SBR545SAFQ

5.0A SBR
SURFACE-MOUNT SUPER BARRIER RECTIFIER

Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F\ (MAX)}$ (V)	$I_{R\ (MAX)}$ (mA)
45	5	0.56	0.2

Features

- Patented SBR® technology provides an avalanche capability five times larger than Schottky diodes ensuring more rugged and reliable end applications.
- Lower reverse leakage ensuring greater stability at higher temperatures.
- Low-forward voltage (V_F) minimizes conduction losses and improving efficiency.
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBR545SAFQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Description and Applications

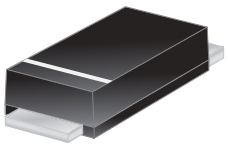
The SBR545SAFQ is a 5A 45V single rectifier packaged in the low profile SMAF package. Providing low V_F and excellent high-temperature stability this device is ideal for use in general rectification applications such as:

- Boost diodes
- Blocking diodes
- Recirculating diodes

Mechanical Data

- Package: SMAF
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 e3
- Polarity: Cathode Band
- Weight: 0.035 grams (Approximate)

SMAF



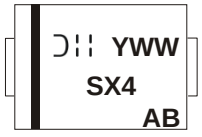
Top View

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR545SAFQ-13	SMAF	10000	Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



SX4 = Product Type Marking Code
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 4 for 2024)
WW = Week Code (01 to 53)
AB = Foundry and Assembly Code

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{RM}	45	V
Average Rectified Output Current (See Figure 1)	I_O	5.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I_{FSM}	100	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Case (Note 5)	$R_{\theta JC}$	20	°C/W
Thermal Resistance Junction to Ambient (Note 5)	$R_{\theta JA}$	45	
Operating and Storage Temperature Range	T_J, T_{STG}	-65 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V_F	—	0.5	0.56	V	I_F = 5.0A, T_J = +25°C
		—	0.485	—	V	I_F = 5.0A, T_J = +125°C
Leakage Current (Note 6)	I_R	—	0.04	0.2	mA	V_R = 45V, T_J = +25°C
		—	6	43	mA	V_R = 45V, T_J = +125°C
Junction Capacitance	C_J	—	215	—	pF	V_R = 4V, T_J = +25°C
Reverse-Recovery Time	t_{RR}	—	14	—	ns	I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A

Notes: 5. Device mounted on FR-4 substrate, 1" x 1", 2oz, single-sided, PC boards with 0.56" x 0.73" copper pad.
6. Short duration pulse test used to minimize self-heating effect.

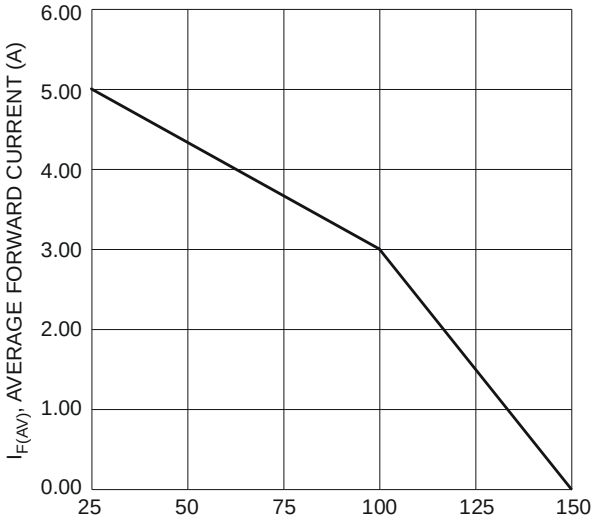


Figure 1 Forward Current Derating Curve

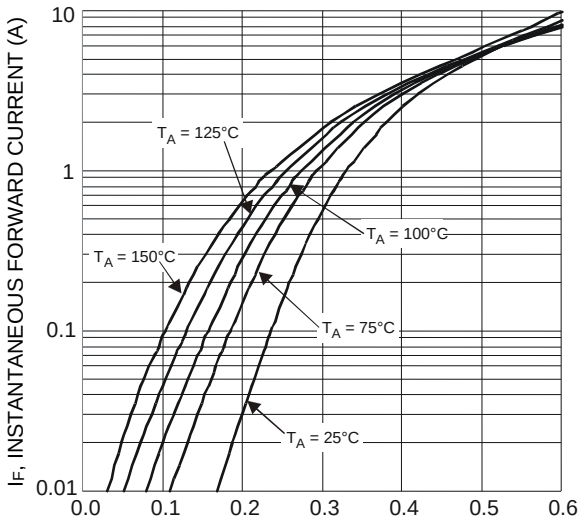


Figure 2 Typical Forward Characteristics

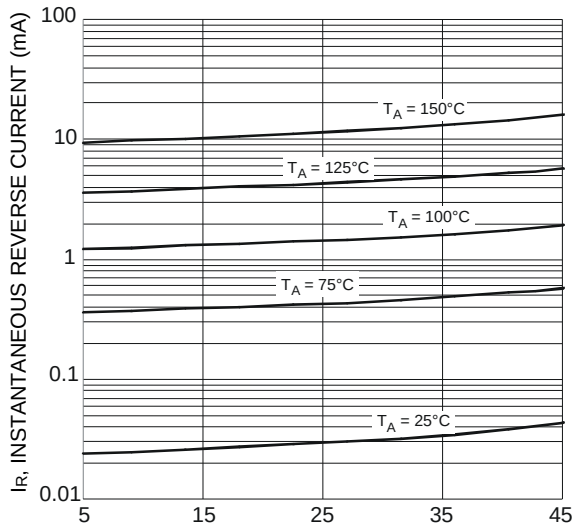


Figure 3 Typical Reverse Characteristics

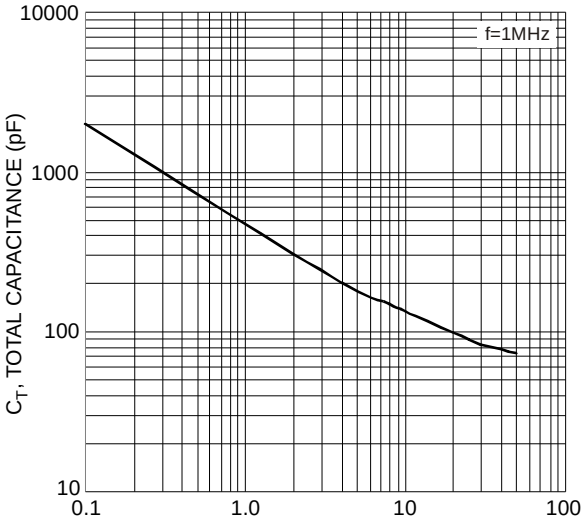


Figure 4 Total Capacitance vs. Reverse Voltage

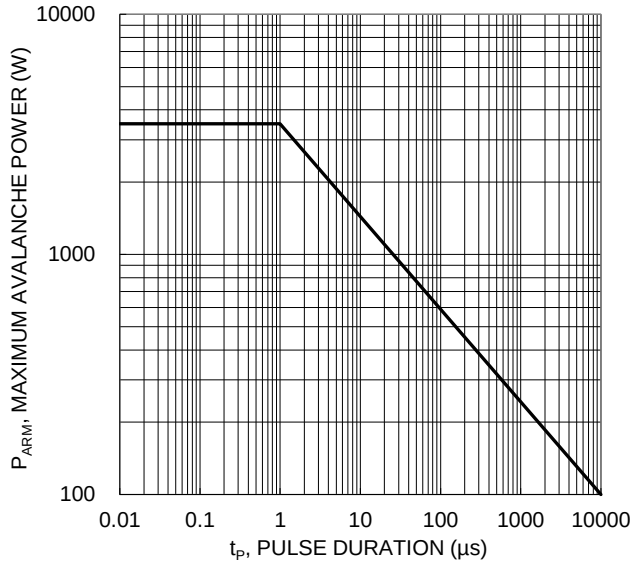
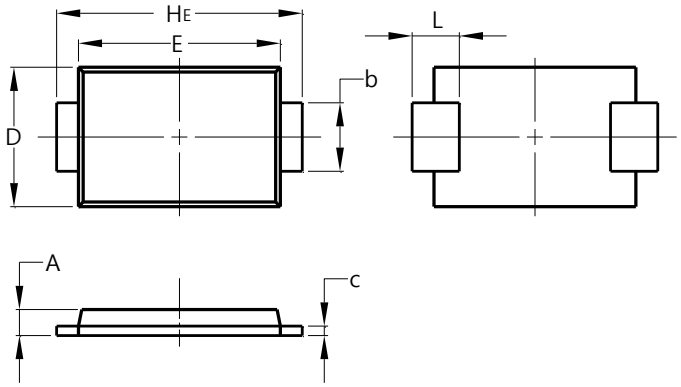


Figure 5 Maximum Avalanche Power

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SMAF

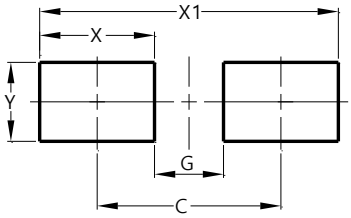


SMAF		
Dim	**Min**	**Max**
A	0.90	1.10
b	1.25	1.65
c	0.10	0.40
D	2.25	2.95
E	3.95	4.60
H_E	4.80	5.60
L	0.50	1.50
All Dimensions in mm		

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SMAF



Dimensions	Value (in mm)
C	4.00
G	1.50
X	2.50
X1	6.50
Y	1.70

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