



2021-2022

MACMIC

Power Semiconductor

We give you high quality and best cost performance products.



宏微科技

Power for the better
www.macmicst.com

The total production process is controlled by ISO 9001 Quality Assurance System. Each production stage is strictly managed to ensure making the highest quality products.



Power for the Better

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◆ COMPANY HISTORY

2006

MacMic Science & Technology Co., Ltd was established in Changzhou, China, with a core team less than 10 people, and introduced FRED chip as the first core product.

2008

Set up the International Business development team to better serve the fast-growing global business.

2012

Released the first wholly-owned IGBT module using self-developed IGBT chips and successfully took commercial order soon after.

2016

Implemented TS16949 Automotive QMS. MacMic vowed to increase investment in Electric Vehicle applications. Headcounts increased to 280 people.

2020

IGBT modules shipment of the self-developed chip is more than 90% of total company IGBT production quantity. Total employees are up to 380 people.

2021

Company headquarters and factories are relocated to new buildings in total 22000 square meters with the high-efficiency automation production line.



◆ COMPANY PROFILE

MacMic Science & Technology Co., Ltd. is a high-tech company consisting of scientists and engineers with expertise in power electronics and engaged in the development and production of power semiconductor products at home and abroad. MacMic designs, manufactures, markets, and sells high energy-efficient power semiconductor devices ranging from chips, discretés, and a variety of power modules. We provide customers with the best cost performance products. Our well-equipped manufacture, testing facilities, and skilled workers enable us to supply high quality and reliable products. Our fast and flexible ability to meet customer's demands highlights our business uniqueness as a great value to customer's competitive advantages.

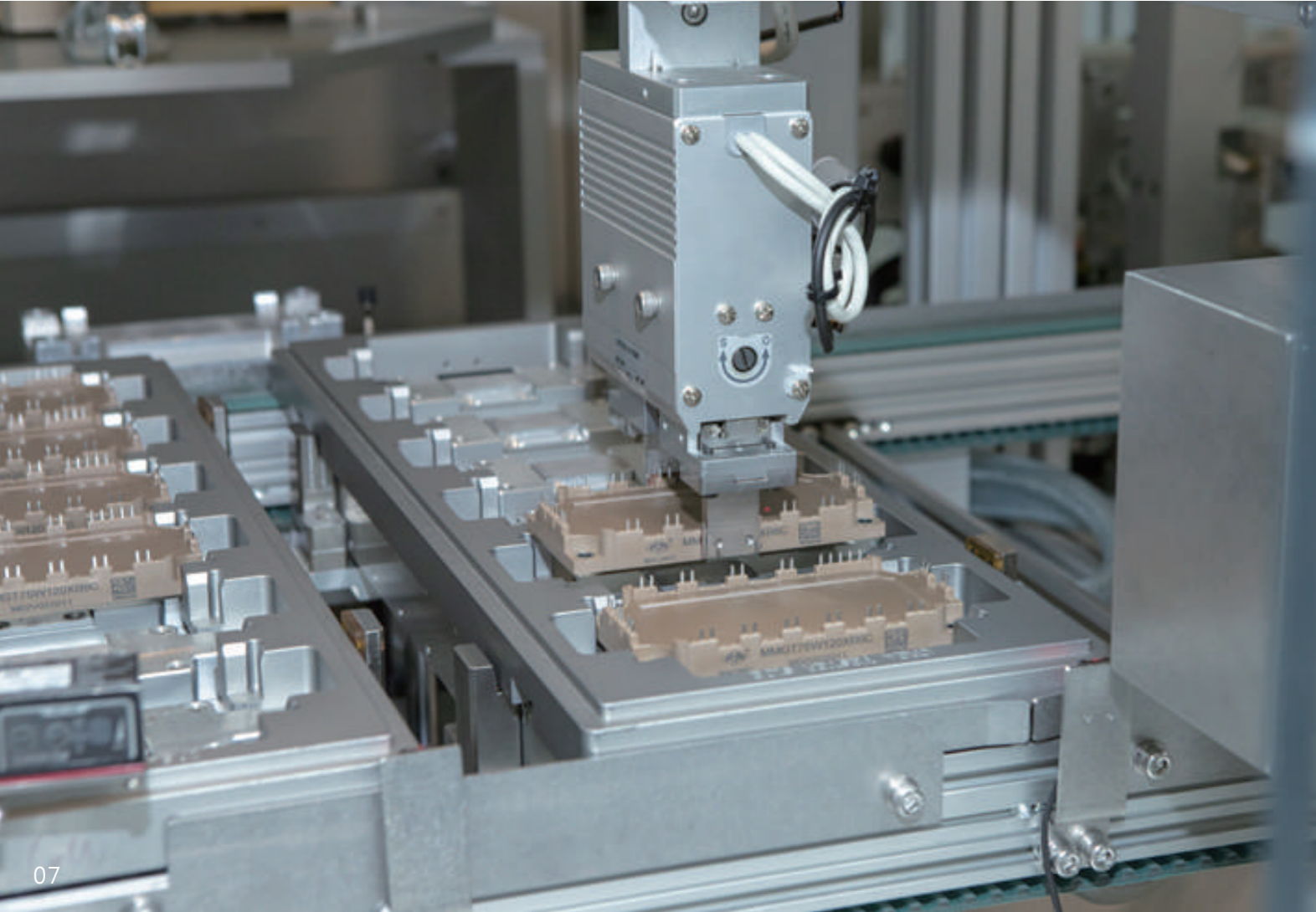


◆ STRENGTHS

MacMic strives to provide top quality and performance power semiconductors to customers with a long-term commitment to use the best materials and implement the strictest quality control by the experienced and well-trained production team. To further fulfill customer's demands, we utilize state-of-the-art automation manufacturing facilities that give MacMic product competitive advantages to gain better customer satisfaction with consistent quality and fast lead time. MacMic provides customers most industry-standard specification products that give the customer an alternative choice with the same or better quality and performance but a much cost-improved source. In many cases, we are also willing to work closely with our clients to take the request for a custom-made product to accomplish their system design. This proves MacMic is a truly valuable partner to its customer.

◆ ADVANCED PRODUCTION & TESTING

All of our products are produced in a high automation production line with very vigorous testing standards. We pursue high volume production while maintaining a high yield rate. The advanced automation production facility is necessary to make the goal possible. We care about the long-term ability of our products to stay in high quality and high-reliability condition. Hence, we set up a cutting-edge Characterization Lab and Reliability Lab to conduct strict testing procedures before the product is released. We would ensure our product can perform as defined and stable operation without any risk of failure even in harsh environments.



FACILITY AND PRODUCTION LINE

Factory- Area:9500m², Cleanroom- Area:2000m²

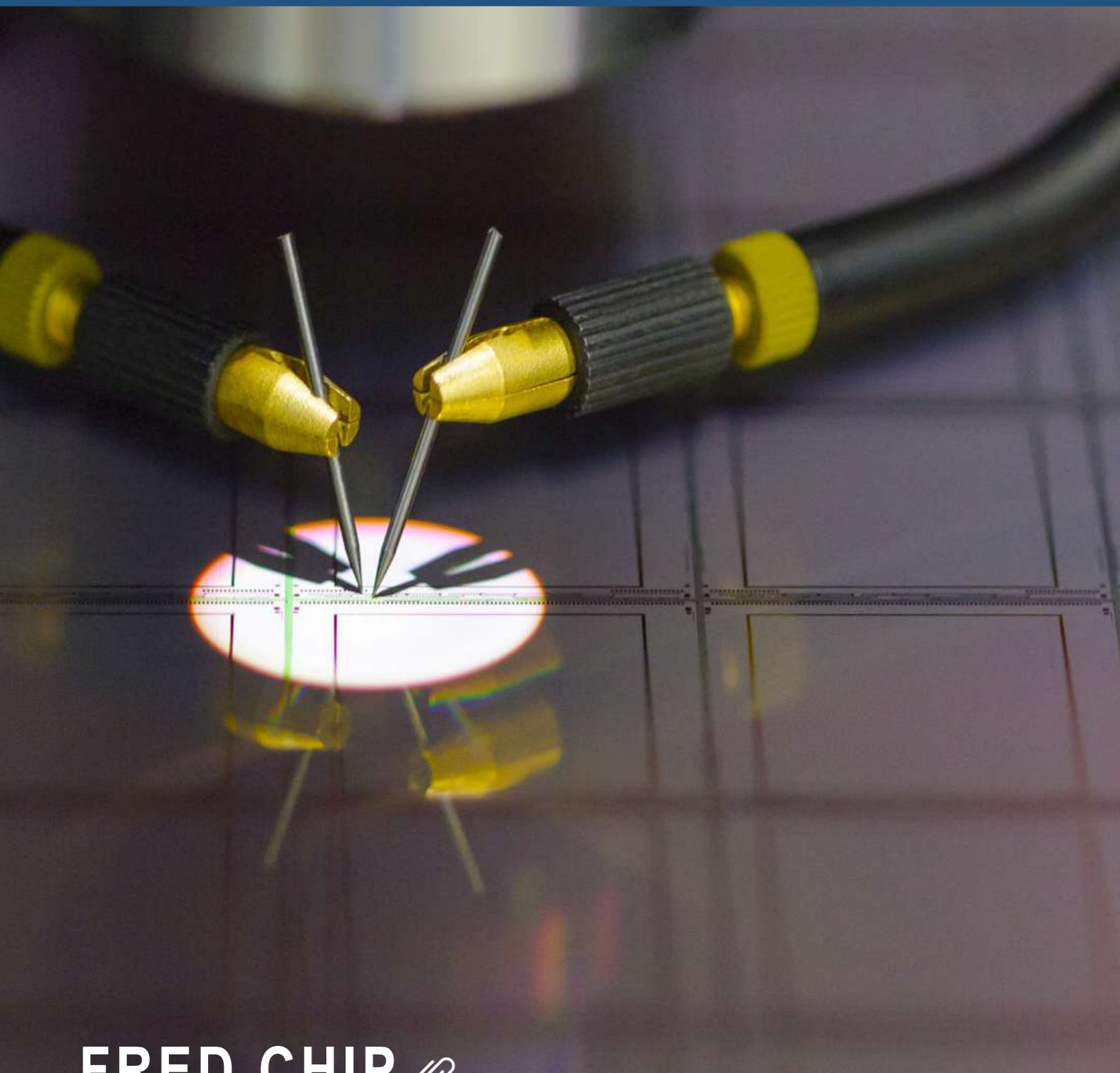
Equipment: Pick and Place Machines \ Vaccum Furnace \ Ai and Cu Wire Bonders \ X-Ray and C-SAM Scanners

CHARACTERIZATION LAB

Diode Reverse Recovery Tester
IGBT DC Parameter Tester
IGBT Switching Parameter Tester
IGBT Charge Tester
IGBT Short Circuit Tester
IGBT SCSOA / RBSOA Tester
HV-D Reverse Recovery Tester
8KV HV Static Parameter Tester
Power Semiconductor UIS Tester
SCR Static & Dynamic Parameter Tester
Surge Current Tester
Thermal Resistance Tester

RELIABILITY LAB

High Temperature Reverse Bias
High Temperature Cate Bias
Power Cycle
High / Low Temperature Cycle
High Humidity High Temperature-Reverse Bias
85 / 85 Temperature / Humidity Test
Thermal Shock Test
Salt Spray Evaluation System
Vibration Evaluation System



FRED CHIP

MacMic is proud to be the earliest China Company to successfully develop high power Fast Recovery Epitaxial Diode (FRED) chips featured with the best price-performance in the market. Our single-chip rating is up to 1700V, 200A, and starting from 200V, 6A. Aside from various standard specifications, we are available to take custom-made design. The MacMic FRED chips demonstrate excellent performance in switching loss and conduction loss with faster T_{rr} and lower V_f values. The feature of soft recovery switching helps significantly improve the EMI interference in the circuit design. The FRED chips can be packaged to discrete or power module product forms and are ideal to use in the applications of Freewheeling, Snubber, and Output Rectification.

◆ FRED CHIP

Ranges

- 200-1200V / 5-200A

Applications

- Welding Machine
- Freewheeling
- Snubber
- Output Rectification
- PFC

Features

- Short Recovery Time
- Low Reverse Recovery Charge
- Soft Recovery Characteristic
- Low Leakage Current
- Avalanche Energy Rated

Part Number	V_{rrm} (V)	$I_{f(av)}$ Duty=0.5 $T_c=110^\circ\text{C}$ (A)	V_f $I_f=I_{f(av)}$ $T_j=125^\circ\text{C}$ (V)	t_{rr} $I_r=1\text{A}$ $T_j=25^\circ\text{C}$ (ns)	Die Size (mm)	Die Size (mil)
MM01A6A2	200	6	0.86	30	1.45 X 1.45	57.1S
MM01A8B2	200	8	0.86	30	1.65 X 1.65	65.0S
MC01A20AC2	200	10	0.86	20	3.616 X 3.616	14.24S
MM01A8A2	200	10	0.86	30	1.80 X 1.80	70.9S
MM01A100B2S	200	100	0.95	35	6.00 X 6.00	23.6S
MC01A30A3	300	30	1.12	22	2.59 X 5.17	101.97 X 203.54
MM01D4A4	400	5	1.00	25	1.36 X 1.36	53.5S
MM01D8B4	400	8	1.00	25	1.80 X 1.80	70.9S
MM01D8A4	400	10	1.00	25	2.15 X 2.15	84.6S
MM01D15A4	400	18	1.20	30	3.00 X 3.00	118.1S
MM01D15A4U	400	18	1.50	25	3.00 X 3.00	118.1S
MC01D30A4	400	35	1.20	30	5.50 X 3.00	216.5 X 118.1
MM01D4A6	600	5	1.15	30	1.36 X 1.36	53.5S
MM01D6A6	600	6	1.20	30	1.52 X 1.52	59.84S
MM01D8A6L	600	8	1.00	45	2.15 X 2.15	84.6S
MM01D8B6	600	8	1.15	30	1.80 X 1.80	70.9S
MM01D10A6U	600	10	1.80	20	2.40 X 2.40	94.5S
MM01D8A6	600	10	1.15	30	2.15 X 2.15	84.6S
MM01D10A6	600	12	1.40	30	2.40 X 2.40	94.5S
MM01D15A6	600	15	1.20	30	3.00 X 3.00	118.1S
MM01D15A6U	600	15	1.60	22	3.00 X 3.00	118.1S
MM01D30A6	600	30	1.20	35	5.50 X 3.00	216.5 X 118.1
MM01D30A6U	600	30	1.45	25	5.50 X 3.00	216.5 X 118.1
MM01D60A6	600	60	1.20	40	5.54 X 5.54	218.1S
MM01D60A6U	600	60	2.10	25	5.54 X 5.54	218.1S
MM01D200A6	600	200	1.10	70	12.00 X 12.00	472.44S
MM01D8A6U	650	8	1.60	20	2.15 X 2.15	84.6S
MM01D8A7U	680	8	1.70	25	2.15 X 2.15	84.6S
MM01J8A12U	1200	8	2.60	30	2.57 X 2.57	101.1S
MC01J15A12	1200	15	1.90	40	3.20 X 3.20	126S
MC01J15A12U	1200	15	2.40	30	3.20 X 3.20	126S
MC01J30A12	1200	30	2.00	40	4.50 X 4.50	177.1S
MC01J30A12U	1200	30	2.60	30	4.50 X 4.50	177.1S
MC01J60A12	1200	60	2.10	45	5.00 X 7.22	196.8 X 284.3
MC01J60A12U	1200	60	2.70	35	5.00 X 7.22	196.8 X 284.3

$T_c=25^\circ\text{C}$ unless otherwise noted



IGBT DISCRETE

MacMic successfully introduces high-power IGBT discrete in the TO-247 package using a self-developed low V_{ce} Trench Field-Stop IGBT chip. The product line is divided into two categories by its switching speed. The “G3T” series is designed for typical power applications, such as Motor Drive, Power Conversion, and the switching frequency <math><15\text{ KHz}</math> circuits. In contrast, the “G3U” series has a feature of high-speed switching which is well fit in Welding Machine, Induction Heating, and the switching frequency >math>>15\text{ KHz}</math> applications. MacMic discrete IGBT is available in both 650V and 1200V voltage ratings.

◆ IGBT DISCRETE

Ranges

- 650-1350V / 10-120A

Packages


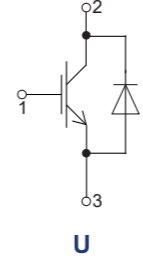

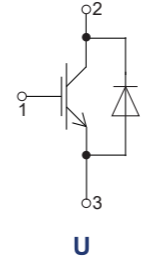
- TO-247, TO-247 PLUS

Applications

- Welding Machine
- Induction Cooker
- Inverter
- SMPS, UPS
- Motor Drive

Features

- Fast Switching Speed
- High Short Circuit Capability
- Soft Turn-Off Characteristic

Package	Inside Circuit	Part Number	V_{ces} min. (V)	I_c $T_c=80-100^\circ\text{C}$ (A)	$V_{ce(sat)}$ typ. (V)	P_d max. (W)	E_{off} $T_j=125^\circ\text{C}$ (mJ)	$R_{\theta jc}$ max. ($^\circ\text{C}/\text{W}$)
TO-247	 	MM40G3T65B	650	40	1.65	230	1.10	0.65
		MM50G3T65B	650	50	1.65	300	1.25	0.50
		MM75G3T65B	650	75	1.55	417	2.66	0.36
		MM40G3U65B	650	40	1.75	230	0.90	0.65
		MM60G3U65B	650	60	1.80	300	1.12	0.50
		MM10G3T120B	1200	10	1.85	125	0.69	1.20
		MM15G3T120B	1200	15	1.85	200	1.21	0.75
		MM25G3T120B	1200	25	1.80	326	2.55	0.46
		MM40G3T120B	1200	40	1.90	395	4.70	0.35
		MM20G3T135B	1350	20	1.65	268	1.40	0.56
		MM25G3U120BX	1200	25	2.15	326	1.05	0.46
		MM40G3U120B	1200	40	1.90	395	2.20	0.38
		MM40G3U120BX	1200	40	1.90	395	2.20	0.38
		TO-247 PLUS	 	MM120G3T65BM	650	120	1.60	750
MM50G3U120BMX	1200			50	1.95	535	2.40	0.28
MM50G3T120BM	1200			50	1.80	535	3.90	0.28

$T_c=25^\circ\text{C}$ unless otherwise noted



FRED DISCRETE

MacMic offers a limited range of power FRED discrete products, mainly in packages of TO-220(F) TO-3P, and TO-247. The FRED discrete inherits all the features of MacMic FRED chip and brings customers an even better value in terms of price-performance consideration. The 200V and 400V types are commonly used in Output Rectification as the V_f value of the FRED discrete is controlled to as consistent as possible so paralleling multiple devices are easy to implement. The 600V and 1200V are also good for high-speed rectification. Furthermore, given the very soft and fast recovery characteristics, they are no doubt perfect devices in the PFC application.

◆ FRED DISCRETE

Ranges

- 200-1200V / 8-100A

Packages


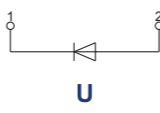

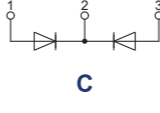

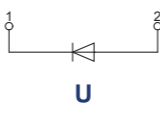

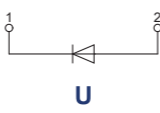

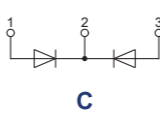
- TO-220, TO-220F, TO-3P, TO-247

Applications

- Welding Machine
- SMPS, UPS
- Home Appliances
- PFC


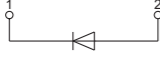

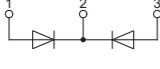
Features

- Short Recovery Time
- Soft-Recovery Characteristic
- Low Reverse Recovery Charge
- Low Leakage Current
- Avalanche Energy Rated

Package	Inside Circuit	Part Number	V_{rrm} (V)	$I_{f(av)}$ Duty=0.5 $T_c=110^\circ\text{C}$ (A)	V_f $I_f=I_{f(av)}$ $T_J=125^\circ\text{C}$ (V)	t_{rr} $I_r=1\text{A}$ $T_J=25^\circ\text{C}$ (ns)	$R_{\theta jc}$ Per Chip ($^\circ\text{C/W}$)
 TO-220	 U	MM8FU060K	600	8	1.80	16	2.80
		MM15F060K	600	15	1.30	23	1.50
		MM15FU60K	600	15	2.00	18	1.30
		MM30FU60K	600	30	2.00	22	0.80
		MM8F70K	700	8	1.30	19	2.50
		MM15F70K	700	15	1.30	21	1.50
		MM8FU120K	1200	8	2.80	20	2.00
		MM15FU120K	1200	15	2.60	25	1.50
		MM30FU120K	1200	30	2.90	26	0.80
 TO-220	 C	MM16F70KC	700	2×8	1.30	19	2.50
 TO-220F	 U	MM15F060K1	600	15	1.30	23	2.00
		MM30FU060K1	600	30	2.00	20	1.50
 TO-3P	 U	MM30FU060P	600	30	2.00	22	0.80
		MM60F060P	600	60	1.30	40	0.50
 TO-3P	 C	D92-02	200	2×10	0.90	17	1.50
		MM60F020PC	200	2×30	0.86	22	0.80
		MM60FU030PC	300	2×30	1.20	22	0.80
		MM80FU040PC	400	2×40	1.30	22	0.80
		MM30F060PC	600	2×15	1.40	21	0.80
		MM30FU60PC	600	2×15	2.00	17	1.60
		MM60F060PC	600	2×30	1.50	22	0.80

$T_c=25^\circ\text{C}$ unless otherwise noted

◆ FRED DISCRETE

Package	Inside Circuit	Part Number	V_{rm} (V)	$I_{f(av)}$ Duty=0.5 $T_c=110^\circ\text{C}$ (A)	V_f $I_f=I_{f(av)}$ $T_J=125^\circ\text{C}$ (V)	t_{rr} $I_r=1\text{A}$ $T_J=25^\circ\text{C}$ (ns)	$R_{\theta jc}$ Per Chip ($^\circ\text{C}/\text{W}$)
 <p>TO-247</p>	 <p>U</p>	MM100F20B	200	100	1.00	35	0.24
		MM30F060B	600	30	1.50	22	0.80
		MM30FU060B	600	30	2.00	22	0.80
		MM60F060B	600	60	1.30	27	0.50
		MM60FU060B	600	60	2.00	25	0.50
		MM75F60B	600	75	1.35	31	0.38
		MM30FC100B	1000	30	2.65	25	0.80
		MM60FC100B	1000	60	2.50	30	0.40
		MM30FC120B	1200	30	2.80	26	0.80
		MM30FU120B	1200	30	2.90	26	0.80
		MM60F120B	1200	60	2.10	32	0.45
		MM60FC120B	1200	60	2.80	30	0.40
		MM60FU120B	1200	60	2.80	30	0.45
		 <p>TO-247</p>	 <p>C</p>	MM60FU060BC	600	2×30	2.00

$T_c=25^\circ\text{C}$ unless otherwise noted



IGBT MODULE

MacMic partners with other leading companies to acquire the advanced technology of IGBT chips as one of our die sources. In the meantime, we are also developing our own IGBT chips as another die source to be packaged in our IGBT modules. MacMic IGBT module features the “HN” series, which enables the design up to 50Khz in hard switching with $V_{ce(sat)}$ around 2.0V. The high-speed IGBT is a great fit for high-frequency applications. Our “6TC” series is a cost-effective product aiming at Motor Drive and similar power conversion applications. We are also proud of several types of IGBT modules, including Electric Vehicle Power Drive and high-efficiency 3-level switching topology. All of MacMic IGBT modules adopt the latest Trench Field-Stop chip technology that ensures the customers to obtain the switching losses and lowest conduction.

◆ IGBT MODULE

Ranges

- 600-1700V / 10-820A

Packages


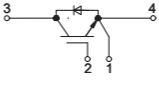

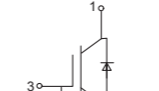

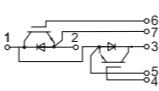
- GJ, GK, GS, GQ, GQC, GD, GHB, GWB, GCB, GCE, GH, GHD, GW, GWD, GWE, GV, GVB, GB, GC

Applications

- Plating Power Supply
- Induction Heating
- UPS, SMPS
- Inverter
- Servo Drive
- Switched Reluctance Drive
- Solar, Wind Power
- Electric Vehicle


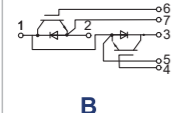
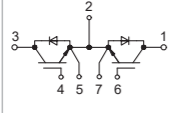
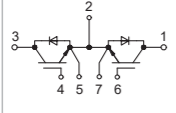
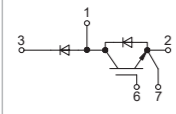
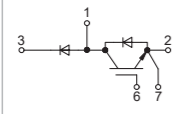
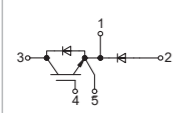
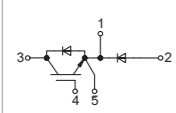

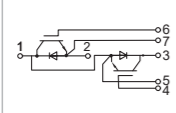
Features

- Fast Switching Speed
- Low Conduction Loss
- Soft Turn-Off Characteristic
- High Short Circuit Capability

Package	Inside Circuit	Part Number	V_{ces} min. (V)	I_c $T_c=65-100^{\circ}C$ (A)	$V_{ce(sat)}$ typ. (V)	P_d max. (W)	E_{off} $T_J=125^{\circ}C$ (mJ)	$R_{\theta jc}$ max. (K/W)
 GJ 38X28X12mm	 U	MMG100J060U6EN	600	100	1.45	330	3.35	0.45
		MMG75J120U	1200	75	1.80	630	7.0	0.20
		MMG75J120U6HN	1200	75	2.10	468	4.5	0.32
		MMG75J120U6TC	1200	75	1.85	385	6.2	0.39
		MMG75J120U6TN	1200	75	1.70	348	8.0	0.36
		MMG100J120U6HN	1200	100	2.10	500	5.5	0.27
		MMG75J120UZ6TC	1200	75	1.85	384	6.4	0.39
		MMG75J120UZ6TN	1200	75	1.70	348	8.0	0.36
		MMG100J120UZ6HN	1200	100	2.10	550	5.5	0.27
		MMG100J120UZ6TC	1200	100	1.85	515	9.1	0.29
 GK 108X62X25mm	 U	MMG600K060U6EN	600	600	1.45	1650	22.5	0.09
		MMG600K060U6TC	600	600	1.55	1650	34.1	0.09
		MMG800K060U6EN	600	800	1.45	2100	29	0.07
		MMG300K120U6HN	1200	300	2.10	1650	18	0.09
		MMG400K120U6HN	1200	400	2.10	2000	22	0.075
		MMG400K120U6TN	1200	400	1.70	1925	45	0.065
		MMG600K120U6HN	1200	600	2.10	3300	37	0.045
		MMG600K120U6TC	1200	600	1.85	3000	76	0.05
		MMG600K120U6TN	1200	600	1.70	2800	88	0.045
		MMG800K120U6HN	1200	800	2.10	3950	50	0.038
 GS 94X34X30mm	 B	MMG400K170U6E4N	1700	400	2.00	2700	126	0.055
		MMG600K170U6E4N	1700	600	2.00	3300	188	0.045
		MMG75S060B6EN	600	75	1.45	250	2.8	0.60
		MMG100S060B6EN	600	100	1.45	330	3.35	0.45
		MMG150S060B6EN	600	150	1.45	500	5.3	0.30
		MMG200S060B6EN	600	200	1.45	600	6.9	0.25
		MMG75S060B6TC	650	75	1.55	250	2.15	0.60
		MMG100S060B6TC	650	100	1.55	330	2.15	0.45
MMG150S060B6TC	650	150	1.65	441	5.0	0.34		
MMG200S060B6TC	650	200	1.55	600	5.7	0.25		


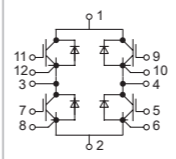

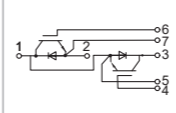
$T_c=25^{\circ}C$ unless otherwise noted

◆ IGBT MODULE

Package	Inside Circuit	Part Number	V _{ces} min. (V)	I _c T _C =65-100°C (A)	V _{ces(sat)} typ. (V)	P _d max. (W)	E _{off} T _J =125°C (mJ)	R _{θjc} max. (K/W)		
 GS 94X34X30mm	 B	MMG40S120B6UC	1200	40	2.15	230	2.0	0.65		
		MMG50S120B6HN	1200	50	2.10	330	3.0	0.45		
		MMG50S120B6TN	1200	50	1.70	260	4.9	0.48		
		MMG50S120B6UC	1200	50	2.20	300	2.2	0.50		
		MMG75S120B6HN	1200	75	2.10	500	4.8	0.32		
		MMG75S120B6TC	1200	75	1.80	385	5.9	0.39		
		MMG75S120B6TN	1200	75	1.70	348	8.0	0.36		
		MMG75S120B6UC	1200	75	2.20	405	4.0	0.37		
		MMG100S120B6HN	1200	100	2.10	600	5.5	0.25		
		MMG100S120B6TC	1200	100	1.70	515	8.3	0.29		
		MMG100S120B6TN	1200	100	1.70	450	10	0.28		
		MMG100S120B6UC	1200	100	2.20	555	5.0	0.27		
		MMG150S120B6TC	1200	150	1.85	750	13	0.20		
		MMG150S120B6TN	1200	150	1.70	625	14.5	0.20		
		MMG150S120B6UC	1200	150	2.00	1000	7.3	0.15		
		MMG50S170B	1700	50	2.40	395	9.8	0.38		
		MMG50S170B6TC	1700	50	2.05	416	12	0.36		
		MMG75S170B	1700	75	2.40	535	18.5	0.28		
		MMG75S170B6E4N	1700	75	1.95	555	25	0.27		
		MMG75S170B6TC	1700	75	2.15	555	17	0.27		
		MMG100S170B	1700	100	2.30	682	24	0.22		
		MMG100S170B6E4N	1700	100	1.95	638	33.5	0.235		
		MMG100S170B6TC	1700	100	2.15	681	22.5	0.22		
		 DE		MMG150S060DE6EN	600	150	1.45	428	5.3	0.35
				MMG200S060DE6EN	600	200	1.45	600	6.9	0.25
				 UA		MMG50S120UA6TN	1200	50	1.70	260
MMG75S120UA6TN	1200					75	1.70	348	8.0	0.36
MMG100S120UA6TC	1200					100	1.80	515	8.1	0.29
MMG100S120UA6TN	1200	100	1.70			450	10	0.28		
MMG150S120UA6TC	1200	150	1.85	750	13	0.20				
 UK		MMG100S120UK6TN	1200	100	1.70	450	10	0.28		
		 GQ 92X45X29mm	 B	MMG300Q060B6EN	600	300	1.45	835	12	0.18
MMG400Q060B6EN	600			400	1.45	1070	15	0.14		
MMG300Q060B6TC	600			300	1.65	882	10	0.17		
MMG150Q120B6HN	1200			150	2.10	830	9.6	0.18		
MMG150Q120B6TN	1200			150	1.70	780	22	0.16		
MMG200Q120B6HN	1200			200	2.10	1070	12	0.14		
MMG200Q120B6TC	1200			200	1.70	1071	16.5	0.14		
MMG200Q120B6TN	1200			200	1.70	1050	25	0.12		


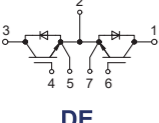
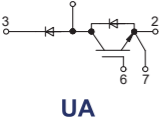
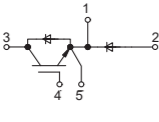

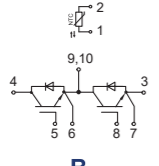
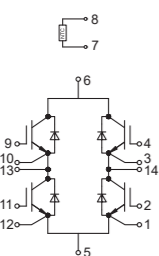

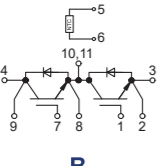
T_C=25°C unless otherwise noted

◆ IGBT MODULE

Package	Inside Circuit	Part Number	V _{ces} min. (V)	I _c T _C =65-100°C (A)	V _{ces(sat)} typ. (V)	P _d max. (W)	E _{off} T _J =125°C (mJ)	R _{θjc} max. (K/W)
 GQC 92X45X30mm	 H	MMG50QC120H6UC	1200	50	1.70	405	3.1	0.37
		MMG75QC120H6UC	1200	75	1.70	535	4.1	0.28
 GD 108X62X30mm	 B	MMG300D060B6EN	600	300	1.45	940	12	0.16
		MMG400D060B6EN	600	400	1.45	1250	15	0.12
		MMG800D060B6EN	600	800	1.45	2100	29	0.07
		MMG300D060B6TC	650	300	1.65	857	8.5	0.175
		MMG400D060B6TC	650	400	1.55	1200	12.6	0.125
		MMG100D120B6HN	1200	100	2.35	937	6.5	0.16
		MMG100D120B6TC	1200	100	1.85	556	5.6	0.27
		MMG100D120B6UC	1200	100	1.70	789	6.7	0.19
		MMG150D120B6HN	1200	150	2.10	880	9.6	0.17
		MMG150D120B6TC	1200	150	1.80	789	12.4	0.19
		MMG150D120B6TN	1200	150	1.70	780	22	0.16
		MMG150D120B6UC	1200	150	1.70	937	9.6	0.16
		MMG200D120B6HN	1200	200	2.10	1150	12	0.13
		MMG200D120B6TC	1200	200	1.80	1071	16.4	0.14
		MMG200D120B6TN	1200	200	1.70	1050	25	0.12
		MMG200D120B6UC	1200	200	1.90	1071	12.3	0.14
		MMG300D120B6HN	1200	300	2.10	1650	19.5	0.09
		MMG300D120B6TC	1200	300	1.85	1500	29	0.10
		MMG300D120B6TN	1200	300	1.70	1450	37	0.085
		MMG300D120B6UC	1200	300	1.90	1578	23.5	0.095
		MMG400D120B6HN	1200	400	2.10	2100	24	0.07
		MMG400D120B6TC	1200	400	1.85	1973	42.4	0.076
		MMG400D120B6TN	1200	400	1.70	1925	50	0.065
		MMG450D120B6TC	1200	450	1.85	2142	52	0.07
		MMG450D120B6TN	1200	450	1.70	1920	55.5	0.065
		MMG100D170B	1700	100	2.50	790	32	0.19
		MMG100D170B6TC	1700	100	2.15	789	25	0.19
		MMG150D170B	1700	150	2.50	1071	41	0.14
		MMG150D170B6E4N	1700	150	1.95	1071	44	0.14
		MMG150D170B6TC	1700	150	2.15	1071	34	0.14
		MMG200D170B	1700	200	2.30	1363	56	0.11
		MMG200D170B6E4N	1700	200	1.95	1250	57	0.12
		MMG200D170B6TC	1700	200	2.20	1500	52	0.10
		MMG300D170B	1700	300	2.30	1875	93	0.08
MMG300D170B6E4N	1700	300	1.95	1765	90	0.085		
MMG300D170B6TC	1700	300	2.15	1760	90	0.085		
MMG400D170B6E4N	1700	400	1.95	2300	114	0.065		


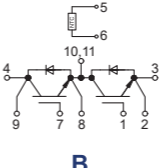

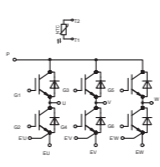

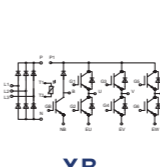

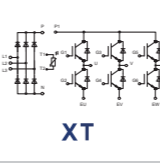

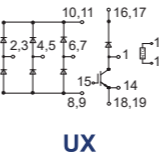
T_C=25°C unless otherwise noted

◆ IGBT MODULE

Package	Inside Circuit	Part Number	V _{ces} min. (V)	I _c T _c =65-100°C (A)	V _{ce(sat)} typ. (V)	P _d max. (W)	E _{off} T _j =125°C (mJ)	R _{θjc} max. (K/W)	
 GD 108X62X30mm	 DE	MMG300D060DE6EN	600	300	1.45	940	12	0.16	
		MMG400D060DE6EN	600	400	1.45	1250	15	0.12	
	 UA	MMG150D120UA6TN	1200	150	1.70	780	22	0.16	
		MMG200D120UA6TN	1200	200	1.70	1050	25	0.12	
		MMG300D120UA6TN	1200	300	1.70	1450	37	0.085	
		MMG400D120UA6TN	1200	400	1.70	1925	50	0.065	
	 UK	MMG200D120UK6TN	1200	200	1.70	1050	25	0.12	
		MMG400D120UK6HN	1200	400	2.10	2100	24	0.07	
	 GHB 122X45X17mm	 B	MMG75HB060B6EN	600	75	1.45	250	2.8	0.60
			MMG100HB060B6EN	600	100	1.45	330	3.35	0.45
MMG150HB060B6EN			600	150	1.45	428	5.3	0.35	
MMG200HB060B6EN			600	200	1.45	600	6.9	0.25	
MMG300HB060B6EN			600	300	1.45	940	12	0.16	
 H		MMG75HB060H6EN	600	75	1.45	250	2.8	0.60	
		MMG100HB060H6EN	600	100	1.45	330	3.35	0.45	
		MMG150HB060H6EN	600	150	1.45	428	5.3	0.35	
		MMG200HB060H6EN	600	200	1.45	600	6.9	0.25	
		MMG150HB060H6TC	650	150	1.55	441	3.7	0.34	
		MMG200HB060H6TC	650	200	1.55	600	5.7	0.25	
		MMG50HB120H6HN	1200	50	2.10	300	3.0	0.50	
		MMG75HB120H6HN	1200	75	2.10	465	4.5	0.32	
		MMG100HB120H6HN	1200	100	2.10	550	5.5	0.27	
 GWB 152X62X17mm	 B	MMG300WB065B6EN	650	300	1.45	833	12	0.18	
		MMG450WB065B6EN	650	450	1.45	1250	14.5	0.12	
		MMG450WB065B6TC	650	450	1.55	1250	19	0.12	
		MMG600WB065B6EN	650	600	1.45	1760	27.5	0.085	
		MMG600WB065B6TC	650	600	1.55	1760	30.5	0.085	
		MMG225WB120B6TC	1200	225	1.85	1150	13.8	0.13	
		MMG225WB120B6TN	1200	225	1.70	1050	33	0.12	
		MMG300WB120B6TC	1200	300	1.80	1596	26.3	0.094	
		MMG300WB120B6TN	1200	300	1.70	1400	37	0.09	
		MMG450WB120B6TC	1200	450	1.85	2305	45	0.065	
		MMG450WB120B6TN	1200	450	1.70	1950	55	0.064	
		MMG600WB120B6TC	1200	600	1.90	3125	61	0.048	
		MMG300WB170B	1700	300	2.65	2000	94	0.075	


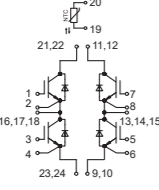
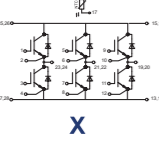
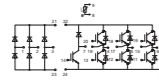

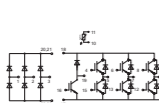
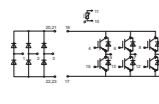

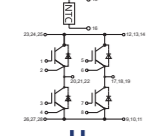
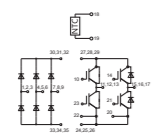
T_c=25°C unless otherwise noted

◆ IGBT MODULE

Package	Inside Circuit	Part Number	V _{ces} min. (V)	I _c T _c =65-100°C (A)	V _{ce(sat)} typ. (V)	P _d max. (W)	E _{off} T _j =125°C (mJ)	R _{θjc} max. (K/W)
 GWB 152X62X17mm	 B	MMG300WB170B6E4N	1700	300	1.95	1800	98.5	0.083
		MMG450WB170B	1700	450	2.70	2700	150	0.055
		MMG450WB170B6E4N	1700	450	1.95	2500	155	0.07
		MMG450WB170B6TC	1700	450	2.15	2500	145	0.07
		MMG600WB170B	1700	600	2.70	3750	215	0.07
		MMG600WB170B6E4N	1700	600	1.95	3750	180	0.07
		MMG150WB170H6E4N	1700	150	1.95	937	45.5	0.07
 GCB 62X33X12mm	 X	MMG10CB120X6TC	1200	10	1.85	107	0.69	2.25
		MMG15CB120X6TC	1200	15	1.85	130	1.12	1.05
		MMG25CB120X6TC	1200	25	1.85	203	2.4	0.74
		MMG35CB120X6TC	1200	35	1.85	227	3.3	0.60
		MMG10CB120XB6TC	1200	10	1.85	107	0.69	1.25
 GCE 62X56X12mm	 XB	MMG15CB120XB6TC	1200	15	1.85	130	1.12	1.05
		MMG15CB120XB6TN	1200	15	1.70	105	145	1.15
		MMG10CB120XT6TC	1200	10	1.85	107	0.69	2.25
 GH 107X45X17mm	 UX	MMG15CB120XT6TC	1200	15	1.85	130	1.12	1.05
		MMG25CE120XB6TC	1200	25	1.85	176	2.4	0.75
 GH 107X45X17mm	 UX	MMG35CE120XB6TC	1200	35	1.85	214	3.3	0.60
		MMG150H160UX6TN	1200	75	1.70	348	8.0	0.36


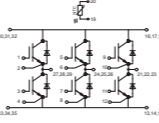
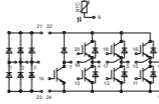
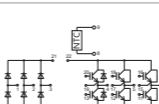


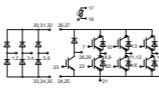

T_c=25°C unless otherwise noted

◆ IGBT MODULE

Package	Inside Circuit	Part Number	V _{ces} min. (V)	I _c T _C =65-100°C (A)	V _{ce(sat)} typ. (V)	P _d max. (W)	E _{off} T _J =125°C (mJ)	R _{θjc} max. (K/W)
 GH 107X45X17mm	 H	MMG50H120H6HN	1200	50	2.10	330	3.3	0.50
		MMG75H120H6HN	1200	75	2.10	465	4.8	0.32
		MMG100H120H6HN	1200	100	2.10	550	6.0	0.27
	 X	MMG25H120X6TN	1200	25	1.70	147	2.1	0.85
		MMG50H120X6HN	1200	50	2.10	330	3.3	0.45
		MMG50H120X6TC	1200	50	1.85	278	4.0	0.54
		MMG50H120X6TN	1200	50	1.70	260	4.9	0.48
		MMG75H120X6TC	1200	75	1.85	385	6.2	0.39
		MMG75H120X6TN	1200	75	1.70	348	8.0	0.36
	 XB	MMG50H060XB6EN	600	50	1.45	190	2.1	0.80
		MMG75H060XB6EN	600	75	1.45	250	3.6	0.60
		MMG15H120XB6TN	1200	15	1.70	105	1.3	1.20
MMG25H120XB6TC		1200	25	1.85	166	2.4	0.90	
MMG25H120XB6TN		1200	25	1.70	147	2.1	0.85	
MMG40H120XB6TC		1200	40	1.95	208	3.35	0.72	
 GHD 107X45X17mm	 XB	MMG25HD120XB6TC	1200	25	1.85	166	2.4	0.90
		MMG35HD120XB6TC	1200	35	1.85	208	3.3	0.72
		MMG50HD120XB6TC	1200	50	1.85	278	4.0	0.54
	 XT	MMG25HD120XT6TC	1200	25	1.85	166	2.4	0.90
		MMG35HD120XT6TC	1200	35	1.85	208	3.3	0.72
		MMG50HD120XT6TC	1200	50	1.80	278	4.2	0.54
 GW 122X62X17mm	 H	MMG200W170H6E4N	1700	200	2.20	1500	52	0.10
		MMG75W170HX6TC	1700	75	2.15	500	17	0.30
	 HX	MMG100W170HX6TC	1700	100	2.20	750	25	0.20
		MMG150W170HX6TC	1700	150	2.20	880	36	0.17


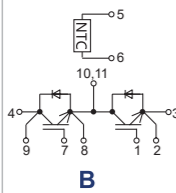

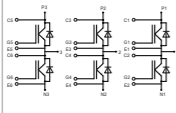

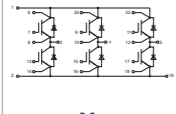
T_C=25°C unless otherwise noted

◆ IGBT MODULE

Package	Inside Circuit	Part Number	V _{ces} min. (V)	I _c T _C =65-100°C (A)	V _{ce(sat)} typ. (V)	P _d max. (W)	E _{off} T _J =125°C (mJ)	R _{θjc} max. (K/W)
 GW 122X62X17mm	 X	MMG100W060X6EN	600	100	1.45	330	3.35	0.45
		MMG150W060X6EN	600	150	1.45	428	5.3	0.35
		MMG200W060X6EN	600	200	1.45	600	6.9	0.25
		MMG50W120X6TC	1200	50	1.85	278	4.0	0.54
		MMG75W120X6TC	1200	75	1.85	385	6.2	0.39
		MMG75W120X6TN	1200	75	1.70	368	8.0	0.34
		MMG100W120X6TC	1200	100	1.85	515	5.6	0.29
		MMG100W120X6TN	1200	100	1.70	450	10	0.28
		MMG150W120X6TC	1200	150	1.85	750	13	0.20
	MMG150W120X6TN	1200	150	1.70	625	14.5	0.20	
	 XB	MMG50W060XB6EN	600	50	1.45	190	2.1	0.80
		MMG75W060XB6EN	600	75	1.45	250	2.8	0.60
		MMG100W060XB6EN	600	100	1.45	330	3.35	0.45
		MMG150W060XB6EN	600	150	1.45	428	5.3	0.35
		MMG40W120XB6TN	1200	40	1.80	195	4.2	0.64
		MMG50W120XB6TC	1200	50	1.85	278	4.0	0.54
	 XT	MMG50W120XB6TN	1200	50	1.70	260	4.9	0.48
		MMG75W120XB6TC	1200	75	1.85	385	6.2	0.39
 XT	MMG75W120XB6TN	1200	75	1.70	368	8.0	0.34	
	MMG50W120XT6TC	1200	50	1.85	278	2.8	0.54	
 GWD 122X62X17mm	 XB	MMG75WD120XB6TC	1200	75	1.85	385	6.2	0.07
		MMG100WD120XB6TC	1200	100	1.70	515	9.0	0.07
	 XT	MMG75WD120XT6TC	1200	75	1.85	385	6.2	0.07


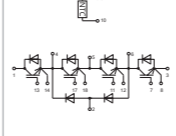

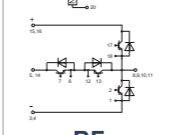

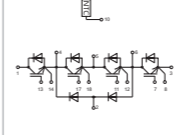

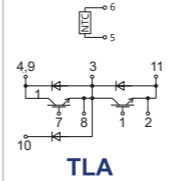
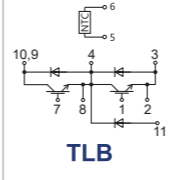
T_C=25°C unless otherwise noted

◆ IGBT MODULE FOR EV

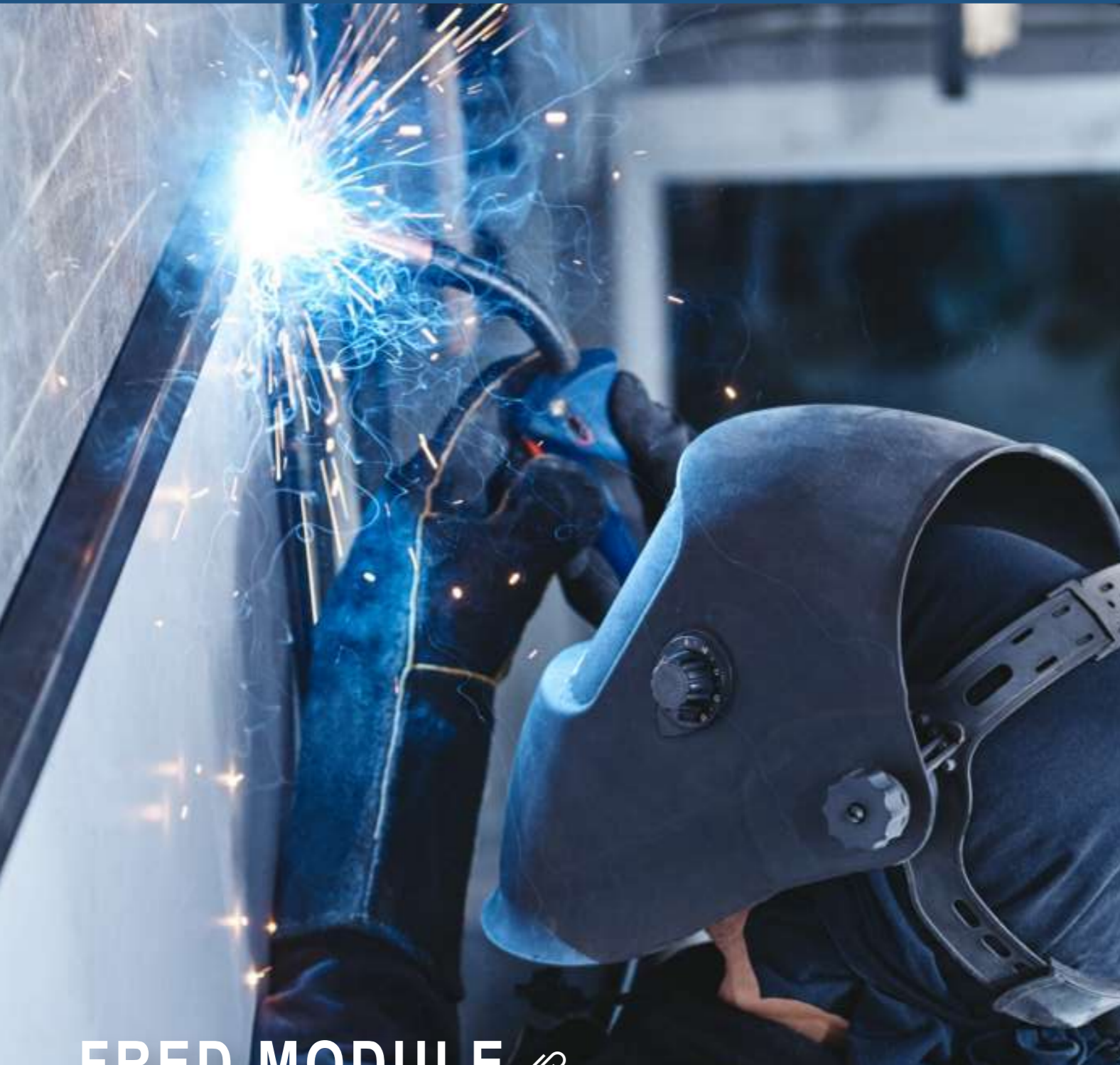
Package	Inside Circuit	Part Number	V _{ces} min. (V)	I _c T _C =65-100°C (A)	V _{ce(sat)} typ. (V)	P _d max. (W)	E _{off} T _J =125°C (mJ)	R _{θjc} max. (K/W)
 GWE 152X62X17mm	 B	MMG450WE065B6TC	650	450	1.55	1250	19	0.07
		MMG600WE065B6TC	650	600	1.55	1760	30.5	0.085
		MMG450WE120B6TC	1200	450	1.85	2305	45	0.065
		MMG600WE120B6TC	1200	600	1.90	3125	61	0.048
		MMG600V075X6O	750	600	1.35	714	24.3	0.07
 GV 154X126X32mm	 X	MMG820V075X6C	750	820	1.45	1071	24.5	0.07
		MMG820V075X6O	750	820	1.35	1250	37	0.07
		MMG300VB065X6TC	650	300	1.55	937	10.5	0.07
 GVB 140X72X17mm	 X	MMG400VB065X6EN	650	400	1.45	1250	14.3	0.07
		MMG400VB065X6TC	650	400	1.55	1200	14.6	0.125

T_C=25°C unless otherwise noted

◆ IGBT MODULE FOR 3-LEVEL

Package	Inside Circuit	Part Number	V _{ces} min. (V)	I _c T _C =65-100°C (A)	V _{ce(sat)} typ. (V)	P _d max. (W)	E _{off} T _J =125°C (mJ)	R _{θjc} max. (K/W)
 GB 108X62X26mm	 PD	MMG150B065PD6EN	650	150	1.45	428	6.1	0.35
		MMG150B065PD6TC	650	150	1.55	441	4.9	0.34
		MMG200B065PD6EN	650	200	1.45	600	7.1	0.25
		MMG200B065PD6TC	650	200	1.55	600	5.7	0.25
		MMG300B065PD6EN	650	300	1.45	856	12	0.175
		MMG300B065PD6TC	650	300	1.55	882	11.2	0.17
 GC 65X32X14mm	 BF	MMG80C120BF	1200	80	2.10	600	5.0	0.25
		MMG150CE120BF6HN	1200	150	1.55	500	5.0	0.30
 GCE 62X56X12mm	 PD	MMG100CE065PD6EN	650	100	1.45	330	3.35	0.45
		MMG100CE065PD6TC	650	100	1.55	300	2.4	0.45
		MMG150CE065PD6EN	650	150	1.45	335	5.15	0.45
		MMG150CE065PD6TC	650	150	1.65	335	5.1	0.40
		MMG600WB065TLA6EN	650	600	1.45	1760	27.5	0.085
 GWB 152X62X17mm	 TLA	MMG300WB120TLA6TN	1200	300	1.70	1380	37	0.07
		MMG600WB065TLB6EN	650	600	1.45	1760	27.5	0.085
	 TLB	MMG300WB120TLB6TN	1200	300	1.70	1380	37	0.07

T_C=25°C unless otherwise noted



FRED MODULE

MacMic FRED module is fully made by our own FRED chip with the best cost performance in the industry. Based on the market requirements, we have products made in the low-cost non-isolated package and the full-isolated package. MacMic FRED modules have superior characteristics of fast and soft recovery characteristics which are excellent using in high speed switching such as PFC and Chopper applications. Its low V_f feature suggests the low conduction loss making the product excellent apply in the output rectification circuit. The product line offers various inside circuit configuration that helps the designers easily to choose, including Single Unit, Half-Bridge, Common-Cathode, and Common-Anode.

FRED MODULE

Ranges

- 100-1700V / 60-600A

Packages

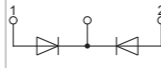
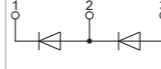

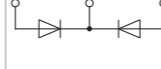
- FJ, FZ, FN, FY, FYB, FS, FD

Applications




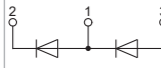
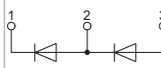
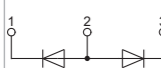
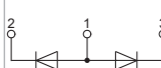
- Welding Machine
- SMPS, UPS
- Inverter
- Chopper
- PFC

Features

- Short Recovery Time
- Soft-Recovery Characteristic
- Low Reverse Recovery Charge
- Low Forward Voltage
- Stressless Package
- Avalanche Energy Rated


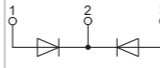
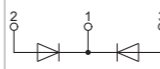
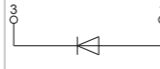
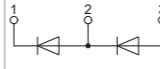
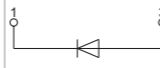
Package	Inside Circuit	Part Number	V_{rm} (V)	$I_{r(av)}$ Duty=0.5 $T_c=110^\circ\text{C}$ (A)	I_{rsm} $t=10\text{ms}$ $T_j=45^\circ\text{C}$ (A)	V_f @ I_r $T_j=125^\circ\text{C}$ (V) (A)	t_{rr} $T_j=25^\circ\text{C}$ (ns)	$R_{\theta jc}$ ($^\circ\text{C}/\text{W}$)
 FJ 38X28X12mm	 D	MMF2X100J040D	400	2×100	1100	1.2 100	62	0.34
		MMF2X100J060D	600	2×100	1500	1.35 100	95	0.30
		MMF2X60J070D	700	2×60	600	1.15 60	150	0.60
		MMF2X100J070D	700	2×100	1200	1.15 100	110	0.45
		MMF2X60J120D	1200	2×60	500	1.8 60	135	0.65
 FZ 93X20X17mm	 DK1	MMF400Z020DK1	200	2×200	1800	0.95 200	90	0.20
		MMF200ZB040DK1	400	2×100	1250	1 100	70	0.20
		MMF200ZB060DK1	600	2×100	1500	1.15 100	105	0.20
		MMF200ZB040DK1B	400	2×100	1350	1 100	85	0.21
 FN 94X26X17mm	 B	MMF150N060B6B	600	2×150	1400	1.15 150	130	0.34
		MMF100N120B	1200	2×100	1100	1.6 100	135	0.44
	 DA	MMF200N070DA	700	2×100	1100	1.2 100	140	0.34
		MMF200N120DA	1200	2×100	1100	1.77 100	150	0.44
	 DK	MMF400N020DK2B	200	2×200	2000	0.9 200	135	0.34
		MMF200N070DK	700	2×100	1200	1.2 100	140	0.34
 FY 92X27X17mm	 DK1	MMF400Y010DK1	100	2×200	1500	1 200	65	0.18
		MMF1000Y010DK1	100	2×500	4000	0.76 500	100	0.085
		MMF800Y020DK1	200	2×400	3000	1 400	165	0.08
		MMF200Y040DK1	400	2×100	1250	1 100	70	0.10
		MMF300Y040DK1	400	2×150	1900	1.2 150	65	0.10
		MMF400Y040DK1	400	2×200	2550	1.2 200	75	0.08
		MMF200Y060DK1	600	2×100	1200	1.2 100	91	0.20
		MMF300Y060DK1	600	2×150	2500	1.2 150	100	0.08
		MMF300Y040DK1B	400	2×150	1900	1.2 150	65	0.10
		MMF400Y040DK1B	400	2×200	2550	1.2 200	75	0.08
MMF300Y060DK1B	600	2×150	2650	1.2 150	95	0.075		

◆ FRED MODULE

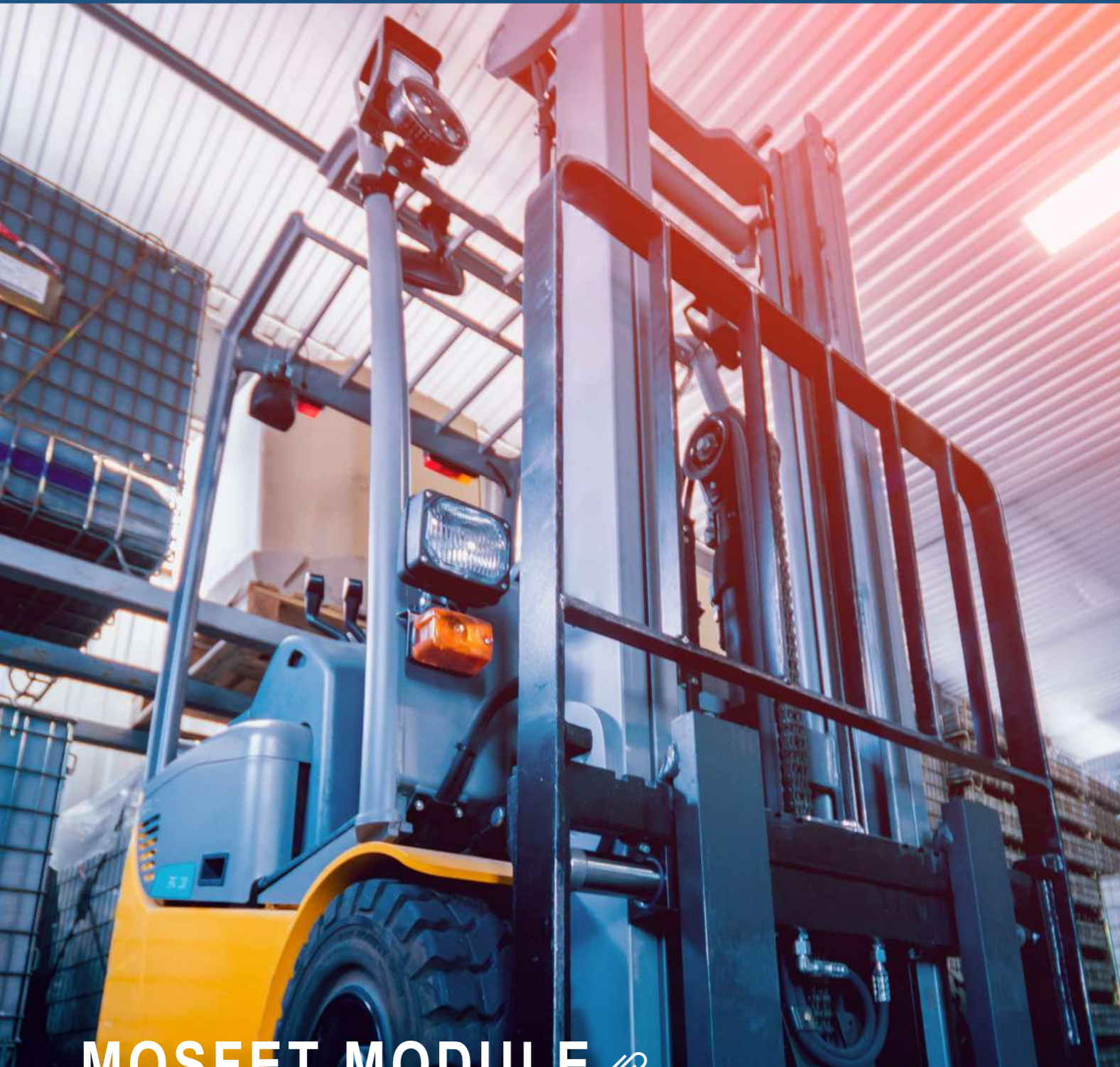
Package	Inside Circuit	Part Number	V _{rrm} (V)	I _{f(av)} Duty=0.5 T _c =110°C (A)	I _{fsm} t=10ms T _J =45°C (A)	V _f @ I _f T _J =125°C (V) (A)	t _{rr} T _J =25°C (ns)	R _{θjc} (°C/W)	
 FYB 80X42X22mm	 U	MMF300YB050U	500	300	3800	1.2 300	160	0.11	
		MMF300YB070U	700	300	3800	1.38 300	121	0.12	
 FS 94X34X30mm	 B	MMF400S040B	400	2×400	2800	1.6 400	110	0.10	
		MMF150S060B	600	2×150	1500	1.15 150	130	0.22	
		MMF200S060B	600	2×200	2000	1.15 200	140	0.18	
		MMF300S060B	600	2×300	3000	1.15 300	150	0.14	
		MMF150S120B	1200	2×150	1500	1.6 150	145	0.22	
		MMF200S120B	1200	2×200	1800	2.3 200	110	0.22	
		MMF300S120B	1200	2×300	2700	2.8 300	135	0.14	
		MMF100S170B	1700	2×100	1000	1.8 100	500	0.22	
		MMF200S170B	1700	2×200	2000	1.8 200	750	0.14	
		 B2B	MMF150S060B2B	600	2×150	1500	1.15 150	130	0.22
	MMF200S060B2B		600	2×200	2000	1.15 200	140	0.18	
	MMF300S060B2B		600	2×300	3000	1.15 300	150	0.14	
	MMF150S120B2B		1200	2×150	1500	1.6 150	145	0.22	
	MMF200S120B2B		1200	2×200	1800	1.9 200	110	0.22	
	MMF300S120B2B		1200	2×300	2700	2.8 300	135	0.14	
	MMF100S170B2B		1700	2×100	1000	1.95 100	500	0.22	
	MMF200S170B2B		1700	2×200	2000	1.95 200	750	0.14	
	 DA		MMF150S060DA	600	2×150	1500	1.15 150	130	0.22
			MMF200S060DA	600	2×200	2000	1.15 200	140	0.18
		MMF300S060DA	600	2×300	3000	1.15 300	150	0.14	
		MMF150S120DA	1200	2×150	1500	1.6 150	145	0.22	
		MMF200S120DA	1200	2×200	1800	2.3 200	110	0.22	
		MMF300S120DA	1200	2×300	2700	2.8 300	135	0.14	
		MMF100S170DA	1700	2×100	1000	1.95 100	500	0.22	
		MMF200S170DA	1700	2×200	2000	1.95 200	750	0.14	
		 DA2B	MMF150S060DA2B	600	2×150	1500	1.25 150	95	0.30
			MMF200S060DA2B	600	2×200	2000	1.15 200	140	0.18
	MMF300S060DA2B		600	2×300	3000	1.1 300	165	0.15	
MMF150S120DA2B	1200		2×150	1500	1.3 150	145	0.22		
MMF200S120DA2B	1200		2×200	1800	2.3 200	110	0.22		
MMF300S120DA2B	1200		2×300	2700	2.8 300	135	0.14		
MMF100S170DA2B	1700		2×100	1000	1.8 100	500	0.22		
MMF200S170DA2B	1700		2×200	2000	1.8 200	750	0.14		

T_c=25°C unless otherwise noted

◆ FRED MODULE

Package	Inside Circuit	Part Number	V _{rrm} (V)	I _{f(av)} Duty=0.5 T _c =110°C (A)	I _{fsm} t=10ms T _J =45°C (A)	V _f @ I _f T _J =125°C (V) (A)	t _{rr} T _J =25°C (ns)	R _{θjc} (°C/W)	
 FS 94X34X30mm	 DK	MMF150S060DK	600	2×150	1500	1.15 150	130	0.22	
		MMF200S060DK	600	2×200	2000	1.15 200	140	0.18	
		MMF300S060DK	600	2×300	3000	1.15 300	150	0.14	
		MMF150S120DK	1200	2×150	1500	1.6 150	145	0.22	
		MMF200S120DK	1200	2×200	1800	2.3 200	110	0.22	
		MMF300S120DK	1200	2×300	2700	2.8 300	135	0.14	
		MMF100S170DK	1700	2×100	1000	1.8 100	500	0.22	
		MMF200S170DK	1700	2×200	2000	1.95 200	750	0.14	
		 DK2B	MMF400S040DK2B	400	2×400	2800	1.6 400	110	0.10
			MMF150S060DK2B	600	2×150	1500	1.25 150	95	0.30
			MMF200S060DK2B	600	2×200	2000	1.15 200	140	0.18
			MMF300S060DK2B	600	2×300	3000	1.1 300	165	0.15
			MMF400S060DK2B	600	2×400	4000	1.3 400	162	0.11
			MMF150S120DK2B	1200	2×150	1500	1.6 150	145	0.22
MMF200S120DK2B	1200		2×200	1800	2.3 200	110	0.22		
MMF300S120DK2B	1200		2×300	2700	2.8 300	135	0.14		
MMF100S170DK2B	1700		2×100	1000	1.95 100	500	0.22		
MMF200S170DK2B	1700		2×200	2000	1.95 200	750	0.14		
 U	MMF600S060U	600	600	4800	1.15 600	175	0.075		
	MMF300S120U	1200	300	2500	2.75 300	150	0.14		
	MMF400S120U	1200	400	3200	3 400	180	0.11		
	MMF600S120U	1200	600	4800	2.8 600	200	0.10		
	MMF400S170U	1700	400	4000	1.8 400	1100	0.09		
	 B2B	MMF400D120B2B	1200	2×400	3200	3 400	180	0.11	
MMF300D170B2B		1700	2×300	3000	2 300	500	0.14		
MMF400D170B2B		1700	2×400	3200	1.95 400	2000	0.10		
 U		MMF400D120U	1200	400	3600	2.1 400	190	0.085	

T_c=25°C unless otherwise noted



MOSFET MODULE

MacMic is one of the few semiconductor companies supplying power MOSFET modules. Customers can utilize the benefit of module configuration to easily realize high power system design instead of paralleling multiple MOSFET discretely. This can also improve production yield and system operation reliability. MacMic MOSFET modules come with some exclusive features. The low $R_{ds(on)}$ of the MOSFET module can work as a high power Synchronous Rectifier to achieve better efficiency in the high power equipment, such as Plating Power. The 6-Pack and Half-Bridge configuration are perfect for the inverter circuit of a battery source 2KW~15KW Motor Drive. The Single-Switch module is also a great replacement to the Mechanical Contactor Relay.

◆ MOSFET MODULE

Ranges

- 60-150V / 200-850A

Packages


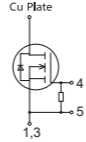

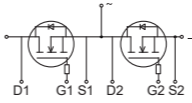

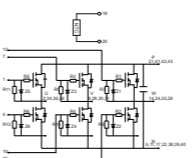
- NA, NDB, NH

Applications

- Low Speed Electric Vehicle
- Motor Drive
- Synchronous Rectifier Circuit

Features

- Fast Switching Speed
- Low $R_{ds(on)}$
- High Avalanche Energy
- High Current Carrying Capability

Package	Inside Circuit	Part Number	V_{ds} min. (V)	I_d (A)	$R_{ds(on)}$ typ. (mΩ)	$R_{θjc}$ (K/W)
 NA 93X21X30mm	 U1	MMN400A006U1	60	610	0.35	0.15
		MMN668A010U1	100	668	1.10	0.14
 NDB 90X60X16mm	 B	MMN600DB012B	120	850	0.64	0.10
		MMN600DB015B	150	850	1.20	0.09
 NH 107X45X17mm	 X	MMN200H010X	100	200	4.50	0.55

$T_c=25^{\circ}\text{C}$ unless otherwise noted



THYRISTOR (SCR) MODULE

Our Thyristor modules are manufactured by soldering and bonding contact process using extremely low leakage current and high-reliability Thyristor chips. The product line is popular for its long lifetime and stable operation performance thanks to our strict production and material quality control. Although Thyristor is considered a relatively mature product, our customers can experience distinct specifications from our modules compared to many others' offers in the market, not to mention our competitive advantage for price. MacMic Thyristor modules are frequently used in AC Power Control, Header, Rectification, Static Switch, Soft-Starter, etc.

◆ THYRISTOR (SCR) MODULE

Ranges

- 300-1600V / 25-200A

Packages


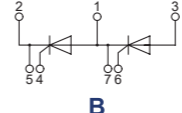
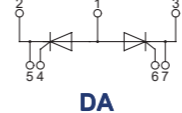
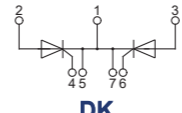
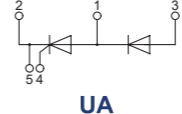
- KA, KS, KLB, KU, KT, KX, KX(2)

Applications

- Inverter
- Soft-Starter
- SMPS, UPS
- Welding Machine
- AC-DC Circuit

Features

- Compact Structure
- High Blocking Voltage
- High Current Capability
- High Reliability
- High Performance Price Ratio

Package	Inside Circuit	Part Number	V_{rrm} V_{drm} (V)	$I_{T(av)}$ $T_c=80-95^\circ C$ (A)	V_{tm} @ I_{tm} (V) (A)	$R_{\theta jc}$ (K/W)	
 <p>KA 93X21X30mm</p>	 <p>B</p>	MMK25A160B	1600	25	1.6 75	0.50	
		MMK40A160B	1600	40	1.81 141	0.50	
		MMK60A160B	1600	60	1.54 188	0.45	
		MMK90A160B	1600	90	1.6 282	0.35	
		MMK110A160B	1600	110	1.65 280	0.25	
	 <p>DA</p>	MMK110A160DA	1600	110	1.8 345	0.24	
		 <p>DK</p>	MMK110A160DK	1600	110	1.8 345	0.24
	 <p>UA</p>		MMK25A160UA	1600	25	1.6 75	0.50
			MMK40A160UA	1600	40	1.81 141	0.50
		MMK60A160UA	1600	60	1.75 180	0.45	
MMK90A160UA		1600	90	1.6 282	0.35		
MMK110A160UA		1600	110	1.65 280	0.25		


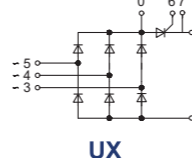

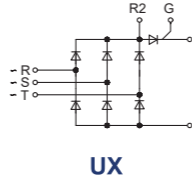

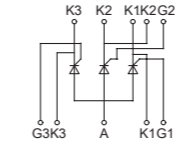

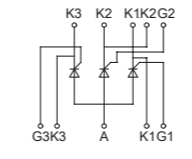
$T_c=25^\circ C$ unless otherwise noted

◆ THYRISTOR (SCR) MODULE

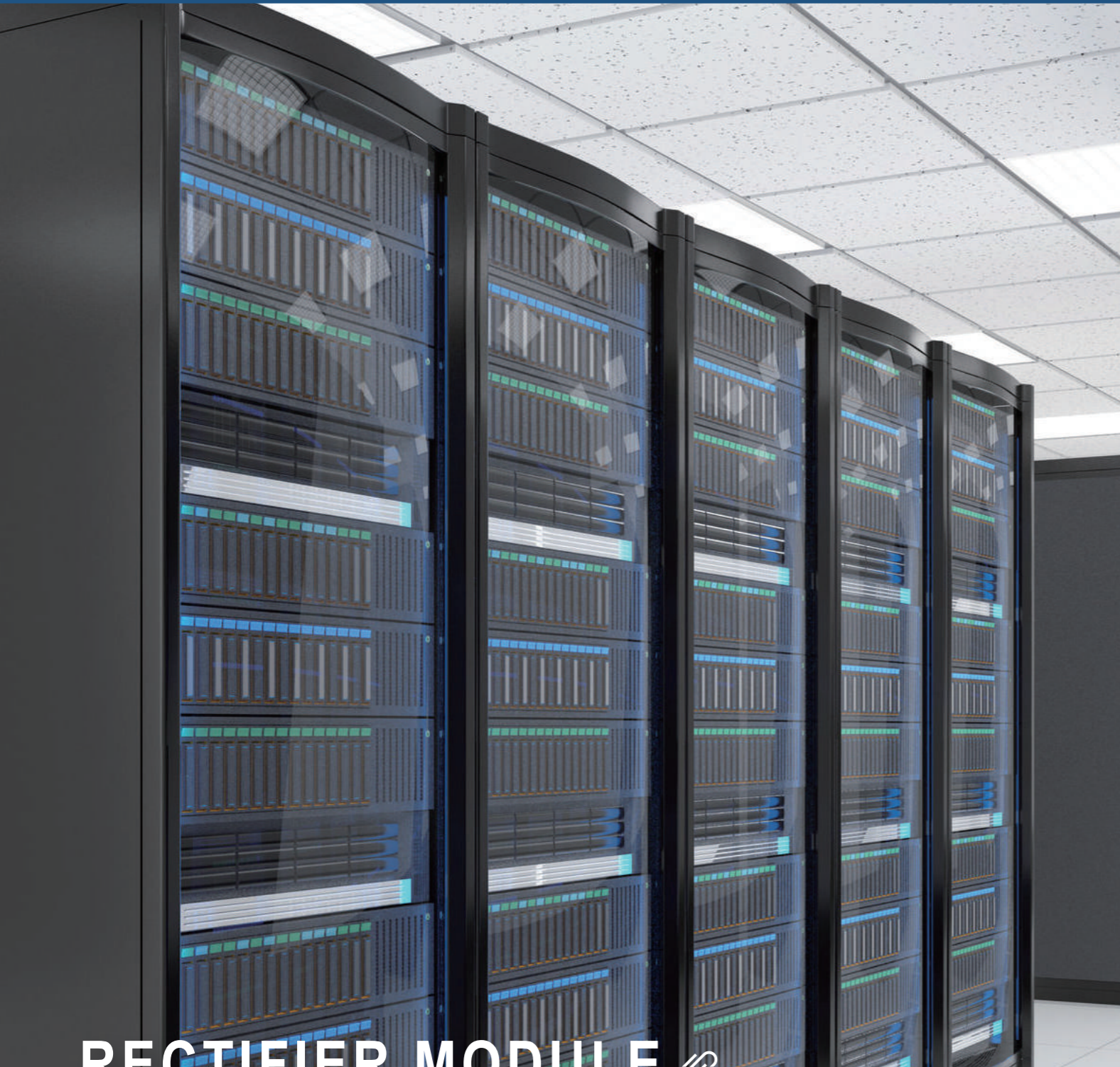
Package	Inside Circuit	Part Number	V_{rm}	$I_{(av)}$	V_{tm} @ I_{tm}		$R_{\theta jc}$
			V_{drm} (V)	$T_c=80-95^\circ C$ (A)	(V)	(A)	(K/W)
 KA 93X21X30mm	 UK	MMK25A160UK	1600	25	1.6	75	0.50
		MMK40A160UK	1600	40	1.85	125	0.50
		MMK60A160UK	1600	60	1.75	180	0.45
		MMK90A160UK	1600	90	1.6	282	0.35
		MMK110A160UK	1600	110	1.65	350	0.30
 KS 94X34X30mm	 UA	MMK130S160B	1600	130	1.57	408	0.20
		MMK160S160B	1600	160	1.54	500	0.18
		MMK200S160B	1600	200	1.75	500	0.12
		MMK130S160UA	1600	130	1.57	408	0.20
		MMK160S160UA	1600	160	1.54	502	0.18
		MMK200S160UA	1600	200	1.75	500	0.12
 UK	 UK	MMK130S160UK	1600	130	1.57	408	0.20
		MMK160S160UK	1600	160	1.54	502	0.18
		MMK200S160UK	1600	200	1.75	600	0.13
 KLB 60X32X27mm	 HB	MMK35LB160HB	1600	35	1.75	110	0.24

$T_c=25^\circ C$ unless otherwise noted

◆ THYRISTOR (SCR) MODULE

Package	Inside Circuit	Part Number	V_{rm}	$I_{(av)}$	V_{tm} @ I_{tm}		$R_{\theta jc}$
			V_{drm} (V)	$T_c=80-95^\circ C$ (A)	(V)	(A)	(K/W)
 KU 94X50X22mm	 UX	MMK75U160UX	1600	75	1.5	235	0.35
		MMK100U160UX	1600	100	1.65	315	0.24
 KT 108X62X26mm	 UX	MMK75T160UX	1600	75	1.5	235	0.35
		MMK100T160UX	1600	100	1.54	314	0.24
		MMK150T160UX	1600	150	1.65	400	0.16
		MMK200T160UX	1600	200	1.6	500	0.13
 KX 108X34X58mm	 DA	MMK150X030DA	300	150	1.15	450	0.10
 KX(2) 130X35X60mm	 DA	MMK200X040DA	400	200	1.2	600	0.15

$T_c=25^\circ C$ unless otherwise noted



RECTIFIER MODULE

MacMic provides Rectifier Diode Modules for single-phase and three-phase AC source applications. Like our other module product lines, the Rectifier Diode Modules are fully compatible with the industry common configurations that give the customer a better choice for good quality at a more acceptable price. Our Rectifier Diode Modules have a Blocking Voltage of more than 1600V and are available for higher rating requests. The superior Short Circuit Current (i^2t) and Surge Current (I_{fsm}) specifications show the ruggedness of the modules that are more reliable to work in a tougher AC Line input condition.

◆ RECTIFIER DIODE MODULE

Ranges

- 1600-1800V / 50-400A

Packages


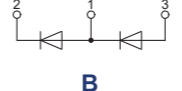

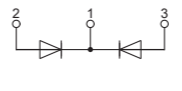

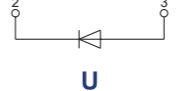
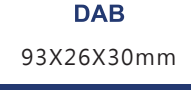
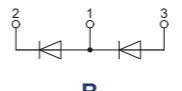
- DA, DAB, DS, DD, DL, DE, DEB, DF, DFB

Applications

- Inverter
- SMPS, UPS
- Welding Machine
- Medical Power Supply
- AC-DC Circuit


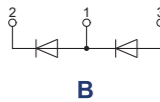

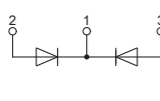

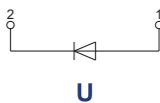

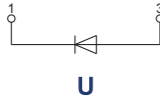
Features

- Compact Structure
- High Blocking Voltage
- High Current Capability
- High Reliability
- High Performance Price Ratio

Package	Inside Circuit	Part Number	V _{rrm} (V)	I _{f(av)} T _c =85°C (A)	I _{fsm} t=10ms T _j =45°C (A)	V _{f(max)} @ I _f T _j =25°C		R _{θjc} (K/W)
						(V)	(A)	
 DA 93X21X30mm	 B	MMD60A160B	1600	60	1350	1.5	180	0.63
		MMD90A160B	1600	90	2000	1.6	280	0.40
		MMD110A160B	1600	110	2500	1.6	350	0.30
		MMD130A160B	1600	130	3450	1.5	400	0.25
		MMD90A180B	1800	90	2000	1.6	280	0.40
		MMD110A180B	1800	110	2500	1.6	350	0.30
 DK 93X21X30mm	 DK	MMD130A180B	1800	130	3500	1.5	400	0.20
		MMD60A160DK	1600	60	1350	1.5	180	0.63
		MMD90A160DK	1600	90	2000	1.6	280	0.40
		MMD110A160DK	1600	110	2500	1.6	350	0.30
		MMD90A180DK	1800	90	2000	1.3	200	0.36
		MMD110A180DK	1800	110	2500	1.25	200	0.30
 U 93X26X30mm	 U	MMD60A160U	1600	60	1600	1.15	60	0.05
		MMD110AB160B	1600	110	2350	1.4	300	0.30
 DAB 93X26X30mm	 B	MMD160AB160B	1600	160	5000	1.5	500	0.18


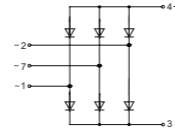


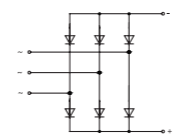

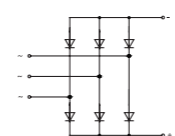

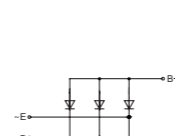

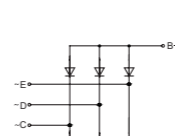


T_c=25°C unless otherwise noted

◆ RECTIFIER DIODE MODULE

Package	Inside Circuit	Part Number	V _{rrm} (V)	I _{f(av)} T _c =85°C (A)	I _{fsm} t=10ms T _j =45°C (A)	V _{f(max)} @ I _f T _j =25°C		R _{θjc} (K/W)
						(V)	(A)	
 DS 94X34X30mm		MMD130S160B	1600	130	3500	1.5	400	0.20
		MMD160S160B	1600	160	5500	1.5	500	0.18
		MMD180S160B	1600	180	6000	1.5	600	0.18
		MMD200S160B	1600	200	6500	1.5	600	0.16
		MMD240S160B	1600	240	7350	1.55	600	0.12
		MMD130S180B	1800	130	3500	1.5	300	0.20
		MMD160S180B	1800	160	5500	1.5	500	0.18
		MMD180S180B	1800	180	6000	1.5	600	0.18
		MMD200S180B	1800	200	6500	1.5	600	0.16
		 DK		MMD130S160DK	1600	130	3500	1.5
MMD160S160DK	1600			160	5500	1.5	500	0.18
MMD180S160DK	1600			180	6000	1.5	400	0.17
MMD200S160DK	1600			200	6500	1.5	600	0.16
MMD240S160DK	1600			240	10000	1.25	500	0.14
MMD130S180DK	1800			130	3500	1.5	300	0.20
MMD160S180DK	1800			160	5000	1.5	350	0.18
MMD180S180DK	1800			180	6000	1.5	400	0.17
MMD200S180DK	1800			200	6500	1.5	500	0.16
 U				MMD200S160U	1600	200	6500	1.5
		MMD300S160U	1600	300	9000	1.25	500	0.09
		MMD400S160U	1600	400	12000	1.1	400	0.09
 DD 108X62X30mm		MMD400D160U	1600	400	12000	1	400	0.09

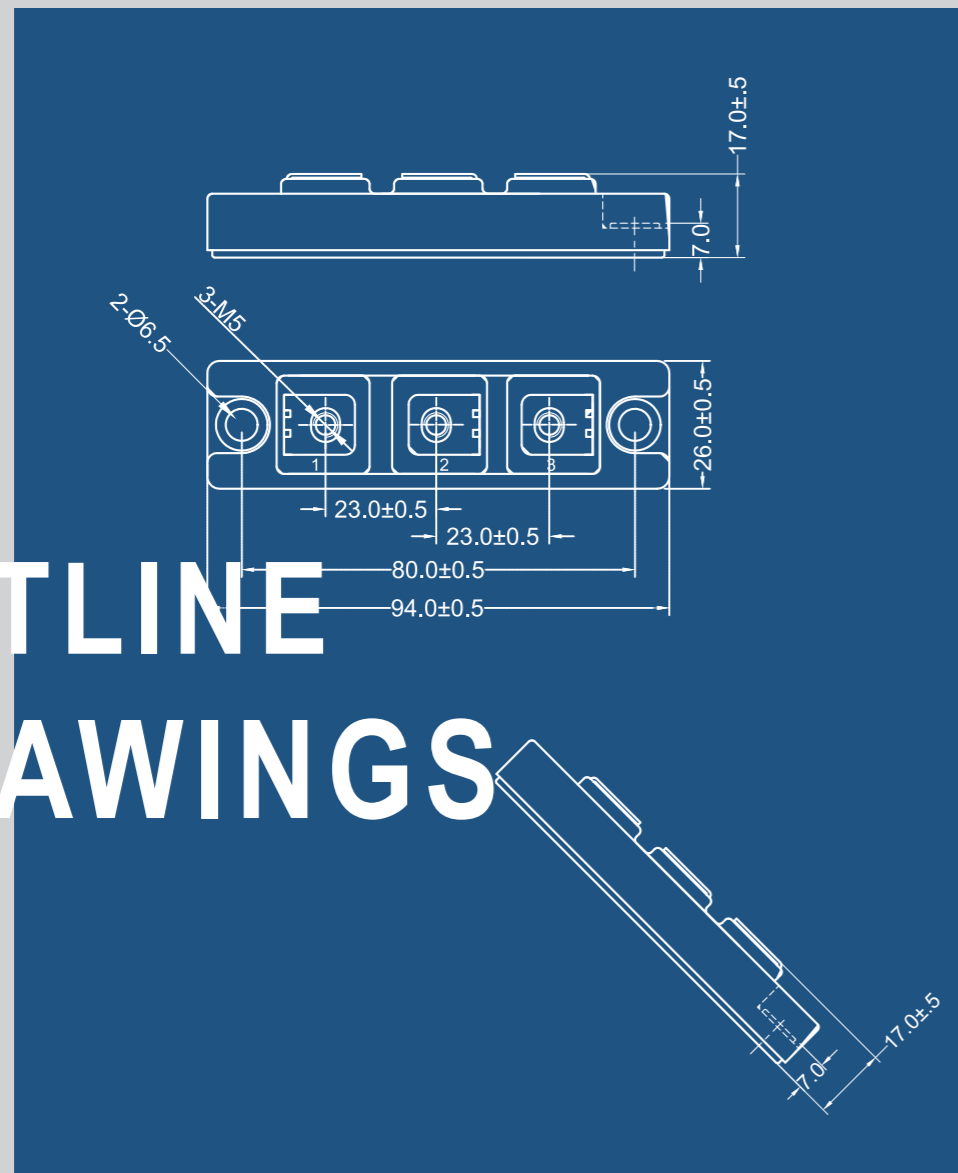
T_c=25°C unless otherwise noted

◆ THREE-PHASE RECTIFIER MODULE

Package	Inside Circuit	Part Number	V _{rrm} (V)	I _{f(av)} T _c =85°C (A)	I _{fsm} t=10ms T _j =45°C (A)	V _{f(max)} @ I _f T _j =25°C		R _{θjc} (K/W)
						(V)	(A)	
 DL 60X32X27mm		MMD50L160X	1600	50	500	1.4	500	0.20
 DE 72X42X30mm		MMD70E160X	1600	70	700	1.35	70	0.18
 DEB 82X42X22mm		MMD100E160X	1600	100	1000	1.35	100	0.15
		MMD70E180X	1800	70	700	1.35	70	0.18
 DF 94X54X30mm		MMD100E180X	1800	100	1000	1.35	100	0.15
		MMD70EB160X	1600	70	700	1.35	70	0.18
		MMD100EB160X	1600	100	1000	1.35	100	0.15
 DFB 94X54X17mm		MMD70EB180X	1800	70	700	1.35	70	0.18
		MMD100EB180X	1800	100	1000	1.35	100	0.15
		MMD150F160X	1600	150	1500	1.45	150	0.11
		MMD200F160X	1600	200	2000	1.45	200	0.09
		MMD250F160X	1600	250	2500	1.55	250	0.08
		MMD150F180X	1800	150	1500	1.45	150	0.11
 DFB 94X54X17mm		MMD200F180X	1800	200	2000	1.45	200	0.09
		MMD250F180X	1800	250	2500	1.55	250	0.08
		MMD150FB160X	1600	150	1500	1.45	150	0.11
		MMD200FB160X	1600	200	2000	1.45	200	0.09
		MMD250FB160X	1600	250	2500	1.55	250	0.08
		MMD150FB180X	1800	150	1500	1.45	150	0.11
 DFB 94X54X17mm		MMD200FB180X	1800	200	2000	1.45	200	0.09
		MMD250FB180X	1800	250	2500	1.55	250	0.08

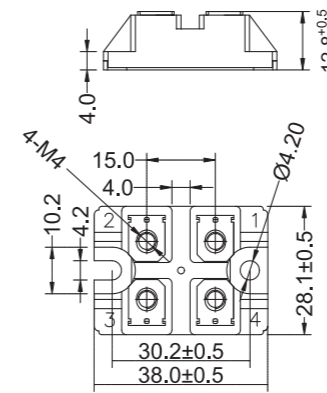
T_c=25°C unless otherwise noted

OUTLINE DRAWINGS

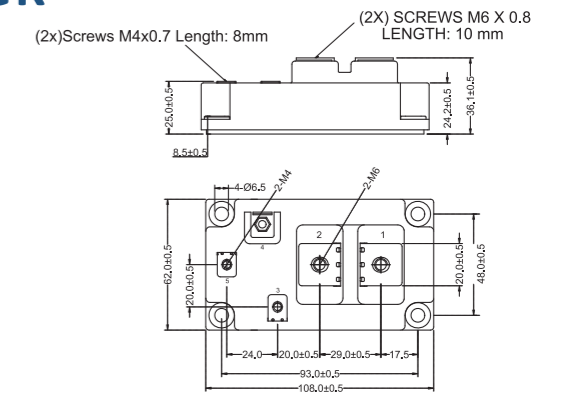


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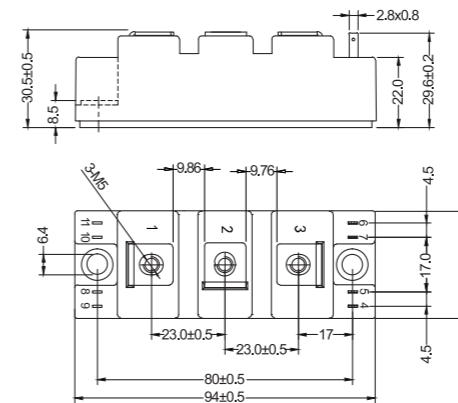
◆ GJ



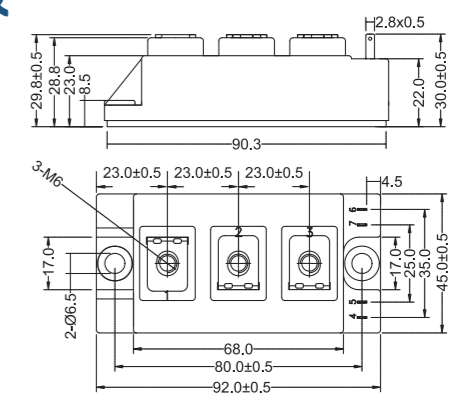
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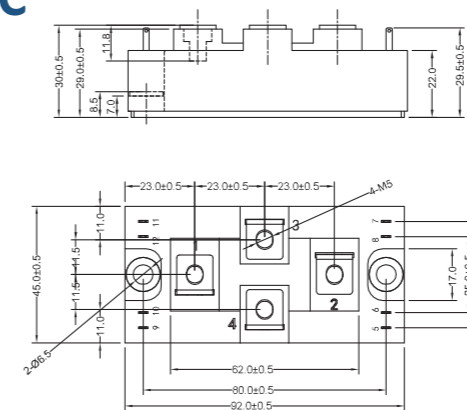
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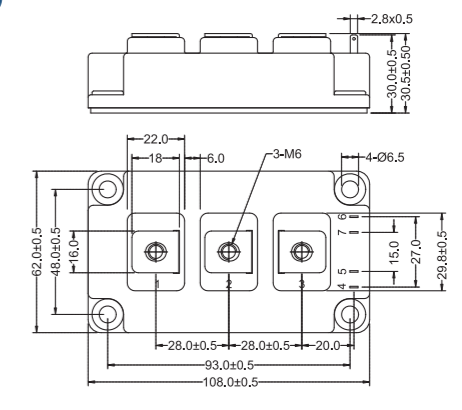
◆ GQ



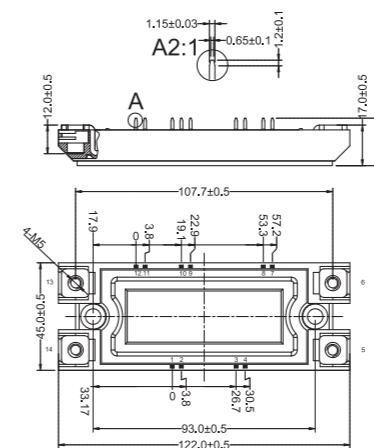
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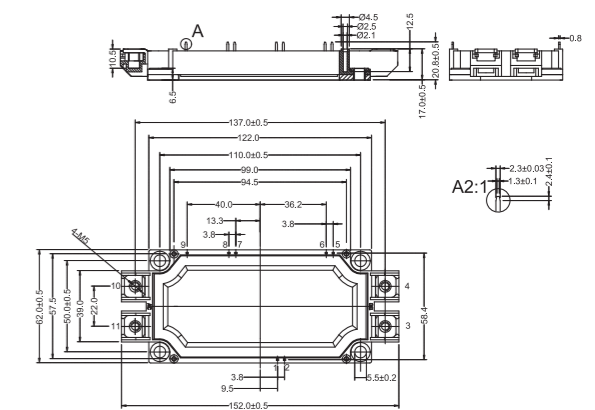
◆ GD



◆ GHB



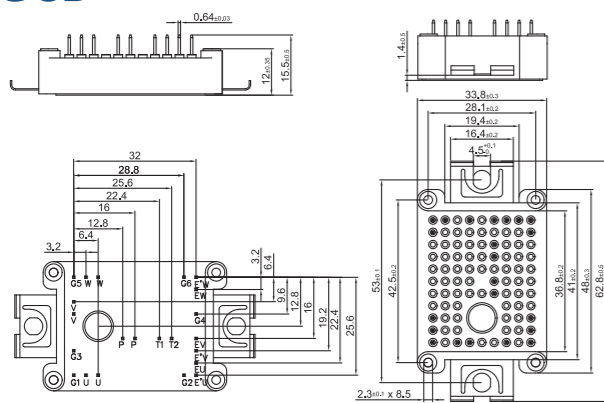
◆ GWB



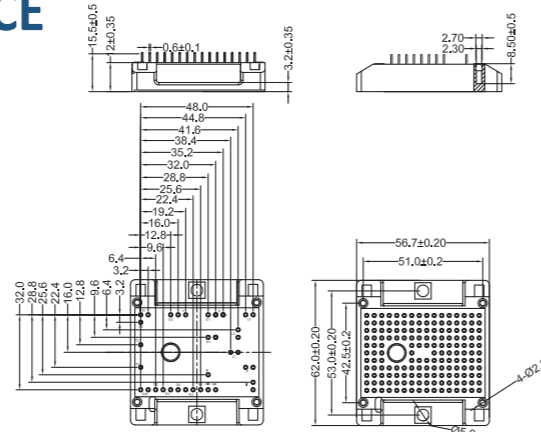
unit : mm

unit : mm

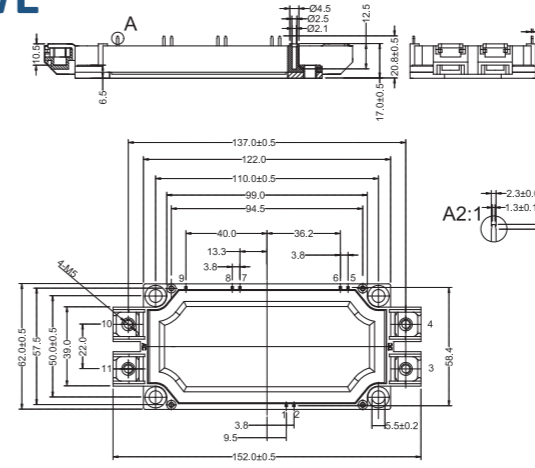
◆ GCB



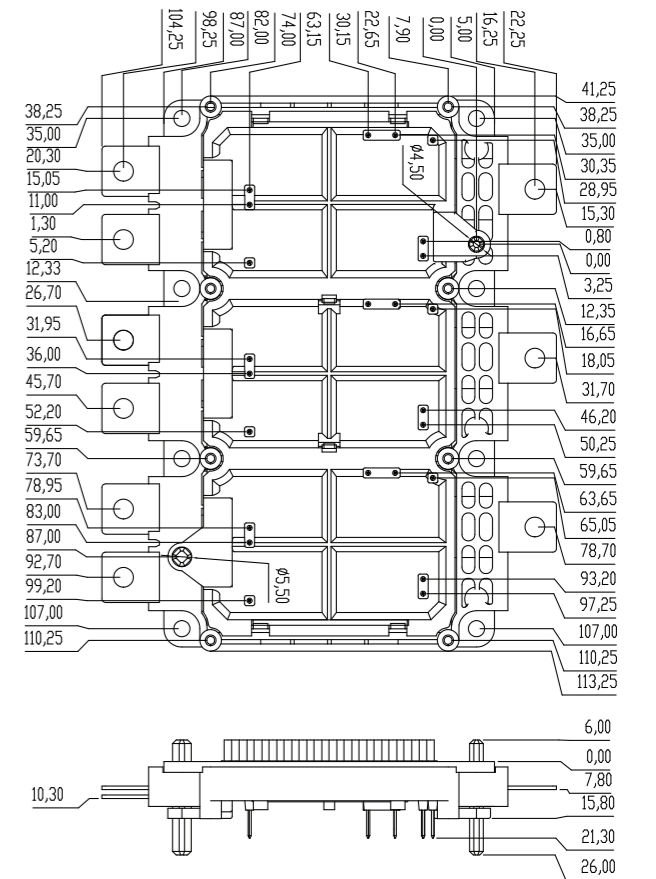
◆ GCE



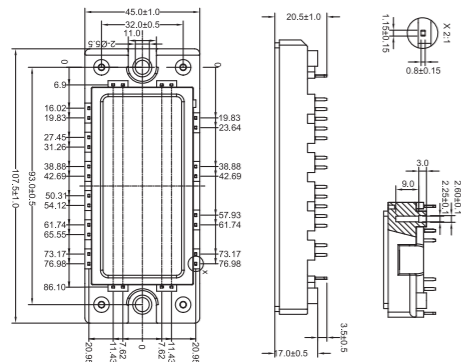
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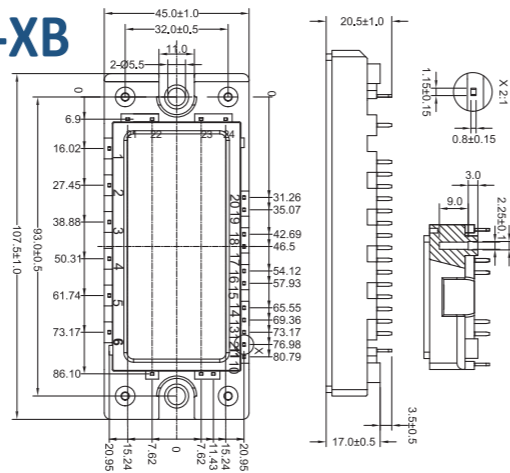
◆ GV



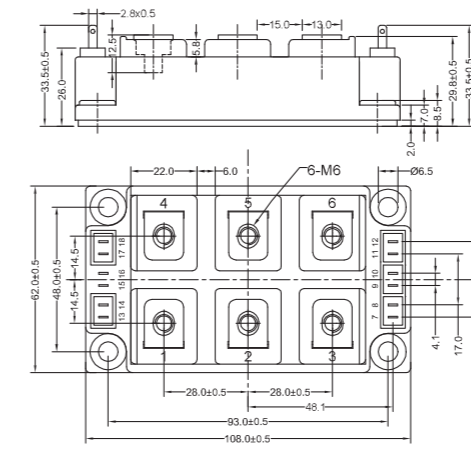
◆ GH-X



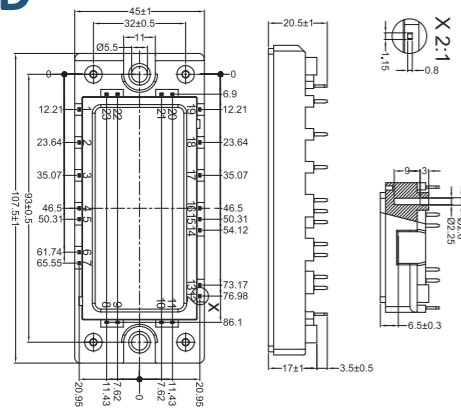
◆ GH-XB



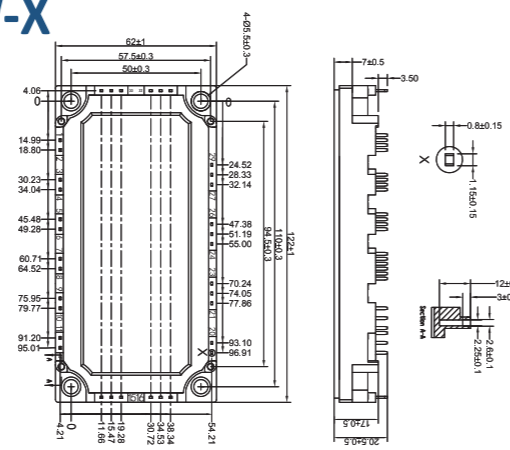
◆ GB



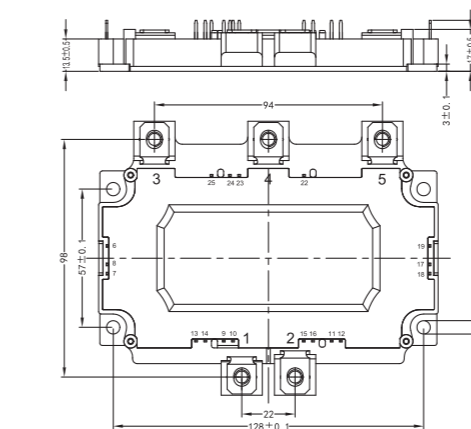
◆ GHD



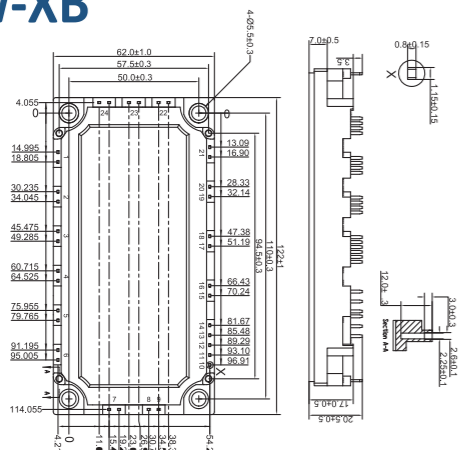
◆ GW-X



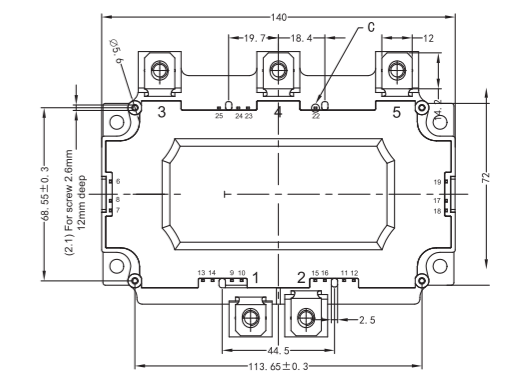
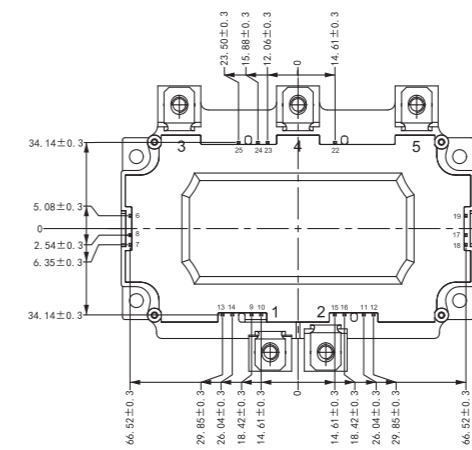
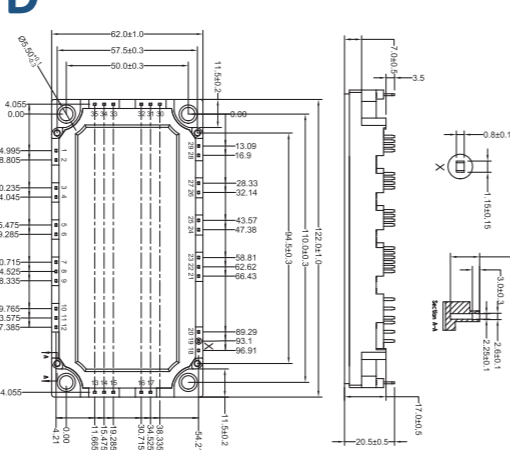
◆ GVB



◆ GW-XB

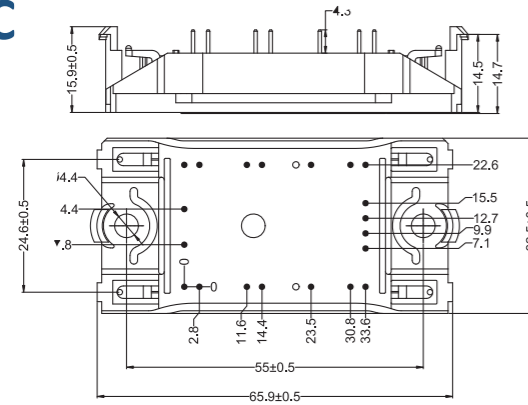


◆ GWD

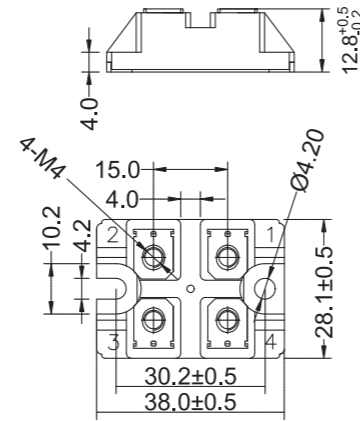


unit : mm

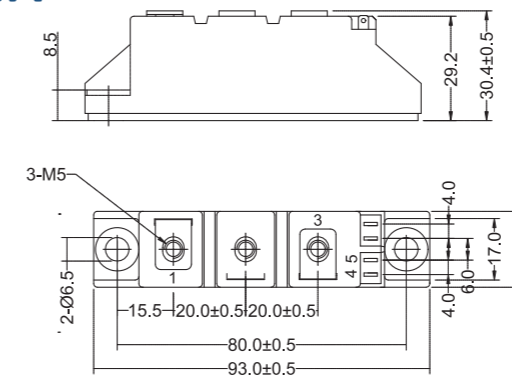
◆ GC



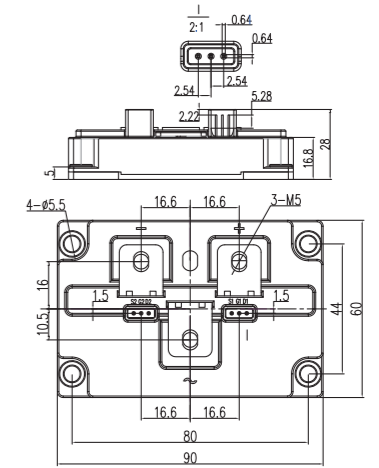
◆ FJ



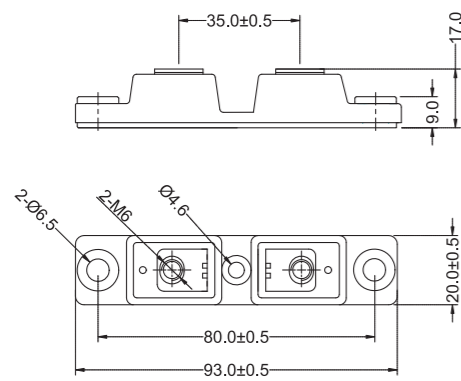
◆ NA



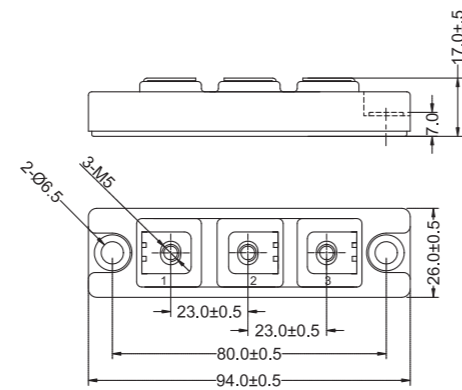
◆ NDB



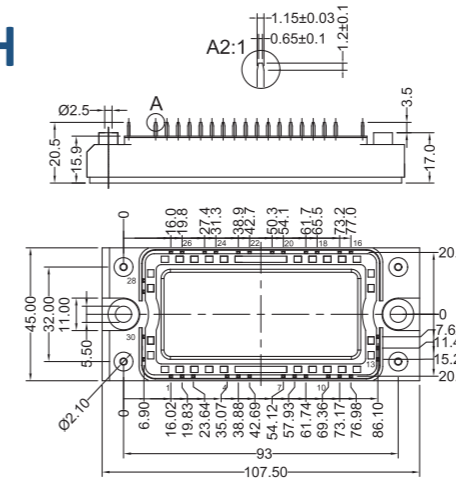
◆ FZ



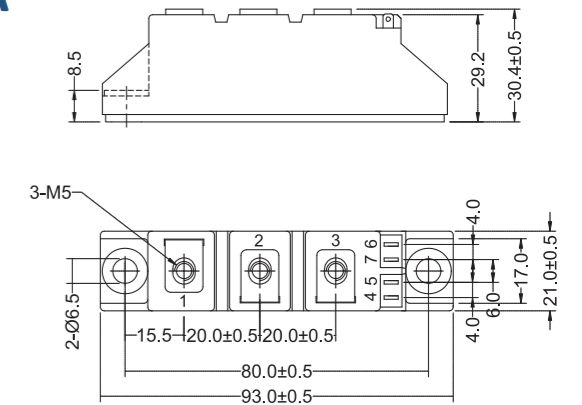
◆ FN



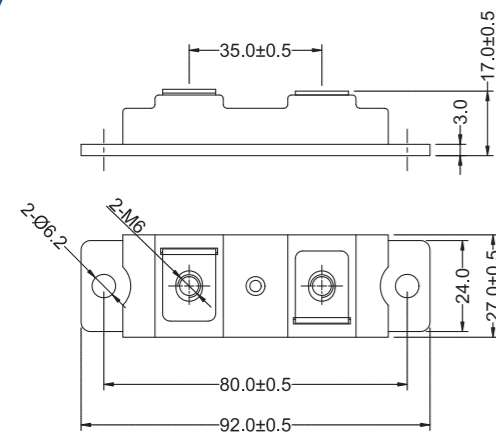
◆ NH



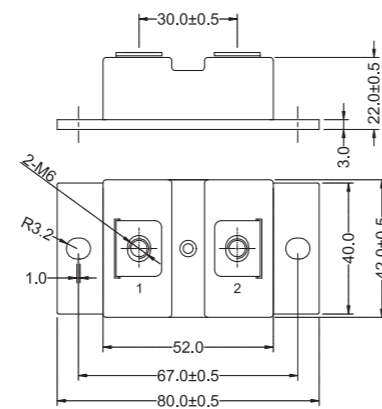
◆ KA



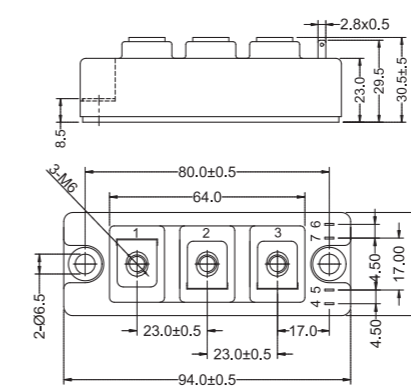
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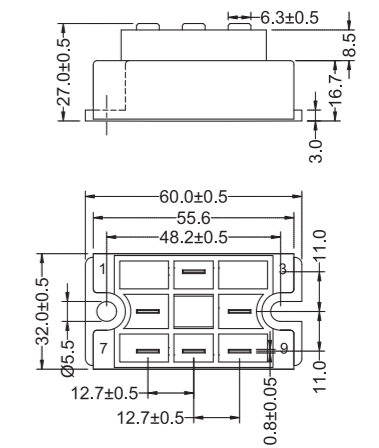
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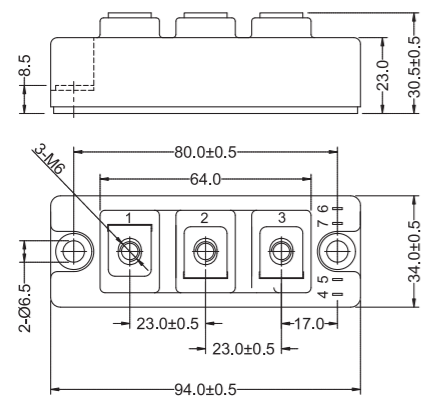
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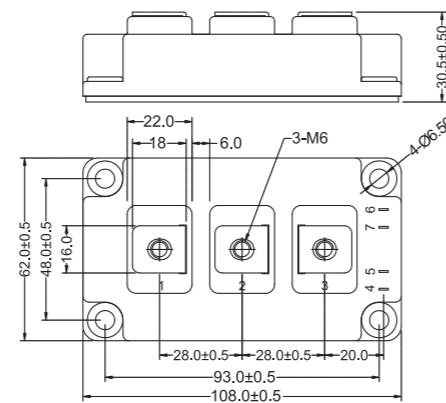
◆ KLB



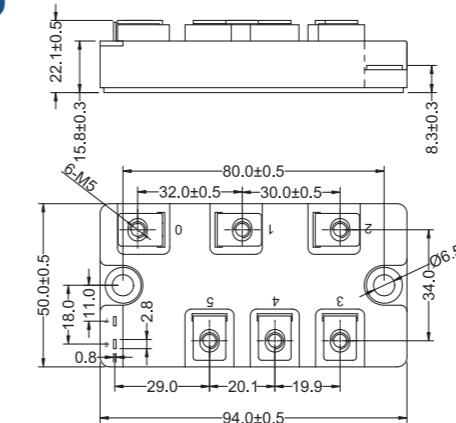
◆ FS



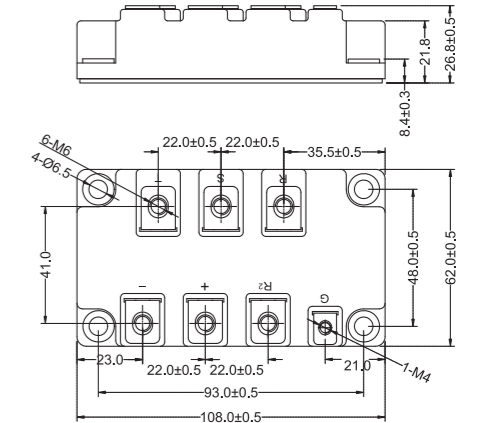
◆ FD



◆ KU

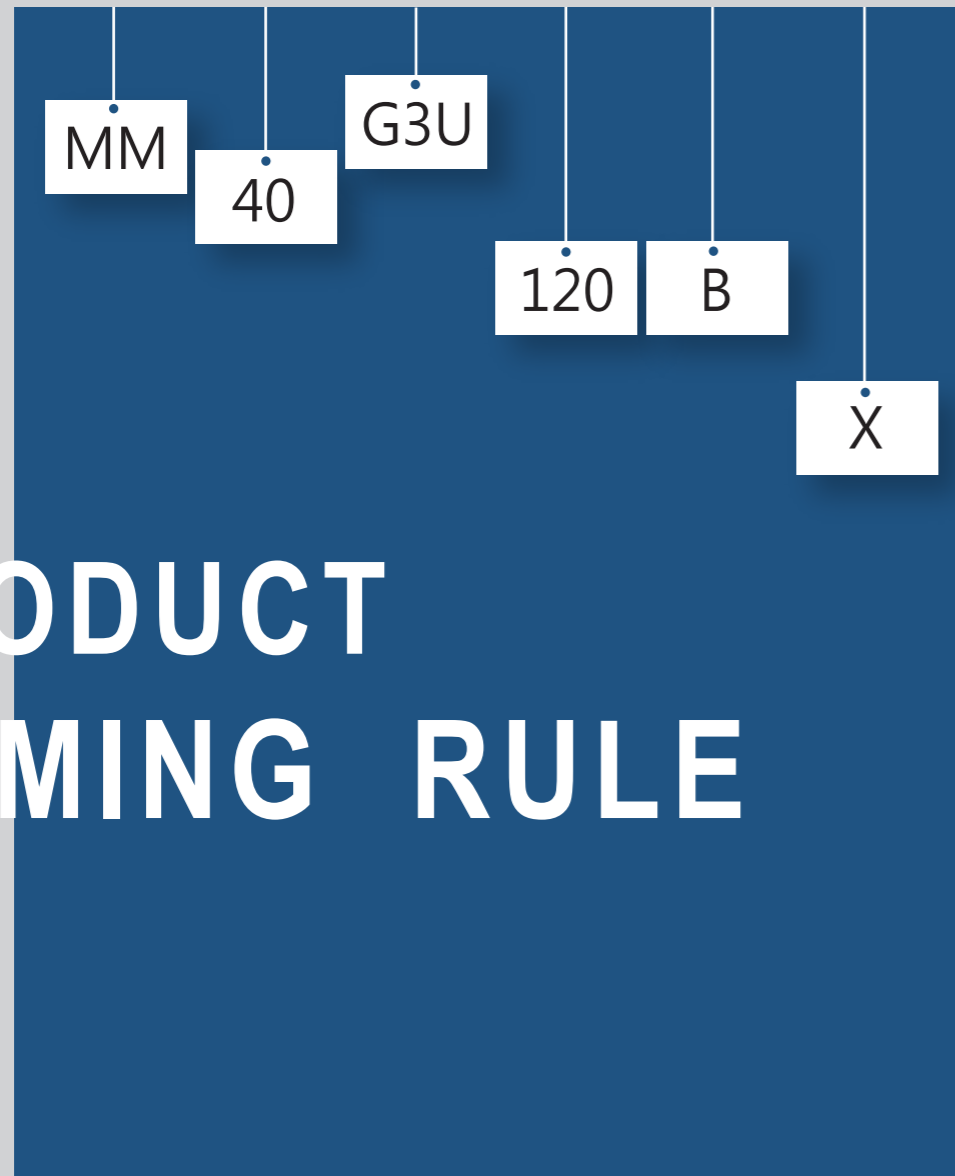


◆ KT

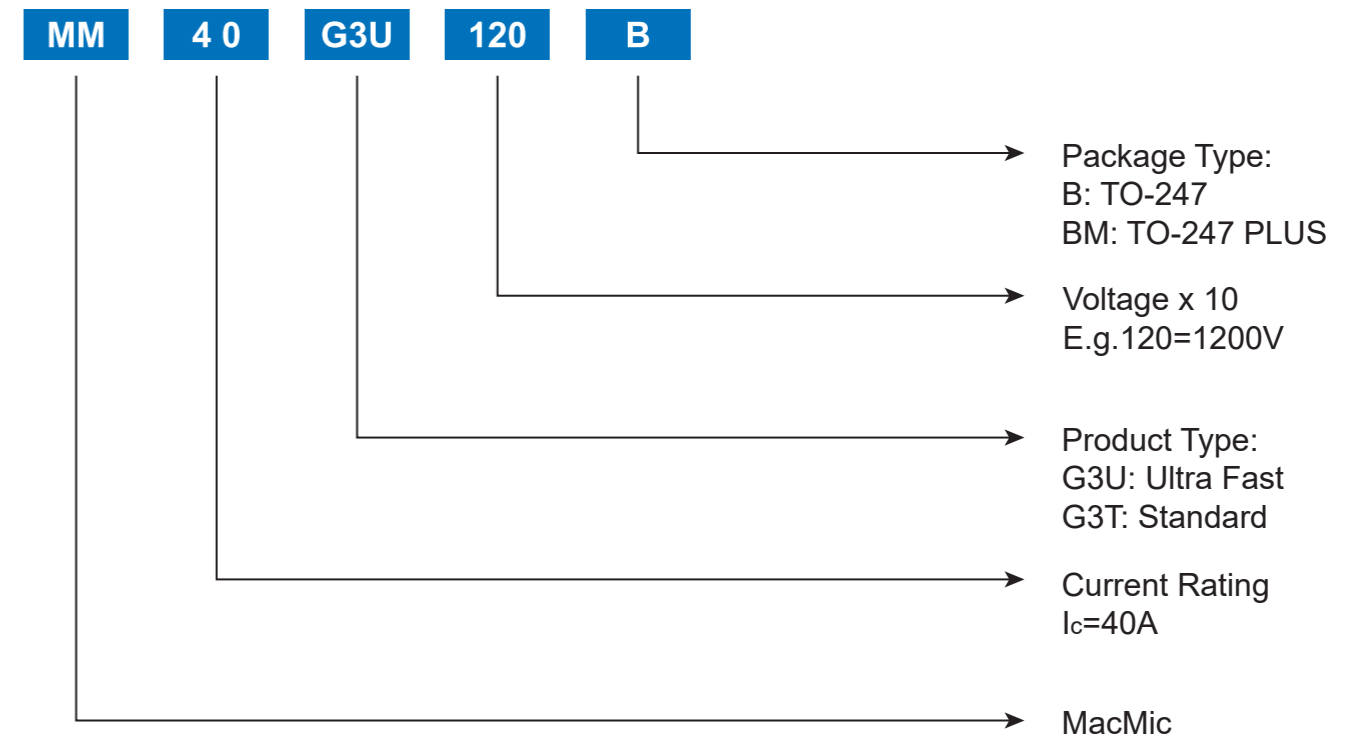


unit : mm

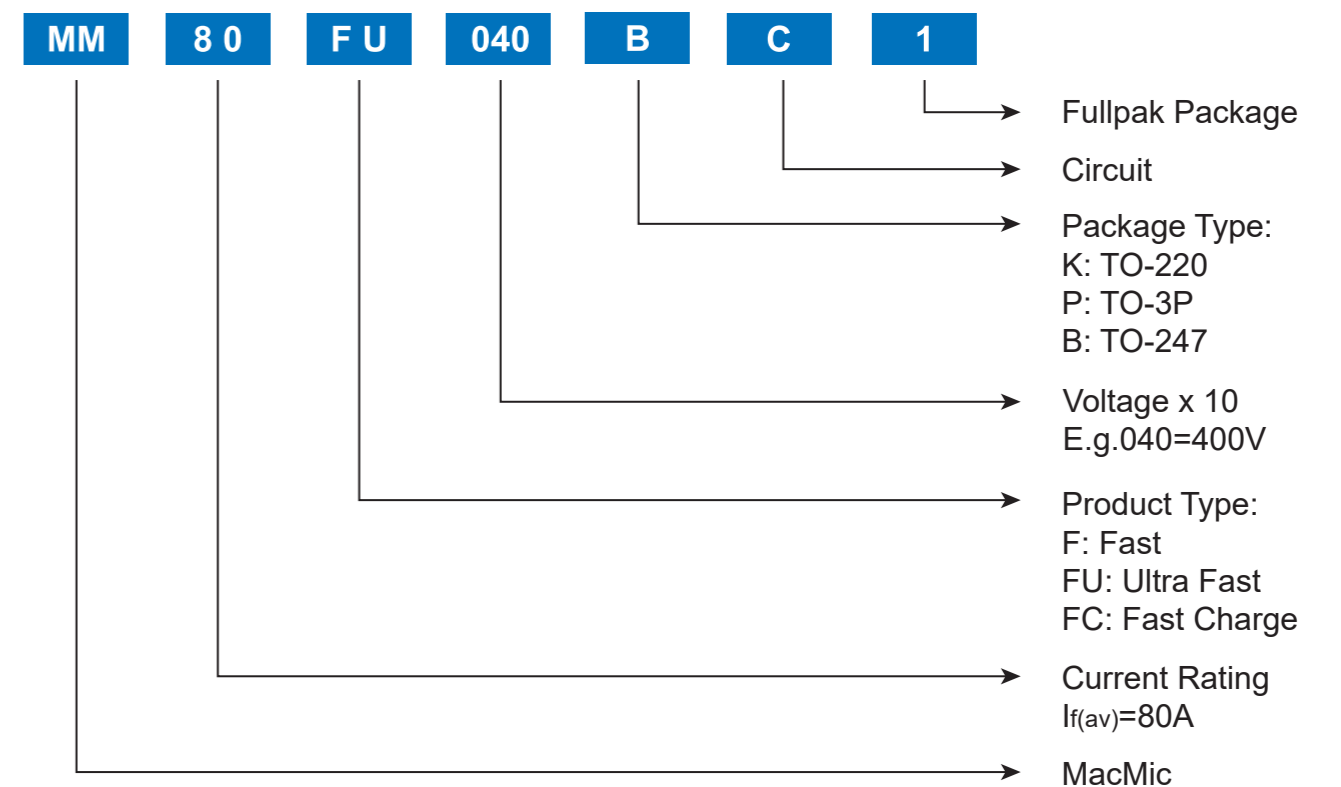
PRODUCT NAMING RULE



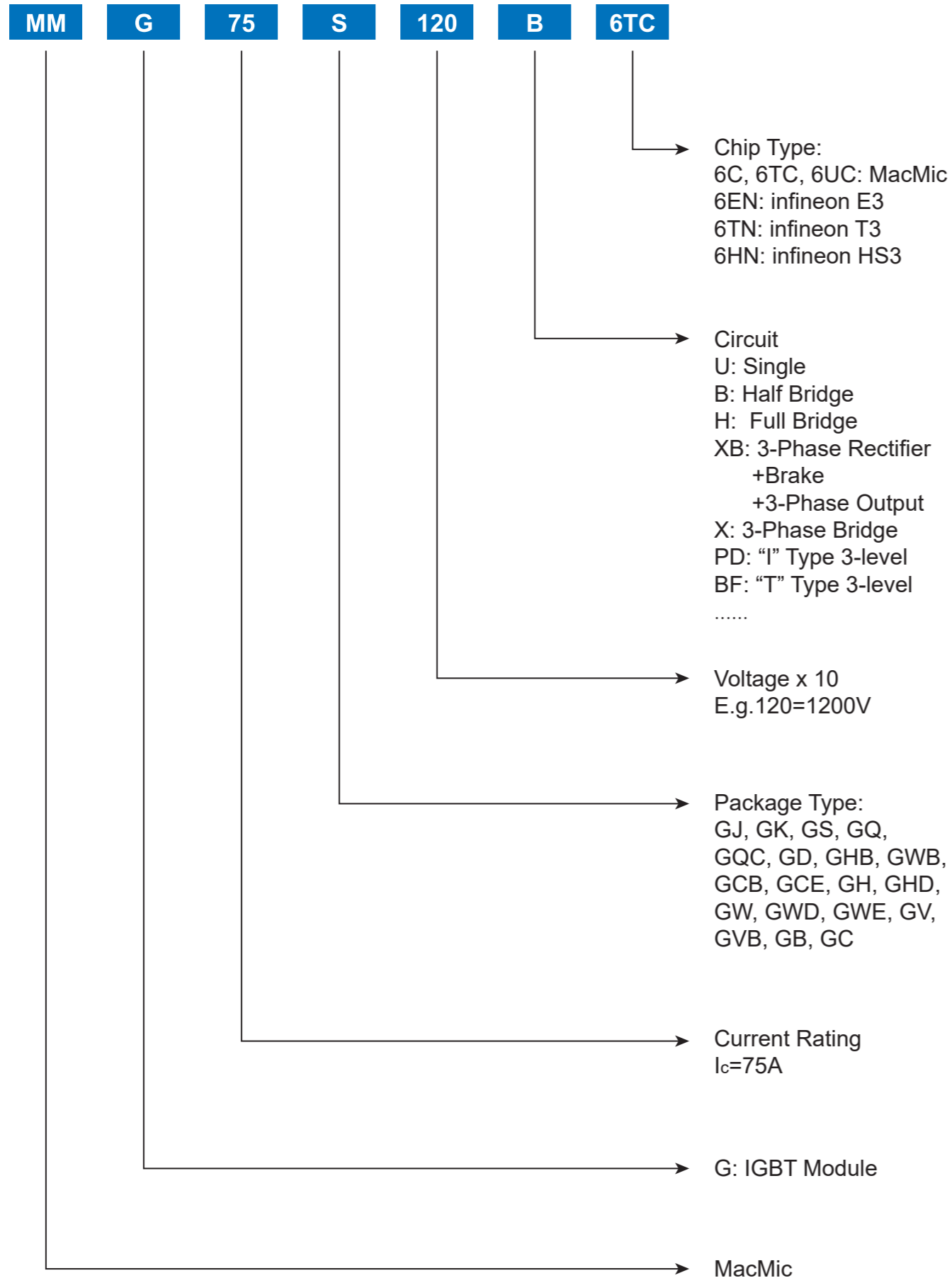
◆ IGBT DISCRETE



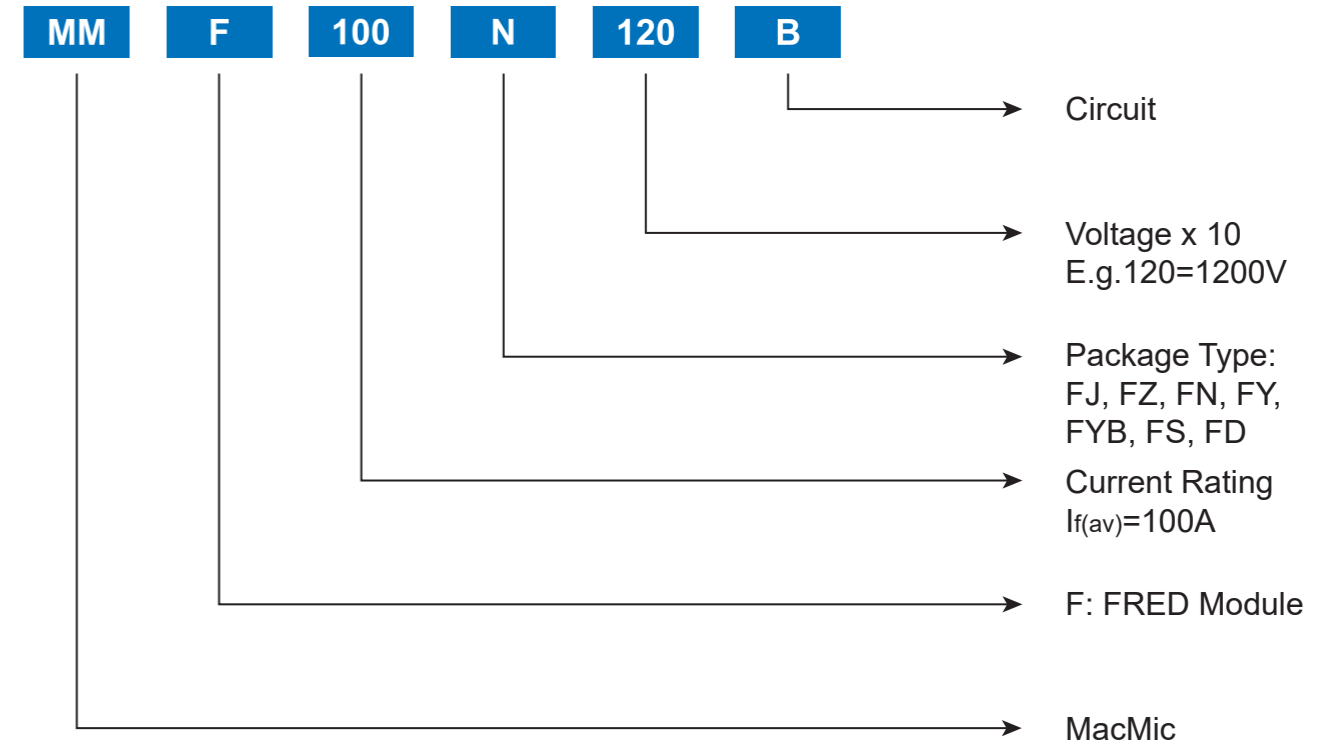
◆ FRED DISCRETE



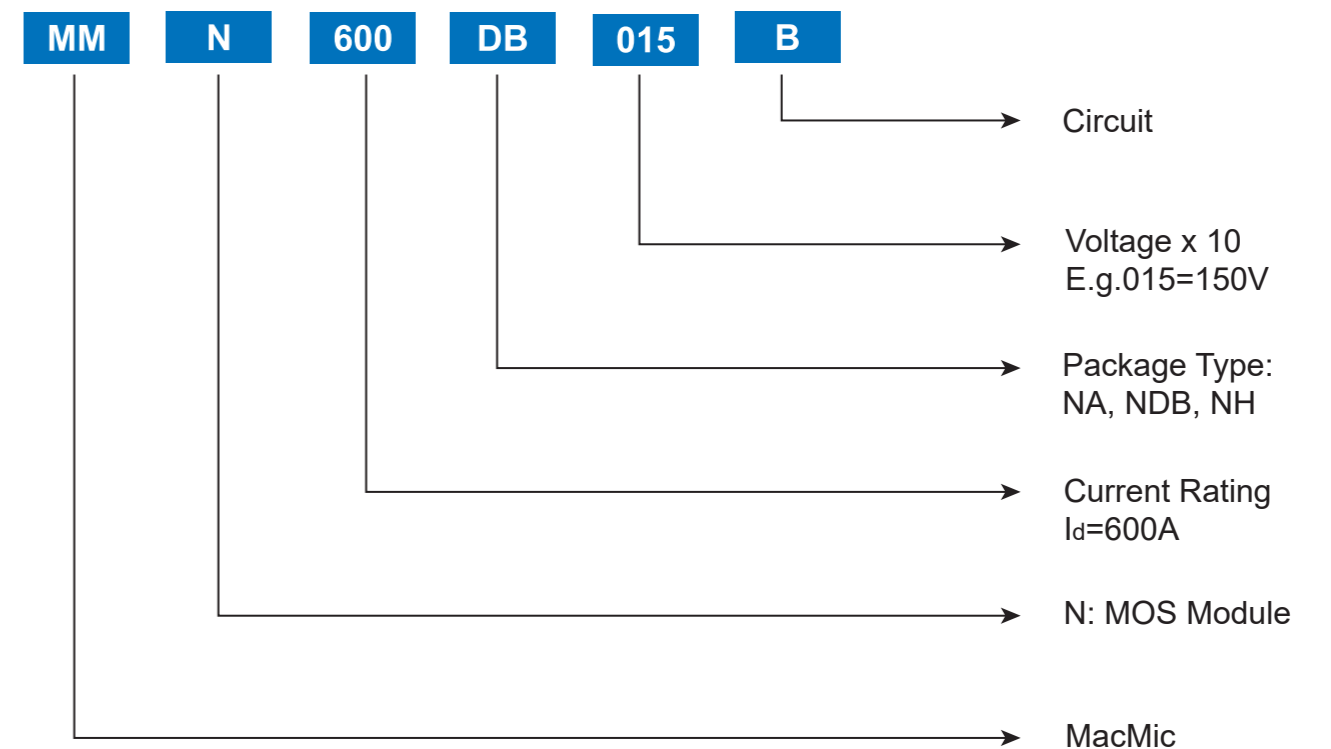
◆ IGBT MODULE



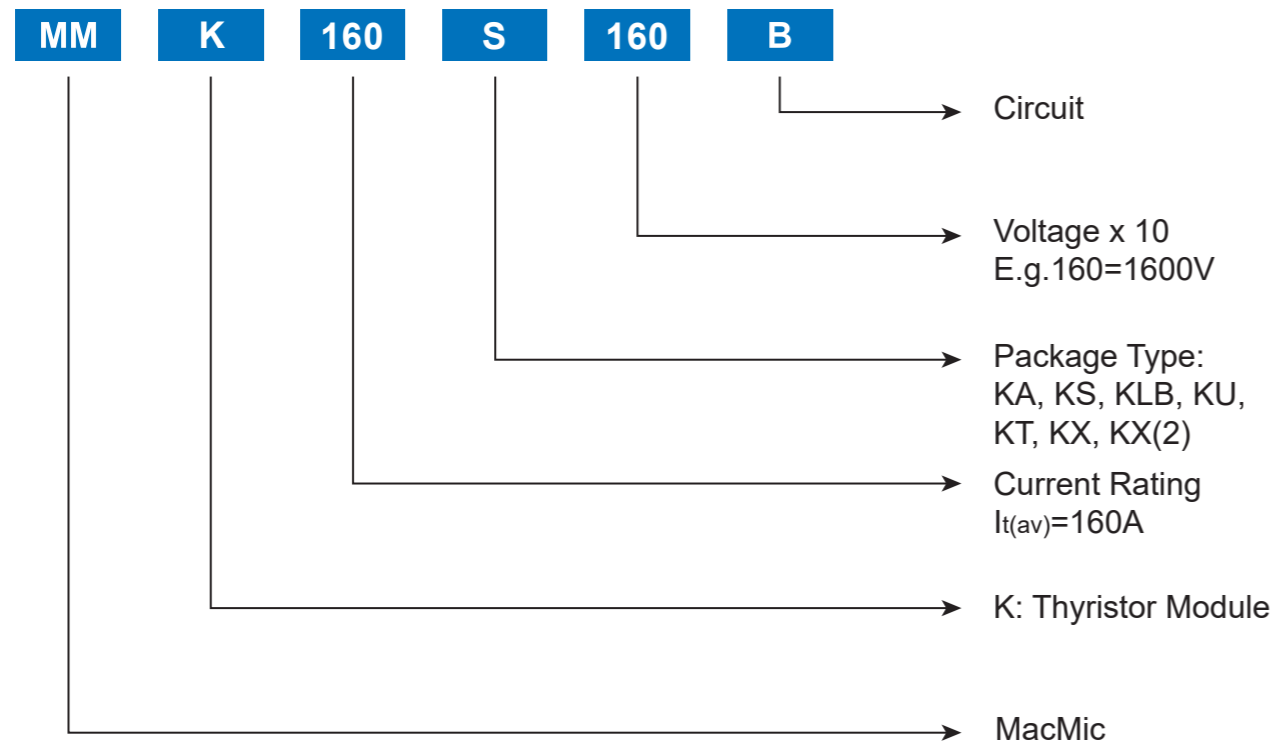
◆ FRED MODULE



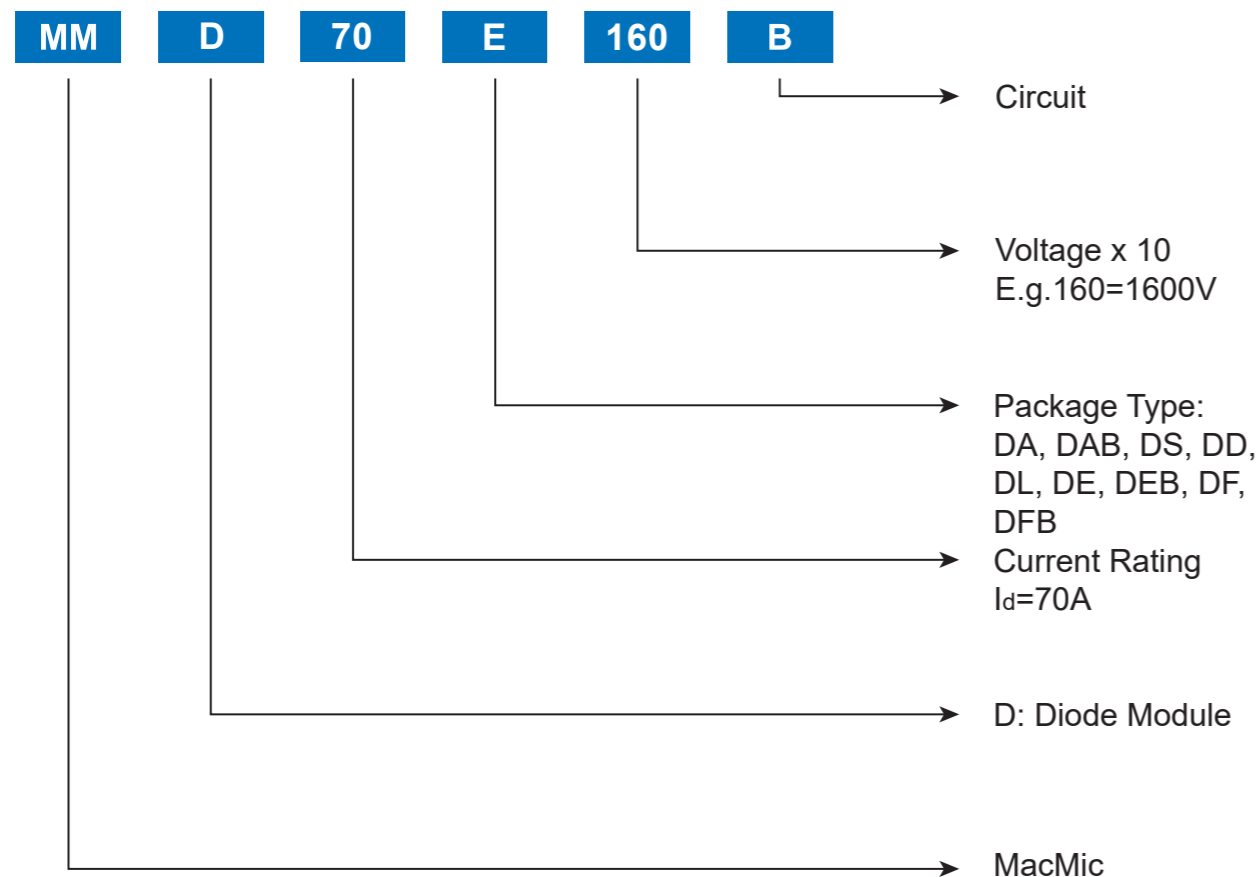
◆ MOSFET MODULE



◆ THYRISTOR (SCR) MODULE



◆ RECTIFIER MODULE



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