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,  $T_I = 150$ °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: Polarity Band Indicates Cathode Lead
- Marking: U1A, U1B, U1C, U1D, U1G, U1J

#### **MAXIMUM RATINGS**

Please See the Table on the Following Page



#### ON Semiconductor™

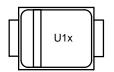
http://onsemi.com

# 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.

#### **MAXIMUM RATINGS**

		MURS						
Rating	Symbol	105T3	110T3	115T3	120T3	140T3	160T3	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	50	100	150	200	400	600	Volts
Average Rectified Forward Current	I <sub>F(AV)</sub>	1.0 @ T <sub>L</sub> = 155°C 2.0 @ T <sub>L</sub> = 145°C		1.0 @ T <sub>L</sub> = 150°C 2.0 @ T <sub>L</sub> = 125°C		Amps		
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I <sub>FSM</sub>	40		35		Amps		
Operating Junction Temperature	TJ	- 65 to +175			°C			

#### THERMAL CHARACTERISTICS

Thermal Resistance, Junction to Lead	$R_{ heta JL}$	13	°C/W
$(T_L = 25^{\circ}C)$			

#### **ELECTRICAL CHARACTERISTICS**

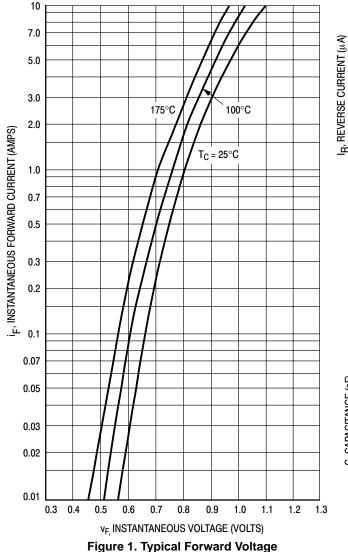
Maximum Instantaneous Forward Voltage (Note 1.) $ (i_F = 1.0 \text{ A}, T_J = 25^{\circ}\text{C}) \\ (i_F = 1.0 \text{ A}, T_J = 150^{\circ}\text{C}) $	VF	0.875 0.71	1.25 1.05	Volts
Maximum Instantaneous Reverse Current (Note 1.) (Rated dc Voltage, $T_J = 25^{\circ}C$ ) (Rated dc Voltage, $T_J = 150^{\circ}C$ )	i <sub>R</sub>	2.0 50	5.0 150	μА
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 \text{ to } 0.25 \text{ A}) $	t <sub>rr</sub>	35 25	75 50	ns
Maximum Forward Recovery Time (i <sub>F</sub> = 1.0 A, di/dt = 100 A/μs, Rec. to 1.0 V)	t <sub>fr</sub>	25	50	ns

<sup>1.</sup> Pulse Test: Pulse Width = 300 μs, Duty Cycle ≤ 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

#### MURS105T3, MURS110T3, MURS115T3, MURS120T3



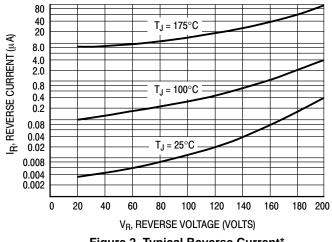


Figure 2. Typical Reverse Current\*

\* 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<sub>R</sub> is sufficiently below rated V<sub>R</sub>.

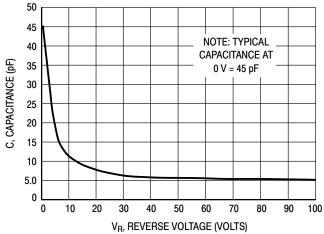


Figure 3. Typical Capacitance

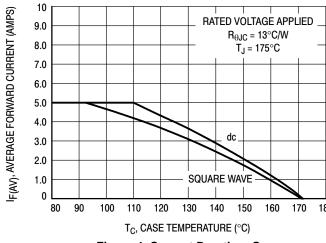


Figure 4. Current Derating, Case

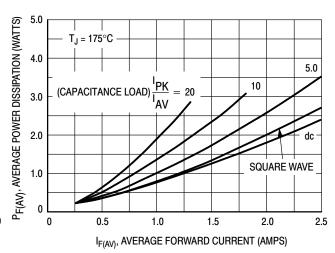
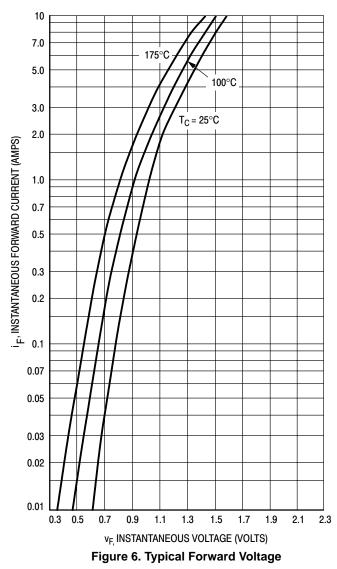


Figure 5. Power Dissipation

#### MURS140T3, MURS160T3



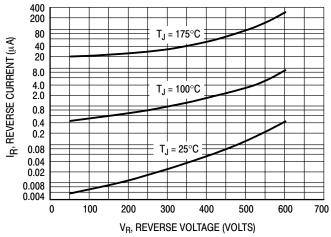


Figure 7. Typical Reverse Current\*

\* 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  $V_R$ .

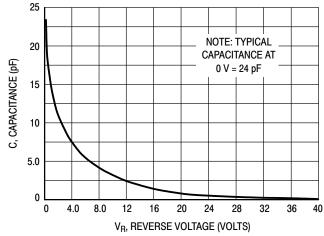


Figure 8. Typical Capacitance

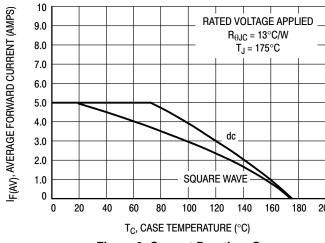


Figure 9. Current Derating, Case

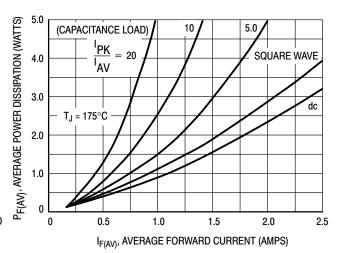
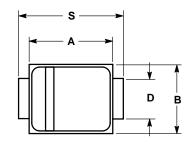
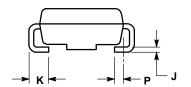


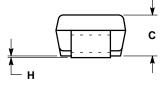
Figure 10. Power Dissipation

#### **PACKAGE DIMENSIONS**

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.

	INC	HES	MILLIMETERS				
DIM	MIN	MIN MAX MIN		MAX			
Α	0.160	0.180	4.06	4.57			
В	0.130	0.150	3.30	3.81			
С	0.075	0.095	1.90	2.41			
D	0.077	0.083	1.96	2.11			
Н	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			





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