

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.

- 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 to 1.05 Volts Max @ 1.0 A, $T_J = 150^\circ\text{C}$)

Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 95 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
- Shipped in 12 mm Tape and Reel, 2500 units per reel
- Polarity: Notch in Plastic Body Indicates Cathode Lead
- Marking: U1D, U1J

MURS120T3
MURS160T3

Motorola Preferred Devices

ULTRAFAST RECTIFIERS
1.0 AMPERE
200-600 VOLTS



CASE 403A-03

MAXIMUM RATINGS

| Rating | Symbol | MURS | | Unit |
|--|---------------------------------|--|--|------------------|
| | | 120T3 | 160T3 | |
| Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 200 | 600 | Volts |
| Average Rectified Forward Current | $I_{F(AV)}$ | 1.0 @ $T_L = 155^\circ\text{C}$ 2.0 @ $T_L = 145^\circ\text{C}$ | 1.0 @ $T_L = 150^\circ\text{C}$ 2.0 @ $T_L = 125^\circ\text{C}$ | Amps |
| Non-Repetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz) | I_{FSM} | 40 | 35 | Amps |
| Operating Junction Temperature | T_J | -65 to +175 | | $^\circ\text{C}$ |

THERMAL CHARACTERISTICS

| | | | |
|--|-----------------|----|--------------------|
| Thermal Resistance, Junction to Lead ($T_L = 25^\circ\text{C}$) | $R_{\theta JL}$ | 13 | $^\circ\text{C/W}$ |
|--|-----------------|----|--------------------|

ELECTRICAL CHARACTERISTICS

| | | | | |
|---|----------|---------------|--------------|---------------|
| Maximum Instantaneous Forward Voltage (1) ($i_F = 1.0\text{ A}$, $T_J = 25^\circ\text{C}$) ($i_F = 1.0\text{ A}$, $T_J = 150^\circ\text{C}$) | V_F | 0.875 0.71 | 1.25 1.05 | Volts |
| Maximum Instantaneous Reverse Current (1) (Rated dc Voltage, $T_J = 25^\circ\text{C}$) (Rated dc Voltage, $T_J = 150^\circ\text{C}$) | i_R | 2.0 50 | 5.0 150 | μA |
| Maximum Reverse Recovery Time ($i_F = 1.0\text{ A}$, $di/dt = 50\text{ A}/\mu\text{s}$) ($i_F = 0.5\text{ A}$, $i_R = 1.0\text{ A}$, I_R to 0.25 A) | t_{rr} | 35 25 | 75 50 | ns |
| Maximum Forward Recovery Time ($i_F = 1.0\text{ A}$, $di/dt = 100\text{ A}/\mu\text{s}$, Rec. to 1.0 V) | t_{fr} | 25 | 50 | ns |

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

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

MURS120T3 MURS160T3

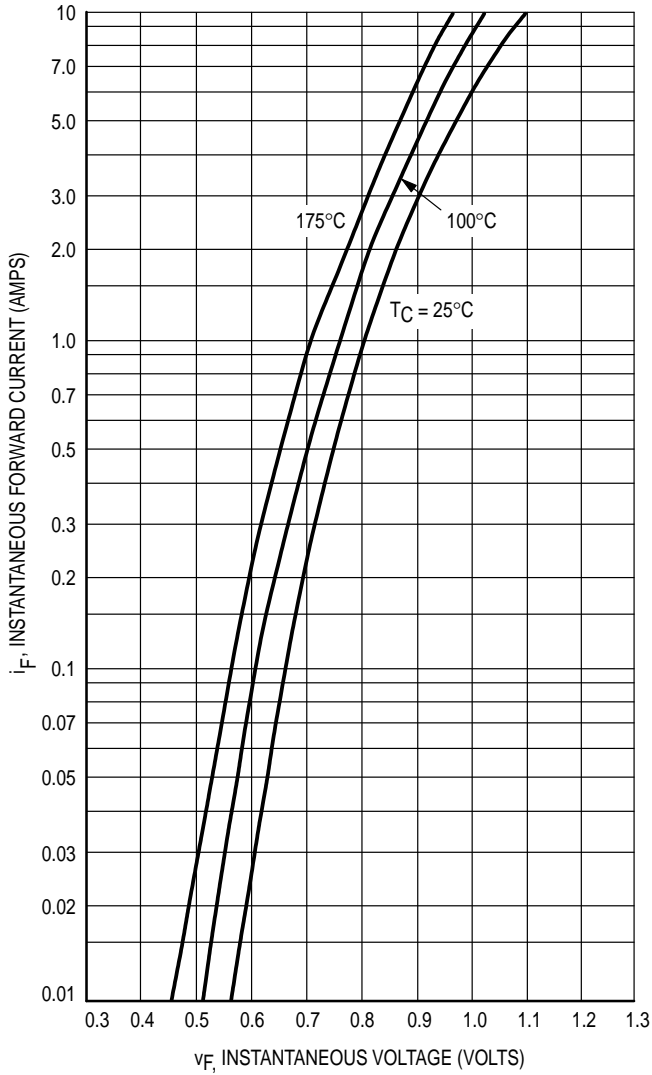


Figure 1. Typical Forward Voltage

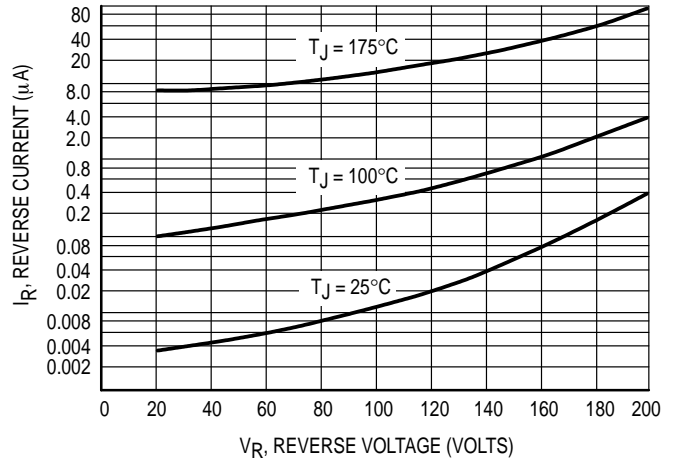


Figure 2. Typical Reverse Current*

* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if applied V_R is sufficiently below rated V_R .

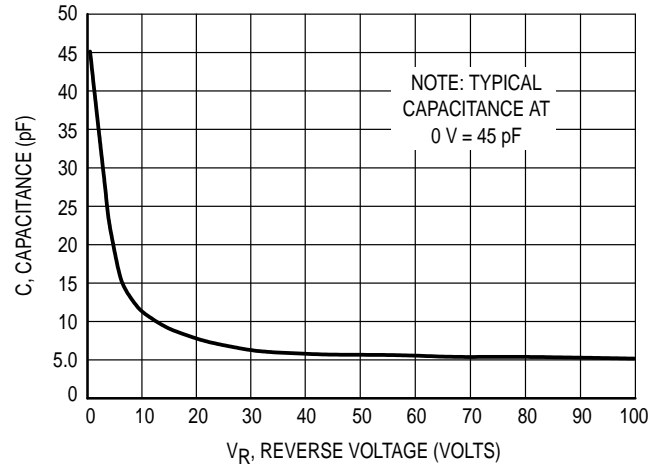


Figure 3. Typical Capacitance

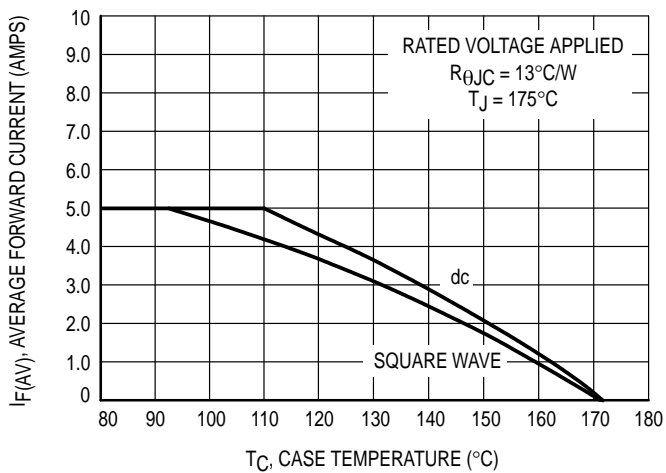


Figure 4. Current Derating, Case

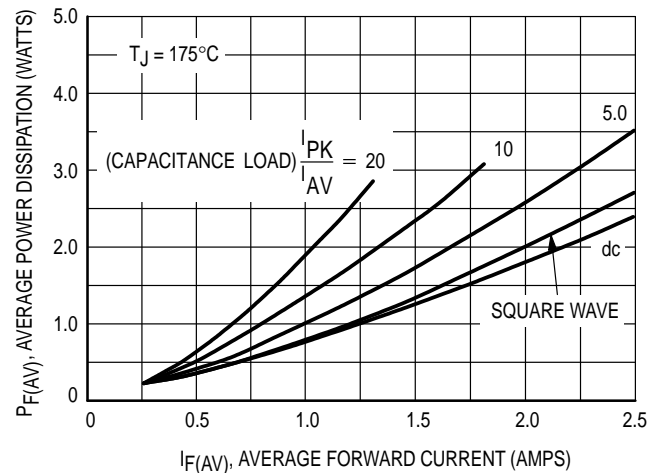


Figure 5. Power Dissipation

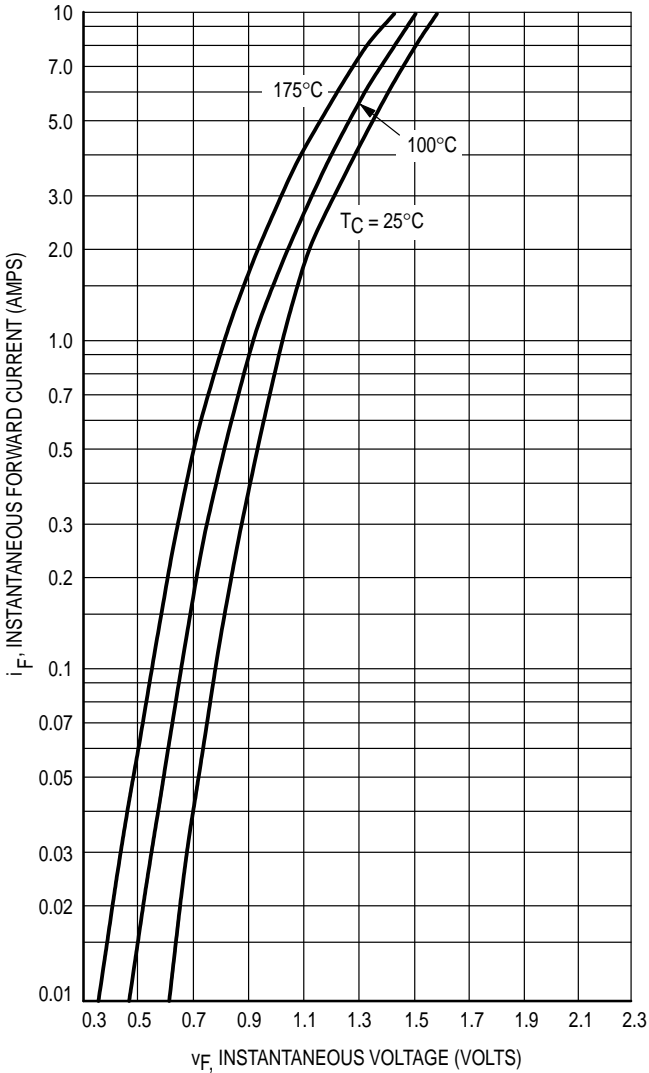


Figure 6. Typical Forward Voltage

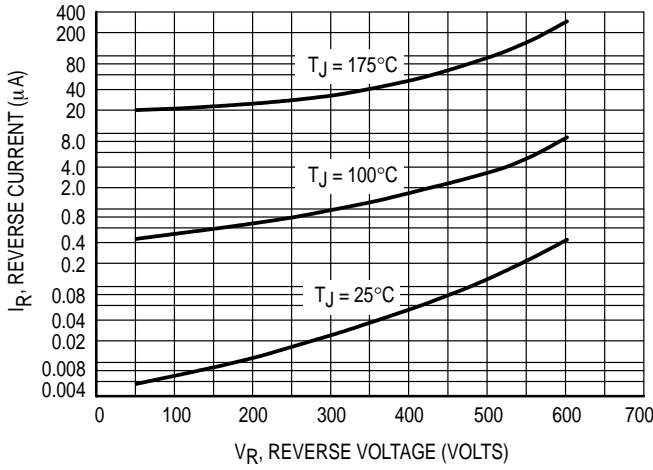


Figure 7. Typical Reverse Current*

* The curves shown are typical for the highest voltage device in the voltage grouping. Typical reverse current for lower voltage selections can be estimated from these same curves if applied V_R is sufficiently below rated V_R .

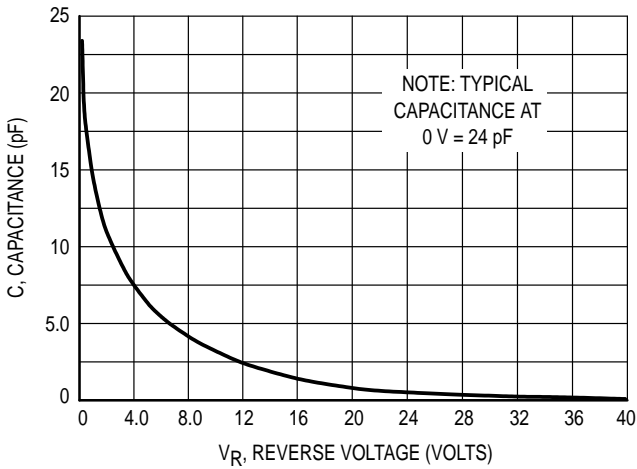


Figure 8. Typical Capacitance

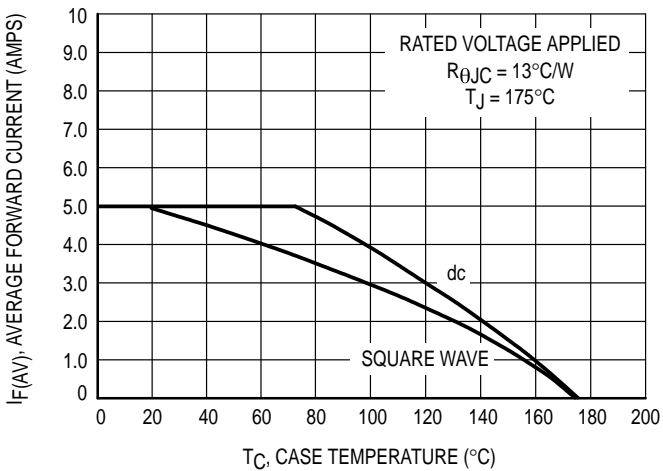


Figure 9. Current Derating, Case

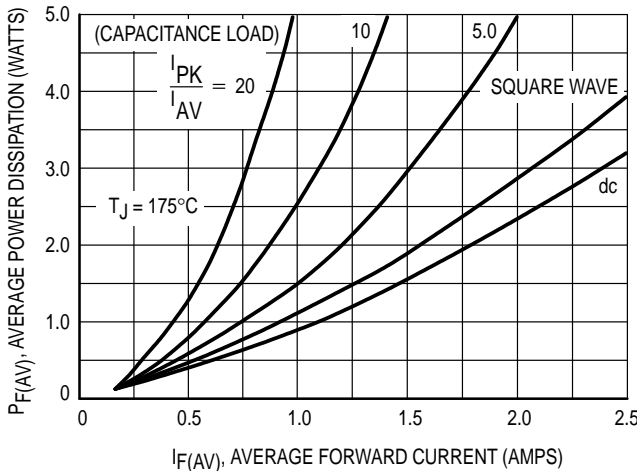
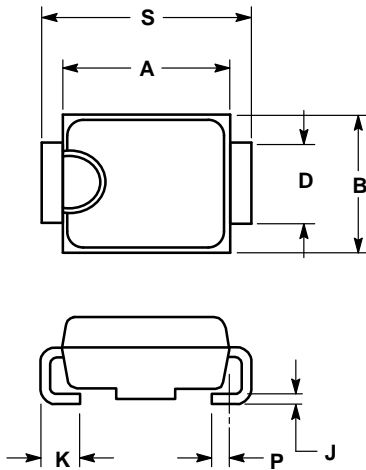


Figure 10. Power Dissipation


PACKAGE DIMENSIONS



- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. D DIMENSION SHALL BE MEASURED WITHIN DIMENSION P.

| DIM | INCHES | | MILLIMETERS | |
|-----|-----------|--------|-------------|-------|
| | MIN | MAX | MIN | MAX |
| A | 0.160 | 0.180 | 4.06 | 4.57 |
| B | 0.130 | 0.150 | 3.30 | 3.81 |
| C | 0.075 | 0.095 | 1.90 | 2.41 |
| D | 0.077 | 0.083 | 1.96 | 2.11 |
| H | 0.0020 | 0.0060 | 0.051 | 0.152 |
| J | 0.006 | 0.012 | 0.15 | 0.30 |
| K | 0.030 | 0.050 | 0.76 | 1.27 |
| P | 0.020 REF | | 0.51 REF | |
| S | 0.205 | 0.220 | 5.21 | 5.59 |

CASE 403A-03
ISSUE B

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