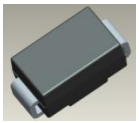
1.0A SURFACE MOUNT SUPER-FAST RECTIFIER

Features

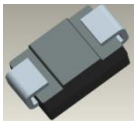
- Glass Passivated Die Construction
- Super-Fast Recovery Time For High Efficiency
- Surge Overload Rating to 40A Peak
- Ideally Suited for Automated Assembly
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

Mechanical Data

- Case: SMB
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solder Plated Terminal - Solderable per MIL-STD-202, Method 208 e3
- Lead Free Plating (Matte Tin Finish).
- Polarity: Cathode Band or Cathode Notch
- Marking Information: As Marked on Body
- Weight: 0.093 grams (Approximate)



Top View



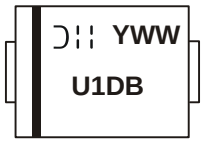
Bottom View

Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
MURS120 -13-F	Commercial	SMB	3000/Tape & Reel

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 packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



U1DB = Product Type Marking Code
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 7 for 2017)
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 capacitive load, derate current by 20%.

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage (Note 7) @ I_R = 5μA	V_{RRM} V_{RWM} V_R	200	V
RMS Reverse Voltage	$V_{R(RMS)}$	141	V
Average Rectified Output Current @ T_T = +135°C	I_O	1.0	A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	40	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Total Capacitance (Note 6)	C_T	27	pF
Typical Thermal Resistance, Junction to Terminal (Note 5)	$R_{\theta JT}$	15	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

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

Characteristic		Symbol	Value	Unit
Forward Voltage	@ I_F = 1.0A, T_J = +25°C @ I_F = 1.0A, T_J = +150°C	V_{FM}	0.875 0.710	V
Peak Reverse Current at Rated DC Blocking Voltage (Note 9)	@ T_A = +25°C @ T_A = +150°C	I_{RM}	2.0 50	μA
Reverse Recovery Time (Note 7)		t_{RR}	25	ns
Forward Recovery Time (Note 8)		t_{RR}	25	ns

Notes:
5. Unit mounted on PC board with 5.0mm^2 (0.013mm thick) copper pads as heat sink.
6. Measured at 1.0MHz and applied reverse voltage of 4V DC.
7. Measured with I_F = 0.5A, I_R = 1.0A, I_{RR} = 0.25A. See Figure 5.
8. Measured with I_F = 1.0A, di/dt = 100A/μs, Duty Cycle ≤ 2.0%.
9. Short duration pulse test used to minimize self-heating effect.

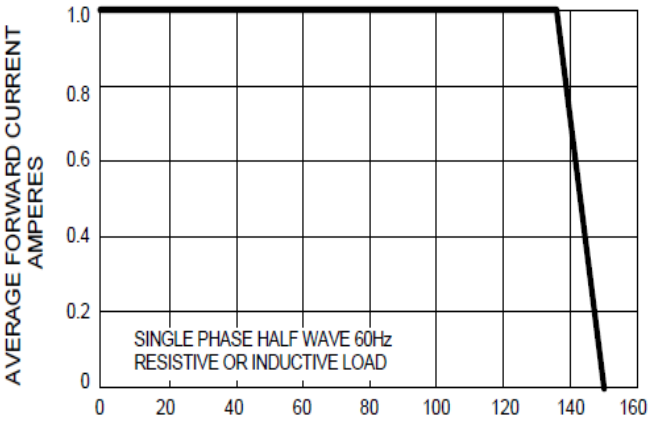


Fig.1 Forward Current Derating Curve

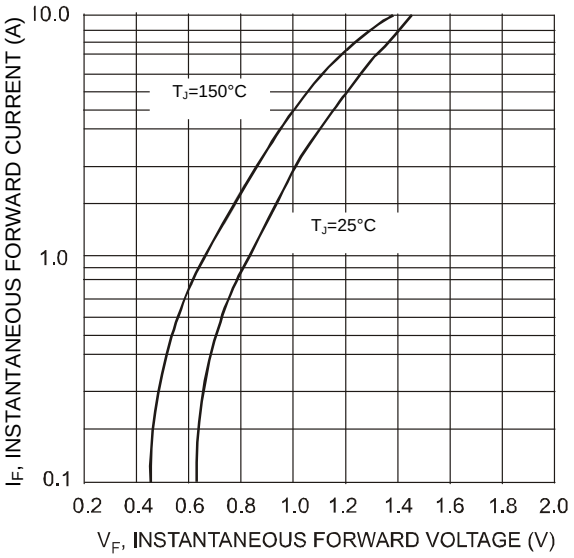


Fig. 2 Typical Forward Characteristics

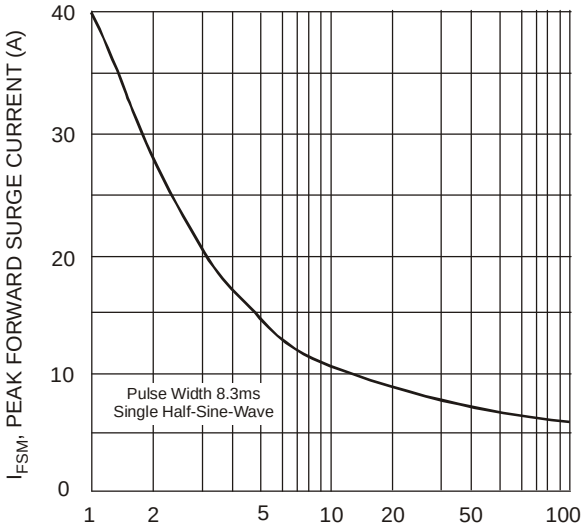


Fig. 3 Surge Current Derating Curve

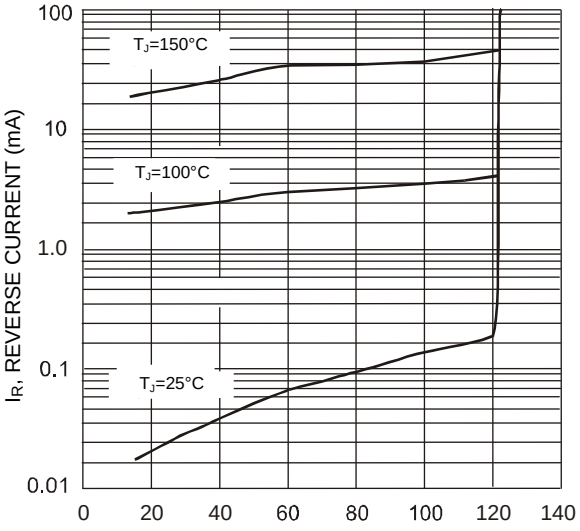
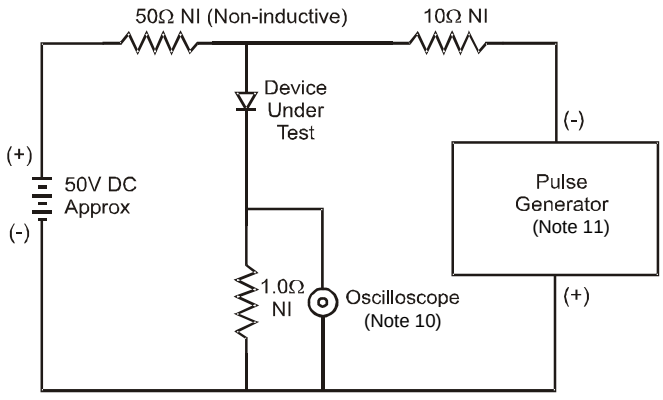
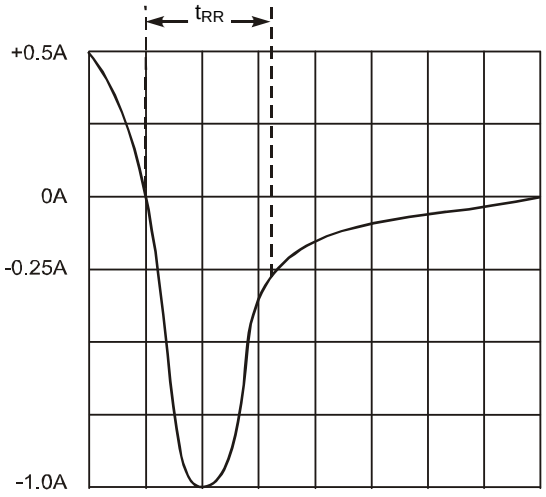


Fig. 4 Typical Reverse Characteristics



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



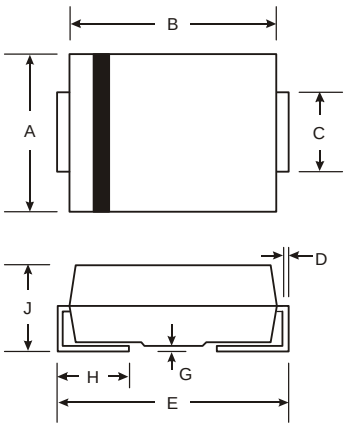
Set Time Base for 50/100 ns/cm

Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

Package Outline Dimensions

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

SMB

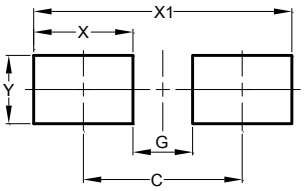


SMB		
Dim	**Min**	**Max**
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

Suggested Pad Layout

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

SMB



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

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