

Product Summary (@ T_A = +25°C)

V _{RRM} (V)	I _O (A)	V _F Max (V)	I _R Max (μA)
60	3	0.62	7

Description

This field plated Super Barrier Rectifier (SBR[®]FP) diode is ideally suited for application requiring ultra-low blocking mode. Leading to lower operating temperatures and increased system reliability. Packaged in the robust industry-standard SMAF package.

Applications

- DC-DC converters
- AC-DC rectifiers
- Reverse-polarity protections
- SMPS
- Freewheeling applications
- Low power consumption applications

Features

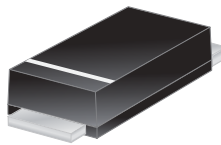
- Patented SBR Technology Provides an Avalanche Capability Five Times Larger Than Schottky Diodes Ensuring More Rugged and Reliable End Applications
- Lower Reverse Leakage Ensuring Greater Stability at Higher Temperatures
- Low-Forward Voltage (V_F) Minimizing Conduction Losses and Improving Efficiency
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBRFP3M60SAFQ 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/>

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



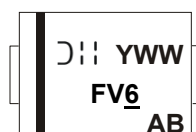
Top View

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBRFP3M60SAFQ-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



FV6 = Product Type Marking Code
 J11 = Manufacturer's Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 5 for 2025)
 WW = Week Code (01 to 53)
 AB = Foundry and Assembly Code

SBR is a registered trademark of Diodes Incorporated.

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}	60	V
Average Rectified Output Current	I _O	3	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	I _{FSM}	70	A
Non-Repetitive Avalanche Energy (T _J = +25°C, I _{AS} = 3.4A, L = 15mH)	E _{AS}	120	mJ

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance Junction to Case (Note 5)	R _{θJC}	49	°C/W
Thermal Resistance Junction to Ambient (Note 5)	R _{θJA}	105	
Operating and Storage Temperature Range (Note 6)	T _J , T _{STG}	-55 to +175	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V _F	—	0.51	0.62	V	I _F = 3A, T _J = +25°C
		—	0.48	—	V	I _F = 3A, T _J = +125°C
Leakage Current (Note 7)	I _R	—	1.2	7	μA	V _R = 60V, T _J = +25°C
		—	0.3	—	mA	V _R = 60V, T _J = +125°C
Junction Capacitance	C _J	—	80	—	pF	V _R = 60V, T _J = +25°C
Reverse-Recovery Time	t _{RR}	—	18	—	ns	I _F = 0.5A, I _R = 1.0A, I _{RR} = 0.25A, T _A = +25°C

Notes: 5. Device mounted on FR-4 substrate, 1" × 1", 2oz, single-sided, PC boards with 0.06" × 0.09" copper pad.
6. The heat generated must be less than the thermal conductivity from junction to case: dP_D/dT_J < 1/R_{θJC} or junction to ambient: dP_D/dT_J < 1/R_{θJA}.
7. Short duration pulse test used to minimize self-heating effect.

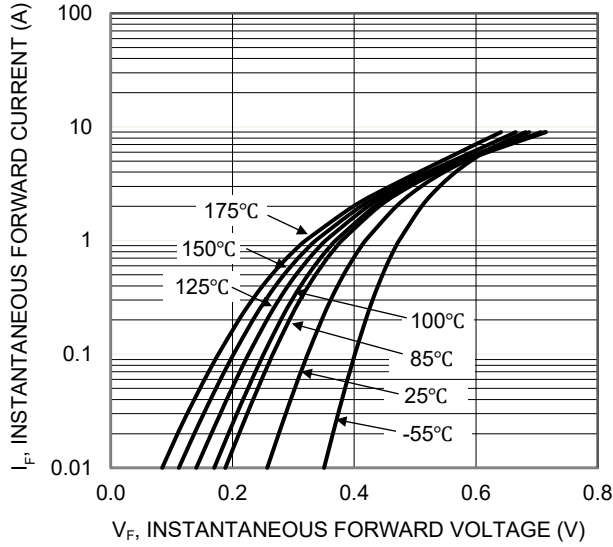


Figure 1. Typical Forward Characteristics

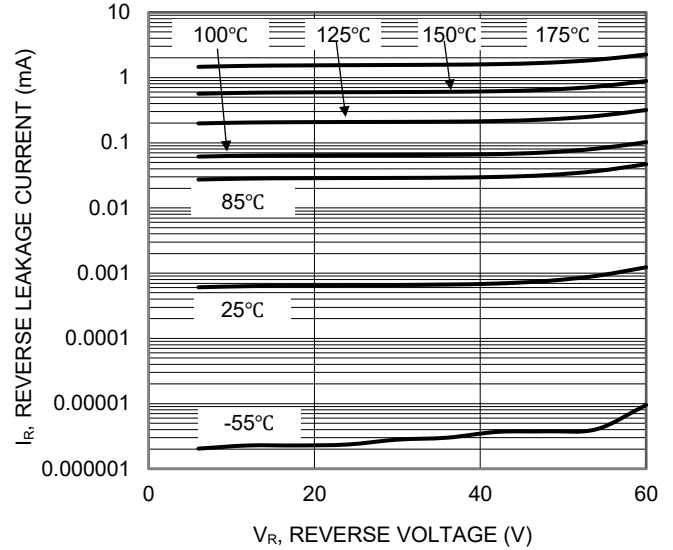


Figure 2. Typical Reverse Characteristics

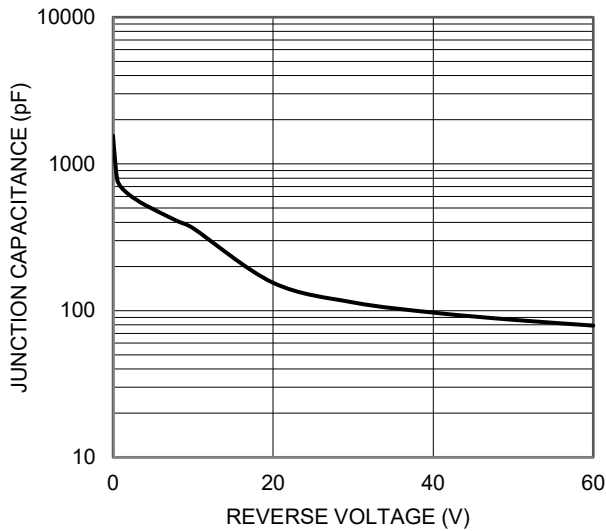


Figure 3. Typical Junction Capacitance

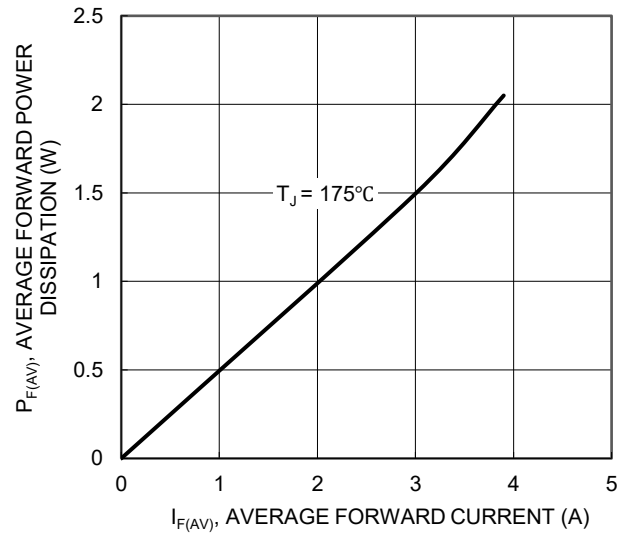


Figure 4. Forward Power Dissipation

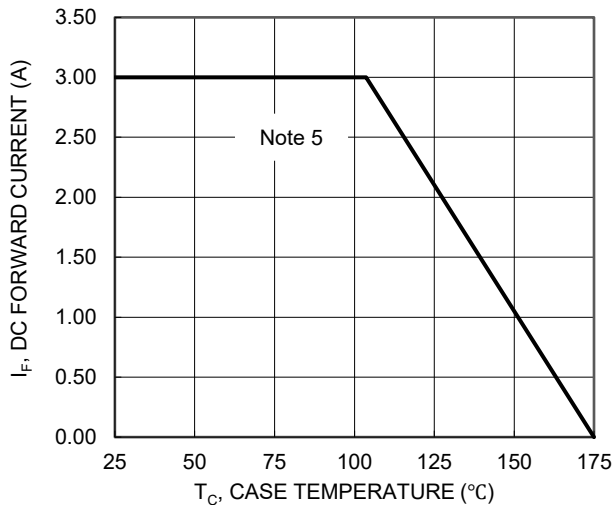


Figure 5. DC Forward Current Derating

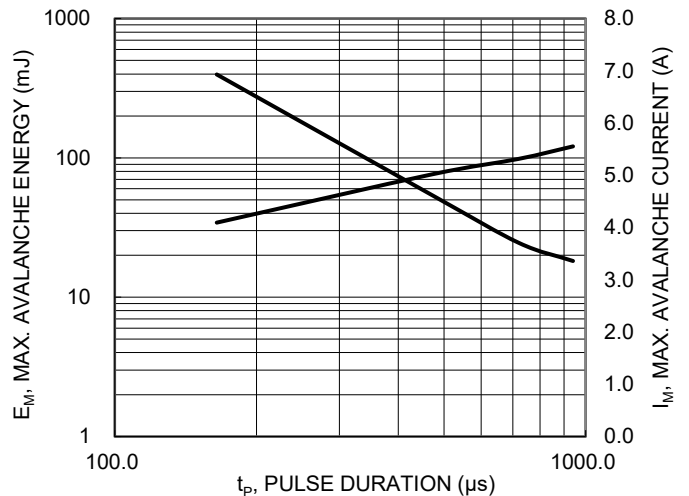
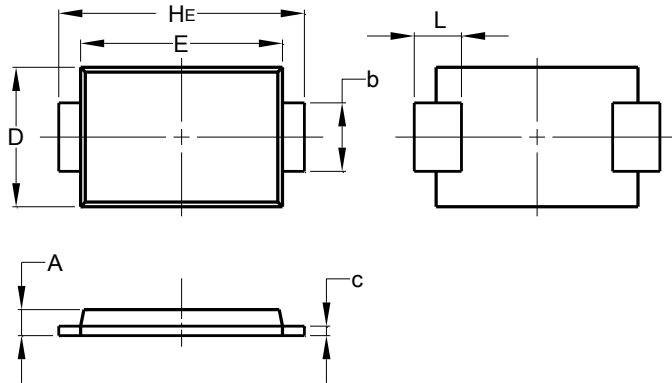


Figure 6. Single Pulse Max. Avalanche Energy and Current

Package Outline Dimensions

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

SMAF

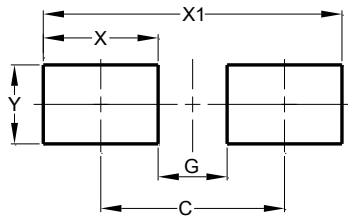


SMAF		
Dim	Min	Max
A	0.90	1.10
b	1.25	1.65
c	0.10	0.40
D	2.25	2.95
E	3.95	4.60
HE	4.80	5.60
L	0.50	1.50
All Dimensions in mm		

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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