



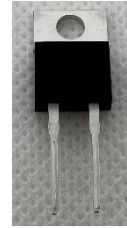
# Silicon Carbide Schottky Diode S1S65004RC1

$V_{RRM}$	=	650V
$I_F (T_C=135^\circ C)$	=	8 A
$Q_C$	=	14 nC

## Features

- 650V Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching

## Package



## 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
S1S65004RC1	TO220-2L

料号: 3960120000  
 品名: SiC SBD塑封器件 650V 4A-T0220-2L(S1S65004RC1)  
 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	17	A	$T_c=25^\circ\text{C}$	Fig. 3
		8		$T_c=135^\circ\text{C}$	
		6		$T_c=150^\circ\text{C}$	
$I_{FRM}$	Repetitive Peak Forward Surge Current	19	A	$T_c=25^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse	
		16		$T_c=110^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse	
$I_{FSM}$	Non-Repetitive Forward Surge Current	22	A	$T_c=25^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse	
		19		$T_c=110^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse	
$I_{F,MAX}$	Non-Repetitive Forward Surge Current	193	A	$T_c=25^\circ\text{C}$ , $t_p=10\mu\text{s}$ , Square Wave Pulse	
		161		$T_c=110^\circ\text{C}$ , $t_p=10\mu\text{s}$ , Square Wave Pulse	
$P_{tot}$	Power Dissipation	75	W	$T_c=25^\circ\text{C}$	Fig. 4
		32.5		$T_c=110^\circ\text{C}$	
$T_J$	Operating Temperature	-55 to +175	$^\circ\text{C}$		
$T_{stg}$	Storage Temperature	-55 to +175	$^\circ\text{C}$		

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

Symbol	Parameter	Value			Unit	Test Conditions	Note
		Min.	Typ.	Max.			
$V_F$	Forward Voltage		1.45		V	$I_F=4\text{A}$ , $T_J=25^\circ\text{C}$	Fig. 1
			1.60			$I_F=4\text{A}$ , $T_J=175^\circ\text{C}$	
$I_R$	Reverse Current		1		$\mu\text{A}$	$V_R=650\text{V}$ , $T_J=25^\circ\text{C}$	Fig. 2
			6			$V_R=650\text{V}$ , $T_J=175^\circ\text{C}$	
$Q_C$	Total Capacitive Charge		14		nC	$V_R=400\text{V}$ , $T_J=25^\circ\text{C}$	Fig. 5
C	Total Capacitance		282		pF	$V_R=0\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$	Fig. 6
			26			$V_R=200\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$	
			24			$V_R=400\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$	
$E_C$	Capacitance Stored Energy		1.8		$\mu\text{J}$	$V_R=400\text{V}$	Fig. 7

### Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
$R_{\theta JC}$	Thermal Resistance(Junction to Case)	2.0	$^\circ\text{C/W}$	Fig. 8



## Typical Performance

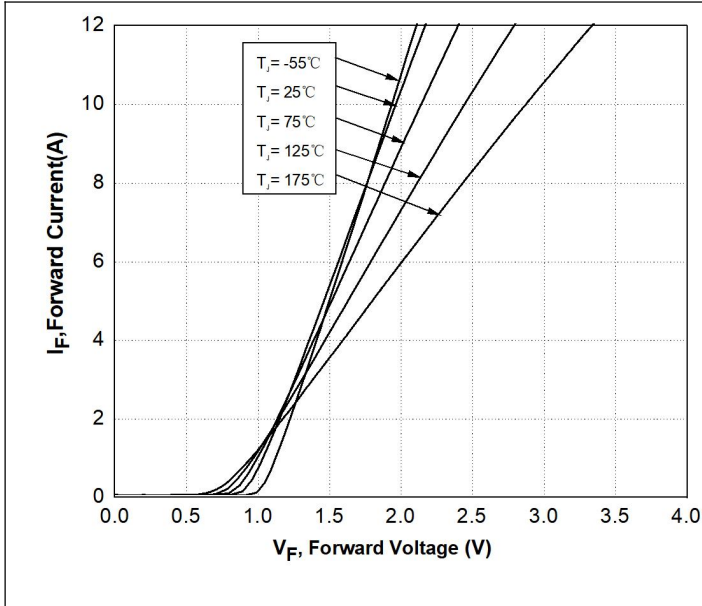


Figure 1. Forward Characteristics

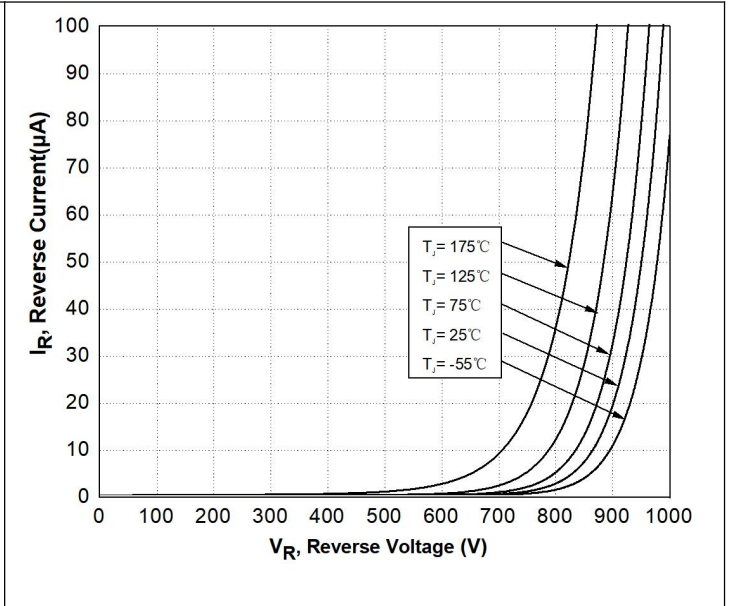


Figure 2. Reverse Characteristics

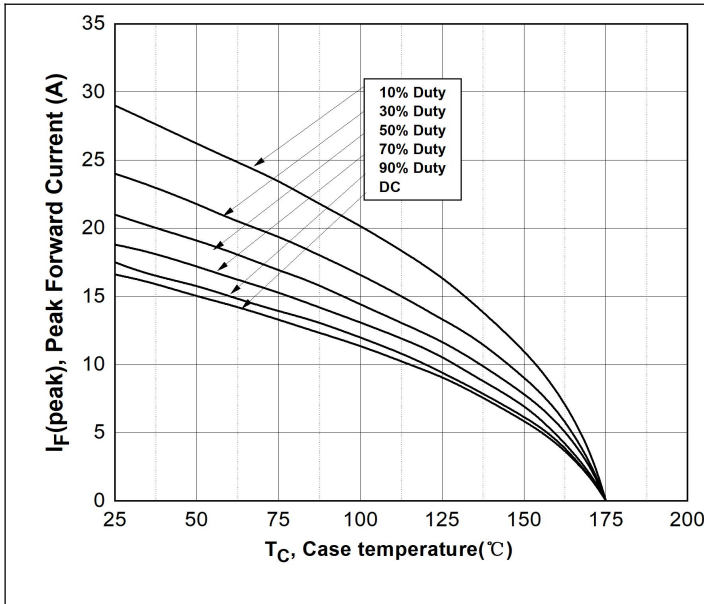


Figure 3. Current Derating

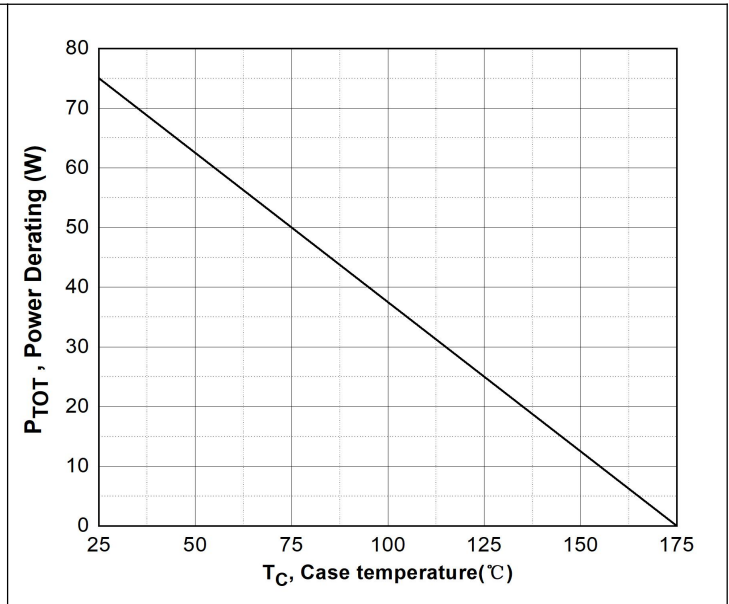


Figure 4. Power Derating



### Typical Performance

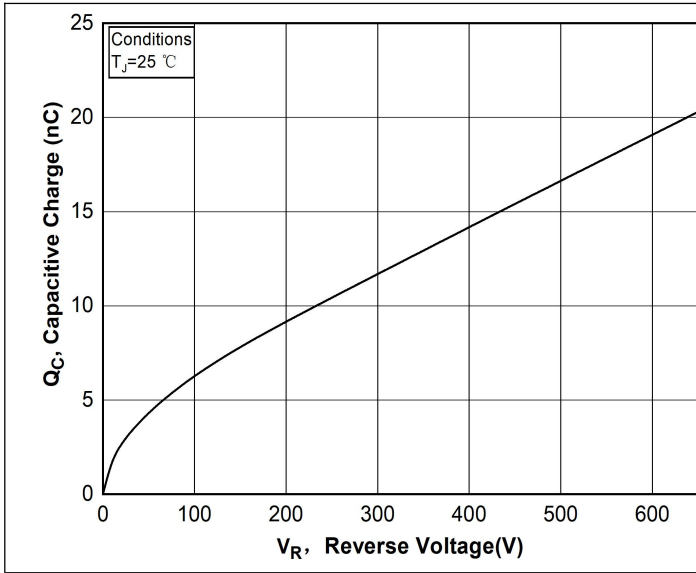


Figure 5. Capacitance Charge Vs. Reverse Voltage

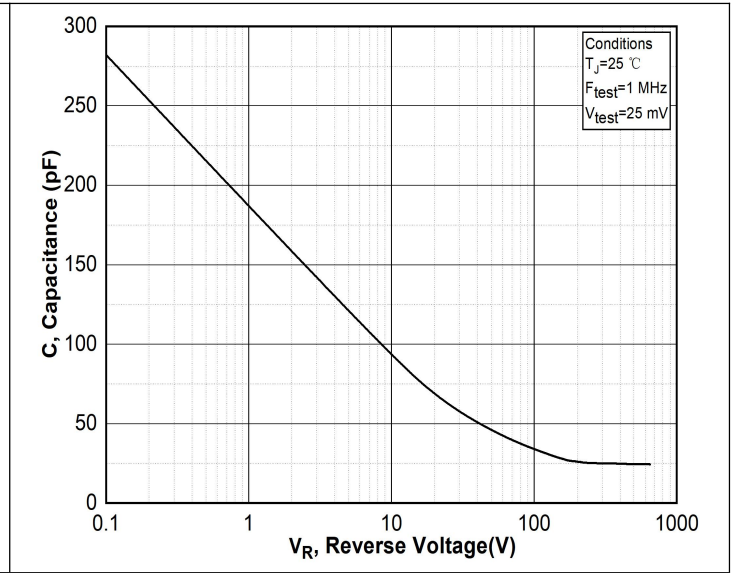


Figure 6. Capacitance Vs. Reverse Voltage

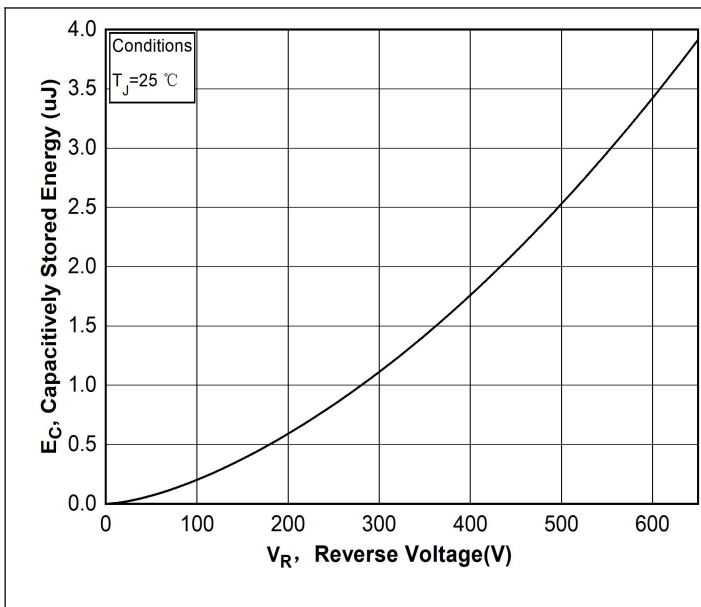


Figure 7. Capacitance Stored Energy

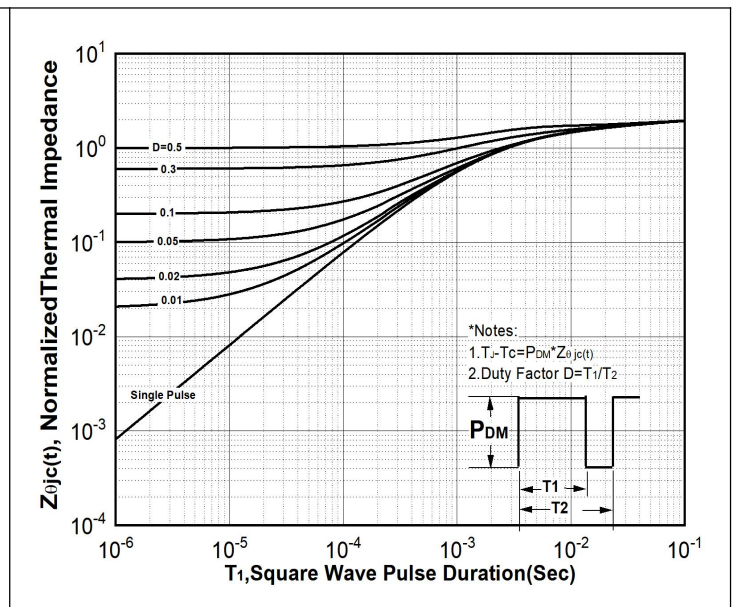
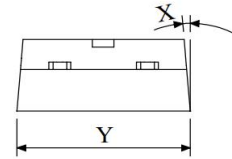
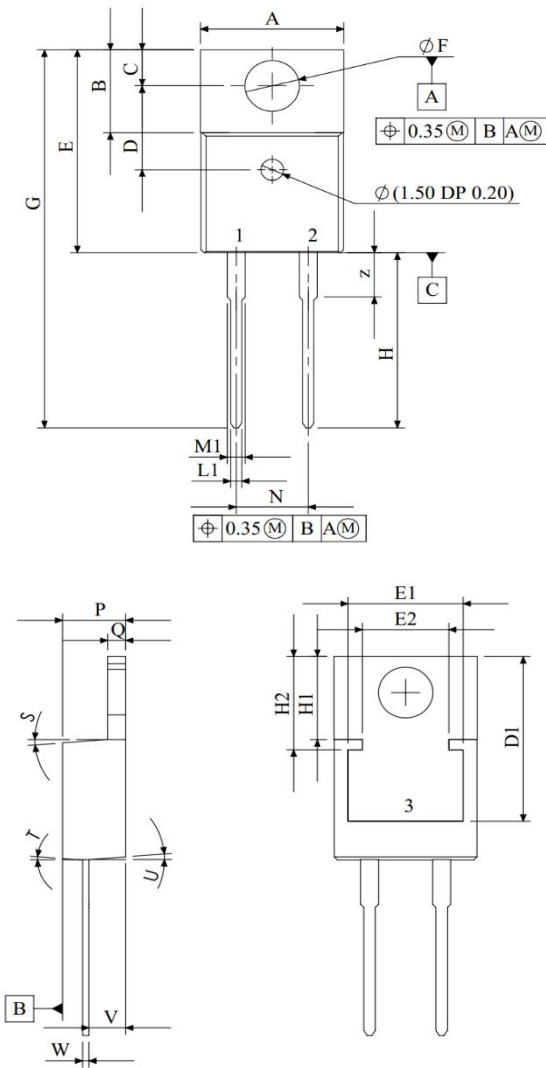


Figure 8. Transient Thermal Response Curve(Junction-to-Case)



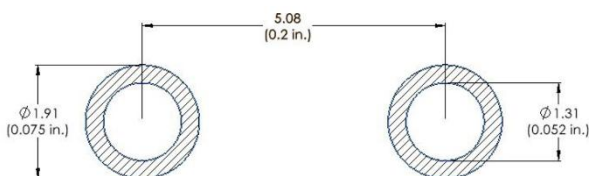
### Package Dimensions

#### 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



TO-220-2L

Part Number	Package
S1S65004RC1	TO220-2L



## Statement:

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