# **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°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**

		MURS		
Rating	Symbol	120T3	160T3	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	VRRM VRWM VR	200	600	Volts
Average Rectified Forward Current	lF(AV)	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)	IFSM	40	35	Amps
Operating Junction Temperature	TJ	-65 to	+175	°C

### THERMAL CHARACTERISTICS

Thermal Resistance, Junction to Lead	$R_{\theta JL}$	13	°C/W
(IL = 25°C)			í

#### **ELECTRICAL CHARACTERISTICS**

Maximum Instantaneous Forward Voltage (1) (iF = 1.0 A, T <sub>J</sub> = 25°C) (iF = 1.0 A, T <sub>J</sub> = 150°C)	VF	0.875 0.71	1.25 1.05	Volts
Maximum Instantaneous Reverse Current (1) (Rated dc Voltage, T <sub>J</sub> = 25°C) (Rated dc Voltage, T <sub>J</sub> = 150°C)	İR	2.0 50	5.0 150	μΑ
Maximum Reverse Recovery Time (iF = 1.0 A, di/dt = 50 A/ $\mu$ s) (iF = 0.5 A, iR = 1.0 A, IR to 0.25 A)	trr	35 25	75 50	ns
Maximum Forward Recovery Time (iF = 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  $\mu$ s, Duty Cycle  $\leq$  2.0%.

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





#### **MURS120T3 MURS160T3**

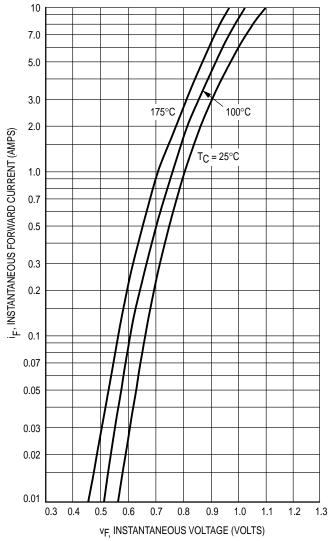


Figure 1. Typical Forward Voltage

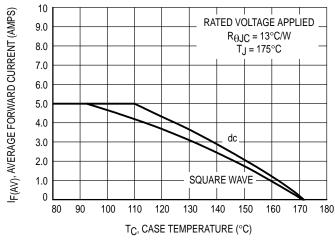


Figure 4. Current Derating, Case

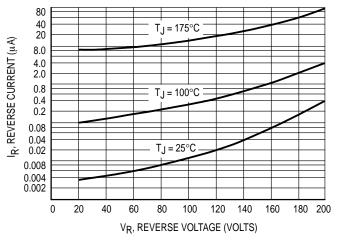


Figure 2. Typical Reverse Current\*

\* 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>.

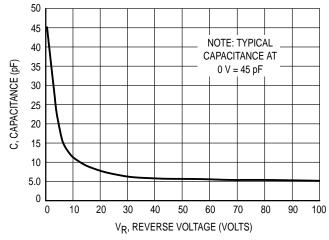


Figure 3. Typical Capacitance

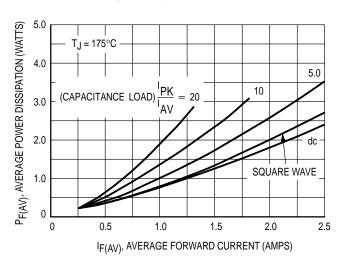


Figure 5. Power Dissipation

2 Rectifier Device Data

#### **MURS120T3 MURS160T3**

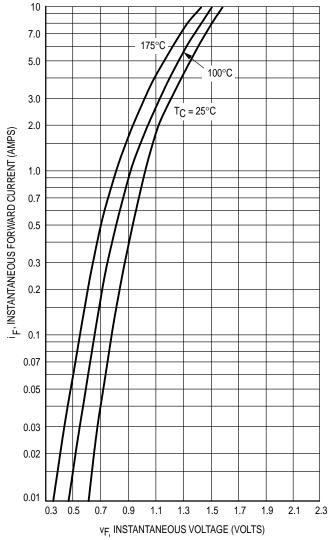


Figure 6. Typical Forward Voltage

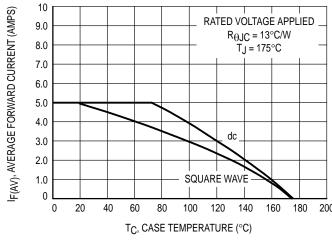


Figure 9. Current Derating, Case

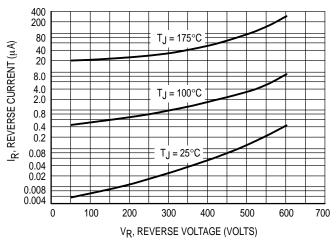


Figure 7. Typical Reverse Current\*

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

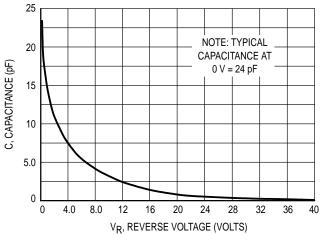


Figure 8. Typical Capacitance

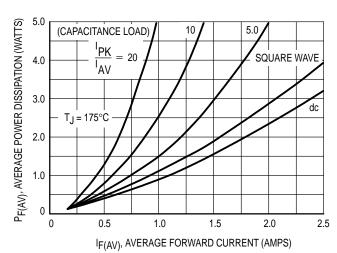
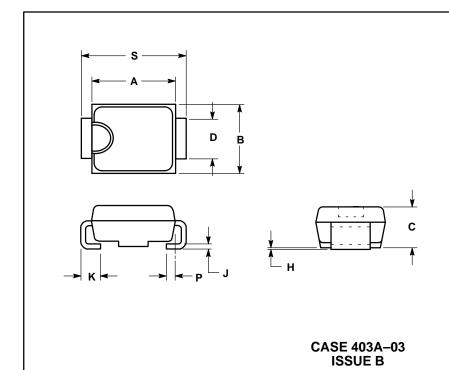


Figure 10. Power Dissipation

Rectifier Device Data 3

#### PACKAGE DIMENSIONS



#### NOTES:

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

	INCHES		MILLIMETERS		
DIM	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	
Р	0.020 REF		0.51 REF		
S	0.205	0.220	5 21	5 50	

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#### How to reach us:

USA/EUROPE/Locations Not Listed: Motorola Literature Distribution; P.O. Box 5405, Denver, Colorado 80217. 1-303-675-2140 or 1-800-441-2447

JAPAN: Nippon Motorola Ltd.: SPD, Strategic Planning Office, 4-32-1, Nishi-Gotanda, Shinagawa-ku, Tokyo 141, Japan. 81-3-5487-8488

Customer Focus Center: 1-800-521-6274

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