

T-2305

**MOTOROLA**  
**SEMICONDUCTOR**  
**TECHNICAL DATA**

**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
- Packaged in 12 mm Pocket Tape and Reel
- High Temperature Glass Passivated Junction
- Low Forward Voltage Drop (0.71 to 1.05 Volts Max @ 1.0 A, T<sub>J</sub> = 150°C)

**MURS105T3**  
**MURS110T3**  
**MURS115T3**  
**MURS120T3**  
**MURS130T3**  
**MURS140T3**  
**MURS150T3**  
**MURS160T3**

**MECHANICAL CHARACTERISTICS**

**CASE:** Transfer Molded Plastic Package

**LEAD FINISH:** Plated Leads, Readily Solderable in Surface Mount Applications

**POLARITY IDENTIFICATION:** Notch in Plastic Body Indicates Cathode Lead

**DEVICE MARKING:** MURS105T3.....U1A MURS130T3.....U1F  
MURS110T3.....U1B MURS140T3.....U1G  
MURS115T3.....U1C MURS150T3.....U1H  
MURS120T3.....U1D MURS160T3.....U1J

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



**MAXIMUM RATINGS**

Rating	Symbol	MURS								Unit
		105T3	110T3	115T3	120T3	130T3	140T3	150T3	160T3	
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	300	400	500	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
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, single phase, 60 Hz)	I <sub>FSM</sub>	40				35				Amps
Operating Junction Temperature	T <sub>J</sub>	-65 to +175								°C

**THERMAL CHARACTERISTICS**

Thermal Resistance — Junction to Lead (T <sub>L</sub> = 25°C)	R <sub>θJL</sub>	13	°C/W
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**ELECTRICAL CHARACTERISTICS**

Maximum Instantaneous Forward Voltage (1) (i <sub>F</sub> = 1.0 A, T <sub>J</sub> = 25°C) (i <sub>F</sub> = 1.0 A, T <sub>J</sub> = 150°C)	v <sub>F</sub>	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)	I <sub>R</sub>	2.0 50	5.0 150	μA
Maximum Reverse Recovery Time (i <sub>F</sub> = 1.0 A, di/dt = 50 A/μs) (i <sub>F</sub> = 0.5 A, i <sub>R</sub> = 1.0 A, I <sub>R</sub> to 0.25 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

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



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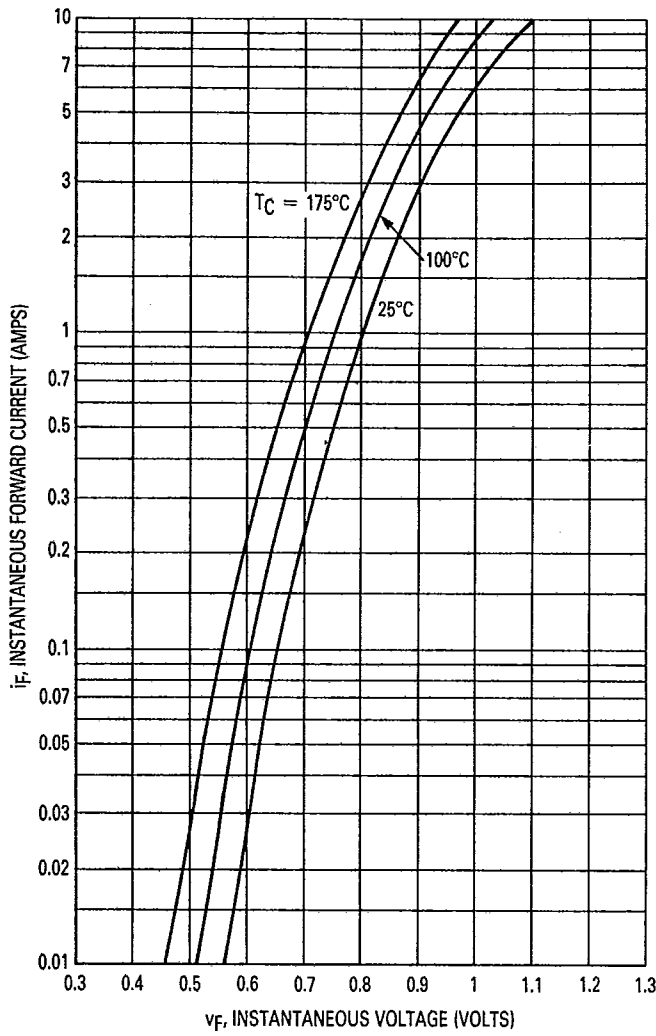


Figure 1. Typical Forward Voltage

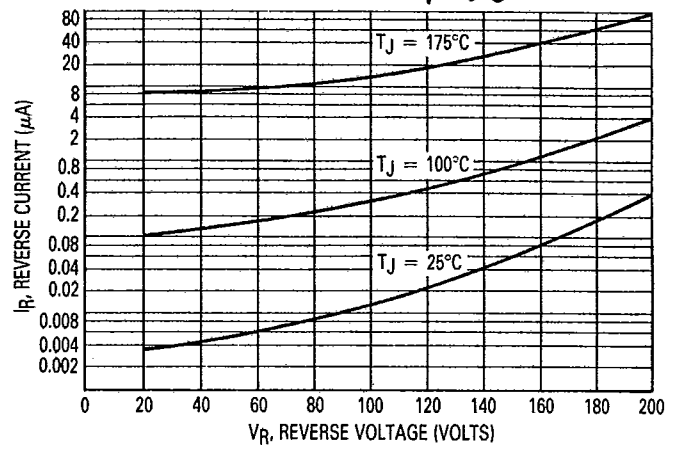


Figure 2. Typical Reverse Current\*

\*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  $V_R$ .

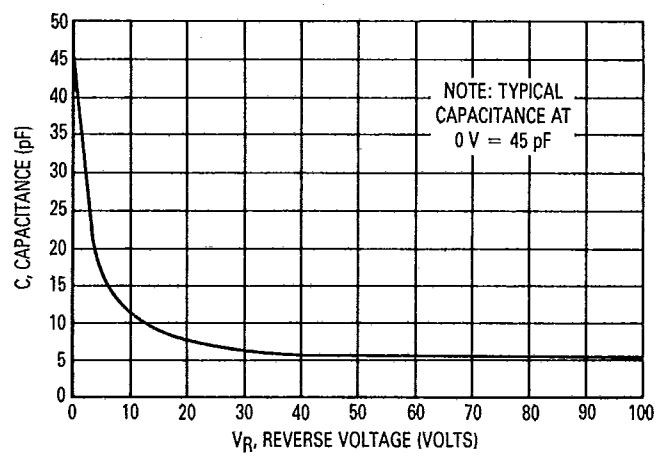


Figure 3. Typical Capacitance

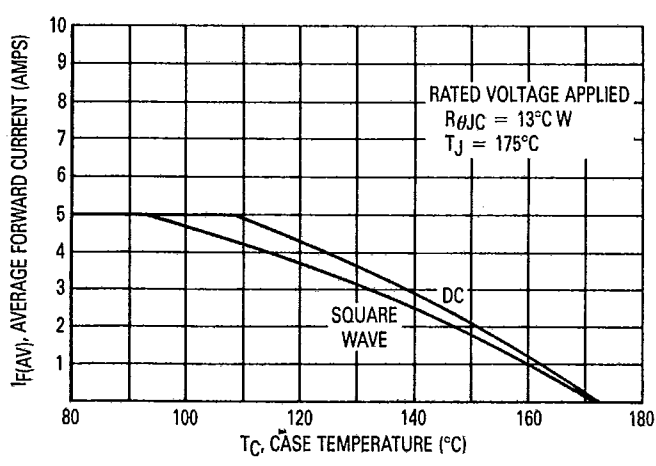


Figure 4. Current Derating, Case

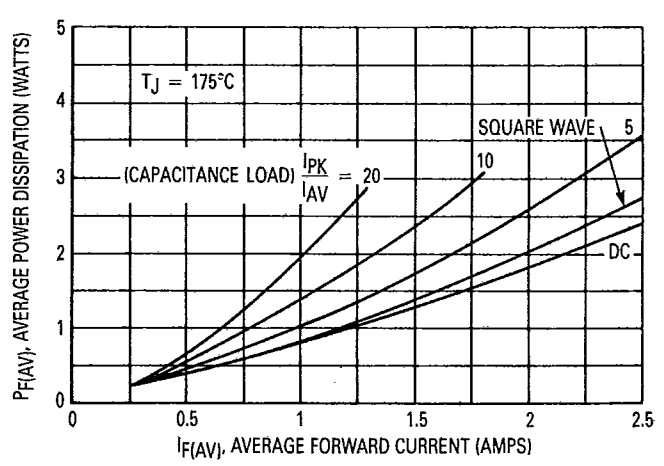


Figure 5. Power Dissipation

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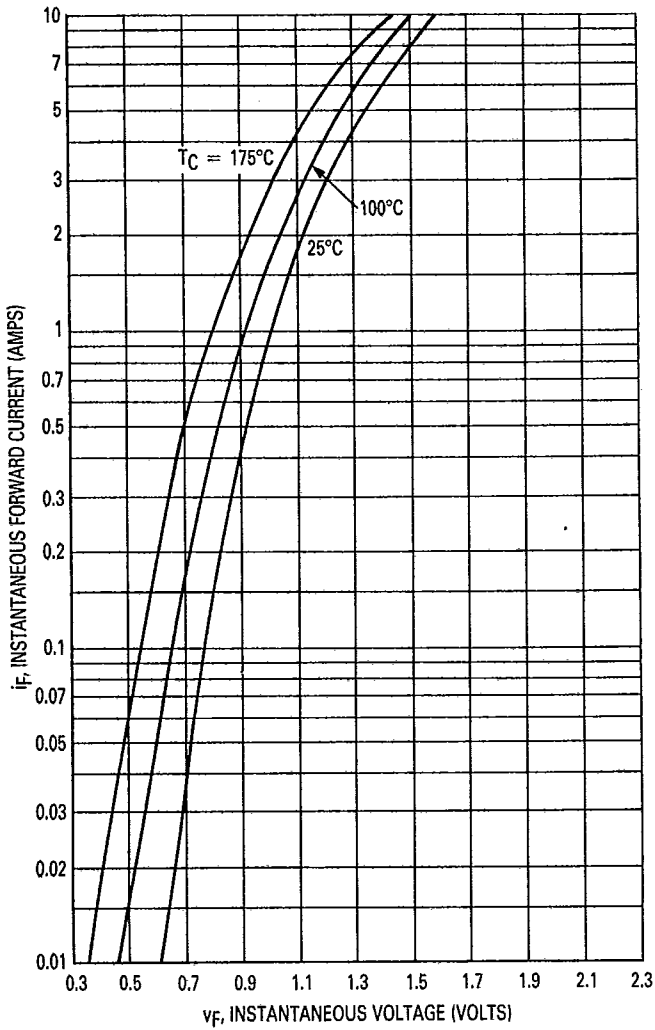


Figure 6. Typical Forward Voltage

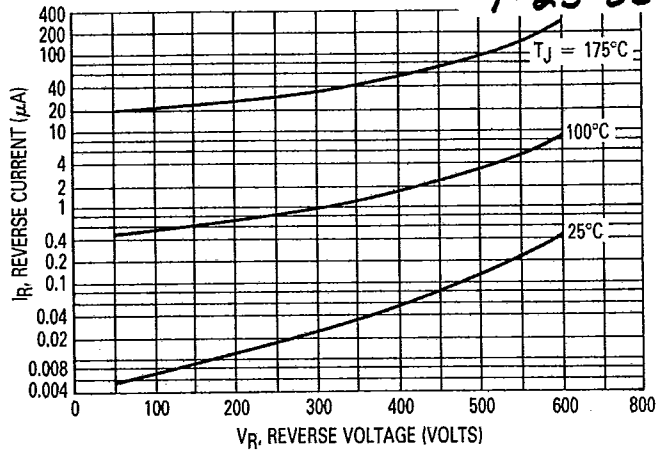


Figure 7. Typical Reverse Current\*

\*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  $V_R$ .

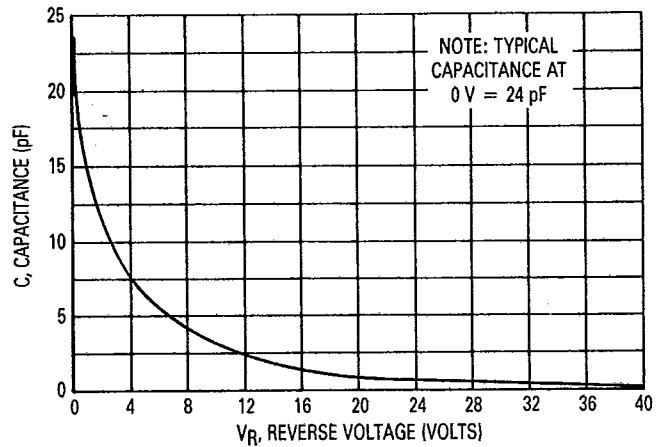


Figure 8. Typical Capacitance

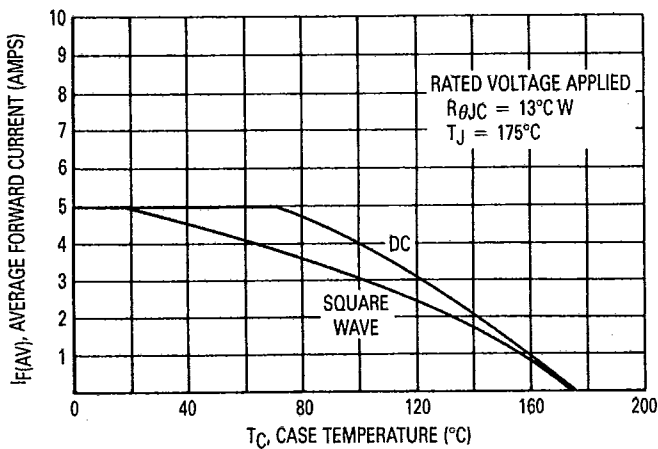


Figure 9. Current Derating, Case

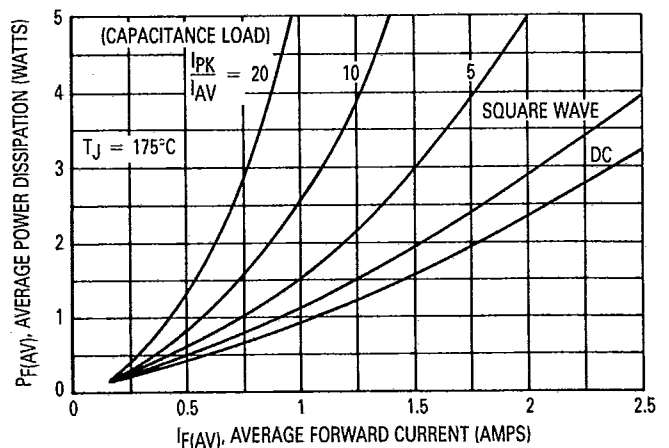
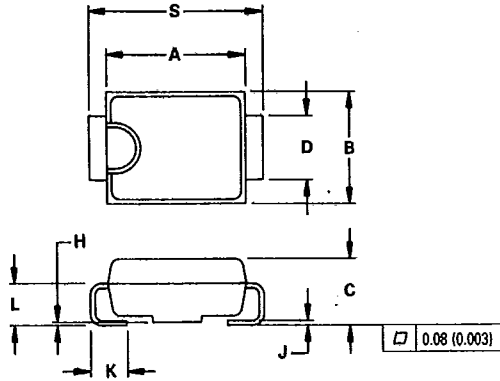


Figure 10. Power Dissipation

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OUTLINE DIMENSIONS

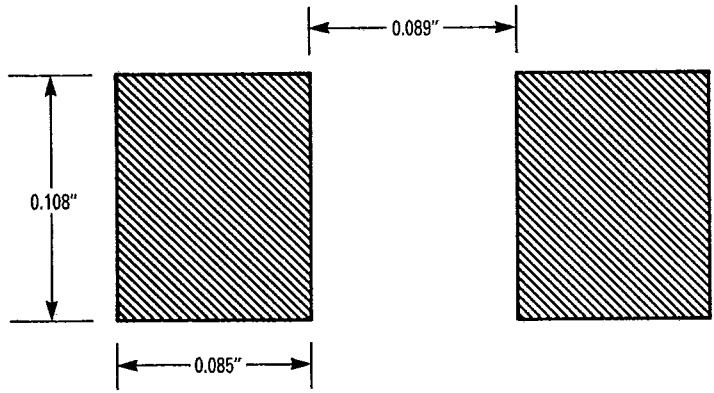
CASE 403A-01



- NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.20	4.44	0.165	0.175
B	3.43	3.68	0.135	0.145
C	2.01	2.26	0.079	0.089
D	1.91	2.15	0.075	0.085
H	0.013	0.101	0.0005	0.0040
J	0.11	0.25	0.004	0.010
K	1.02	1.27	0.040	0.050
L	1.22	1.47	0.048	0.058
S	5.29	5.53	0.208	0.218

MINIMUM SOLDER PAD SIZES RECOMMENDED FOR SURFACE MOUNT APPLICATIONS



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