



Silicon Carbide Schottky Diode S1S65002RC1

V_{RRM}	=	650 V
$I_F (T_C=135\text{ }^\circ\text{C})$	=	5.9A
Q_C	=	7.2nC

Features

- 650V 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



Part Number	Package
S1S65002RC1	TO220-2L

料号 : 3960110000
 品名 : Si C SBD塑封器件 650V 2A-T0220-2L(S1S65002RC1)
 版本 : 01
 编辑 : 温小花 2025.01.02
 审核 : 王松 2025.01.02



Maximum Rated Values ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	650	V		
V_R	DC Peak Reverse Voltage	650	V		
I_F	Continuous Forward Current	9.0	A	$T_C=25^{\circ}\text{C}$	Fig. 3
		5.9		$T_C=135^{\circ}\text{C}$	
		4.5		$T_C=150^{\circ}\text{C}$	
I_{FRM}	Repetitive Peak Forward Surge Current	8.8	A	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	
		5.9		$T_C=110^{\circ}\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	
I_{FSM}	Non-Repetitive Forward Surge Current	9.6	A	$T_C=25^{\circ}\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	
		6.4		$T_C=110^{\circ}\text{C}$, $t_p=10\text{ ms}$, Half Sine Pulse	
$I_{F,MAX}$	Non-Repetitive Forward Surge Current	85	A	$T_C=25^{\circ}\text{C}$, $t_p=10\mu\text{s}$, Square Wave Pulse	
		73		$T_C=110^{\circ}\text{C}$, $t_p=10\mu\text{s}$, Square Wave Pulse	
P_{tot}	Power Dissipation	73	W	$T_C=25^{\circ}\text{C}$	Fig. 4
		32		$T_C=110^{\circ}\text{C}$	
T_J	Operating Temperature	-55 to +175	$^{\circ}\text{C}$		
T_{stg}	Storage Temperature	-55 to +175	$^{\circ}\text{C}$		
	TO-247 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	

Electrical Characteristics ($T_J=25^{\circ}\text{C}$)

Symbol	Parameter	Value			Unit	Test Conditions	Note
		Min.	Typ.	Max.			
V_F	Forward Voltage		1.4	1.7	V	$I_F=2\text{A}$, $T_J=25^{\circ}\text{C}$	Fig. 1
			1.6	2.4		$I_F=2\text{A}$, $T_J=175^{\circ}\text{C}$	
I_R	Reverse Current		0.1	18	μA	$V_R=650\text{V}$, $T_J=25^{\circ}\text{C}$	Fig. 2
			4	60		$V_R=650\text{V}$, $T_J=175^{\circ}\text{C}$	
Q_C	Total Capacitive Charge		7.2		nC	$V_R=400\text{V}$, $T_J=25^{\circ}\text{C}$	Fig. 5
C	Total Capacitance		128		pF	$V_R=0\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$	Fig. 6
			13.9			$V_R=200\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$	
			13.5			$V_R=400\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$	
E_C	Capacitance Stored Energy		0.9		μJ	$V_R=400\text{ V}$	Fig. 7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
$R_{\theta JC}$	Thermal Resistance(Junction to Case)	2.05	$^{\circ}\text{C/W}$	Fig. 8



Typical Performance

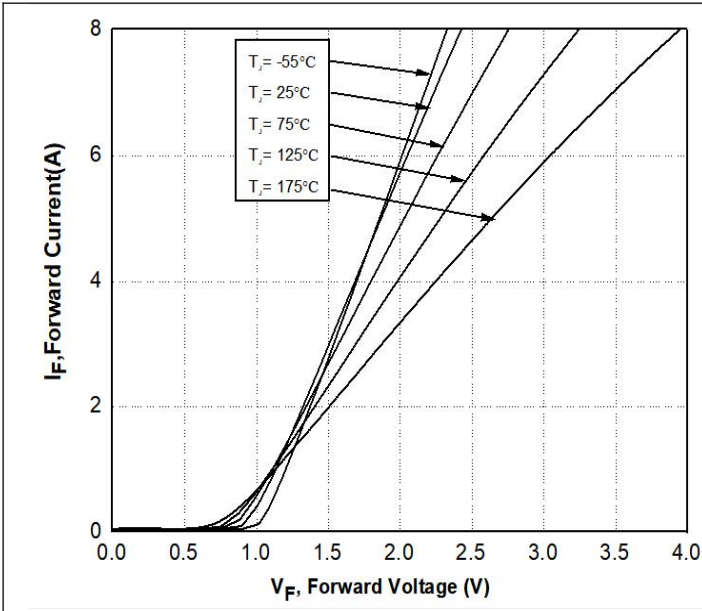


Figure 1. Forward Characteristics

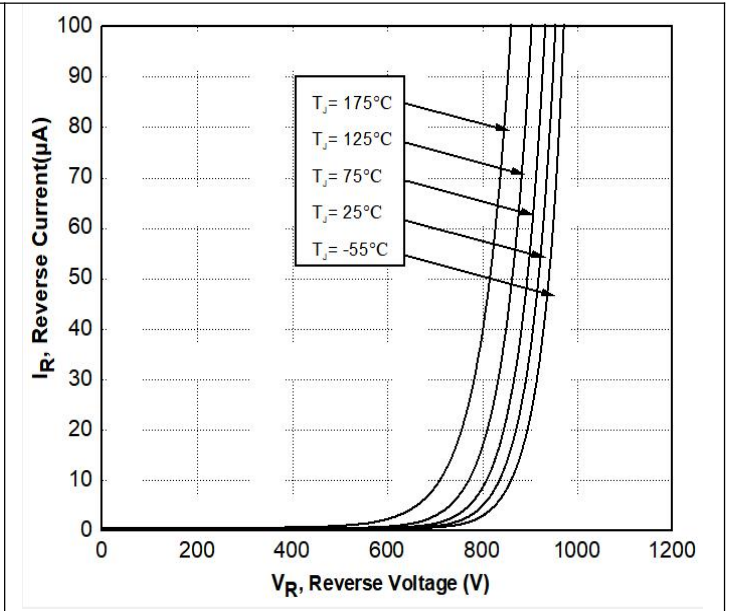


Figure 2. Reverse Characteristics

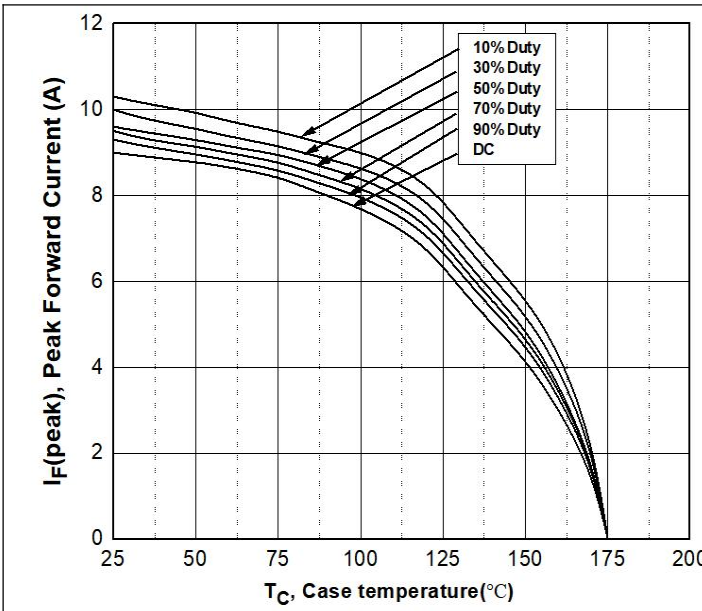


Figure 3. Current Derating

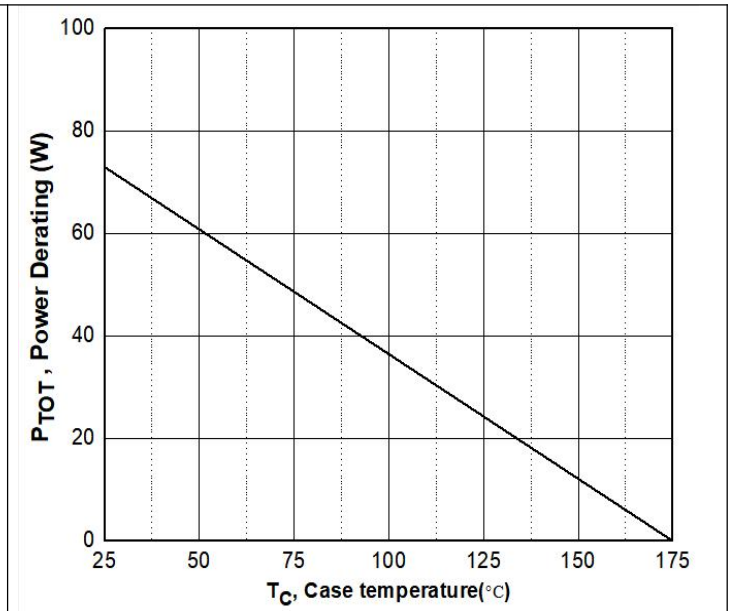


Figure 4. Power Derating



Typical Performance

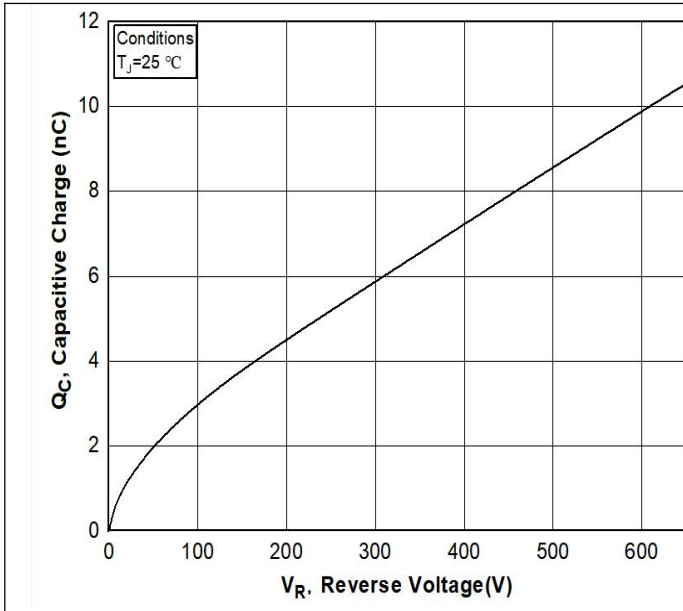


Figure 5. Capacitance Charge Vs. Reverse Voltage

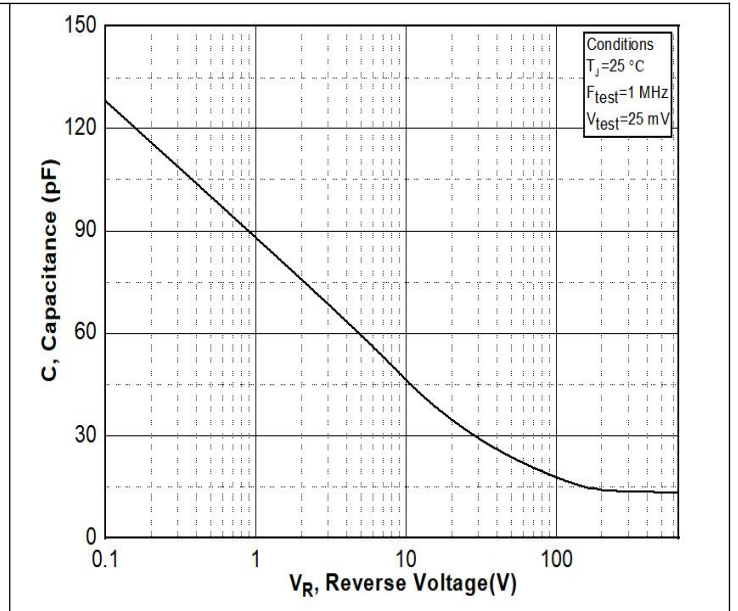


Figure 6. Capacitance Vs. Reverse Voltage

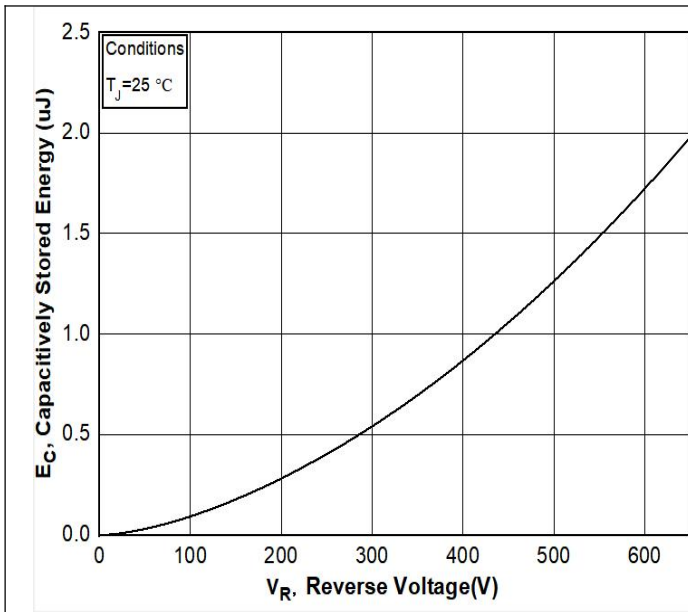


Figure 7. Capacitance Stored Energy

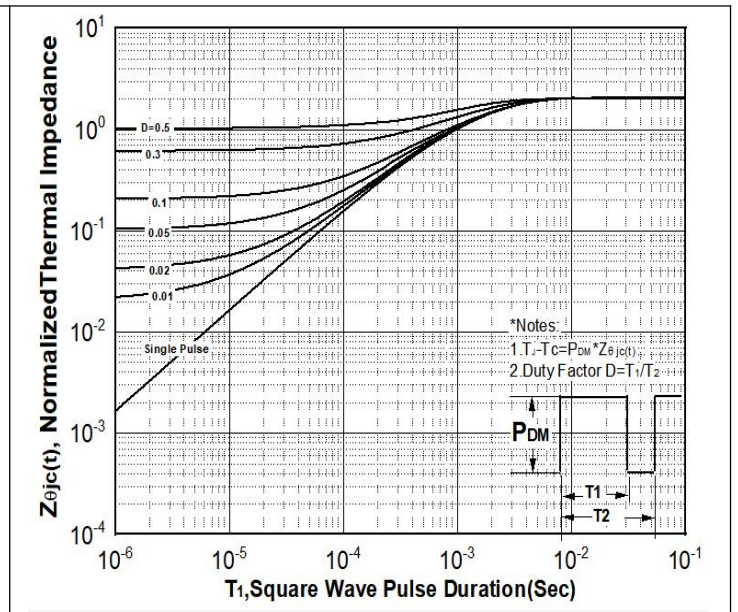
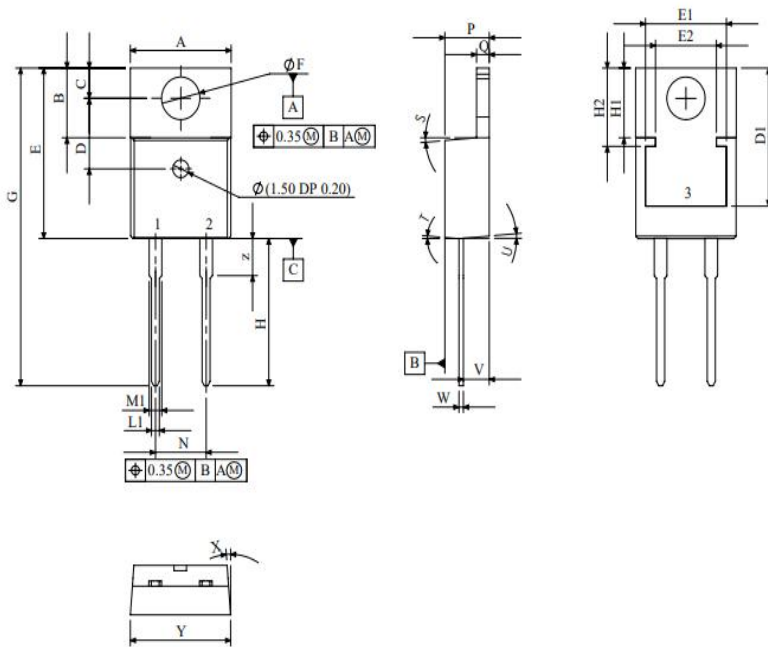


Figure 8. Transient Thermal Response Curve(Junction-to-Case)



Package Dimensions

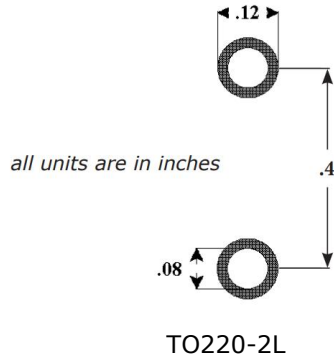
Package TO-220-2L



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



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