NPN Epitaxial Planar Transistor

BTC1510J3

BV_{CEO}	150V
I_C	10A

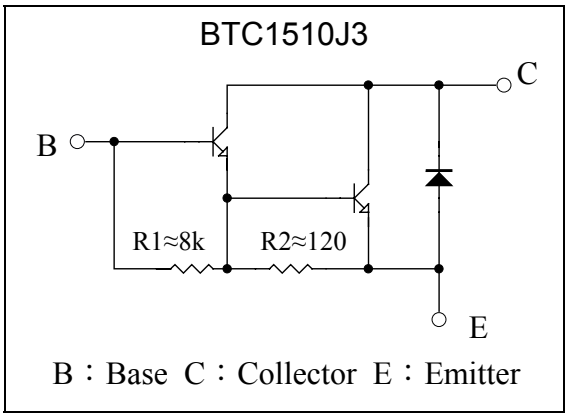
Description

The BTC1510J3 is a NPN Darlington transistor, designed for general purpose amplifier and low speed switching application.

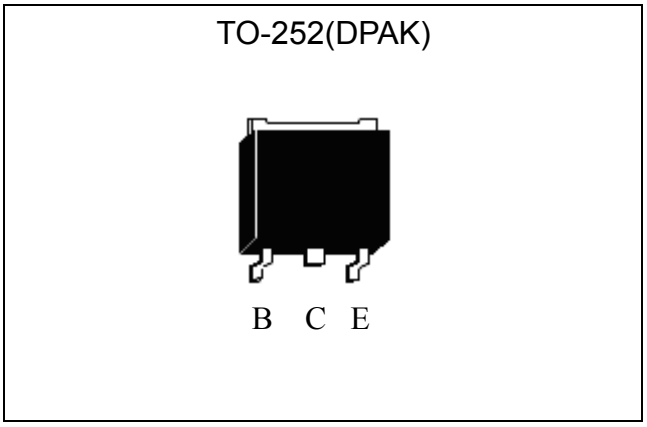
Features:

- High BV_{CEO}
- Low $V_{CE(SAT)}$
- High current gain
- Monolithic construction with built-in base-emitter shunt resistors
- TO-252 surface mount package
- RoHS compliant package

Equivalent Circuit

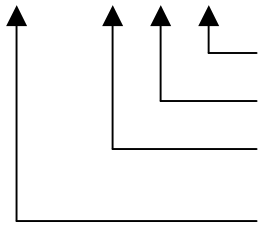


Outline



Ordering Information

Device	Package	Shipping
BTC1510J3-XX-T3-X	TO-252 (RoHS compliant 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

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	150	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current	I_C(DC)	10	A
	I_C(Pulse)	15 *1	
Power Dissipation	Pd(T_A=25℃)	1.75	W
	Pd(T_C=25℃)	20	
Operating Junction Temperature Range	Tj	-55~+150	°C
Storage Temperature Range	Tstg	-55~+150	°C

Note : *1. Single Pulse Pw=100ms

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	150	-	-	V	I_C=100μA, I_E=0
BV_{CEO}	150	-	-	V	I_C=1mA, I_B=0
I_{CEO}	-	-	200	μA	V_{CE}=150V, I_E=0
I_{CBO}	-	-	200	μA	V_{CB}=150V, I_E=0
I_{EBO}	-	-	2	mA	V_{EB}=5V, I_C=0
*$V_{CE(sat)}$ 1	-	-	1.5	V	I_C=5A, I_B=10mA
*$V_{CE(sat)}$ 2	-	-	3	V	I_C=10A, I_B=100mA
*$V_{CE(sat)}$ 3	-	-	2	V	I_C=5A, I_B=2.5mA
*$V_{BE(sat)}$	-	-	2	V	I_C=5A, I_B=5mA
*$V_{BE(on)}$ 1	-	-	2.8	V	V_{CE}=3V, I_C=5A
*$V_{BE(on)}$ 2	-	-	4.5	V	V_{CE}=3V, I_C=10A
*V_{FEC}	-	-	3	V	I_C=5A
*h_{FE}1	2	-	20	K	V_{CE}=3V, I_C=5A
*h_{FE}2	100	-	-	-	V_{CE}=3V, I_C=10A

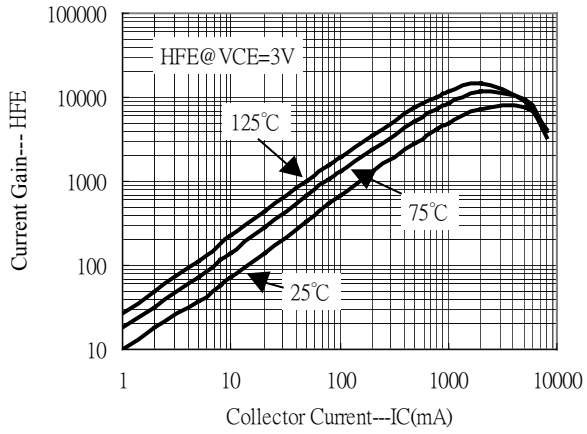
*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

Classification Of $V_{CE(sat)}$ 1

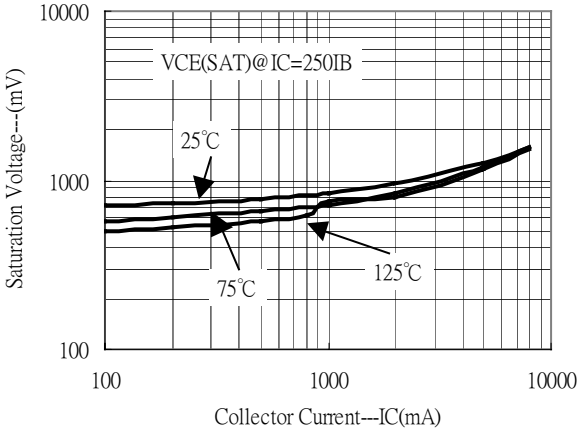
Rank	KA	N
Range	<1.1V	<1.5V

Typical Characteristics

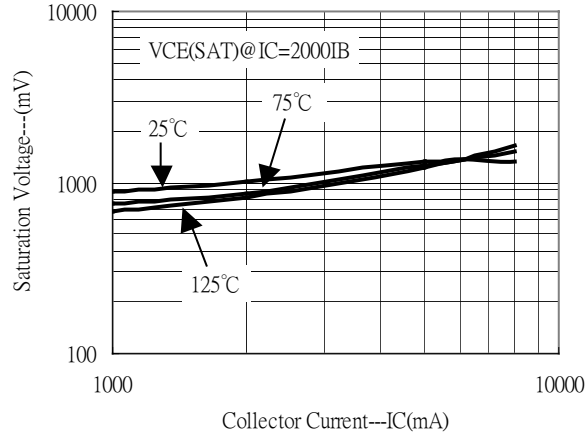
Current Gain vs Collector Current



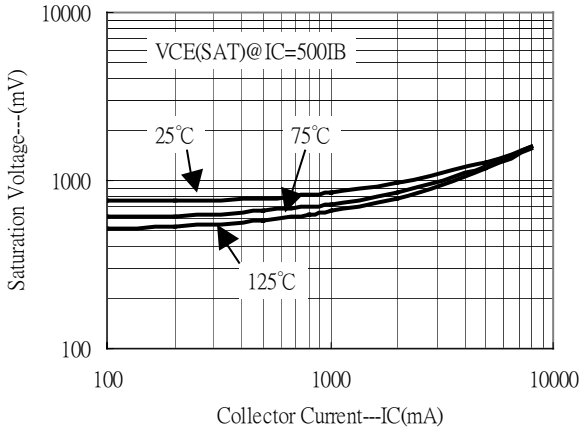
Saturation Voltage vs Collector Current



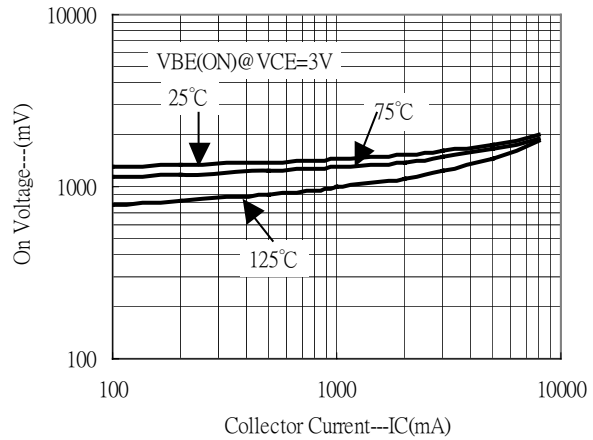
Saturation Voltage vs Collcetor Current



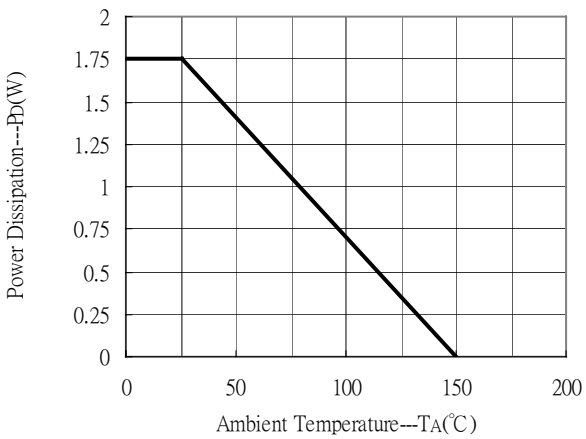
Saturation Voltage vs Colltctor Current



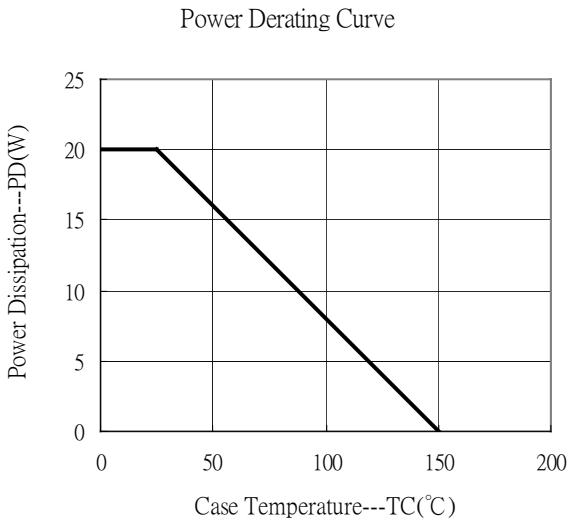
Saturation Voltage vs Collcetor Current

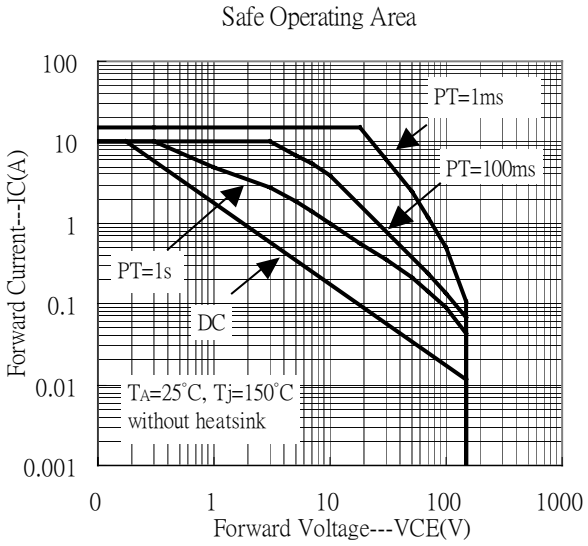


Power Derating Curve

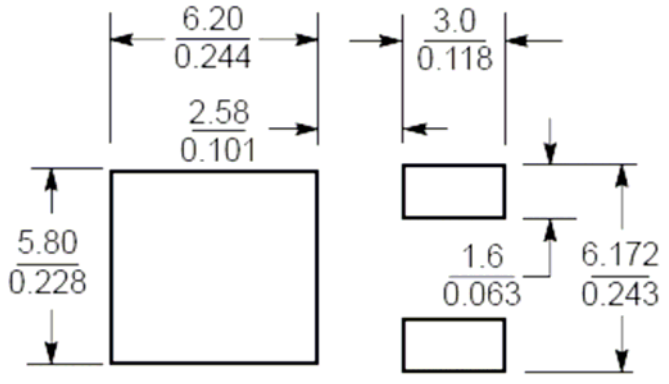


Typical Characteristics(Cont.)



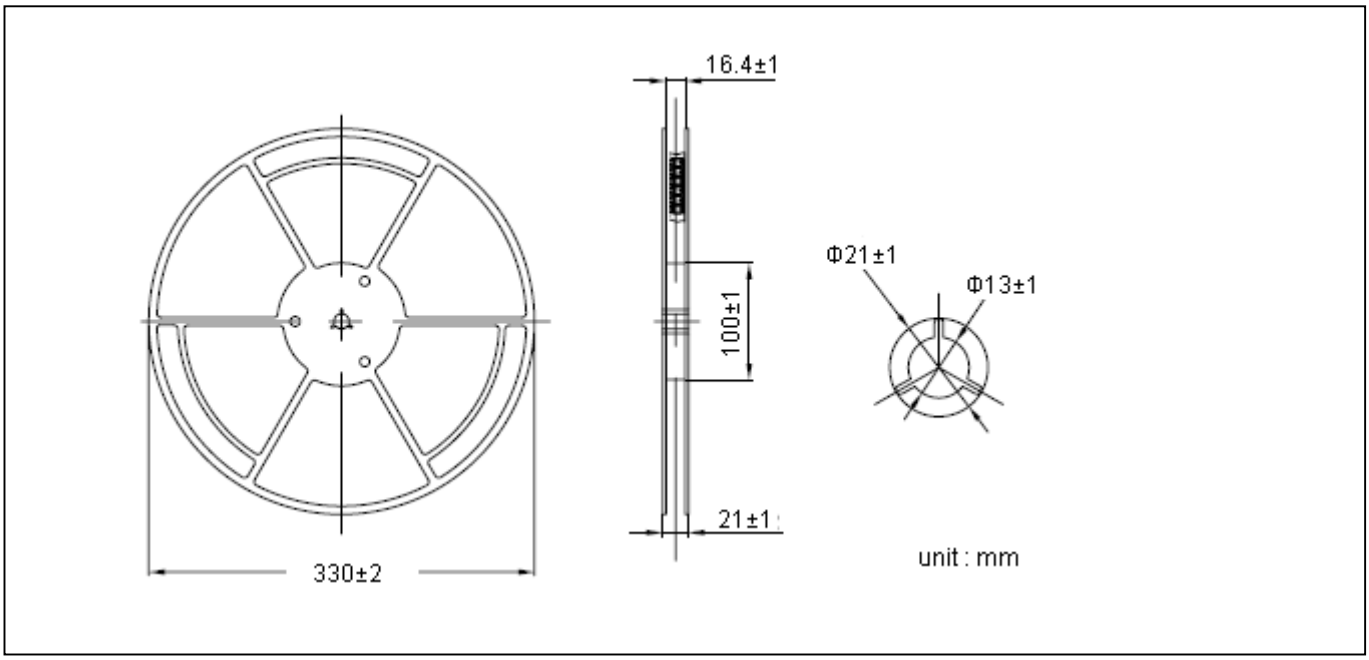


Recommended soldering footprint

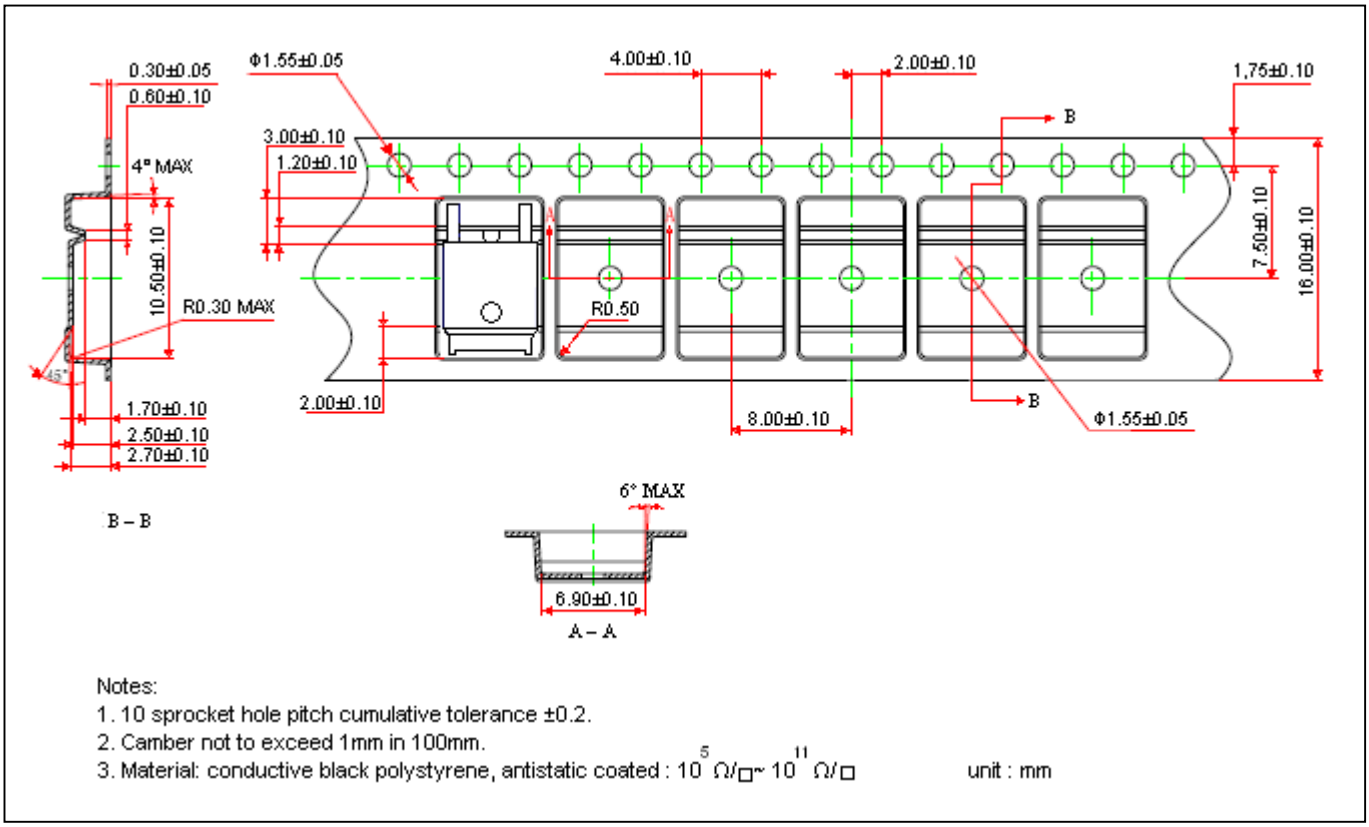


Unit (mm / inch)

Reel Dimension



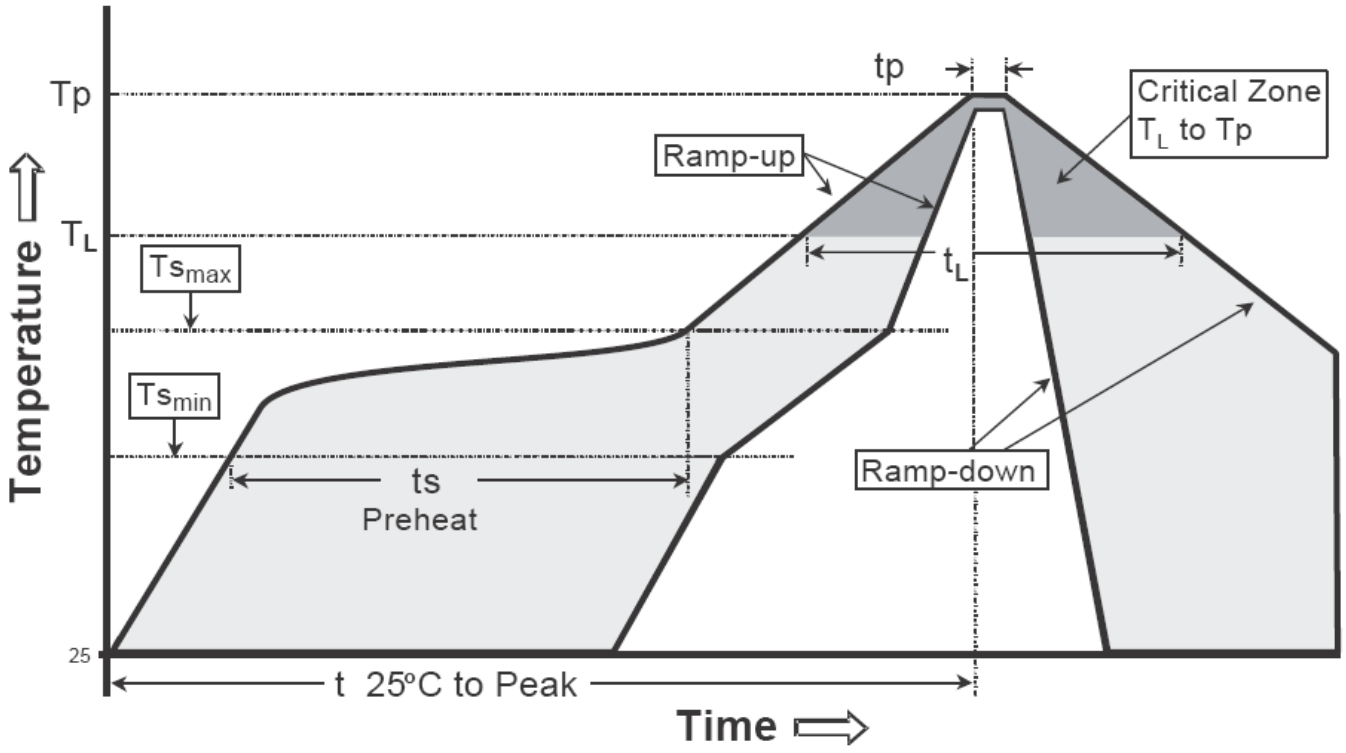
Carrier Tape Dimension



Recommended wave soldering condition

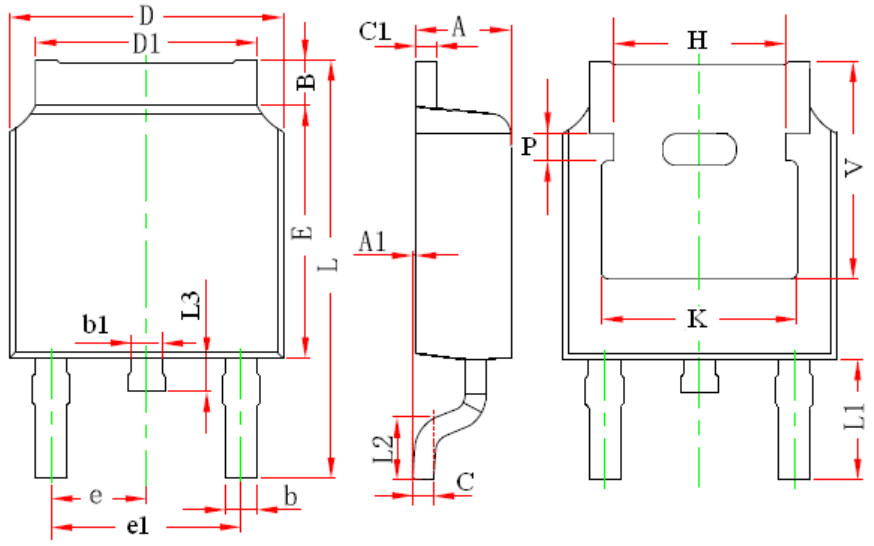
Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

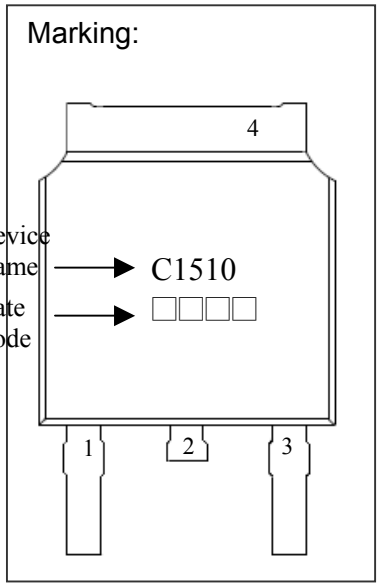
Recommended temperature profile for IR reflow



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(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.

TO-252 Dimension





3-Lead TO-252 Plastic Surface Mount Package
CYStek Package Code: J3

Style: Pin 1.Base 2.Collector 3.Emitter 4.Collector

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	0.026	REF	0.650	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.