# MURS120

## 1.0A SURFACE MOUNT SUPER-FAST RECTIFIER

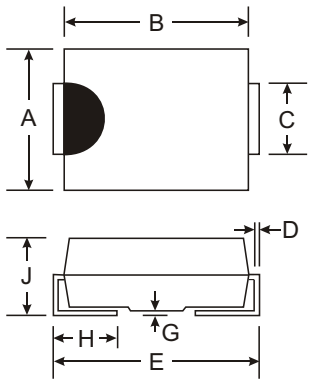
NEW PRODUCT

## Features

- Glass Passivated Die Construction
- Super-Fast Recovery Time For High Efficiency
- Low Forward Voltage Drop and High Current Capability
- Surge Overload Rating to 40A Peak
- Ideally Suited for Automated Assembly
- **Available in Lead Free Finish/RoHS Compliant Version (Note 5)**

## Mechanical Data

- Case: SMB
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solder Plated Terminal - Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish). Please see Ordering Information, Note 7, on Page 3
- Marking: U1DB
- Polarity: Cathode Band or Cathode Notch
- Ordering Information: See Page 3
- Weight: 0.093 grams (approximate)




| 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** | 0.10 | 0.20 |
| **H** | 0.76 | 1.52 |
| **J** | 2.00 | 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 | MURS120 | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage @ $I_R$ = 5uA | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 200 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 141 | V |
| Average Rectified Output Current @ $T_T$ = 155°C<br>@ $T_T$ = 145°C | $I_O$ | 1.0<br>2.0 | A |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single half sine-wave Superimposed on Rated Load (JEDEC Method) | $I_{FSM}$ | 40 | A |
| Forward Voltage @ $I_F$ = 1.0A, $T_J$ = 25°C<br>@ $I_F$ = 1.0A, $T_J$ = 150°C | $V_{FM}$ | 0.875<br>0.710 | V |
| Peak Reverse Current @ $T_A$ = 25°C<br>at Rated DC Blocking Voltage @ $T_A$ = 150°C | $I_{RM}$ | 2.0<br>50 | μA |
| Reverse Recovery Time (Note 3) | $t_{rr}$ | 25 | ns |
| Forward Recovery Time (Note 4) | $t_{fr}$ | 25 | ns |
| Typical Junction Capacitance (Note 2) | $C_j$ | 60 | pF |
| Typical Thermal Resistance, Junction to Terminal (Note 1) | $R_{\theta JT}$ | 13 | K/W |
| Operating and Storage Temperature Range | $T_j$, $T_{STG}$ | -65 to +175 | °C |

Notes:
1. Unit mounted on PC board with 5.0 $mm^2$ (0.013 mm thick) copper pads as heat sink.
2. Measured at 1.0MHz and applied reverse voltage of 0V DC.
3. Measured with $I_F$ = 0.5A, $I_R$ = 1.0A, $I_{rr}$ = 0.25A. See Figure 5.
4. Measured with $I_F$ = 1.0A, di/dt = 100A/μs, Duty Cycle ≤ 2.0%.
5. RoHS revision 13.2.2003. Glass and High Temperature Solder Exemptions Applied, see *EU Directive Annex Notes 5 and 7.*

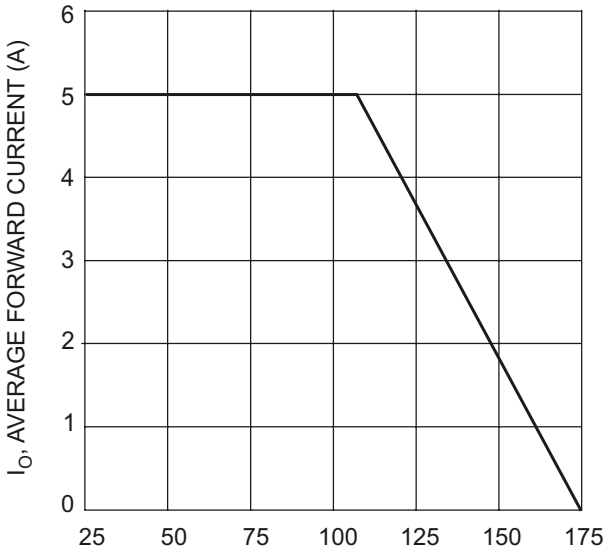



Fig. 1 Forward Current Derating Curve

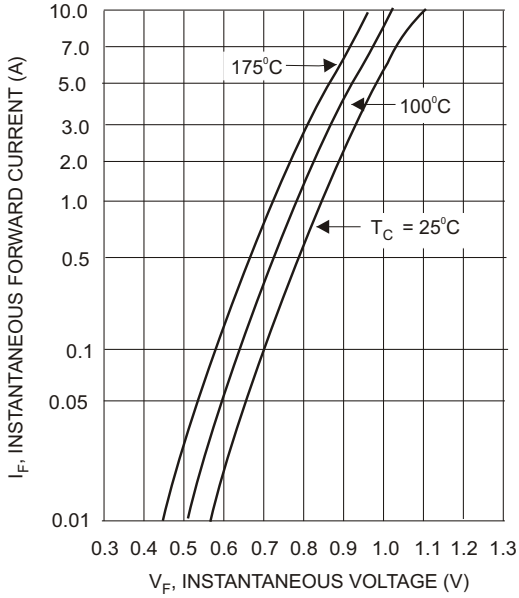



Fig. 2 Typical Forward Current

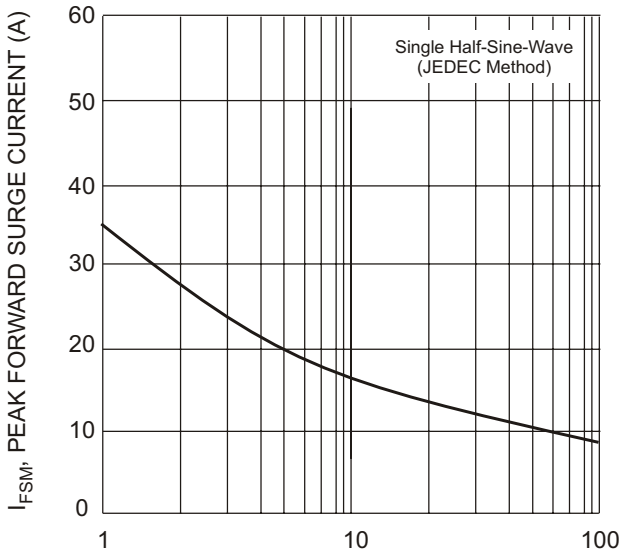



Fig. 3 Surge Current Derating Curve

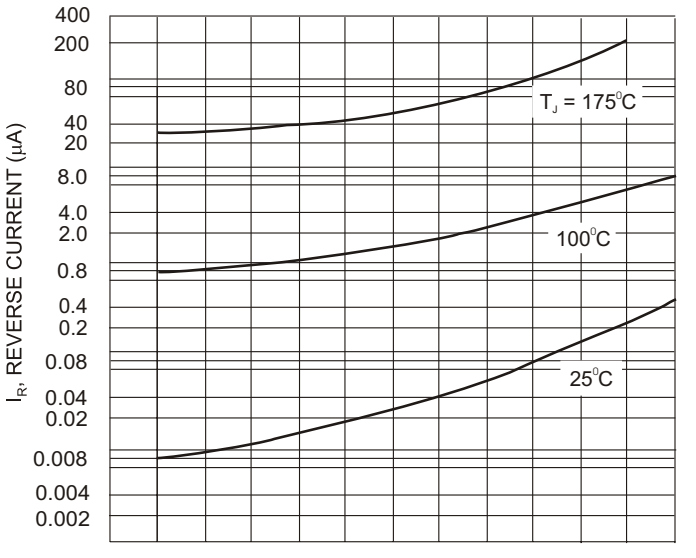
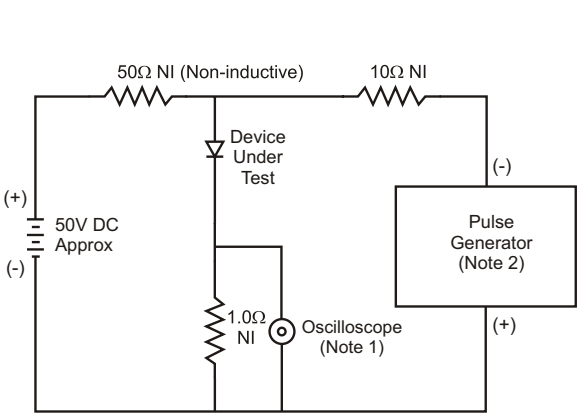



Fig. 4 Typical Reverse Current




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

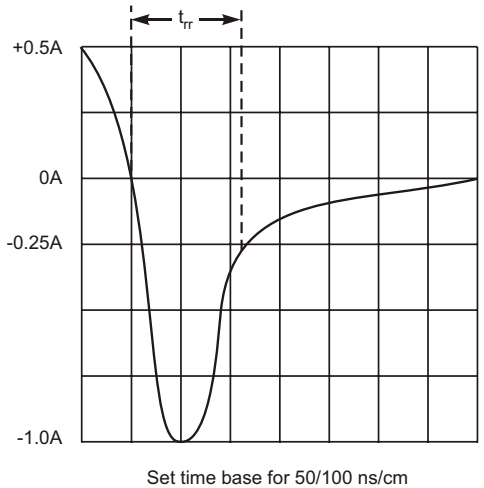



Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

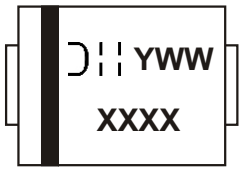
NEW PRODUCT

## Ordering Information (Note 6)

| Device | Packaging | Shipping |
|---|---|---|
| MURS120-13 | SMB | 5000/Tape & Reel |

Notes: 6. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.
7. For Lead Free Finish/RoHS Compliant version part number, please add "-F" suffix to the part number above. Example: MURS120-13-F.

## Marking Information




XXXX = Product type marking code (See Page 1)
= Manufacturers' code marking
YWW = Date code marking
Y = Last digit of year ex: 2 for 2002
WW = Week code 01 to 52