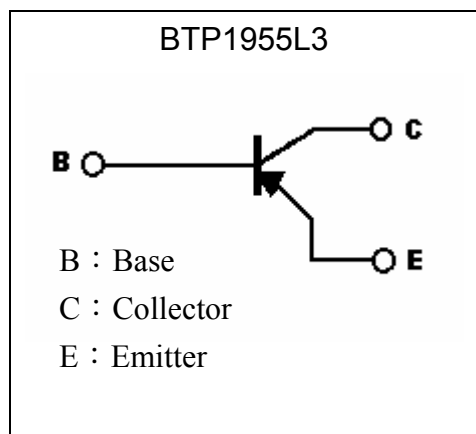
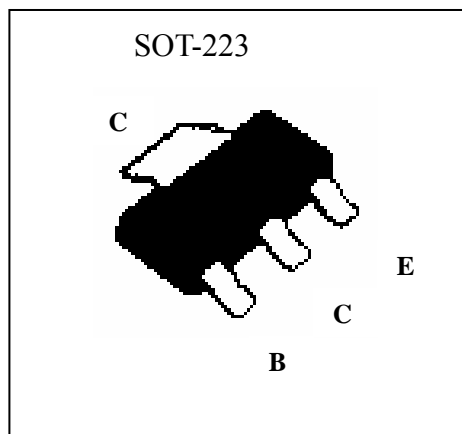


**PNP Epitaxial Planar High Current (High Performance) Transistor**

# BTP1955L3

**Features**

- 4 Amps continuous current, up to 10 Amps peak current
- Very low saturation voltage
- Excellent gain characteristics specified up to 3 Amps
- $P_{tot}=3\text{Watts}$
- Extremely low equivalent on resistance,  $R_{CE(SAT)}=75\text{m}\Omega$  at 3A
- Pb-free package

**Symbol**

**Outline**

**Absolute Maximum Ratings (Ta=25°C)**

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	$V_{CBO}$	-180	V
Collector-Emitter Voltage	$V_{CEO}$	-140	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Continuous Collector Current	$I_C$	-4	A
Peak Collector Current	$I_{CP}$	-10	A
Base Current	$I_B$	-1	A
Power Dissipation @Ta=25°C	$P_d$	3 (Note 1)	W
ESD susceptibility		4000 (Note 2)	V
Operating and Storage Temperature Range	$T_j ; T_{stg}$	-55 ~ +150	°C

Note: 1. The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 4 square inch minimum.

2. Human body model, 1.5k $\Omega$  in series with 100pF

**Characteristics** (Ta=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>CB0</sub>	-180	-210	-	V	I <sub>C</sub> =-100μA
BV <sub>CER</sub>	-180	-210	-	V	I <sub>C</sub> =-1μA, R <sub>BE</sub> ≤1kΩ
*BV <sub>CEO</sub>	-140	-170	-	V	I <sub>C</sub> =-10mA
BV <sub>EBO</sub>	-6	-8	-	V	I <sub>E</sub> =-100μA
I <sub>CB0</sub>	-	-	-50	nA	V <sub>CB</sub> =-150V
I <sub>CER</sub>	-	-	-50	nA	V <sub>CE</sub> =-150V, R <sub>BE</sub> ≤1kΩ
I <sub>EBO</sub>	-	-	-10	nA	V <sub>EB</sub> =-6V
*V <sub>CE(sat)1</sub>	-	-30	-60	mV	I <sub>C</sub> =-100mA, I <sub>B</sub> =-5mA
*V <sub>CE(sat)2</sub>	-	-60	-120	mV	I <sub>C</sub> =-500mA, I <sub>B</sub> =-50mA
*V <sub>CE(sat)3</sub>	-	-100	-150	mV	I <sub>C</sub> =-1A, I <sub>B</sub> =-100mA
*V <sub>CE(sat)4</sub>	-	-220	-370	mV	I <sub>C</sub> =-3A, I <sub>B</sub> =-300mA
*V <sub>BE(sat)</sub>	-	-900	-1110	mV	I <sub>C</sub> =-3A, I <sub>B</sub> =-300mA
*V <sub>BE(on)</sub>	-	-830	-950	mV	V <sub>CE</sub> =-5V, I <sub>C</sub> =-3A
h <sub>FE1</sub>	100	-	-	-	V <sub>CE</sub> =-5V, I <sub>C</sub> =-10mA
h <sub>FE2</sub>	100	-	500	-	V <sub>CE</sub> =-5V, I <sub>C</sub> =-1A
*h <sub>FE3</sub>	75	-	-	-	V <sub>CE</sub> =-5V, I <sub>C</sub> =-3A
*h <sub>FE4</sub>	-	10	-	-	V <sub>CE</sub> =-5V, I <sub>C</sub> =-10A
f <sub>T</sub>	-	110	-	MHz	V <sub>CE</sub> =-10V, I <sub>C</sub> =-100mA, f=50MHz
C <sub>ob</sub>	-	40	-	pF	V <sub>CB</sub> =-20V, f=1MHz
ton		68		ns	I <sub>C</sub> =-1A, I <sub>B1</sub> =-100mA, I <sub>B2</sub> =100mA,
toff		1030		ns	V <sub>CC</sub> =-50V

\*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

**Classification Of h<sub>FE</sub> 2**

Rank	Q	R	S
Range	100~270	180~390	270~500

**Ordering Information**

Device	Package	Shipping	Marking
BTP1955L3	SOT-223 (Pb-free)	2500 pcs / Tape & Reel	1955

**Moisture Sensitivity Level : Conform to JEDEC Level 3**

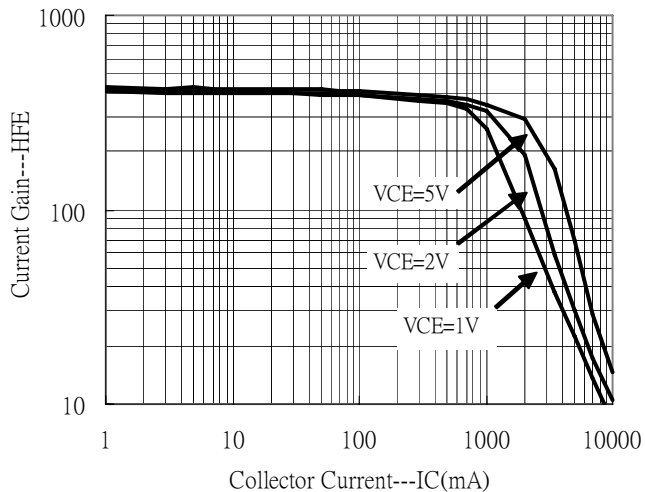
Recommended Storage Condition:

Temperature : ≤ 30 °C

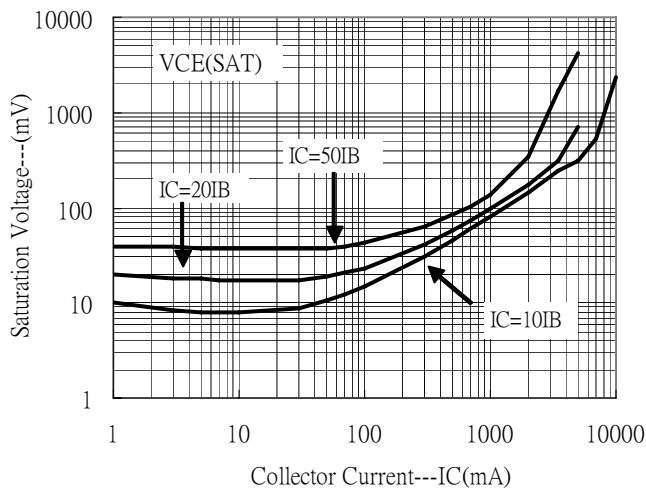
Humidity : ≤ 60% RH

**Characteristic Curves**

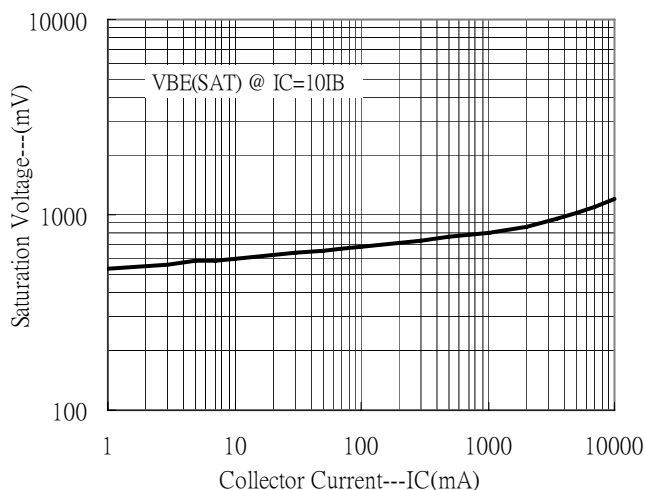
Current Gain vs Collector Current



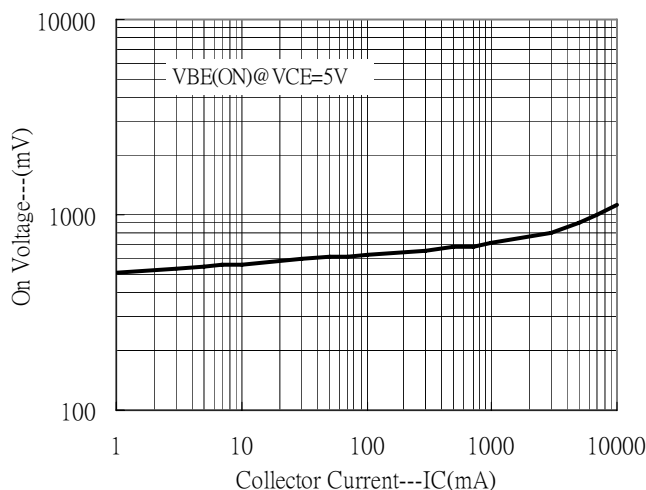
Saturation Voltage vs Collector Current



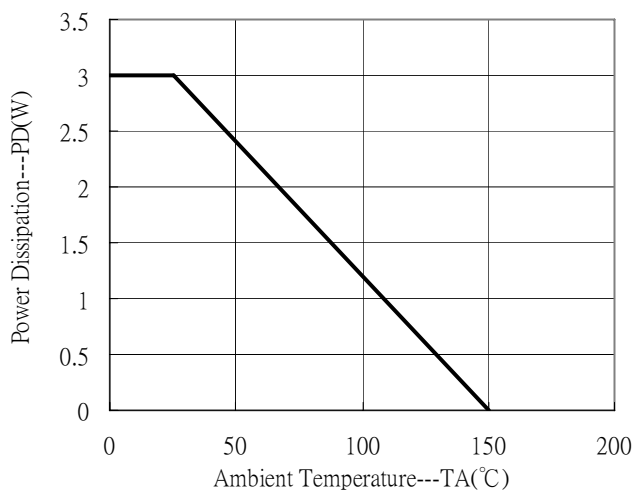
Saturation Voltage vs Collector Current



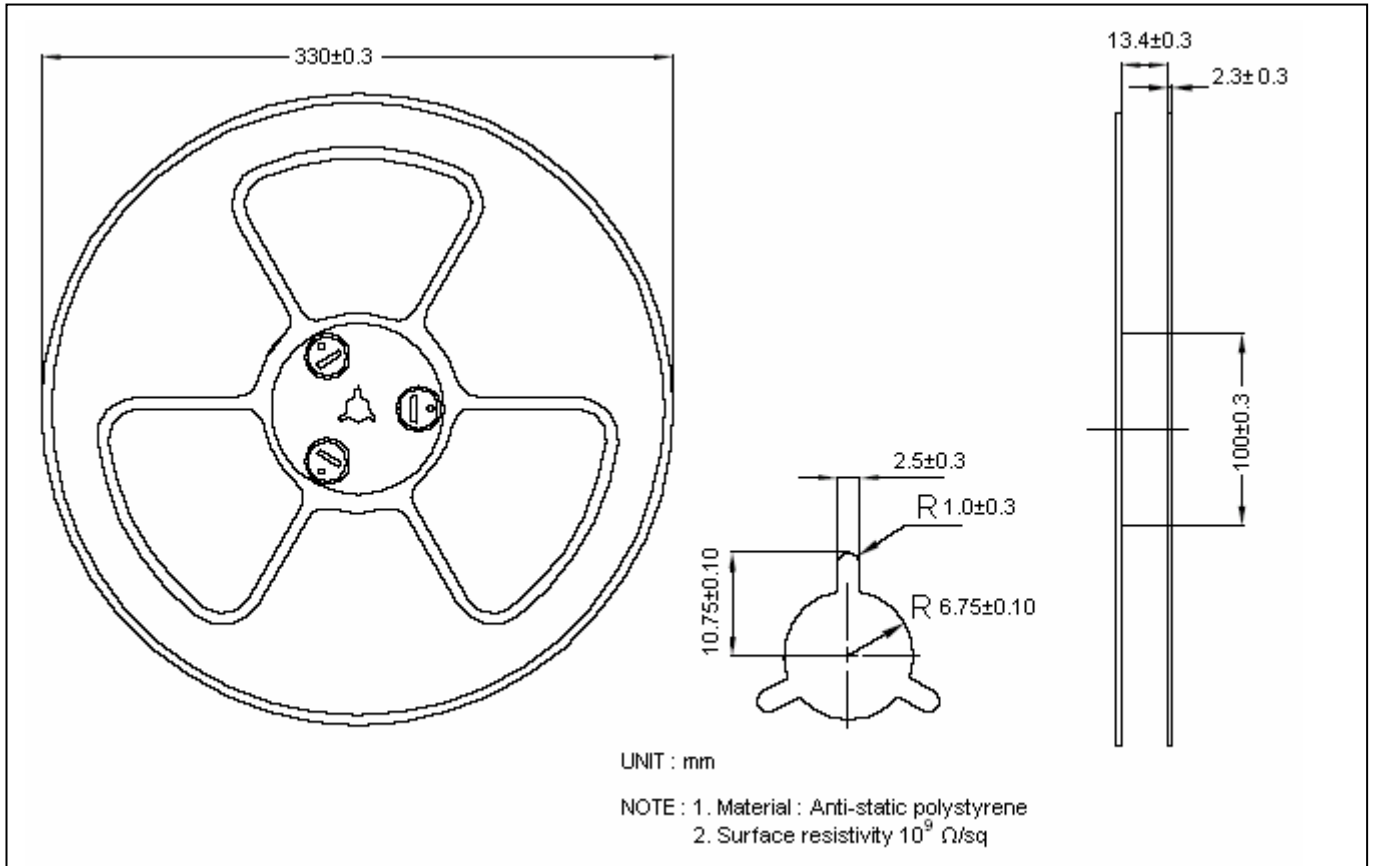
On Voltage vs Collector Current



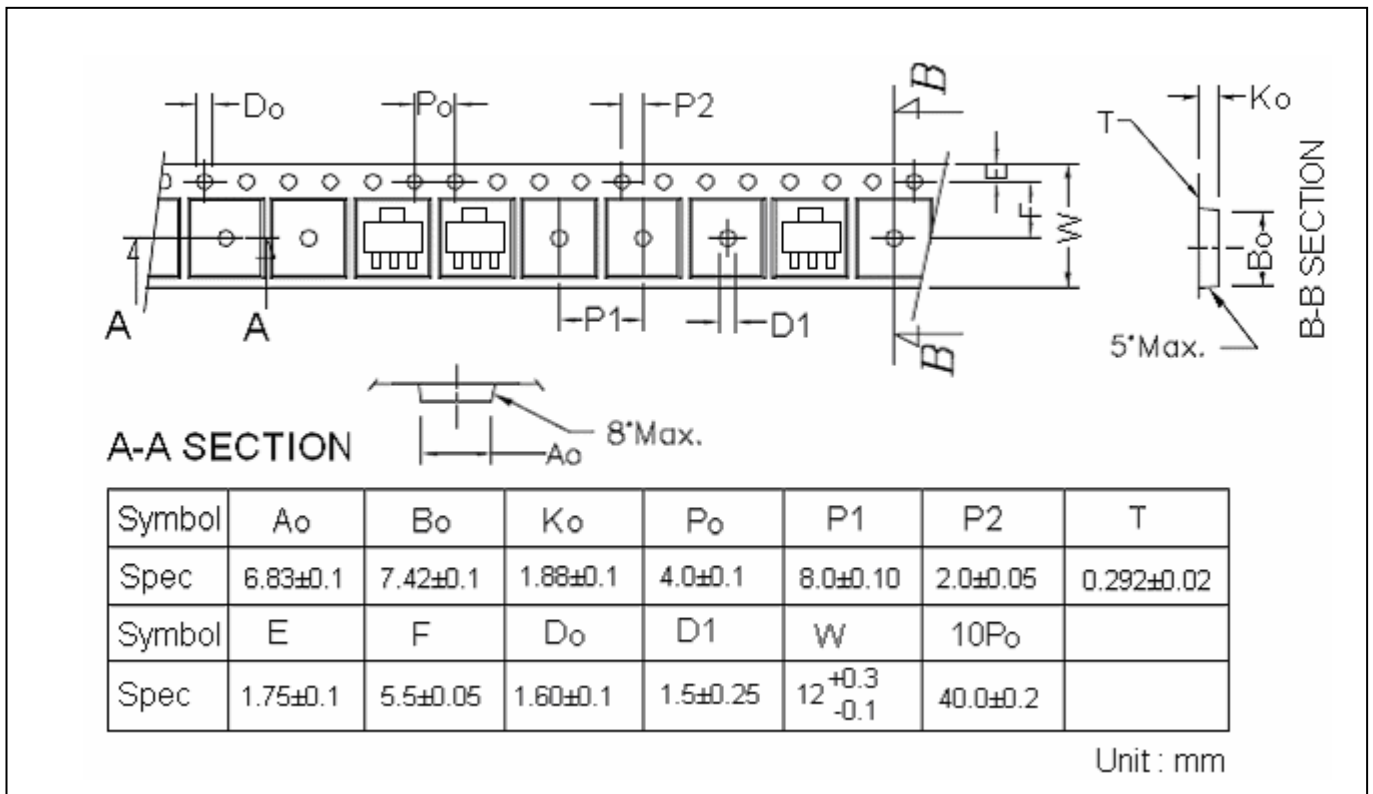
Power Derating Curve



**Reel Dimension**



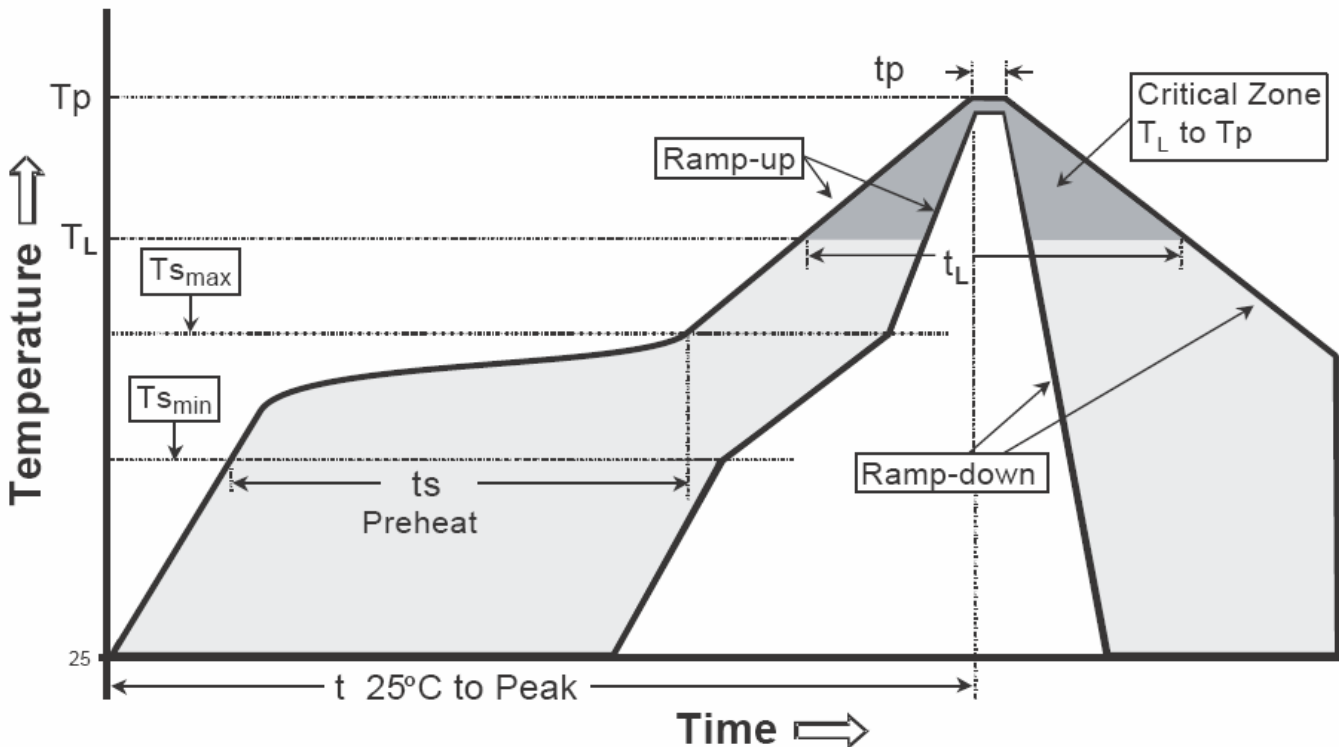
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

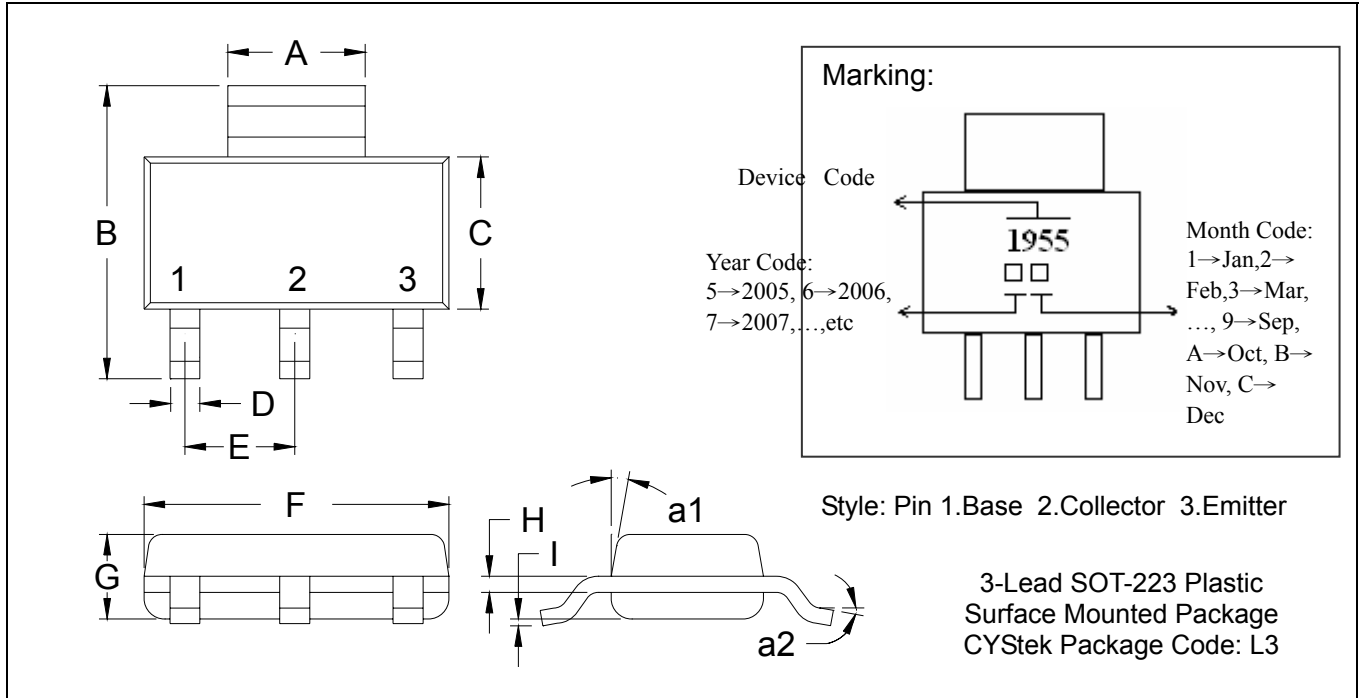
**Recommended temperature profile for IR reflow**



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.

**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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