US1A - US1M

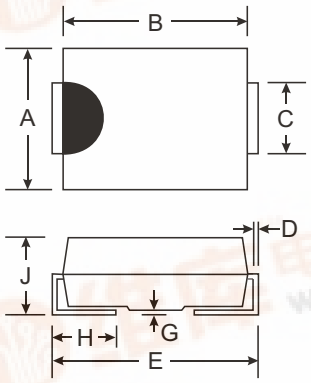
1.0A SURFACE MOUNT ULTRA-FAST RECTIFIER

Features

- Glass Passivated Die Construction
- Ultra-Fast Recovery Time for High Efficiency
- Surge Overload Rating to 30A Peak
- High Current Capability
- Ideally Suited for Automated Assembly
- **Lead Free Finish/RoHS Compliant (Note 4)**

Mechanical Data

- Case: SMA
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 e3
- Polarity: Cathode Band or Cathode Notch
- Marking: Type Number & Date Code: See Page 3
- Ordering Information: See Page 3
- Weight: 0.064 grams (approximate)



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	0.10	0.20
H	0.76	1.52
J	2.01	2.62
All Dimensions in mm		

Maximum Ratings and Electrical Characteristics 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	US1A	US1B	US1D	US1G	US1J	US1K	US1M	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	1000	V
RMS Reverse Voltage	$V_{R(RMS)}$	35	70	140	280	420	560	700	V
Average Rectified Output Current @ T_T = 75 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
Forward Voltage Drop @ I_F = 1.0A	V_{FM}	1.0			1.3	1.7			V
Peak Reverse Current @ T_A = 25 C at Rated DC Blocking Voltage (Note 5) @ T_A = 100 C	I_{RM}	5.0 100							A
Reverse Recovery Time (Note 2)	t_{rr}	50				75			ns
Typical Total Capacitance (Note 1)	C_T	20				10			pF
Typical Thermal Resistance, Junction to Terminal	R_{JT}	30							C/W
Operating and Storage Temperature Range	T_j, T_{STG}	-65 to +150							C

Notes:
1. Measured with I_F = 0.5A, I_R = 1.0A, I_{rr} = 0.25A. See figure 5.
2. Measured at 1.0MHz and applied reverse voltage of 4.0V DC.
3. Unit mounted on PC board with 5.0 mm^2 (0.013 mm thick) copper pad as heat sink.
4. RoHS revision 13.2.2003. Glass and high temperature solder exemptions applied, see *EU Directive Annex Notes 5 and 7.*
5. Short duration pulse test used to minimize self-heating effect.

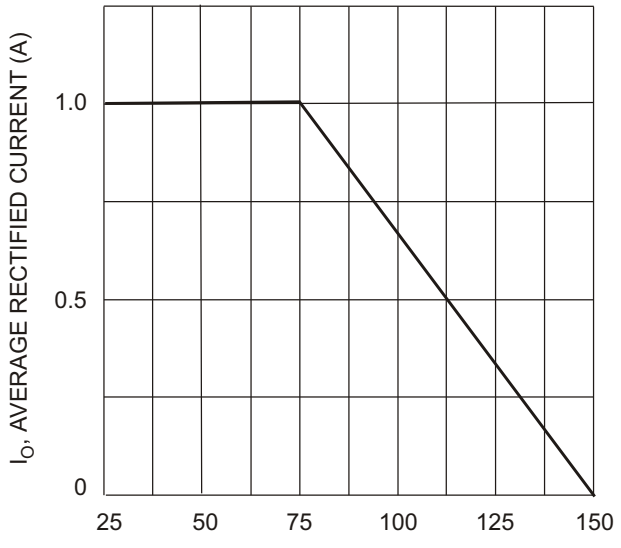


Fig. 1 Forward Current Derating Curve

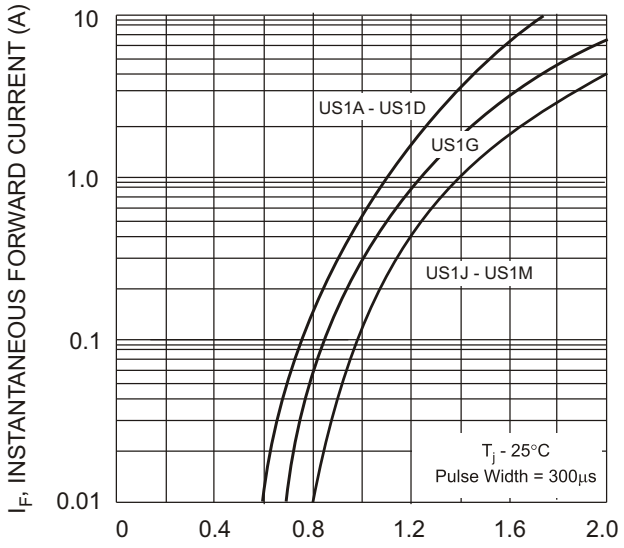


Fig. 2 Typical Forward Characteristics

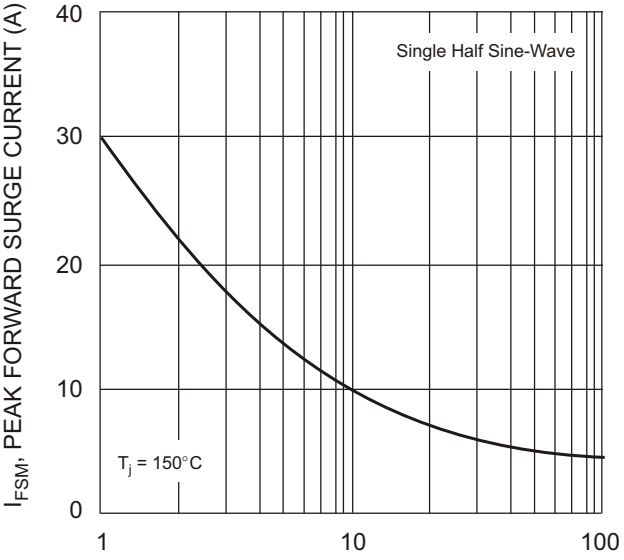


Fig. 3 Forward Surge Current Derating Curve

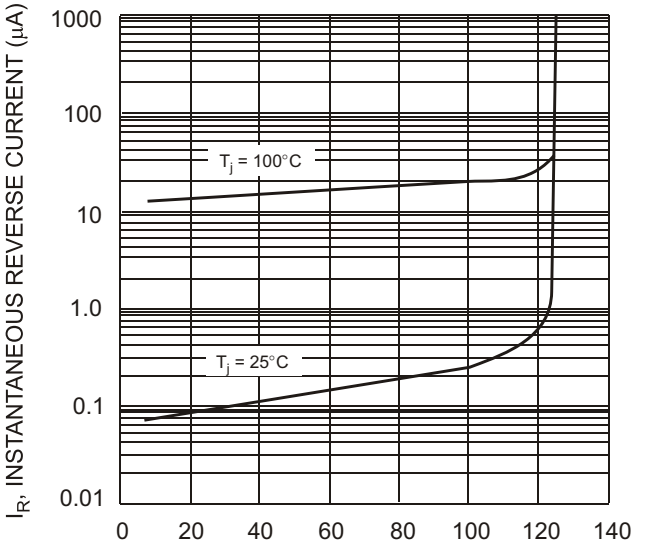
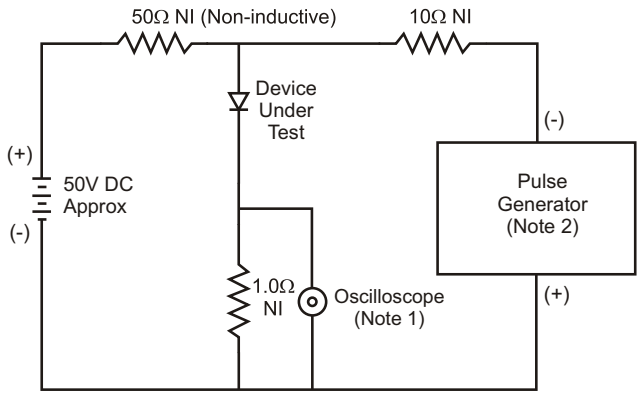


Fig. 4 Typical Reverse Characteristics



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

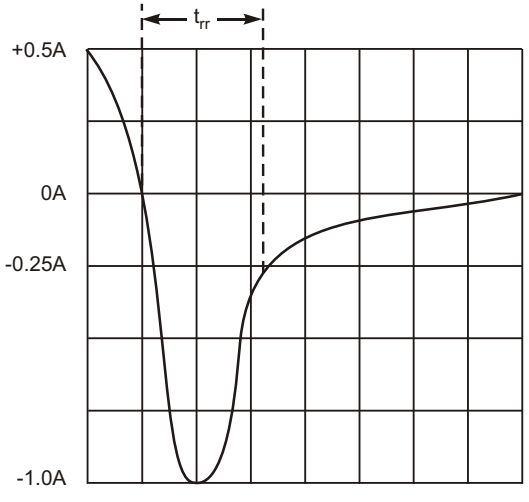


Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

Ordering Information (Note 6)

Device*	Packaging	Shipping
US1x-13-F	SMA	5000/Tape & Reel

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

Marking Information

US1X = Product type marking code, ex. US1A
= Manufacturers' code marking
YWW = Date code marking
Y = Last digit of year ex: 2 for 2002
WW = Week code 01 to 52