



Silicon Carbide Schottky Diode S1S12015RB1

V_{RRM}	=	1200 V
$I_F (T_C=135^\circ C)$	=	21 A
Q_C	=	75 nC

Features

- 1200V 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
S1S12015RB1	TO247-2L

料号: 3960220000
 品名: SiC SBD塑封器件 1200V 15A-T0247-2L(S1S12015RB1)
 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	1200	V		
V_R	DC Peak Reverse Voltage	1200	V		
I_F	Continuous Forward Current	45	A	$T_C=25^\circ\text{C}$	Fig. 3
		21		$T_C=135^\circ\text{C}$	
		16		$T_C=150^\circ\text{C}$	
I_{FRM}	Repetitive Peak Forward Surge Current	71	A	$T_C=25^\circ\text{C}$, $t_P=10$ ms, Half Sine Pulse	
		63		$T_C=110^\circ\text{C}$, $t_P=10$ ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Forward Surge Current	86	A	$T_C=25^\circ\text{C}$, $t_P=10$ ms, Half Sine Pulse	
		74		$T_C=110^\circ\text{C}$, $t_P=10$ ms, Half Sine Pulse	
$I_{F,MAX}$	Non-Repetitive Forward Surge Current	429	A	$T_C=25^\circ\text{C}$, $t_P=10\mu\text{s}$, Square Wave Pulse	
		390		$T_C=110^\circ\text{C}$, $t_P=10\mu\text{s}$, Square Wave Pulse	
P_{tot}	Power Dissipation	195	W	$T_C=25^\circ\text{C}$	Fig. 4
		84		$T_C=110^\circ\text{C}$	
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		1.5	1.8	V	$I_F=15\text{A}$, $T_J=25^\circ\text{C}$	Fig. 1
			1.8	3		$I_F=15\text{A}$, $T_J=175^\circ\text{C}$	
I_R	Reverse Current		2.6	200	μA	$V_R=1200\text{V}$, $T_J=25^\circ\text{C}$	Fig. 2
			24	300		$V_R=1200\text{V}$, $T_J=175^\circ\text{C}$	
Q_C	Total Capacitive Charge		75		nC	$V_R=800\text{V}$, $T_J=25^\circ\text{C}$	Fig. 5
C	Total Capacitance		1100		pF	$V_R=0\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	Fig. 6
			67			$V_R=400\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	
			65			$V_R=1200\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	
E_C	Capacitance Stored Energy		19		μJ	$V_R=800\text{V}$	Fig. 7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
$R_{\theta JC}$	Thermal Resistance(Junction to Case)	0.77	$^\circ\text{C/W}$	Fig. 8



Typical Performance

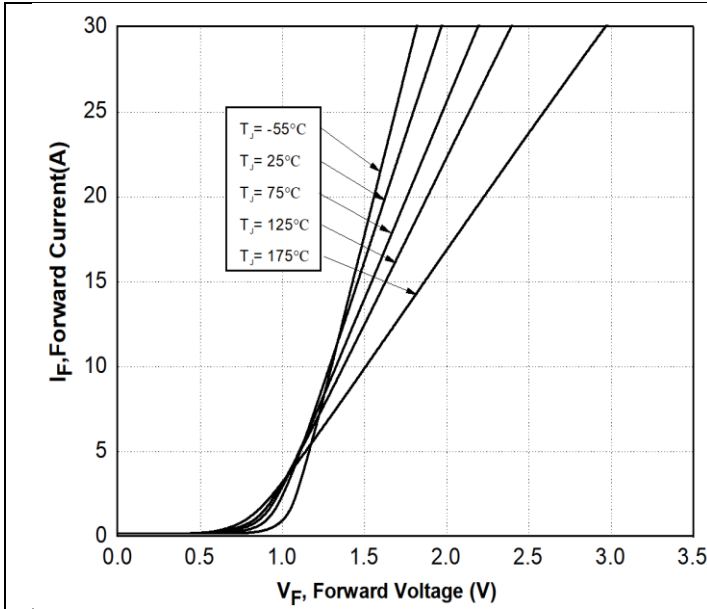


Figure 1. Forward Characteristics

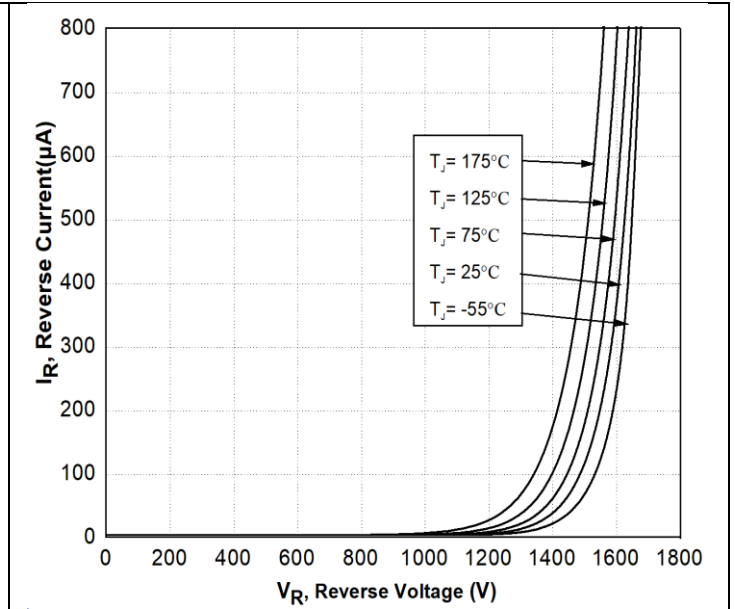


Figure 2. Reverse Characteristics

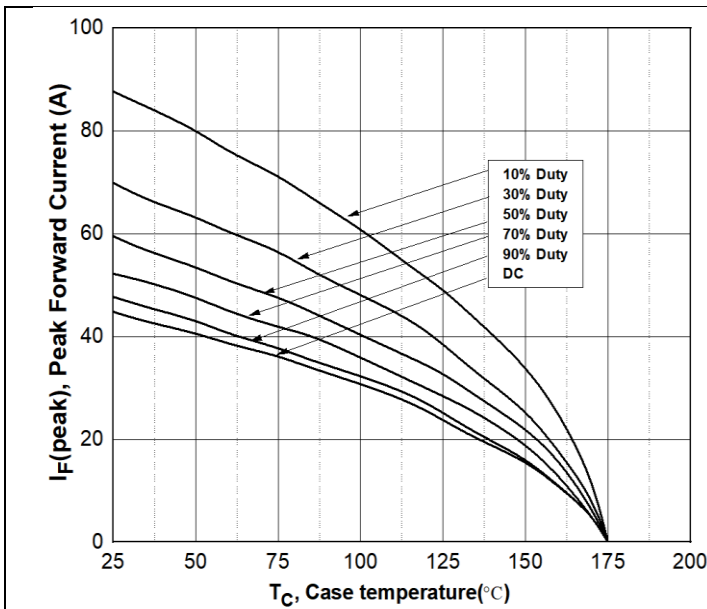


Figure 3. Current Derating

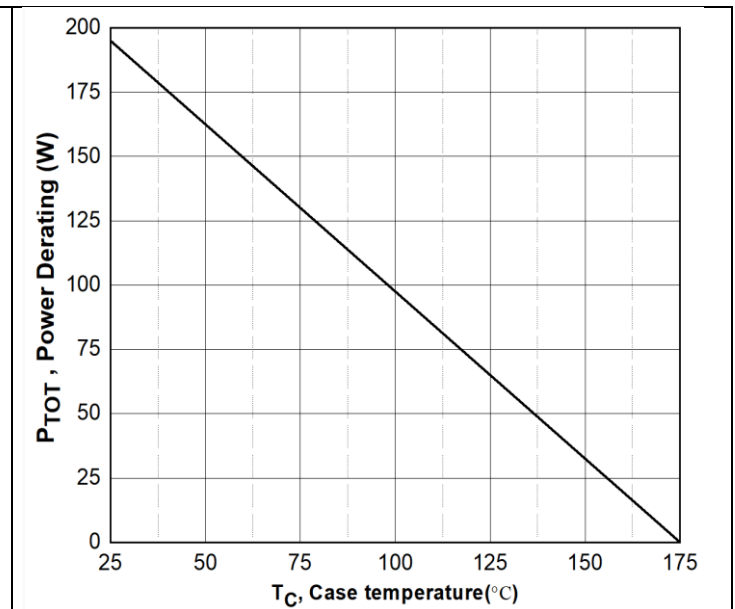


Figure 4. Power Derating



Typical Performance

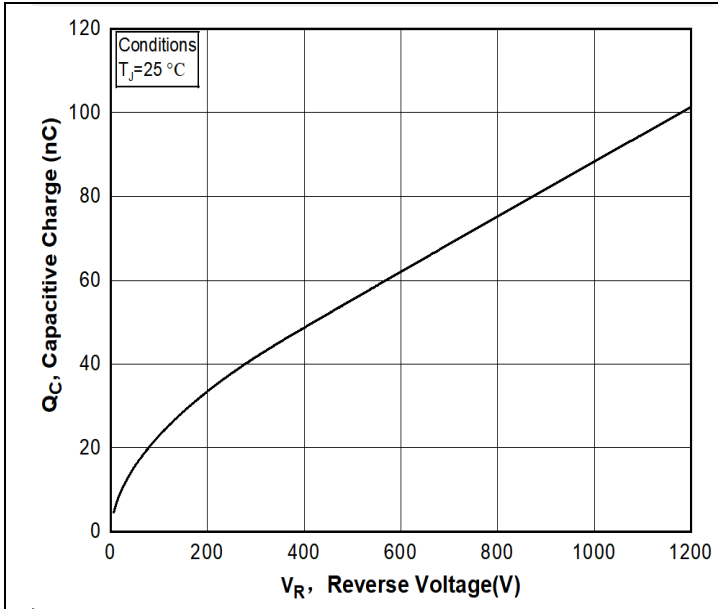


Figure 5. Capacitance Charge Vs. Reverse Voltage

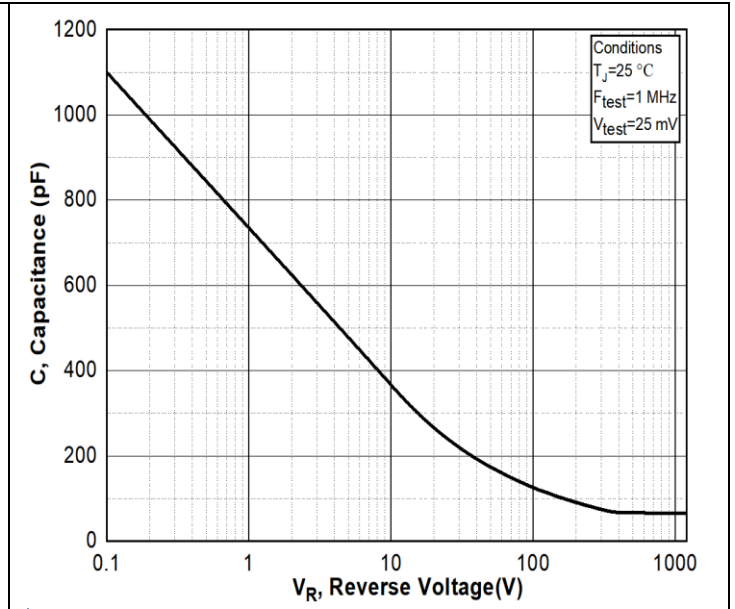


Figure 6. Capacitance Vs. Reverse Voltage

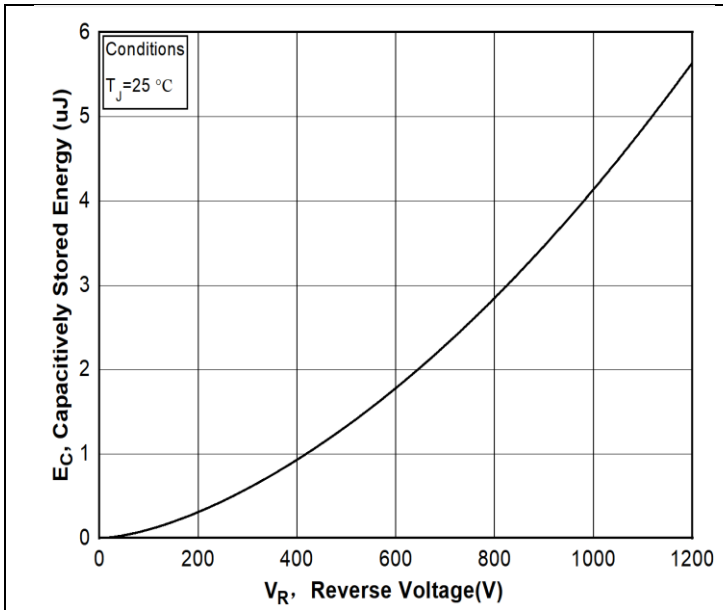


Figure 7. Capacitance Stored Energy

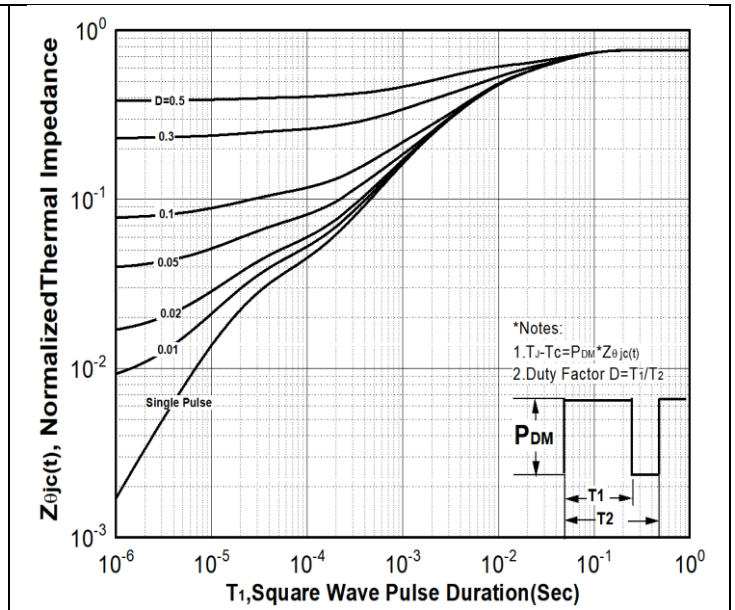
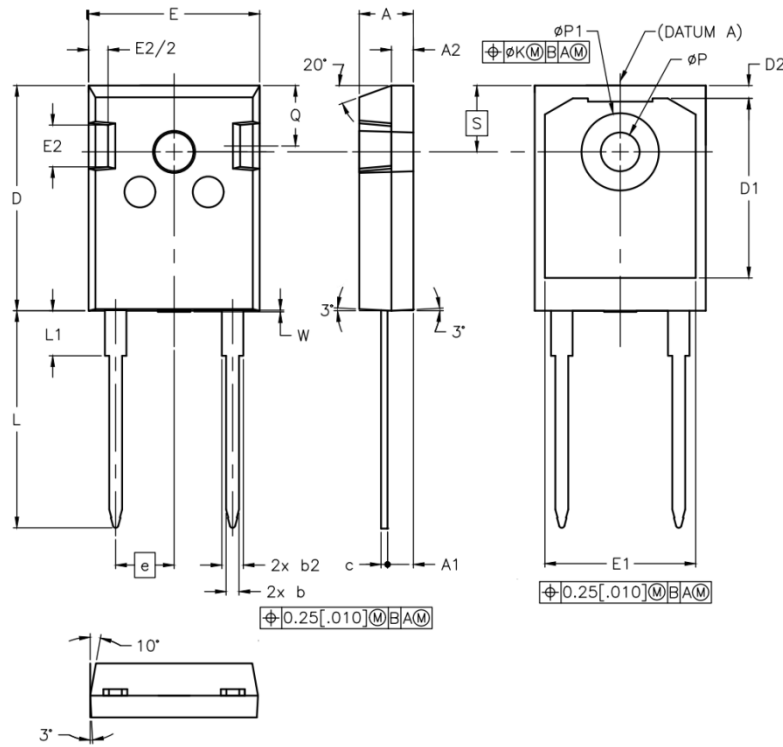


Figure 8. Transient Thermal Response Curve(Junction-to-Case)



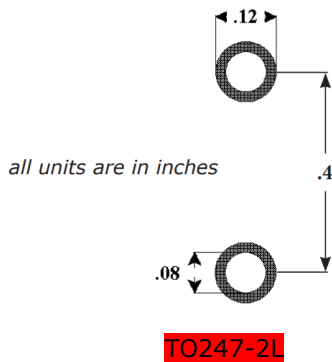
Package Dimensions

Package TO-247-2L



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



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Statement:

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