

8Amp. Superfast High Voltage Rectifiers

MSR0860AJ3

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

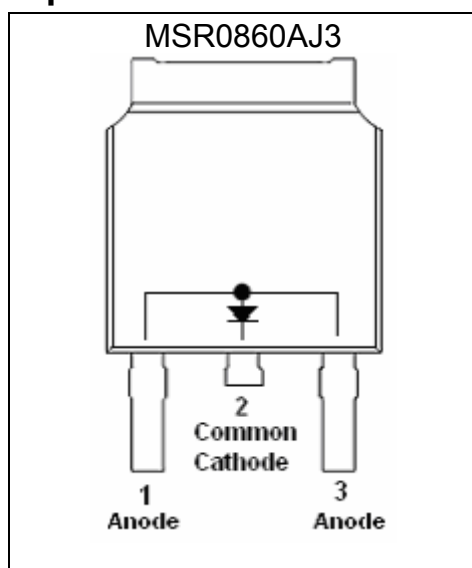
Features

- 175°C operating junction temperature
- Low leakage current
- Superfast recovery time
- Low switching loss, high efficiency
- High forward surge capability
- Pb-free lead plating and halogen-free package

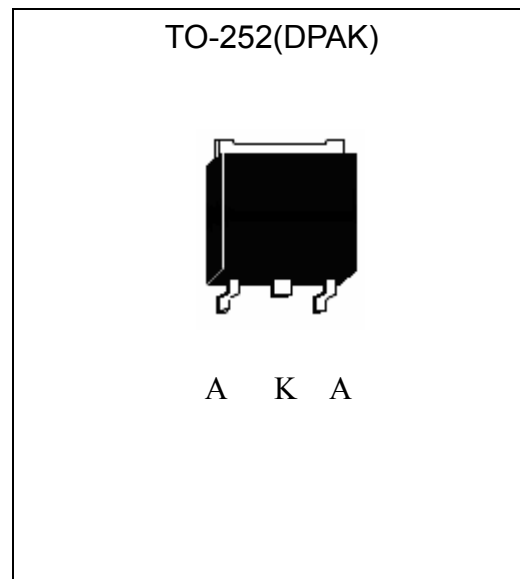
Mechanical Data

- Case: TO-252 molded plastic
- Mounting Position: Any
- 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 $I_F=8A$	$T_C=25^{\circ}C$	V_F	1.8	2.2	V
	$T_C=125^{\circ}C$		1.5	2	
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	$V_R=600V, T_C=25^{\circ}C$	I_R		25	μA
	$V_R=600V, T_C=125^{\circ}C$			500	
Maximum reverse recovery time	$I_F=1A, V_R=30V, dI_F/dt=100A/\mu s$	t_{rr}		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

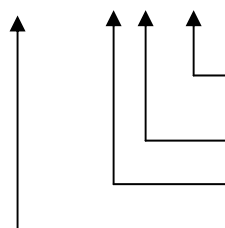
Parameter	Symbol	Value	Unit
Maximum Thermal Resistance, Junction-to-case	$R_{th,j-c}$	4	$^{\circ}C/W$
Maximum Thermal Resistance, Junction-to-ambient (Note 1)	$R_{th,j-a}$	50	
Maximum Thermal Resistance, Junction-to-ambient (Note 2)		110	

Note : 1. When device mounted on 1 in² FR-4 board with 2 oz. copper, in a still air environment with $T_A=25^{\circ}C$.

2. When mounted on the minimum pad size recommended (PCB mount).

Ordering Information

Device	Package	Shipping
MSR0860AJ3-0-T3-G	TO-252 (Pb-free lead plating and halogen-free package)	2500 pcs / Tape & Reel



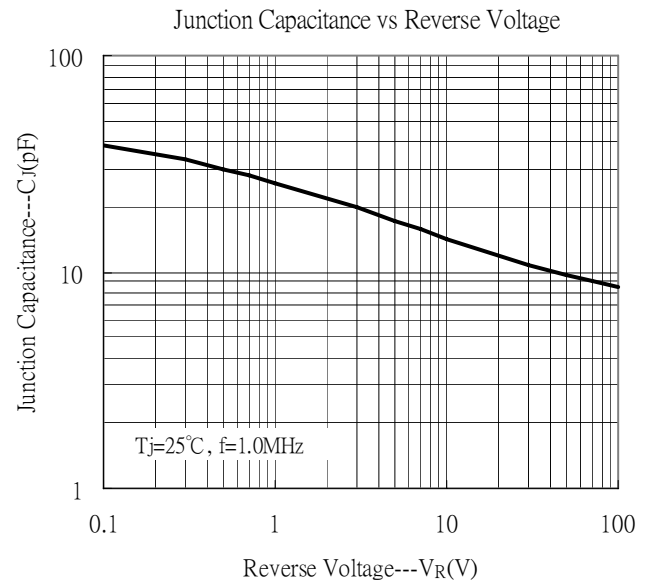
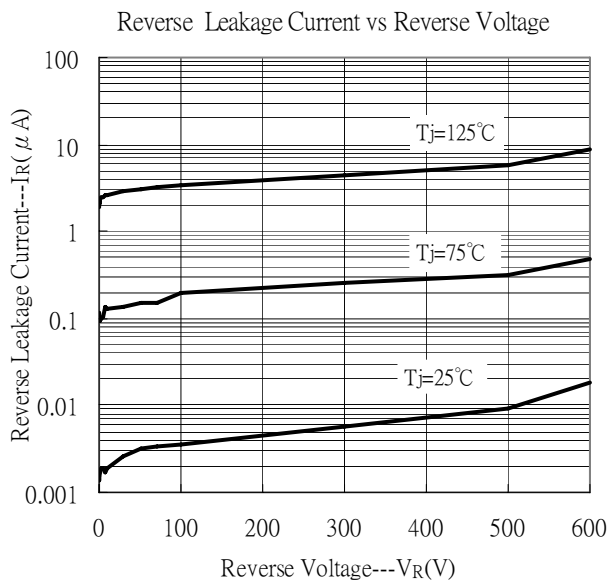
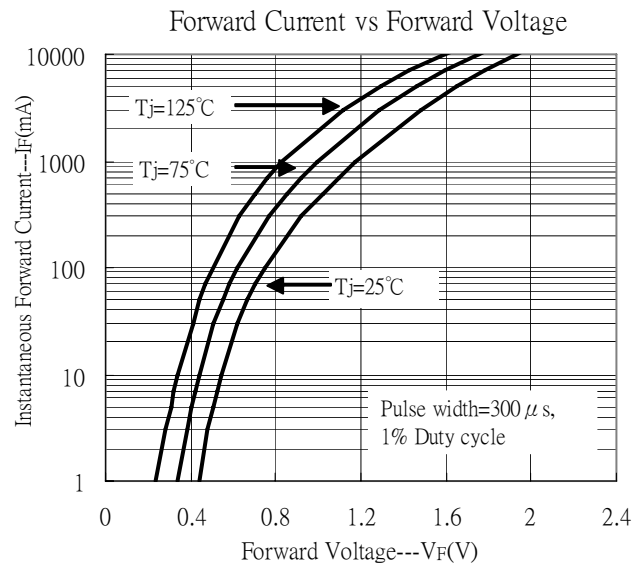
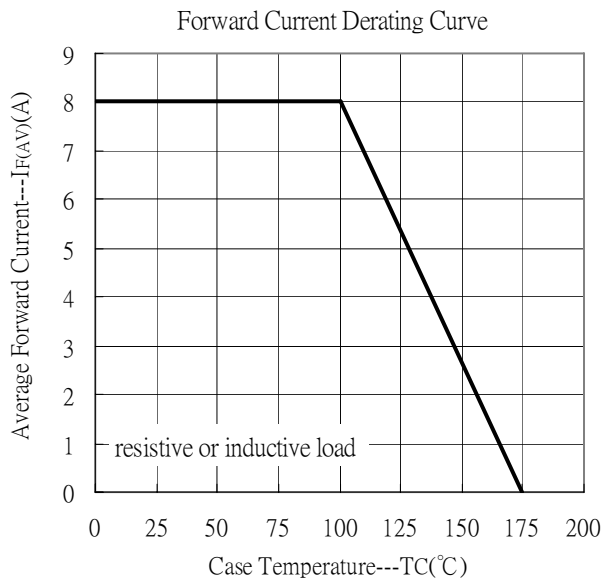
Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, T3 : 2500 pcs / tape & reel, 13" reel

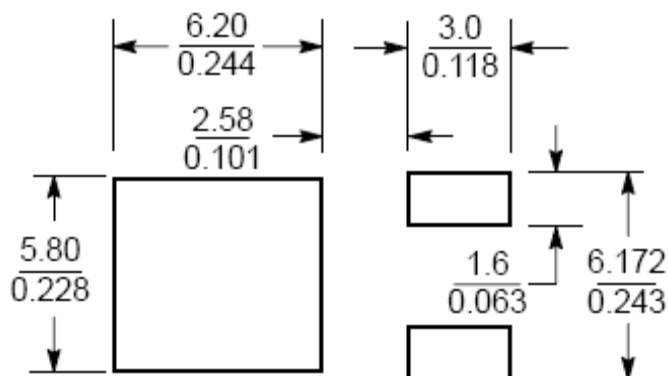
Product rank, zero for no rank products

Product name

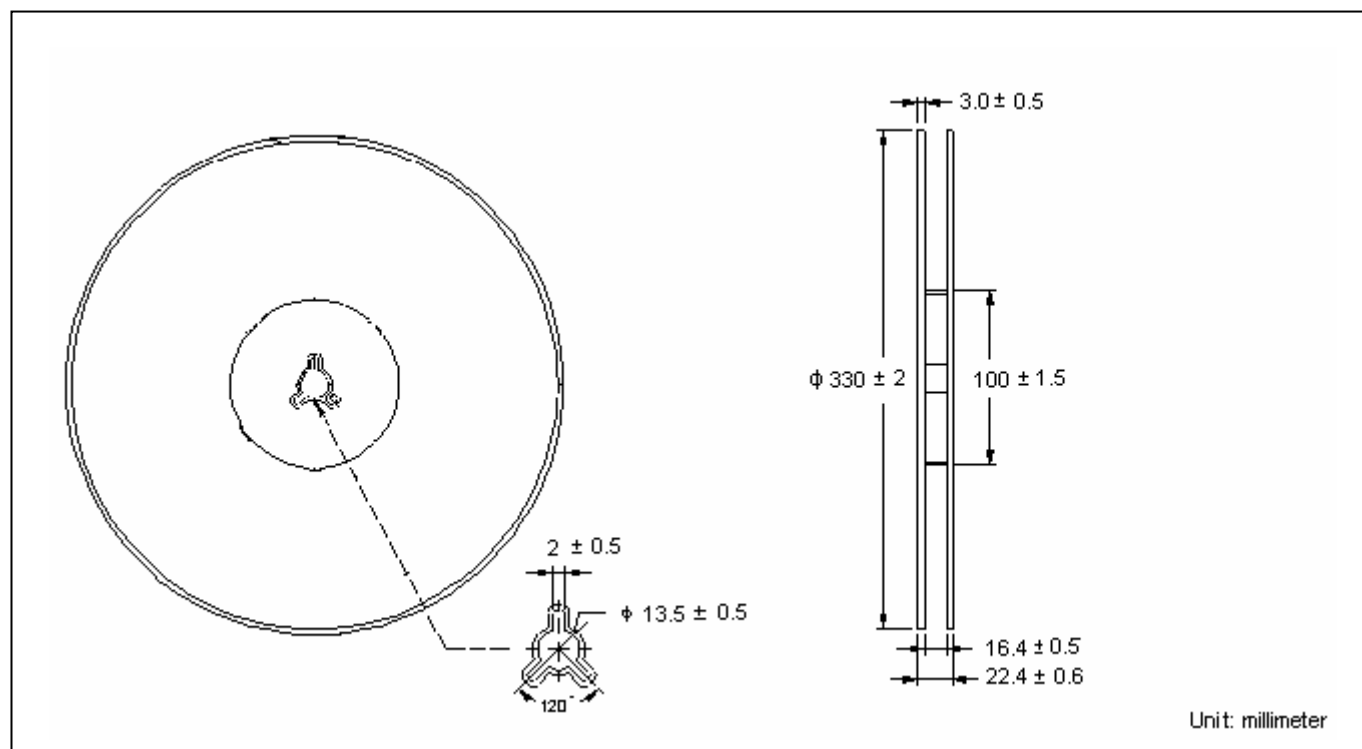
Typical Characteristics



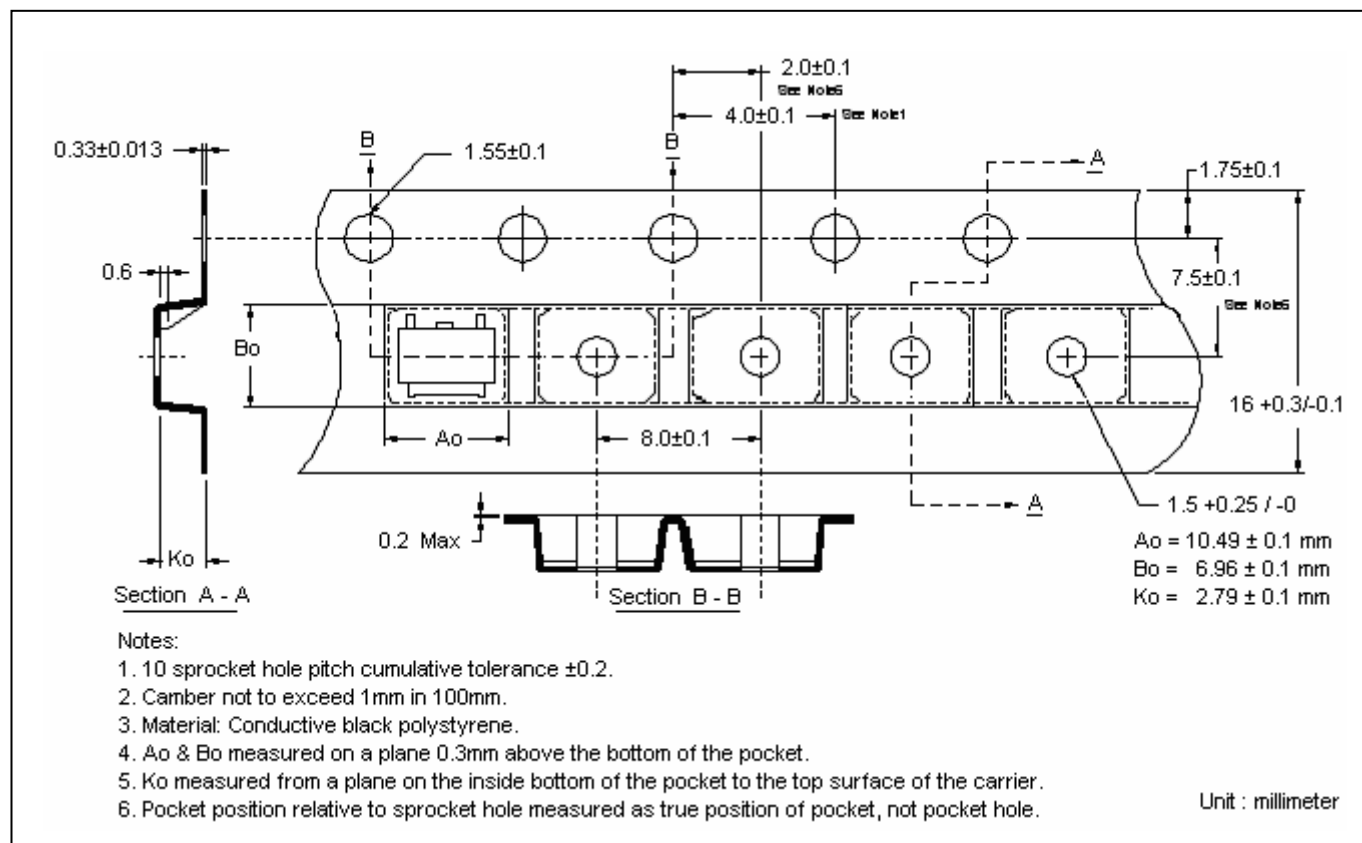
Recommended soldering footprint


Unit ($\frac{mm}{inch}$)

Reel Dimension



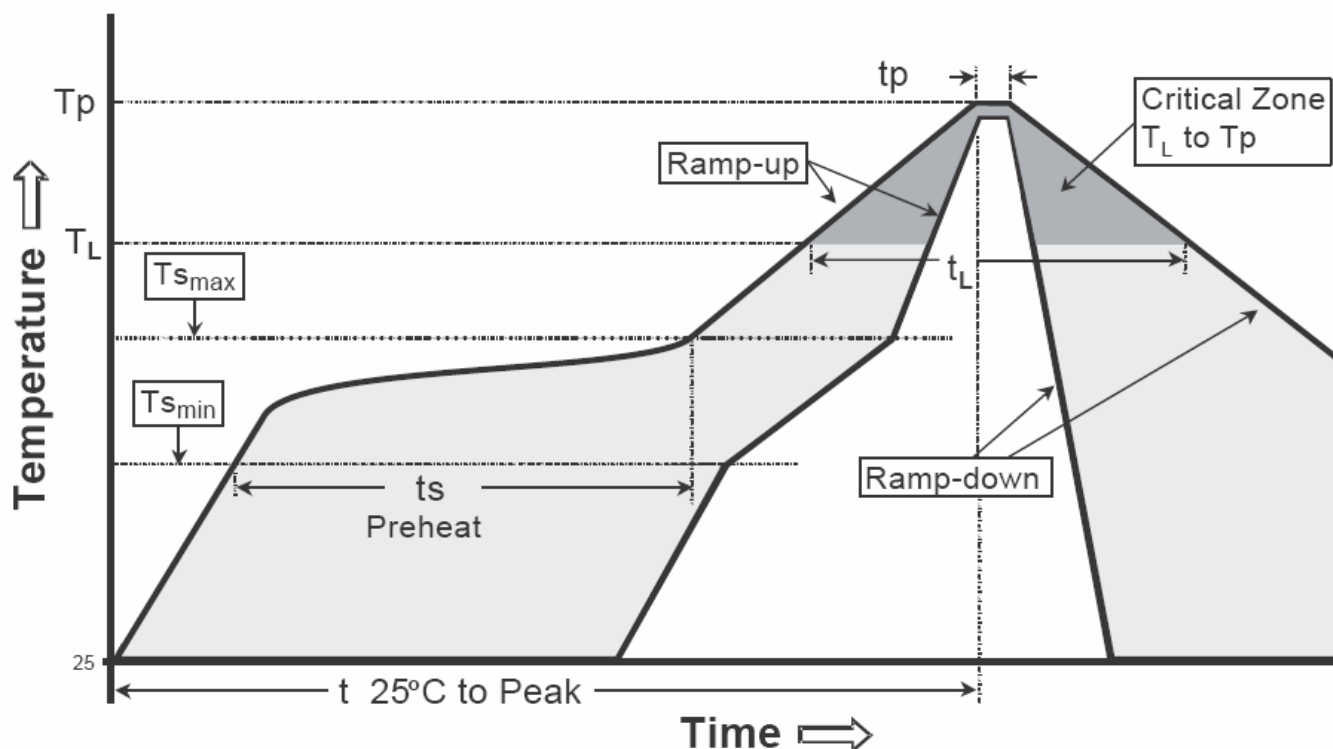
Carrier Tape Dimension



Recommended wave soldering condition

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

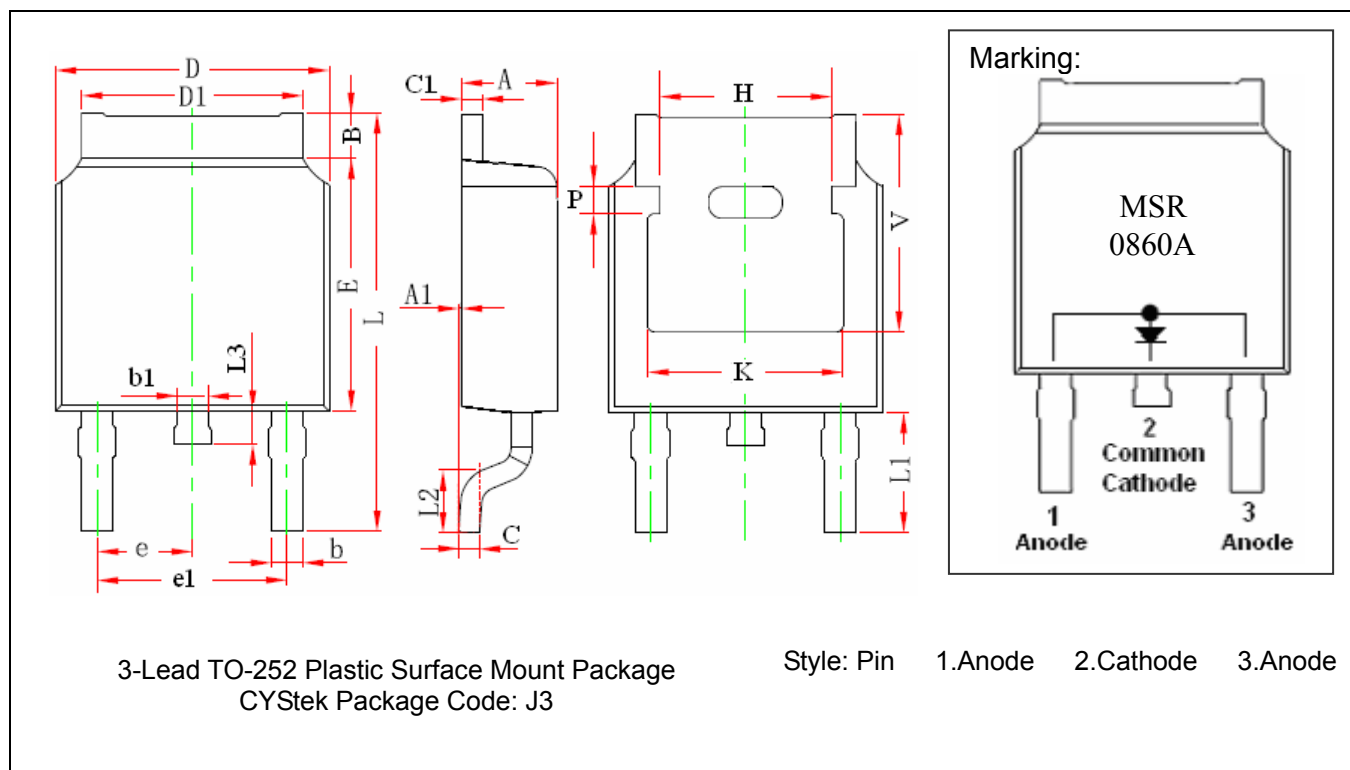
Recommended temperature profile for IR reflow



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-252 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.087	0.094	2.200	2.400	e	0.086	0.094	2.186	2.386
A1	0.000	0.005	0.000	0.127	e1	0.172	0.188	4.372	4.772
B	0.039	0.048	0.990	1.210	H	0.163	REF	4.140	REF
b	0.026	0.034	0.660	0.860	K	0.190	REF	4.830	REF
b1	0.026	0.034	0.660	0.860	L	0.386	0.409	9.800	10.400
C	0.018	0.023	0.460	0.580	L1	0.114	REF	2.900	REF
C1	0.018	0.023	0.460	0.580	L2	0.055	0.067	1.400	1.700
D	0.256	0.264	6.500	6.700	L3	0.024	0.039	0.600	1.000
D1	0.201	0.215	5.100	5.460	P	0.030	REF	0.750	REF
E	0.236	0.244	6.000	6.200	V	0.211	REF	5.350	REF

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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