PNP Epitaxial Planar Transistor

BTA1210J3

BV_{CEO}	-120V
I_C	-10A
R_{CESAT}	270mΩ

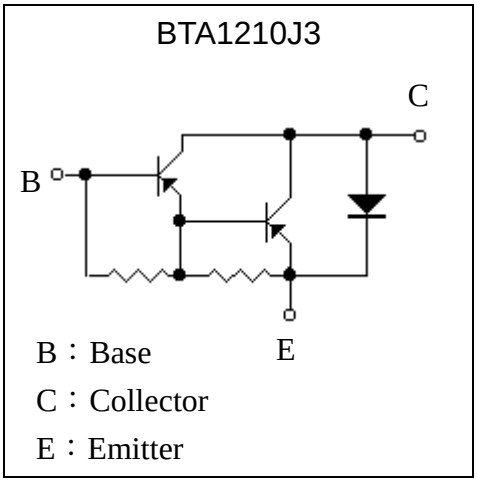
Description

The BTA1210J3 is a PNP Darlington transistor, designed for use in general purpose amplifier and low speed switching application.

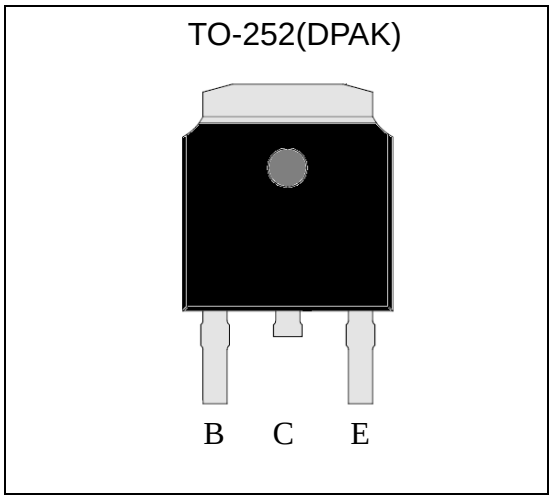
Features

- High BV_{CEO}
- High DC current gain
- High current capability
- Monolithic construction with built-in base-emitter shunt resistors
- RoHS compliant package

Equivalent Circuit

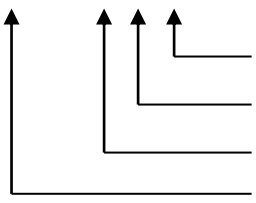


Outline



Ordering Information

Device	Package	Shipping
BTA1210J3-0-T3-G	TO-252 (Pb-free lead plating and halogen-free package)	2500 pcs / Tape & Reel



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-120	V
Collector-Emitter Voltage	V_{CEO}	-120	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current (DC)	I_C	-10	A
Collector Current (Pulse)	I_{CP}	-15 (Note)	A
Power Dissipation	Pd(T_A=25℃)	1.75	W
	Pd(T_C=25℃)	20	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	83.3	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	6.25	°C/W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

Note : Single Pulse Pw≦350μs, Duty≦2%.

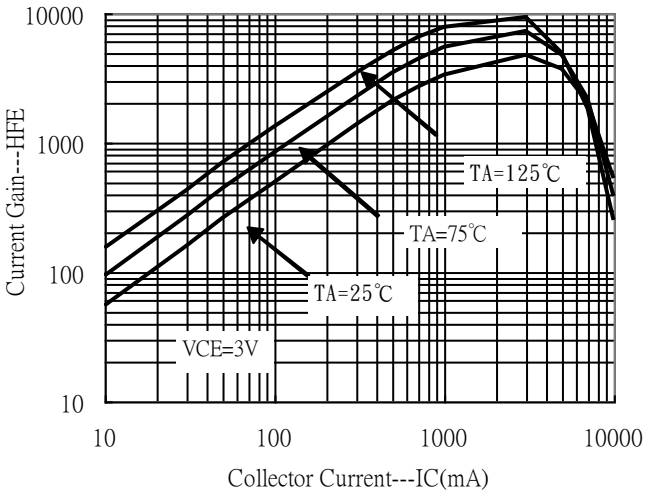
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CEO}	-120	-	-	V	I_C=-1mA, I_B=0
BV_{CBO}	-120	-	-	V	I_C=-100μA, I_E=0
I_{CBO}	-	-	-200	μA	V_{CB}=-120V, I_E=0
I_{CEO}	-	-	-200	μA	V_{CE}=-120V, I_B=0
I_{EBO}	-	-	-2	mA	V_{EB}=-5V, I_C=0
*$V_{CE(sat)}$ 1	-	-	-1.8	V	I_C=-4A, I_B=-16mA
*$V_{CE(sat)}$ 2	-	-	-2.0	V	I_C=-8A, I_B=-80mA
*$V_{BE(sat)}$	-	-	-2.5	V	I_C=-8A, I_B=-80mA
*$V_{BE(on)}$	-	-	-2.2	V	V_{CE}=-4V, I_C=-4A
*h_{FE} 1	2	-	-	K	V_{CE}=-4V, I_C=-1A
*h_{FE} 2	4	-	20	K	V_{CE}=-4V, I_C=-4A
*h_{FE} 3	200	-	-	-	V_{CE}=-4V, I_C=-8A
Cob	-		300	pF	V_{CB}=-10V, I_E=0A, f=1MHz

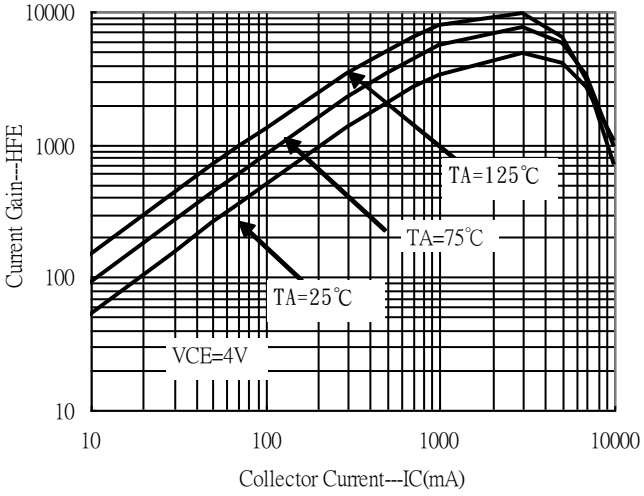
*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

Typical Characteristics

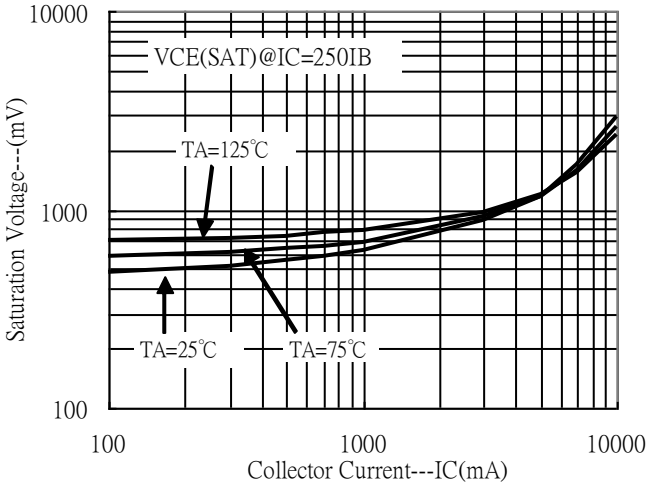
Current Gain vs Collector Current



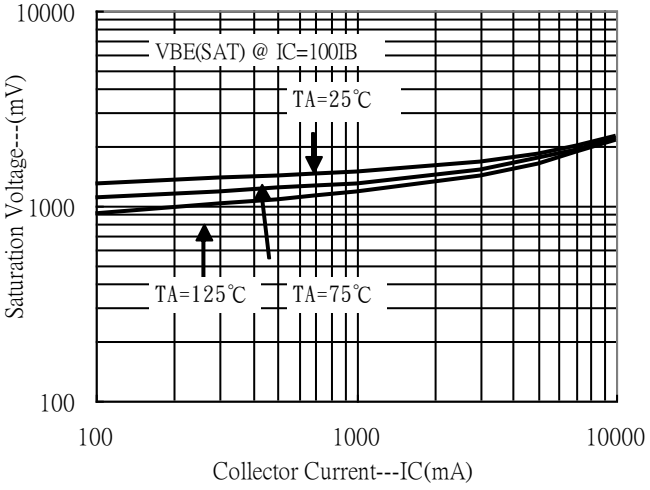
Current Gain vs Collector Current



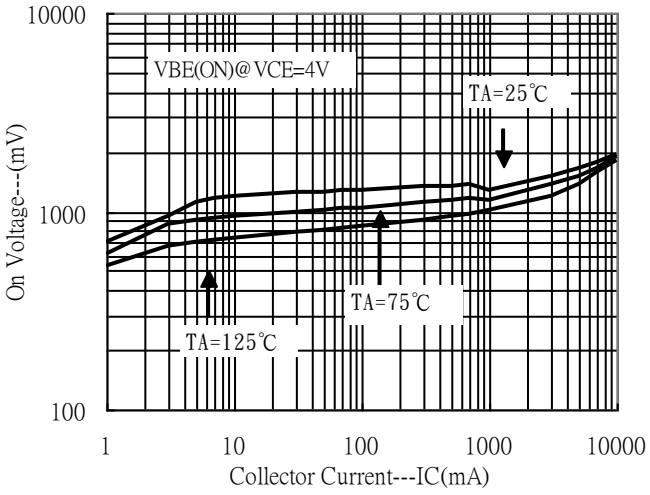
Saturation Voltage vs Collector Current



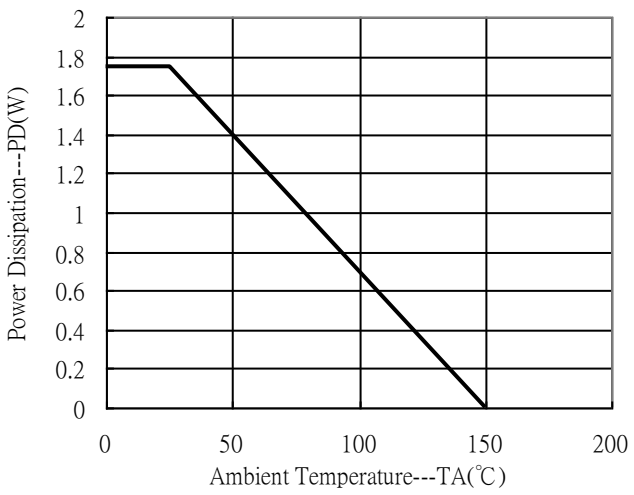
Saturation Voltage vs Collector Current



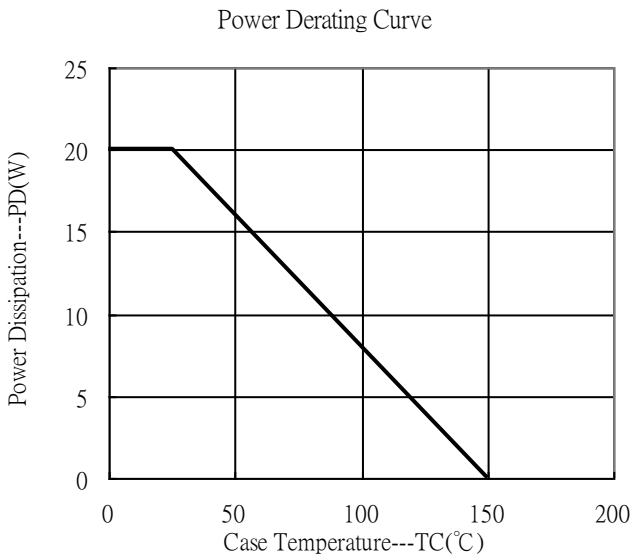
On Vottage vs Collector Current

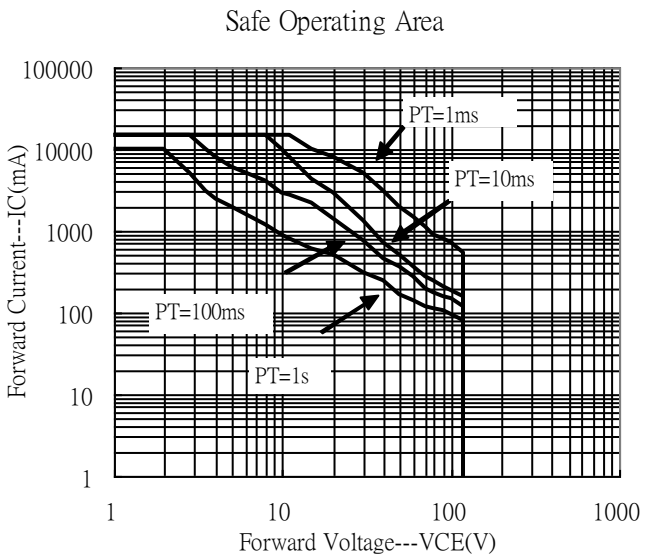


Power Derating Curve

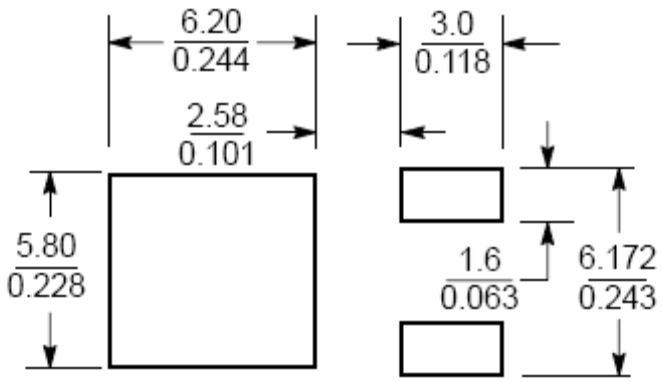


Typical Characteristics(Cont.)



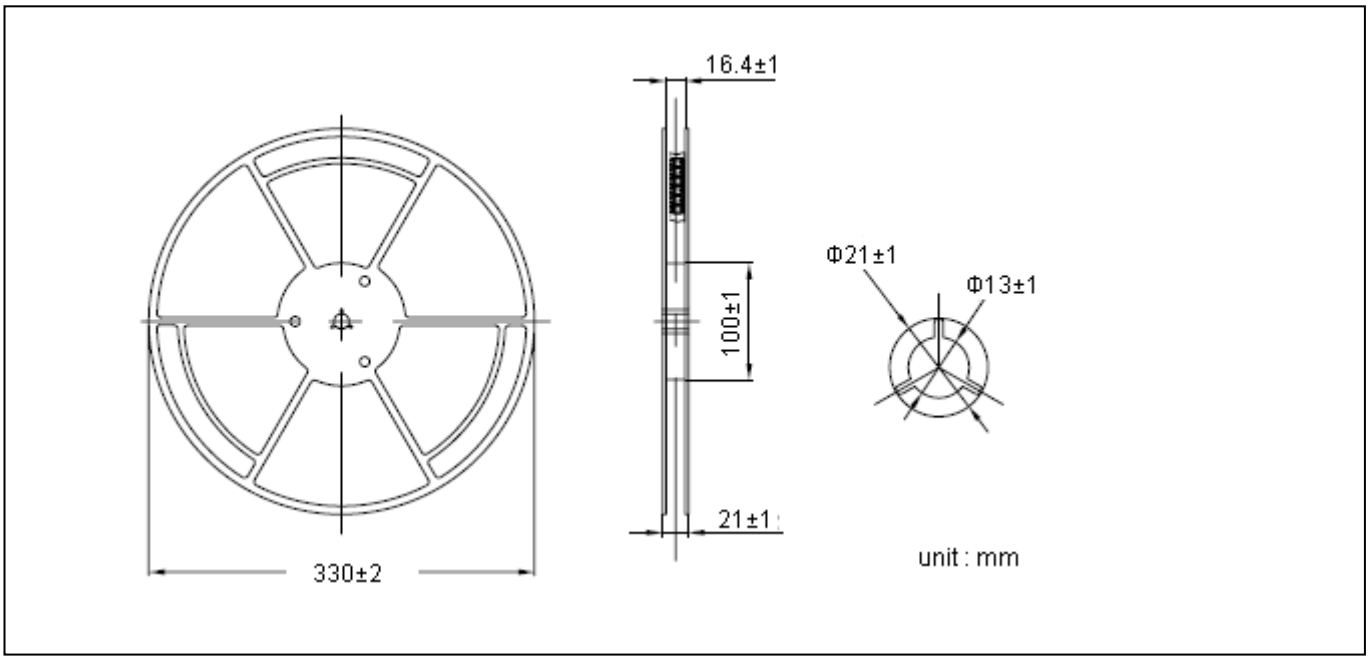


Recommended soldering footprint

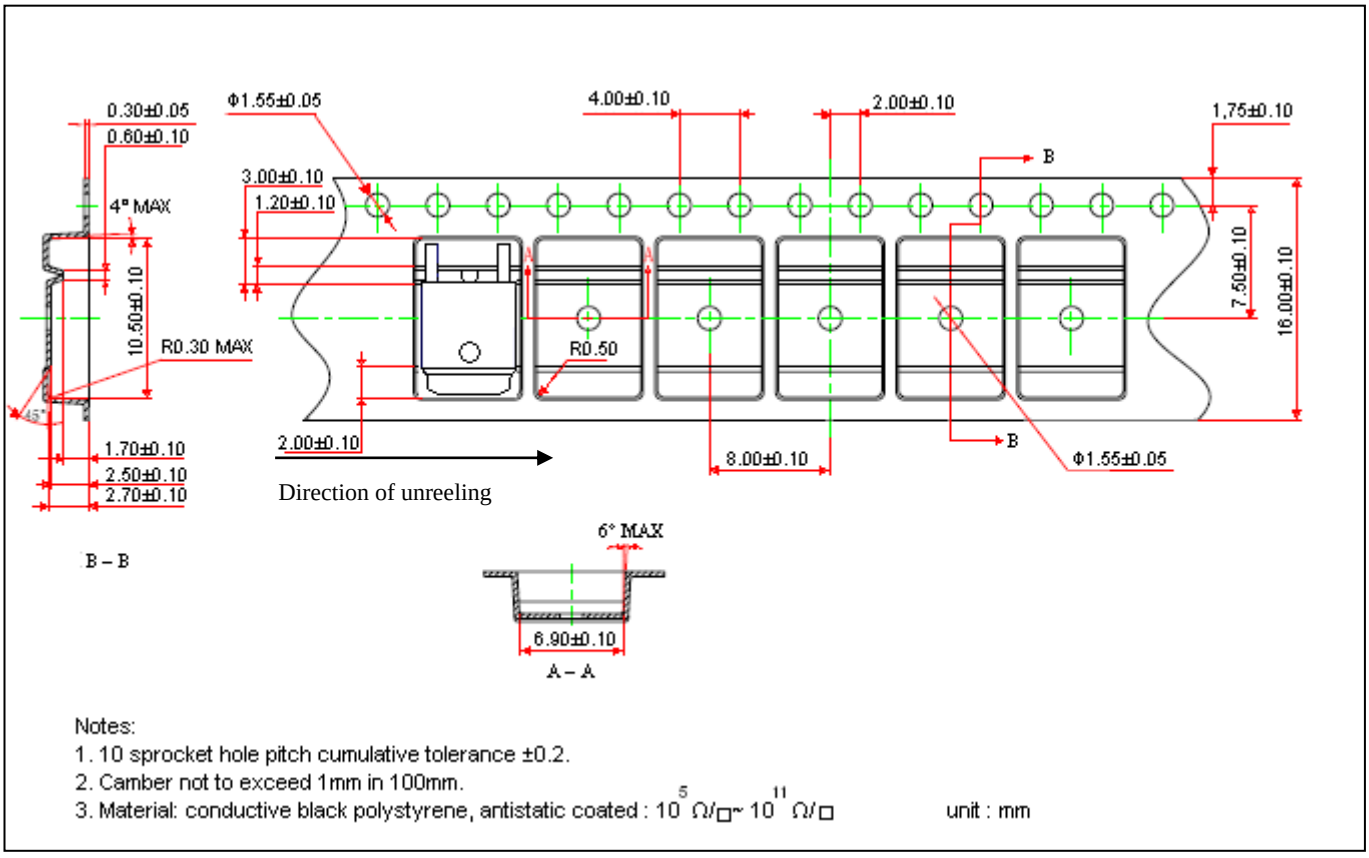


Unit (mm / inch)

Reel Dimension



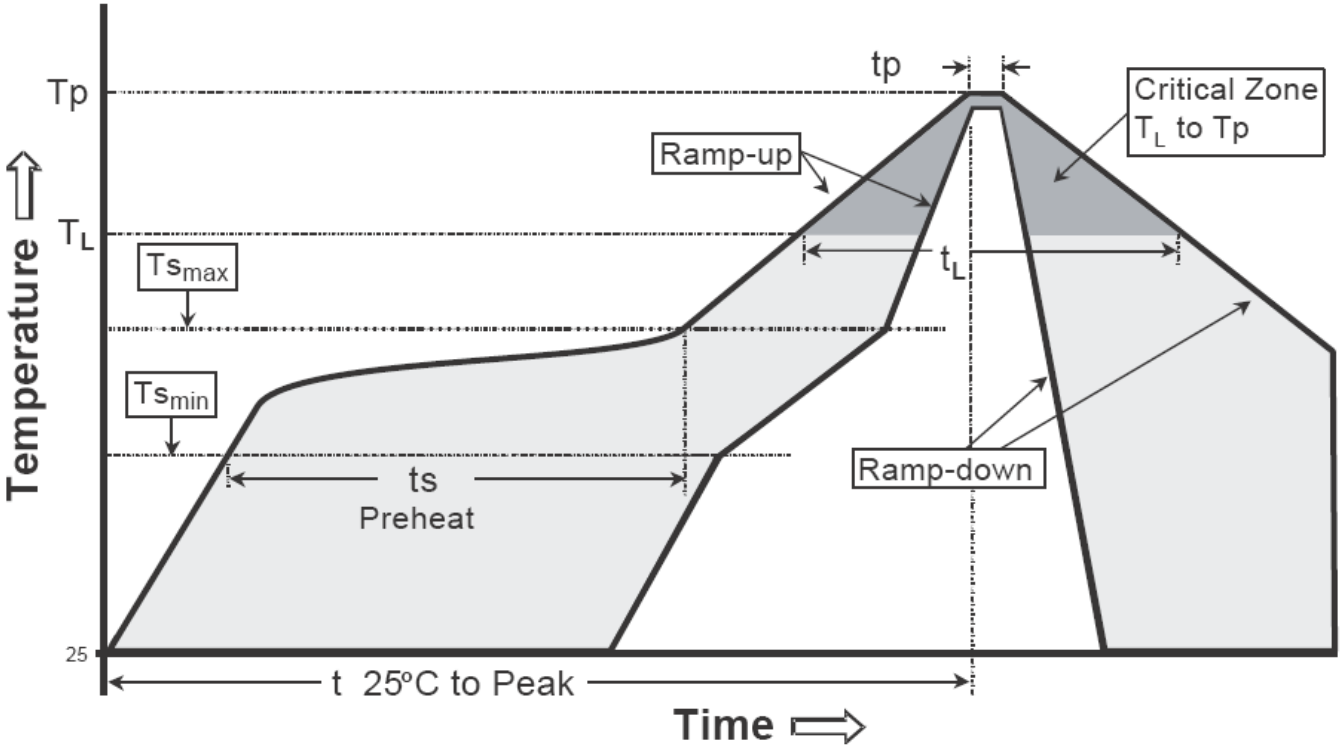
Carrier Tape Dimension



Recommended wave soldering condition

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

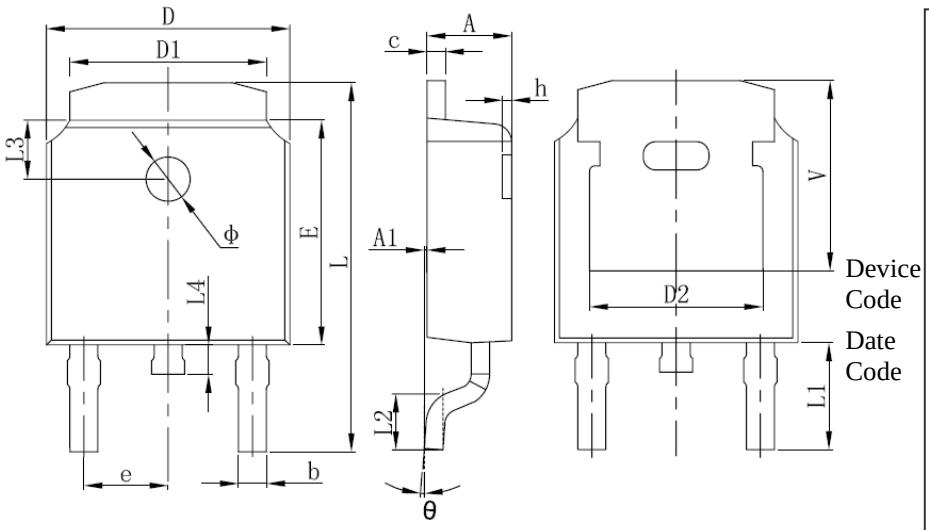
Recommended temperature profile for IR reflow

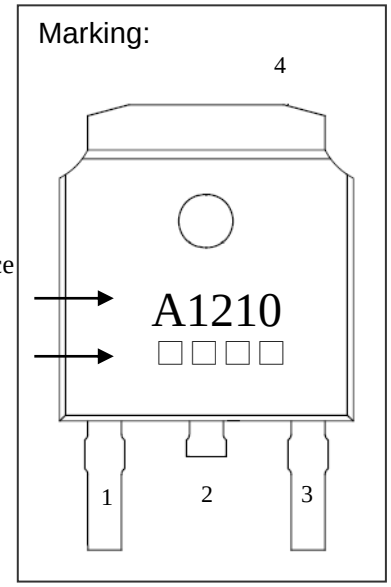


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 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.

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	L	0.382	0.406	9.712	10.312
A1	0.000	0.005	0.000	0.127	L1	0.114 REF		2.900 REF	
b	0.025	0.030	0.635	0.770	L2	0.055	0.067	1.400	1.700
c	0.018	0.023	0.460	0.580	L3	0.063 REF		1.600 REF	
D	0.256	0.264	6.500	6.700	L4	0.024	0.039	0.600	1.000
D1	0.201	0.215	5.100	5.460	Φ	0.043	0.051	1.100	1.300
D2	0.190 REF		4.830 REF		θ	0°	8°	0°	8°
E	0.236	0.244	6.000	6.200	h	0.000	0.012	0.000	0.300
e	0.086	0.094	2.186	2.386	v	0.207 REF		5.250 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.