8Amp. Superfast High Voltage Rectifiers

MSR0860AE2

$I_{F(AV)}$	8A
V_{RRM}	600V
I_{FSM}	125A
$trr_{(Max)}$	25ns
Tj	175°C
$V_{F(Max)}$	2.2V

Features

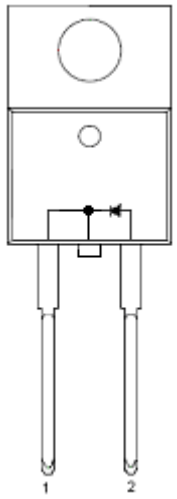
- 175℃ operating junction temperature
- Low leakage current
- Superfast recovery time
- Low switching loss, high efficiency
- High forward surge capability
- High temperature soldering guaranteed : 260℃/40s, 0.25”(6.35mm) from case
- Pb-free lead plating package

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.

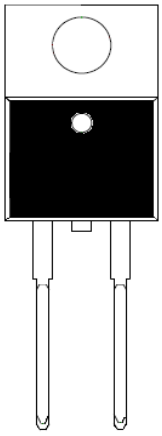
Equivalent Circuit

MSR0860AE2



Outline

TO-220AC



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%.)

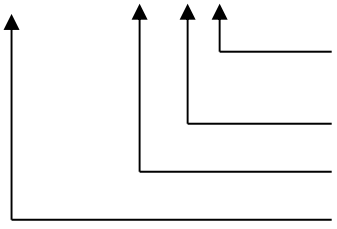
Parameter		Symbol	Min.	Typ.	Max.	Units
Maximum Recurrent peak reverse voltage		V_{RRM}			600	V
Maximum RMS voltage		V_{RMS}			420	V
Maximum DC blocking voltage		V_{DC}			600	V
Maximum instantaneous forward voltage at I_F=8A	T_C=25°C	V_F		2.0	2.2	V
	T_C=125°C			1.6	2.0	
Maximum Average forward rectified current @ T_C=100°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	V_R=600 V, T_C=25°C	I_R			25	μA
	V_R=600 V, T_C=125°C				500	
Maximum reverse recovery time	I_F=1A, V_R=30V, dI_F/dt=100A/μs	trr		16	25	ns
Typical junction capacitance @ f=1MHz and applied 4V reverse voltage		C_J		40		pF
Storage temperature range		Tstg	-65		+175	°C
Operating junction temperature range		T_J	-65		+175	°C

Thermal Data

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

Ordering Information

Device	Package	Shipping
MSR0860AE2-0-UF-S	TO-220AC (RoHS compliant package)	50 pcs / Tube, 40 Tubes/Box



Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

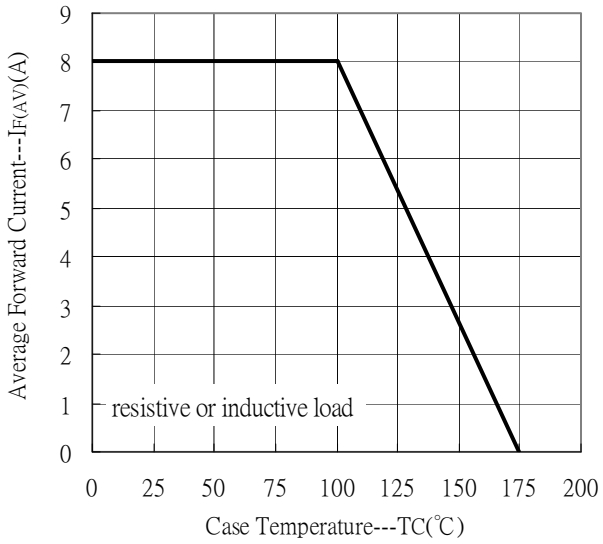
Packing spec, UF : 50 pcs / tube, 40 tubes/box

Product rank, zero for no rank products

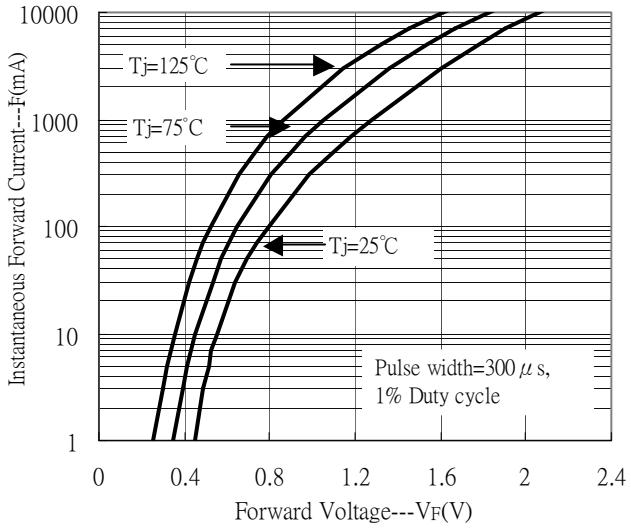
Product name

Typical Characteristics

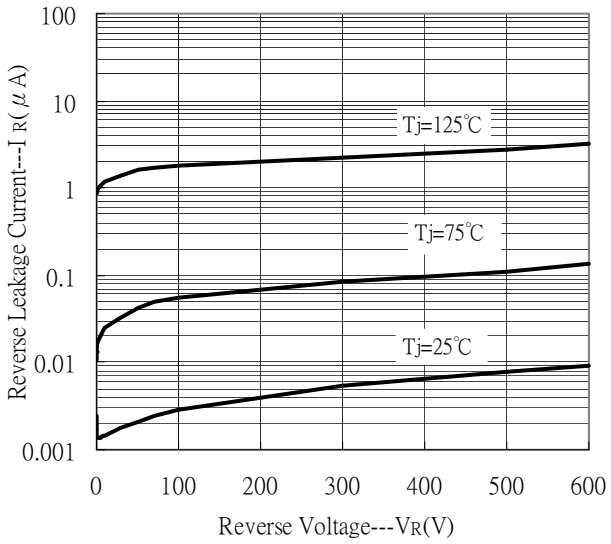
Forward Current Derating Curve



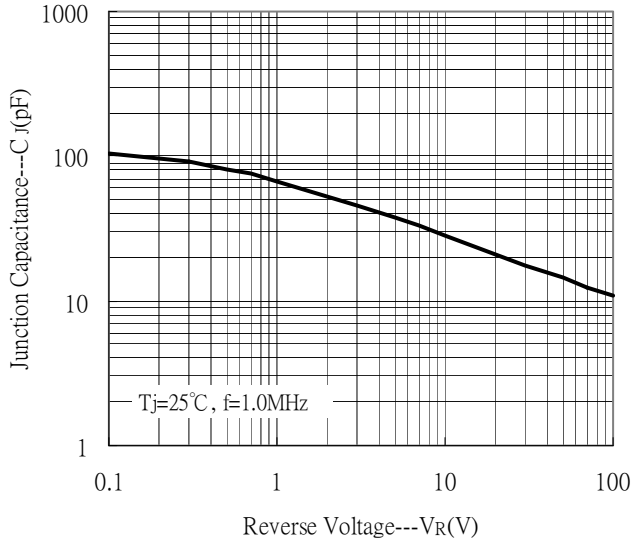
Forward Current vs Forward Voltage



Reverse Leakage Current vs Reverse Voltage



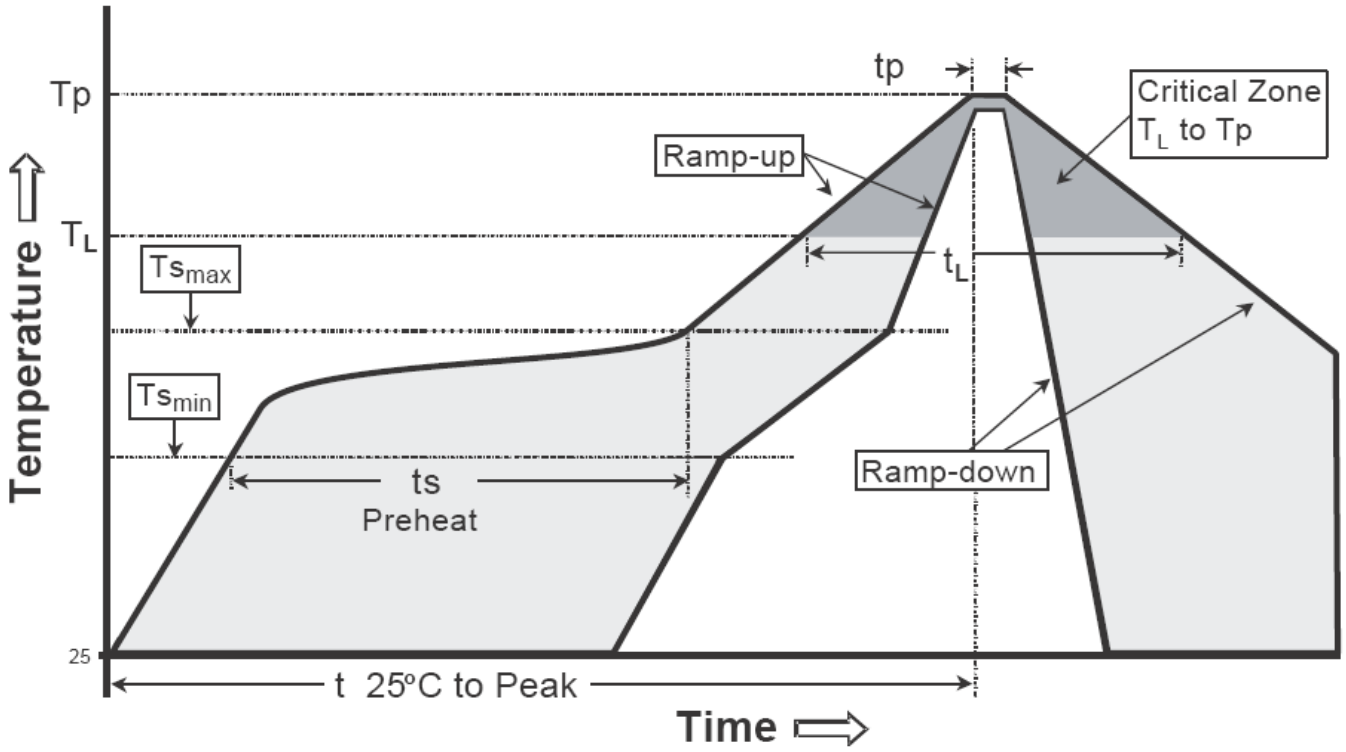
Junction Capacitance vs Reverse Voltage



Recommended wave soldering condition

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

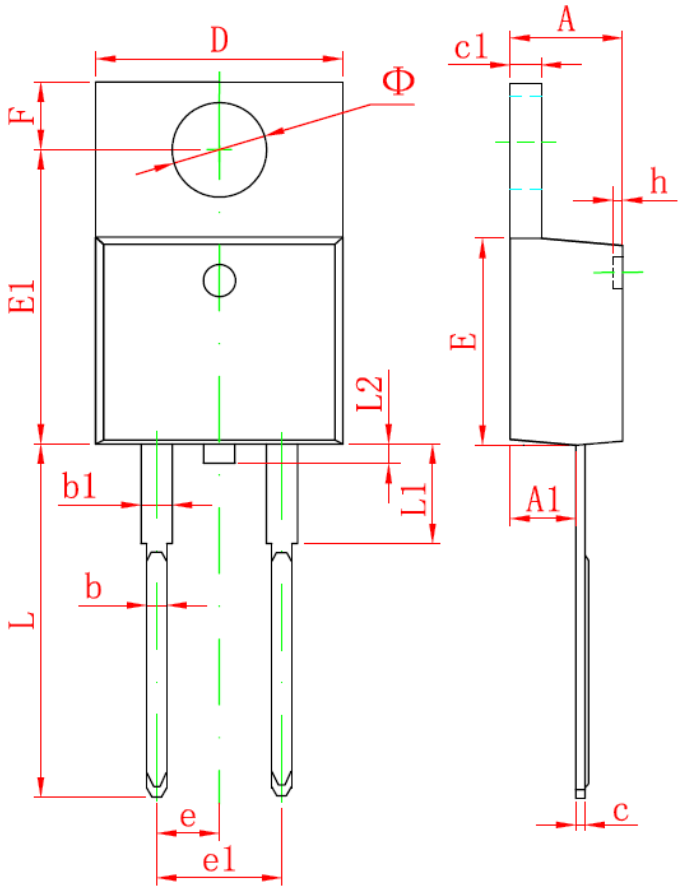
Recommended temperature profile for IR reflow



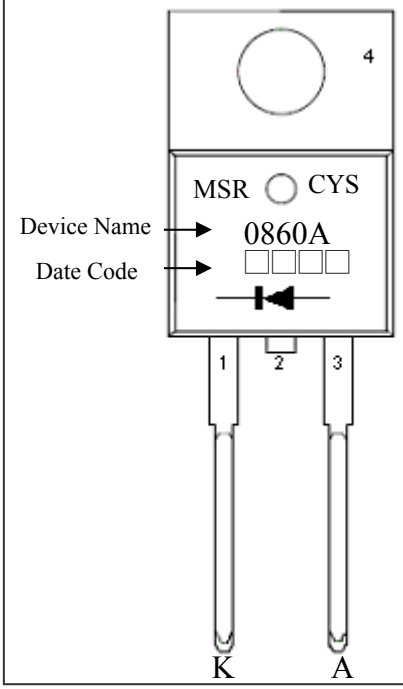
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(T_P)	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



Marking:



Style: Pin 1, 2, 4 Cathode 3.Anode

2-Lead TO-220AC Plastic Package
CYStek Package Code: E2

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.