

# MUR870E-MUR8100E

## 8 AMP ULTRA FAST RECTIFIER

### FEATURES

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.
- Available as non-RoHS (Sn/Pb plating), standard, and as RoHS by adding "-PBF" suffix.

### MAXIMUM RATINGS

Rating	Symbol	MUR870	MUR880	MUR890	MUR8100	Unit
Peak repetitive reverse voltage	$V_{RRM}$					
Working peak reverse voltage	$V_{RWM}$	700	800	900	1000	V
DC blocking voltage	$V_R$					
Average rectified forward current (Rated $V_R$ ) <sup>(1)</sup>	$I_{F(AV)}$	8.0 @ $T_C = 150^\circ\text{C}$				A
Peak repetitive forward current (Rated $V_R$ ) square wave, 20 kHz	$I_{FM}$	16 @ $T_C = 150^\circ\text{C}$				A
Non-repetitive peak surge current (surge applied at rated load conditions, halfwave, single phase, 60Hz)	$I_{FSM}$	100				A
Operating and storage junction temperature range	$T_J, T_{stg}$	-65 to +175				$^\circ\text{C}$
Maximum thermal resistance Junction to case	$R_{\theta JC}$	2.0				$^\circ\text{C}/\text{W}$

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ unless otherwise specified)

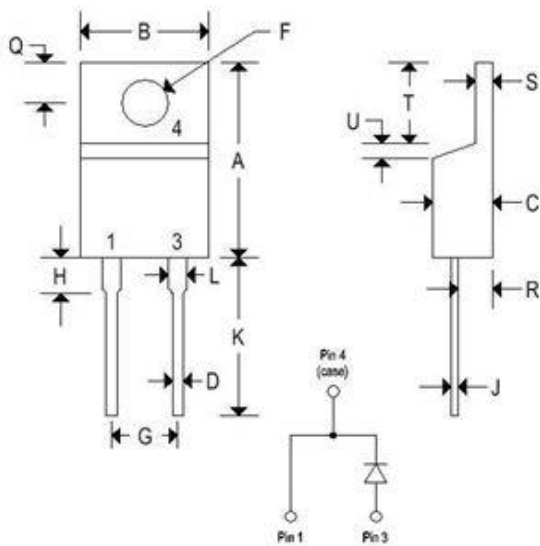
Parameter	Symbol	MUR870	MUR880	MUR890	MUR8100	Unit
Maximum instantaneous forward voltage <sup>(1)</sup> ( $I_F = 8.0\text{A}, T_C = 150^\circ\text{C}$ ) ( $I_F = 8.0\text{A}, T_C = 25^\circ\text{C}$ )	$V_F$			1.5 1.8		V
Maximum instantaneous reverse current <sup>(1)</sup> (Rated dc voltage, $T_C = 100^\circ\text{C}$ ) (Rated dc voltage, $T_C = 25^\circ\text{C}$ )	$I_R$		500 25			$\mu\text{A}$
Maximum reverse recovery time ( $I_F = 1.0\text{A}, di/dt = 50\text{A}/\mu\text{s}$ ) ( $I_F = 0.5\text{A}, I_R = 1.0\text{A}, I_{REC} = 0.25\text{A}$ )	$t_{rr}$		100 75			ns
Controlled avalanche energy	$W_{AVAL}$		20			mJ

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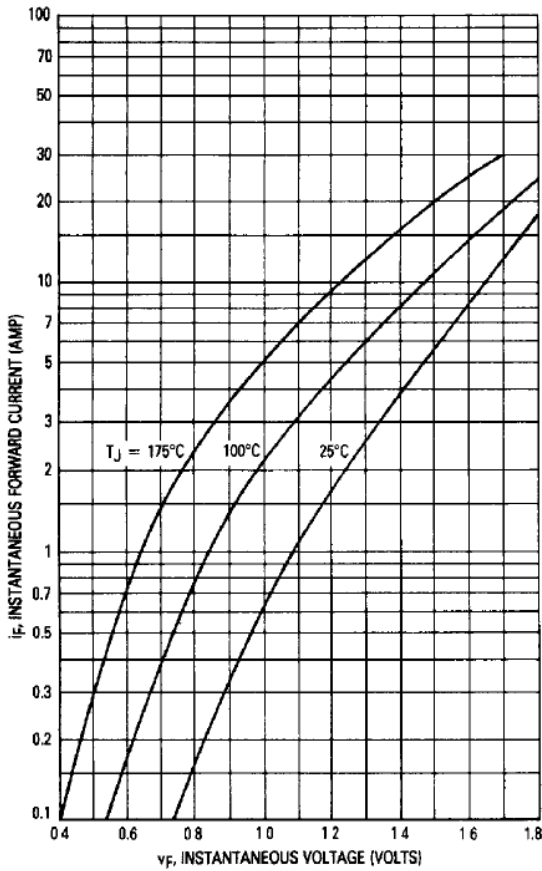
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**MECHANICAL CHARACTERISTICS**

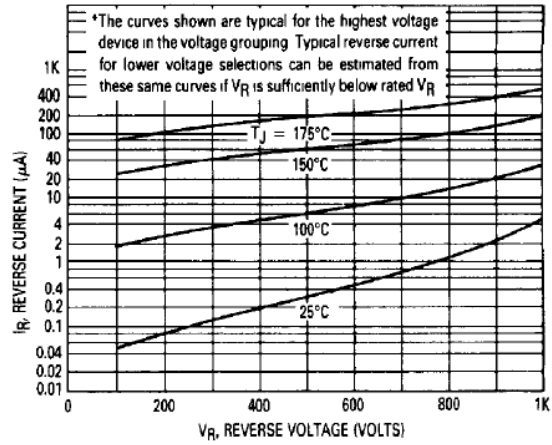
Case	TO-220AC
Marking	Alpha-numeric
Pin out	See below



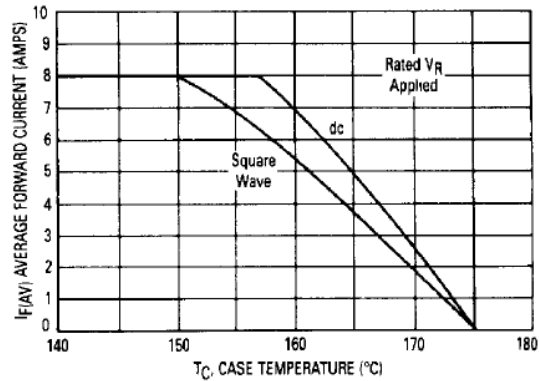
	TO-220AC			
	Inches		Millimeters	
	Min	Max	Min	Max
A	0.595	0.620	15.110	15.750
B	0.380	0.405	9.650	10.290
C	0.160	0.190	4.060	4.820
D	0.142	0.147	3.610	3.730
F	0.142	0.147	3.610	3.730
G	0.190	0.210	4.830	5.330
H	0.110	0.130	2.790	3.300
J	0.018	0.025	0.460	0.640
K	0.500	0.562	12.700	14.270
L	0.045	0.050	1.140	1.270
Q	0.100	0.120	2.540	3.040
R	0.080	0.110	2.040	2.790
S	0.045	0.055	1.140	1.390
T	0.235	0.255	5.970	6.480
U	0.030	0.050	0.760	1.270



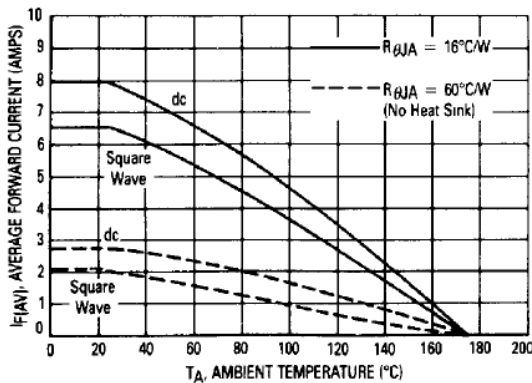
**Figure 1. Typical Forward Voltage**



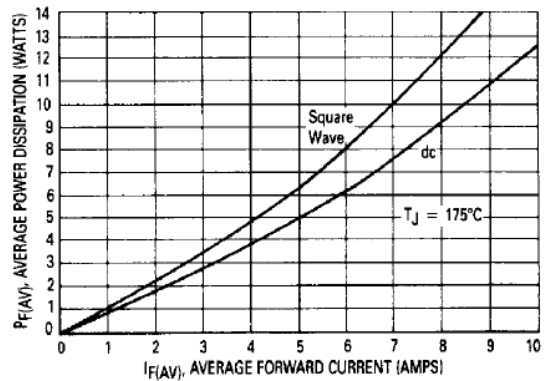
**Figure 2. Typical Reverse Current\***



**Figure 3. Current Derating, Case**



**Figure 4. Current Derating, Ambient**



**Figure 5. Power Dissipation**

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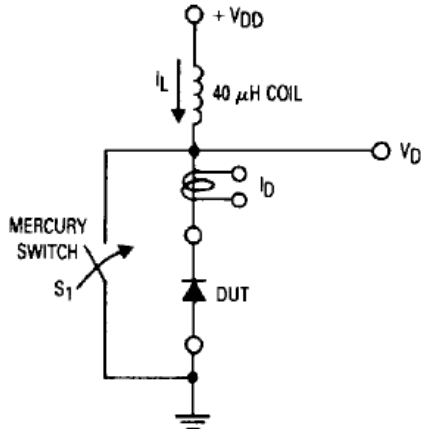


Figure 6. Test Circuit

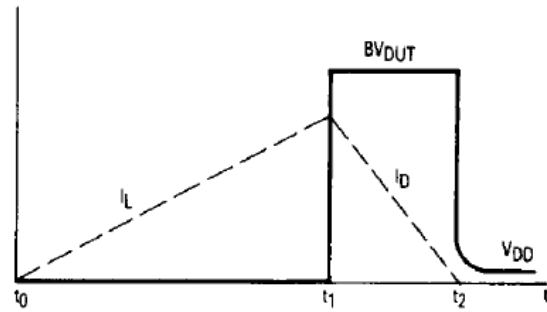


Figure 7. Current-Voltage Waveforms

EQUATION (1):  

$$W_{\text{AVAL}} \approx \frac{1}{2} L^2 I_{\text{PK}} \left( \frac{BV_{\text{DUT}}}{BV_{\text{DUT}} - V_{\text{DD}}} \right)$$

EQUATION (2):  

$$W_{\text{AVAL}} \approx \frac{1}{2} L^2 I_{\text{PK}}$$

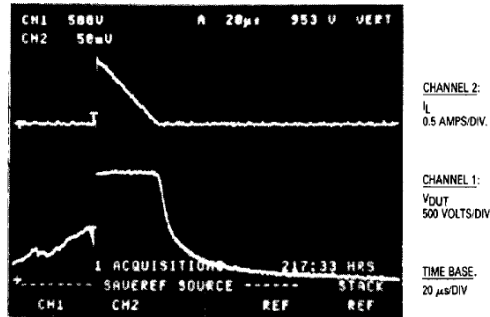


Figure 8. Current-Voltage Waveforms

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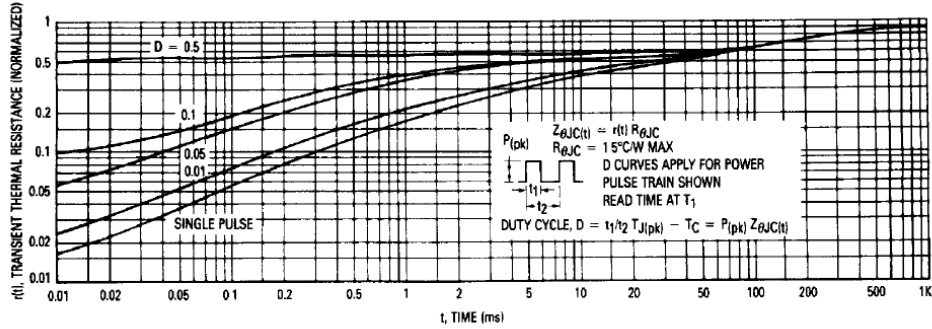


Figure 9. Thermal Response

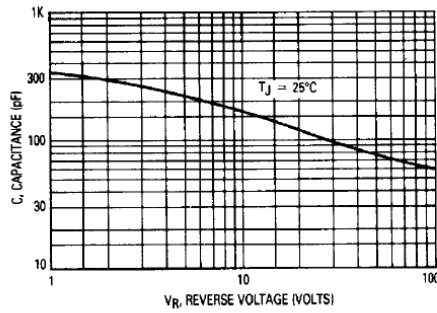


Figure 10. Typical Capacitance