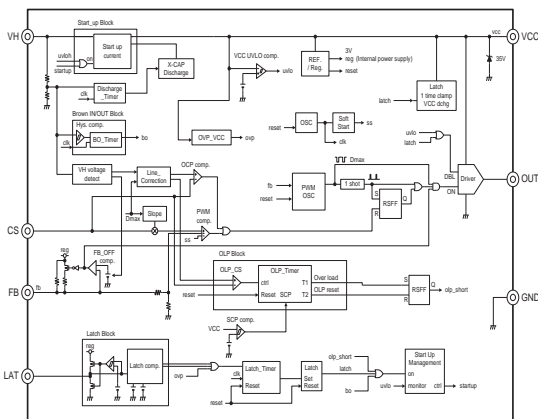


## ● 低待機電力対応 PWM-IC系列 (ブラウンアウトなし) Green mode PWM-ICs without Brown Out function

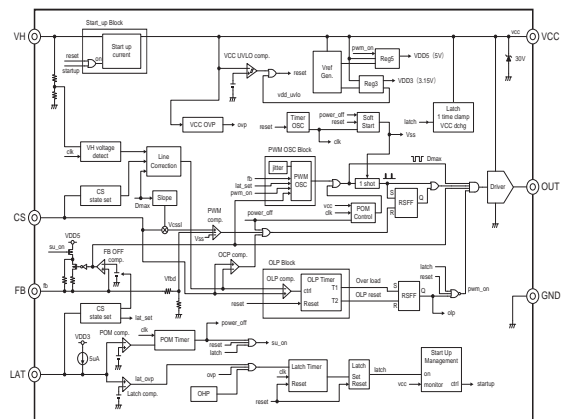


## ● 代表型式ブロック図 Block diagram(Main product)

FA8A00N (With-in Brown out)



FA8A61N (Without Brown out)



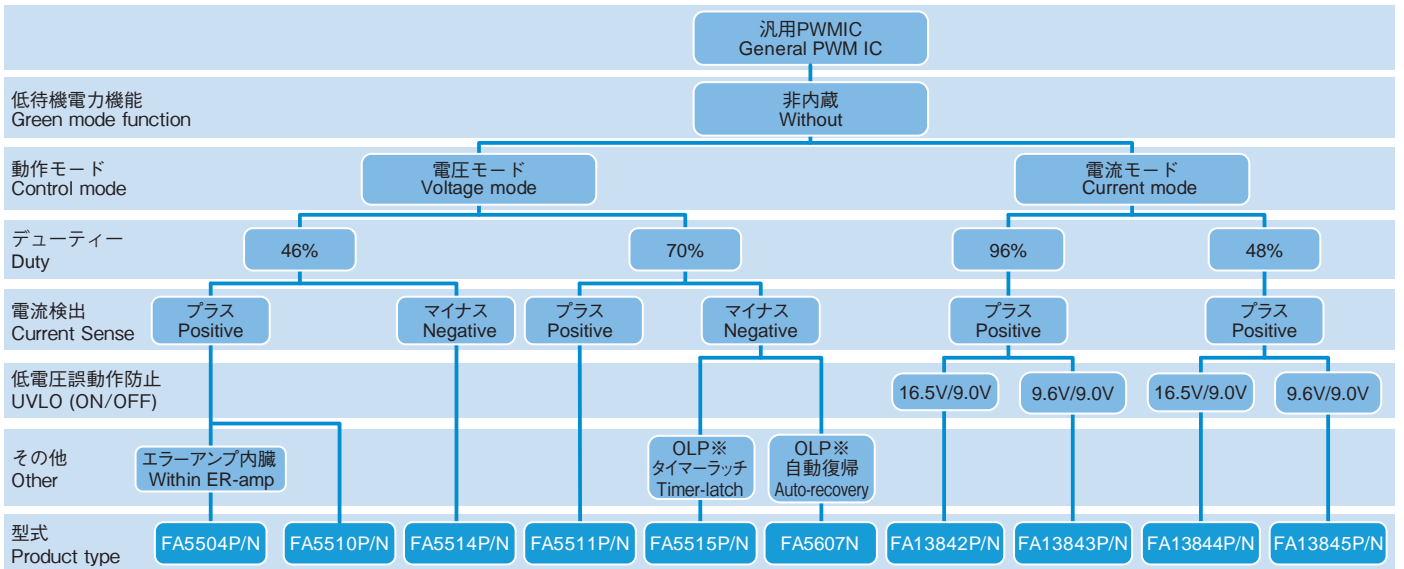
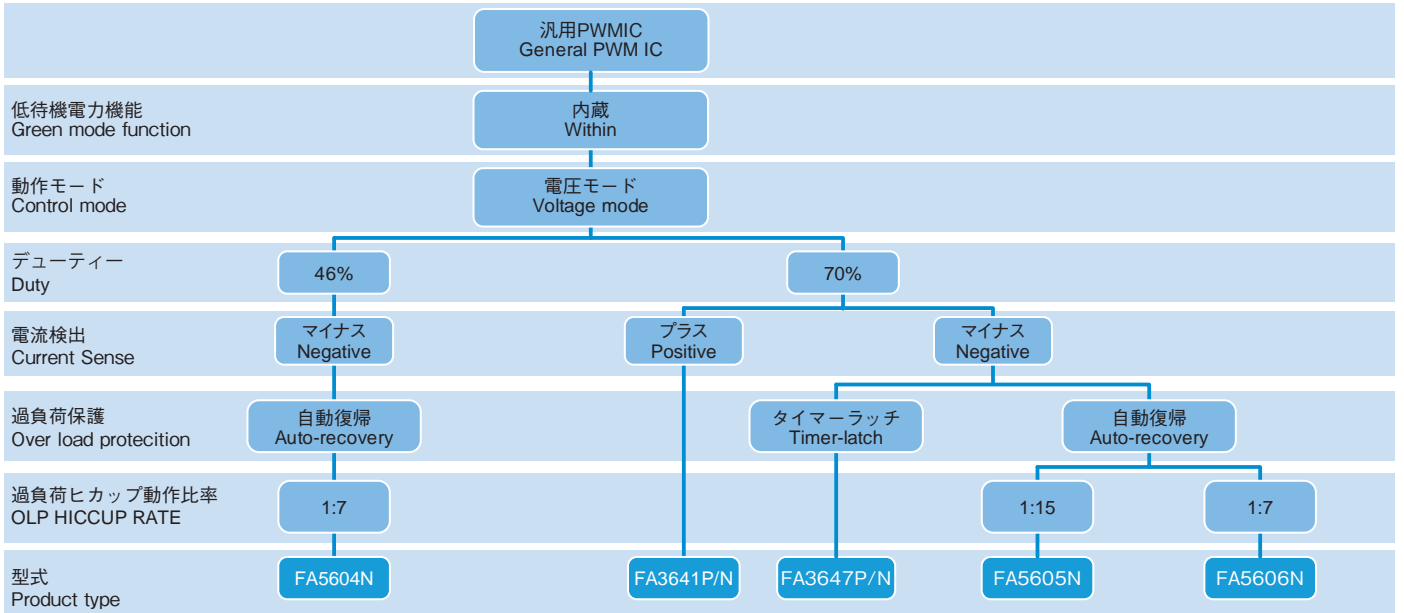
## ● 汎用PWM制御IC General PWM-ICs

型式 Type Name	制御方式 Control mode	デューティ Duty (%)	入力電圧 Input voltage (V)	電流検出 Current sense	過負荷保護 Over load protection	過電圧保護 Over voltage protection	UVLO Under-voltage lockout (ON/OFF)	備考 Remarks	
低待機電力機能 内蔵 Within Green mode function									
FA3641P/N	電圧 モード Voltage mode	70	10 - 28	プラス Positive	タイマーラッチ Timer-latch	ラッチ Latch	17.5V/9.7V		
FA3647P/N				マイナス Negative					
FA5604N		46	10 - 30	マイナス Negative	自動復帰 Auto-Recovery				軽負荷時周波数低減開始 / 復帰 FB 電圧 1.8V/1.95V Frequency reduction start/stop FB voltage under light load 1.8V/1.95V 軽負荷時周波数低減開始 / 復帰 FB 電圧 1.55V/1.65V Frequency reduction start/stop FB voltage under light load 1.55V/1.65V
FA5605N		70							
FA5606N									
低待機電力機能 非内蔵 Without Green mode function									
FA13842P/N	電流 モード Current mode	96	10 - 25	プラス Positive	-	-	16.5V/9.0V		
FA13843P/N		48							
FA13844P/N									
FA13845P/N									
FA5504P/N	電圧 モード Voltage mode	46	10 - 28	プラス Positive	タイマーラッチ Timer-latch	ラッチ Latch	-	エラーアンプ内蔵 Within error amplifier	
FA5510P/N		70							
FA5511P/N								46	
FA5514P/N		70	10 - 30	マイナス Negative	自動復帰 Auto-Recovery				
FA5515P/N									
FA5607N									

PKG: 全て8pin All 8pin

動作周波数: 外部調整 Frequency: Adjustable

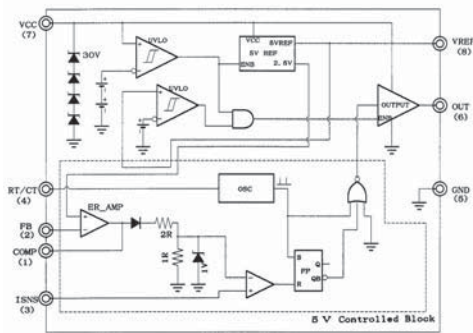
● 汎用PWM制御IC系列 General PWM-ICs



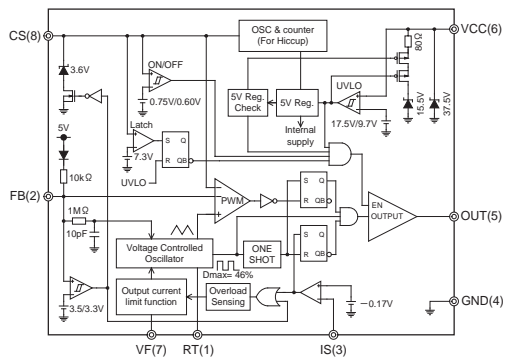
※OLP : Over Load Protection 過負荷保護

● 代表型式ブロック図 Block diagram (Main model)

FA13842P/N



FA5604N



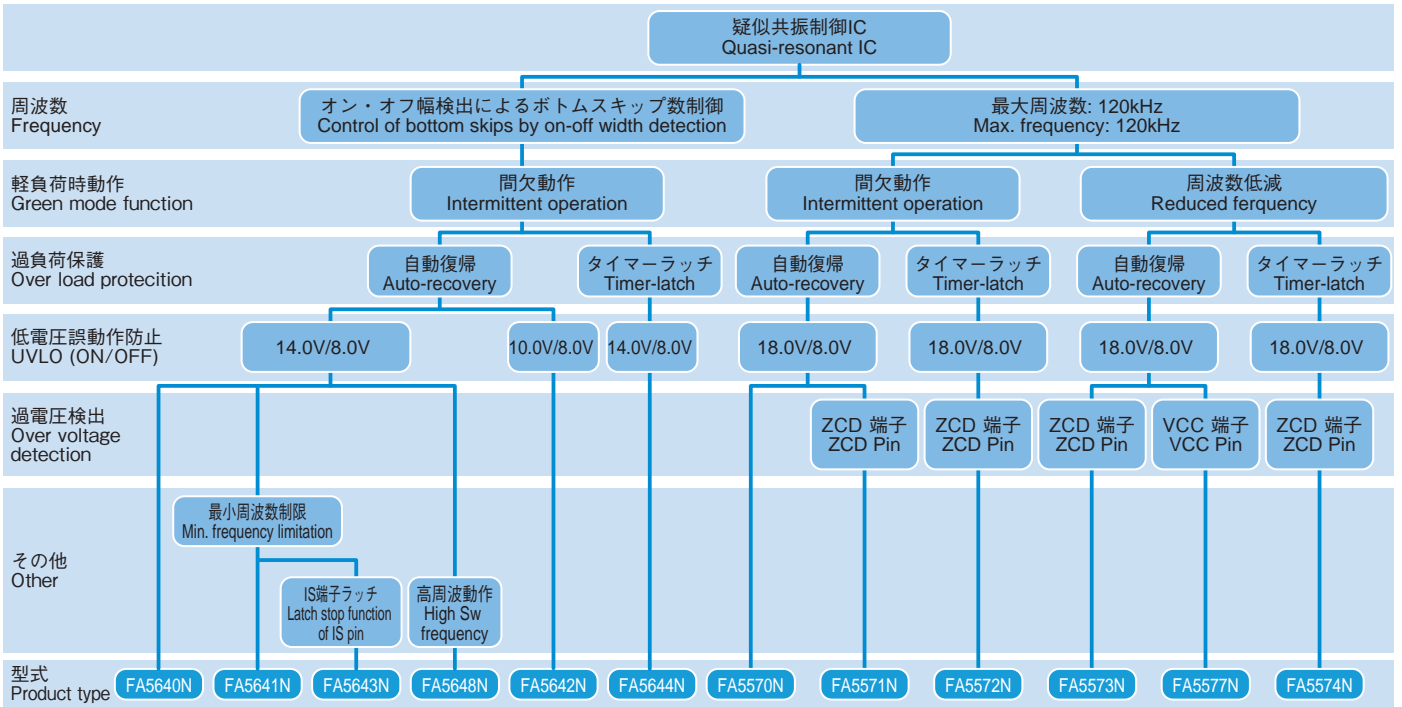


## ●低待機電力対応 擬似共振制御IC (電流モード) Green mode Quasi-resonant ICs (Current mode)

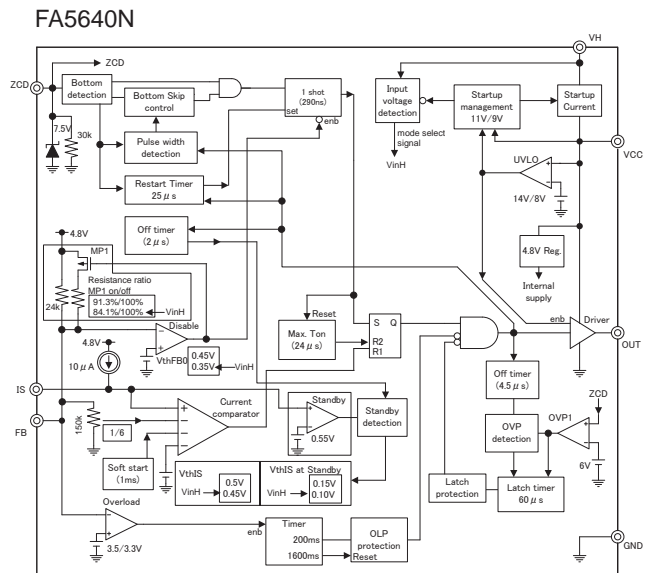
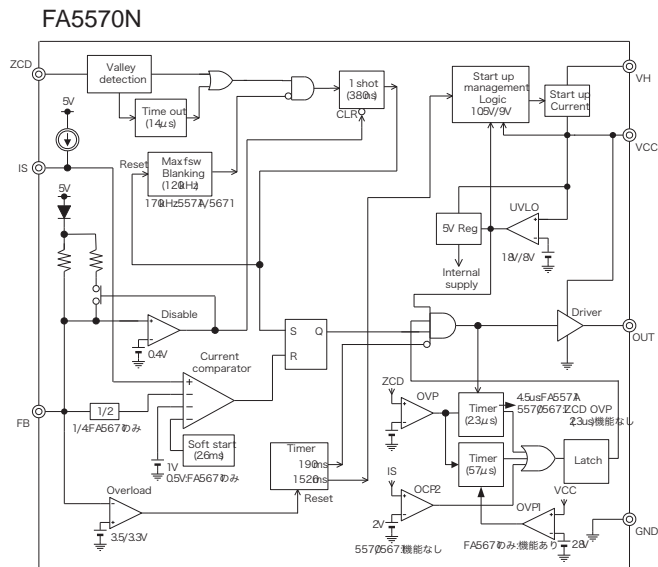
型式 Type Name	入力電圧 Input voltage (V)	最大周波数 Maximum frequency	過負荷保護 Over load protection	過電圧検出 Over voltage sense	起動回路 Start up circuit	低待機電力機能 Green mode function	UVLO Under-voltage lockout (ON/OFF)	備考 Remarks
FA5570N	10 - 28	120kHz	自動復帰 Auto-Recovery	—	500V	間欠動作 Intermittent operation	18V/8V	過電圧保護 ラッチ Over voltage protection Latch
FA5571N			タイマーラッチ Timer-latch	ZCD 端子 ZCD Pin				
FA5572N			自動復帰 Auto-Recovery					
FA5573N			タイマーラッチ Timer-latch			リニア周波数低減 Linear frequency reduction		
FA5574N			自動復帰 Auto-Recovery	VCC 端子 VCC Pin				
FA5577N								
FA5640N	11 - 26	オン・オフ幅検出によるボトムスキップ数制御 Bottom skip control by on-off width detection	自動復帰 Auto-Recovery		500V	間欠動作 Intermittent operation	14V/8V	最小周波数制限 Min. frequency limitation
FA5641N							10V/8V	
FA5642N				ZCD 端子 ZCD Pin			14V/8V	最小周波数制限 Min. frequency limitation IS 端子ラッチ停止 Latch stop function (IS pin)
FA5643N			タイマーラッチ Timer-latch					
FA5644N			自動復帰 Auto-Recovery				高周波動作向け For High SW frequency	
FA5648N								

PKG: 全て8pin All 8pin

## ● 低待機電力対応 擬似共振制御IC系列 Green mode Quasi-resonant ICs



## ● 代表型式ブロック図 Block diagram (Main model)



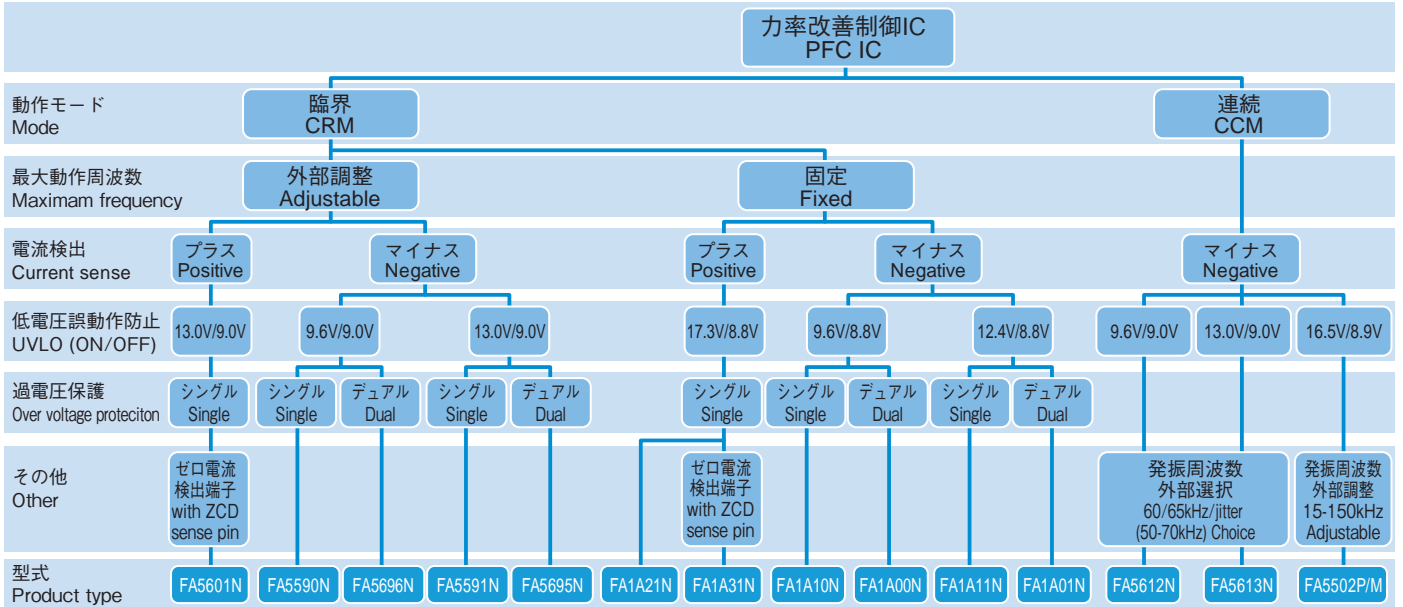
## ● 力率改善制御IC Power factor correction ICs

型式 Type Name	入力電圧 Input voltage (V)	最大 デューティ Duty (%)	電流検出 Current sense	UVLO Under-voltage lockout (ON/OFF)	動作 周波数 Frequency	最大 周波数 Maximum frequency	ゼロ電流 検出 Zero Current Detection	FBオープン ショート保護 FB open short protection	過電圧保護 Over voltage protection	備考 Remarks			
臨界モード PFC CRMPFC													
FA5590N	10 - 26	-	マイナス Negative	9.6V/9.0V	自動方式 Self-oscillation	外部調整 Adjustable	電流検出 Current sence	✓	パルス幅制御電圧制限 Voltage-Limit by Pulse width				
FA5591N				13.0V/9.0V									
FA1A10N				9.6V/8.8V		固定 Fixed							
FA1A11N				12.4V/8.8V									
FA5695N				13.0V/9.0V		外部調整 Adjustable					補助巻線 Auxiliary- winding	-	パルス幅制御電圧制限 + 電圧制限 Voltage-Limit by Pulse width and Voltage-Limit
FA5696N				9.6V/9.0V									
FA1A00N				9.6V/8.8V		固定 Fixed							
FA1A01N				12.4V/8.8V									
FA5601N			13.0V/9.0V	外部調整 Adjustable		-			パルス幅制御電圧制限 Voltage-Limit by Pulse width				
FA1A21N			17.3V/8.8V										
FA1A31N○			17.3V/8.8V										
連続モード PFC CCM PFC													
FA5502P/M	10 - 28	94	マイナス Negative	16.5V/8.9V	外部調整 Adjustable	150kHz	-	-	電圧制限 Voltage-Limit				
FA5612N	10 - 26			9.6V/9.0V	外部選択 Choice	-	-	✓	パルス幅制御電圧制限 Voltage-Limit by Pulse width				
FA5613N				13.0V/9.0V	65/60kHz/jitter (50-70kHz)								

○: 開発中 Under development

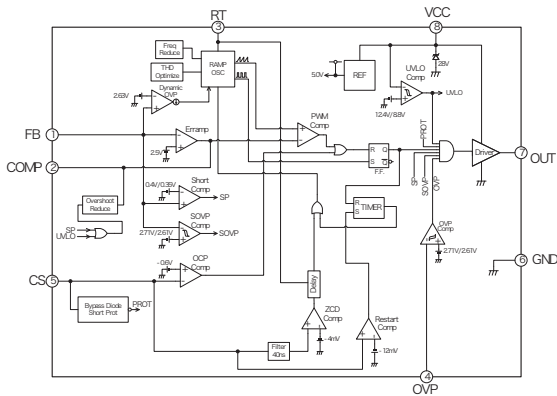
PKG: FA5502のみ16pin 他は全て8pin FA5502 is 16pin, others are 8pin

● 力率改善制御IC系列 Power factor correction ICs

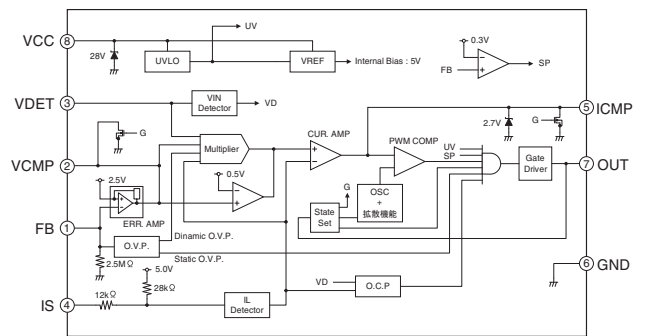


● 代表型式ブロック図 Block diagram (Main model)

FA5591N



FA5613N

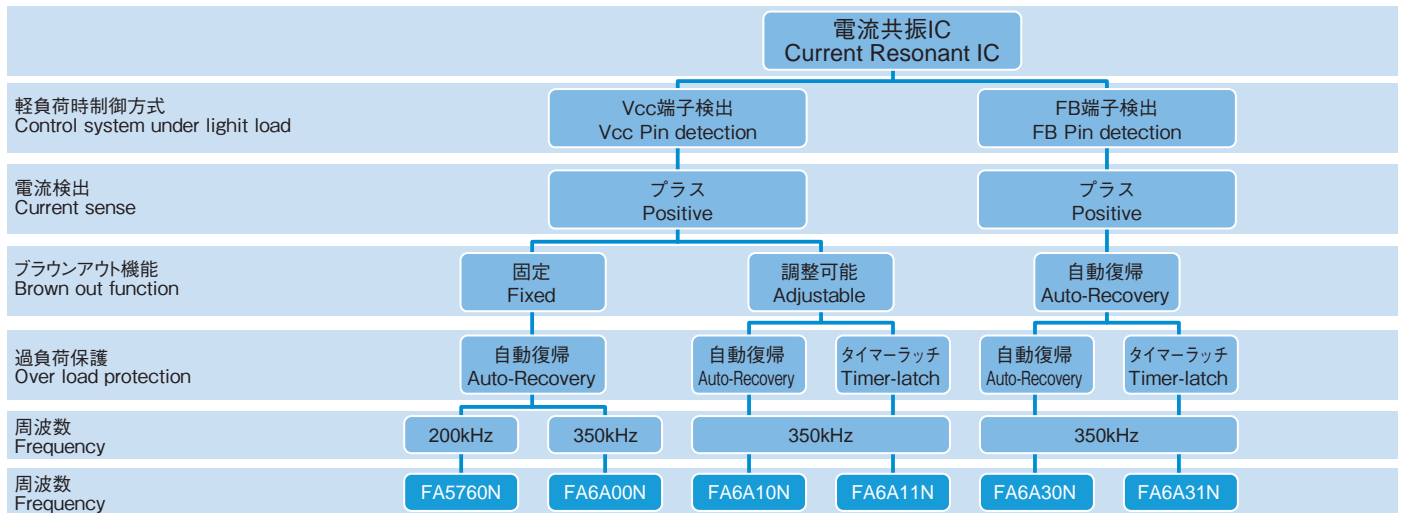


● 電流共振IC Current Resonant ICs

型式 Type Name	制御方式 Control mode	入力電圧 Input voltage (V)	UVLO Under-voltage lockout (ON/OFF)	電流検出 Current sense	動作周波数 Frequency	最大周波数 Maximum frequency (kHz)	過負荷保護 Over load protection	過電圧保護 Over voltage protection	起動回路 Start up circuit	ブラウンアウト機能 Brown out function
FA5760N	電圧モード Voltage mode	10 - 24	12.0V/8.9V	プラス Positive	自励方式 Self-oscillation	200	自動復帰 Auto-Recovery	タイマーラッチ Timer-latch	500V	調整可能 Adjustable
FA6A00N										
FA6A10N		14 - 27	12.0V/9.0V			350	タイマーラッチ Timer-latch			
FA6A11N							自動復帰 Auto-Recovery			
FA6A30N ●							タイマーラッチ Timer-latch			
FA6A31N ●							タイマーラッチ Timer-latch			

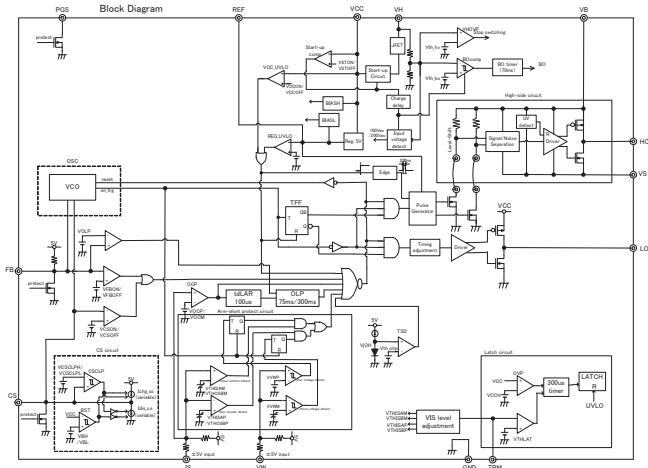
●: 新製品 New Product    PKG: 全て16pin All 16pin

● 電流共振IC Current Resonant ICs

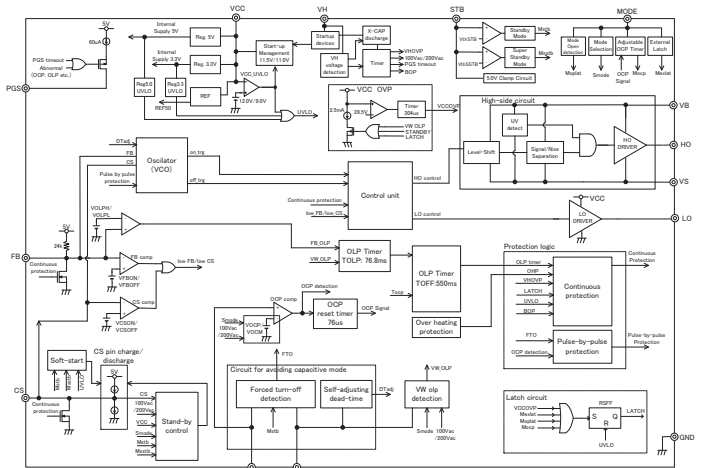


● 代表型式ブロック図 Block diagram (Main model)

FA5760N



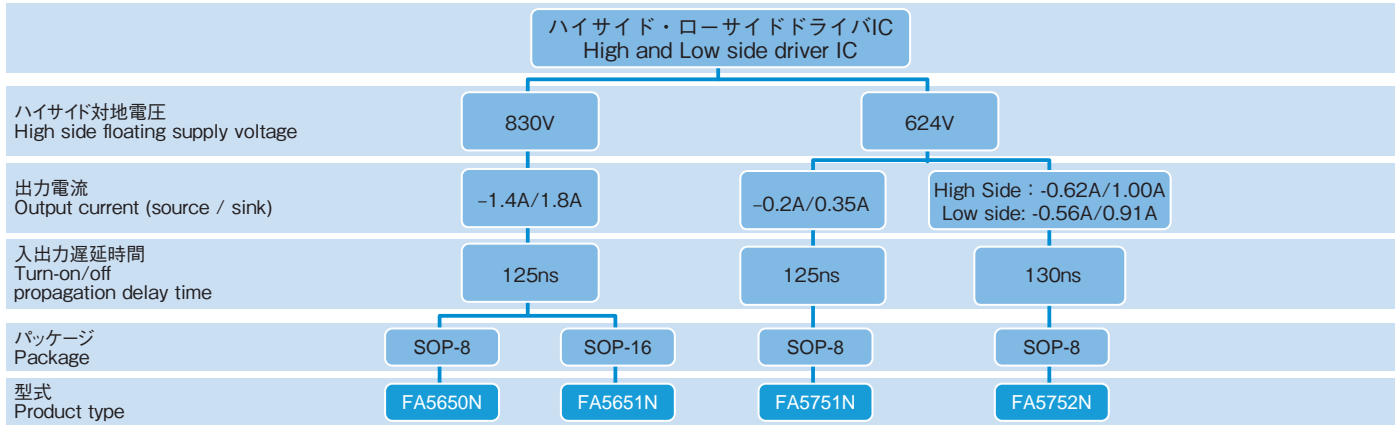
FA6A00N



■ ハイサイド・ローサイドドライバIC High and Low side driver ICs

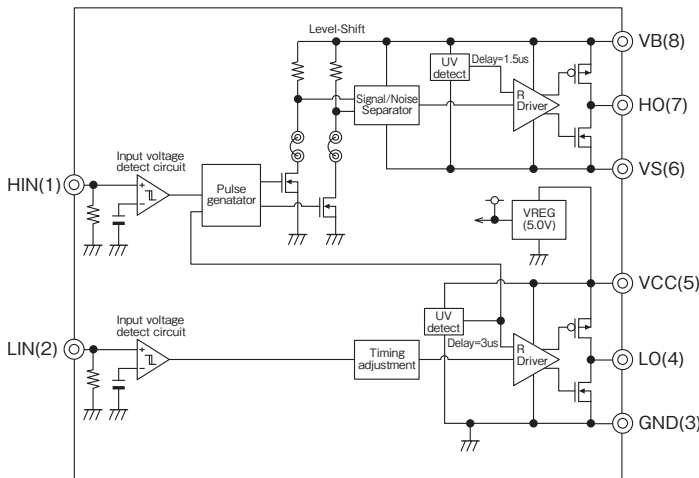
型式 Type name	絶対最大定格 Absolute maximum ratings				電気的特性 Electrical characteristics				
	ハイサイド 対地電圧 High side floating supply voltage	入力電圧 Maximum supply voltage	出力電流 Output current source / sink	最大動作 周波数 Maximum input frequency	論理入力電圧 Logic"1" / "0" Input voltage level (typ.)	入出力遅延 時間 Turn-on/off propagation delay time (typ.)	電源電圧 低下保護 VCC and VBS supply under-voltage threshold (typ.)	入力系統数 Number of Input terminal	パッケージ Package
FA5650N	830V	30V	-1.4A/1.8A	500kHz	Logic"1" 2.1V	125ns	positive going 8.9V negative going 8.2V	2	SOP-8
FA5651N					Logic"0" 1.1V				SOP-16
FA5751N	624V	24V	-0.2A/0.35A		Logic"1" 2.1V	125ns			SOP-8
FA5752N			High side IHO: -0.62A/1.00A Low side ILO: -0.56A/0.91A		Logic"0" 1.3V	130ns			

● ハイサイド・ローサイドドライバIC系列 High and Low side driver IC



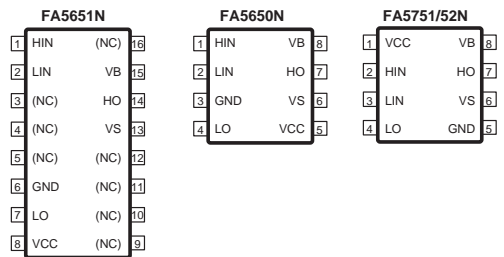
● 代表型式ブロック図 Block diagram (Main model)

FA5650N



■ 端子配置 Pin Layout

Pin Layout

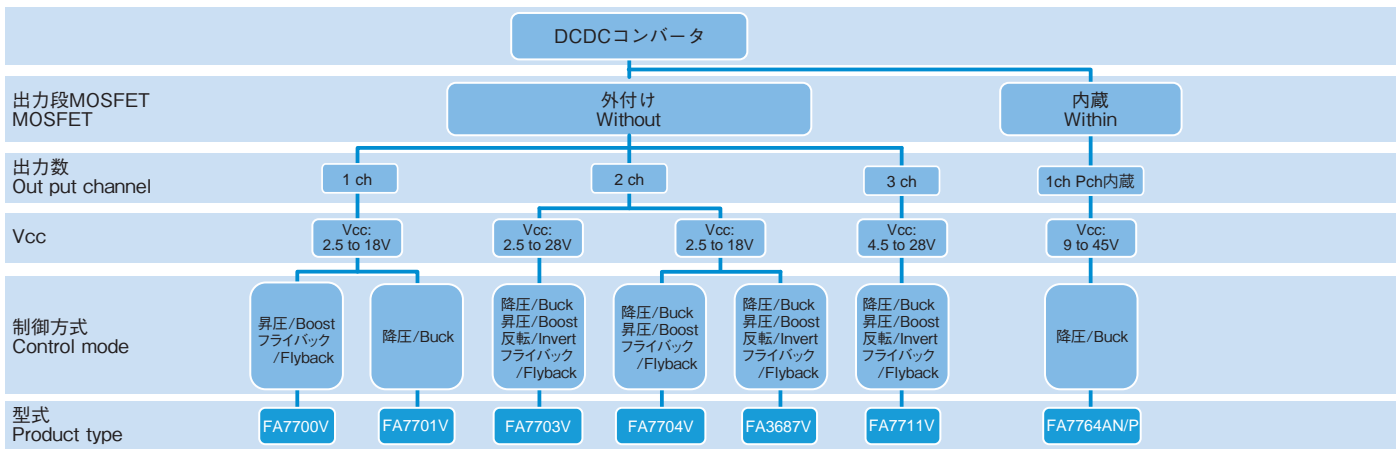


DC/DC 電源制御用 IC DC/DC Power Supply control ICs

● DC/DC制御IC DC/DC Power Supply control ICs

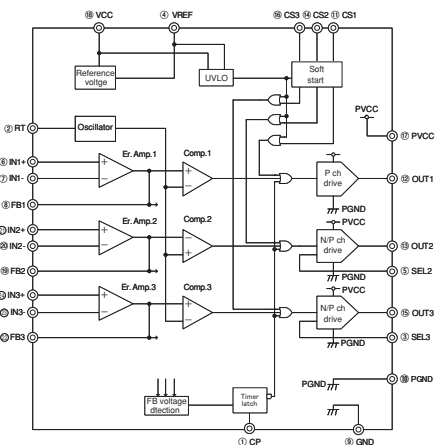
型式 Type Name	制御方式 Control mode				出力数 Output channel	入力電圧 Input voltage	動作周波数 Frequency	基準電圧 Reference Voltage	動作周囲温度 Operating Ambient Temperature	出力電流 Output Current	出力段 MOSFET Output MOSFET	パッケージ Package
	昇圧 Boost	フライバック Fly back	降圧 Buck	反転 Inverting								
FA7700V	✓	✓			1	2.5 - 18V	50k - 1MHz	0.88V	-30 — +85°C	—	—	TSSOP-8
FA7701V			✓		1	2.5 - 18V	50k - 1MHz	0.88V	-30 — +85°C	—	—	TSSOP-8
FA7703V	✓	✓	✓	✓	2	2.5 - 28V	50k - 1MHz	1.0V	-30 — +85°C	—	—	TSSOP-16 SOP-16
FA7704V	✓	✓	✓		2	2.5 - 18V	50k - 1MHz	1.0V	-30 — +85°C	—	—	TSSOP-16
FA3687V	✓	✓	✓	✓	2	2.5 - 18V	300k - 1.5MHz	1.0V	-40 — +85°C	—	—	TSSOP-16
FA7711V	✓	✓	✓	✓	3	4.5 - 28V	200k - 800kHz	Adjustable	-20 — +85°C	—	—	TSSOP-24
FA7764AN/P			✓		1	9 - 45V	30k - 400kHz	1.0V	-20 — +85°C	1.5A	内蔵 Within	SOP-8E

● DC/DC制御IC DC/DC Power Supply control ICs

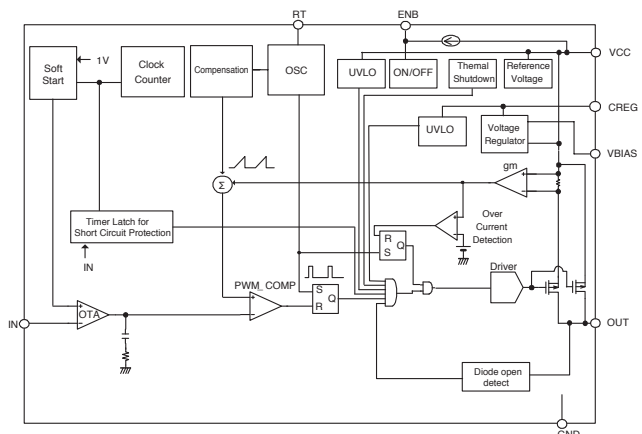


● 代表型式ブロック図 Block diagram (Main model)

FA7711V



FA7764AN/P



# パワーMOSFET Power MOSFETs



富士電機のパワー MOSFET は、低損失、低ノイズ、低オン抵抗などの特長を有し、中耐圧から高耐圧品までラインアップしています。

スーパージャンクション技術を適用した『Super J MOS®』シリーズでは 600V 耐圧品を中心に展開しています。

Fuji Electric has a lineup of power MOSFETs ranging from medium to high-voltage types with features such as low power loss, low noise, and low on-resistance. The “Super J-MOS®” Series uses superjunction technology, and was developed primarily for models with a withstand voltage of 600 V.



## ■ 第2世代スーパージャンクション MOSFET Super J MOS®S2シリーズ

### ■ コンセプト Concept

スーパージャンクション構造の不純物拡散プロセスの改善により、従来製品 (Super J MOS®S1 シリーズ) に比べ、素子耐圧とオン抵抗 ( $R_{on} \cdot A$ ) のトレードオフを大幅に改善し、ターンオフ損失とターンオフ  $dV/dt$  とのトレードオフ特性を従来製品と同等レベルにする事で、低損失と低ノイズ特性を両立し電源の高効率化、小型化をサポートします。

Superjunction technology has much improved trade-off charactaricity between On-resistance and Breakdown voltage. Super J MOS has the same turn-off loss and turn-off  $dV/dt$  capabilities at conventional MOSFET. As a result, It contributes to high efficiency and miniaturization of power supply.

### ■ Super J MOS®S2 シリーズの特長

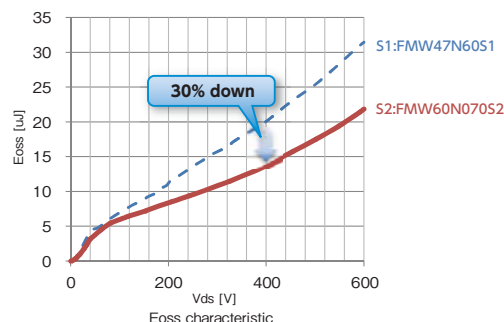
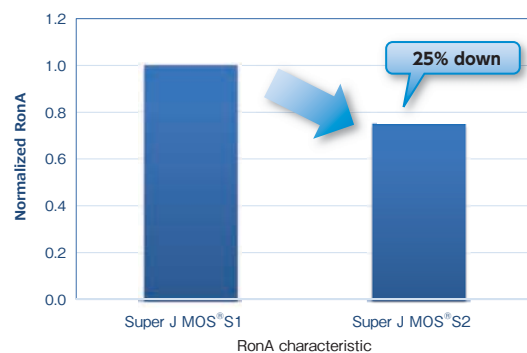
#### Features of the Super J MOS® S2series

- 低オン抵抗  $R_{onA}$  を従来比 (対 Super J MOS®S1) 約 25% 低減
- 低充放電容量  $E_{oss}$  を従来比 (対 Super J MOS®S1) 約 30% 低減
- 低ゲートチャージ  $Q_G$  を従来比 (対 Super J MOS®S1) 約 30% 低減
- 低ターンオフ損失と低ノイズを両立
- アバランシェ耐量保証
- ゲートしきい値電圧  $typ. \pm 0.5V$  保証
- 低オン抵抗化によりパッケージ小型化が可能  
ex) 600V/0.07Ω/TO-3P → 600V/0.07Ω/TO-220F
- Low  $R_{onA}$  25% lower than our conventional MOSFET
- Low  $E_{oss}$  30% lower than our conventional MOSFET
- Low  $Q_G$  30% lower than our conventional MOSFET
- Coping with both low turn-off loss and low noise
- Guaranteed avalanche robustness
- Narrow band of the gate threshold voltage ( $typ. \pm 0.5V$ )
- Due to low  $R_{DS(on)}$ , Selectable smaller package  
ex) 600V/0.07Ω/TO-3P → 600V/0.07Ω/TO-220F

### ■ 用途 Applications

サーバ、PC、パワーコンディショナー、UPS、液晶テレビ、照明、標準電源、基地局電源などの PFC 回路・PWM コンバータ

PFC or PWM converter for Server, PC, PCS, UPS, LCD-TV, Lighting and Standard power supply





### ■ Super J MOS<sup>®</sup> S2FD シリーズ (Built-in FRED type) の 特長

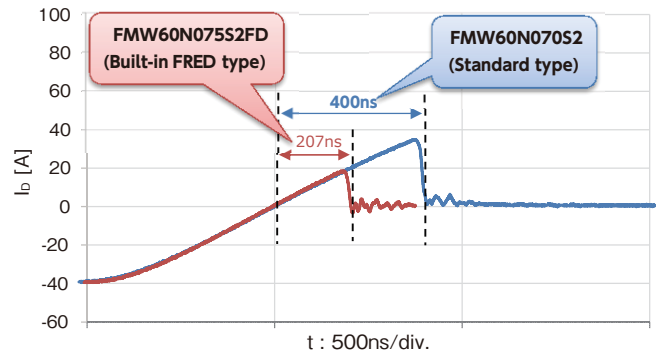
#### Features of the Super J MOS<sup>®</sup> S2FD series (Built-in FRED type)

- 内蔵ダイオードの  $T_{rr}$  を Super J MOS<sup>®</sup> S2 比、約 50% 低減
- 高リカバリー耐量 (高  $-di/dt$  耐量)
- アバランシェ耐量保証
- Fast-recovery body diode 50% lower than Super J MOS<sup>®</sup> S2
- High diode recovery ruggedness (High  $-di/dt$  ruggedness)
- Guaranteed avalanche robustness

### ■ 用途 Applications

UPS、サーバー、通信電源、LED 照明、PCS 等の LLC、フェーズシフトフルブリッジ回路等の共振回路部、インバータ回路部

for resonant switching topologies in applications like UPS, Server, Telecom, LED lighting, Power conditioner system and Power supply.



Conditions :  $V_{DD}=400V$ ,  $I_{SD}=39.4A$ ,  $-di/dt=100A/us$ ,  $T_{CH}=25^{\circ}C$

Built-in diode recovery wave form

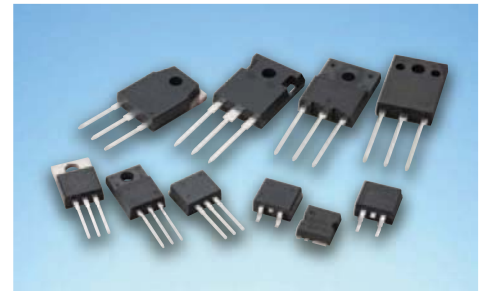
## SuperFAP-E<sup>3</sup>, E<sup>3S</sup>シリーズの特長 Features of the SuperFAP-E<sup>3</sup>, E<sup>3S</sup> series

### ■コンセプト Concept

第二世代擬平面接合技術により、“低損失、低ノイズ特性”と“使い易さ”を両立し、電源セットの設計から製品までのトータル性能向上をサポートします。

The second generation Quasi-Planer Junction technology copes with both low loss/noise and usability.

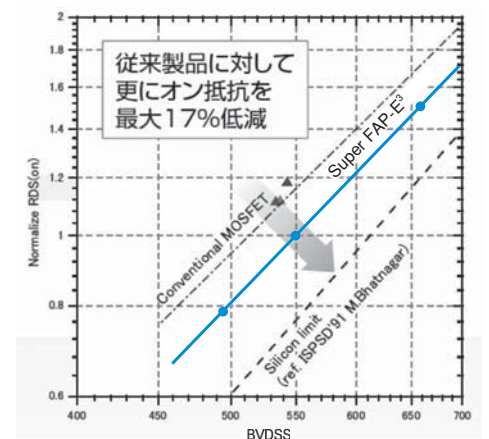
And this technology lets us achieve high performance for power supply's circuit design.



### ■特長 Features

- 低損失特性と低ノイズ特性の両立
- 低オン抵抗特性
- スイッチング時 dv/dt のゲート抵抗制御性が良い
- スイッチング時の VGS のリングングが小さい
- ゲートしきい値電圧幅 ±0.5V
- 高アバランシェ耐量
- Coping with both low loss and low noise
- Low RDS(on)
- High controllability of gate resistance during switching
- Low VGS ringing waveform during switching
- Narrow band of the gate threshold voltage(3.0±0.5V)
- High avalanche durability

### E<sup>3</sup>コンセプト概念図 Concept



## SuperFAP-Gシリーズの特長 Features of the SuperFAP-G series

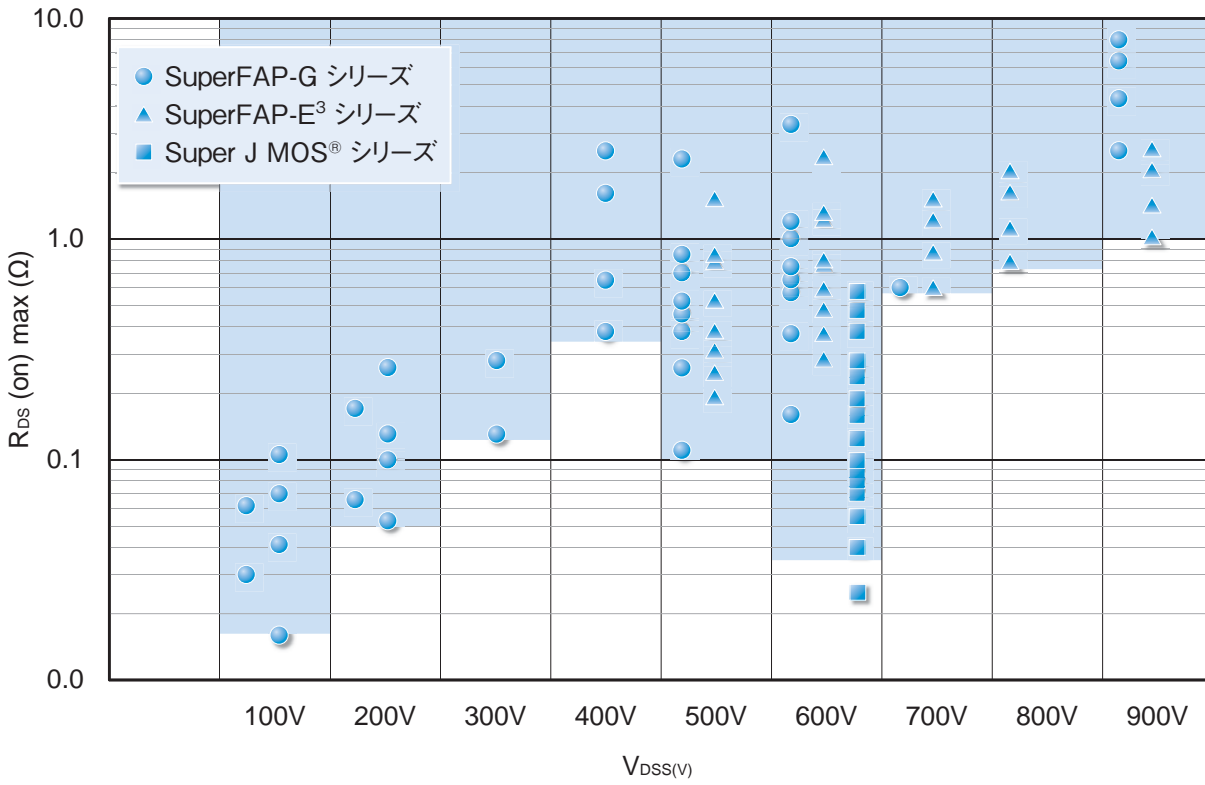
擬平面接合技術により、低 Qgd によるスイッチング損失と低オン抵抗特性を実現しました。

The Quasi-Planer Junction technology achieve low RDS(on) and low switching loss(low Qgd).

### ■特長 Features

- ターンオフ損失の低減 従来比で約 75%低減
- 低ゲートチャージ 従来比で約 60%低減
- 高アバランシェ耐量
- 低オン抵抗化によりパッケージ小型化が可能  
ex) 500V/0.4Ω/TO-3P → 500V/0.38Ω/TO-220
- Low turn off loss 75% lower than our conventional type
- Low Gate charge 60% lower than our conventional type
- High avalanche durability
- Due to low RDS(on), Selectable smaller package  
ex) 500V/0.4Ω/TO-3P → 500V/0.38Ω/TO-220

## ■系列マップ Series map



## ■型式の見方 Part numbers

FMV20N60S1 (example)

F	M	V	20	N	60	S1
社名 Company Symbol	機種コード Device code	パッケージコード Package code	定格電流 Current	極性 Polarity	定格電圧 Voltage	製品シリーズ Series
Fuji	M MOSFET	A TO-220F C T-pack (S) H TO-3P I T-pack (L) P TO-220 R TO-3PF V TO-220F (SLS) W TO-247	×1	N N-ch	×1/10	S1 Super J MOS <sup>®</sup> S1FD Super J MOS <sup>®</sup> (FRED) S1A Super J MOS <sup>®</sup> for Automotive S1FDA Super J MOS <sup>®</sup> (FRED) for Automotive E SuperFAP-E <sup>3</sup> ES SuperFAP-E <sup>3S</sup> G SuperFAP-G GF SuperFAP-G (FRED) T2 Trench R 3G-Trench






FMV60N190S2 (example)

F	M	V	60	N	190	S2
社名 Company Symbol	機種コード Device code	パッケージコード Package code	定格電圧 Voltage	極性 Polarity	オン抵抗 Ron(mΩ)	製品シリーズ Series
Fuji	M MOSFET	D TO-252 H TO-3P P TO-220 V TO-220F (SLS) W TO-247	×1/10	N N-ch	×1	S2 Super J MOS <sup>®</sup> S2FD Super J MOS <sup>®</sup> (FRED) S2A Super J MOS <sup>®</sup> for Automotive S2FDA Super J MOS <sup>®</sup> (FRED) for Automotive

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Super J MOS<sup>®</sup> S2シリーズ Super J MOS<sup>®</sup> S2 series

低オン抵抗、低ノイズ、低スイッチング損失 Low-on resistance, low switching noise and low switching loss

Super J MOS <sup>®</sup> S2 series			TO-220	TO-220F (SLS)	TO-3P(Q)	TO-247-P2	TO-252
							
Vds (V)	Ron (Ω)	Id (A)					
600	0.3800	8.1	✓	✓			✓
	0.2800	10.4	✓	✓	✓		✓
	0.1900	15.5	✓	✓	✓	✓	
	0.1600	17.9	✓	✓		✓	
	0.1250	22.7	✓	✓		✓	
	0.0990	29.2	✓	✓		✓	
	0.0880	32.8	✓	✓		✓	
	0.0790	37.1	✓	✓		✓	
	0.0700	39.4		✓		✓	
	0.0550	49.9				✓	
0.0400	66.2				✓		
0.0254	95.5				✓		
650V	(0.1010)	(30.6)	✓	✓		✓	
	(0.0790)	(37.1)		✓		✓	
	(0.0450)	(62.4)				✓	
	(0.0287)	(89.8)				✓	

600Vクラス 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS</sub> (on) Max. Ohms (Ω)	P <sub>D</sub> Watts	V <sub>GS</sub> Volts	V <sub>GS</sub> (th) Volts	Q <sub>g</sub> typ. nC	パッケージ Package	質 量 Net mass Grams
● FMP60N380S2	600	8.1	24.3	0.3800	62	30	3.0±0.5	27.5	TO-220	2.0
● FMV60N380S2	600	8.1	24.3	0.3800	20	30	3.0±0.5	27.5	TO-220F(SLS)	2.0
○ FMD60N380S2	600	8.1	24.3	0.3800	58	30	3.0±0.5	27.5	TO-252	(0.3)
● FMP60N280S2	600	10.4	31.2	0.2800	75	30	3.0±0.5	33	TO-220	2.0
● FMV60N280S2	600	10.4	31.2	0.2800	26	30	3.0±0.5	33	TO-220F(SLS)	2.0
● FMH60N280S2	600	10.4	31.2	0.2800	65	30	3.0±0.5	33	TO-3P(Q)	5.0
○ FMD60N280S2	600	10.4	31.2	0.2800	75	30	3.0±0.5	33	TO-252	(0.3)
● FMP60N190S2	600	15.5	46.5	0.1900	113	30	3.0±0.5	46	TO-220	2.0
● FMV60N190S2	600	15.5	46.5	0.1900	38	30	3.0±0.5	46	TO-220F(SLS)	2.0
● FMW60N190S2	600	15.5	46.5	0.1900	94	30	3.0±0.5	46	TO-247-P2	6.0
● FMP60N160S2	600	17.9	53.7	0.1600	127	30	4.0±0.5	43	TO-220	2.0
● FMV60N160S2	600	17.9	53.7	0.1600	45	30	4.0±0.5	43	TO-220F(SLS)	2.0
● FMW60N160S2	600	17.9	53.7	0.1600	110	30	4.0±0.5	43	TO-247-P2	6.0
● FMP60N125S2	600	22.7	68.1	0.1250	160	30	4.0±0.5	53	TO-220	2.0
● FMV60N125S2	600	22.7	68.1	0.1250	57	30	4.0±0.5	53	TO-220F(SLS)	2.0
● FMW60N125S2	600	22.7	68.1	0.1250	140	30	4.0±0.5	53	TO-247-P2	6.0
● FMP60N099S2	600	29.2	87.6	0.0990	210	30	4.0±0.5	65	TO-220	2.0
● FMV60N099S2	600	29.2	87.6	0.0990	75	30	4.0±0.5	65	TO-220F(SLS)	2.0
● FMW60N099S2	600	29.2	87.6	0.0990	185	30	4.0±0.5	65	TO-247-P2	6.0

● : 新製品 New Products ○ : 開発中 Under development

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The Super J MOS<sup>®</sup> series products satisfies the quality assurance level of general consumer use.

If you intend to use the products for equipment requiring higher reliability, such as equipment for automobiles and medical equipment, please contact Fuji Electric.

Do not use the products for equipment requiring strict reliability such as aerospace equipment.

## ■ 600Vクラス 600V class(continued)

型式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. Ohms (Ω)	P <sub>D</sub> Watts	V <sub>GS</sub> Volts	V <sub>GS</sub> (th) Volts	Q <sub>G</sub> typ. nC	パッケージ Package	質量 Net mass Grams
● <b>FMP60N088S2</b>	600	32.8	98.4	0.0880	235	30	4.0±0.5	72	TO-220	2.0
● <b>FMV60N088S2</b>	600	32.8	98.4	0.0880	85	30	4.0±0.5	72	TO-220F(SLS)	2.0
● <b>FMW60N088S2</b>	600	32.8	98.4	0.0880	205	30	4.0±0.5	72	TO-247-P2	6.0
● <b>FMP60N079S2</b>	600	37.1	111.3	0.0790	270	30	4.0±0.5	80	TO-220	2.0
● <b>FMV60N079S2</b>	600	37.1	111.3	0.0790	95	30	4.0±0.5	80	TO-220F(SLS)	2.0
● <b>FMW60N079S2</b>	600	37.1	111.3	0.0790	235	30	4.0±0.5	80	TO-247-P2	6.0
● <b>FMV60N070S2</b>	600	39.4	118.2	0.0700	110	30	4.0±0.5	90	TO-220F(SLS)	2.0
● <b>FMW60N070S2</b>	600	39.4	118.2	0.0700	270	30	4.0±0.5	90	TO-247-P2	6.0
● <b>FMW60N055S2</b>	600	49.9	149.7	0.0550	340	30	4.0±0.5	110	TO-247-P2	6.0
● <b>FMW60N040S2</b>	600	66.2	198.6	0.0400	435	30	4.0±0.5	147	TO-247-P2	6.0
● <b>FMW60N025S2</b>	600	95.5	286.5	0.0254	575	30	4.0±0.5	222	TO-247-P2	6.0

●:新製品 New Product

## ■ 650Vクラス 650V class

型式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. Ohms (Ω)	P <sub>D</sub> Watts	V <sub>GS</sub> Volts	V <sub>GS</sub> (th) Volts	Q <sub>G</sub> typ. nC	パッケージ Package	質量 Net mass Grams
○ <b>(FMP65N101S2)</b>	650	(30.6)	(91.8)	(0.1010)	TBD	(30)	TBD	TBD	TO-220	2.0
○ <b>(FMV65N101S2)</b>	650	(30.6)	(91.8)	(0.1010)	TBD	(30)	TBD	TBD	TO-220F(SLS)	2.0
○ <b>(FMW65N101S2)</b>	650	(30.6)	(91.8)	(0.1010)	TBD	(30)	TBD	TBD	TO-247-P2	6.0
○ <b>(FMV65N079S2)</b>	650	(37.1)	(111.3)	(0.079)	TBD	(30)	TBD	TBD	TO-220F(SLS)	2.0
○ <b>(FMW65N079S2)</b>	650	(37.1)	(111.3)	(0.079)	TBD	(30)	TBD	TBD	TO-247-P2	6.0
○ <b>(FMW65N045S2)</b>	650	(62.4)	(187.2)	(0.0450)	TBD	(30)	TBD	TBD	TO-247-P2	6.0
○ <b>(FMW65N029S2)</b>	650	(89.8)	(269.4)	(0.0287)	TBD	(30)	TBD	TBD	TO-247-P2	6.0

○:開発中 Under development




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■ Super J MOS<sup>®</sup> S2FDシリーズ 高速ダイオード内蔵シリーズ  
 Super J MOS<sup>®</sup> S2FD Series (Built-in FRED type)

低オン抵抗、低ノイズ、低スイッチング損失 Low-on resistance, low switching noise and low switching loss

Super J MOS <sup>®</sup> S2FD Series (Built-in FRED type)			TO-220	TO-220F (SLS)	TO-247-P2
					
Vds (V)	Ron (Ω)	Id (A)			
600	0.1700	17.9	✓	✓	✓
	0.1330	22.7	✓	✓	✓
	0.1050	29.2	✓	✓	✓
	0.0940	32.8	✓	✓	✓
	0.0840	37.1	✓	✓	✓
	0.0750	39.4		✓	✓
	0.0590	49.9			✓
	0.0430	66.2			✓
	0.0270	95.5			✓

■ 600Vクラス 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. Ohms (Ω)	P <sub>D</sub> Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> Volts	Q <sub>G</sub> typ. nC	T <sub>rr</sub> typ. ns	パッケージ Package	質量 Net mass Grams
● FMP60N170S2FD	600	17.9	53.7	0.170	127	30	4.0±1.0	(47)	150	TO-220	2.0
● FMV60N170S2FD	600	17.9	53.7	0.170	45	30	4.0±1.0	(47)	150	TO-220F(SLS)	2.0
● FMW60N170S2FD	600	17.9	53.7	0.170	110	30	4.0±1.0	(47)	150	TO-247-P2	6.0
● FMP60N133S2FD	600	22.7	68.1	0.133	160	30	4.0±1.0	(59)	160	TO-220	2.0
● FMV60N133S2FD	600	22.7	68.1	0.133	57	30	4.0±1.0	(59)	160	TO-220F(SLS)	2.0
● FMW60N133S2FD	600	22.7	68.1	0.133	140	30	4.0±1.0	(59)	160	TO-247-P2	6.0
● FMP60N105S2FD	600	29.2	87.6	0.105	210	30	4.0±1.0	75	174	TO-220	2.0
● FMV60N105S2FD	600	29.2	87.6	0.105	75	30	4.0±1.0	75	174	TO-220F(SLS)	2.0
● FMW60N105S2FD	600	29.2	87.6	0.105	185	30	4.0±1.0	75	174	TO-247-P2	6.0
● FMP60N094S2FD	600	32.8	98.4	0.094	235	30	4.0±1.0	83	185	TO-220	2.0
● FMV60N094S2FD	600	32.8	98.4	0.094	85	30	4.0±1.0	83	185	TO-220F(SLS)	2.0
● FMW60N094S2FD	600	32.8	98.4	0.094	205	30	4.0±1.0	83	185	TO-247-P2	6.0
● FMP60N084S2FD	600	37.1	111.3	0.084	270	30	4.0±1.0	(91)	190	TO-220	2.0
● FMV60N084S2FD	600	37.1	111.3	0.084	95	30	4.0±1.0	(91)	190	TO-220F(SLS)	2.0
● FMW60N084S2FD	600	37.1	111.3	0.084	235	30	4.0±1.0	(91)	190	TO-247-P2	6.0
● FMV60N075S2FD	600	39.4	118.2	0.075	110	30	4.0±1.0	97	207	TO-220F(SLS)	2.0
● FMW60N075S2FD	600	39.4	118.2	0.075	270	30	4.0±1.0	97	207	TO-247-P2	6.0
● FMW60N059S2FD	600	49.9	149.7	0.059	340	30	4.0±1.0	(127)	215	TO-247-P2	6.0
● FMW60N043S2FD	600	66.2	198.6	0.043	435	30	4.0±1.0	177	250	TO-247-P2	6.0
● FMW60N027S2FD	600	95.5	286.5	0.027	575	30	4.0±1.0	(274)	288	TO-247-P2	6.0

●:新製品 New Product





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## Super J MOS<sup>®</sup> S1シリーズ Super J MOS<sup>®</sup> S1 series

低オン抵抗、低ノイズ、低スイッチング損失 Low-on resistance, low switching noise and low switching loss

Super J MOS <sup>®</sup> S1 series			TO-220	TO-220F (SLS)	TO-3P(Q)	TO-247-P2
						
V <sub>ds</sub> (V)	R <sub>on</sub> (Ω)	I <sub>d</sub> (A)				
600	0.580	6.5	✓	✓		
	0.470	8	✓	✓		
	0.380	10	✓	✓		
	0.280	13	✓	✓	✓	
	0.230	15	✓	✓	✓	✓
	0.190	20	✓	✓	✓	✓
	0.160	22	✓	✓	✓	✓
	0.125	30	✓	✓	✓	✓
	0.099	35		✓	✓	✓
	0.088	40		✓	✓	✓
	0.070	47			✓	✓
	0.055	57				✓
	0.040	68				✓

### 600Vクラス 600V class

型式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS</sub> (on) Max. Ohms (Ω)	P <sub>D</sub> Watts	V <sub>GS</sub> Volts	V <sub>GS</sub> (th) Volts	Q <sub>G</sub> typ. nC	パッケージ Package	質量 Net mass Grams
FMP07N60S1	600	6.5	19.5	0.580	60	30	3±0.5	21	TO-220	2.0
FMV07N60S1	600	6.5	19.5	0.580	21	30	3±0.5	21	TO-220F(SLS)	2.0
FMP08N60S1	600	8	24	0.470	70	30	3±0.5	25	TO-220	2.0
FMV08N60S1	600	8	24	0.470	25	30	3±0.5	25	TO-220F(SLS)	2.0
FMP10N60S1	600	10	30	0.380	90	30	3±0.5	28	TO-220	2.0
FMV10N60S1	600	10	30	0.380	32	30	3±0.5	28	TO-220F(SLS)	2.0
FMP13N60S1	600	13	39	0.280	120	30	3±0.5	35	TO-220	2.0
FMV13N60S1	600	13	39	0.280	43	30	3±0.5	35	TO-220F(SLS)	2.0
FMH13N60S1	600	13	39	0.280	105	30	3±0.5	35	TO-3P(Q)	5.0
FMP15N60S1	600	15	45	0.230	135	30	3±0.5	43	TO-220	2.0
FMV15N60S1	600	15	45	0.230	48	30	3±0.5	43	TO-220F(SLS)	2.0
FMH15N60S1	600	15	45	0.230	115	30	3±0.5	43	TO-3P(Q)	5.0
FMW15N60S1	600	15	45	0.230	115	30	3±0.5	43	TO-247-P2	6.0
FMP20N60S1	600	20	60	0.190	150	30	3±0.5	48	TO-220	2.0
FMV20N60S1	600	20	60	0.190	60	30	3±0.5	48	TO-220F(SLS)	2.0
FMH20N60S1	600	20	60	0.190	130	30	3±0.5	48	TO-3P(Q)	5.0
FMW20N60S1	600	20	60	0.190	130	30	3±0.5	48	TO-247-P2	6.0
FMP22N60S1	600	22	66	0.160	195	30	3±0.5	57	TO-220	2.0
FMV22N60S1	600	22	66	0.160	70	30	3±0.5	57	TO-220F(SLS)	2.0
FMH22N60S1	600	22	66	0.160	170	30	3±0.5	57	TO-3P(Q)	5.0
FMW22N60S1	600	22	66	0.160	170	30	3±0.5	57	TO-247-P2	6.0
FMP30N60S1	600	30	90	0.125	250	30	3±0.5	73	TO-220	2.0
FMV30N60S1	600	30	90	0.125	90	30	3±0.5	73	TO-220F(SLS)	2.0
FMH30N60S1	600	30	90	0.125	220	30	3±0.5	73	TO-3P(Q)	5.0
FMW30N60S1	600	30	90	0.125	220	30	3±0.5	73	TO-247-P2	6.0
FMV35N60S1	600	35	105	0.099	110	30	3±0.5	87	TO-220F(SLS)	2.0
FMH35N60S1	600	35	105	0.099	270	30	3±0.5	87	TO-3P(Q)	5.0
FMW35N60S1	600	35	105	0.099	270	30	3±0.5	87	TO-247-P2	6.0
FMV40N60S1	600	40	120	0.088	130	30	3±0.5	100	TO-220F(SLS)	2.0
FMH40N60S1	600	40	120	0.088	315	30	3±0.5	100	TO-3P(Q)	5.0
FMW40N60S1	600	40	120	0.088	315	30	3±0.5	100	TO-247-P2	6.0
FMH47N60S1	600	47	141	0.070	390	30	3±0.5	125	TO-3P(Q)	5.0
FMW47N60S1	600	47	141	0.070	390	30	3±0.5	125	TO-247-P2	6.0
FMW57N60S1	600	57	171	0.055	445	30	3±0.5	153	TO-247-P2	6.0
FMW79N60S1	600	68	204	0.040	545	30	3±0.5	203	TO-247-P2	6.0





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■ Super J MOS<sup>®</sup> S1FDシリーズ 高速ダイオード内蔵シリーズ  
 Super J MOS<sup>®</sup> S1FD Series (Built-in FRED type)

低オン抵抗、低ノイズ、低スイッチング損失 Low-on resistance, low switching noise and low switching loss

Super J MOS <sup>®</sup> S1FD series (Built-in FRED type)			TO-220	TO-220F (SLS)	TO-3P(Q)	TO-247-P2
						
Vds (V)	Ron (Ω)	Id (A)				
600	0.200	20	✓	✓	✓	✓
	0.170	22	✓	✓	✓	✓
	0.132	30	✓	✓	✓	✓
	0.105	35		✓	✓	✓
	0.093	40			✓	✓
	0.074	47			✓	✓
	0.058	57				✓
	0.042	68				✓

■ 600Vクラス 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. Ohms (Ω)	P <sub>D</sub> Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> Volts	Q <sub>G</sub> typ. nC	T <sub>rr</sub> typ. ns	パッケージ Package	質量 Net mass Grams
FMP20N60S1FD	600	20	60	0.200	150	30	4.0±1.0	52	150	TO-220	2.0
FMV20N60S1FD	600	20	60	0.200	60	30	4.0±1.0	52	150	TO-220F(SLS)	2.0
FMH20N60S1FD	600	20	60	0.200	130	30	4.0±1.0	52	150	TO-3P(Q)	5.0
FMW20N60S1FD	600	20	60	0.200	130	30	4.0±1.0	52	150	TO-247-P2	6.0
FMP22N60S1FD	600	22	66	0.170	195	30	4.0±1.0	58	165	TO-220	2.0
FMV22N60S1FD	600	22	66	0.170	70	30	4.0±1.0	58	165	TO-220F(SLS)	2.0
FMH22N60S1FD	600	22	66	0.170	170	30	4.0±1.0	58	165	TO-3P(Q)	5.0
FMW22N60S1FD	600	22	66	0.170	170	30	4.0±1.0	58	165	TO-247-P2	6.0
FMP30N60S1FD	600	30	90	0.132	250	30	4.0±1.0	73	180	TO-220	2.0
FMV30N60S1FD	600	30	90	0.132	90	30	4.0±1.0	73	180	TO-220F(SLS)	2.0
FMH30N60S1FD	600	30	90	0.132	220	30	4.0±1.0	73	180	TO-3P(Q)	5.0
FMW30N60S1FD	600	30	90	0.132	220	30	4.0±1.0	73	180	TO-247-P2	6.0
FMV35N60S1FD	600	35	105	0.105	110	30	4.0±1.0	92	185	TO-220F(SLS)	2.0
FMH35N60S1FD	600	35	105	0.105	270	30	4.0±1.0	92	185	TO-3P(Q)	5.0
FMW35N60S1FD	600	35	105	0.105	270	30	4.0±1.0	92	185	TO-247-P2	6.0
FMH40N60S1FD	600	40	120	0.093	315	30	4.0±1.0	104	200	TO-3P(Q)	5.0
FMW40N60S1FD	600	40	120	0.093	315	30	4.0±1.0	104	200	TO-247-P2	6.0
FMH47N60S1FD	600	47	141	0.074	390	30	4.0±1.0	127	210	TO-3P(Q)	5.0
FMW47N60S1FD	600	47	141	0.074	390	30	4.0±1.0	127	210	TO-247-P2	6.0
FMW57N60S1FD	600	68	171	0.058	445	30	4.0±1.0	158	220	TO-247-P2	6.0
FMW79N60S1FD	600	68	204	0.042	545	30	4.0±1.0	209	230	TO-247-P2	6.0

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## SuperFAP-E<sup>3</sup>シリーズ SuperFAP-E<sup>3</sup> series

低オン抵抗、低ノイズ Low-on resistance and low switching noise

SuperFAP-E <sup>3</sup> series			TO-220	TO-220 (SLS)	TO-3P (Q)	TO-3PF	T-Pack(L)	T-Pack(S)
								
Vds (V)	Ron (Ω)	Id (A)						
500	1.5	5	✓	✓			✓	✓
	0.85	6.5	✓	✓			✓	✓
	0.79	7.5	✓	✓				
	0.52	12	✓	✓			✓	✓
	0.38	16	✓	✓	✓		✓	✓
	0.31	20	✓	✓	✓		✓	✓
	0.245	23		✓	✓	✓		
	0.19	28			✓	✓		
600	2.3	3	✓	✓			✓	✓
	1.3	6	✓	✓			✓	✓
	1.2	6	✓	✓				
	0.79	10	✓	✓			✓	✓
	0.75	11	✓	✓			✓	✓
	0.58	13	✓	✓			✓	✓
	0.47	16	✓	✓			✓	✓
	0.365	19		✓	✓	✓		
	0.28	23			✓	✓		
	0.19	28						
650	1.47	7		✓				
	0.97	9		✓				
700	1.5	7		✓	✓			
	1.2	9		✓	✓			
	0.85	11		✓	✓			
	0.59	15		✓				
800	2	6		✓	✓		✓	✓
	1.6	8		✓	✓		✓	✓
	1.1	10		✓	✓			
	0.78	13		✓	✓			
900	2.5	6		✓	✓		✓	✓
	2	7		✓	✓		✓	✓
	1.4	9		✓	✓	✓		
	1	11		✓	✓	✓		

MOSFET

SuperFAP-E<sup>3</sup>シリーズ SuperFAP-E<sup>3</sup> series

500V クラス 500V class

型式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS(on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS(th)</sub> Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質量 Net mass Grams
FMP05N50E	500	5	20	1.5	60	30	3±0.5	21	TO-220	2.0
FMV05N50E	500	5	20	1.5	21	30	3±0.5	21	TO-220F(SLS)	1.7
FMI05N50E	500	5	20	1.5	60	30	3±0.5	21	T-Pack(L)	1.6
FMC05N50E	500	5	20	1.5	60	30	3±0.5	21	T-Pack(S)	1.6
FMP07N50E	500	6.5	26	0.85	90	30	3±0.5	32	TO-220	2.0
FMV07N50E	500	6.5	26	0.85	32	30	3±0.5	32	TO-220F(SLS)	1.7
FMI07N50E	500	6.5	26	0.85	90	30	3±0.5	32	T-Pack(L)	1.6
FMC07N50E	500	6.5	26	0.85	90	30	3±0.5	32	T-Pack(S)	1.6
FMP08N50E	500	7.5	30	0.79	105	30	3±0.5	35	TO-220	2.0
FMV08N50E	500	7.5	30	0.79	37	30	3±0.5	35	TO-220F(SLS)	1.7
FMP12N50E	500	12	48	0.52	165	30	3±0.5	60	TO-220	2.0
FMV12N50E	500	12	48	0.52	60	30	3±0.5	60	TO-220F(SLS)	1.7
FMI12N50E	500	12	48	0.52	165	30	3±0.5	60	T-Pack(L)	1.6
FMC12N50E	500	12	48	0.52	165	30	3±0.5	60	T-Pack(S)	1.6
FMP16N50E	500	16	64	0.38	225	30	3±0.5	60	TO-220	2.0
FMV16N50E	500	16	64	0.38	80	30	3±0.5	60	TO-220F(SLS)	1.7
FMI16N50E	500	16	64	0.38	225	30	3±0.5	60	T-Pack(L)	1.6
FMC16N50E	500	16	64	0.38	225	30	3±0.5	60	T-Pack(S)	1.6
FMH16N50E	500	16	64	0.38	195	30	3±0.5	60	TO-3P(Q)	5.1
FMP20N50E	500	20	80	0.31	270	30	3±0.5	77	TO-220	2.0
FMV20N50E	500	20	80	0.31	95	30	3±0.5	77	TO-220F(SLS)	1.7
FMI20N50E	500	20	80	0.31	270	30	3±0.5	77	T-Pack(L)	1.6
FMC20N50E	500	20	80	0.31	270	30	3±0.5	77	T-Pack(S)	1.6
FMH20N50E	500	20	80	0.31	235	30	3±0.5	77	TO-3P(Q)	5.1
FMV23N50E	500	23	92	0.245	130	30	3±0.5	93	TO-220F(SLS)	1.7
FMH23N50E	500	23	92	0.245	315	30	3±0.5	93	TO-3P(Q)	5.1
FMR23N50E	500	23	92	0.245	150	30	3±0.5	93	TO-3PF	6.0
FMH28N50E	500	28	112	0.19	400	30	3±0.5	130	TO-3P(Q)	5.1
FMR28N50E	500	28	112	0.19	200	30	3±0.5	130	TO-3PF	6.0

\*1 R<sub>DS(on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

記号 Letter symbols

V <sub>DSS</sub> : ドレイン・ソース電圧	Drain-source voltage	P <sub>D</sub> : 許容損失電力	Maximum power dissipation
I <sub>D</sub> : ドレイン電流	Continuous drain current	V <sub>GS</sub> : ゲート・ソース電圧	Gate-source voltage
I <sub>D</sub> (pulse): パルスドレイン電流	Pulsed drain current	V <sub>GS(th)</sub> : ゲートしきい値電圧	Gate threshold voltage
R <sub>DS(on)</sub> : ドレイン・ソース オン抵抗	Drain-source on-state resistance	Q <sub>G</sub> : トータルゲートチャージ量	Total gate charge

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SuperFAP-E<sup>3</sup>シリーズ SuperFAP-E<sup>3</sup> series

■ 600 - 800V クラス 600 - 800V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D (pulse)</sub> Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質量 Net mass Grams
FMP03N60E	600	3	12	2.3	60	30	3±0.5	21.5	TO-220	2.0
FMV03N60E	600	3	12	2.3	21	30	3±0.5	21.5	TO-220F(SLS)	1.7
FMI03N60E	600	3	12	2.3	60	30	3±0.5	21.5	T-Pack(L)	1.6
FMC03N60E	600	3	12	2.3	60	30	3±0.5	21.5	T-Pack(S)	1.6
FMP05N60E	600	5.5	22	1.3	90	30	3±0.5	33	TO-220	2.0
FMV05N60E	600	5.5	22	1.3	32	30	3±0.5	33	TO-220F(SLS)	1.7
FMI05N60E	600	5.5	22	1.3	90	30	3±0.5	33	T-Pack(L)	1.6
FMC05N60E	600	5.5	22	1.3	90	30	3±0.5	33	T-Pack(S)	1.6
FMP06N60E	600	6	24	1.2	105	30	3±0.5	35	TO-220	2.0
FMV06N60E	600	6	24	1.2	37	30	3±0.5	35	TO-220F(SLS)	1.7
FMP10N60E	600	10	40	0.79	165	30	3±0.5	47	TO-220	2.0
FMV10N60E	600	10	40	0.79	60	30	3±0.5	47	TO-220F(SLS)	1.7
FMI10N60E	600	10	40	0.79	165	30	3±0.5	47	T-Pack(L)	1.6
FMC10N60E	600	10	40	0.79	165	30	3±0.5	47	T-Pack(S)	1.6
FMP11N60E	600	11	44	0.75	180	30	3±0.5	48.5	TO-220	2.0
FMV11N60E	600	11	44	0.75	65	30	3±0.5	48.5	TO-220F(SLS)	1.7
FMI11N60E	600	11	44	0.75	180	30	3±0.5	48.5	T-Pack(L)	1.6
FMC11N60E	600	11	44	0.75	180	30	3±0.5	48.5	T-Pack(S)	1.6
FMP13N60E	600	13	52	0.58	225	30	3±0.5	60	TO-220	2.0
FMV13N60E	600	13	52	0.58	80	30	3±0.5	60	TO-220F(SLS)	1.7
FMI13N60E	600	13	52	0.58	225	30	3±0.5	60	T-Pack(L)	1.6
FMC13N60E	600	13	52	0.58	225	30	3±0.5	60	T-Pack(S)	1.6
FMP16N60E	600	16	64	0.47	270	30	3±0.5	76	TO-220	2.0
FMV16N60E	600	16	64	0.47	95	30	3±0.5	76	TO-220F(SLS)	1.7
FMI16N60E	600	16	64	0.47	270	30	3±0.5	76	T-Pack(L)	1.6
FMC16N60E	600	16	64	0.47	270	30	3±0.5	76	T-Pack(S)	1.6
FMV19N60E	600	19	76	0.365	130	30	3±0.5	105	TO-220F(SLS)	1.7
FMH19N60E	600	19	76	0.365	315	30	3±0.5	105	TO-3P(Q)	5.1
FMR19N60E	600	19	76	0.365	150	30	3±0.5	105	TO-3PF	6.0
FMH23N60E	600	23	92	0.28	400	30	3±0.5	130	TO-3P(Q)	5.1
FMR23N60E	600	23	92	0.28	200	30	3±0.5	130	TO-3PF	6.0
FMV07N65E	650	7	28	1.47	37	30	3±0.5	35	TO-220F(SLS)	1.7
FMV09N65E	650	9	36	0.97	60	30	3±0.5	47	TO-220F(SLS)	1.7
FMV07N70E	700	7	28	1.5	48	30	4±0.5	32	TO-220F(SLS)	1.7
FMH07N70E	700	7	28	1.5	115	30	4±0.5	32	TO-3P(Q)	5.1
FMV09N70E	700	9	36	1.2	60	30	4±0.5	38	TO-220F(SLS)	1.7
FMH09N70E	700	9	36	1.2	145	30	4±0.5	38	TO-3P(Q)	5.1
FMV11N70E	700	11	44	0.85	85	30	4±0.5	50	TO-220F(SLS)	1.7
FMH11N70E	700	11	44	0.85	205	30	4±0.5	50	TO-3P(Q)	5.1
FMV15N70E	700	15	60	0.59	120	30	4±0.5	66	TO-220F(SLS)	1.7
FMV06N80E	800	6	24	2.0	48	30	4±0.5	32	TO-220F(SLS)	1.7
FMH06N80E	800	6	24	2.0	115	30	4±0.5	32	TO-3P(Q)	5.1
FMI06N80E	800	6	24	2.0	135	30	4±0.5	32	T-Pack(L)	1.6
FMC06N80E	800	6	24	2.0	135	30	4±0.5	32	T-Pack(S)	1.6
FMV08N80E	800	8	32	1.6	60	30	4±0.5	38	TO-220F(SLS)	1.7
FMH08N80E	800	8	32	1.6	145	30	4±0.5	38	TO-3P(Q)	5.1
FMI08N80E	800	8	32	1.6	165	30	4±0.5	38	T-Pack(L)	1.6
FMC08N80E	800	8	32	1.6	165	30	4±0.5	38	T-Pack(S)	1.6
FMV10N80E	800	10	40	1.1	85	30	4±0.5	50	TO-220F(SLS)	1.7
FMH10N80E	800	10	40	1.1	205	30	4±0.5	50	TO-3P(Q)	5.1
FMV13N80E	800	13	52	0.78	120	30	4±0.5	66	TO-220F(SLS)	1.7
FMH13N80E	800	13	52	0.78	285	30	4±0.5	66	TO-3P(Q)	5.1

\*1 R<sub>DS (on)</sub> : V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

■ SuperFAP-E<sup>3</sup> シリーズ SuperFAP-E<sup>3</sup> series

■ 900V クラス 900V class

型 式 Device type	V <sub>DS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS</sub> (th) Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質 量 Net mass Grams
FMH06N90E	900	6	24	2.5	115	30	4±0.5	33	TO-3P(Q)	5.1
FMV06N90E	900	6	24	2.5	48	30	4±0.5	33	TO-220F(SLS)	1.7
FMI06N90E	900	6	24	2.5	135	30	4±0.5	33	T-Pack(L)	1.6
FMC06N90E	900	6	24	2.5	135	30	4±0.5	33	T-Pack(S)	1.6
FMH07N90E	900	7	28	2.0	145	30	4±0.5	39	TO-3P(Q)	5.1
FMV07N90E	900	7	28	2.0	60	30	4±0.5	39	TO-220F(SLS)	1.7
FMI07N90E	900	7	28	2.0	165	30	4±0.5	39	T-Pack(L)	1.6
FMC07N90E	900	7	28	2.0	165	30	4±0.5	39	T-Pack(S)	1.6
FMH09N90E	900	9	36	1.4	205	30	4±0.5	50	TO-3P(Q)	5.1
FMV09N90E	900	9	36	1.4	85	30	4±0.5	50	TO-220F(SLS)	1.7
FMR09N90E	900	9	36	1.4	100	30	4±0.5	50	TO-3PF	6.0
FMH11N90E	900	11	44	1.0	285	30	4±0.5	60	TO-3P(Q)	5.1
FMV11N90E	900	11	44	1.0	120	30	4±0.5	60	TO-220F(SLS)	1.7
FMR11N90E	900	11	44	1.0	135	30	4±0.5	60	TO-3PF	6.0

\*1 R<sub>DS (on)</sub> : V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

## SuperFAP-E<sup>3S</sup> 低Qgシリーズ SuperFAP-E<sup>3S</sup> Low Qg series

低オン抵抗、低ノイズ、低スイッチング損失 Low-on resistance, low switching noise and low switching loss

SuperFAP-E <sup>3S</sup> Low Qg series			TO-220	TO-220 (SLS)	TO-3P (Q)	TO-3PF	T-Pack(L)	T-Pack(S)	TFP
V <sub>ds</sub> (V)	R <sub>on</sub> (Ω)	I <sub>d</sub> (A)							
500	0.5	12	✓	✓			✓	✓	✓
	0.38	16	✓	✓	✓		✓	✓	✓
	0.31	20	✓	✓	✓		✓	✓	✓
	0.27	21		✓	✓	✓			
	0.245	23		✓	✓	✓			
	0.19	28			✓	✓			
600	1.2	6	✓	✓			✓	✓	
	0.75	12	✓	✓			✓	✓	✓
	0.58	13	✓		✓		✓	✓	✓
	0.47	16	✓	✓	✓		✓	✓	✓
	0.4	17		✓	✓	✓			
	0.365	19		✓	✓	✓			
	0.28	23			✓	✓			

### 500V クラス 500V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS(on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS(th)</sub> Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質 量 Net mass Grams
FMP12N50ES	500	12	48	0.5	180	30	3.7±0.5	41	TO-220	2.0
FMV12N50ES	500	12	48	0.5	65	30	3.7±0.5	41	TO-220F(SLS)	1.7
FMI12N50ES	500	12	48	0.5	180	30	3.7±0.5	41	T-Pack(L)	1.6
FMC12N50ES	500	12	48	0.5	180	30	3.7±0.5	41	T-Pack(S)	1.6
FML12N50ES	500	12	48	0.5	180	30	3.7±0.5	41	TFP	1.6
FMP16N50ES	500	16	64	0.38	225	30	3.7±0.5	52	TO-220	2.0
FMV16N50ES	500	16	64	0.38	80	30	3.7±0.5	52	TO-220F(SLS)	1.7
FMI16N50ES	500	16	64	0.38	225	30	3.7±0.5	52	T-Pack(L)	1.6
FMC16N50ES	500	16	64	0.38	225	30	3.7±0.5	52	T-Pack(S)	1.6
FMH16N50ES	500	16	64	0.38	195	30	3.7±0.5	52	TO-3P(Q)	5.1
FML16N50ES	500	16	64	0.38	225	30	3.7±0.5	52	TFP	1.6
FMP20N50ES	500	20	80	0.31	270	30	4.2±0.5	57	TO-220	2.0
FMV20N50ES	500	20	80	0.31	95	30	4.2±0.5	57	TO-220F(SLS)	1.7
FMI20N50ES	500	20	80	0.31	270	30	4.2±0.5	57	T-Pack(L)	1.6
FMC20N50ES	500	20	80	0.31	270	30	4.2±0.5	57	T-Pack(S)	1.6
FMH20N50ES	500	20	80	0.31	235	30	4.2±0.5	57	TO-3P(Q)	5.1
FML20N50ES	500	20	80	0.31	270	30	4.2±0.5	57	TFP	1.6
FMV21N50ES	500	21	84	0.27	120	30	4.2±0.5	67	TO-220F(SLS)	1.7
FMR21N50ES	500	21	84	0.27	135	30	4.2±0.5	67	TO-3PF	6.0
FMH21N50ES	500	21	84	0.27	285	30	4.2±0.5	67	TO-3P(Q)	5.1
FMV23N50ES	500	23	92	0.245	130	30	4.2±0.5	74	TO-220F(SLS)	1.7
FMR23N50ES	500	23	92	0.245	150	30	4.2±0.5	74	TO-3PF	6.0
FMH23N50ES	500	23	92	0.245	315	30	4.2±0.5	74	TO-3P(Q)	5.1
FMR28N50ES	500	28	112	0.19	200	30	4.2±0.5	92	TO-3PF	6.0
FMH28N50ES	500	28	112	0.19	400	30	4.2±0.5	92	TO-3P(Q)	5.1

\*1 R<sub>DS(on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

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The SuperFAP-E<sup>3S</sup> series products satisfies the quality assurance level of general consumer use.

If you intend to use the products for equipment requiring higher reliability, such as equipment for automobiles and medical equipment, please contact Fuji Electric. Do not use the products for equipment requiring strict reliability such as aerospace equipment.

SuperFAP-E<sup>3S</sup> 低Qgシリーズ SuperFAP-E<sup>3S</sup> Low Qg series

600V クラス 600V class

型 式 Device type	V <sub>DS</sub>	I <sub>D</sub>	I <sub>D</sub> (pulse)	R <sub>DS (on)</sub> Max. *1	P <sub>D</sub> *2	V <sub>GS</sub>	V <sub>GS (th)</sub>	Q <sub>G</sub> Typ. nC	パッケージ Package	質 量 Net mass Grams
	Volts	Amps.	Amps.	Ohms (Ω)	Watts	Volts	Volts			
FMP06N60ES	600	6	24	1.2	105	30	3.7±0.5	31	TO-220	2.0
FMV06N60ES	600	6	24	1.2	37	30	3.7±0.5	31	TO-220F(SLS)	1.7
FMI06N60ES	600	6	24	1.2	105	30	3.7±0.5	31	T-Pack(L)	1.6
FMC06N60ES	600	6	24	1.2	105	30	3.7±0.5	31	T-Pack(S)	1.6
FMP12N60ES	600	12	48	0.75	180	30	4.2±0.5	37	TO-220	2.0
FMV12N60ES	600	12	48	0.75	65	30	4.2±0.5	37	TO-220F(SLS)	1.7
FMI12N60ES	600	12	48	0.75	180	30	4.2±0.5	37	T-Pack(L)	1.6
FMC12N60ES	600	12	48	0.75	180	30	4.2±0.5	37	T-Pack(S)	1.6
FML12N60ES	600	12	48	0.75	180	30	4.2±0.5	37	TFP	1.6
FMP13N60ES	600	13	48	0.58	225	30	4.2±0.5	48	TO-220	2.0
FMV13N60ES	600	13	48	0.58	225	30	4.2±0.5	48	TO-220F(SLS)	1.7
FMI13N60ES	600	13	48	0.58	225	30	4.2±0.5	48	T-Pack(L)	1.6
FMC13N60ES	600	13	48	0.58	225	30	4.2±0.5	48	T-Pack(S)	1.6
FMH13N60ES	600	13	48	0.58	195	30	4.2±0.5	48	TO-3P(Q)	5.1
FML13N60ES	600	13	48	1.58	225	30	4.2±0.5	48	TFP	1.6
FMP16N60ES	600	16	64	0.47	270	30	4.2±0.5	56	TO-220	2.0
FMV16N60ES	600	16	64	0.47	95	30	4.2±0.5	56	TO-220F(SLS)	1.7
FMI16N60ES	600	16	64	0.47	270	30	4.2±0.5	56	T-Pack(L)	1.6
FMC16N60ES	600	16	64	0.47	270	30	4.2±0.5	56	T-Pack(S)	1.6
FMH16N60ES	600	16	64	0.47	235	30	4.2±0.5	56	TO-3P(Q)	5.1
FML16N60ES	600	16	64	0.47	270	30	4.2±0.5	56	TFP	1.6
FMV17N60ES	600	17	68	0.4	120	30	4.2±0.5	68	TO-220F(SLS)	1.7
FMR17N60ES	600	17	68	0.4	135	30	4.2±0.5	68	TO-3PF	6.0
FMH17N60ES	600	17	68	0.4	285	30	4.2±0.5	68	TO-3P(Q)	5.1
FMV19N60ES	600	19	76	0.365	130	30	4.2±0.5	74	TO-220F(SLS)	1.7
FMR19N60ES	600	19	76	0.365	150	30	4.2±0.5	74	TO-3PF	6.0
FMH19N60ES	600	19	76	0.365	315	30	4.2±0.5	74	TO-3P(Q)	5.1
FMR23N60ES	600	23	92	0.28	200	30	4.2±0.5	92	TO-3PF	6.0
FMH23N60ES	600	23	92	0.28	400	30	4.2±0.5	92	TO-3P(Q)	5.1

\*1 R<sub>DS (on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

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## SuperFAP-Gシリーズ SuperFAP-G series

低オン抵抗、低ゲート容量 Low-on resistance and low gate charge

SuperFAP-G series			TO-220	TO-220F	TO-220 (SLS)	TO-3PF	TO-247	T-Pack(L)	T-Pack(S)	TFP
Vds (V)	Ron (Ω)	Id (A)								
100	0.062	29	✓	✓				✓	✓	
120	0.03	67	✓	✓				✓	✓	✓
150	0.105	23	✓	✓				✓	✓	
	0.1	23								
	0.07	33	✓	✓				✓	✓	✓
	0.041	57	✓	✓				✓	✓	✓
200	0.016	100					✓			
	0.17	18	✓	✓				✓	✓	✓
	0.066	45	✓	✓				✓	✓	✓
	0.26	14	✓	✓				✓	✓	
250	0.13	24			✓					
	0.1	37	✓	✓		✓		✓	✓	✓
	0.053	59				✓				
280	0.061	56				✓				
300	0.28	15		✓						
	0.13	32	✓	✓				✓	✓	✓
450	2.5	3	✓	✓						
	1.6	4	✓	✓						
	0.65	10	✓	✓				✓	✓	
	0.38	17	✓	✓				✓	✓	✓
500	2.3	4	✓	✓				✓	✓	
	0.85	9	✓	✓				✓	✓	
	0.7	11	✓	✓				✓	✓	
	0.52	14	✓	✓				✓	✓	
	0.46	16	✓	✓				✓	✓	
	0.38	19	✓	✓				✓	✓	
	0.26	25				✓		✓	✓	✓
	0.11	51					✓			
600	3.3	3	✓	✓				✓	✓	
	1.2	8	✓	✓				✓	✓	
	1	9	✓	✓				✓	✓	
	0.75	12	✓	✓				✓	✓	
	0.65	13	✓	✓		✓				
	0.57	16	✓	✓				✓	✓	
	0.37	21				✓	✓			
700	0.6	17				✓				
900	8	2.2	✓	✓						
	6.4	2.6	✓	✓				✓	✓	
	4.3	3.7	✓	✓						
	2.5	6.0						✓	✓	

MOSFET

SuperFAP-Gシリーズ SuperFAP-G series

100 – 250V クラス 100 – 250V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質 量 Net mass Grams
2SK3598-01	100	29	116	0.062	105	±30	3 to 5	22	TO-220	2.0
2SK3599-01MR	100	29	116	0.062	37	±30	3 to 5	22	TO-220F	1.7
2SK3600-01L, S	100	29	116	0.062	105	±30	3 to 5	22	T-pack	1.6
2SK3920-01	120	67	268	0.03	270	±30	3 to 5	52	TO-220	2.0
2SK3886-01MR	120	67	268	0.03	95	±30	3 to 5	52	TO-220F	1.7
2SK3921-01L, S	120	67	268	0.03	270	±30	3 to 5	52	T-pack	1.6
2SK3922-01	120	67	268	0.03	270	±30	3 to 5	52	TFP	0.8
2SK3602-01	150	23	92	0.105	105	±30	3 to 5	21	TO-220	2.0
2SK3603-01MR	150	23	92	0.105	37	±30	3 to 5	21	TO-220F	1.7
2SK3604-01L, S	150	23	92	0.105	105	±30	3 to 5	21	T-pack	1.6
2SK3648-01	150	33	132	0.07	150	±30	3 to 5	34	TO-220	2.0
2SK3649-01MR	150	33	132	0.07	53	±30	3 to 5	34	TO-220F	1.7
2SK3650-01L, S	150	33	132	0.07	150	±30	3 to 5	34	T-pack	1.6
2SK3474-01	150	33	132	0.07	150	±30	3 to 5	34	TFP	0.8
2SK3537-01MR	150	33	132	0.07	53	±20	1 to 2.5	46	TO-220F	1.7
2SK3590-01	150	57	228	0.041	270	±30	3 to 5	52	TO-220	2.0
2SK3591-01MR	150	57	228	0.041	95	±30	3 to 5	52	TO-220F	1.7
2SK3592-01L, S	150	57	228	0.041	270	±30	3 to 5	52	T-pack	1.6
2SK3593-01	150	57	228	0.041	270	±30	3 to 5	52	TFP	0.8
2SK3882-01	150	100	400	0.016	600	±30	3 to 5	140	TO-247	4.9
2SK3606-01	200	18	72	0.17	105	±30	3 to 5	21	TO-220	2.0
2SK3607-01MR	200	18	72	0.17	37	±30	3 to 5	21	TO-220F	1.7
2SK3608-01L, S	200	18	72	0.17	105	±30	3 to 5	21	T-pack	1.6
2SK3609-01	200	18	72	0.17	105	±30	3 to 5	21	TFP	0.8
2SK3594-01	200	45	180	0.066	270	±30	3 to 5	51	TO-220	2.0
2SK3595-01MR	200	45	180	0.066	95	±30	3 to 5	51	TO-220F	1.7
2SK3596-01L, S	200	45	180	0.066	270	±30	3 to 5	51	T-pack	1.6
2SK3597-01	200	45	180	0.066	270	±30	3 to 5	51	TFP	0.8
2SK3610-01	250	14	56	0.26	105	±30	3 to 5	21	TO-220	2.0
2SK3611-01MR	250	14	56	0.26	37	±30	3 to 5	21	TO-220F	1.7
2SK3612-01L, S	250	14	56	0.26	105	±30	3 to 5	21	T-pack	1.6
FMV24N25G	250	24	96	0.13	65	±30	3 to 5	36	TO-220F(SLS)	1.7
2SK3554-01	250	37	148	0.1	270	±30	3 to 5	44	TO-220	2.0
2SK3555-01MR	250	37	148	0.1	95	±30	3 to 5	44	TO-220F	1.7
2SK3556-01L, S	250	37	148	0.1	270	±30	3 to 5	44	T-pack	1.6
2SK3535-01	250	37	148	0.1	270	±30	3 to 5	44	TFP	0.8
2SK3651-01R	250	37	148	0.1	115	±30	3 to 5	44	TO-3PF	6.0
2SK3778-01	250	59	236	0.053	410	±30	3 to 5	80	TO-247	4.9
2SK3779-01R	250	59	236	0.053	210	±30	3 to 5	80	TO-3PF	6.0

\*1 R<sub>DS (on)</sub> : V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

SuperFAP-G シリーズは、一般民生用向けの品質保証製品であります。車載用、医療機器など高度な信頼性を要求される機器へ適用される場合には、弊社にお問い合わせください。また、航空宇宙用など高度な信頼性を要求される機器への適用は行わないでください。

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If you intend to use the products for equipment requiring higher reliability, such as equipment for automobiles and medical equipment, please contact Fuji Electric.

Do not use the products for equipment requiring strict reliability such as aerospace equipment.



## SuperFAP-Gシリーズ SuperFAP-G series

## 300 - 500V クラス 300 - 500V class

型式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS(on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS</sub> (th) Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質量 Net mass Grams
2SK3580-01MR	300	15	60	0.28	48	±30	3.5 to 4.5	23	TO-220F	1.7
2SK3772-01	300	32	128	0.13	270	±30	3 to 5	44.5	TO-220	2.0
2SK3773-01MR	300	32	128	0.13	95	±30	3 to 5	44.5	TO-220F	1.7
2SK3774-01L, S	300	32	128	0.13	270	±30	3 to 5	44.5	T-pack	1.6
2SK3775-01	300	32	128	0.13	270	±30	3 to 5	44.5	TFP	0.8
2SK3725-01	450	3	12	2.5	50	±30	3 to 5	10.5	TO-220	2.0
2SK3726-01MR	450	3	12	2.5	17	±30	3 to 5	10.5	TO-220F	1.7
2SK3916-01	450	4.3	17.2	1.6	21	±30	3 to 5	13	TO-220	2.0
2SK3917-01MR	450	4.3	17.2	1.6	21	±30	3 to 5	13	TO-220F	1.7
2SK3514-01	450	10	40	0.65	135	±30	3 to 5	22	TO-220	2.0
2SK3515-01MR	450	10	40	0.65	48	±30	3 to 5	22	TO-220F	1.7
2SK3516-01L, S	450	10	40	0.65	135	±30	3 to 5	22	T-pack	1.6
2SK3692-01	450	17	68	0.38	225	±30	3 to 5	33	TO-220	2.0
2SK3693-01MR	450	17	68	0.38	80	±30	3 to 5	33	TO-220F	1.7
2SK3694-01L, S	450	17	68	0.38	225	±30	3 to 5	33	T-pack	1.6
2SK4040-01	450	17	68	0.38	225	±30	3 to 5	33	TFP	0.8
2SK3985-01	500	3.6	14.4	2.3	60	±30	3 to 5	13	TO-220	2.0
2SK3986-01MR	500	3.6	14.4	2.3	21	±30	3 to 5	13	TO-220F	1.7
2SK3987-01L, S	500	3.6	14.4	2.3	60	±30	3 to 5	13	T-pack	1.6
2SK3519-01	500	9	36	0.85	135	±30	3 to 5	20	TO-220	2.0
2SK3520-01MR	500	9	36	0.85	48	±30	3 to 5	20	TO-220F	1.7
2SK4004-01MR	500	9	36	0.85	48	±30	2.5 to 3.5	24	TO-220F	1.7
2SK3521-01L, S	500	9	36	0.85	135	±30	3 to 5	20	T-pack	1.6
2SK3931-01	500	11	44	0.70	165	±30	3 to 5	25	TO-220	2.0
2SK3932-01MR	500	11	44	0.70	60	±30	3 to 5	25	TO-220F	1.7
2SK3933-01L, S	500	11	44	0.70	165	±30	3 to 5	25	T-pack	1.6
2SK3468-01	500	14	56	0.52	195	±30	3 to 5	30	TO-220	2.0
2SK3469-01MR	500	14	56	0.52	70	±30	3 to 5	30	TO-220F	1.7
2SK3512-01L, S	500	14	56	0.52	195	±30	3 to 5	30	T-pack	1.6
2SK3504-01	500	16	64	0.46	225	±30	3 to 5	33	TO-220	2.0
2SK3505-01MR	500	16	64	0.46	80	±30	3 to 5	33	TO-220F	1.7
2SK3581-01L, S	500	16	64	0.46	225	±30	3 to 5	33	T-pack	1.6
2SK3682-01	500	19	76	0.38	270	±30	3 to 5	32	TO-220	2.0
2SK3683-01MR	500	19	76	0.38	95	±30	3 to 5	32	TO-220F	1.7
2SK3684-01L, S	500	19	76	0.38	270	±30	3 to 5	32	T-pack	1.6
2SK3685-01	500	19	76	0.38	235	±30	3 to 5	32	TO-247	4.9
FML19N50G	500	19	76	0.38	270	±30	3 to 5	32	TFP	0.8
2SK3522-01	500	25	100	0.26	335	±30	3 to 5	54	TO-247	4.9
2SK3523-01R	500	25	100	0.26	160	±30	3 to 5	54	TO-3PF	6.0
2SK3680-01	500	51	208	0.11	600	±30	3 to 5	118	TO-247	4.9

\*1 R<sub>DS(on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C






■ SuperFAP-Gシリーズ SuperFAP-G series

■ 600 – 900V クラス 600 – 900V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS(on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS(th)</sub> Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質 量 Net mass Grams
2SK3988-01	600	3	12	3.3	60	±30	3 to 5	13	TO-220	2.0
2SK3989-01MR	600	3	12	3.3	21	±30	3 to 5	13	TO-220F	1.7
2SK3990-01L, S	600	3	12	3.3	60	±30	3 to 5	13	T-pack	1.6
2SK3524-01	600	8	32	1.2	135	±30	3 to 5	20	TO-220	2.0
2SK3525-01MR	600	8	32	1.2	48	±30	3 to 5	20	TO-220F	1.7
2SK3526-01L, S	600	8	32	1.2	135	±30	3 to 5	20	T-pack	1.6
2SK3887-01	600	9	36	1.0	165	±30	3 to 5	25	TO-220	2.0
2SK3888-01MR	600	9	36	1.0	60	±30	3 to 5	25	TO-220F	1.7
2SK3889-01L, S	600	9	36	1.0	165	±30	3 to 5	25	T-pack	1.6
2SK3501-01	600	12	48	0.75	195	±30	3 to 5	30	TO-220	2.0
2SK3502-01MR	600	12	48	0.75	70	±30	3 to 5	30	TO-220F	1.7
2SK3513-01L, S	600	12	48	0.75	195	±30	3 to 5	30	T-pack	1.6
2SK3450-01	600	13	52	0.65	225	±30	3 to 5	34	TO-220	2.0
2SK3451-01MR	600	13	52	0.65	80	±30	3 to 5	34	TO-220F	1.7
2SK3753-01R	600	13	52	0.65	95	±30	3 to 5	34	TO-3PF	6.0
2SK3686-01	600	16	64	0.57	270	±30	3 to 5	33	TO-220	2.0
2SK3687-01MR	600	16	64	0.57	97	±30	3 to 5	33	TO-220F	1.7
2SK3688-01L, S	600	16	64	0.57	270	±30	3 to 5	33	T-pack	1.6
2SK3689-01	600	16	64	0.57	235	±30	3 to 5	33	TO-247	4.9
2SK3527-01	600	21	84	0.37	335	±30	3 to 5	54	TO-247	4.9
2SK3528-01R	600	21	84	0.37	160	±30	3 to 5	54	TO-3PF	6.0
2SK3681-01	600	43	172	0.16	600	±30	3 to 5	118	TO-247	4.9
2SK3891-01R	700	17	68	0.6	170	±30	3 to 5	46	TO-3PF	6.0
2SK3727-01	900	2.2	8.8	8.0	75	±30	3.5 to 4.5	8.3	TO-220	2.0
2SK3728-01MR	900	2.2	8.8	8.0	26	±30	3.5 to 4.5	8	TO-220F	1.7
2SK3981-01	900	2.6	10.4	6.4	90	±30	3 to 5	13	TO-220	2.0
2SK3982-01MR	900	2.6	10.4	6.4	32	±30	3 to 5	13	TO-220F	1.7
2SK3983-01L, S	900	2.6	10.4	6.4	90	±30	3 to 5	13	T-pack	1.6
2SK3698-01	900	3.7	14.8	4.3	120	±30	3.5 to 4.5	13	TO-220	2.0
2SK3699-01MR	900	3.7	14.8	4.3	43	±30	3.5 to 4.5	13	TO-220F	1.7
2SK3676-01L, S	900	6	24	2.5	195	±30	3 to 5	21.5	T-pack	1.6

\*1 R<sub>DS(on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

## SuperFAP-Gシリーズ 高速ダイオード内蔵シリーズ SuperFAP-G Built-in FRED series

SuperFAP-G Built-in FRED series			TO-220	TO-220F	TO-247	T-Pack (L)	T-Pack (S)
							
V <sub>ds</sub> (V)	R <sub>on</sub> (Ω)	I <sub>d</sub> (A)					
500	0.55	13	✓	✓			
600	0.8	11	✓	✓		✓	✓
	0.17	42			✓		








### 500 – 600V クラス 500 – 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質 量 Net mass Grams
<b>2SK3695-01</b>	500	13	52	0.55	195	±30	3 to 5	28	TO-220	2.0
<b>2SK3696-01MR</b>	500	13	52	0.55	70	±30	3 to 5	28	TO-220F	1.7
<b>2SK3928-01</b>	600	11	44	0.8	195	±30	3 to 5	30	TO-220	2.0
<b>2SK3929-01MR</b>	600	11	44	0.8	70	±30	3 to 5	30	TO-220F	1.7
<b>2SK3930-01L, S</b>	600	11	44	0.8	195	±30	3 to 5	30	T-pack	1.6
<b>2SK3697-01</b>	600	42	168	0.17	600	±30	3 to 5	105	TO-247	4.9

\*1 R<sub>DS (on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

■ 低・中耐圧トレンチ シリーズ Trench Power MOSFET

低オン抵抗、高ゲート耐圧 Low-on resistance and high gate capability

Trench Power MOSFET			TO-220	TO-220F	TO-3P (Q)	TO-247	T-Pack(L)	T-Pack(S)	D2-pack
V <sub>ds</sub> (V)	R <sub>on</sub> (Ω)	I <sub>d</sub> (A)							
40	0.060	70				✓			
60	0.0065	70		✓					
		80	✓				✓	✓	✓
75	0.0079	70		✓					
		70						✓	
100	0.0067	80						✓	
		100				✓			
		80	✓	✓			✓	✓	
150	0.0245	65	✓	✓			✓	✓	
200	0.0470	49	✓	✓			✓	✓	

■ 60 – 100V クラス 60 – 100V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> typ. Volts	パッケージ Package	質量 Net mass Grams
2SK4068-01	40	70	280	0.006	115	+30/-20	3.0	TO-247	4.9
2SK3273-01MR	60	70	280	0.0065	70	+30/-20	3.0	TO-220F	1.7
2SK3270-01	60	80	320	0.0065	135	+30/-20	3.0	TO-220	2.0
2SK3272-01L, S	60	80	320	0.0065	135	+30/-20	3.0	T-pack (L, S)	1.6
2SK3272-01SJ	60	80	320	0.0065	135	+30/-20	3.0	D2-pack	1.6
2SK4047-01S	60	80	320	0.0065	195	+30/-20	3.0	T-pack (S)	1.6
2SK3271-01	60	100	400	0.0065	155	+30/-20	3.0	TO-3P	5.5
2SK3730-01MR	75	70	280	0.0079	70	±20	3.0	TO-220F	1.7
2SK3804-01S	75	70	280	0.0085	162	±20	3.0	T-pack (S)	1.6
FMC80N10R6	100	80	320	0.0067	180	+30/-20	3.0	T-pack (S)	1.6
FMY100N10R6	100	100	400	0.0067	280	+30/-20	3.0	TO-247	6.3

\*1 R<sub>DS (on)</sub> : V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

■ 100 – 200V クラス 100 – 200V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> typ. Volts	パッケージ Package	質量 Net mass Grams
FMP80N10T2	100	80	320	0.0128	270	+30/-20	2 to 4	TO-220	2.0
FMA80N10T2	100	80	320	0.0128	95	+30/-20	2 to 4	TO-220F	1.7
FMI80N10T2	100	80	320	0.0128	270	+30/-20	2 to 4	T-pack(L)	1.6
FMC80N10T2	100	80	320	0.0128	270	+30/-20	2 to 4	T-pack(S)	1.6
FMP65N15T2	150	65	260	0.0245	270	+30/-20	2 to 4	TO-220	2.0
FMA65N15T2	150	65	260	0.0245	95	+30/-20	2 to 4	TO-220F	1.7
FMI65N15T2	150	65	260	0.0245	270	+30/-20	2 to 4	T-pack(L)	1.6
FMC65N15T2	150	65	260	0.0245	270	+30/-20	2 to 4	T-pack(S)	1.6
FMP49N20T2	200	49	196	0.047	270	+30/-20	2 to 4	TO-220	2.0
FMA49N20T2	200	49	196	0.047	95	+30/-20	2 to 4	TO-220F	1.7
FMI49N20T2	200	49	196	0.047	270	+30/-20	2 to 4	T-pack(L)	1.6
FMC49N20T2	200	49	196	0.047	270	+30/-20	2 to 4	T-pack(S)	1.6

\*1 R<sub>DS (on)</sub> : V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

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The Trench Power MOSFET series products satisfies the quality assurance level of general consumer use. If you intend to use the products for equipment requiring higher reliability, such as equipment for automobiles and medical equipment, please contact Fuji Electric. Do not use the products for equipment requiring strict reliability such as aerospace equipment.

MOSFET

## 自動車用Super J MOS<sup>®</sup> S1シリーズ Automotive Super J MOS<sup>®</sup> S1 series



低オン抵抗、低ノイズ、低スイッチング損失 Low-on resistance, low switching noise and low switching loss

Automotive Super J MOS <sup>®</sup> S1 Series			TO-247	T-Pack(S)
V <sub>ds</sub> (V)	R <sub>on</sub> (Ω)	I <sub>d</sub> (A)		
600	0.145	29	✓	✓
	0.082	46	✓	
	0.070	47	✓	
	0.071	52	✓	
	0.062	53	✓	
	0.046	67	✓	
	0.040	68	✓	

### 600V クラス 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS(on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS(th)</sub> typ. Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質量 Net mass Grams
<b>FMY47N60S1A</b>	600	47	141	0.070	390	30	3.0±0.5	125	TO-247	6.4
<b>FMY53N60S1A</b>	600	53	159	0.062	480	30	3.0±0.5	164	TO-247	6.4
<b>FMY68N60S1A</b>	600	68	204	0.040	545	30	3.0±0.5	203	TO-247	6.4

\*1 R<sub>DS(on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

Super J MOS<sup>®</sup> は、富士電機の登録商標です。

自動車用 Super J MOS<sup>®</sup> S1 シリーズは、一般車載用向けの品質保証(AEC-Q101準拠)製品であります。  
航空宇宙用など高度な信頼性を要求される機器への適用は行わないでください。

Super J MOS<sup>®</sup> is registered trademarks of Fuji Electric.

Automotive Super J MOS<sup>®</sup> S1 series of products satisfies the quality assurance level of general automobile use (conforms to AEC-Q101).  
Do not use the products for equipment requiring strict reliability such as aerospace equipment.

## 自動車用Super J MOS<sup>®</sup> S1FDシリーズ (高速ダイオード内蔵タイプ) Automotive Super J MOS<sup>®</sup> S1FD series (Built-in FRED type)



### 600V クラス 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS(on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS(th)</sub> typ. Volts	Q <sub>G</sub> Typ. nC	trr Typ. nsec	パッケージ Package	質量 Net mass Grams
<b>FMC29N60S1FDA</b>	600	29	87	0.145	220	30	4.0±1	73	170	T-Pack	1.6
<b>FMY29N60S1FDA</b>	600	29	87	0.145	220	30	4.0±1	73	170	TO-247	6.4
<b>FMY46N60S1FDA</b>	600	46	138	0.082	390	30	4.0±1	125	210	TO-247	6.4
<b>FMY52N60S1FDA</b>	600	52	156	0.071	480	30	4.0±1	164	280	TO-247	6.4
<b>FMY67N60S1FDA</b>	600	67	201	0.046	545	30	4.0±1	203	280	TO-247	6.4
<b>FMY52N65S1FDA</b>	650	52	156	0.071	480	30	4.0±1	164	280	TO-247	6.4

\*1 R<sub>DS(on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

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Do not use the products for equipment requiring strict reliability such as aerospace equipment.

■ 自動車用Super J MOS<sup>®</sup> S2シリーズ  
Automotive Super J MOS<sup>®</sup> S2 series



低オン抵抗、低ノイズ、低スイッチング損失 Low-on resistance, low switching noise and low switching loss

■ 600V クラス 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> typ. Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質量 Net mass Grams
○ FMY60N160S2A	600	18	54	0.160	110	30	4.0±0.5	42	TO-247	6.4
○ FMC60N160S2A	600	18	54	0.160	127	30	4.0±0.5	42	T-Pack	1.6
○ FMY60N125S2A	600	23	68	0.125	140	30	4.0±0.5	52	TO-247	6.4
○ FMC60N125S2A	600	23	68	0.125	160	30	4.0±0.5	52	T-Pack	1.6
○ FMY60N099S2A	600	29	88	0.099	185	30	4.0±0.5	64	TO-247	6.4
○ FMC60N099S2A	600	29	88	0.099	210	30	4.0±0.5	64	T-Pack	1.6
○ FMY60N088S2A	600	33	98	0.088	205	30	4.0±0.5	71	TO-247	6.4
○ FMC60N088S2A	600	33	98	0.088	235	30	4.0±0.5	71	T-Pack	1.6
○ FMY60N079S2A	600	37	111	0.079	235	30	4.0±0.5	80	TO-247	6.4
○ FMC60N079S2A	600	37	111	0.079	270	30	4.0±0.5	80	T-Pack	1.6
○ FMY60N070S2A	600	39	118	0.070	270	30	4.0±0.5	89	TO-247	6.4
○ FMY60N040S2A	600	66	199	0.040	435	30	4.0±0.5	150	TO-247	6.4
○ FMY60N025S2A	600	96	287	0.025	575	30	4.0±0.5	232	TO-247	6.4

○ : 開発中 \*1 R<sub>DS (on)</sub> : V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

自動車用 Super J MOS<sup>®</sup> S1FDシリーズは、一般車載用向けの品質保証(AEC-Q101準拠)製品であります。  
航空宇宙用など高度な信頼性を要求される機器への適用は行わないでください。

Super J MOS<sup>®</sup> は、富士電機の登録商標です。  
Super J MOS<sup>®</sup> is registered trademarks of Fuji Electric.

The Automotive Super J MOS<sup>®</sup> S1FD series of products satisfies the quality assurance level of general automobile use (conforms to AEC-Q101).  
Do not use the products for equipment requiring strict reliability such as aerospace equipment.

■ 自動車用Super J MOS<sup>®</sup> S2FDシリーズ (高速ダイオード内蔵タイプ)  
Automotive Super J MOS<sup>®</sup> S2FD series (Built-in FRED type)



型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> typ. Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質量 Net mass Grams
○ FMY60N105S2FDA	600	28	84	0.105	185	30	4.0±1	64	TO-247	6.4
○ FMC60N105S2FDA	600	28	84	0.105	210	30	4.0±1	64	T-Pack	1.6
○ FMY60N081S2FDA	600	37	111	0.081	235	30	4.0±1	100	TO-247	6.4
○ FMC60N081S2FDA	600	37	111	0.081	270	30	4.0±1	100	T-Pack	1.6

○ : 開発中 \*1 R<sub>DS (on)</sub> : V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C








自動車用 Super J MOS<sup>®</sup> S2FDシリーズは、一般車載用向けの品質保証(AEC-Q101準拠)製品であります。  
航空宇宙用など高度な信頼性を要求される機器への適用は行わないでください。

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Super J MOS<sup>®</sup> is registered trademarks of Fuji Electric.

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## 自動車用MOSFET (Trench Power MOS、SuperFAP-E<sup>3S</sup>)

### Automotive MOSFET

Automotive Trench Power MOSFET SuperFAP-E <sup>3S</sup> Low Qg series			TO-220	TO-220F	TO-3P (Q)	TO-247	T-Pack(L)	T-Pack(S)	D2-pack
V <sub>ds</sub> (V)	R <sub>on</sub> (Ω)	I <sub>d</sub> (A)							
40	0.006	70				✓			
60	0.0065	70		✓					
		80	✓				✓	✓	✓
75	0.0065	100			✓	✓			
	0.0079	70		✓					
100	0.0085	70						✓	
	0.0067	80					✓		
150	0.0128	80							
	0.0067	100				✓			
200	0.0245	65							
300	0.047	49							
	0.085	47				✓			
	0.072	50				✓			
	0.053	67				✓			
600	0.045	72				✓			
	0.29	22				✓			
	0.28	24				✓			
	0.21	30				✓			
	0.20	31				✓			
	0.17	35				✓			
	0.16	36				✓			

## 自動車用SuperFAP-E<sup>3S</sup> 低Qgシリーズ Automotive SuperFAP-E<sup>3S</sup> Low Qg series



### 300 – 600V クラス 300 – 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> typ. Volts	Q <sub>G</sub> Typ. nC	パッケージ Package	質量 Net mass Grams
<b>FMY50N30ES</b>	300	50	200	0.072	400	+30/-30	4.2±0.5	97	TO-247	6.4
<b>FMY72N30ES</b>	300	72	288	0.045	570	+30/-30	4.2±0.5	155	TO-247	6.4
<b>FMY24N60ES</b>	600	24	96	0.280	400	+30/-30	4.2±0.5	95	TO-247	6.4
<b>FMY31N60ES</b>	600	31	124	0.200	495	+30/-30	4.2±0.5	125	TO-247	6.4
<b>FMY36N60ES</b>	600	36	144	0.160	570	+30/-30	4.2±0.5	155	TO-247	6.4

\*1 R<sub>DS (on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

自動車用SuperFAP-E<sup>3S</sup> 低Qgシリーズは、一般車載用向けの品質保証(AEC-Q101準拠)製品であります。  
航空宇宙用など高度な信頼性を要求される機器への適用は行わないでください。

The Automotive SuperFAP-E<sup>3S</sup> Low Qg series of products satisfies the quality assurance level of general automobile use (conforms to AEC-Q101).  
Do not use the products for equipment requiring strict reliability such as aerospace equipment.

■ 自動車用SuperFAP-E<sup>3S</sup> 低Qg 高速ダイオード内蔵シリーズ  
Automotive SuperFAP-E<sup>3S</sup> Low Qg Built-in FRED series



低オン抵抗、低ノイズ、低スイッチング損失 Low-on resistance, low switching noise and low switching loss

■ 300 – 600V クラス 300 – 600V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> typ. Volts	Q <sub>G</sub> Typ. nC	t <sub>rr</sub> Typ. nsec	パッケージ Package	質量 Net mass Grams
FMY47N30ESF	300	47	188	0.085	400	+30/-30	4.2±1.0	96	130	TO-247	6.4
FMY67N30ESF	300	67	268	0.053	570	+30/-30	4.2±1.0	155	150	TO-247	6.4
FMY22N60ESF	600	22	88	0.290	400	+30/-30	4.2±1.0	95	150	TO-247	6.4
FMY30N60ESF	600	30	120	0.210	495	+30/-30	4.2±1.0	125	160	TO-247	6.4
FMY35N60ESF	600	35	140	0.170	570	+30/-30	4.2±1.0	155	160	TO-247	6.4

\*1 R<sub>DS (on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

自動車用SuperFAP-E<sup>3S</sup> 低Qg 高速ダイオード内蔵シリーズは、一般車載用向けの品質保証(AEC-Q101準拠)製品であります。  
航空宇宙用など高度な信頼性を要求される機器への適用は行わないでください。

Automotive SuperFAP-E<sup>3S</sup> Low Qg Built-in FRED series of products satisfies the quality assurance level of general automobile use (conforms to AEC-Q101).  
Do not use the products for equipment requiring strict reliability such as aerospace equipment.

■ 自動車用トレンチMOSFET Automotive Trench Power MOSFET

■ 40 – 100V クラス 40 – 100V class

型 式 Device type	V <sub>DSS</sub> Volts	I <sub>D</sub> Amps.	I <sub>D</sub> (pulse) Amps.	R <sub>DS (on)</sub> Max. *1 Ohms (Ω)	P <sub>D</sub> *2 Watts	V <sub>GS</sub> Volts	V <sub>GS (th)</sub> typ. Volts	パッケージ Package	質量 Net mass Grams
2SK4068-01	40	70	280	0.006	115	+30/-20	3.0	TO-247	4.9
2SK3273-01MR	60	70	280	0.0065	70	+30/-20	3.0	TO-220F	1.7
2SK3270-01	60	80	320	0.0065	135	+30/-20	3.0	TO-220	2.0
2SK3272-01L, S	60	80	320	0.0065	135	+30/-20	3.0	T-pack	1.6
2SK3272-01SJ	60	80	320	0.0065	135	+30/-20	3.0	D2-pack	1.6
2SK4047-01S	60	80	320	0.0065	195	+30/-20	3.0	T-pack	1.6
FMY100N06T *1	60	100	400	0.0065	135	+30/-20	3.0	TO-247	6.3
2SK3271-01	60	100	400	0.0065	155	+30/-20	3.0	TO-3P	5.5
2SK3730-01MR	75	70	280	0.0079	70	±20	3.0	TO-220F	1.7
2SK3804-01S	75	70	280	0.0085	135	±20	3.0	T-pack	1.6
FMC80N10R6	100	80	320	0.0067	324	+30/-20	3.0	T-Pack	1.6
FMY100N10R6 *1	100	100	400	0.0067	280	+30/-20	3.0	TO-247	6.3

\*1 R<sub>DS (on)</sub>: V<sub>GS</sub>=10V, \*2 P<sub>D</sub>: T<sub>C</sub>=25°C

※1 FMY100N06T、FMY100N10R6は一般車載用向けの品質保証(AEC-Q101準拠)製品であります。  
FMY100N06T and FMY100N10R6 satisfies the quality assurance level of general automobile use (conforms to AEC-Q101).

航空宇宙用など高度な信頼性を要求される機器への適用は行わないでください。  
Do not use the products for equipment requiring strict reliability such as aerospace equipment.



## 自動車用 IPS シリーズ (インテリジェントパワースイッチ) Automotive IPS series ( Intelligent Power Switches ) 自己保護機能 Self protection

型 式 Device type	Type	Channels	V <sub>GS</sub> Volts	I <sub>D</sub> Amps.	R <sub>DS (on)</sub> Max. Ohms (Ω)	P <sub>D</sub> Watts	パッケージ Package	質 量 Net mass Grams	備考 Remarks
F5044H	High side	1	50	2.5	0.12 <sup>※1</sup>	1.5	SOP-8	0.2	
F5045P	High side	1	50	1	0.60 <sup>※1</sup>	1.5	SOP-8	0.2	
● F5106H	High side	1	50	2	0.12 <sup>※1</sup>	1.5	SOP-8	0.2	
● F5112H <sup>※3</sup>	High side	1	50	2	0.12 <sup>※1</sup>	2	SOP-8	0.2	
F5062H	High side	1	35	50	0.008 <sup>※1</sup>	114	PSOP-12	0.4	
F5072H	High side	1	35	80	0.005 <sup>※1</sup>	114	PSOP-12	0.4	
F5018	Low side	1	40	8	0.14 <sup>※2</sup>	15	K-pack	0.6	
F5019	Low side	1	40	12	0.14 <sup>※2</sup>	30	T-pack	1.6	
F5020	Low side	1	40	3	0.40 <sup>※2</sup>	10	K-pack	0.6	
F5033	Low side	2	40	1	0.60 <sup>※2</sup>	1.5	SOP-8	0.2	
F5041	Low side	2	40	1	0.60 <sup>※2</sup>	1.5	SOP-8	0.2	
F5042	Low side	1	40	8	0.14 <sup>※2</sup>	15	K-pack	0.6	
F5043	Low side	1	40	12	0.14 <sup>※2</sup>	30	T-pack	1.6	
F5048	Low side	1	80	15	0.125 <sup>※2</sup>	43	T-pack	1.6	
F5055	Low side	2	40	5.9	0.14 <sup>※2</sup>	7.8	SSOP-20	0.3	
F5063L	Low side	2	40	1.9	0.14 <sup>※2</sup>	1.75	SOP-8	0.2	

● : 新製品 New Product    ※1 R<sub>DS (on)</sub> : V<sub>DS</sub>=13V    ※2 R<sub>DS (on)</sub> : V<sub>IN</sub>/V<sub>GS</sub>=5V    ※3 低待機電流品

## 整流ダイオード

### Rectifier Diodes



富士電機の整流ダイオードは、低 VF 特性、低 IR などの特長を有し、電源の PFC 回路や二次側整流回路に対応が可能です。

Fuji Electric's rectifier diodes have features such as low VF characteristics and low IR, and are compatible with PFC circuits of power supplies and secondary-side rectification circuits.



## ■ SBD, LLD の特長 Features of the SBD, LLD

### 超低IR-SBD (Schottky-Barrier Diode) Ultra Low-IR SBD

#### ■特長 Features

- 接合部温度 (Tj) 175°C保証
- 従来品に対し VF は同等で、IR を 1/10 以下に低減
- Guaranteed Tj=175°C
- VF is same level and IR is reduced by less than 1/10.

### LLD (Low Loss Diode) Super LLD series for PFC circuit

#### ■特長 Features

Super LLD-3 (電流連続モード PFC 用)

- 従来品に対し高速化と低 VF 化を実現。

Super LLD-2 (臨界モード PFC 用)

- 低 VF 特性による低損失化
- ソフトリカバリーによる低ノイズ化

#### Super LLD-3 for CCM-PFC

- Realize acceleration and low VF compared with existing model.

#### Super LLD-2 for DCM-PFC

- Achieved low power loss by low VF
- Achieved low noise by soft recovery

#### ■型式の見方 Part numbers

FDRW50C60L (example)

F	DR		W		50	C		60		L	
社名 Company code	機種コード Device code		パッケージコード Package code		定格電流 Current	極性 Polarity		定格電圧 Voltage		製品シリーズ Series	
Fuji	DR	FWD	P	TO-220	×1	S	Single	60	600V	L	Ultra Fast Recovery
			W	TO-247		C	Cathode Common	120	1200V		J



# 整流ダイオード/Rectifier Diodes

## ■型式の見方 Part numbers

YA875C10R (example)

YA		87		5		C		10				R		
パッケージコード Package code		シリーズ Series		定格電流 Current		極性 Polarity		定格電圧 Voltage				付加コード Additional code		
KP	K-Pack (L)	8x	SBD	1	5A	S	Single	SBD	02	20V	LLD	2	200V	R or RR
KS	K-Pack (S)	9x	LLD	2	10A	C	Cathode		03	30V		3	300V	
MS	TFP			3	15A		Common		04	40V		4	400V	
PA	TO-3P			4	15A				06	60V		6	600V	
PG	TO-3PF			5	20A				08	80V		8	800V	
PH	TO-247			6	30A				09	90V		10	1000V	
TP	T-Pack (L)			8	30A				10	100V		12	1200V	
TS	T-Pack (S)			9	40A				12	120V		15	1500V	
YA	TO-220			0	40A				15	150V				
YG	TO-220F								20	200V				

## ■型式の見方 Part numbers

ESAD92M02R (example)

ESA		D		92		M		02				R			
チップ構成 Chip		定格電流 Current		シリーズ Series		パッケージコード Package code		電圧定格 Voltage				付加コード Additional code			
ESA	ツインチップ	リード	ERA	≤1A	8x	SBD	無し	フィン	SBD	004	40V	LLD	02	200V	R or RR
ER	シングルチップ		ERB	≤2A	9x	LLD	M	フルモールド		006	60V		03	300V	
			ERC	≤3A						009	90V				
			ERD	-											
		TOPPKG	ERC	≤5A											
			ESAB	5A-10A											
			ESAC	10A-20A											
			ESAD	20A-30A											

■ ショットキーバリアダイオード Schottky-Barrier Diodes(SBD)

Schottky-Barrier Diodes(SBD)					TO-220F	K-Pack(L)	K-Pack(S)	TFP	
結線	V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> (V)	I <sub>R</sub> (mA)					
シングル	40	5	0.55	5	✓		✓		
	45	10	0.60	2	✓				
	60	5	0.59	5	✓				
デュアル	20	7	0.39	10		✓	✓		
		30	5	0.47	5			✓	
	40	5	0.55	5	✓		✓		
		10	0.55	5	✓				
		20	0.6	15	✓				
		30	0.53	8	✓			✓	
	60	5	0.58	5	✓				
		10	0.58	5	✓				
		15	0.58	5	✓				
		20	0.58	15	✓				
	90	5	0.9	5			✓		
		100	5	0.8	0.7	✓			
			10	0.8	1.2	✓			
	20		0.8	2.5	✓				
	30		0.8	20	✓				

シングル 1 in one-package

型式 Device type	絶対最大定格 Maximum rating			I <sub>FSM</sub> * <sup>2</sup> Amps.	接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(T <sub>a</sub> =25°C) Characteristics			パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> * <sup>1</sup> Amps.				V <sub>FM</sub> Max. Volts	I <sub>RRM</sub> * <sup>3</sup> Max.mA	R <sub>th(j-c)</sub> °C/W		
KS826S04	40	5.0 (T <sub>c</sub> =110°C)		80	-40 to +150	0.55 (I <sub>F</sub> =5.0A)	5	10	K-pack(S)	0.6
YG811S04R	40	5.0 (T <sub>c</sub> =122°C)		120	-40 to +150	0.55 (I <sub>F</sub> =5.0A)	5	5.0	TO-220F	1.7
YG812S04R	45	10 (T <sub>c</sub> =124°C)		120	-40 to +150	0.6 (I <sub>F</sub> =10A)	2	2.5	TO-220F	1.7
YG811S06R	60	5.0 (T <sub>c</sub> =127°C)		80	-40 to +150	0.59 (I <sub>F</sub> =5.0A)	5	5.0	TO-220F	1.7
YG804S06R	60	15 (T <sub>c</sub> =99°C)		120	-40 to +150	0.63 (I <sub>F</sub> =15A)	20	2.2	TO-220F	1.7

( ) 条件

\*<sup>1</sup> 50Hz 方形波 duty=1/2

\*<sup>2</sup> 正弦波 10ms. \*<sup>3</sup> V<sub>R</sub>=V<sub>RRM</sub>

( ) Conditions

\*<sup>1</sup> 50Hz Square wave duty=1/2

\*<sup>2</sup> Sine wave, 10ms \*<sup>3</sup> V<sub>R</sub>=V<sub>RRM</sub>

記号 Letter symbols

V <sub>RRM</sub>	ピーク繰返し逆電圧	Repetitive peak reverse voltage	T <sub>stg</sub>	保存温度	Storage temperature
V <sub>RSM</sub>	ピーク非繰返し逆電圧	Non-repetitive peak reverse voltage	V <sub>FM</sub>	順電圧	Forward voltage
I <sub>O</sub>	平均出力電流	Average output current	I <sub>RRM</sub>	逆電流	Reverse current
I <sub>FSM</sub>	サージ電流	Surge current	t <sub>rr</sub>	逆回復時間	Reverse recovery time
T <sub>j</sub>	接合温度	Junction temperature	R <sub>th(j-c)</sub>	熱抵抗 (接合ケース間)	Thermal resistance (Junction to case)
T <sub>a</sub>	周囲温度	Ambient temperature	T <sub>i</sub>	リード温度	Lead temperature
T <sub>c</sub>	ケース温度	Case temperature	I <sub>F(AV)</sub>	平均順電流	Average forward current

## ■ ショットキーバリアダイオード Schottky-Barrier Diodes(SBD)

デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics			パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> *3 Max. Volts	I <sub>RRM</sub> *4 Max.mA	R <sub>th(j-c)</sub> °C/W		
KP883C02	20	7.0 (Tc=89°C)	60	-40 to +125	0.39 (I <sub>F</sub> =2.5A)	10	10.0	K-Pack(L)	0.6
KS883C02	20	7.0 (Tc=89°C)	60	-40 to +125	0.39 (I <sub>F</sub> =2.5A)	10	10.0	K-pack(S)	0.6
KS823C03	30	5.0 (Tc=117°C)	60	-40 to +150	0.47 (I <sub>F</sub> =2.5A)	5	10.0	K-pack(S)	0.6
KS823C04	40	5.0 (Tc=107°C)	60	-40 to +150	0.55 (I <sub>F</sub> =2.5A)	5	10.0	K-pack(S)	0.6
YG801C04R	40	5.0 (Tc=125°C)	100	-40 to +150	0.55 (I <sub>F</sub> =2.0A)	5	5.0	TO-220F	1.7
YG802C04R	40	10 (Tc=110°C)	120	-40 to +150	0.55 (I <sub>F</sub> =4.0A)	5	3.5	TO-220F	1.7
YG805C04R	40	20 (Tc=100°C)	120	-40 to +150	0.6 (I <sub>F</sub> =10A)	15	2.5	TO-220F	1.7
YG838C04R	40	30 (Tc=85°C)	180	-40 to +150	0.53 (I <sub>F</sub> =12.5A)	8	2.0	TO-220F	1.7
MS838C04	40	30 (Tc=111°C)	180	-40 to +150	0.53 (I <sub>F</sub> =12.5A)	8	1.2	TFP	0.8
YG801C06R	60	5.0 (Tc=125°C)	60	-40 to +150	0.58 (I <sub>F</sub> =2.0A)	5	5.0	TO-220F	1.7
YG802C06R	60	10 (Tc=118°C)	80	-40 to +150	0.58 (I <sub>F</sub> =4.0A)	5	3.5	TO-220F	1.7
YG803C06R	60	15 (Tc=94°C)	100	-40 to +150	0.58 (I <sub>F</sub> =6.0A)	5	3.0	TO-220F	1.7
YG805C06R	60	20 (Tc=108°C)	80	-40 to +150	0.58 (I <sub>F</sub> =8.0A)	15	2.5	TO-220F	1.7
MS808C06	60	30 (Tc=118°C)	150	-40 to +150	0.58 (I <sub>F</sub> =12.5A)	3	1.2	TFP	0.8
KS823C09	90	5.0 (Tc=100°C)	60	-40 to +150	0.9 (I <sub>F</sub> =2.5A)	5	10.0	K-pack(S)	0.6
YG801C10R	100	5.0 (Tc=117°C)	60	-40 to +150	0.8 (I <sub>F</sub> =1.5A)	0.7	5.0	TO-220F	1.7
YG802C10R	100	10 (Tc=102°C)	80	-40 to +150	0.8 (I <sub>F</sub> =3.0A)	1.2	3.5	TO-220F	1.7
YG805C10R	100	20 (Tc=91°C)	100	-40 to +150	0.8 (I <sub>F</sub> =5.0A)	2.5	2.5	TO-220F	1.7
YG808C10R	100	30 (Tc=80°C)	180	-40 to +150	0.8 (I <sub>F</sub> =10A)	20	2.0	TO-220F	1.7

( ) 条件 ( ) Conditions  
 \*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流) \*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)  
 \*2 正弦波 10ms. 1チップあたり \*2 Sine wave, 10ms per element \*3 I<sub>F</sub>=0.5I<sub>O</sub> 1チップあたり \*3 I<sub>F</sub>=0.5I<sub>O</sub> per element  
 \*4 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり \*4 V<sub>R</sub>=V<sub>RRM</sub> per element

■ 超低 IR ショットキーバリアダイオード Ultra Low IR Schottky-Barrier Diodes

Ultra Low IR Schottky-Barrier Diodes					TO-220	TO-220F
結線	V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> (V)	I <sub>R</sub> (mA)		
デュアル	100	10	0.82	0.015	✓	✓
		20	0.86	0.02	✓	✓
		30	0.86	0.03	✓	✓
	120	10	0.84	0.015	✓	✓
		20	0.88	0.02	✓	✓
		30	0.88	0.03	✓	✓
	150	10	0.86	0.015	✓	✓
		20	0.89	0.02	✓	✓
		30	0.89	0.03	✓	✓
	200	10	0.89	0.015	✓	✓
		20	0.93	0.02	✓	✓
		30	0.93	0.03	✓	✓

デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			I <sub>FSM</sub> *2 Amps.	接合、保存温度 Thermal rating T <sub>J</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics			パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.				V <sub>FM</sub> *3 Max. Volts	I <sub>RRM</sub> *4 Max.mA	R <sub>th(j-c)</sub> °C/W		
YG872C10R	100	10 (Tc=146°C)		125	-40 to +175	0.82	0.015	3.5	TO-220F	1.7
YA872C10R	100	10 (Tc=158°C)		125	-40 to +175	0.82	0.015	2.0	TO-220	2.0
YG875C10R	100	20 (Tc=131°C)		145	-40 to +175	0.86	0.020	2.5	TO-220F	1.7
YA875C10R	100	20 (Tc=144°C)		145	-40 to +175	0.86	0.020	1.75	TO-220	2.0
YG878C10R	100	30 (Tc=122°C)		160	-40 to +175	0.86	0.030	2.0	TO-220F	1.7
YA878C10R	100	30 (Tc=142°C)		160	-40 to +175	0.86	0.030	1.25	TO-220	2.0
YG872C12R	120	10 (Tc=143°C)		125	-40 to +175	0.84	0.015	3.5	TO-220F	1.7
YA872C12R	120	10 (Tc=158°C)		125	-40 to +175	0.84	0.015	2.0	TO-220	2.0
YG875C12R	120	20 (Tc=127°C)		145	-40 to +175	0.88	0.020	2.5	TO-220F	1.7
YA875C12R	120	20 (Tc=144°C)		145	-40 to +175	0.88	0.020	1.75	TO-220	2.0
YG878C12R	120	30 (Tc=116°C)		160	-40 to +175	0.88	0.030	2.0	TO-220F	1.7
YA878C12R	120	30 (Tc=141°C)		160	-40 to +175	0.88	0.030	1.25	TO-220	2.0
YG872C15R	150	10 (Tc=144°C)		125	-40 to +175	0.86	0.015	3.5	TO-220F	1.7
YA872C15R	150	10 (Tc=157°C)		125	-40 to +175	0.86	0.015	2.0	TO-220	2.0
YG875C15R	150	20 (Tc=130°C)		145	-40 to +175	0.89	0.020	2.5	TO-220F	1.7
YA875C15R	150	20 (Tc=143°C)		145	-40 to +175	0.89	0.020	1.75	TO-220	2.0
YG878C15R	150	30 (Tc=120°C)		160	-40 to +175	0.89	0.030	2.0	TO-220F	1.7
YA878C15R	150	30 (Tc=140°C)		160	-40 to +175	0.89	0.030	1.25	TO-220	2.0
YG872C20R	200	10 (Tc=143°C)		125	-40 to +175	0.89	0.015	3.5	TO-220F	1.7
YA872C20R	200	10 (Tc=157°C)		125	-40 to +175	0.89	0.015	2.0	TO-220	2.0
YG875C20R	200	20 (Tc=127°C)		145	-40 to +175	0.93	0.020	2.5	TO-220F	1.7
YA875C20R	200	20 (Tc=141°C)		145	-40 to +175	0.93	0.020	1.75	TO-220	2.0
YG878C20R	200	30 (Tc=116°C)		160	-40 to +175	0.93	0.030	2.0	TO-220F	1.7
YA878C20R	200	30 (Tc=138°C)		160	-40 to +175	0.93	0.030	1.25	TO-220	2.0

( ) 条件

- \*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流)
- \*2 正弦波 10ms. 1チップあたり
- \*3 I<sub>F</sub>=0.5I<sub>O</sub> 1チップあたり
- \*4 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり

( ) Conditions

- \*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)
- \*2 Sine wave, 10ms per element
- \*3 I<sub>F</sub>=0.5I<sub>O</sub> per element
- \*4 V<sub>R</sub>=V<sub>RRM</sub> per element

# 5 整流ダイオード/Rectifier Diodes

## ■ 低 IR ショットキーバリアダイオード Low IR Schottky-Barrier Diodes

Low IR Schottky-Barrier Diodes					TO-220	TO-220F	TO-3P (Q)	TO-3PF	TO-247	T-Pack(L)	T-Pack(S)	TFP
結線	$V_{RRM}$ (V)	$I_O$ (A)	$V_F$ (V)	$I_R$ (mA)								
シングル	120	5	0.88	0.15		✓						
	150	5	0.9	0.15		✓						
デュアル	45	20	0.63	0.175	✓	✓					✓	✓
		30	0.63	0.2	✓	✓					✓	✓
	60	10	0.68	0.15	✓	✓					✓	
		20	0.74	0.175	✓	✓					✓	
		30	0.74	0.2	✓	✓					✓	
	80	40	0.7	0.2	✓	✓				✓		
		10	0.76	0.15	✓	✓					✓	✓
		20	0.76	0.175	✓	✓					✓	✓
		30	0.76	0.2	✓	✓					✓	
	100	40	0.71	0.2	✓	✓					✓	
		10	0.86	0.15	✓	✓					✓	
		20	0.86	0.175	✓	✓					✓	✓
		30	0.86	0.2	✓	✓	✓				✓	✓
	120	40	0.82	0.2	✓	✓					✓	
		10	0.88	0.15	✓	✓					✓	✓
		20	0.88	0.15	✓	✓			✓	✓	✓	✓
30		0.88	0.2	✓	✓			✓		✓	✓	
150	30	1.01	0.2									
	40	0.95	0.2	✓	✓							
	10	0.9	0.15	✓	✓				✓	✓		
	20	0.9	0.15	✓	✓		✓		✓	✓	✓	
	30	0.9	0.2	✓	✓	✓		✓		✓	✓	
	40	0.97	0.2	✓	✓			✓		✓	✓	

### シングル 1 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating		電気的特性(Ta=25°C) Characteristics			パッケージ Package	質量 Net mass
	$V_{RRM}$ Volts	$I_O^{*1}$ Amps.	$I_{FSM}^{*2}$ Amps.	$T_j$ and $T_{stg}$ °C		$V_{FM}^{*3}$ Max. Volts	$I_{RRM}^{*4}$ Max.mA	$R_{th(j-c)}$ °C/W		Grams
YG861S12R	120	5 (Tc=104°C)	75	-40 to +150		0.88	0.15	5.0	TO-220F	1.7
YG861S15R	150	5 (Tc=94°C)	75	-40 to +150		0.90	0.15	5.0	TO-220F	1.7

( ) 条件

\*1 50Hz 方形波 duty=1/2

\*2 正弦波 10ms.

\*3  $I_F=I_O$

\*4  $V_R=V_{RRM}$

( ) Conditions

\*1 50Hz Square wave duty=1/2

\*2 Sine wave, 10ms \*3  $I_F=I_O$

\*4  $V_R=V_{RRM}$

■ 低 IR ショットキーバリアダイオード Low IR Schottky-Barrier Diodes

デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics			パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> *3 Max. Volts	I <sub>RRM</sub> *4 Max.mA	R <sub>th(j-c)</sub> °C/W		
YG865C04R	45	20 (Tc=115°C)	145	-40 to +150	0.63	0.175	2.5	TO-220F	1.7
YA865C04R	45	20 (Tc=126°C)	145	-40 to +150	0.63	0.175	1.75	TO-220	2.0
TS865C04R	45	20 (Tc=126°C)	145	-40 to +150	0.63	0.175	1.75	T-pack(S)	1.6
MS865C04	45	20 (Tc=125°C)	145	-40 to +150	0.63	0.175	1.75	TFP	0.8
YG868C04R	45	30 (Tc=105°C)	160	-40 to +150	0.63	0.20	2.0	TO-220F	1.7
YA868C04R	45	30 (Tc=122°C)	160	-40 to +150	0.63	0.20	1.25	TO-220	2.0
TS868C04R	45	30 (Tc=122°C)	160	-40 to +150	0.63	0.20	1.25	T-pack(S)	1.6
MS868C04	45	30 (Tc=122°C)	160	-40 to +150	0.63	0.20	1.25	TFP	0.8
YG862C06R	60	10 (Tc=124°C)	125	-40 to +150	0.68	0.15	3.5	TO-220F	1.7
YA862C06R	60	10 (Tc=136°C)	125	-40 to +150	0.68	0.15	2.0	TO-220	2.0
TS862C06R	60	10 (Tc=136°C)	125	-40 to +150	0.68	0.15	2.0	T-pack(S)	1.6
YG865C06R	60	20 (Tc=109°C)	145	-40 to +150	0.74	0.175	2.5	TO-220F	1.7
YA865C06R	60	20 (Tc=122°C)	145	-40 to +150	0.74	0.175	1.75	TO-220	2.0
TS865C06R	60	20 (Tc=122°C)	145	-40 to +150	0.74	0.175	1.75	T-pack(S)	1.6
YG868C06R	60	30 (Tc=101°C)	160	-40 to +150	0.74	0.20	2.0	TO-220F	1.7
YA868C06R	60	30 (Tc=119°C)	160	-40 to +150	0.74	0.20	1.25	TO-220	2.0
TS868C06R	60	30 (Tc=119°C)	160	-40 to +150	0.74	0.20	1.25	T-pack(S)	1.6
YG869C06R	60	40 (Tc=105°C)	190	-40 to +150	0.70	0.20	1.2	TO-220F	1.7
YA869C06R	60	40 (Tc=114°C)	190	-40 to +150	0.70	0.20	1.0	TO-220	2.0
TP869C06R	60	40 (Tc=114°C)	190	-40 to +150	0.70	0.20	1.0	T-Pack(L)	1.6
YG862C08R	80	10 (Tc=109°C)	125	-40 to +150	0.76	0.15	3.5	TO-220F	1.7
YA862C08R	80	10 (Tc=126°C)	125	-40 to +150	0.76	0.15	2.0	TO-220	2.0
TS862C08R	80	10 (Tc=126°C)	125	-40 to +150	0.76	0.15	2.0	T-pack(S)	1.6
MS862C08	80	10 (Tc=115°C)	125	-40 to +150	0.76	0.15	3.0	TFP	0.8
YG865C08R	80	20 (Tc=89°C)	145	-40 to +150	0.76	0.175	2.5	TO-220F	1.7
YA865C08R	80	20 (Tc=107°C)	145	-40 to +150	0.76	0.175	1.75	TO-220	2.0
TS865C08R	80	20 (Tc=107°C)	145	-40 to +150	0.76	0.175	1.75	T-pack(S)	1.6
MS865C08	80	20 (Tc=108°C)	145	-40 to +150	0.76	0.175	1.75	TFP	0.8
YG868C08R	80	30 (Tc=72°C)	160	-40 to +150	0.76	0.20	2.0	TO-220F	1.7
YA868C08R	80	30 (Tc=105°C)	160	-40 to +150	0.76	0.20	1.25	TO-220	2.0
TS868C08R	80	30 (Tc=105°C)	160	-40 to +150	0.76	0.20	1.25	T-pack(S)	1.6
YG869C08R	80	40 (Tc=86°C)	190	-40 to +150	0.71	0.20	1.2	TO-220F	1.7
YA869C08R	80	40 (Tc=98°C)	190	-40 to +150	0.71	0.20	1.0	TO-220	2.0
TP869C08R	80	40 (Tc=98°C)	190	-40 to +150	0.71	0.20	1.0	T-Pack(L)	1.6

( ) 条件

\*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流)

\*2 正弦波 10ms. 1チップあたり \*3 I<sub>F</sub>=0.5I<sub>O</sub> 1チップあたり

\*4 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり

( ) Conditions

\*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)

\*2 Sine wave, 10ms per element

\*4 V<sub>R</sub>=V<sub>RRM</sub> per element

\*3 I<sub>F</sub>=0.5I<sub>O</sub> per element



## ■ 低 IR ショットキーバリアダイオード Low IR Schottky-Barrier Diodes

デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics			パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> *3 Max. Volts	I <sub>RRM</sub> *4 Max.mA	R <sub>th(j-c)</sub> °C/W		
YG862C10R	100	10 (Tc=118°C)	125	-40 to +150	0.86	0.15	3.5	TO-220F	1.7
YA862C10R	100	10 (Tc=132°C)	125	-40 to +150	0.86	0.15	2.0	TO-220	2.0
TS862C10R	100	10 (Tc=132°C)	125	-40 to +150	0.86	0.15	2.0	T-pack(S)	1.6
YG865C10R	100	20 (Tc=103°C)	145	-40 to +150	0.86	0.175	2.5	TO-220F	1.7
YA865C10R	100	20 (Tc=117°C)	145	-40 to +150	0.86	0.175	1.75	TO-220	2.0
TS865C10R	100	20 (Tc=117°C)	145	-40 to +150	0.86	0.175	1.75	T-pack(S)	1.6
MS865C10	100	20 (Tc=117°C)	145	-40 to +150	0.86	0.175	1.75	TFP	0.8
YG868C10R	100	30 (Tc=91°C)	160	-40 to +150	0.86	0.20	2.0	TO-220F	1.7
YA868C10R	100	30 (Tc=113°C)	160	-40 to +150	0.86	0.20	1.25	TO-220	2.0
TS868C10R	100	30 (Tc=113°C)	160	-40 to +150	0.86	0.20	1.25	T-pack(S)	1.6
TP868C10R	100	30 (Tc=113°C)	160	-40 to +150	0.86	0.20	1.25	T-Pack(L)	1.6
MS868C10	100	30 (Tc=114°C)	160	-40 to +150	0.86	0.20	1.2	TFP	0.8
PA868C10R	100	30 (Tc=107°C)	160	-40 to +150	0.86	0.20	1.5	TO-3P(Q)	5.1
YG869C10R	100	40 (Tc=94°C)	190	-40 to +150	0.82	0.20	1.2	TO-220F	1.7
YA869C10R	100	40 (Tc=105°C)	190	-40 to +150	0.82	0.20	1.0	TO-220	2.0
TP869C10R	100	40 (Tc=105°C)	190	-40 to +150	0.82	0.20	1.0	T-Pack(L)	1.6
YG862C12R	120	10 (Tc=122°C)	75	-40 to +150	0.88	0.15	3.00	TO-220F	1.7
YA862C12R	120	10 (Tc=137°C)	75	-40 to +150	0.88	0.15	1.20	TO-220	2.0
TP862C12R	120	10 (Tc=137°C)	75	-40 to +150	0.88	0.15	1.50	T-Pack(L)	1.6
TS862C12R	120	10 (Tc=137°C)	75	-40 to +150	0.88	0.15	1.50	T-pack(S)	1.6
YG865C12R	120	20 (Tc=116°C)	150	-40 to +150	0.88	0.15	1.75	TO-220F	1.7
YA865C12R	120	20 (Tc=126°C)	150	-40 to +150	0.88	0.15	1.25	TO-220	2.0
PH865C12	120	20 (Tc=126°C)	150	-40 to +150	0.88	0.15	1.50	TO-247	4.9
TP865C12R	120	20 (Tc=126°C)	150	-40 to +150	0.88	0.15	1.25	T-Pack(L)	1.6
TS865C12R	120	20 (Tc=126°C)	150	-40 to +150	0.88	0.15	1.25	T-pack(S)	1.6
MS865C12	120	20 (Tc=126°C)	150	-40 to +150	0.88	0.15	1.25	TFP	0.8
YG868C12R	120	30 (Tc=116°C)	190	-40 to +150	0.88	0.20	1.20	TO-220F	1.7
YA868C12R	120	30 (Tc=122°C)	190	-40 to +150	0.88	0.20	1.00	TO-220	2.0
PH868C12	120	30 (Tc=122°C)	190	-40 to +150	0.88	0.20	1.20	TO-247	4.9
TS868C12R	120	30 (Tc=122°C)	190	-40 to +150	0.88	0.20	1.00	T-pack(S)	1.6
MS868C12	120	30 (Tc=115°C)	190	-40 to +150	0.88	0.20	1.20	TFP	0.8
YG869C12R	120	40 (Tc=95°C)	190	-40 to +150	0.95	0.20	1.20	TO-220F	1.7
YA869C12R	120	40 (Tc=104°C)	190	-40 to +150	0.95	0.20	1.00	TO-220	2.0
YG862C15R	150	10 (Tc=117°C)	75	-40 to +150	0.90	0.15	3.00	TO-220F	1.7
YA862C15R	150	10 (Tc=134°C)	75	-40 to +150	0.90	0.15	1.50	TO-220	2.0
TP862C15R	150	10 (Tc=134°C)	75	-40 to +150	0.90	0.15	1.50	T-Pack(L)	1.6
TS862C15R	150	10 (Tc=134°C)	75	-40 to +150	0.90	0.15	1.50	T-pack(S)	1.6
YG865C15R	150	20 (Tc=101°C)	150	-40 to +150	0.90	0.15	1.75	TO-220F	1.7
PH865C15	150	20 (Tc=109°C)	150	-40 to +150	0.90	0.15	1.50	TO-247	4.9
PG865C15R	150	20 (Tc=80°C)	150	-40 to +150	0.90	0.15	2.50	TO-3PF	6.0
YA865C15R	150	20 (Tc=115°C)	150	-40 to +150	0.90	0.15	1.25	TO-220	2.0
TP865C15R	150	20 (Tc=115°C)	150	-40 to +150	0.90	0.15	1.25	T-Pack(L)	1.6
TS865C15R	150	20 (Tc=115°C)	150	-40 to +150	0.90	0.15	1.25	T-pack(S)	1.6
MS865C15	150	20 (Tc=115°C)	150	-40 to +150	0.90	0.15	1.25	TFP	0.8
YG868C15R	150	30 (Tc=113°C)	190	-40 to +150	0.90	0.20	1.20	TO-220F	1.7
YA868C15R	150	30 (Tc=119°C)	190	-40 to +150	0.90	0.20	1.00	TO-220	2.0
TS868C15R	150	30 (Tc=119°C)	190	-40 to +150	0.90	0.20	1.00	T-pack(S)	1.6
MS868C15	150	30 (Tc=113°C)	190	-40 to +150	0.90	0.20	1.20	TFP	0.8
PA868C15R	150	30 (Tc=129°C)	190	-40 to +150	0.90	0.20	1.20	TO-3P	5.5
PH868C15	150	30 (Tc=129°C)	190	-40 to +150	0.90	0.20	1.20	TO-247	4.9
YG869C15R	150	40 (Tc=90°C)	190	-40 to +150	0.97	0.20	1.20	TO-220F	1.7
YA869C15R	150	40 (Tc=100°C)	190	-40 to +150	0.97	0.20	1.00	TO-220	2.0

( ) 条件  
 \*1 50Hz方形波 duty=1/2 (センタータップ平均出力電流)  
 \*2 正弦波 10ms. 1チップあたり \*3 I<sub>F</sub>=0.5I<sub>O</sub> 1チップあたり  
 \*4 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり

( ) Conditions  
 \*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)  
 \*2 Sine wave, 10ms per element \*3 I<sub>F</sub>=0.5I<sub>O</sub> per element  
 \*4 V<sub>R</sub>=V<sub>RRM</sub> per element

■ スーパー LLD 2 ( 臨界モード PFC 回路用 ) Super LLD 2 (Critical mode PFC)

Super LLD 2 (Critical mode PFC)						TO-220	TO-220F	TO-247
結線	V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	Trr (μsec)			
シングル	600	8	1.55	10	0.05	✓	✓	
		10	1.55	10	0.05	✓	✓	
デュアル	600	5	2.2	10	0.05		✓	
		10	1.55	10	0.05	✓	✓	✓

シングル 1 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics				パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> Max. Volts	I <sub>RRM</sub> *3 Max. μA	t <sub>rr</sub> *4 μ sec.	R <sub>th(j-c)</sub> °C/W		
YA971S6R	600	8 (Tc=116°C)	70	-40 to +150	1.55 (I <sub>F</sub> =8A)	10	0.05	2.5	TO-220	2.0
YG971S6R	600	8 (Tc=89°C)	70	-40 to +150	1.55 (I <sub>F</sub> =8A)	10	0.05	4.5	TO-220F	1.7
YA972S6R	600	10 (Tc=115°C)	100	-40 to +150	1.55 (I <sub>F</sub> =10A)	10	0.05	2.0	TO-220	2.0
YG972S6R	600	10 (Tc=89°C)	100	-40 to +150	1.55 (I <sub>F</sub> =10A)	10	0.05	3.5	TO-220F	1.7
YG971S8R	800	5 (Tc=93°C)	60	-40 to +150	2.2 (I <sub>F</sub> =5A)	10	0.05	4.5	TO-220F	1.7

( ) 条件

\*1 50Hz 方形波 duty=1/2  
\*2 正弦波 10ms. \*3 V<sub>R</sub>=V<sub>RRM</sub>  
\*4 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

( ) Conditions

\*1 50Hz Square wave duty=1/2  
\*2 Sine wave, 10ms \*3 V<sub>R</sub>=V<sub>RRM</sub>  
\*4 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics				パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> Max. Volts	I <sub>RRM</sub> *3 Max. μA	t <sub>rr</sub> *4 μ sec.	R <sub>th(j-c)</sub> °C/W		
YA975C6R	600	20 (Tc=106°C)	100	-40 to +150	1.55 (I <sub>F</sub> =10A)	10	0.05	1.25	TO-220	2.0
YG975C6R	600	20 (Tc=89°C)	100	-40 to +150	1.55 (I <sub>F</sub> =10A)	10	0.05	1.75	TO-220F	1.7
PH975C6	600	20 (Tc=97°C)	100	-40 to +150	1.55 (I <sub>F</sub> =10A)	10	0.05	1.5	TO-247	4.9

( ) 条件





\*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流)  
\*2 正弦波 10ms. 1チップあたり \*3 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり  
\*4 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

( ) Conditions

\*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)  
\*2 Sine wave, 10ms per element \*3 V<sub>R</sub>=V<sub>RRM</sub> per element  
\*4 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

# 5 整流ダイオード/Rectifier Diodes

## ■ スーパー LLD 3 (連続モード PFC 回路用) Super LLD 3 (Continuous mode PFC)

Super LLD 3 (Continuous mode PFC)						TO-220	TO-220F	TO-247	T-Pack (S)
									
結線	V <sub>RRM</sub> (V)	I <sub>o</sub> (A)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	T <sub>rr</sub> (μsec)				
シングル	600	8	3	25	0.026	✓	✓		
		10	3	30	0.028	✓	✓		
デュアル	600	16	3	25	0.026	✓	✓		✓
		20	3	30	0.028	✓	✓	✓	✓

### シングル 1 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics				パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>o</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> Max. Volts	I <sub>RRM</sub> *3 Max. μA	t <sub>rr</sub> *4 μ sec.	R <sub>th(j-c)</sub> °C/W		
YA981S6R	600	8 (Tc=99°C)	40	-40 to +150	3.0 (I <sub>F</sub> =8A)	25	0.026	2.5	TO-220	2.0
YG981S6R	600	8 (Tc=58°C)	40	-40 to +150	3.0 (I <sub>F</sub> =8A)	25	0.026	4.5	TO-220F	1.7
YA982S6R	600	10 (Tc=99°C)	50	-40 to +150	3.0 (I <sub>F</sub> =10A)	30	0.028	2.0	TO-220	2.0
YG982S6R	600	10 (Tc=60°C)	50	-40 to +150	3.0 (I <sub>F</sub> =10A)	30	0.028	3.5	TO-220F	1.7

( ) 条件

\*1 50Hz 方形波 duty=1/2

\*2 正弦波 10ms.

\*3 V<sub>R</sub>=V<sub>RRM</sub>

\*4 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

( ) Conditions

\*1 50Hz Square wave duty=1/2

\*2 Sine wave, 10ms

\*3 V<sub>R</sub>=V<sub>RRM</sub>

\*4 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

### デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics				パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>o</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> Max. Volts	I <sub>RRM</sub> *3 Max. μA	t <sub>rr</sub> *4 μ sec.	R <sub>th(j-c)</sub> °C/W		
YA982C6R	600	16 (Tc=88°C)	40	-40 to +150	3.0 (I <sub>F</sub> =8A)	25	0.026	1.5	TO-220	2.0
TS982C6R	600	16 (Tc=88°C)	40	-40 to +150	3.0 (I <sub>F</sub> =8A)	25	0.026	1.5	T-pack(S)	1.6
YG982C6R	600	16 (Tc=68°C)	40	-40 to +150	3.0 (I <sub>F</sub> =8A)	25	0.026	2	TO-220F	1.7
YA985C6R	600	20 (Tc=86°C)	50	-40 to +150	3.0 (I <sub>F</sub> =10A)	30	0.028	1.25	TO-220	2.0
TS985C6R	600	20 (Tc=86°C)	50	-40 to +150	3.0 (I <sub>F</sub> =10A)	30	0.028	1.25	T-pack(S)	1.6
YG985C6R	600	20 (Tc=60°C)	50	-40 to +150	3.0 (I <sub>F</sub> =10A)	30	0.028	1.75	TO-220F	1.7
PH985C6	600	20 (Tc=73°C)	50	-40 to +150	3.0 (I <sub>F</sub> =10A)	30	0.028	1.5	TO-247	4.9

( ) 条件

\*1 50Hz 方形波 duty=1/2(センタータップ平均出力電流)

\*2 正弦波 10ms. 1チップあたり \*3 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり

\*4 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

( ) Conditions

\*1 50Hz Square wave duty 1/2 (Average forward current of centertap full wave connection)

\*2 Sine wave, 10ms per element \*3 V<sub>R</sub>=V<sub>RRM</sub> per element

\*4 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

■ 低損失超高速ダイオード Low-Loss Fast Recovery Diodes (LLD)

Low-Loss Fast Recovery Diodes (LLD)						TO-220F	K-Pack(L)	K-Pack(S)	TFP
結線	V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	T <sub>rr</sub> (μsec)				
シングル	200	5	0.95	100	0.035	✓	✓	✓	
		10	0.98	200	0.035	✓			
デュアル	200	5	0.95	100	0.035	✓	✓	✓	
		10	0.95	100	0.035	✓			
		20	0.98	200	0.035	✓			✓
	300	5	1.2	100	0.035	✓			
		10	1.2	100	0.035	✓			
		20	1.2	200	0.035				✓

シングル 1 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics				パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> *3 Max. Volts	I <sub>RRM</sub> *4 Max. μA	t <sub>rr</sub> *5 μ sec.	R <sub>th(j-c)</sub> °C/W		
KP926S2	200	5 (Tc=106°C)	70	-40 to +150	0.95	100	0.035	10.0	K-Pack(L)	0.6
KS926S2	200	5 (Tc=106°C)	70	-40 to +150	0.95	100	0.035	10.0	K-pack(S)	0.6
YG911S2R	200	5 (Tc=134°C)	50	-40 to +150	0.95	100	0.035	3.5	TO-220F	1.7
YG912S2R	200	10 (Tc=116°C)	80	-40 to +150	0.98	200	0.035	3.5	TO-220F	1.7
YG911S3R	300	5 (Tc=128°C)	40	-40 to +150	1.2	100	0.035	3.5	TO-220F	1.7

( ) 条件

\*1 50Hz 方形波 duty=1/2

\*2 正弦波 10ms. \*3 I<sub>F</sub>=I<sub>O</sub>

\*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

\*4 V<sub>R</sub>=V<sub>RRM</sub>

( ) Conditions

\*1 50Hz Square wave duty 1/2

\*2 Sine wave, 10ms \*3 I<sub>F</sub>=I<sub>O</sub>

\*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

\*4 V<sub>R</sub>=V<sub>RRM</sub>

デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics				パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	I <sub>FSM</sub> *2 Amps.		V <sub>FM</sub> *3 Max. Volts	I <sub>RRM</sub> *4 Max. μA	t <sub>rr</sub> *5 μ sec.	R <sub>th(j-c)</sub> °C/W		
KP923C2	200	5 (Tc=103°C)	50	-40 to +150	0.95	100	0.035	10.0	K-Pack(L)	0.6
KS923C2	200	5 (Tc=103°C)	50	-40 to +150	0.95	100	0.035	10.0	K-pack(S)	0.6
YG901C2R	200	5 (Tc=120°C)	25	-40 to +150	0.95	100	0.035	5.0	TO-220F	1.7
YG902C2R	200	10 (Tc=115°C)	50	-40 to +150	0.95	100	0.035	3.5	TO-220F	1.7
YG906C2R	200	20 (Tc=102°C)	80	-40 to +150	0.98	200	0.035	2.5	TO-220F	1.7
MS906C2	200	20 (Tc=105°C)	80	-40 to +150	0.98	200	0.035	2.0	TFP	0.8
YG901C3R	300	5 (Tc=105°C)	25	-40 to +150	1.2	100	0.035	5.0	TO-220F	1.7
YG902C3R	300	10 (Tc=101°C)	40	-40 to +150	1.2	100	0.035	3.5	TO-220F	1.7
MS906C3	300	20 (Tc=95°C)	80	-40 to +150	1.2	200	0.035	2.0	TFP	0.8

( ) 条件

\*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流)

\*2 正弦波 10ms. 1チップあたり \*3 I<sub>F</sub>=0.5I<sub>O</sub> 1チップあたり

\*4 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり

\*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

( ) Conditions







\*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)

\*2 Sine wave, 10ms per element \*3 I<sub>F</sub>=0.5I<sub>O</sub> per element

\*4 V<sub>R</sub>=V<sub>RRM</sub> per element

\*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

## ■ 低損失超高速低ノイズダイオード Low-Loss Fast Soft Recovery Diodes (LLD)

Low-Loss Fast Soft Recovery Diodes (LLD)						TO-220	TO-220F	TO-3PF	T-Pack (S)	K-Pack (S)	TFP
											
結線	V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	T <sub>rr</sub> (μsec)						
シングル	300	5	1.3	20	0.04					✓	
	400	5	1.45	20	0.05					✓	
デュアル	300	10	1.3	20	0.04	✓	✓		✓		
		20	1.3	35	0.04	✓	✓	✓	✓		✓
	400	10	1.45	20	0.05	✓	✓		✓		
		20	1.45	35	0.05	✓	✓	✓	✓		✓

### シングル 1 in one-package

型式 Device type	絶対最大定格 Maximum rating			I <sub>FSM</sub> *2 Amps.	接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics				パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	V <sub>F</sub> Volts			V <sub>FM</sub> *3 Max. Volts	I <sub>RRM</sub> *4 Max. μA	t <sub>rr</sub> *5 μsec.	R <sub>th(j-c)</sub> °C/W		
KS986S3	300	5 (Tc=128°C)	1.3	90	-40 to +150	1.3	20	0.04	3.5	K-pack(S)	0.6
KS986S4	400	5 (Tc=125°C)	1.45	80	-40 to +150	1.45	20	0.05	3.5	K-pack(S)	0.6

( ) 条件  
 \*1 50Hz方形波 duty=1/2  
 \*2 正弦波 10ms. \*3 I<sub>F</sub>=I<sub>O</sub> \*4 V<sub>R</sub>=V<sub>RRM</sub>  
 \*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

( ) Conditions  
 \*1 50Hz Square wave duty=1/2  
 \*2 Sine wave, 10ms \*3 I<sub>F</sub>=I<sub>O</sub> per element \*4 V<sub>R</sub>=V<sub>RRM</sub>  
 \*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

### デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			I <sub>FSM</sub> *2 Amps.	接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics				パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> *1 Amps.	V <sub>F</sub> Volts			V <sub>FM</sub> *3 Max. Volts	I <sub>RRM</sub> *4 Max. μA	t <sub>rr</sub> *5 μsec.	R <sub>th(j-c)</sub> °C/W		
YG982C3R	300	10 (Tc=112°C)	1.3	90	-40 to +150	1.3	20	0.04	3	TO-220F	1.7
YA982C3R	300	10 (Tc=128°C)	1.3	90	-40 to +150	1.3	20	0.04	1.75	TO-220	2.0
TS982C3R	300	10 (Tc=128°C)	1.3	90	-40 to +150	1.3	20	0.04	1.75	T-pack(S)	1.6
YG985C3R	300	20 (Tc=105°C)	1.3	110	-40 to +150	1.3	35	0.04	1.75	TO-220F	1.7
YA985C3R	300	20 (Tc=118°C)	1.3	110	-40 to +150	1.3	35	0.04	1.25	TO-220	2.0
TS985C3R	300	20 (Tc=118°C)	1.3	110	-40 to +150	1.3	35	0.04	1.25	T-pack(S)	1.6
MS985C3	300	20 (Tc=118°C)	1.3	110	-40 to +150	1.3	35	0.04	1.25	TFP	0.8
PG985C3R	300	20 (Tc=73°C)	1.3	110	-40 to +150	1.3	35	0.04	3	TO-3PF	6.0
YG982C4R	400	10 (Tc=107°C)	1.45	80	-40 to +150	1.45	20	0.05	3	TO-220F	1.7
YA982C4R	400	10 (Tc=125°C)	1.45	80	-40 to +150	1.45	20	0.05	1.75	TO-220	2.0
TS982C4R	400	10 (Tc=125°C)	1.45	80	-40 to +150	1.45	20	0.05	1.75	T-pack(S)	1.6
YG985C4R	400	20 (Tc=100°C)	1.45	100	-40 to +150	1.45	35	0.05	1.75	TO-220F	1.7
YA985C4R	400	20 (Tc=114°C)	1.45	100	-40 to +150	1.45	35	0.05	1.25	TO-220	2.0
TS985C4R	400	20 (Tc=114°C)	1.45	100	-40 to +150	1.45	35	0.05	1.25	T-pack(S)	1.6
MS985C4	400	20 (Tc=114°C)	1.45	100	-40 to +150	1.45	35	0.05	1.25	TFP	0.8
PG985C4R	400	20 (Tc=64°C)	1.45	100	-40 to +150	1.45	35	0.05	3	TO-3PF	6.0

( ) 条件  
 \*1 50Hz方形波 duty=1/2 (センタータップ平均出力電流)  
 \*2 正弦波 10ms. 1チップあたり \*3 I<sub>F</sub>=0.5I<sub>O</sub> 1チップあたり  
 \*4 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり  
 \*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

( ) Conditions  
 \*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)  
 \*2 Sine wave, 10ms per element \*3 I<sub>F</sub>=0.5I<sub>O</sub> per element  
 \*4 V<sub>R</sub>=V<sub>RRM</sub> per element  
 \*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

■ ショットキーバリアダイオード Schottky-Barrier Diodes (SBD)

Schottky-Barrier Diodes (SBD)					TO-3P(Q)	TO-3PF	T-Pack (S)	T-Pack (L)
結線	V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)				
シングル/ デュアル	40	10	0.55	5			✓	✓
		20	0.6	15			✓	
		30	0.55	20	✓	✓		
	60	30	0.58	20	✓	✓	✓	

シングル / デュアル 1 in one-package/2 in one-package

型式 Device type	絶対最大定格 Maximum rating		I <sub>FSM</sub> <sup>*2</sup> Amps.	接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics			パッケージ Package	質量 Net mass Grams
	V <sub>RRM</sub> Volts	I <sub>O</sub> <sup>*1</sup> Amps.			V <sub>FM</sub> <sup>*3</sup> Max. Volts	I <sub>RRM</sub> <sup>*4</sup> Max.mA	R <sub>th(j-c)</sub> °C/W		
TP802C04R	40	10 (Tc=116°C)	120	-40 to +150	0.55 (I <sub>F</sub> =4.0A)	5	3.0	T-Pack(L)	1.6
TS802C04R	40	10 (Tc=116°C)	120	-40 to +150	0.55 (I <sub>F</sub> =4.0A)	5	3.0	T-pack(S)	1.6
TS805C04R	40	20 (Tc=110°C)	120	-40 to +150	0.6 (I <sub>F</sub> =10A)	15	2.0	T-pack(S)	1.6
ESAD83M-004RR	40	30 (Tc=105°C)	150	-40 to +150	0.55 (I <sub>F</sub> =12.5A)	20	1.7	TO-3PF	6.0
ESAD83-004R	40	30 (Tc=118°C)	150	-40 to +150	0.55 (I <sub>F</sub> =12.5A)	20	1.2	TO-3P	5.5
ESAD83M-006RR	60	30 (Tc=106°C)	120	-40 to +150	0.58 (I <sub>F</sub> =12.5A)	20	1.7	TO-3PF	6.0
TS808C06R	60	30 (Tc=115°C)	120	-40 to +150	0.58 (I <sub>F</sub> =12.5A)	20	1.2	T-pack(S)	1.6
ESAD83-006R	60	30 (Tc=119°C)	120	-40 to +150	0.58 (I <sub>F</sub> =12.5A)	20	1.2	TO-3P	5.5

( ) 条件

\*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流)

\*2 正弦波 10ms. 1チップあたり \*3 1チップあたり

\*4 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり

( ) Conditions

\*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)

\*2 Sine wave, 10ms per element \*3 per element

\*4 V<sub>R</sub>=V<sub>RRM</sub> per element

■ 低損失超高速ダイオード Low-Loss Fast Recovery Diodes (LLD)

Low-Loss Fast Recovery Diodes (LLD)						TO-3P(Q)	TO-3PF	T-Pack (S)	T-Pack (L)
結線	V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F</sub> (V)	I <sub>R</sub> (μA)	T <sub>rr</sub> (μsec)				
シングル/ デュアル	200	5	0.95	100	0.035			✓	✓
		10	0.95	100	0.035			✓	✓
		20	0.95	200	0.04	✓	✓		
		20	0.98	200	0.035			✓	✓
	300	10	1.2	100	0.035			✓	✓
		20	1.2	200	0.04	✓	✓		
	400	20	1.5	500	0.05	✓			

シングル / デュアル 1 in one-package/2 in one-package

型式 Device type	絶対最大定格 Maximum rating		I <sub>FSM</sub> <sup>*2</sup> Amps.	接合、保存温度 Thermal rating T <sub>j</sub> and T <sub>stg</sub> °C	電気的特性(Ta=25°C) Characteristics			パッケージ Package	質量 Net mass Grams	
	V <sub>RRM</sub> Volts	I <sub>O</sub> <sup>*1</sup> Amps.			V <sub>FM</sub> <sup>*3</sup> Max. Volts	I <sub>RRM</sub> <sup>*4</sup> Max. μA	t <sub>rr</sub> <sup>*5</sup> μ sec.			R <sub>th(j-c)</sub> °C/W
TP901C2R	200	5 (Tc=120°C)	25	-40 to +150	0.95 (I <sub>F</sub> =2.5A)	100	0.035	5.0	T-Pack(L)	1.6
TP902C2R	200	10 (Tc=125°C)	50	-40 to +150	0.95 (I <sub>F</sub> =5A)	100	0.035	2.5	T-Pack(L)	1.6
TS902C2R	200	10 (Tc=125°C)	50	-40 to +150	0.95 (I <sub>F</sub> =5A)	100	0.035	2.5	T-pack(S)	1.6
ESAD92M-02RR	200	20 (Tc=108°C)	100	-40 to +150	0.95 (I <sub>F</sub> =10A)	200	0.04	2.0	TO-3PF	6.0
TP906C2R	200	20 (Tc=110°C)	80	-40 to +150	0.98 (I <sub>F</sub> =10A)	200	0.035	2.0	T-Pack(L)	1.6
TS906C2R	200	20 (Tc=110°C)	80	-40 to +150	0.98 (I <sub>F</sub> =10A)	200	0.035	2.0	T-pack(S)	1.6
ESAD92-02R	200	20 (Tc=115°C)	100	-40 to +150	0.95 (I <sub>F</sub> =10A)	200	0.04	1.5	TO-3P	5.5
TP902C3R	300	10 (Tc=115°C)	40	-40 to +150	1.2 (I <sub>F</sub> =5A)	100	0.035	2.5	T-Pack(L)	1.6
TS902C3R	300	10 (Tc=115°C)	40	-40 to +150	1.2 (I <sub>F</sub> =5A)	100	0.035	2.5	T-pack(S)	1.6
ESAD92-03R	300	20 (Tc=110°C)	80	-40 to +150	1.2 (I <sub>F</sub> =10A)	200	0.04	1.5	TO-3P	5.5
ESAD92M-03RR	300	20 (Tc=96°C)	80	-40 to +150	1.2 (I <sub>F</sub> =10A)	200	0.04	2.0	TO-3PF	6.0
PA905C4R	400	20 (Tc=107°C)	70	-40 to +150	1.5 (I <sub>F</sub> =10A)	500	0.05	1.5	TO-3P	5.5

( ) 条件

\*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流)

\*2 正弦波 10ms. 1チップあたり \*3 1チップあたり

\*4 V<sub>R</sub>=V<sub>RRM</sub> 1チップあたり \*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

( ) Conditions



\*1 50Hz Square wave duty=1/2 (Average forward current of centertap full wave connection)

\*2 Sine wave, 10ms per element \*3 per element

\*4 V<sub>R</sub>=V<sub>RRM</sub> per element \*5 I<sub>F</sub>=0.1A, I<sub>R</sub>=0.2A, I<sub>rec</sub>=0.05A

Diode

## 600V 超高速ダイオード Ultra Fast Recovery Diodes

Ultra Fast Recovery Diodes						TO-220	TO-247-P2
							
結線	$V_{RRM}$ (V)	$I_O$ (A)	$V_F$ (V)	$I_R$ ( $\mu$ A)	$T_{rr}$ ( $\mu$ sec)		
シングル	600	15	2.6	250	0.031	✓	✓
		25	2.6	250	0.033	✓	✓
		35	2.6	250	0.036		✓
デュアル	600	50	2.6	250	0.033		✓
		70	2.6	250	0.036		✓

### シングル 1 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating $T_j$ and $T_{stg}$ °C	電気的特性( $T_a=25^\circ\text{C}$ ) Characteristics				パッケージ Package	質量 Net mass Grams
	$V_{RRM}$ Volts	$I_O^{*1}$ Amps.	$I_{FSM}^{*2}$ Amps.		$V_{FM}^{*3}$ Max. Volts	$I_{RRM}^{*4}$ Max. $\mu$ A	$t_{rr}^{*5}$ $\mu$ sec.	$R_{th(j-c)}$ °C/W		
FDRP15S60L	600	15 ( $T_c=98^\circ\text{C}$ )	110	-40 to +150	2.6	250	0.031	1.6	TO-220	2.0
FDRW15S60L	600	15 ( $T_c=85^\circ\text{C}$ )	110	-40 to +150	2.6	250	0.031	2.0	TO-247-P2	4.9
FDRP25S60L	600	25 ( $T_c=86^\circ\text{C}$ )	125	-40 to +150	2.6	250	0.033	1.2	TO-220	2.0
FDRW25S60L	600	25 ( $T_c=86^\circ\text{C}$ )	125	-40 to +150	2.6	250	0.033	1.2	TO-247-P2	4.9
FDRW35S60L	600	35 ( $T_c=91^\circ\text{C}$ )	140	-40 to +150	2.6	250	0.036	0.8	TO-247-P2	4.9

( ) 条件

\*1 50Hz 方形波 duty=1/2

\*2 正弦波 10ms. 1 パルス

\*4  $V_R=V_{RRM}$

\*3  $I_F=I_O$

\*5  $V_R=30V, I_F=0.1 I_O, -di/dt=200A/us$

( ) Conditions

\*1 50Hz Square wave duty=1/2

\*2 Sine wave, 10ms 1shot

\*4  $V_R=V_{RRM}$

\*3  $I_F=I_O$

\*5  $V_R=30V, I_F=0.1 I_O, -di/dt=200A/us$

### デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating $T_j$ and $T_{stg}$ °C	電気的特性( $T_a=25^\circ\text{C}$ ) Characteristics				パッケージ Package	質量 Net mass Grams
	$V_{RRM}$ Volts	$I_O^{*1}$ Amps.	$I_{FSM}^{*2}$ Amps.		$V_{FM}^{*3}$ Max. Volts	$I_{RRM}^{*4}$ Max. $\mu$ A	$t_{rr}^{*5}$ $\mu$ sec.	$R_{th(j-c)}$ °C/W		
FDRW50C60L	600	50 ( $T_c=86^\circ\text{C}$ )	125	-40 to +150	2.6	250	0.033	0.6	TO-247-P2	4.9
FDRW70C60L	600	70 ( $T_c=91^\circ\text{C}$ )	140	-40 to +150	2.6	250	0.036	0.4	TO-247-P2	4.9

( ) 条件

\*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流)

\*2 正弦波 10ms. 1チップあたり

\*4  $V_R=V_{RRM}$  1チップあたり

\*5  $V_R=30V, I_F=0.05 I_O, -di/dt=200A/us, 1$  チップあたり

( ) Conditions


\*1 50Hz Square wave duty=1/2, Output Current of center tap full wave connection

\*2 Sine wave, 10ms 1shot, Rating per element

\*4  $V_R=V_{RRM}$ , Rating per element

\*5  $V_R=30V, I_F=0.05 I_O, -di/dt=200A/us, Rating$  per element

■ 1200V 低ノイズ高速ダイオード Soft Recovery Fast Recovery Diodes

Soft Recovery Fast Recovery Diodes						TO-247-P2
						
結線	$V_{RRM}$ (V)	$I_O$ (A)	$V_F$ (V)	$I_R$ ( $\mu$ A)	$T_{rr}$ ( $\mu$ sec)	
シングル	1200	12	2.8	250	0.042	✓
		20	2.8	250	0.055	✓
		30	2.8	250	0.063	✓
デュアル	1200	40	2.8	250	0.055	✓
		60	2.8	250	0.063	✓

シングル 1 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating $T_j$ and $T_{stg}$ °C	電気的特性( $T_a=25^\circ\text{C}$ ) Characteristics				パッケージ Package	質量 Net mass Grams
	$V_{RRM}$ Volts	$I_O^{*1}$ Amps.	$I_{FSM}^{*2}$ Amps.		$V_{FM}^{*3}$ Max. Volts	$I_{RRM}^{*4}$ Max. $\mu$ A	$t_{rr}^{*5}$ $\mu$ sec.	$R_{th(j-c)}$ °C/W		
FDRW12S120J	1200	12 ( $T_c=97^\circ\text{C}$ )	100	-40 to +150	2.8	250	0.042	1.6	TO-247-P2	4.9
FDRW20S120J	1200	20 ( $T_c=88^\circ\text{C}$ )	120	-40 to +150	2.8	250	0.055	1.2	TO-247-P2	4.9
FDRW30S120J	1200	30 ( $T_c=89^\circ\text{C}$ )	150	-40 to +150	2.8	250	0.063	0.781	TO-247-P2	4.9

( ) 条件

\*1 50Hz 方形波 duty=1/2

\*2 正弦波 10ms. 1 パルス \*3  $I_F=I_O$

\*4  $V_R=V_{RRM}$  \*5  $V_R=30V, I_F=0.1 I_O, -di/dt=200A/us$

( ) Conditions

\*1 50Hz Square wave duty=1/2

\*2 Sine wave, 10ms 1shot \*3  $I_F=I_O$

\*4  $V_R=V_{RRM}$  \*5  $V_R=30V, I_F=0.1 I_O, -di/dt=200A/us$

デュアル 2 in one-package

型式 Device type	絶対最大定格 Maximum rating			接合、保存温度 Thermal rating $T_j$ and $T_{stg}$ °C	電気的特性( $T_a=25^\circ\text{C}$ ) Characteristics				パッケージ Package	質量 Net mass Grams
	$V_{RRM}$ Volts	$I_O^{*1}$ Amps.	$I_{FSM}^{*2}$ Amps.		$V_{FM}^{*3}$ Max. Volts	$I_{RRM}^{*4}$ Max. $\mu$ A	$t_{rr}^{*5}$ $\mu$ sec.	$R_{th(j-c)}$ °C/W		
FDRW40C120J	1200	40 ( $T_c=98^\circ\text{C}$ )	120	-40 to +150	2.8	250	0.055	0.5	TO-247-P2	4.9
FDRW60C120J	1200	60 ( $T_c=87^\circ\text{C}$ )	150	-40 to +150	2.8	250	0.063	0.397	TO-247-P2	4.9

( ) 条件

\*1 50Hz 方形波 duty=1/2 (センタータップ平均出力電流)

\*2 正弦波 10ms. 1チップあたり \*3  $I_F=0.5 I_O$ , 1チップあたり

\*4  $V_R=V_{RRM}$  1チップあたり

\*5  $V_R=30V, I_F=0.05 I_O, -di/dt=200A/us$ , 1チップあたり

( ) Conditions

\*1 50Hz Square wave duty=1/2, Output Current of center tap full wave connection

\*2 Sine wave, 10ms 1shot, Rating per element \*3  $I_F=0.5 I_O$ , Rating per element

\*4  $V_R=V_{RRM}$ , Rating per element

\*5  $V_R=30V, I_F=0.05 I_O, -di/dt=200A/us$ , Rating per element



## ■ 圧力センサ Pressure Sensors



富士電機の圧力センサは、ピエゾ抵抗、調整回路、EMC 保護を 1 チップに一体化しているため、システム全体の小型化に貢献できます。また、広範囲な圧力レンジに対応可能であり、様々な用途への適用が可能です。

Fuji Electric's pressure sensors combine piezo resistance, adjustment circuits, and EMC protection on single chip and contribute to reduction of system size. They operate in wide pressure range and are applicable to various uses.



### ■ 特長

- 絶対圧測定
- デジタルトリミングによる高精度保証
- 広範囲な圧力範囲に対応、フルスケール 100kPa ~ 300kPa
- センサチップに過電圧保護回路、電磁波遮断回路、サージ保護回路を備えており、特にサージに関しては、世界的な国際基準である ISO7637-level 4 をクリア
- Vcc、Vout、GND 配線が断線した場合のダイアグ自己検出機能搭載
- EPROM の冗長性による高信頼性を確保

### ■ Features

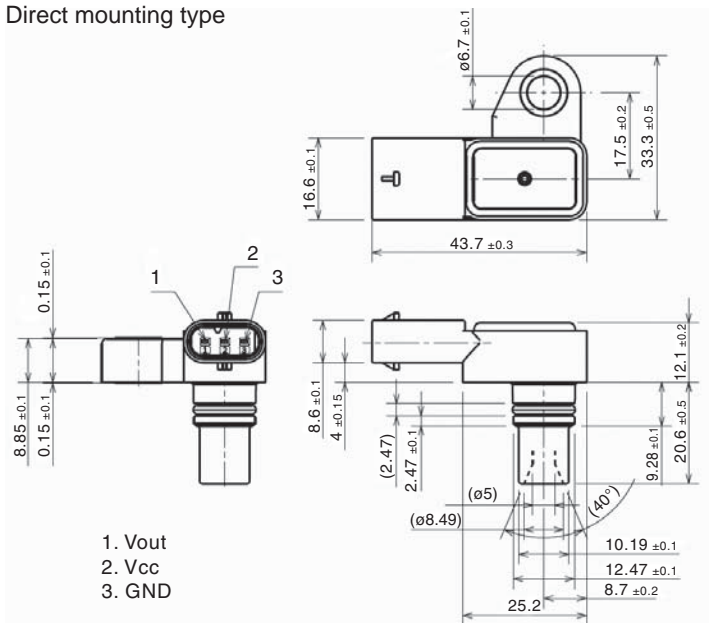
- Absolute pressure measurement
- High accuracy with digital trimming
- Wide pressure range, full scale of 100kPa to 300kPa
- Provided with overvoltage protection circuit, EMC filter, and surge protective device in the sensor chip
- Surge protection conforms to ISO7637-level 4 for automotive components
- Diagnostic self-detecting function in the event of a wire opened among Vcc, Vout and GND terminals
- High reliability ensured by EPROM bit redundancy

### 主な製品 Products

型 式 Device type	最大印加圧力 Max. applied voltage (kPa.abs)	許容電圧 Allowable voltage (V)	使用温度 Operating temperature (°C)	使用圧力 Operating pressure (kPa.abs)	使用電圧 Operating voltage (V)	出力電圧範囲 Output Voltage range (V)	絶対圧・ 相対圧	パッケージ Package
EPL4PC-R3S	500	7	-40 to 125	20 to 106.7	5.0±0.25	0.789 to 4.211	絶対圧	外装
EPL6GC-R3S	500	7	-40 to 125	25 to 242	5.0±0.25	0.5 to 4.5	絶対圧	外装

### 外形寸法 Dimensions, mm

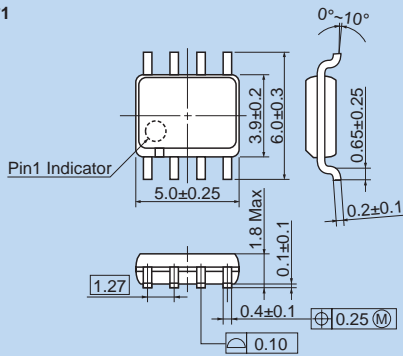
Direct mounting type



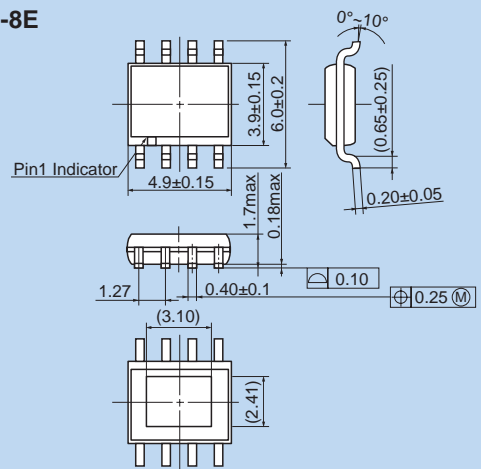
< 集積回路 / ディスクリートデバイス Integrated circuits / Discrete devices >

mm

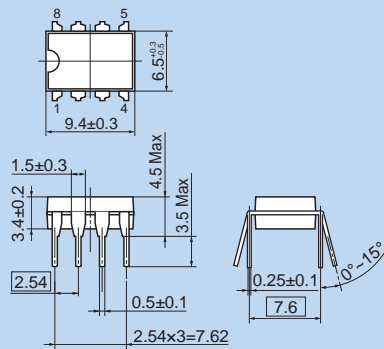
SOP-8<sup>\*1</sup>



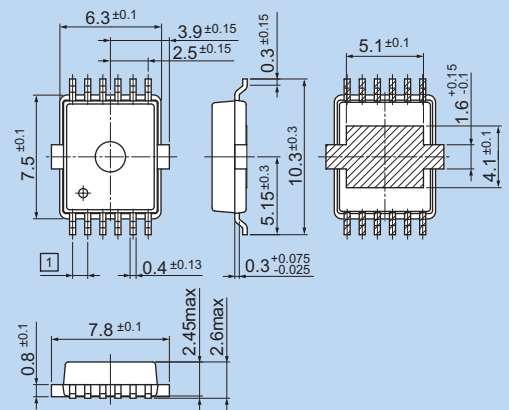
SOP-8E



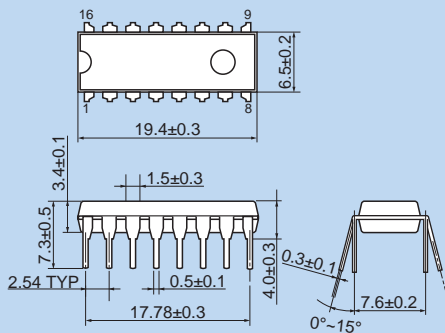
DIP-8



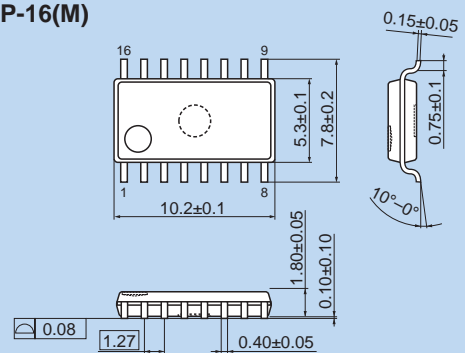
PSOP-12



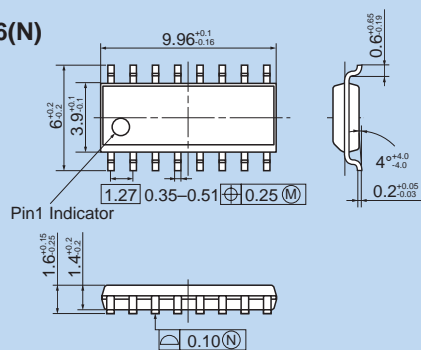
DIP-16



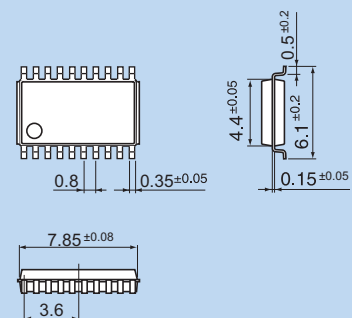
SOP-16(M)



SOP-16(N)



SSOP-20



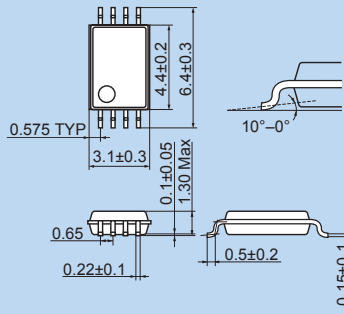
\*1) 代表型式 (FA8AxxN) のパッケージサイズです。他の IC については個別アプリケーションノート (仕様書) を参照ください。

\*1) This is the package size for the representative device type (FA8AxxN). For other ICs, please refer to the separate application note (specifications).

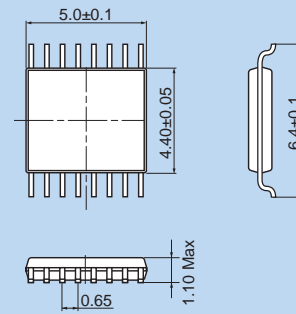
# 外形図/Outline

mm

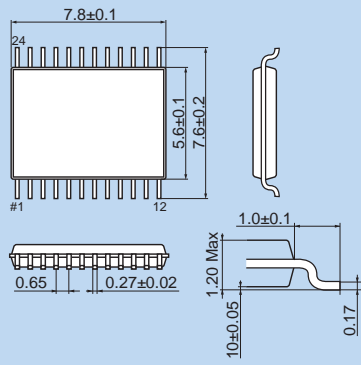
### TSSOP-8



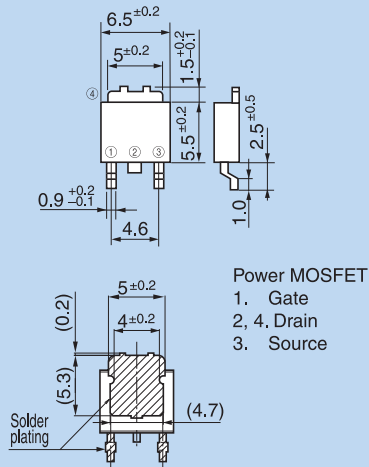
### TSSOP-16



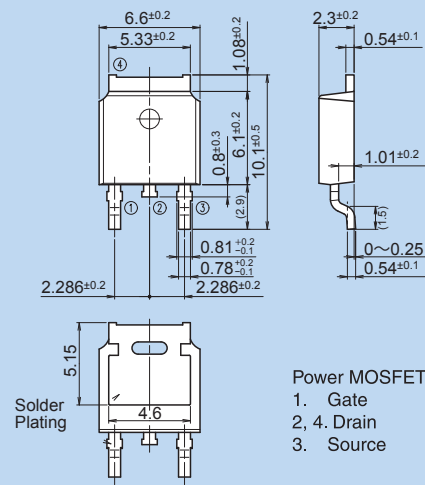
### TSSOP-24



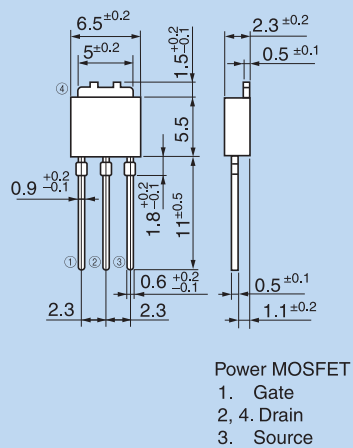
## K-pack(S)



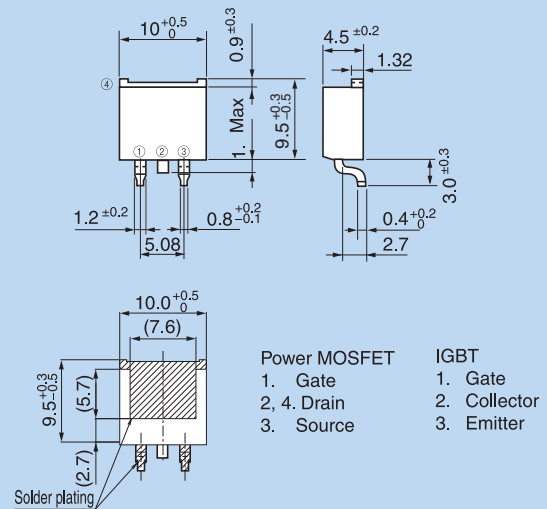
## TO-252



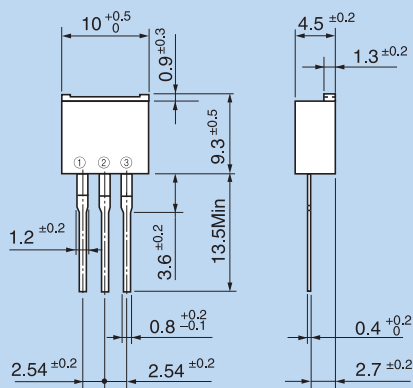
## K-pack(L)/I-pack: Power MOSFET K-pack(P)/I-pack: Diode



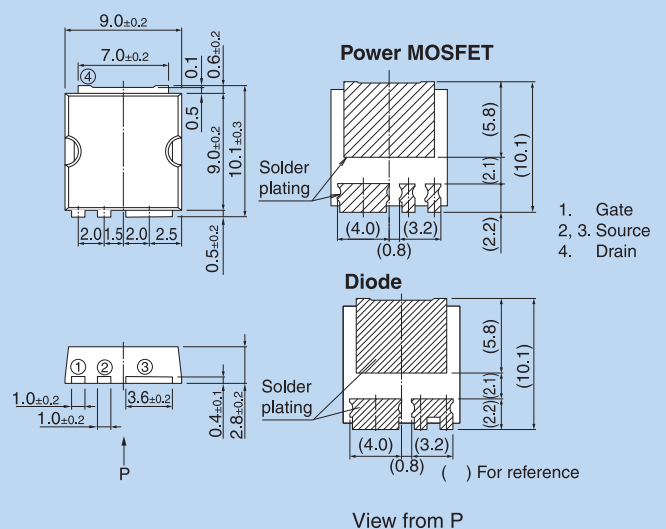
## T-pack(S)



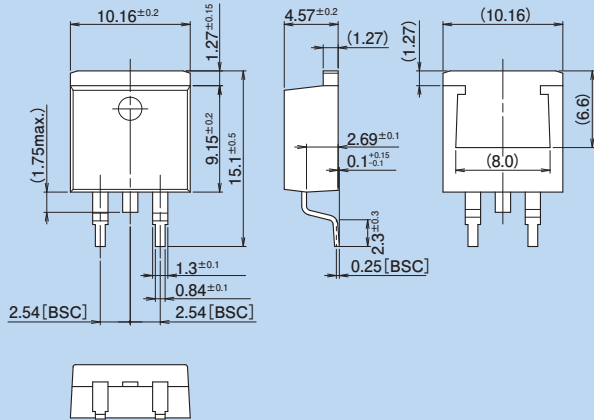
## T-pack(L): Power MOSFET T-pack(P): Diode



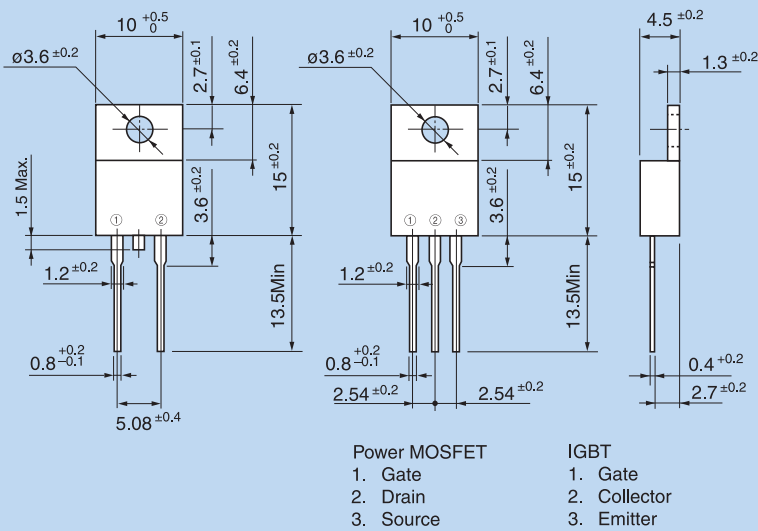
## TFP



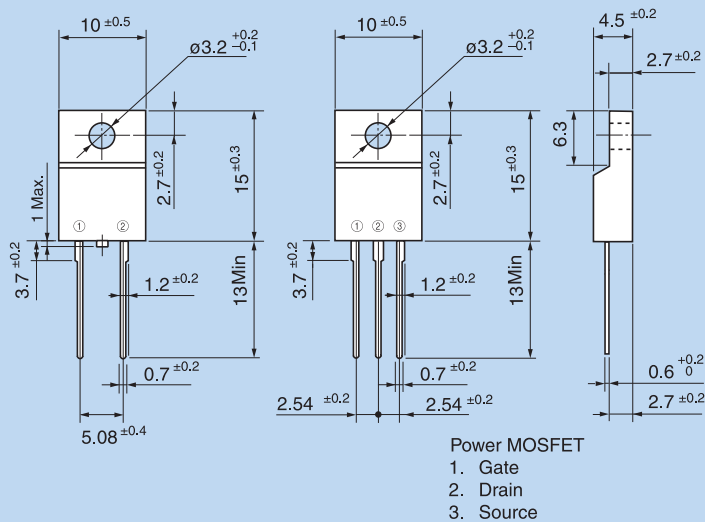
## D2-Pack



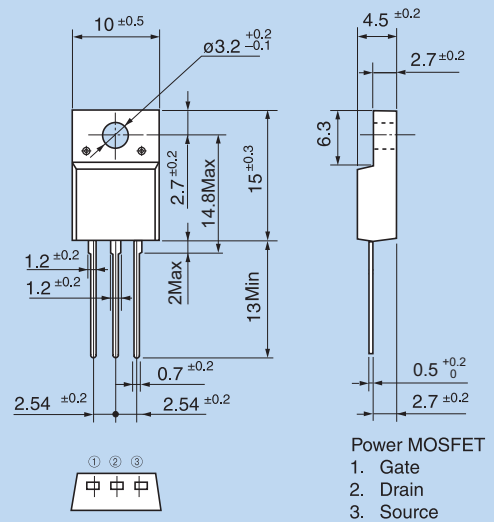
## TO-220AB



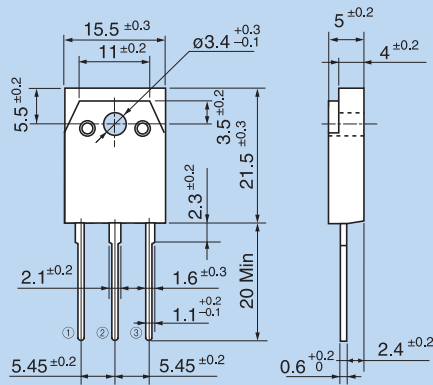
## TO-220F



## TO-220F (SLS)



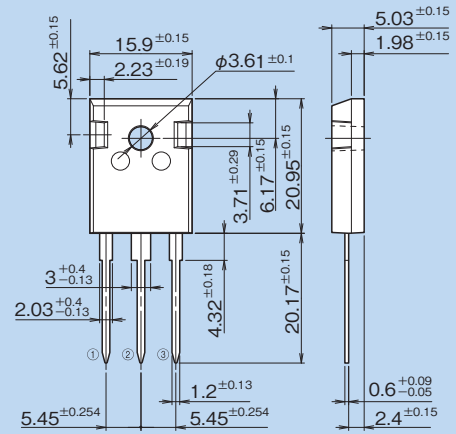
## TO-247



Power MOSFET

1. Gate
2. Drain
3. Source

## TO-247-P2



Power MOSFET

1. Gate
2. Drain
3. Source

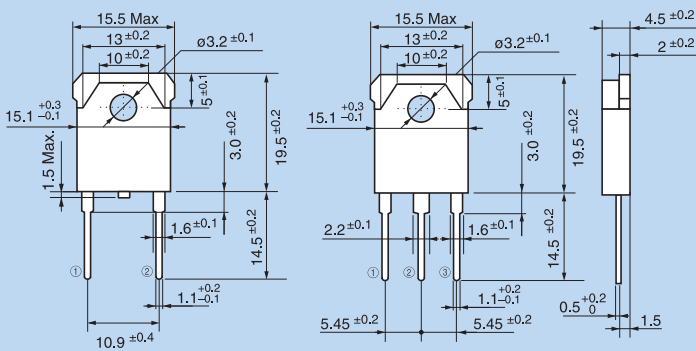
IGBT

1. Gate
2. Collector
3. Emitter

FWD

1. Anode
2. Cathode
3. Anode

## TO-3P



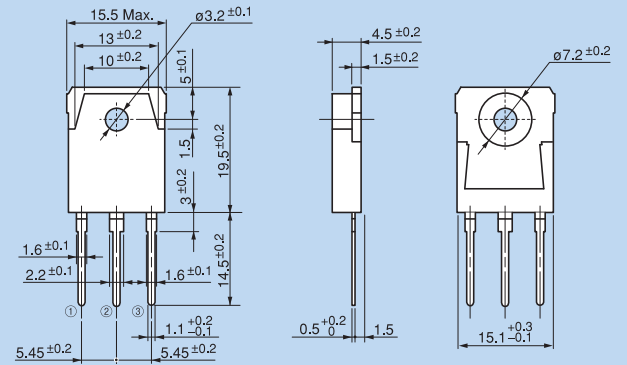
Power MOSFET

1. Gate
2. Drain
3. Source

IGBT

1. Gate
2. Collector
3. Emitter

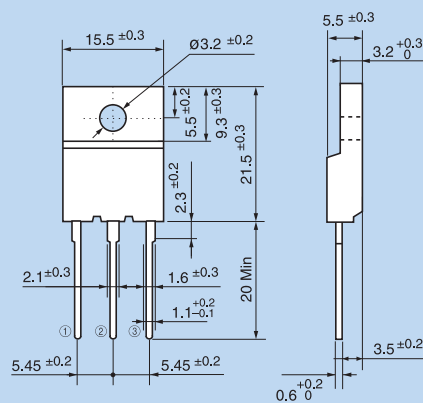
## TO-3P(Q)



Power MOSFET

1. Gate
2. Drain
3. Source

## TO-3PF



Power MOSFET

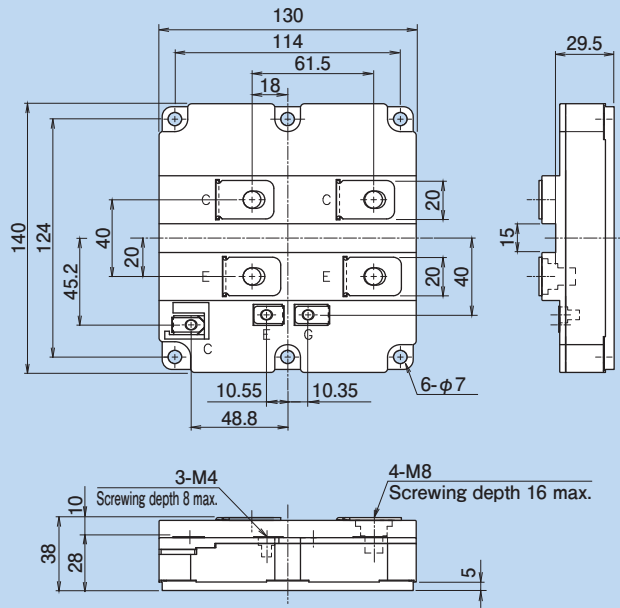
1. Gate
2. Drain
3. Source

# 外形図/Outline

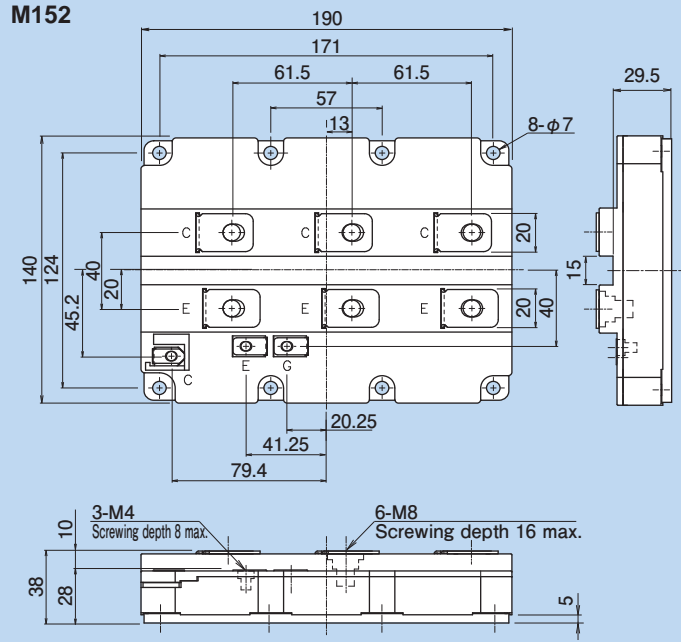
<パワーデバイス Power devices>

mm

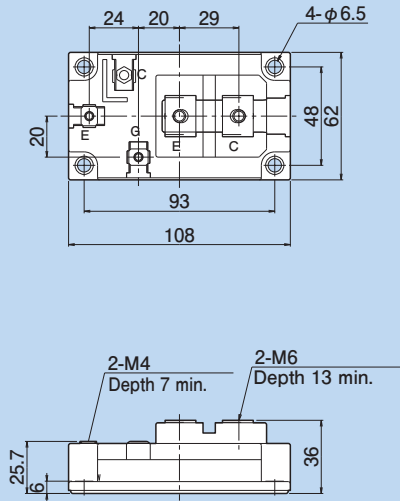
**M151**



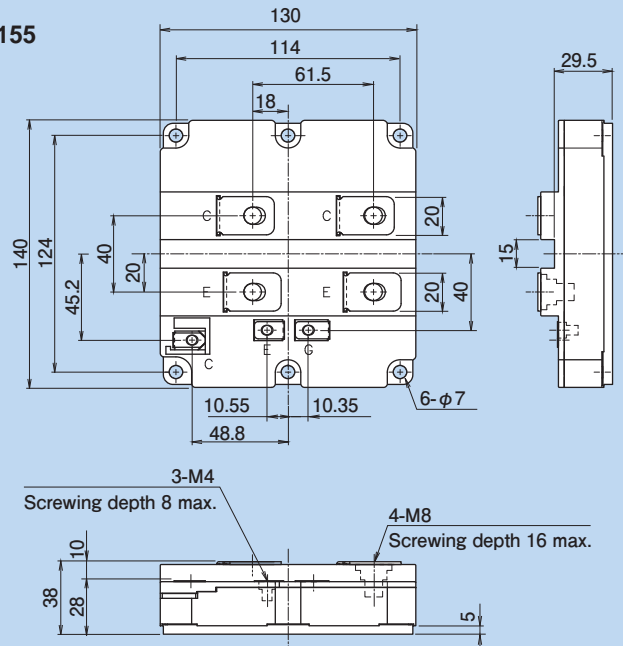
**M152**



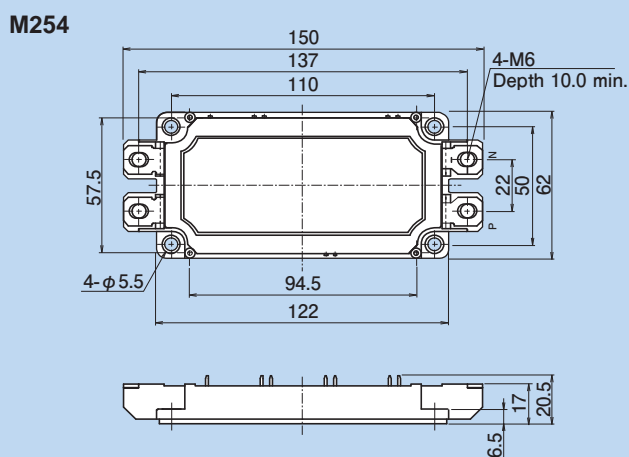
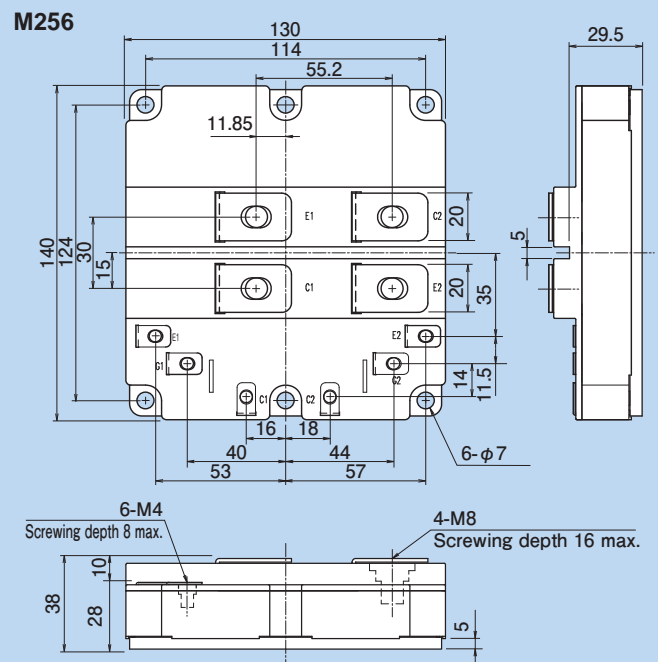
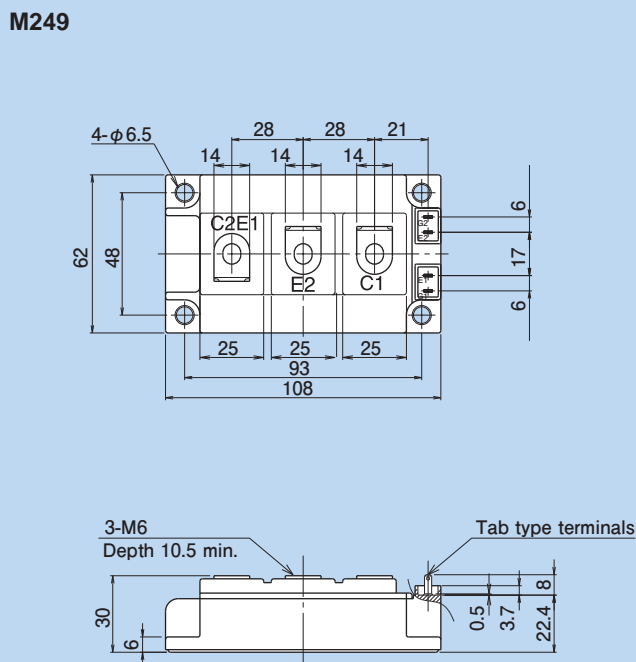
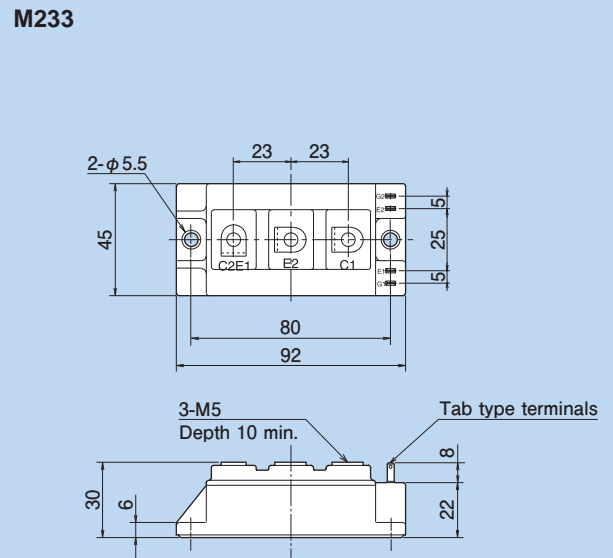
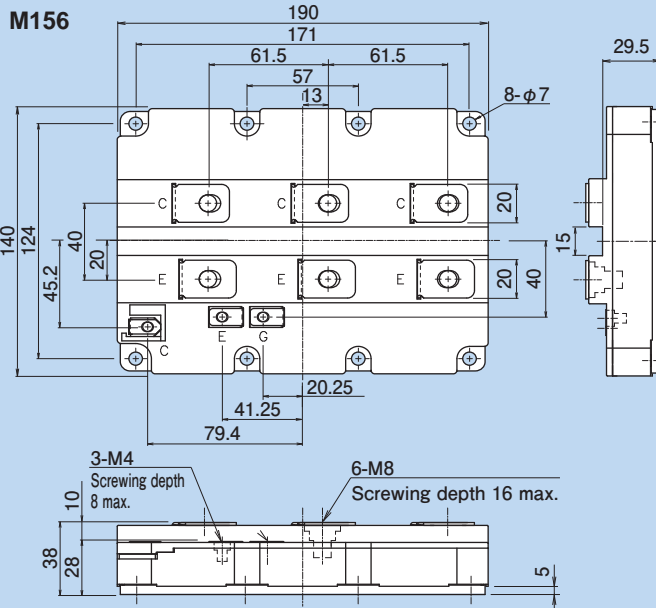
**M153**



**M155**

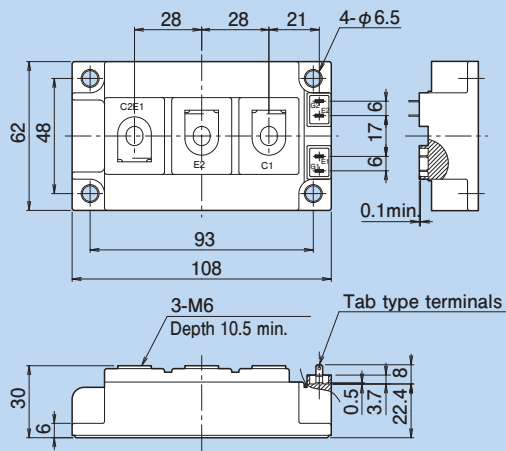


Outline

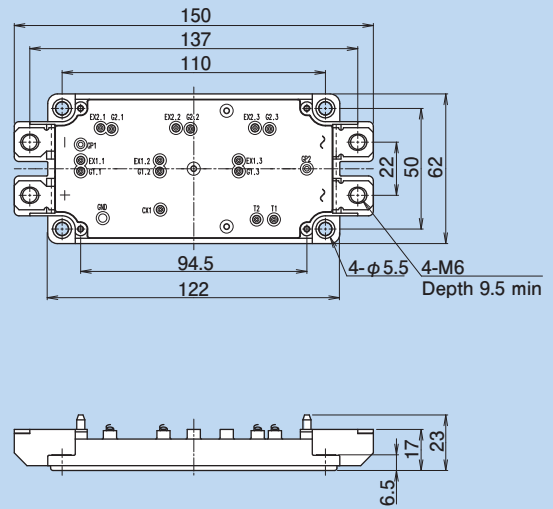




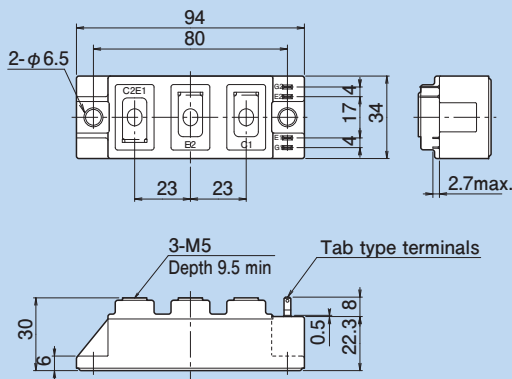
M259



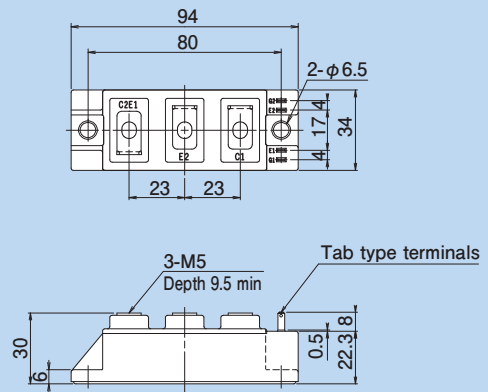
M260



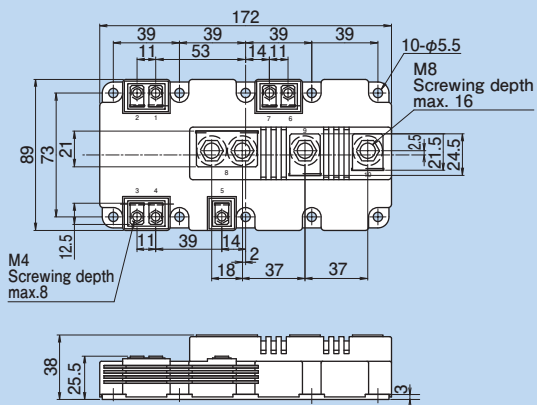
M262



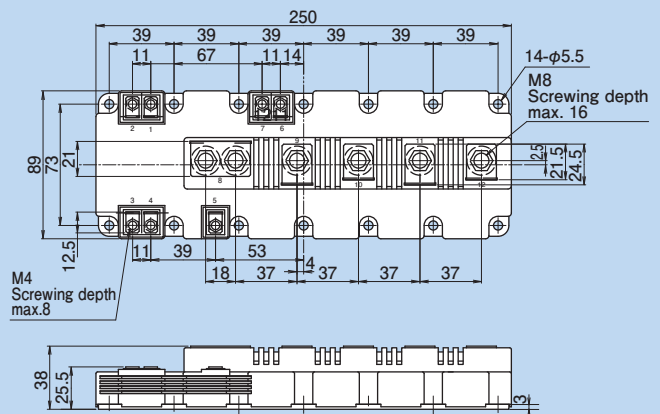
M263



M271

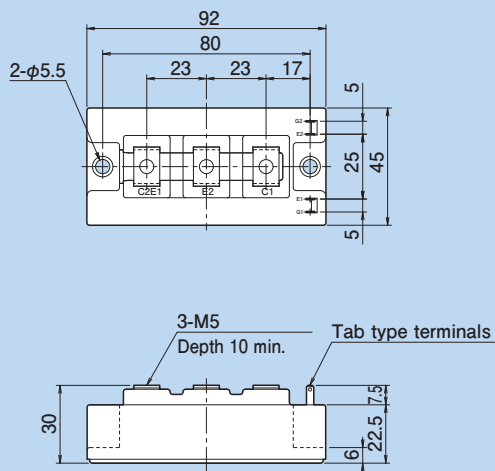


M272

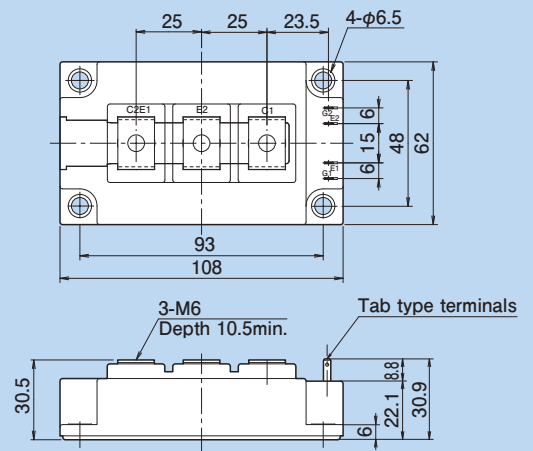


mm

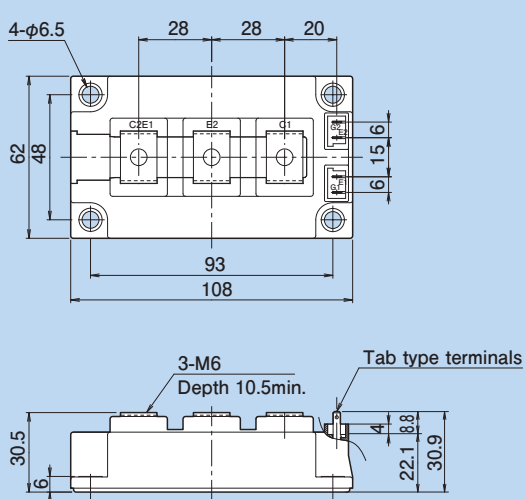
**M274**



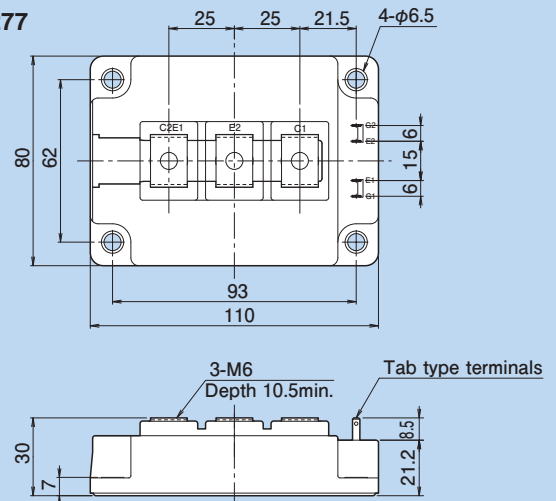
**M275**



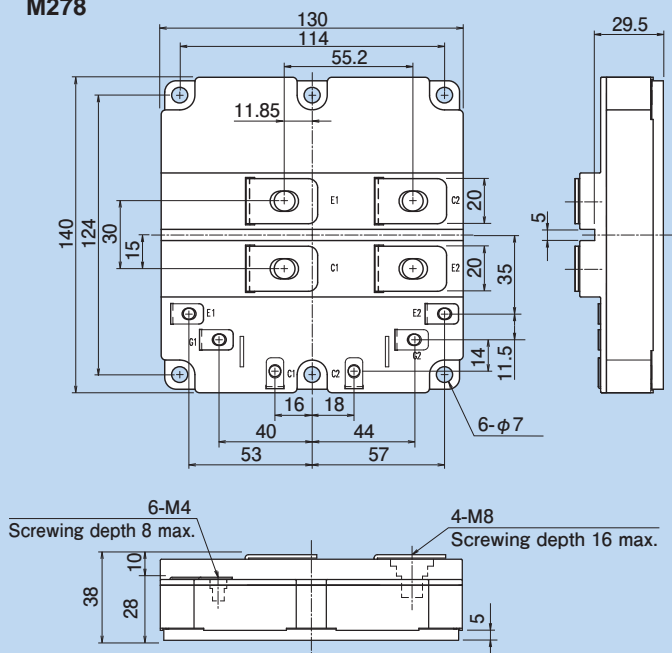
**M276**



**M277**

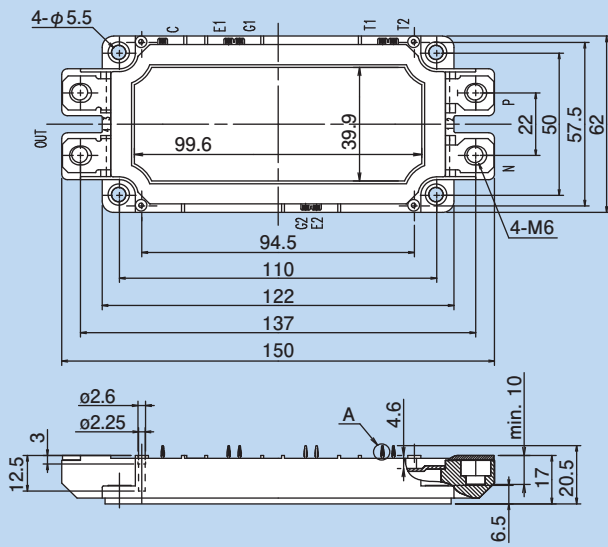


**M278**

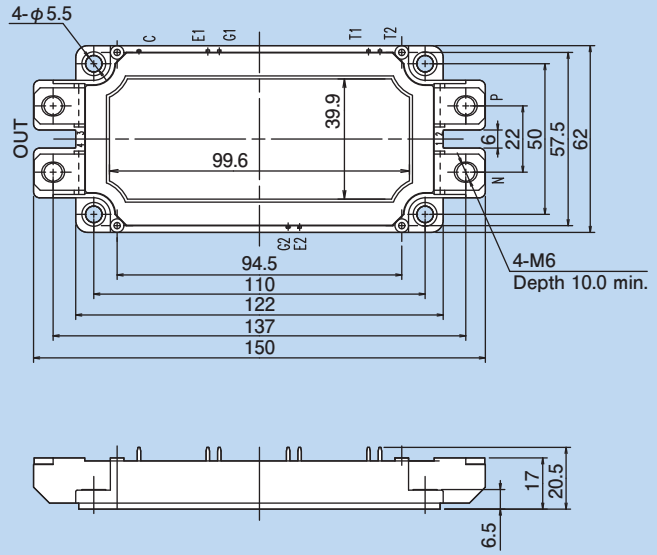


mm

**M282**

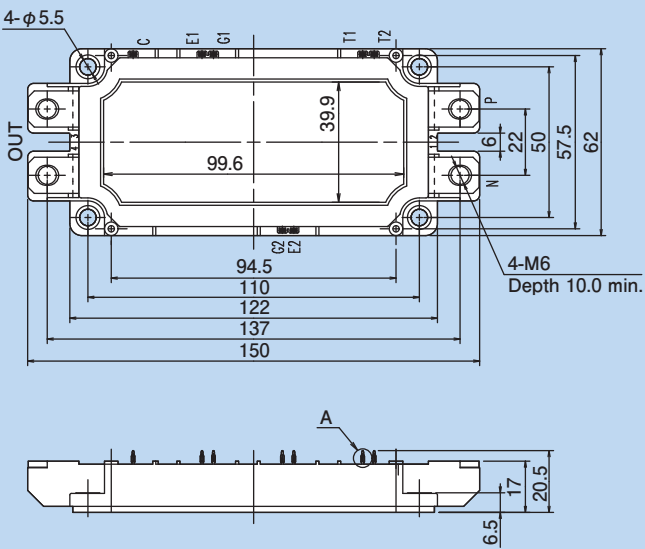


**M285**



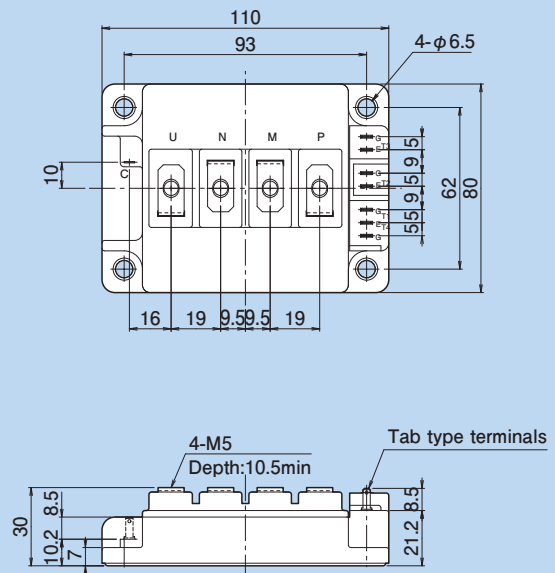
NOTE)  $\square$  shows theoretical dimension and tolerance is  $\pm 0.5$

**M286**



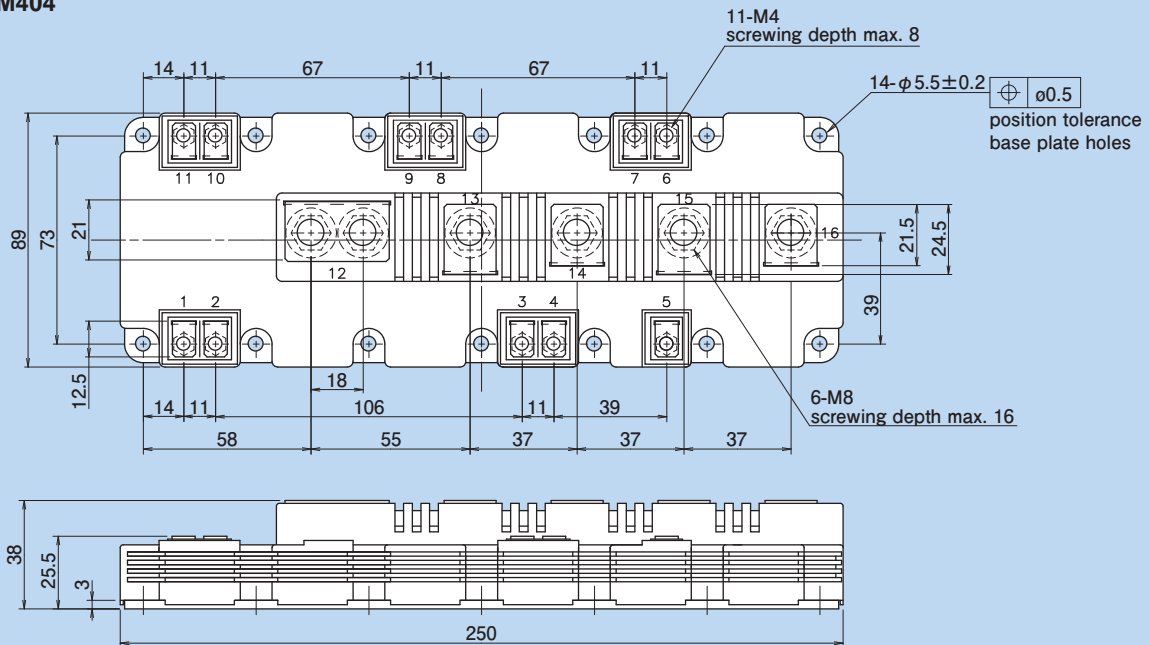
NOTE)  $\square$  shows theoretical dimension and tolerance is  $\pm 0.5$

**M403**

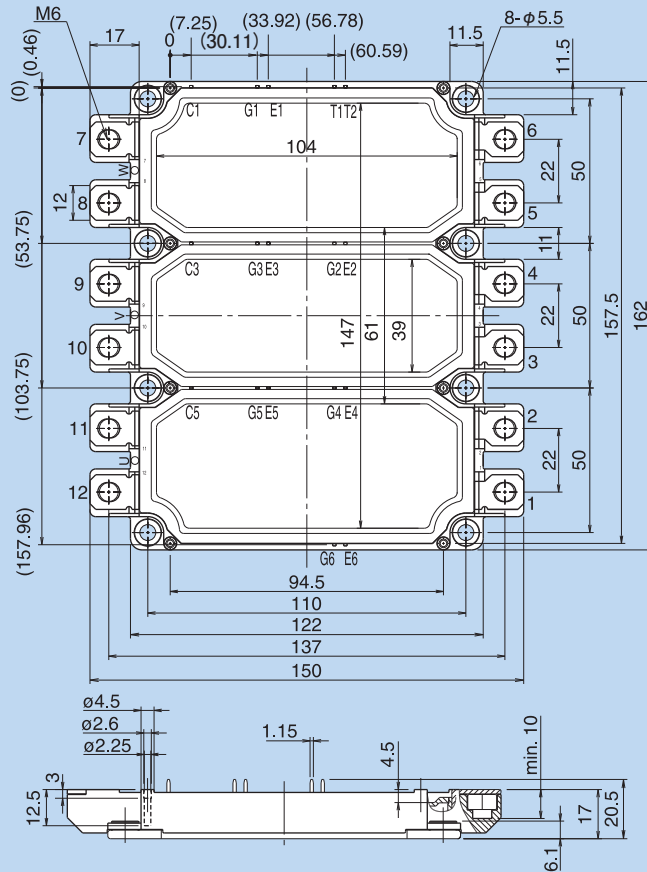


mm

## M404

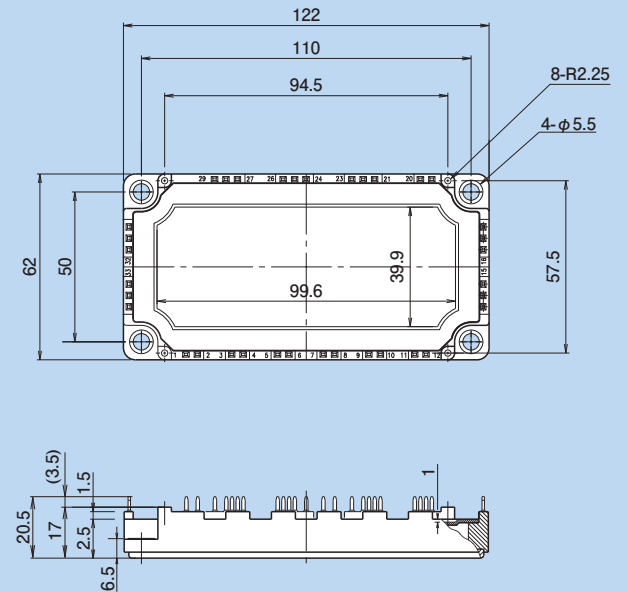


## M629



( ) : Theoretical dimensions, tolerance  $\phi 0.5$

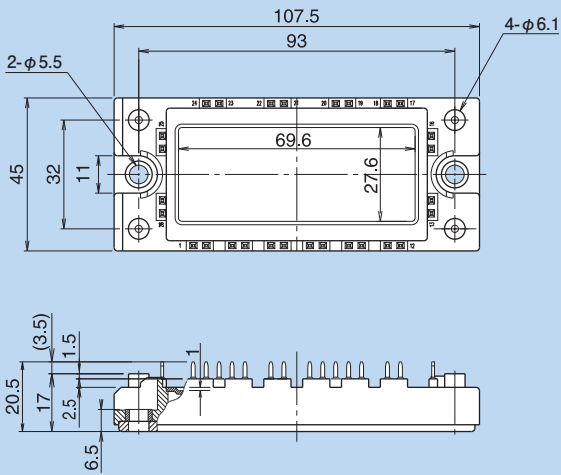
## M633



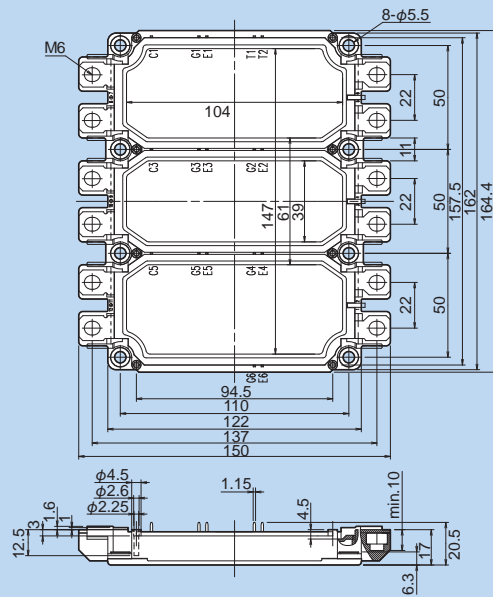
# 外形图/Outline

mm

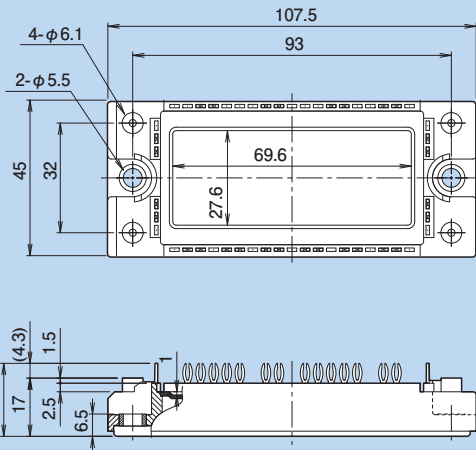
**M636**



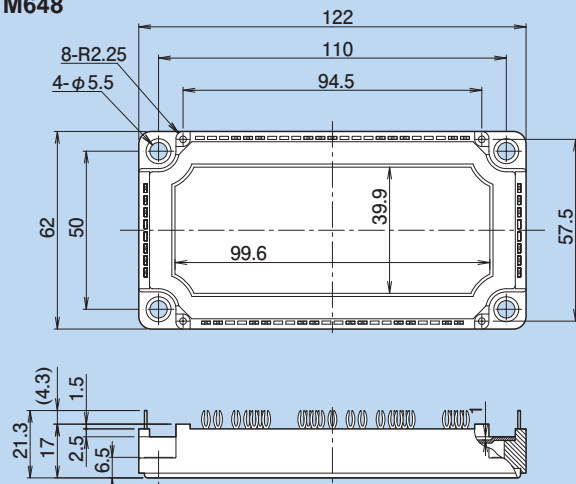
**M639**



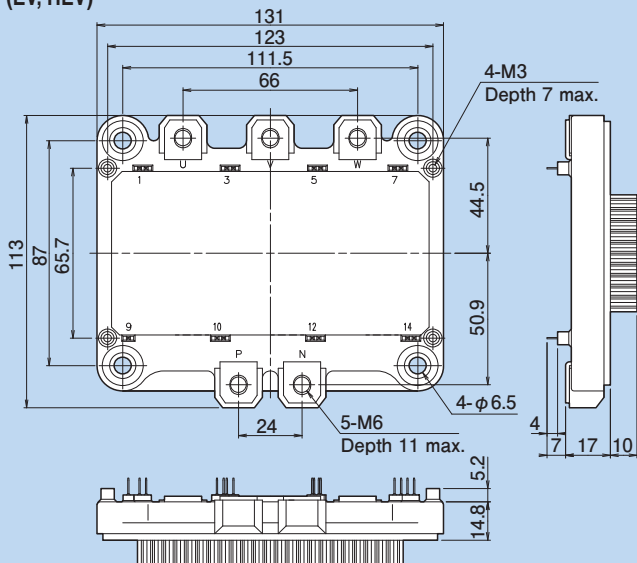
**M647**



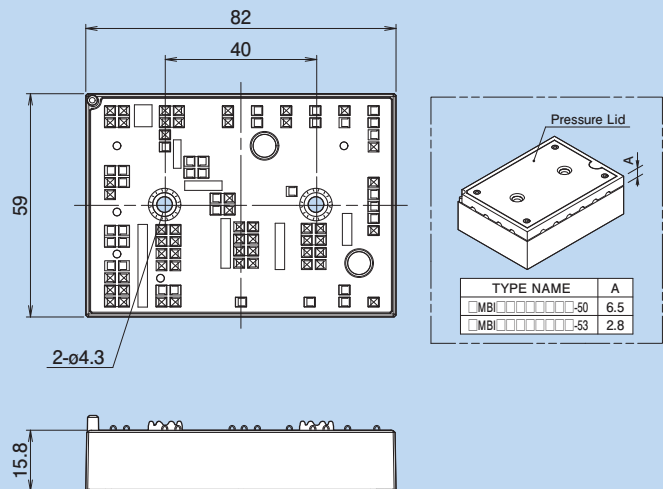
**M648**



**M652 (EV, HEV)**



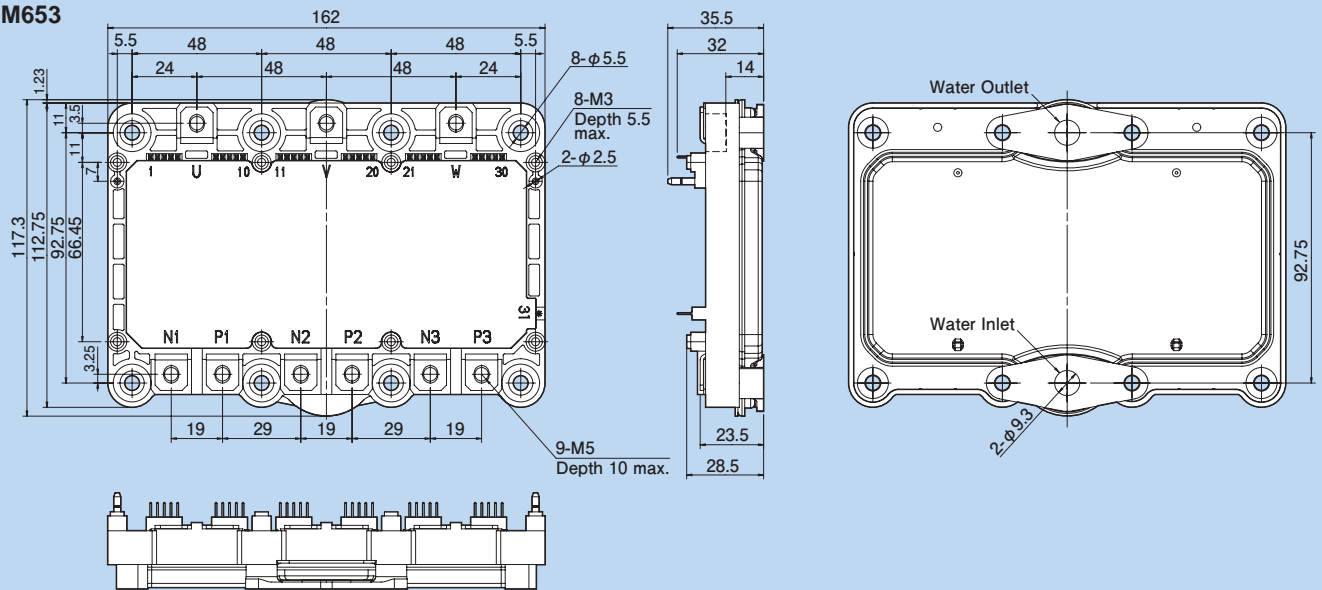
**M664**



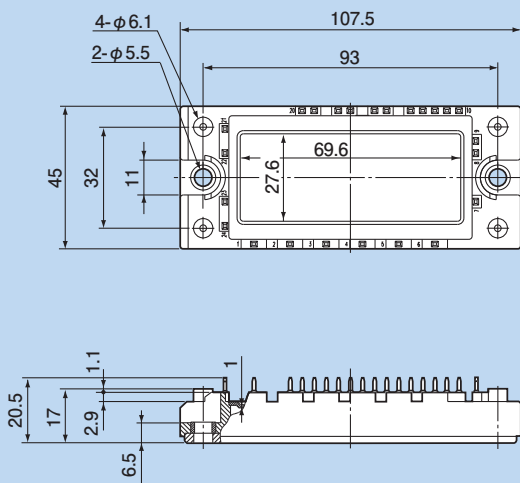
Outline

mm

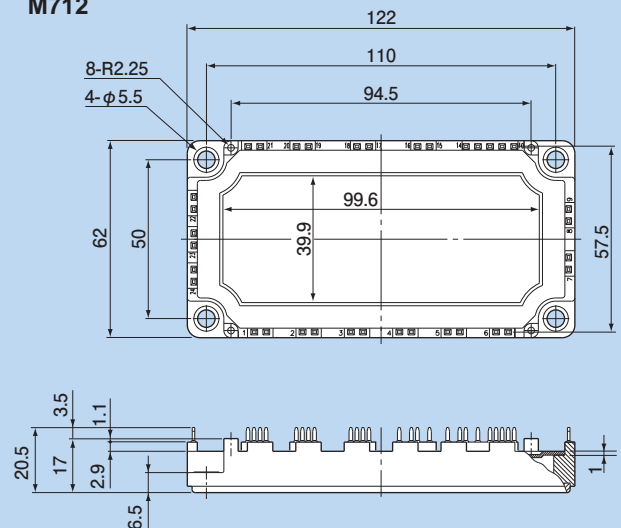
**M653**



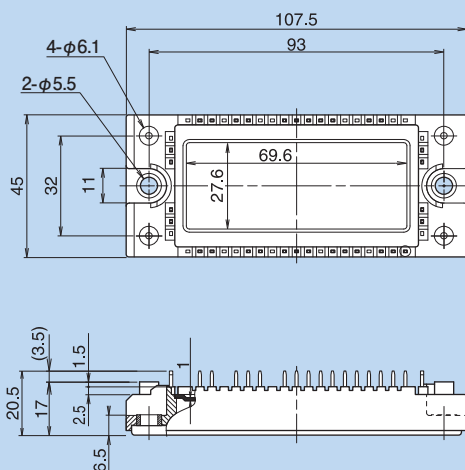
**M711**



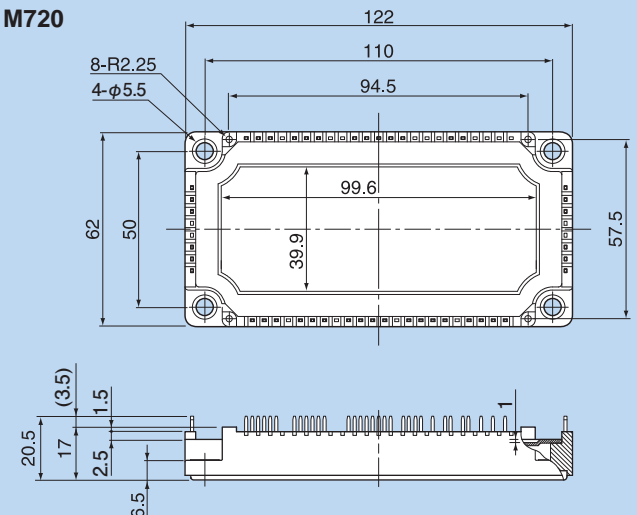
**M712**



**M719**



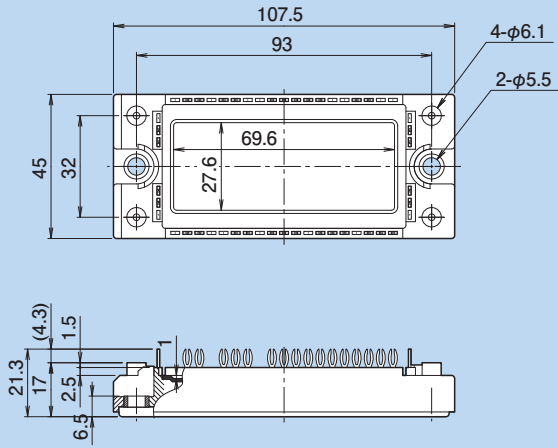
**M720**



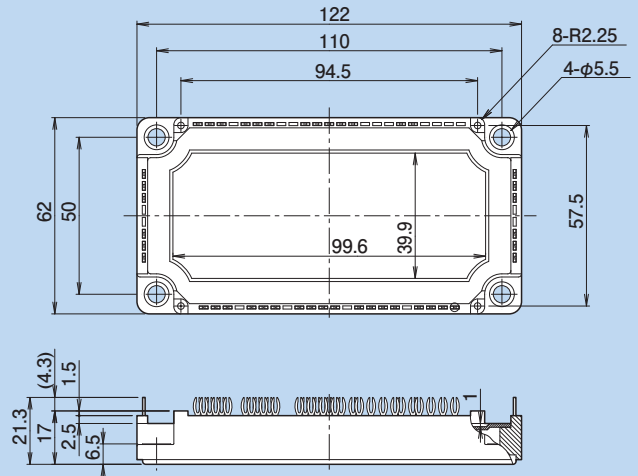
# 外形图/Outline

mm

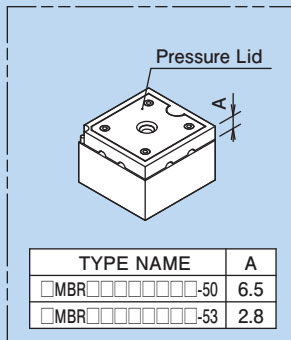
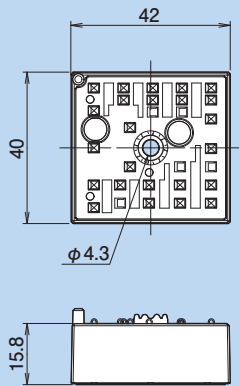
M721



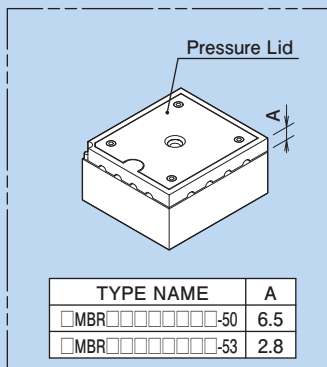
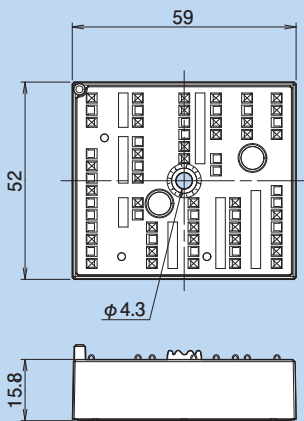
M722



M723

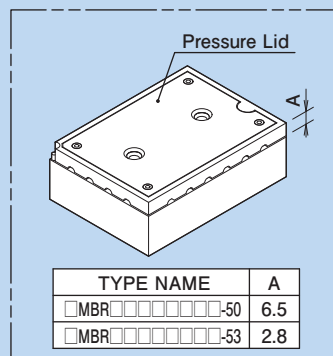
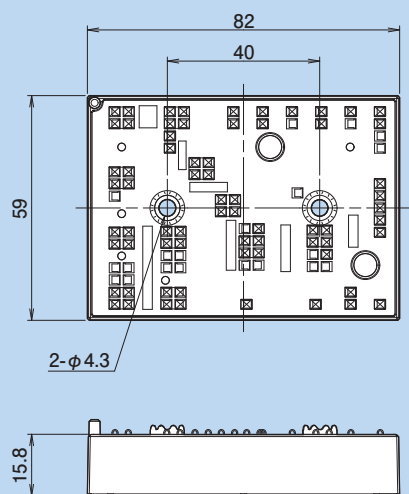


M724

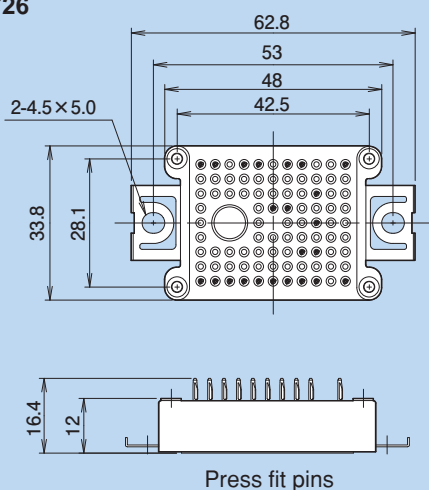


Outline

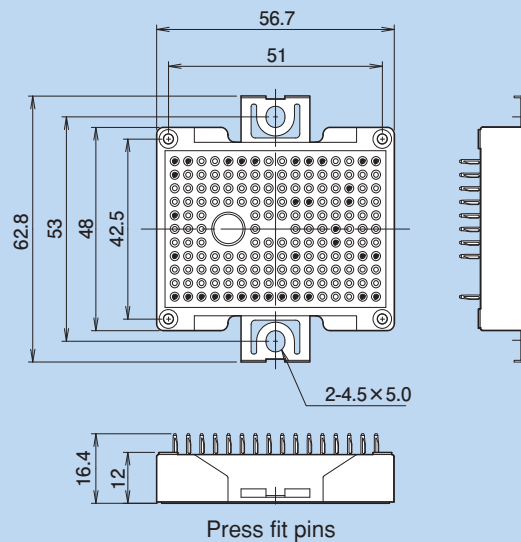
**M725**



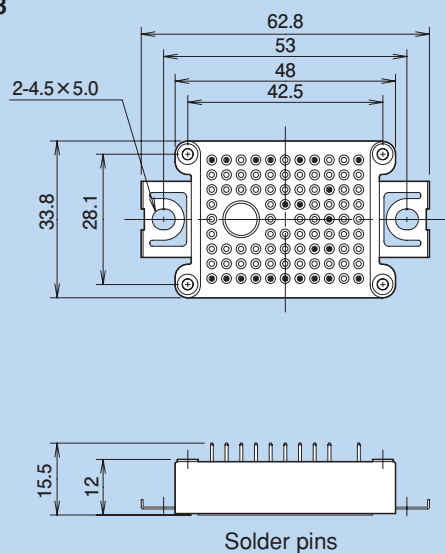
**M726**



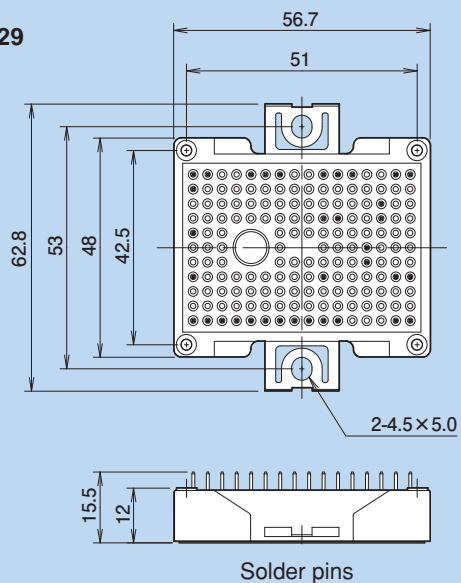
**M727**



**M728**



**M729**

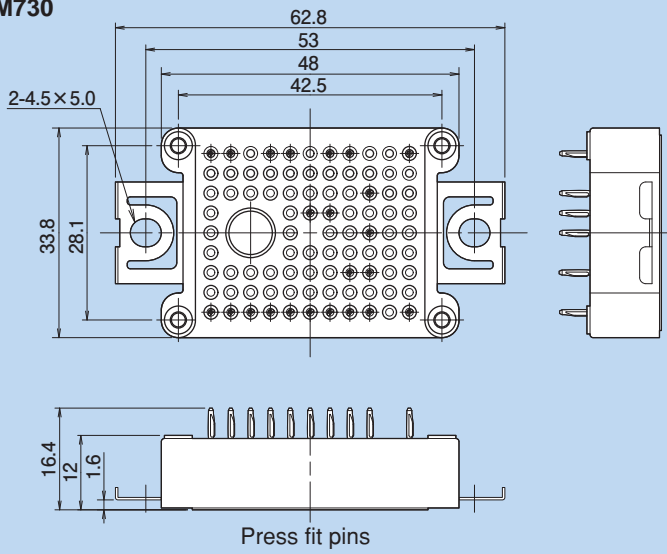




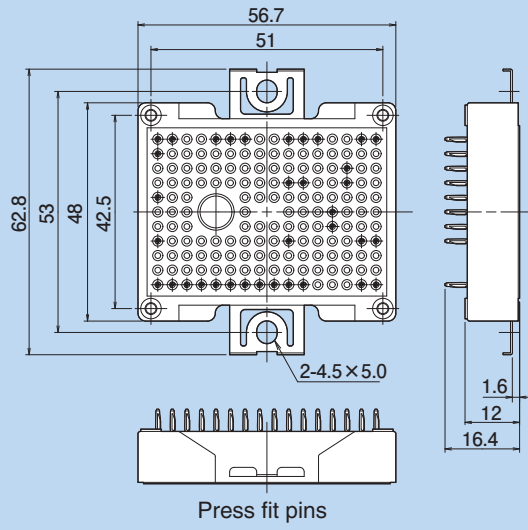
# 外形图/Outline

mm

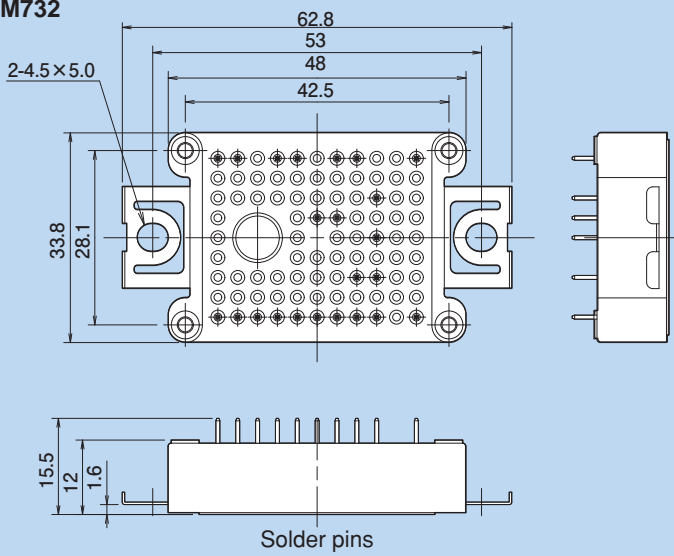
**M730**



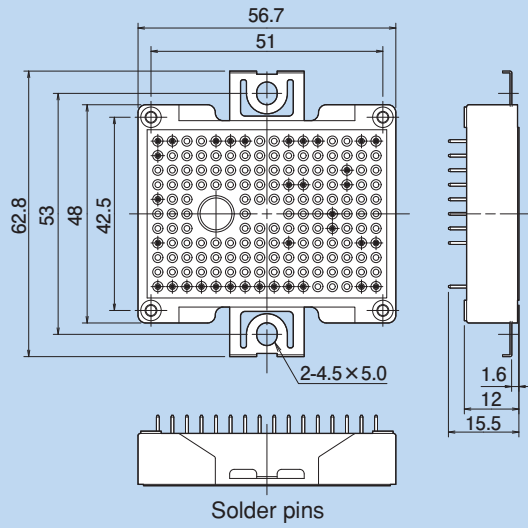
**M731**



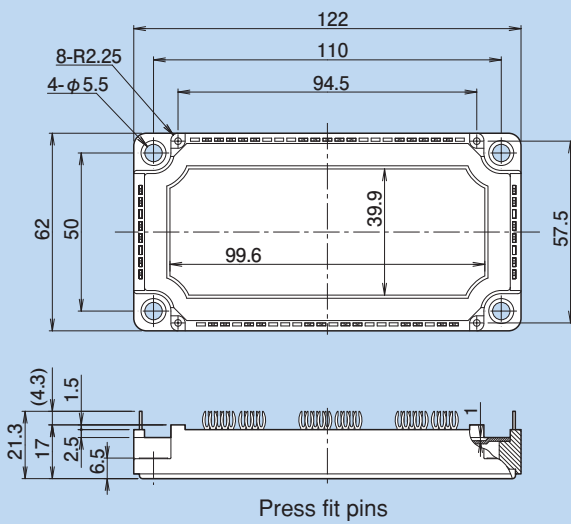
**M732**



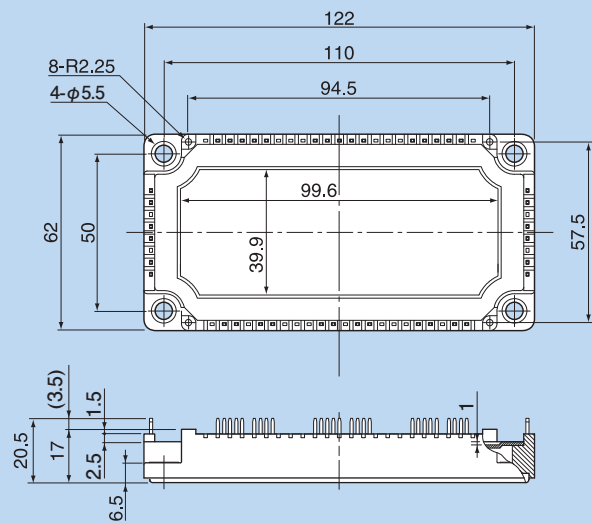
**M733**



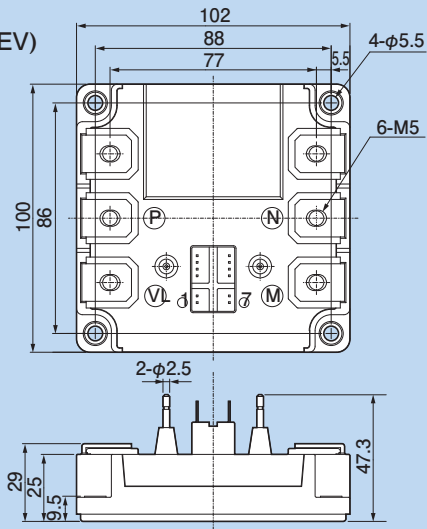
**M1202**



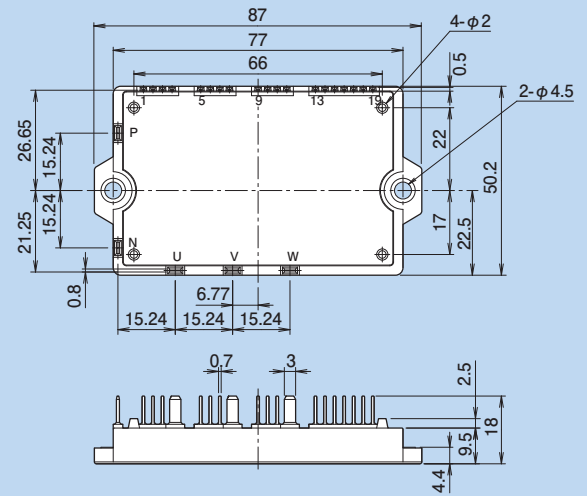
**M1203**



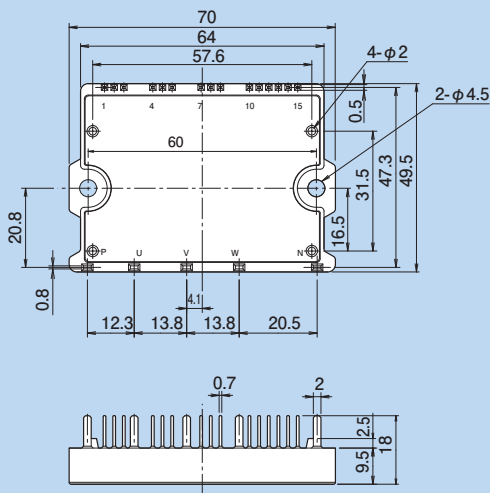
**P401**  
(EV, HEV)



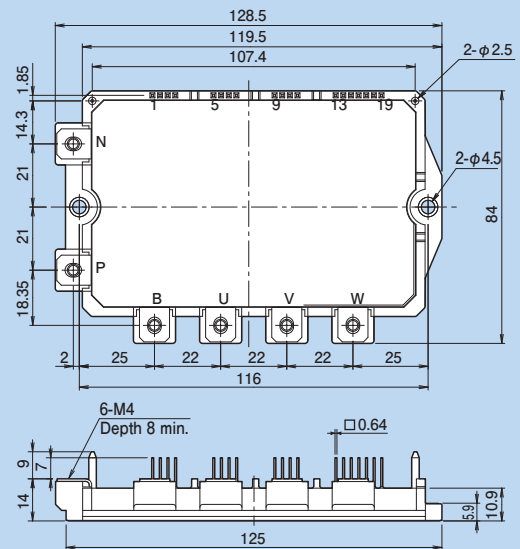
**P626**



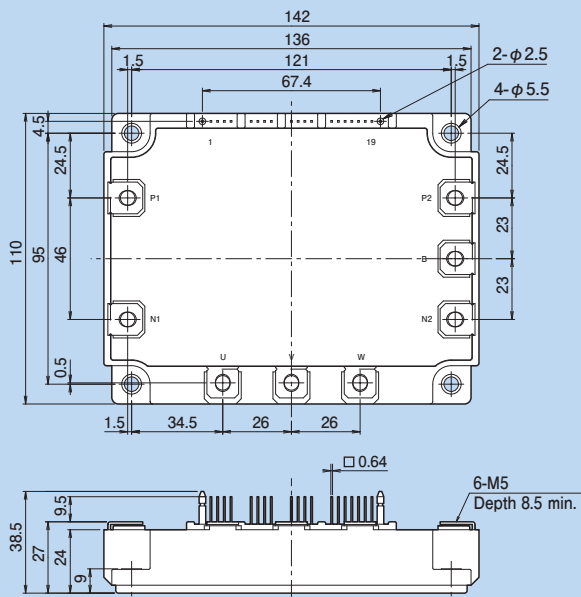
**P629**



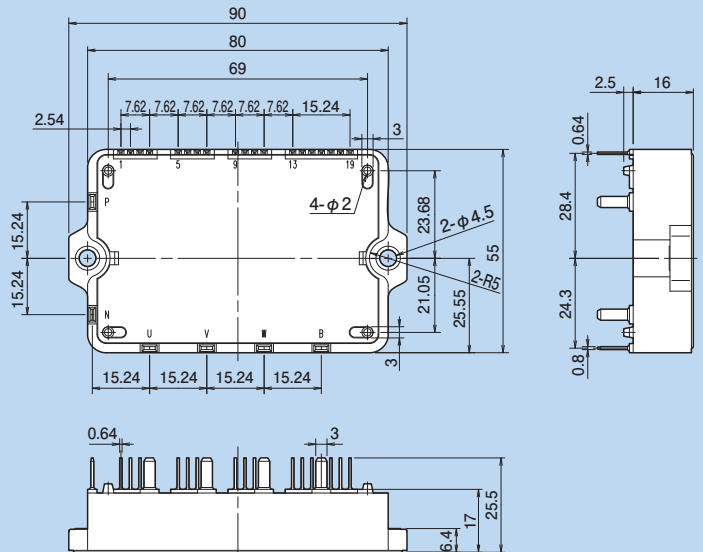
**P630**



**P631**



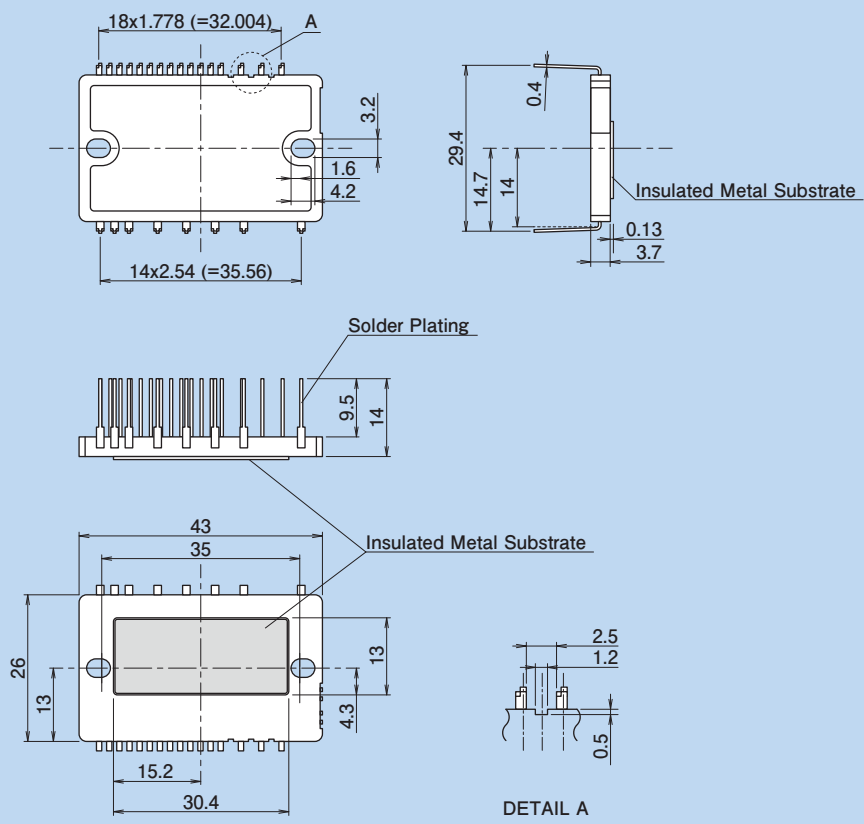
**P636**



# 外形図/Outline

mm

P633A



## 注文単位/Order Quantity

- ・ご注文は最小注文単位以上、且つその整数倍にてお願い致します。
- ・下記一覧表は単品（テーピング品を除く）及びリール品が対象です。
- ・テーピング品は、仕様により注文単位が異なりますのでお問合せ願います。

- ・ Please give us order above min order unit and that of integral multiplication.
- ・ This table subjects to single or reel package items(Except for taping items)
- ・ Order unit of taping package is different every spec. If you'd like to know how to order it, Please contact us.

種類 Description	パッケージ Package	型式 Type number	最小注文単位 Min. quantity per order	最小梱包単位 Min. quantity per packing
パワーMOSFET ダイオード  Power MOSFETs Diodes	TO-220	全型式 All types	100	500
	TO-220F/TO-220F(SLS)		100	500
	TFP		1,500	1,500
	TO-247		100	500
	TO-3P, TO-3P(Q)		100	500
	TO-3PF		100	500
	TO-3PL		50	50
	K-pack (S)		3,000	3,000
	T-pack (S)		1,000	1,000
	K-pack (L, P)		500	500
	T-pack (L, P)		100	500
	TO-220	-S2□PP (Tube)	1,000	1,000
TO-220F	-S3□PP (Tube)	1,000	1,000	
パワーMOSFET ディスクリートIGBT ダイオード  Power MOSFETs Discrete IGBTs Diodes	TO-247-P2	全型式 All types	600	600
集積回路 ICs		下記を除く全型式 All types (except for below types)	2,000	2,000
		FA8A-□□, FA6A-□□, FA1A-□□	3,000	3,000
		FA5627, 28	3,000	3,000
		FA5637	3,000	3,000
		FA5641, 42, 43, 44	3,000	3,000
		FA5680, FA5681	3,000	3,000
		FA5696	3,000	3,000
		FA5651	3,000	3,000
		FA5752	3,000	3,000
		FA5760	3,000	3,000

# 型式索引 / Type Number Index

Page	Page	Page	Page	Page	Page						
12MBI100VN-120-50	38	1MBI600V-170-50	32	2MBI150XHA170-50	14	2MBI400XDE065-50	14	2MBI650VXA-170EA-54	31	2SK3516-01L, S	80
12MBI100VX-120-50	38	1MBI600VF-120-50	32	2MBI1800XF120P-50	16	2MBI400XDE120-50	14	2MBI650XXA170E-50	16	2SK3519-01	80
12MBI50VN-120-50	38	1MBI650VXA-170EH-50	35	2MBI1800XF170P-50	16	2MBI400XEE170-50	14	2MBI75VA-120-50	28	2SK3520-01MR	80
12MBI50VX-120-50	38	1MBI650VXA-170EH-54	35	2MBI200HH-120-50	36	2MBI400XHA170-50	14	2MBI75VA-170-50	28	2SK3521-01L, S	80
12MBI75VN-120-50	38	1MBI650VXA-170EL-50	35	2MBI200HJ-120-50	36	2MBI450VE-120-50	28	2MBI75XAA170-50	14	2SK3522-01	80
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7MBR50XKD065-50	9	F5018	88	FA5640N	56	FDCA06S65	48	FGW25N120WE	43	FMC16N50ES	76
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7MBR50XWA120-50	11	F5043	88	FA5650N	61	FDCC10S65	48	FGW35N60HD	44	FMC49N20T2	83
7MBR50XYA065-50	11	F5044H	88	FA5651N	61	FDCC10S65A	49	FGW40N120H	44	FMC60N079S2A	85
7MBR50XYA120-50	11	F5045P	88	FA5680N	52	FDCC20C65	48	FGW40N120HD	44	FMC60N081S2FDA	85
7MBR75VB060-50	23	F5048	88	FA5681N	52	FDCC20C65A	49	FGW40N120VD	44	FMC60N088S2A	85
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7MBR75VR120-50	23	F5112H	88	FA6A00N	60	FDCP10S65A	49	FGW40N65WE	43	FMC80N10R6	83
7MBR75VX120-50	24	FA13842P/N	54	FA6A10N	60	FDCP20C65	48	FGW50N60H	44	FMC80N10R6	87
7MBR75VY060-50	24	FA13843P/N	54	FA6A11N	60	FDCP20C65A	49	FGW50N60HC	44	FMC80N10T2	83
7MBR75VZ120-50	24	FA13844P/N	54	FA6A30N	60	FDCP25S65	48	FGW50N60HD	44	FMD60N280S2	67
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7MBR75XNA120-50	10	FA1A10N	58	FA7703V	62	FDCY18C120A	49	FGW50N65WE	43	FMH07N70E	74
7MBR75XPA065-50	10	FA1A11N	58	FA7704V	62	FDCY18S120	48	FGW60N65W	43	FMH07N90E	75
7MBR75XPE120-50	10	FA1A21N	58	FA7711V	62	FDCY20C65	48	FGW60N65WD	43	FMH08N80E	74
7MBR75XRA120-50	10	FA1A31N	58	FA7764AN/P	62	FDCY20C65A	49	FGW60N65WE	43	FMH09N70E	74
7MBR75XWA065-50	11	FA3641P/N	54	FA8A00N	52	FDCY25S65	48	FGW75N60H	44	FMH09N90E	75
7MBR75XWE120-50	11	FA3647P/N	54	FA8A01N	52	FDCY25S65A	49	FGW75N60HC	44	FMH10N80E	74
7MBR75XXA065-50	11	FA3687V	62	FA8A12N	52	FDCY36C120	48	FGW75N60HD	44	FMH11N70E	74
7MBR75XXA120-50	11	FA5502P/M	58	FA8A27N	52	FDCY36C120A	49	FGW85N60RB	44	FMH11N90E	75
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FMI11N60E	74	FMP22N60S1FD	71	FMV10N60E	74	FMV60N280S2	67	FMY30N60ESF	87	MS906C3	99
FMI12N50E	73	FMP30N60S1	70	FMV10N60S1	70	FMV60N380S2	67	FMY31N60ES	86	MS985C3	100
FMI12N50ES	76	FMP30N60S1FD	71	FMV10N80E	74	FMV65N079S2	68	FMY35N60ESF	87	MS985C4	100
FMI12N60ES	77	FMP49N20T2	83	FMV11N60E	74	FMV65N101S2	68	FMY36N60ES	86	PA868C10R	96
FMI13N60E	74	FMP60N079S2	68	FMV11N70E	74	FMW15N60S1	70	FMY46N60S1FDA	84	PA868C15R	96
FMI13N60ES	77	FMP60N084S2FD	69	FMV11N90E	75	FMW20N60S1	70	FMY47N30ESF	87	PA905C4R	101
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FMI16N50ES	76	FMP60N094S2FD	69	FMV12N50ES	76	FMW22N60S1	70	FMY50N30ES	86	PG985C3R	100
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# 保守移行機種 / Maintenance products

- ・ 下記記載の機種は保守品移行機種です。
- ・ 新規設計には使用されないようお願いいたします。

- ・ Models listed below are for maintenance products only.
- ・ Do not use them for new designing

機種 Description	型式 Type number	機種 Description	型式 Type number	機種 Description	型式 Type number
パワーデバイス Power Devices	6MBP100RA060	パワーデバイス Power Devices	7MBP25RJ120	整流ダイオード Rectifier Diodes	CB803-03
	6MBP100RA120		7MBP25RU2A120		CB863-06
	6MBP100RTB060		7MBP25TEA120-50		CB863-12
	6MBP100RTJ060		7MBP300RA060		CB863-15
	6MBP100TEA060-50		7MBP50RA060		ERA81-004
	6MBP150RA060		7MBP50RA120		ERA82-004
	6MBP150RA120		7MBP50RJ120		ERA83-004
	6MBP150RTB060		7MBP50RTB060		ERA83-006
	6MBP150RTJ060		7MBP50RTJ060		ERA84-009
	6MBP150TEA060-50		7MBP50RU2A120		ERA85-009
	6MBP15RA120		7MBP50TEA060-50		ERA91-02
	6MBP200RA060		7MBP50TEA120-50		ERA92-02
	6MBP20RTA060		7MBP75RA060		ERB81-004
	6MBP25RA120		7MBP75RA120		ERB83-004
	6MBP25RJ120		7MBP75RJ120		ERB83-006
	6MBP25RU2A120		7MBP75RTB060		ERB84-009
	6MBP25TEA120-50		7MBP75RTJ060		ERB91-02
	6MBP300RA060		7MBP75RU2A120		ERB93-02
	6MBP50RA060		7MBP75TEA060-50		ERC81-004
	6MBP50RA120		7MBP75TEA120-50		ERC81-006
	6MBP50RJ120		7MBR10UF120		ERC81S-004
	6MBP50RTB060		7MBR15UF060		ERC84-009
	6MBP50RTJ060		7MBR15UF120		ERC91-02
	6MBP50RU2A120		7MBR20UF060		FD867-12
	6MBP50TEA060-50		7MBR30UF060		FD867-15
	6MBP50TEA120-50				FD868-12
	6MBP75RA060				FD868-15
	6MBP75RA120				SC802-04
	6MBP75RJ120				SC802-06
	6MBP75RTB060				SC802-09
	6MBP75RTJ060				SC902-2
	6MBP75RU2A120				SD832-03
	6MBP75TEA060-50				SD832-04
	6MBP75TEA120-50				SD833-03
	7MBP100RA060				SD833-04
	7MBP100RA120				SD833-06
	7MBP100RTB060				SD833-09
	7MBP100RTJ060				SD834-03
	7MBP100TEA060-50				SD834-04
	7MBP150RA060				SD862-04
	7MBP150RA120				SD863-04
	7MBP150RTB060				SD863-06
	7MBP150RTJ060				SD863-10
	7MBP150TEA060-50				SD882-02
	7MBP200RA060				SD883-02
	7MBP25RA120				SD883-04

# 廃型機種 / Discontinued products

- ・下記記載の機種は廃型機種です。
- ・新規設計には使用されないようお願いいたします。

- ・ Models listed below are for discontinued products only.
- ・ Do not use them for new designing

機種 Description	型式 Type number	機種 Description	型式 Type number	機種 Description	型式 Type number
パワーデバイス Power Devices	1MBI150NH-060	パワーデバイス Power Devices	6MBI35S-140	整流ダイオード Rectifier Diodes	FDLR20C20
	1MBI150NK-060		6MBI50S-060		KP823C03
	1MBI200N-120		6MBI50S-120		KP823C04
	1MBI200NH-060		6MBI50S-140		KP823C09
	1MBI200NK-060		6MBI75S-060		PA955C6R
	1MBI300N-120		6MBI75S-120		PG985C6R
	1MBI300NN-120		6MBI75S-140		TP858C12R
	1MBI300NP-120		6MBP15RH060-50		TP869C04R
	1MBI400N-120		6MBP20RH060-50		TS862C04R
	1MBI400NN-120		6MBP30RH060-50		TS906C3R
	1MBI400NP-120		7MBR100SB060		TS952C6R
	1MBI600NN-060		7MBR100SD060		TS955C6R
	1MBI600NP-060		7MBR10SA120		YA852C12R
	2MBI100N-060		7MBR10SA140		YA852C15R
	2MBI100N-120		7MBR10SC120		YA855C12R
	2MBI100NB-120		7MBR15SA120		YA855C15R
	2MBI100NC-120		7MBR15SA140		YA858C12R
	2MBI150N-060		7MBR15SC120		YA858C15R
	2MBI150N-120		7MBR20SC060		YA862C04R
	2MBI150NB-120		7MBR25SA120		YA869C04R
	2MBI150NC-060		7MBR25SA140		YA951S6R
	2MBI150NC-120		7MBR25SC120		YA952C6R
	2MBI200N-060		7MBR30SA060		YA952S6R
	2MBI200N-060-03		7MBR30SC060		YA955C6R
	2MBI200N-120		7MBR35SB120		YG801C09R
	2MBI200NB-120		7MBR35SB140		YG802C03R
	2MBI200NB-120-01		7MBR35SD120		YG802C09R
	2MBI300N-060		7MBR50SA060		YG803C04R
	2MBI300N-060-04		7MBR50SB060		YG811S09R
	2MBI300N-120		7MBR50SB120		YG831C03R
	2MBI300N-120-01		7MBR50SB140		YG831C04R
	2MBI300NB-060		7MBR50SC060		YG832C03R
	2MBI300NB-060-01		7MBR50SD120		YG832C04R
	2MBI400N-060		7MBR75SB060		YG835C03R
	2MBI400N-060-01		7MBR75SD060		YG835C04R
	2MBI50N-060				YG838C03R
	2MBI50N-120				YG852C12R
	2MBI600NT-060				YG852C15R
	2MBI75N-060				YG855C12R
	2MBI75N-120				YG855C15R
	4MBI75T-060				YG858C12R
	4MBI100T-060				YG858C15R
	4MBI150T-060				YG862C04R
	4MBI200T-060				YG864S06R
	1MBI600PX-120				YG869C04R
	1MBI600PX-140				YG881C02R
	2MBI100PC-140				YG882C02R
2MBI100SC-120		YG885C02R			
2MBI150PC-140		YG906C3R			
2MBI150SC-120		YG951S6R			
2MBI200PB-140		YG952C6R			
2MBI200S-120		YG952S6R			
2MBI300P-140		YG955C6R			
2MBI300S-120					
2MBI50P-140					
2MBI75P-140					
6MBI100S-060					
6MBI100S-120					
6MBI100S-140					
6MBI10S-120					
6MBI15S-120					
6MBI25S-120					
6MBI35S-120					
		集積回路 Integrated Circuits	FA3675F-H1		
			FA7709R-H1		
			FA7716R-H4		
			FA7723R-H4		
			FA7724R-H4		
			FA7724AR-H4		
			FA7728F-D1		
			FA7729R-H1		
			FA7730F-D1		
			FA7731F-D1		
			FA7743N-D1		
		IGBT ドライブ用 ハイブリッド IC Hybrid ICs for IGBT Drive	EXB840		
			EXB841		
		IPS (インテリジェントパワースイッチ) IPS (Intelligent Power switch)	F5016H	パワー MOSFET Power MOSFET	2SJ314-01L, S
			F5017H		2SJ472-01L, S
			F5021H		2SJ473-01L, S
			F5022		2SJ474-01L, S
			F5038H	2SJ475-01	
		整流ダイオード Rectifier Diodes	FDLA20C20		2SJ476-01L, S
			FDLA20C20		2SJ477-01MR
			FDLH20C20		2SK2687-01
			FDP20C20		2SK2688-01L, S

## 廃型機種 / Discontinued products

機種 Description	型式 Type number	機種 Description	型式 Type number
パワー MOSFET Power MOSFET	2SK2689-01MR	パワー MOSFET Power MOSFET	2SK3613-01
	2SK2690-01		2SK3644-01
	2SK2691-01R		2SK3645-01MR
	2SK2806-01		2SK3646-01L, S
	2SK2807-01L, S		2SK3647-01
	2SK2808-01MR		2SK3673-01MR
	2SK2809-01MR		2SK3674-01L, S
	2SK2890-01MR		2SK3675-01
	2SK2891-01		2SK3677-01MR
	2SK2892-01R		2SK3678-01
	2SK2893-01		2SK3679-01MR
	2SK2894-01R		2SK3690-01
	2SK2895-01		2SK3691-01MR
	2SK2896-01L, S		2SK3769-01MR
	2SK2897-01MR		2SK3770-01MR
	2SK2898-01		2SK3771-01MR
	2SK2899-01R		2SK3776-01
	2SK2900-01		2SK3777-01R
	2SK2901-01L, S		2SK3780-01
	2SK2902-01MR		2SK3781-01R
	2SK2903-01MR		2SK3788-01
	2SK2904-01		2SK3789-01R
	2SK2905-01R		2SK3870-01
	2SK2906-01		2SK3871-01MR
	2SK2907-01R		2SK3872-01L, S
	2SK3362-01		2SK3873-01
	2SK3363-01		2SK3874-01R
	2SK3364-01		2SK3875-01
	2SK3517-01		2SK3876-01R
	2SK3518-01MR		2SK3883-01
	2SK3529-01		2SK3884-01
	2SK3530-01MR		2SK3885-01
	2SK3531-01		2SK3913-01MR
	2SK3532-01MR		2SK3914-01
	2SK3533-01		2SK3915-01MR
	2SK3534-01MR		2SK3923-01
	2SK3549-01		2SK3924-01L, S
	2SK3550-01R		2SK3925-01
	2SK3586-01		2SK3926-01MR
	2SK3587-01MR		2SK3927-01L, S
	2SK3588-01L, S		2SK4005-01MR
	2SK3589-01		2SK4006-01L, S
	2SK3601-01		FMA18N25G
	2SK3605-01		

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