

Модули IGBT ABB купить в Минске

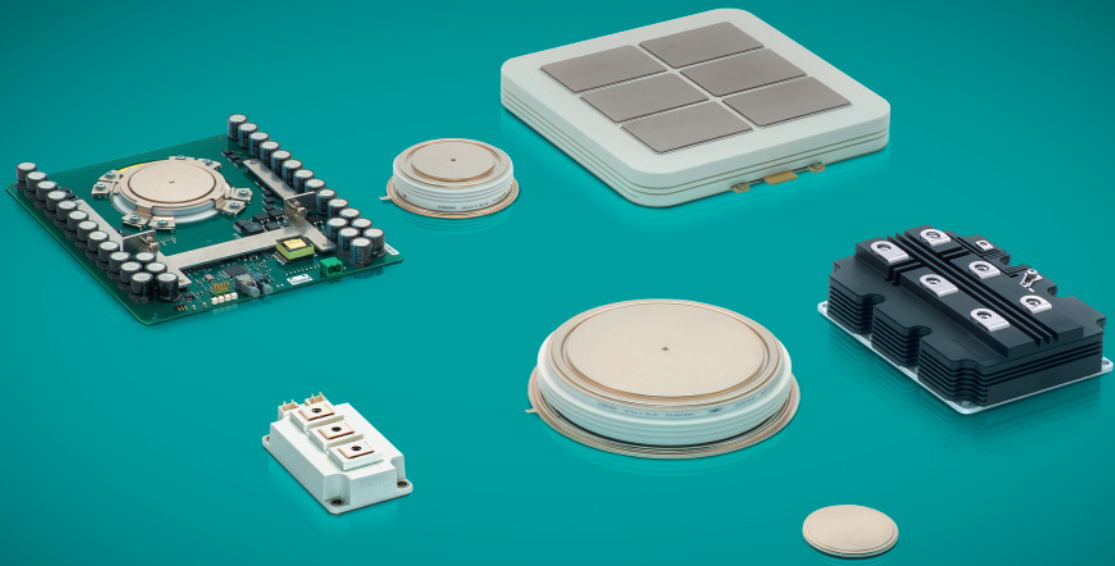
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Мы работаем только с юридическими лицами(организациями) и ИП и только по безналичному расчёту.
подробно смотрите ниже: описание, характеристики, datasheet

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Product catalog 2016

Power semiconductors

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This is ABB Semiconductors



ABB's success story in power electronics began more than 100 years ago with the production of mercury-arc rectifiers in Switzerland. Over the past 60 years ABB has played a pivotal part in the development of power semiconductors and their applications.

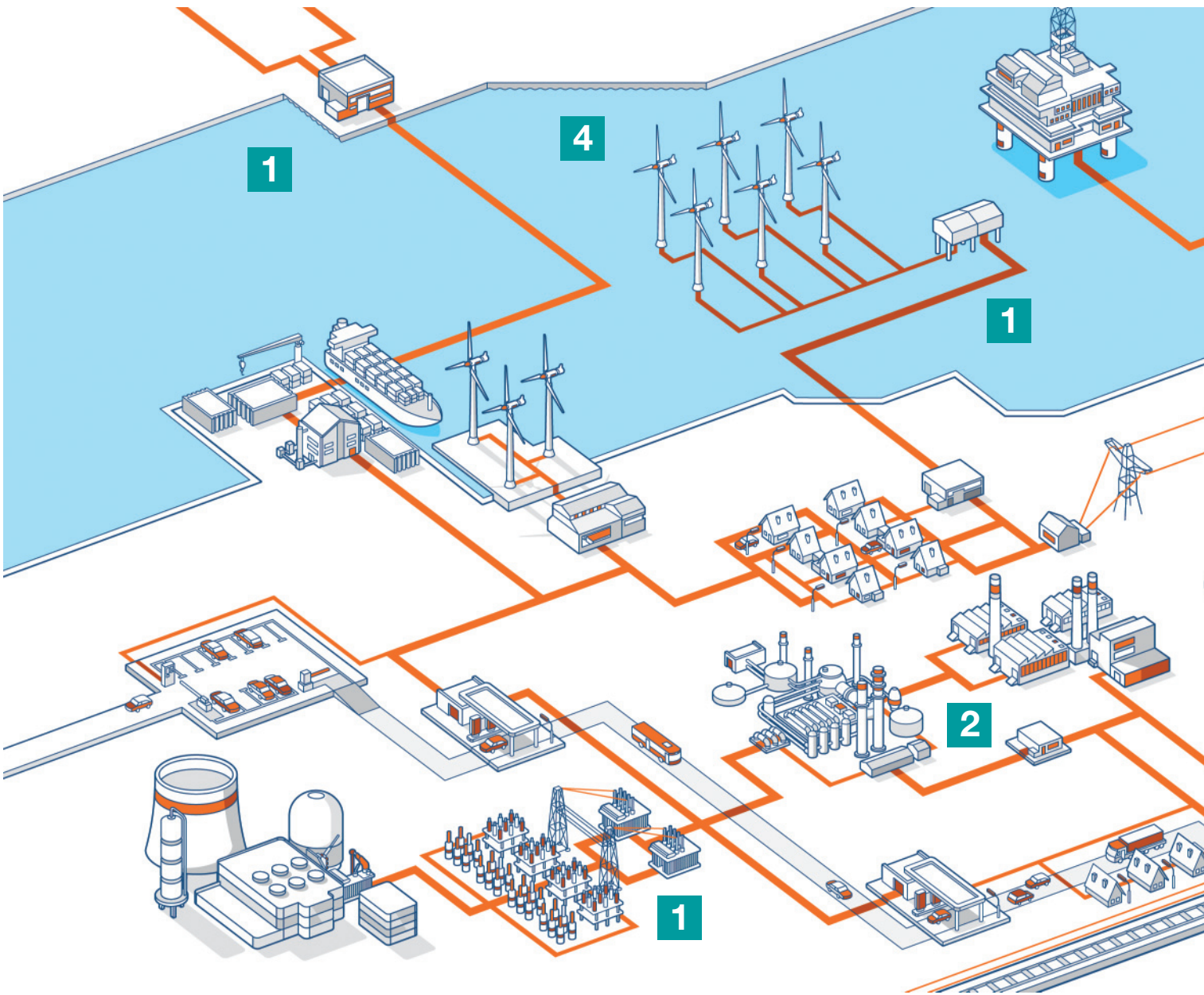
ABB is a leading supplier of power semiconductors with production facilities in Lenzburg, Switzerland, and Prague, Czech Republic, as well as a new research laboratory for wide bandgap semiconductors in Baden-Dättwil, Switzerland.

Exceeding quality requirements, guaranteeing reliability expectations and perpetual pioneering are our distinctions.

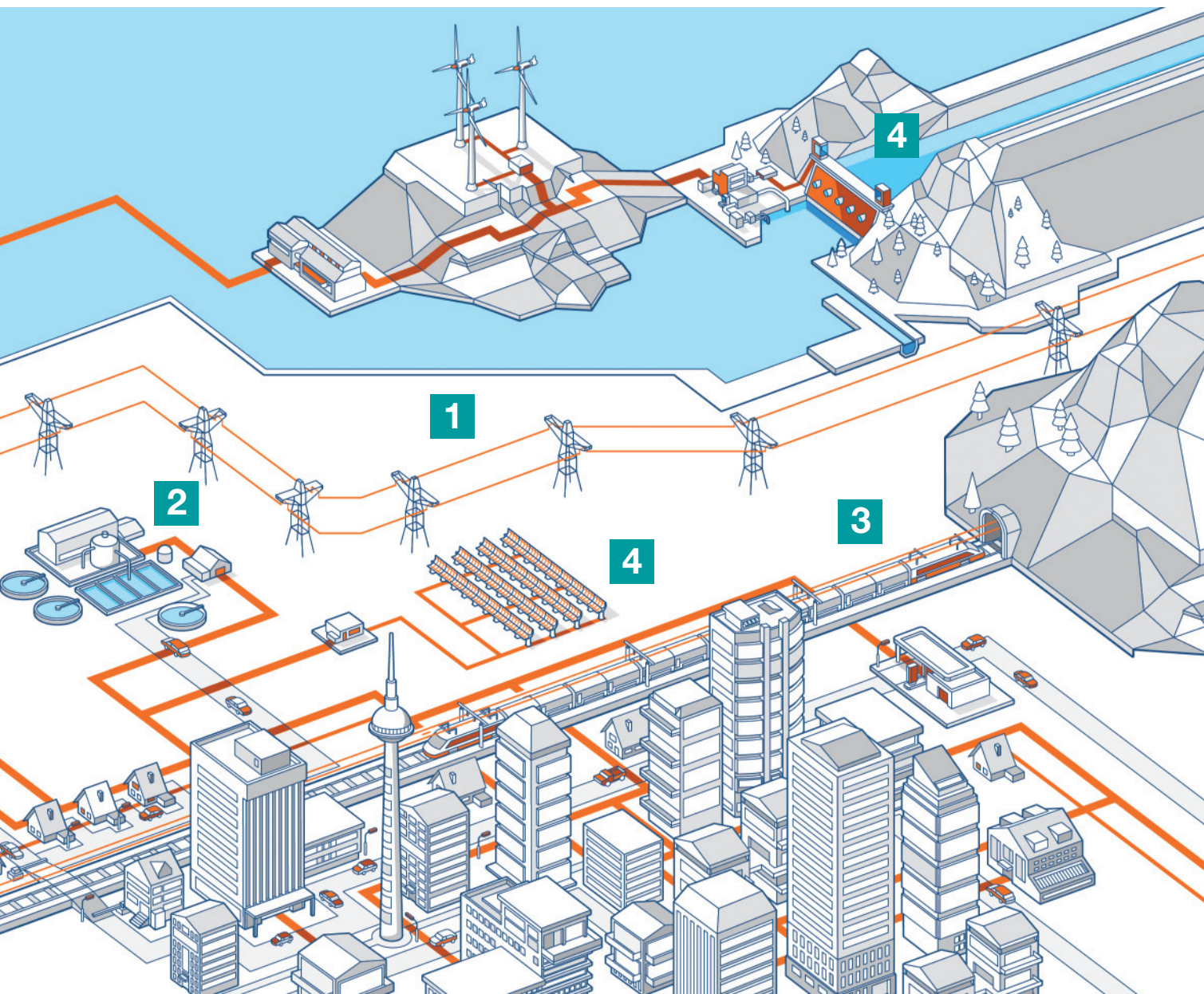
This product catalog provides an overview of ABB's full range of thyristor and IGBT power semiconductors.

For more information please contact us or visit www.abb.com/semiconductors.

Applications



ABB's power semiconductors are key components in a variety of demanding applications in markets like power transmission & distribution, industrial, traction and renewable energy. Customers rely on ABB's high quality power semiconductor products and use them in applications in power ranges from 50 kW to 10 GW.

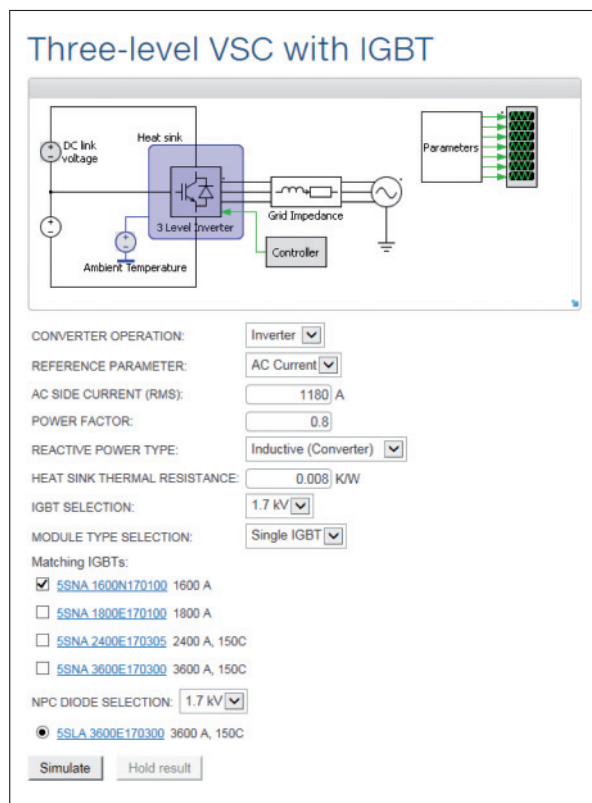


- 1** Power transmission and distribution (HVDC, FACTS, STATCOM and others)
- 2** Industry (medium and low voltage drives, soft starters, UPSs, high-power rectifiers, excitation systems and others)
- 3** Traction (main and auxiliary drives, trackside power supply)
- 4** Renewable energy (converters for pumped hydro, wind turbines and solar)

SEMIS - Semiconductor simulation tool

ABB's Semiconductor Simulation tool SEMIS is a web-based tool, intended to assist engineers at an early design phase in selecting the semiconductor device best fitting their application in respect to thermal losses. For a system designer it is important to choose the appropriate semiconductor according to the parameters of the application without having to spend too much time and effort.

Two- and three-level voltage-source converter (VSC) topologies with HiPak and StakPak modules as well as with IGCTs are available for simulations on ABB Semiconductors' website.



The screenshot displays the SEMIS web interface for a "Three-level VSC with IGBT" simulation. At the top, a schematic diagram shows a DC link voltage source connected to a 3-level inverter. The inverter is represented by a block containing a heat sink and a controller. The output of the inverter is connected to a grid impedance and a grid. A "Parameters" block is also shown, indicating the simulation results. Below the schematic, the "CONVERTER OPERATION" section includes a dropdown menu for "Inverter". The "REFERENCE PARAMETER" is set to "AC Current". The "AC SIDE CURRENT (RMS)" is set to 1180 A, and the "POWER FACTOR" is set to 0.8. The "REACTIVE POWER TYPE" is set to "Inductive (Converter)". The "HEAT SINK THERMAL RESISTANCE" is set to 0.008 K/W. The "IGBT SELECTION" is set to 1.7 kV, and the "MODULE TYPE SELECTION" is set to "Single IGBT". Under "Matching IGBTs", the following options are listed:

- [5SNA 1600N170100](#) 1600 A
- [5SNA 1800E170100](#) 1800 A
- [5SNA 2400E170305](#) 2400 A, 150C
- [5SNA 3600E170300](#) 3600 A, 150C

The "NPC DIODE SELECTION" is set to 1.7 kV, and the following option is selected:

- [5SLA 3600E170300](#) 3600 A, 150C

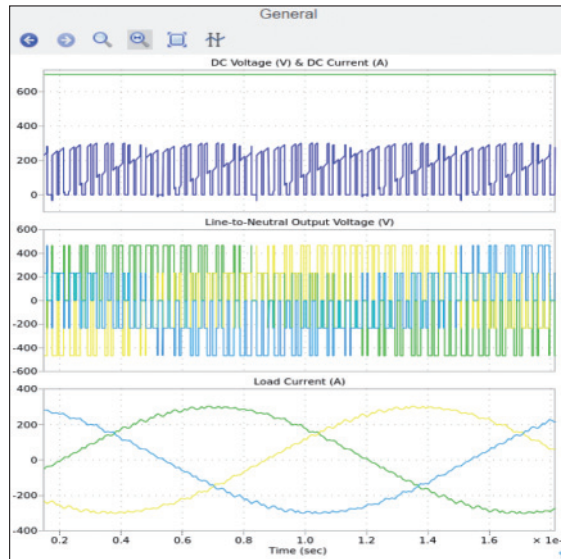
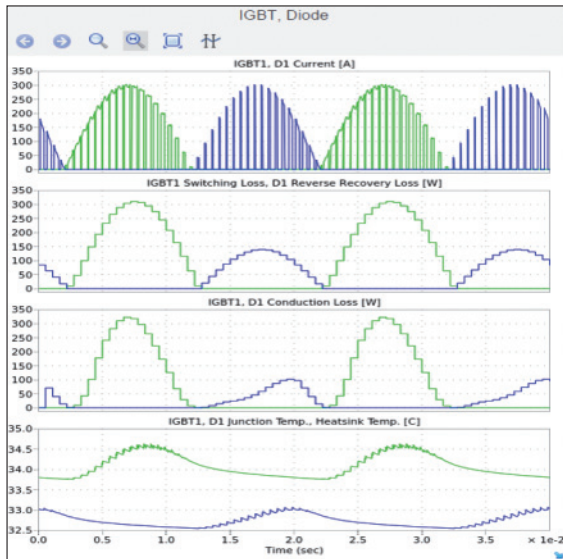
At the bottom, there are "Simulate" and "Hold result" buttons.

SEMIS offers a user friendly interface for parameter set up and provides a comprehensive steady state analysis for the selected ABB semiconductors.

Simulation results are obtained in both graphical and arithmetical form. Time based graphs such as semiconductor current, output voltage, output current and temperatures are presented. The arithmetical results are listed in tables and among others indicate the estimated semiconductor switching and conduction losses as well as the junction temperatures. Input and output values for voltage and current are also available. Multiple device selection and simulation for the same conditions is possible for direct product comparison.

To run SEMIS is straight forward: On www.abb.com/semiconductors you click on the *Simulation tool SEMIS* tile under 'Links and downloads', you input parameters like load power, power factor, heat sink thermal resistance, IGBT module voltage and type (single, dual half bridge or chopper).

SEMIS then lists the available HiPak IGBT modules on the screen and you just select your favorite and start the simulation.



Device Losses & Temperatures				
	Switching	Conduction	Combined Losses	Max Junction Temperature
per IGBT	99.58 W	83.17 W	182.7 W	34.48 °C
per Diode	43.01 W	22.87 W	65.88 W	33.04 °C
Converter Losses	0.8555 kW	0.6362 kW	1.492 kW	

Output Parameters				
Real Power	Phase Voltage (True RMS)	Phase Current (True RMS)	Losses (%)	
99.81 kW	198.0 V	210.4 A	1.491 %	

Input Parameters				
DC Power	DC Voltage	Power Factor	Modulation Index	
101.3 kW	700.0 V	0.8000	0.8000	

SEMIS simulation results are time based graphs and tables with arithmetic values. The semiconductor losses are analytically calculated as switching and conduction losses. They are also presented on converter level, accounting for the total losses on all elements. Having the input power also available in the results, SEMIS calculates the total semiconductor losses as percentage of the absorbed power from the converter. In this way, the user gets an indication

of the impact of the semiconductor selection in the overall efficiency of the converter. The semiconductor junction temperature T_j is another parameter included in the results allowing for assessing the thermal limits of operation. If permissible limits are exceeded for the junction temperature T_j or if the applied voltage is out of the recommended limits of the product to be simulated, then alert messages are prompted.

As SEMIS is based on the PLECS simulation software, the HiPak, StakPak, diode and IGCT thermal models (in XML format) are available for download from our website, so that PLECS users can use them to simulate ABB products accurately on their own.

Product outlook


Innovation and quality are key for success. It is our mission to drive innovation in power semiconductor technology together with our customers and to add value through best performance and quality. We are pushing to be the best and most forward-looking performer in our markets when it's about reliability.

ABB Semiconductors' vast range of thyristor and IGBT power semiconductors for industrial, traction, power generation & distribution and renewable energy markets will be expanded soon with the following new products.

LinPak IGBT modules

For the first time a high-power high reliable IGBT power module becomes available that addresses long sought customer requirements such as low overall stray inductance, high flexibility and highest current densities. The already presented 1,700 V, 2 x 1,000 A module will be ready for mass production in the 2nd half of 2016 and as well a 3,300 V, 2 x 450 A module will become available. The lineup will be expanded to higher voltages in the coming years.


Target ratings LinPak

LinPak	LinPak	Rating	Configuration NG Phase-leg IGBT
	AlSiC (LV)	1700 V / 2 x 1000 A	NG
	AlSiC (LV)	3300 V / 2 x 450 A	NG
	AlSiC (HV)	4500 V / 2 x 350 A	NG
	AlSiC (HV)	6500 V / 2 x 250 A	NG

LoPak1 medium-power phase-leg IGBT modules

Following ABB's product expansion into the medium-power segment, we will add a new industry standard phase-leg module to our portfolio. The LoPak1 is a low profile low inductive module that features the latest low loss 1,700 V SPT⁺⁺ chipset and 175 °C junction operation temperature setting a new benchmark in the industry. This allows customers to use more converter output power per rated module amps yielding in a significant financial benefit.

Target ratings LoPak1

LoPak	Voltage (V)	Current (A)	Configuration NG Phase-leg IGBT
	1700	450	NG
	1700	300	NG
	1700	225	NG
	1700	600	NG
	1200	225...600	NG

Thyristor / diode modules

All thyristor / diode modules feature industry standard housings and are designed for very low losses and highest operating temperatures.

Typical applications are AC motor soft starters, variable speed drives and renewable energies. Features coming from high-power semiconductors are used in ABB's medium-power modules.

These features ensure benefits like highest performance under load cycling, a higher thermal utilization, increased overload capability and many more.

Target ratings 20Pak, 34Pak, 50Pak, 60Pak and 77Pak



Voltage (V)	Package (ss) soldered (pp) press-pack	Configuration TT Thy/Thy DD Dio/Dio DT Dio/Thy TD Thy/Dio
6000	60, 77Pak (pp)	DD
5000	50, 60Pak (pp)	DD
2200	50, 60Pak (pp)	DD
1800	34, 50, 60Pak (ss, pp)	TT, DD, DT, TD
1200 - 1600	20, 34, 50, 60Pak (ss, pp)	TT, DD, DT, TD

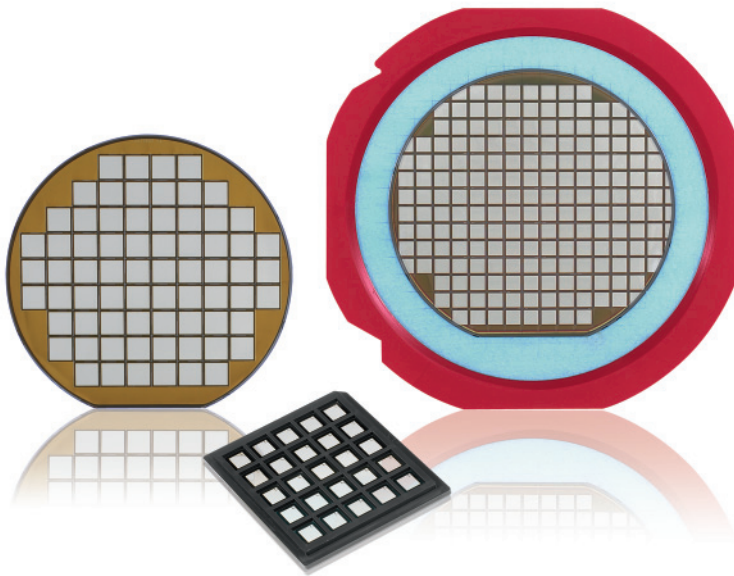
IGBT and diode dies

When looking for chipsets, featuring highest switching performance, ruggedness and reliability, ABB's IGBT chips with accompanying diodes are certainly the preferred choice.

ABB Semiconductors' SPT (Soft Punch Through) chipsets and their improved versions with lower losses (SPT⁺ and SPT⁺⁺) are available at 1,200 V and 1,700 V. They feature highest output power per rated ampere due to a moderate chip shrinkage and thus larger die area compared to others.

Typical applications for 1,200 V are power converters for industrial drives, solar energy, battery backup systems (UPS) and electrical vehicles. Applications for 1,700 V also include industrial power conversion & drives, wind turbines and traction converters.

ABB's 1,700 V SPT⁺⁺ chipset is the world's first 1,700 V chipset that offers an operational junction temperature of up to 175 °C. This allows the module designer to increase the power density of the IGBT modules significantly.



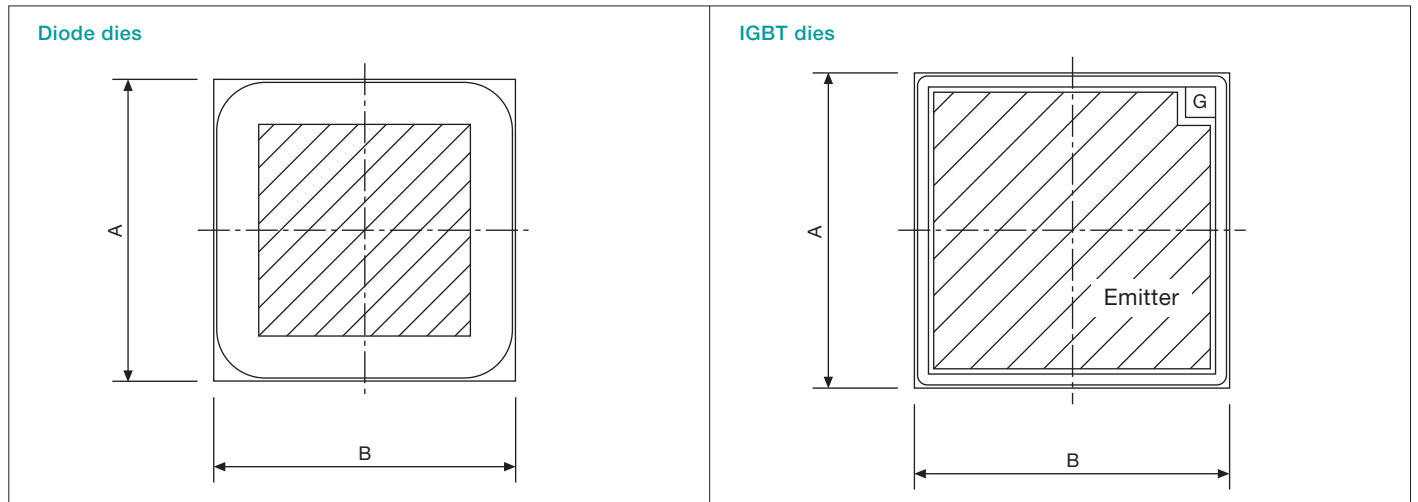
Diode dies

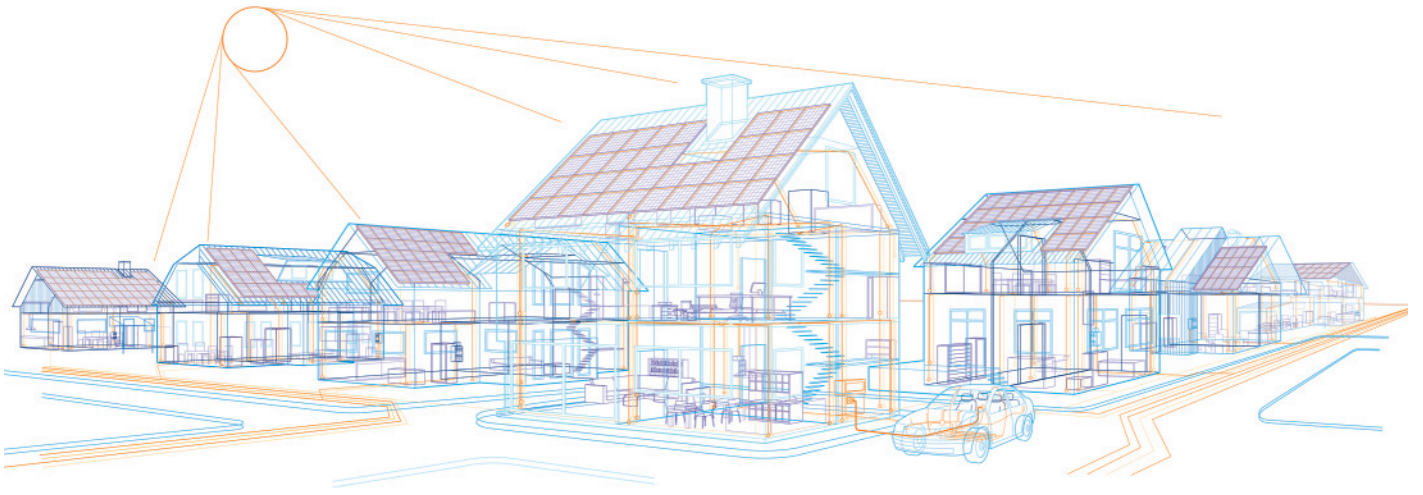
Part number	Type	Size A x B mm	Thickness μm	V_{RRM} (V)	I_{F} (A)	V_{F} (V) typ. 125°C	Max. dies per wafer (W) or tray (T)
1.2 kV							
5SLY 76E1200	SPT ⁺	6.3 x 6.3	350	1200	50	1.85	361 (W)
5SLY 86E1200							
5SLY 76F1200	SPT ⁺	7.4 x 7.4	350	1200	75	1.85	257 (W)
5SLY 86F1200							
5SLY 76G1200	SPT ⁺	8.4 x 8.4	350	1200	100	1.85	198 (W)
5SLY 86G1200							
5SLY 76J1200	SPT ⁺	10.0 x 10.0	350	1200	150	1.85	137 (W)
5SLY 86J1200							
1.7 kV							
5SLY 86E1700	SPT ⁺	6.3 x 6.3	390	1700	50	2.1	326 (W)
5SLY 86F1700	SPT ⁺	7.7 x 7.7	390	1700	75	2.1	237 (W)
5SLY 86G1700	SPT ⁺	8.6 x 8.6	390	1700	100	2.1	188 (W)
5SLY 86J1700	SPT ⁺	10.2 x 10.2	390	1700	150	2.1	131 (W)
5SLY 12J1700							36 (T)
5SLY 86M1700	SPT ⁺	13.6 x 13.6	390	1700	300	2.1	69 (W)
5SLY 12M1700							25 (T)
5SLZ 86J1700	SPT ⁺⁺ /FSA	10.2 x 10.2	370	1700	150	1.75	131 (W)

IGBT dies

Part number	Type	Size A x B mm	Thickness μm	V_{CES} (V)	I_{C} (A)	I_{CM} (A)	V_{CESat} (V) typ. 125°C	Max. dies per wafer (W) or tray (T)
1.2 kV								
5SMY 76H1280	SPT ⁺	9.1 x 9.1	140	1200	57	114	2.1	166 (W)
5SMY 86H1280								
5SMY 76J1280	SPT ⁺	10.2 x 10.2	140	1200	75	150	2.1	130 (W)
5SMY 86J1280								
5SMY 76K1280	SPT ⁺	11.2 x 11.9	140	1200	100	200	2.1	98 (W)
5SMY 86K1280								
5SMY 76M1280	SPT ⁺	13.5 x 13.5	140	1200	150	300	2.2	71 (W)
5SMY 86M1280								
1.7 kV								
5SMY 86G1721	SPT ⁺	8.6 x 8.6	209	1700	50	100	3.0	186 (W)
5SMY 86J1721								132 (W)
5SMY 12J1721	SPT ⁺	10.1 x 10.1	209	1700	75	150	3.0	36 (T)
5SMY 86K1721								102 (W)
5SMY 12K1721	SPT ⁺	11.4 x 11.4	209	1700	100	200	3.0	36 (T)
5SMY 86L1731 New								SPT ⁺⁺
5SMY 86M1721	SPT ⁺	13.6 x 13.6	209	1700	150	300	3.0	69 (W)
5SMY 12M1721								25 (T)
5SMY 86M1730	SPT ⁺⁺	13.6 x 13.6	190	1700	150	300	2.55	69 (W)
5SMY 86M1731 New	SPT ⁺⁺	13.9 x 14.0	190	1700	160	320	2.55	66 (W)

Please refer to page 72 for part numbering structure.





Medium-power IGBT modules

ABB enhances its successful IGBT module range into the medium-power segment. Starting with the 62Pak, ABB brings the proven high quality and reliability of the HiPak modules to the 62 mm module range.

ABB's 62Pak modules have an advanced packaging technology that leverages the performance of the latest silicon technology:

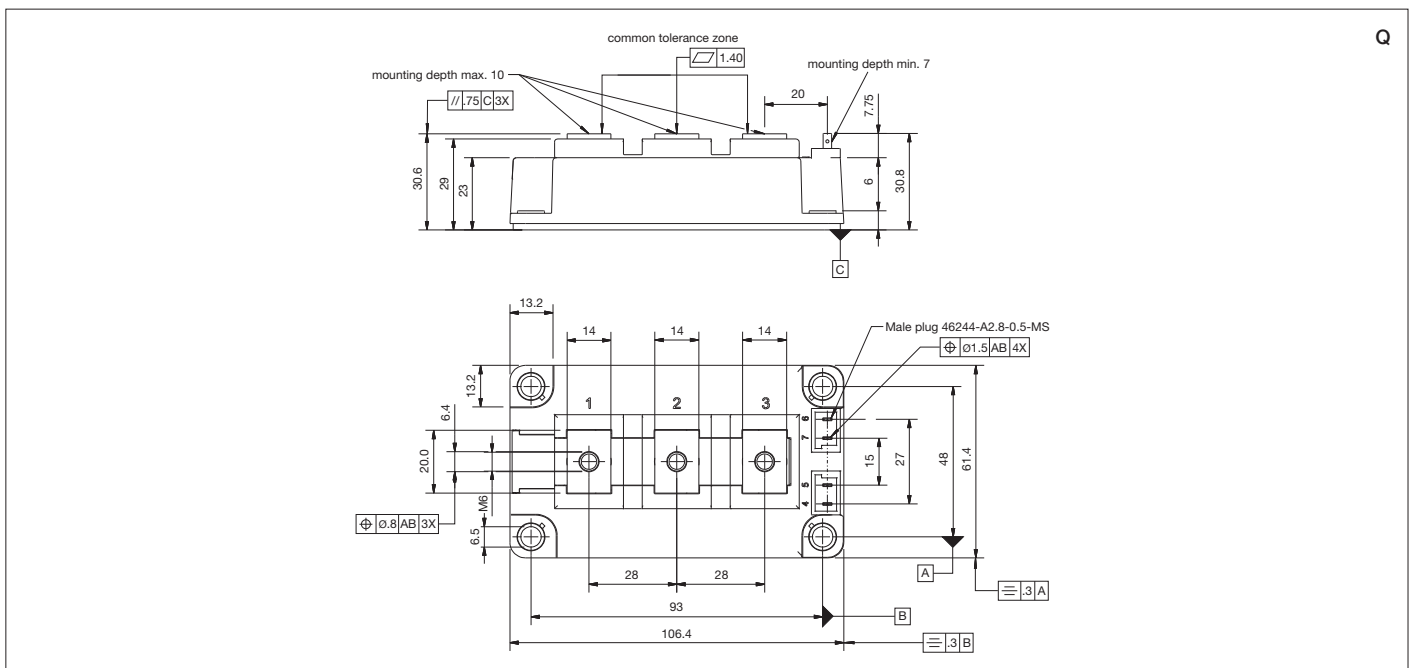
- 1,700 V SPT++ fast switching IGBT / diode chipset with lowest switching losses
- Full 175 °C operation temperature with full square SOA
- Best-in-class temperature cycling performance of bond-wire chip connection
- Standard package allows drop-in replacement



Part number T_{vj} (operational) up to 175°C 1.7 kV	Voltage V_{CES} (V)	Current I_C (A)	Configuration *	V_{CESat} (V) typ. 125°C	V_F (V) typ. 125°C	Housing
5SNG 0150Q170300 New	1700	2 x 150	(5) - Phase-leg IGBT	2.55	1.75	Q
5SNG 0200Q170300 New	1700	2 x 200	(5) - Phase-leg IGBT	2.55	1.75	Q
5SNG 0300Q170300 New	1700	2 x 300	(5) - Phase-leg IGBT	2.55	1.75	Q

Please refer to page 72 for part numbering structure.

* Configurations on page 22



Dimensions in mm

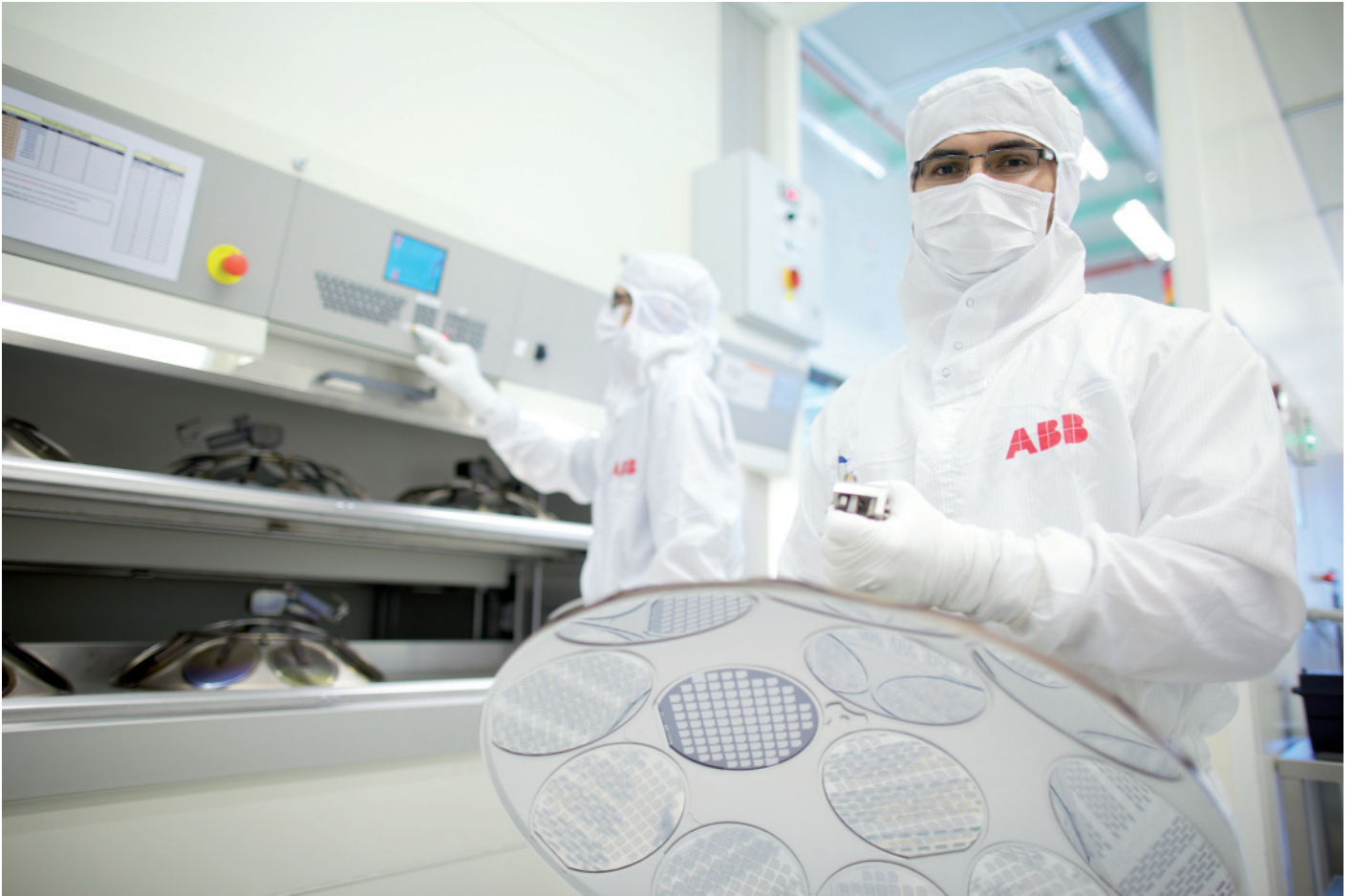
High-power IGBT and diode modules

ABB offers two families of high-power IGBT and diode modules: the HiPak and the StakPak modules. HiPak modules are a range of insulated high-power IGBTs in industry standard housings using the popular 190 x 140 mm, 130 x 140 mm and 140 x 70 mm footprints. StakPaks are press-pack IGBT modules.

HiPak modules are the perfect match for demanding high-power applications such as traction, renewable energy (wind, solar), industrial drives and T&D. The StakPak is a range of high-power IGBT press-packs and diodes in an advanced modular housing that guarantees uniform chip pressure in multiple-device stacks as for instances in high-voltage DC transmission (HVDC) applications.

ABB's high-power IGBT and diode module families are:

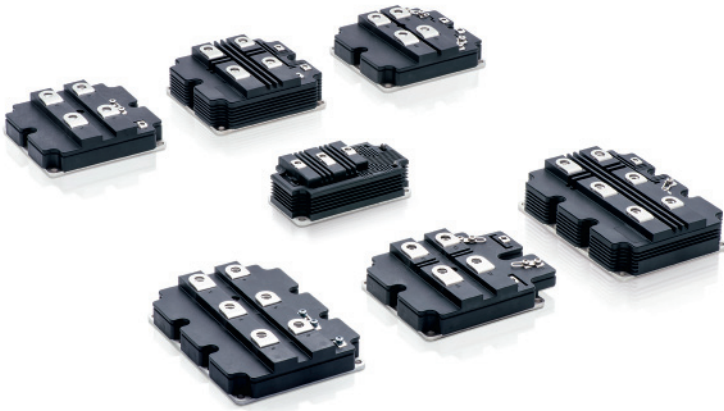
- HiPak IGBT and diode modules → page 20
- StakPak IGBT press-pack modules → page 24



HiPak IGBT and diode modules

Demanding high-power applications such as traction inverters, medium voltage drives, wind turbines, HVDC or FACTS are looking for the highest reliability IGBT modules. ABB's HiPak family of IGBT modules is the best fit to demanding applications, continuing to set new standards of robustness.

ABB's HiPak IGBT modules are available from 1,700 V to 6,500 V in various configurations. They all feature low losses combined with soft-switching performance and record-breaking Safe Operating Area (SOA).



Part number	Voltage V_{CES} (V)	Current I_C (A)	Configuration	V_{CEsat} (V) typ. 125°C	V_F (V) typ. 125°C	Housing
T_{vj}(operational) up to 125°C						
1.7 kV						
5SND 0800M170100	1700	800	(3) – Dual IGBT	2.6	1.7	M
5SNE 0800M170100	1700	800	(2) – Chopper	2.6	1.7	M
5SNA 1600N170100	1700	1600	(1) – Single IGBT	2.6	1.7	N1
5SNA 1800E170100	1700	1800	(1) – Single IGBT	2.6	1.7	E
5SNA 2400E170100 *	1700	2400	(1) – Single IGBT	2.6	1.7	E
3.3 kV						
5SNE 0800E330100	3300	800	(2) – Chopper	3.8	2.35	E
5SNA 0800N330100	3300	800	(1) – Single IGBT	3.8	2.35	N1
5SLD 1200J330100	3300	1200	(4) – Dual Diode	-	2.35	J
5SNA 1200E330100	3300	1200	(1) – Single IGBT	3.8	2.35	E
5SNA 1200G330100	3300	1200	(1) – Single IGBT	3.85	2.35	G
T_{vj}(operational) up to 150°C						
1.7 kV						
5SNA 2400E170305	1700	2400	(1) – Single IGBT	2.4	1.67	E
5SNA 3600E170300	1700	3600	(1) – Single IGBT	3.0	1.95	E
5SLA 3600E170300	1700	3600	(6) – Single Diode	-	1.95	E
2.5 kV						
5SNA 1500E250300	2500	1500	(1) – Single IGBT	2.5	2.0	E
3.3 kV						
5SNG 0250P330305	3300	250	(5) – Phase-leg IGBT	3.1	2.25	P
5SLG 0500P330300	3300	500	(7) – Phase-leg Diode	-	2.25	P
5SND 0500N330300	3300	500	(3) – Dual IGBT	3.1	2.25	N2
5SLD 1000N330300	3300	1000	(4) – Dual Diode	-	2.25	N1
5SNA 1000N330300	3300	1000	(1) – Single IGBT	3.1	2.25	N1
5SNA 1500E330305	3300	1500	(1) – Single IGBT	3.1	2.25	E

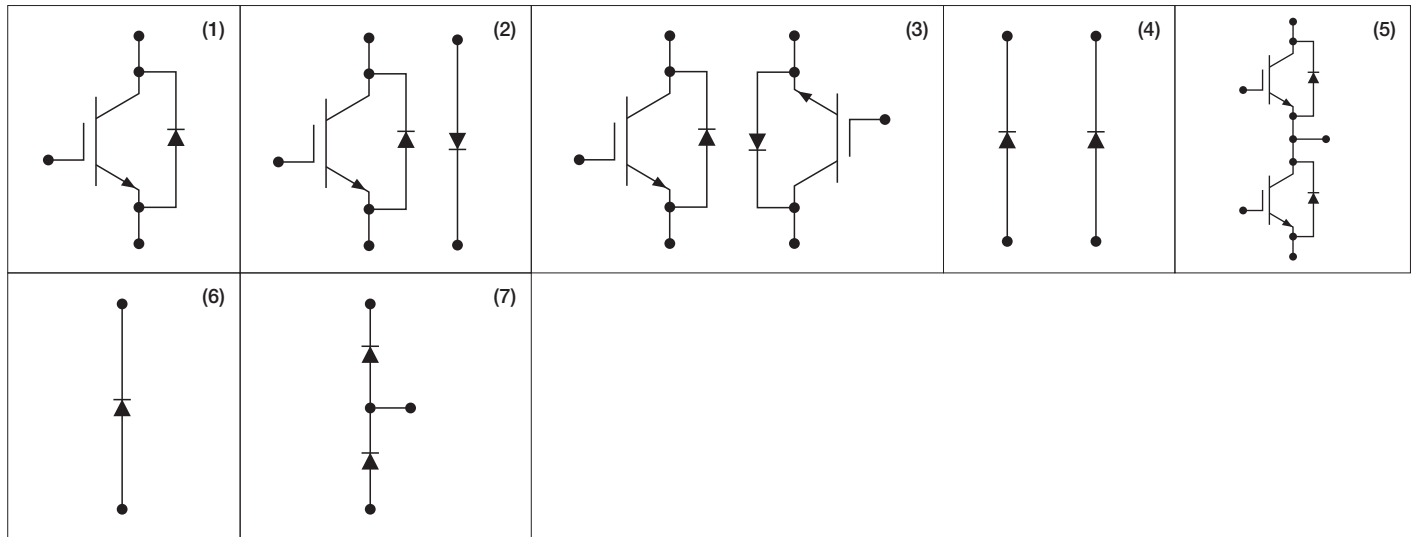
* not for new designs

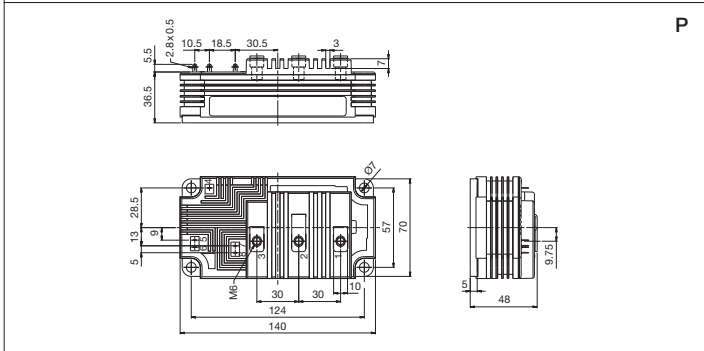
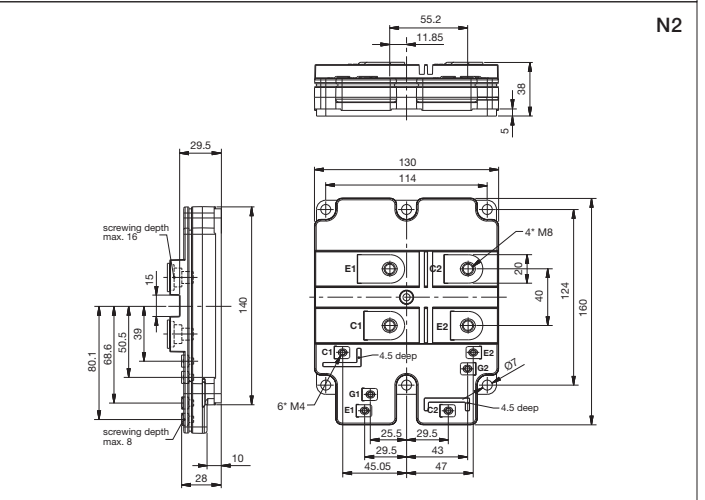
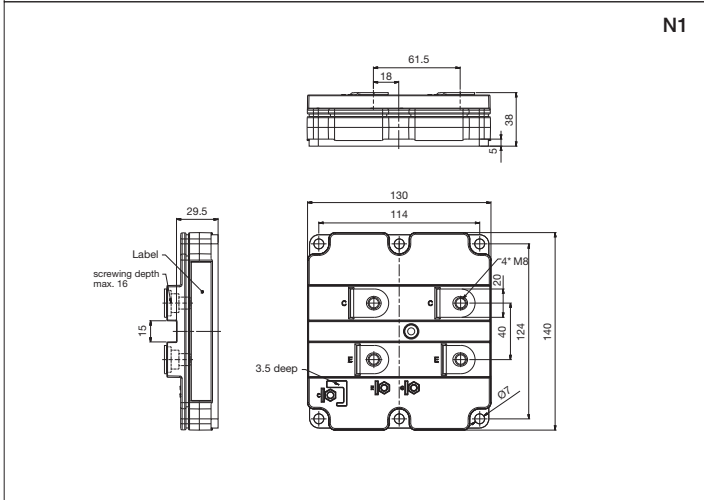
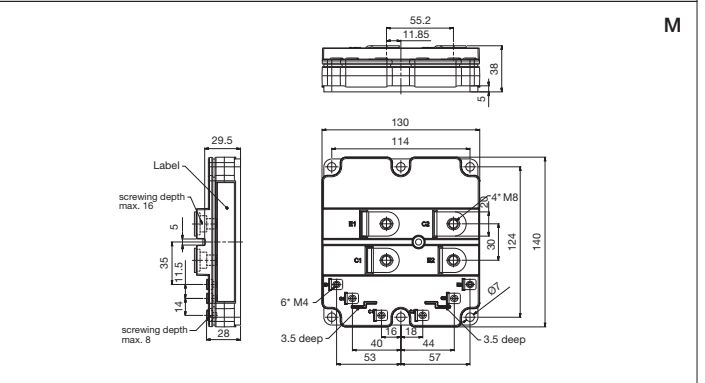
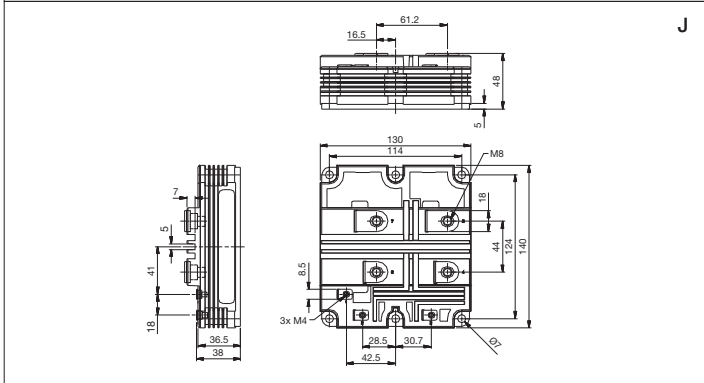
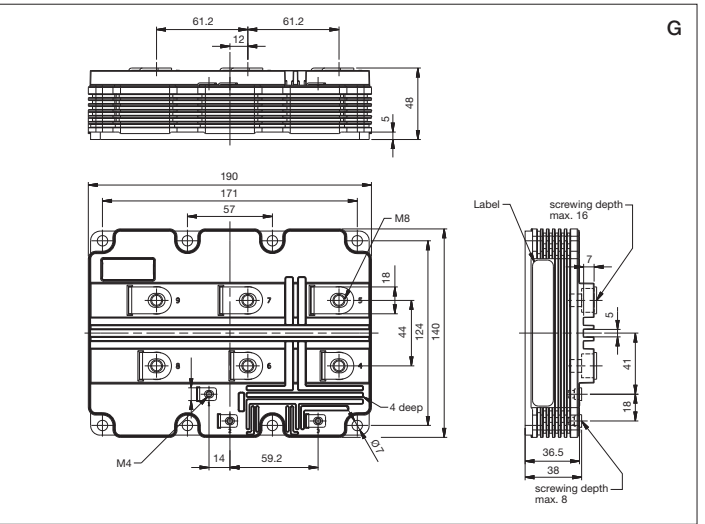
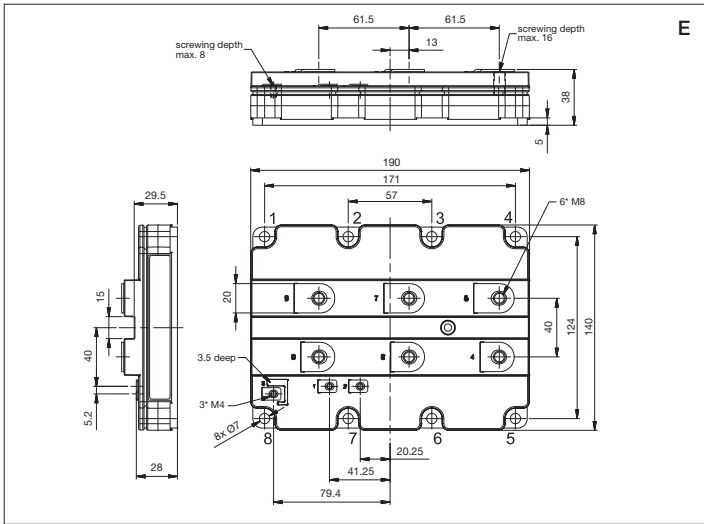
Please refer to page 72 for part numbering structure.

Part number	Voltage V_{CES} (V)	Current I_C (A)	Configuration	V_{CEsat} (V) typ. 125°C	V_F (V) typ. 125°C	Housing
T_{vj}(operational) up to 125°C						
4.5 kV						
5SNG 0150P450300	4500	150	(5) – Phase-leg IGBT	3.5	3.45	P
5SLG 0600P450300	4500	600	(7) – Phase-leg Diode	-	3.5	P
5SLD 0650J450300	4500	650	(4) – Dual Diode	-	3.4	J
5SNA 0650J450300	4500	650	(1) – Single IGBT	3.7	3.4	J
5SNA 0800J450300	4500	800	(1) – Single IGBT	3.55	3.5	J
5SLD 1200J450350	4500	1200	(4) – Dual Diode	-	3.5	J
5SNA 1200G450300	4500	1200	(1) – Single IGBT	3.55	3.5	G
5SNA 1200G450350	4500	1200	(1) – Single IGBT	3.55	3.5	G
6.5 kV						
5SNA 0400J650100	6500	400	(1) – Single IGBT	5.4	3.4	J
5SNA 0500J650300	6500	500	(1) – Single IGBT	3.9	3.4	J
5SLD 0600J650100	6500	600	(4) – Dual Diode	-	3.4	J
5SNA 0600G650100	6500	600	(1) – Single IGBT	5.4	3.4	G
5SNA 0750G650300	6500	750	(1) – Single IGBT	3.9	3.4	G

Please refer to page 72 for part numbering structure.

Configurations





Dimensions in mm

StakPak IGBT press-pack modules

To enhance reliability and reduce cost in systems that require redundancy and series-connected IGBT modules, you should consider using ABB's StakPaks.

ABB's StakPak family uses a well proven concept in IGBT press-pack technology that

- allows for easy mechanical and electrical series connection
- allows for easy stack design thanks to high tolerance for inhomogeneous mounting pressure
- guarantees a uniform chip pressure in multiple-device stacks
- provides a stable shorted state in case of failure
- long-term short-circuit failure mode (SCFM) available

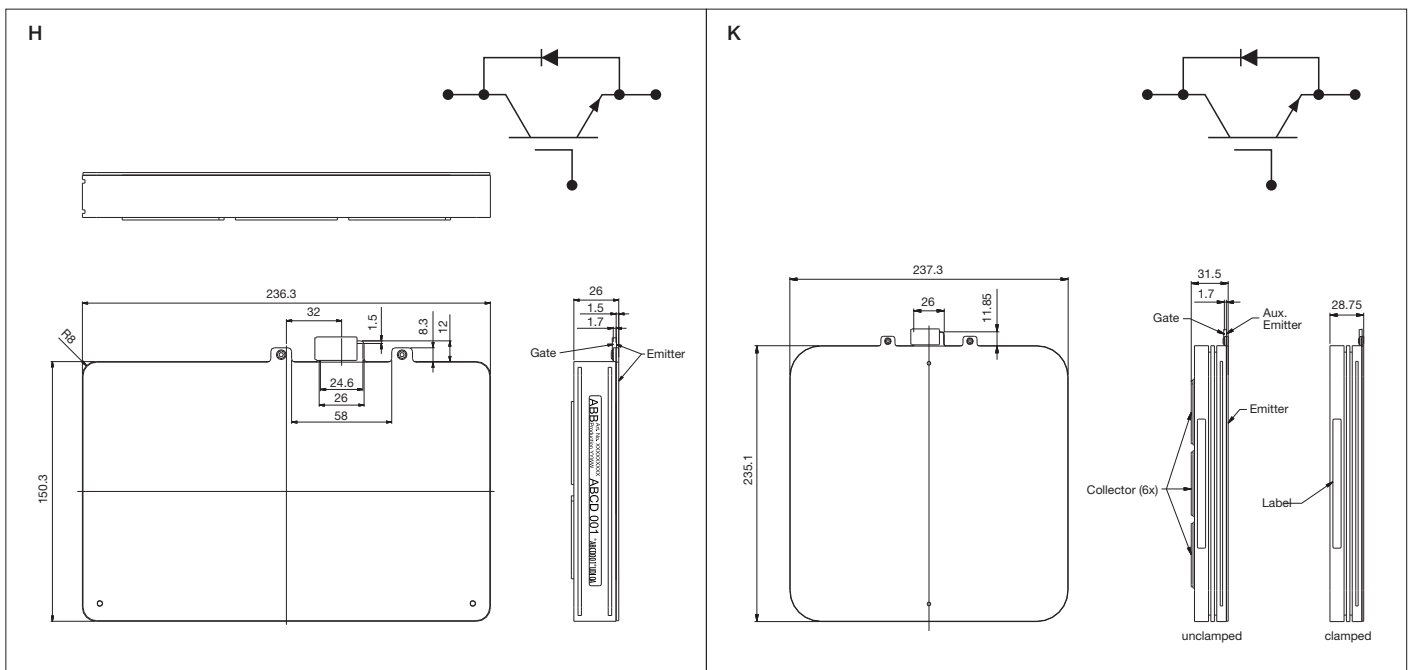
ABB Semiconductors' StakPak IGBT modules are therefore a perfect match for applications like HVDC and FACTS.



Part number	Voltage V_{CES} (V)	Current I_C (A)	V_{CESat} (V) typ. 125°C	V_F (V) typ. 125°C	IGBT-to-diode ratio	Housings	SCFM rating
5SNR 10H2501 *	2500	1000	2.7	1.9	2:1	H	Yes
5SNR 13H2501 *	2500	1300	2.7	1.9	2:1	H	Yes
5SNR 20H2501 *	2500	2000	2.7	1.9	2:1	H	Yes
5SNA 1300K450300	4500	1300	3.4	2.3	1:1	K	Yes
5SNA 2000K450300	4500	2000	3.4	2.4	1:1	K	Yes
5SNA 2000K451300	4500	2000	3.5	3.0	2:1	K	Yes
5SNA 3000K452300 New	4500	3000	3.5	3.0	2:1	K	No

* not for new designs

Please refer to page 72 for part numbering structure.



Dimensions in mm

Diodes

Diodes are used in a number of different applications. Each of these applications sets different requirements on the diodes' characteristics. Inverter applications ask for fast recovery diodes with soft-switching characteristics, high-current rectifiers demand diodes with low on-state losses, medium-power rectifiers benefit from diodes with avalanche capability and welding rectifiers require highest current in the smallest package.

ABB offers four press-pack diode families that meet these requirements:

- Fast recovery diodes → page 28
- Standard rectifier diodes → page 32
- Avalanche diodes → page 32
- Welding diodes → page 36



Fast recovery diodes

ABB Semiconductors' comprehensive family of fast recovery diodes is optimized for enhanced Safe Operating Area (SOA) and controlled (soft) turn-off recovery. This makes these diodes very well suited for all converter applications.

ABB has a long history in producing high-power fast recovery diodes for applications such as Voltage Source Inverters (VSIs), Current Source Inverters (CSIs) and snubbers. The diodes are typically used in combination with IGCTs and GTOs as free-wheeling, snubber and clamp diodes, thus enabling full IGCT and GTO performance.

ABB particularly developed L-housing fast recovery diodes to optimally match IGBT and IEGT applications where a di/dt of up to $5 \text{ kA}/\mu\text{s}$ is required.

Fast recovery diode recommendations for various applications can be found in the ABB application note *Applying fast recovery diodes*. The latest version is available at www.abb.com/semiconductors.



GTO free-wheeling diodes

Part number	V_{RRM}	V_{DC}	I_{FAVM}		I_{FSM}		V_{F0}	r_F	I_{rr}	Q_{rr}	T_{VJM}	R_{thJC}	R_{thCH}	F_m	Housing			
			$T_C=85^\circ\text{C}$		1ms	10ms										T_{VJM}		$di/dt=80\text{ A}/\mu\text{s}$
			A	kA	kA	kA										V	m Ω	
5SDF 06D2504	2500	-	615	22.6	10.0	1.20	0.46	200	400	125	32	8	10	D				
5SDF 06T2504	2500	-	615	22.6	10.0	1.20	0.46	200	400	125	32	8	10	T1				
5SDF 12F2505	2500	-	1256	43.0	19.0	1.20	0.24	230	700	125	15	4	22	F				
5SDF 12T2505	2500	-	1256	43.0	19.0	1.20	0.24	230	700	125	15	4	22	T2				
5SDF 04D4504	4500	-	361	13.6	6.0	1.86	1.54	200	400	125	32	8	10	D				
5SDF 04T4504	4500	-	361	13.6	6.0	1.86	1.54	200	400	125	32	8	10	T1				
5SDF 08F4505	4500	-	767	33.9	15.0	1.81	0.73	230	700	125	15	4	22	F				
5SDF 08T4505	4500	-	767	33.9	15.0	1.81	0.73	230	700	125	15	4	22	T2				
5SDF 13H4501	4500	2800	1200	60.0	25.0	1.30	0.48	800*	3000*	125	12	3	40	H1				
5SDF 10H6004	6000	3800	1100	44.0	18.0	1.50	0.60	1000*	6000*	125	12	3	40	H1				

* at $di/dt = 300\text{A}/\mu\text{s}$

Drawings see page 34f.

Please refer to page 74 for part numbering structure.

Snubber diodes

Part number	V_{RRM}	V_{DC}	I_{FAVM}	I_{FSM}		V_{F0}	r_F	I_{rr}	Q_{rr}	T_{VJM}	R_{thJC}	R_{thCH}	F_m	Housing		
			$T_C=85^\circ\text{C}$	1ms	10ms										T_{VJM}	$di/dt=100\text{ A}/\mu\text{s}$
			A	T_{VJM}	T_{VJM}											
V	V	A	kA	kA	V	$m\Omega$	A	μC	$^\circ\text{C}$	K/kW	K/kW	kN				
5SDF 05D2501	2500	1100	490	27.0	8.5	1.40	0.50	250	900	125	40	8	11	D		
5SDF 03D4501	4500	2400	320	12.0	5.0	2.00	1.50	200	1000	125	40	8	11	D		
5SDF 07H4501	4500	2400	900	40.0	16.0	1.80	0.90	260	1700	125	12	3	40	H1		
5SDF 02D6002	6000	3000	250	11.4	3.6	2.50	2.50	260	2000	125	40	8	11	D		

IGBT diodes

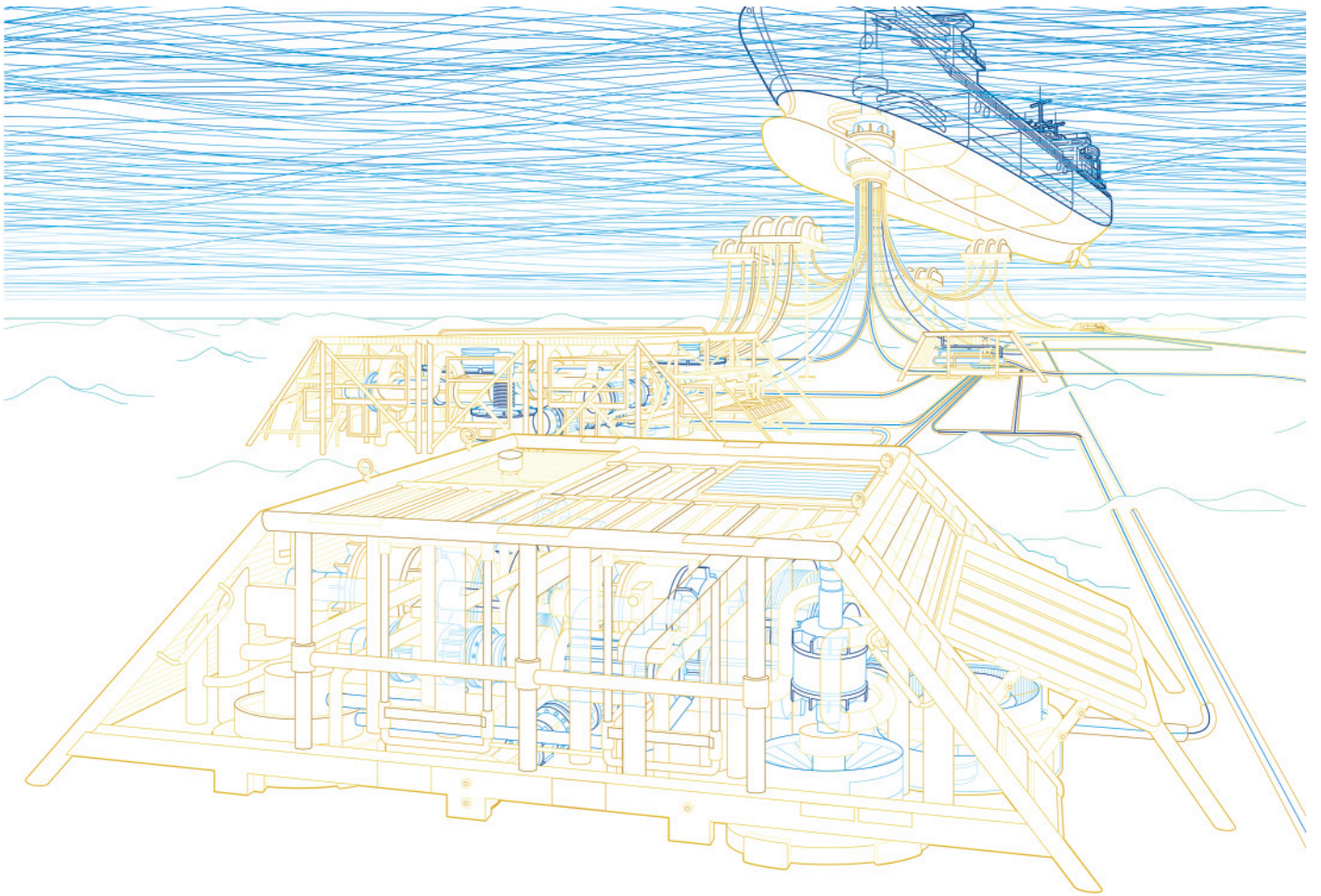
Part number	V_{RRM}	V_{DC}	I_{FAVM}	I_{FSM}		V_{F0}	r_F	I_{rr}	Q_{rr}	T_{VJM}	R_{thJC}	R_{thCH}	F_m	Housing	
			$T_C=70^\circ\text{C}$	10ms	T_{VJM}										$di/dt=5000\text{ A}/\mu\text{s}$
			A	T_{VJM}	T_{VJM}										
V	V	A	kA	V	$m\Omega$	A	μC	$^\circ\text{C}$	K/kW	K/kW	kN				
5SDF 20L4521	4500	2800	1950	38.0	1.70	0.80	3600	5300	140	6	3	40	L3		
5SDF 28L4521	4500	2800	2620	48.0	1.10	0.47	3700	10100	140	6	3	40	L3		

IGCT diodes

Part number	V_{RRM}	V_{DC}	I_{FAVM}	I_{FSM}		V_{F0}	r_F	I_{rr}	di/dt max.	T_{VJM}	R_{thJC}	R_{thCH}	F_m	Housing	
			$T_C=70^\circ\text{C}$	1ms	10ms										T_{VJM}
			A	T_{VJM}	T_{VJM}										
V	V	A	kA	kA	V	$m\Omega$	A	$\text{A}/\mu\text{s}$	$^\circ\text{C}$	K/kW	K/kW	kN			
5SDF 03D4502	4500	2800	275	10.0	5.0	2.15	2.80	355	300	115	40	8	16	D	
5SDF 05F4502	4500	2800	435	32.0	16.0	2.42	2.10	610	430	115	17	5	20	F	
5SDF 10H4503	4500	2800	1100	47.0	20.0	1.75	0.88	1520	600	125	12	3	40	H1	
5SDF 20L4520	4500	2800	1950	-	38.0	1.70	0.80	2400	1200	140	6	3	40	L3	
5SDF 28L4520	4500	2800	2620	-	48.0	1.10	0.47	2800	1000	140	6	3	40	L3	
5SDF 02D6004	5500	3300	175	8.0	3.0	3.35	7.20	300	220	115	40	8	16	D	
5SDF 04F6004	5500	3300	380	22.0	10.0	2.70	2.80	600	340	115	22	5	20	F	
5SDF 08H6005	5500	3300	585	40.0	18.0	4.50	1.30	900	440	115	12	3	40	H1	

Drawings see page 34f.

Please refer to page 74 for part numbering structure.



Standard rectifier & avalanche diodes

ABB's two families of high-power rectifier diodes – standard rectifier diodes and avalanche diodes – are well-known for their outstanding reliability and excellent nominal and surge current capabilities.

The **standard rectifier diodes** are optimized for line frequency and low on-state losses. Their main applications are input rectifiers for large AC drives, aluminum smelting and other metal refining as well as trackside supply.

The **avalanche diodes** are self-protected against transient over-voltages, offer reduced snubber requirements and feature maximum avalanche power dissipation. They are frequently used for input rectifiers in traction converters or high-voltage power rectifiers.

For safe and easy parallel or series connection, both types of diodes are available in groups of similar V_F or Q_{rr} , respectively.



Standard recovery diodes

Part number	V_{RSM}	V_{RRM}	I_{FAVM}	I_{FSM}	V_{T0}	r_T	T_{VJM}	R_{thJC}	R_{thCH}	F_m	Housing
			$T_C=85^\circ C$	10ms	T_{VJM}						
	V	V	A	kA	V	m Ω	$^\circ C$	K/kW	K/kW	kN	
5SDD 70H2000	2000	2000	7030	65.0	0.861	0.046	190	8.0	2.5	50	H2
5SDD 65H2400	2400	2400	6520	59.0	0.870	0.057	190	8.0	2.5	50	H2
5SDD 51L2800	2800	2000	5380	65.0	0.770	0.082	175	8.0	3.0	70	L1
5SDD 60N2800	2800	2000	6830	87.0	0.800	0.050	160	5.7	1.0	90	N
5SDD 60Q2800	2800	2000	7385	87.0	0.800	0.050	160	5.0	1.0	90	Q
5SDD 11T2800	2800	2800	1285	15.0	0.933	0.242	160	32.0	8.0	10	T1
5SDD 11D2800	3000	2800	1285	15.0	0.933	0.242	160	32.0	8.0	10	D
5SDD 24F2800	3000	2800	2600	30.0	0.906	0.135	160	15.0	4.0	22	F
5SDD 48H3200	3200	3200	4710	61.0	0.992	0.067	160	8.0	2.5	50	H2
5SDD 54N4000	4000	3600	5200	85.0	0.800	0.086	150	5.7	1.0	90	N
5SDD 39K4000	4000	4000	3941	46.0	0.905	0.109	160	9.2	2.5	50	K
5SDD 40H4000	4000	4000	3847	46.0	0.900	0.133	160	8.0	2.5	50	H2
5SDD 08D5000	5000	5000	1028	12.0	0.894	0.487	160	32.0	8.0	10	D
5SDD 08T5000	5000	5000	1028	12.0	0.894	0.487	160	32.0	8.0	10	T1
5SDD 20F5000	5000	5000	1978	24.0	0.940	0.284	160	15.0	4.0	22	F
5SDD 38H5000	5000	5000	3814	45.0	0.903	0.136	160	8.0	2.5	50	H2
5SDD 36K5000	5000	5000	3638	45.0	0.903	0.136	160	9.2	2.5	50	K
5SDD 33L5500	5500	5000	3480	46.0	0.940	0.147	150	7.0	1.5	70	L1
5SDD 50N5500	5500	5000	4570	73.0	0.800	0.107	150	5.7	1.0	90	N
5SDD 06D6000	6000	6000	662	10.5	1.066	0.778	150	42.0	8.0	11	D
5SDD 09D6000	6000	6000	845	11.0	0.893	0.647	150	32.0	8.0	10	D
5SDD 10F6000	6000	6000	1363	17.5	1.015	0.407	150	20.0	5.0	22	F
5SDD 14F6000	6000	6000	1363	17.5	1.015	0.407	150	20.0	5.0	22	F
5SDD 31H6000	6000	6000	3246	40.0	0.894	0.166	150	8.0	2.5	50	H2
5SDD 31K6000	6000	6000	3097	40.0	0.894	0.166	150	9.2	2.5	50	K

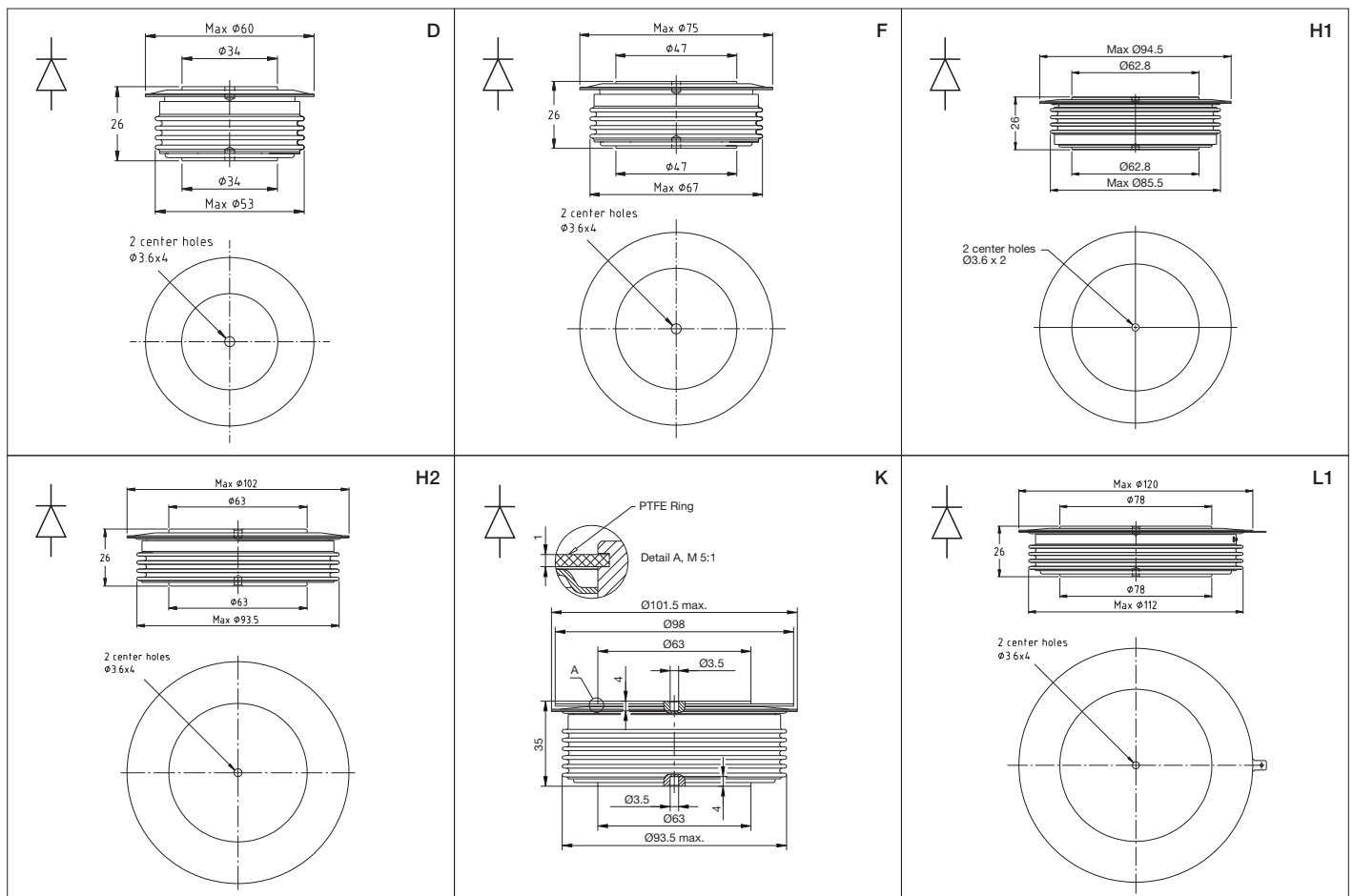
Drawings see page 34f.

Please refer to page 74 for part numbering structure.

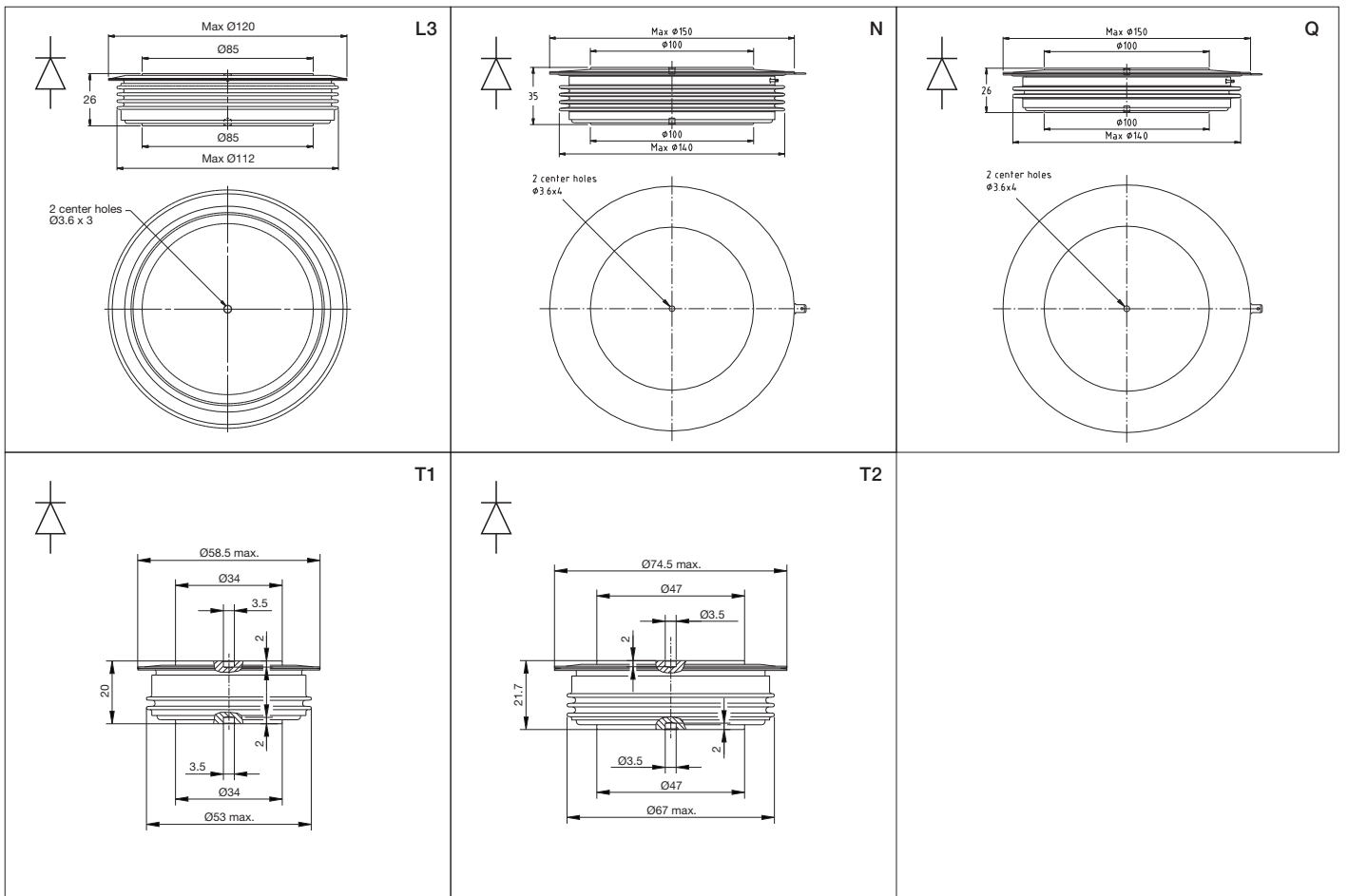
Avalanche diodes

Part number	V_{RRM}	I_{FAVM}	I_{FSM}	V_{F0}	r_F	P_{RSM}	T_{VJM}	R_{thJC}	R_{thCH}	F_m	Housing
		$T_c=85^\circ\text{C}$	10ms			20 μs					
	V	A	kA	V	m Ω	kW	$^\circ\text{C}$	K/kW	K/kW	kN	
5SDA 11D1702	1700	1310	15.0	0.74	0.25	50	160	40	10	11	D
5SDA 27F2002	2000	2700	31.0	0.79	0.09	100	160	20	5	22	F
5SDA 10D2303	2300	1140	13.5	0.83	0.30	50	160	40	10	11	D
5SDA 24F2303	2300	2350	29.0	0.84	0.13	75	160	20	5	22	F
5SDA 09D2604	2600	1020	11.5	0.87	0.39	50	160	40	10	11	D
5SDA 08D3205	3200	910	9.2	0.93	0.52	50	160	40	10	11	D
5SDA 21F3204	3200	2110	26.0	0.89	0.17	75	160	20	5	22	F
5SDA 07D3806	3800	790	7.6	1.01	0.72	50	160	40	10	11	D
5SDA 16F3806	3800	1620	20.5	1.03	0.32	50	160	20	5	22	F
5SDA 06D5007	5000	690	7.0	1.10	1.01	50	160	40	10	11	D
5SDA 14F5007	5000	1410	17.5	1.13	0.44	50	160	20	5	22	F

Please refer to page 74 for part numbering structure.



Dimensions in mm



Dimensions in mm

Welding diodes

Almost every second car driving in Europe has been fabricated using ABB welding diodes, as most of the major welding equipment manufacturers rely on ABB's quality, reliability and performance.

ABB's comprehensive product range offers medium frequency (up to 2 kHz) and high frequency (up to 10 kHz) welding diodes. They all feature very low on-state voltage and very low thermal resistance. In addition, they are available in small weight, thin and hermetically sealed ceramic housings or even housing-less, another welcomed feature for equipment that is mounted directly on robot arms.



Medium frequency

Part number	V_{RRM}	V_{Fmin}	V_{Fmax}	I_{FAVM}	I_{FSM}	V_{F0}	r_F	T_{VJM}	R_{thJC}	R_{thCH}	F_m	Housing
		$T_J=25^{\circ}C, I_F=5000A$		$T_C=85^{\circ}C$	10ms	T_{VJM}	T_{VJM}					
	V	V	V	A	kA	V	m Ω	$^{\circ}C$	K/kW	K/kW	kN	
5SDD 71X0200	200	-	1.05	7110	55	0.74	0.026	170	10.0	5.0	22	X
5SDD 71B0200	200	-	1.05	7110	55	0.74	0.026	170	10.0	5.0	22	B
5SDD 0120C0200	200	-	0.92*	11000	85	0.75	0.020	170	6.0	3.0	36	C
5SDD 71X0400	400	0.97	1.02	7110	55	0.74	0.026	170	10.0	5.0	22	X
5SDD 71B0400	400	-	1.05	7110	55	0.74	0.026	170	10.0	5.0	22	B
5SDD 0120C0400	400	0.83*	0.88*	11350	85	0.74	0.018	170	6.0	3.0	36	C
5SDD 92Z0401	400	-	1.03*	9250	60	0.78	0.031	180	5.6	3.6	22	Z1
5SDD 0105Z0401	400	-	1.01*	10502	70	0.812	0.026	180	5.0	2.5	30	Z2
5SDD 0135Z0401	400	-	0.92*	13500	85	0.758	0.021	180	3.9	2.6	35	Z3

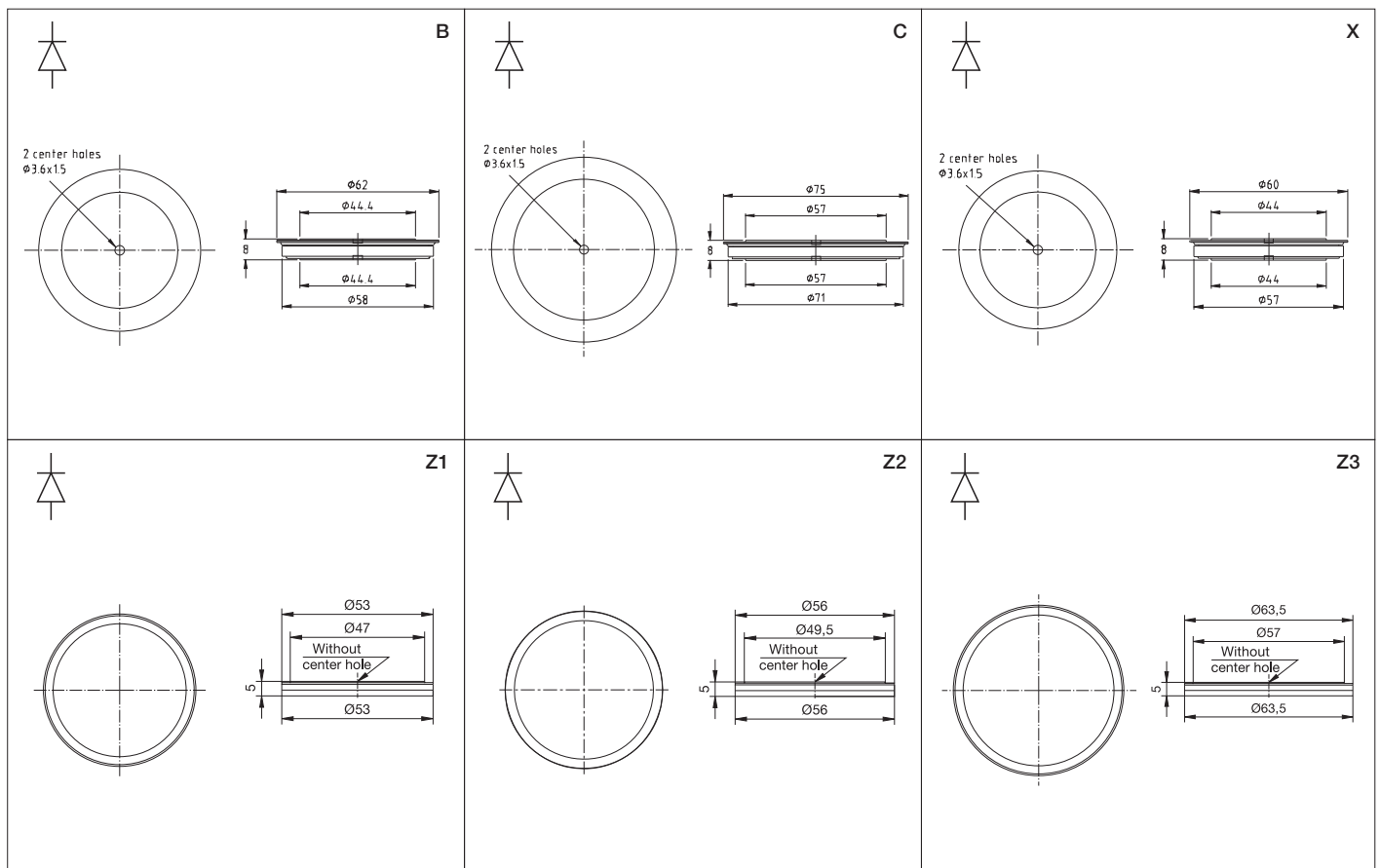
* at 8000 A, T_{VJM}

High frequency

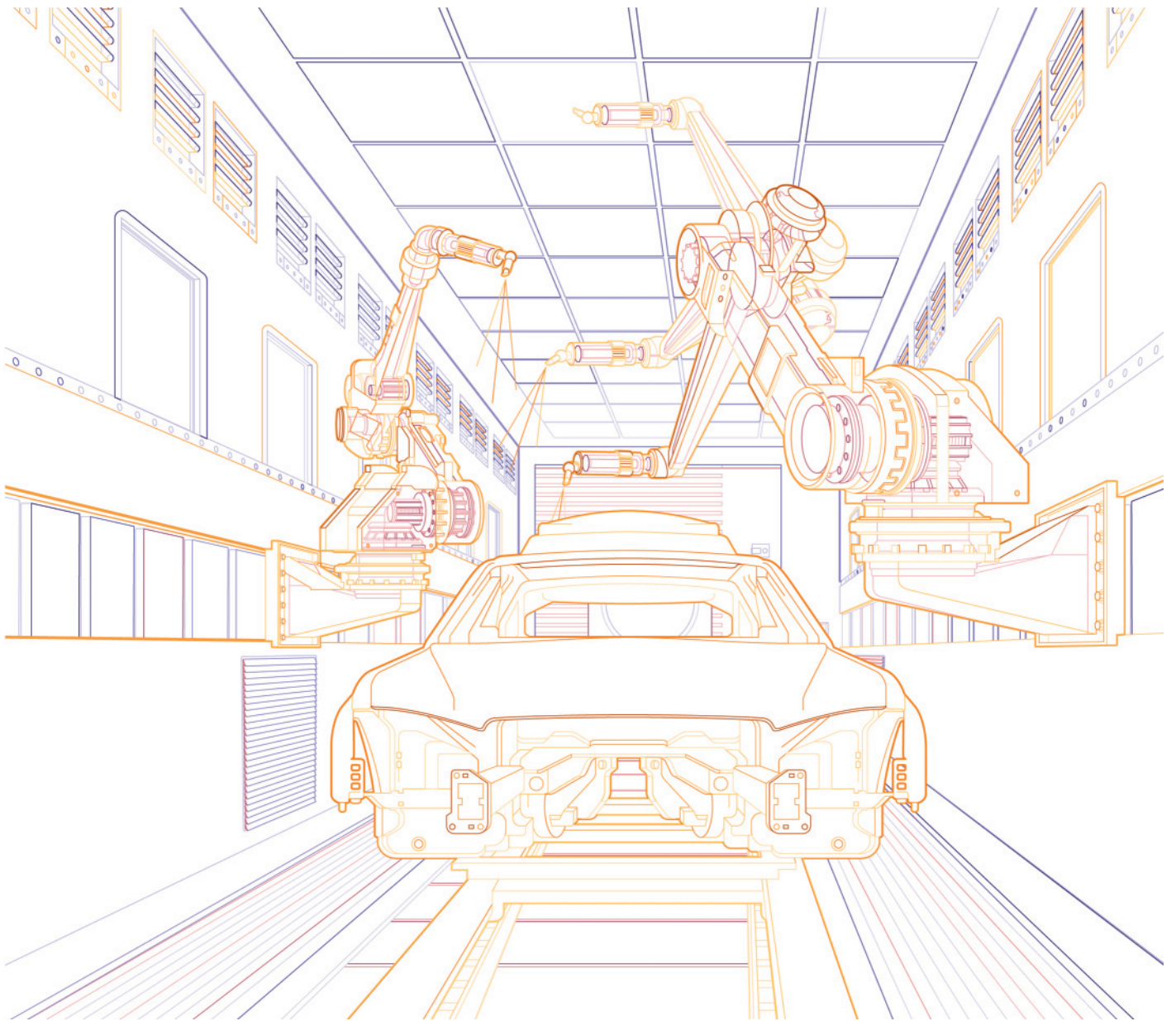
Part number	V_{RRM}	V_{Fmax}	I_{FAVM}	I_{FSM}	V_{F0}	r_F	Q_{rr}	T_{VJM}	R_{thJC}	R_{thCH}	F_m	Housing
		T_{VJM}	$T_C=85^{\circ}C$	10ms	T_{VJM}	T_{VJM}	T_{VJM}					
	V	V	A	kA	V	m Ω	μC	$^{\circ}C$	K/kW	K/kW	kN	
5SDF 63B0400	400	1.14	6266	44	0.96	0.036	180	190	10.0	5.0	22	B
5SDF 63X0400	400	1.14	6266	44	0.96	0.036	180	190	10.0	5.0	22	X
5SDF 90Z0401	400	1.13	9041	48	0.98	0.032	200	190	5.6	3.6	22	Z1
5SDF 0102C0400	400	1.14*	10159	70	0.98	0.022	300	190	6.0	3.0	35	C
5SDF 0103Z0401	400	1.20*	10266	54	1.00	0.027	230	190	5.0	2.5	30	Z2
5SDF 0131Z0401	400	1.14*	13058	70	0.98	0.022	300	190	3.9	2.6	35	Z3

* at 8000 A

Please refer to page 74 for part numbering structure.



Dimensions in mm



Thyristors

High-power thyristors are used in applications ranging from 100 kW soft starters up to HVDC stations rated 8 to 10 GW. Besides commonly being used at line frequency, they are also found in kilohertz range applications like induction heating. Such applications can take advantage from devices where multiple functionalities are integrated in a single housing, like the integration of a diode and a thyristor or two antiparallel thyristors.

ABB offers the following thyristor families:

- Phase control thyristors (PCTs) → page 42
- Bi-directionally controlled thyristors (BCTs) → page 46
- Fast switching thyristors → page 48
- Reverse conducting thyristors (RCTs) → page 48

ABB Semiconductors is pushing the physical limits to meet your needs



ABB launches new fast recovery diode types 5SDF 11H4505, 5SDF 20L4520 and 5SDF 28L4520

Fast recovery diodes, an integral part of inverter design, have seldom received the same attention as the switching elements such as IGBTs or IGCTs. As a result, Clamp, Neutral-Point Clamping and Free-Wheeling Diodes often have limited an optimal equipment design.

ABB has now developed a new range of fast recovery diodes offering enhanced Safe Operating Area (SOA) and controlled soft recovery at very high di/dt and dv/dt levels which are ideally suited for IGCT applications.

Features:

- high operating temperature range up to 140 °C
- optimized forward and reverse recovery characteristics
- excellent softness and enhanced SOA
- cosmic radiation withstand rating
- presspack devices

Applications:

- Snubber, clamp or freewheeling diodes for IGCT, IGBT or GTO applications

	5SDF 03D4502	4500	2800	275	10	5.0	2.15	2.80	355	300	115	40	8	16	D
	5SDF 05F4502	4500	2800	435	32	16.0	2.42	2.10	610	430	115	17	5	20	F
	5SDF 10H4502	4500	2800	810	40	24.0	2.42	1.10	1150	650	115	12	3	40	H
	5SDF 10H4503	4500	2800	1100	47	20.0	1.75	0.88	1520	600	125	12	3	40	H
new	5SDF 11H4505	4500	2800	1576	58	23.0	2.43	0.65	1250	1000	140	8	3	40	H
	5SDF 10H4520	4500	2800	1440	56	25.0	1.75	0.88	1600	600	140	10	3	40	H
	5SDF 16L4503	4500	2800	1650	47	26.0	1.90	0.79	1200	600	125	6.5	3	40	L
new	5SDF 20L4520	4500	2800	2010	70	30.0	1.86	0.71	2400	1200	140	6.5	3	40	L
new	5SDF 28L4520	4500	2800	2750	70	30.0	1.35	0.38	2800	1000	140	6.5	3	40	L
	5SDF 02D6004	5500	3300	175	8	3.0	3.35	7.20	300	220	115	40	8	16	D
	5SDF 04F6004	5500	3300	380	22	10.0	2.70	2.80	600	340	115	22	5	20	F
	5SDF 08H6005	5500	3300	585	40	18.0	4.50	1.30	900	440	115	12	3	40	H

Table 1 - Product range

Document Title	Document Number
Recommendations regarding mechanical clamping of high power press pack semiconductors	5SYA2036
Field measurements on high power press pack semiconductors	5SYA2048
Voltage ratings of high power semiconductors	5SYA2051
Failure Rates of Fast Recovery Diodes due to Cosmic Rays	5SYA2061
Applying Fast Recovery Diodes	5SYA2064
Specification of environmental class for pressure contact diodes, PCTs and GTO, STORAGE	5SZK9104
Specification of environmental class for pressure contact diodes, PCTs and GTO, TRANSPORTATION	5SZK9105
Specification of environmental class for presspack Diodes, PCTs and GTOs - Operation (Industry) -	5SZK 9115-00
Specification of environmental class for presspack Diodes, PCTs and GTOs - Operation (Traction) -	5SZK 9116-00

Table 2 - Principal applications documents

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Мы работаем только с юридическими лицами(организациями) и ИП и только по безналичному расчёту.
подробно смотрите ниже: описание, характеристики, datasheet

QR код

