

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.

Features

- Pb-Free Packages are Available
- 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
- Polarity: Polarity Band Indicates Cathode Lead



ON Semiconductor®

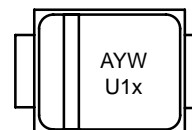
<http://onsemi.com>

ULTRAFAST RECTIFIERS
1.0 AMPERE
50–600 VOLTS



SMB
CASE 403A

MARKING DIAGRAM



U1 = Device Code
x = A, B, C, D, G or J
A = Assembly Location
Y = Year
W = Work Week

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 Working Peak Reverse Voltage DC Blocking Voltage | V_{RRM} V_{RWM} V_R | 50 | 100 | 150 | 200 | 400 | 600 | V |
| 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 @ $T_L = 125^{\circ}\text{C}$ | | A |
| Non–Repetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz) | I_{FSM} | 40 | | | | 35 | | A |
| Operating Junction Temperature | T_J | – 65 to +175 | | | | | | $^{\circ}\text{C}$ |

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.

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 (Note 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 | V |
| Maximum Instantaneous Reverse Current (Note 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 $\leq 2.0\%$.

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 |
| MURS120T3G | U1D | SMB (Pb-Free) | 2500 Units/Tape & Reel |
| MURS140T3 | U1G | SMB | 2500 Units/Tape & Reel |
| MURS140T3G | U1G | SMB (Pb-Free) | 2500 Units/Tape & Reel |
| MURS160T3 | U1J | SMB | 2500 Units/Tape & Reel |
| MURS160T3G | U1J | SMB (Pb-Free) | 2500 Units/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.

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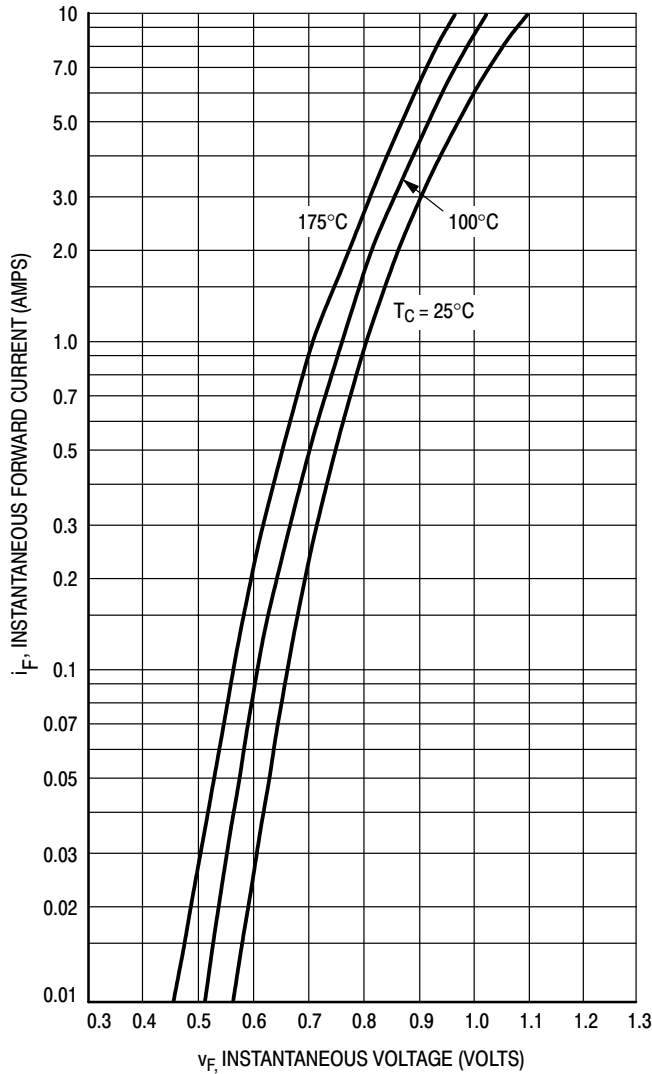


Figure 1. Typical Forward Voltage

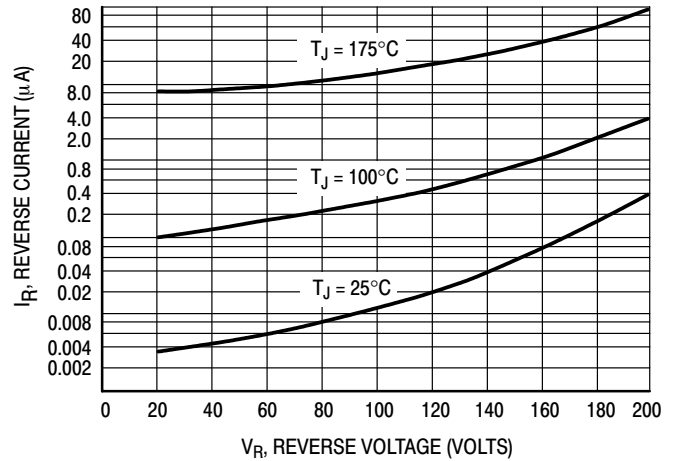


Figure 2. Typical Reverse Current*

* 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 .

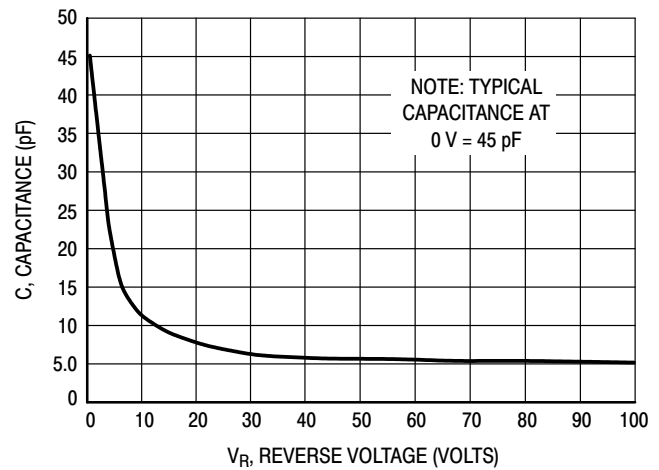


Figure 3. Typical Capacitance

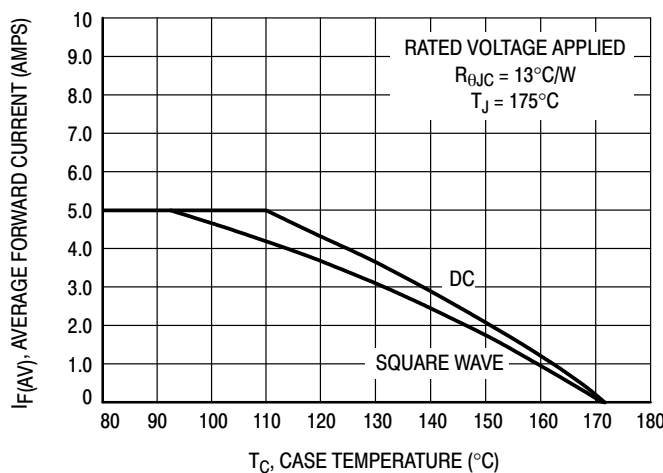


Figure 4. Current Derating, Case

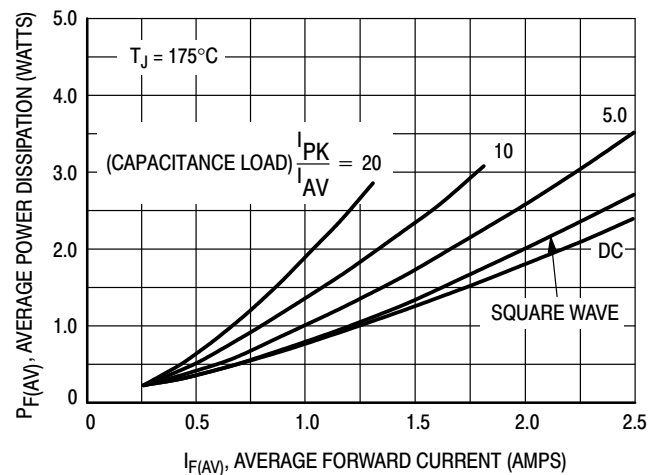


Figure 5. Power Dissipation

MURS120T3 Series

MURS140T3, MURS160T3

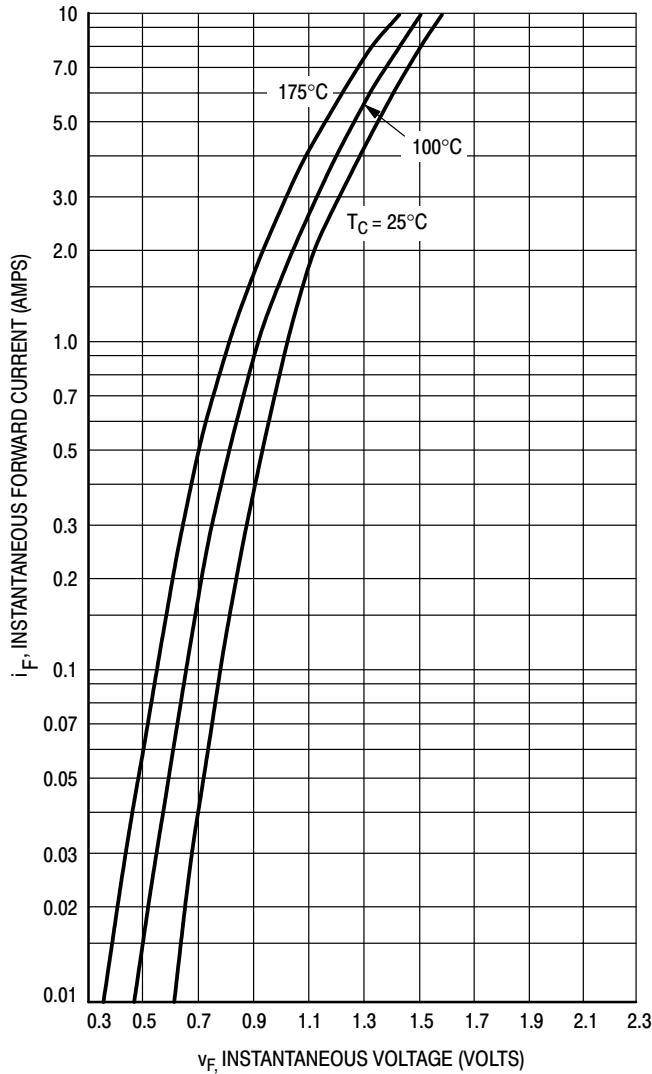


Figure 6. Typical Forward Voltage

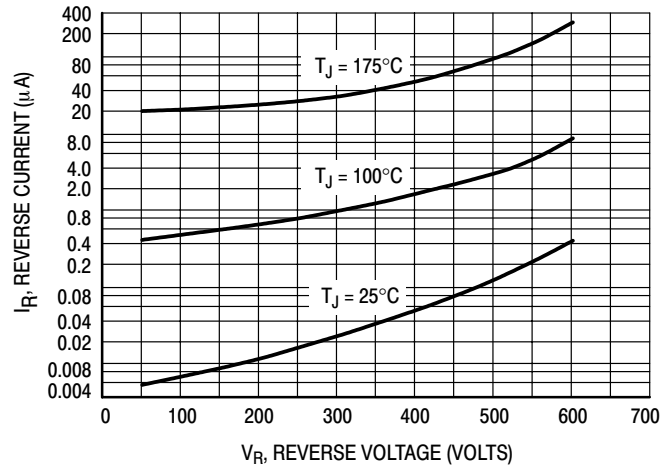


Figure 7. Typical Reverse Current*

* 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 .

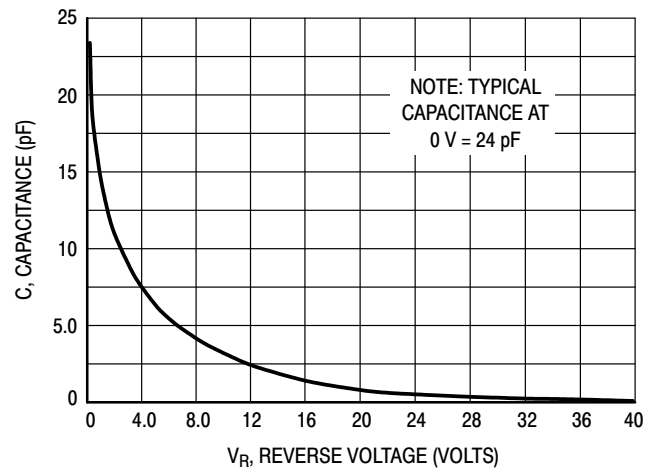


Figure 8. Typical Capacitance

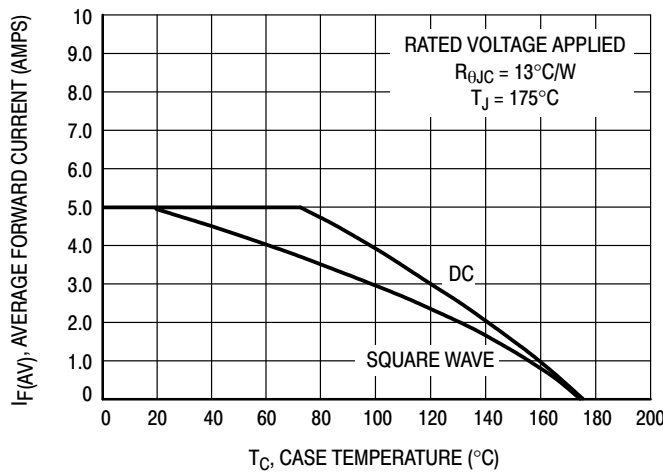


Figure 9. Current Derating, Case

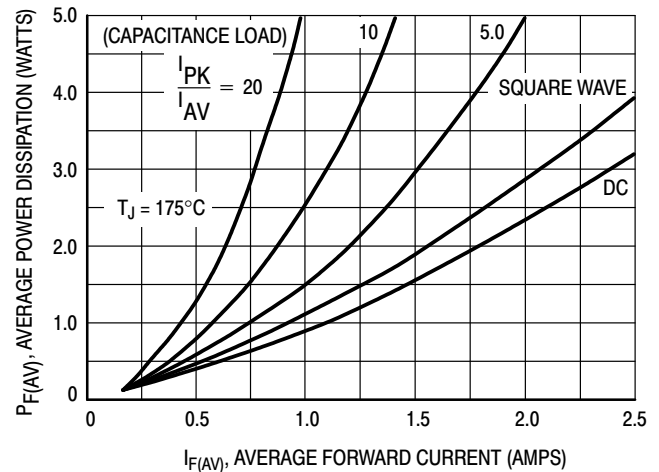
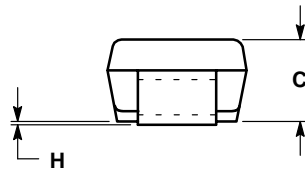
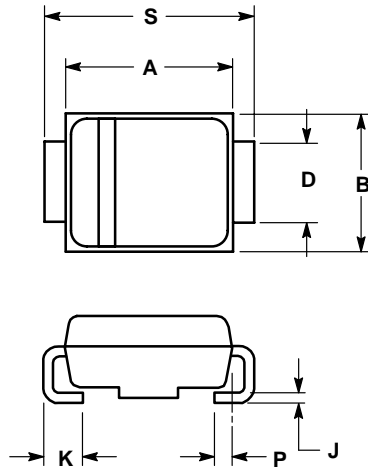


Figure 10. Power Dissipation

MURS120T3 Series

PACKAGE DIMENSIONS

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

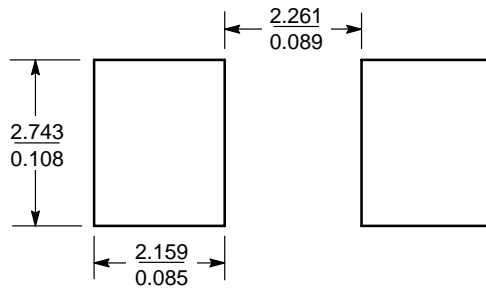


NOTES:

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 |

SOLDERING FOOTPRINT*



SCALE 8:1 $\left(\frac{\text{mm}}{\text{inches}} \right)$

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

MURS120T3 Series

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