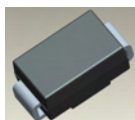


**1.0A SURFACE MOUNT SUPER-FAST RECTIFIER**
**Features**

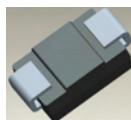
- Glass Passivated Die Construction
- Super-Fast Recovery Time For High Efficiency
- Surge Overload Rating to 40A Peak
- Ideally Suited for Automated Assembly
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**

**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 
- Lead Free Plating (Matte Tin Finish).
- Polarity: Cathode Band or Cathode Notch
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.093 grams (approximate)



Top View



Bottom View

**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitance load, derate current by 20%.

| Characteristic                                                                                      | Symbol              | Value | Unit |
|-----------------------------------------------------------------------------------------------------|---------------------|-------|------|
| Peak Repetitive Reverse Voltage                                                                     | V <sub>RRM</sub>    | 200   | V    |
| Working Peak Reverse Voltage                                                                        | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage (Note 7) @ I <sub>R</sub> = 5uA                                                 | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage                                                                                 | V <sub>R(RMS)</sub> | 141   | V    |
| Average Rectified Output Current @ T <sub>T</sub> = 135°C                                           | I <sub>O</sub>      | 1.0   | A    |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | I <sub>FSM</sub>    | 40    | A    |

**Thermal Characteristics**

| Characteristic                                            | Symbol                            | Value       | Unit |
|-----------------------------------------------------------|-----------------------------------|-------------|------|
| Typical Total Capacitance (Note 2)                        | C <sub>T</sub>                    | 27          | pF   |
| Typical Thermal Resistance, Junction to Terminal (Note 1) | R <sub>θJT</sub>                  | 15          | °C/W |
| Operating and Storage Temperature Range                   | T <sub>J</sub> , T <sub>STG</sub> | -55 to +175 | °C   |

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

| Characteristic                                                                                                    | Symbol          | Value          | Unit |
|-------------------------------------------------------------------------------------------------------------------|-----------------|----------------|------|
| Forward Voltage @ I <sub>F</sub> = 1.0A, T <sub>J</sub> = 25°C<br>@ I <sub>F</sub> = 1.0A, T <sub>J</sub> = 150°C | V <sub>FM</sub> | 0.875<br>0.710 | V    |
| Peak Reverse Current @ T <sub>A</sub> = 25°C<br>at Rated DC Blocking Voltage @ T <sub>A</sub> = 150°C             | I <sub>RM</sub> | 2.0<br>50      | μA   |
| Reverse Recovery Time (Note 3)                                                                                    | t <sub>rr</sub> | 25             | ns   |
| Forward Recovery Time (Note 4)                                                                                    | t <sub>fr</sub> | 25             | ns   |

- Notes:
1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied, see EU Directive 2002/95/EC Annex Notes.
  2. Product manufactured with Data Code 0924 (week 24, 2009) and newer are built with Green Molding Compound.
  3. Unit mounted on PC board with 5.0 mm<sup>2</sup> (0.013 mm thick) copper pads as heat sink.
  4. Measured at 1.0MHz and applied reverse voltage of 4V DC.
  5. Measured with I<sub>F</sub> = 0.5A, I<sub>R</sub> = 1.0A, I<sub>rr</sub> = 0.25A. See Figure 5.
  6. Measured with I<sub>F</sub> = 1.0A, di/dt = 100A/μs, Duty Cycle ≤ 2.0%.
  7. Short duration pulse test used to minimize self-heating effect.

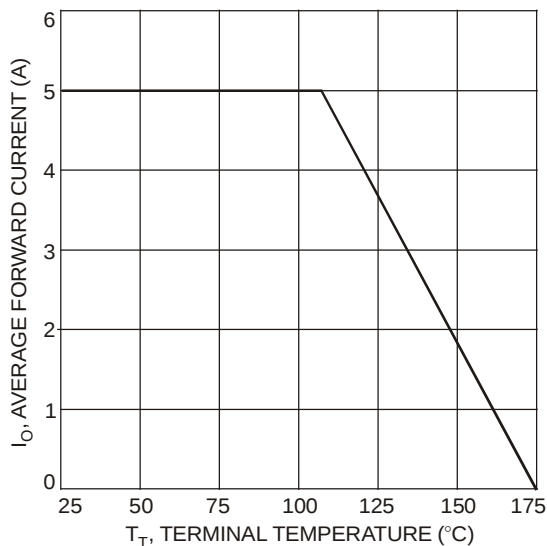


Fig. 1 Forward Current Derating Curve

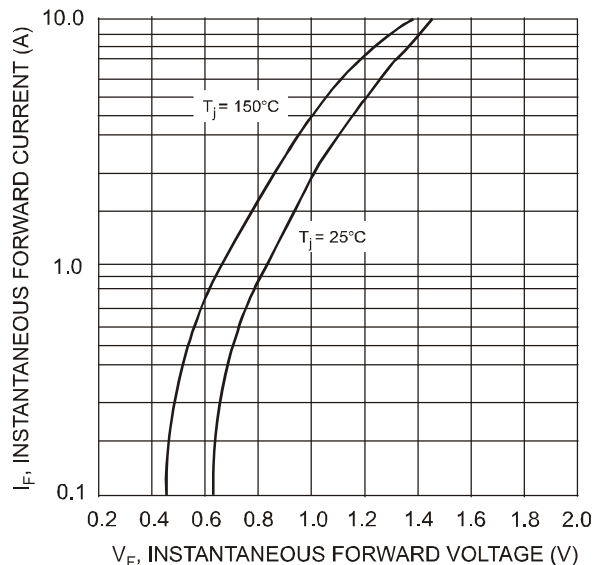


Fig. 2 Typical Forward Characteristics

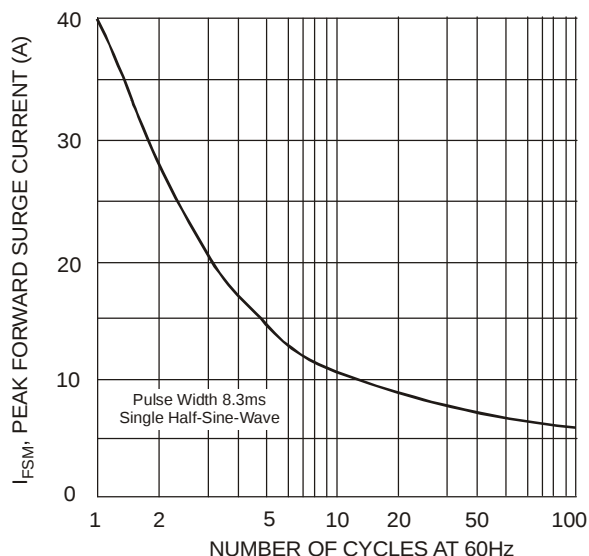


Fig. 3 Surge Current Derating Curve

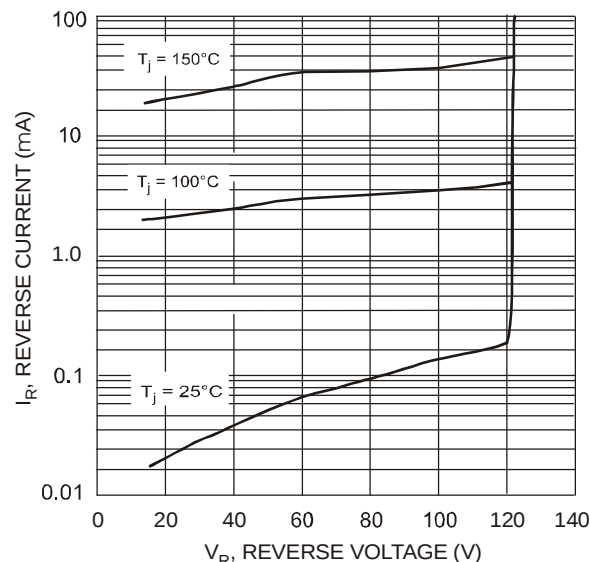
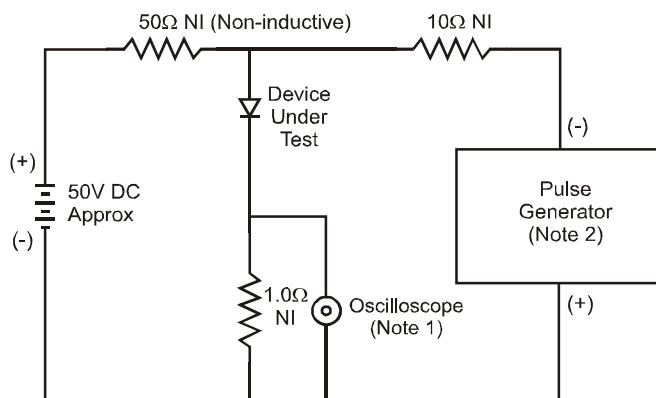


Fig. 4 Typical Reverse Characteristics



Notes:

1. Rise Time = 7.0ns max. Input Impedance = 1.0M $\Omega$ , 22pF.
2. Rise Time = 10ns max. Input Impedance = 50 $\Omega$ .

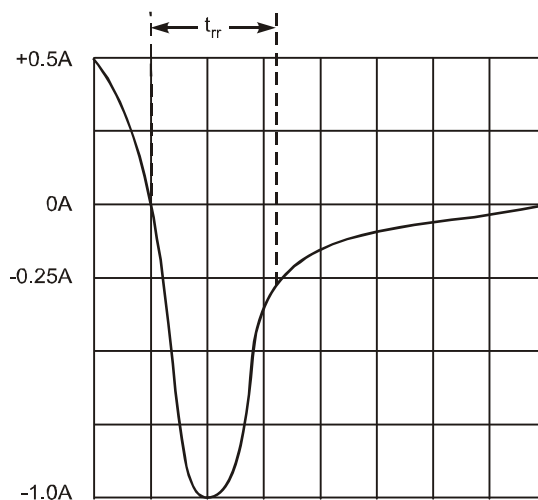


Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

# Ordering Information (Note 7)

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

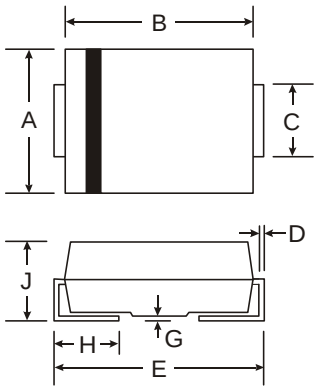
Notes: 7. For packaging details, go to our website at <http://www.diodes.com>.

# Marking Information



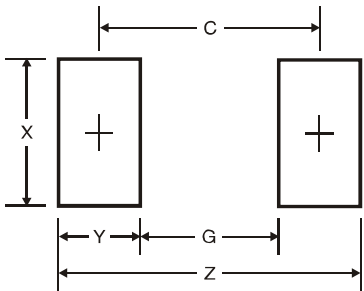
U1DB = Product type marking code  
 YWW = Manufacturers' code marking  
 YWW = Date code marking  
 Y = Last digit of year (ex: 2 for 2002)  
 WW = Week code (01 - 53)

# Package Outline Dimensions



| 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



| SMB Dimensions | Value (in mm) |
|----------------|---------------|
| Z              | 6.7           |
| G              | 1.8           |
| X              | 2.3           |
| Y              | 2.5           |
| C              | 4.3           |

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