

MURA115T3, MURA120T3

Preferred Devices

Surface Mount Ultrafast Power Rectifiers

Ideally suited for high voltage, high frequency rectification, or as free wheeling and protection diodes in surface mount applications where compact size and weight are critical to the system.

Features

- Small Compact Surface Mountable Package with J-Bend Leads
- Rectangular Package for Automated Handling
- High Temperature Glass Passivated Junction
- Low Forward Voltage Drop (0.71 V Max @ 1.0 A, $T_J = 150^\circ\text{C}$)
- Pb-Free Packages are Available

Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 70 mg (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead and Mounting Surface Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Polarity Band Indicates Cathode Lead
- ESD Protection: Human Body Model > 4000 V (Class 3)
Machine Model > 400 V (Class C)

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|--|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 150 200 | V |
| Average Rectified Forward Current @ $T_L = 155^\circ\text{C}$ @ $T_L = 135^\circ\text{C}$ | $I_{F(AV)}$ | 1.0 2.0 | A |
| Non-Repetitive Peak Surge Current (Surge Applied at Rated Load Conditions Halfwave, Single Phase, 60 Hz) | I_{FSM} | 40 | A |
| Operating Junction Temperature Range | T_J | -65 to +175 | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|--------------------------|-----|--------------------|
| Thermal Resistance, Junction-to-Lead ($T_L = 25^\circ\text{C}$) (Note 1) | Ψ_{iJL} (Note 2) | 24 | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction-to-Ambient (Note 1) | $R_{\theta JA}$ | 216 | |

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Rating applies when surface mounted on the minimum pad size recommended, PC Board FR-4.
2. In compliance with JEDEC 51, these values (historically represented by $R_{\theta JL}$) are now referenced as Ψ_{iJL} .



ON Semiconductor®

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ULTRAFAST RECTIFIERS 1 AMPERE, 100–200 VOLTS



SMA
CASE 403D
PLASTIC

MARKING DIAGRAM



U4x = Device Code
x = C for MURA115T3
= D for MURA120T3
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb-Free Package

ORDERING INFORMATION

| Device | Package | Shipping† |
|------------|------------------|------------------|
| MURA115T3 | SMA | 5000/Tape & Reel |
| MURA115T3G | SMA (Pb-Free) | 5000/Tape & Reel |
| MURA120T3 | SMA | 5000/Tape & Reel |
| MURA120T3G | SMA (Pb-Free) | 5000/Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

Preferred devices are recommended choices for future use and best overall value.

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ELECTRICAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|----------|---------------|---------------|
| Maximum Instantaneous Forward Voltage (Note 3) ($i_F = 1.0 \text{ A}$, $T_J = 25^\circ\text{C}$) ($i_F = 1.0 \text{ A}$, $T_J = 150^\circ\text{C}$) | V_F | 0.875 0.71 | V |
| Maximum Instantaneous Reverse Current (Note 3) (Rated DC Voltage, $T_J = 25^\circ\text{C}$) (Rated DC Voltage, $T_J = 150^\circ\text{C}$) | i_R | 2.0 50 | μA |
| Maximum Reverse Recovery Time ($i_F = 1.0 \text{ A}$, $di/dt = 50 \text{ A}/\mu\text{s}$) | t_{rr} | 35 | ns |

3. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

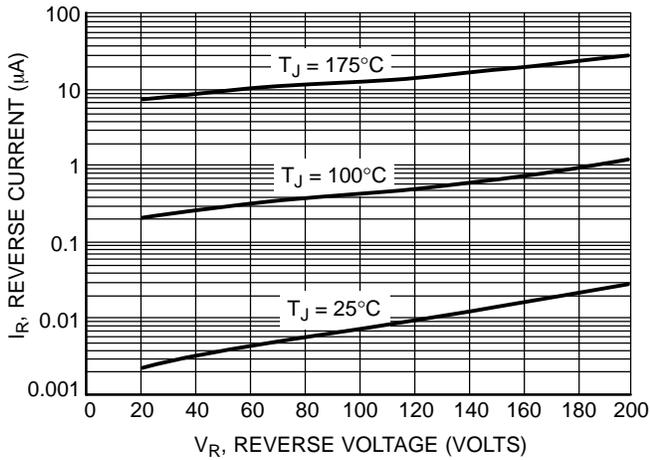


Figure 1. Typical Reverse Current

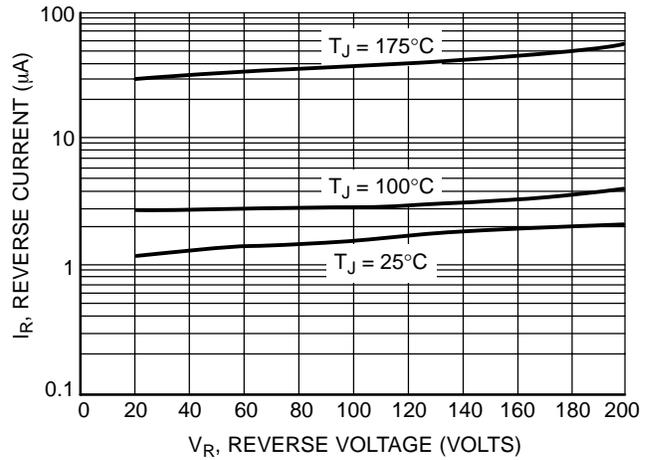


Figure 2. Maximum Reverse Current

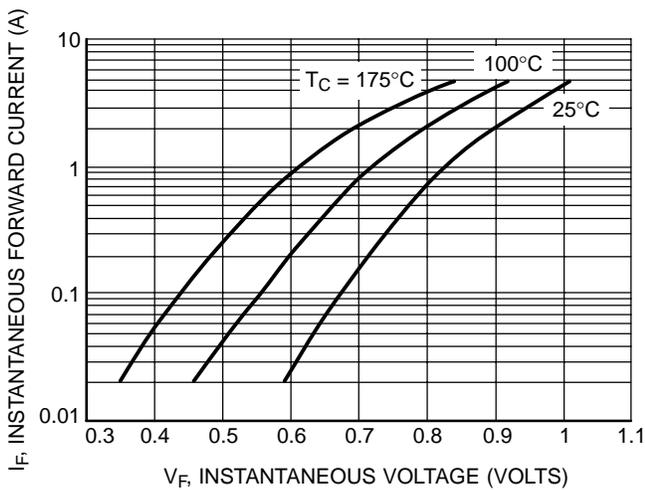


Figure 3. Typical Forward Voltage

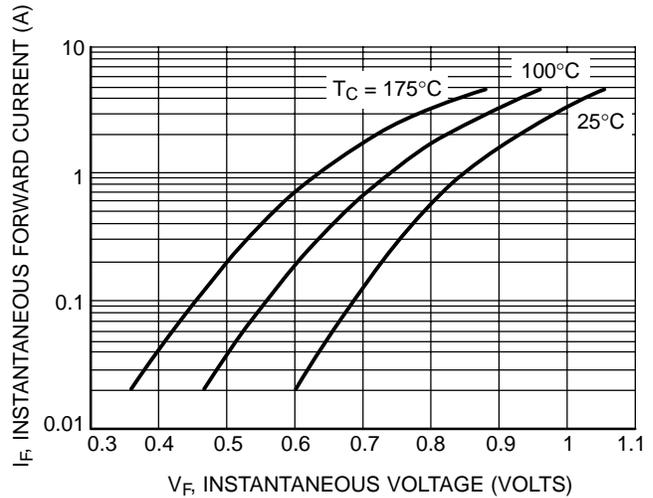


Figure 4. Maximum Forward Voltage

MURA115T3, MURA120T3

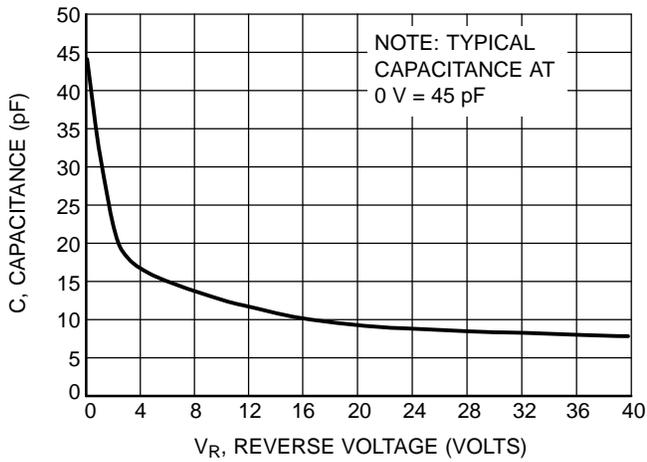


Figure 5. Typical Capacitance

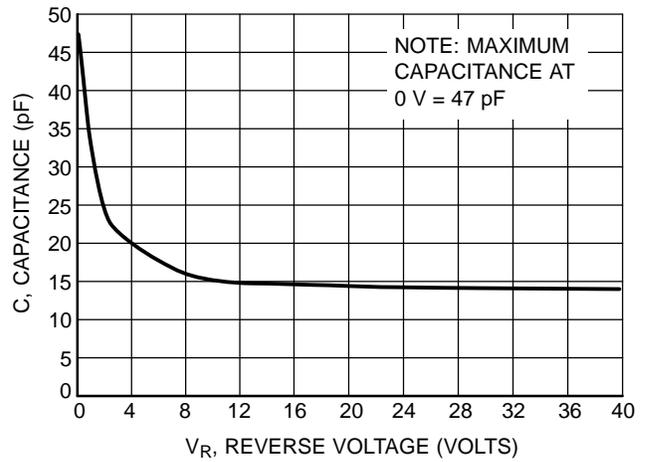


Figure 6. Maximum Capacitance

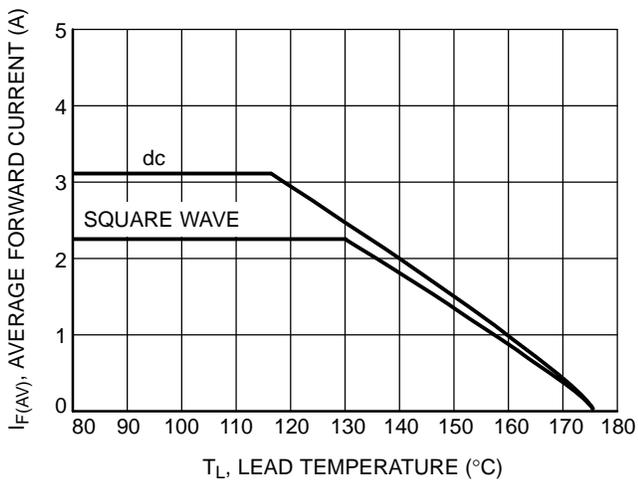


Figure 7. Current Derating, Lead

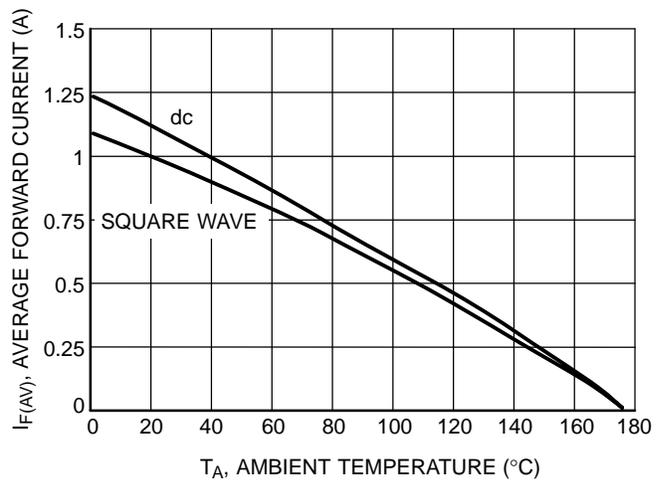


Figure 8. Current Derating, Ambient (FR-4 Board with Minimum Pad)

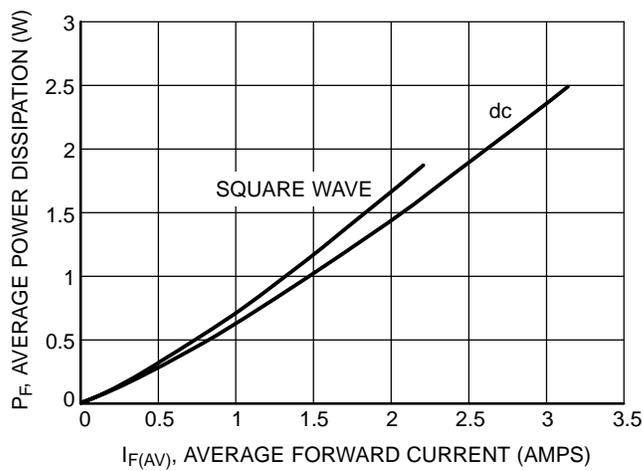
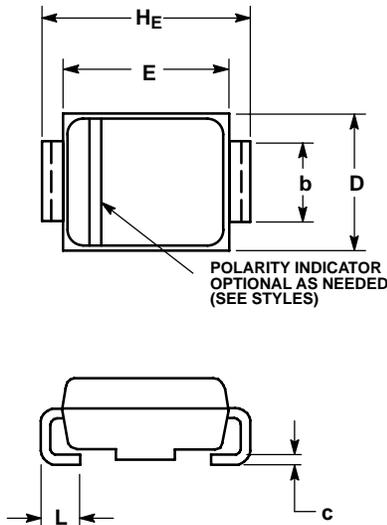


Figure 9. Power Dissipation

MURA115T3, MURA120T3

PACKAGE DIMENSIONS

SMA CASE 403D-02 ISSUE C

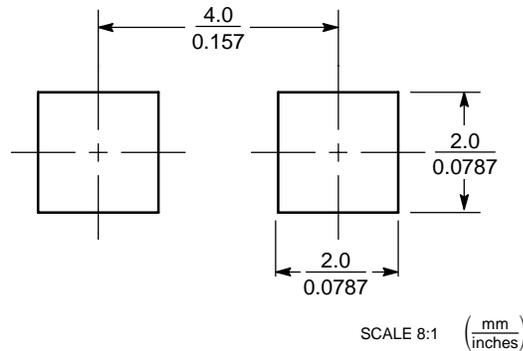


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. 403D-01 OBSOLETE, NEW STANDARD IS 403D-02.

| DIM | MILLIMETERS | | | INCHES | | |
|-----|-------------|------|------|--------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 1.91 | 2.16 | 2.41 | 0.075 | 0.085 | 0.095 |
| A1 | 0.05 | 0.10 | 0.15 | 0.002 | 0.004 | 0.006 |
| b | 1.27 | 1.45 | 1.63 | 0.050 | 0.057 | 0.064 |
| c | 0.15 | 0.28 | 0.41 | 0.006 | 0.011 | 0.016 |
| D | 2.29 | 2.60 | 2.92 | 0.090 | 0.103 | 0.115 |
| E | 4.06 | 4.32 | 4.57 | 0.160 | 0.170 | 0.180 |
| HE | 4.83 | 5.21 | 5.59 | 0.190 | 0.205 | 0.220 |
| L | 0.76 | 1.14 | 1.52 | 0.030 | 0.045 | 0.060 |

- STYLE 1:
PIN 1. CATHODE (POLARITY BAND)
2. ANODE

SOLDERING FOOTPRINT*



*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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