

**General Purpose NPN Epitaxial Planar Transistor**

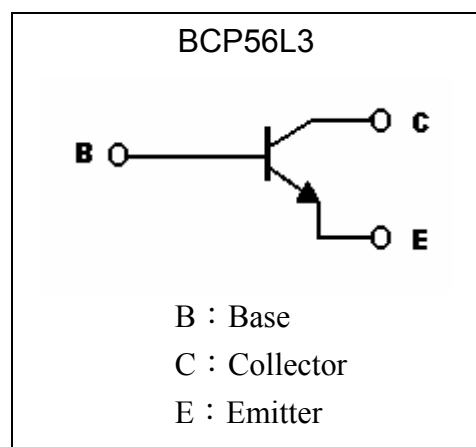
# BCP56L3

**Description**

General purpose mainly intended for use in medium power industrial application and for audio amplifier output stage.

**Features**

- High collector current and low  $V_{CE(SAT)}$
- Complement to BCP53L3
- Pb-free package

**Symbol**

**Outline**

**Absolute Maximum Ratings** ( $T_a=25^{\circ}\text{C}$ )

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	$V_{CBO}$	100	V
Collector-Emitter Voltage	$V_{CEO}$	80	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current(DC)	$I_C$	1	A
Collector Current(Pulse)	$I_{CP}$	1.5	A
Power Dissipation @ $T_c=25^{\circ}\text{C}$	$P_d$	2	W
Operating Junction Temperature Range	$T_j$	-55~+150	$^{\circ}\text{C}$
Storage Temperature Range	$T_{stg}$	-55~+150	$^{\circ}\text{C}$

**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>CBO</sub>	100	-	-	V	I <sub>C</sub> =100μA
BV <sub>CEO</sub>	80	-	-	V	I <sub>C</sub> =10mA
BV <sub>EBO</sub>	5	-	-	V	I <sub>E</sub> =10μA
I <sub>CBO</sub>	-	-	100	nA	V <sub>CB</sub> =80V
I <sub>EBO</sub>	-	-	100	nA	V <sub>EB</sub> =5V
*V <sub>CE(sat)1</sub>	-	0.15	0.3	V	I <sub>C</sub> =500mA, I <sub>B</sub> =50mA
*V <sub>CE(sat)2</sub>	-	-	0.6	V	I <sub>C</sub> =1A, I <sub>B</sub> =50mA
*V <sub>BE(sat)</sub>	-	-	1.2	V	I <sub>C</sub> =1A, I <sub>B</sub> =50mA
*V <sub>BE(on)</sub>	-	-	1.0	V	V <sub>CE</sub> =2V, I <sub>C</sub> =500mA
*h <sub>FE1</sub>	100	-	-	-	V <sub>CE</sub> =2V, I <sub>C</sub> =5mA
*h <sub>FE2</sub>	100	-	400	-	V <sub>CE</sub> =2V, I <sub>C</sub> =150mA
*h <sub>FE3</sub>	45	-	-	-	V <sub>CE</sub> =2V, I <sub>C</sub> =500mA
f <sub>T</sub>	-	125	-	MHz	V <sub>CE</sub> =10V, I <sub>C</sub> =50mA, f=100MHz
C <sub>ob</sub>	-	-	10	pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0A, f=1MHz

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

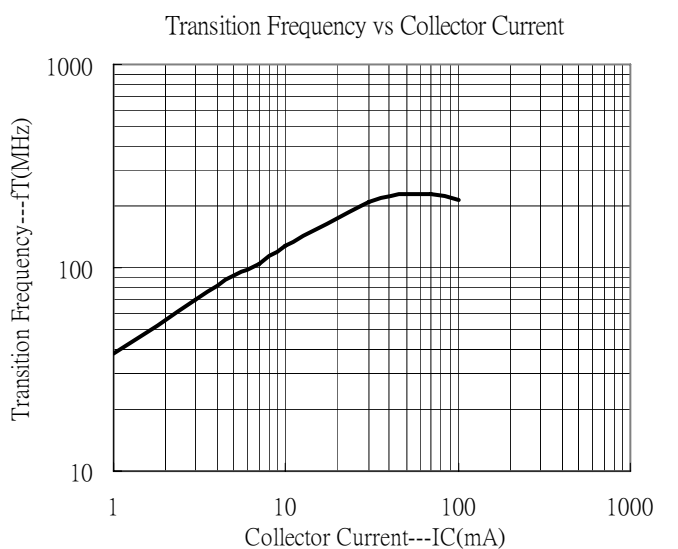
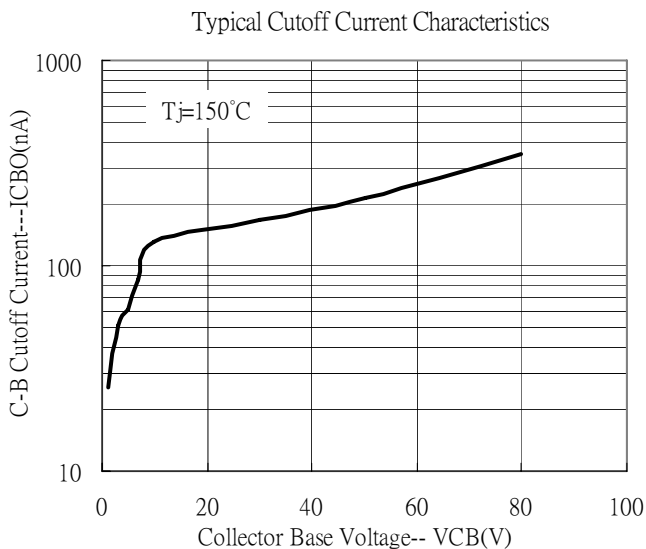
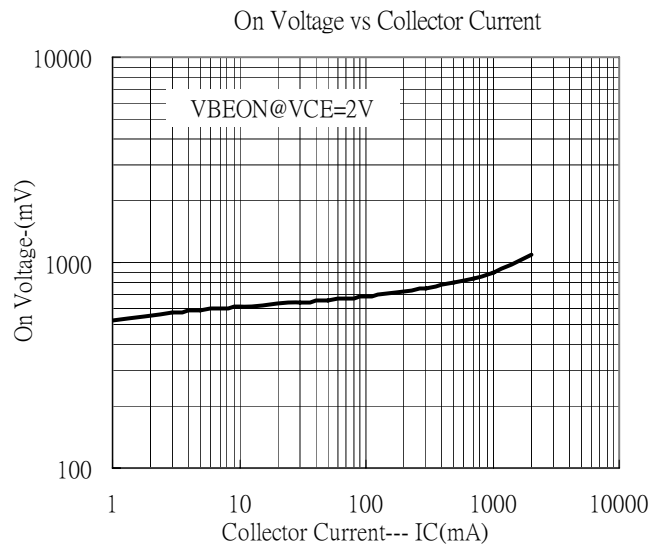
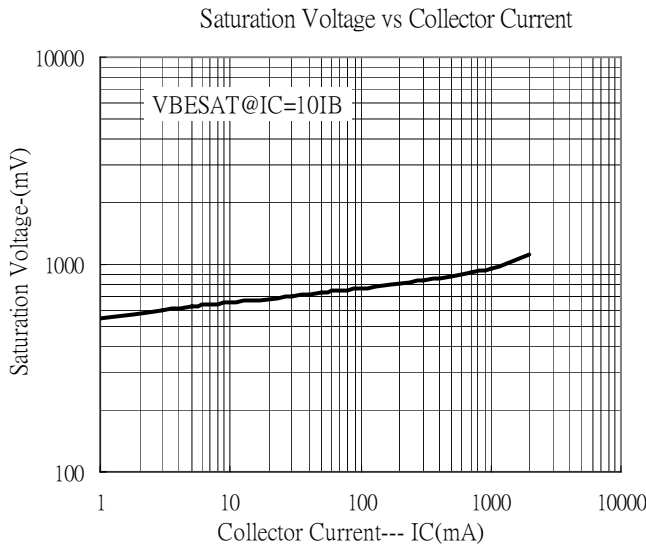
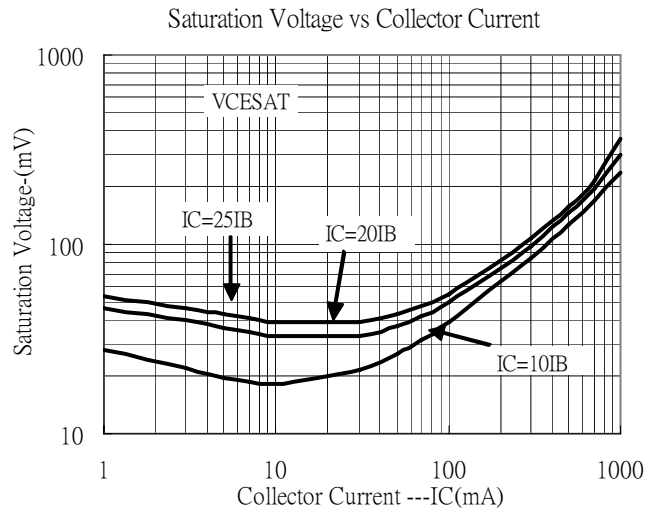
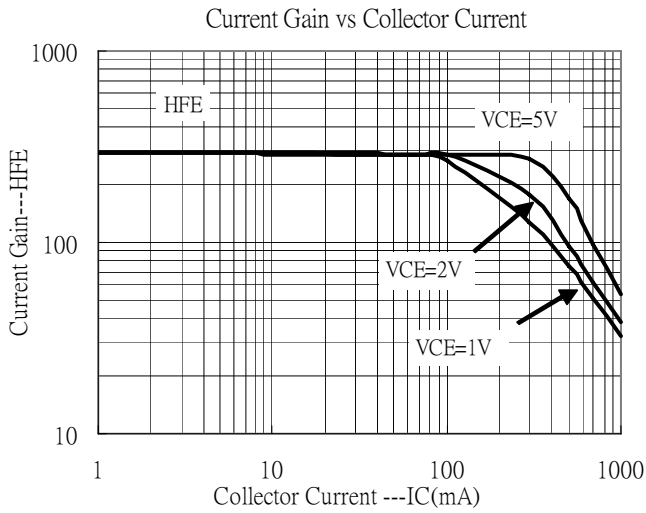
**Classification Of h<sub>FE</sub> 2**

Rank	-16	-25
Range	100~250	160~400

**Ordering Information**

Device	Package	Shipping	Marking
BCP56L3	SOT-223 (Pb-free)	2500 pcs / Tape & Reel	AJ

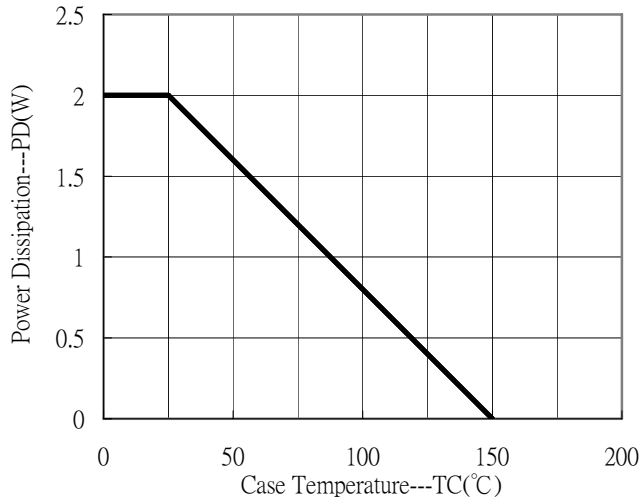
**Typical Characteristics**



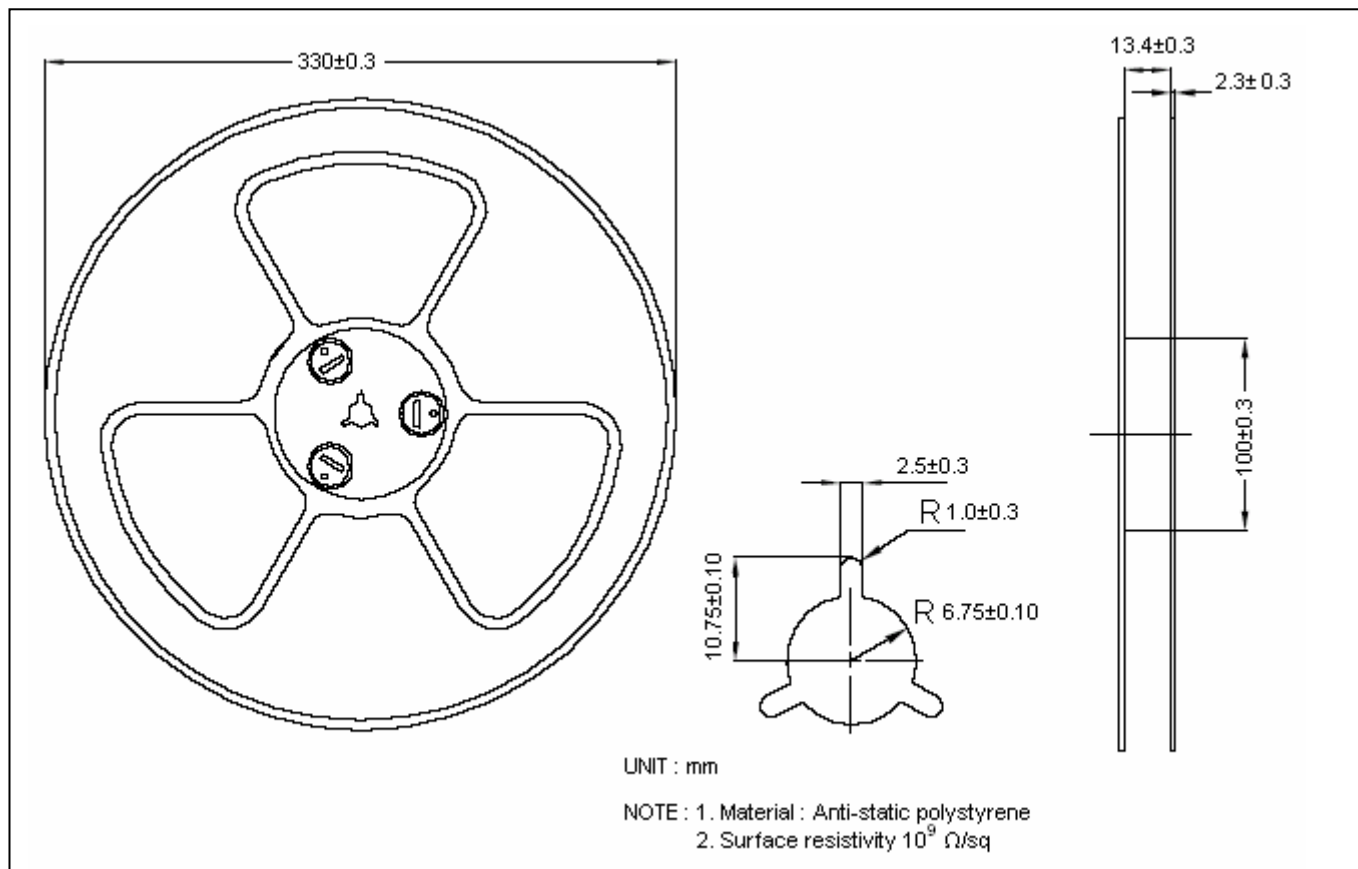


### Typical Characteristics(Cont.)

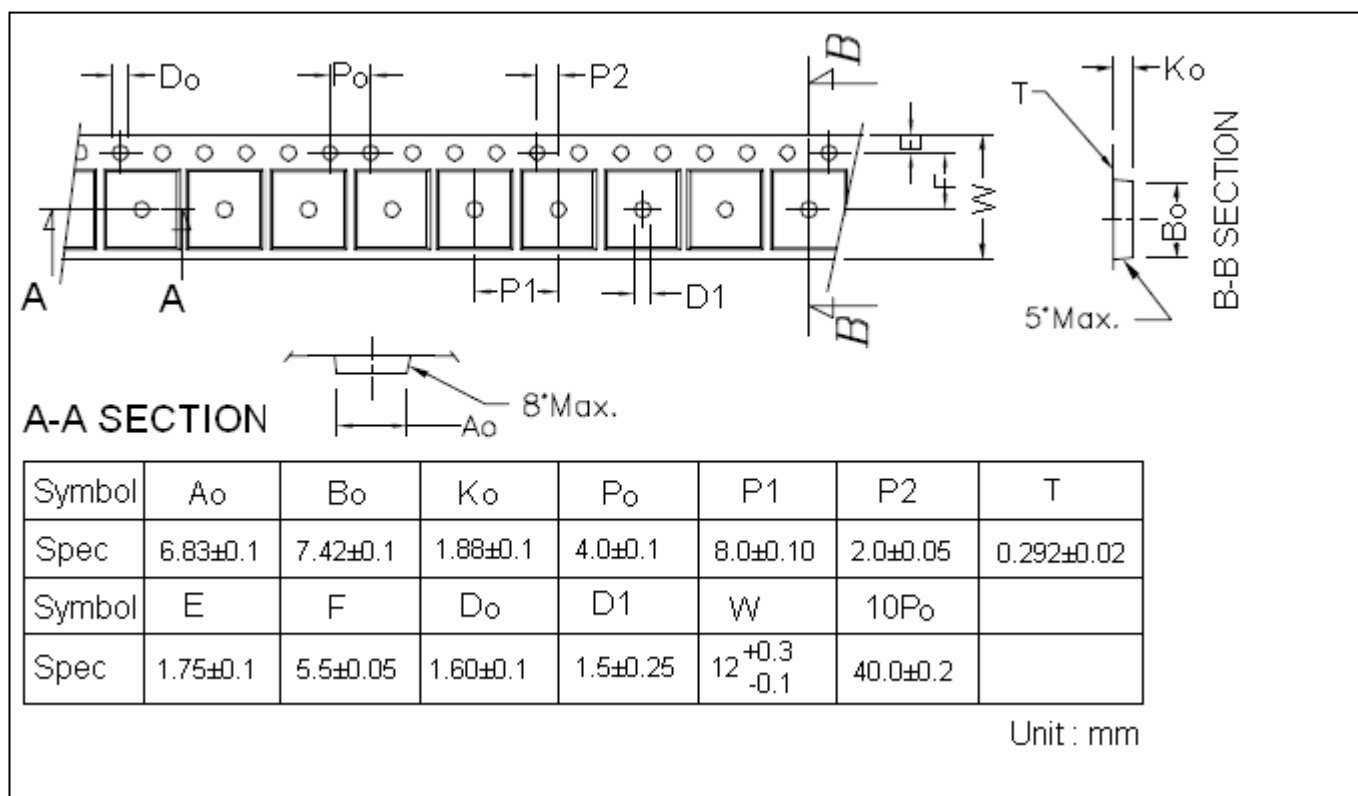
Power Derating Curve



**Reel Dimension**



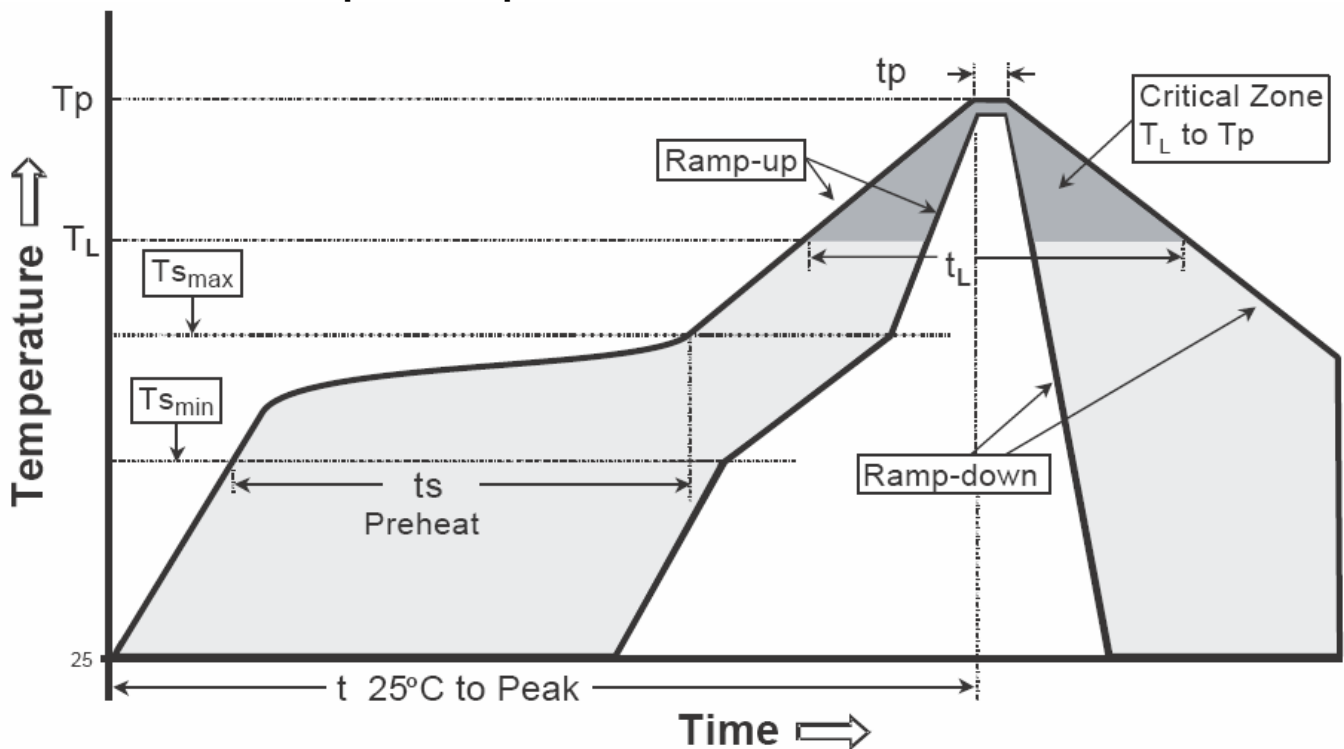
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

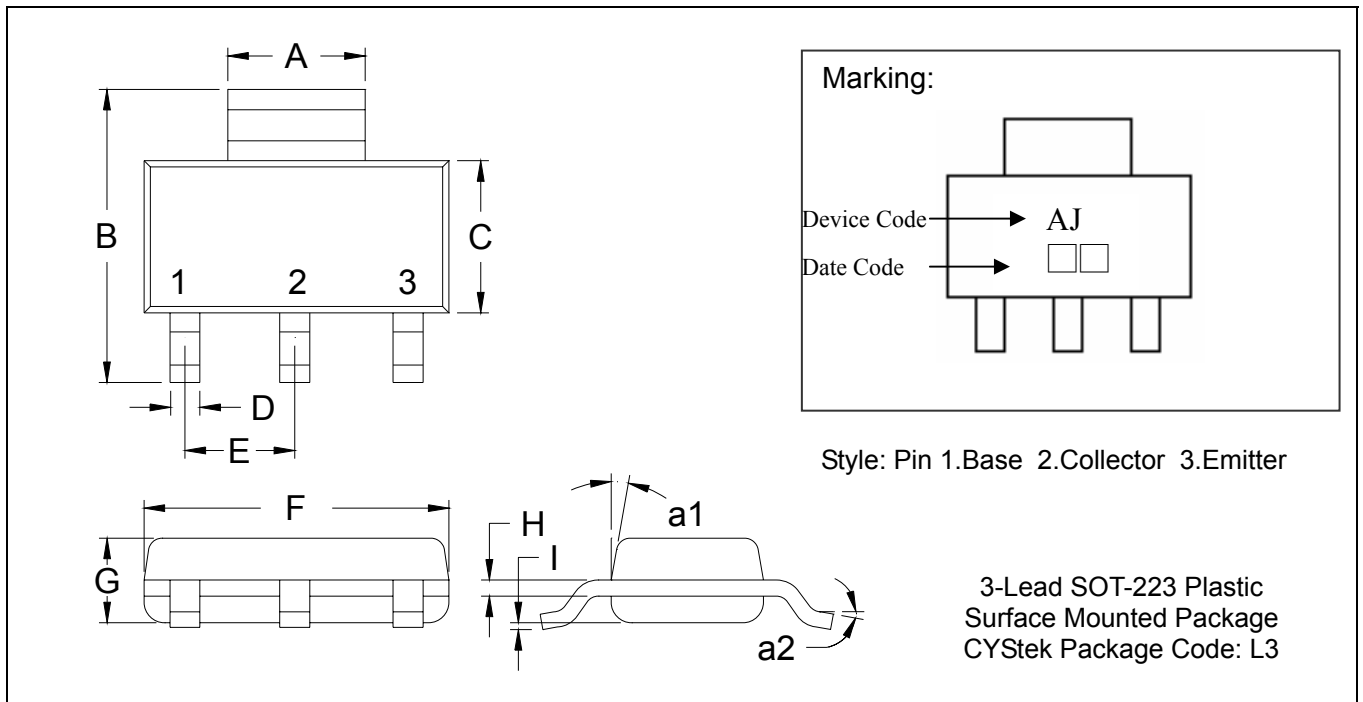
**Recommended temperature profile for IR reflow**



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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