

## SiC Schottky Barrier Diode

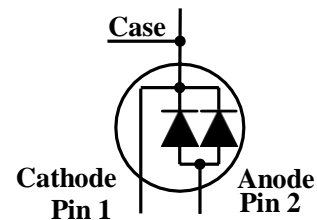
### Features

- Maximum junction temperature of 175°C
- High Surge Current Capacity
- Zero Backward Repetitive Current
- Zero Forward Repetitive Voltage
- High-Frequency Operation
- Switching Properties are free from temperature changes
- Forward Turn-on Voltage  $V_F$  of PTC

### Applications

- Solar Boosters
- EV Charging Station
- Inverter Renewal Reverse Parallel Diode
- Vienna Three-Phase PFC Rectifier Converter
- AC/DC Converters
- Switching Power Supply

### Package Outline



Model number	Package
<b>SL12020B</b>	<b>TO-247-2</b>

### Maximum Ratings (Tc=25°C ,unless otherwise specified)

Symbol	Parameters	Value	Unit
$V_{RRM}$	Peak Repetitive Reverse Voltage	1200	V
$V_{DC}$	DC Peak Reverse Voltage	1200	V
$I_F$	Forward Continuous Direct Current @Tc=25°C	83	A
	Forward Continuous Direct Current @Tc=150°C	22	A
$I_{FSM}$	Non- Repetitive Peak Forward Surge Current (IFSM) Half Sine-Wave @ Tc=25°C Tp=10ms	125	A
$P_{tot}$	Power Dissipation @ Tc=25°C	272	W
	Power Dissipation @ Tc=150°C	45	
$\int i^2 dt$	$I^2t$ Value @Tc=25°C	78	A·S
Tstg	Storage Temperature Range	-55 to 175	°C
Tj	Operating Junction Temperature Range	-55 to 175	°C

## Electrical specifications

Symbol	Parameters	Typical value	Max value	Unit	Testing conditions	Note
$V_F$	Forward Voltage	1.54 2.20	1.8 3.0	V	$I_F = 20\text{ A } T_J = 25^\circ\text{C}$ $I_F = 20\text{ A } T_J = 175^\circ\text{C}$	Figure 1
$I_R$	Reverse current	14 49	100 350	$\mu\text{A}$	$V_R = 1200\text{ V } T_J = 25^\circ\text{C}$ $V_R = 1200\text{ V } T_J = 175^\circ\text{C}$	Figure 2
C	Total Capacitance	1160		pF	$V_R = 1\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	Figure 3
		113			$V_R = 400\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	
		78			$V_R = 800\text{ V}, T_J = 25^\circ\text{C}, f = 1\text{ MHz}$	
$Q_C$	Total Storage Charge	132		nC	$V_R = 800\text{ V}, T_J = 25^\circ\text{C},$ $Q_C = \int_0^{V_R} c(v)dv$	Figure 4

## Thermal Resistance Property

Symbol	Parameters	Typical value	Unit	Note
$R_{th(j-c)}$	Junction-to-Case Thermal Resistance	0.55	$^\circ\text{C/W}$	Figure 7

## Typical Characteristics

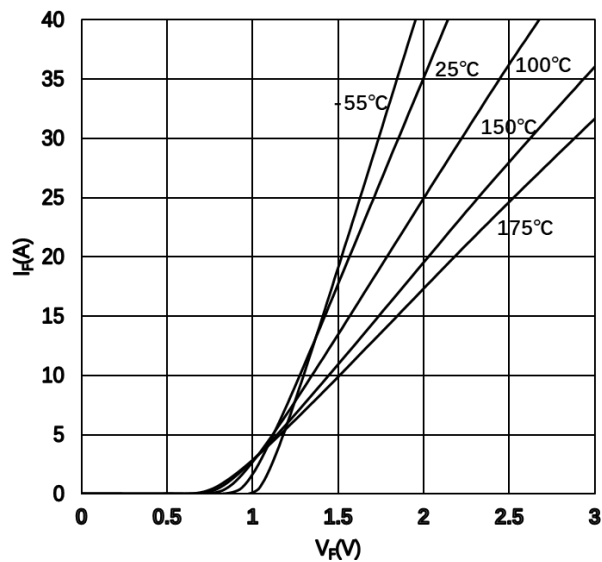


Figure 1 Typical Forward Features

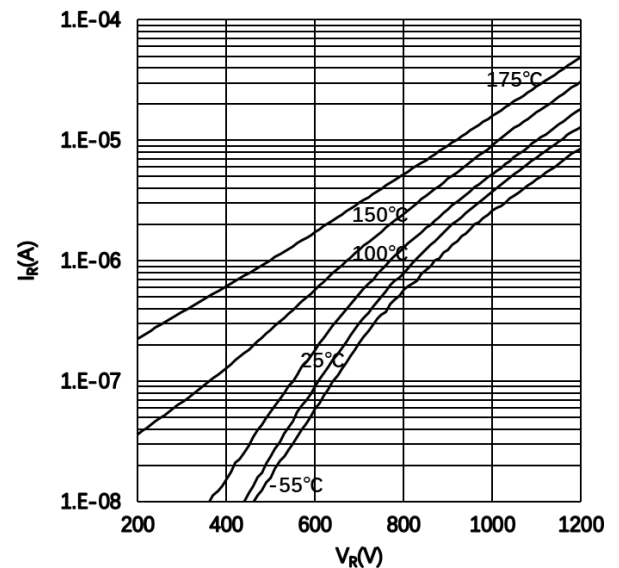


Figure 2 Typical Backward Features

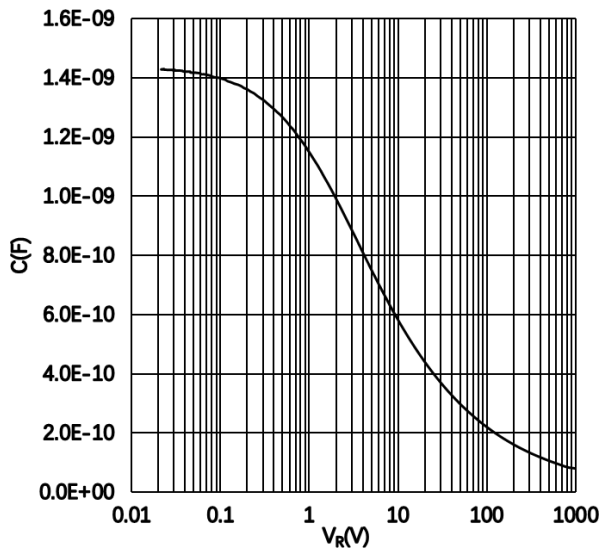


Figure 3 Typical Capacitance VS Backward Voltage

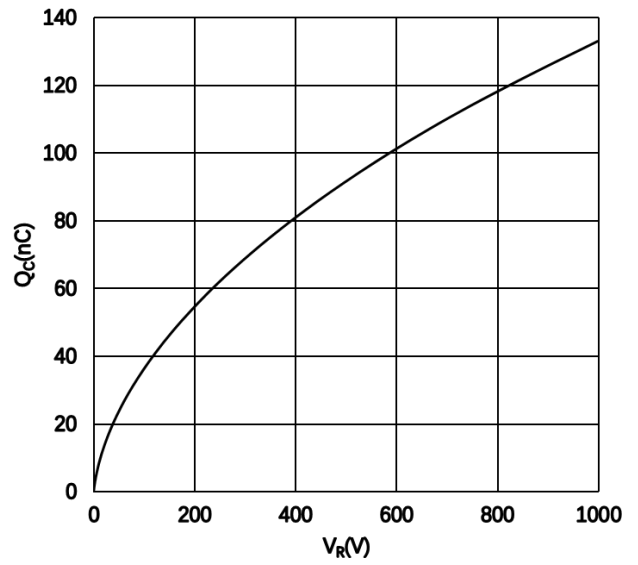


Figure 4 Typical Storage Charge VS Backward Voltage

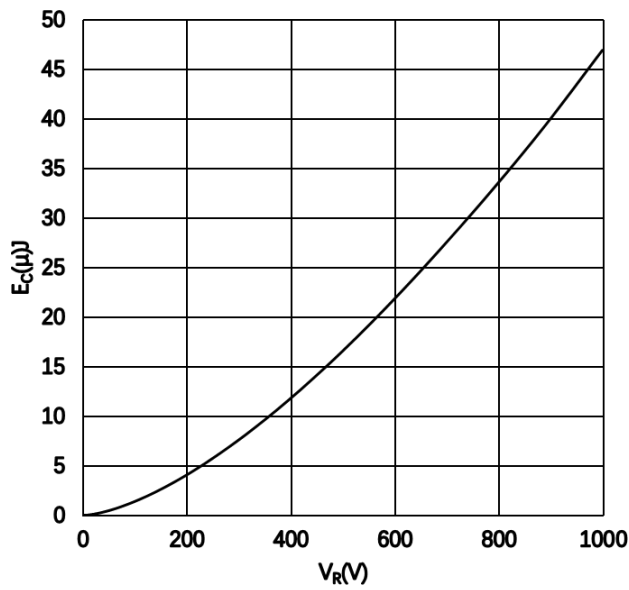


Figure 5 Typical Capacitance Energy VS Backward Voltage

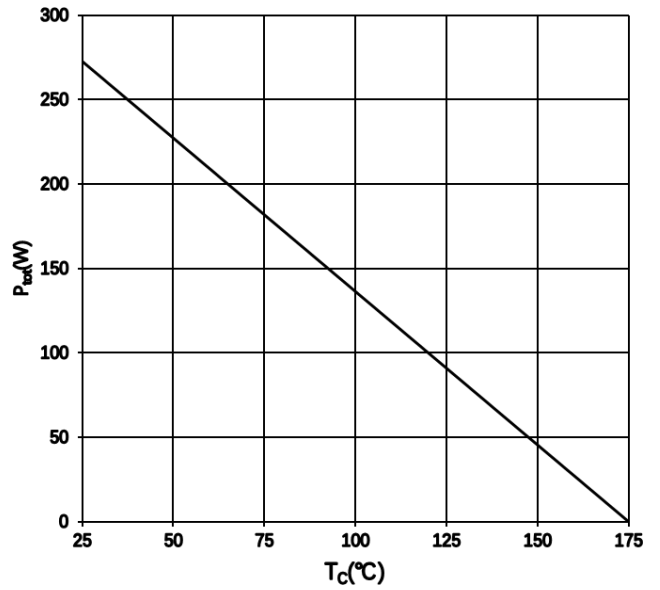


Figure 6 Typical Power Derating

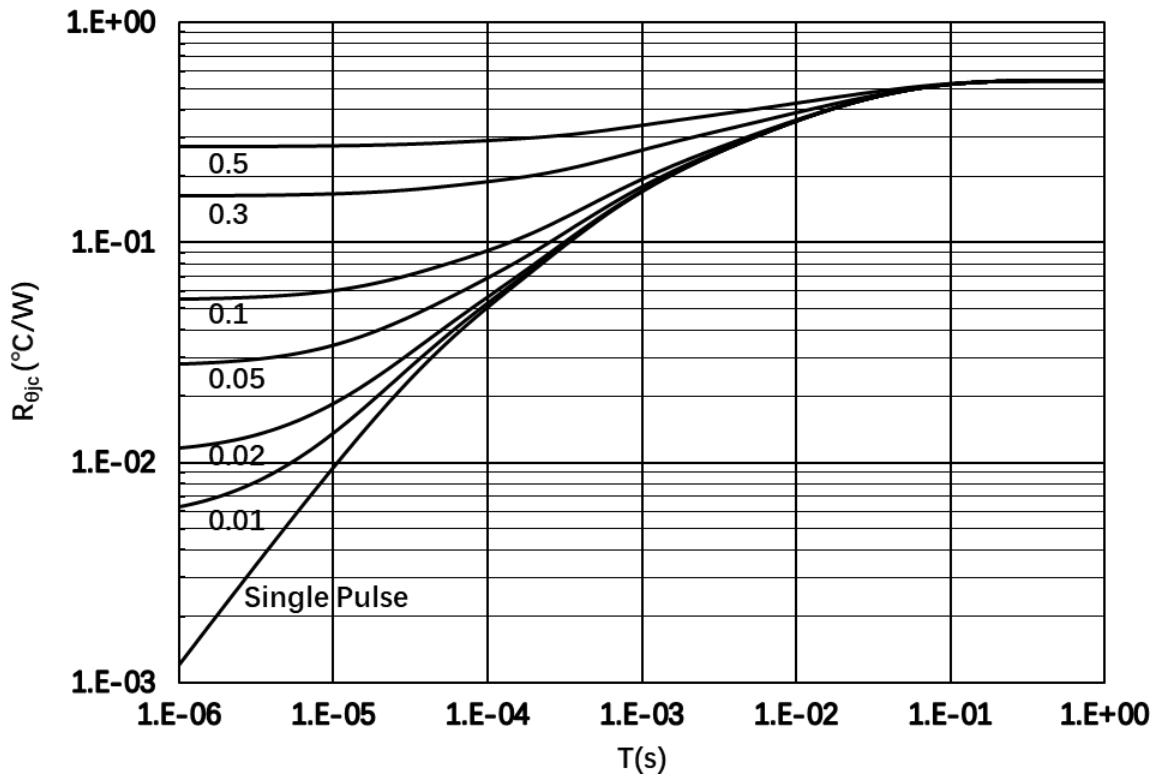
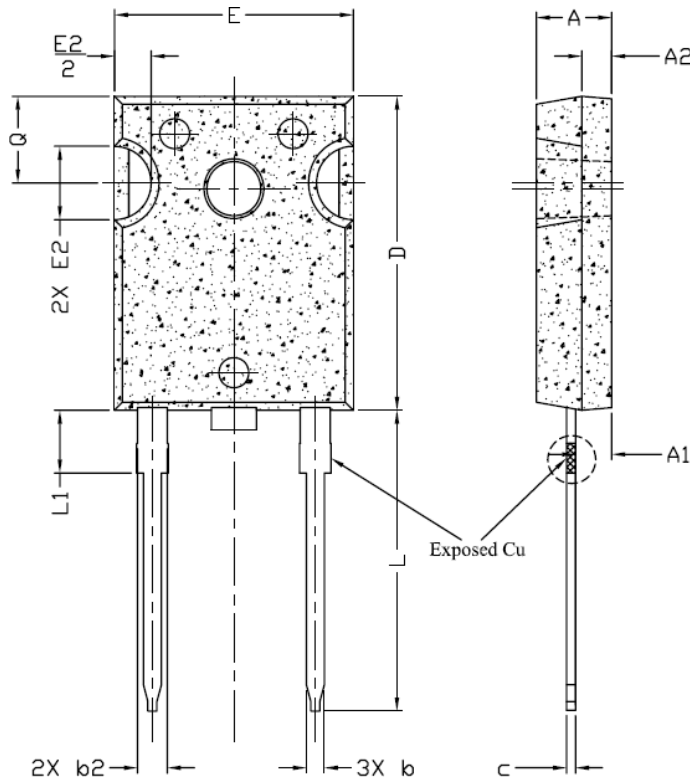
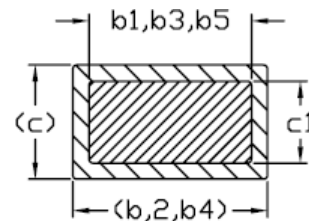
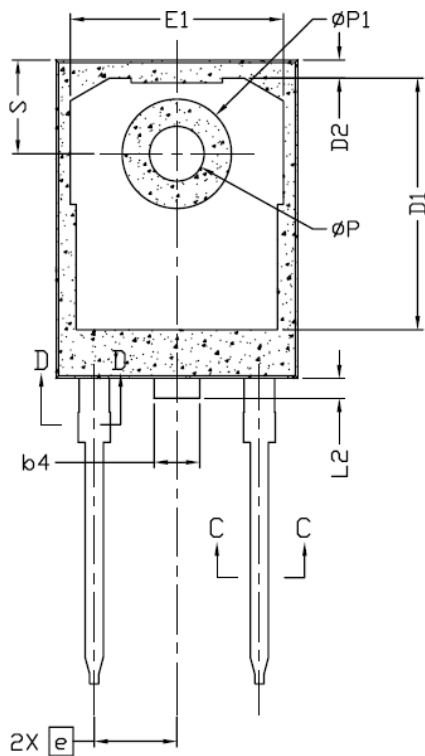


Figure 7 Transient Thermal Impedance

## Package Specification



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.83	5.02	5.21	
A1	2.29	2.41	2.55	
A2	1.50	2.00	2.49	
b	1.12	1.20	1.33	
b1	1.12	1.20	1.28	
b2	1.91	2.00	2.39	6
b3	1.91	2.00	2.34	
b4	2.87	3.00	3.22	6, 8
b5	2.87	3.00	3.18	
c	0.55	0.60	0.69	6
c1	0.55	0.60	0.65	
D	20.80	20.95	21.10	4
D1	16.25	16.55	17.65	5
D2	0.51	1.19	1.35	
E	15.75	15.94	16.13	4
E1	13.46	14.02	14.16	5
E2	4.32	4.91	5.49	3
e	5.44BSC			
L	19.81	20.07	20.32	
L1	4.10	4.19	4.40	6
L2	1.00	1.30	1.50	
ØP	3.56	3.61	3.65	7
ØP1	6.90	7.09	7.15	
Q	5.39	5.79	6.20	
S	6.04	6.17	6.30	



Section C—C, D—D

**Note:**

1. Standard Reference: JEDEC TO247, Variation AD
2. Unit: mm
3. There shall be slots in it, and the shape can be round.
4. Mould overflowing is excluded from D and E.