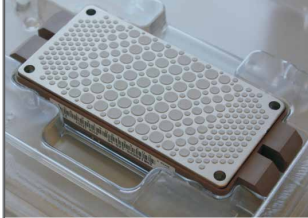
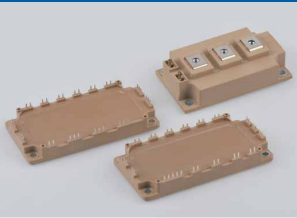
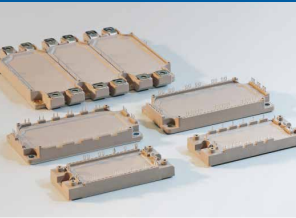
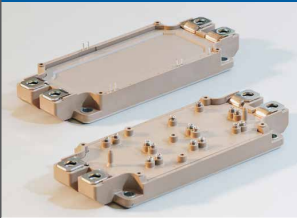
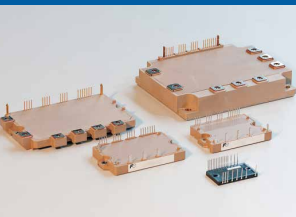
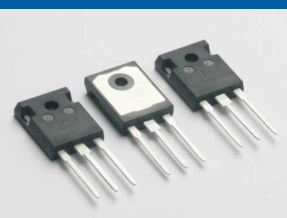
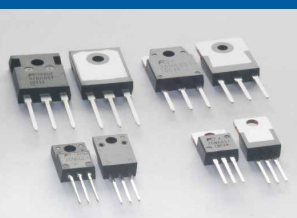
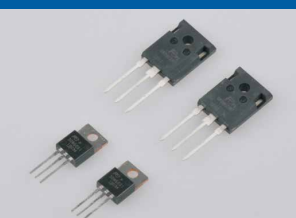


Power Semiconductors

IGBT Modules, MOSFETs, All SiC Modules, SiC-Schottky Diodes and Discrete IGBTs

Pre-applied Thermal Interface Material (TIM) 1 	IGBT Modules for 3-Level inverters 4-5 	Hybrid IGBT-Modules with SiC Schottky Barrier Diodes 6-7 	PIM Power Integrated Modules Solder pins & PressFit contacts 8-11 	6-Pack IGBT-Modules, Solder pins & PressFit contacts 12 	2-Pack IGBT-Modules, Spring-, Pin- & PressFit contacts 13 
Standard 1- & 2-Pack IGBT Modules 14 	High Power Modules 1200V, 1700V & 3300V 15 	HPnC High Power next Core 16 	High Power Modules 2-Pack & Chopper 17 	IPM Intelligent Power Modules 18-20 	
Chopper Modules & High Speed IGBTs 21 	Discrete IGBTs, standard and Reverse Blocking IGBT 22 	Super Junction- MOSFETs with & without FRED 23 	SiC Schottky Barrier Diodes 24 	Fuji Electric Corp. of America 50 Northfield Avenue Edison, NJ 08837 USA Tel: (732)560-9410 Fax: (732)457-0042 x-fea-semi-group@fujielectric.com www.americas.fujielectric.com Email  Website 	

Industrialized Process for Pre-applied Thermal Interface Material (TIM)



Fuji Electric's printing process of pre-applied TIM is automated and carried out by a computer controlled printing line under clean environment.

Precise printing equipment and optimized module specific printing patterns guaranty a uniform print and maximum thermal conductivity.

3D-imaging tests ensure the compliance of our specified TIM thickness.

The whole process is controlled by our qualified staff to ensure our high quality standards.

Features

- + Optimized for Fuji Electric modules
- + Increase lifetime of IGBT
- + Advanced IGBT power density

Process - Benefits

- + Outsourcing of a dirty process
- + Stable quality level
- + Increased system reliability

Thermal - Benefits

- + Higher thermal conductivity
- + Uniform thermal resistance
- + Higher reliability and life time.

Our range of modules with pre-applied TIM is being continually expanded

For latest availability status please contact us

About Type Name

The Type Name is not exactly the item code for the ordering process

1. Modules with Standard IGBT-Chips

2 M Bi 450 V H - 120 - 50

Suffix - 50 = RoHS compliant

Voltage class: 060 = 600V · 065 = 650V · 120 = 1200V · 170 = 1700V · 330 = 3300V

Package Style

IGBT-series (here V-Series) / IGBT-technology

IGBT development

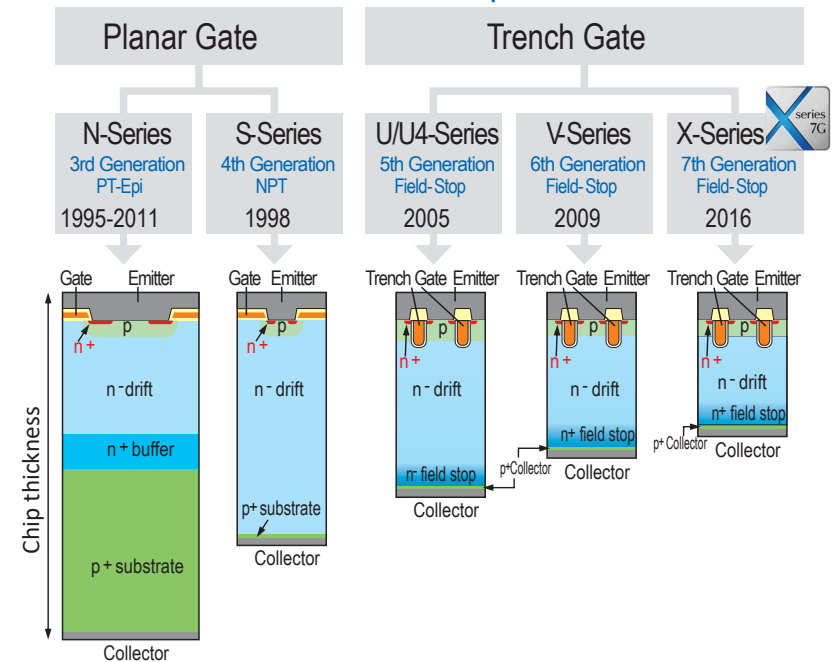
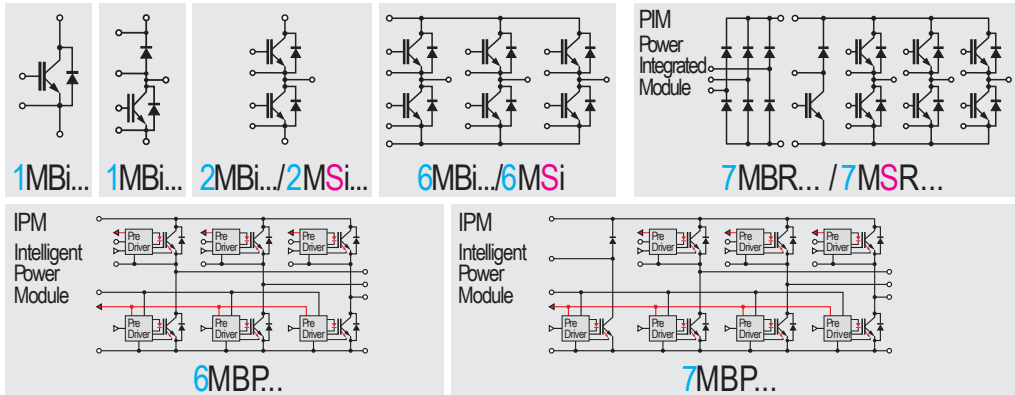
Device type & configuration

MBi : Standard IGBT module (1-, 2- and 6-pack)

MBR : PIM IGBT (Power Integrated Module)

MBP : IPM IGBT (Intelligent Power Module)

MSi, MSR: The "S" indicates hybrid module with Si-IGBT & SiC Schottky free wheeling diodes



Number of IGBT-switches (not chips)

About Type Name

The Type Name is not exactly the item code for the ordering process

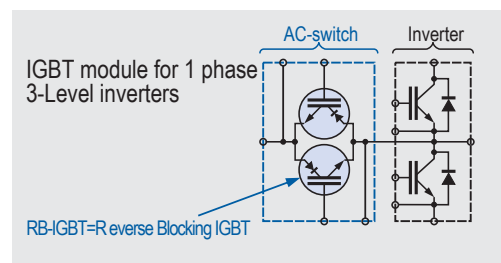
2. Modules with RB-IGBT (Reverse Blocking IGBT)

4 M Bi3 00 V G - 1 2 0 R1 - 5 0

Voltage class of inverter part

060= 600V
120=1200V
170=1700V

R = 600V
R1= 900V
R2=1200V



3. Discrete IGBTs

F G W 3 5 N 6 0 H D

Fuji IGBT I_c [A] N-channel Series

Package

Voltage: 60=600V · 65=650V · 120=1200V

4. Super- Junction MOSFETs

F M P 6 0 N 1 3 3 S2 FD

Fuji MOSFET

N-channel

With built-in FRED
Super- Junction MOSFET, S2-Series

$R_{DS(on),max}$ [mW]

V_{DS} : 60= 600V · 65= 650V

Package

5. SiC Schottky Barrier Diodes

F D C P 2 5 S 6 5

Fuji SiC-Diode

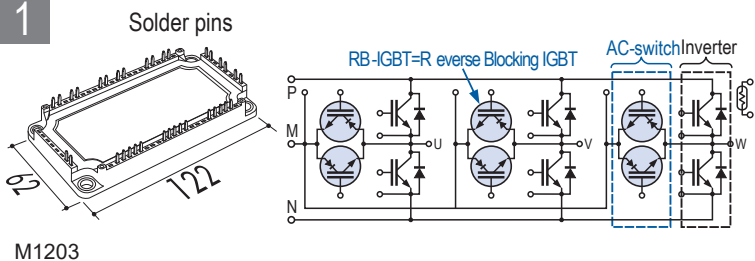
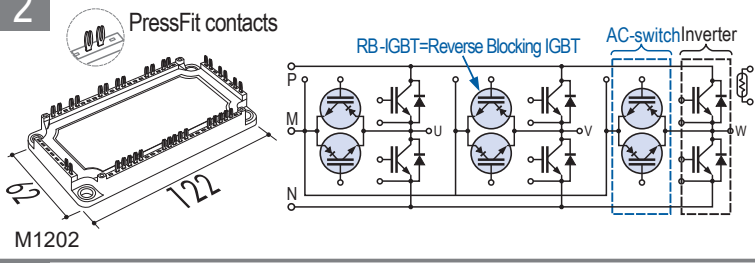
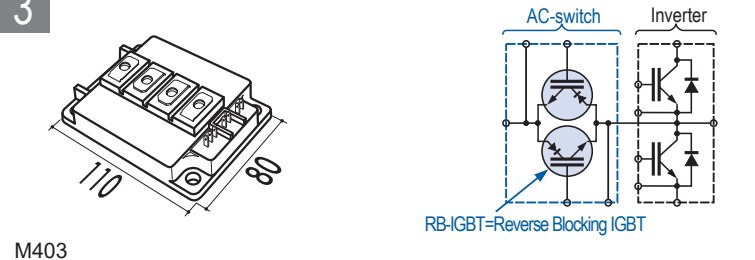
I_{FAV} [A]

Voltage: 65=650V · 120=1200V

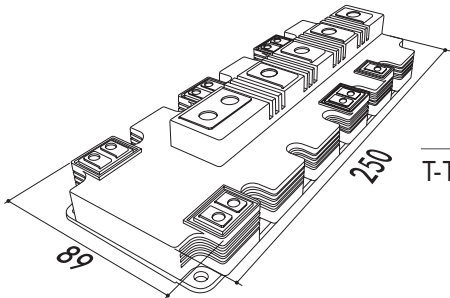
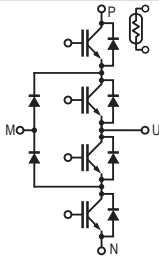
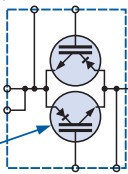
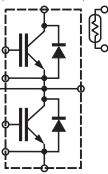
Configuration C=Dual S=Single

Package

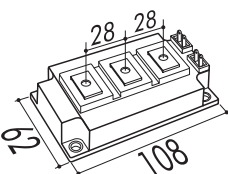
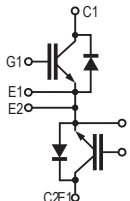
IGBT -Modules for 3-Level Inverters

IGBT-Modules for 3-Level Inverters			I_C	600V		1200V		1700V	
				V-Series 6th Generation	AC-switch	V-Series 6th Generation	AC-switch	V-Series 6th Generation	AC-switch
3 Phase	1		50A			12MBi 50VN-120-50	600V		
			75A			12MBi 75VN-120-50	600V		
			100A			12MBi 100VN-120-50	600V		
	2		50A			12MBi 50VX-120-50	600V		
			75A			12MBi 75VX-120-50	600V		
			100A			12MBi 100VX-120-50	600V		
1 Phase	3		220A					4MBi 220VF-170R2-50	1200V
			300A			4MBi 300VG-120R-50 4MBi 300VG-120R1-50	600V 900V		
			340A			4MBi 340VF-120R-50	600V		
			400A	4MBi 400VG-060R-50	600V	4MBi 400VF-120R-50	600V		

IGBT -Modules for 3-Level Inverters

1 Phase	4	I-Type			600A	4MBi 600VC-120-50				
	T-Type	AC-switch		Inverter		450A	4MBi 450VB-120R1-50	900V	4MBi 450VB-170R2-50	1200V
						600A			4MBi 600VB-170R2-50	1200V
						650A	4MBi 650VB-120R1-50	900V		
						900A	4MBi 900VB-120R1-50	900V		
		RB-IGBT=Reverse Blocking IGBT								

AC - switch

		I _C	1200V
			V-Series 6th Generation
2-Pack	5		
		450A	2MBi450VH-120F-50

Hybrid IGBT-Modules with SiC-SBD



I_C

1200V

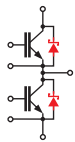
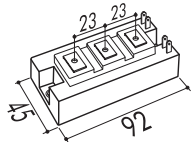
V-Series
6th Generation

1700V

V-Series
6th Generation

2-Pack

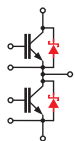
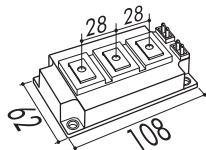
6



200A

2MSi200VAB-120-53

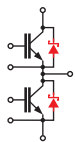
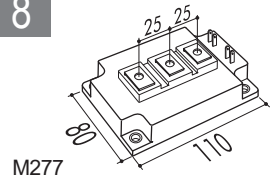
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300A

2MSi300VAH-120C-53

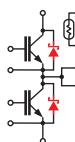
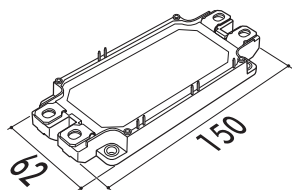
8



400A

2MSi400VAE-170-53

9



300A

2MSi300VAN-120-53*

450A

2MSi450VAN-120-53*

2MSi450VAN-170-53*

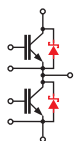
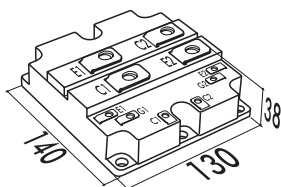
550A

2MSi550VAN-170-53*

600A

2MSi600VAN-120-53*

10



1200A

2MSi1200VAT-170 PC*

2MSi1200VAT-170 EC*

Suffix -53 = With $V_{CE,sat}$ & V_F rank label

* Under Development

Hybrid IGBT-Modules with SiC-SBD



			I_C	600V	1200V
				V-Series 6th Generation	V-Series 6th Generation
PIM	11		35A		7MSR 35VB-120-50
			50A	7MSR 50VB-060-50	7MSR 50VB-120-50
			75A	7MSR 75VB-060-50	
			100A	7MSR 100VB-060-50	
6-Pack	12		100A		6MSi 100VB-120-50

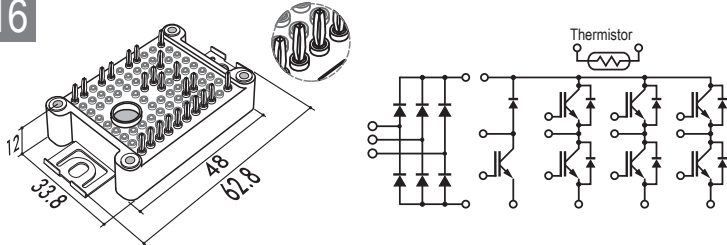
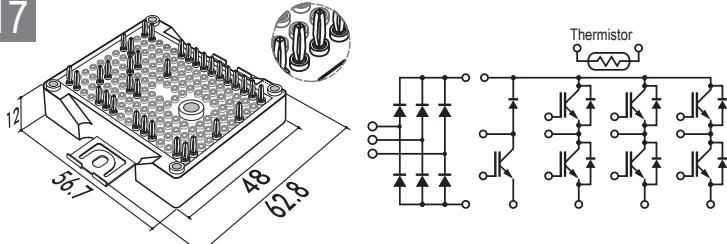
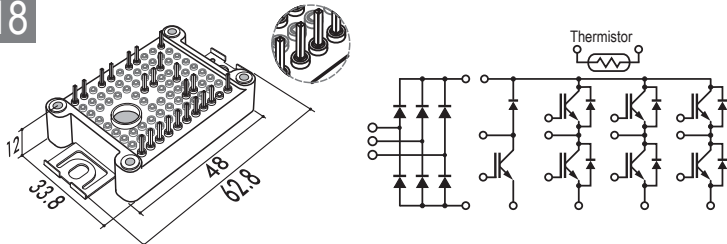
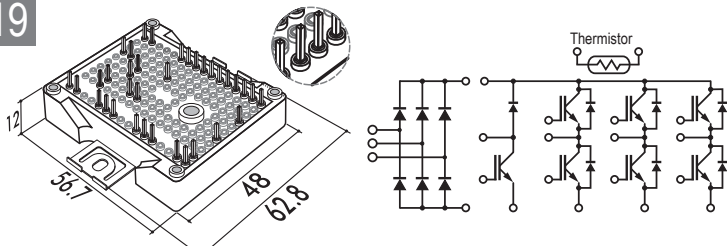
All SiC 2in1modules (SiC MOS-FET & SiC Schottky diode)



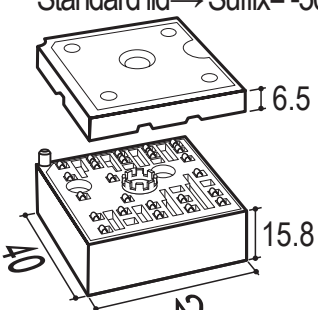
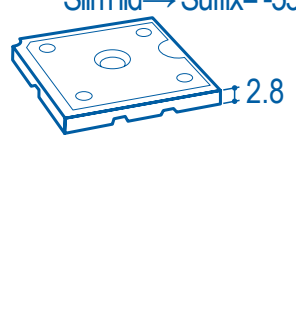
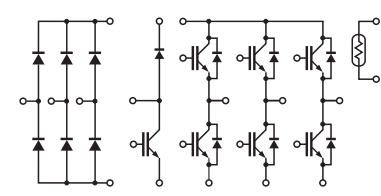
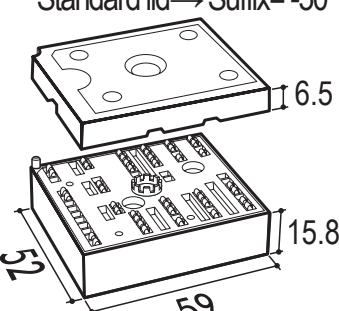
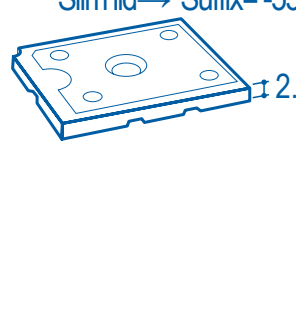
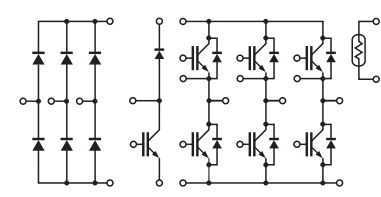
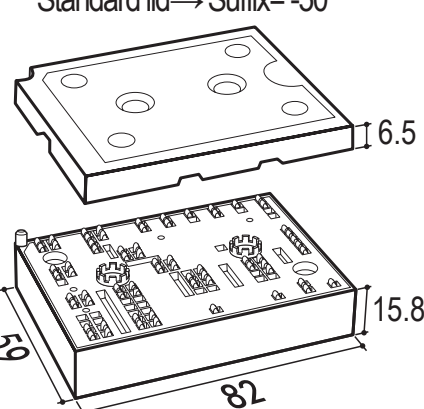
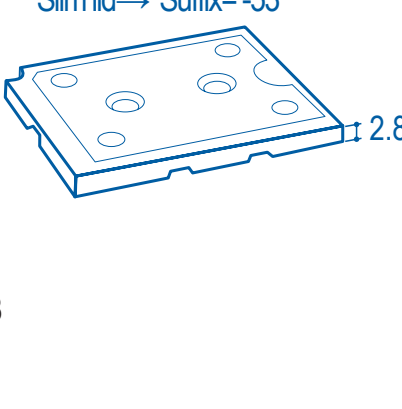
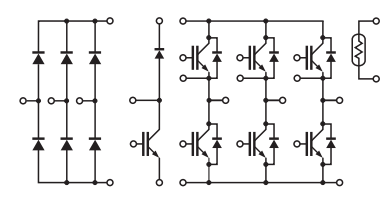
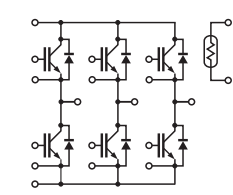
				1st gen. Trench MOS
2-Pack	13		25A	2CSi 25CAN120A-50 *
			50A	2CSi 50CAN120A-50 *
	14		75A	2CSi 75CAM120A-50 *
			100A	2CSi 100CAM120A-50 *
	15		200A	2CSi 200CAS120A-50 *
			300A	2CSi 300CAS120A-50 *
			400A	2CSi 400CAS120A-50 *

* Under development

Small PIM IGBTs (**P**ower **I**ntegrated **M**odules)

			600V	650V	1200V	
		I_C	V-Series 6th Generation	X-Series 7th Generation	V-Series 6th Generation	X-Series 7th Generation
With PressFit Contacts	16		10A 7MBR 10VKA-060-50	7MBR 10XKA65-50	7MBR 10VKA-120-50	7MBR 10XKA120-50
			15A 7MBR 15VKA-060-50	7MBR 15XKA065-50	7MBR 15VKA-120-50	7MBR 15XKA120-50
			20A 7MBR 20VKA-060-50	7MBR 20XKA065-50		
			25A			7MBR 25XKA120-50
			30A 7MBR 30VKA-060-50	7MBR 30XKA065-50		
With PressFit Contacts	17		15A		7MBR 15VKB-120-50	7MBR 15XKB120-50
			25A		7MBR 25VKB-120-50	7MBR 25XKB120-50
			35A		7MBR 35VKB-120-50	7MBR 35XKB120-50
			50A 7MBR 50VKB-060-50	7MBR 50XKB065-50		
With Solder Pins	18		10A 7MBR 10VKC-060-50	7MBR 10XKC065-50	7MBR 10VKC-120-50	7MBR 10XKC120-50
			15A 7MBR 15VKC-060-50	7MBR 15XKC065-50	7MBR 15VKC-120-50	7MBR 15XKC120-50
			20A 7MBR 20VKC-060-50	7MBR 20XKC065-50		
			25A			7MBR 25XKC120-50
			30A 7MBR 30VKC-060-50	7MBR 30XKC065-50		
With Solder Pins	19		15A		7MBR 15VKD-120-50	7MBR 15XKD120-50
			25A		7MBR 25VKD-120-50	7MBR 25XKD120-50
			35A		7MBR 35VKD-120-50	7MBR 35XKD120-50
			50A 7MBR 50VKD-060-50	7MBR 50XKD065-50		

PIM and 6-PACK IGBTs with V-Series IGBT (MiniSKiiP® compatible)

				I_C	1200V V-Series 6th Generation
MiniSKiiP® 1	20	Standard lid → Suffix = -50  Slim lid → Suffix = -53 		8A	7MBR 8VJA-120-50 7MBR 8VJA-120-53
				15A	7MBR 15VJA-120-50 7MBR 15VJA-120-53
MiniSKiiP® 2	21	Standard lid → Suffix = -50  Slim lid → Suffix = -53 		25A	7MBR 25VJB-120-50 7MBR 25VJB-120-53
				35A	7MBR 35VJB-120-50 7MBR 35VJB-120-53 7MBR 35VJB-120A-50 <i>With larger rectifier diodes</i> 7MBR 35VJB-120A-53 <i>With larger rectifier diodes</i>
MiniSKiiP® 3	22	Standard lid → Suffix = -50  Slim lid → Suffix = -53 		50A	7MBR 50VJC-120-50 7MBR 50VJC-120-53
				75A	7MBR 75VJC-120-50 7MBR 75VJC-120-53
				100A	7MBR 100VJC-120-50 7MBR 100VJC-120-53
				100A	6MBi 100VJC-120-50* 6MBi 100VJC-120-53*
				150A	6MBi 150VJC-120-50* 6MBi 150VJC-120-53* 6MBi 150VJC-120-55* <i>With SiN-DCB</i>

MiniSKiiP® is a trademark of SEMIKRON Elektronik GmbH & Co. KG - Germany

* Under development

PIM IGBTs (Power Integrated Modules) with Solder Pins

With Solder Pins	23 M711		25A			7MBR 25V A-120-50	
		35A			7MBR 35V A-120-50		
		50A	7MBR 50V A-060-50				
	24 M712		35A			7MBR 35VB-120-50	
		50A			7MBR 50VB-120-50		
		75A	7MBR 75VB-060-50		7MBR 75VB-120-50		
		100A	7MBR 100VB-060-50				
	25 M719		25A			7MBR 25VM-120-50	
		35A			7MBR 35VM-120-50	7MBR 35XMA120-50	
		50A		7MBR 50XMA065-50	7MBR 50VM-120-50	7MBR 50XMA120-50	
		75A		7MBR 75XMA065-50		7MBR 75XME120-50	
	26 M719		25A			7MBR 25VP-120-50	
		35A			7MBR 35VP-120-50	7MBR 35XPA120-50	
		50A	7MBR 50VP-060-50	7MBR 50XPA065-50	7MBR 50VP-120-50	7MBR 50XPA120-50	
		75A	7MBR 75VP-060-50	7MBR 75XPA065-50		7MBR 75XPE120-50	
		100A	7MBR 100VP-060-50	7MBR 100XPE065-50			
	27 M720		50A			7MBR 50VN-120-50	
		75A		7MBR 75XNA065-50	7MBR 75VN-120-50	7MBR 75XNA120-50	
		100A		7MBR 100XNA065-50	7MBR 100VN-120-50	7MBR 100XNA120-50	
		150A		7MBR 150XNA065-50	7MBR 150VN-120-50	7MBR 150XNE120-50	
	28 M720		50A			7MBR 50VR -120-50	
		75A			7MBR 75VR -120-50	7MBR 75XRA120-50	
		100A	7MBR 100VR-060-50	7MBR 100XRA065-50	7MBR 100VR-120-50	7MBR 100XRA120-50	
		150A	7MBR 150VR-060-50	7MBR 150XRA065-50	7MBR 150VR-120-50	7MBR 150XRE120-50	

PIM IGBTs (Power Integrated Modules) with PressFit Contacts

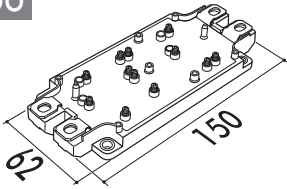
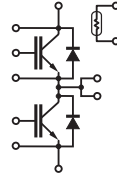
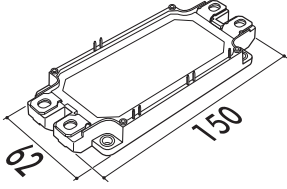
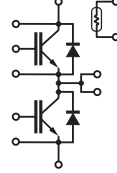
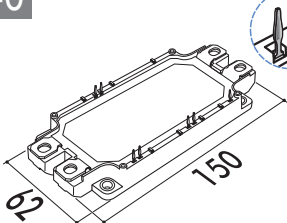
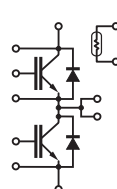
		600V	650V	1200V	
		V-Series 6th Generation	X-Series 7th Generation	V-Series 6th Generation	X-Series 7th Generation
With PressFit Contacts	29 M721	25A	7MBR 50XWA065-50	7MBR 25VW-120-50	
		35A		7MBR 35VW-120-50	7MBR 35XWA120-50
		50A		7MBR 50VW-120-50	7MBR 50XWA120-50
		75A	7MBR 75XWA065-50		7MBR 75XWE120-50
	30 M722	50A		7MBR 50VX-120-50	
		75A	7MBR 75XXA065-50	7MBR 75VX-120-50	7MBR 75XXA120-50
		100A	7MBR 100XXA065-50	7MBR 100VX-120-50	7MBR 100XXA120-50
		150A	7MBR 150XXA065-50	7MBR 150VX-120-50	7MBR 150XXE120-50
	31 M721	25A		7MBR 25VY-120-50	
		35A		7MBR 35VY-120-50	7MBR 35XYA120-50
		50A	7MBR 50VY-060-50	7MBR 50VY-120-50	7MBR 50XYA120-50
		75A	7MBR 75VY-060-50		7MBR 75XYE120-50
		100A	7MBR 100VY-060-50		
	32 M722	50A		7MBR 50VZ-120-50	
		75A		7MBR 75VZ-120-50	7MBR 75XZA120-50
		100A	7MBR 100VZ-060-50	7MBR 100VZ-120-50	7MBR 100XZA120-50
		150A	7MBR 150VZ-060-50	7MBR 150VZ-120-50	7MBR 150XZE120-50

6-Pack IGBTs

With Solder Pins	33		50A	6MBi 50VA-060-50	6MBi 50VA-120-50			
			75A	6MBi 75VA-060-50	6MBi 75VA-120-50			
			100A	6MBi 100VA-060-50	6MBi 100VA-120-50			
	34		100A		6MBi 100VB-120-50	6MBi 100XBA120-50		
			150A	6MBi 150VB-060-50	6MBi 150VB-120-50	6MBi 150XBA120-50		
			180A		6MBi 180VB-120-50			
			200A		6MBi 180VB-120-55 <i>Equivalent to 200A by lower R_{th(j-c)}</i>	6MBi 200XBA120-50 6MBi 200XBE120-50		
With PressFit Contacts	35		50A	6MBi 50VW-060-50	6MBi 50VW-120-50			
			75A	6MBi 75VW-060-50	6MBi 75VW-120-50			
			100A	6MBi 100VW-060-50	6MBi 100VW-120-50			
	36		100A		6MBi 100VX-120-50	6MBi 100XXA120-50	6MBi 100VX-170-50	
			150A	6MBi 150VX-060-50	6MBi 150VX-120-50	6MBi 150XXA120-50		
			180A		6MBi 180VX-120-50			
			200A		6MBi 180VX-120-55 <i>Equivalent to 200A by lower R_{th(j-c)}</i>	6MBi 200XXA120-50 6MBi 200XXE120-50		
High Power	37		With solder pins	225A		6MBi 225V-120-50		
		300A			6MBi 300V-120-50		6MBi 300V-170-50	
		450A			6MBi 450V-120-50		6MBi 450V-170-50	
		550A			6MBi 550V-120-50		6MBi 550V-170-50	

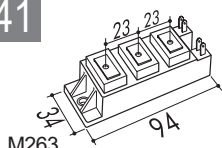
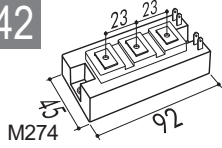
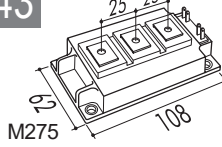
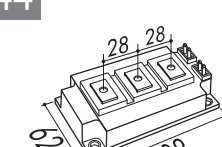
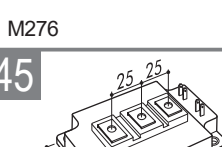
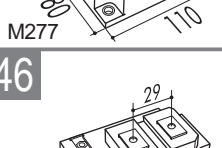
2-Pack IGBT-Modules

with Spring, Pin & PressFit Contacts

		1200V			1700	
		V-Series 6th Generation	V-Series 6th Generation With SiN-substrate 20% Lower thermal impedance	X-Series 7th Generation	V-Series 6th Generation	X-Series 7th Generation
Spring Contacts	38  M260		I _C			
			225A	2MBi 225VJ-120-50		
			300A	2MBi 300VJ-120-50		
			450A	2MBi 450VJ-120-50		
			550A		2MBi 550VJ-170-50	
Solder Pins	39  M254		600A	2MBi 600VJ-120-50		
			225A	2MBi 225VN-120-50	2MBi 225VN-120S-50	2MBi 225XNA120-50 *
			300A	2MBi 300VN-120-50	2MBi 300VN-120S-50	2MBi 300XNA120-50 *
			450A	2MBi 450VN-120-50	2MBi 450VN-120S-50	2MBi 450XNA120-50 *
			550A			2MBi 550VN-170-50
			600A		2MBi 600VN-120-50	2MBi 600XNE120-50
			800A		2MBi 800XNE120-50	2MBi 800XNE170-50 *
PressFit Contacts	40 		225A	2MBi 225VX-120-50	2MBi 225XNB120-50 *	2MBi 225VX-170-50
			300A	2MBi 300VX-120-50	2MBi 300XNB120-50 *	2MBi 300VX-170-50
			450A	2MBi 450VX-120-50	2MBi 450XNB120-50 *	2MBi 450VX-170-50
			550A			2MBi 550VX-170-50
			600A	2MBi 600VX-120-50	2MBi 600XNF120-50 *	2MBi 600XNF170-50 *
			800A		2MBi 800XNF120-50 *	

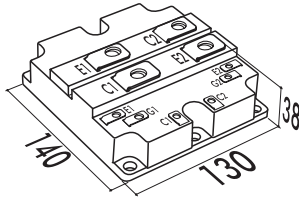
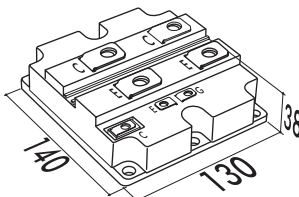
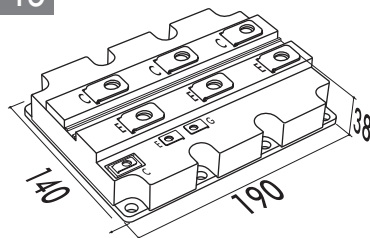
* Under development

Standard1 & 2-Pack

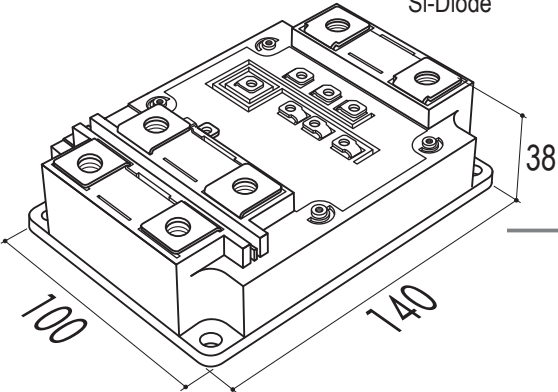
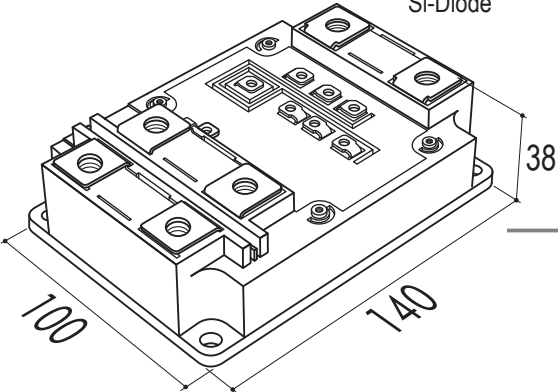
	I _C	600V	650V	1200V		1700V	
		V-Series 6th Generation	X-Series 7th Generation	V-Series 6th Generation	X-Series 7th Generation	V-Series 6th Generation	X-Series 7th Generation
2-Pack	41 	75A		2MBi 75VA-120-50		2MBi 75VA-170-50	2MBi 75XAA170-50*
		100A	2MBi 100VA-060-50	2MBi 100VA-120-50	2MBi 100XAA120-50*	2MBi 100VA-170-50	2MBi 100XAA170-50*
		150A	2MBi 150VA-060-50	2MBi 150VA-120-50	2MBi 150XAA120-50*		2MBi 150XAA170-50*
		200A	2MBi 200VA-060-50		2MBi 200XAA120-50*		
	42 	150A		2MBi 150VB-120-50			
		200A		2MBi 200VB-120-50	2MBi 200XBE120-50*		
		300A	2MBi 300VB-060-50		2MBi 300XBE120-50*		
		400A	2MBi 400VB-060-50				
	43 	300A		2MBi 300VD-120-50			
		400A	2MBi 400VD-060-50	2MBi 400VD-120-50	2MBi 400XDE120-50*		
		600A	2MBi 600VD-060-50		2MBi 600XDE120-50*		
	44 	150A				2MBi 150VH-170-50	2MBi 150XHA170-50*
		200A		2MBi 200VH-120-50		2MBi 200VH-170-50	2MBi 200XHA170-50*
		300A		2MBi 300VH-120-50	2MBi 300XHA120-50	2MBi 300VH-170-50	2MBi 300XHA170-50*
		400A					2MBi 400XHA170-50*
		450A		2MBi 450VH-120-50	2MBi 450XHA120-50		
		600A			2MBi 600XHA120-50		
	45 	300A		2MBi 300VE-120-50		2MBi 300VE-170-50	2MBi 300XEE170-50*
		400A				2MBi 400VE-170-50	2MBi 400XEE170-50*
		450A		2MBi 450VE-120-50	2MBi 450XEE120-50*		
		600A	2MBi 600VE-060-50	2MBi 600VE-120-50	2MBi 600XEE120-50*		
1-Pack	46 	300A				1MBi 300V-170-50	
		400A		1MBi 400V-120-50 1MBi 400VF-120-50		1MBi 400V-170-50	
		600A		1MBi 600V-120-50 1MBi 600VF-120-50		1MBi 600V-170-50	
		900A		1MBi 900V-120-50			

* Under development

High Power Modules 1 & 2 Pack

			1200V	1700V		3300V	
		I _C	V-Series 6th Generation With Cu-baseplate Soft turn-off	V-Series 6th Generation With Cu-baseplate Low switching loss	V-Series 6th Generation With AlSiC-baseplate Low switching loss	U-Series 5th Generation With AlSiC-baseplate Soft turn-off	U-Series 5th Generation With AlSiC-baseplate Low switching loss
2-Pack	47						
							
	M256, M278						
1-Pack	48						
							
	M151, M155						
	49						
							
	M152, M156						
		600A	2MBi 600VG-120P	2MBi 600VG-170E	2MBi 600VT-170E		
		800A	2MBi 800VG-120P	2MBi 800VG-170E	2MBi 800VT-170E		
		1200A	2MBi 1200VG-120P	2MBi 1200VG-170E	2MBi 1200VT-170E		
		800A				1MBi 800UG-330	
		1000A				1MBi 1000UG-330	1MBi 1000UG-330 B
		1200A	1MBi 1200VC-120P	1MBi 1200VC-170E	1MBi 1200VR-170E		
		1600A	1MBi 1600VC-120P	1MBi 1600VC-170E	1MBi 1600VR-170E		
		2400A	1MBi 2400VC-120P	1MBi 2400VC-170E	1MBi 2400VR-170E		
		1200A				1MBi 1200UE-330	
		1500A				1MBi 1500UE-330	1MBi 1500UE-330B
		2400A	1MBi 2400VD-120P	1MBi 2400VD-170E	1MBi 2400VS-170E		
		3600A	1MBi 3600VD-120P	1MBi 3600VD-170E	1MBi 3600VS-170E		

High Power next Core (HPnC)

		1700V		3300V	
		I _C	X-Series 7th Generation	X-Series 7th Generation	
All Silicon Modules Si-IGBT & Si-Diode	 All Silicon Modules Si-IGBT (X-Series, 7th Generation) Si-Diode				
		450A		2MBi 450XUF330-50*	
		1000A	2MBi 1000XUF170-50*		
Hybrid Modules Si-IGBT & SiC Diode	 Hybrid Modules Si-IGBT (X-Series, 7th generation) SiC-Schottky Diode				
		450A		2MSi 450XUF330-50*	
		1000A	2MSi 1000XUF170-50*		

* Under development

High Power Modules, 2-Pack & Chopper

		1200V		1700V		
		V-Series 6th Generation E-type (Low switching loss) P-type (Soft turn-off)	X-Series 7th Generation E-type (Low switching loss) P-type (Soft turn-off)	V-Series 6th Generation E-type (Low switching loss) P-type (Soft turn-off)	X-Series 7th Generation E-type (Low switching loss) P-type (Soft turn-off)	
2-Pack	51	600A	2MBi 600VXA-120E-50			
		650A			2MBi 650VXA-170E-50 2MBi 650VXA-170EA-50 (With larger free wheeling diode)	2MBi 650XXA170E-50*
		900A	2MBi 900VXA-120E-50 2MBi 900VXA-120P-50	2MBi 900XXA120E-50* 2MBi 900XXA120P-50*		
		1200A		2MBi 1200XXE120E-50* 2MBi 1200XXE120P-50*		2MBi 1200XXE170P-50*
Chopper	M271	650A			1MBi 650VXA-170EL-50	
		900A	1MBi 900VXA-120PD-50			
		650A			1MBi 650VXA-170EH-50	
		900A	1MBi 900VXA-120PC-50			
2-Pack	52	1000A			2MBi 1000VXB-170E-50 2MBi 1000VXB-170EA-50 (With larger free wheeling diode)	2MBi 1000XXB170E-50*
		1400A	2MBi 1400VXB-120E-50 2MBi 1400VXB-120P-50	2MBi 1400XXB120P-50*	2MBi 1400VXB-170E-50 2MBi 1400VXB-170P-50	2MBi 1400XXB170P-50*
		1800A		2MBi 1800XXF120P-50*		2MBi 1800XXF170P-50*
Chopper	M272	1000A			1MBi 1000VXB-170EL-50	
		1400A	1MBi 1400VXB-120PL-50		1MBi 1400VXB-170EL-50	
		1000A			1MBi 1000VXB-170EH-50	
		1400A	1MBi 1400VXB-120PH-50		1MBi 1400VXB-170EH-50	

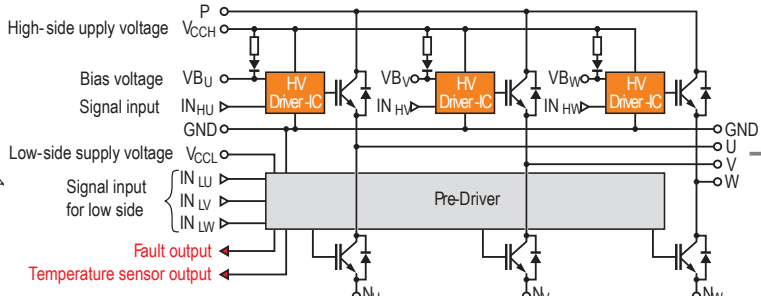
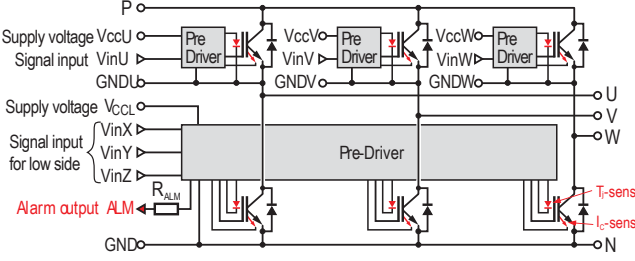
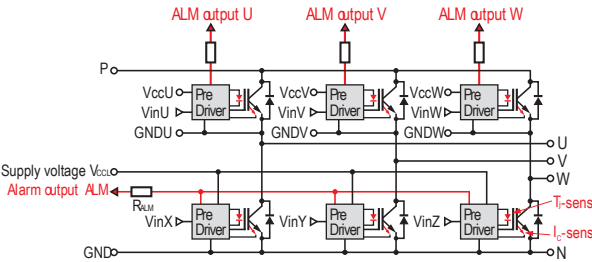
Above devices are available with V_{CEsat} & V_F rank label for optimum paralleling (→suffix -54 instead of -50)

* Under development

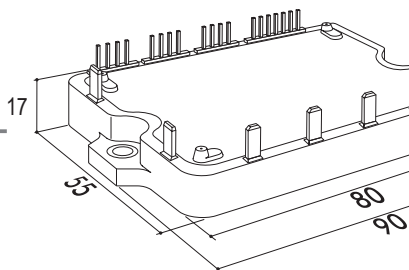
IPM IGBTs (Intelligent Power Modules)

Built-in protection functions

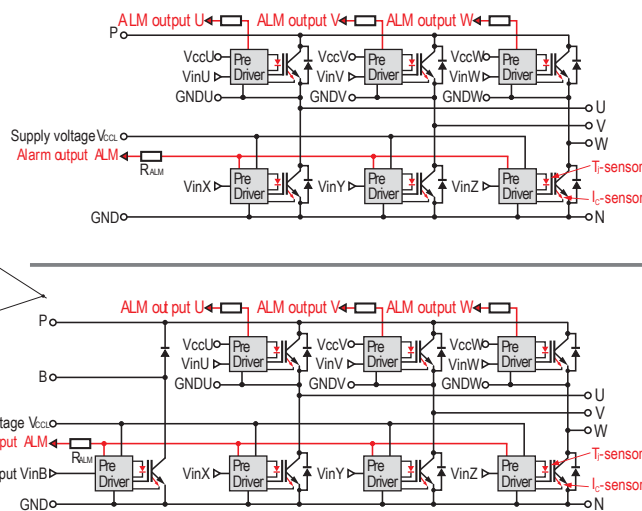
- Fault status output (Alarm)
- Under voltage protection (self shutdown)
- Short circuit protection (self shutdown)
- Overheating protection (self shutdown)
- Temperature sensor function ($V_{temp,out}$)

		600V		1200V
		V-Series 6th Generation	X-Series 7th Generation	V-Series 6th Generation
Without Brake-Chopper	53 With High Voltage Driver-IC			
	P633, P633A	15A	6MBP 15XSD060-50	
		20A	6MBP 20XSD060-50	
		30A	6MBP 30XSD060-50	
		35A	6MBP 35XSD060-50	
		15A	6MBP 15XSF060-50	
		20A	6MBP 20XSF060-50	
		30A	6MBP 30XSF060-50	
		35A	6MBP 35XSF060-50	
Without Brake-Chopper	54 I_c - & T_j -Sensors on chip			
	P629	10A		6MBP 10VAA-120-50
		15A		6MBP 15VAA-120-50
		20A	6MBP 20VAA-060-50	
		25A		6MBP 25VAA-120-50
		30A	6MBP 30VAA-060-50	
		50A	6MBP 50VAA-060-50	
Without Brake-Chopper	55 I_c - & T_j -Sensors on chip			
	P626	25A		6MBP 25VBA-120-50
		35A		6MBP 35VBA-120-50
		50A	6MBP 50VBA-060-50	6MBP 50VBA-120-50
		75A	6MBP 75VBA-060-50	

IPM IGBTs (Intelligent Power Modules)

56 I_c - & T_j -Sensors on chip

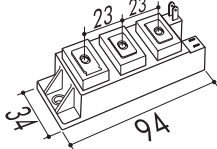
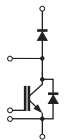
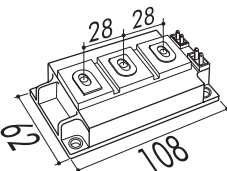
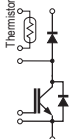
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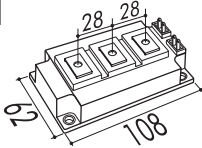
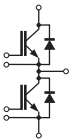


Built-in protection functions

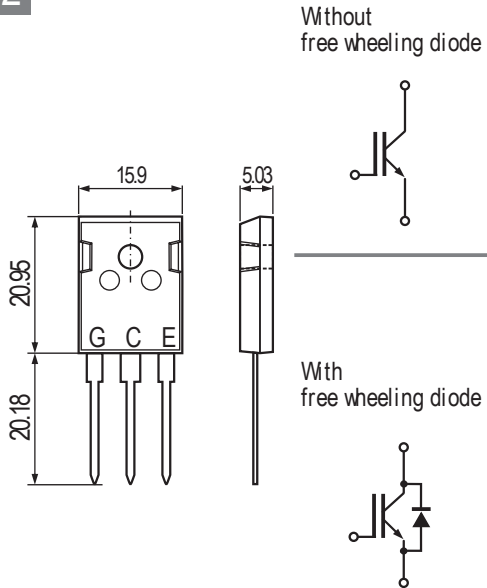
Fault status output (Alarm)
Under voltage protection (self shutdown)
Short circuit protection (self shutdown)
Overheating protection (self shutdown)
Temperature sensor function ($V_{temp,out}$)

	600V	1200V
I _C	V-Series 6th Generation	V-Series 6th Generation
25A		6MBP 25VFN-120-50
35A		6MBP 35VFN-120-50
50A	6MBP 50VFN-060-50	6MBP 50VFN-120-50
75A	6MBP 75VFN-060-50	
100A	6MBP 100VFN-060-50	
25A		7MBP 25VFN-120-50
35A		7MBP 35VFN-120-50
50A	7MBP 50VFN-060-50	7MBP 50VFN-120-50
75A	7MBP 75VFN-060-50	
100A	7MBP 100VFN-060-50	

Chopper(Standard and high speed IGBTs)		I_C	1200V		
			Planar-NPT High Speed-Series	U-Series 5th Generation	V-Series 6th Generation
Chopper	59	  M262	50A	1MBi50U4F-120L-50	
		75A		1MBi75U4F-120L-50	
		100A		1MBi100U4F-120L-50	
		150A			1MBi150VA-120L-50
		200A			1MBi200VA-120L-50
Chopper	60	  M259	200A	1MBi200HH-120L-50	1MBi200U4H-120L-50 Without thermistor
		300A	1MBi300HH-120L-50		
		400A	1MBi400HH-120L-50		

High Speed IGBTs		I_C	1200V
			Planar-NPT High Speed-Series
2-Pack	61	 	100A
		150A	2MBi100HJ-120-50
		200A	2MBi150HJ-120-50
		300A	2MBi200HJ-120-50

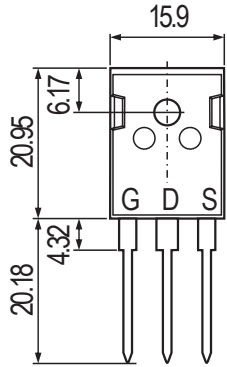
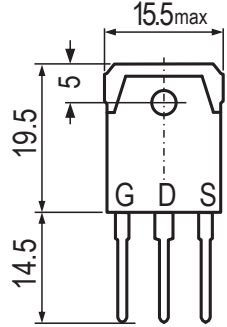
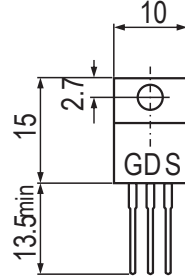
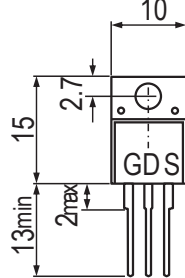
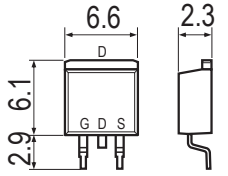
Discrete IGBTs

TO -247	62		I_C	V-Series, 6th Generation Low loss, ~10kHz		V-Series, 6th Generation High speed, 10~30kHz		W-Series, 6th Generation Ultra high speed, 20~100kHz	
				600V	1200V	600V	1200V	650V	1200V
	Without free wheeling diode		15A				FGW 15N 120H		
			25A						FGW 25N 120W
			30A				FGW 30N 120H		
			35A			FGW 35N 60H			
			40A				FGW 40N 120H	FGW 40N 65W	FGW 40N 120W
			50A			FGW 50N 60H		FGW 50N 65W	
			60A					FGW 60N 65W	
			75A			FGW 75N 60H			
	With free wheeling diode		15A		FGW 15N 120VD		FGW 15N 120HD		
			25A		FGW 25N 120VD				FGW 25N 120WD FGW 25N 120WE
			30A	FGW 30N 60VD			FGW 30N 120HD	FGW 30N 65WD	
			35A			FGW 35N 60HD FGW 35N 60HC ¹⁾			
			40A		FGW 40N 120VD		FGW 40N 120HD	FGW 40N 65WD FGW 40N 65WE	FGW 40N 120WD FGW 40N 120WE
			50A	FGW 50N 60VD		FGW 50N 60HD FGW 50N 60HC ¹⁾		FGW 50N 65WD FGW 50N 65WE	
			60A					FGW 60N 65WD FGW 60N 65WE	
			75A			FGW 75N 60HD FGW 75N 60HC ¹⁾		FGW 75N 65WE	

TO -247-4	63	IGBT with Kelvin connection	W-Series, 6th Generation Ultra high speed, 20~100kHz	
			650V	1200V
			40A	FGZ 40N 120WE ¹⁾
			50A	FGZ 50N 65WD FGZ 50N 65WE ¹⁾
			75A	FGZ 75N 65WE ¹⁾

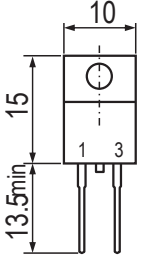
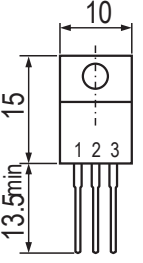
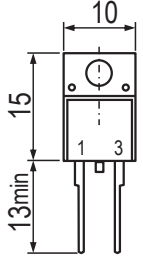
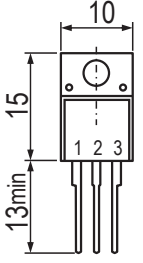
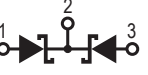
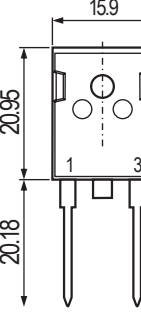
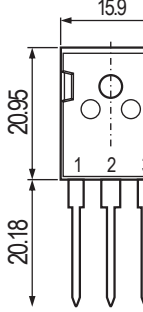
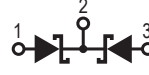
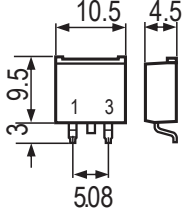
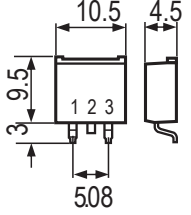
TO -247	64	Reverse Blocking IGBT	I_C	600V
			85A	FGW 85N 60RB

1) With full rating free wheeling diode

Super - Junction MOSFET			TO -247	TO -3P(Q)	TO -220	TO -220F	TO -252
V_{DS}	$R_{DS(on), max}$	I_D					
600V	25.4 mW	95.5 A	FM W 60N 025 S2				
	40.0 mW	66.2 A	FM W 60N 040 S2				
	55.0 mW	50.3 A	FM W 60N 055 S2				
	70.0 mW	39.4 A	FM W 60N 070 S2			FM V 60N 070 S2	
	79.0 mW	37.1 A	FM W 60N 079 S2		FM P 60N 079 S2	FM V 60N 079 S2	
	88.0 mW	32.8 A	FM W 60N 088 S2		FM P 60N 088 S2	FM V 60N 088 S2	
	99.0 mW	29.2 A	FM W 60N 099 S2		FM P 60N 099 S2	FM V 60N 099 S2	
	125.0 mW	23.4 A	FM W 60N 125 S2		FM P 60N 125 S2	FM V 60N 125 S2	
	160.0 mW	18.4 A	FM W 60N 160 S2		FM P 60N 160 S2	FM V 60N 160 S2	
	190.0 mW	15.5 A	FM W 60N 190 S2	FM H 60N 190 S2	FM P 60N 190 S2	FM V 60N 190 S2	
	280.0 mW	10.7 A		FM H 60N 280 S2	FM P 60N 280 S2	FM V 60N 280 S2	FM D 60N 280 S2
	380.0 mW	8.1 A			FM P 60N 380 S2	FM V 60N 380 S2	FM D 60N 380 S2
	With built-in FRED	27.0 mW	FM W 60N 027 S2 FD				
		43.0 mW	FM W 60N 043 S2 FD				
		59.0 mW	FM W 60N 059 S2 FD				
		75.0 mW	FM W 60N 075 S2 FD			FM V 60N 075 S2 FD	
		84.0 mW	FM W 60N 084 S2 FD		FM P 60N 084 S2 FD	FM V 60N 084 S2 FD	
		94.0 mW	FM W 60N 094 S2 FD		FM P 60N 094 S2 FD	FM V 60N 094 S2 FD	
		105.0 mW	FM W 60N 105 S2 FD		FM P 60N 105 S2 FD	FM V 60N 105 S2 FD	
		133.0 mW	FM W 60N 133 S2 FD		FM P 60N 133 S2 FD	FM V 60N 133 S2 FD	
		170.0 mW	FM W 60N 170 S2 FD		FM P 60N 170 S2 FD	FM V 60N 170 S2 FD	

* Under development

SiC Schottky Barrier Diodes

		TO -220		TO -220F (insulated)		TO -247		T-Pack S	
		 Single 	 Dual 	 Single 	 Dual 	 Single 	 Dual 	 Single 	 Dual 
650V	10A	FDCP 10S 65		FDCA 10S 65		FDCY 10S 65		FDCC 10S 65	
	20A		FDCP 20C 65		FDCA 20C 65		FDCY 20C 65		FDCC 20C 65
	25A	FDCP 25S 65		FDCA 25S 65		FDCY 25S 65		FDCC 25S 65	
	50A						FDCY 50C 65		
1200V	18A			FDCA 18S 120		FDCY 18S 120			
	36A						FDCY 36C 120		

I_{FAV}

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