

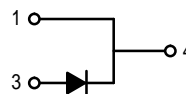
Designer's <sup>TM</sup> Data Sheet  
**SCANSWITCH <sup>TM</sup> Power Rectifier**  
**For Use As A Damper Diode**  
**In High and Very High Resolution Monitors**

The MUR5150E is a state-of-the-art Ultrafast Power Rectifier specifically designed for use as a damper diode in horizontal deflection circuits for high and very high resolution monitors. In these applications, the outstanding performance of the MUR5150E is fully realized when paired with the appropriate 1500V SCANSWITCH Bipolar Power Transistor.

- 1500 V Blocking Voltage
- 20 mJoules Avalanche Energy Guaranteed
- Peak Transient Overshoot Voltage Specified, 17 Volts (typical)
- Forward Recovery Time Specified, 175 ns (typical)
- Epoxy Meets UL94, V<sub>0</sub> at 1/8"

**Mechanical Characteristics**

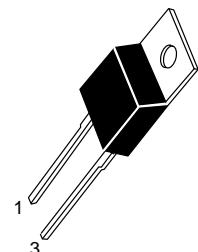
- Case: Epoxy, Molded
- Weight: 1.9 grams (approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Shipped 50 units per plastic tube
- Marking: U5150E



**MUR5150E**

Motorola Preferred Device

**SCANSWITCH  
RECTIFIER  
5.0 AMPERES  
1500 VOLTS**



**CASE 221B-03  
(TO-220AC)**

**MAXIMUM RATINGS**

| Rating  | Symbol                          | Value       | Unit             |
|---|---------------------------------|-------------|------------------|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                      | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 1500        | Volts            |
| Average Rectified Forward Current, (Rated $V_R$ ), $T_C = 100^\circ\text{C}$                                | $I_F(AV)$                       | 5.0         | Amps             |
| Peak Repetitive Forward Current, Per Leg<br>(Rated $V_R$ , Square Wave, 20 kHz), $T_C = 100^\circ\text{C}$  | $I_{FRM}$                       | 10          | Amps             |
| Non-Repetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave, single phase, 60 Hz) | $I_{FSM}$                       | 100         | Amps             |
| Operating Junction and Storage Temperature  | $T_J, T_{stg}$                  | -65 to +125 | $^\circ\text{C}$ |
| Controlled Avalanche Energy   | $W_{AVAL}$                      | 20          | mJ               |

**THERMAL CHARACTERISTICS**

|                                       |                 |     |                    |
|---------------------------------------|-----------------|-----|--------------------|
| Thermal Resistance — Junction to Case | $R_{\theta JC}$ | 2.0 | $^\circ\text{C/W}$ |
|---------------------------------------|-----------------|-----|--------------------|

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**Designer's Data for "Worst Case" Conditions** — The Designer's Data Sheet permits the design of most circuits entirely from the information presented. SOA Limit curves — representing boundaries on device characteristics — are given to facilitate "worst case" design.

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

Rev 1



## ELECTRICAL CHARACTERISTICS

| Characteristic  | Symbol    | Typ        | Max        | Unit          |
|---|-----------|------------|------------|---------------|
| Maximum Instantaneous Forward Voltage (1)<br>( $I_F = 2.0$ Amps, $T_J = 25^\circ\text{C}$ )<br>( $I_F = 5.0$ Amps, $T_J = 25^\circ\text{C}$ ) | $V_F$     | 1.7<br>2.0 | 2.0<br>2.4 | Volts         |
| Maximum Instantaneous Reverse Current (1)<br>(Rated dc Voltage, $T_J = 125^\circ\text{C}$ )<br>(Rated dc Voltage, $T_J = 25^\circ\text{C}$ )  | $I_R$     | 100<br>10  | 500<br>50  | $\mu\text{A}$ |
| Maximum Reverse Recovery Time ( $I_F = 1.0$ Amps, $di/dt = 50$ Amps/ $\mu\text{s}$ )  | $t_{rr}$  | 130        | 175        | ns            |
| Maximum Forward Recovery Time ( $I_F = 6.5$ Amps, $di/dt = 12$ Amps/ $\mu\text{s}$ )  | $t_{fr}$  | 175        | 225        | ns            |
| Peak Transient Overshoot Voltage  | $V_{RFM}$ | 17         | 20         | Volts         |

(1) Pulse Test: Pulse Width = 300  $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## TYPICAL ELECTRICAL CHARACTERISTICS

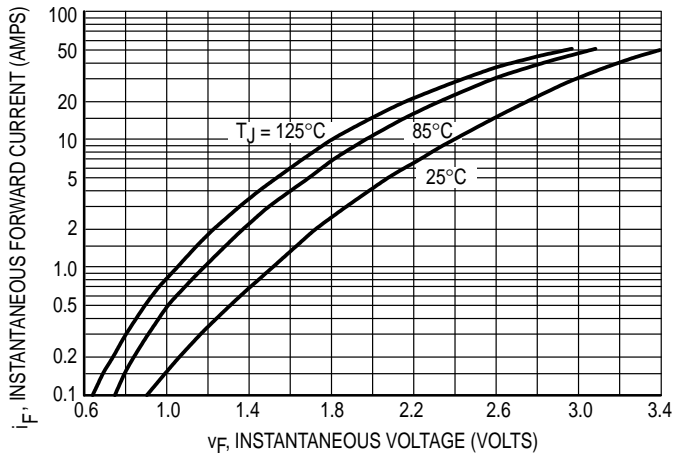


Figure 1. Typical Forward Voltage

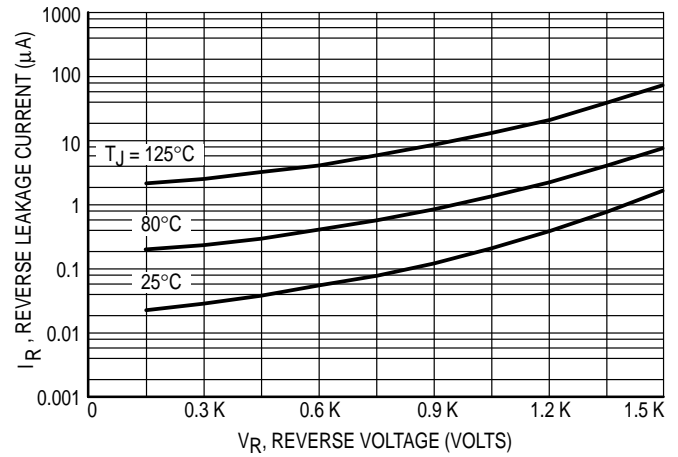


Figure 2. Typical Reverse Leakage Current

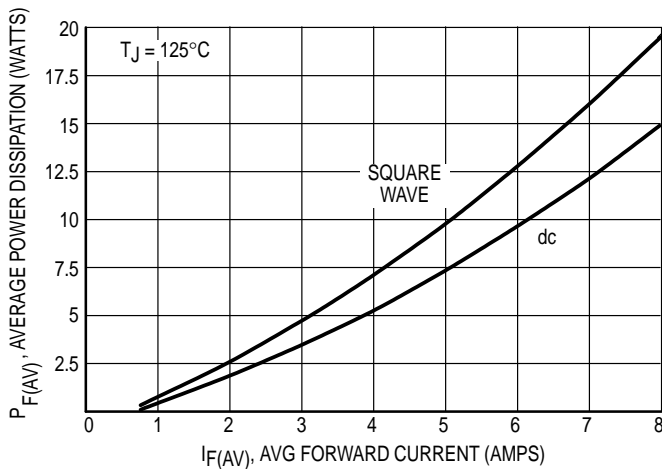


Figure 3. Forward Power Dissipation

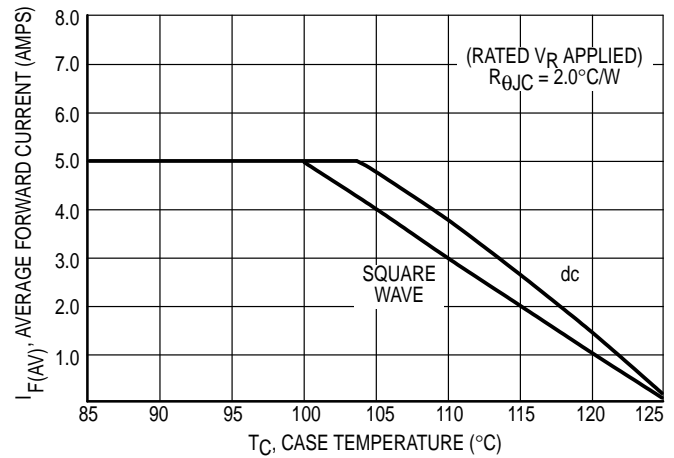


Figure 4. Current Derating Case

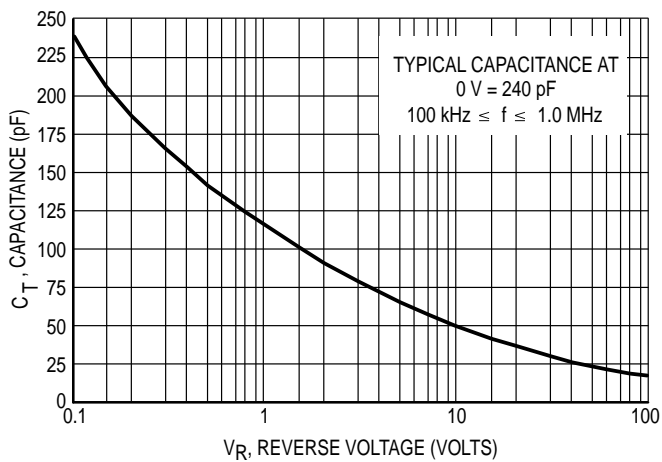


Figure 5. Typical Capacitance

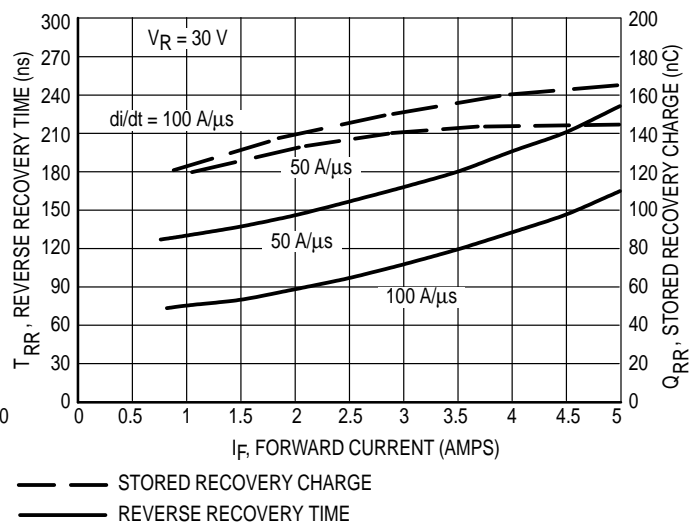
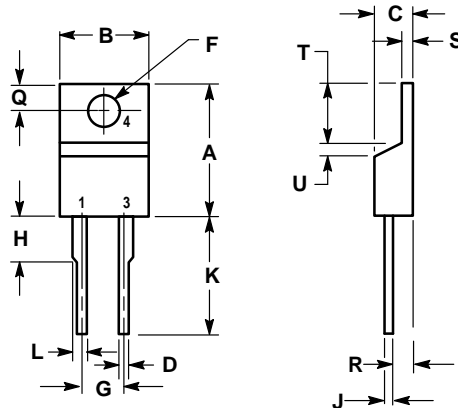


Figure 6. Typical Reverse Switching Characteristics

## PACKAGE DIMENSIONS



## NOTES:


1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES |       | MILLIMETERS |       |
|-----|--------|-------|-------------|-------|
|     | MIN    | MAX   | MIN         | MAX   |
| A   | 0.595  | 0.620 | 15.11       | 15.75 |
| B   | 0.380  | 0.405 | 9.65        | 10.29 |
| C   | 0.160  | 0.190 | 4.06        | 4.82  |
| D   | 0.025  | 0.035 | 0.64        | 0.89  |
| F   | 0.142  | 0.147 | 3.61        | 3.73  |
| G   | 0.190  | 0.210 | 4.83        | 5.33  |
| H   | 0.110  | 0.130 | 2.79        | 3.30  |
| J   | 0.018  | 0.025 | 0.46        | 0.64  |
| K   | 0.500  | 0.562 | 12.70       | 14.27 |
| L   | 0.045  | 0.060 | 1.14        | 1.52  |
| Q   | 0.100  | 0.120 | 2.54        | 3.04  |
| R   | 0.080  | 0.110 | 2.04        | 2.79  |
| S   | 0.045  | 0.055 | 1.14        | 1.39  |
| T   | 0.235  | 0.255 | 5.97        | 6.48  |
| U   | 0.000  | 0.050 | 0.000       | 1.27  |

## STYLE 1:

- PIN 1. CATHODE
- N/A
- ANODE
- CATHODE

**CASE 221B-03  
(TO-220AC)  
ISSUE B**

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