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MACMIC®

股票名称	宏微科技
股票代码	688711

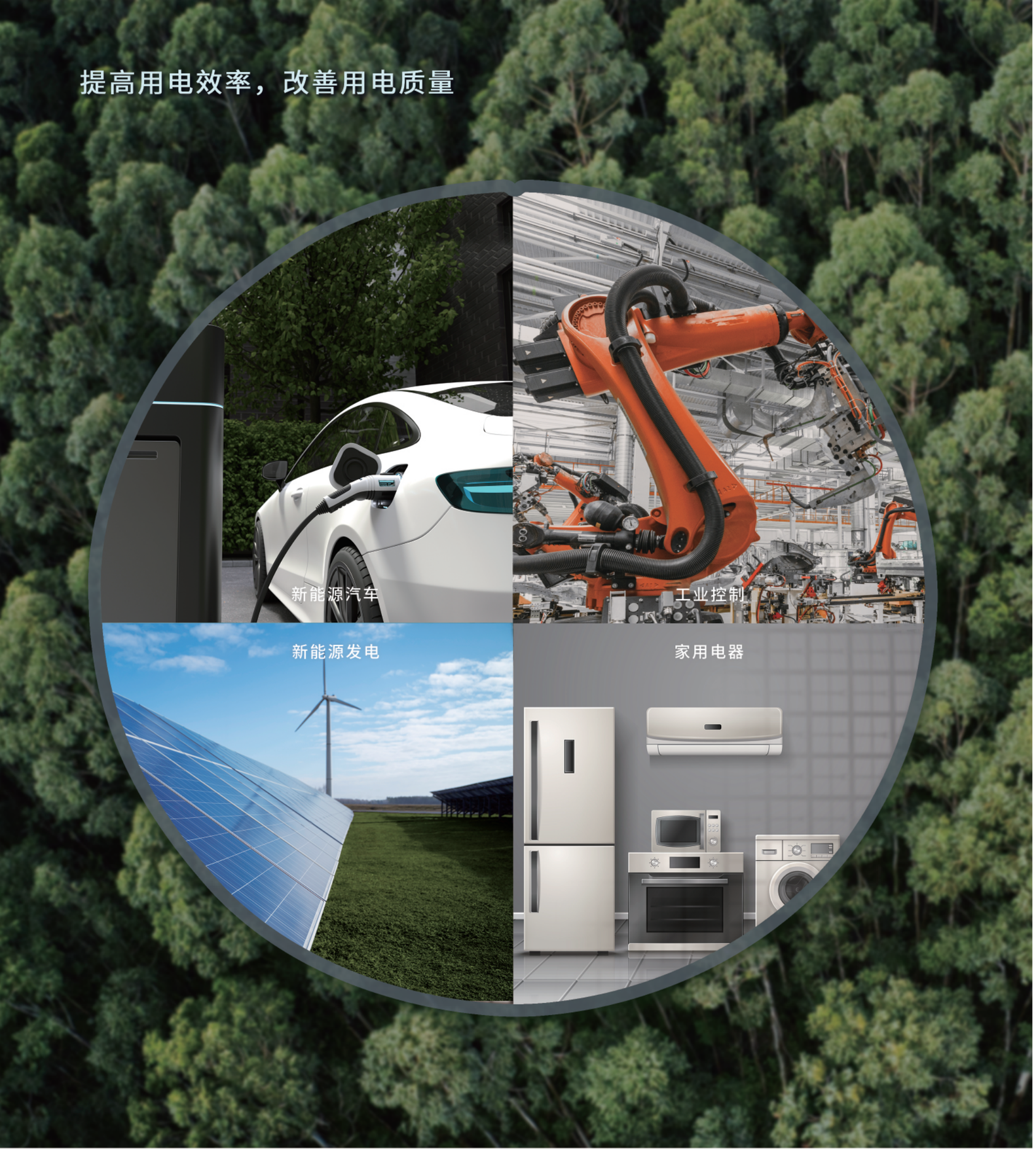
专注功率半导体产品设计与制造

Power for the Better

MACMIC

产品手册
PRODUCT CATALOGUE

江苏宏微科技股份有限公司
MACMIC SCIENCE & TECHNOLOGY CO.,LTD.



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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，主营业务为电力半导体器件的设计、研发、制造及销售，主要产品：IGBT、VDMOS、FRD等芯片、分立器件、模块等功率半导体器件产品。公司自产 IGBT、FRD 芯片技术已达国际先进、国内领先水平，打破国外垄断，填补了多项国内的空白。宏微科技是国内功率半导体器件行业领军企业之一。2021年，宏微科技成功上市科创板，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, VDMOS, FRD, SiC chips, discrete devices and modules. MACMIC has advanced IGBT and FRD technologies. MACMIC focuses on becoming an expert in providing power semiconductor device solutions. It 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、VDMOS、FRD 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, VDMOS, FRD 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。

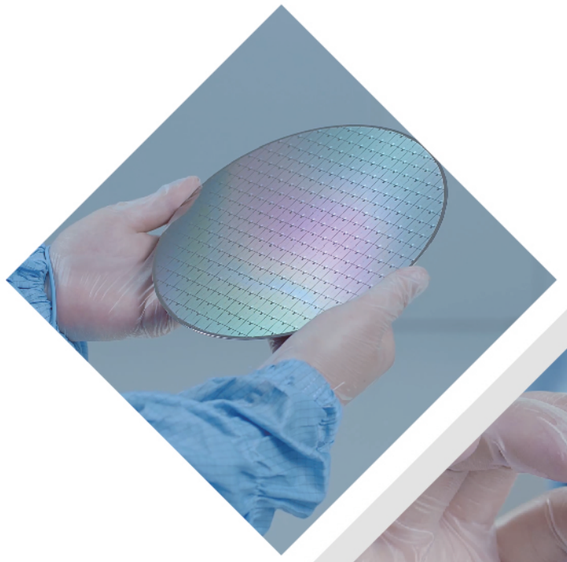
  The total production process is controlled by the ISO9001 and IATF16949 quality assurance systems. Every production step is strictly checked and tested to ensure the quality and stability of the products.

企业宗旨 COMPANY GOALS

- 自主创新、设计、研发、生产国际一流的 IGBT、VDMOS、FRD 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, VDMOS, FRD discretes and modules, to provide solutions of power semiconductor devices.

企业实力
COMPANY STRENGTH



宏图之志　成于细微

功率模块生产线 POWER MODULE LINE

华山厂区：6000m² 先进厂房　　1700m² 抗静电超净模块车间
新竹厂区：41000m² 先进厂房　　19300m² 抗静电超净模块车间
Huashan Plant - Factory Area: 6000m²; Clean Room Area: 1700m²
Xinzhu Plant - Factory Area: 41000m²; Clean Room Area: 19300m²

先进的设备 - 全自动贴片机、真空烧结炉、全自动键合机、X - Ray 扫描机……
Equipment: Pick and Place Machines / Vacuum Fumace / Al and Cu Wire Bonders / X - Ray and C-SAM Scanners……

测试分析中心 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 DC 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
IGBT 开关安全工作区测试仪	IGBT SCSOA Tester
IGBT 反向安全工作区测试仪	IGBT RBSOA Tester
高压二极管反向恢复测试仪	HV-D Reverse Recovery Tester
8KV 高压静态参数测试仪	8KV HV Static Parameter Tester
功率半导体器件 UIS 测试仪	Power Semiconductor UIS Tester
可控硅静态及全动态测试仪	SCR Static & Dynamic Parameter Tester
浪涌电流测试仪	Surge Current Tester
热阻测试仪	Thermal Resistance Tester
……	……

可靠性实验室 RELIABILITY LABORATORY

高温反偏 (HTRB) 测试	High Temperature Reverse Bias Test
高温栅偏 (HTGB) 测试	High Temperature Gate Bias Test
功率循环 (PC) 测试	Power Cycle Test
高低温循环 (TC) 测试	High / Low Temperature Cycle Test
高温高湿反向偏置 (H^3TRB) 测试	High Humidity High Temperature Reverse Bias Test
85-85 (恒温恒湿) 测试	85 / 85 Temperature / Humidity Test
冷热冲击试验	Hermal Shock Test
盐雾试验	Salt Spray Evaluation Test
振动试验	Vibration Evaluation Test
高加速应力测试	Highly Accelerated Stress Test (HAST)

失效分析实验室 FAILURE ANALYSIS LABORATORY

X-Ray 扫描	X-Ray Scanning
断面结构分析	Cross-Section Analysis
局部热像分析	Hot Spotting Analysis
1000倍显微镜	1000 time Magnification Microscope

产品命名
PRODUCT NAMING

IGBT & MOSFET 分立器件 IGBT & MOSFET DISCRETES

MM 40 G3U 120 B F

- F → Fullpak Package
- B → Package Type:
  B: TO-247
  P: TO-3P
  K: TO-220
  S: TO-263
  BM: TO-247 Plus
- 120 → Voltage×10
  E.g.120=1200V
- G3U → Product Type:
  G=IGBT
  N=MOS
- 40 → Current Rating
  I_C=40A
- MM → MacMic

FRD 分立器件 FRD DISCRETES

MM 80 F U 040 B F 1

- 1 → Fullpak Package
- F → Circuit
- B → Package Type:
  B: TO-247
  P: TO-3P
  K: TO-220
- 040 → Voltagex10
  E.g. 040=400V
- F U → Product Type:
  F=Fast
  FU=Ultra Fast
  FC=Fast Charge
- 80 → Current Rating
  $I_{F(Av)}$=80A
- MM → MacMic

IGBT 模块 IGBT MODULES

MM G 75 S 120 B 6TC

- 6TC → Chip Type
  MacMic Chip
  6C: M2i Chip
  6TC: M3i Chip
  6T6: M6i Chip
  6T7: M7i Chip
  B: Hitachi Energy Chip
  RS: Renesas Chip
- B → Circuit
  U=Single
  B=Half Bridge
  H=Full Bridge
  XB=3 Phase Rectifier + Brake + 3 Phase Output
  X=3 Phase Bridge
  PD="I" Type 3-level
  BF="T" Type 3-level
  ……
- 120 → Voltage×10
  E.g.120=1200V
- S → Package Type:
  GJ, GS, GQ, GD, GK, GQC, GWJ, GCB, GCE, GH, GHD, GW, GWD, GHB, GWB, GHC, GHP, GCF, GB, GC, GV, GVB, GVC, GVD
- 75 → Current Rating
  I_C=75A
- G → G: IGBT Modules
- MM → MacMic

FRD 模块 / 整流二极管模块 / 三相整流桥模块

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

MM F 100 N 120 B

- B → Circuit
- 120 → Voltage×10 E.g.120=1200V
- N → Package Type: FZ, FY, FN, FS, FJ, FYB, FD DE, DEB, DF, DFB, DL, DA, DAB, DS
- 100 → Current Rating I_C=100A
- F → F: FRD Modules D: Diode Modules
- MM → MacMic

PART 01 分立器件 DISCRETES

IGBT 分立器件 IGBT DISCRETES

产品范围 Ranges

- 650-1350V / 10-120A

封装 Packages

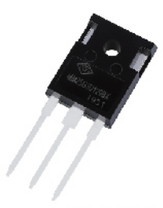
- TO-247-3L, TO-247-4L, TO-247 Plus-3L, TO-247 Plus-4L

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

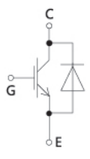
- 开关速度快
  Fast Switching Speed
- 短路承受能力强
  High Short Circuit Capability



TO-247-3L

TO-247 Plus-3L

TO-247-4L



Circuit	Type	V_{CES} min. (V)	I_C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} T_j=150℃ (mJ)	R_{thJC} max. (K/W)	Package Outline
	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
	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
	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
	MM40G5U120BX	1200	40	1.70	395	1.90	0.38	TO-247-3L
	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
	MM140G7U120BKM	1200	140	1.60	1111	8.00	0.14	TO-247 Plus-4L
	RC IGBT							
	MM20G3R135B	1350	20	1.60	333	1.40	0.45	TO-247-3L
	MM20G3T135B	1350	20	1.65	268	1.30	0.56	TO-247-3L

* 注(Note): RC IGBT stands for reverse conducting IGBT

MOSFET 分立器件 MOSFET DISCRETES

产品范围 Ranges

- 1500V / 3A

封装 Packages

- TO-263, TO-3PF, TO-247

应用 Applications

- 开关电源，电动工具
  Switching Mode Power Supply, Electric Tools
- 同步整流，PFC 电路
  Synchronous Rectifier Circuit, PFC Circuit
- 低速电动车，变频器
  Low Speed EV, Inverter

特性 Features

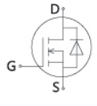
- 导通电阻低
  Low $R_{ds(on)}$
- 开关速度快
  Fast Switching Speed
- 雪崩耐量高
  High Avalanche Energy

TO-263

TO-3PF

TO-247

Tc=25℃ unless otherwise noted

Circuit	Type	V_{DSS} min. (V)	I_D (A)	$R_{DS(on)}$ typ. (Ω)	P_D max. (W)	t_f T_j=25℃ (ns)	R_{thJC} max. (K/W)	Package Outline
	MM3N150PF	1500	2.5	9	63	61	2.00	TO-3PF
	MM3N150S	1500	2.5	9	63	61	0.90	TO-263
	MM3N150B	1500	2.5	9	63	61	0.89	TO-247

FRD 分立器件 FRD DISCRETES

产品范围 Ranges

- 200-1200V / 8-100A

封装 Packages

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

应用 Applications

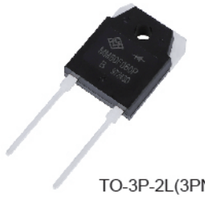
- 电焊机
  Welding Machine
- 各种开关电源，UPS 电源
  SMPS, UPS
- 家电
  Home Appliances
- 充电桩
  Charging Pile

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

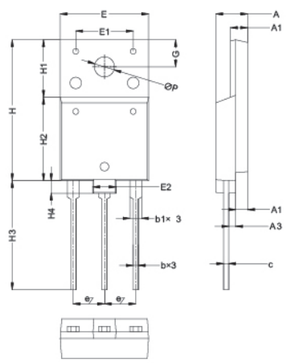
TO-3P-3L(3PN/3PB)

Tc=25°C unless otherwise noted

Circuit	Type	V_{RRM} (V)	$I_{F(AV)}$ d=0.5 (A)	V_F $I_F=I_{F(AV)}$ (V)	t_{rr} I_F=1A T_j=25℃ (ns)	R_{thJC} max. (℃/W)	Package Outline
	D92-02	200	10*2	0.90	17	1.50	TO-3PB-3L
	MM100F20B	200	100	1.00	35	0.24	TO-247-2L
	MM60F020PC	200	30*2	0.86	22	0.80	TO-3PB-3L
	MM60FU030PC	300	30*2	1.25	22	0.80	TO-3PB-3L
	MM80FU040PC	400	40*2	1.30	22	0.80	TO-3PB-3L
	MM30F060PC	600	15*2	1.41	21	0.80	TO-3PB-3L
	MM60F060PC	600	30*2	1.50	30	0.80	TO-3PB-3L
	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
	MM15F060K	600	15	1.30	30	1.50	TO-220C-2L
	MM60FU060B	600	60	2.00	25	0.50	TO-247-2L
	MM60F060P	600	60	1.30	40	0.50	TO-3PB-2L
	MM30FU060K1	600	30	2.00	20	1.50	TO-220F-2L
	MM60FU60BC	600	30*2	2.00	20	0.80	TO-247-3L
	MM8FU060K	600	8	1.80	17	2.50	TO-220C-2L
	MM30FU60PC	600	15*2	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
	MM15F70K	700	15	1.30	21	1.50	TO-220C-2L
	MM16F70KC	700	8*2	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-220A-2L/ TO-220B-2L
	MM30FU120B	1200	30	2.90	26	0.80	TO-247-2L
	MM8FU120K	1200	8	2.80	20	2.00	TO-220A-2L/ TO-220B-2L
	MM30FU120K	1200	30	2.90	26	0.80	TO-220A-2L/ TO-220B-2L
	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
	MM60F040B	400	60	1.15	35	0.48	TO-247-2L

注(Note): I_F=IA, di_F/dt=-200Nus, V_R=30V.

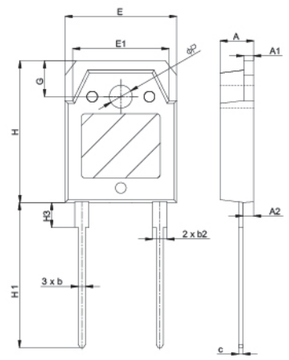
TO-3PF



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
øP	3.30	3.50	3.70

UNIT: mm

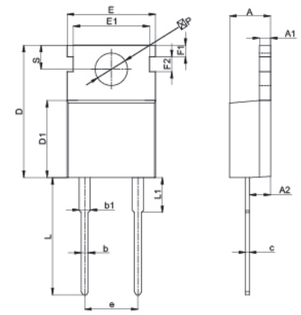
TO-3PB-3L



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	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
ØP	3.00	3.20	3.40

UNIT: mm

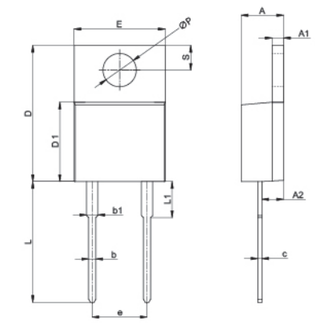
TO-220B-2L



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
ØP	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

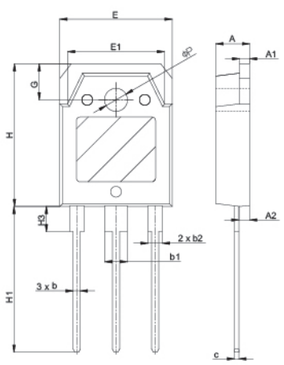
TO-220C-2L



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
ØP	3.40	3.60	3.80
S	2.60	2.80	3.00

UNIT: mm

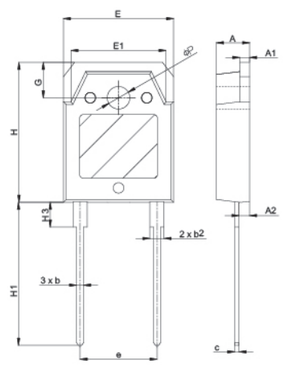
TO-3PB-3L



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
ØP	3.00	3.20	3.40

UNIT: mm

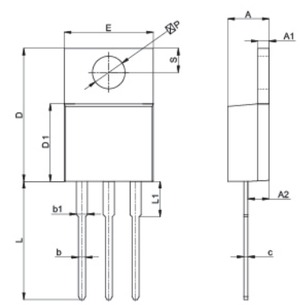
TO-3PN-2L



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
ØP	3.00	3.20	3.40

UNIT: mm

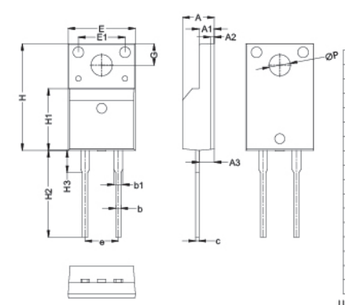
TO-220C-3L



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
ØP	3.40	3.60	3.80
S	2.60	2.80	3.00

UNIT: mm

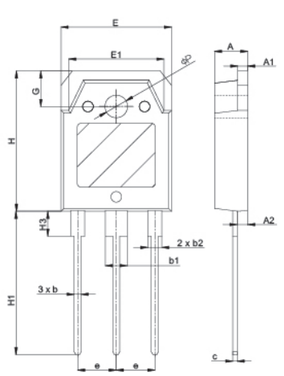
TO-220F



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	5.08BSC		
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
øP	3.00	3.20	3.40

UNIT: mm

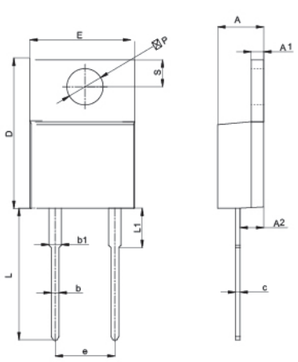
TO-3PN-3L



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
ØP	3.00	3.20	3.40

UNIT: mm

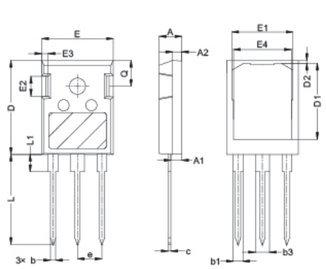
TO-220A-2L



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
ØP	3.64	3.84	4.04
S	2.54	2.74	2.94

UNIT: mm

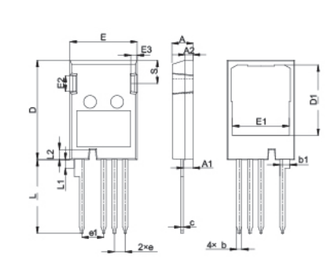
TO-247 Plus-3L



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

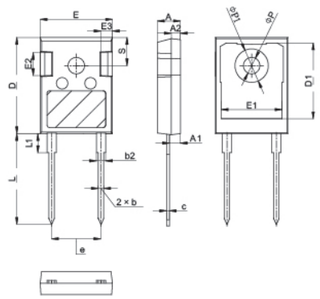


Symbol	Min	Nom	Max
A	4.83	5.02	5.21
A1	2.29	2.42	2.54
A2	1.91	2.04	2.16
b	1.07	1.20	1.33
b1	2.39	2.54	2.69
c	0.55	0.62	0.68
e	2.54BSC		
e1	5.08BSC		
E	15.75	15.94	16.13
E1	12.38	12.91	13.43
E2	3.68	4.39	5.10
E3	1.00	1.14	1.90
D	23.30	23.45	23.60
D1	16.25	17.10	17.65
L	17.31	17.57	17.82
*L1	3.97	4.17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

UNIT: mm
*L1 有2.00 mm± 0.2mm方案可选

单位（Unit）: mm

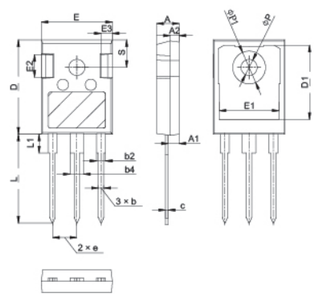
TO-247-2L



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

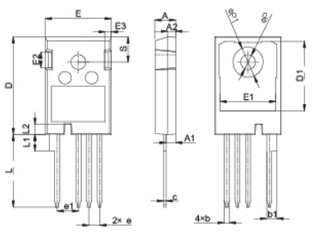
TO-247-3L



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

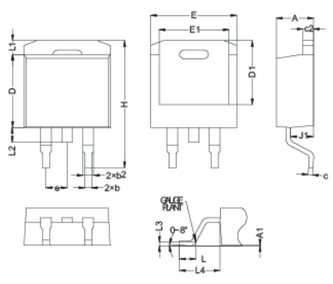
TO-247-4L



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-263



Symbol	Min	Nom	Max
A	4.36	4.46	4.56
A1	-	-	0.25
b	0.70	0.80	0.90
b2	1.17	1.27	1.37
c	0.38	0.54	0.69
c2	1.19	1.27	1.34
D	8.60	8.80	9.00
D1	6.90	7.20	7.50
E	10.15	10.35	10.55
E1	8.10	8.40	8.70
e	2.54BSC		
H	15.00	15.30	15.60
L	1.90	2.20	2.50
L1	-	-	1.65
L2	-	-	1.78
L3	0.25TYP		
L4	4.78	5.03	5.28
J1	2.56	2.76	2.96

UNIT: mm

PART 02

IGBT 模块
IGBT MODULES

IGBT 模块 IGBT MODULES

产品范围 Ranges

- 600-1700V / 10-820A

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

电路结构 Circuit Configurations

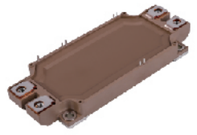
- 单单元电路
  Single Circuit
- 半桥电路、全桥电路、三相桥电路
  Half-Bridge Circuit, Full-Bridge Circuit, Three Phase Bridge Circuit
- 斩波电路、共发射极电路
  Chopping Circuit, Common-Emitter Circuit
- 三电平电路
  Three-Level Circuit

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


GWB


GV

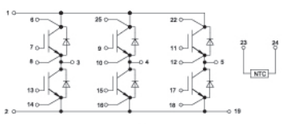

GVB


GVC


GVD

电动汽车 IGBT 模块 IGBT MODULES FOR ELECTRIC VEHICLE


B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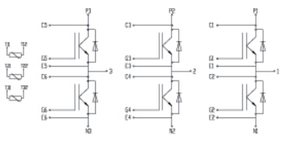

X

Circuit	Type	V_{CES} min. (V)	I_C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} (mJ)	R_{thJC} max. (K/W)	Package Outline
	MMG450WB120B6TC	1200	450	1.85	2142	40	0.07	GWB
	MMG600WB120B6T6	1200	600	1.70	2941	74.5	0.051	GWB
	MMG800WB120B6T6	1200	800	1.80	3750	121	0.04	GWB
	MMG400VB065X6TC	650	400	1.55	1200	14.6	0.125	GVB
	MMG280VD075X6TC	650	280	1.40	564	20	0.266	GVD
	MMG400VD075X6TC	750	400	1.35	1315	24	0.114	GVD
	MMG400VC075X6TC	750	400	1.21	1071	22.3	0.14	GVC
	MMG600V075X6TC	750	600	1.15	1071	20	0.14	GV
	MMG820V075X6TC	750	820	1.35	1070	31.5	0.14	GV
	MMG820V075X6RS	750	820	1.35	1154	25	0.13	GV
	MMG950V075X6TC	750	950	1.15	1304	28.2	0.115	GV
	MMG600V120X6RS	1200	600	1.80	1500	51	0.10	GV


GCB


GC


GB


GWB

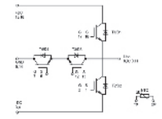

GCF

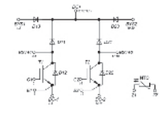

GHP


GCE


GD

光储 IGBT 模块 IGBT MODULES FOR PV


BF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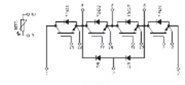
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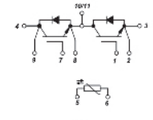
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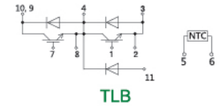
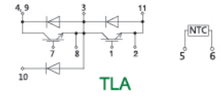

TLB


TLA

Circuit	Type	V_{CES} min. (V)	I_C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} (mJ)	R_{thJC} max. (K/W)	Package Outline
	MMG80C120BF_Y1	1200	80	1.90	300	1.4	0.50	GC
	MMG50C120BT6HN_Y1	1200	50	2.00	357	2.7	0.42	GC
	MMG150B065PD6TC	650	150	1.55	411	5.3	0.34	GB
	MMG450WB120B6TC	1200	450	1.85	2305	48.5	0.065	GWB
	MMG600WB120B6T6	1200	600	1.70	2941	74.5	0.051	GWB
	MMG800WB120B6T6	1200	800	1.80	3750	121.0	0.04	GWB
	MMG300WB120TLB6TC	1200	300	1.70	1380	37.0	0.09	GWB
	MMG300WB120TLA6TC	1200	300	1.70	1380	37.0	0.09	GWB
	MMG400CF065PD6T5C	650	400	1.20	1389	2.1	0.11	GCF
	MMG450HP065PD6T5	650	450	1.50	1071	2.2	0.14	GHP
	MMG150CE065PD6TC	650	150	1.65	335	5.1	0.45	GCE
	MMG150CE065PD6T6	650	150	1.40	335	5.00	0.40	GCE
	MMG200CE065PD6T5	650	200	1.50	468	5.2	0.32	GCE
	MMG800D120B6T7	1200	800	1.50	3061	132.0	0.049	GD


GB

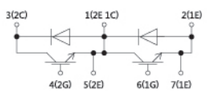
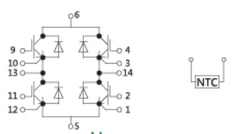
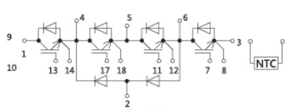
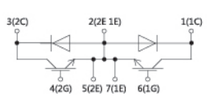
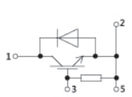

GHB


GS


GD


GH

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

Circuit	Type	V_{CES} min. (V)	I_C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} (mJ)	R_{thJC} max. (K/W)	Package Outline
	M3i							
 B	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
 H	MMG100CE065PD6TC	650	100	1.55	300	2.40	0.45	GCE
	MMG150CE065PD6TC	650	150	1.65	335	5.10	0.45	GCE
	MMG150HB060H6TC	600	150	1.55	441	3.70	0.34	GHB
	MMG200HB060H6TC	600	200	1.55	600	5.70	0.25	GHB
 PD	MMG75S060B6TC	600	75	1.55	250	2.15	0.6	GS
	MMG100S060B6TC	600	100	1.55	330	2.15	0.45	GS
	MMG150S060B6TC	600	150	1.65	441	5.00	0.34	GS
 B	MMG200S060B6TC	600	200	1.55	600	5.70	0.25	GS
	MMG300Q060B6TC	600	300	1.55	882	10.70	0.17	GQ
 DE	MMG300D060B6TC	600	300	1.55	882	10.70	0.17	GD
	MMG400D060B6TC	600	400	1.55	1200	12.60	0.125	GD
	MMG450WB065B6TC	650	450	1.55	1250	19.00	0.12	GWB
	MMG600WB065B6TC	650	600	1.55	1760	30.50	0.085	GWB
 U	MMG50H065XB6TC	650	50	1.70	187	1.00	0.80	GH
	MMG75H065XB6TC	650	75	1.35	250	2.25	0.60	GH

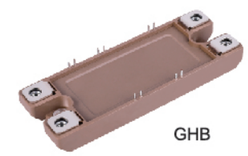

GJ

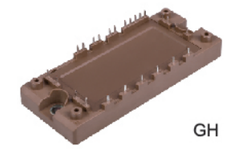

GCB

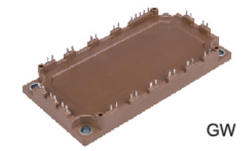

GCE


GQC

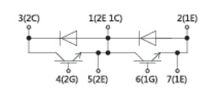
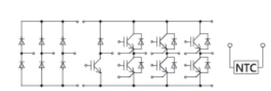
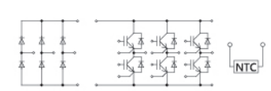
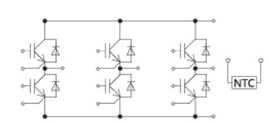

GQ


GHB

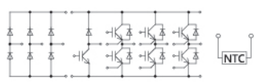
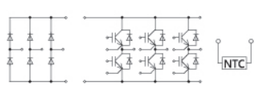
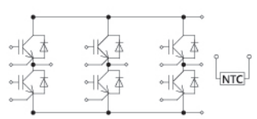
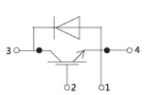
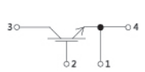

GH


GW

1200V IGBT 模块 1200V IGBT MODULES

Circuit	Type	V_{CES} min. (V)	I_C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} (mJ)	R_{thJC} max. (K/W)	Package Outline
	M3i U							
 B	MMG40S120B6UC	1200	40	1.70	300	2.40	0.50	GS
	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
	MMG100D120B6UC	1200	100	1.70	789	6.70	0.19	GD
	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
	MMG400D120B6UC	1200	400	1.90	2083	31.60	0.072	GD
	MMG50QC120H6UC	1200	50	1.70	405	3.10	0.37	GQC
	MMG75QC120H6UC	1200	75	1.70	535	4.10	0.28	GQC
	M3i T							
 XB	MMG10CB120XB6TC	1200	10	1.85	107	0.69	1.25	GCB
	MMG10CB120X6TC	1200	10	1.85	107	0.69	1.25	GCB
	MMG10CB120XT6TC	1200	10	1.85	107	0.69	1.25	GCB
	MMG15CB120XB6TC	1200	15	1.85	130	1.12	1.05	GCB
	MMG15CB120X6TC	1200	15	1.85	130	1.12	1.05	GCB
	MMG15CB120XT6TC	1200	15	1.85	130	1.12	1.05	GCB
 XT	MMG25CB120X6TC	1200	25	1.85	203	2.40	0.74	GCB
	MMG25CE120XB6TC	1200	25	1.85	176	2.40	0.75	GCE
	MMG35CE120XB6TC	1200	35	1.85	214	3.30	0.60	GCE
 X	MMG25HD120XB6TC	1200	25	1.85	166	2.40	0.90	GHD

1200V IGBT 模块 1200V IGBT MODULES

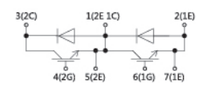
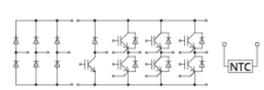
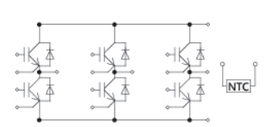
Circuit	Type	V_{CES} min. (V)	I_C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} (mJ)	R_{thJC} max. (K/W)	Package Outline
 B	MMG35HD120XB6TC	1200	35	1.85	208	3.30	0.72	GHD
	MMG35HD120XT6TC	1200	35	1.85	208	3.30	0.72	GHD
	MMG50HD120XB6TC	1200	50	1.80	278	4.20	0.54	GHD
	MMG50HD120XT6TC	1200	50	1.80	278	4.20	0.54	GHD
	MMG25H120XB6TC	1200	25	1.85	166	2.40	0.90	GH
 XB	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
 XT	MMG35CB120X6TC	1200	35	1.80	214	3.70	0.70	GCB
	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
 X	MMG75J120UZ6TC	1200	75	1.85	385	6.20	0.39	GJ
	MMG75J120U6TC	1200	75	1.85	385	6.20	0.39	GJ
	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
 U	MMG100S120B6TC	1200	100	1.70	515	8.30	0.29	GS
	MMG150S120B6TC	1200	150	1.85	750	13.00	0.20	GS
	MMG100D120B6TC	1200	100	1.85	556	5.60	0.27	GD
	MMG150D120B6TC	1200	150	1.70	789	12.10	0.19	GD
	MMG200Q120B6TC	1200	200	1.70	1071	16.50	0.14	GQ
 UZ	MMG200Q120DE6TC	1200	200	1.70	1071	16.50	0.14	GQ
	MMG200D120B6TC	1200	200	1.70	1071	16.50	0.14	GD
	MMG300D120B6TC	1200	300	1.85	1500	29.00	0.10	GD
	MMG400D120B6TC	1200	400	1.85	2000	35.00	0.75	GD

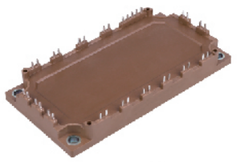

GS


GQ


GD

1200V IGBT 模块 1200V IGBT MODULES

Circuit	Type	V_{CES} min. (V)	I_C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} (mJ)	R_{thJC} max. (K/W)	Package Outline
 B	MMG450D120B6TC	1200	450	1.85	2235	52.00	0.07	GD
	MMG300WB120B6TC	1200	300	1.80	1596	26.30	0.094	GWB
	MMG450WB120B6TC	1200	450	1.85	2305	45.00	0.065	GWB
	MMG600WB120B6TC	1200	600	1.90	3125	58.00	0.048	GWB
	M6i							
 B	MMG600WB120B6T6	1200	600	1.70	3750	74.50	0.40	GWB
	MMG800WB120B6T6	1200	800	1.80	3571	87.00	0.042	GWB
	M7i							
 XB	MMG25CB120XB6T7	1200	25	1.60	163	3.18	0.92	GCB
	MMG75HD120XB6T7	1200	75	1.55	312	4.95	0.48	GHD
	MMG150WJ120XB6T7	1200	150	1.50	882	12.10	0.17	GW
 X	MMG200W120X6T7	1200	200	1.55	652	13.6	0.23	GW
	MMG300W120X6T7	1200	300	1.50	882	24.4	0.17	GW
	MMMG800D120B6T7	1200	800	1.50	3061	132	0.05	GD

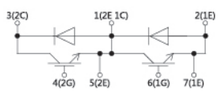


GW

GS

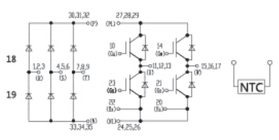
GD

1700V IGBT 模块 1700V IGBT MODULES



B

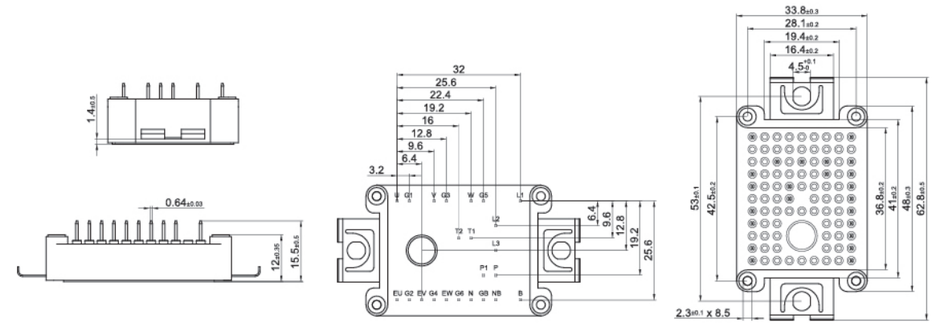
B



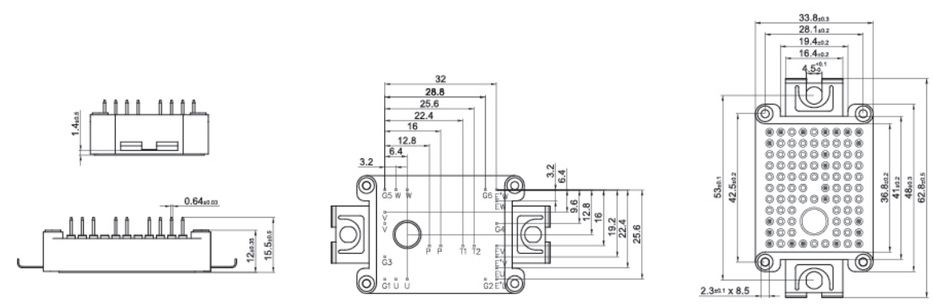
HX

Circuit	Type	V_{CES} min. (V)	I_C (A)	$V_{CE(sat)}$ typ. (V)	P_D max. (W)	E_{off} (mJ)	R_{thJC} max. (K/W)	Package Outline
	SPT+							
	MMG50S170B	1700	50	2.40	395	9.8	0.38	GS
	MMG75S170B	1700	75	2.40	535	18.5	0.28	GS
	MMG100S170B	1700	100	2.30	682	24	0.22	GS
	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							
	MMG75S170B6TC	1700	75	2.15	555	17	0.27	GS
	MMG100S170B6TC	1700	100	2.15	681	22.5	0.22	GS
	MMG100D170B6TC	1700	100	2.05	833	26	0.18	GD
	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
	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

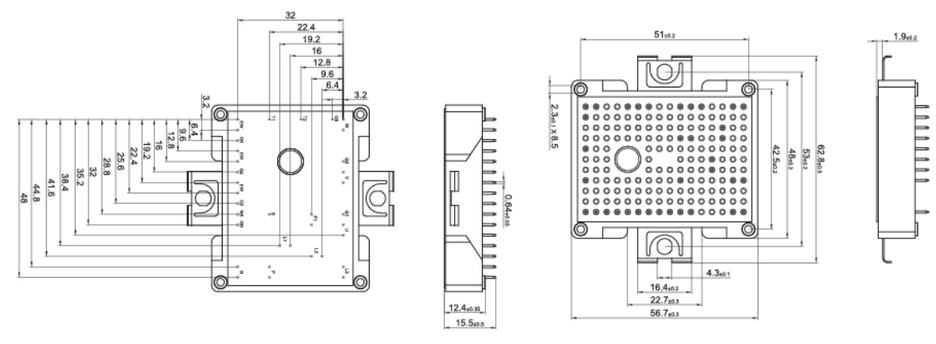
GCB-XB



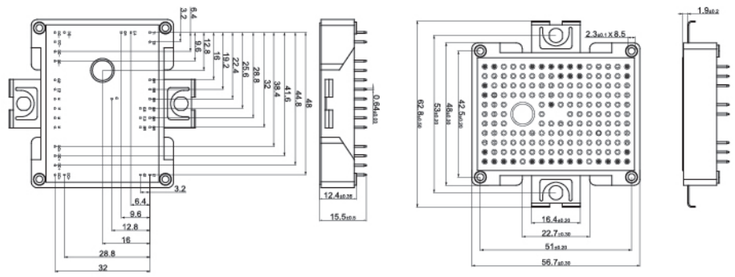
GCB-X



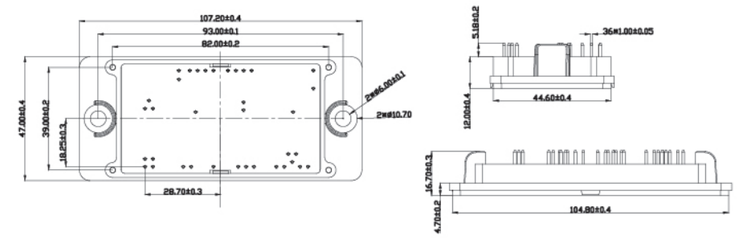
GCE-XB



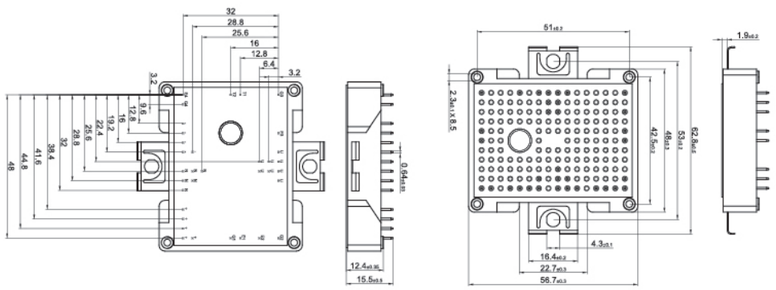
GCE-BF



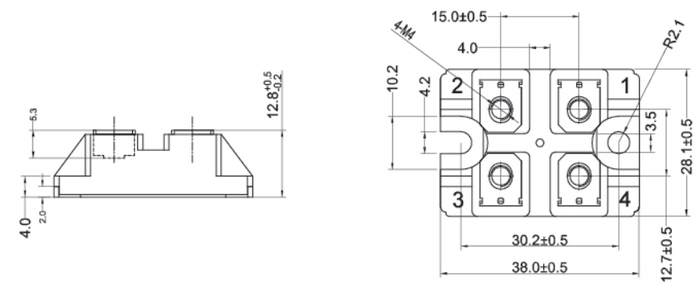
GHP



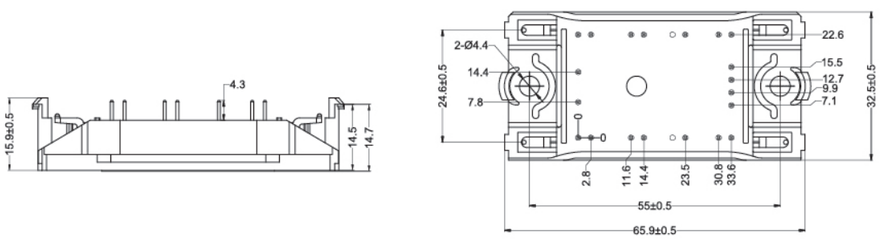
GCE-PD



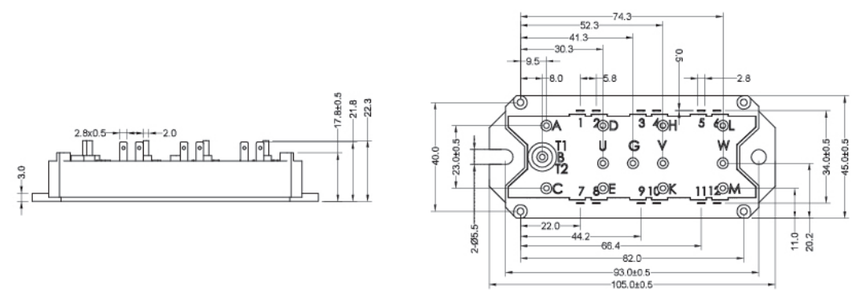
GJ



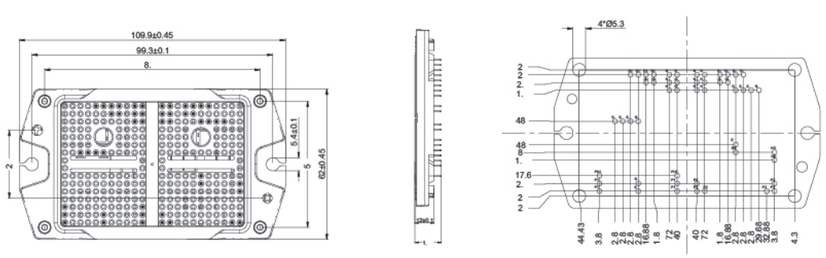
GC



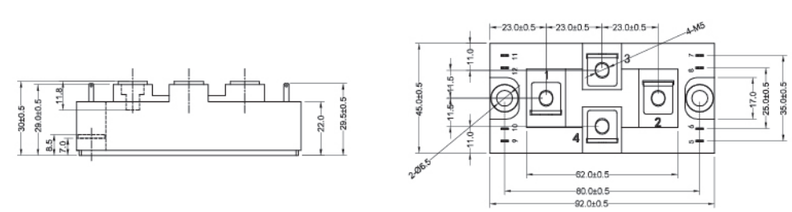
GHC



GCF

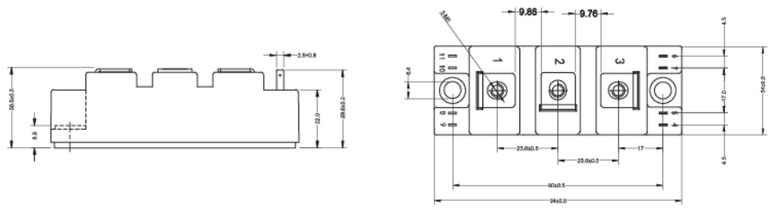


GQC

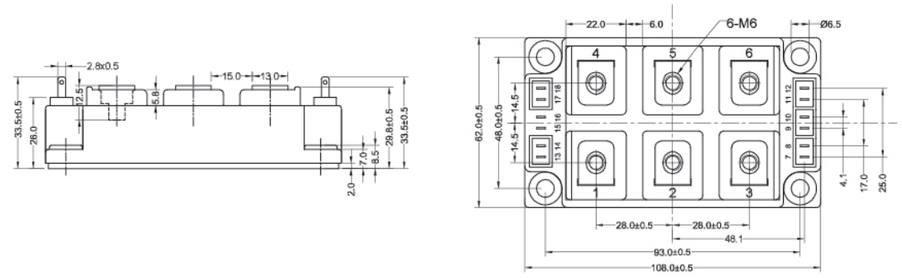


单位（Unit）：mm

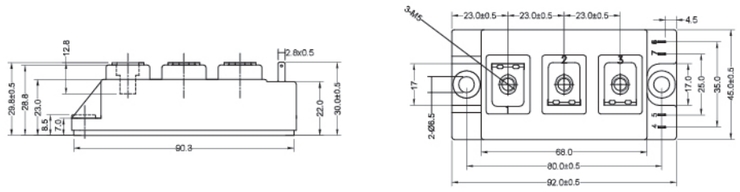
GS



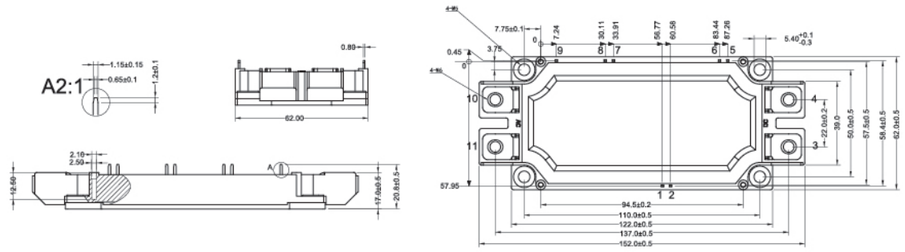
GB



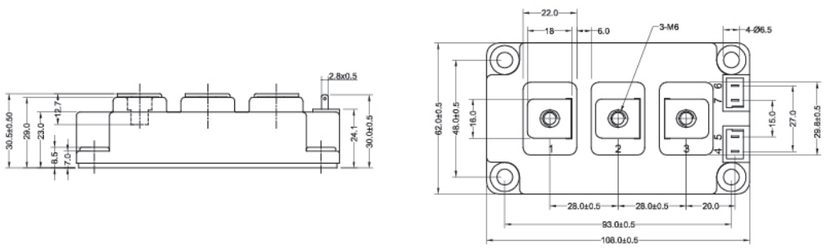
GQ



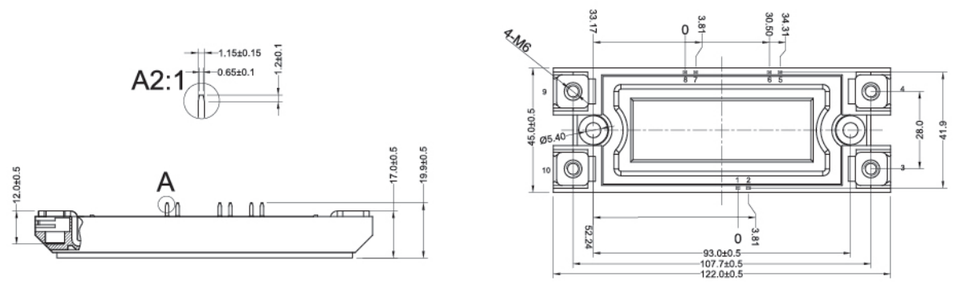
GWB



GD



GHB-B



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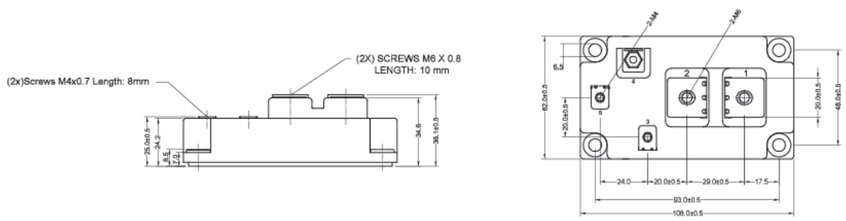
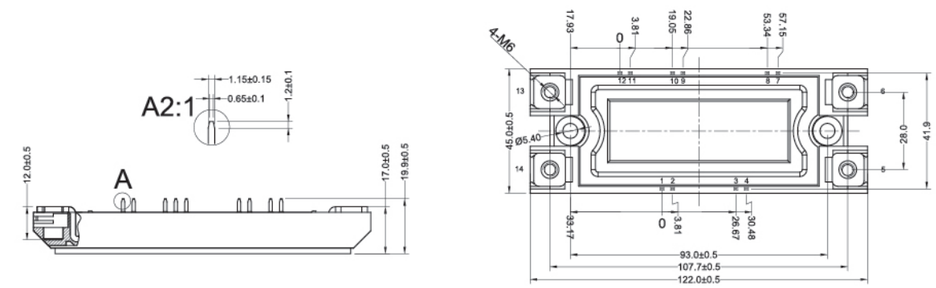
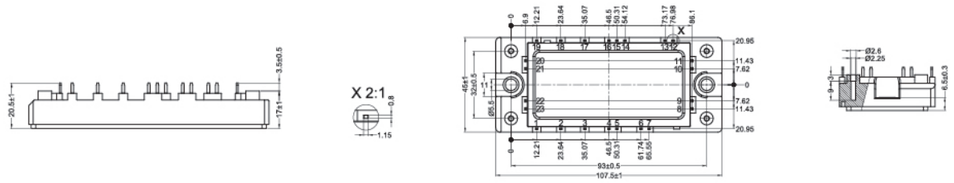


GHB-H

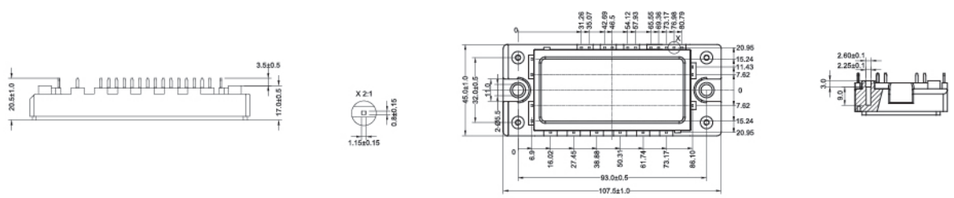


单位（Unit）：mm

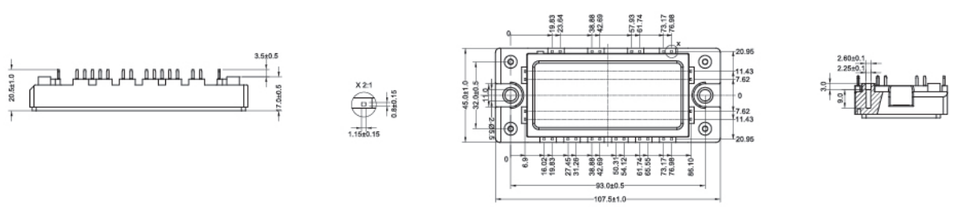
GHD-XB



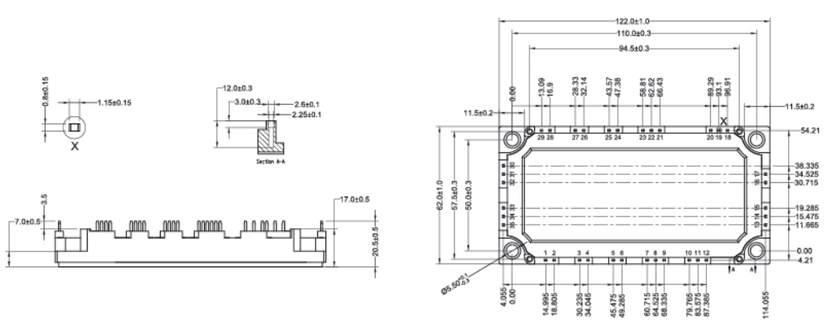
GH-XB



GH-X

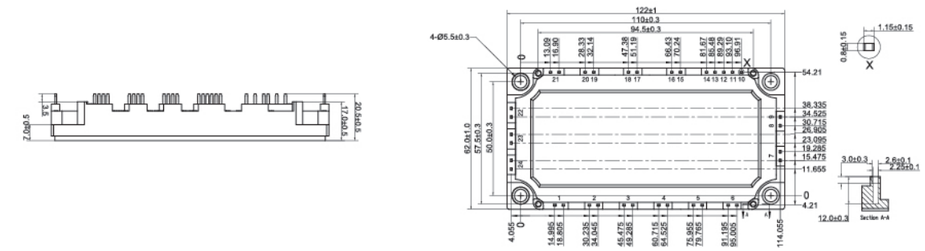


GWD-XB

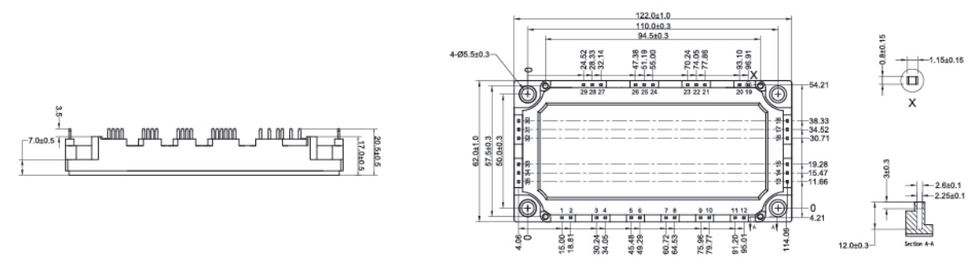


单位（Unit）：mm

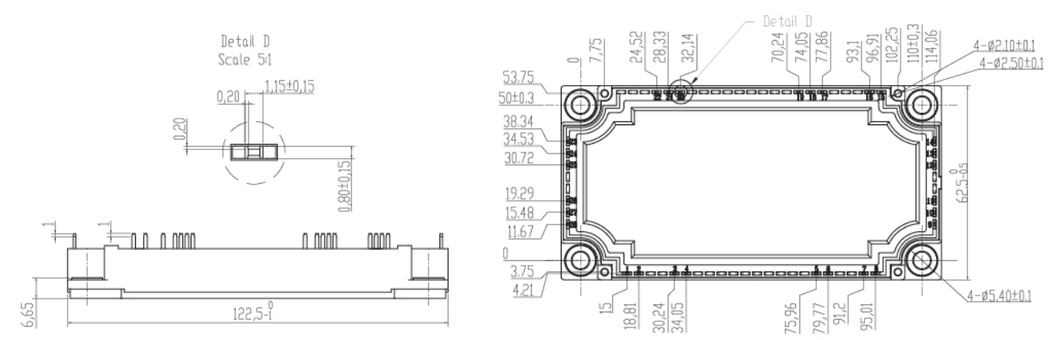
GW-XB



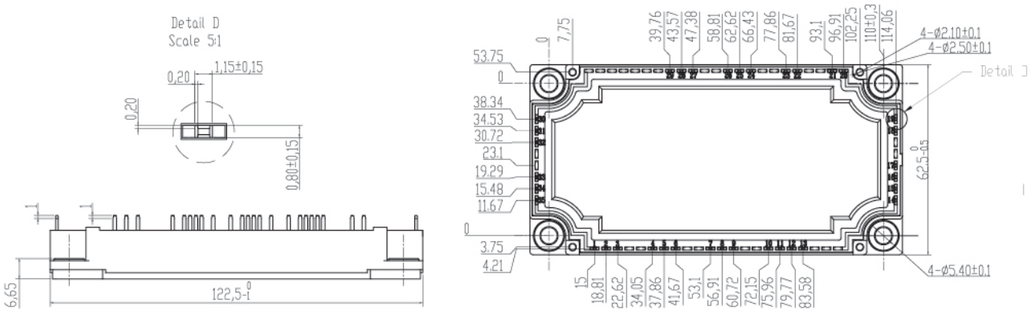
GW-X



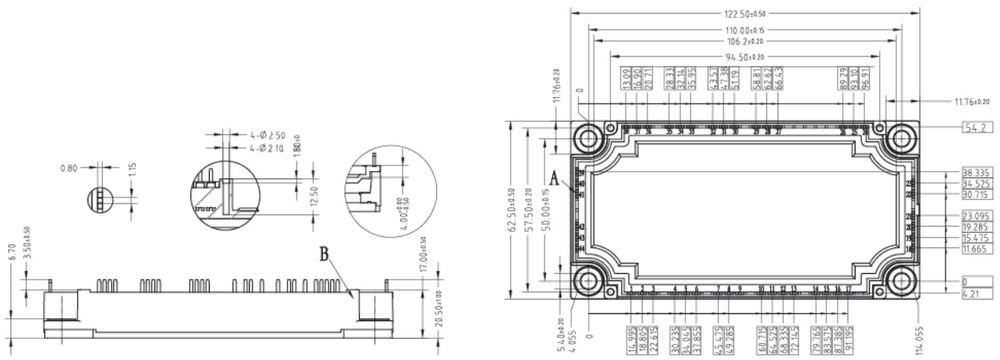
GW-H



GW-HX



GWJ



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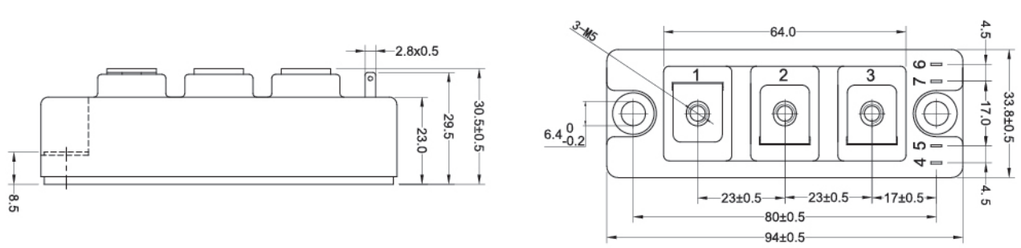
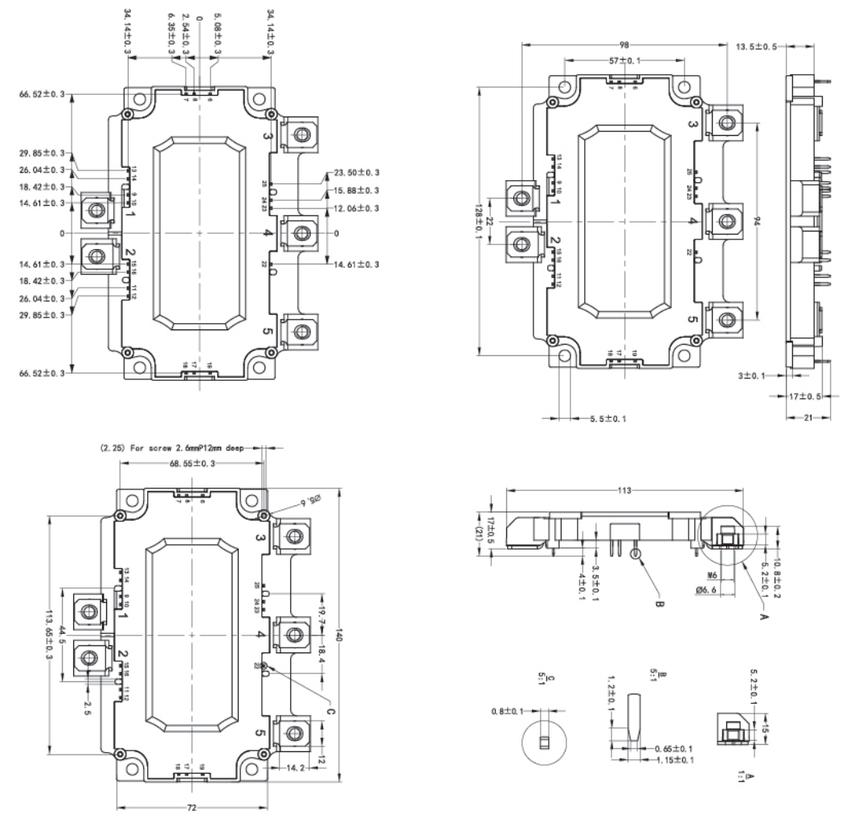


GVB



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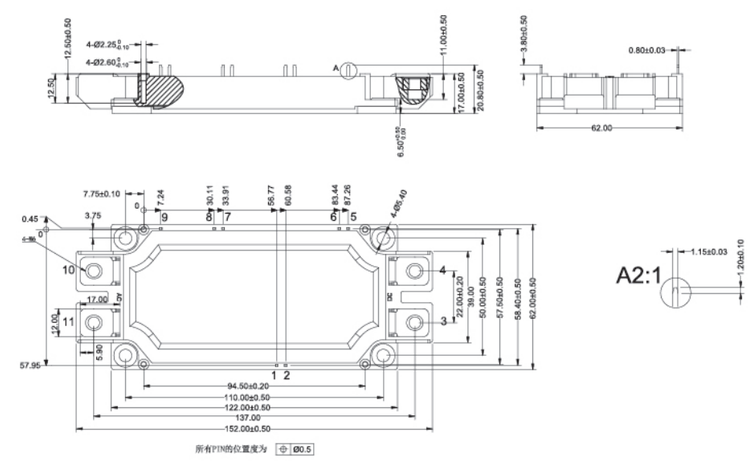
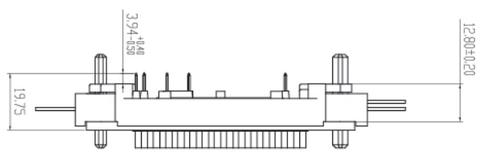
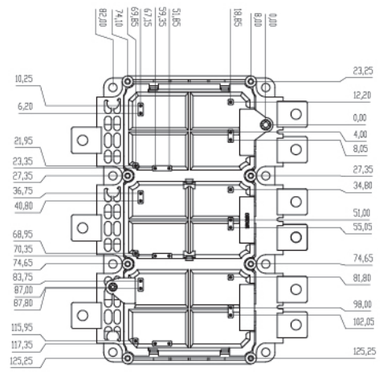
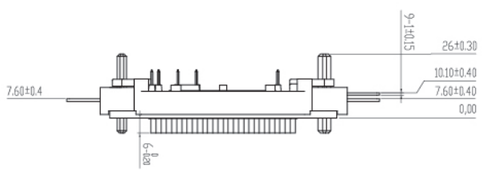


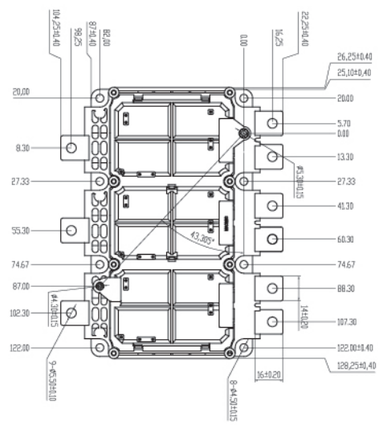
单位（Unit）: mm

GV

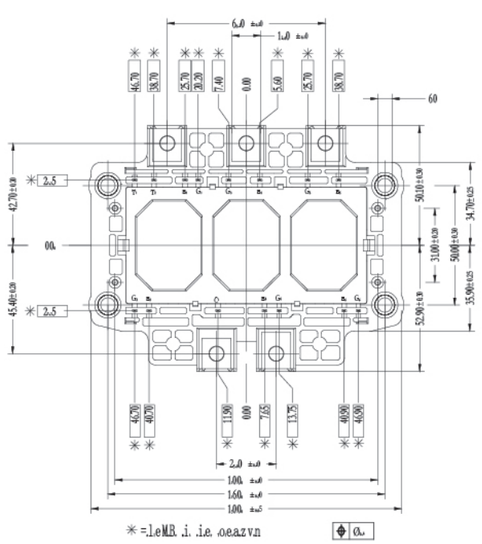

3,94
12,80±0,20
19,75

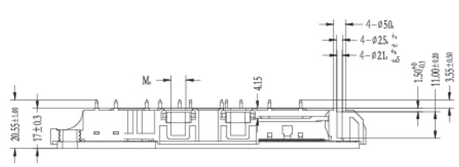



26±0.30
10.10±0.40
7.60±0.40
0,00
7.60±0.4

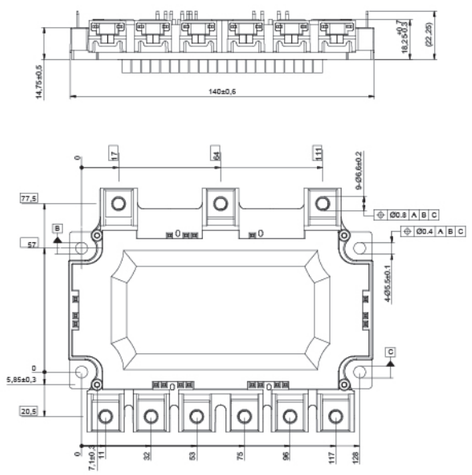


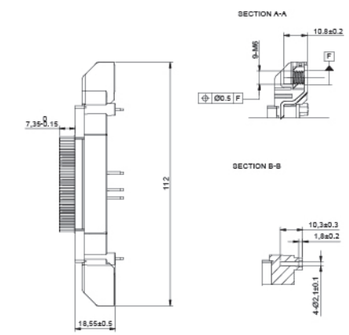
GVD

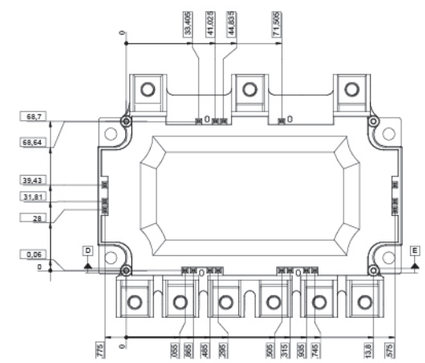


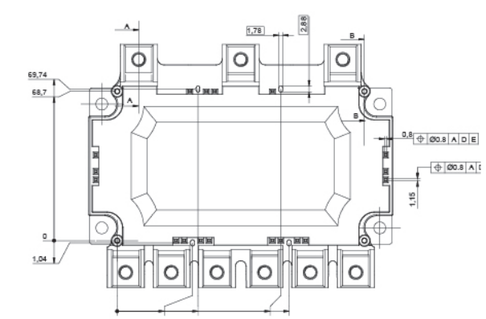


GVC




SECTION A-A
SECTION B-B





PART 03 FRD 模块

FRD MODULES

产品范围 Ranges

- 100-1700V / 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

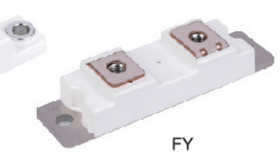
封装 Packages

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

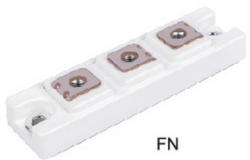
特性 Features

- 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

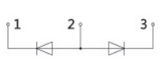
FYB

FS

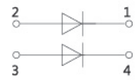
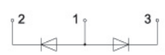
FD

Circuit	Type	V_{RRM} (V)	$I_{F(AV)}$ d=0.5 (A)	I_{FSM} 10ms T_j=45°C (A)	V_{FM}@I_{FM} (V)	V_{FM}@I_{FM} (A)	t_{rr} typ (ns)	R_{thJC} (°C/W)	Package Outline
 DK1 (非绝缘型) (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
	MMF200ZB060DK1C	600	2×100	1000	1.20	100	130	0.25	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
	MMF300Y060DK1B	600	2×150	2650	1.30	150	95	0.075	FY
	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
 U	MMF300S120U	1200	300	2500	2.75	300	150	0.14	FS
	MMF400S120U	1200	400	3200	3.00	400	180	0.11	FS
 U	MMF600S120U	1200	600	4800	2.80	600	200	0.10	FS
	MMF400S170U	1700	400	4000	1.80	400	1100	0.09	FS
	MMF400D120U	1200	400	3600	2.10	400	190	0.085	FD

* 注(Note)： T_j=25°C， I_F=$I_{F(AV)}$, di_F/dt =-200A/us , V_R= ½V_{RRM}

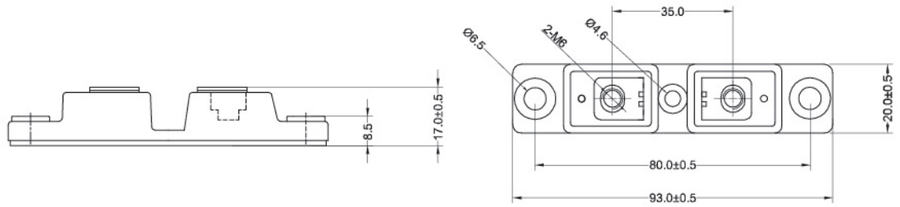
Circuit	Type	V_{RRM} (V)	$I_{F(AV)}$ d=0.5 (A)	I_{FSM} 10ms T_j=45℃ (A)	V_{FM}@I_{FM} (V)	V_{FM}@I_{FM} (A)	t_{rr} typ (ns)	R_{thJC} (℃/W)	Package Outline
 B	MMF150N060B6B	600	2×150	1400	1.15	150	130	0.34	FN
	MMF100N120B	1200	2×100	1100	1.60	100	135	0.44	FN
 B	MMF150S060B	600	2×150	1500	1.15	150	130	0.22	FS
	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
	MMF300N060DK6B	600	2×150	1410	1.25	150	95	0.34	FN
 DK	MMF200N120DK6B	1200	2×100	1100	3.25	100	150	0.44	FN
	MMF200N120DK	1200	2×100	1100	1.77	100	150	0.44	FN
	MMF200N070DK	700	2×100	1200	1.20	100	140	0.34	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
	MMF200N120DA6B	1200	2×100	1100	3.25	100	150	0.44	FN
	MMF200N120DA	1200	2×100	1100	1.77	100	150	0.44	FN
 DA	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
	MMF200S120DA	1200	2×300	1800	2.30	200	110	0.22	FS
	MMF300S120DA	1200	2×300	2700	2.80	300	135	0.14	FS

* 注(Note)： T_j=25°C， I_F=$I_{F(AV)}$， di_F/dt =-200A/us ，V_R= ½V_{RRM}

Circuit	Type	V_{RRM} (V)	$I_{F(AV)}$ d=0.5 (A)	I_{FSM} 10ms T_j=45℃ (A)	V_{FM}@I_{FM} (V)	V_{FM}@I_{FM} (A)	t_{rr} typ (ns)	R_{thJC} (℃/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
	MMF2X100J120D6B	1200	2×100	950	3.25	100	150	0.44	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
	MMF150S120DK2B	1200	2×150	1500	1.60	150	145	0.22	FS
	MMF200S120DK2B	1200	2×200	1800	2.30	200	110	0.22	FS
	MMF300S120DK2B	1200	2×300	2700	2.80	300	135	0.14	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
	MMF300S060DA2B	600	2×300	3000	1.10	300	165	0.15	FS
	MMF200S120DA2B	1200	2×200	1800	2.30	200	110	0.22	FS
	MMF200S170DA2B	1700	2×200	2000	1.80	200	750	0.14	FS
	MMF150S060B2B	600	2×150	1500	1.15	150	130	0.22	FS
	MMF300S060B2B	600	2×300	3000	1.15	300	150	0.14	FS
 B2B	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

* 注(Note)： T_j=25°C， I_F=$I_{F(AV)}$， di_F/dt =-200A/us ，V_R= ½V_{RRM}

FZ



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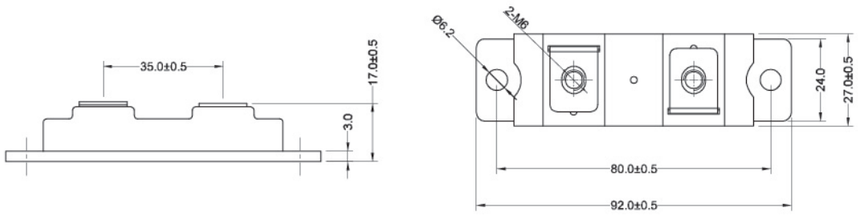

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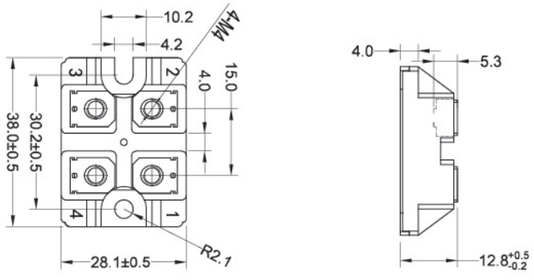

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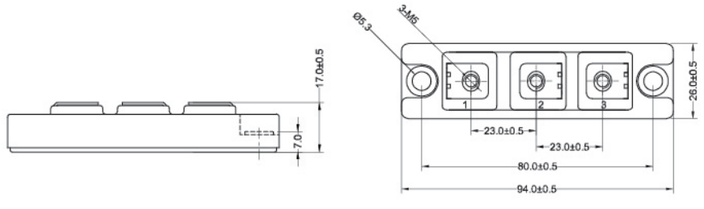

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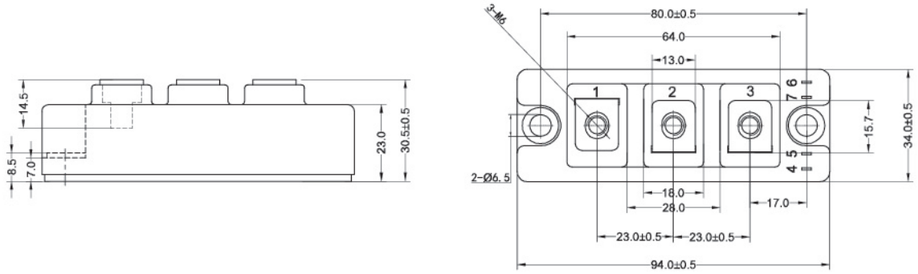

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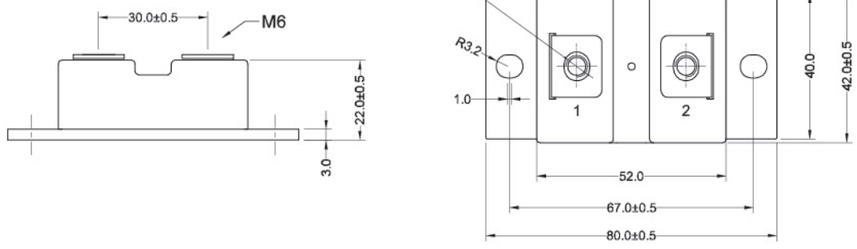

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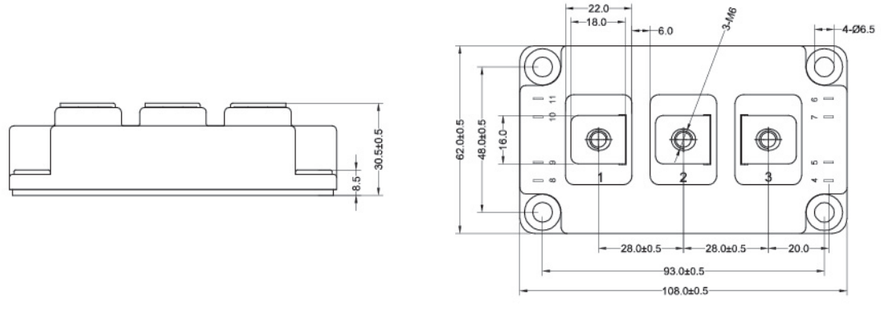


单位（Unit）：mm

PART 04 整流二极管模块

RECTIFIER DIODE MODULES

产品范围 Ranges

- 1600-1800V / 60-400A

电路结构 Circuit Configurations

- 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

- 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

DA

DAB

DS

T_C=25°C unless otherwise noted

Circuit	Type	V_{RRM} (V)	$I_{F(AV)}$ T_C=85°C (A)	I_{FSM} 10ms T45°C (A)	V_{FM}@I_{FM} T_j=125°C (V)	V_{FM}@I_{FM} T_j=125°C (A)	R_{thJC} (°C/W)	Package Outline
 B	MMD60A160DK	1600	60	1350	1.50	180	0.63	DA
	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
 DK	MMD160S160B	1600	160	5500	1.50	500	0.18	DS
	MMD160S180B	1800	160	5500	1.50	500	0.18	DS
	MMD180S160B	1600	180	6000	1.50	600	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
	MMD400S160U	1600	400	12000	1.10	400	0.09	DS

PART 05 三相整流桥模块

THREE-PHASE RECTIFIER BRIDGE MODULES

产品范围 Ranges

- 1600-2000V / 50-250A

电路结构 Circuit Configurations

- 三相整流桥电路
  Three Phase Rectifier Bridge 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

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

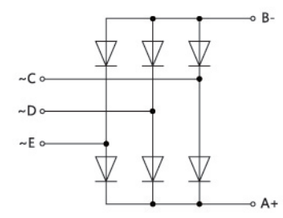
DE

DEB

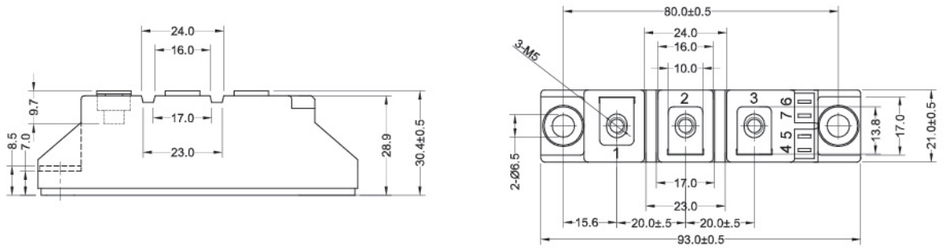
DFB

DF

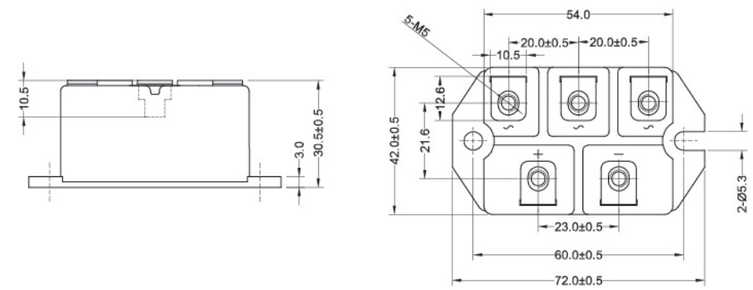
Tc=25°C unless otherwise noted

Circuit	Type	V_{RRM} (V)	$I_{d(AV)}$ T_C=100°C (A)	I_{FSM} 10ms 45°C (A)	V_{FM}@I_{FM} T_j=125°C (V)	(A)	R_{thJC} (k/w)	Package Outline
 X	MMD50L160X	1600	50	500	1.40	50	0.20	DL
	MMD70E160X	1600						
	MMD70E180X	1800	70	700	1.35	70	0.18	DE
	MMD70E200X	2000						
	MMD100E160X	1600						
	MMD100E180X	1800	100	1000	1.35	100	0.15	DE
	MMD100E200X	2000						
	MMD100F200X	2000	100	1000	1.35	100	0.15	DF
	MMD150F160X	1600	150	1500	1.45	150	0.11	DF
	MMD150F180X	1800						
	MMD160F200X	2000	160	1600	1.50	160	0.11	DF
	MMD200F160X	1600						
	MMD200F180X	1800	200	2000	1.45	200	0.09	DF
	MMD200F200X	2000						
	MMD250F160X	1600	250	2500	1.55	250	0.08	DF
	MMD250F180X	1800						
	MMD70EB160X	1600	70	700	1.35	70	0.18	DEB
	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	1600	250	2500	1.55	250	0.08	DFB
	MMD250FB180X	1800						

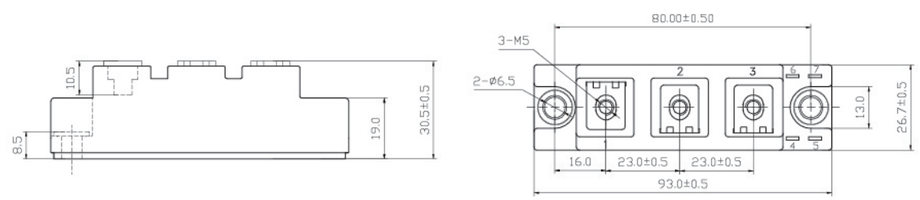
DA



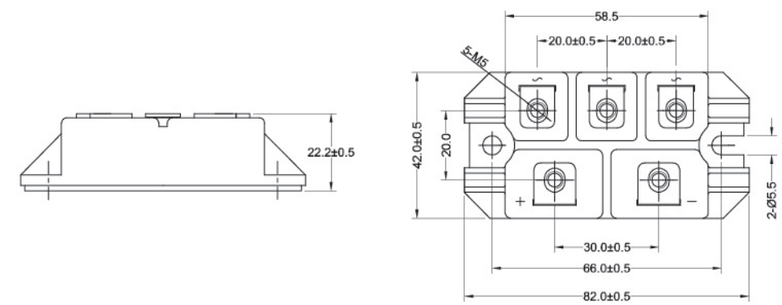
DE



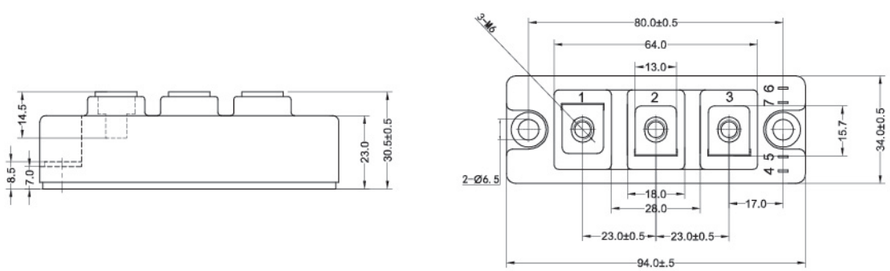
DAB



DEB



DS



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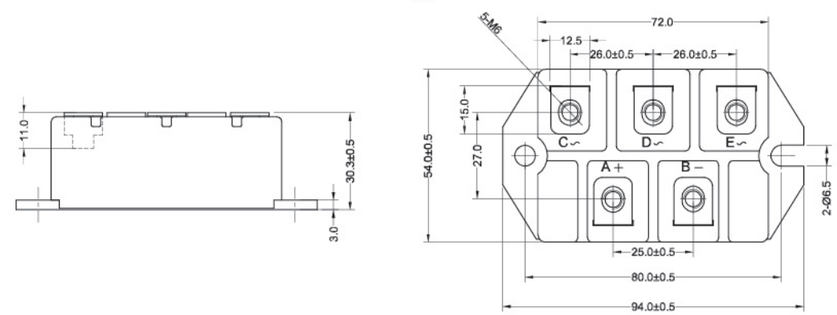

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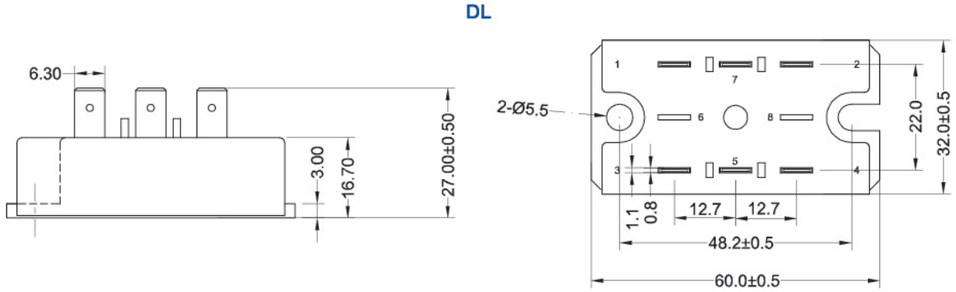

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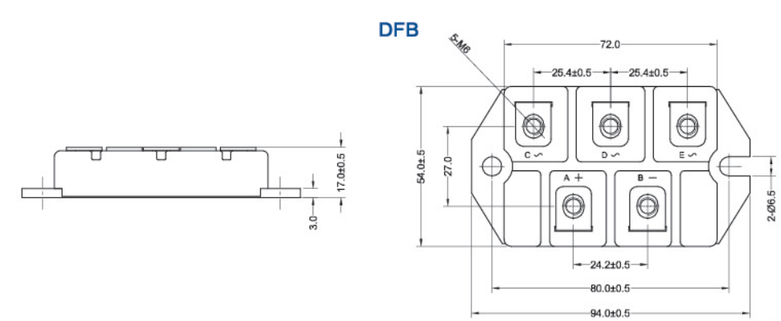

单位（Unit）：mm