总　部
HEADQUARTERS

地址：江苏省常州市新北区新竹路5号（新竹路厂区）
江苏省常州市新北区华山中路18号（华山路厂区）
Add.: No.18 Huashan Road, Xinbei District, Changzhou City, Jiangsu Province, China
No.5, Xinzhu Road, Xinbei District, Changzhou City, Jiangsu Province, China
Tel: +86-519-85166088　Fax: +86-519-85162291
E-mail: sales@macmicst.com
Web: www.macmicst.com

MACMIC®

股票名称　宏微科技
股票代码　688711

专注功率半导体产品设计与制造

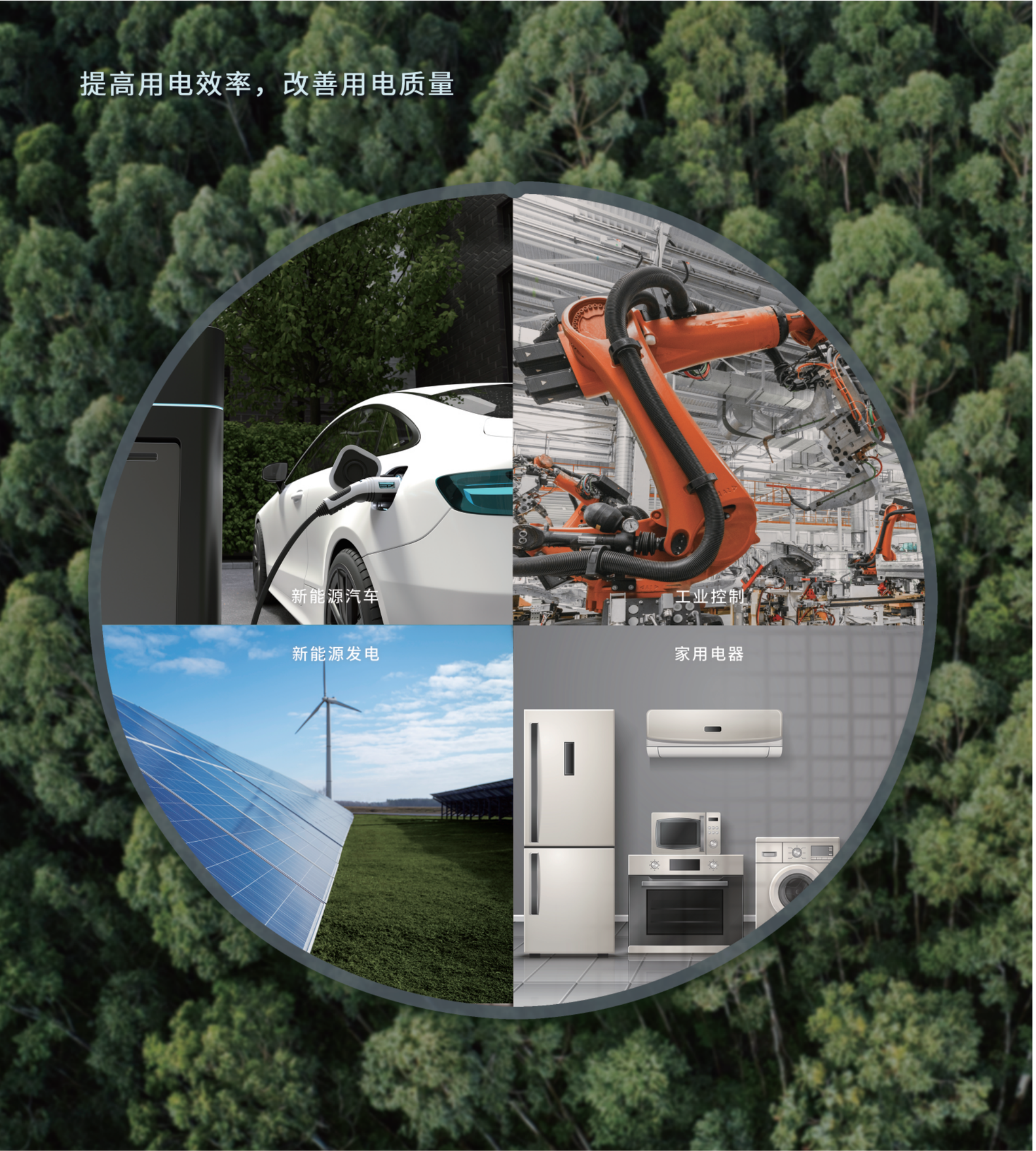
Power for the Better

2025-2026 产品手册

Product Catalogue

江苏宏微科技股份有限公司

MacMic Science & Technology Co., Ltd.



目 录

CONTENTS

企业简介

COMPANY PROFILE

江苏宏微科技股份有限公司(英文名MACMIC)成立于2006年，主营业务为功率半导体器件的设计、研发、制造及销售，主要产品包括 IGBT、MOSFET、FRED、SiC 等芯片、分立器件、模块等功率半导体器件。公司自产 IGBT、FRED 芯片技术已达国际先进、国内领先水平，打破国外垄断，填补了多项国内空白。宏微科技是国内功率半导体器件行业领军企业之一，2021年，成功登陆科创板，股票代码 688711。

MACMIC was founded in 2006. Its main business is the R&D, manufacturing and sales of power semiconductor devices. The main products of MACMIC are IGBT, MOSFET, FRED, SiC chips, discrete devices and modules. MACMIC has advanced IGBT and FRED technologies. MACMIC focuses on becoming an expert in providing power semiconductor device solutions. The company is one of the leading companies in the power semiconductor industry in China. In 2021, MACMIC was successfully listed on the Shanghai Science and Technology Innovation Board with stock ticker 688711.

业务范围 BUSINESS SCOPES

- 设计、研发、生产和销售新型电力半导体芯片、分立器件及模块，如 IGBT、FRED、SiC 芯片、分立器件、标准模块及用户定制模块 (CSPM)。
  Design, development, manufacturing, and marketing of new types of power semiconductor devices, i.e. IGBT, FRED, SiC chips and discrete devices, standard and customer-specific power modules (CSPM).

质保体系 QUALITY ASSURANCE SYSTEMS

- 坚持自主创新、科学管理和持续改进，提供更好的产品和服务，满足并超越顾客的要求和期望。

  Insisting on independent innovation, scientific management and continuous improvement, providing better products and services to meet and exceed customers' requirements and expectations.

- 整个生产过程严格实施 ISO9001 和 IATF 16949质量管理体系控制。每道工序均经过严格检测，确保产品的质量和稳定性。

  The entire production process is managed by the ISO9001 and IATF16949 quality management systems. Every process is strictly checked and tested to ensure the quality and stability of the products.

企业宗旨 COMPANY GOALS

- 自主创新、设计、研发、生产国际一流的 IGBT、FRED、SiC 分立器件及其模块，打造民族品牌；成为提供功率半导体器件解决方案的专家。

  Independent innovation, design, development and manufacturing of world-class IGBT, FRED, SiC chips, discretes and modules, to provide solutions of power semiconductor devices.

企业实力
COMPANY STRENGTH

功率模块生产线 POWER MODULE FABRICATION LINES

Fab 1（华山厂区）：6000m²先进厂房　1700m²抗静电超净模块车间
Fab 2（新竹厂区）：11200m²先进厂房　5600m²抗静电超净模块车间
Fab 3（新竹厂区）：12000m²先进厂房　7500m²抗静电超净模块车间
Fab 4（芯动能*）：14000m²先进厂房　12300m²抗静电超净模块车间

* 注：芯动能是宏微科技的子公司

Fab 1（Huashan Plant）—Plant Area: 6000m², Clean Room Area: 1700m²
Fab 2（Xinzhu Plant）—Plant Area: 11200m², Clean Room Area: 5600m²
Fab 3（Xinzhu Plant）—Plant Area: 12000m², Clean Room Area: 7500m²
Fab 4（Core Energy*）—Plant Area: 14000m², Clean Room Area: 12300m²

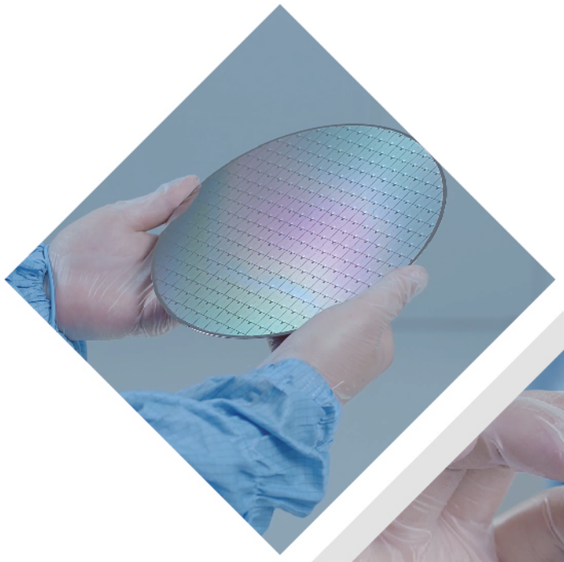
* Note: Core Energy is a subsidiary of MacMic.

特性分析实验室 CHARACTERISTIC ANALYSIS LABORATORY

功率二极管反向恢复测试仪	Diode Reverse Recovery Tester
功率 IGBT 静态测试仪	IGBT Static Parameter Tester
功率 IGBT 动态测试仪	IGBT Switching Parameter Tester
IGBT 栅电荷测试仪	IGBT Charge Tester
IGBT 短路能力测试仪	IGBT Short Circuit Tester
高压静态参数测试仪	HV Static Parameter Tester
UIS 测试仪	UIS Tester
浪涌电流测试仪	Surge Current Tester
ESD测试仪	Electrostatic Discharge Tester
……	……

可靠性实验室 RELIABILITY LABORATORY

高温反偏 (HTRB) 测试台	High Temperature Reverse Bias Tester
高温栅偏 (HTGB) 测试台	High Temperature Gate Bias Tester
功率循环 (PC) 测试台	Power Cycle Tester
高低温循环 (TC) 测试台	High / Low Temperature Cycle Tester
85-85 (恒温恒湿) 测试台	85 / 85 Temperature / Humidity Tester
高温高湿高压反向偏置 (HV-H³TRB) 测试台	High Humidity High Temperature Reverse Bias Tester
高温存储 (HTS) 测试台	High Temperature Storage Life Tester
低温存储 (LTS) 测试台	Low Temperature Storage Life Tester
冷热冲击 (TS) 试验箱	Thermal Shock Tester
盐雾试验台	Salt Spray Evaluation Tester
振动 (VVF) 试验台	Vibration Evaluation Test
机械冲击 (MS) 试验台	Mechanical Shock Tester
高加速应力 (HAST) 测试台	Highly Accelerated Stress Tester



宏图之志　成于细微

失效分析实验室 FAILURE ANALYSIS LABORATORY

数码显微镜	Digital Microscope
超声扫描仪	Scanning Acoustic Microscope
扫描电子显微镜	Scanning Electron Microscope (SEM)
热点分析仪	Thermal EMMI
激光开封机	Laser Decap
自动切割机	Automatic Cutting Machine
自动研磨机	Automatic Grinder and Polisher

IGBT 模块
IGBT MODULES

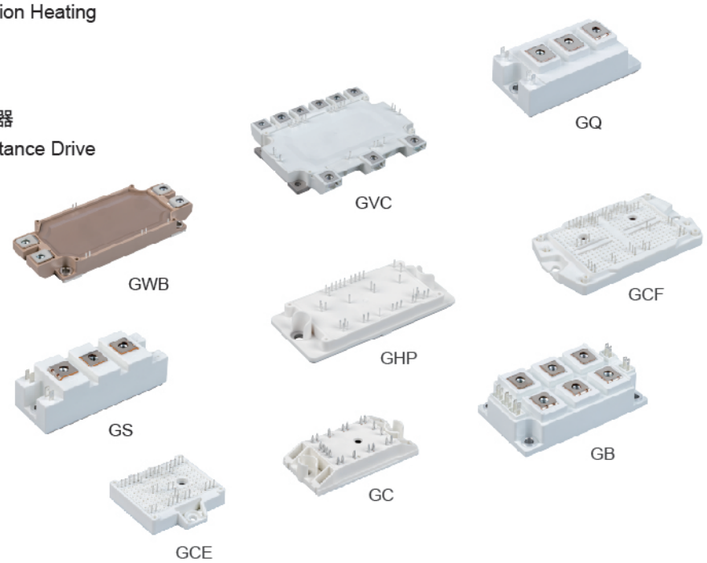
产品范围 Ranges
- 600-1700V / 10-950A

封装 Packages
- GJ, GS, GQ, GD, GK, GQC, GWJ, GCB, GCE, GH, GHD, GW, GWD, GHB, GWB, GHC, GHP, GCF, GB, GC, GV, GVB, GVC, GVD, GVE

电路结构 Circuit Configurations
- 单单元电路
  Single Circuit
- 半桥电路、全桥电路、三相桥电路
  Half-Bridge Circuit, Full-Bridge Circuit, Three Phase Bridge Circuit
- 斩波电路、共发射极电路
  Chopping Circuit, Common-Emitter Circuit
- 三电平电路
  Three-Level Circuit

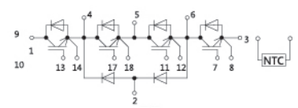
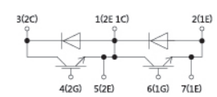
特性 Features
- 开关速度快
  Fast Switching Speed
- 导通损耗低
  Low Conduction Loss
- 软关断特性
  Soft Turn-Off Characteristic
- 短路承受能力强
  High Short Circuit Capability

应用 Applications
- 逆变电焊机、切割机
  Welding Machine, Cutting Machine
- 电镀电源、感应加热
  Plating Power Supply, Induction Heating
- UPS、变频器、斩波调速
  UPS, Inverter, Chopper
- 工业伺服、开关磁阻电机驱动器
  Servo Drive, Switched Reluctance Drive
- 光伏逆变器、风电变流器
  Solar Inverter, Wind Power
- 电动汽车
  Electric Vehicle



◆ 600-650V IGBT 模块 600-650V IGBT MODULES

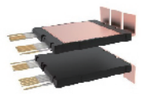
Tc=25°C unless otherwise noted

Circuit	Part Number	V_{CES} min. (V)	I_C Tc=65-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=125°C (mJ)	R_{thJC} max. (K/W)	Package Outline
	M3i							
 PD	MMG150B065PD6TC	650	150	1.55	441	4.90	0.34	GB
	MMG200B065PD6TC	650	200	1.55	600	5.70	0.25	GB
	MMG300B065PD6TC	650	300	1.55	882	11.20	0.17	GB
	MMG100CE065PD6TC	650	100	1.55	300	2.40	0.45	GCE
	MMG75S060B6TC	600	75	1.55	250	2.15	0.60	GS
	MMG100S060B6TC	600	100	1.55	330	2.15	0.45	GS
 B	MMG150S060B6TC	600	150	1.65	441	5.00	0.34	GS
	MMG200S060B6TC	600	200	1.55	600	5.70	0.25	GS
	MMG300Q060B6TC	600	300	1.55	882	10.70	0.17	GQ
	MMG300D060B6TC	600	300	1.55	882	10.70	0.17	GD
	MMG400D060B6TC	600	400	1.55	1200	12.60	0.125	GD
	M5i							
 B	MMG200CE065PD6T5	650	200	1.50	468	6.03	0.32	GCE
	M6i							
	MMG150CE065PD6T6	650	150	1.40	335	5.00	0.40	GCE


GWB

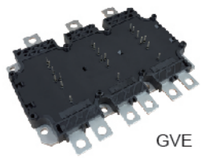

GV

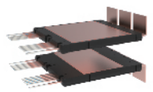

GVB


SSC


GVD

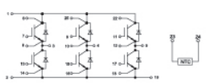
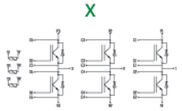
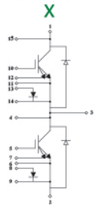
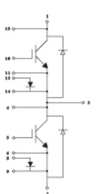

GVC


GVE

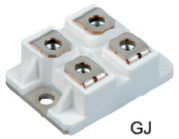

DSC

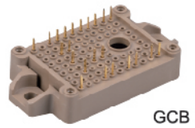
750V IGBT 模块 750V IGBT MODULES

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{CES} min. (V)	I_C Tc=65-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=125°C (mJ)	R_{thJC} max. (K/W)	Package Outline
 X	MMG280VD075X6T7	750	280	1.38	595	15.5	0.252	GVD
	MMG400VD075X6TC-12	750	400	1.40	1027	24.0	0.146	GVD
 X	MMG400VB075X6TC	750	400	1.21	1071	21.7	0.107	GVB
	MMG400VC075X6TC	750	400	1.21	1070	22.3	0.14	GVC
	MMG600V075X6T7	750	600	1.10	937	20.0	0.16	GV
	MMG820V075X6T7	750	820	1.10	1640	31.5	0.12	GV
	MMG820V075X6TC	750	820	1.15	1070	20.0	0.14	GV
	MMG950V075X6T7	750	950	1.15	1800	28.2	0.10	GV
 HB	MMG500VE075X6T7	750	500	1.35	600	15.0	0.23	GVE
	MMG650VE075X6T7	750	650	1.10	950	20.0	0.16	GVE
	MMG880VE075X6T7	750	880	1.00	1300	18.0	0.14	GVE
 HB	CS095HB08C1P1-I7000 *	750	950	1.24	1127	14.03	0.133	DSC
	CS080HB08C1P1-I7000*	750	800	1.22	1136	14.0	0.132	DSC
	CS054HB08C2P1-Z7000*	750	540	1.22	418	16.7	0.358	SSC

* Note: Transfer-Molded IGBT Modules by Core Energy


GJ

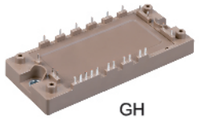

GCB


GD


GQC


GQ

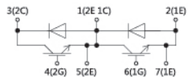
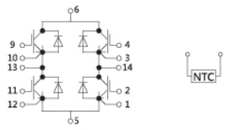
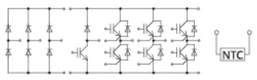
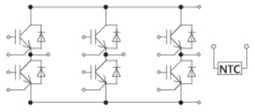

GHB


GH


GW

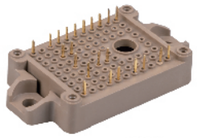
1200V IGBT 模块 1200V IGBT MODULES

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{CES} min. (V)	I_C Tc=65-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=125°C (mJ)	R_{thJC} max. (K/W)	Package Outline
	M3i							
 B	MMG50S120B6UC	1200	50	1.70	405	3.10	0.37	GS
	MMG75S120B6UC	1200	75	1.70	535	4.10	0.28	GS
	MMG100S120B6UC	1200	100	2.20	555	5.00	0.27	GS
	MMG150S120B6UC	1200	150	2.00	1000	7.30	0.15	GS
 H	MMG150D120B6UC	1200	150	1.70	937	9.60	0.16	GD
	MMG200D120B6UC	1200	200	1.90	1071	12.30	0.14	GD
	MMG300D120B6UC	1200	300	1.90	1578	23.50	0.095	GD
	MMG50QC120H6UC	1200	50	1.70	405	3.10	0.37	GQC
	MMG75QC120H6UC	1200	75	1.70	535	4.10	0.28	GQC
 XB	MMG10CB120XB6TC	1200	10	1.85	107	0.69	1.25	GCB
	MMG10CB120X6TC	1200	10	1.85	107	0.69	1.25	GCB
	MMG15CB120XB6TC	1200	15	1.85	130	1.12	1.05	GCB
 X	MMG25CE120XB6TC	1200	25	1.85	176	2.40	0.75	GCE
	MMG35CE120XB6TC	1200	35	1.85	214	3.30	0.60	GCE
	MMG25HD120XB6TC	1200	25	1.85	166	2.40	0.90	GHD


GQ

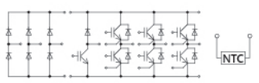
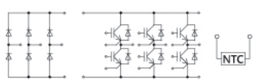
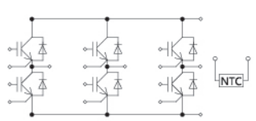
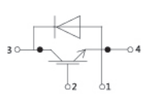
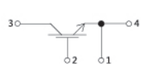

GWJ


GCB


GHE

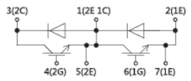
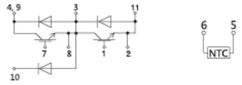
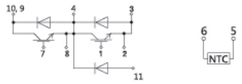
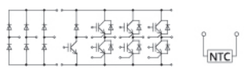
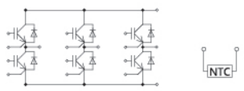
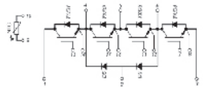
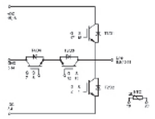
1200V IGBT 模块 1200V IGBT MODULES

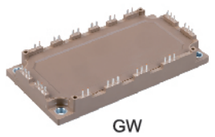
Tc=25°C unless otherwise noted

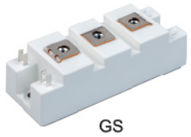
Circuit	Part Number	V_{CES} min. (V)	I_C Tc=65-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=125°C (mJ)	R_{thJC} max. (K/W)	Package Outline
 XB	MMG35HD120XB6TC	1200	35	1.85	208	3.30	0.72	GHD
	MMG35HD120XT6TC	1200	35	1.85	208	3.30	0.72	GHD
	MMG50HD120XB6TC	1200	50	1.80	278	4.20	0.54	GHD
	MMG50HD120XT6TC	1200	50	1.80	278	4.20	0.54	GHD
 XT	MMG25H120XB6TC	1200	25	1.85	166	2.40	0.90	GH
	MMG40H120XB6TC	1200	40	1.95	208	3.35	0.72	GH
	MMG50W120XB6TC	1200	50	1.85	278	4.00	0.54	GW
	MMG75W120XB6TC	1200	75	1.85	385	6.20	0.39	GW
	MMG75WD120XB6TC	1200	75	1.85	385	6.20	0.39	GWD
	MMG100WD120XB6TC	1200	100	1.70	515	9.00	0.29	GWD
 X	MMG75H120X6TC	1200	75	1.85	385	6.20	0.39	GH
	MMG75W120X6TC	1200	75	1.85	385	6.20	0.39	GW
	MMG100W120X6TC	1200	100	1.85	515	5.60	0.29	GW
	MMG150W120X6TC	1200	150	1.85	750	13.00	0.20	GW
 U	MMG75J120UZ6TC	1200	75	1.85	385	6.20	0.39	GJ
	MMG75J120U6TC	1200	75	1.85	385	6.20	0.39	GJ
 UZ	MMG100J120UZ6TC	1200	100	1.85	515	9.10	0.29	GJ
	MMG150J120UZ6TC	1200	150	1.85	750	14.40	0.20	GJ
	MMG75S120B6TC	1200	75	1.85	385	6.20	0.39	GS
 B	MMG100S120B6TC	1200	100	1.70	515	8.30	0.29	GS
	MMG150S120B6TC	1200	150	1.85	750	13.00	0.20	GS
	MMG150D120B6TC	1200	150	1.70	789	12.10	0.19	GD

1200V IGBT 模块 1200V IGBT MODULES

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{CES} min. (V)	I_C Tc=65-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=125°C (mJ)	R_{thJC} max. (K/W)	Package Outline
 B	MMG200Q120B6TC	1200	200	1.70	1071	16.50	0.14	GQ
	MMG200D120B6TC	1200	200	1.70	1071	16.50	0.14	GD
 B	MMG300D120B6TC	1200	300	1.85	1500	29.00	0.10	GD
	MMG400D120B6TC	1200	400	1.85	2000	35.00	0.75	GD
	MMG450D120B6TC	1200	450	1.85	2235	52.00	0.07	GD
 TLA	MMG300WB120B6TC	1200	300	1.80	1596	26.30	0.094	GWB
	MMG450WB120B6TC	1200	450	1.85	2305	45.00	0.065	GWB
 TLB	MMG300WB120TLA6TC	1200	300	1.70	1500	26.50	0.09	GWB
	MMG300WB120TLB6TC	1200	300	1.70	1500	26.50	0.09	GWB
	M6i							
 XB	MMG600WB120B6T6	1200	600	1.70	3750	74.50	0.40	GWB
	M7i							
 X	MMG25CB120XB6T7	1200	25	1.60	163	3.18	0.92	GCB
	MMG75HE120XB6T7_W11	1200	75	1.55	340	11.24	0.44	GHE
	MMG150WJ120XB6T7	1200	150	1.50	882	12.10	0.17	GWJ
 PD	MMG450WQ120PD6T7	1200	450	1.53	1400	13.70	0.107	GWQ
	MMG450WQ120PD6T7H	1200	450	1.53	1400	13.70	0.107	GWQ
 BF	MMG560WQ120BF6T7	1200	560	1.50	1666	18.70	0.09	GWQ
	MMG800D120B6T7	1200	800	1.50	3061	132.00	0.05	GD
	MMG800WB120B6T7	1200	800	1.80	3750	121.0	0.04	GWB


GW

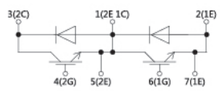
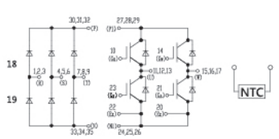

GS


GD


GWB

1700V IGBT 模块 1700V IGBT MODULES

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{CES} min. (V)	I_C Tc=65-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=125°C (mJ)	R_{thJC} max. (K/W)	Package Outline
	SPT+							
	MMG75S170B	1700	75	2.40	535	18.5	0.28	GS
	MMG100S170B	1700	100	2.30	682	24	0.22	GS
 B	MMG100D170B	1700	100	2.30	789	25	0.19	GD
	MMG150D170B	1700	150	2.30	1071	41	0.14	GD
	MMG200D170B	1700	200	2.30	1363	56	0.11	GD
	MMG300D170B	1700	300	2.30	1875	93	0.08	GD
	MMG300WB170B	1700	300	2.65	2000	94	0.075	GWB
	MMG450WB170B	1700	450	2.70	2700	150	0.055	GWB
	MMG600WB170B	1700	600	2.70	3750	215	0.04	GWB
	M3i							
 B	MMG75S170B6TC	1700	75	2.15	555	17	0.27	GS
	MMG100S170B6TC	1700	100	2.15	681	22.5	0.22	GS
	MMG150D170B6TC	1700	150	2.15	1071	34	0.14	GD
	MMG200D170B6TC	1700	200	2.20	1500	52	0.10	GD
	MMG300D170B6TC	1700	300	2.15	1760	90	0.085	GD
	MMG300WB170B6TC	1700	300	2.15	1688	95	0.09	GWB
 HX	MMG450WB170B6TC	1700	450	2.05	2500	160	0.06	GWB
	MMG75W170HX6TC	1700	75	2.15	500	17	0.30	GW
	MMG100W170HX6TC	1700	100	2.20	750	25	0.20	GW
	MMG150W170HX6TC	1700	150	2.20	880	36	0.17	GW
	M6i							
	MMG600WB170B6T6	1700	600	1.70	3486	223	0.039	GWB

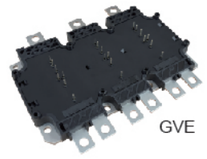

GWB


GV


GVB

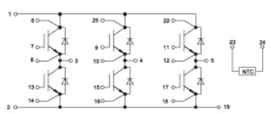
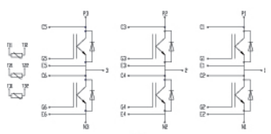

GVD

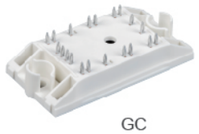

GVC


GVE

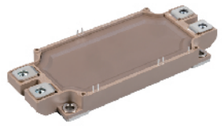
电动汽车IGBT模块 IGBT MODULES FOR ELECTRIC VEHICLES

Tc=25°C unless otherwise noted

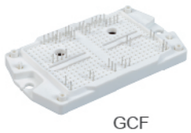
Circuit	Part Number	V_{CES} min. (V)	I_C Tc=65-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=125°C (mJ)	R_{thJC} max. (K/W)	Package Outline
 B	MMG450WB120B6TC	1200	450	1.85	2305	45.0	0.065	GWB
	MMG600WB120B6T6	1200	600	1.70	2941	74.5	0.051	GWB
	MMG800WB120B6T7	1200	800	1.80	3750	121.0	0.04	GWB
	MMG280VD075X6T7	750	280	1.38	595	15.5	0.252	GVD
	MMG400VD075X6TC-12	750	400	1.40	1027	24.0	0.146	GVD
	MMG400VB075X6TC	750	400	1.21	1071	21.7	0.107	GVB
 X	MMG400VC075X6TC	750	400	1.21	1070	22.3	0.14	GVC
	MMG600V075X6T7	750	600	1.10	937	20.0	0.16	GV
	MMG820V075X6T7	750	820	1.10	1640	31.5	0.12	GV
	MMG820V075X6TC	750	820	1.15	1070	20.0	0.14	GV
	MMG950V075X6T7	750	950	1.15	1800	28.2	0.10	GV
	MMG600V120X6RS	1200	600	1.60	1500	51.0	0.10	GV
 X	MMG500VE075X6T7	750	500	1.35	600	15.0	0.23	GVE
	MMG650VE075X6T7	750	650	1.10	950	20.0	0.16	GVE
	MMG880VE075X6T7	750	880	1.00	1300	18.0	0.14	GVE


GC


GB


GWB


GWQ


GCF

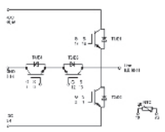
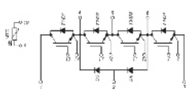
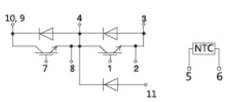
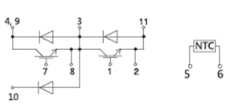

GHP


GCE


GD

◆ 光储 IGBT 模块 IGBT MODULES FOR PV

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{CES} min. (V)	I_C Tc=65-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=125°C (mJ)	R_{thJC} max. (K/W)	Package Outline
 BF	MMG80C120BF_Y1	1200	80	1.90	300	1.4	0.50	GC
	MMG150B065PD6TC	650	150	1.55	411	4.9	0.34	GB
	MMG450WB120B6TC	1200	450	1.85	2305	45.0	0.065	GWB
 PD	MMG600WB120B6T6	1200	600	1.70	2941	74.5	0.051	GWB
	MMG800WB120B6T6	1200	800	1.80	3750	121.0	0.04	GWB
 B	MMG300WB120TLB6TC	1200	300	1.70	1380	37.0	0.09	GWB
	MMG300WB120TLA6TC	1200	300	1.70	1380	37.0	0.09	GWB
	MMG150CE065PD6T6	650	150	1.40	335	5.0	0.40	GCE
 TLB	MMG200CE065PD6T5	650	200	1.50	468	5.2	0.32	GCE
	MMG800D120B6T7	1200	800	1.50	3061	132.0	0.049	GD
 TLA	MMG450WQ120PD6T7	1200	450	1.53	1400	14.1	0.107	GWQ
	MMG560WQ120BF6T7	1200	560	1.50	1666	15.7	0.09	GWQ
	MMG600WQ100PD6T7	1000	600	1.80	1540	11.8	0.097	GWQ

IGBT 分立器件

IGBT DISCRETES

产品范围 Ranges

- 650-1200V / 10-140A

封装 Packages

- TO-247-3L, TO-247-4L, TO-247 Plus-3L, TO-247 Plus-4L, TO-247 LP-4L, TOLT

应用 Applications

- 电焊机，电磁炉，变频器
  Welding Machine, Induction Cooker, Inverter
- 开关电源、UPS、光伏逆变器、储能
  Switching Mode Power Supply, UPS, PV Inverter, Energy Storage

特性 Features

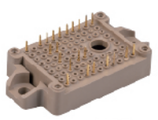
- 开关速度快
  Fast Switching Speed
- 短路承受能力强
  High Short Circuit Capability

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{CES} min. (V)	I_C Tc=80-110°C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} Tj=150°C (mJ)	R_{thJC} max. (K/W)	Package Outline
 TO-247-3L 	MM40G3U65B	650	40	1.55	230	0.70	0.65	TO-247-3L
	MM50GBU65B	650	50	1.50	375	1.90	0.42	TO-247-3L
	MM60G3U65B	650	60	1.55	300	1.14	0.50	TO-247-3L
	MM75G3T65B	650	75	1.45	535	3.05	0.24	TO-247-3L
	MM75G5T65B	650	75	1.50	385	2.60	0.39	TO-247-3L
	MM75G5U65BX	650	75	1.65	385	1.20	0.39	TO-247-3L
	MM75G5U65BKX	650	75	1.65	385	1.40	0.39	TO-247-4L
	MM100G5T65B	650	100	1.50	517	1.63	0.29	TO-247-3L
 TO-247 Plus-3L	MM120G3T65BM	650	120	1.60	750	5.10	0.20	TO-247 Plus-3L
	MM10G3T120B	1200	10	1.85	125	0.69	1.20	TO-247-3L
	MM15G3T120B	1200	15	1.85	200	1.12	0.75	TO-247-3L
	MM25G3T120B	1200	25	1.80	385	2.55	0.39	TO-247-3L
 TO-247 Plus-4L	MM15G3T120T	1200	15	1.85	300	1.50	0.50	TOLT
	MM25G7T120T	1200	15	1.55	250	2.65	0.60	TOLT
	MM25G3U120BX	1200	25	2.15	326	1.05	0.46	TO-247-3L
	MM40G3T120B	1200	40	1.90	395	4.70	0.35	TO-247-3L
	MM40G3U120BX	1200	40	1.90	455	2.20	0.33	TO-247-3L
 TO-247 LP-4L	MM40G5U120BX	1200	40	1.70	395	1.90	0.38	TO-247-3L
	MM40G7U120B	1200	40	1.50	441	1.40	0.34	TO-247-3L
	MM40G7U120BK	1200	40	1.50	441	1.40	0.34	TO-247 LP-4L
 TO-247-4L 	MM50G3T120BM	1200	50	1.80	535	4.30	0.28	TO-247 Plus-3L
	MM50G3U120BMX	1200	50	1.95	535	2.80	0.28	TO-247 Plus-3L
	MM75G5U120BM	1200	75	1.70	535	3.80	0.28	TO-247 Plus-3L
	MM75G5U120BKM	1200	75	1.70	535	3.70	0.28	TO-247 Plus-4L
 TOLT	MM140G7U120BKM	1200	140	1.60	1111	8.00	0.14	TO-247 Plus-4L

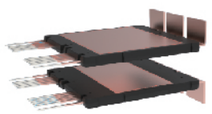
SiC 模块
SiC MODULES

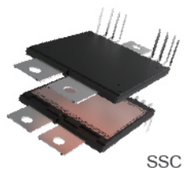

NV

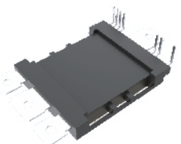

NCB

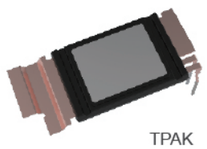

SJ / NJ

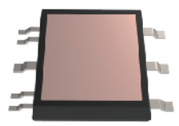

NS


DSC


SSC


SDC


TPAK


SMPD

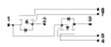
◆ SiC SBD 模块 SiC SBD MODULES

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{CES} (V)	I_C (A)	$V_{CE(sat)}$ (V)	R_{thJC} (K/W)	T_{jmax}	Package Outline
	MMS2X60J120D	1200	2x60	1.40	0.11	175°C	SJ
	MMS2X100J065D	1200	2x100	1.36	0.24	175°C	SJ

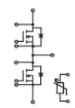
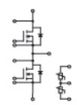
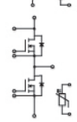
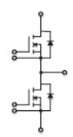
◆ SiC MOSFET 模块 SiC MOSFET MODULES

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{DSS} (V)	I_D (A)	$R_{DS(on)}$ (mΩ)	R_{thJF} /R_{thJC} (K/W)	T_{jmax}	Package Outline
 BA	MMN7CB120BA6BS	1200	110	7	0.32	150°C	NCB
 X	MMN01V120X6BS	1200	540	1.57	0.105	175°C	NV
	MMN02V120X6BS	1200	439	2.12	0.118	175°C	NV
 U	MMN13J120U6TN	1200	107	13.4	0.565	175°C	NJ
 B	MMN14S120B6TN	1200	140	13.8	0.467	175°C	NS

◆ 塑封 SiC 模块 TRANSFER-MOLDED SiC MODULES

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{DSS} (V)	I_D (A)	$R_{DS(on)}$ (mΩ)	R_{thJF} /R_{thJC} (K/W)	T_{jmax}	Package Outline
	CC002HB12C1P1-R4000	1200	800	1.6	0.016	175℃	DSC
	CC002HB12C5C1-E3000	1200	400	2.2	0.025	175℃	SSC
	CC002HB12C3P1-L2000	1200	800	1.6	0.088	175℃	SDC
	CC008ST12F1C1-F1000	1200	200	8	0.093	175℃	Tpak
	CC010ST12F1C1-F1000	1200	120	10	0.111	175℃	Tpak
	CC035HB12S1C1-F1000	1200	40	35	0.27	175℃	SMPD
	CC060HB12S1C1-F1000	1200	15	60	0.50	175℃	SMPD
	CC018HB12S1C1-F1000	1200	90	18	0.14	175℃	SMPD

Note: Transfer-Molded SiC Modules by Core Energy

SiC 分立器件
SiC DISCRETES


TO-247-2L


TO-247-4L

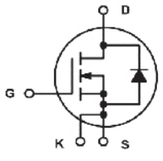
SiC SBD 分立器件 SiC SBD DISCRETES

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{RRM} (V)	$I_{F(AV)}$ (A)	V_F (V)	I_{FSM} (A)	T_{jmax}	Qualification	Package Outline
	MM20S120B	1200	20	1.40	180	175°C	Industrial	TO-247-2L
	MM20SH120B	1200	20	1.45	180	175°C	Industrial	TO-247-2L
	MM40S120B	1200	40	1.40	360	175°C	Industrial	TO-247-2L
	MM40SH120B	1200	40	1.45	360	175°C	Industrial	TO-247-2L

SiC MOSFET 分立器件 SiC MOSFET DISCRETES

Tc=25°C unless otherwise noted



Circuit	Part Number	V_{DSS} (V)	I_D (A)	$R_{DS(on)}$ (mΩ)	Q_g (nC)	T_{jmax}	Qualification	Package Outline
	MM11NAS075KZ	750	138	11	217	175°C	Industrial	TO-247-4L
	MM25NAS075KZ	750	74	25	112	175°C	Industrial	TO-247-4L
	MM13N120BK	1200	130	13	184	175°C	Industrial	TO-247-4L
	MM15NAS120KZ	1200	126	18	222	175°C	Industrial	TO-247-4L
	MM20NAS120KZ	1200	88	20	175	175°C	Industrial	TO-247-4L
	MM30NAS120KZ	1200	64	30	117	175°C	Industrial	TO-247-4L
	MM39NAS120KZ	1200	50	39	93	175°C	Industrial	TO-247-4L
	MM40N120KZ	1200	50	40	120	175°C	Industrial	TO-247-4L

FRED 模块
FRED MODULES

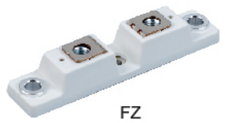
产品范围 Ranges
- 200-1700V/ 60-600A

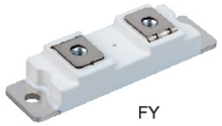
电路结构 Circuit Configuration
- 非绝缘式共阴电路
  Non-insulated Common-Cathode Circuit
- 绝缘式共阴电路
  Insulated Common-Cathode Circuit
- 绝缘式共阳电路
  Insulated Common-Anode Circuit
- 绝缘式半桥电路
  Insulated Half Bridge Circuit

应用 Applications
- 电焊机
  Welding Machine
- 开关电源，UPS
  SMPS, UPS
- 变频器、斩波调速
  Inverter, Chopper
- 功率因数校正装置
  PFC

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

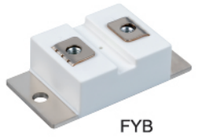
特性 Features
- 恢复时间快
  Short Recovery Time
- 软恢复特性
  Soft-Recovery Characteristics
- 反向恢复电荷低
  Low Reverse Recovery Charge
- 正向压降低
  Low Forward Voltage
- 雪崩能量高
  High Avalanche Energy
- 无机械应力封装
  Stressless Package


FZ


FY


FN


FJ


FYB


FS


FD

FZ

FY

FYB

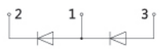
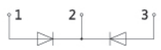
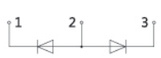
FS

FD

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{RRM} (V)	$I_{F(AV)}$ d=0.5 Tc=110°C (A)	I_{FSM} 10ms T_J=45°C (A)	V_{FM} @ I_{FM} T_J=25°C (V)	V_{FM} @ I_{FM} T_J=25°C (A)	t_{rr} T_J=25°C (ns)	R_{thJC} (K/W)	Package Outline
 DK1 (Non-insulated)	MMF400Z020DK1	200	2×200	1800	0.95	200	90	0.20	FZ
	MMF200ZB040DK1	400	2×100	1250	1.00	100	70	0.20	FZ
	MMF200ZB040DK1C	400	2×100	1000	1.10	100	75	0.22	FZ
	MMF200ZB040DK1D	400	2×100	700	1.25	100	49	0.37	FZ
	MMF800Y020DK1	200	2×400	3000	1.00	400	165	0.08	FY
	MMF200Y040DK1	400	2×100	1250	1.00	100	70	0.10	FY
	MMF300Y040DK1	400	2×150	1900	1.20	150	65	0.10	FY
	MMF300Y040DK1B	400	2×150	1900	1.20	150	65	0.10	FY
	MMF400Y040DK1	400	2×200	2550	1.20	200	75	0.08	FY
	MMF400Y040DK1B	400	2×200	2550	1.20	200	75	0.08	FY
	MMF200Y060DK1	600	2×100	1200	1.20	100	91	0.20	FY
	MMF300Y060DK1	600	2×150	2500	1.20	150	100	0.08	FY
 U	MMF300YB050U	500	300	3800	1.20	300	160	0.11	FYB
	MMF300YB070U	700	300	3800	1.38	300	121	0.12	FYB
	MMF600S060U	600	600	4800	1.15	600	175	0.075	FS
	MMF300S120U	1200	300	2500	2.75	300	150	0.14	FS
 U	MMF400S120U	1200	400	3200	3.00	400	180	0.11	FS
	MMF600S120U	1200	600	4800	2.80	600	200	0.10	FS
	MMF400D120U	1200	400	3600	2.10	400	190	0.085	FD

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{RRM} (V)	$I_{F(AV)}$ d=0.5 Tc=110°C (A)	I_{FSM} 10ms T_J=45°C (A)	V_{FM} @ I_{FM} T_J=25°C (V)	V_{FM} @ I_{FM} T_J=25°C (A)	t_{rr} T_J=25°C (ns)	R_{thJC} (K/W)	Package Outline
 B	MMF200S060B	600	2×200	2000	1.15	200	140	0.18	FS
	MMF300S060B	600	2×300	3000	1.15	300	150	0.14	FS
	MMF150S120B	1200	2×150	1500	1.60	150	145	0.22	FS
	MMF200S120B	1200	2×200	1800	2.30	200	110	0.22	FS
	MMF300S120B	1200	2×300	2700	2.80	300	135	0.14	FS
	MMF100S170B	1700	2×100	1000	1.80	100	500	0.22	FS
 DK	MMF300N060DK6B	600	2×150	1410	1.25	150	95	0.34	FN
	MMF200N120DK	1200	2×100	1100	1.77	100	150	0.44	FN
	MMF150S060DK	600	2×150	1500	1.15	150	130	0.22	FS
	MMF200S060DK	600	2×200	2000	1.15	200	140	0.18	FS
	MMF300S060DK	600	2×300	3000	1.15	300	150	0.14	FS
	MMF150S120DK	1200	2×150	1500	1.60	150	145	0.22	FS
	MMF200S120DK	1200	2×200	1800	2.30	200	110	0.22	FS
	MMF300S120DK	1200	2×300	2700	2.80	300	135	0.14	FS
 DA	MMF200N120DA	1200	2×100	1100	1.77	100	150	0.44	FN
	MMF200N070DA	700	2×100	1200	1.20	100	140	0.34	FN
	MMF150S060DA	600	2×150	1500	1.15	150	130	0.22	FS
	MMF200S060DA	600	2×200	2000	1.15	200	140	0.18	FS
	MMF300S060DA	600	2×300	3000	1.15	300	150	0.14	FS
	MMF150S120DA	1200	2×150	1500	1.60	150	145	0.22	FS

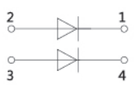

FJ


FN


FS


FD

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{RRM} (V)	$I_{F(AV)}$ d=0.5 Tc=110°C (A)	I_{FSM} 10ms Tj=45°C (A)	V_{FM} @ I_{FM} Tj=25°C (V)	V_{FM} @ I_{FM} Tj=25°C (A)	t_{rr} Tj=25°C (ns)	R_{thJC} (K/W)	Package Outline
 D	MMF2X100J040D	400	2×100	1100	1.20	100	62	0.34	FJ
	MMF2X100J060D	600	2×100	1500	1.35	100	95	0.30	FJ
	MMF2X60J070D	700	2×60	600	1.15	60	150	0.60	FJ
	MMF2X60J120D	1200	2×60	500	1.80	60	135	0.65	FJ
	MMF2X100J120D	1200	2×60	1400	2.15	100	125	0.40	FJ
 DK2B	MMF400N020DK2B	200	2×200	2000	0.90	200	135	0.34	FN
	MMF400S040DK2B	400	2×400	2800	1.60	400	110	0.10	FS
	MMF150S060DK2B	600	2×150	1500	1.25	150	95	0.30	FS
	MMF200S060DK2B	600	2×200	2000	1.15	200	140	0.18	FS
	MMF300S060DK2B	600	2×300	3000	1.10	300	165	0.15	FS
	MMF200S120DK2B	1200	2×200	1800	2.30	200	110	0.22	FS
 DA2B	MMF150S060DA2B	600	2×150	1500	1.25	150	95	0.30	FS
	MMF200S060DA2B	600	2×200	2000	1.15	200	140	0.18	FS
	MMF300S120DA2B	1200	2×300	2700	2.80	300	135	0.14	FS
	MMF300S060DA2B	600	2×300	3000	1.10	300	165	0.15	FS
 B2B	MMF150S060B2B	600	2×150	1500	1.15	150	130	0.22	FS
	MMF300S060B2B	600	2×300	3000	1.15	300	150	0.14	FS
	MMF150S120B2B	1200	2×150	1500	1.60	150	145	0.22	FS
	MMF300S120B2B	1200	2×300	2700	2.80	300	135	0.14	FS
	MMF400D120B2B	1200	2×400	3200	3.00	400	180	0.11	FD
	MMF100S170B2B	1700	2×100	1000	1.80	100	500	0.22	FS
	MMF300D170B2B	1700	2×300	3000	2.00	300	500	0.14	FD
	MMF400D170B2B	1700	2×400	3200	1.95	400	2000	0.10	FD

FRED 分立器件
FRED DISCRETES

产品范围 Ranges
- 300-1700V / 8-100A

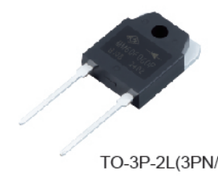
应用 Applications
- 电焊机
  Welding Machine
- 各种开关电源，UPS 电源
  SMPS, UPS
- 家电
  Home Appliances
- 充电桩
  Charging Pile

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

特性 Features
- 超快恢复时间
  Short Recovery Time
- 软恢复特性
  Soft-Recovery Characteristics
- 反向恢复电荷低
  Low Reverse Recovery Charge
- 漏电流低
  Low Leakage Current
- 雪崩能量高
  High Avalanche Energy

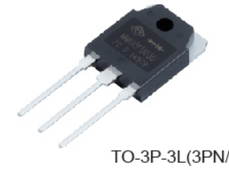

TO-220(A/B/C)


TO-247-3L


TO-3P-2L(3PN/3PB)


TO-220F


TO-247-2L


TO-3P-3L(3PN/3PB)

TO-220(A/B/C)

TO-247-3L

TO-3P-2L(3PN/3PB)

TO-220F

TO-247-2L

TO-3P-3L(3PN/3PB)

Tc=25℃ unless otherwise noted

Circuit	Part Number	V_{RRM} (V)	$I_{F(AV)}$ d=0.5 Tc=110℃ (A)	V_F $I_F=I_{F(AV)}$ T_J=125℃ (V)	t_{rr} I_F=1A T_J=25℃ (ns)	R_{thJC} max. (K/W)	Package Outline
 C	MM60FU030PC	300	60	1.25	22	0.80	TO-3PB-3L
	MM60F040B	400	60	1.15	35	0.48	TO-247-2L
	MM80FU040PC	400	80	1.30	22	0.80	TO-3PB-3L
	MM30F060PC	600	30	1.41	21	0.80	TO-3PB-3L
	MM60F060PC	600	60	1.50	30	0.80	TO-3PB-3L
	MM60F060P	600	60	1.30	40	0.50	TO-3PB-2L
	MM60F060B	600	60	1.30	27	0.50	TO-247-2L
	MM30FU60K	600	30	2.00	20	0.80	TO-220C-2L
	MM75F60B	600	75	1.35	31	0.38	TO-247-2L
	MM30F060B	600	30	1.50	30	0.80	TO-247-2L
	MM60FU060B	600	60	2.00	25	0.50	TO-247-2L
	MM30FU060K1	600	30	2.00	20	1.50	TO-220F-2L
	MM60FU60BC	600	60	2.00	20	0.80	TO-247-3L
	MM8FU060K	600	8	1.80	17	2.50	TO-220C-2L
	MM30FU60PC	600	30	2.00	18	1.30	TO-3PB-3L
	MM30FU060B	600	30	2.00	20	0.80	TO-247-2L
	MM15F060K1	600	15	1.30	30	2.00	TO-220F-2L
	MM15F060K	600	15	1.30	30	1.50	TO-220C-2L
	MM15FU60K	600	15	2.00	18	1.30	TO-220
	MM100F60B	600	100	1.55	50	0.26	TO-247-2L
 U	MM15F70K	700	15	1.30	21	1.50	TO-220C-2L
	MM16F70KC	700	16	1.30	19	2.50	TO-220C-3L
	MM8F70K	700	8	1.30	19	2.50	TO-220C-2L
	MM30FC100B	1000	30	2.50	25	0.80	TO-247-2L
	MM60FC100B	1000	60	2.50	30	0.40	TO-247-2L
	MM15FU120K	1200	15	2.60	25	1.50	TO-220
	MM30FU120B	1200	30	2.90	26	0.80	TO-247-2L
	MM8FU120K	1200	8	2.80	20	2.00	TO-220
	MM30FU120K	1200	30	2.90	26	0.80	TO-220
	MM60F120B	1200	60	2.10	40	0.40	TO-247-2L
	MM60FU120B	1200	60	2.80	30	0.40	TO-247-2L
	MM30FC120B	1200	30	2.80	26	0.80	TO-247-2L
	MM60FC120B	1200	60	2.80	31	0.40	TO-247-2L
	MM75F170B	1700	75	2.00	0	0.25	TO-247-2L

整流二极管模块

RECTIFIER DIODE MODULES

产品范围 Ranges

- 1600-2000V / 50-300A

电路结构 Circuit Configurations

- 三相整流桥电路
  Three Phase Rectifier Bridge Circuit
- 半桥电路
  Half Bridge Circuit
- 共阴电路
  Common-Cathode Circuit
- 单单元电路
  Single Circuit

应用 Applications

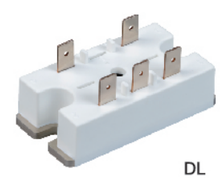
- 变频器
  Inverter
- 开关电源
  Switching Mode Power Supply
- 焊接电源
  Welding Machine
- 医疗电源
  Medical Power Supply

封装 Packages

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

特性 Features

- 结构紧凑
  Compact Structure
- 通流能力强
  High Current Capability
- 耐压高
  High Blocking Voltage
- 可靠性高
  High Reliability
- 性价比高
  High Performance Price Ratio

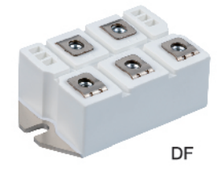


DL

DE

DEB

DFB



DF

DA

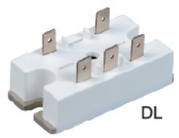
DAB

DS


DA


DAB


DS


DL


DE


DF

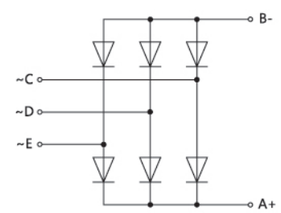

DEB


DFB

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{RRM} (V)	$I_{F(AV)}$ Tc=85°C (A)	I_{FSM} t=10ms T_j=45°C (A)	V_{FM} @ I_{FM} T_j=25°C (V)	(A)	R_{thJC} (K/W)	Package Outline
 B	MMD110A180B	1800	110	2500	1.60	350	0.30	DA
	MMD130A160B	1600	130	3450	1.50	400	0.25	DA
	MMD130A180B	1800	130	3500	1.50	400	0.20	DA
	MMD110AB160B	1600	110	2350	1.40	300	0.30	DAB
	MMD160AB160B	1600	160	5000	1.50	500	0.18	DAB
	MMD130S160B	1600	130	3500	1.50	400	0.20	DS
	MMD160S160B	1600	160	5500	1.50	500	0.18	DS
	MMD160S180B	1800	160	5500	1.50	500	0.18	DS
	MMD180S180B	1800	180	6000	1.50	600	0.18	DS
 U	MMD200S180B	1800	200	6500	1.50	600	0.16	DS
	MMD240S160B	1600	240	7350	1.55	600	0.12	DS
	MMD300S160U	1600	300	9000	1.25	500	0.09	DS

Tc=25°C unless otherwise noted

Circuit	Part Number	V_{RRM} (V)	$I_{F(AV)}$ Tc=85°C (A)	I_{FSM} t=10ms T_j=45°C (A)	$V_{F(max)}$ @ I_F T_j=25°C (V)	(A)	R_{thJC} (K/W)	Package Outline
	MMD50L160X	1600	50	500	1.40	50	0.20	DL
	MMD70E160X MMD70E180X MMD70E200X	1600 1800 2000	70	700	1.35	70	0.18	DE
	MMD100E160X MMD100E180X MMD100E200X	1600 1800 2000	100	1000	1.35	100	0.15	DE
	MMD100F200X	2000	100	1000	1.35	100	0.15	DF
 X	MMD150F160X MMD150F180X	1600 1800	150	1500	1.45	150	0.11	DF
	MMD160F200X	2000	160	1600	1.50	160	0.11	DF
	MMD200F160X MMD200F180X MMD200F200X	1600 1800 2000	200	2000	1.45	200	0.09	DF
	MMD250F160X MMD250F180X	1600 1800	250	2500	1.55	250	0.08	DF
	MMD75EB160X	1600	75	1000	1.35	75	0.15	DEB
	MMD100EB160X	1600	100	1000	1.35	100	0.15	DEB
	MMD150FB160X	1600	150	1500	1.45	150	0.11	DFB
	MMD200FB160X	1600	200	2000	1.45	200	0.09	DFB
	MMD250FB160X MMD250FB180X	1600 1800	250	2500	1.55	250	0.08	DFB

产品命名

PRODUCT NAMING

IGBT & MOSFET & SiC MOSFET 分立器件

IGBT & MOSFET & SiC MOSFET DISCRETES

MM Q 50 G 7T 120 BH [ ]

MacMic

Q: Automotive Grade
(AEC-Q101 Qualified)
Blank: Industrial Grade

Ic= 50A
$R_{DS(on)}$ =50mohm

Product Type
N: MOSFETs
G:IGBT

Optimization
1S: GEN1 SiC MOSFETs
AS: GEN2 SiC MOSFETs
3T: M3i 5-40kHz
3U: M3i 10-60kHz
3R: M3i RC-IGBT
5T: M5i 5-40kHz
5U: M5i 10-60kHz
7T: M7i 5-40kHz
7U: M7i 10-60kHz

Voltage×10
E.g.120=1200V

Package Type
K : TO-220-3L
K1 : TO-220 Full Package
PF : TO-3P Full Package
S : TO-263 (D^2PAK)
SJ : TO-263-7
B : TO-247-3L
BH : TO-247-H3L (High Creapage)
BM: TO-247Plus-3L
MH: TO-247Plus-H3L (High Creapage)
BK : TO-247-4L (C-E High Creapage)
KA : TO-247LP-4L (Asymmetric)
KZ : TO-247-4L
MK: TO-247Plus-4L (C-E High Creapage)
ZA : TO-247Plus-4L (Collector Protrusion)
T : TOLT / TOLL

Blank for MOSFETs
Diode Type for IGBT
Blank: Ful Rated Diode
G : Half Rated Diode
Q : Full rated SiC SBD
D : Half Rated SiC SBD
N : Single IGBT

FRED & SiC SBD 分立器件 FRED & SiC SBD DISCRETES

MM 80 F U 040 P C

MacMic

Current Rating
$I_{F(Av)}$=80A

Product Type:
D: Rectifier Diode
F: Fast Recovery Diode
S: SiC Schottky Diode

Optimization:
Blank: Fast
U : Ultrafast
UF: Hyperfast
C : EV Charger
H : High efficiency

Voltagex10
E.g. 040=400V

Package Type:
K : TO-220-2L / 3L
K1 : TO-220 Full Package
P : TO-3PN / 3PB
PF : TO-3P Full Package
S : TO-263-2L / 3L (D2PAK)
B : TO-247-2L / 3L

Circuit
Blank: Single
H : Half Bridge
T : Dual Package
C : Common Cathode
A : Common Anode

IGBT 模块 & 混合 SiC 模块 IGBT MODULES & HYBRID SiC MODULES

MM G 450 WQ 120 PD 6T7 H

MacMic

G: IGBT Modules

Current Rating
I_C=450A

Package Type:
EV Pack (Electric Vehicle Pack Series) :
V, VB, VC, VD, VE, VF
Smart: C, CB, CE, CF
Ofa (Original Fashion Series) : B, S, D, J, K, Q, QC
Sym (Symmetrical Series) : WB
PV (Photovoltaic Series) : HP, WQ
Effi PIM (Efficient PIM Series) :
H, HD, HE, W, WD, WJ

Voltage×10
E.g.120=1200V

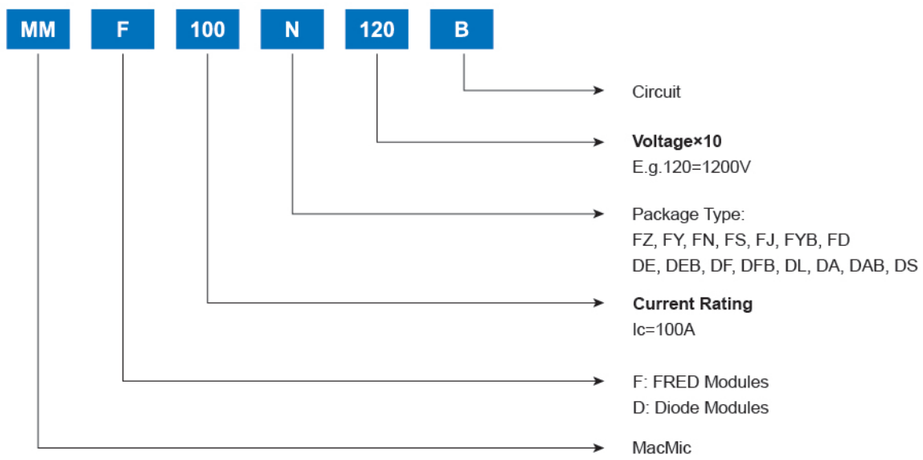
H: Hybrid SiC Modules
.....

Chip Type
MacMic Chip:
6TC: M3i 6T5: M5i
6T6 : M6i 6T7: M7i
.....

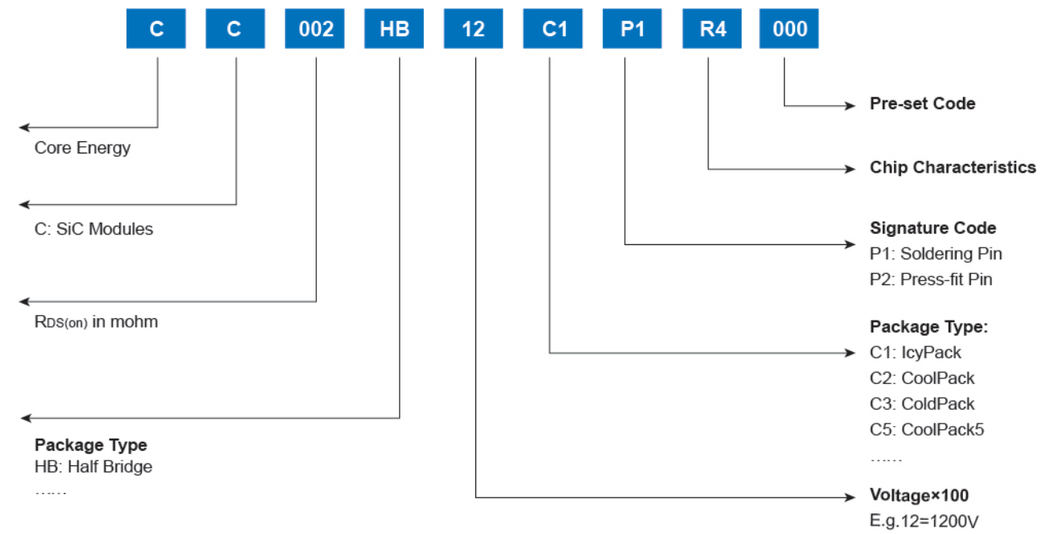
Circuit
U=Single Switch UZ=Single without FWD
UK=Chopper Diode Low Side
UA=Chopper Diode Up Side
UX=3 Phase Rectifier+Brake
B=Half Bridge H= Full Bridge
HX=3 Phase Rectifier+Full Bridge
X=3 Phase Bridge
XT=3 Phase Rectifier+3 Phase Output
XB=3 Phase Rectifier+Brake+3 Phase Output (PIM)
BT=Boost BF=T-NPC PF=Buck+ Boost
PD=I-NPC PG=I-NPC
.....

FRED 模块 / 整流二极管模块 / 三相整流桥模块

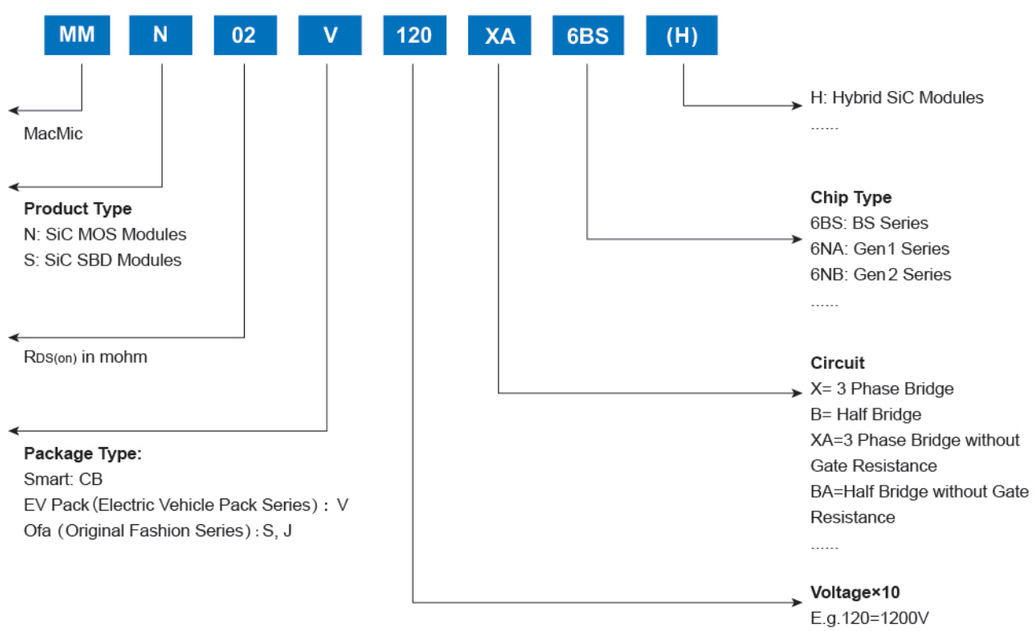
FRED MODULES / RECTIFIER DIODE MODULES / THREE-PHASE RECTIFIER BRIDGE MODULES



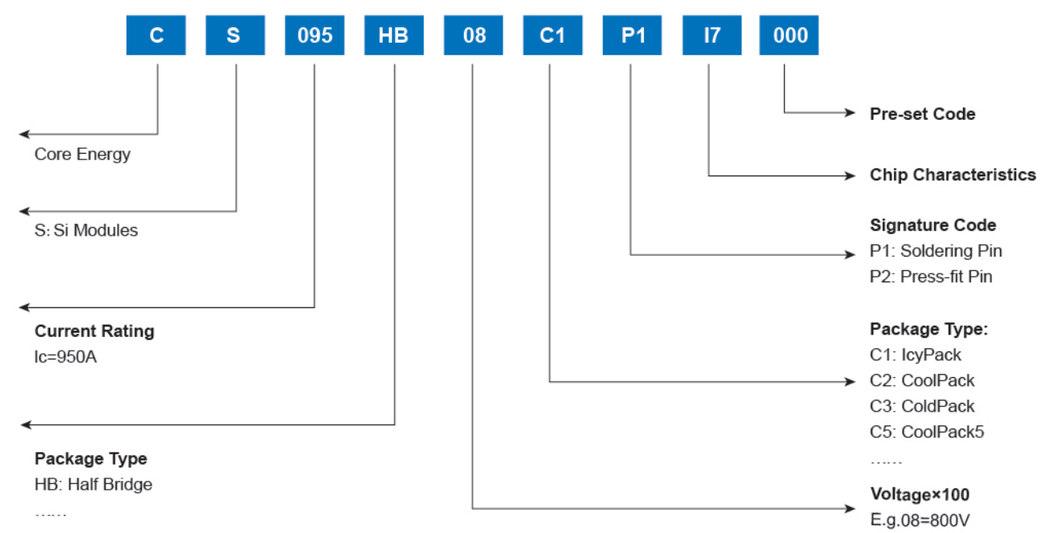
塑封 SiC 模块 TRANSFER-MOLDED SiC MODULES



SiC MOSFET 模块 SiC MOSFET MODULES



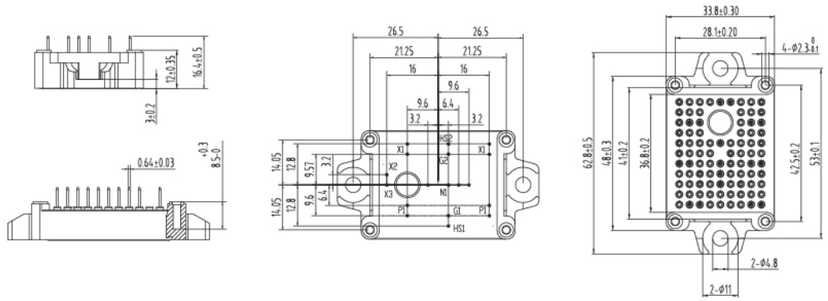
塑封 IGBT 模块 TRANSFER-MOLDED IGBT MODULES



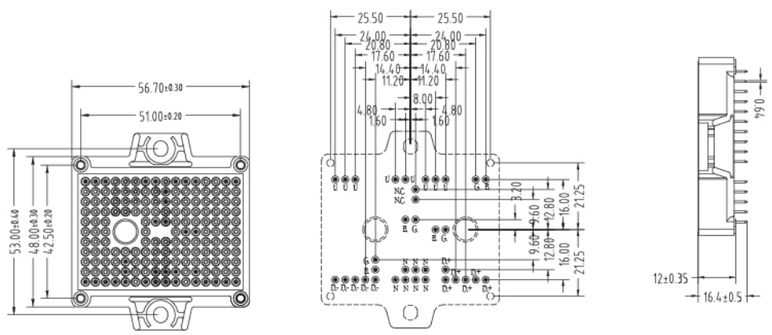
外观尺寸图

OUTLINE DRAWINGS

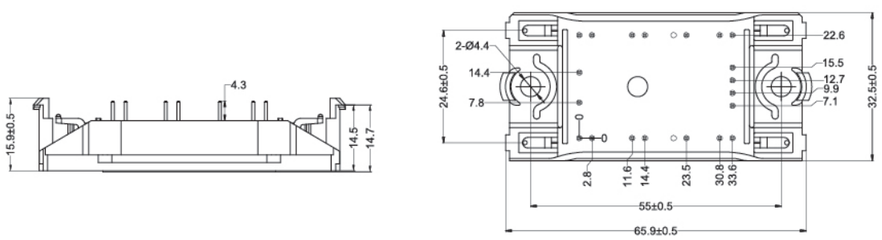
GCB



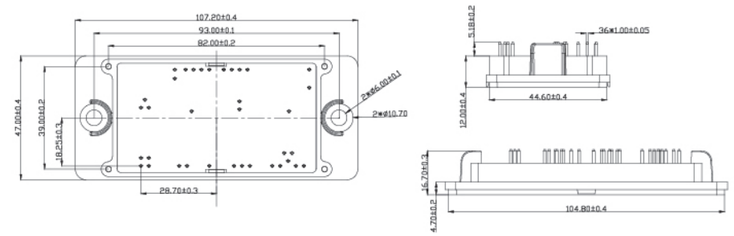
GCE



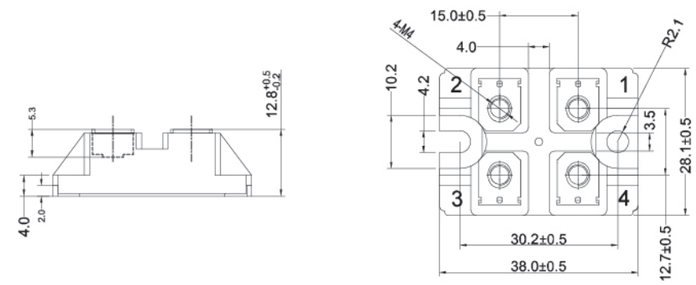
GC



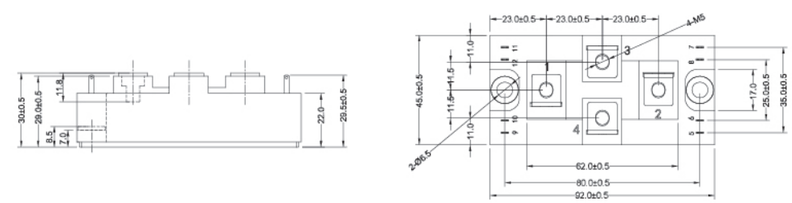
GHP



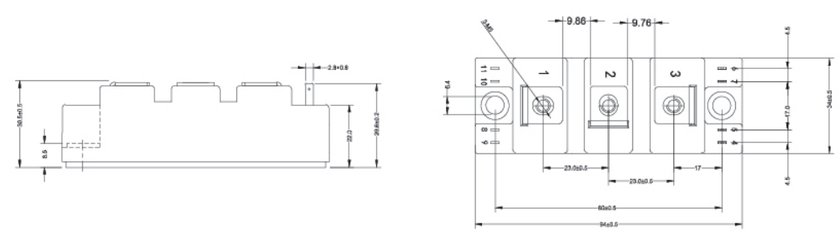
GJ / NJ / SJ



GQC

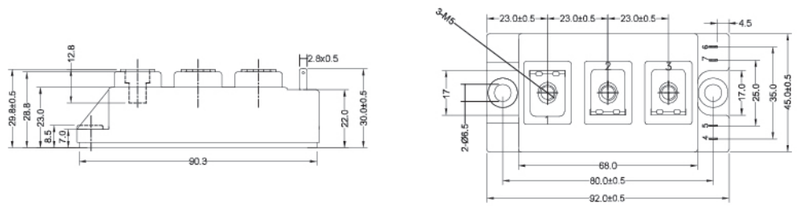


GS / NS

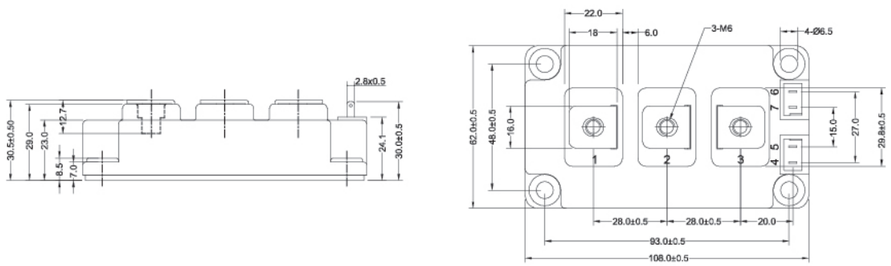


单位Unit:mm

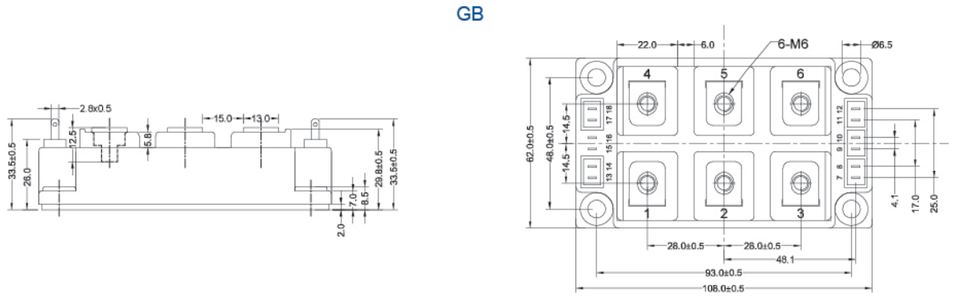
GQ



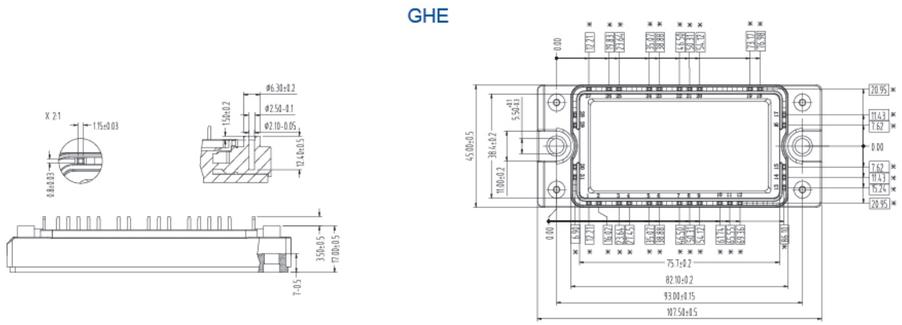
GD



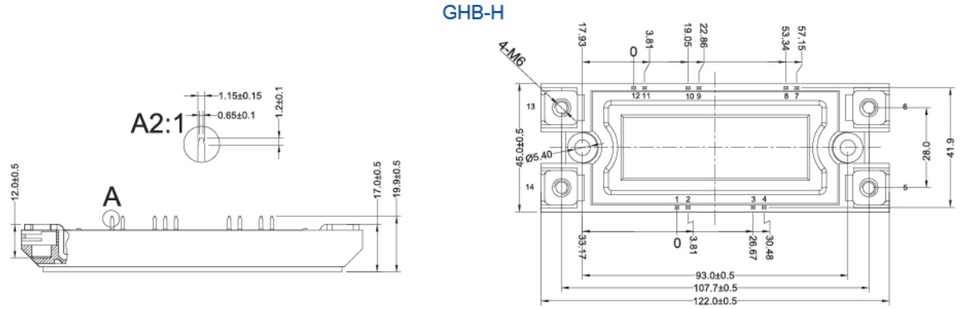
GB



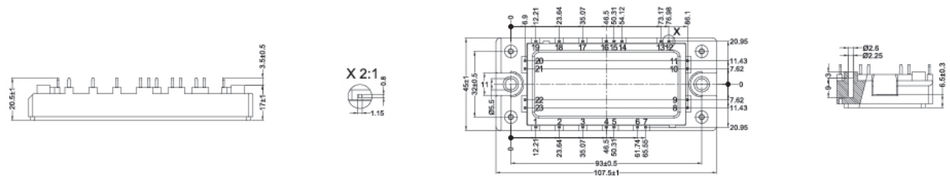
GHE



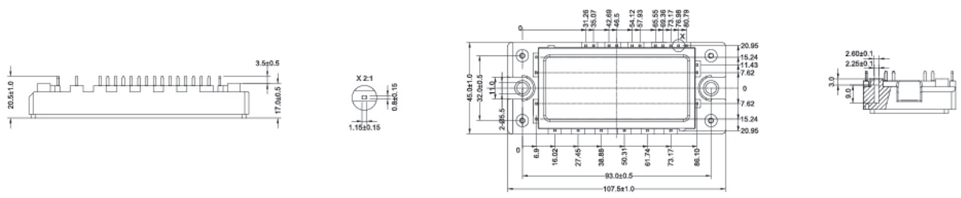
GHB-H



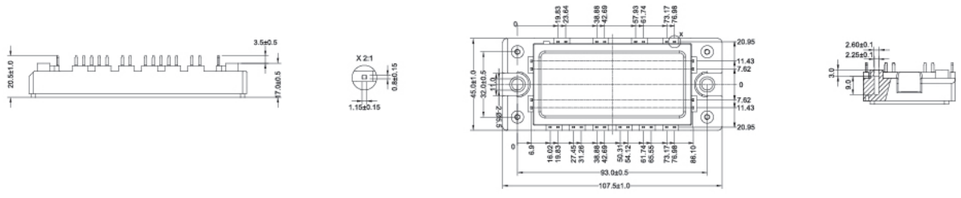
GHD-XB



GH-XB

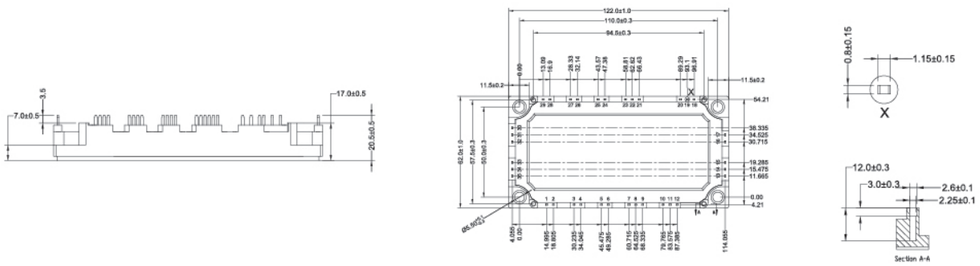


GH-X

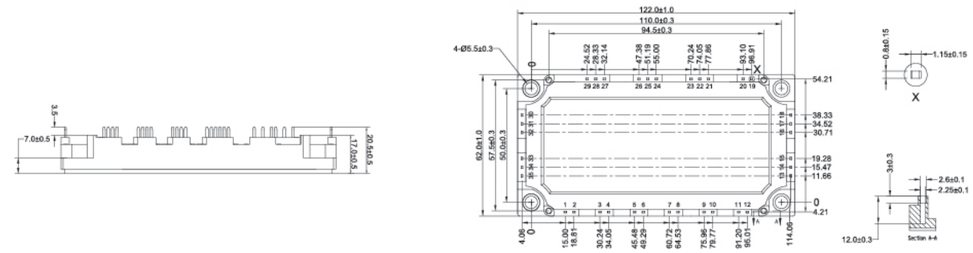


单位Unit:mm

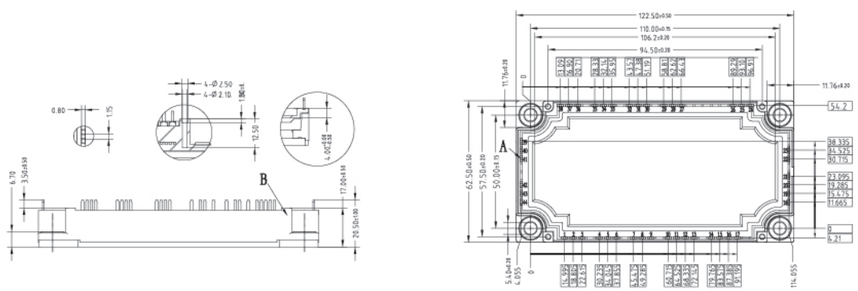
GWD-XB



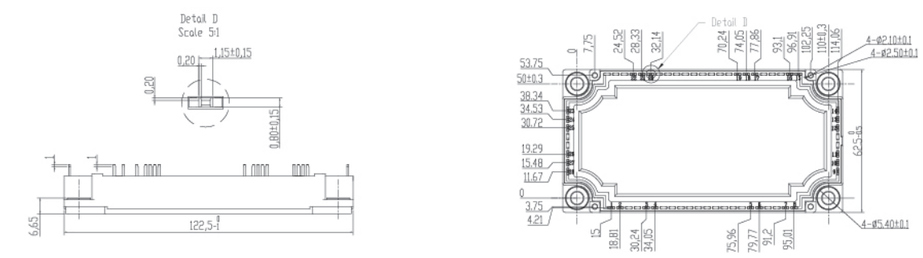
GW-X



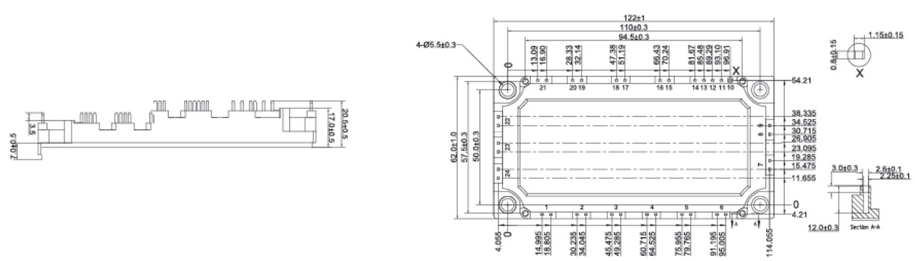
GWJ



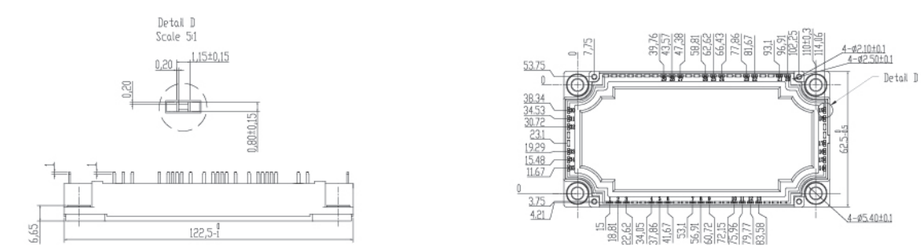
GW-H



GW-XB

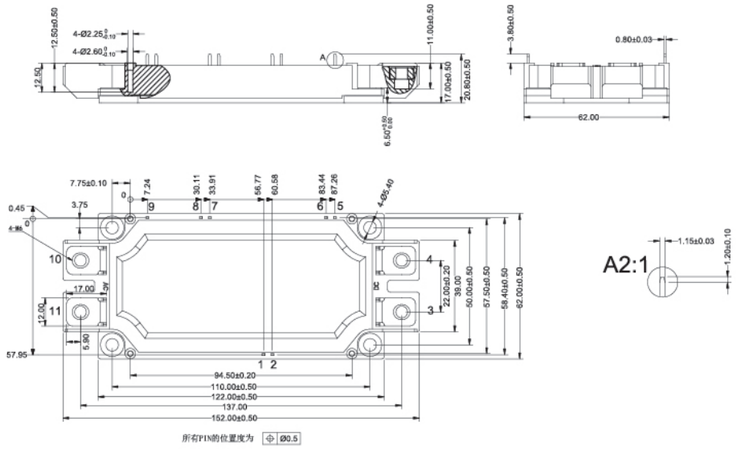


GW-HX

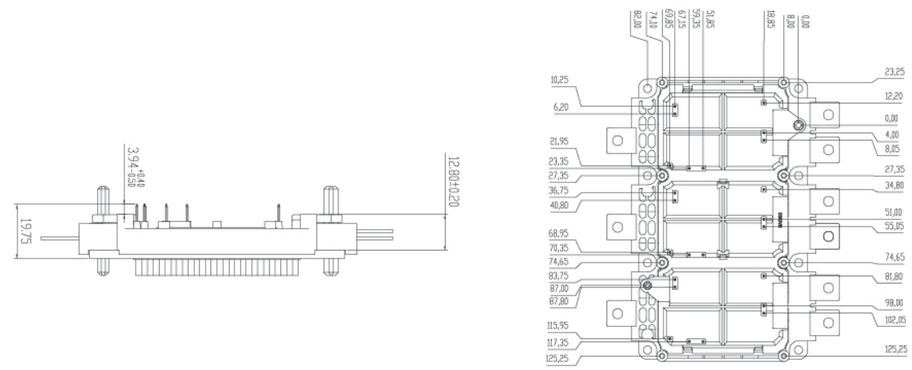


单位Unit:mm

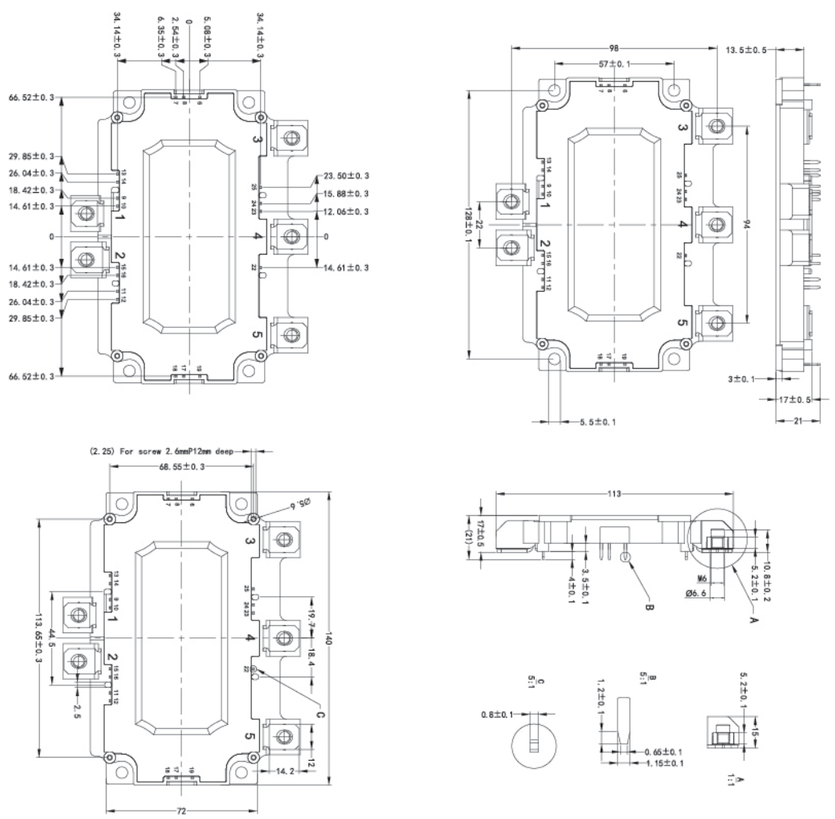
GWB



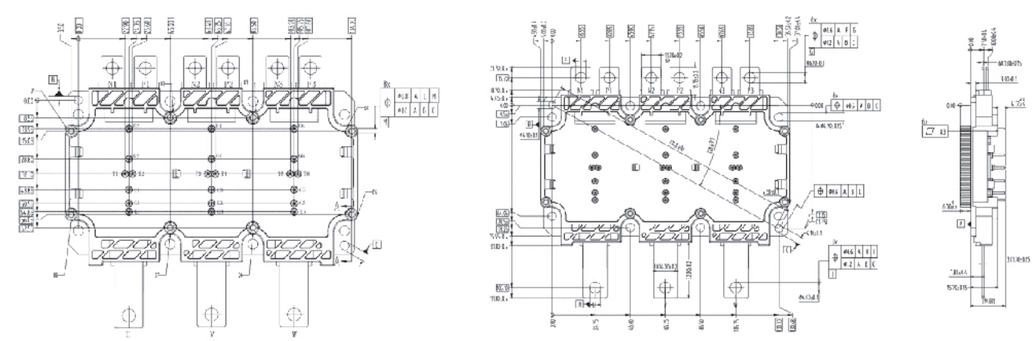
GV



GVB

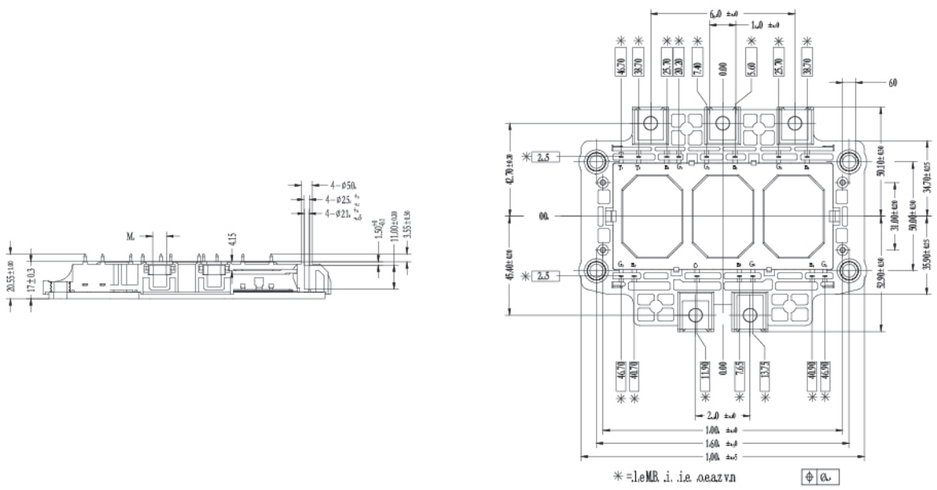


GVE

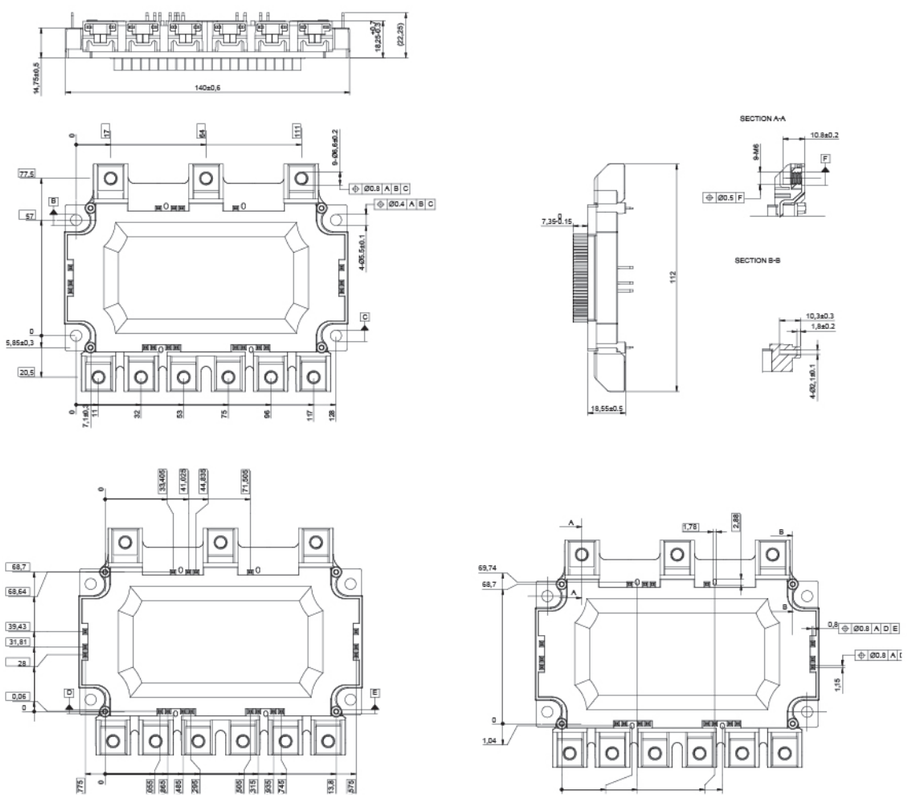


单位Unit:mm

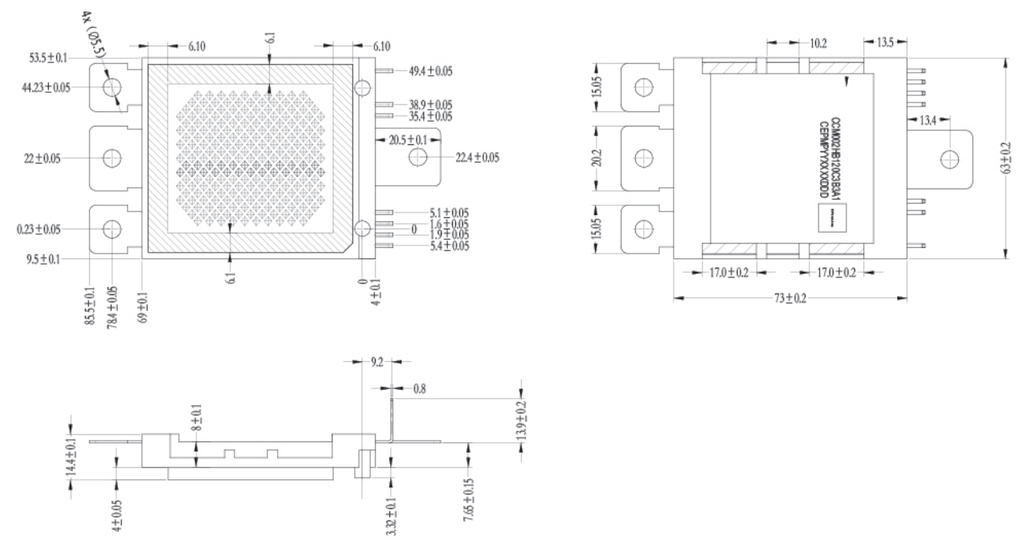
GVD



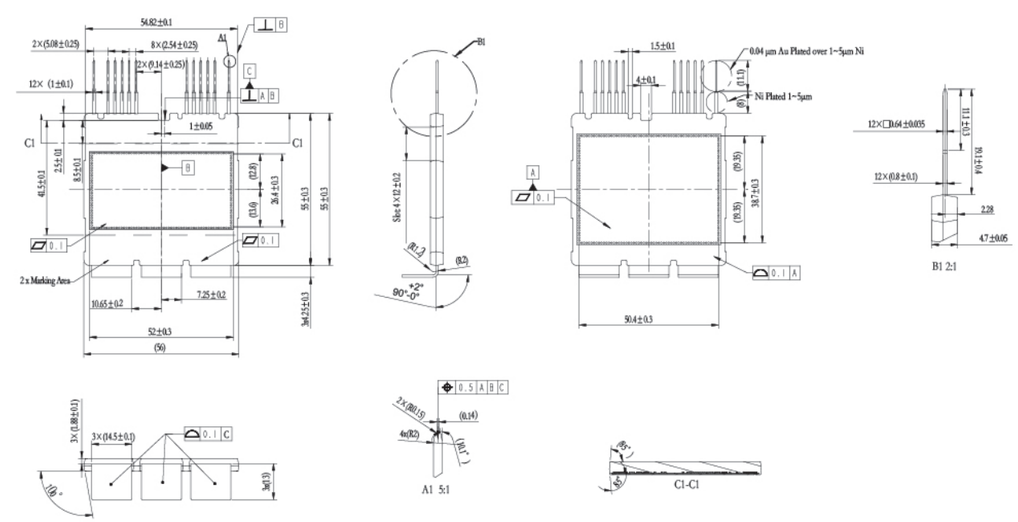
GVC



SDC

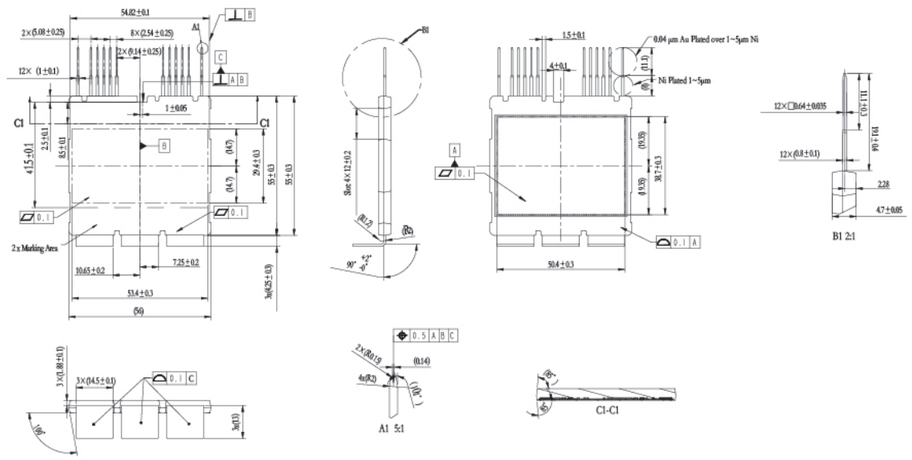


DSC

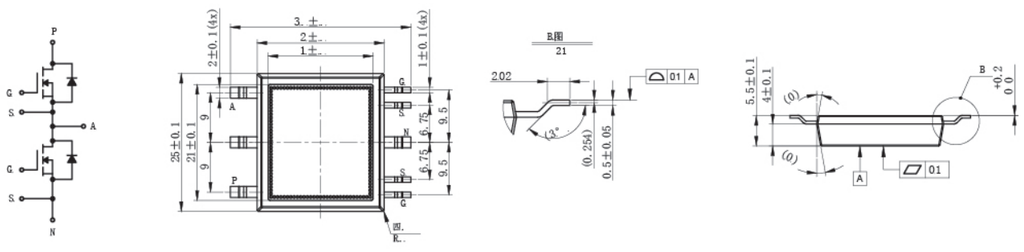


单位Unit:mm

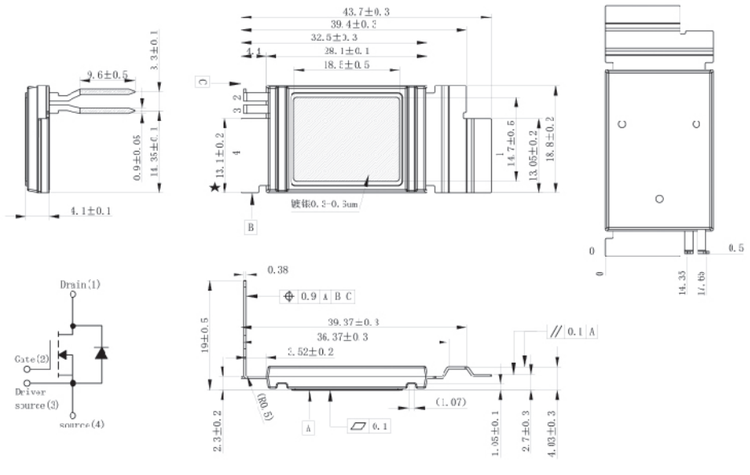
SSC



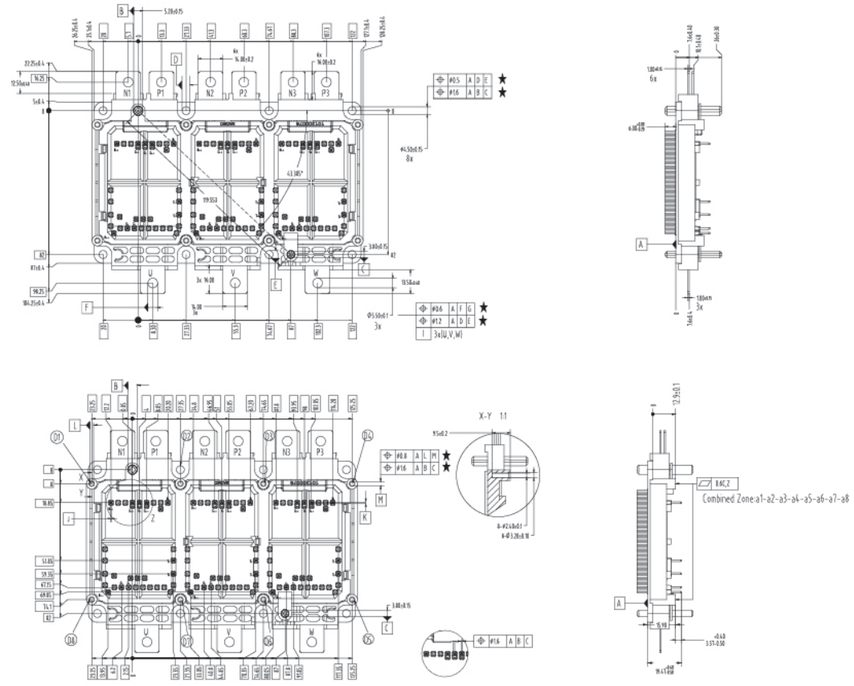
SMPD



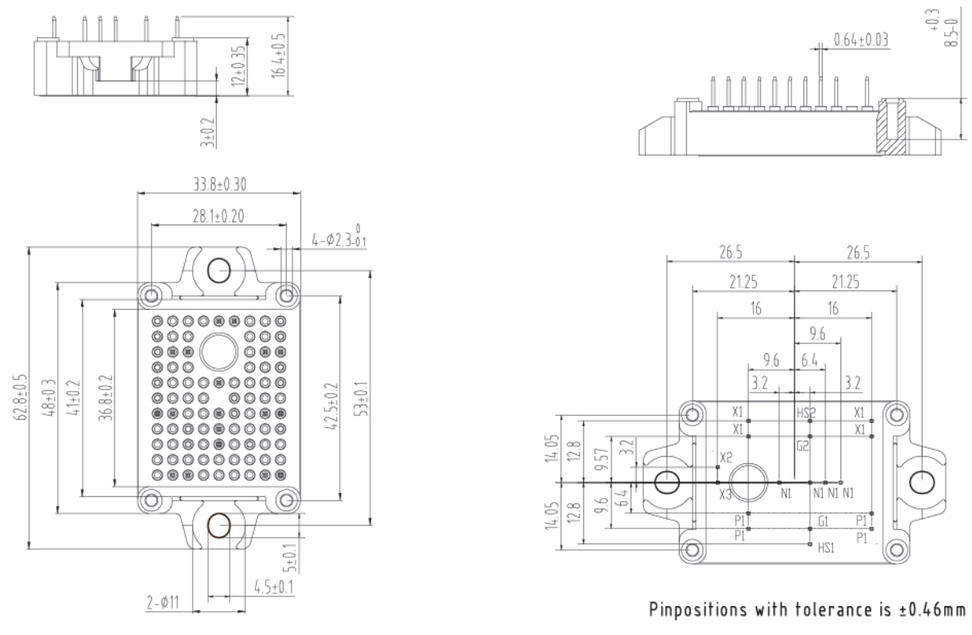
TPAK



NV



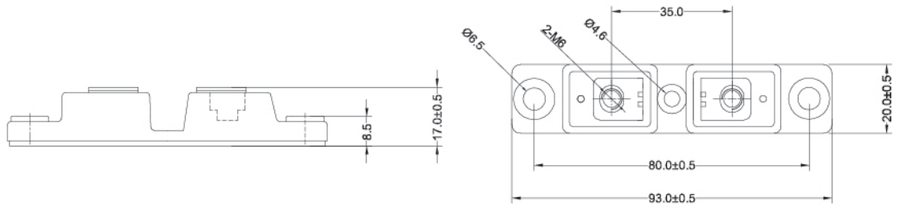
NCB



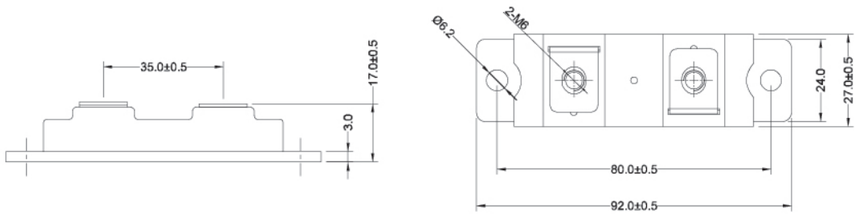
Pinpositions with tolerance is ±0.46mm

单位Unit:mm

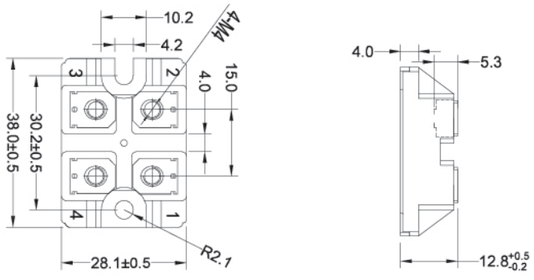
FZ



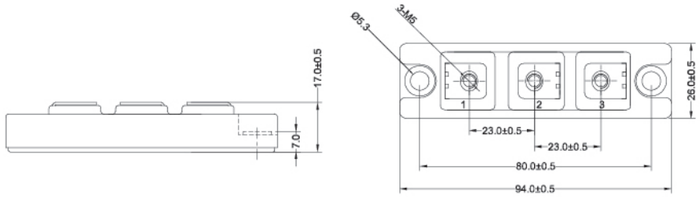
FY



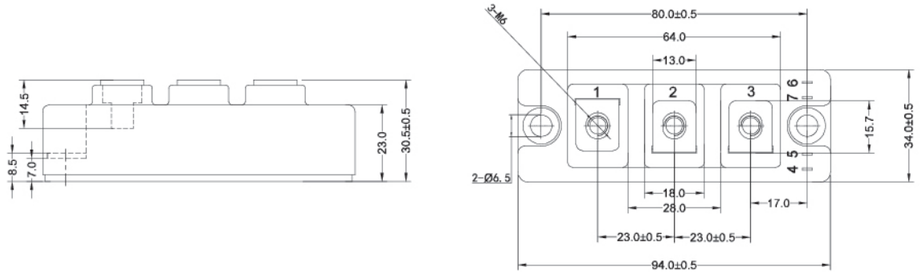
FJ



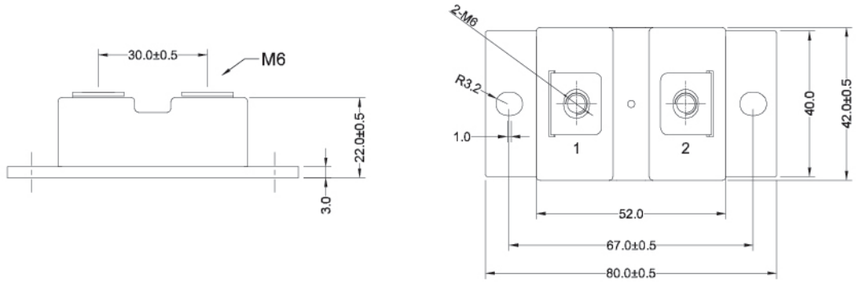
FN



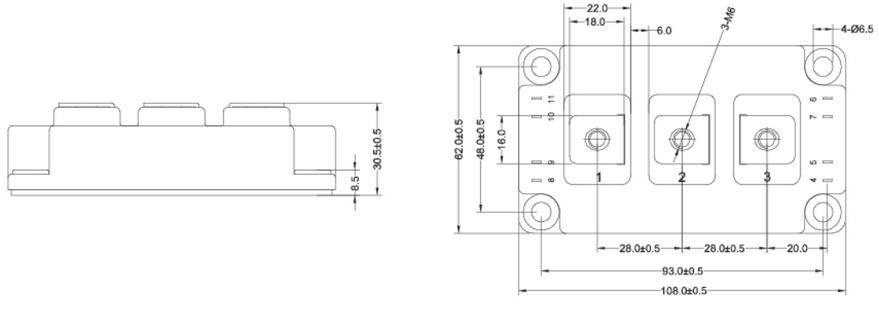
FS



FYB

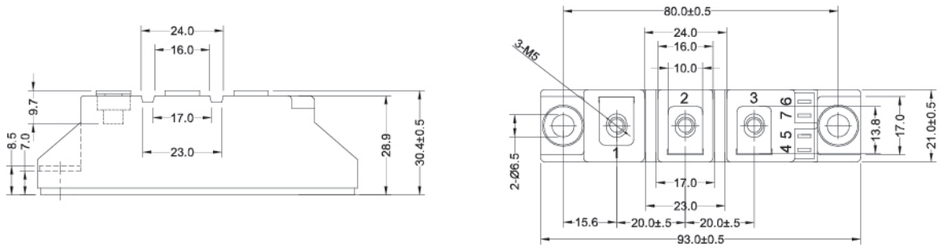


FD

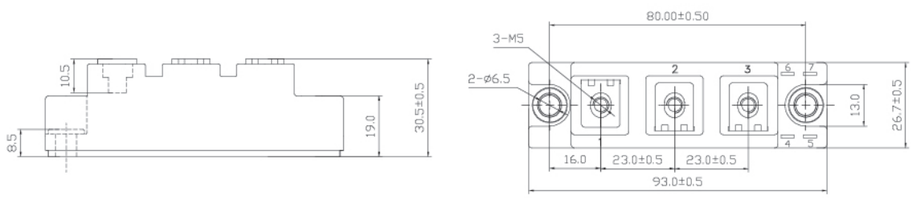


单位Unit:mm

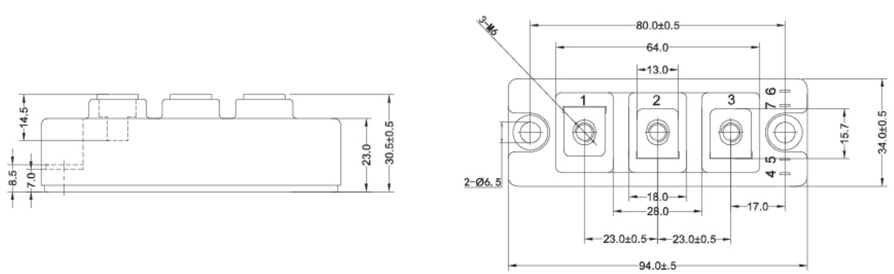
DA



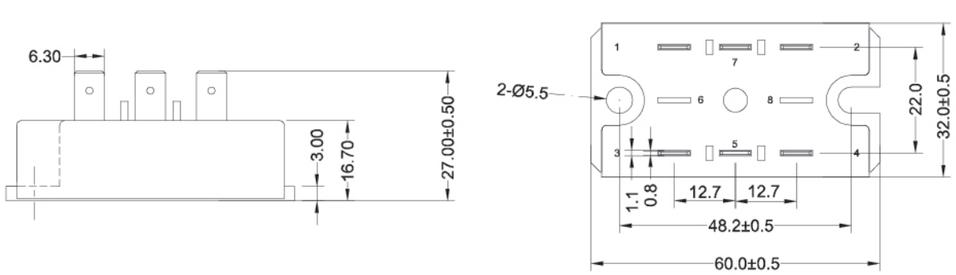
DAB



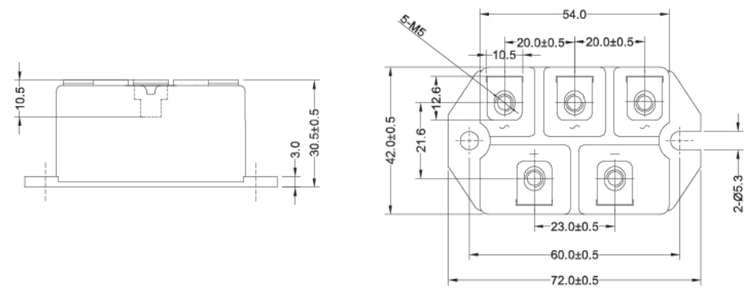
DS



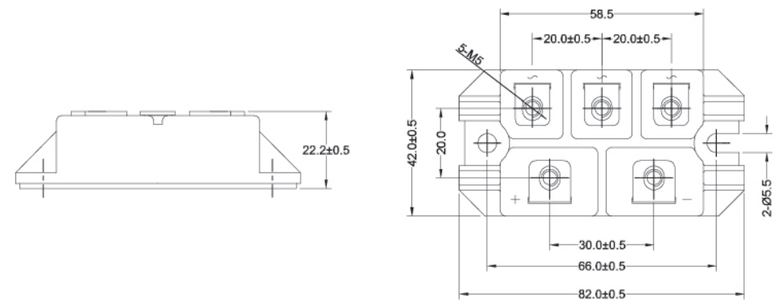
DL



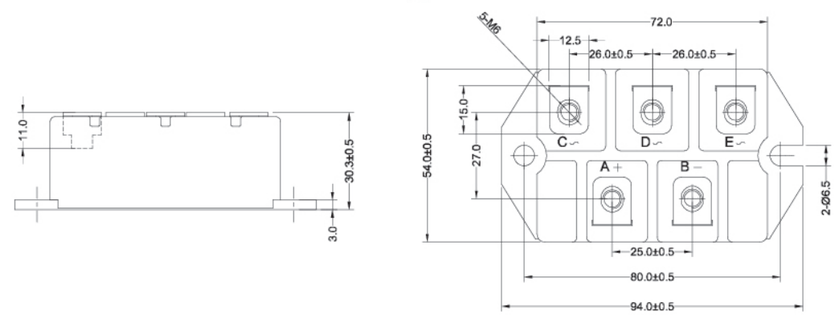
DE



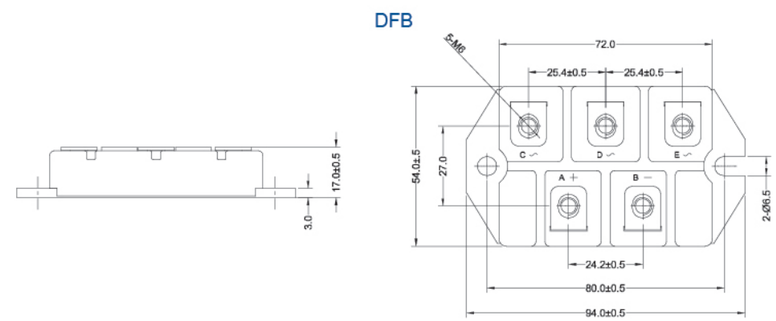
DEB



DF

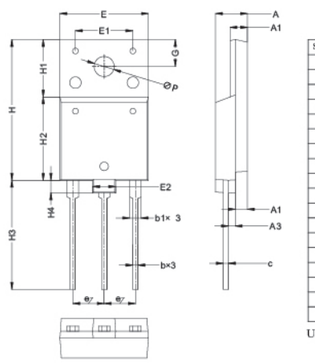


DFB



单位Unit:mm

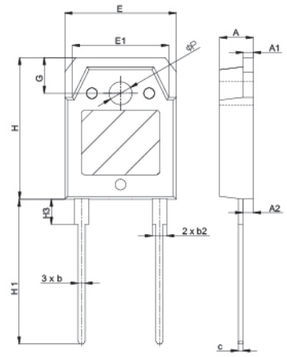
TO-3PF



Symbol	Min	Nom	Max
A	5.35	5.55	5.75
A1	2.80	3.00	3.20
A2	1.90	2.10	2.30
A3	1.00	1.20	1.40
b	0.78	0.90	1.00
b1	1.80	2.00	2.20
e	5.45BSC		
c	0.70	0.90	1.10
E	15.20	15.40	15.60
E1	9.80	10.00	10.20
E2	3.80	4.00	4.20
H	24.30	24.50	24.70
H1	9.80	10.00	10.20
H2	14.30	14.50	14.70
H3	18.50	19.00	19.50
H4	2.00	2.20	2.40
G	4.50	4.70	4.90
ΦP	3.30	3.50	3.70

UNIT: mm

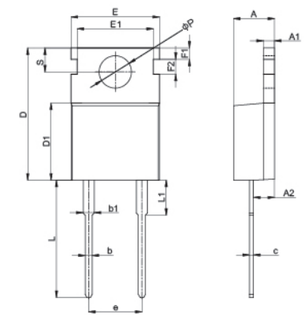
TO-3PB-2L



Symbol	Min	Nom	Max
A	4.60	4.75	4.85
A1	1.30	1.50	1.70
A2	2.20	2.40	2.60
b	0.80	1.00	1.20
b1	2.90	3.10	3.30
b2	1.80	2.00	2.20
c	0.50	0.60	0.70
e	10.9BSC		
E	15.20	15.60	16.00
E1	13.20	13.45	13.70
H	19.80	20.00	20.20
H1	19.40	19.80	20.00
H3	2.90	3.10	3.30
G	4.80	5.00	5.20
ΦP	3.00	3.20	3.40

UNIT: mm

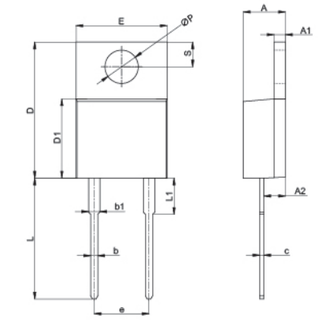
TO-220B-2L



Symbol	Min	Nom	Max
A	4.35	4.50	4.65
A1	1.25	1.30	1.35
A2	2.30	2.40	2.50
b	0.70	0.80	0.90
b1	1.17	1.27	1.37
c	0.45	0.50	0.55
e	5.08BSC		
E	9.80	9.90	10.20
E1	8.60	8.70	8.80
D	15.50	15.70	15.90
D1	9.00	9.20	9.40
L	12.80	13.10	13.40
L1	2.80	3.00	3.20
ΦP	3.50	3.60	3.70
S	2.70	2.80	2.90
F1	1.10	1.30	1.50
F2	1.50	1.70	1.90

UNIT: mm

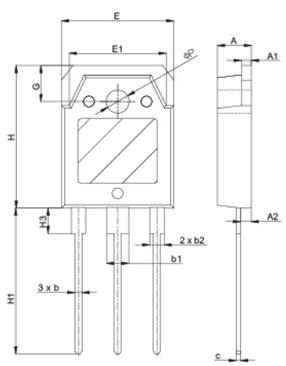
TO-220C-2L



Symbol	Min	Nom	Max
A	4.30	4.50	4.70
A1	1.20	1.30	1.40
A2	2.30	2.40	2.50
b	0.60	0.80	1.00
b1	1.10	1.30	1.50
c	0.40	0.50	0.60
e	5.08BSC		
E	9.80	10.00	10.20
D	15.50	15.70	15.90
D1	9.00	9.20	9.40
L	12.50	13.00	13.50
L1	2.80	3.00	3.20
ΦP	3.40	3.60	3.80
S	2.60	2.80	3.00

UNIT: mm

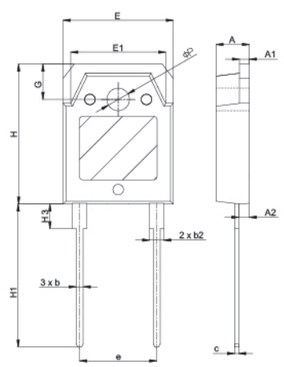
TO-3PB-3L



Symbol	Min	Nom	Max
A	4.60	4.75	4.85
A1	1.30	1.50	1.70
A2	2.20	2.40	2.60
b	0.80	1.00	1.20
b1	2.90	3.10	3.30
b2	1.80	2.00	2.20
c	0.50	0.60	0.70
e	5.45BSC		
E	15.20	15.60	16.00
E1	13.20	13.45	13.70
H	19.80	20.00	20.20
H1	19.40	19.80	20.00
H3	2.90	3.10	3.30
G	4.80	5.00	5.20
ΦP	3.00	3.20	3.40

UNIT: mm

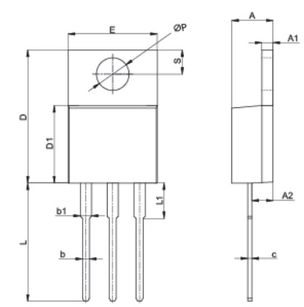
TO-3PN-2L



Symbol	Min	Nom	Max
A	4.60	4.75	4.85
A1	1.30	1.50	1.70
A2	1.20	1.40	1.60
b	0.80	1.00	1.20
b2	1.80	2.00	2.20
c	0.50	0.60	0.70
e	10.90BSC		
E	15.20	15.60	16.00
E1	13.20	13.45	13.70
H	19.20	19.70	20.20
H1	20.00	20.25	20.50
H3	3.20	3.50	3.80
G	4.80	5.00	5.20
ΦP	3.00	3.20	3.40

UNIT: mm

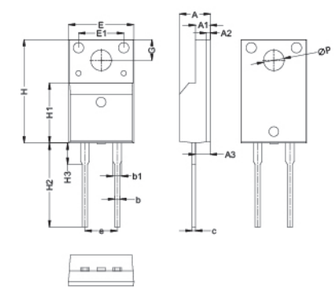
TO-220C-3L



Symbol	Min	Nom	Max
A	4.30	4.50	4.70
A1	1.20	1.30	1.40
A2	2.30	2.40	2.50
b	0.60	0.80	1.00
b1	1.10	1.30	1.50
c	0.40	0.50	0.60
e	2.54BSC		
E	9.80	10.00	10.20
D	15.50	15.70	15.90
D1	9.00	9.20	9.40
L	12.50	13.00	13.50
L1	2.80	3.00	3.20
ΦP	3.40	3.60	3.80
S	2.60	2.80	3.00

UNIT: mm

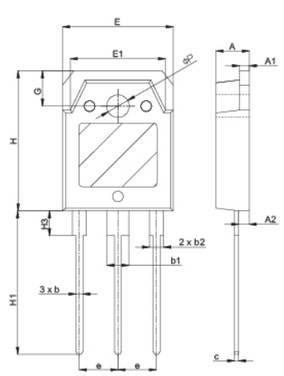
TO-220F



Symbol	Min	Nom	Max
A	4.55	4.75	4.95
A1	2.40	2.60	2.80
A2	0.40	0.60	0.80
A3	2.10	2.30	2.50
b	0.60	0.80	1.00
b1	1.10	1.30	1.50
e	5.00BSC		
c	0.42	0.50	0.58
E	9.90	10.10	10.30
E1	0.68	0.70	0.72
H	15.80	16.00	16.20
H1	9.10	9.30	9.50
H2	12.50	13.00	13.50
H3	3.10	3.30	3.50
G	3.00	3.20	3.40
ΦP	3.00	3.20	3.40

UNIT: mm

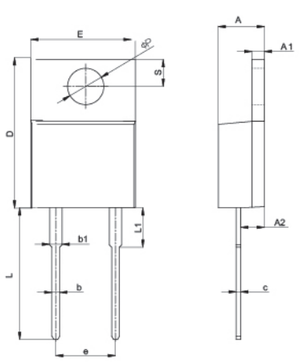
TO-3PN-3L



Symbol	Min	Nom	Max
A	4.60	4.75	4.85
A1	1.30	1.50	1.70
A2	1.20	1.40	1.60
b	0.80	1.00	1.20
b1	2.90	3.10	3.30
b2	1.80	2.00	2.20
c	0.50	0.60	0.70
e	5.45BSC		
E	15.20	15.60	16.00
E1	13.20	13.45	13.70
H	19.20	19.70	20.20
H1	20.00	20.25	20.50
H3	3.20	3.50	3.80
G	4.80	5.00	5.20
ΦP	3.00	3.20	3.40

UNIT: mm

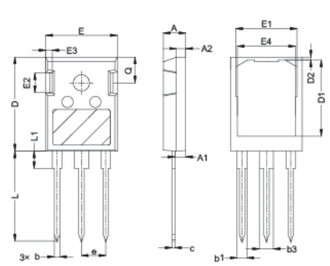
TO-220A-2L



Symbol	Min	Nom	Max
A	4.37	4.60	4.90
A1	1.07	1.27	1.47
A2	2.49	2.69	2.89
b	0.61	0.81	1.01
b1	1.17	1.37	1.57
c	0.30	0.48	0.66
e	5.08BSC		
E	9.86	10.01	10.40
D	14.64	15.02	15.40
L	13.00	13.54	14.08
L1	3.40	3.95	4.90
ΦP	3.64	3.84	4.04
S	2.54	2.74	2.94

UNIT: mm

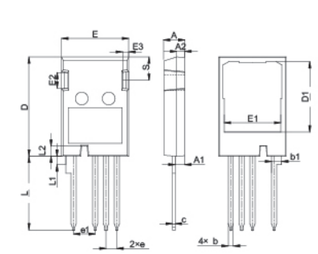
TO-247 Plus-3L



Symbol	Min	Nom	Max
A	4.83	5.02	5.21
A1	2.29	2.42	2.54
A2	1.91	2.04	2.16
b	1.07	1.20	1.33
b1	1.91	2.16	2.41
b3	2.87	3.13	3.38
c	0.55	0.62	0.68
e	5.44BSC		
D	20.80	20.95	21.10
D1	16.25	16.95	17.65
D2	0.50	0.65	0.80
E	15.75	15.94	16.13
E1	13.10	13.63	14.15
E2	3.68	4.39	5.10
E3	1.00	1.45	1.90
E4	12.38	12.91	13.43
L	19.81	20.07	20.32
L1	3.70	3.85	4.00
Q	5.49	5.75	6.00

UNIT: mm

TO-247 Plus-4L

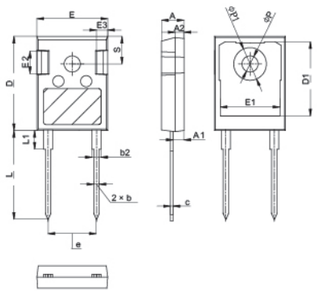


Symbol	Min	Nom	Max
A	4.83	5.02	5.21
A1	2.29	2.42	2.54
A2	1.91	2.04	2.16
b	1.07	1.20	1.33
b1	2.39	2.54	2.69
c	0.55	0.62	0.68
e	2.54BSC		
e1	5.08BSC		
E	15.75	15.94	16.13
E1	12.38	12.91	13.43
E2	3.68	4.39	5.10
E3	1.00	1.14	1.90
D	23.30	23.45	23.60
D1	16.25	17.10	17.65
L	17.31	17.57	17.82
*L1	3.97	4.17	4.37
L2	2.35	2.50	2.65
S	5.49	5.75	6.00

UNIT: mm

单位Unit:mm

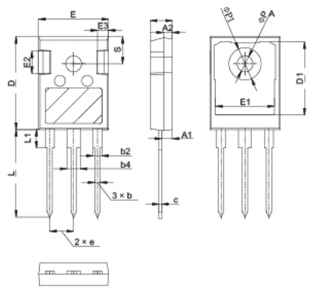
TO-247-2L



Symbol	Min	Nom	Max
A	4.80	5.00	5.21
A1	2.21	2.41	2.61
A2	1.85	2.00	2.16
b	1.07	1.23	1.36
b2	1.90	2.05	2.41
c	0.50	0.60	0.75
e	10.88BSC		
E	15.50	15.80	16.13
E1	12.38	13.30	13.60
E2	3.68	-	5.20
E3	1.00	-	2.70
D	20.70	21.00	21.30
D1	16.25	-	17.65
L	19.60	19.91	20.32
L1	-	-	4.40
ΦP	3.40	3.60	3.80
ΦP1	-	-	7.30
S	6.15BSC		

UNIT: mm

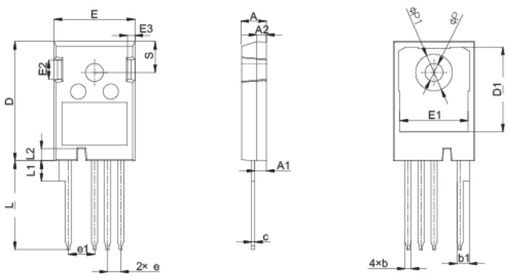
TO-247-3L



Symbol	Min	Nom	Max
A	4.80	5.00	5.21
A1	2.21	2.41	2.61
A2	1.85	2.00	2.16
b	1.07	1.23	1.36
b2	1.90	2.05	2.41
b4	2.87	3.05	3.38
c	0.50	0.60	0.75
e	5.44BSC		
E	15.50	15.80	16.13
E1	12.38	13.30	13.60
E2	3.68	-	5.20
E3	1.00	-	2.70
D	20.70	21.00	21.30
D1	16.25	-	17.65
L	19.60	19.91	20.32
L1	-	-	4.40
ΦP	3.40	3.60	3.80
ΦP1	-	-	7.30
S	6.15BSC		

UNIT: mm

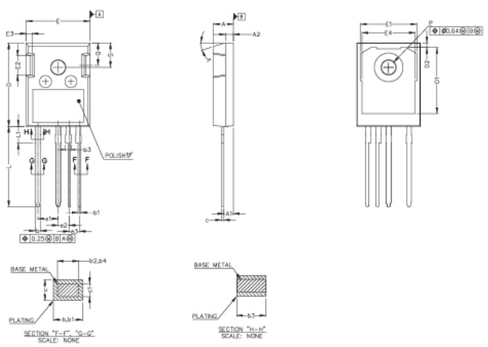
TO-247-4L



Symbol	Min	Nom	Max
A	4.83	5.02	5.21
A1	2.29	2.42	2.54
A2	1.91	2.04	2.16
b	1.07	1.34	1.60
b1	2.39	2.67	2.94
c	0.55	0.62	0.68
e	2.54BSC		
e1	5.08BSC		
E	15.75	15.94	16.13
E1	12.38	12.91	13.43
E2	3.68	4.39	5.10
E3	1.00	1.14	1.90
D	23.30	23.45	23.60
D1	16.25	17.10	17.65
L	17.31	17.57	17.82
L1	3.97	4.17	4.37
L2	2.35	2.50	2.65
ΦP	3.51	3.58	3.65
ΦP1	-	-	7.18
S	6.04	6.17	6.30

UNIT: mm

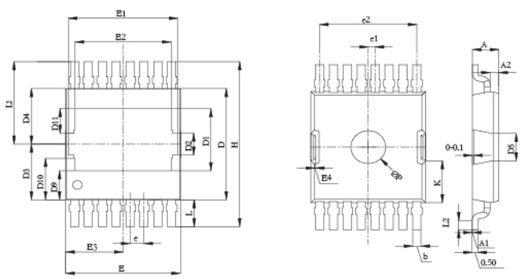
TO-247 LP-4L



SYM	MILLIMETERS	
	MIN	MAX
A	4.83	5.21
A1	2.29	2.54
A2	1.91	2.16
b	1.10	1.30
b1	0.65	0.79
b2	1.10	1.25
b3	1.34	1.44
b4	0.65	0.74
c	0.55	0.68
c1	0.55	0.65
D	20.80	21.10
D1	16.25	17.65
D2	0.95	1.25
E	15.75	16.13
E1	13.10	14.15
E2	4.32	5.10
E3	1.00	1.90
E4	12.38	13.43
e1	5.08 BSC	
e2	2.79 BSC	
e3	2.54 BSC	
L	19.72	20.32
L1	3.97	4.37
øP	3.51	3.65
Q	5.49	6.00
S	6.04	6.30
T	17.5° REF.	

UNIT: mm

TOLT



Symbol	Min	Max
A	2.20	2.35
A1	0.01	0.11
A2	0.56	0.96
b	0.60	0.85
b1	0.60	0.80
c	0.45	0.65
c1	0.45	0.60
D	10.00	10.30
D1	5.47	5.87
D2	1.80	2.20
D3	4.85	5.25
D4	5.00	5.13
D5	2.08	2.48
D9	2.42	2.82
D10	3.85	4.25
D11	2.04	2.44

UNIT: mm

Symbol	Min	Max
E	9.70	10.10
E1	9.26	9.66
E2	8.10	8.50
E3	4.75	5.15
E4	0.20	0.60
e	1.20BSC	
e1	0.60BSC	
e2	8.40BSC	
H	14.80	15.20
K	3.71	4.11
L	2.25	2.65
L1	7.30	7.70
L2	1.30	1.70
R	0.07	-
P	2.90	3.10
θ	4°	10°

单位Unit:mm