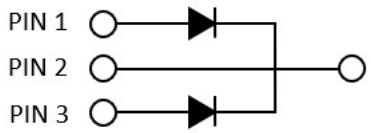
M3S-0040-065D

Silicon Carbide Schottky Diode



Maximum Ratings (T_c = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	V		
V_{RSM}	Surge Peak Reverse Voltage	650	V		
V_{DC}	DC Blocking Voltage	650	V		
I_F	Continuous Forward Current	20/40 (P)	A	T_C=150°C	Fig. 7
I_{FRM}	Repetitive Peak Forward Surge Current	275	A	T_C=25°C, t_P=10 ms, Half Sine Wave,	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	320	A	T_C=25°C, t_P=10ms, Half Sine Wave	
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	1350(S)	A	T_C=25°C, t_P= 10 μs, Pulse	
P_{tot}	Power Dissipation	300 130	W	T_C=25°C T_C=110°C	Fig. 6
T_J , T_{stg}	Operating Junction and Storage Temperature	-55 to +175	°C		

P-paralleling S-Single

Electrical Characteristics (Single)

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.40 1.70	1.8 2.4	V	I_F = 20 A T_J=25°C I_F = 20 A T_J=175°C	Fig. 1
I_R	Reverse Current	1.5 30	20 200	μA	V_R = 650 V T_J=25°C V_R = 650 V T_J=175°C	Fig. 2
Q_C	Total Capacitive Charge	65		nC	V_R = 400 V, T_J = 25°C $Qc=\int_0^{V_R} C(V)dV$	Fig. 4
C	Total Capacitance	1300 110 105		pF	V_R = 0 V, T_J = 25°C, f = 1 MHz V_R = 200 V, T_J = 25°C, f = 1 MHz V_R = 400 V, T_J = 25°C, f = 1 MHz	Fig. 3
E_C	Capacitance Stored Energy	15		μJ	V_R = 400 V	Fig. 5

Thermal Characteristics (Single)

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.9	°C/W	Fig. 8

Typical Performance

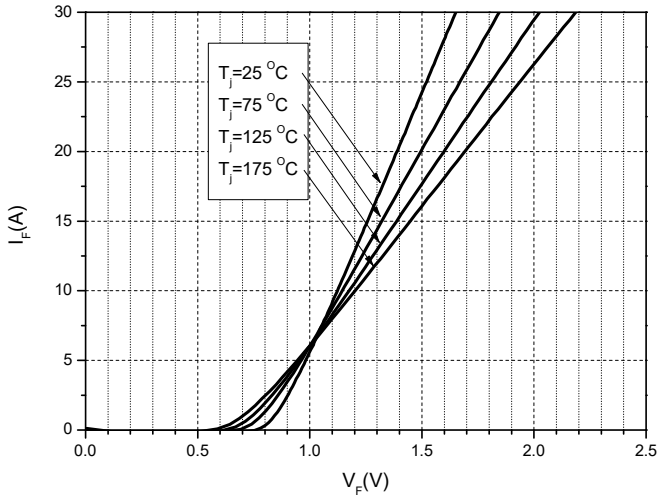


Figure 1.Forward Characteristics

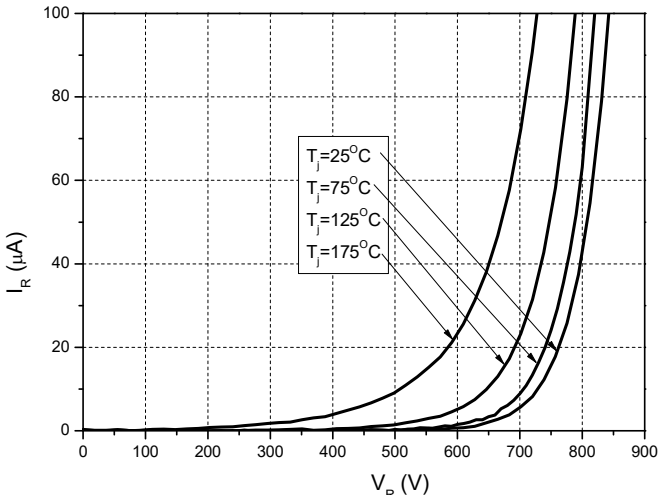


Figure 2. Reverse Characteristics

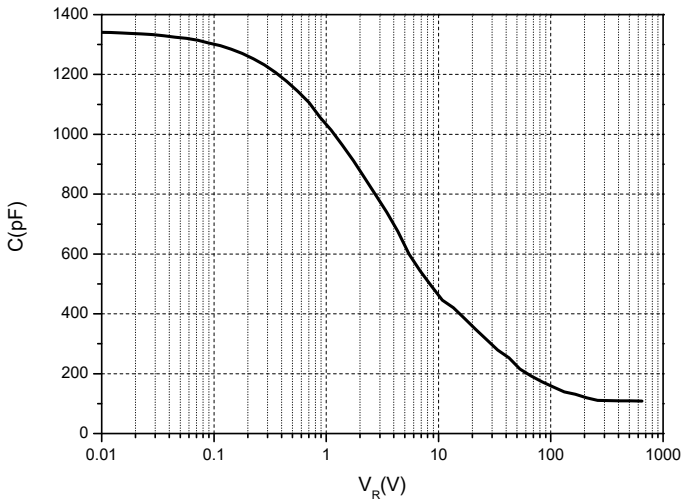


Figure 3.Capacitance vs. Reverse Voltage

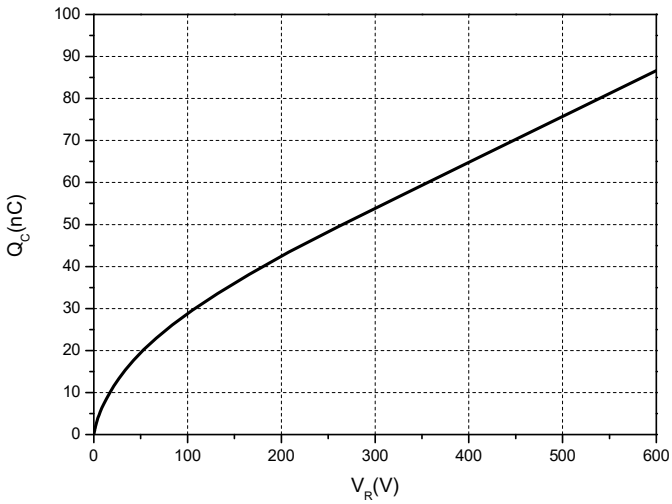


Figure 4. Total Capacitance Charge vs. Reverse Voltage

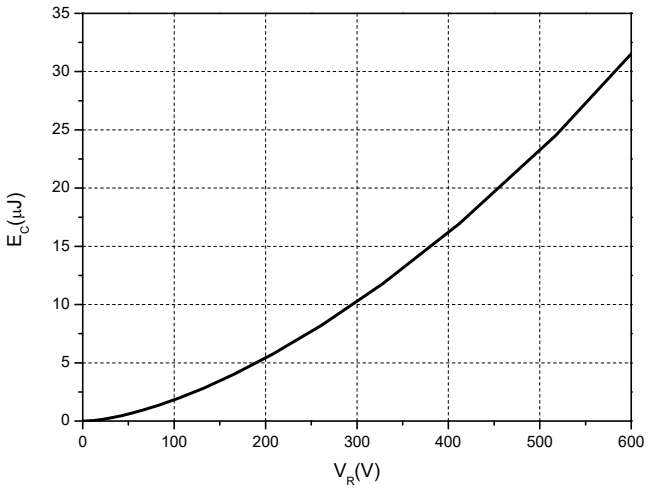


Figure 5. Capacitance Stored Energy

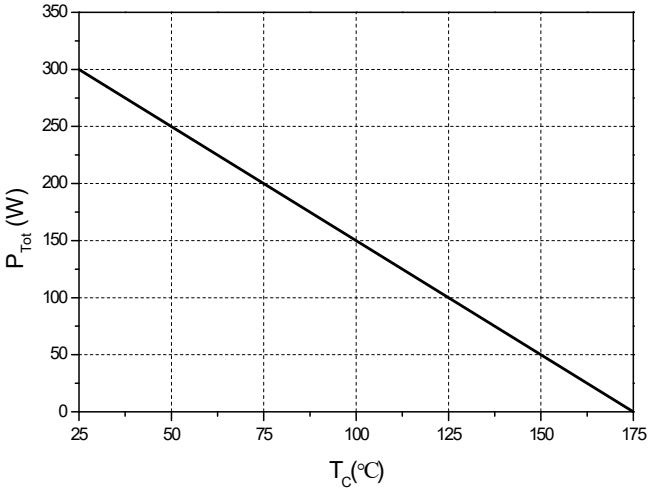


Figure 6. Power Derating

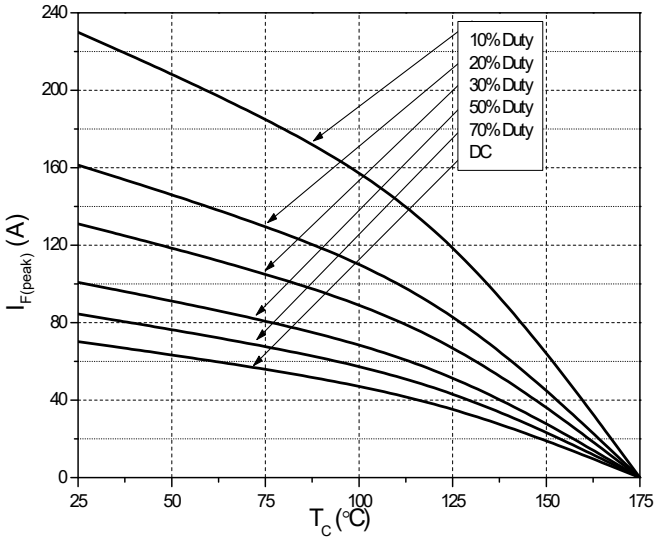


Figure 7. Current Derating

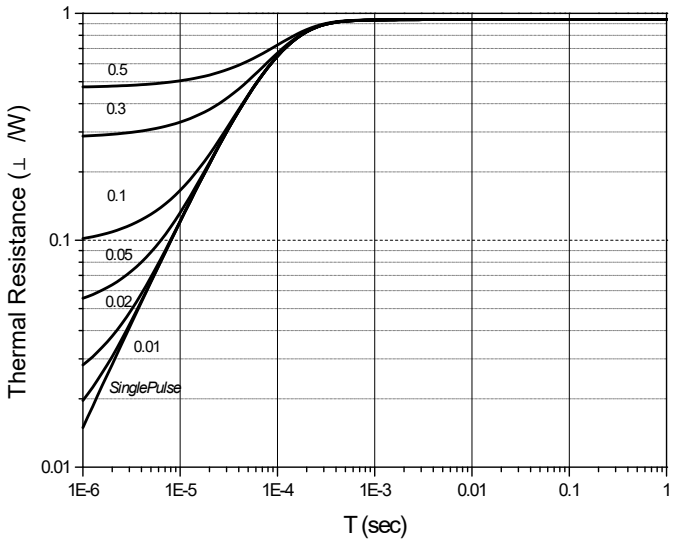
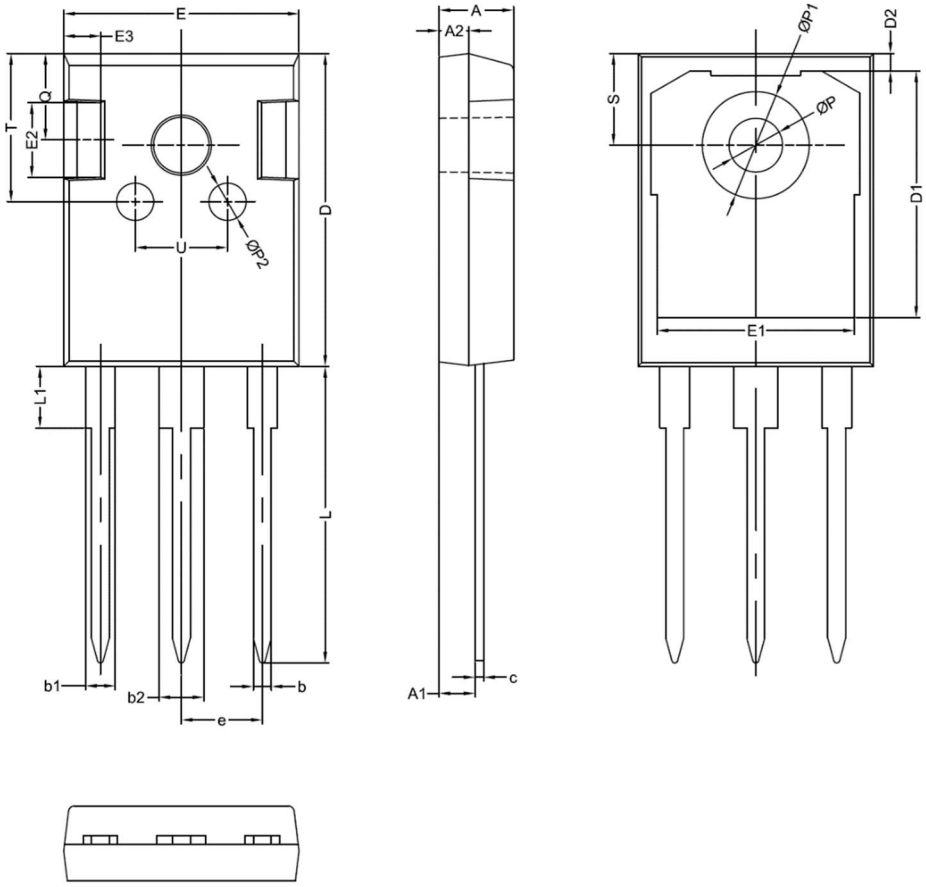


Figure 8. Transient Thermal Impendance

Package Dimensions: TO-247-3L



符号	机械尺寸/mm		
	最小值	典型值	最大值
A	4.80	5.00	5.20
A1	2.21	2.41	2.61
A2	1.90	2.00	2.10
b	1.10	1.20	1.35
b1		2.00	
b2		3.00	
c	0.55	0.60	0.75
D	20.80	21.00	21.20
D1		16.55	
D2		1.20	
E	15.60	15.80	16.0
E1		13.30	
E2		5.00	
E3		2.50	
e		5.44	
L	19.42	19.92	20.42
L1		4.13	
P	3.50	3.60	3.70
P1	-	-	7.40
P2		2.50	
Q		5.80	
S	6.05	6.15	6.25
T		10.00	
U		6.20	