



Silicon Carbide Schottky Diode S1S17025RB1

V_{RRM}	=	1700 V
$I_F (T_C=135\text{ }^\circ\text{C})$	=	52 A
Q_c	=	286 nC

Features

- 1700V 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
S1S17025RB1	TO247-2L

料号: 3960270000
 品名: SiC SBD塑封器件 1700V 25A-T0247-2L(S1S17025RB1)
 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	1700	V		
V_R	DC Peak Reverse Voltage	1700	V		
I_F	Continuous Forward Current	102	A	$T_C=25^\circ\text{C}$	Fig. 3
		52		$T_C=135^\circ\text{C}$	
		39		$T_C=150^\circ\text{C}$	
I_{FRM}	Repetitive Peak Forward Surge Current	109	A	$T_C=25^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
		95		$T_C=110^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
I_{FSM}	Non-Repetitive Forward Surge Current	116	A	$T_C=25^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
		102		$T_C=110^\circ\text{C}$, $t_p=10$ ms, Half Sine Pulse	
$I_{F,MAX}$	Non-Repetitive Forward Surge Current	942	A	$T_C=25^\circ\text{C}$, $t_p=10\mu\text{s}$, Square Wave Pulse	
		812		$T_C=110^\circ\text{C}$, $t_p=10\mu\text{s}$, Square Wave Pulse	
P_{tot}	Power Dissipation	750	W	$T_C=25^\circ\text{C}$	Fig. 4
		325		$T_C=110^\circ\text{C}$	
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		1.45	1.7	V	$I_F=25\text{A}$, $T_J=25^\circ\text{C}$	Fig. 1
			2.2	2.9		$I_F=25\text{A}$, $T_J=175^\circ\text{C}$	
I_R	Reverse Current		9.0	45	μA	$V_R=1700\text{V}$, $T_J=25^\circ\text{C}$	Fig. 2
			243			$V_R=1700\text{V}$, $T_J=175^\circ\text{C}$	
Q_C	Total Capacitive Charge		286		nC	$V_R=1700\text{V}$, $T_J=25^\circ\text{C}$	Fig. 5
C	Total Capacitance		2840		pF	$V_R=0\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	Fig. 6
			122			$V_R=800\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	
			121			$V_R=1700\text{V}$, $T_J=25^\circ\text{C}$, $f=1\text{MHz}$	
E_C	Capacitance Stored Energy		150		μJ	$V_R=1700\text{V}$	Fig. 7

Thermal Characteristics

Symbol	Parameter	Value	Unit	Note
$R_{\theta JC}$	Thermal Resistance(Junction to Case)	0.2	$^\circ\text{C/W}$	Fig. 8



Typical Performance

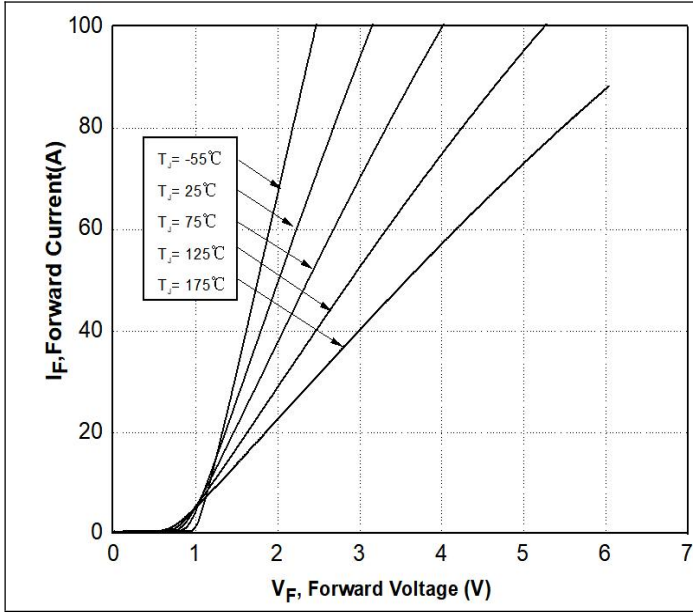


Figure 1. Forward Characteristics

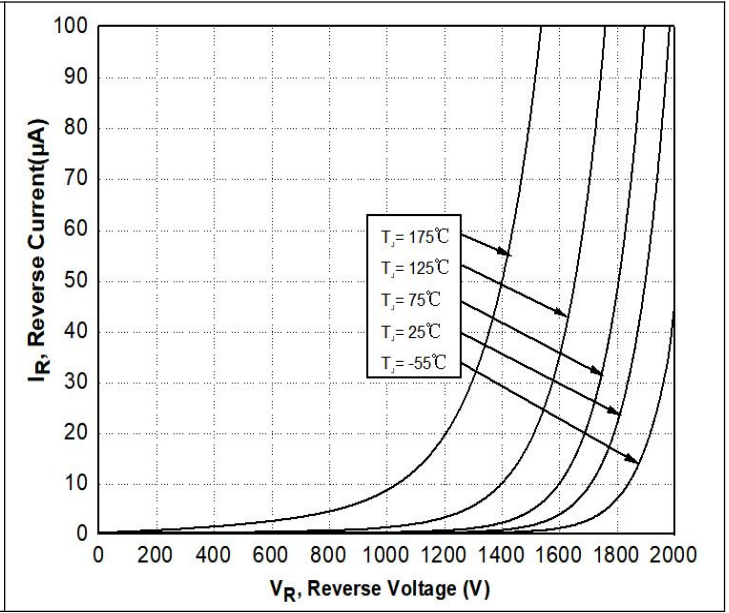


Figure 2. Reverse Characteristics

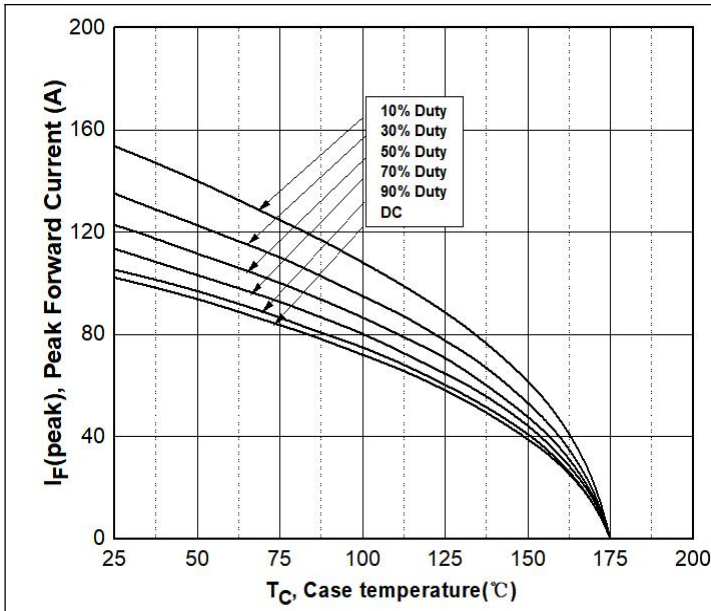


Figure 3. Current Derating

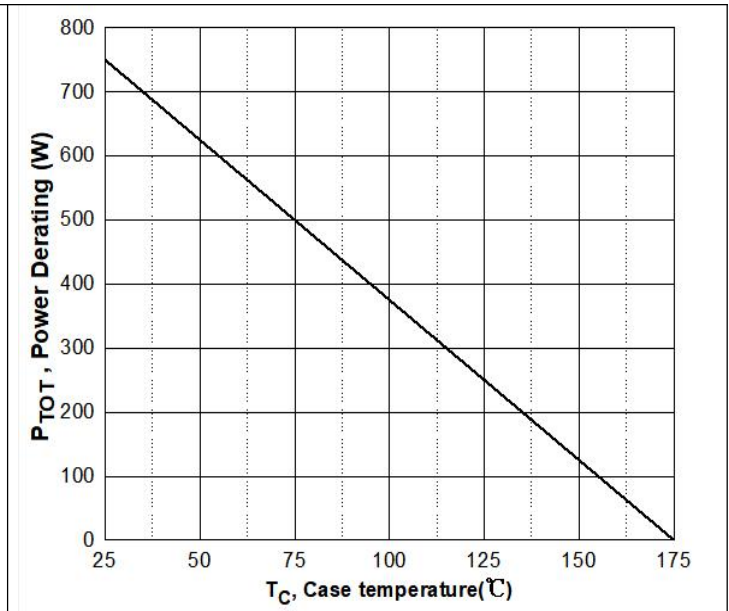


Figure 4. Power Derating



Typical Performance

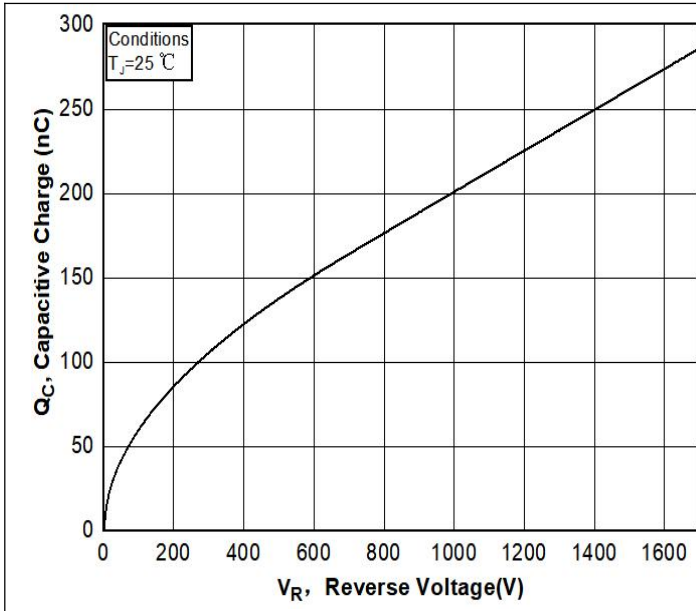


Figure 5. Capacitance Charge Vs. Reverse Voltage

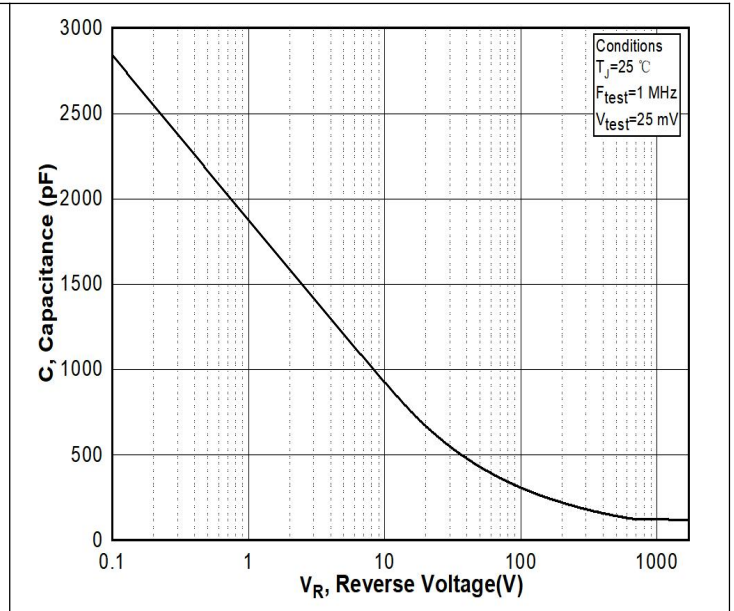


Figure 6. Capacitance Vs. Reverse Voltage

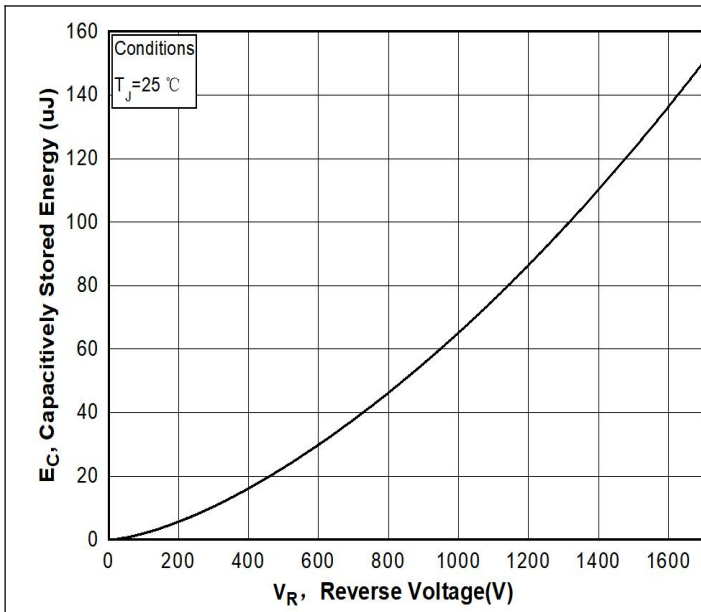


Figure 7. Capacitance Stored Energy

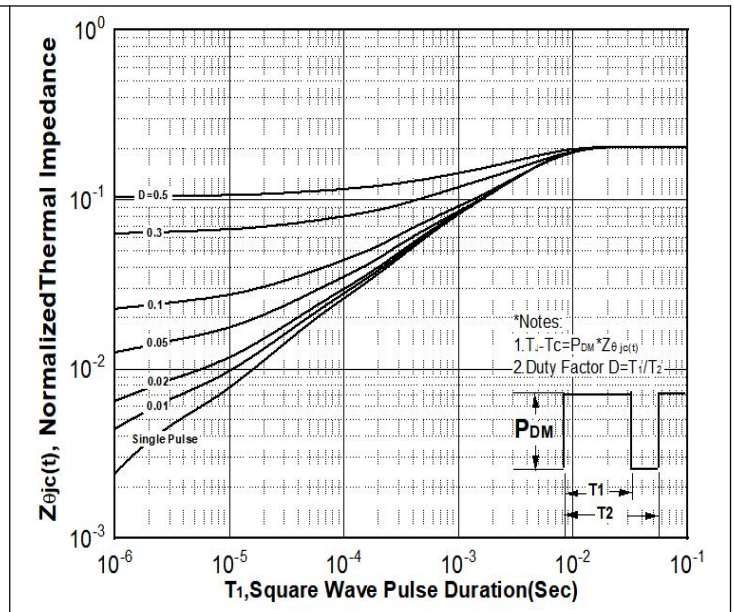
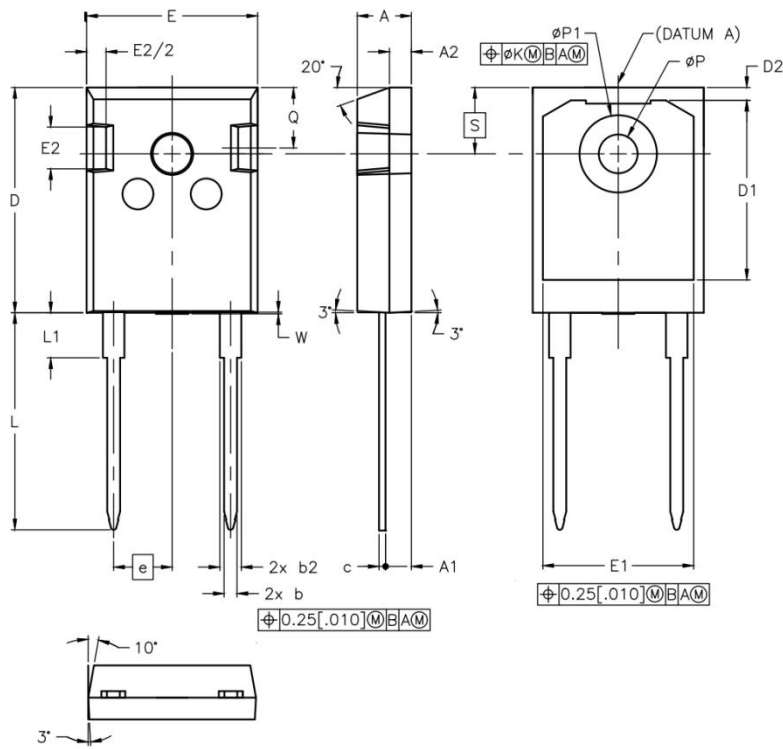


Figure 8. Transient Thermal Response Curve(Junction-to-Case)



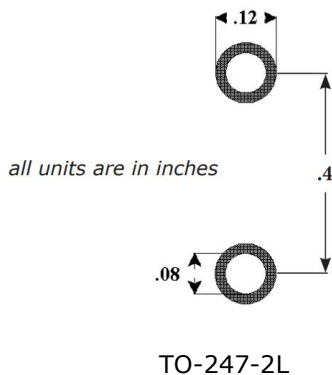
Package Dimensions

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
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