



MG120R015B

主要参数 MAIN CHARACTERISTICS

I_D	129A
V_{CE}	1200V
$R_{dson-typ}$ (@ $V_{GS}=18V$)	15 m Ω
Q_g-typ	245 nC

用途

- 光伏逆变器
- 开关模式电源
- 高压 DC/DC 转换器
- 电池充电器
- 电动驱动
- 脉冲电源应用

APPLICATIONS

- Solar Inverters
- Switch Mode Power Supplies
- High Voltage DC/DC Converters
- Battery Chargers
- Motor Drives
- Pulsed Power applications

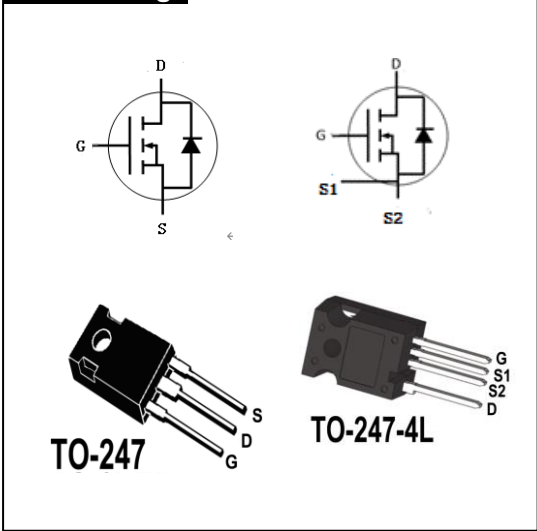
产品特性

- 高阻断电压
- 低导通电阻
- 低电容高速开关
- 易于驱动
- 雪崩强度高
- RoHS 产品

FEATURES

- High Blocking Voltage
- Low On-Resistance
- High Speed Switching with Low Capacitances
- Easy to Parallel and Simple to Drive
- Avalanche Ruggedness
- RoHS product

封装 Package



订货信息 ORDER MESSAGE

订货型号 Order codes	印 记 Marking	封 装 Package
无卤-条管 Halogen-Free-Tube		
MG120R015B-GE-BR	MG120R015B	TO-247
MG120R015B-GH-BR	MG120R015B	TO-247-4L



绝对最大额定值 ABSOLUTE RATINGS ($T_C=25^{\circ}\text{C}$)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit	测试条件 Tests conditions
最高漏极-源极直流电压 Drain-Source Voltage	V_{DSmax}	1200	V	$V_{GS}=0V, I_D=100\mu A$
最高栅源电压 Gate-Source Voltage	V_{GSmax}	-10/+22	V	Absolute maximum values
工作栅源电压 Gate-Source Voltage	V_{GSop}	-5/+18	V	Recommended operational values
连续漏极电流 Drain Current -continuous	I_D	129	A	$V_{GS}=18V, T_C=25^{\circ}\text{C}$
		75	A	$V_{GS}=18V, T_C=100^{\circ}\text{C}$
最大脉冲漏极电流 Drain Current - pulse	I_{DM}	291	A	$T_C=25^{\circ}\text{C}$ Pulse width limited by T_{jmax}
		168		$T_C=125^{\circ}\text{C}$ Pulse width limited by T_{jmax}
耗散功率 Power Dissipation	P_D	500	W	$T_C=25^{\circ}\text{C}$
单脉冲雪崩能量 Single Pulsed Avalanche Energy	E_{AS}	850	mJ	$T_C = 25^{\circ}\text{C}, V_D=50V, L=0.5mH,$ $I_{AS}=58A, V_{GS}=18V$
最高结温及存储温度 Operating and Storage Temperature Range	T_J, T_{STG}	-55~+175	$^{\circ}\text{C}$	
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T_L	300	$^{\circ}\text{C}$	





电特性 ELECTRICAL CHARACTERISTICS

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单位 Units
漏—源击穿电压 Drain-Source Voltage	BV_{DSS}	$I_D=100\mu A, V_{GS}=0V$	1200	-	-	V
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=23mA, T_C=25^\circ C$	2.0	2.78	4.0	V
		$V_{DS} = V_{GS}, I_D=23mA, T_C=175^\circ C$	-	1.83	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=1200V, V_{GS}=0V, T_C=25^\circ C$	-	2	50	μA
栅极体漏电流 Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=22V$	-	-	250	nA
		$V_{DS}=0V, V_{GS}=-10V$	-	-	250	nA
导通电阻 Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=18V, I_D=75A, T_C=25^\circ C$	-	15	18	m Ω
		$V_{GS}=18V, I_D=75A, T_C=175^\circ C$	-	23	-	m Ω
		$V_{GS}=15V, I_D=75A, T_C=25^\circ C$	-	18	-	m Ω
		$V_{GS}=18V, I_D=75A, T_C=175^\circ C$	-	25	-	m Ω
输入电容 Input capacitance	C_{iss}	$V_{DS}=800V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	5270	-	pF
输出电容 Output capacitance	C_{oss}		-	243	-	pF
反向传输电容 Reverse transfer capacitance	C_{rss}		-	16	-	pF
导通开关能量 Turn-On Switching Energy	E_{ON}	$V_{DS}=800V, V_{GS}=-5/18V, I_D=75A,$ $L=100\mu H, R_{G(ext)}=10\Omega$	-	3585	-	μJ
关断开关能量 Turn-Off Switching Energy	E_{OFF}		-	1020	-	
延迟时间 Turn-On delay time	$t_d(on)$	$V_{DS}=800V, V_{GS}=-5/18V, I_D=75A,$ $L=100\mu H, R_{G(ext)}=10\Omega$	-	77	-	ns
上升时间 Turn-On rise time	t_r		-	37	-	ns
延迟时间 Turn-Off delay time	$t_d(off)$		-	93	-	ns
下降时间 Turn-Off Fall time	t_f		-	28	-	ns
栅电阻 Intrinsic gate resistance	R_G	$f=1MHz, V_{AC}=25mV$	-	1.2	-	Ω
栅—源电荷 Gate-Source charge	Q_{gs}	$V_{DD}=800V, V_{GS}=-5/18V, I_D=75A$	-	73	-	nC
栅—漏电荷 Gate-Drain charge	Q_{gd}		-	24	-	
栅极电荷总量 Total Gate Charge	Q_g		-	245	-	





漏-源二极管特性 Drain-Source Diode Characteristics

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	典型 Typ	最大 Max	单位 Units
正向压降 Drain-Source Diode Forward Voltage	V_{SD}	$V_{GS} = -5V, I_{SD} = 75A, T_J = 25^\circ C$	4.9	-	V
		$V_{GS} = -5V, I_{SD} = 75A, T_J = 175^\circ C$	4.3	-	V
正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current	I_S	$T_C = 25^\circ C$ $T_C = 125^\circ C$	-	104 44	A
反向恢复时间 Reverse recovery time	t_{rr}	$I_{SD} = 75A, V_{DD} = 800V, V_{GS} = -5V,$ $di/dt = 1000A/\mu s$	39.4	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		370	-	nC
峰值反向恢复电流 Peak Reverse Recovery Current	I_{rrm}		16.4	-	A

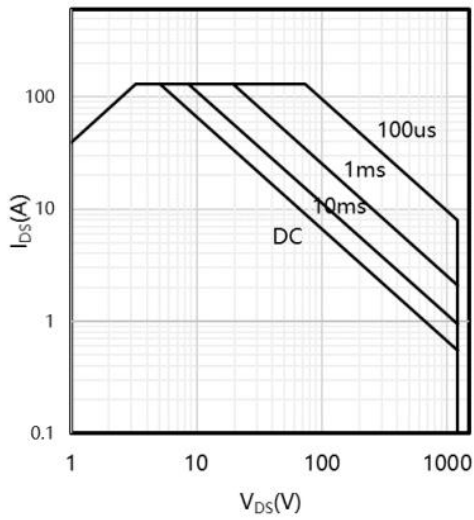
热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	典型 Typ	单位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.30	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	40	$^\circ C/W$

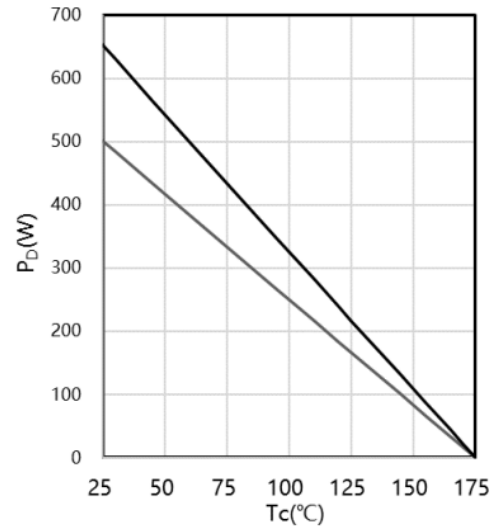




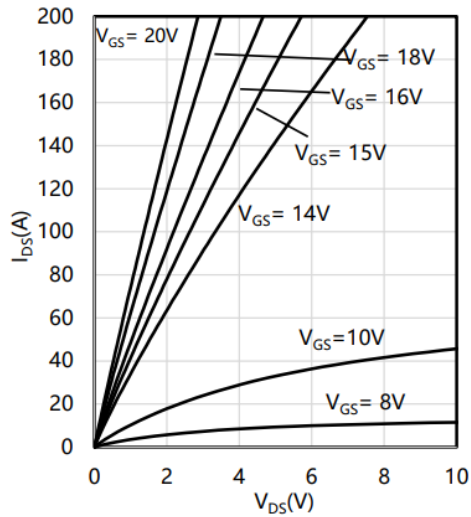
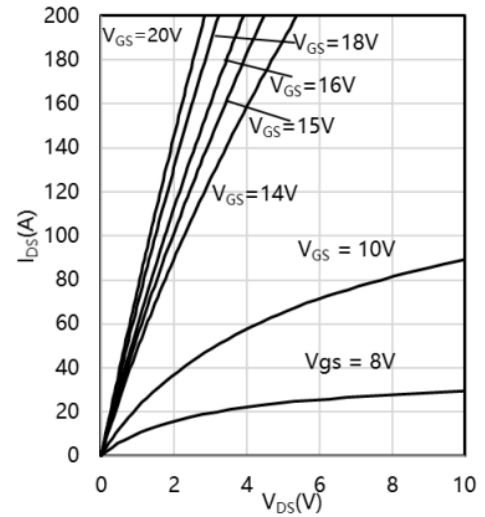
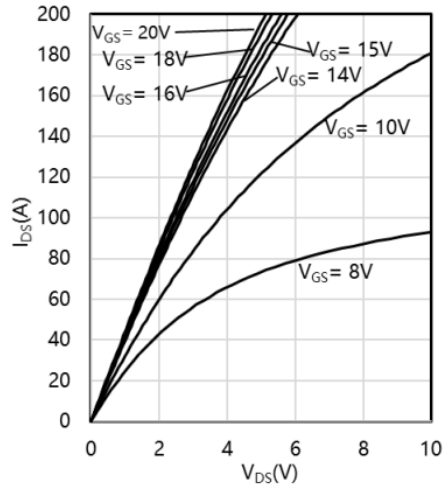
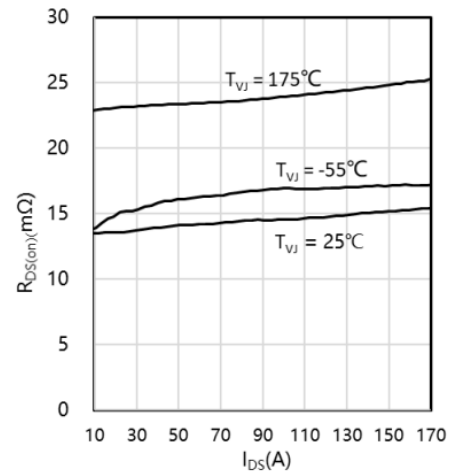
典型性能 Typical Performance



Safe Operating Area

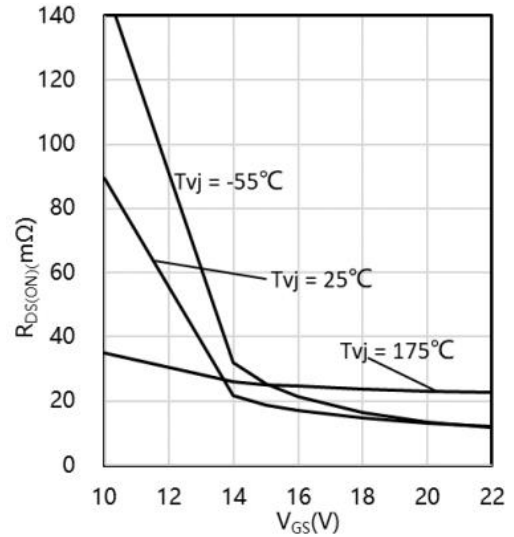
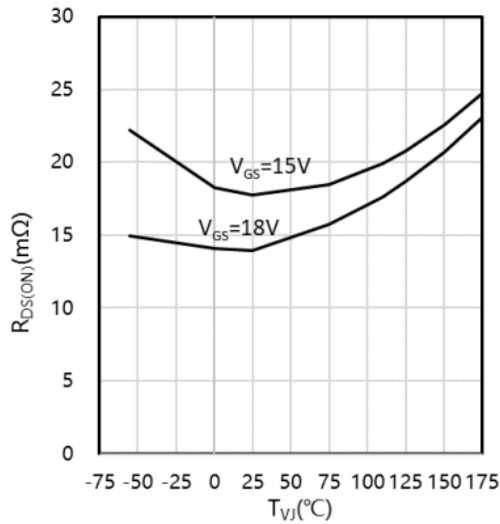


Total Power Dissipation

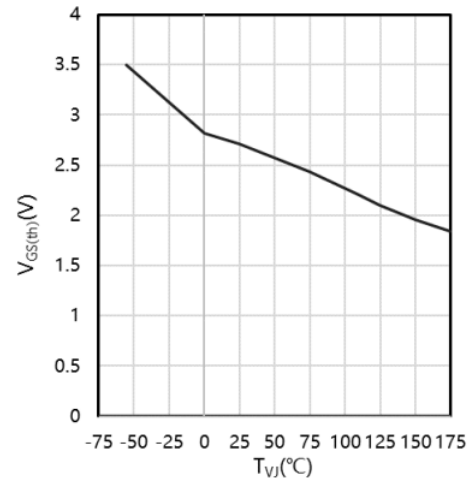
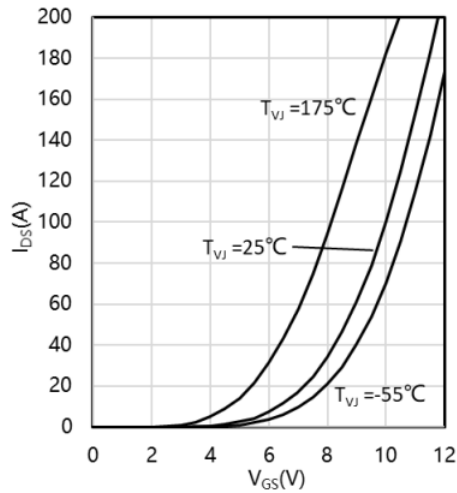
Output Characteristics $T_J = -55\text{ }^{\circ}\text{C}$ Output Characteristics $T_J = 25\text{ }^{\circ}\text{C}$ Output Characteristics $T_J = 175\text{ }^{\circ}\text{C}$ 

Typical on-state resistance as a function of drain current



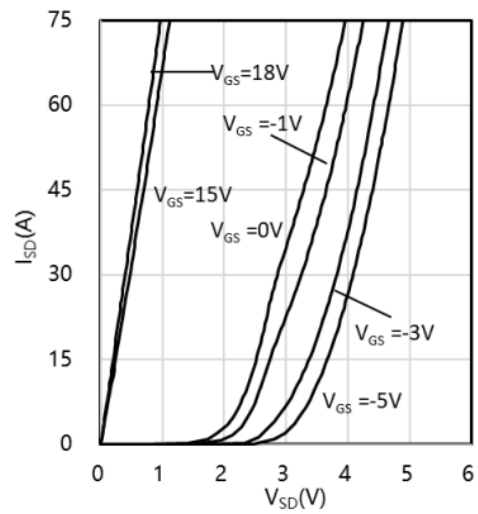
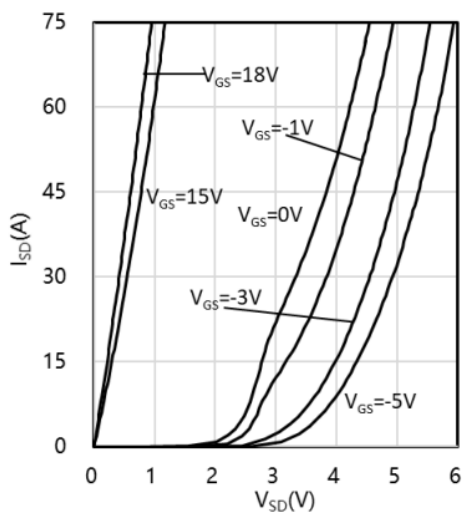


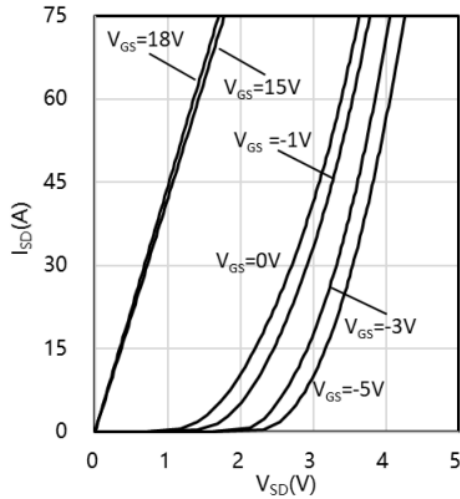
Typical on-state resistance as a function of temperature

Typical on-state resistance as a function of V_{GS} 

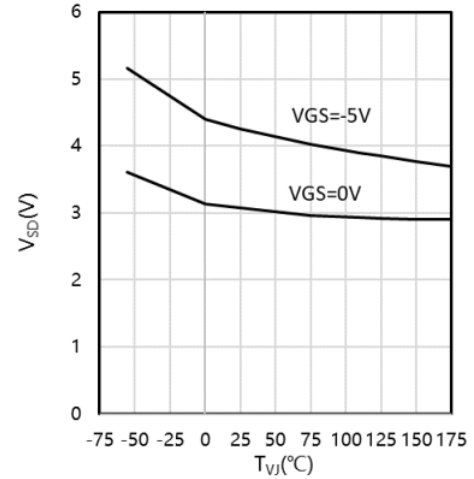
Typical transfer characteristic

Typical gate-source threshold voltage as a function of junction temperature

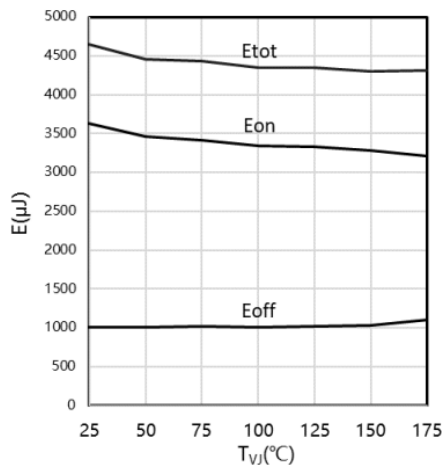
Typical reverse drain current as function of reverse drain voltage, V_{GS} as parameter $I_{SD} = f(V_{SD})$, $T_{VJ} = -55\text{ }^{\circ}\text{C}$ Typical reverse drain current as function of reverse drain voltage, V_{GS} as parameter $I_{SD} = f(V_{SD})$, $T_{VJ} = 25\text{ }^{\circ}\text{C}$ 



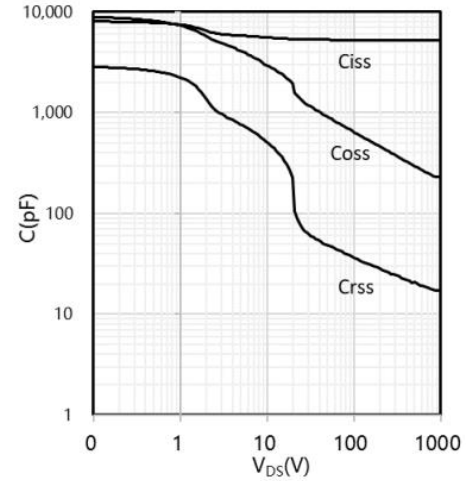
Typical reverse drain current as function of reverse drain voltage, V_{GS} as parameter $I_{SD} = f(V_{SD})$, $T_{VJ} = 175\text{ }^{\circ}\text{C}$



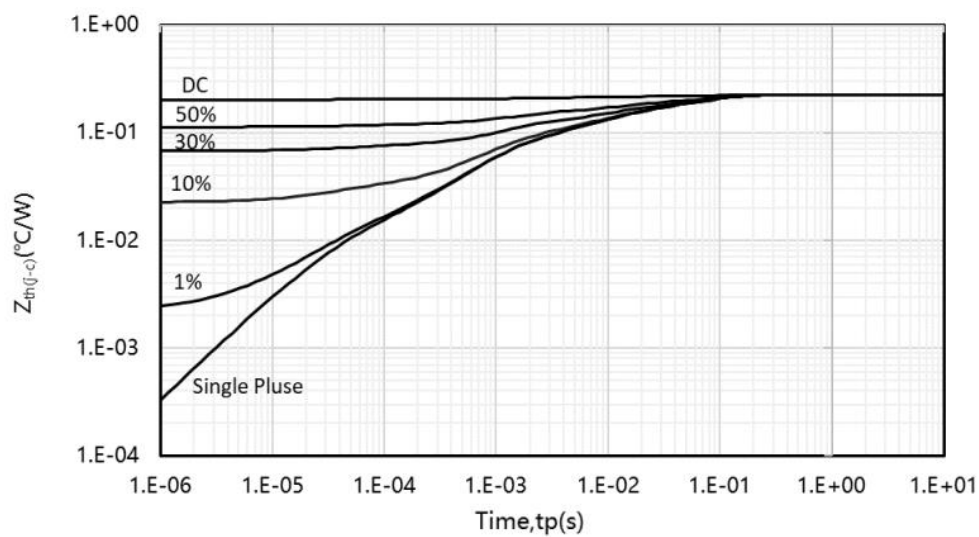
Typical reverse drain voltage as function of junction temperature



Typical switching energy as a function of junction temperature, 2nd device own body diode



Typical capacitance as a function of drain-source voltage



Max. transient thermal resistance (MOSFET) ($Z_{th(j-c,max)} = f(t_p)$, Parameter $D = t_p/T$)

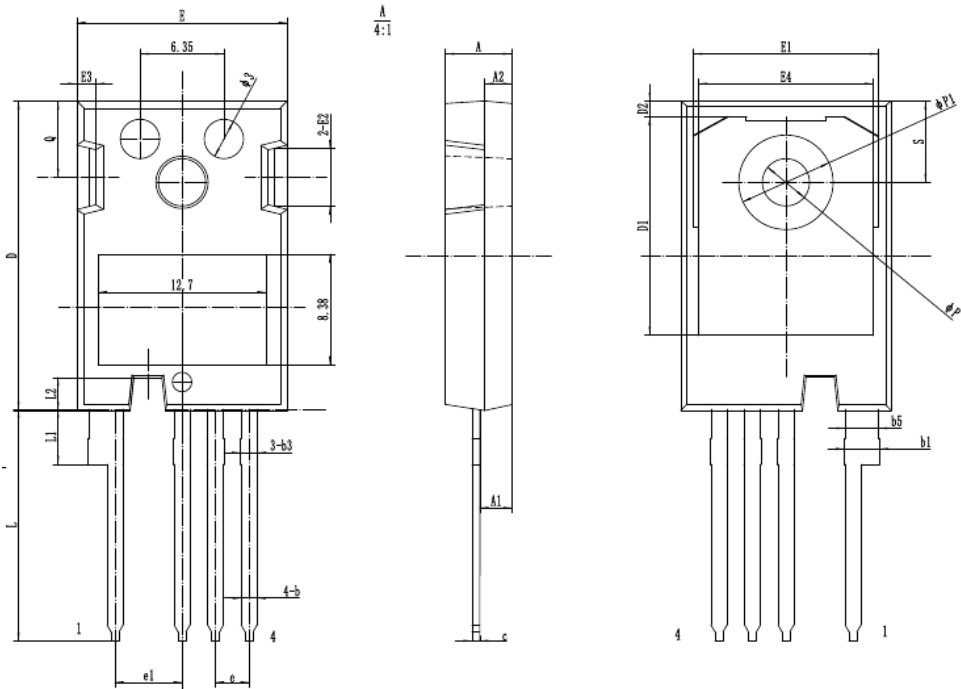




外形尺寸 PACKAGE MECHANICAL DATA

TO-247-4L

单位 Unit: mm



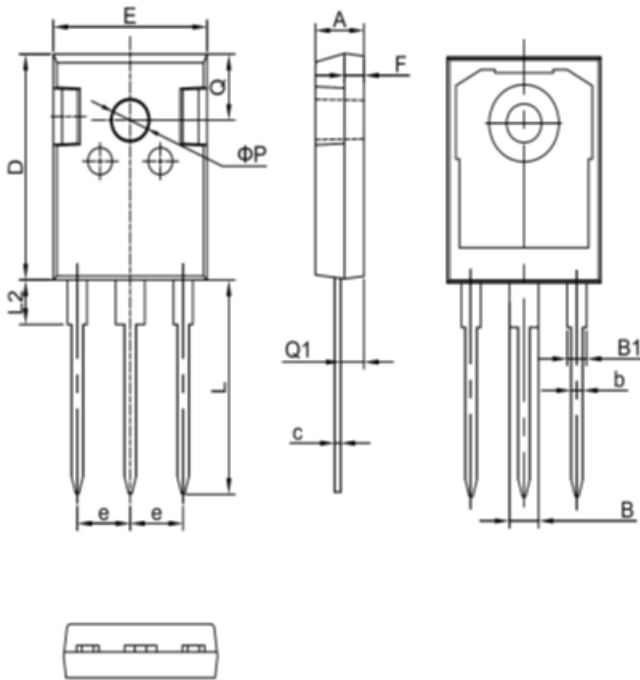
SYMBOL	mm		
	MIN	NOM	MAX
*A	4.83	5.02	5.21
A1	2.29	2.41	2.54
A2	1.91	2.00	2.16
*b	1.07	1.20	1.33
b1	2.39	2.67	2.94
b3	1.07	1.30	1.60
b5	2.39	2.53	2.69
*c	0.55	0.60	0.68
*D	23.30	23.45	23.60
D1	16.25	16.55	17.65
D2	0.95	1.19	1.25
*E	15.75	15.94	16.13
E1	13.10	14.02	14.15
E2	3.68	4.40	5.10
E3	1.00	1.45	1.90
E4	12.38	13.26	13.43
*e		2.54BSC	
e1		5.08BSC	
*L	17.31	17.57	17.82
*L1	3.97	4.19	4.37
*L2	2.30	2.50	2.65
* ϕ P	3.51	3.61	3.65
* ϕ P1		7.19REF	
*Q	5.49	5.79	6.00
S	6.04	6.17	6.30



外形尺寸 PACKAGE MECHANICAL DATA

TO-247

单位 Unit: mm



符号 symbol	MIN	MAX
A	4.90	5.10
B	2.95	3.35
B1	1.95	2.35
b	1.15	1.35
c	0.50	0.70
D	20.90	21.10
E	15.70	15.90
e	5.34	5.54
F	1.90	2.10
L	19.40	20.40
L2	4.03	4.23
Q	6.00	6.40
Q1	2.30	2.50
P	3.50	3.70

←



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