

Silicon Carbide Schottky Diode

V_{RRM}	=	650 V
$I_{F(AVG)}$	=	60 A
Q_C	=	149 nC

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Positive Temperature Coefficient on V_F

Benefits

- Replace Bipolar with Unipolar Rectifiers
- Higher System Efficiency
- Reduced Cooling Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Switch Mode Power Supplies (SMPS)
- Server/Telecom Power Supplies
- Industrial Power Supplies
- Solar Inverters

Package



Part Number	Package
CI60S65D3L2	TO-247-2

Maximum Ratings ($T_C = 25^\circ\text{C}$ Unless Otherwise Specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	V		
V_{DC}	DC Blocking Voltage	650			
I_F	Continuous Forward Current	147	A	$T_C = 25^\circ\text{C}$	Fig. 8
		116		$T_C = 75^\circ\text{C}$	
		60		$T_C = 142^\circ\text{C}$	
I_{FRM}	Repetitive Peak Forward Surge Current	281	A	$T_C = 25^\circ\text{C}$, $t_p = 10$ ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	352	A	$T_C = 25^\circ\text{C}$, $t_p = 10$ ms, Half Sine Pulse	
P_{TOT}	Total Power Dissipation	483	W	$T_C = 25^\circ\text{C}$, $T_J = 175^\circ\text{C}$	Fig. 7
T_{stg}, T_J	Storage and Operating Junction Temperature Range	-55 to +175	$^\circ\text{C}$		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.40 1.80	1.80 3.00	V	$I_F = 60 \text{ A}$, $T_J = 25^\circ\text{C}$ $I_F = 60 \text{ A}$, $T_J = 175^\circ\text{C}$	Fig. 1
I_R	Reverse Current	1 20	10 100	μA	$V_R = 650 \text{ V}$, $T_J = 25^\circ\text{C}$ $V_R = 650 \text{ V}$, $T_J = 175^\circ\text{C}$	Fig. 2
Q_{Cj}	Total Capacitive Charge	149		nC	$V_R = 400 \text{ V}$, $T_J = 25^\circ\text{C}$ $Q_C = \int_0^{V_R} C(V)dV$	Fig. 4
C_j	Total Capacitance	2930 280 276		pF	$V_R = 0 \text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1 \text{ MHz}$ $V_R = 200 \text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1 \text{ MHz}$ $V_R = 400 \text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1 \text{ MHz}$	Fig. 3
E_c	Capacitance Stored Energy	36		μJ	$V_R = 400 \text{ V}$	Fig. 5

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Test Conditions	Note
R_{thJC}	Thermal Resistance from Junction to Case	0.31	$^\circ\text{C}/\text{W}$		Fig. 6

Electrical Characteristics (Curves)

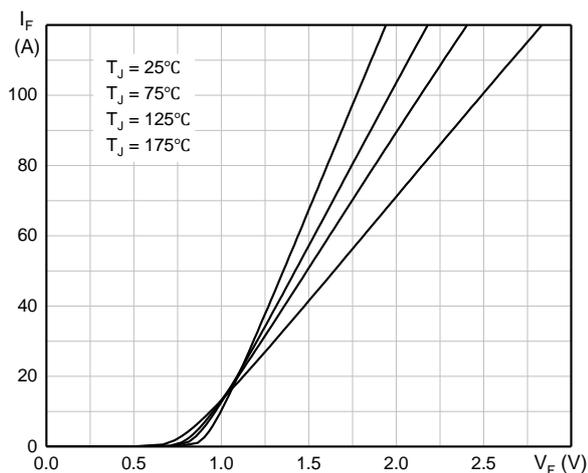


Figure 1. Typical Forward Characteristics

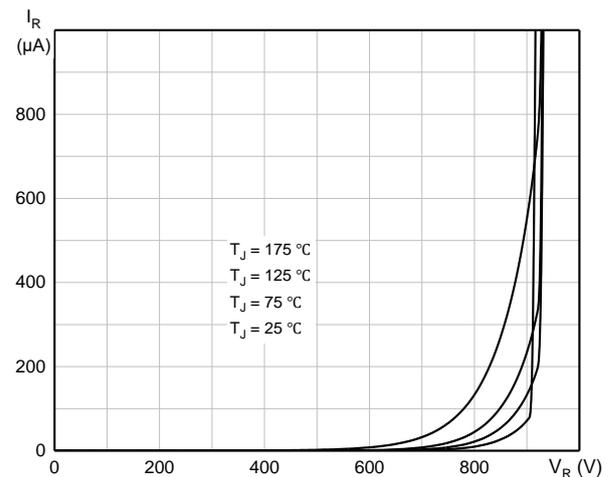


Figure 2. Typical Reverse Characteristics

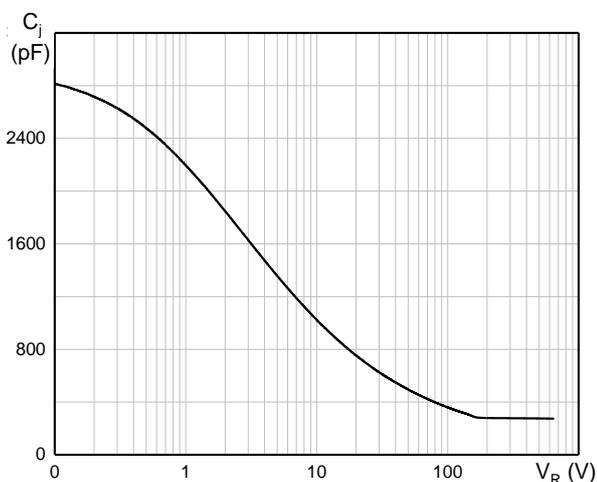


Figure 3. Typical Capacitance vs. Reverse Voltage

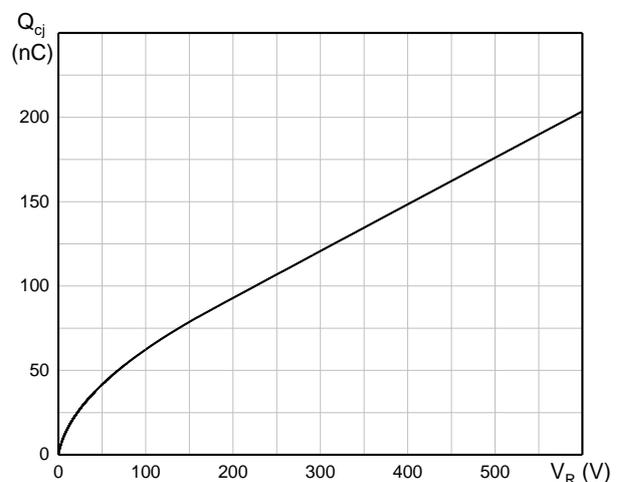


Figure 4. Total Recovery Charge vs. Reverse Voltage

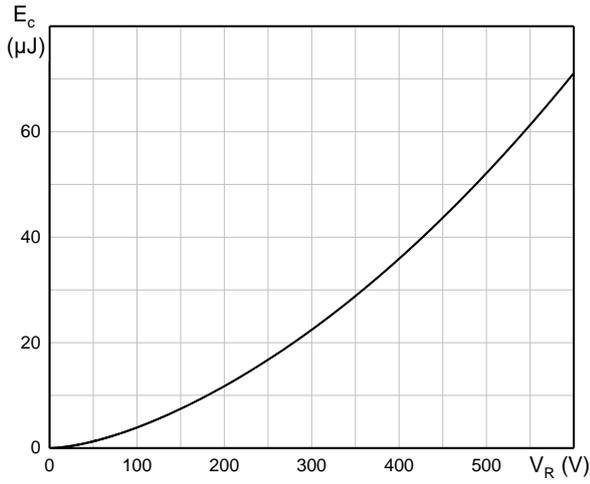


Figure 5. Typical Capacitance Stored Energy vs. Reverse Voltage

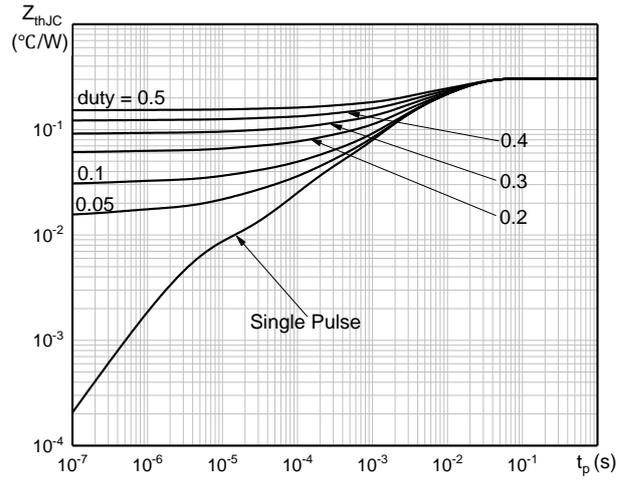


Figure 6. Typical Thermal Impedance Characteristics

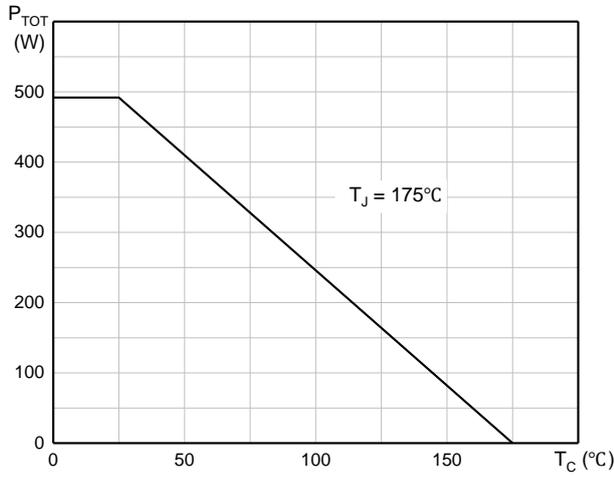


Figure 7. Total Power Dissipation

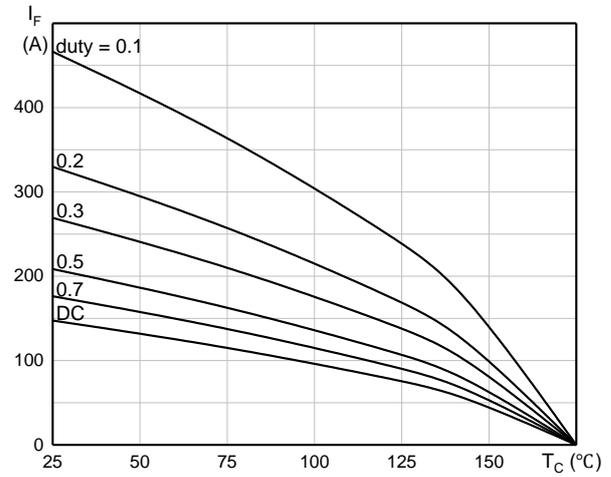
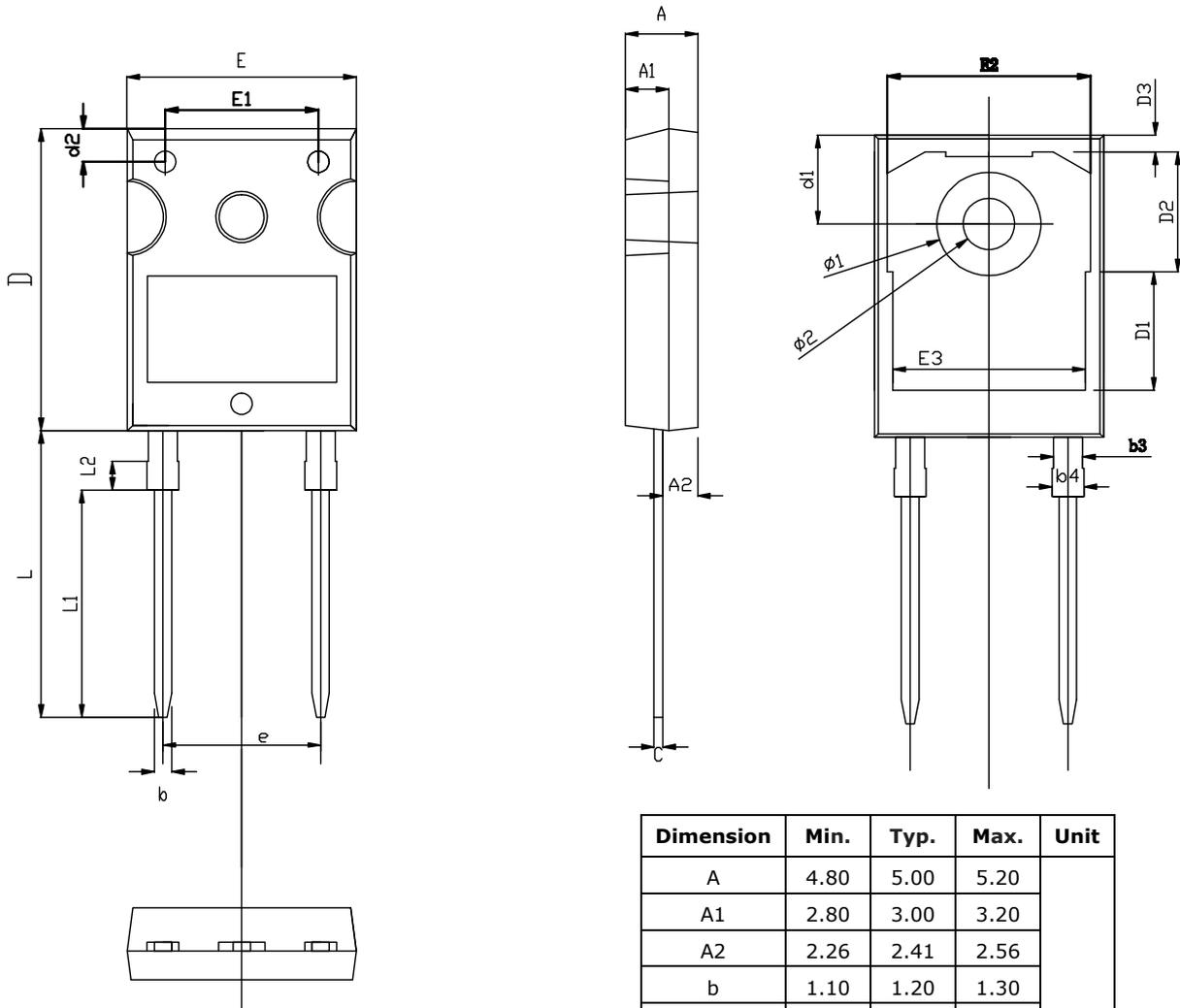
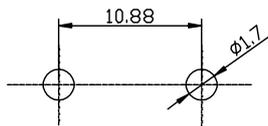


Figure 8. Current Derating

Package Information

RECOMMENDED LAND PATTERN


Dimension	Min.	Typ.	Max.	Unit
A	4.80	5.00	5.20	mm
A1	2.80	3.00	3.20	
A2	2.26	2.41	2.56	
b	1.10	1.20	1.30	
b3	1.90	2.00	2.10	
b4	2.00	-	2.20	
c	0.50	0.60	0.70	
D	20.80	21.00	21.20	
D1		8.23		
D2		8.32		
D3		1.17		
d1	6.00	6.15	6.30	
d2	2.20	2.30	2.40	
E	15.60	15.80	16.00	
E1		10.50		
E2		14.02		
E3		13.50		
e		10.88		
L	19.72	19.92	20.12	
L1		15.79		
L2		1.98		
Ø1	7.10	7.19	7.30	
Ø2	3.50	3.60	3.70	

Figure 9. TO-247-2 Package Outline