TS30D12B1A-313B

SiC MPS 器件 SiC MPS Device

关键参数 Key Parameters

V_R		1200	V
V_F	Typ.	1.40	V
I_F	Max.	30	A

电路结构 Circuit Configuration

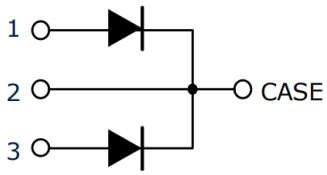


图 1. 电路结构

Fig. 1 Circuit configuration

典型应用 Typical Application

- 光伏逆变器 Solar Inverters
- 开关电源 Switching Mode Power Supply
- 不间断电源 UPS

器件外形 Device Appearance

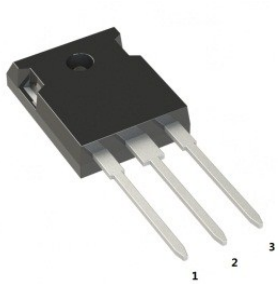


图 2. 模块外形

Fig. 2 Device appearance

特点 Features

- 零反向恢复电流 No Reverse Recovery Current
- 高效率 Higher Efficiency
- 易并联使用 Easy Paralleling

最大额定值 Maximum Ratings

符号 Symbol	参数名称 Parameter	测试条件 Test Conditions	数值 Value	单位 Unit
V_{RRM}	反向重复峰值电压 Repetitive peak reverse voltage		1200	V
I_F	正向持续直流电流，由 $T_{vj\,max}$ 限制 Continuous forward current, limited by $T_{vj\,max}$	T_C = 25 °C,T_{vjmax}=175°C	15/30	A
I_{FRM}	正向重复峰值电流，由 $T_{vj\,max}$ 限制 Maximum repetitive forward current, limited by $T_{vj\,max}$	T_C = 25 °C，t_P = 10ms	60/120	A
		T_C = 100 °C，t_P = 10ms	45/90	A
I_{FSM}	正向不重复浪涌电流 Non-Repetitive peak forward surge current	T_C = 25 °C，t_P = 10ms，正弦半波 T_C = 25 °C，t_P = 10ms, Half Sine Pulse	150/300	A
		T_C = 150 °C，t_P = 10ms，正弦半波 T_C = 150 °C，t_P = 10ms, Half Sine Pulse	136/272	A
I^2t	I^2t 值 I^2t value	T_C = 25 °C，t_P = 10ms，正弦半波 T_C = 25 °C，t_P = 10ms, Half Sine Pulse	113/450	A^2s

I^2t	I^2t 值 I^2t value	T_C = 150 °C，t_P = 10ms，正弦半波 T_C = 150 °C，t_P = 10ms, Half Sine Pulse	92/370	A^2s
$T_{vj\ max}$	最大允许结温 Max. Junction temperature		175	°C
$T_{vj(op)}$	工作结温 Operation junction temperature		-55...+175	°C
T_{stg}	存储温度 Storage temperature range		-55...+150	°C
M	安装力矩 - M3 Mounting Torque - M3		0.6	Nm

电特性值 Electrical Characteristics

除非特别声明，否则 T_{vj}= 25 °C　　T_{vj}= 25 °C unless otherwise stated

符号 Symbol	参数名称 Parameter	测试条件 Test Conditions	最小值 Min.	典型值 Typ.	最大值 Max.	单位 Unit
V_{DC}	击穿电压 DC Blocking Voltage	I_R=100uA	1200			V
V_F	正向电压 Diode forward voltage	I_F =15A/30A		1.40		V
		I_F = 15A/30A, T_{vj} = 175°C		1.88		V
I_R	反向电流 Reverse current	V_R= 1200V			1	uA
		V_R= 1200V, T_{vj} = 175°C			5	uA
Q_C	总电容电荷 Total Capacitive Charge	V_R = 800V		82/164		nC
C	总电容 Total Capacitance	V_R = 1V, f = 100KHz		802/1604		pF
		V_R =400V, f = 100KHz		77/154		
		V_R = 800V, f = 100KHz		68/136		

热学特性 Thermal Characristics

符号 (Symbol)	参数名称 (Parameter)	条件 (Test Conditions)	最小值 (Min)	典型值 (Typ)	最大值 (Max)	单位 (Unit)
$R_{th(j-c)}$	结壳热阻 Thermal resistance, junction – case			0.72/0.36		K/W

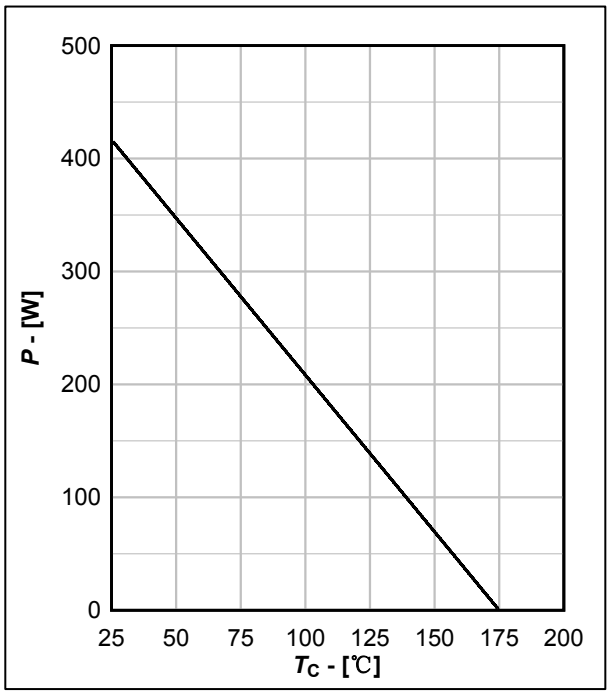


图 3 典型功率降额曲线, P_{tot}=f(T_C)

Fig.3 Power dissipation per leg as functionof case temperature, P_{tot}=f(T_C)

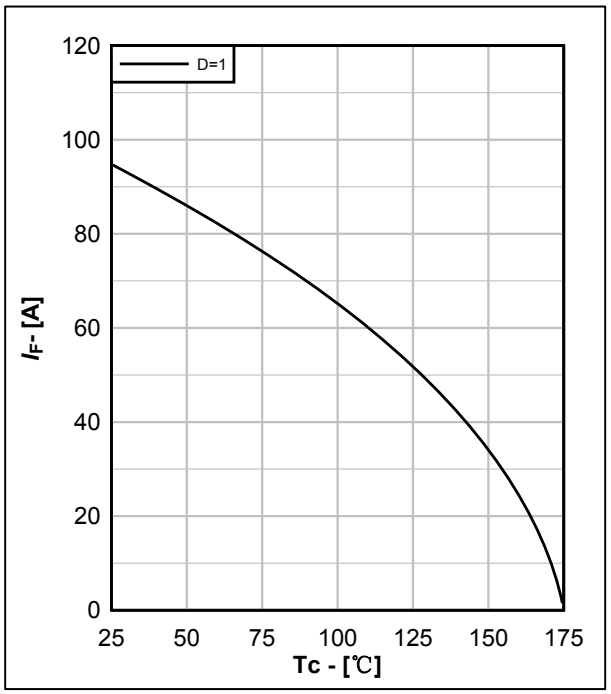


图 4. 不同负载下的电流曲线, I_F= f (T_c)

Fig.4 Diode forward current per leg as function of temperature, I_F= f (T_c)

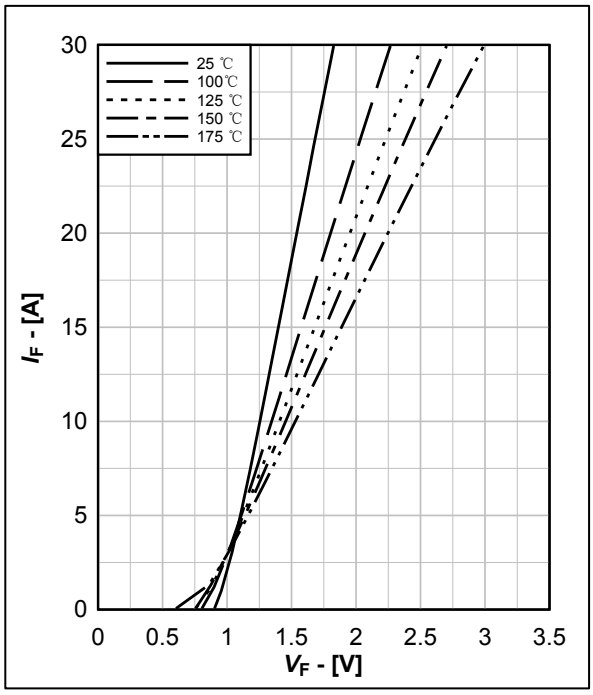


图 5. 典型正向特性曲线, I_F=f(V_F)

Fig.5 Typical forward characteristics per leg, I_F=f(V_F)

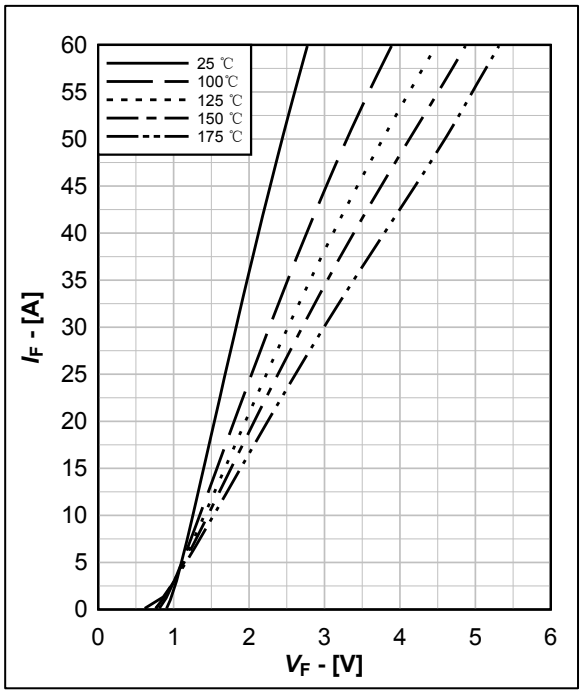


图 6. 典型正向特性曲线, I_F= f (V_F)

Fig.6 Typical forward characteristics per leg, I_F=f(V_F)

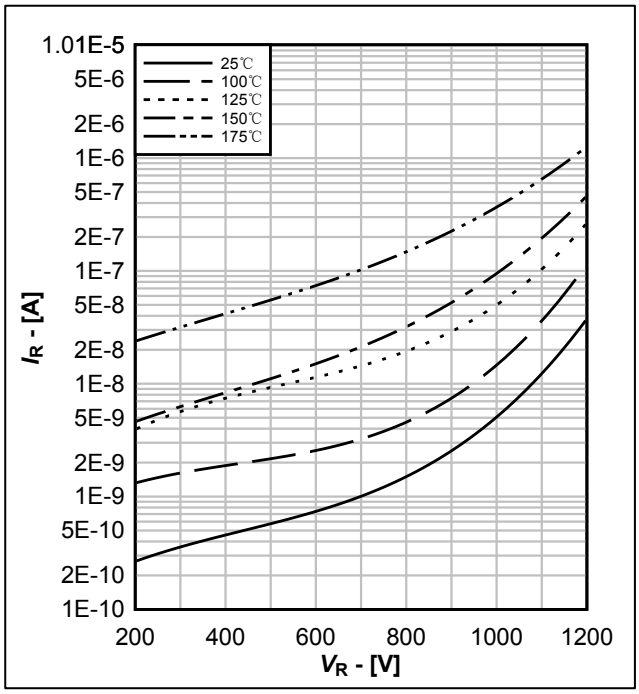


图 7. 典型反向特性曲线, I_R= f (V_R)

Fig.7 Typical IGBT output characteristics, I_R= f (V_R)

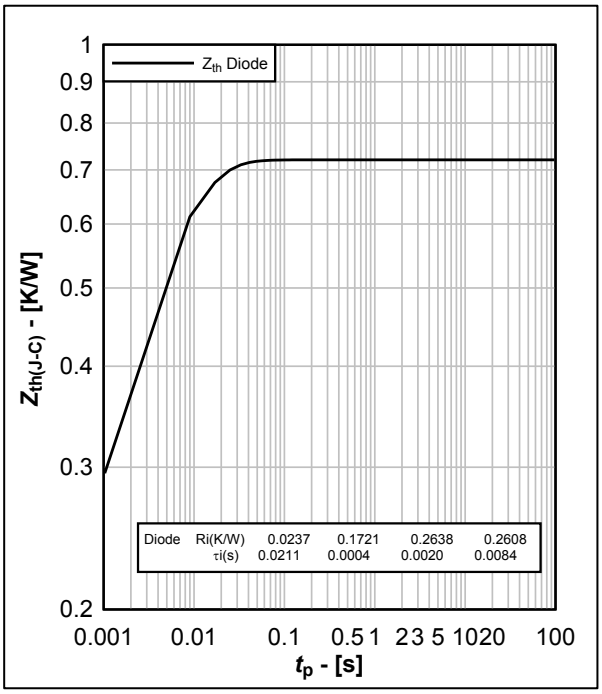


图 8. 瞬态热阻抗曲线（单芯片）, $Z_{th(J-C)}$ = f (t_p)

Fig.8 Transient thermal impedance(per leg), $Z_{th(J-C)}$ = f (t_p)

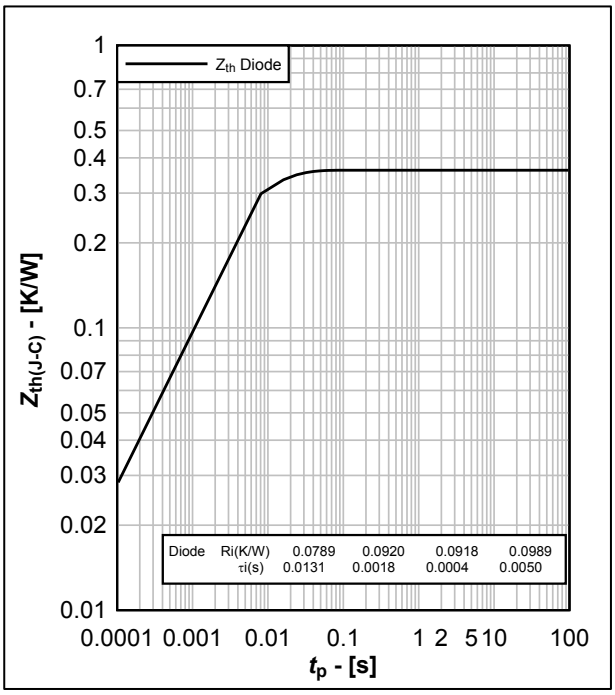


图 9. 瞬态热阻抗曲线, $Z_{th(J-C)}$ = f (t_p)

Fig.9 Transient thermal impedance(per device), $Z_{th(J-C)}$ = f (t_p)

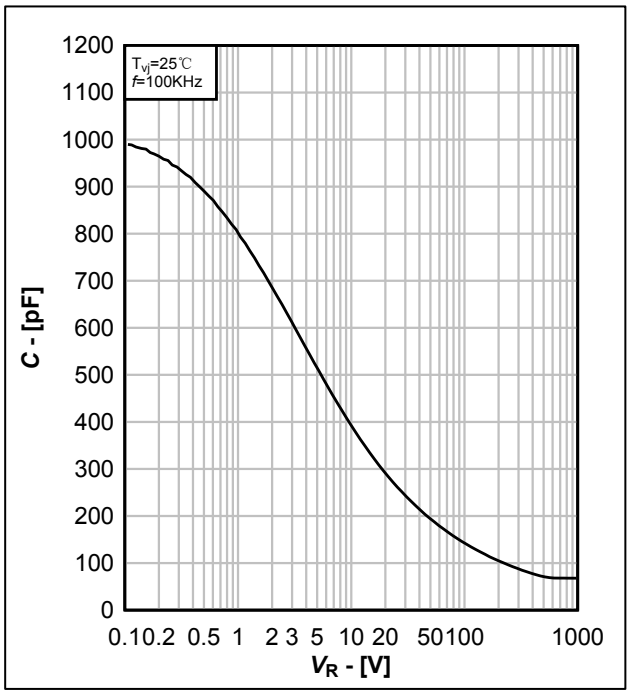


图 10. 典型电容与反向电压曲线, C=f(V_R)

Fig.10 Typical capacitance per leg as function of reverse voltage, C=f(V_R)

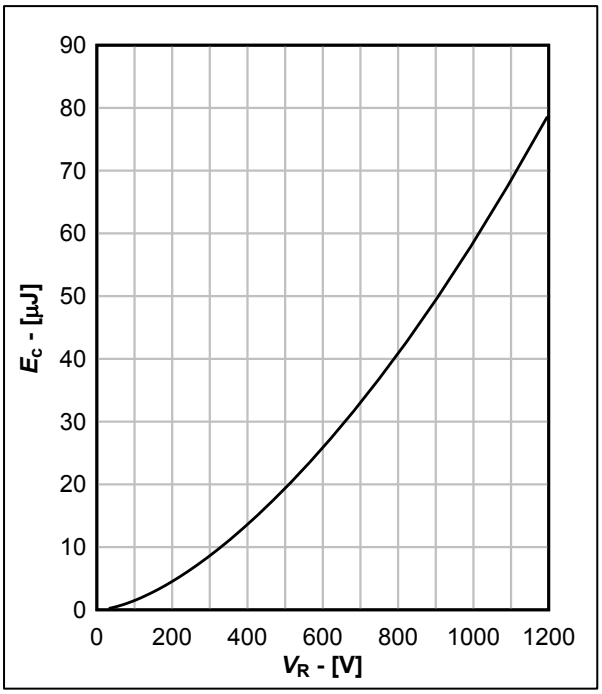
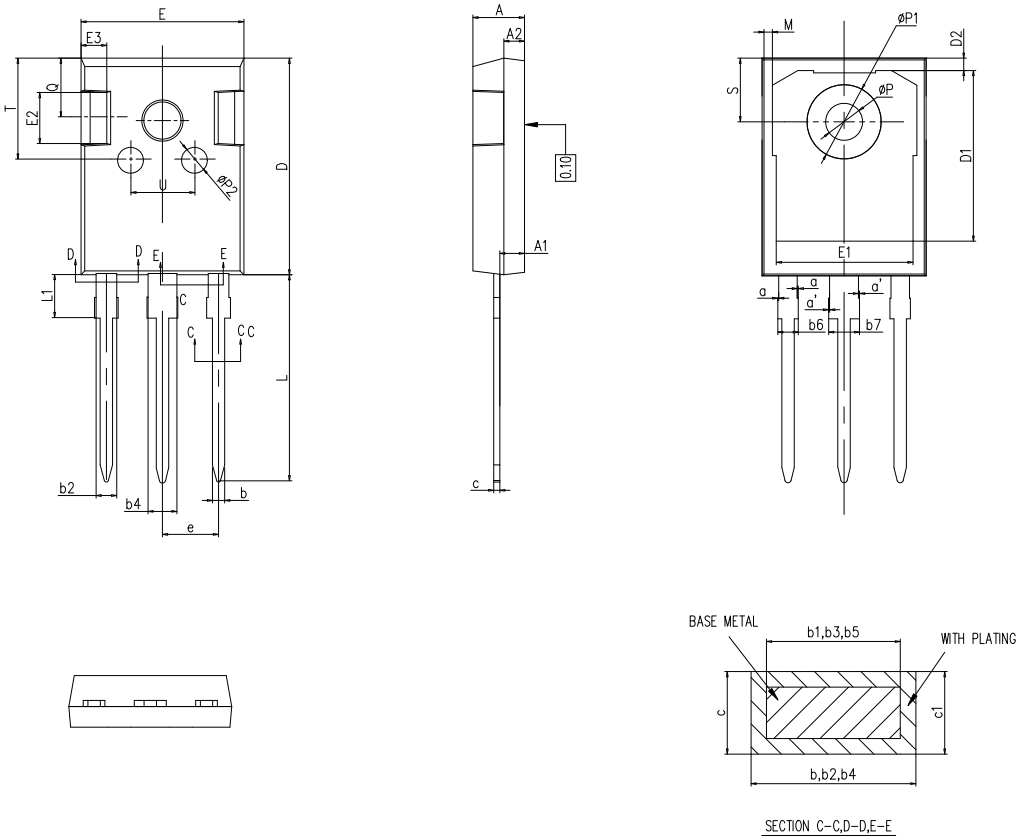


图 11. 典型电容能量与反向电压曲线, E_C=f(V_R)

Fig.11 Typical capacitively stored energy as function of reverse voltage, per leg, E_C=f(V_R)



SYMBOL	mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
a	0	-	0.15
a'	0	-	0.15
b	1.11	-	1.36
b1	1.15	1.20	1.25
b2	1.91	-	2.21
b3	1.95	2.00	2.02
b4	2.96	-	3.06
b5	2.95	3.00	3.02
b6	-	-	2.25
b7	-	-	3.25
c	0.51	-	0.75
c1	0.58	0.60	0.62
D	20.70	21.00	21.30
D1	16.25	16.55	16.85
D2	1.05	1.20	1.35
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	5.34	5.44	5.54
L	19.62	19.92	20.22
L1	3.93	-	4.46
M	0.35	-	0.95
P	3.40	3.60	3.80
P1	7.00	-	7.40
P2	2.40	2.50	2.60
Q	5.60	-	6.00
S	6.05	6.15	6.25
T	9.80	-	10.20
U	6.00	-	6.40

图 11. 封装尺寸

Fig. 11 Package Dimensions

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