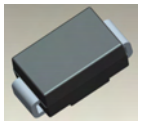
# 3.0A SURFACE MOUNT SUPER-FAST RECTIFIER

## Features

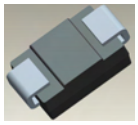
- Glass Passivated Die Construction
- Super-Fast Recovery Time For High Efficiency
- Surge Overload Rating to 75A Peak
- Ideally Suited for Automated Assembly
- **Lead Free Finish/RoHS Compliant (Note 1)**
- **Green Molding Compound (No Halogen and Antimony) (Note 2)**

## Mechanical Data

- Case: SMC
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 e3
- Polarity: Cathode Band or Cathode Notch
- Weight: 0.21 grams (approximate)



Top View



Bottom View

## Ordering Information (Note 3)

| Part Number | Case | Packaging |
|---|---|---|
| MURS320-13-F | SMC | 3000/Tape & Reel, 13-inch |

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

## Marking Information


U3D = Product type marking code
= Manufacturers' code marking
YWW = Date code marking
Y = Last digit of year (ex: 6 for 2006)
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 capacitance load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage (Note 4) | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 200 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 140 | V |
| Average Rectified Output Current @ $T_L$ = 140°C | $I_O$ | 3.0 | A |
| Non-Repetitive Peak Forward Surge Current 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 75 | A |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Total Capacitance (Note 5) | $C_T$ | 45 | pF |
| Typical Thermal Resistance, Junction to Lead (Note 6) | $R_{\theta JL}$ | 11 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -65 to +175 | °C |

## Electrical Characteristics @$T_A$ = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Forward Voltage @ $I_F$ = 3.0A, $T_J$ = 25°C<br>@ $I_F$ = 3.0A, $T_J$ = 150°C | $V_{FM}$ | 0.875<br>0.71 | V |
| Peak Reverse Current @ $T_J$ = 25°C<br>at Rated DC Blocking Voltage (Note 4) @ $T_J$ = 150°C | $I_{RM}$ | 5.0<br>100 | μA |
| Reverse Recovery Time (Note 7) | $t_{rr}$ | 25 | ns |
| Maximum Forward Recovery Time (Note 8) | $t_{fr}$ | 25 | ns |

Notes:
4. Short duration pulse test used to minimize self-heating effect.
5. Measured at 1.0MHz and applied reverse voltage of 0V DC.
6. Unit mounted on PC board with 5.0 $mm^2$ (0.013 mm thick) copper pads as heat sink.
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, Recovery to 1.0V.

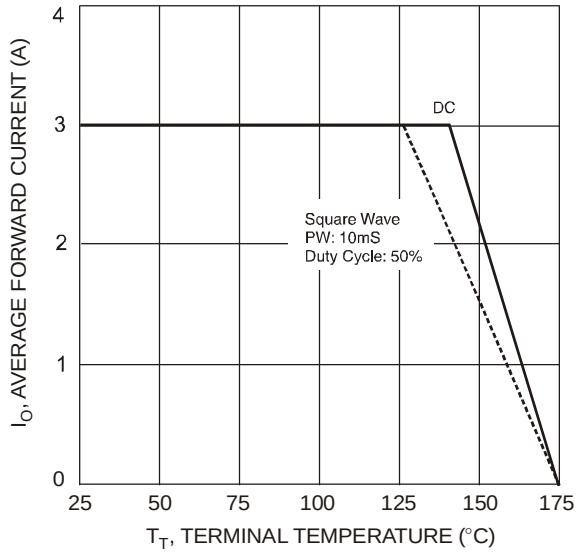


Fig. 1 Forward Current Derating Curve

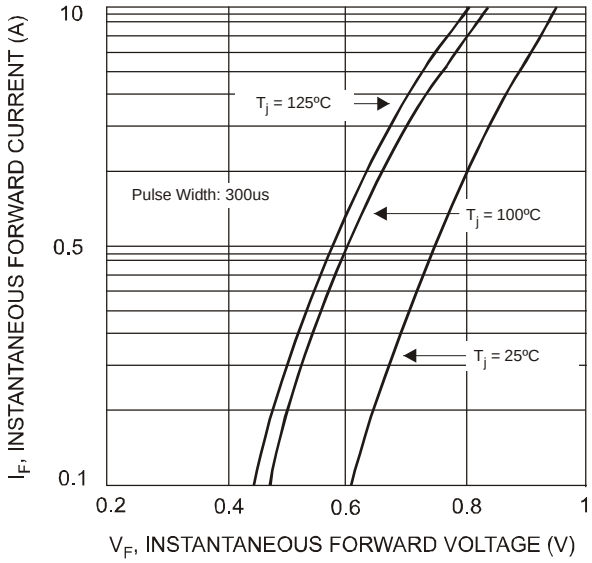


Fig. 2 Typical Forward Characteristics

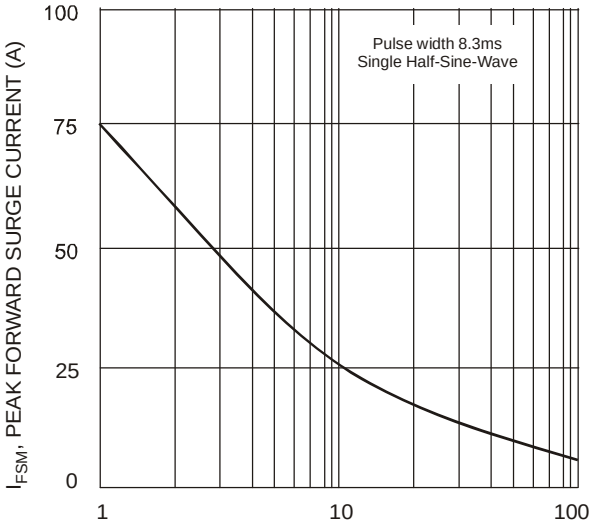



Fig. 3 Surge Current Derating Curve

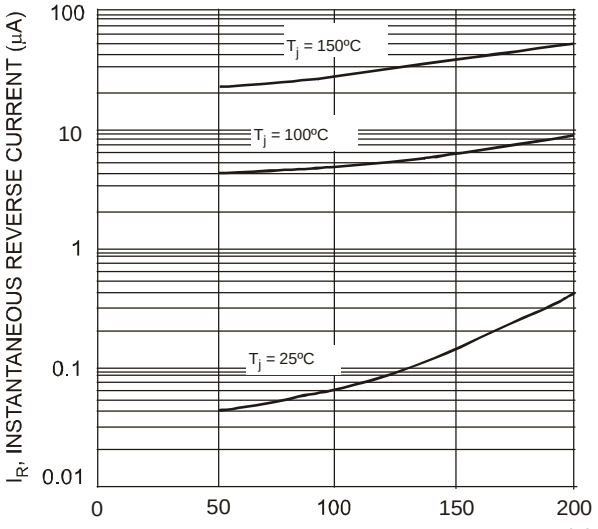
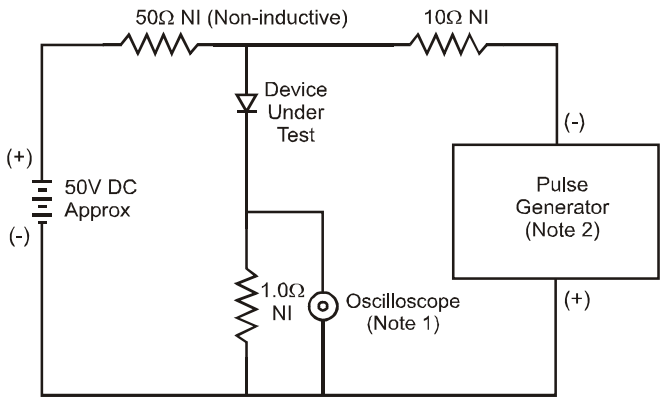



Fig. 4 Typical Reverse Characteristics




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

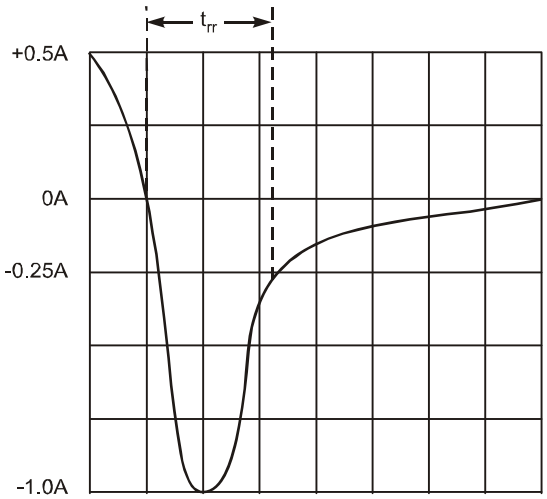



Fig. 5 Reverse Recovery Time Characteristic and Test Circuit

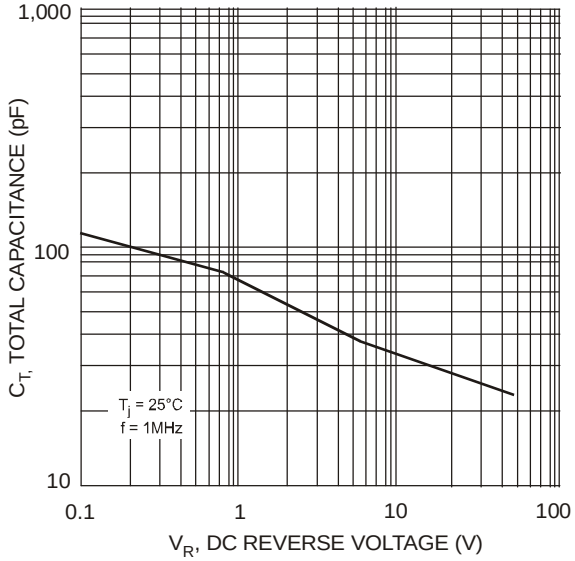
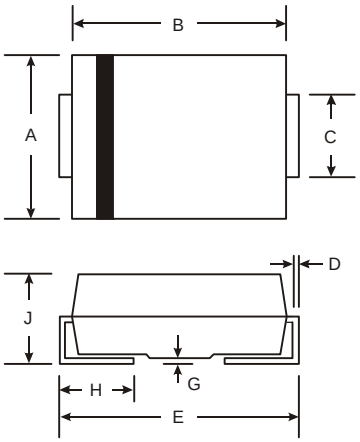


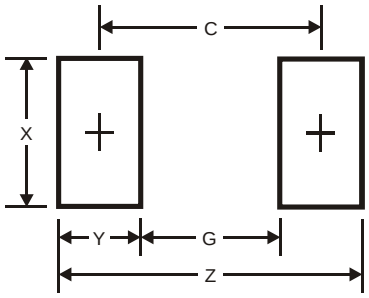

Fig. 6 Typical Total Capacitance

## Package Outline Dimensions




| SMC | | |
|---|---|---|
| **Dim** | **Min** | **Max** |
| **A** | 5.59 | 6.22 |
| **B** | 6.60 | 7.11 |
| **C** | 2.75 | 3.18 |
| **D** | 0.15 | 0.31 |
| **E** | 7.75 | 8.13 |
| **G** | 0.10 | 0.20 |
| **H** | 0.76 | 1.52 |
| **J** | 2.00 | 2.50 |
| **All Dimensions in mm** | | |

## Suggested Pad Layout




| Dimensions | Value (in mm) |
|---|---|
| **Z** | 9.3 |
| **G** | 4.4 |
| **X** | 3.3 |
| **Y** | 2.5 |
| **C** | 6.8 |

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