

# MURS120T3 Series

Preferred Devices

## Surface Mount Ultrafast Power Rectifiers

MURS105T3, MURS110T3, MURS115T3,  
MURS120T3, MURS140T3, MURS160T3

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:  $260^\circ\text{C}$  Max. for 10 Seconds
- Shipped in 12 mm Tape and Reel, 2500 units per reel
- Polarity: Polarity Band Indicates Cathode Lead
- Marking: U1A, U1B, U1C, U1D, U1G, U1J

### MAXIMUM RATINGS

Please See the Table on the Following Page



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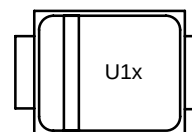
<http://onsemi.com>

**ULTRAFAST RECTIFIERS**  
**1.0 AMPERE**  
**50–600 VOLTS**



SMB  
CASE 403A

### MARKING DIAGRAM



U1x= Device Code  
x = Specific Device Code  
A, B, C, D, G or J

### ORDERING INFORMATION

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

### DEVICE MARKING INFORMATION

See general marking information in the device marking table on page 2 of this data sheet.

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

## MURS120T3 Series

### MAXIMUM RATINGS

| Rating                                                                                                         | Symbol                          | MURS                                                     |       |       |       |                                                          |       | Unit        |
|----------------------------------------------------------------------------------------------------------------|---------------------------------|----------------------------------------------------------|-------|-------|-------|----------------------------------------------------------|-------|-------------|
|                                                                                                                |                                 | 105T3                                                    | 110T3 | 115T3 | 120T3 | 140T3                                                    | 160T3 |             |
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage                         | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 50                                                       | 100   | 150   | 200   | 400                                                      | 600   | Volts       |
| Average Rectified Forward Current                                                                              | $I_{F(AV)}$                     | 1.0 @ $T_L = 155^{\circ}C$<br>2.0 @ $T_L = 145^{\circ}C$ |       |       |       | 1.0 @ $T_L = 150^{\circ}C$<br>2.0 @ $T_L = 125^{\circ}C$ |       | Amps        |
| Non–Repetitive Peak Surge Current<br>(Surge applied at rated load conditions halfwave,<br>single phase, 60 Hz) | $I_{FSM}$                       | 40                                                       |       |       |       | 35                                                       |       | Amps        |
| Operating Junction Temperature                                                                                 | $T_J$                           | – 65 to +175                                             |       |       |       |                                                          |       | $^{\circ}C$ |

### THERMAL CHARACTERISTICS

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

### ELECTRICAL CHARACTERISTICS

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

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

### DEVICE MARKING AND ORDERING INFORMATION

| Device    | Marking | Package | Shipping               |
|-----------|---------|---------|------------------------|
| MURS105T3 | U1A     | SMB     | 2500 Units/Tape & Reel |
| MURS110T3 | U1B     | SMB     | 2500 Units/Tape & Reel |
| MURS115T3 | U1C     | SMB     | 2500 Units/Tape & Reel |
| MURS120T3 | U1D     | SMB     | 2500 Units/Tape & Reel |
| MURS140T3 | U1G     | SMB     | 2500 Units/Tape & Reel |
| MURS160T3 | U1J     | SMB     | 2500 Units/Tape & Reel |

# MURS120T3 Series

## MURS105T3, MURS110T3, MURS115T3, MURS120T3

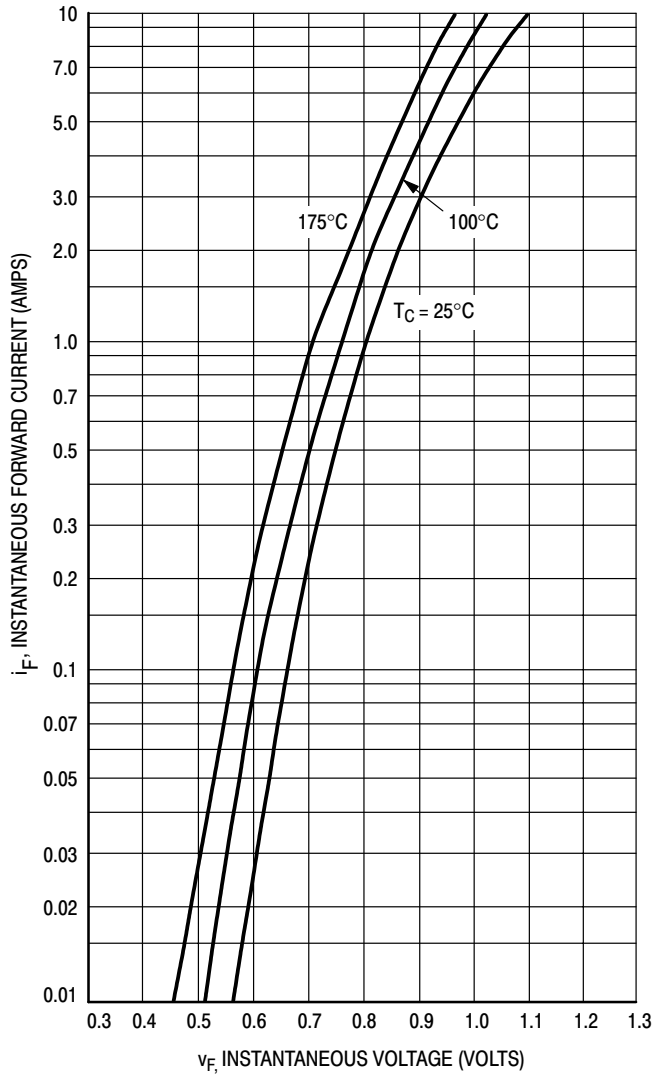


Figure 1. Typical Forward Voltage

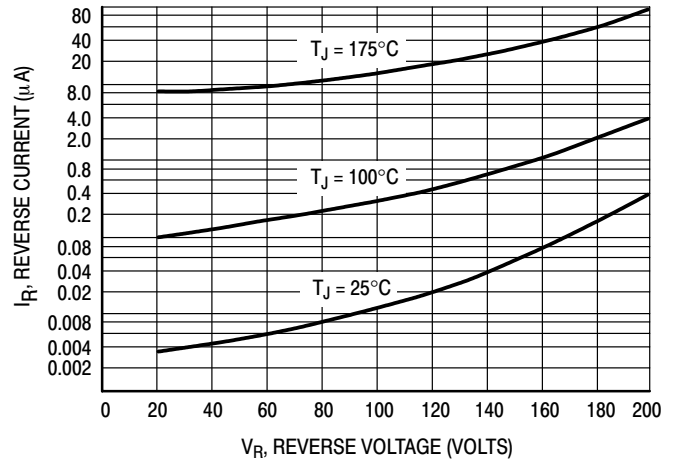


Figure 2. Typical Reverse Current\*

\* 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  $V_R$ .

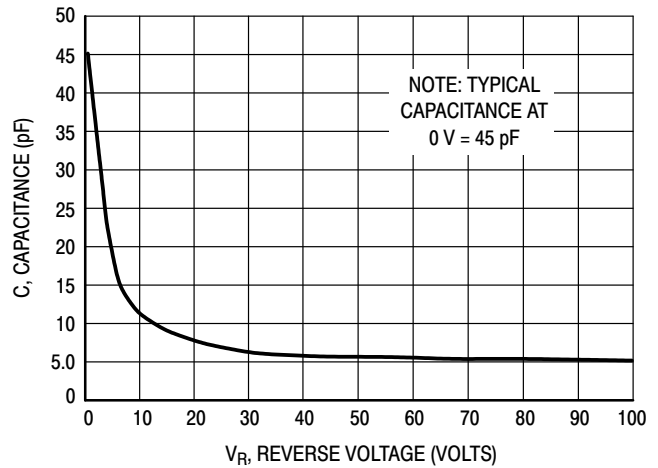


Figure 3. Typical Capacitance

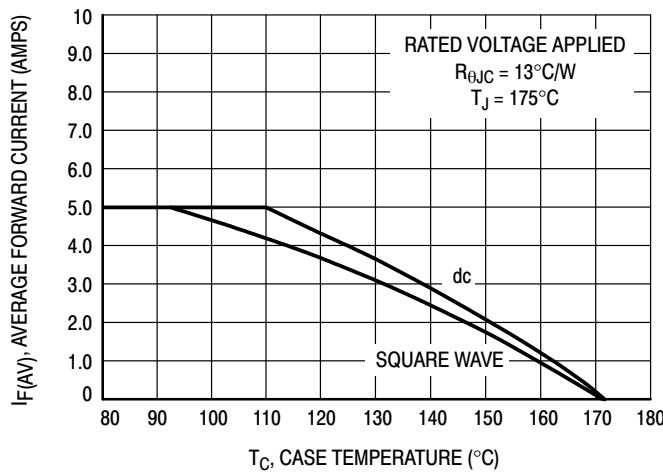


Figure 4. Current Derating, Case

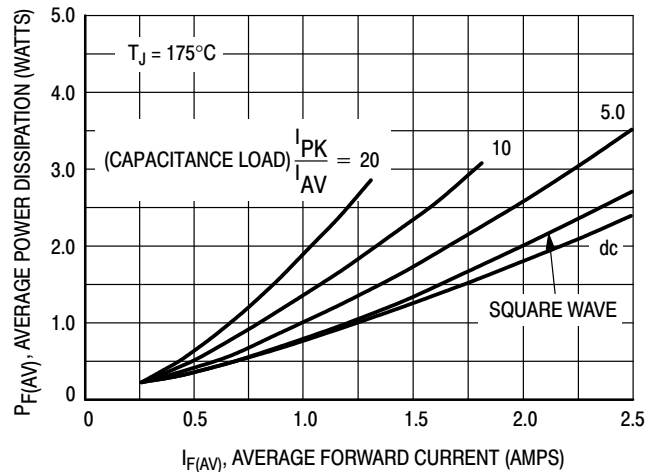


Figure 5. Power Dissipation

# MURS120T3 Series

## MURS140T3, MURS160T3

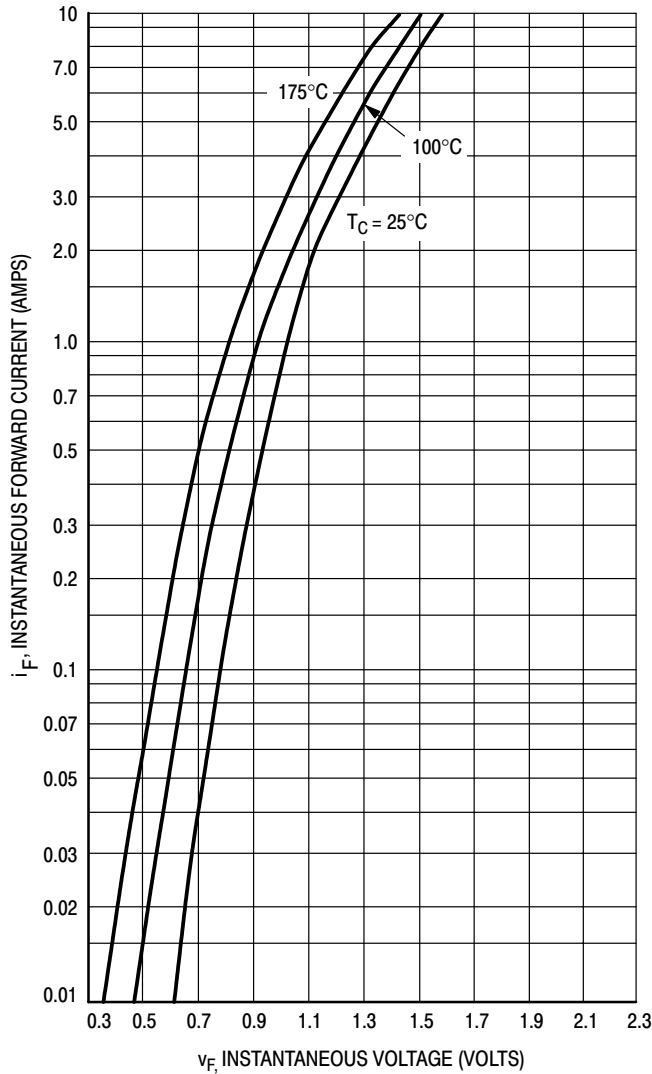


Figure 6. Typical Forward Voltage

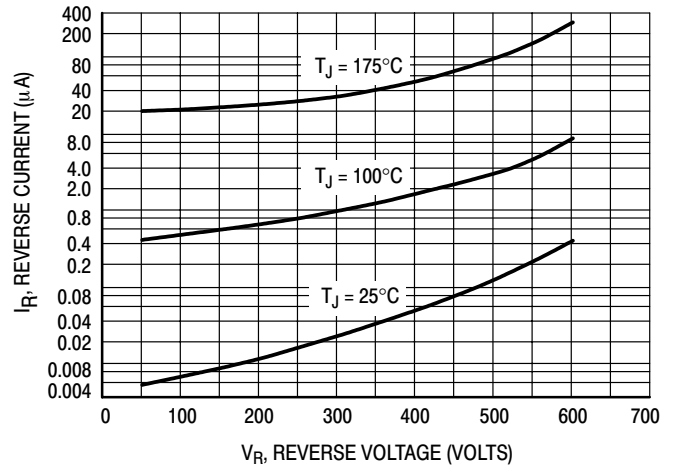


Figure 7. Typical Reverse Current\*

\* 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  $V_R$ .

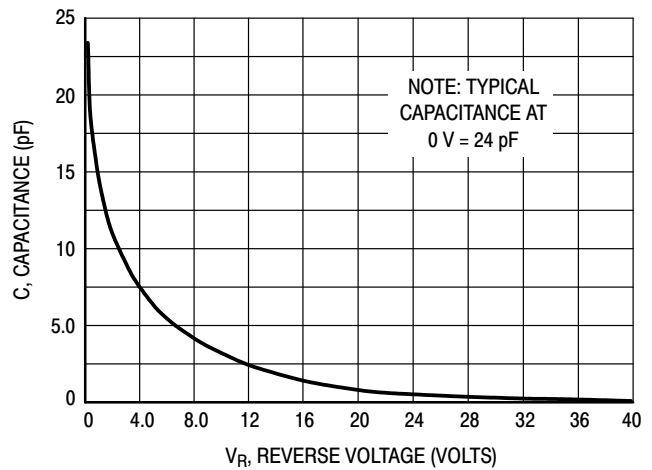


Figure 8. Typical Capacitance

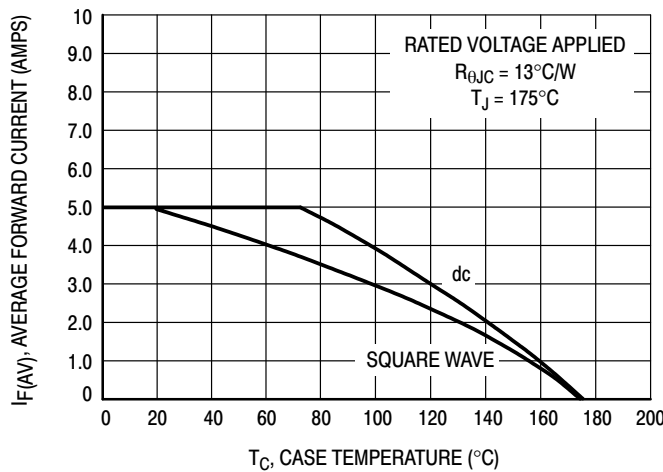


Figure 9. Current Derating, Case

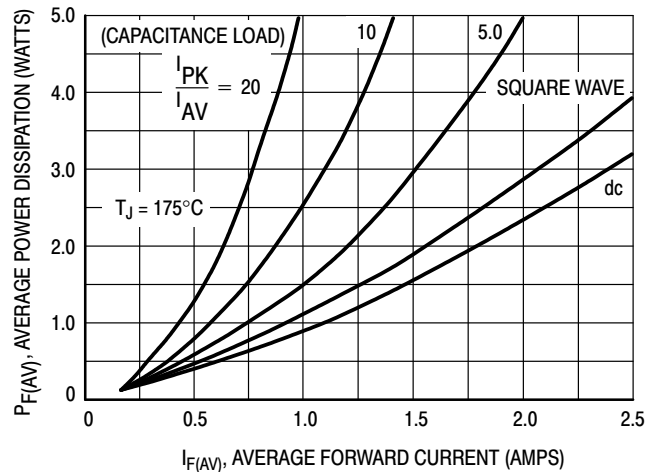
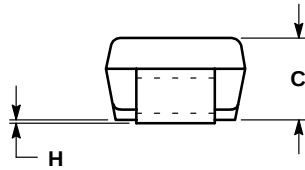
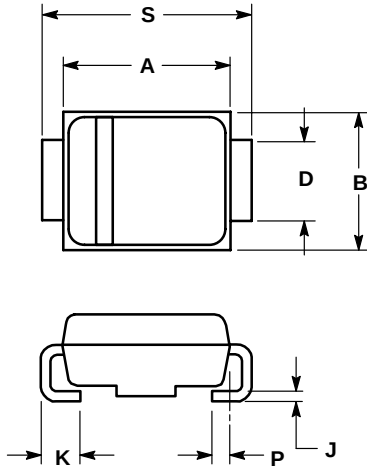


Figure 10. Power Dissipation

# MURS120T3 Series

## PACKAGE DIMENSIONS

SMB  
DO-214AA  
CASE 403A-03  
ISSUE D



- 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  |

## **Notes**

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