SBR3A40SA

3.0A SBR
SUPER BARRIER RECTIFIER
SMA

Product Summary (@ T_A = +25°C)

V_{RRM} (V)	I_O (A)	$V_{F(MAX)}$ (mV)	$I_{R(MAX)}$ (μA)
40	3	500	400

Features and Benefits

- Low Leakage Current
- Patented Super Barrier Rectifier Technology (SBR®)
- Soft, Fast Switching Capability
- +150°C Operating Junction Temperature
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The SBR3A40SAQ 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/

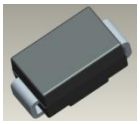
Applications

- SMPS
- AC-DC
- DC-DC converters
- Freewheeling diodes

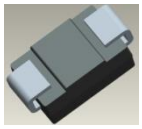
Mechanical Data

- Package: SMA
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead-Free Plating (Matte Tin Finish.) Solderable per MIL-STD-202, Method 208 (e3)
- Polarity Indicator: Cathode Band
- Weight: 0.064 grams (Approximate)

SMA



Top View



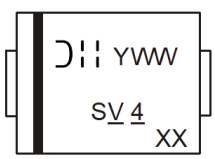
Bottom View

Ordering Information (Note 4)

Orderable Part Number	Package	Packing	
		Qty.	Carrier
SBR3A40SA-13	SMA	5,000	Tape & Reel
SBR3A40SAQ-13	SMA	5,000	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 (Note 5)



SV 4 = Product Type Marking Code
= Manufacturer's Code Marking
YWW = Date Code Marking
A Bar or Underline around the Date Code or Product Type Marking Code Denotes Assembly Site if Marked.
Y = Last Digit of Year (ex: 6 for 2026)
WW = Week Code 01 to 52
XX = Foundry and Assembly Site

Note: 5. Device has a cathode band (as shown above) and may also have a cathode notch.

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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}	40	V
Maximum Voltage Rate of Change (Rated V_R)	dv/dt	10,000	V/µs
RMS Reverse Voltage	$V_{R(RMS)}$	28	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}	45	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Maximum Thermal Resistance Thermal Resistance Junction to Soldering (Note 6) Thermal Resistance Junction to Ambient (Note 7) Thermal Resistance Junction to Case (Note 7)	$R_{\theta JS}$ $R_{\theta JA}$ $R_{\theta JC}$	5 124 14.3	°C/W
Power Dissipation (Note 7) @T_A = +25°C	P_D	1.2	W
Operating and Storage Temperature Range (Note 8)	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
Reverse Breakdown Voltage (Note 9)	$V_{(BR)R}$	40	—	—	V	I_R = 0.4mA
Forward Voltage Drop	V_F	— — — —	0.30 0.33 0.43 —	0.35 0.38 0.50 0.48	V	I_F = 0.5A, T_J = +25°C I_F = 1.0A, T_J = +25°C I_F = 3.0A, T_J = +25°C I_F = 3.0A, T_J = +125°C
Leakage Current (Note 9)	I_R	— — —	45 80 9	250 400 40	µA µA mA	V_R = 5V, T_J = +25°C V_R = 40V, T_J = +25°C V_R = 40V, T_J = +125°C
Junction Capacitance	C_J	—	130	—	pF	V_R = 4V, T_J = +25°C
Reverse-Recovery Time	t_{RR}	—	12	—	ns	I_F = 0.5A, I_R = 1A, I_{RR} = 0.25A

Notes:
6. Theoretical $R_{\theta JS}$ calculated from the top center of the die straight down to the PCB cathode tab solder junction.
7. FR-4 PCB, 2oz. copper, minimum recommended pad layout per http://www.diodes.com/package-outlines.html.
8. The heat generated must be less than thermal conductivity from junction-to-ambient: $dP_D / dT_J < 1 / R_{\theta JA}$.
9. Short duration pulse test used to minimize self-heating effect.

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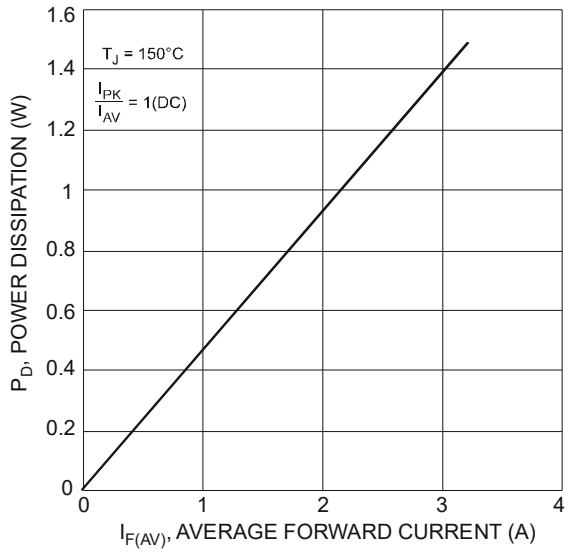


Fig. 1 Forward Power Dissipation

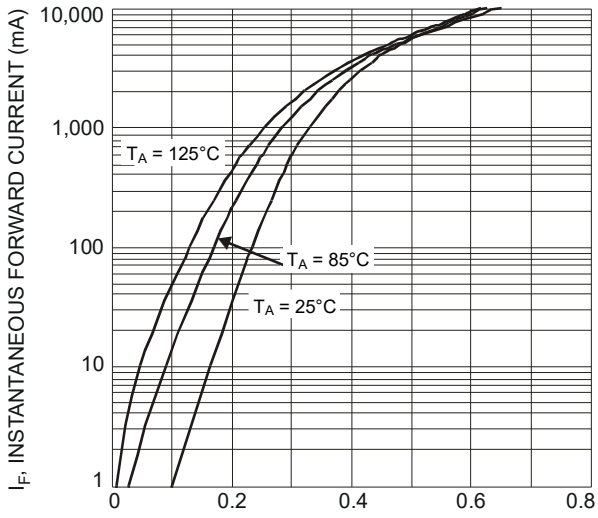


Fig. 2 Typical Forward Characteristics

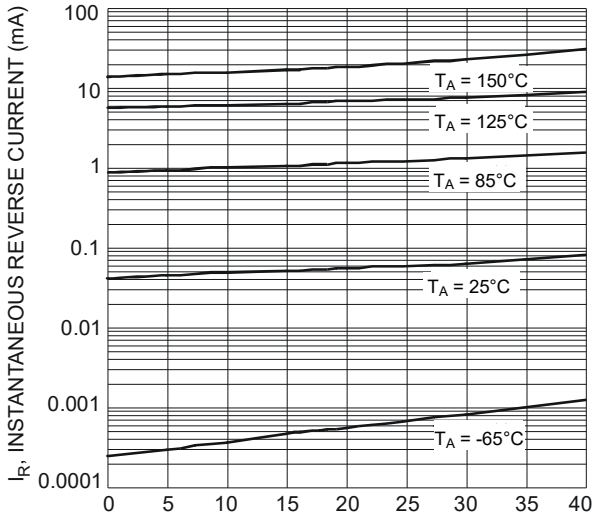


Fig. 3 Typical Reverse Characteristics

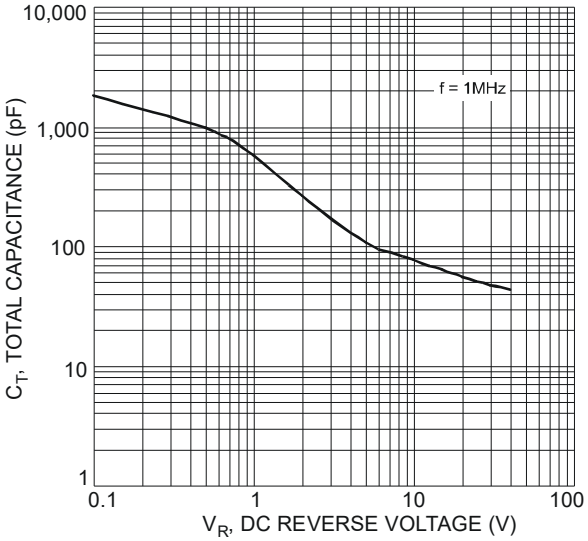


Fig. 4 Total Capacitance vs. Reverse Voltage

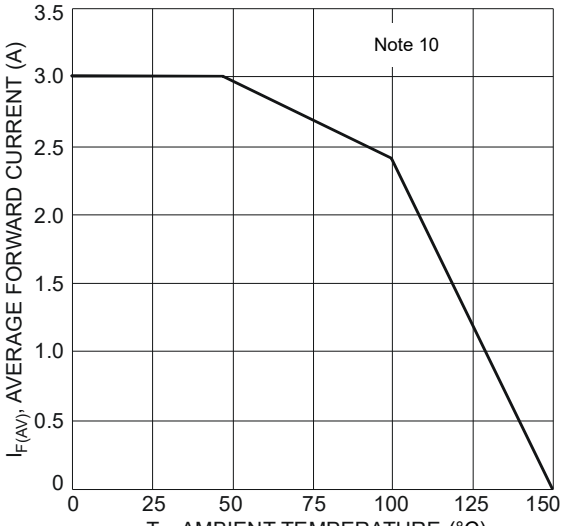


Fig. 5 Forward Current Derating Curve

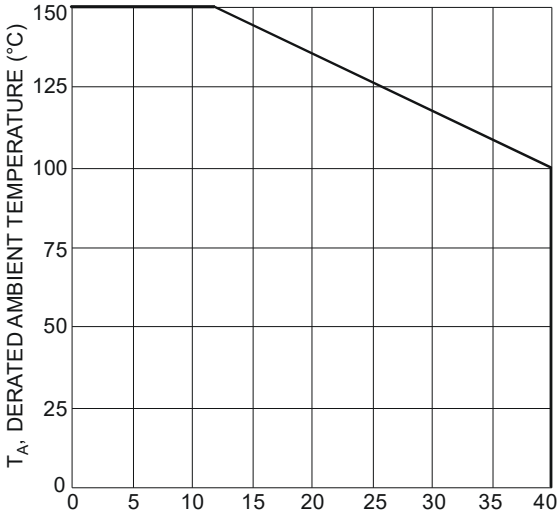


Fig. 6 Operating Temperature Derating

Note: 10. FR-4 PCB, 2oz. copper, single-side 16 x MRP, 1" x 1" PC board.

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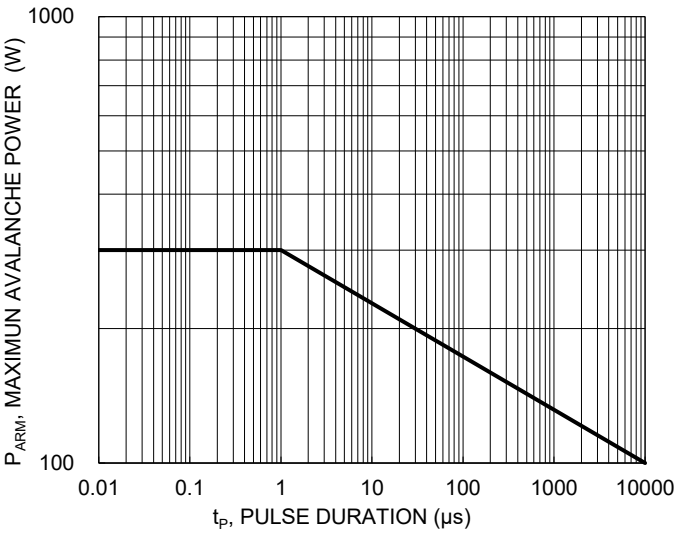
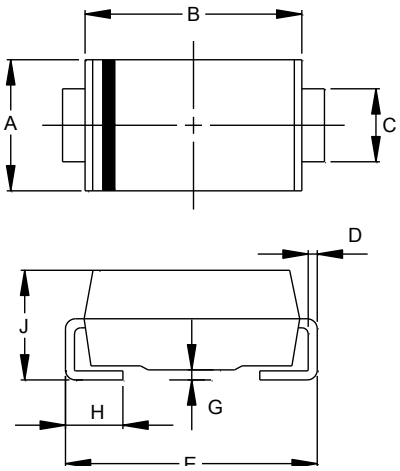


Fig. 7 Maximum Avalanche Power

Package Outline Dimensions

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

SMA

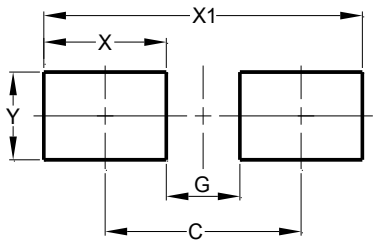


SMA		
Dim	**Min**	**Max**
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

Suggested Pad Layout

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

SMA



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

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