Silicon Carbide Schottky Diode

S1S12004RC1

V_{RRM}	=	1200 V
I_F (T_C=135 ˚C)	=	8 A
Q_C	=	24 nC

Features

- 1200V Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching

Package

Halogen-Free

RoHS

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

Part Number	Package
S1S12004RC1	TO220-2L

料号:3960190000
品名:SiC SBD塑封器件 1200V 4A-TO220-2L(S1S12004RC1)
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	1200	V		
V_R	DC Peak Reverse Voltage	1200	V		
I_F	Continuous Forward Current	17	A	T_C=25˚C	Fig. 3
		8		T_C=135˚C	
		6		Tc=150˚C	
I_{FRM}	Repetitive Peak Forward Surge Current	18	A	T_C=25˚C, t_P=10 ms, Half Sine Pulse	
		16		T_C=110˚C, t_P=10 ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Forward Surge Current	21	A	T_C=25˚C, t_P=10 ms, Half Sine Pulse	
		18		T_C=110˚C, t_P=10 ms, Half Sine Pulse	
$I_{F,MAX}$	Non-Repetitive Forward Surge Current	206	A	T_C=25˚C, t_P=10μs, Square Wave Pulse	
		165		T_C=110˚C, t_P=10μs, Square Wave Pulse	
P_{tot}	Power Dissipation	94	W	T_C=25˚C	Fig. 4
		41		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		1.4	1.8	V	I_F=4A, T_J=25°C	Fig. 1
			1.8	3		I_F=4A, T_J=175°C	
I_R	Reverse Current		3.3	150	μA	V_R=1200V, T_J=25°C	Fig. 2
			47	300		V_R=1200V, T_J=175°C	
Q_C	Total Capacitive Charge		24		nC	V_R=800V, T_J=25°C	Fig. 5
C	Total Capacitance		341		pF	V_R=0V, T_J=25°C, f=1MHz	Fig. 6
			22			V_R=400V, T_J=25°C, f=1MHz	
			20			V_R=800V, T_J=25°C, f=1MHz	
E_C	Capacitance Stored Energy		6		μJ	V_R=800 V	Fig. 7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
$R_{\theta JC}$	Thermal Resistance(Junction to Case)	1.6	°C/W	Fig. 8

Typical Performance

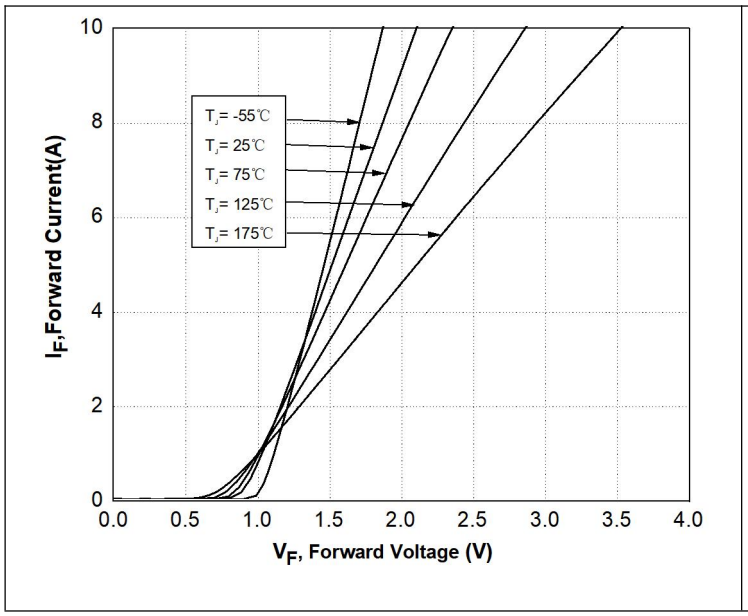


Figure 1. Forward Characteristics

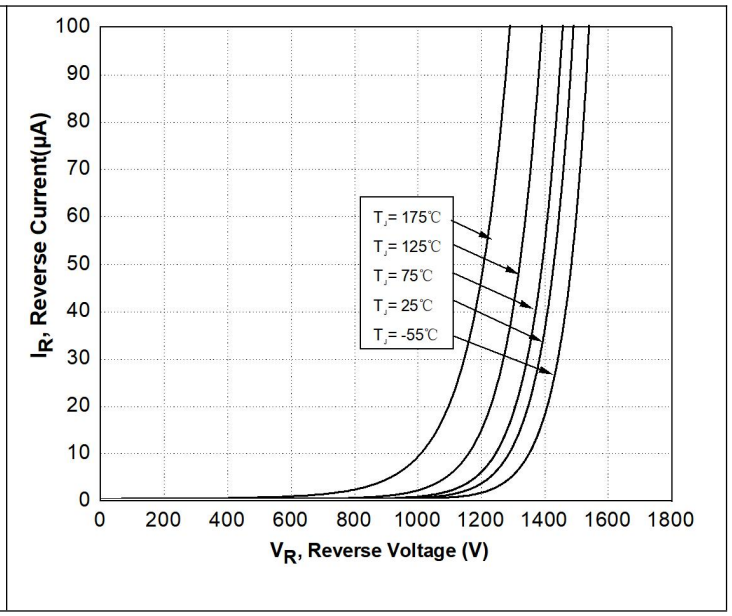


Figure 2. Reverse Characteristics

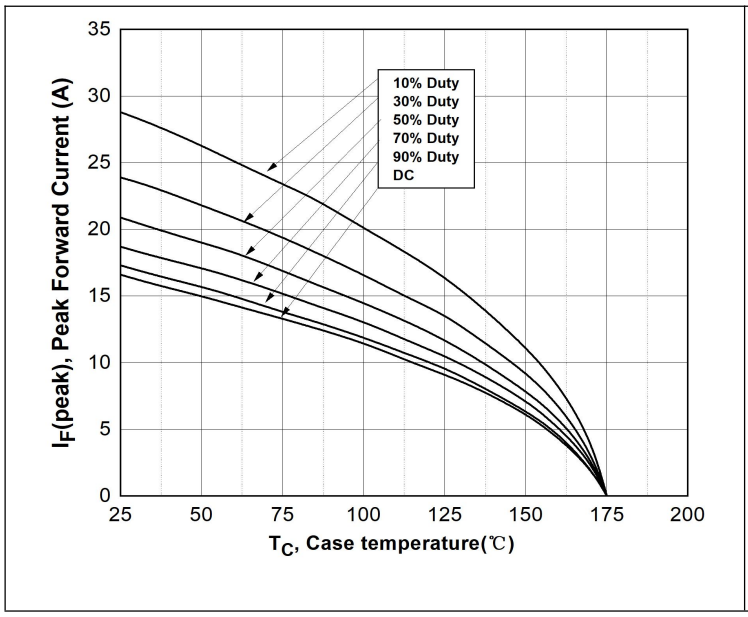


Figure 3. Current Derating

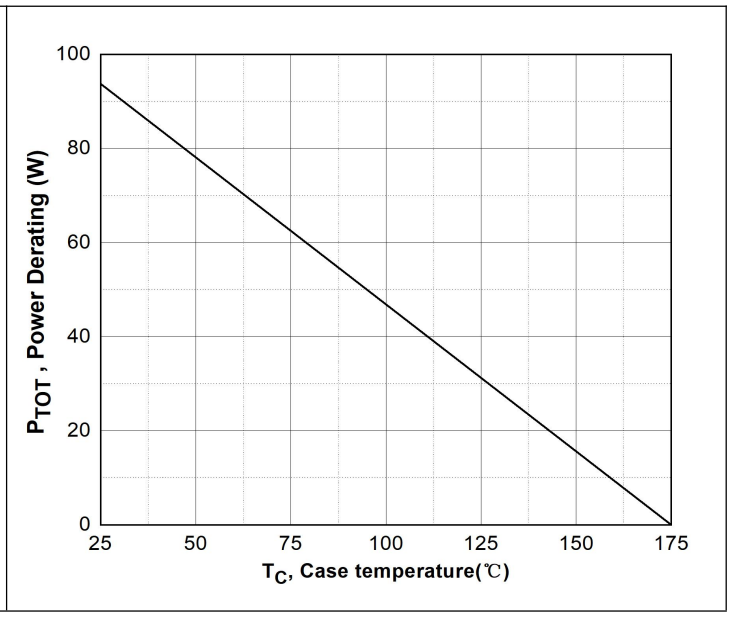


Figure 4. Power Derating

Typical Performance

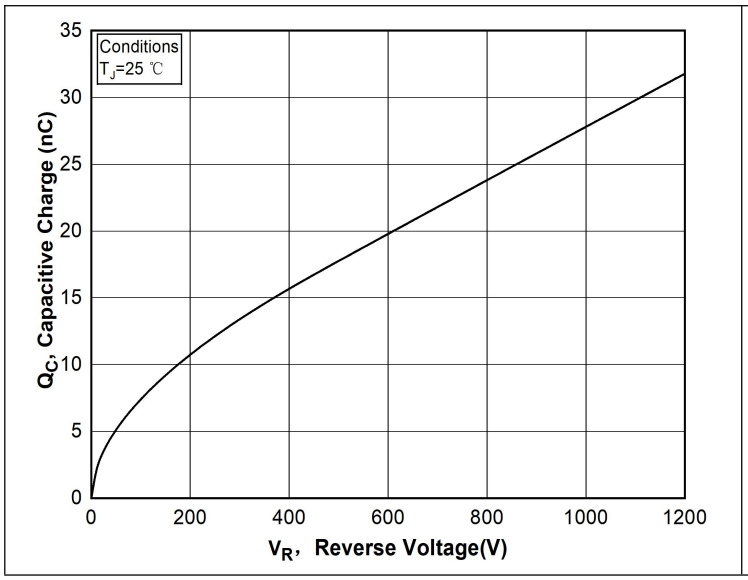


Figure 5. Capacitance Charge Vs. Reverse Voltage

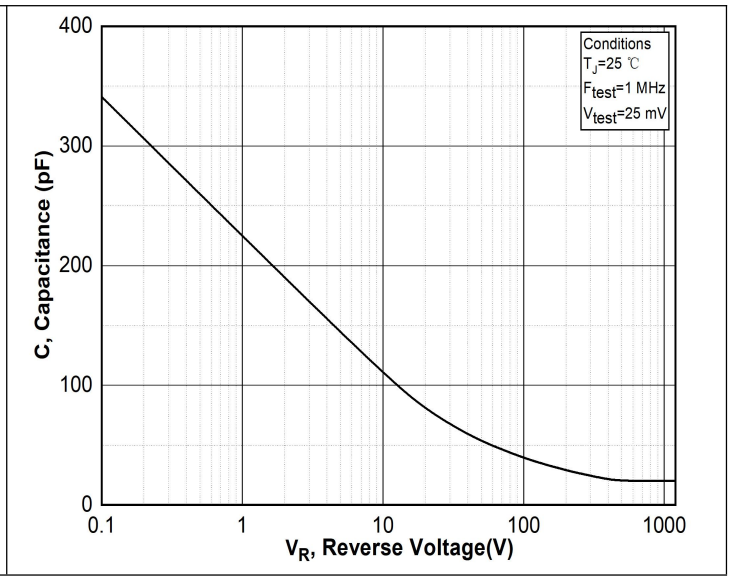


Figure 6. Capacitance Vs. Reverse Voltage

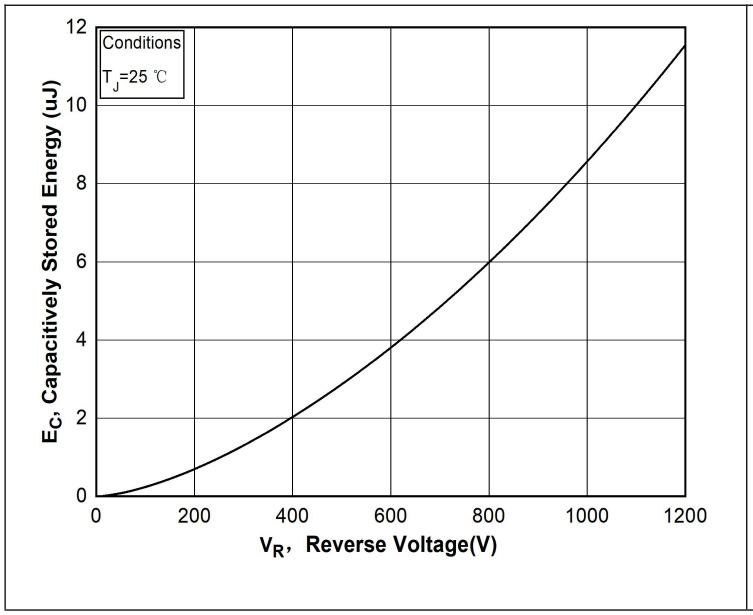


Figure 7. Capacitance Stored Energy

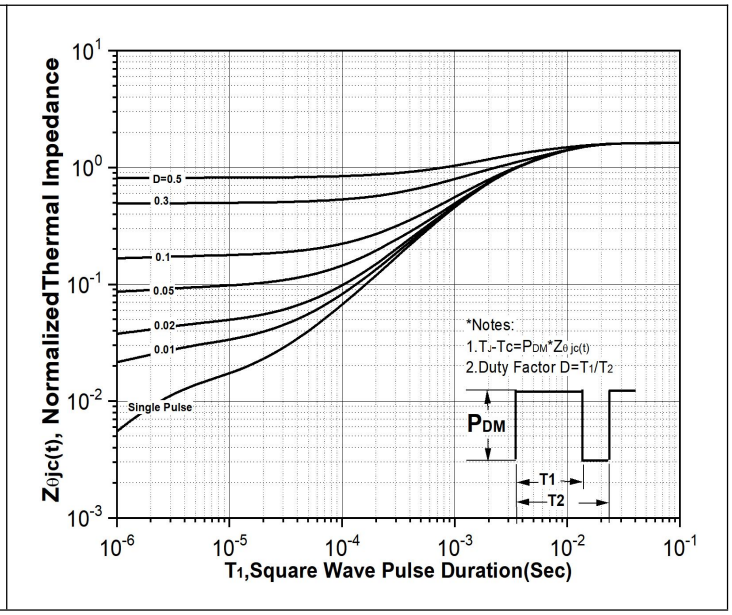
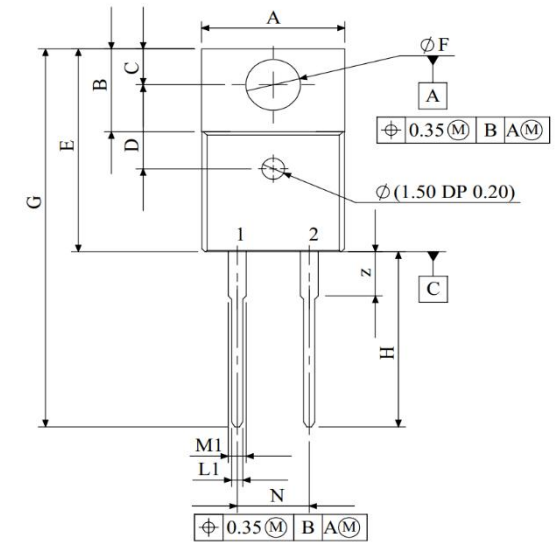
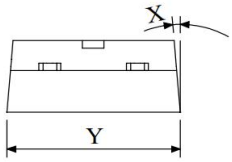


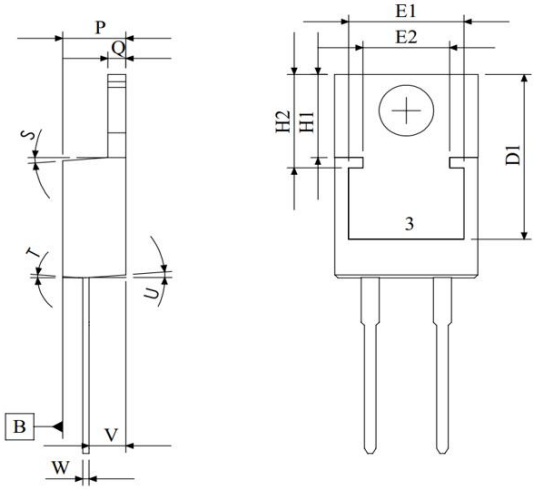
Figure 8. Transient Thermal Response Curve(Junction-to-Case)

Package Dimensions

Package TO-220-2L

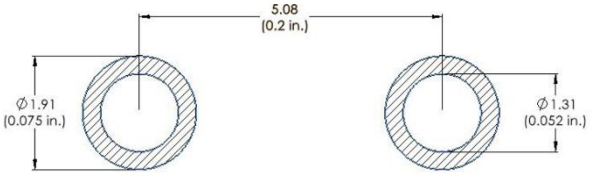






SYMBOL	MIN (mm)	MAX (mm)
A	9.677	10.414
B	5.969	6.477
C	2.540	3.048
D	5.664	8.560
D1	12.450 REF	
E	14.986	15.621
E1	8.120 REF	
E2	6.100 REF	
F	3.632	3.886
G	28.067	29.134
H	12.700	13.970
H1	6.223 REF	
H2	7.040 REF	
L1	0.635	0.914
M1	1.143	1.397
N	4.953	5.207
P	4.191	4.699
Q	1.219	1.372
S	3°	6°
T	3°	6°
U	3°	6°
V	2.388	2.794
W	0.356	0.635
W1	0.356	0.520
X	3°	5.5°
Y	9.779	10.414
Z	3.302	3.810

Recommended Solder Pad Layout



TO-220-2L

Part Number	Package
S1S12004RC1	TO220-2L

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