

8Amp. Superfast High Voltage Rectifiers

MSR0860AE2

$I_{F(AV)}$	8A
V_{RRM}	600V
I_{FSM}	125A
trr	25ns
T_j	175°C
$V_F(Max)$	2V

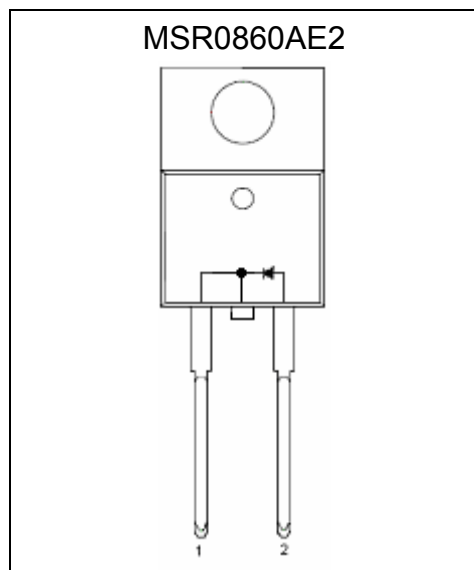
Features

- 175°C operating junction temperature
- Low leakage current
- Superfast recovery time
- Low switching loss, high efficiency
- High forward surge capability
- High temperature soldering guaranteed : 260°C/40s, 0.25”(6.35mm) from case
- Pb-free lead plating package

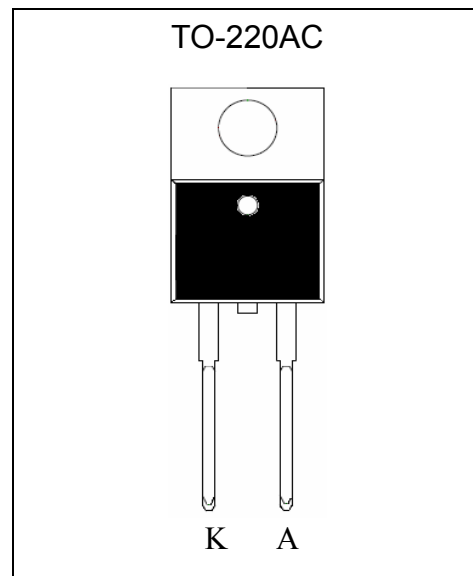
Mechanical Data

- Case: TO-220AC molded plastic
- Mounting Position: Any
- Weight: 1.85 grams, 0.065 ounce approximately
- Terminals: Pure tin plated, solderable per J-STD-002 and JESD22-B102
- Epoxy: UL 94V-0 rate flame retardant
- Polarity : As marked.

Equivalent Circuit



Outline



**Maximum Ratings and Electrical Characteristics**

(Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.)

Parameter	Symbol	Min.	Typ.	Max.	Units
Maximum Recurrent peak reverse voltage	V_{RRM}			600	V
Maximum RMS voltage	V_{RMS}			420	V
Maximum DC blocking voltage	V_{DC}			600	V
Maximum instantaneous forward voltage at $I_F=8A$	V_F	$T_C=25^{\circ}C$		1.8	V
		$T_C=125^{\circ}C$		1.5	
Maximum Average forward rectified current @ $T_C=100^{\circ}C$	$I_{F(AV)}$			8	A
Non-repetitive peak forward surge current @ 8.3ms single half sine wave superimposed on rated load (JEDEC method)	I_{FSM}			125	A
Maximum instantaneous reverse current at	I_R	$V_R=600V, T_C=25^{\circ}C$		25	μA
		$V_R=600V, T_C=125^{\circ}C$		500	
Maximum reverse recovery time	t_{rr}	$I_F=1A, V_R=30V, dI_F/dt=100A/\mu s$		16	ns
Typical junction capacitance @ $f=1MHz$ and applied 4V reverse voltage	C_J		18		pF
Storage temperature range	T_{stg}	-65		+175	$^{\circ}C$
Operating junction temperature range	T_J	-65		+175	$^{\circ}C$

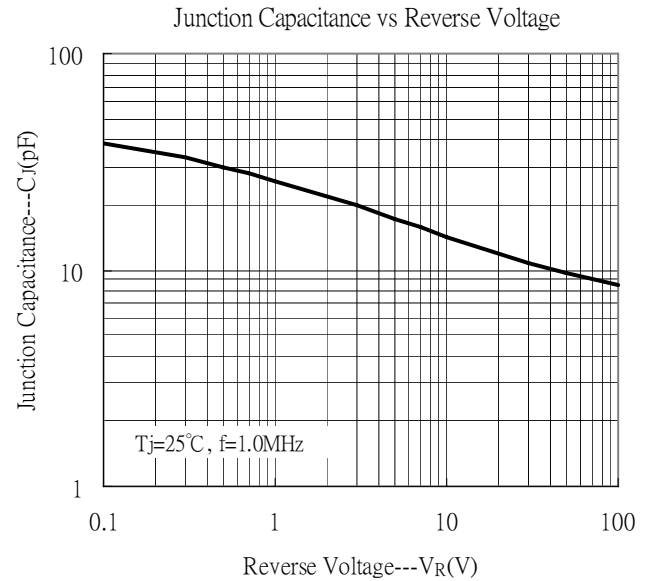
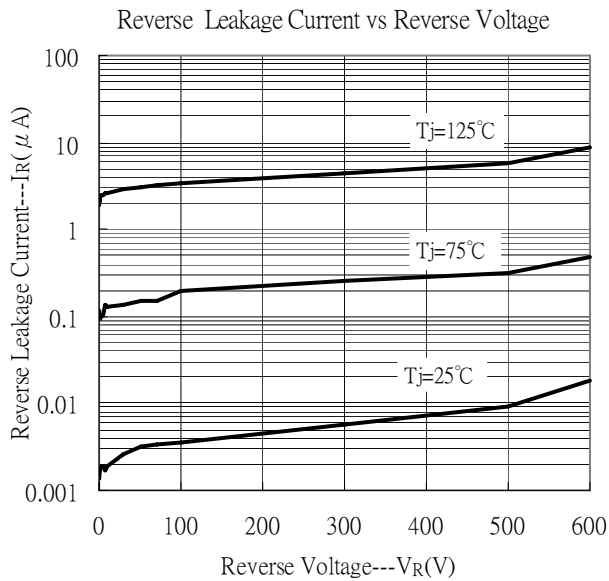
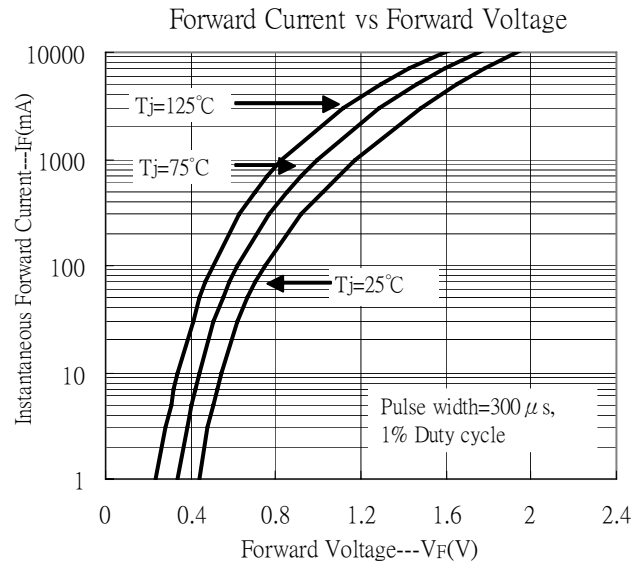
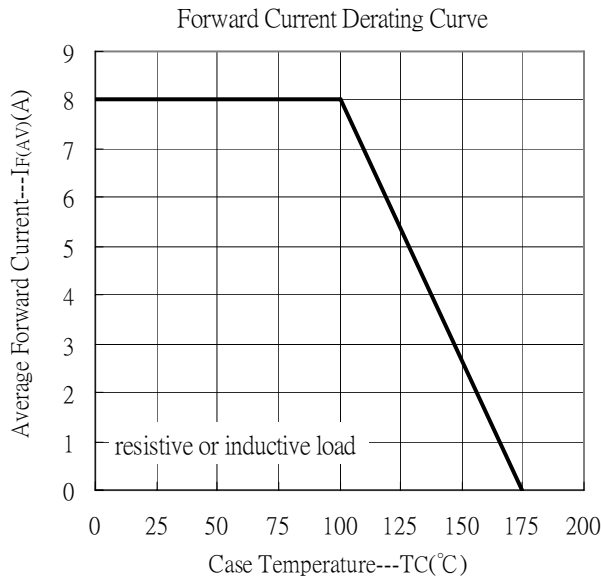
Thermal Data

Parameter	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-case	$R_{th,j-c}$	2.2	$^{\circ}C/W$
Maximum Thermal Resistance, Junction-to-ambient	$R_{th,j-a}$	60	$^{\circ}C/W$

Ordering Information

Device	Package	Shipping
MSR0860AE2	TO-220AC (RoHS compliant package)	50 pcs / Tube, 40 Tubes/Box

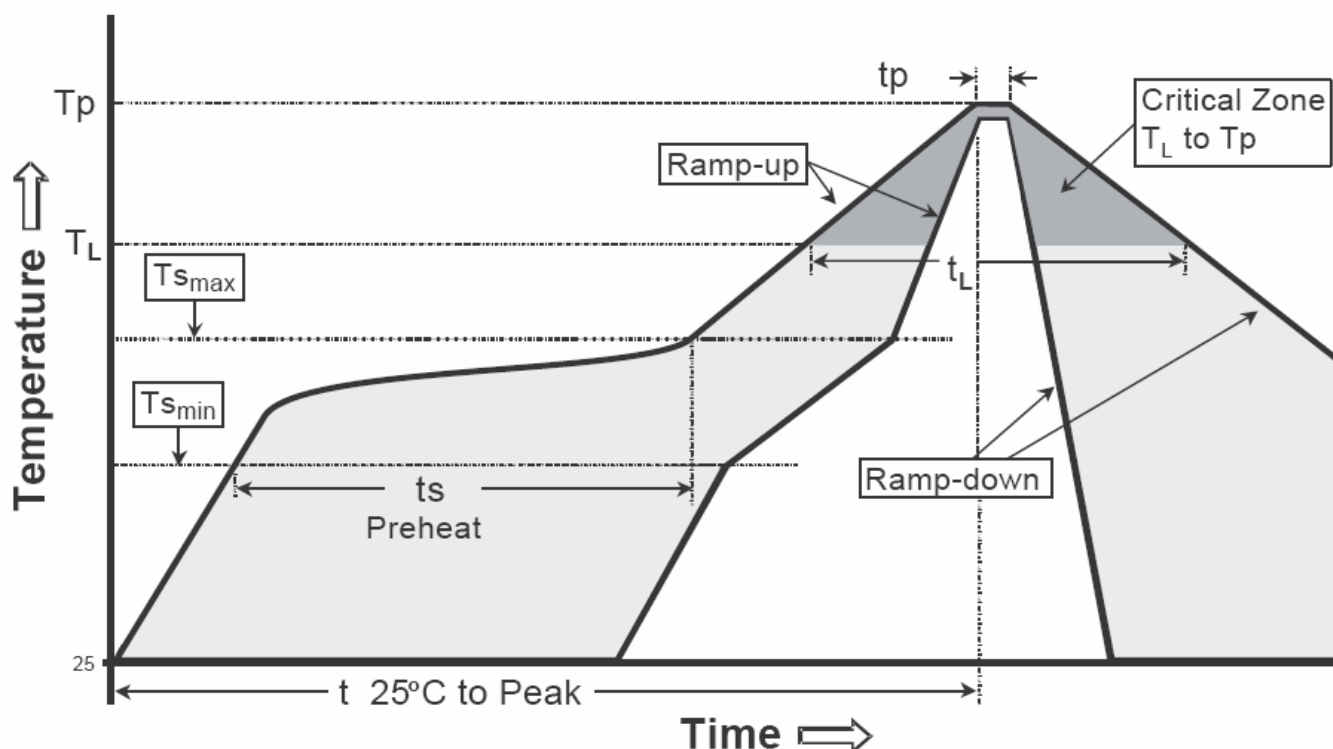
Typical Characteristics



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

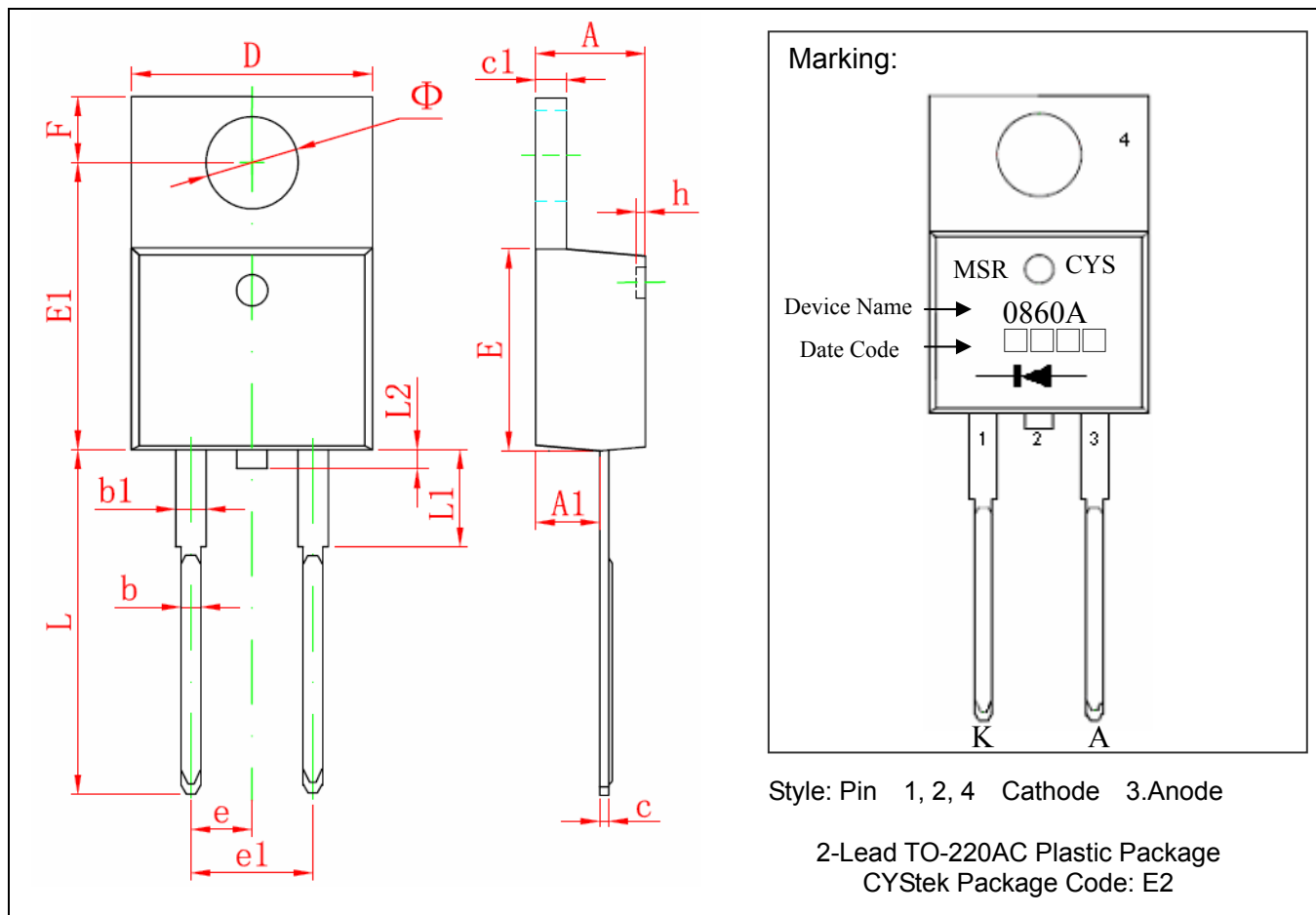
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (TL)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-220AC Dimension



DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184	e	2.540	TYP	0.100	TYP
A1	2.520	2.820	0.099	0.111	e1	4.980	5.180	0.196	0.204
b	0.710	0.910	0.028	0.036	F	2.590	2.890	0.102	0.114
b1	1.170	1.370	0.046	0.054	h	0.000	0.300	0.000	0.012
c	0.310	0.530	0.012	0.021	L	13.400	13.800	0.528	0.543
c1	1.170	1.370	0.046	0.054	L1	3.560	3.960	0.140	0.156
D	10.010	10.310	0.394	0.406	L2	0.000	1.000	0.000	0.039
E	8.500	8.900	0.335	0.350	Φ	3.735	3.935	0.147	0.155
E1	12.060	12.460	0.475	0.491					

Notes: 1.Controlling dimension: millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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