Silicon Carbide Schottky Diode

S1S17030RB1

V_{RRM}	=	1700 V
I_F (T_C=135 ˚C)	=	52 A
Q_C	=	353 nC

Features

- 1700V Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching

Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Switch Mode Power Supplies (SMPS)
- Power Factor Correction
- Motor Drives

Package

Halogen-Free

RoHS

Part Number	Package
S1S17030RB1	TO247-2L

料号:3960280000
品名:SiC SBD塑封器件 1700V 30A-TO247-2L(S1S17030RB1)
版本:01
编辑:温小花 2025.01.02
审核:王松 2025.01.02

Maximum Rated Values (T_C=25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1700	V		
V_R	DC Peak Reverse Voltage	1700	V		
I_F	Continuous Forward Current	106	A	T_C=25˚C	Fig. 3
		52		T_C=135˚C	
		40		Tc=150˚C	
I_{FRM}	Repetitive Peak Forward Surge Current	108	A	T_C=25˚C, t_P=10 ms, Half Sine Pulse	
		100		T_C=110˚C, t_P=10 ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Forward Surge Current	122	A	T_C=25˚C, t_P=10 ms, Half Sine Pulse	
		116		T_C=110˚C, t_P=10 ms, Half Sine Pulse	
$I_{F,MAX}$	Non-Repetitive Forward Surge Current	1170	A	T_C=25˚C, t_P=10μs, Square Wave Pulse	
		1083		T_C=110˚C, t_P=10μs, Square Wave Pulse	
P_{tot}	Power Dissipation	682	W	T_C=25˚C	Fig. 4
		295		T_C=110˚C	
T_J	Operating Temperature	-55 to +175	˚C		
T_{stg}	Storage Temperature	-55 to +175	˚C		
	TO-247 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	

Electrical Characteristics (T_J=25℃)

Symbol	Parameter	Value			Unit	Test Conditions	Note
		Min.	Typ.	Max.			
V_F	Forward Voltage		1.5	1.9	V	I_F=30A, T_J=25°C	Fig. 1
			2.2	3.0		I_F=30A, T_J=175°C	
I_R	Reverse Current		14	45	μA	V_R=1700V, T_J=25°C	Fig. 2
			386	500		V_R=1700V, T_J=175°C	
Q_C	Total Capacitive Charge		353		nC	V_R=1700V, I_F =30A di/dt=200A/us, T_J=25°C	Fig. 5
C	Total Capacitance		3672		pF	V_R=0V, T_J=25°C, f=1MHz	Fig. 6
			152			V_R=800V, T_J=25°C, f=1MHz	
			150			V_R=1700V, T_J=25°C, f=1MHz	
E_C	Capacitance Stored Energy		186		μJ	V_R=1700 V	Fig. 7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
$R_{\theta JC}$	Thermal Resistance(Junction to Case)	0.22	°C/W	Fig. 8

Typical Performance

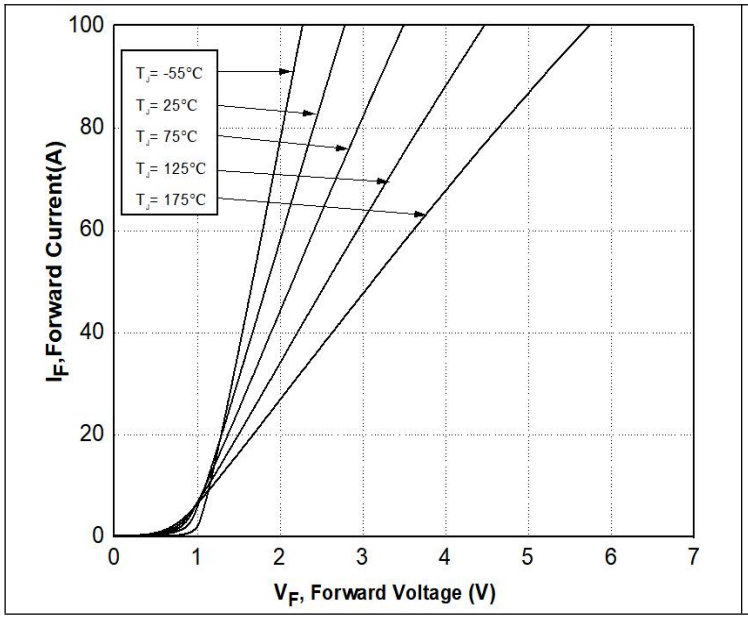


Figure 1. Forward Characteristics

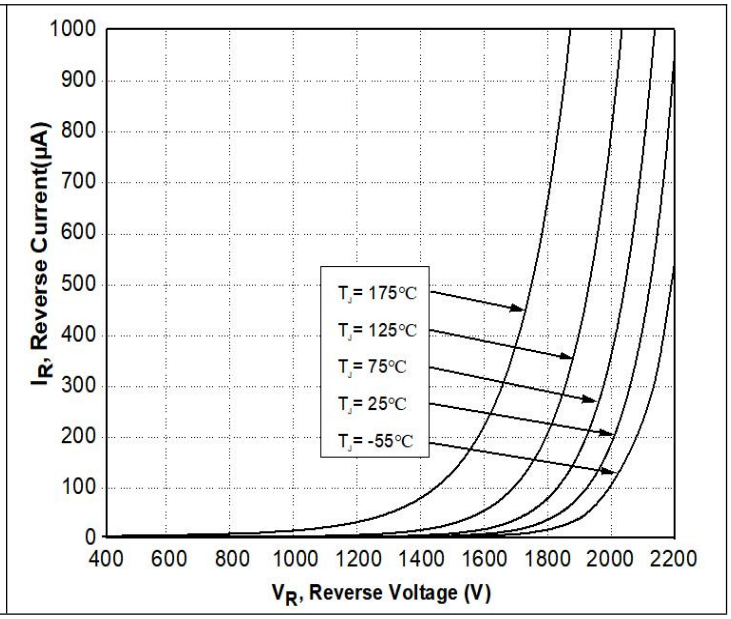


Figure 2. Reverse Characteristics

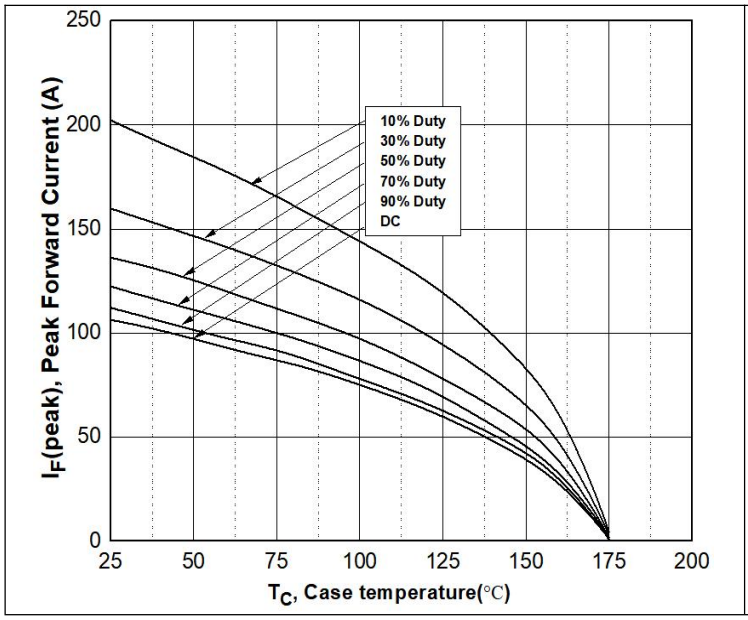


Figure 3. Current Derating

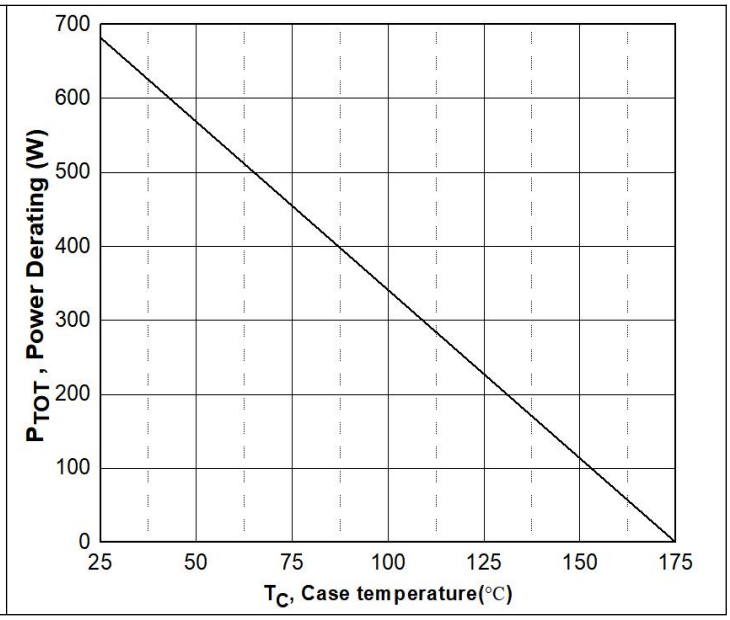


Figure 4. Power Derating

Typical Performance

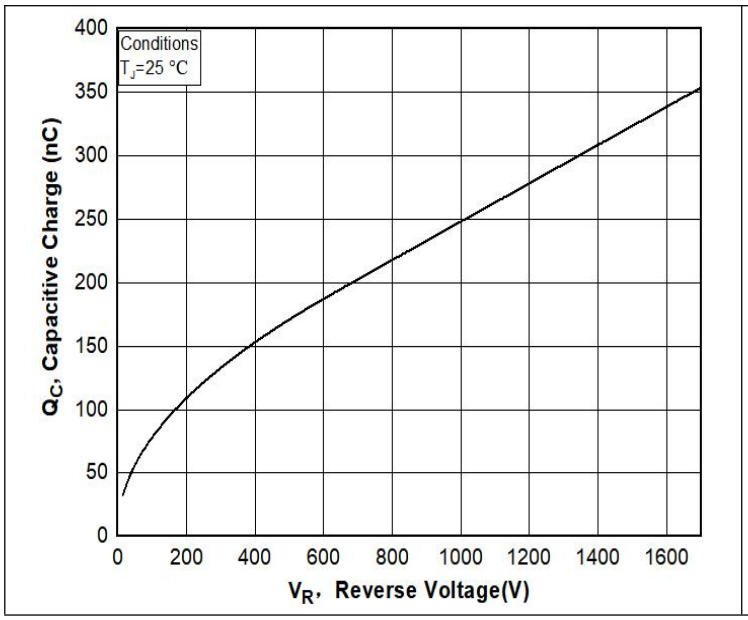


Figure 5. Capacitance Charge Vs. Reverse Voltage

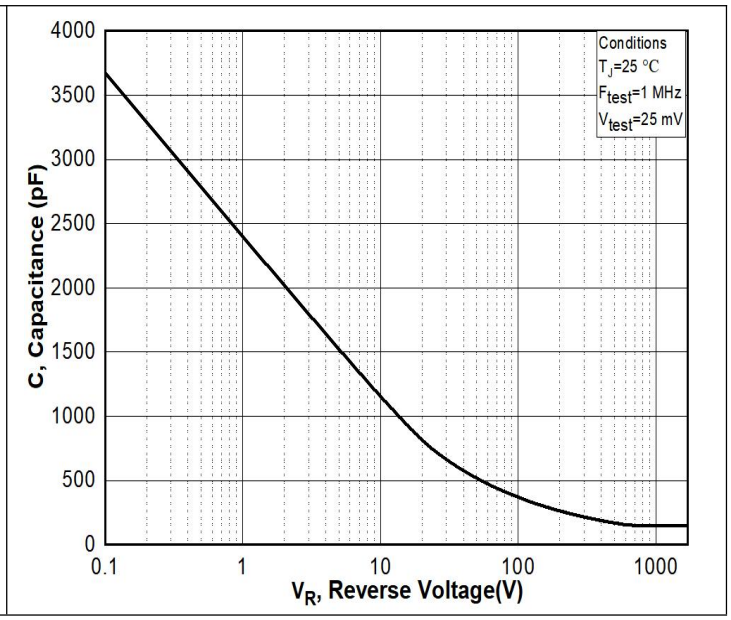


Figure 6. Capacitance Vs. Reverse Voltage

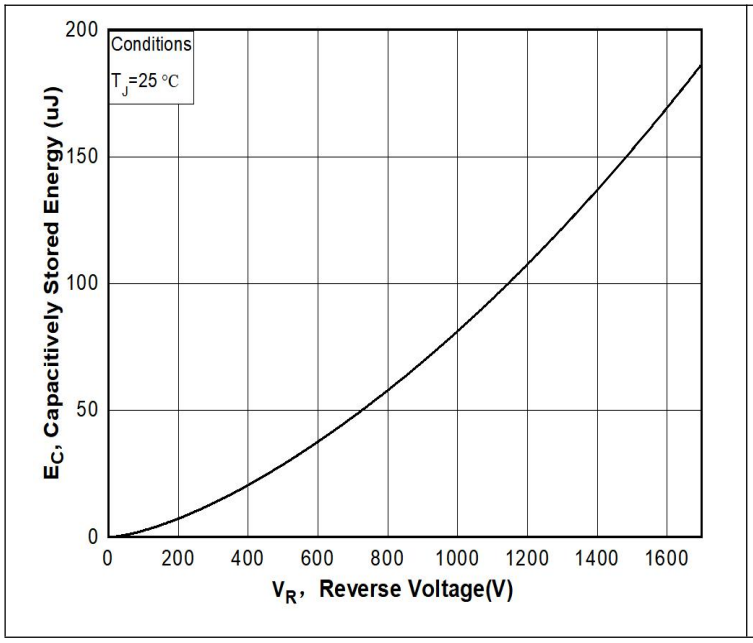


Figure 7. Capacitance Stored Energy

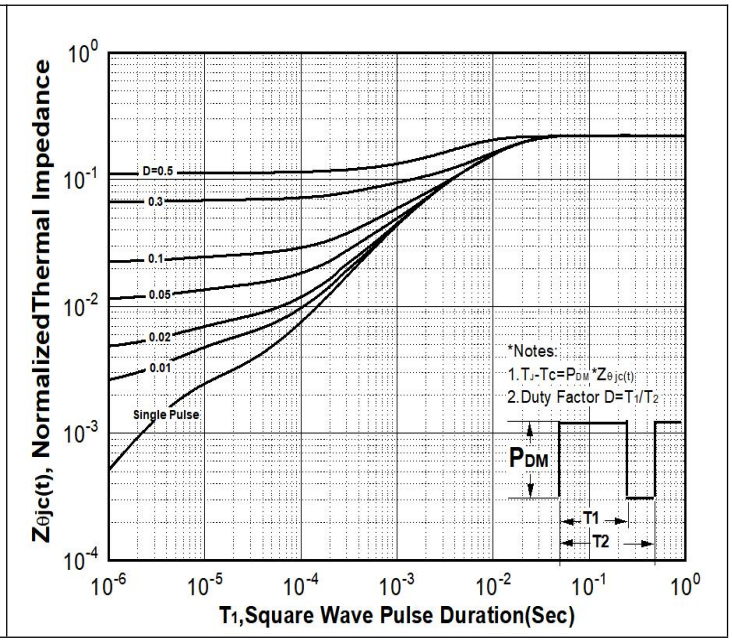
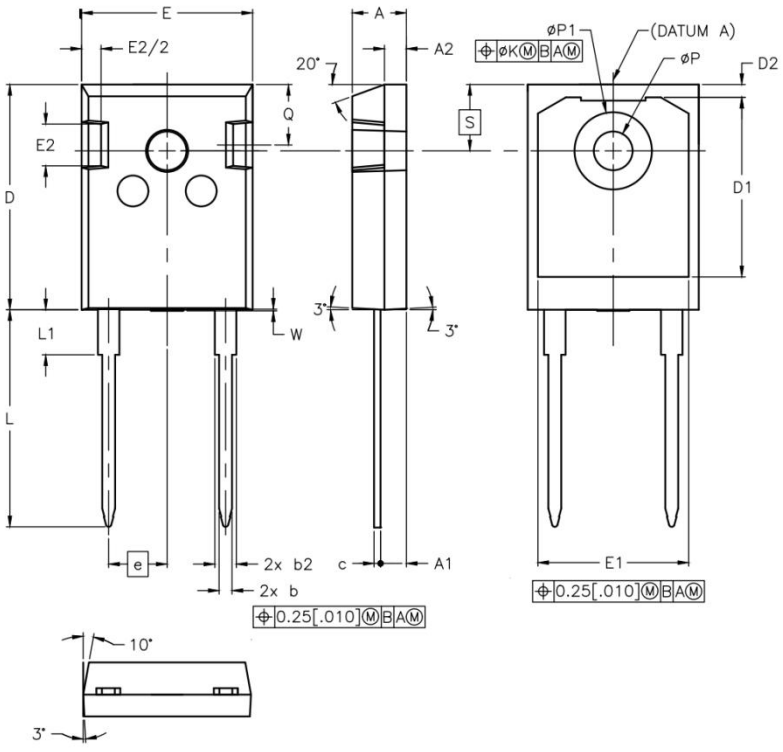


Figure 8. Transient Thermal Response Curve(Junction-to-Case)

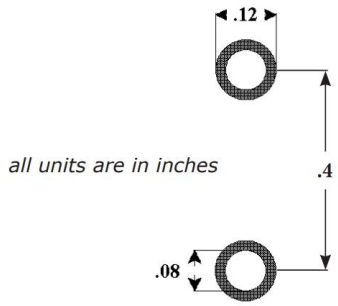
Package Dimensions

Package TO247-2L



POS	Inches		Millimeters	
	Min	Max	Min	Max
A	.190	.205	4.70	5.31
A1	.087	.102	2.21	2.59
A2	.059	.098	1.50	2.49
b	.039	.055	0.99	1.40
b2	.065	.094	1.65	2.39
c	.015	.035	0.38	0.89
D	.819	.845	20.80	21.46
D1	.515	-	13.08	-
D2	.020	.053	0.51	1.35
E	.620	.640	15.49	16.26
E1	.530	-	13.46	-
E2	.135	.157	3.43	3.99
e	.214		5.44	
ØK	.010		0.25	
L	.780	.800	19.81	20.32
L1	-	.177	-	4.50
ØP	.140	.144	3.56	3.66
ØP1	.278	.291	7.06	7.39
Q	.212	.244	5.38	6.20
S	.243		6.17	
W	-	.006	-	0.15

Recommended Solder Pad Layout



TO247-2L

Part Number	Package
S1S17030RB1	TO247-2L

Statement:

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