1A Snubber Damping Rectifier

QJPL3, QJPCAL3

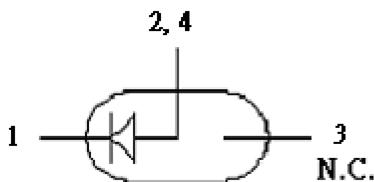
Features

- 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

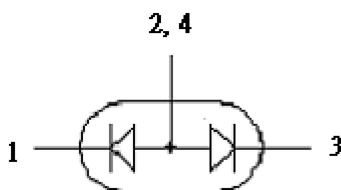
Pinning

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

Diode configuration and symbol



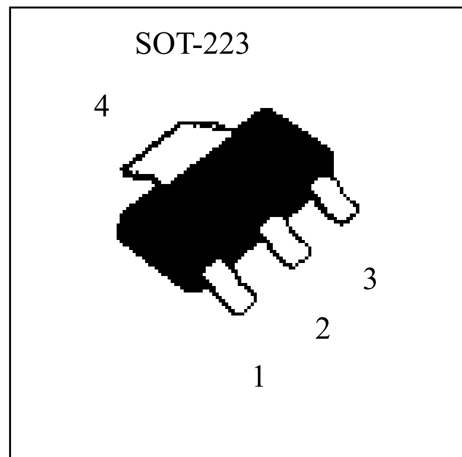
(1) QJPL3



(2) QJPCAL3

Outline

SOT-223

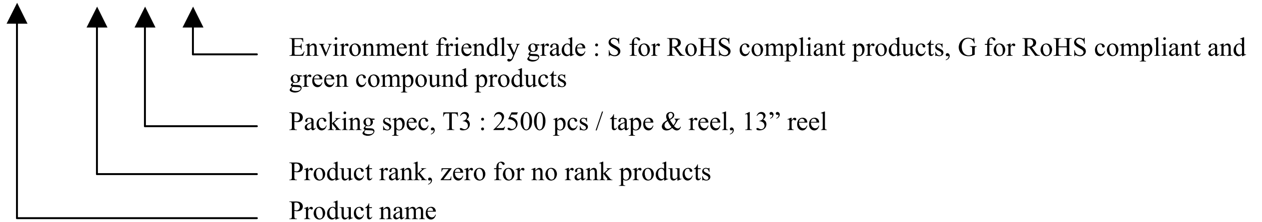


Marking:

Type	Marking Code
QJL3	QJP
QJCTL3	QJPCA

Ordering Information

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



Absolute Maximum Ratings (T$_A$=25℃, 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		Tstg	-55~+150			°C
Operating junction temperature range		Tj	-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

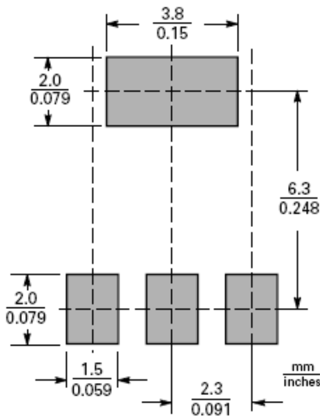
Characteristics (T_A=25°C, unless otherwise noted)

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

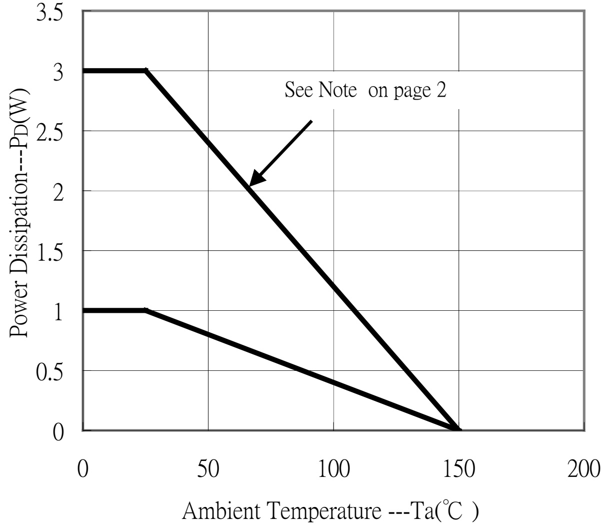
Classification by V_R

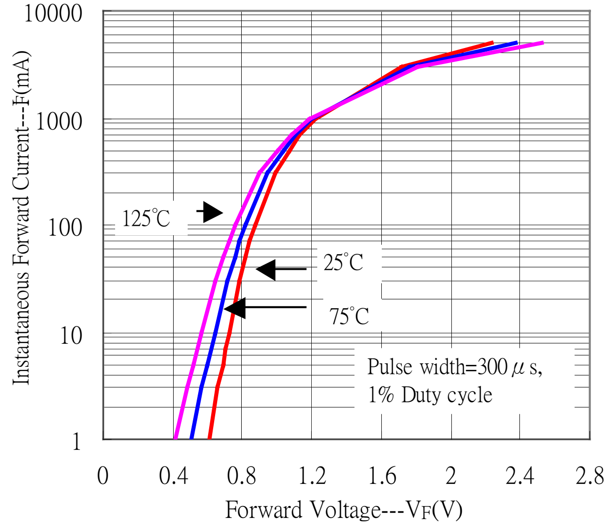
Rank	60	62	65
Range	> 600V	>620V	>650V

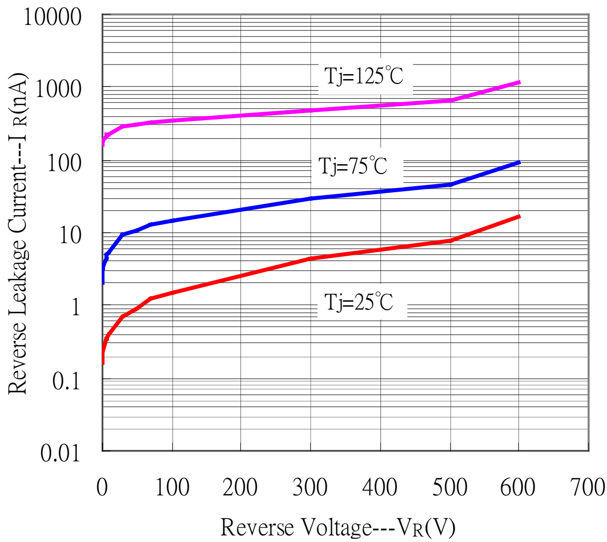
Recommended soldering footprint

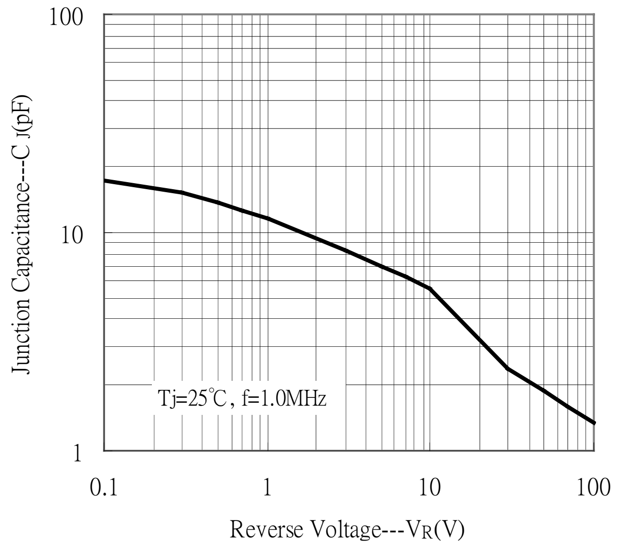


Typical Characteristics

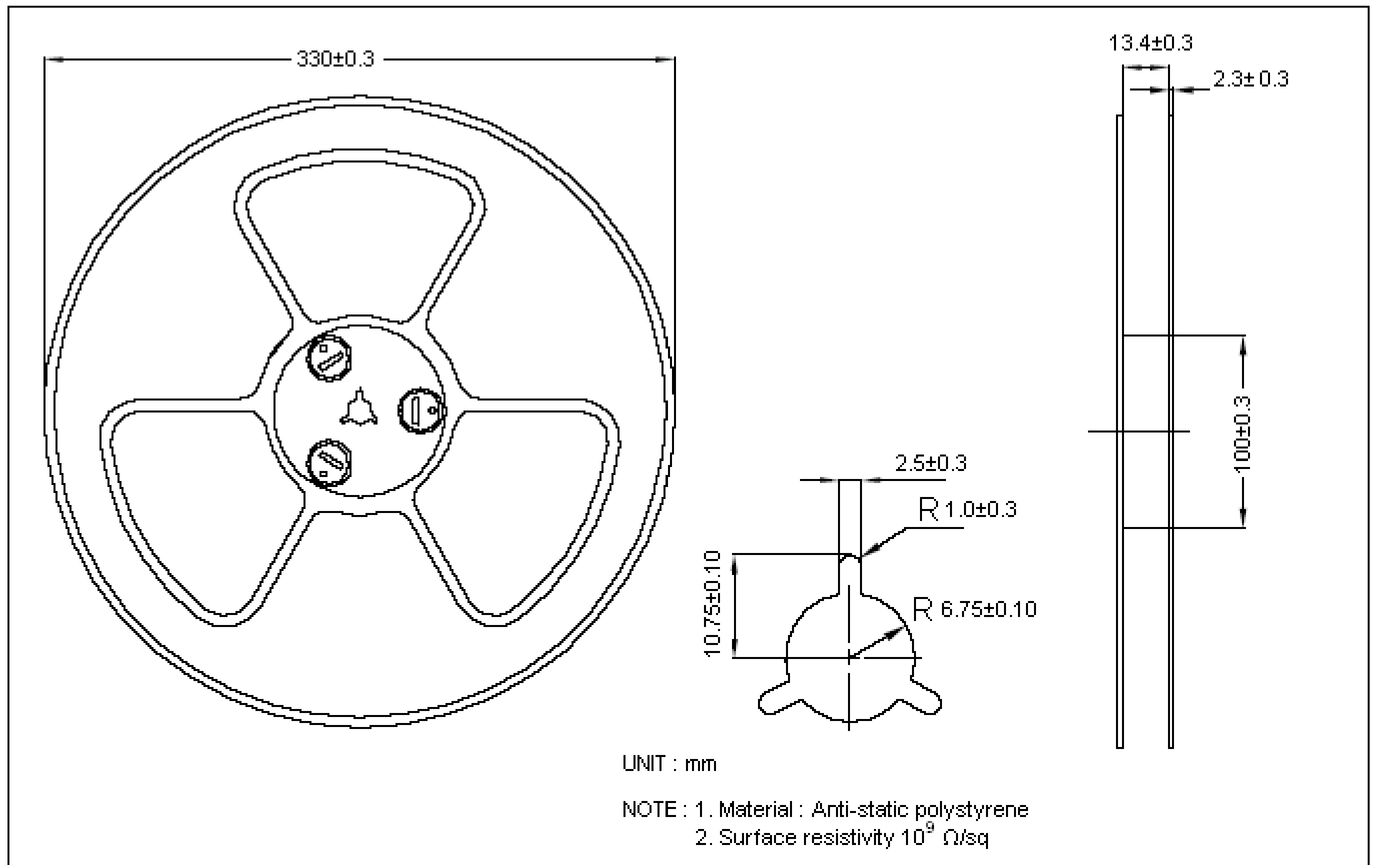




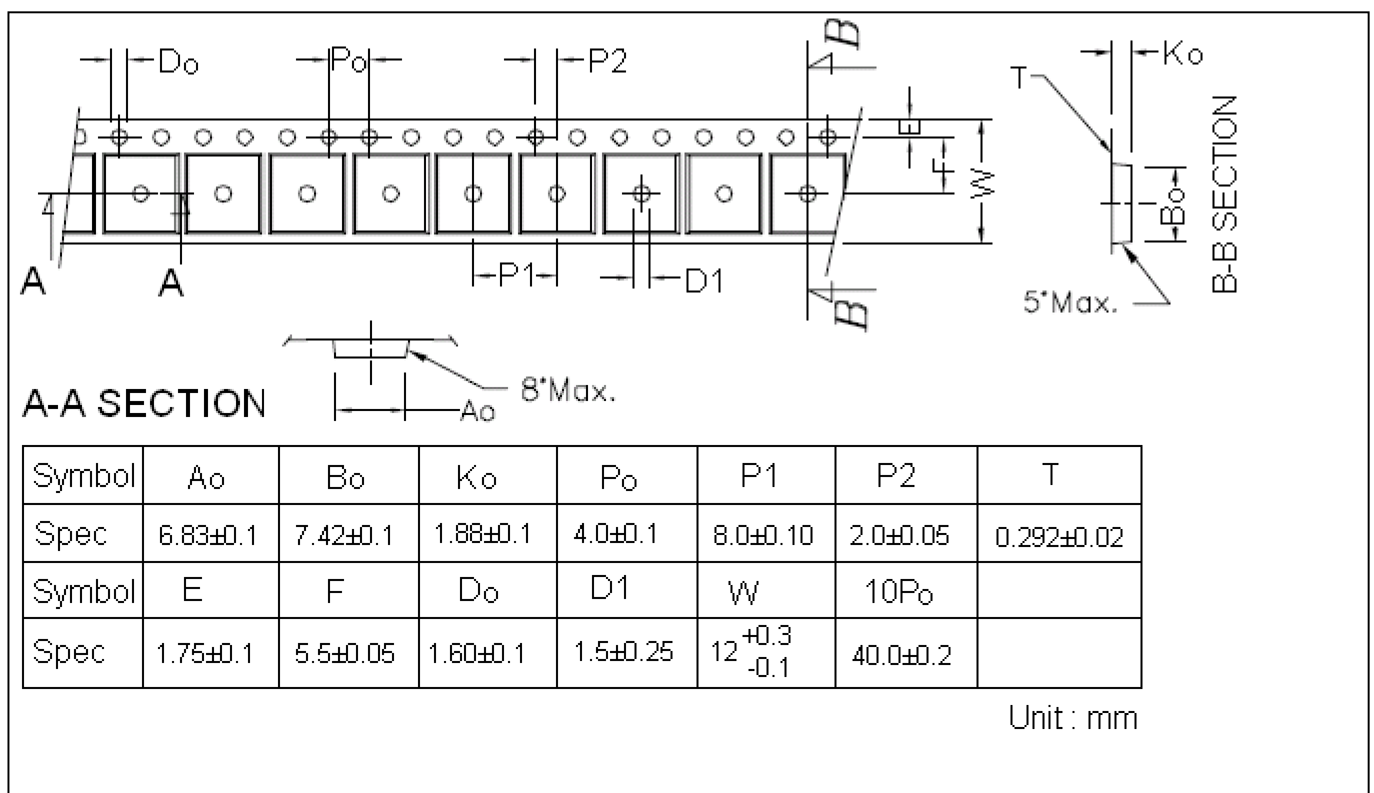




Reel Dimension



Carrier Tape Dimension



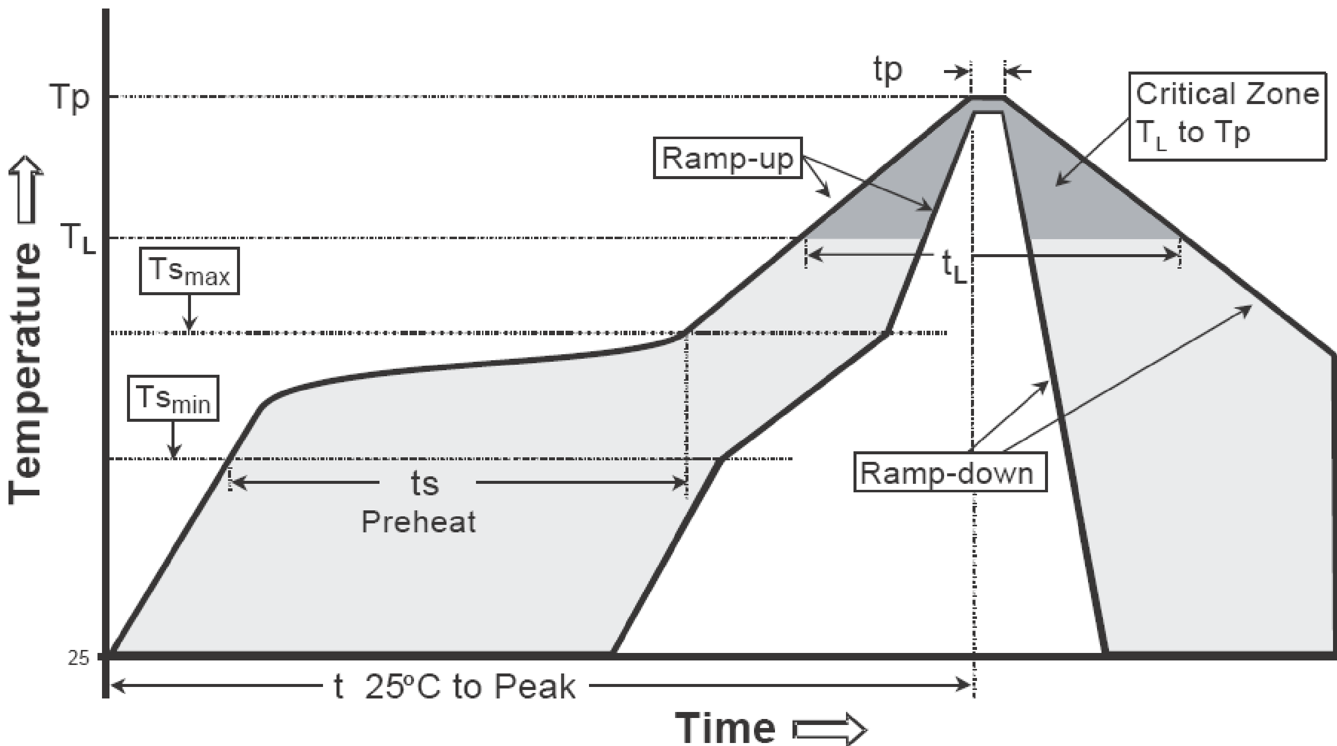
Symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	6.83±0.1	7.42±0.1	1.88±0.1	4.0±0.1	8.0±0.10	2.0±0.05	0.292±0.02
Symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	5.5±0.05	1.60±0.1	1.5±0.25	12 +0.3 -0.1	40.0±0.2	

Unit : mm

Recommended wave soldering condition

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

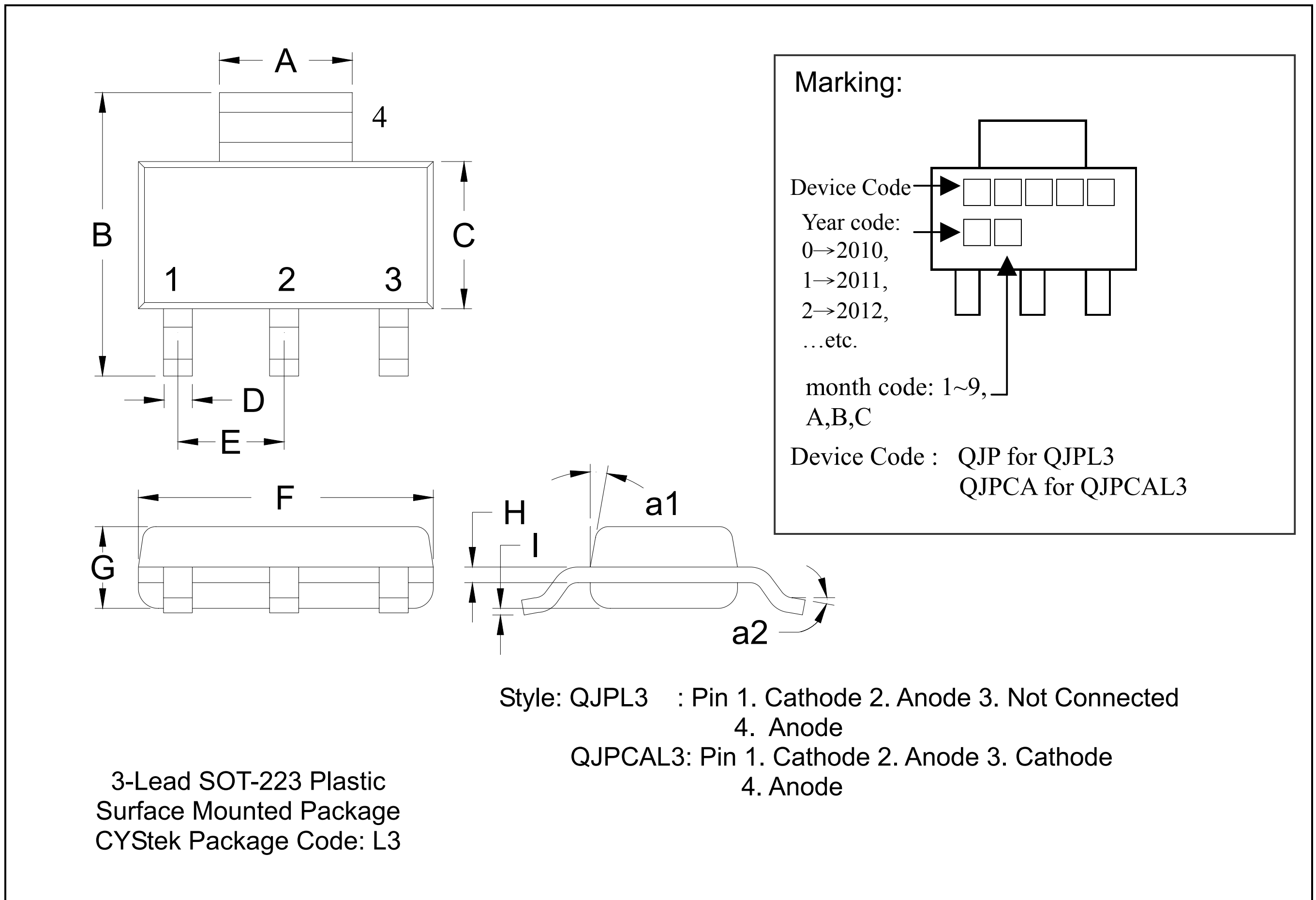
Recommended temperature profile for IR reflow



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(ts_{min} to ts_{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.

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: 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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