

1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER

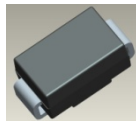
Features

- Glass Passivated Die Construction
- Fast Recovery Time for High Efficiency
- Surge Overload Rating to 30A Peak
- Ideally Suited for Automated Assembly
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

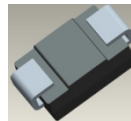
Mechanical Data

- Case: SMA/SMB
- Case Material: Molded Plastic.
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Annealed over Copper Alloy Leadframe; Solderable per MIL-STD-202, Method 208
- Polarity: Cathode Band or Cathode Notch
- Weight: SMA - 0.064 grams (Approximate)
SMB - 0.093 grams (Approximate)

SMA/SMB



Top View



Bottom View

Ordering Information (Note 4)

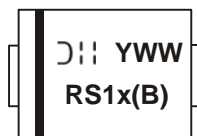
Part Number	Case	Packaging
RS1x-13-F	SMA	5,000/Tape & Reel
RS1xB-13-F	SMB	3,000/Tape & Reel

* x = Device type, e.g. RS1D-13-F (SMA package); RS1JB-13-F (SMB package).

- Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
 2. See http://www.diodes.com/quality/lead_free.html 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 packing details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information

SMA/SMB



RS1x = Product Type Marking Code, ex: RS1G (SMA Package)
 RS1xB = Product Type Marking Code, ex: RS1GB (SMB Package)
 = Manufacturer's Code Marking
 YWW = Date Code Marking
 Y = Last Digit of Year (ex: 4 for 2014)
 WW = Week Code (01 to 53)

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

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

Characteristic	Symbol	RS1 A/AB	RS1 B/BB	RS1 D/DB	RS1 G/GB	RS1 J/JB	RS1 K/KB	RS1 M/MB	Unit	
Peak Repetitive Reverse Voltage	V _{RRM}									
Working Peak Reverse Voltage	V _{RWM}	50	100	200	400	600	800	1,000	V	
DC Blocking Voltage (Note 5)	V _R									
RMS Reverse Voltage	V _{R(RMS)}	35	70	140	280	420	560	700	V	
Average Rectified Output Current @ T _T = +120°C	I _O	1.0								A
Non-Repetitive Peak Forward Surge Current, 8.3ms										
Single Half Sine-Wave Superimposed on Rated Load	I _{FSM}	30								A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Terminal (Note 6)	R _{θJT}	20	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-65 to +150	°C

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

Characteristic	Symbol	RS1 A/AB	RS1 B/BB	RS1 D/DB	RS1 G/GB	RS1 J/JB	RS1 K/KB	RS1 M/MB	Unit	
Minimum Reverse Breakdown Voltage (Note 5) @ I _R = 0.5 μA	V _{(BR)R}	50	100	200	400	600	800	1,000	V	
Maximum Forward Voltage Drop @ I _F = 1.0A	V _{FM}	1.3							V	
Peak Reverse Current @ T _A = +25°C									5.0	
at Rated DC Blocking Voltage (Note 5) @ T _A = +125°C	I _{RM}								200	μA
Maximum Reverse Recovery Time (Note 7)	t _{rr}	150				250	500			ns
Typical Total Capacitance (Note 8)	C _T	15								pF

- Notes:
5. Short duration pulse test used to minimize self-heating effect.
 6. Valid provided that terminals are kept at ambient temperature.
 7. Reverse recovery test conditions: I_F = 0.5A, I_R = 1.0A, I_{rr} = 0.25A. See Figure 5.
 8. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.

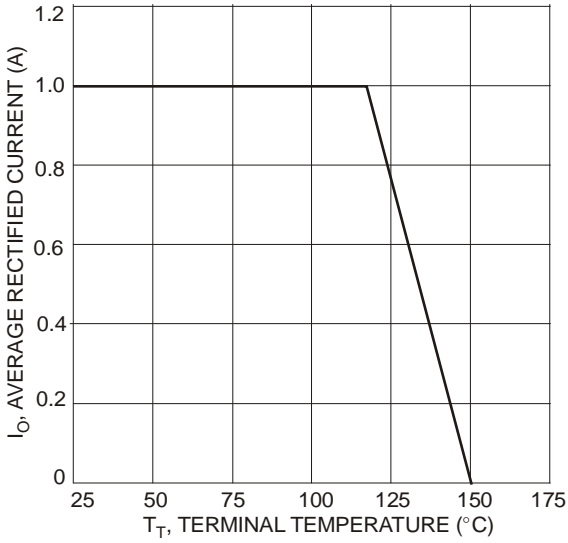


Fig. 1 Forward Current Derating Curve

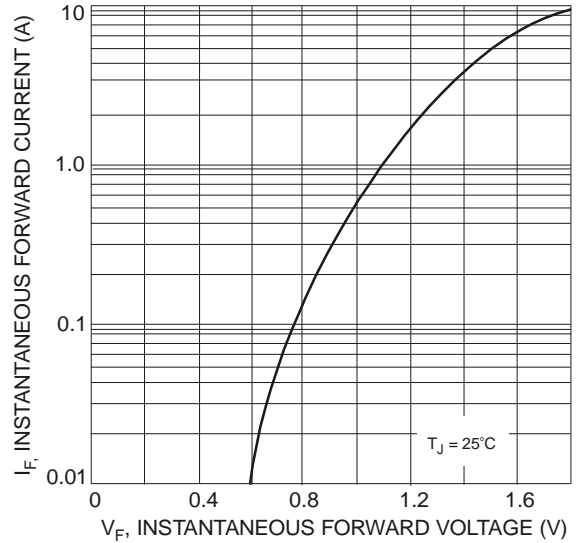


Fig. 2 Typical Forward Characteristics

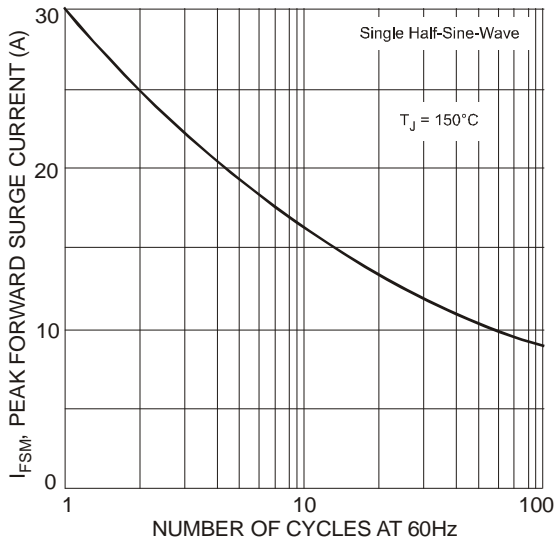


Fig. 3 Forward Surge Current Derating Curve

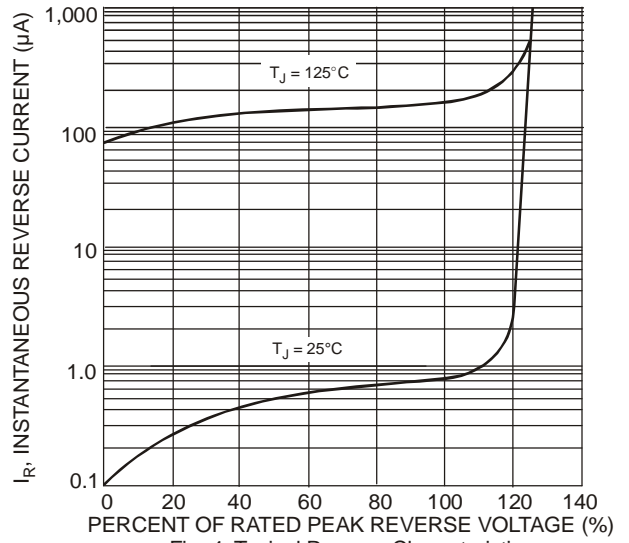
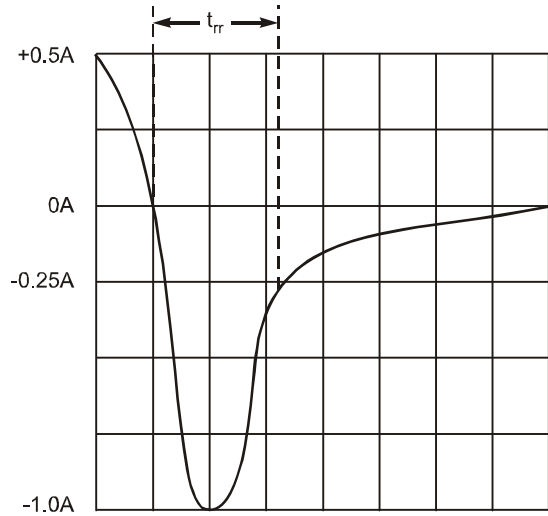
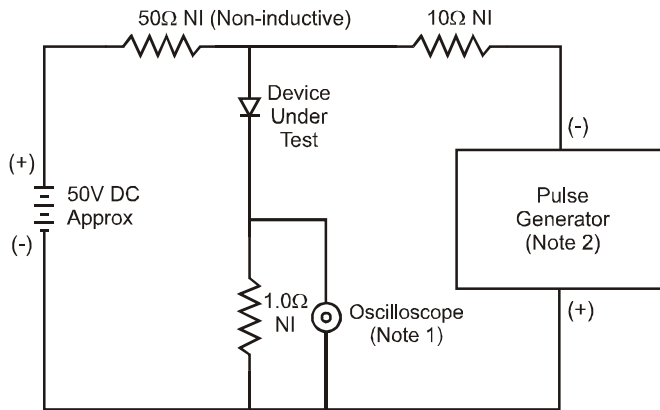


Fig. 4 Typical Reverse Characteristics



Set time base for 50/100 ns/cm

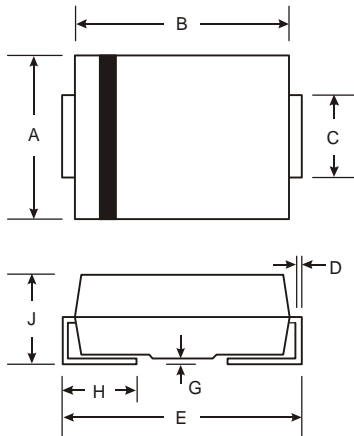
Notes:

1. Rise Time = 7.0ns max. Input Impedance = 1.0MΩ, 22pF.
2. Rise Time = 10ns max. Input Impedance = 50Ω.

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

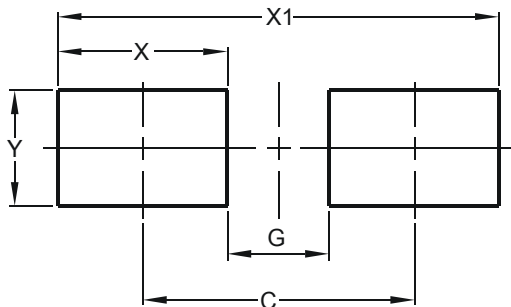


SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

SMB		
Dim	Min	Max
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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

SMB	
Dimensions	Value (in mm)
C	4.30
G	1.80
X	2.50
X1	6.80
Y	2.30

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