

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, $T_J = 150^\circ\text{C}$)

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

MURS105T3
MURS110T3
MURS115T3
MURS120T3
MURS130T3
MURS140T3
MURS150T3
MURS160T3

ULTRAFAST RECTIFIERS
1.0 AMPERE
50-600 VOLTS



CASE 403A-01

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_{RRM} V_{RWM} V_R	50	100	150	200	300	400	500	600	Volts
Average Rectified Forward Current	$I_F(AV)$	1.0 @ $T_L = 155^{\circ}C$ 2.0 @ $T_L = 145^{\circ}C$				1.0 @ $T_L = 150^{\circ}C$ 2.0 @ $T_L = 125^{\circ}C$				Amps
Nonrepetitive Peak Surge Current (Surge applied at rated load conditions halfwave, 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 ($T_L = 25^\circ\text{C}$)	$R_{\theta JL}$	13	$^\circ\text{C/W}$
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ELECTRICAL CHARACTERISTICS

Maximum Instantaneous Forward Voltage (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	Volts
Maximum Instantaneous Reverse Current (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 $\leq 2.0\%$.**MOTOROLA**

T-23-05

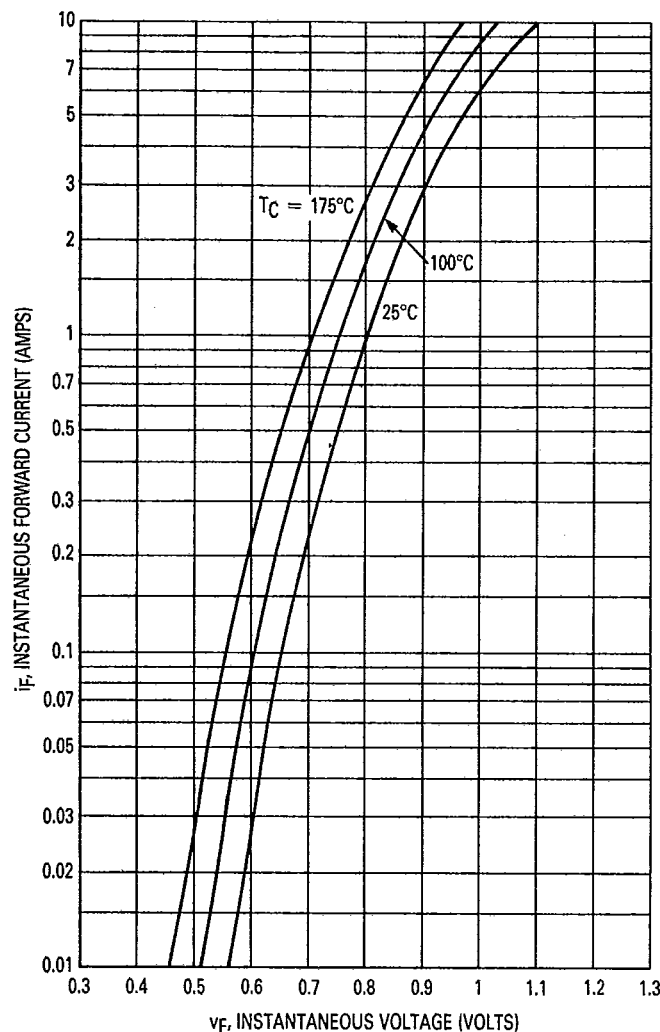


Figure 1. Typical Forward Voltage

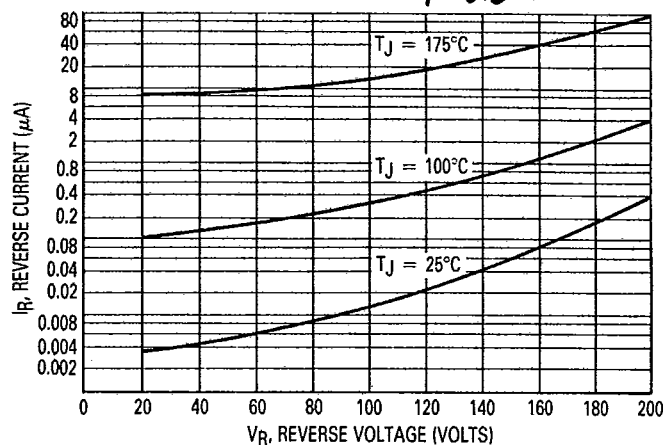


Figure 2. Typical Reverse Current*

*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 .

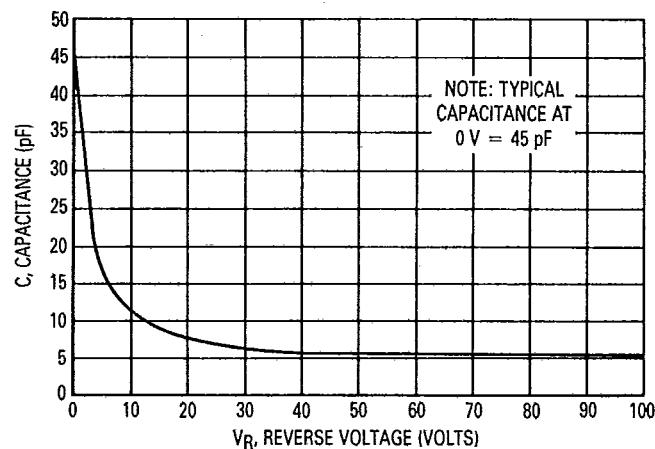


Figure 3. Typical Capacitance

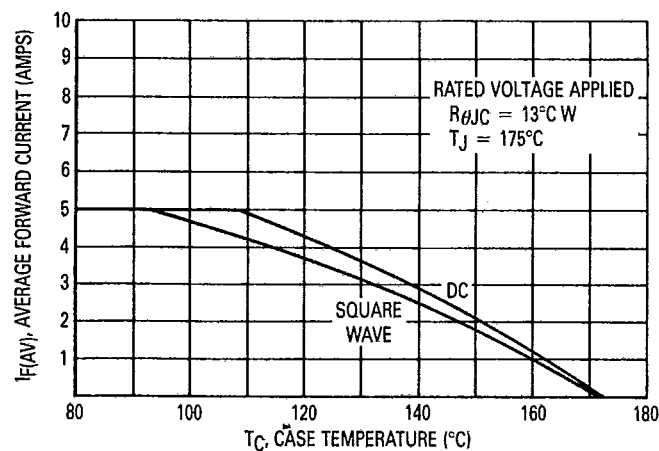


Figure 4. Current Derating, Case

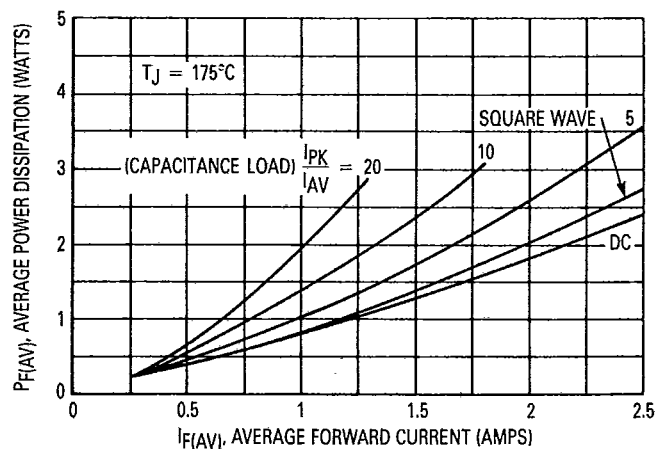


Figure 5. Power Dissipation

T-23-05

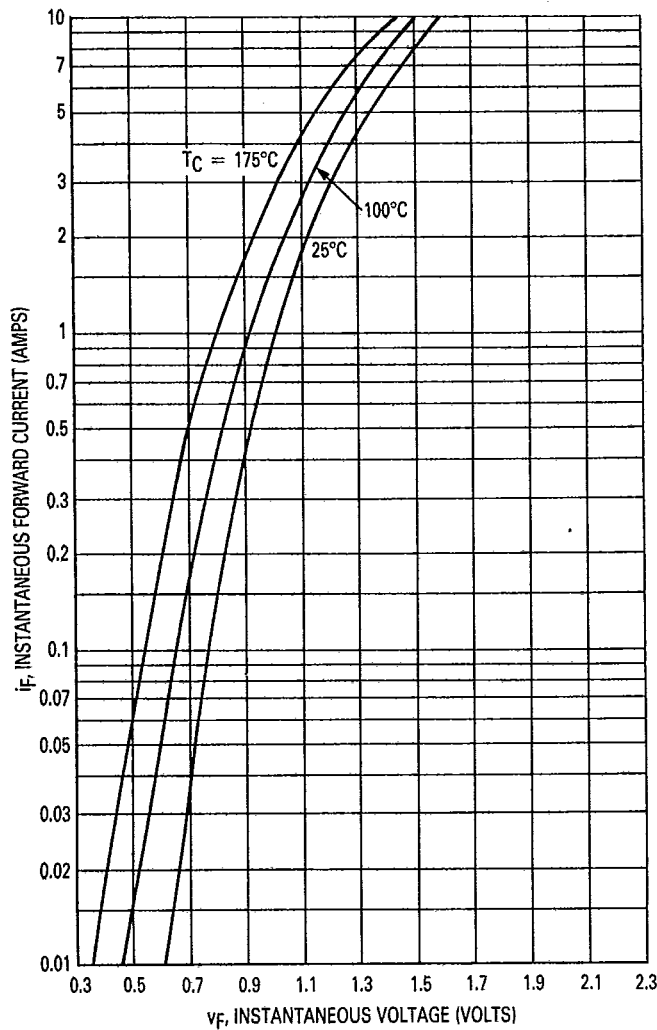


Figure 6. Typical Forward Voltage

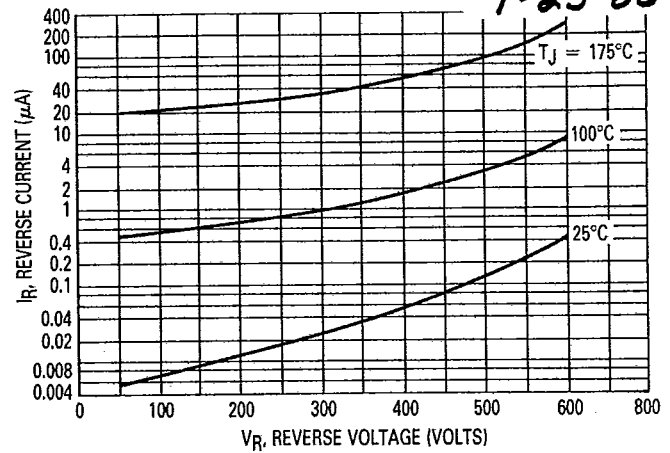


Figure 7. Typical Reverse Current*

*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 .

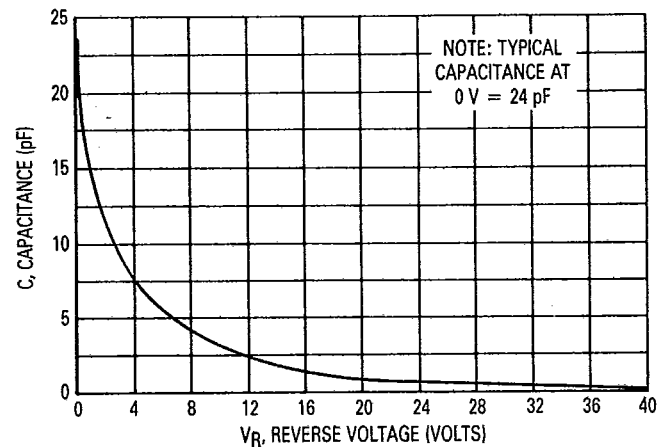


Figure 8. Typical Capacitance

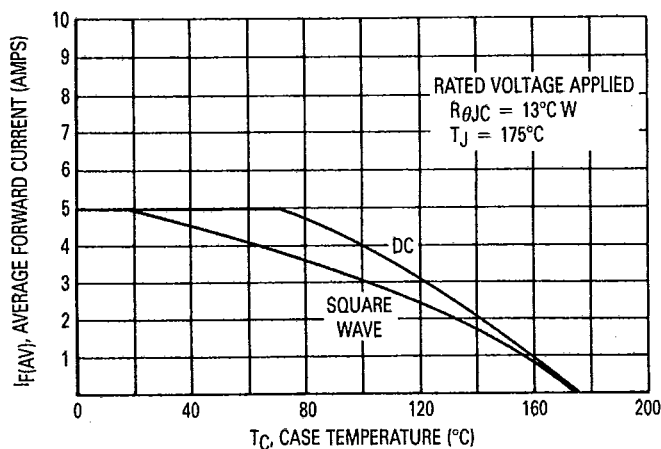


Figure 9. Current Derating, Case

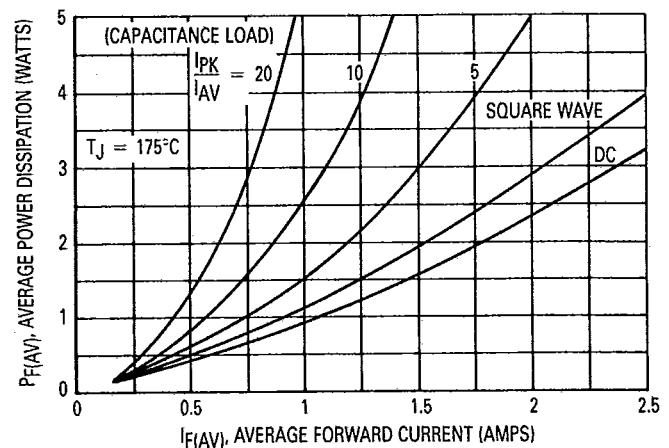
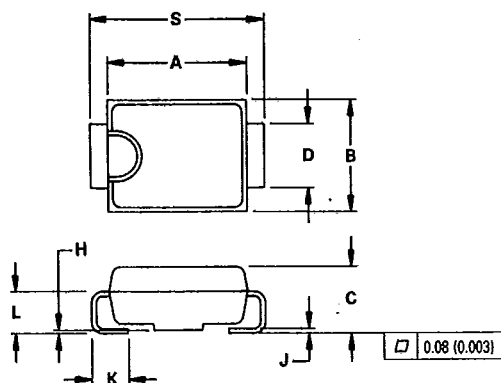


Figure 10. Power Dissipation

OUTLINE DIMENSIONS

T-23-05

CASE 403A-01

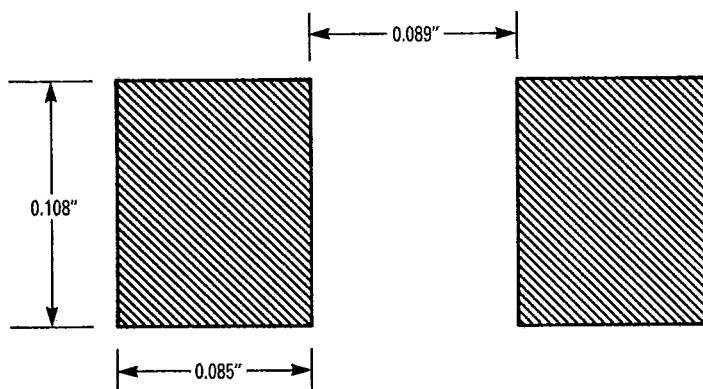


NOTES:

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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