Low Vcesat PNP Epitaxial Planar Transistor

BTA3513I3

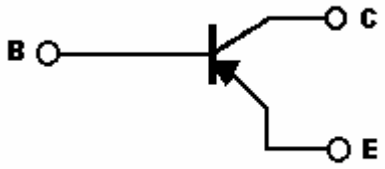
BV_{CEO}	-80V
I_C	-10A
R_{CESAT}	75mΩ typ.

Features

- Low $V_{CE(sat)}$
- High BV_{CEO}
- Excellent current gain characteristics
- RoHS compliant package

Symbol

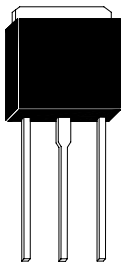
BTA3513I3



B：Base
C：Collector
E：Emitter

Outline

TO-251



B C E

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-100	V
Collector-Emitter Voltage	V_{CEO}	-80	V
Emitter-Base Voltage	V_{EBO}	-7	V
Collector Current (DC)	I_C	-10	A
Collector Current (Pulse)	I_{CP}	-16 (Note 1)	
Power Dissipation @ T_A=25℃	P_D	1.75 (Note 2)	W
Power Dissipation @ T_C=25℃	P_D	20	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	71.4 (Note 2)	°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 : 1. Single Pulse , Pw≦300μs,Duty≦2%.
2. When mounted on a PCB with the minimum pad size.

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$BV_{CEO(SUS)}$	-80	-	-	V	I_C=-30mA, I_B=0
I_{CEO}	-	-	-1	μA	V_{CE}=-80V, I_B=0
I_{CES}	-	-	-1	μA	V_{CE}=-80V, V_{BE}=0
I_{EBO}	-	-	-100	nA	V_{EB}=-7V, I_C=0
*$V_{CE(sat)}$ 1	-	-0.2	-0.3	V	I_C=-3A, I_B=-150mA
*$V_{CE(sat)}$ 2	-	-0.3	-0.5	V	I_C=-5A, I_B=-250mA
*$V_{CE(sat)}$ 3	-	-0.6	-1.0	V	I_C=-8A, I_B=-0.4A
*$R_{CE(sat)}$	-	75	125	mΩ	I_C=-8A, I_B=-0.4A
*$V_{BE(sat)}$ 1	-	-0.85	-1.0	V	I_C=-3A, I_B=-150mA
*$V_{BE(sat)}$ 2	-	-0.9	-1.2	V	I_C=-5A, I_B=-250mA
*$V_{BE(sat)}$ 3	-	-1.0	-1.5	V	I_C=-8A, I_B=-0.8A
*h_{FE} 1	160	-	-	-	V_{CE}=-2V, I_C=-500mA
*h_{FE} 2	180	-	360	-	V_{CE}=-2V, I_C=-1A
*h_{FE} 3	100	-	-	-	V_{CE}=-2V, I_C=-3A
f_T	-	80	-	MHz	V_{CE}=-10V, I_C=-500mA, f=20MHz
Cob	-	98	-	pF	V_{CB}=-10V, f=1MHz
ton	-	135	-	ns	I_C=-5A, I_{B1}=-I_{B2}=-0.5A
tstg	-	500	-	ns	
tf	-	100	-	ns	

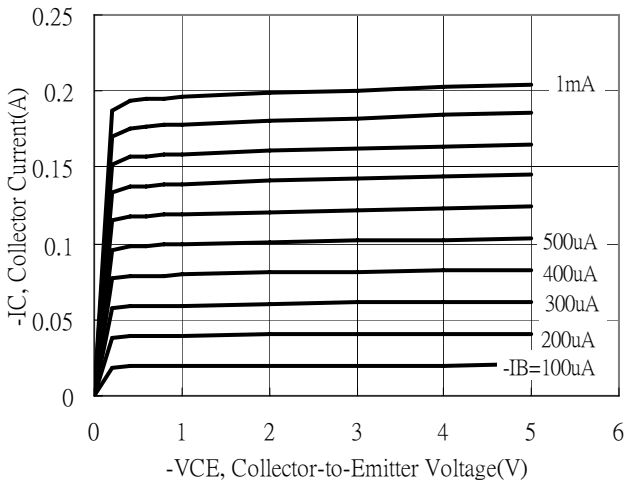
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Ordering Information

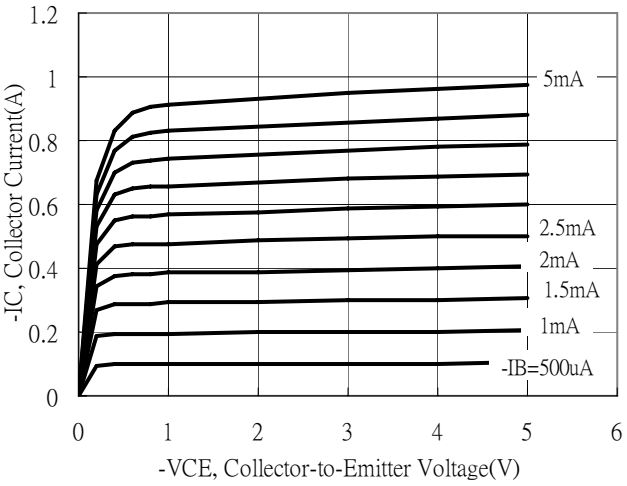
Device	Package	Shipping	Marking
BTA3513I3	TO-251 (RoHS compliant)	80 pcs / tube, 50 tubes / box	A3513

Typical Characteristics

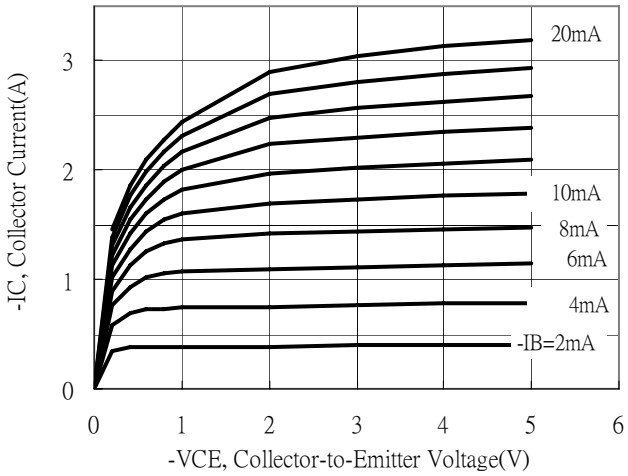
Emitter Grounded Output Characteristics



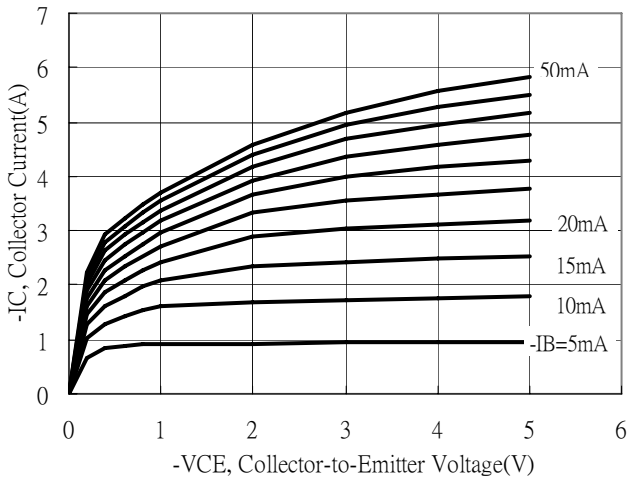
Emitter Grounded Output Characteristics



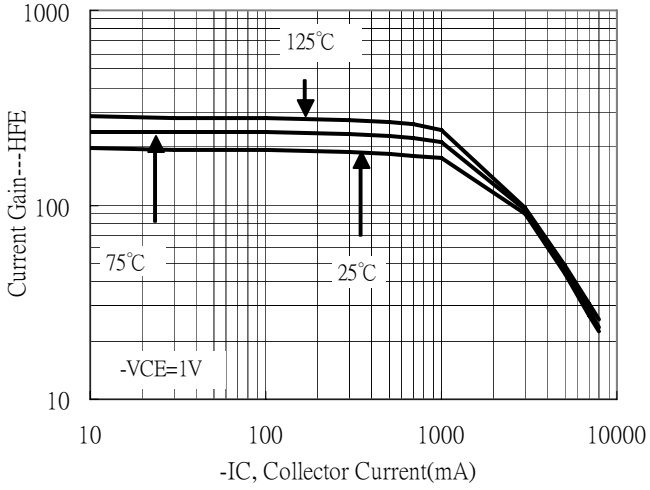
Emitter Grounded Output Characteristics



Emitter Grounded Output Characteristics



Current Gain vs Collector Current



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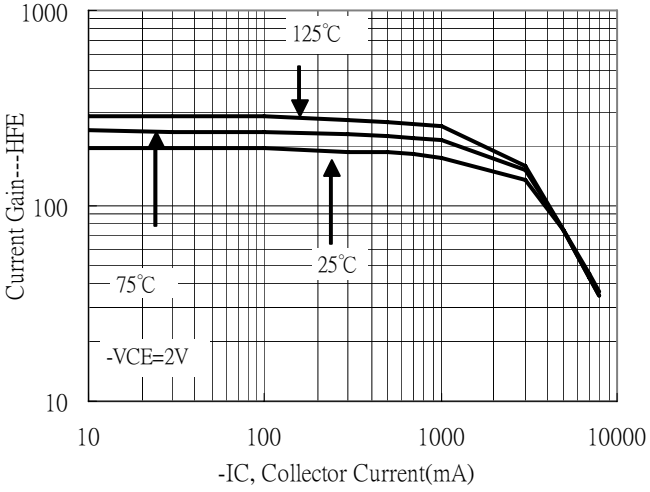
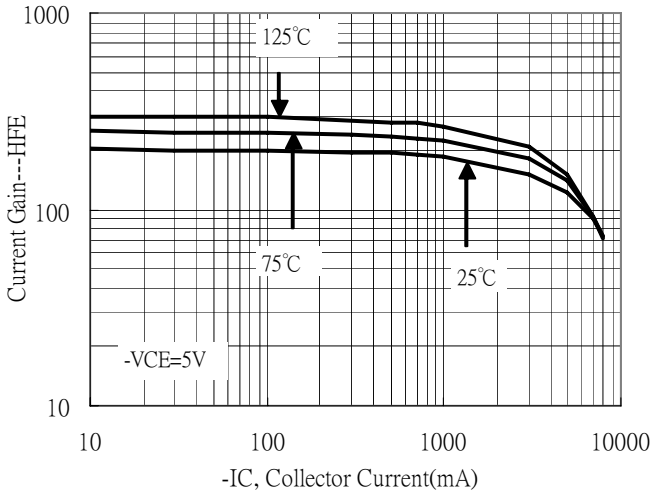
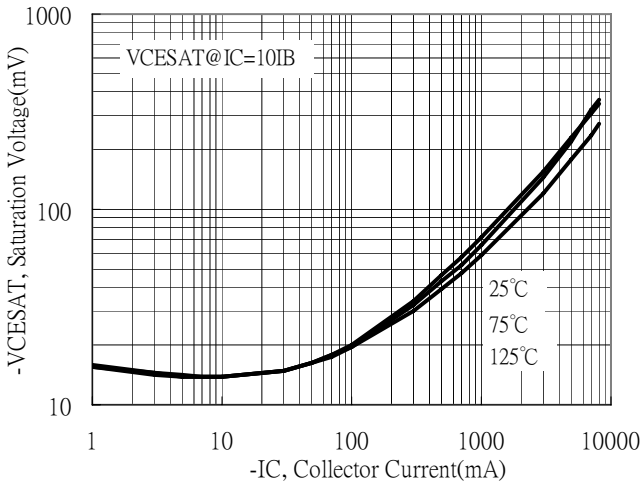


Typical Characteristics(Cont.)

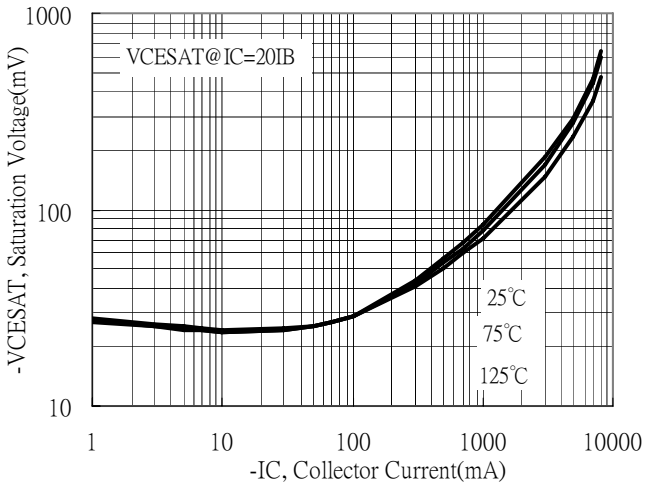
Current Gain vs Collector Current



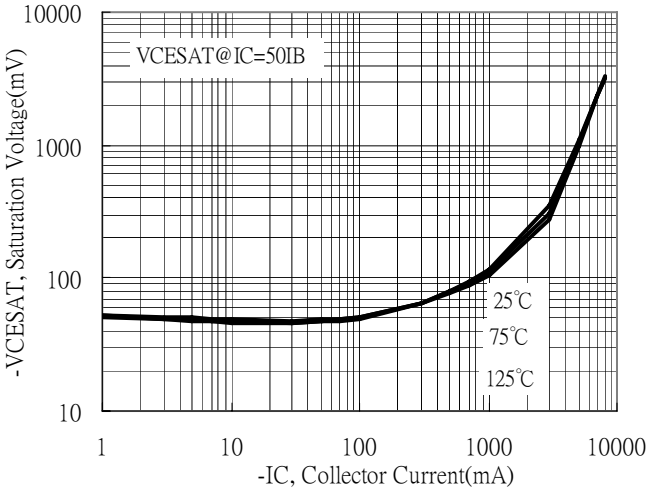
Saturation Voltage vs Collector Current



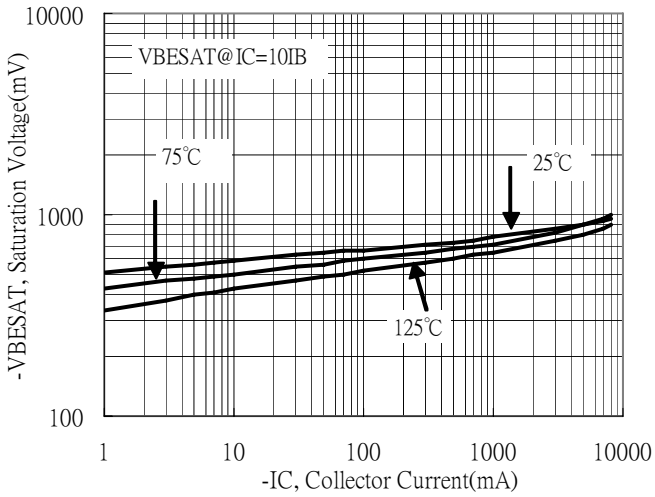
Saturation Voltage vs Collector Current



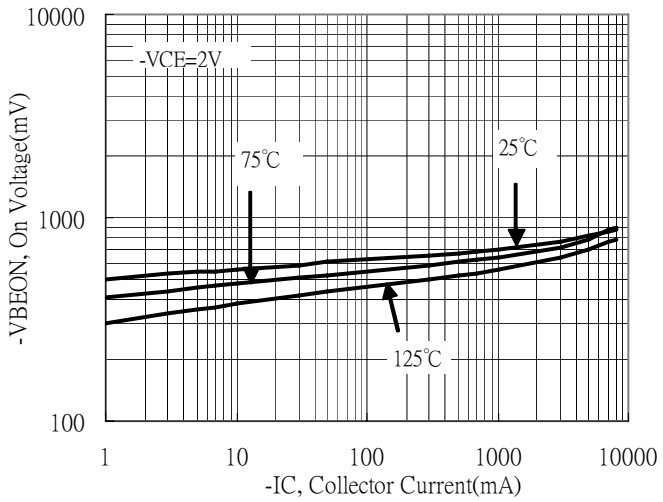
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current

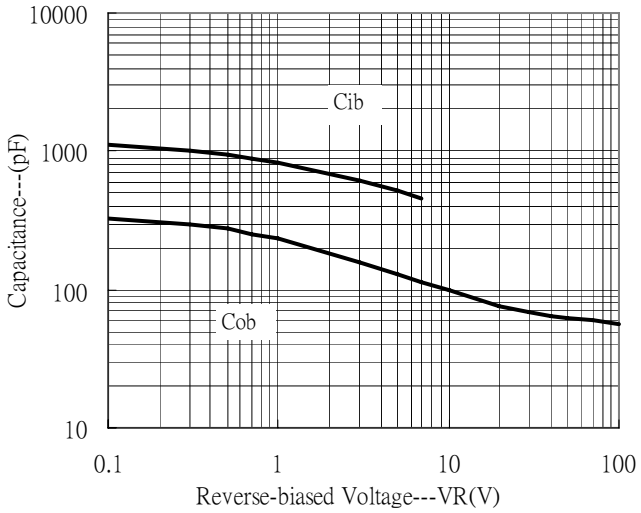


On Voltage vs Collector Current

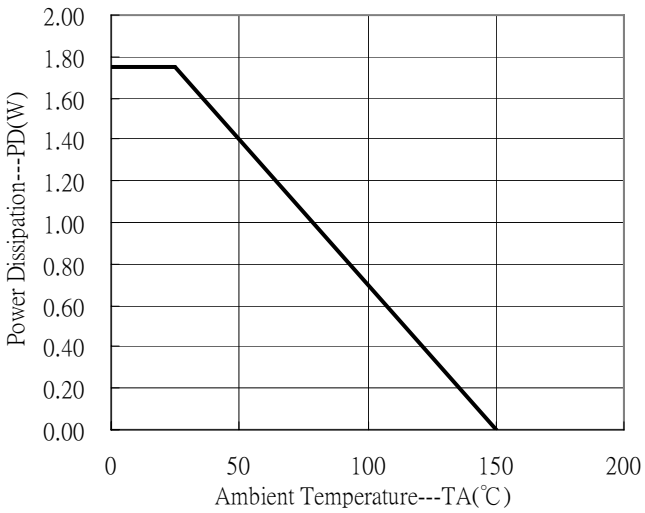


Typical Characteristics(Cont.)

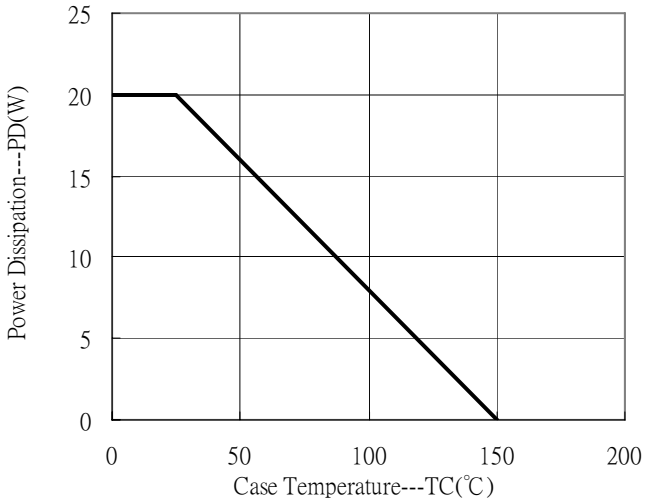
Capacitance vs Reverse-biased Voltage



Power Derating Curve



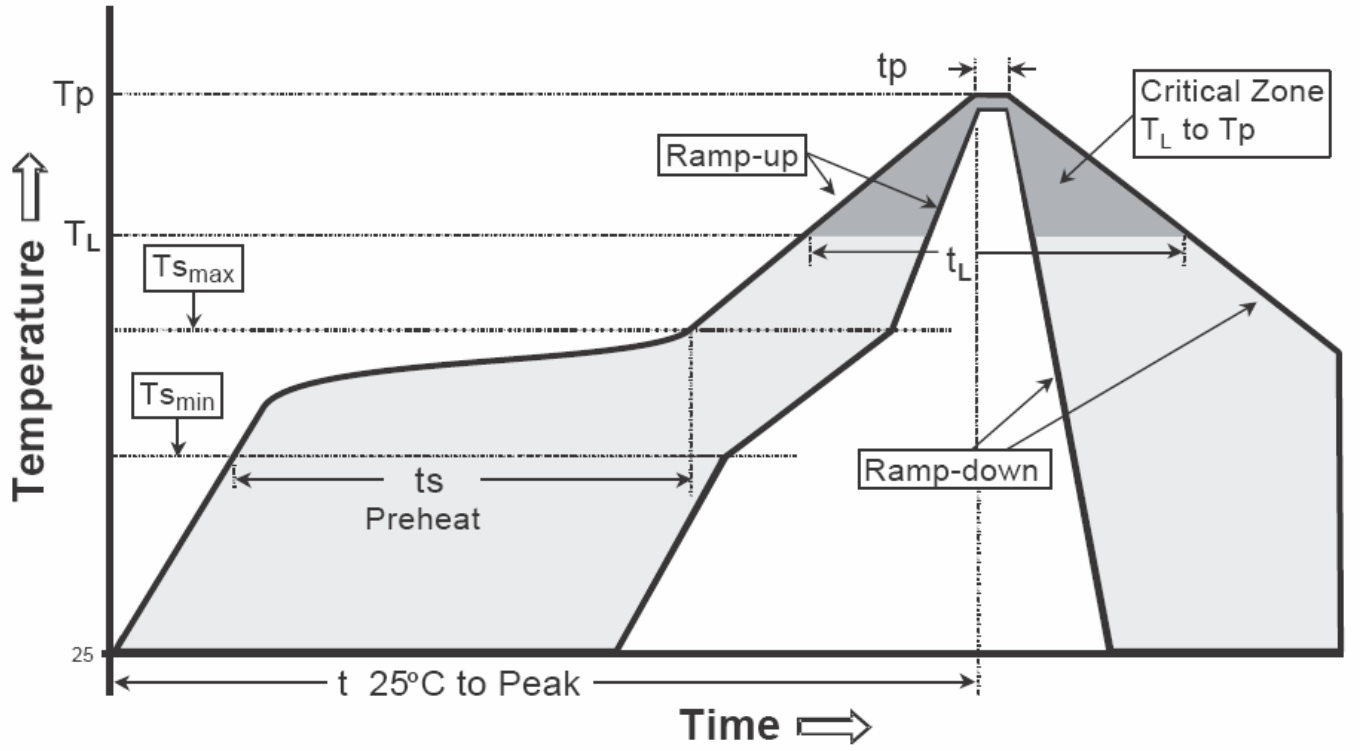
Power Derating Curve



Recommended wave soldering condition

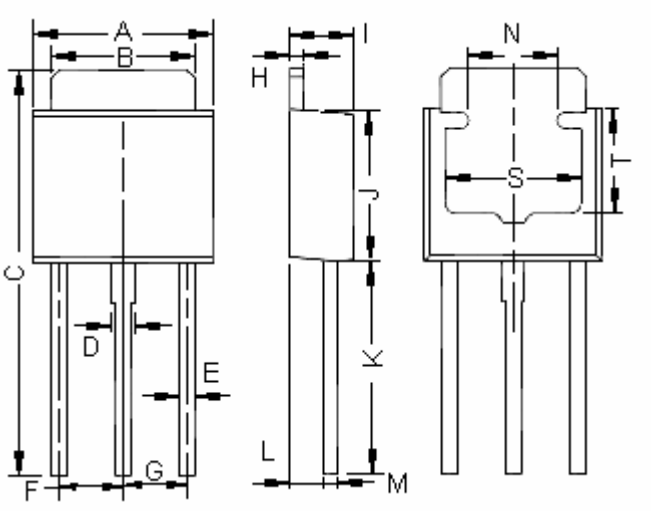
Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

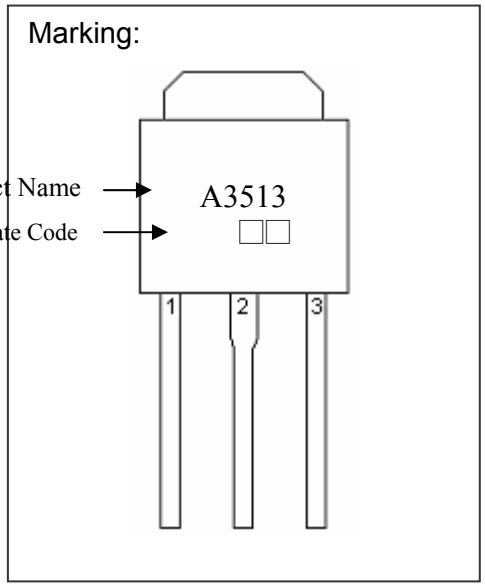
Recommended temperature profile for IR reflow



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.

TO-251 Dimension





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

3-Lead TO-251 Plastic Package
CYStek Package Code: I3

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.250	0.262	6.350	6.650	I	0.087	0.094	2.200	2.400
B	0.205	0.213	5.200	5.400	J	0.213	0.224	5.400	5.700
C	0.571	0.587	14.500	14.900	K	0.295	0.311	7.500	7.900
D	0.028	0.035	0.700	0.900	L	0.042	0.054	1.050	1.350
E	0.020	0.028	0.500	0.700	M	0.017	0.023	0.430	0.580
F	0.091 TYP		2.300 TYP		N	0.118 REF		3.000 REF	
G	0.091 TYP		2.300 TYP		S	0.197 REF		5.000 REF	
H	0.017	0.023	0.430	0.580	T	0.150 REF		3.800 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.