

1.0A SURFACE MOUNT FAST RECOVERY RECTIFIER

RS1A/B - RS1M/B Vishaymas General Semiconductor

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

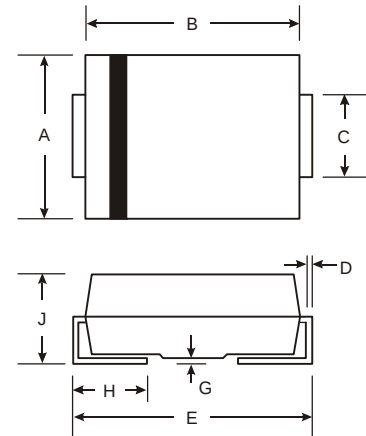
Moisture Sensitivity: Level 1 per J-STD-020

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)



Dim	SMA		SMB	
	Min	Max	Min	Max
A	2.29	2.92	3.30	3.94
B	4.00	4.60	4.06	4.57
C	1.27	1.63	1.96	2.21
D	0.15	0.31	0.15	0.31
E	4.80	5.59	5.00	5.59
G	0.10	0.20	0.10	0.20
H	0.76	1.52	0.76	1.52
J	2.01	2.30	2.00	2.40

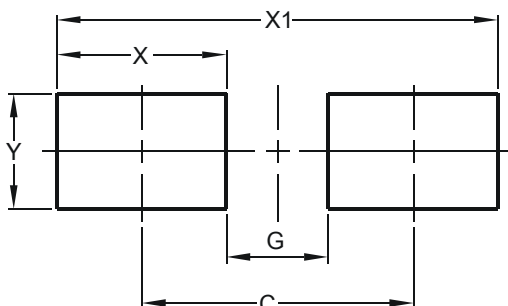
Ordering Information (Note 4)

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.

Suggested Pad Layout



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

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 Working Peak Reverse Voltage DC Blocking Voltage (Note 5)	V _{RRM} V _{RWM} V _R	50	100	200	400	600	800	1,000	V
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 at Rated DC Blocking Voltage (Note 5) @ T _A = +125°C	I _{RM}	5.0 200							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.

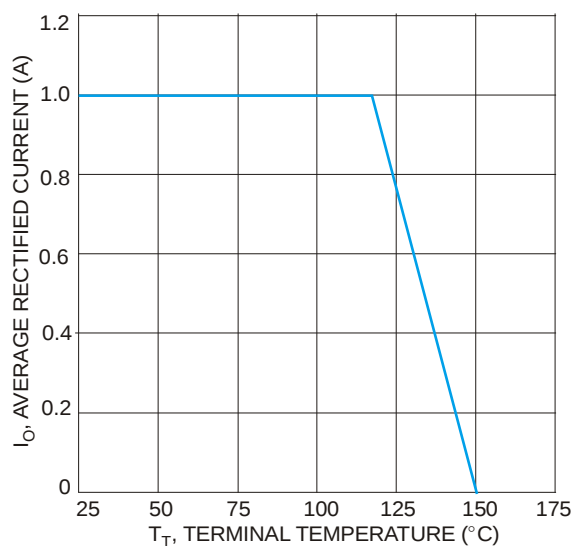


Fig. 1 Forward Current Derating Curve

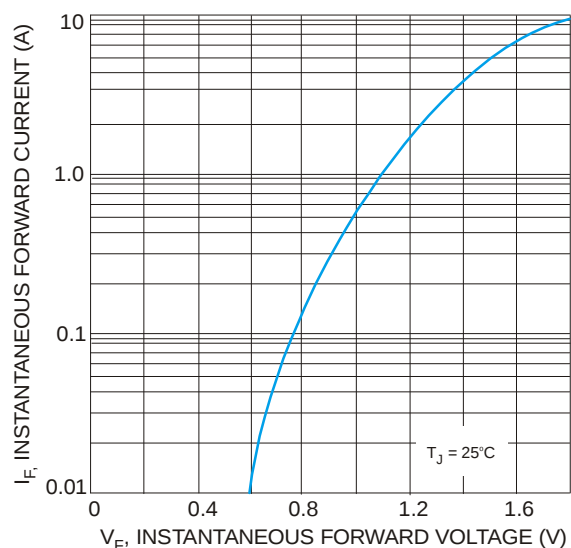


Fig. 2 Typical Forward Characteristics

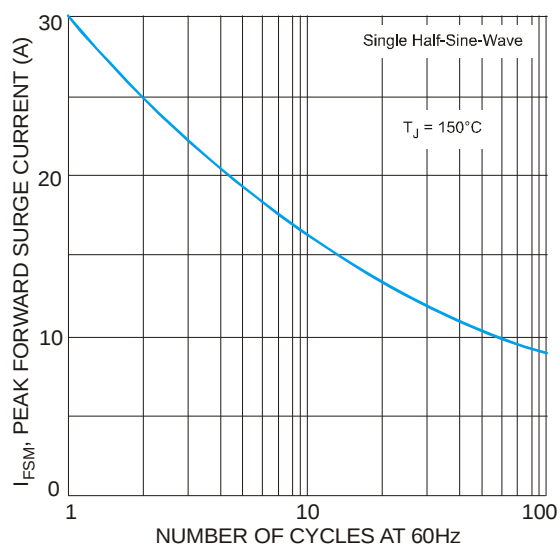


Fig. 3 Forward Surge Current Derating Curve

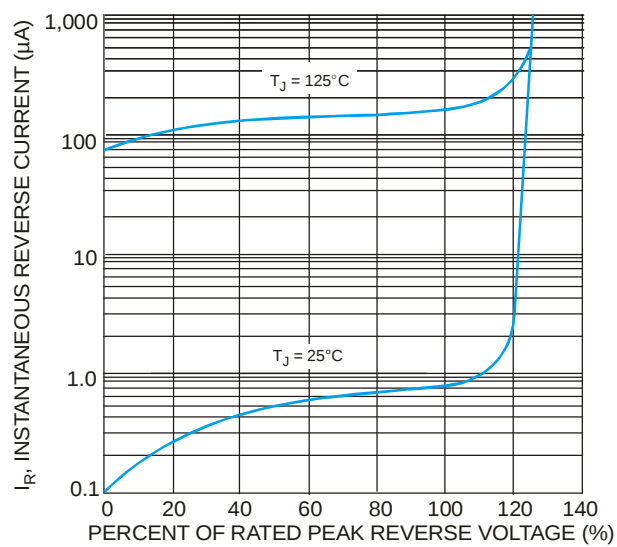
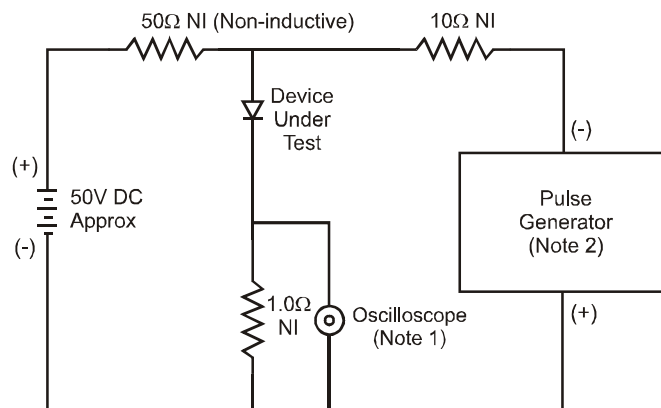
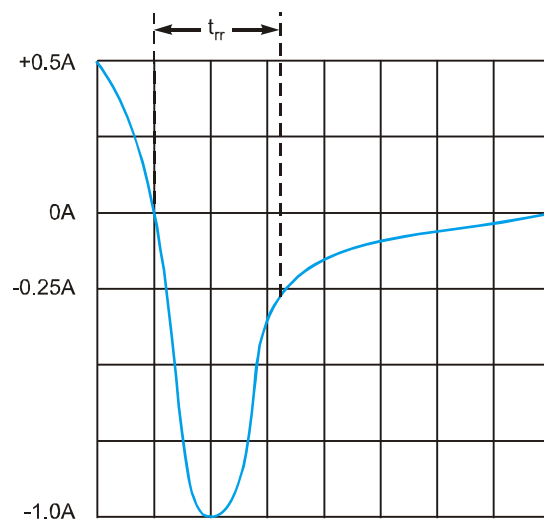


Fig. 4 Typical Reverse Characteristics



Notes:

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



Set time base for 50/100 ns/cm

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

