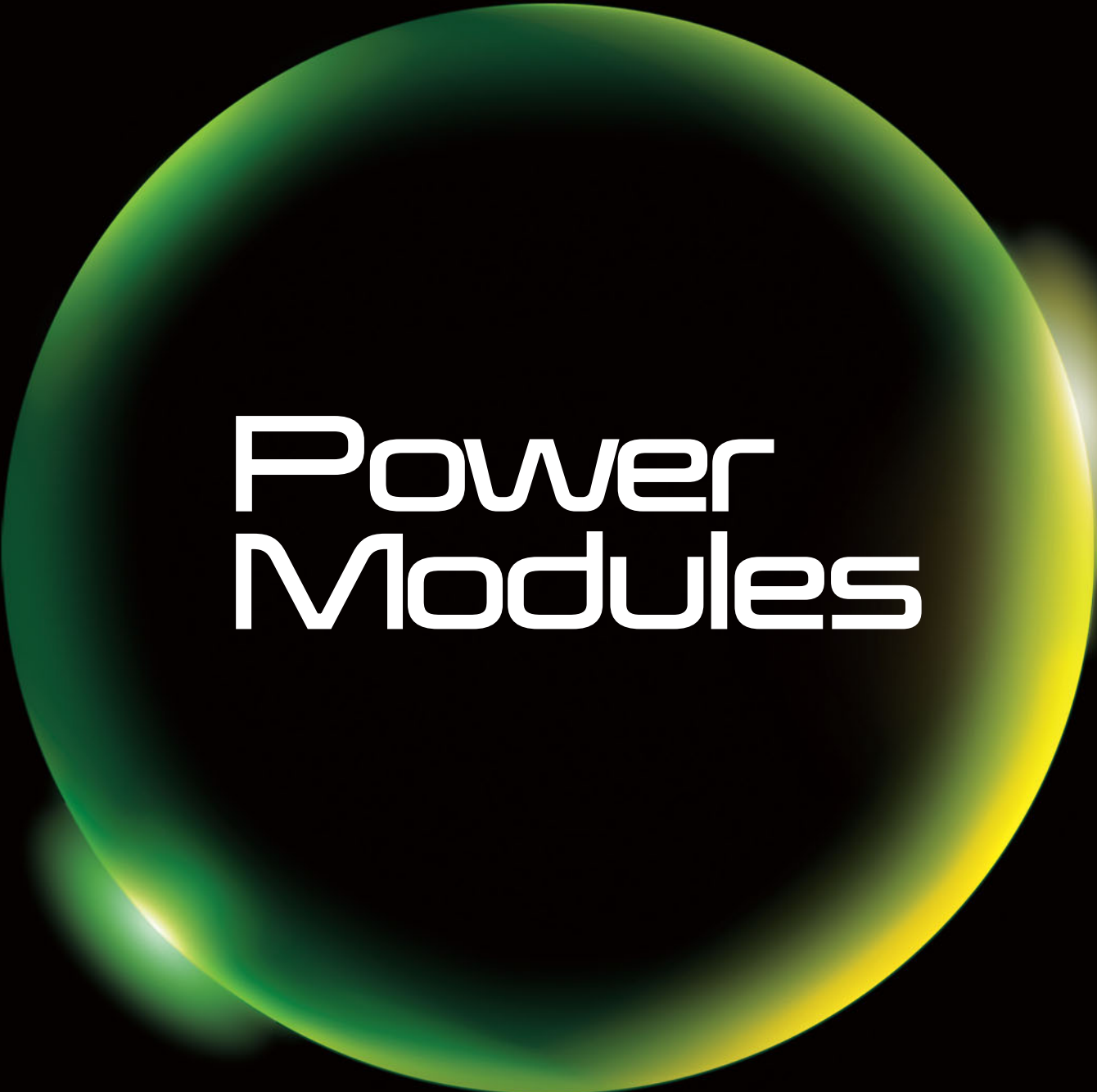


功率模块



Power Modules

Innovative Power Devices for a Sustainable Future

我们在考虑到地球环境的同时，为实现更加富饶舒适的社会，正在采取各种措施。这些措施包括利用太阳能及风力等可再生清洁能源发电，通过智能电网有效供电、推出更加低碳、低能耗的混合动力汽车及电动汽车、普及彻底追求节能的环保型家电等。可以说现在正是地球环境技术创新的时机，而实现这种技术创新的一个解决方案就是功率模块。三菱电机的功率模块将为家电、铁路、电动汽车、工业设备等各个领域的技术创新做贡献。



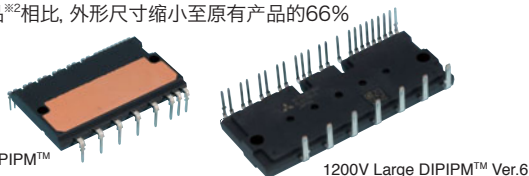


产品聚焦

实现空调和工业马达逆变器的低功耗、小型化及轻量化 第六代1200V大型 DIPIPM™和“1200V小型DIPIPM™”

<特点>

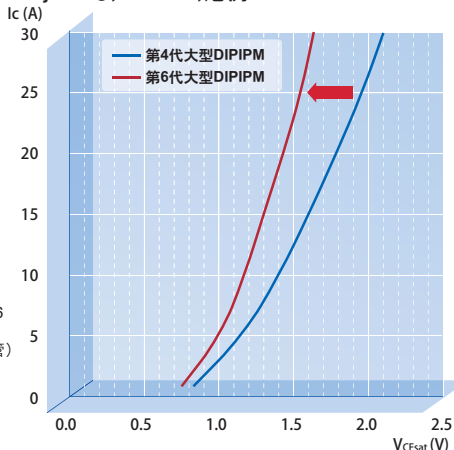
- 通过内置带限流电阻的BSD(Bootstrap Diode:自举二极管), 减少外置元件数量
- 采用CSTBT™*1构造的第6代IGBT芯片, 与本公司原有产品*2相比降低10%损耗*3
- 额定电压1200V的DIPIPM*4首次采用小型封装, 和本公司原有产品*2相比, 外形尺寸缩小至原有产品的66%



- ※1: Carrier Stored Trench Gate Bipolar Transistor (载流子存储式绝缘栅双极性晶体管)
- ※2: 第4代大型DIPIPM系列 (规格5A~35A)
- ※3: PSS25SA2FT (25A/1200V) 和
本公司第4代大型DIPIPM PS22A76 (25A/1200V) 的比较
- ※4: Dual-In-Line Package Intelligent Power Module

IGBT 饱和电压特性

T_j=25℃, VD=15V, 范例

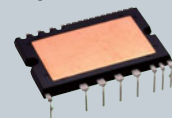


实现单一控制电源、无光耦系统设计, 为家电和小功率变频器做贡献

<特点>

- 采用高热传导绝缘片, 实现散热和绝缘的压注模构造
- 采用内含驱动电路、保护电路和电平转换电路的高耐压IC (High Voltage IC), 通过来自CPU及单片机的输入信号直接控制
- 通过单电源供电及无光耦系统设计, 实现了电路板的小型化并提高了可靠性
- 备有内置自举二极管的类型

DIPIPM™ Dual In-Line Package Intelligent Power Modules



内含驱动电路及保护电路, 为AC伺服系统、自动化和太阳能发电做贡献

<特点>

- 内含短路保护、控制电源欠压保护、过热保护的各种电路
- 采用考虑到兼容性的封装, 简化了接口电路设计
- 备有今后可望扩大市场的光伏逆变器专用IPM阵容

IPM Intelligent Power Modules



以最佳的模块阵容为用途广泛的变频器做贡献

<特点>

- 具有各种低电感封装和功率芯片
- 备有面向高频率、高耐压 (1700V) 用途的产品阵容
- 备有应对可再生能源的大容量模块阵容

IGBT模块 Insulated Gate Bipolar Transistor Modules



以最佳的产品阵容为高耐压、高电流、高绝缘的电气化铁道牵引做贡献

<特点>

- 备有与架线电压相适应的高绝缘耐压 (10.2kVrms: AC60Hz 1min) 封装阵容
- 备有使用AISIC (碳化硅铝) 基板的轻量化模块阵容
- 通过变换器用HV二极管模块阵容, 提高了整体设计的效率

HVIGBT模块 High Voltage Insulated Gate Bipolar Transistor Modules

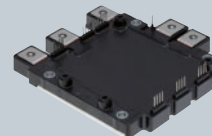


用于混合动力汽车、电动汽车的马达驱动, 实现了高性能、高可靠性

<特点>

- 内含温度模拟输出功能, 提高了马达驱动的可靠性
- 通过较长的功率循环寿命和温度循环寿命, 实现了高可靠性
- 符合制约环境负荷物质的“欧盟ELV (End-of-Life-Vehicle) 指令”的包装
- 实施从模块材料到元件与生产过程的可追溯性管理

电动汽车/混合动力汽车专用功率模块 Power Modules for EV/PHEV

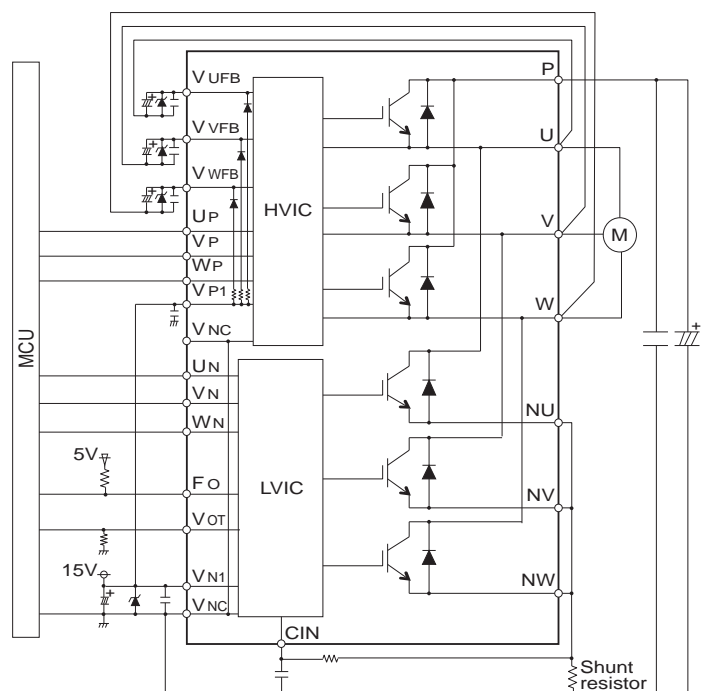


DIPIPM™产品列表 600V / 500V

Ic (A)	Series	600V						500V	
		Ver.6	Ver.5	For Industry	Ver. 4		PFC	MOSFET	
		Super mini type Built-in BSD	Super mini type Built-in BSD	Mini Type Built-in BSD	Mini Type	Large Type	Mini Type	Mini Type	Super mini type Built-in BSD
3									PSM03S93E5-A*
5	PSS05S92F6-AG* PSS05S92E6-AG*			PSS05S51F6* PSS05S51F6-C*					PSM05S93E5-A*
10	PSS10S92F6-AG* PSS10S92E6-AG*	PS219C3-AS PS219C3-AST		PSS10S51F6* PSS10S51F6-C*					
15	PSS15S92F6-AG* PSS15S92E6-AG*	PS219C4-AS PS219C4-AST		PSS15S51F6* PSS15S51F6-C*				PS41764	
20	PSS20S92F6-AG* PSS20S92E6-AG*	PS219C5-AS PS219C5-AST		PSS20S51F6* PSS20S51F6-C* PSS20S71F6*	PS21765		PS51787		
25									
30	PSS30S92F6-AG* PSS30S92E6-AG*			PSS30S71F6*	PS21767/-V		PS51789		
35	PSS35S92F6-AG* PSS35S92E6-AG*								
50				PSS50S71F6*		PS21A79			
75						PS21A7A			
Chip	IGBT/MOSFET	Full-gate CSTBT	Full-gate CSTBT	CSTBT	CSTBT	Full-gate CSTBT	Trench	SJ-MOSFET	MOSFET
	HVIC	x1	x1	x3	x3	x3	-	x3	x1
	LVIC	x1	x1	x1	x1	x1	x1	x1	x1
	BSD	x3	x3	x3	x3	-	-	-	x3
Protective Function	UV	P-side/N-side	P-side/N-side	P-side/N-side	P-side/N-side	P-side/N-side	N-side	P-side/N-side	P-side/N-side
	SC	N-side	N-side	N-side	N-side	N-side w/sense	-	N-side	N-side
	OT	N-side ¹	N-side <-T>	-	-	-	-	-	N-side
	Vor ²	N-side ¹	N-side <except-T>	N-side	-	N-side	-	-	-
Specification	Active Input	High (3/5V)	High (3/5V)	High (3/5V)	High (3/5V)	High (3/5V)	High (3/5V)	High (3/5V)	High (3/5V)
	Emitter pin of N-side	Open	Open	Open	Open	Open	-	Open	Open
	Fault Output	N-side (UV, SC, OT)	N-side (UV, SC, OT)	N-side (UV, SC)	N-side (UV, SC)	N-side (UV, SC)	-	N-side (UV, SC)	N-side (UV, SC, OT)
	Insulation voltage	1500Vrms ³	1500Vrms ³	2500Vrms	2500Vrms	2500Vrms	2500Vrms	2500Vrms	1500Vrms ³
	Insulation structure	Insulation sheet	Insulation sheet	Molding resin ⁷ / Insulation sheet	Insulation sheet	Insulation sheet	Insulation sheet	Insulation sheet	Insulation sheet
	RoHS Directive	Compliant ⁵	Compliant ⁵	Compliant ^{4 5}	Compliant ⁵	Compliant ⁵	Compliant ⁶	Compliant ⁵	Compliant ⁵
Pin Type	A: Long	A: Long	C: Control side of Zigzag None: Short	-	-	-	-	-	A: Long

★★: 开发中 ★: 新产品 **不推荐产品**: 请尽量避免采用新品。

Built-in BSD Super mini type DIPIPM™的应用电路



DIIPM™产品列表 1200V

V _{ces} (V)	1200V		
	Series	Ver.6	Ver.4
I _c (A)	Mini Type	Large Type	Large Type
3			
5	PSS05S72FT**	PSS05SA2FT**	PS22A72
10	PSS10S72FT**	PSS10SA2FT**	PS22A73
15		PSS15SA2FT**	PS22A74
25		PSS25SA2FT**	PS22A76
30			
35		PSS35SA2FT**	PS22A78-E
50		PSS50SA2FT**	PS22A79
75			

Chip	IGBT/MOSFET	CSTBT	CSTBT	CSTBT
	HVIC	x3	x3	x3
	LVIC	x1	x1	x1
	BSD	x3	x3	-

Protective Function	UV	P-side/N-side	P-side/N-side	P-side/N-side
	SC	N-side	N-side	N-side
	OT	-	-	-
	Vor ^{*2}	N-side	N-side	N-side

Specification	Active Input	High(5V)	High(5V)	High(5V)
	Emitter pin of N-side	Open	Open	Open
	Fault Output	N-side(UV,SC)	N-side(UV,SC)	N-side(UV,SC)
	Insulation voltage	2500Vrms	2500Vrms	2500Vrms
	Insulation structure	Insulation sheet	Insulation sheet	Insulation sheet
	RoHS Directive	Compliant*5	Compliant*5	Compliant*5

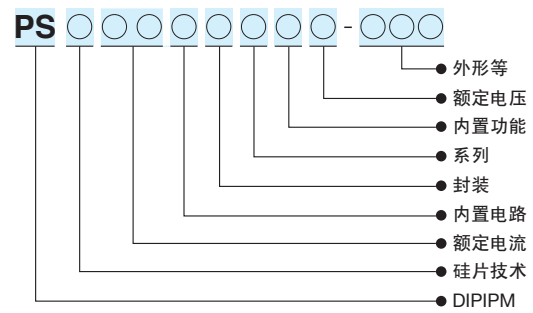
Pin Type	-	-	-
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★★: 开发中 ★: 新产品 **不推荐产品**: 请尽量避免采用新品。

[Term] CSTBT™: Carrier Stored Trench-Gate Bipolar Transistor
 BSD: Bootstrap Diode, HVIC: High Voltage IC, LVIC: Low Voltage IC,
 UV: Supply Under Voltage protection,
 SC: Short Circuit protection, OT: Over-Temperature protection,
 RoHS: Restriction of hazardous substances in electrical and electronic equipment

[Notes] *1: PSSxxS92E6 has OT function, PSSxxS92F6 has VOT function
 *2: Analog temperature output
 *3: AC60Hz, 1minute. Corresponds to isolation voltage 2500Vrms in the case the convex-shaped heat sink
 *4: High melting point solder (Lead Over 85%) is used for chip soldering of PSSxxS51F6 only.
 *5: Pin plating and Chip soldering : Lead-free solder
 *6: High melting point solder (Lead Over 85%) is used for chip soldering only and Pin plating is Lead-free.
 *7: Molding resin insulation for PSSxxS51F6/-C

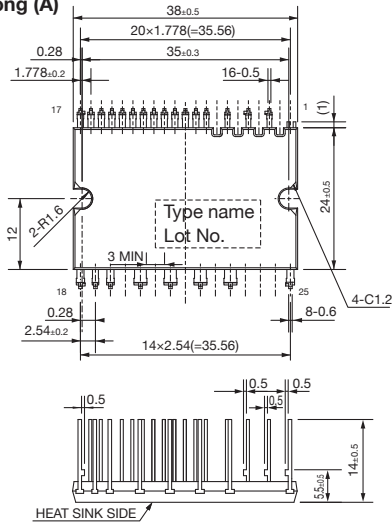
DIIPM™命名方法



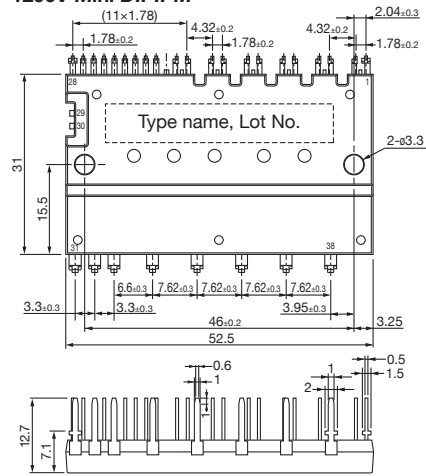
DIIPM™ 的外形图

Unit:mm

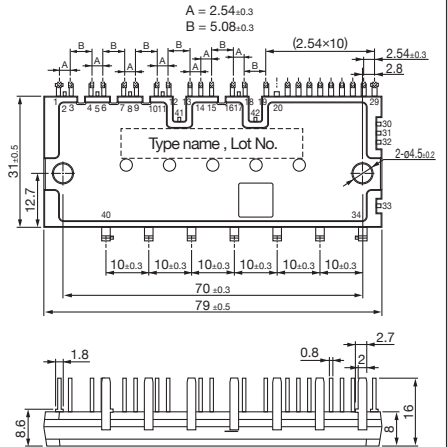
Super Mini DIIPM Ver.6
MOSFET Super Mini DIIPM
Super Mini DIIPM Ver.5
Long (A)



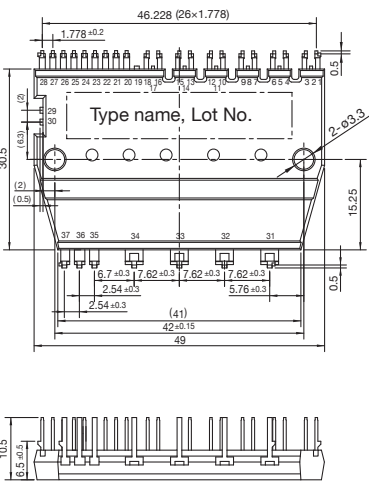
Industrial DIIPM (PSSxxS71F6)
Mini DIIPM Ver.4
MOSFET Mini DIIPM
DIPFC
1200V Mini DIIPM



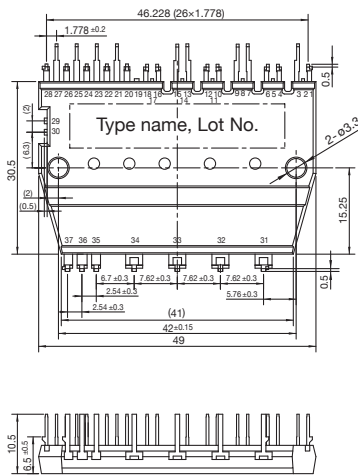
600V Large DIIPM
1200V Large DIIPM



Industrial DIIPM(PSSxxS51F6)



Industrial DIIPM(PSSxxS51F6-C)
Zigzag(C)



■ IPM产品列表 600V (No.为外形图的编号,在第9页上记载)

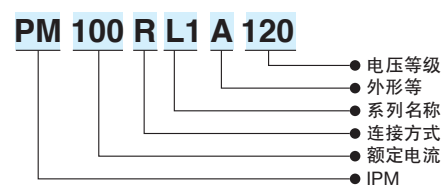
V _{CES} (V)	600V																							
	L1 Series			S1 Series			V1 Series			Photovoltaic			L Series			S-DASH Series								
I _C (A)	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.								
50	PM50CL1A060	C 01	PM50CS1D060	05					PM50B4LA060	B4 01														
	PM50CL1B060	C 02							PM50B5LA060	B5 01							PM50CLA060	C	PM50CSD060	C				
	PM50RL1A060	R 01							PM50B6LA060	B6 01							PM50CLB060	C	PM50CSE060	C				
	PM50RL1B060	R 02							PM50B4LB060	B4 02							PM50RLA060	R	PM50RSD060	R				
	PM50RL1C060	R 03							PM50B5LB060	B5 02							PM50RLB060	R	PM50RSE060	R				
									PM50B6LB060	B6 02														
75	PM75CL1A060	C 01	PM75CS1D060	05					PM75B4LA060	B4 01														
	PM75CL1B060	C 02							PM75B5LA060	B5 01							PM75CLA060	C	PM75CSD060	C				
	PM75RL1A060	R 01							PM75B6LA060	B6 01							PM75CLB060	C	PM75CSE060	C				
	PM75RL1B060	R 02							PM75B4LB060	B4 02							PM75RLA060	R	PM75RSD060	R				
									PM75B5LB060	B5 02							PM75RLB060	R	PM75RSE060	R				
									PM75B6LB060	B6 02														
100	PM100CL1A060	C 01	PM100CS1D060	C 05																				
	PM100CL1B060	C 02															PM100CLA060	C	PM100CSD060	C				
	PM100RL1A060	R 01																			PM100RLA060	R	PM100RSD060	R
	PM100RL1B060	R 02																						
150	PM150CL1A060	C 01	PM150CS1D060	C 05																				
	PM150CL1B060	C 02															PM150CLA060	C	PM150CSD060	C				
	PM150RL1A060	R 01																			PM150RLA060	R	PM150RSD060	R
	PM150RL1B060	R 02																						
200	PM200CL1A060	C 04	PM200CS1D060	C 05																				
	PM200RL1A060	R 04															PM200CLA060	C	PM200CSD060	C				
300	PM300CL1A060	C 04																						
	PM300RL1A060	R 04																PM300CLA060	C	PM300CSD060	C			
400/450					PM400DV1A060	D 06						PM450CLA060	C 08											
600					PM600DV1A060	D 06						PM600CLA060	C 08											
800					PM800DV1B060	D 07																		
IGBT Chip	CSTBT*1 Built-in Emitter Sensor Built-in Temperature Sensor		CSTBT*1 Built-in Emitter Sensor Built-in Temperature Sensor		CSTBT*1 Built-in Emitter Sensor Built-in Temperature Sensor		CSTBT*1 Built-in Emitter Sensor Built-in Temperature Sensor		CSTBT*1 Built-in Emitter Sensor Built-in Temperature Sensor		CSTBT*2 Built-in Emitter Sensor Built-in Temperature Sensor		Planar Built-in Emitter Sensor											
Fault Output	UV	P-side/N-side	N-side		P-side/N-side		P-side/N-side		P-side/N-side		P-side/N-side		N-side*3											
	OT	P-side/N-side	N-side		P-side/N-side		P-side/N-side		P-side/N-side		P-side/N-side		N-side											
	SC	P-side/N-side	N-side		P-side/N-side		P-side/N-side		P-side/N-side		P-side/N-side		N-side*3											
	OC	-	-		-		-		-		-		N-side*3											
RoHS Directive	Compliant		Compliant		Compliant		Compliant		Compliant		Compliant		Compliant											
Compatibility	L Series		S-DASH SERVO		V Series		-		-		-		-											
Connection																								

[Term] UV: Supply Under Voltage-lock protection, SC: Short-Circuit Protection, OT: Over-temperature protection, OC: Over-current protection, CSTBT™: Carrier Stored Trench-Gate Bipolar Transistor. 不推荐产品: 请尽量避免采用新品. ★: 新产品

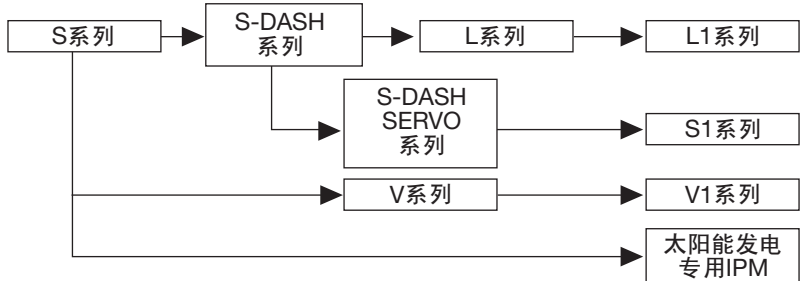
RoHS: Restriction of hazardous substances in electrical and electronic equipment

[Notes] *1: Full-gate CSTBT™ *2: PCM (Plugged Cell Merged) CSTBT™ *3: CSD/RSD have P-side




■ IPM命名方法



■ IPM系列



IPM产品列表 1200V (No.为外形图的编号,在第9页上记载)

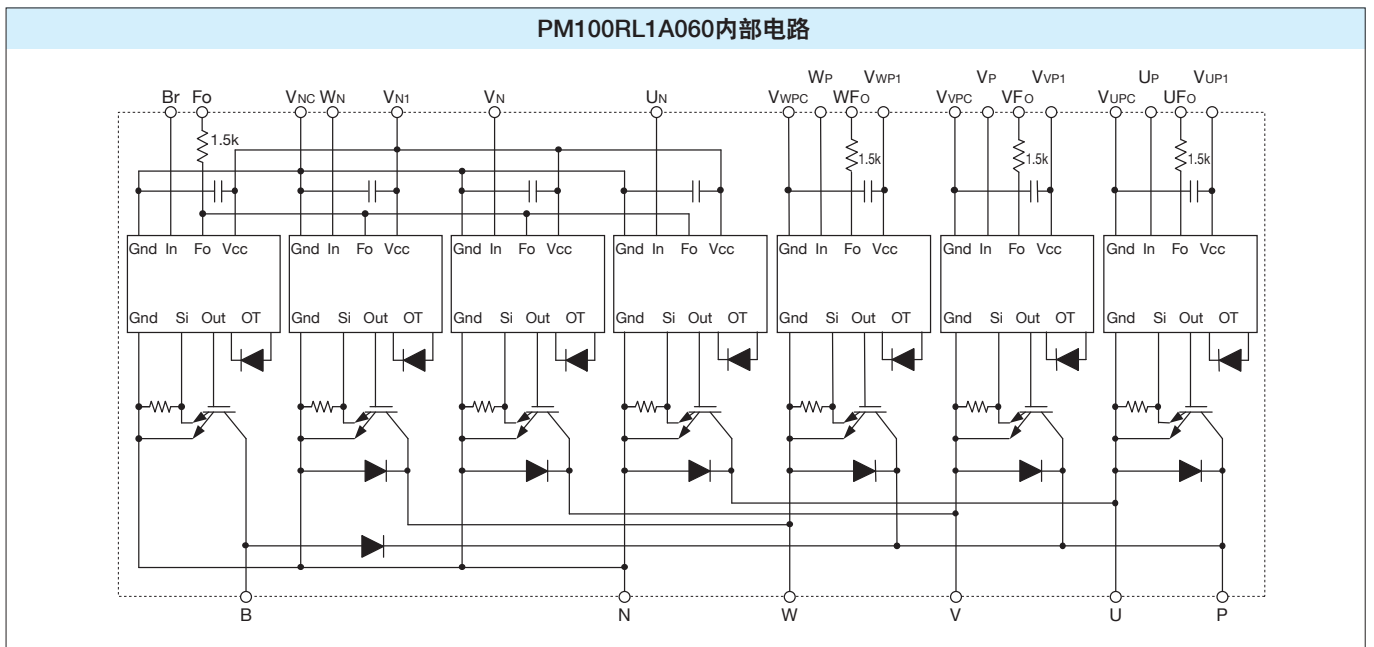
V _{CEs} (V) Series	1200V														
	L1 Series			S1 Series			V1 Series			L Series			S-DASH Series		
I _C (A)	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection		
25	PM25CL1A120	C 01	PM25CS1D120	C 05					PM25CLA120	C					
	PM25CL1B120	C 02							PM25CLB120	C					
	PM25RL1A120	R 01							PM25RLA120	R					
	PM25RL1B120	R 02							PM25RLB120	R					
	PM25RL1C120	R 03													
50	PM50CL1A120	C 01	PM50CS1D120	C 05					PM50CLA120	C			PM50CSD120	C	
	PM50CL1B120	C 02							PM50CLB120	C			PM50CSE120	C	
	PM50RL1A120	R 01							PM50RLA120	R			PM50RSD120	R	
	PM50RL1B120	R 02							PM50RLB120	R			PM50RSE120	R	
75	PM75CL1A120	C 01	PM75CS1D120	C 05					PM75CLA120	C			PM75CSD120	C	
	PM75CL1B120	C 02							PM75CLB120	C			PM75CSE120	C	
	PM75RL1A120	R 01							PM75RLA120	R			PM75RSD120	R	
	PM75RL1B120	R 02							PM75RLB120	R			PM75RSE120	R	
100	PM100CL1A120	C 04	PM100CS1D120	C 05					PM100CLA120	C			PM100CSD120	C	
	PM100RL1A120	R 04							PM100RLA120	R			PM100RSD120	R	PM100RSE120
150	PM150CL1A120	C 04							PM150CLA120	C			PM150CSD120	C	
	PM150RL1A120	R 04							PM150RLA120	R			PM150RSD120	R	PM150RSE120
200									PM200DV1A120	D 06			PM200CLA120	C 08	
300									PM300DV1A120	D 06			PM300CLA120	C 08	
450									PM450DV1A120	D 06			PM450CLA120	C 08	
IGBT Chip	CSTBT*1 Built-in Current Sensor Built-in Temperature Sensor			CSTBT*1 Built-in Current Sensor Built-in Temperature Sensor			CSTBT*1 Built-in Current Sensor Built-in Temperature Sensor			CSTBT*2 Built-in Current Sensor Built-in Temperature Sensor			Planar Built-in Current Sensor		
	UV	P-side/N-side			N-side			P-side/N-side			P-side/N-side			N-side*3	
Fault Output	OT	P-side/N-side			N-side			P-side/N-side			P-side/N-side			N-side	
	SC	P-side/N-side			N-side			P-side/N-side			P-side/N-side			N-side*3	
	OC	-			-			-			-			N-side*3	
RoHS Directive	Compliant			Compliant			Compliant			Compliant			Compliant		
Compatibility	L Series			S-DASH SERVO			V Series			-			-		
Connection	D  C  R 														

[Term] UV: Supply Under Voltage-lock protection, SC: Short-Circuit Protection, OT: Over-temperature protection, OC: Over-current protection, CSTBT™: Carrier Stored Trench-Gate Bipolar Transistor.

不推荐产品: 请尽量避免采用新品。

RoHS: Restriction of hazardous substances in electrical and electronic equipment

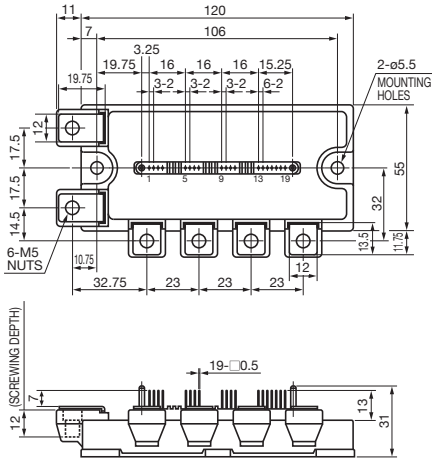
[Notes] *1: Full-gate CSTBT™ *2: PCM (Plugged Cell Merged) CSTBT™ *3: CSD/RSD have P-side



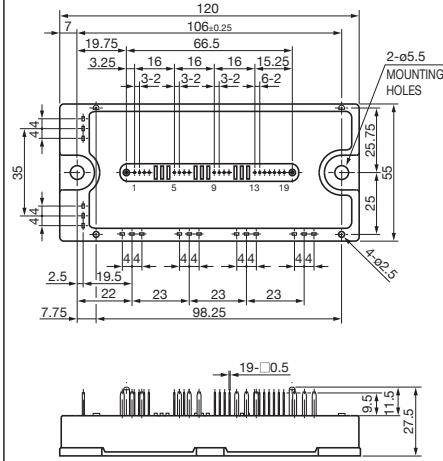
IPM的外形图

Unit: mm

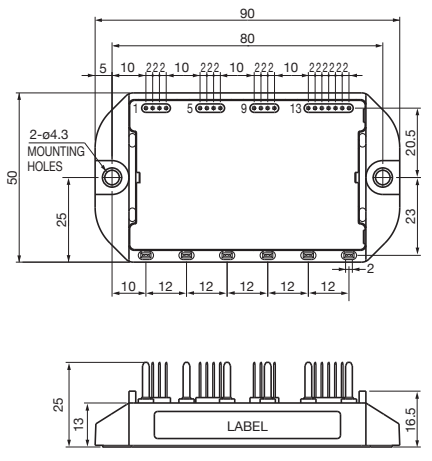
01 PM50, 75, 100, 150CL1A/RL1A060
PM25, 50, 75CL1A/RL1A120
PM50, 75B4/B5/B6LA060



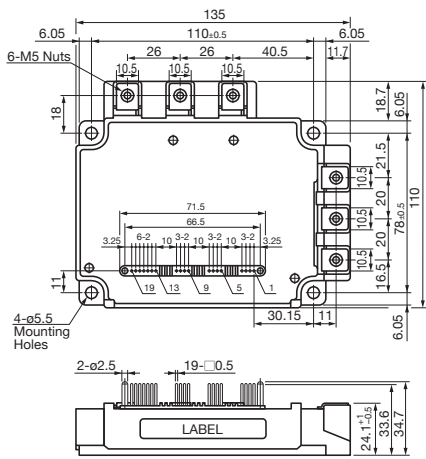
02 PM50, 75, 100, 150CL1B/RL1B060
PM25, 50, 75CL1B/RL1B120
PM50, 75B4/B5/B6LB060



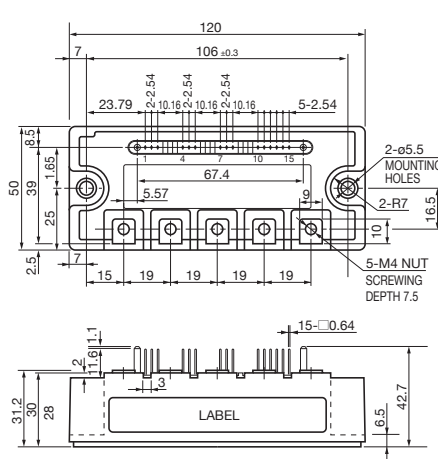
03 PM50RL1C060
PM25RL1C120
PM50, 75, B4/B5/B6L1C060



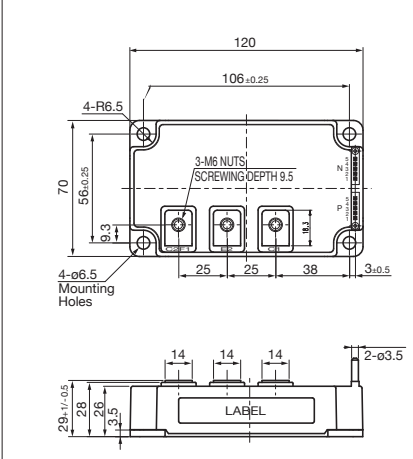
04 PM200, 300CL1A/RL1A060
PM100, 150CL1A/RL1A120



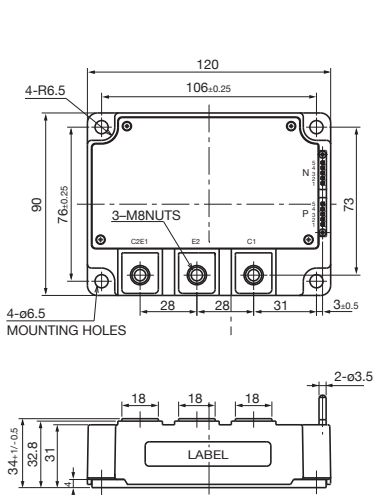
05 PM50, 75, 100, 150, 200CS1D060
PM25, 50, 75, 100CS1D120



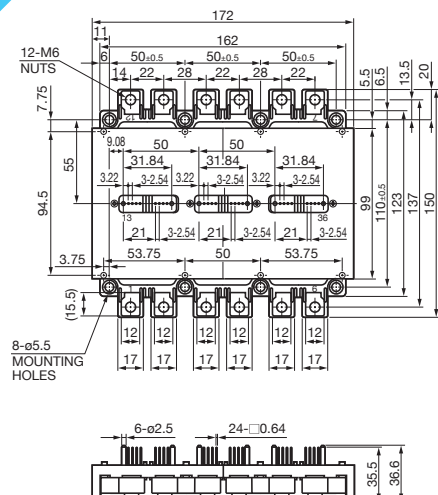
06 PM400, 600DV1A060
PM200, 300, 450DV1A120



07 PM800DV1B060

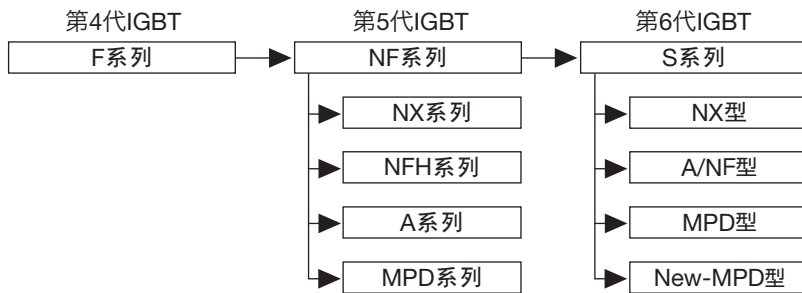


08 PM450, 600CLA060
PM200, 300, 450CLA120

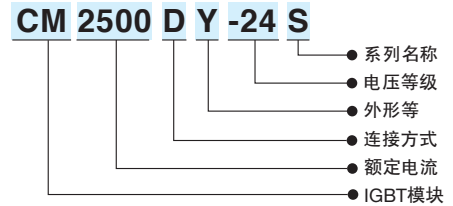


IGBT模块阵容

IGBT模块系列



IGBT模块命名方法



特征IGBT模块系列

S系列

- 具备各种各样的封装
- 通过采用第六代CSTBT™，实现了低损耗
- 封装厚度更薄（高17mm）（NX型）
- 具备大容量产品（2500A/1200V，1800A/1700V）（New-MPD型） MPD: Mega Power Dual（大容量两单元功率模块）

NFH系列

- 通过采用高速的CSTBT™，实现了低损耗
- 应对软开关（ZVS）
- 强化内部布线（应对趋肤效应）

CSTBT™: Carrier Stored Trench-Gate Bipolar Transistor. 载流子存储式沟槽栅型双极性晶体管。

600V IGBT模块产品列表 (No.为外形图的编号, 在第13-16页上记载)

符合欧盟规定的RoHS指令

V _{CES} (V)	600V											
	Series	5th-generation NX Series		NF Series		NFH Series		F Series				
I _C (A)		Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	
75	CM75MX-12A	M	01	CM75TL-12NF	T	08				CM75DU-12F	D	14
				CM75RL-12NF	R	08				CM75TU-12F	T	17
100	CM100MX-12A CM100RX-12A	M	01 02	CM100TL-12NF	T	08	CM100DUS-12F	D	14	CM100DU-12F	D	14
				CM100RL-12NF	R	08				CM100TU-12F	T	17
150	CM150RX-12A	R	02	CM150DY-12NF	D	09	CM150DUS-12F	D	14	CM150DU-12F	D	14
				CM150TL-12NF	T	08				CM150TU-12F	T	18
				CM150RL-12NF	R	08						
200	CM200RX-12A	R	02	CM200DY-12NF	D	09	CM200DU-12NFH	D	14	CM200DU-12F	D	14
				CM200TL-12NF	T	10				CM200TU-12F	T	18
				CM200RL-12NF	R	10						
300	CM300DX-12A	D	03	CM300DY-12NF	D	09	CM300DU-12NFH	D	15	CM300DU-12F	D	15
400	CM400DX-12A	D	03	CM400DY-12NF	D	11	CM400DU-12NFH	D	15	CM400DU-12F	D	15
600	CM600HX-12A	H	04	CM600DY-12NF	D	12	CM600DU-12NFH	D	16	CM600HU-12F	H	20
Connection												

不推荐产品：请尽量避免采用新品。

IGBT模块阵容

第6代IGBT模块 (S系列) 产品列表 1200V/1700V (No.为外形图的编号, 在第13-16页上记载)

符合欧盟规定的RoHS指令

V _{CES} (V)	Series	1200V												1700V										
		NX Type			A/NF Type			MPD Type			New-MPD Type			NX Type			MPD Type			New-MPD Type				
I _c		Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	Connection	No.	
35	CM35MXA-24S	M	05																					
50	CM50MXA-24S	M	05																					
75	CM75MXA-24S	M	05																					
	CM75TX-24S	T	06											CM75MXA-34SA	M	31								
	CM75RX-24S	R	02											CM75RX-34SA	R	27								
100	CM100MXA-24S	M	05																					
	CM100TX-24S1*	T	33																					
	CM100TX-24S	T	06																					
	CM100RX-24S1*	R	34																					
	CM100RX-24S	R	02																					
150	CM150DX-24S	D	03																					
	CM150EXS-24S	E	32																					
	CM150TX-24S1*	T	33																					
	CM150TX-24S	T	06											CM150DX-34SA	D	28								
	CM150RX-24S1*	R	34											CM150RXL-34SA	R	29								
	CM150RX-24S	R	02																					
200	CM200DX-24S	D	03																					
	CM200EXS-24S	E	32											CM200DX-34SA	D	28								
	CM200RXL-24S	R	29											CM200EXS-34SA	E	32								
225	CM225DX-24S1*	D	35																					
300	CM300DX-24S1*	D	35	CM300DY-24S	D	11																		
	CM300DX-24S	D	03																					
	CM300EXS-24S	E	32											CM300DX-34SA	D	28								
400			CM400C1Y-24S	C1	12																			
450	CM450DX-24S1*	D	35																					
	CM450DX-24S	D	03	CM450DY-24S	D	12								CM450DXL-34SA	D	30								
600	CM600DX-24S1*	D	35	CM600DY-24S	D	12																		
	CM600DXL-24S	D	07											CM600DXL-34SA	D	30								
800			CM800DY-24S	D	13																			
900					CM900DUC-24S*	D	24																	
1000	CM1000DXL-24S	D	07													CM1000DUC-34SA	D	24						
1400					CM1400DUC-24S	D	24																	
1800																						CM1800DY-34S	D	26
2500													CM2500DY-24S*	D	26									
Connection																								

★★: 开发中 ★: 新产品 ▼: UL申请中 **不推荐产品**: 请尽量避免采用新品。

第5代IGBT模块 产品列表 1200V/1700V (No.为外形图的编号, 在第13-16页上记载)

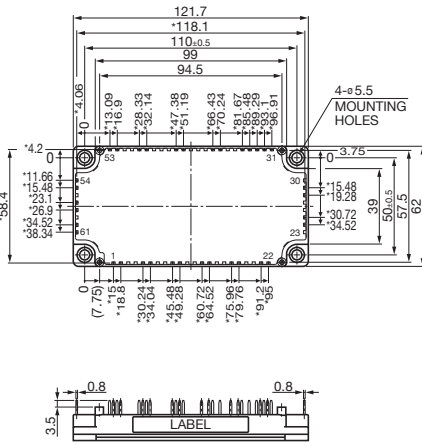
符合欧盟规定的RoHS指令

V _{CEs} (V) I _c	Series	1200V												1700V							
		NF Series		Connection	No.	A Series		Connection	No.	NFH Series		Connection	No.	F Series		Connection	No.	A Series		Connection	No.
50		CM50TL-24NF	T	08									CM50DU-24F	D	14						
		CM50RL-24NF	R	08									CM50TU-24F	T	17						
75		CM75TL-24NF	T	08									CM75DU-24F	D	14	CM75DY-34A	D	09			
		CM75RL-24NF	R	08								CM75TU-24F	T	18							
										CM75E3U-24F	E3	14									
100		CM100DY-24NF	D	09	CM100DY-24A	D	09	CM100DU-24NFH	D	14	CM100TU-24F	T	18	CM100DY-34A	D	09					
		CM100E3Y-24NF	E3	09													CM100DU-24F	D	14		
		CM100TL-24NF	T	08													CM100E3U-24F	E3	14		
		CM100RL-24NF	R	08																	
150		CM150DY-24NF	D	09	CM150DY-24A	D	09	CM150DU-24NFH	D	14	CM150DU-24F	D	15	CM150DY-34A	D	11					
		CM150E3L-24NF	E3	09													CM150E3U-24F	E3	15		
		CM150TL-24NF	T	10																	
		CM150RL-24NF	R	10																	
200		CM200DY-24NF	D	11	CM200DY-24A	D	09	CM200DU-24NFH	D	15	CM200DU-24F	D	15	CM200DY-34A	D	11					
		CM200TL-24NF	T	10													CM200E3U-24F	E3	15		
		CM200RL-24NF	R	10																	
300					CM300DY-24A	D	11	CM300DU-24NFH	D	15	CM300DU-24F	D	19	CM300DY-34A	D	12					
400		CM400DY-24NF	D	12	CM400HA-24A	H	21	CM400DU-24NFH	D	16	CM400HU-24F	H	20	CM400DY-34A	D	25					
											CM400DU-24F	D	22								
500														CM500HA-34A	H	21					
600		CM600DU-24NF	D	13	CM600HA-24A	H	21	CM600DU-24NFH	D	16	CM600HU-24F	H	23								
					CM600DY-24A	D	12				CM600DU-24F	D	13								
Connection																					

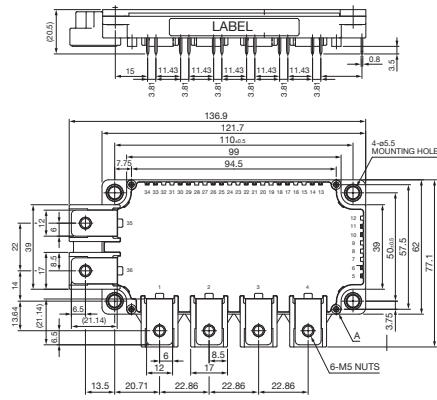
IGBT模块的外形图

Unit: mm

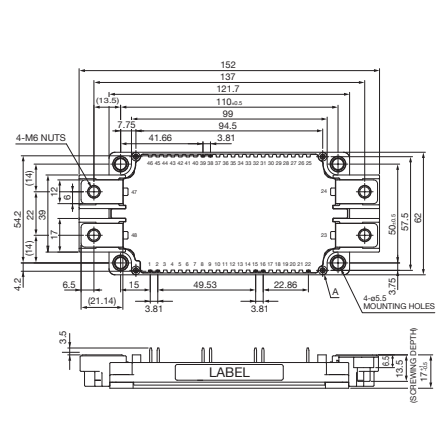
01 CM75, 100MX-12A



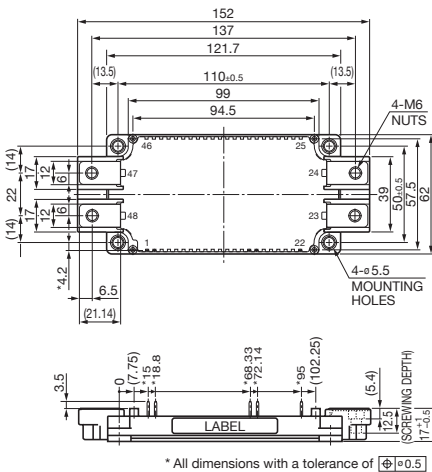
02 CM100, 150, 200RX-12A
CM75, 100, 150RX-24S



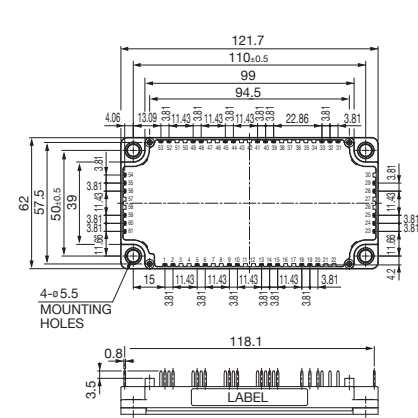
03 CM300, 400DX-12A
CM150, 200, 300, 450DX-24S



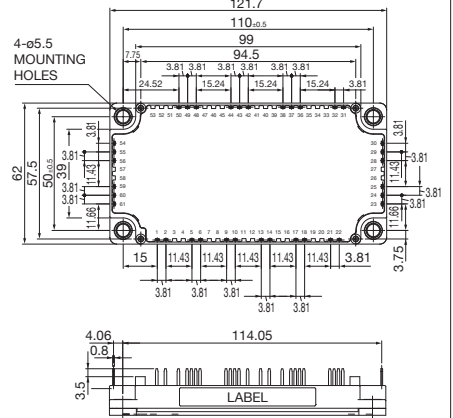
04 CM600HX-12A



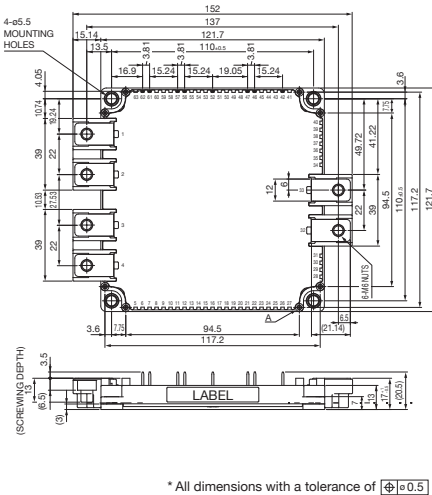
05 CM35, 50, 75, 100MXA-24S



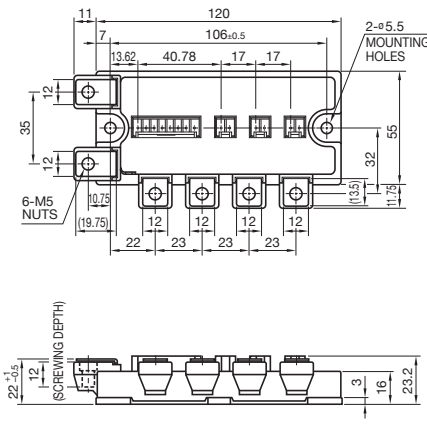
06 CM75, 100, 150TX-24S



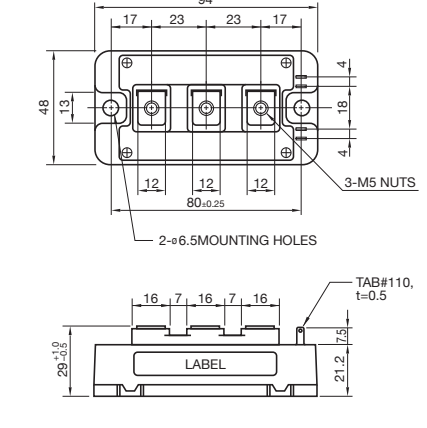
07 CM600, 1000DXL-24S



08 CM75, 100, 150TL/RL-12NF
CM50, 75, 100TL/RL-24NF

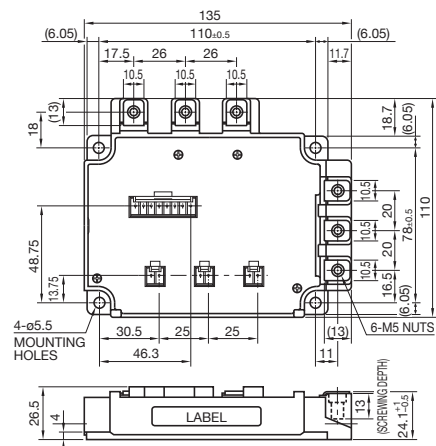


09 CM150, 200, 300DY-12NF
CM100, 150DY-24NF
CM100, 150, 200DY-24A
CM75, 100DY-34A
CM100E3Y-24NF
CM150E3L-24NF



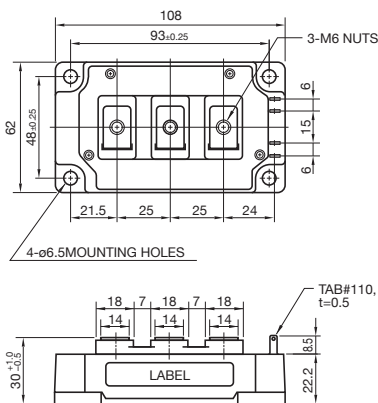
10

CM200TL/RL-12NF
CM150, 200TL/RL-24NF



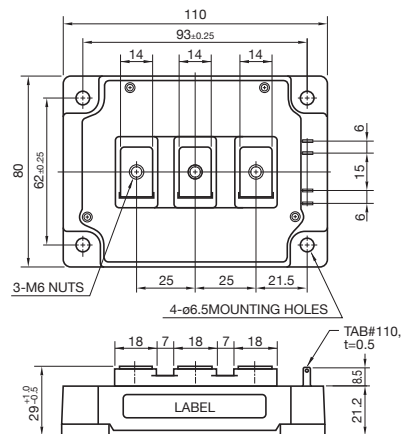
11

CM400DY-12NF
CM200DY-24NF
CM300DY-24A
CM300DY-24S
CM150, 200DY-34A



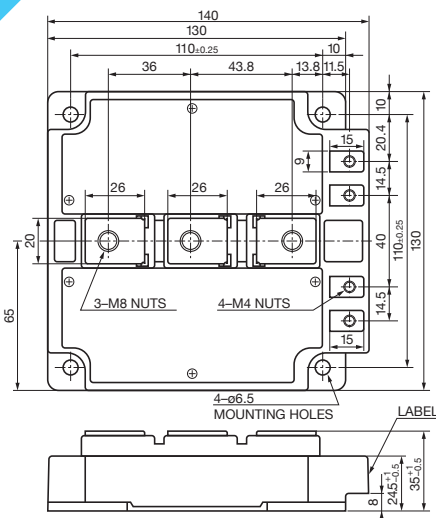
12

CM600DY-12NF
CM400DY-24NF
CM400, 600DY-24A
CM300DY-34A
CM400C1Y-24S
CM450DY-24S
CM600DY-24S



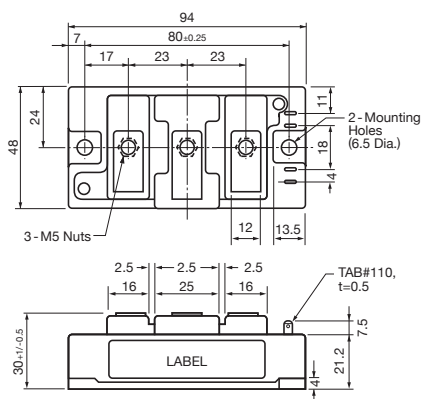
13

CM600DU-24NF/24F
CM800DY-24S



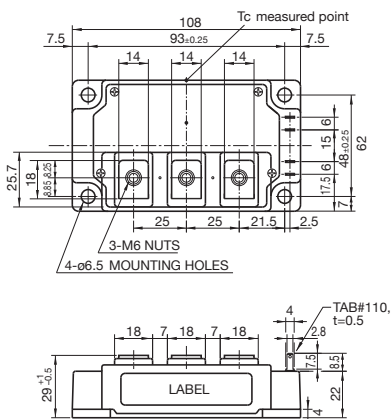
14

CM100, 150DUS-12F
CM200DU-12NFH
CM75, 100, 150, 200DU-12F
CM100, 150DU-24NFH
CM50, 75, 100DU-24F
CM75, 100E3U-24F



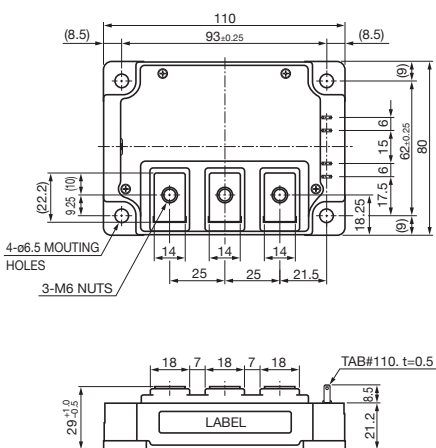
15

CM300, 400DU-12NFH/12F
CM200, 300DU-24NFH
CM150, 200DU-24F
CM150, 200E3U-24F



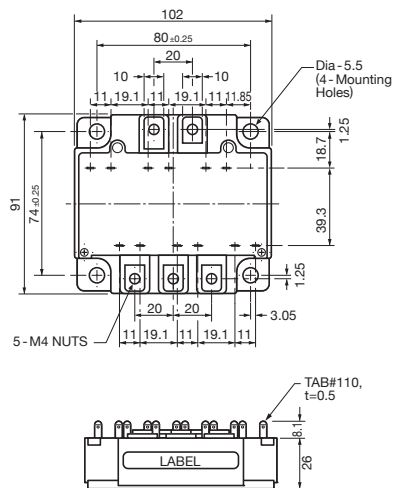
16

CM600DU-12NFH
CM400, 600DU-24NFH



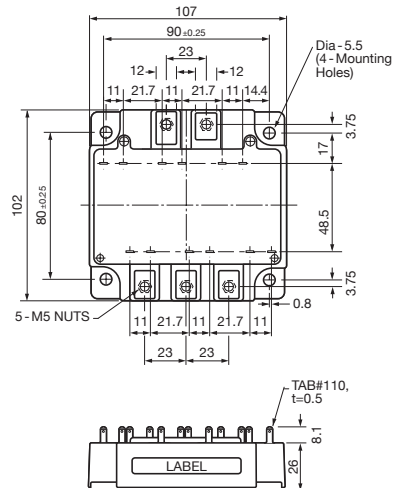
17

CM75, 100TU-12F
CM50TU-24F



18

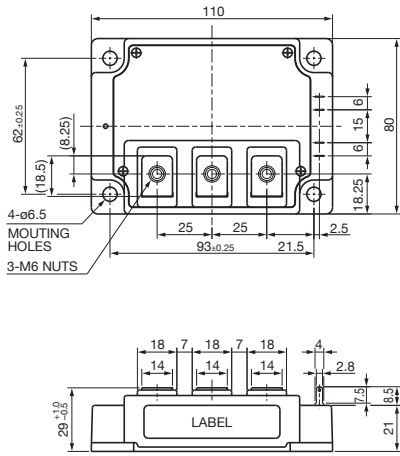
CM150, 200TU-12F
CM75, 100TU-24F



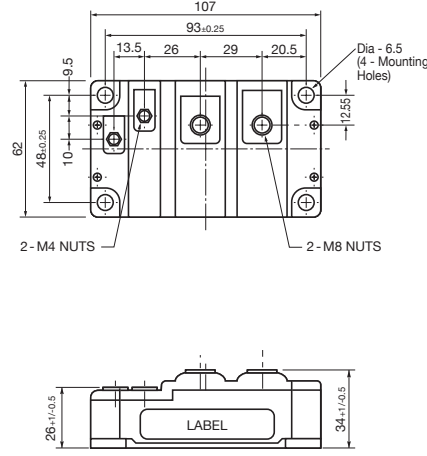
IGBT模块的外形图

Unit: mm

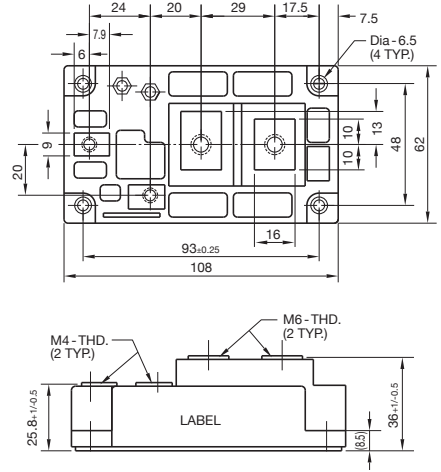
19 CM300DU-24F



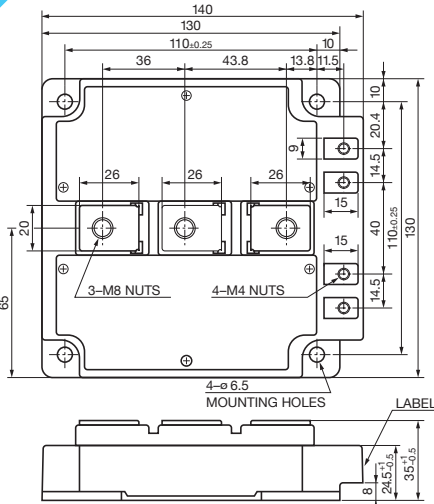
20 CM600HU-12F
CM400HU-24F



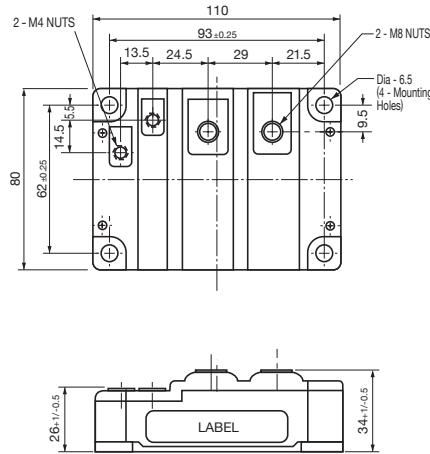
21 CM400, 600HA-24A
CM500HA-34A



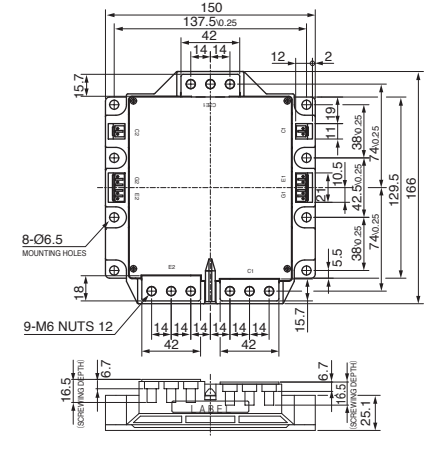
22 CM400DU-24F



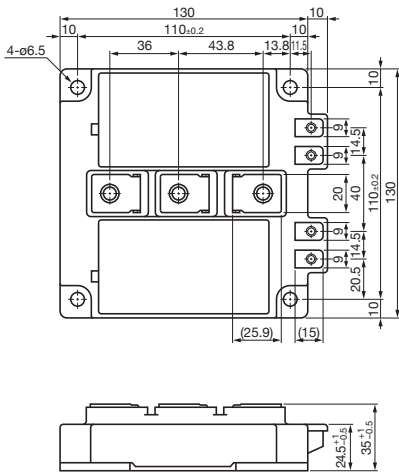
23 CM600HU-24F



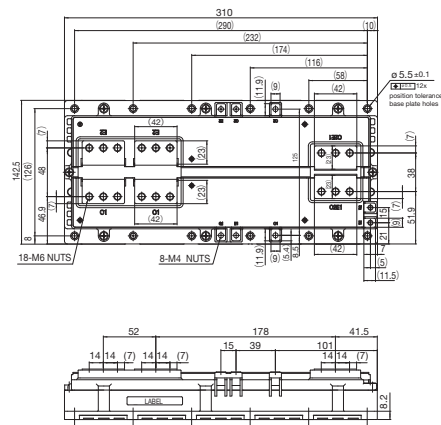
24 CM900, 1400DUC-24S
CM1000DUC-34SA



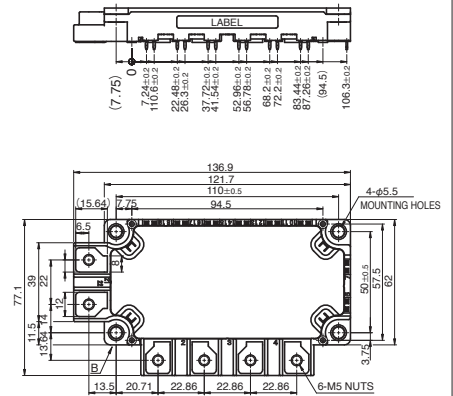
25 CM400DY-34A



26 CM1800DY-34S
CM2500DY-24S



27 CM75RX-34SA



HVIGBT/HVIPM模块产品列表 (No.为外形图的编号,在第16~17页上记载)

Vces	1700V				2500V				3300V				4500V				6500V																		
	Ic (A)	Connection	Type	No.	Connection	Type	No.	Connection	Type	No.	Connection	Type	No.	Connection	Type	No.	Connection	Type	No.																
200																				CM200HG-130H	H	HG	07												
400					CM400DY-50H	D	HA	15	CM400HG-66H	H	HG	07	CM400DY-66H	D	HA	15	CM400HB-90H	H	HB	03	CM400HG-130H	H	HG	12											
																					CM400E2G-130H	E2	HG	09	CM400E4G-130H	E4	HG	09							
600	CM600DY-34H	D	HA	01													CM600HG-90H	H	HG	12	CM600HG-130H	H	HG	09											
	CM600E2Y-34H	E2	HA	01													CM600HB-90H	H	HB	03															
750																							CM750HG-130R★	H	HG	11									
800	CM800DZB-34N	D	NB	01	CM800HB-50H	H	HB	03	CM800HC-66H	H	HC	03	CM800E4C-66H	E4	HC	06	CM800HC-90R★	H	R	08	CM800HG-90R★	H	RG	13											
	CM800DZ-34H	D	HC	01					CM800E6C-66H	E2	HC	06																							
	CM800HA-34H	H	HA	-					CM800HB-66H	H	HB	03																							
									CM800HA-66H	H	HA	-																							
900																	CM900HG-90H	H	HG	09															
																	CM900HC-90H	H	HC	06															
																	CM900HB-90H	H	HB	06															
1000									CM1000HC-66R★	H	R	08	CM1000E4C-66R★	E4	R	10																			
	CM1200HCB-34N	H	NB	03	CM1200HC-50H	H	HC	06	CM1200HG-66H	H	HG	09	CM1200HC-66H	H	HC	06	CM1200HC-90R★	H	R	10	CM1200HC-90RA	H	R	10											
CM1200DB-34N	D	N	04	CM1200HB-66H					H	HB	06																								
CM1200DC-34N	D	N	04	CM1200HA-50H					H	HA	-	CM1200HA-66H	H	HA	-																				
CM1200E4C-34N	E4	N	05									PM1200HCE330-1	H	HC	14																				
CM1200HC-34H	H	HC	02																																
CM1200DC-34S★	D	S	04																																
1500									CM1500HC-66R	H	R	10	CM1500HG-66R★	H	RG	11																			
1600	CM1600HC-34H	H	HC	02																															
1800	CM1800HCB-34N	H	NB	06																															
	CM1800HC-34N	H	N	05																															
	CM1800HC-34H	H	HC	06																															
2400	CM2400HCB-34N	H	NB	06																															
	CM2400HC-34N	H	N	05																															
	CM2400HC-34H	H	HC	06																															

[Type Description] (H Series: standard) HA: Cu Base plate, HB: Cu Base plate, HC: AISiC Base plate, HG*: AISiC Base plate
 (N Series: CSTBT™) N: AISiC Base plate (CM1200DB-34N: Cu Base plate), NB: AISiC Base plate (Outline of H Series)
 (R Series: Low Loss) R: AISiC Base plate, RG*: AISiC Base plate
 (S Series: CSTBT™ (III)) S: AISiC Base plate
 *: High-Insulation Package (10.2kV, AC 1min.)

不推荐产品: 请尽量避免采用新品。
 ★★: 开发中 ★: 新产品

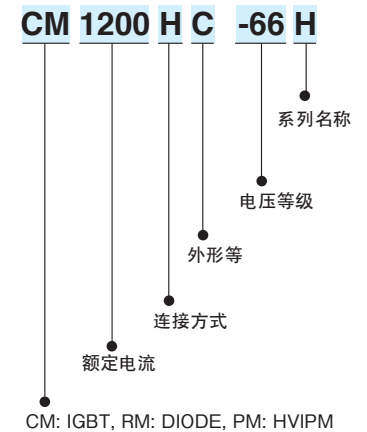
HVDIODE模块产品列表 (No.为外形图的编号,在第18页上记载)

VPRM	1700V				3300V				4500V				6500V				
If (A)	Connection	Type	No.	Connection	Type	No.	Connection	Type	No.	Connection	Type	No.	Connection	Type	No.		
200													RM200DG-130S	D	SG	18	
250													RM250DG-130F★	D	FG	18	
300									RM300DG-90S	D	SG	18					
400					RM400DG-66S	D	SG	18	RM400DG-90F★	D	FG	18					
					RM400DY-66S	D	SD	19									
600					RM600DY-66S	D	SD	19	RM600HE-90S	H	SH	17	RM600DG-130S	D	SG	18	
800									RM800DG-90F★	D	FG	18					
900									RM900HC-90S	H	SH	21					
									RM900DB-90S	D	SD	21					
1000					RM1000DC-66F★	D	F	20									
1200	RM1200DB-34S	D	SD	16	RM1200DG-66S	D	SG	18	RM1200DG-90F★	D	FG	18					
					RM1200HE-66S	H	SH	17									
					RM1200DB-66S	D	SD	21									
1500					RM1500DC-66F★	D	F	20									
1800	RM1800HE-34S	H	SH	17													

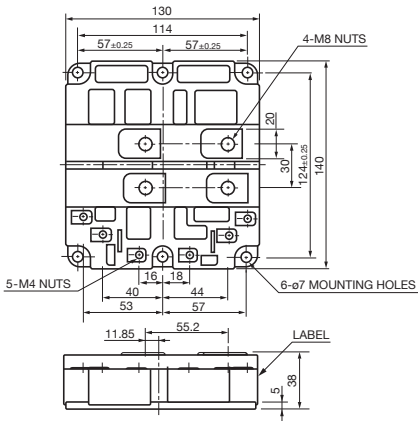
[Type Description] (F Series: Low Loss) F: AISiC Base plate, FG*: AISiC Base plate
 (S Series: standard) SH: AISiC Base plate, SD: Cu Base plate, SG*: AISiC Base plate
 *: High-Insulation Package (10.2kV, AC 1min.)

★★: 开发中 ★: 新产品

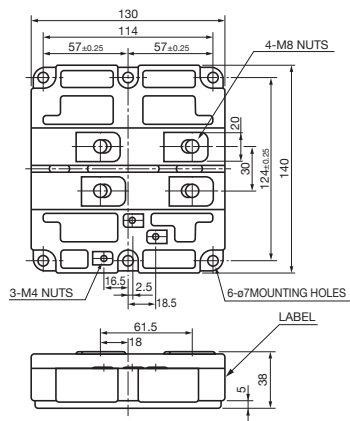
IGBT模块命名方法



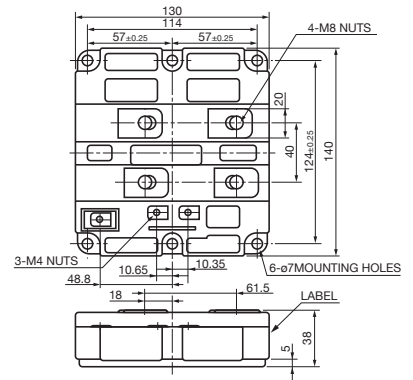
01
CM600DY-34H
CM600E2Y-34H
CM800DZ-34H
CM800DZB-34N



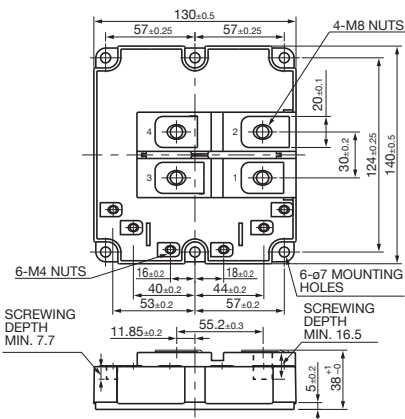
02
CM1200, 1600HC-34H



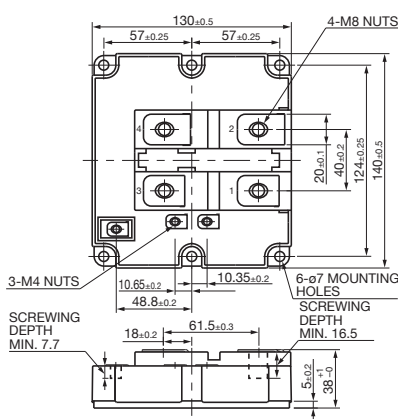
03
CM1200HCB-34N
CM800HB-50H, -66H
CM800HC-66H
CM400, 600HB-90H



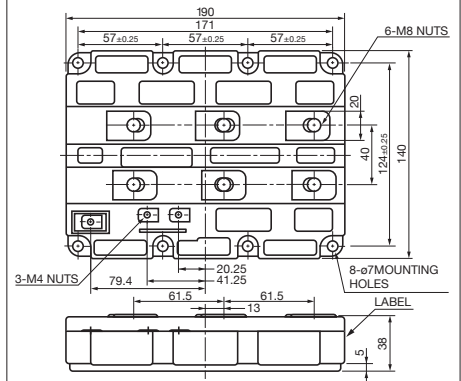
04
CM1200DB/DC-34N
CM1200DC-34S



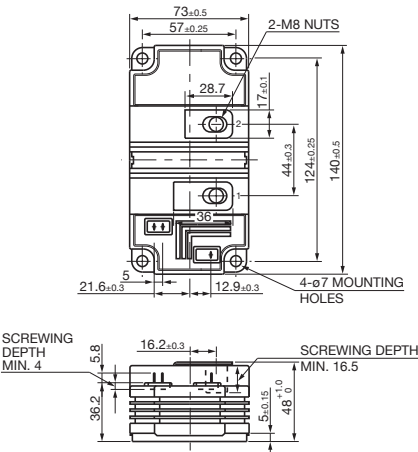
05
CM1200E4C-34N
CM1800, 2400HC-34N



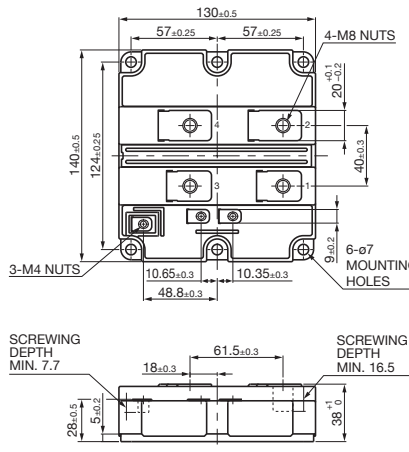
06
CM1800, 2400HCB-34N
CM1800, 2400HC-34H
CM1200HB/HC-50H, -66H
CM800E4C/E6C-66H
CM900HB/HC-90H



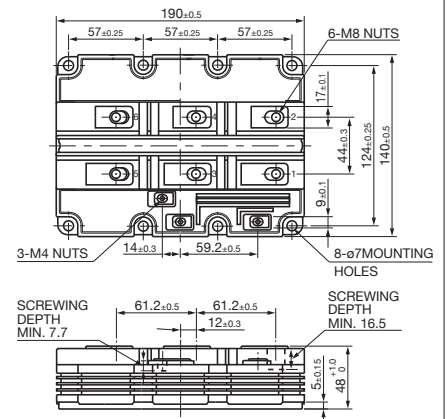
07
CM400HG-66H
CM200HG-130H



08
CM800HC-90R
CM1000HC-66R



09
CM1200HG-66H
CM900HG-90H
CM400E2G/E4G-130H
CM600HG-130H

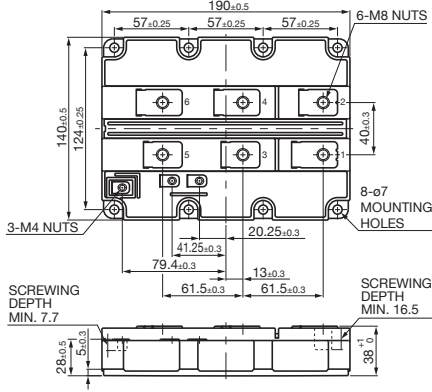


HVIGBT/HVIPM模块的外形图

Unit: mm

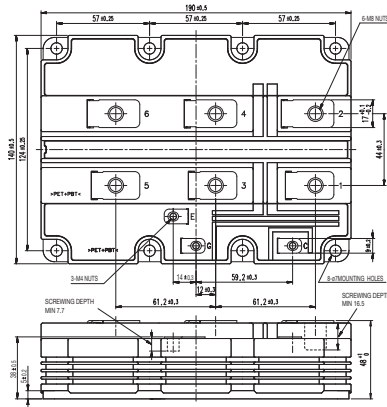
10

CM1000E4C-66R
CM1500HC-66R
CM1200HC-90R
CM1200HC-90RA



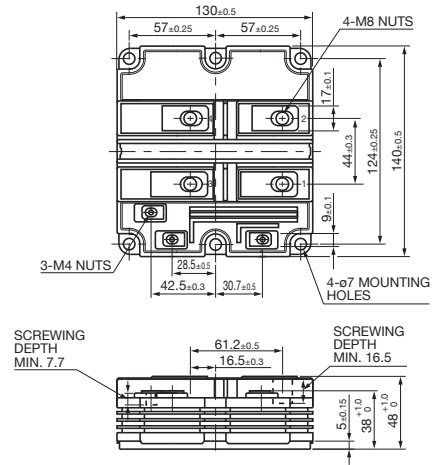
11

CM1500HG-66R
CM1200HG-90R
CM750HG-130R



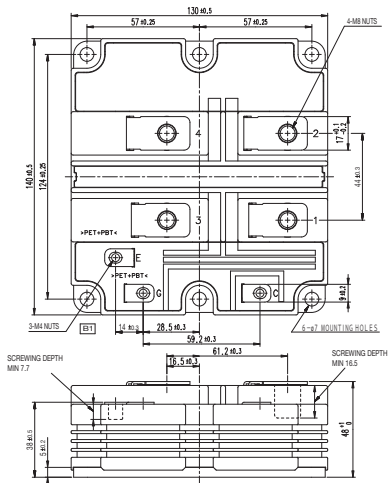
12

CM600HG-90H
CM400HG-130H



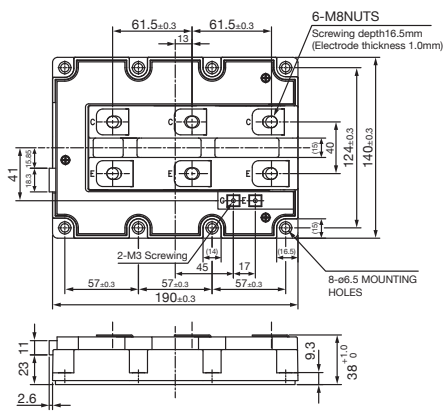
13

CM800HG-90R



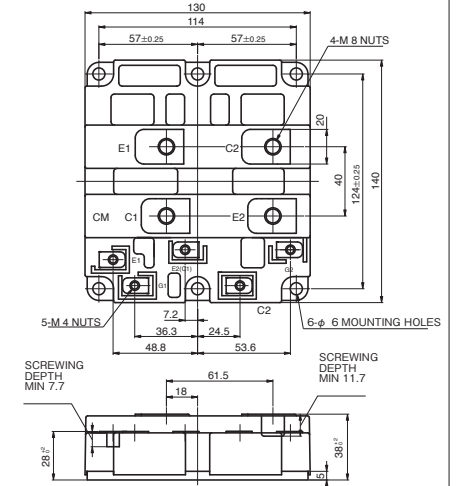
14

PM1200HCE330-1

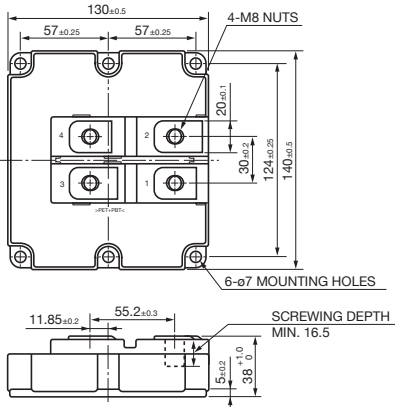


15

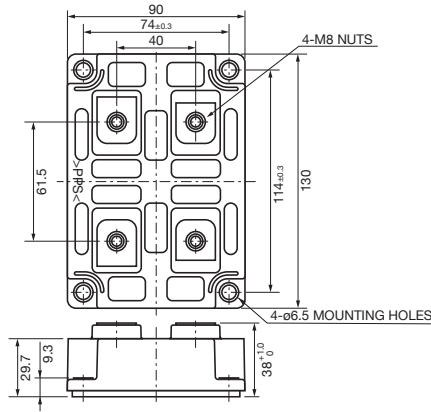
CM400DY-50H/66H



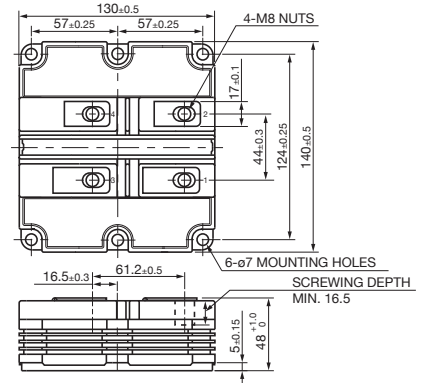
16 RM1200DB-34S



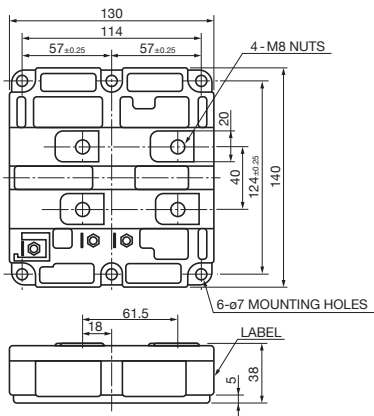
17 RM1800HE-34S
RM1200HE-66S
RM600HE-90S



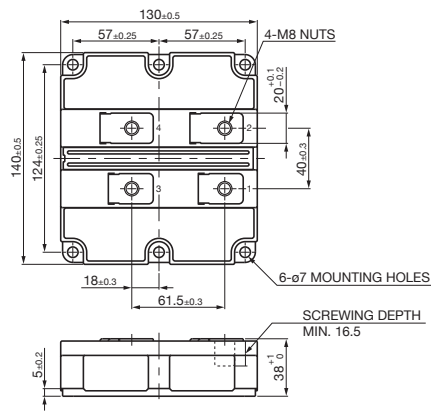
18 RM400, 1200DG-66S
RM300DG-90S
RM400, 800, 1200DG-90F
RM200, 600DG-130S
RM250DG-130F



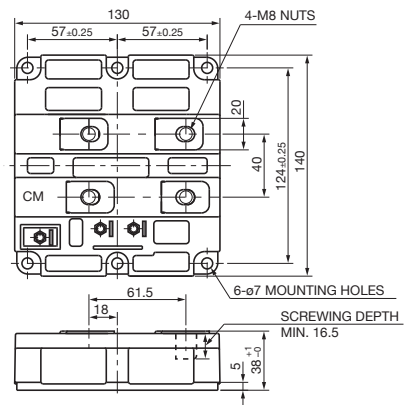
19 RM400, 600DY-66S



20 RM1000, 1500DC-66F



21 RM1200DB-66S
RM900DB/HC-90S



特点

通用

- 实现了较长的功率循环寿命和温度循环寿命
- 通过集成于芯片上的温度传感器,实现精确的芯片温度检测
- 实施从模块材料到无件与生产过程的可追溯性管理
- 符合制约环境负荷物质的“欧盟ELV (End-of-Life-Vehicle) 指令”的包装

J1系列(6合1封装、附Pin-fin)

- 6合1封装设计推动车载逆变器的小型化
- 一体式冷却的直接水冷结构(Pin-fin),为车载逆变器的小型化和高可靠性做出贡献。
- 配置CSTBT™结构的第7代IGBT,有助于降低功耗。
- 小型·轻量,而且实现高电流密度

※CSTBT:Carrier Stored Trench-Gate Bipolar Transistor

J系列 IPM

- 内含驱动电路、保护电路(过热保护、短路保护、电源欠压保护、内置IGBT驱动和控制功能用隔离电源(只有PM800CJG060G、PM500CJG120G))
- 内含有助于失效保护设计及系统的高功能化的RDY功能、芯片温度模拟输出功能、DC-Link电压模拟输出功能(订货时选择规格)
- 内置便于进行绝缘设计的光耦合器、装配性优良的汽车用连接器
- 通过优化内置屏蔽板和电路图形,提高抗噪声能力

J系列 T-PM(2合1封装)

- 采用本公司独特的DLB构造,直接将主端子焊接在功率半导体芯片上
- 利用DLB构造,降低内部的线阻和寄生电感
- 包括端子在内,完全无铅化

※DLB:Direct Lead Bonding

※T-PM:Transfer-molded Power Module

汽车用功率模块产品列表 650V/900V(为外形图的编号,在第22页上记载)

V _{CEs} (V)	650V									900V		
	Series	J1 Series			J Series						J1 Series	
I _c (A)	PM with Pin-Fin	Connection	No.	T-PM	Connection	No.	IPM	Connection	No.	PM with Pin-Fin	Connection	No.
300	CT300CJ1A060**	C	01	CT300DJG060**	D	02	PM300CJG060G**	C	04	-	-	-
400	-	-	-	-	-	-	-	-	-	CT400CJ1A090**	C	01
500	-	-	-	-	-	-	-	-	-	-	-	-
600	CT600CJ1A060**	C	01	CT600DJH060**	D	03	PM600CJG060G**	C	05	-	-	-
800	-	-	-	-	-	-	PM800CJG060G**	C	06	-	-	-
Connection												

※ PM: Power Module, ★★: 开发中

汽车用功率模块产品列表 1200V(为外形图的编号,在第22页上记载)

V _{CEs} (V)	1200V								
	Series	J1 Series			J Series				
I _c (A)	PM with Pin-Fin	Connection	No.	T-PM	Connection	No.	IPM	Connection	No.
300	CT300CJ1A120**	C	01	CT300DJH120**	D	03	-	-	-
400	-	-	-	-	-	-	-	-	-
500	-	-	-	-	-	-	PM500CJG120G**	C	06
600	-	-	-	-	-	-	-	-	-
800	-	-	-	-	-	-	-	-	-
Connection									

※ PM: Power Module, ★★: 开发中

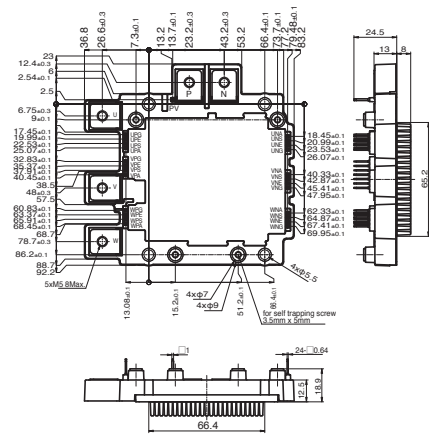
汽车用功率模块命名方法

PM 500 C JG 120 G

- 其他
- 电压等级
- 系列名称和结构
- 连接方式
- 额定电流
- CT:IGBT.PM:IPM

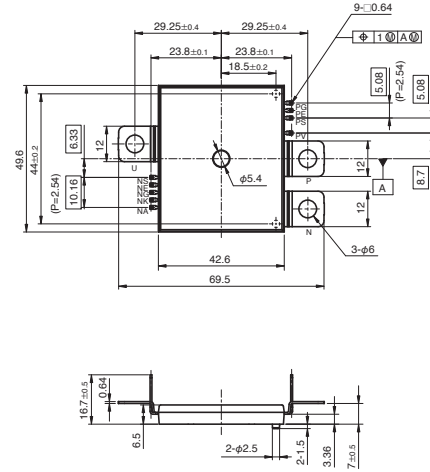
01

CT300CJ1A060
CT300CJ1A120
CT400CJ1A090
CT600CJ1A060



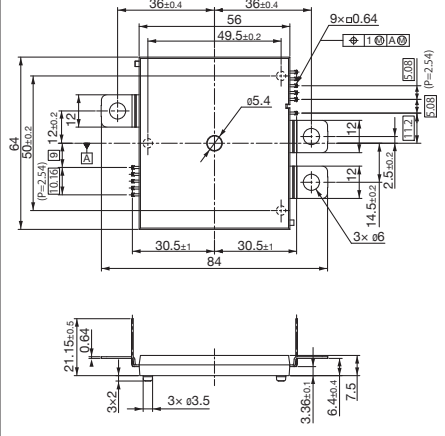
02

CT300DJG060



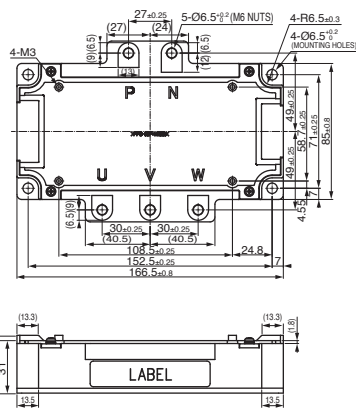
03

CT300DJH120
CT600DJH060



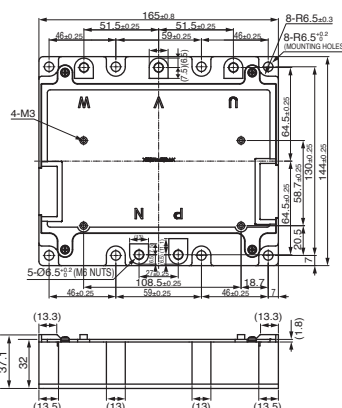
04

PM300CJG060G



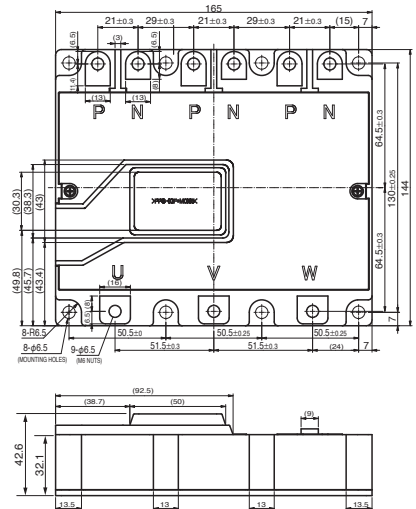
05

PM600CJG060G



06

PM500CJG120G
PM800CJG060G



更多信息请访问我们的网站

www.MitsubishiElectric.com

安全注意

• 我们公司一直致力于提高产品品质与可靠性，但半导体仍然可能发生故障、错误操作等情况。为了不使这些故障、错误操作导致人身事故、火灾事故等社会危害，请在安全设计时充分考虑冗余设计、火灾防护设计以及防止错误操作设计等。

使用本资料时的注意事项

- 本资料是在客户购买三菱电机半导体产品后，为客户更好地了解应用产品而使用的参考资料。三菱电机对本资料中所记载的相关技术信息拥有知识产权，未经许可不得用于其它用途。
- 如因将本资料所记载的产品数据、图、表、程序及算法用于其它应用电路而导致损害或侵害第三方权利时，三菱电机将不承担任何责任。
- 本资料中记载的产品数据、图、表、程序、算法和其他所有信息均为本资料发行当时的信息，三菱电机可能会不经预告而对本资料记载的产品或规格作出变更。购买三菱半导体产品时，请事先与三菱电机或代理商确认最新信息，并经常登陆三菱电机半导体情报官方网站 (www.MitsubishiElectric.com) 等关注已公布的最新信息。
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- 本资料所记载产品，在设计、制造时，并非以人身相关状况为前提作为设计和生产的目的。若客户考虑将本产品用于交通、移动通信、医疗、航空宇宙、核能控制、海底中继设备或其他特殊场合时，请与三菱电机或者代理商进行确认。
- 若需转载、复制本资料，需事前得到三菱电机的书面许可。
- 关于本资料更细节问题，或者其他任何疑点，请与三菱电机或者代理商进行确认。



精于节能 尽心环保

“Eco Changes” 是三菱电机集团的环境宣言。本集团通过世界先进的节能环保技术和优异的产品，努力成为为构建富裕社会做贡献的“全球性环保先进企业”！



三菱电机株式会社

日本总公司：〒100-8310 日本国・东京都千代田区丸之内二丁目7番3号 东京大厦