



US1A - US1M

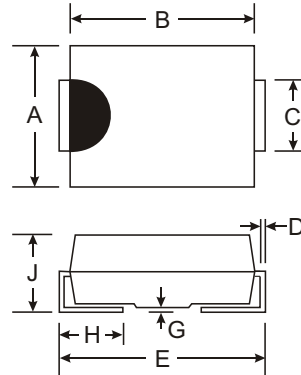
1.0A SURFACE MOUNT ULTRA-FAST RECTIFIER

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 $T_A = 25^\circ\text{C}$ 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 @ $T_T = 75\text{ C}$	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 @ $T_A = 25\text{ C}$ at Rated DC Blocking Voltage (Note 5) @ $T_A = 100\text{ C}$	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 $I_F = 0.5\text{A}$, $I_R = 1.0\text{A}$, $I_{rr} = 0.25\text{A}$. 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 mm² (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.

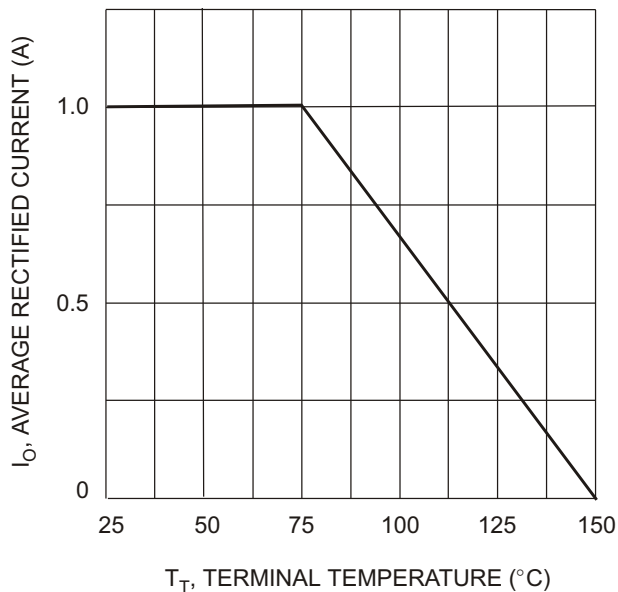


Fig. 1 Forward Current Derating Curve

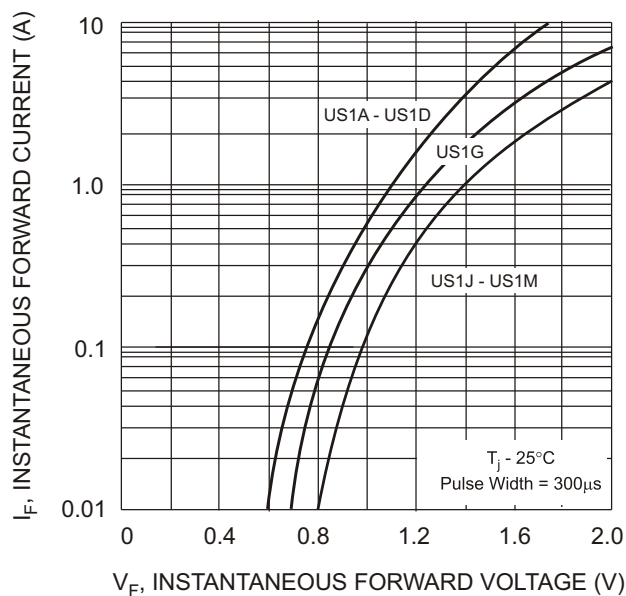


Fig. 2 Typical Forward Characteristics

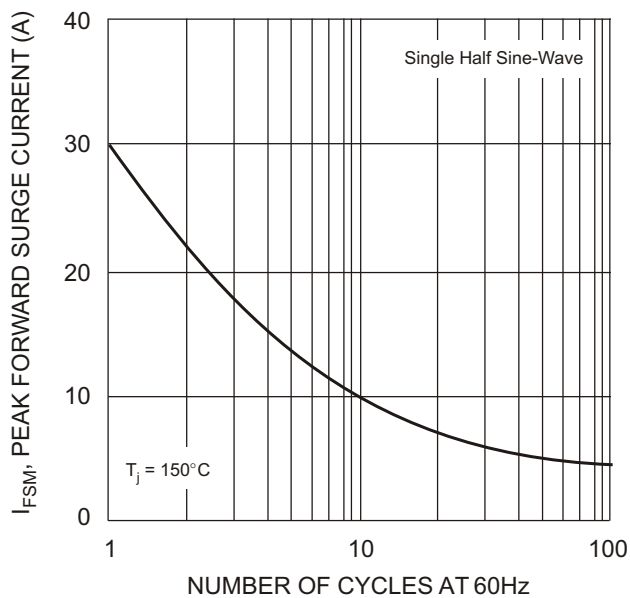


Fig. 3 Forward Surge Current Derating Curve

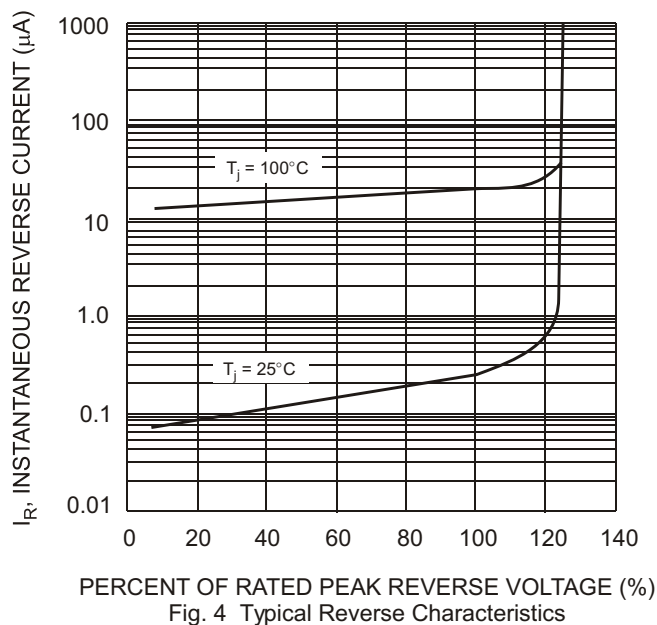
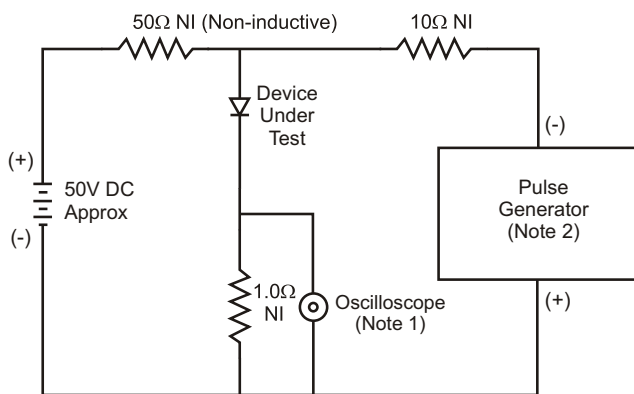
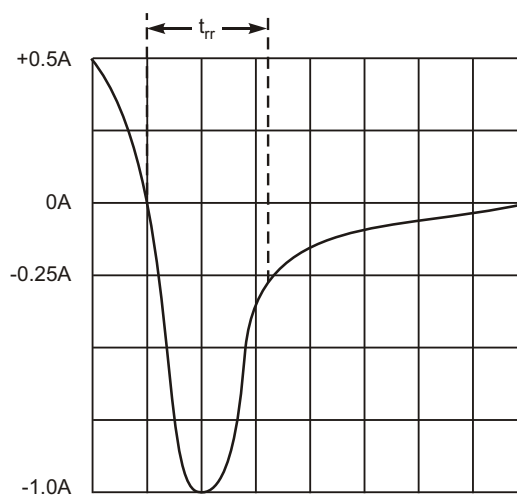


Fig. 4 Typical Reverse Characteristics



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



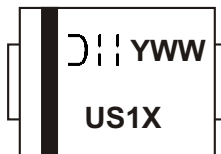
Set time base for 50/100 ns/cm

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
D11 = Manufacturers' code marking
YWW = Date code marking
Y = Last digit of year ex: 2 for 2002
WW = Week code 01 to 52

IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on our website, harmless against all damages.

LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.