



Silicon Carbide Schottky Diode S1S12010RB1

V_{RRM} = 1200 V

$I_F (T_C=135\text{ }^\circ\text{C})$ = 18 A

Q_C = 51nC

Features

- 1200V 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
S1S12010RB1	TO247-2L

料号: 3960210000
 品名: Si C SBD塑封器件 1200V 10A-T0247-2L(S1S12010RB1)
 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	37	A	$T_C=25^\circ\text{C}$	Fig. 3
		18		$T_C=135^\circ\text{C}$	
		14		$T_C=150^\circ\text{C}$	
I_{FRM}	Repetitive Peak Forward Surge Current	52	A	$T_C=25^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
		43		$T_C=110^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Forward Surge Current	75	A	$T_C=25^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
		62		$T_C=110^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
$I_{F,MAX}$	Non-Repetitive Forward Surge Current	760	A	$T_C=25^\circ\text{C}$, $t_p=10\mu\text{s}$, Square Wave Pulse	
		640		$T_C=110^\circ\text{C}$, $t_p=10\mu\text{s}$, Square Wave Pulse	
P_{tot}	Power Dissipation	234	W	$T_C=25^\circ\text{C}$	Fig. 4
		102		$T_C=110^\circ\text{C}$	
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	1.8	V	$I_F=10\text{A}$, $T_J=25^\circ\text{C}$	Fig. 1
			2.1	3		$I_F=10\text{A}$, $T_J=175^\circ\text{C}$	
I_R	Reverse Current		2.4	250	μA	$V_R=1200\text{V}$, $T_J=25^\circ\text{C}$	Fig. 2
			73	350		$V_R=1200\text{V}$, $T_J=175^\circ\text{C}$	
Q_C	Total Capacitive Charge		51		nC	$V_R=800\text{V}$, $T_J=25^\circ\text{C}$	Fig. 5
C	Total Capacitance		770		pF	$V_R=0\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	Fig. 6
			47			$V_R=400\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	
			46			$V_R=800\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	
E_C	Capacitance Stored Energy		12.6		μJ	$V_R=800\text{V}$	Fig. 7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
$R_{\theta JC}$	Thermal Resistance(Junction to Case)	0.64	$^\circ\text{C/W}$	Fig. 8



Typical Performance

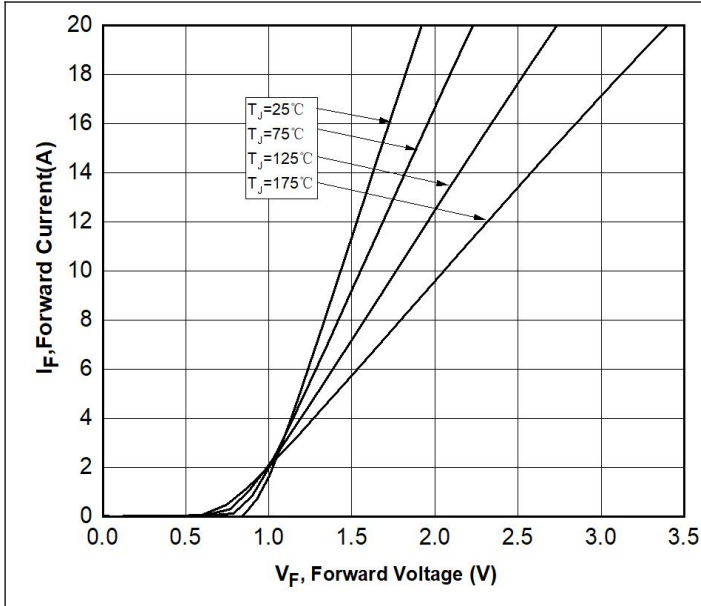


Figure 1. Forward Characteristics

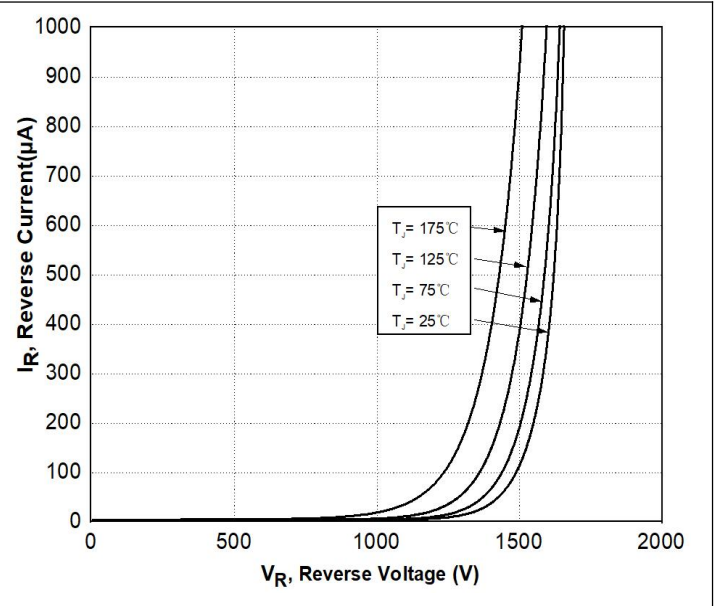


Figure 2. Reverse Characteristics

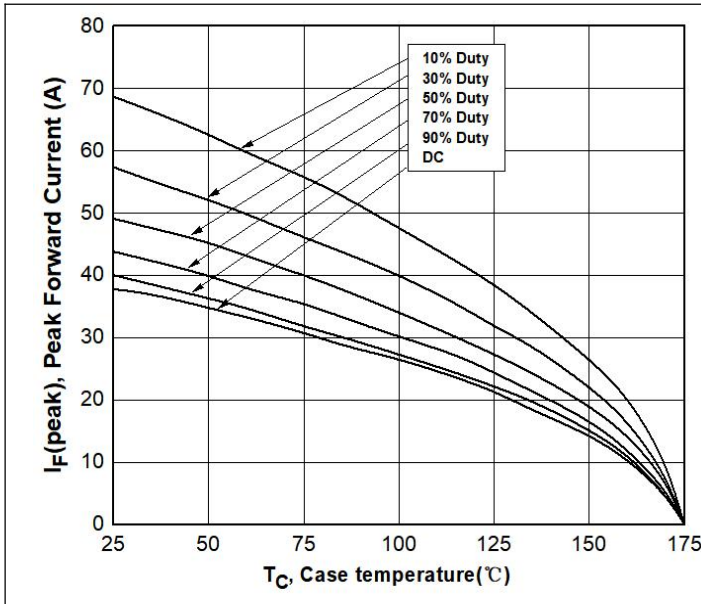


Figure 3. Current Derating

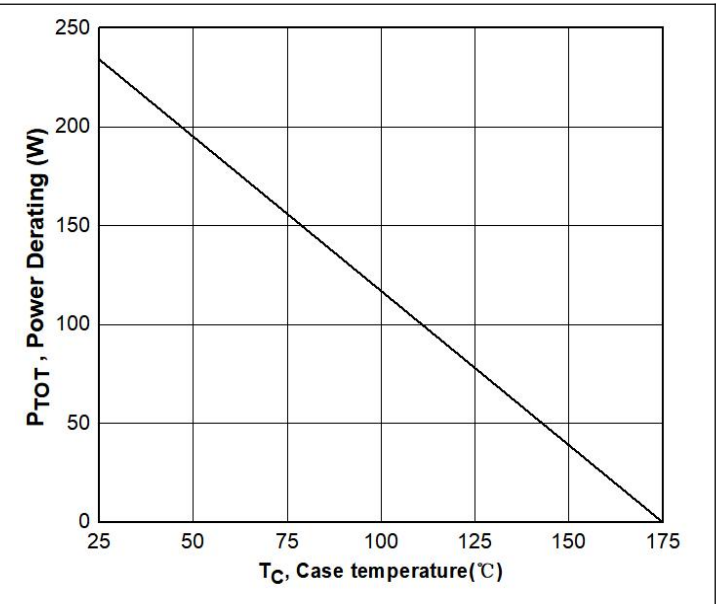


Figure 4. Power Derating



Typical Performance

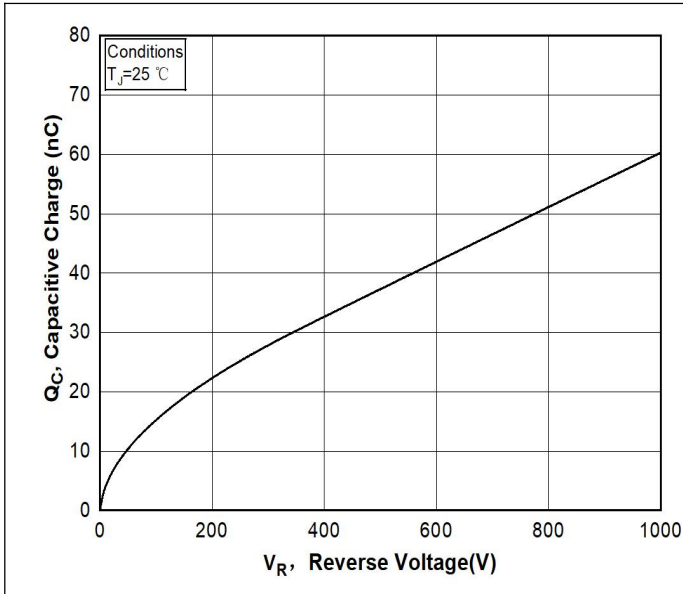


Figure 5. Capacitance Charge Vs. Reverse Voltage

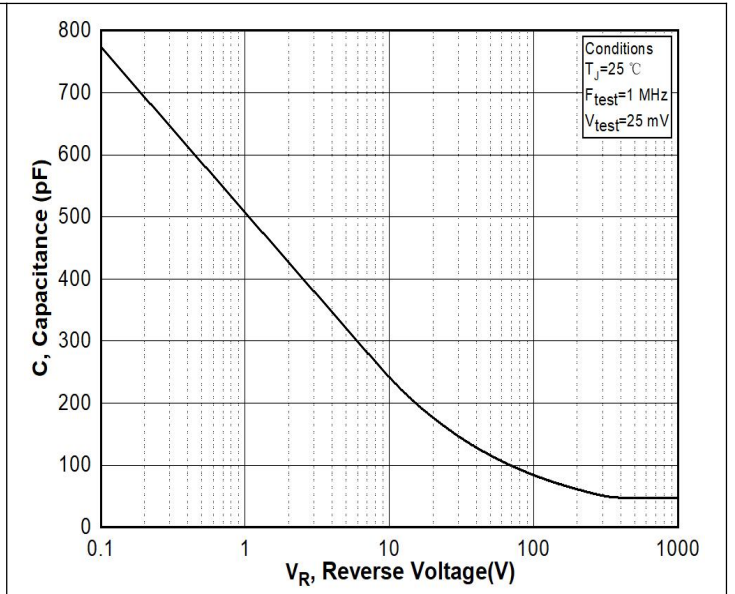


Figure 6. Capacitance Vs. Reverse Voltage

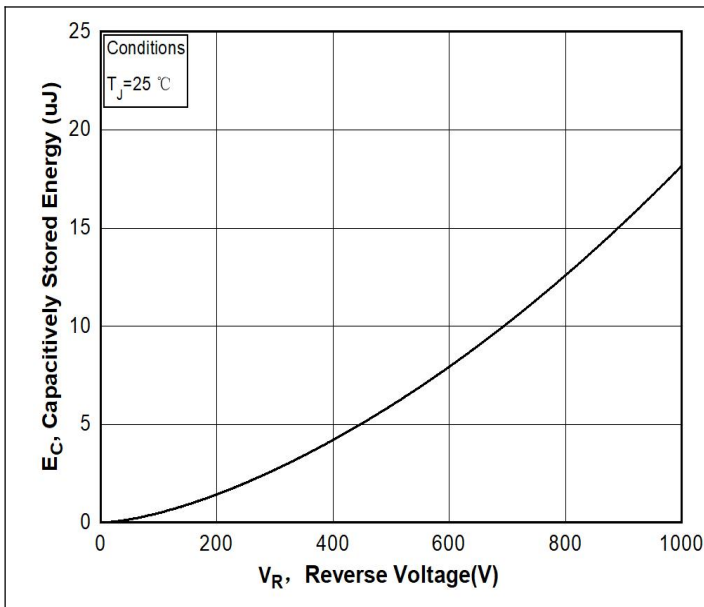


Figure 7. Capacitance Stored Energy

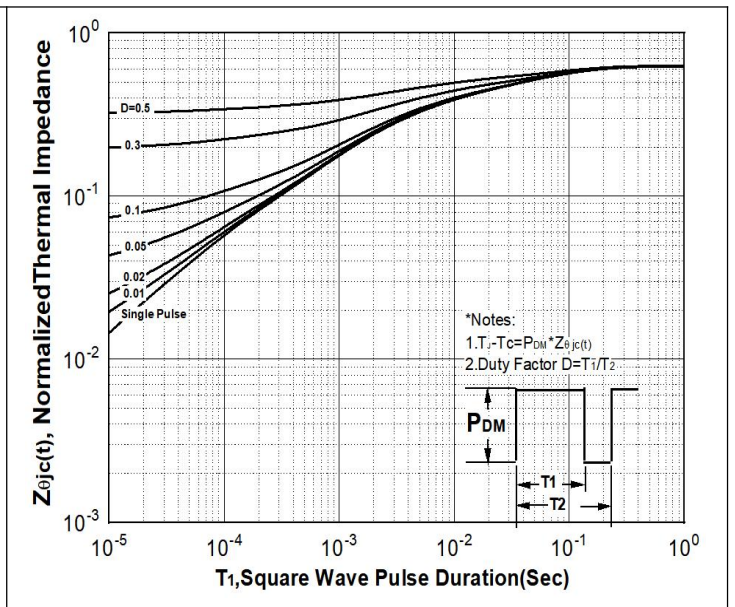
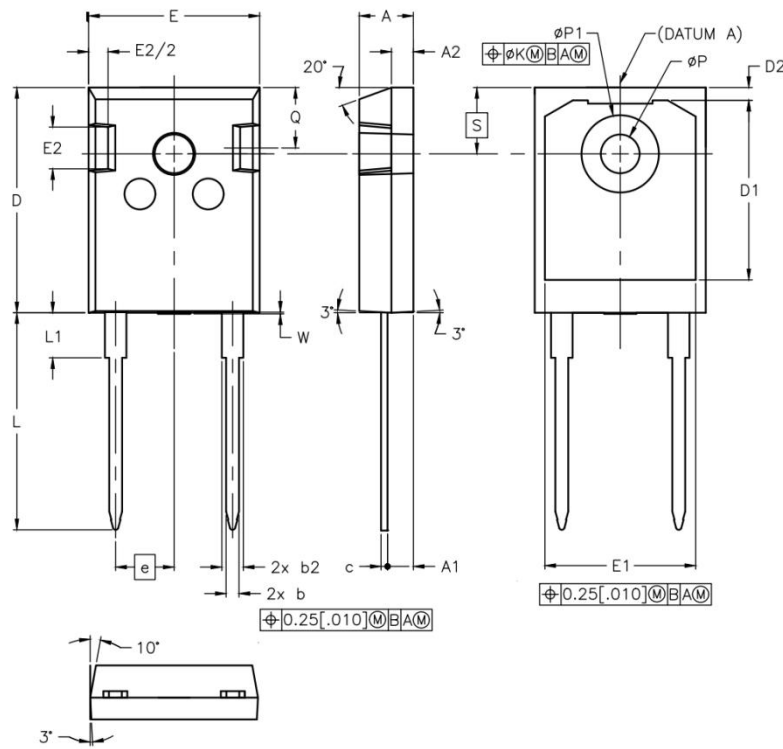


Figure 8. Transient Thermal Response Curve (Junction-to-Case)



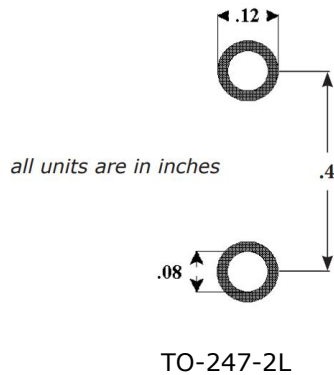
Package Dimensions

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



Part Number	Package
S1S12010RB1	TO247-2L



Statement:

SAN-U owns the authority for final explanation of all information contained in this document, which is subject to change without notice. All the information was obtained in particular environments; and SAN-U will not be responsible for the performance of the customers' actual operating environments. All information contained is only for the users' reference and shall not be considered as warranted characteristics. SAN-U will not be liable for damages arising directly or indirectly which from any use of the information contained in this document.

Contact Information:

Address: N501-505 Weiye Bldg., Xiamen Pioneering Park For Overseas Chinese Scholars, Xiamen, Fujian, China

Tel: +86-592-3898601, 3898608, 5318000

Fax: +86-592-5703588

Email: sales@san-u.com

<http://www.san-u.com>