

MUR180E, MUR1100E

MUR1100E is a Preferred Device

SWITCHMODE™ Power Rectifiers Ultrafast “E” Series with High Reverse Energy Capability

These state-of-the-art devices are designed for use in switching power supplies, inverters and as free wheeling diodes.

Features

- 10 mJoules Avalanche Energy Guaranteed
- Excellent Protection Against Voltage Transients in Switching Inductive Load Circuits
- Ultrafast 75 Nanosecond Recovery Time
- 175°C Operating Junction Temperature
- Low Forward Voltage
- Low Leakage Current
- High Temperature Glass Passivated Junction
- Reverse Voltage to 1000 V
- These are Pb-Free Devices*

Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 0.4 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped in Plastic Bags; 1,000 per Bag
- Available Tape and Reel; 5,000 per Reel, by Adding a “RL” Suffix to the Part Number
- Polarity: Cathode Indicated by Polarity Band

MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
|---|---------------------------------|-----------------------------------|------|
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 800 1000 | V |
| Average Rectified Forward Current (Note 1) (Square Wave Mounting Method #3 Per Note 3) | $I_{F(AV)}$ | 1.0 @ $T_A = 95^\circ\text{C}$ | A |
| Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, halfwave, single phase, 60 Hz) | I_{FSM} | 35 | A |
| Operating Junction Temperature and Storage Temperature Range | T_J, T_{stg} | -65 to +175 | °C |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

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

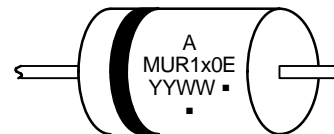


ON Semiconductor®

ULTRAFAST RECTIFIERS 1.0 AMPERES, 800–1000 VOLTS



MARKING DIAGRAM



A = Assembly Location
MUR1x0E = Device Code
x 8 or 10
Y = Year
WW = Work Week
▪ = Pb-Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

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

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THERMAL CHARACTERISTICS

| Charateristics | Symbol | Value | Unit |
|---|-----------------|------------|---------------|
| Maximum Thermal Resistance, Junction-to-Ambient | $R_{\theta JA}$ | See Note 3 | $^{\circ}C/W$ |

ELECTRICAL CHARACTERISTICS

| | | | |
|--|------------|--------------|---------|
| Maximum Instantaneous Forward Voltage (Note 2) ($I_F = 1.0$ Amp, $T_J = 150^{\circ}C$) ($I_F = 1.0$ Amp, $T_J = 25^{\circ}C$) | V_F | 1.50 1.75 | V |
| Maximum Instantaneous Reverse Current (Note 2) (Rated dc Voltage, $T_J = 100^{\circ}C$) (Rated dc Voltage, $T_J = 25^{\circ}C$) | i_R | 600 10 | μA |
| Maximum Reverse Recovery Time ($I_F = 1.0$ Amp, $di/dt = 50$ Amp/ μs) ($I_F = 0.5$ Amp, $i_R = 1.0$ Amp, $I_{REC} = 0.25$ Amp) | t_{rr} | 100 75 | ns |
| Maximum Forward Recovery Time ($I_F = 1.0$ Amp, $di/dt = 100$ Amp/ μs , Recovery to 1.0 V) | t_{fr} | 75 | ns |
| Controlled Avalanche Energy (See Test Circuit in Figure 6) | W_{AVAL} | 10 | mJ |

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

ORDERING INFORMATION

| Device | Package | Shipping [†] |
|-------------|-------------|-----------------------|
| MUR180E | Axial Lead* | 1000 Units / Bag |
| MUR180EG | Axial Lead* | |
| MUR180ERL | Axial Lead* | 5000 / Tape & Reel |
| MUR180ERLG | Axial Lead* | |
| MUR1100E | Axial Lead* | 1000 Units / Bag |
| MUR1100EG | Axial Lead* | |
| MUR1100ERL | Axial Lead* | 5000 / Tape & Reel |
| MUR1100ERLG | Axial Lead* | |

[†]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.

*These packages are inherently Pb-Free.

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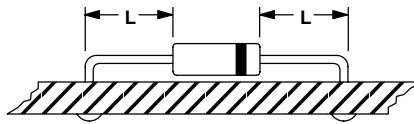
NOTE 3 — AMBIENT MOUNTING DATA

Data shown for thermal resistance, junction-to-ambient ($R_{\theta JA}$) for the mountings shown is to be used as typical guideline values for preliminary engineering or in case the tie point temperature cannot be measured.

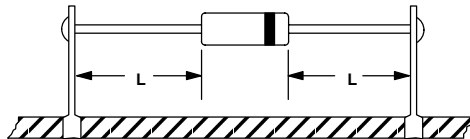
TYPICAL VALUES FOR $R_{\theta JA}$ IN STILL AIR

| Mounting Method | $R_{\theta JA}$ | Lead Length, L | | | Units |
|-----------------|-----------------|----------------|-----|-----|-----------------------------|
| | | 1/8 | 1/4 | 1/2 | |
| 1 | | 52 | 65 | 72 | $^{\circ}\text{C}/\text{W}$ |
| 2 | | 67 | 80 | 87 | $^{\circ}\text{C}/\text{W}$ |
| 3 | | 50 | | | $^{\circ}\text{C}/\text{W}$ |

MOUNTING METHOD 1

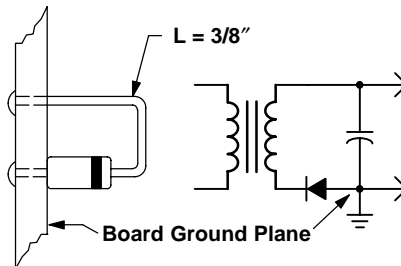


MOUNTING METHOD 2



Vector Pin Mounting

MOUNTING METHOD 3

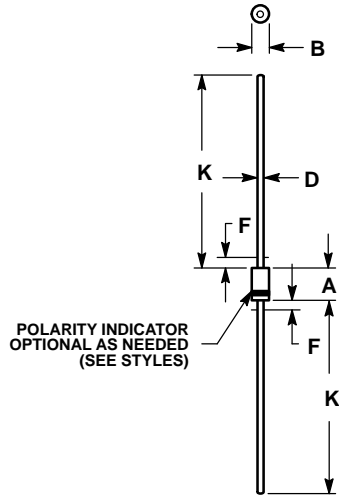


P.C. Board with 1-1/2" X 1-1/2" Copper Surface

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PACKAGE DIMENSIONS

AXIAL LEAD CASE 59-10 ISSUE U



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH JEDEC DO-41 OUTLINE SHALL APPLY
4. POLARITY DENOTED BY CATHODE BAND.
5. LEAD DIAMETER NOT CONTROLLED WITHIN F DIMENSION.

| DIM | INCHES | | MILLIMETERS | |
|-----|--------|-------|-------------|------|
| | MIN | MAX | MIN | MAX |
| A | 0.161 | 0.205 | 4.10 | 5.20 |
| B | 0.079 | 0.106 | 2.00 | 2.70 |
| D | 0.028 | 0.034 | 0.71 | 0.86 |
| F | ---- | 0.050 | ---- | 1.27 |
| K | 1.000 | ---- | 25.40 | ---- |

STYLE 1:

1. CATHODE (POLARITY BAND)
2. ANODE