

1A Snubber Damping Rectifier

QJPL3, QJPCAL3

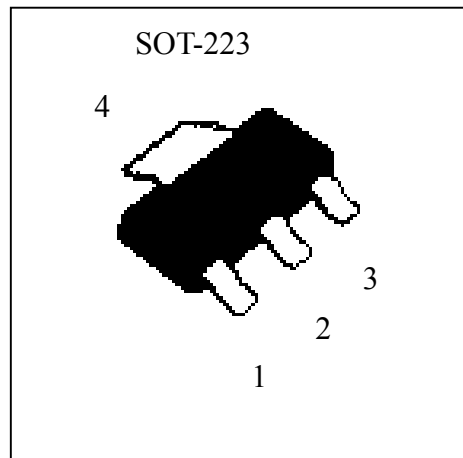
Features

- High current capability
- Smoothly soft reverse recovery time (trr)
- Low profile surface mounted package in order to minimize board space
- Pb-free lead plating and halogen-free package

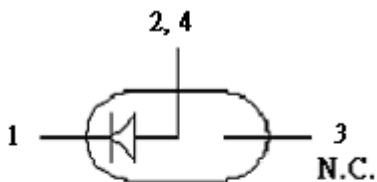
Pinning

Pin	Description	
	QJPL3	QJPCAL3
1	K	K1
2	A	A1, A2
3	NC	K2
4	A	A1, A2

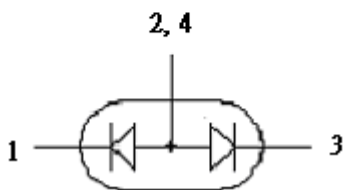
Outline



Diode configuration and symbol



(1) QJPL3



(2) QJPCAL3

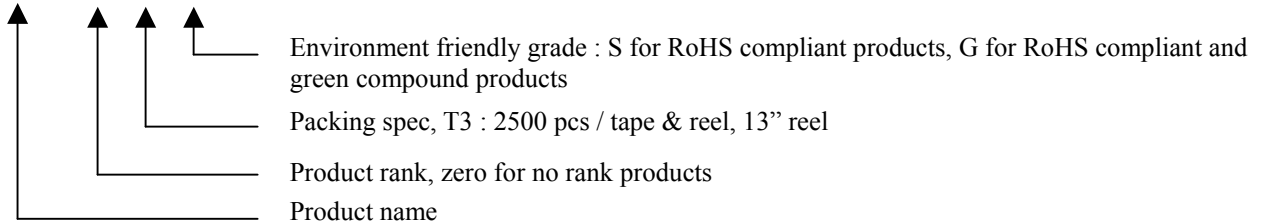
Marking:

Type	Marking Code
QJL3	QJP
QJCTL3	QJPCA



Ordering Information

Device	Package	Shipping
QJPL3-XX-T3-G	SOT-223	2500 pcs / Tape & Reel
QJPCAL3-XX-T3-G	(Pb-free lead plating and halogen-free package)	



Absolute Maximum Ratings (TA=25°C, unless otherwise noted)

Parameters	Conditions	Symbol	Value			Units
			60	62	65	
Repetitive peak reverse voltage		V _{RRM}	600	620	650	V
RMS voltage		V _{RMS}	420	434	455	V
Continuous reverse voltage		V _R	600	620	650	V
Forward rectified current	Single phase half wave, 60Hz @T _J =25°C	I _{F(AV)}	1			A
Repetitive Peak Forward Current	Single phase half wave, 60Hz @T _J =25°C	I _{FRM}	1.57			A
Forward surge current	8.3ms single half sine-wave superimposed on rated load (JEDEC method)	I _{FSM}	9			A
Power Dissipation		P _D	0.8			W
	(Note 1)		1.2			
	(Note 2)		3			
Maximum reverse recovery time	I _F =0.5A, I _R =1.0A, I _{RR} =0.25A	trr	300			ns
Storage temperature range		T _{stg}	-55~+150			°C
Operating junction temperature range		T _j	-55~+150			°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-ambient, max	R _{th,j-a}	156	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 1)		104	
Thermal Resistance, Junction-to-ambient, max (Note 2)		42	
Thermal Resistance, Junction-to-case, max	R _{th,j-c}	35	

Note: *1 When mounted on FR-4 PCB with area measuring 10×10×1 mm

*2 When mounted on ceramic with area measuring 40×40×1 mm

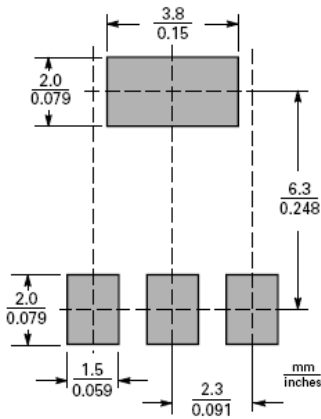
Characteristics (TA=25°C, unless otherwise noted)

Characteristic	Symbol	Condition	Min.	Typ	Max.	Unit
	V _R	I _R =100μA	600	-	-	V
Forward Voltage	V _F 1	I _F =100mA	-	-	0.95	V
	V _F 2	I _F =500mA	-	-	1.2	
Reverse Leakage Current	I _R	V _R =540V	-	-	100	nA
	I _R	V _R =540V, T _A =125°C	-	-	10	μA
Junction Capacitance	C _J	V _R =1V, f=1MHz	-	11.6	-	pF

Classification by V_R

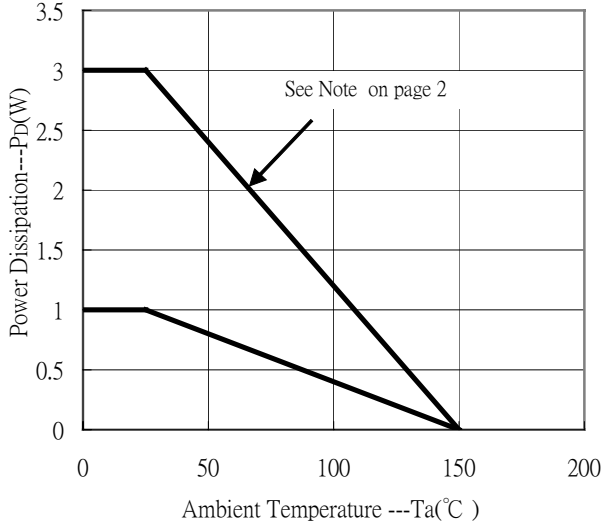
Rank	60	62	65
Range	> 600V	>620V	>650V

Recommended soldering footprint

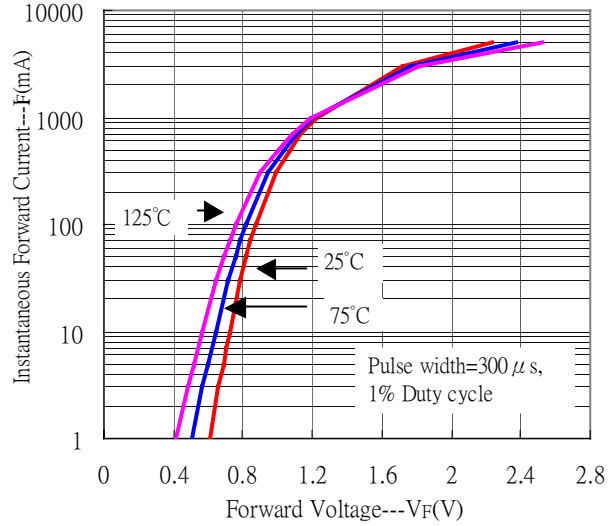


Typical Characteristics

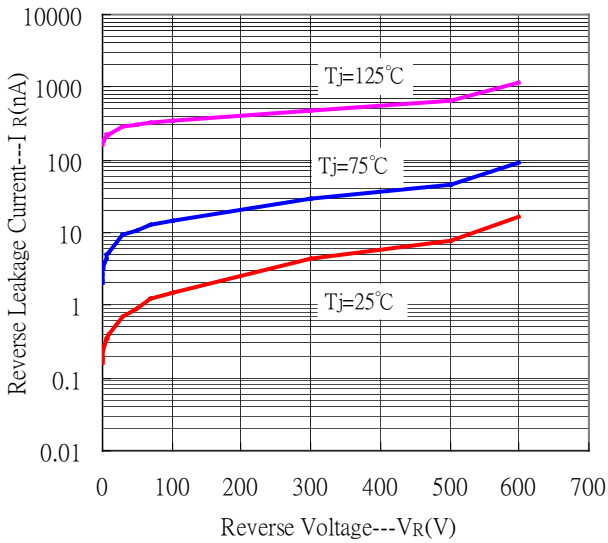
Power Derating Curves



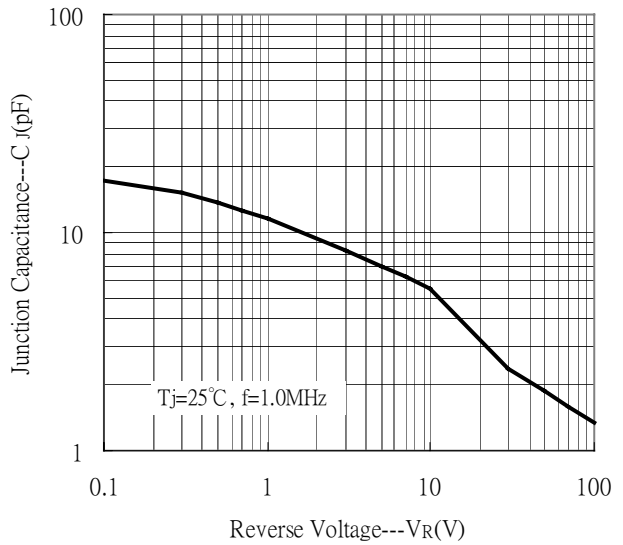
Forward Current vs Forward Voltage



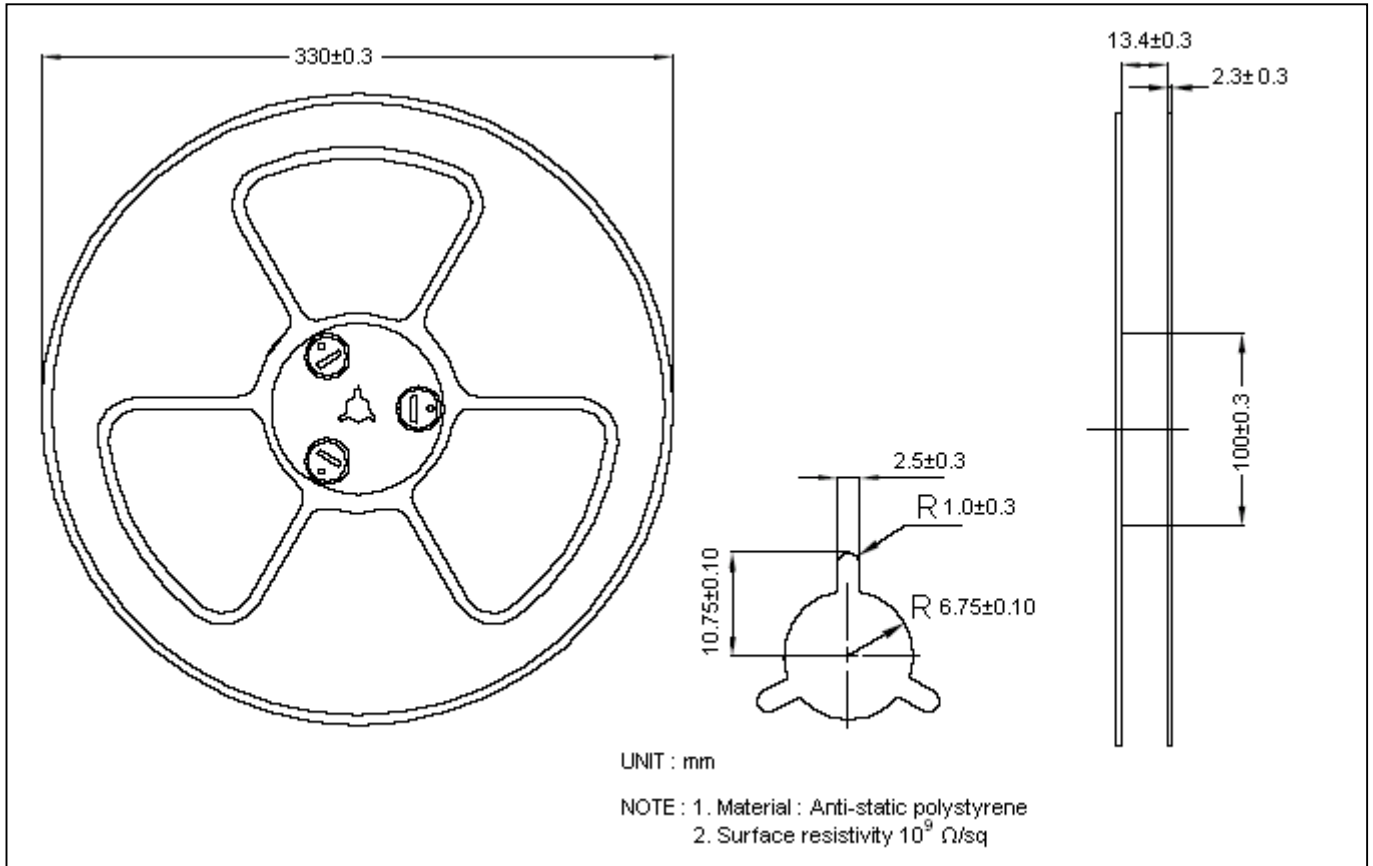
Reverse Leakage Current vs Reverse Voltage



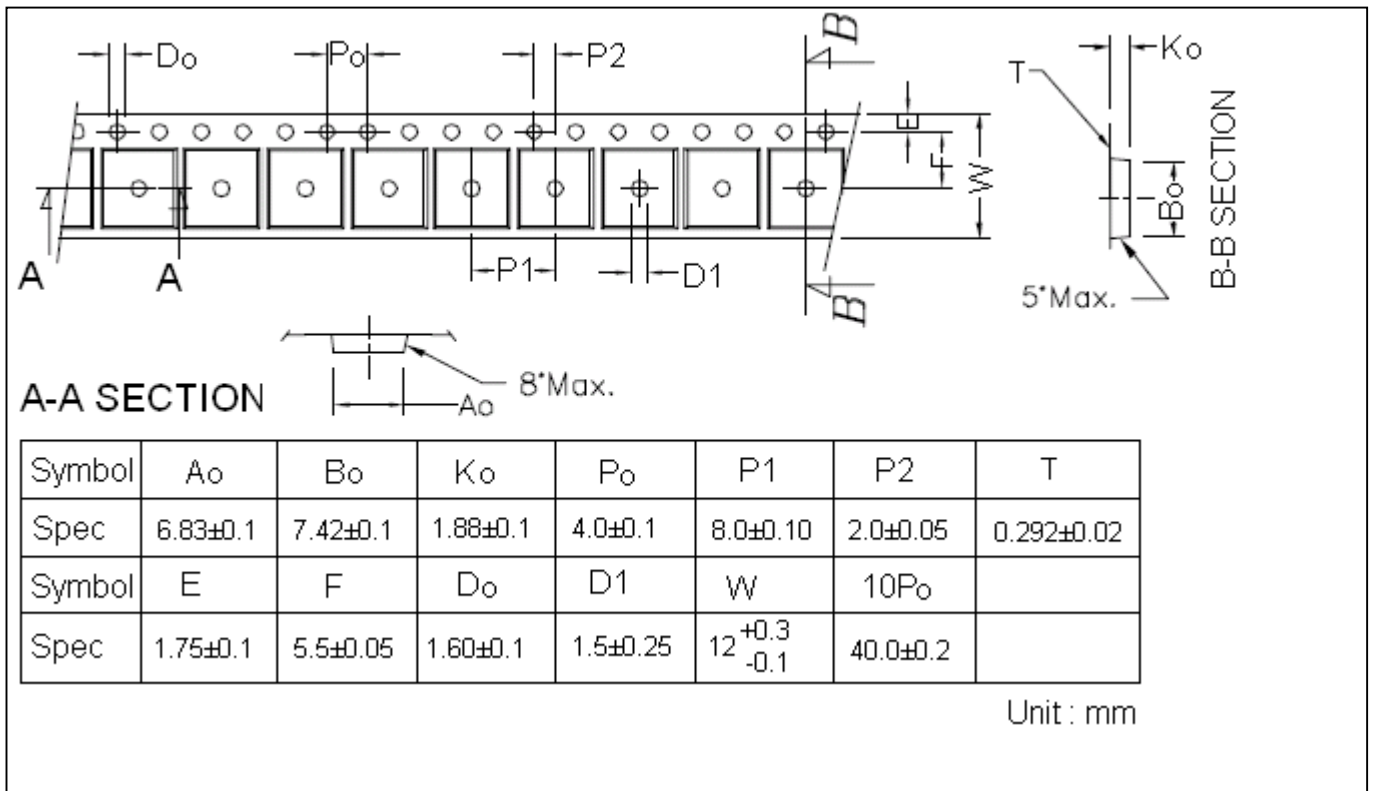
Junction Capacitance vs Reverse Voltage



Reel Dimension



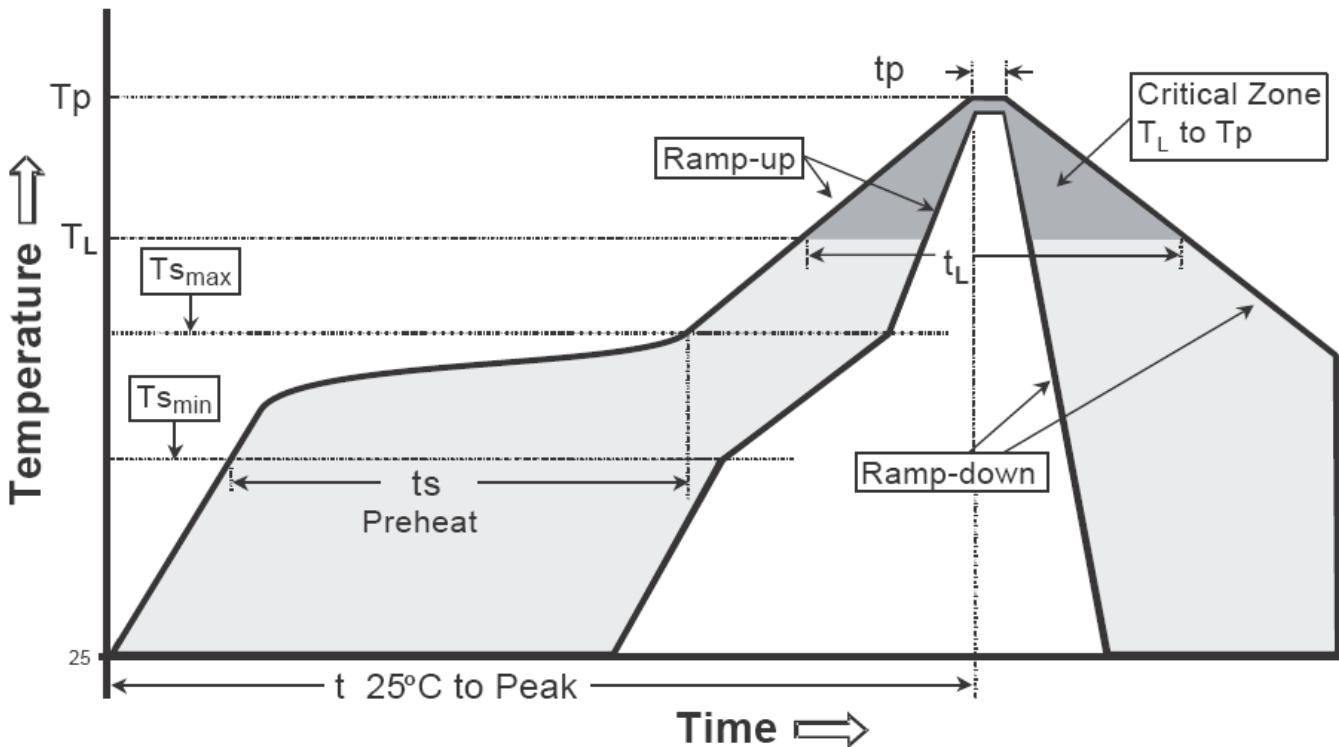
Carrier Tape Dimension



Recommended wave soldering condition

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

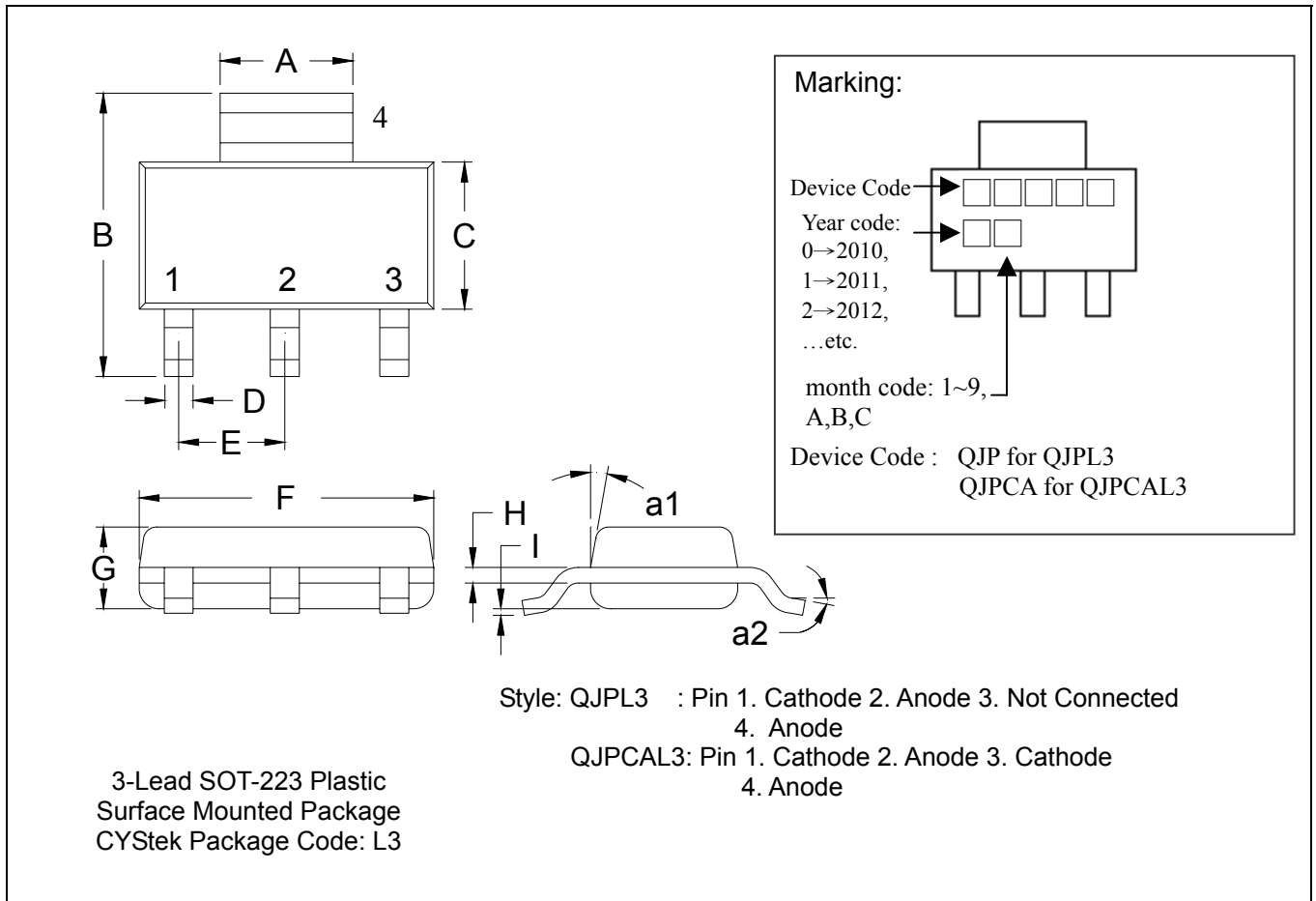
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Ts_max 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 (T_L)	183°C	217°C
- Time (t_L)	60-150 seconds	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.

SOT-223 Dimension



*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1142	0.1220	2.90	3.10	G	0.0551	0.0709	1.40	1.80
B	0.2638	0.2874	6.70	7.30	H	0.0098	0.0138	0.25	0.35
C	0.1299	0.1457	3.30	3.70	I	0.0008	0.0039	0.02	0.10
D	0.0236	0.0315	0.60	0.80	a1	*13°	-	*13°	-
E	*0.0906	-	*2.30	-	a2	0°	10°	0°	10°
F	0.2480	0.2638	6.30	6.70					

- Notes:**
- Controlling dimension: millimeters.
 - Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 - 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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