Low Vcesat PNP Epitaxial Planar Transistor

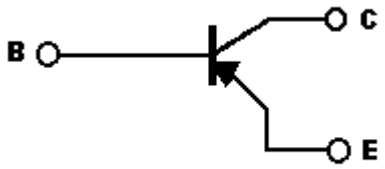
BTA1952E3

Features

- Low V_{CE}(sat), V_{CE}(sat)=-0.23 V (typical), at I_C / I_B = -3A / -0.15A
- Excellent DC current gain characteristics
- Wide SOA
- Pb-free lead plating package

Symbol

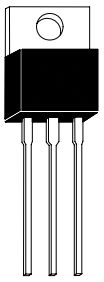
BTA1952E3



B：Base
C：Collector
E：Emitter

Outline

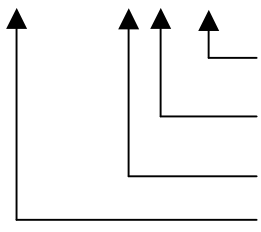
TO-220



B C E

Ordering Information

Device	Package	Shipping
BTA1952E3-X-UB-X	TO-220 (Pb-free lead plating)	50 pcs / tube, 20 tubes/ box , 4 boxes/carton



Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, UB : 50 pcs / tube, 20 tubes/box

Product rank, zero for no rank products

Product name

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-100	V
Collector-Emitter Voltage	V_{CEO}	-70	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current	I_C(DC)	-5	A
	I_C(Pulse)	-8 *1	
Base Current	I_B	-1	A
Power Dissipation	Pd(T_A=25℃)	2	W
	Pd(T_C=25℃)	40	
Operating Junction Temperature Range	Tj	-55~+150	°C
Storage Temperature Range	Tstg	-55~+150	°C

Note : *1. Single Pulse Pw=10ms

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	3.1	

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CEO}	-70	-	-	V	I_C=-10mA, I_B=0
I_{CBO}	-	-	-100	nA	V_{CB}=-100V, I_E=0
I_{EBO}	-	-	-100	nA	V_{EB}=-5V, I_C=0
*$V_{CE(sat)}$	-	-145	-300	mV	I_C=-1A, I_B=-10mA
*$V_{CE(sat)}$	-	-230	-500	mV	I_C=-3A, I_B=-150mA
*$V_{CE(sat)}$	-	-300	-600	mV	I_C=-4A, I_B=-200mA
*$V_{BE(sat)}$	-	-0.93	-1.2	V	I_C=-3A, I_B=-150mA
*h_{FE} 1	100	-	-	-	V_{CE}=-3V, I_C=-500mA
*h_{FE} 2	120	-	390	-	V_{CE}=-2V, I_C=-1A
f_T	-	130	-	MHz	V_{CE}=-10V, I_C=-100mA, f=1MHz
Cob	-	80	-	pF	V_{CB}=-10V, f=1MHz

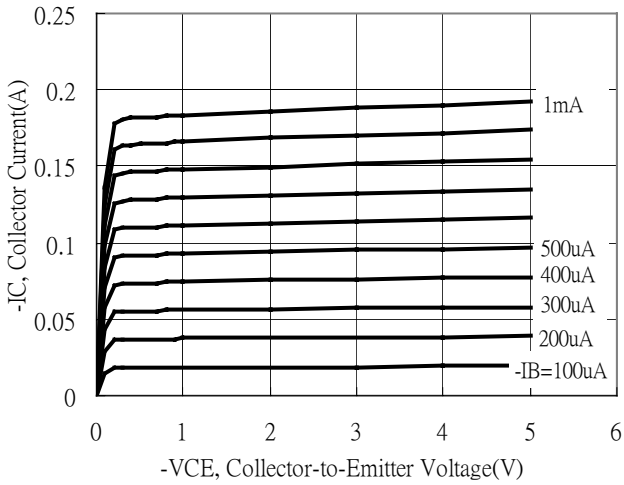
*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

Classification of h_{FE} 2

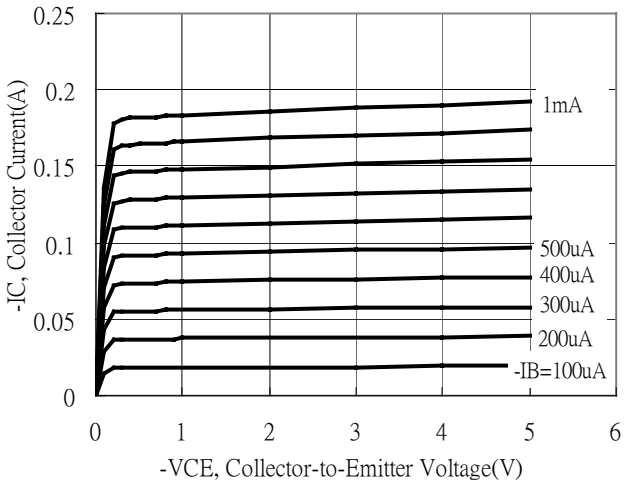
Rank	Q	R
Range	120~270	180~390

Typical Characteristics

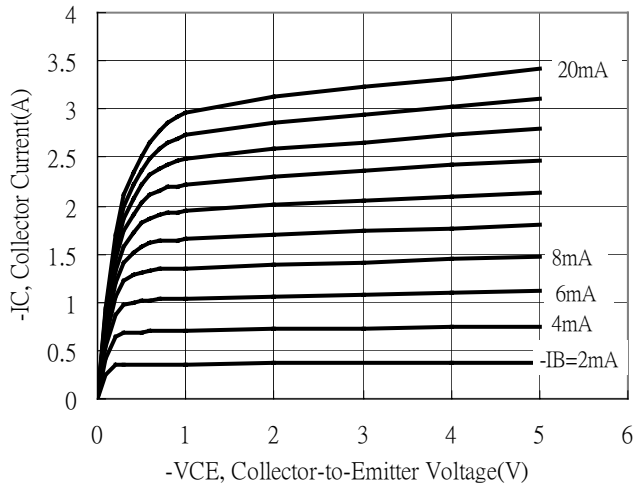
Emitter Grounded Output Characteristics



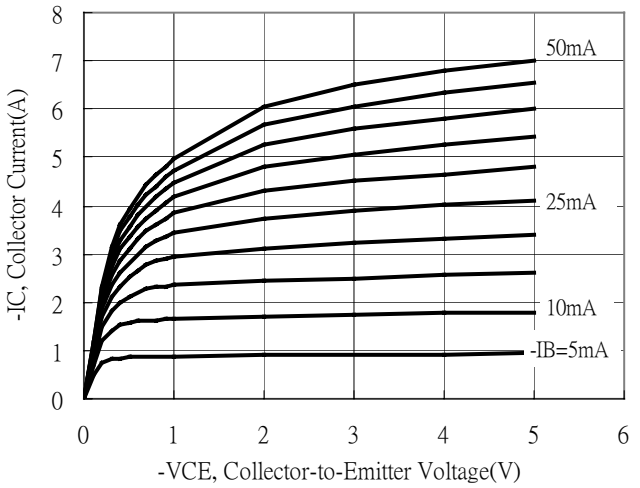
Emitter Grounded Output Characteristics



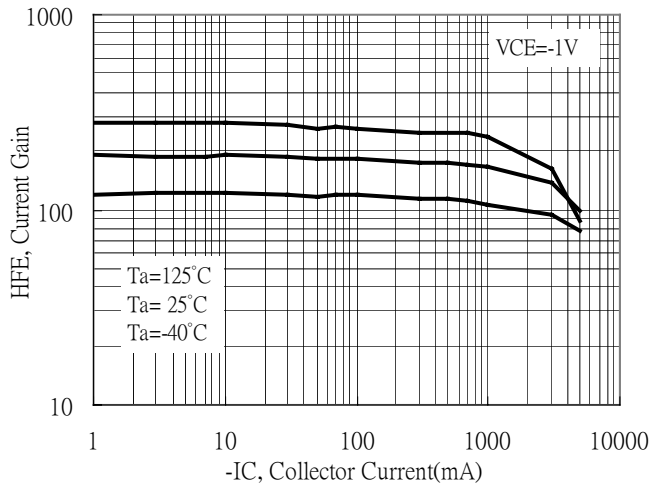
Emitter Grounded Output Characteristics



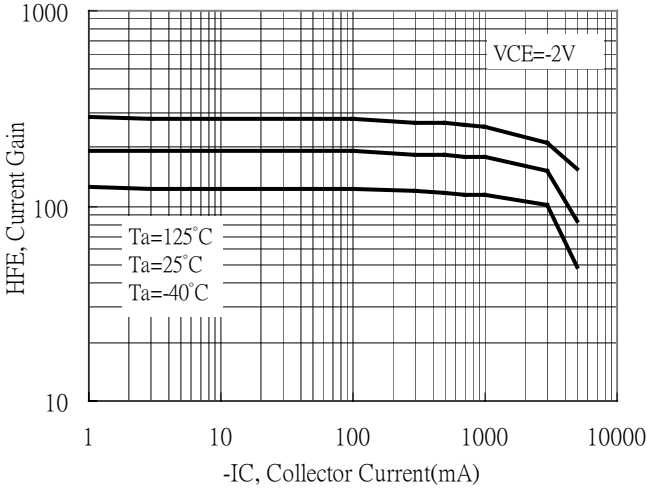
Emitter Grounded Output Characteristics



Current Gain vs Collector Current

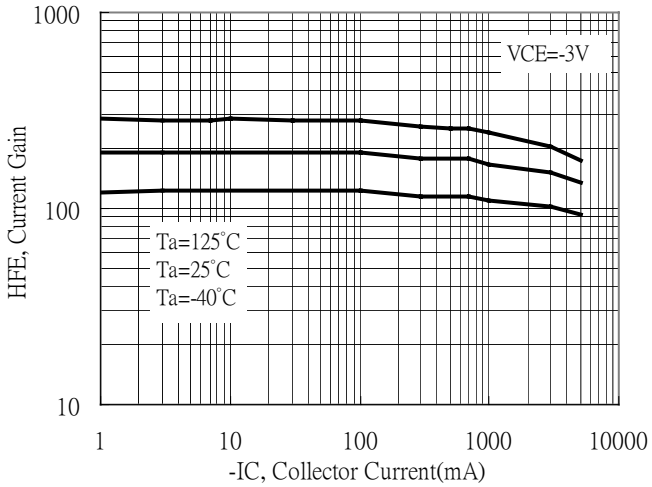


Current Gain vs Collector Current

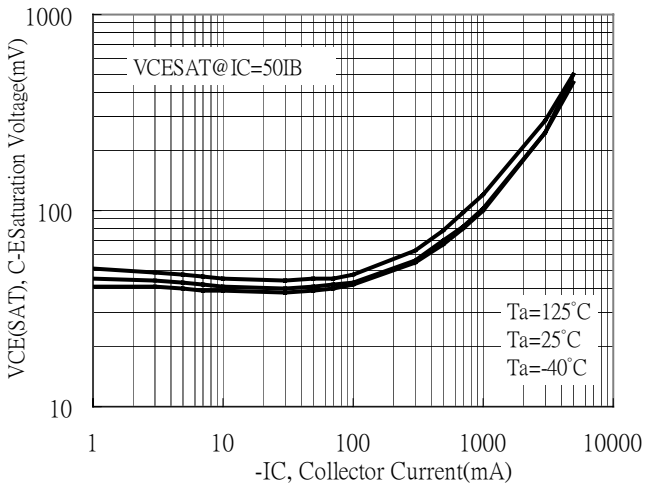


Typical Characteristics(Cont.)

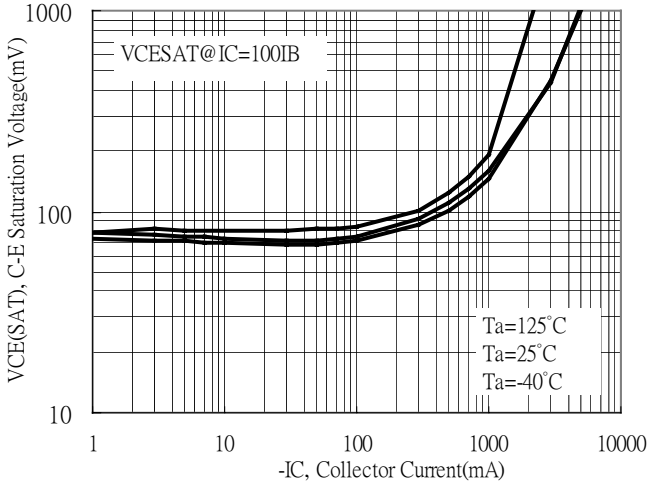
Current Gain vs Collector Current



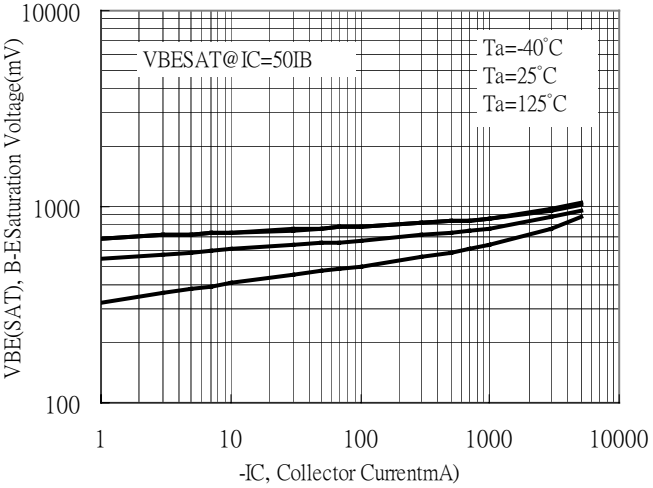
Saturation Voltage vs Collector Current



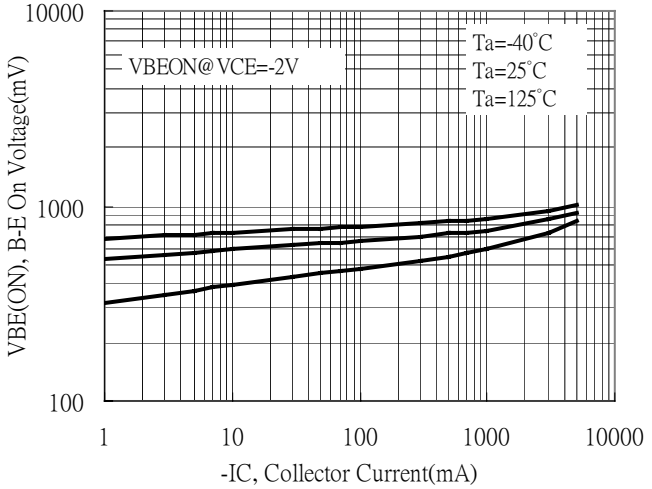
Saturation Voltage vs Collector Current



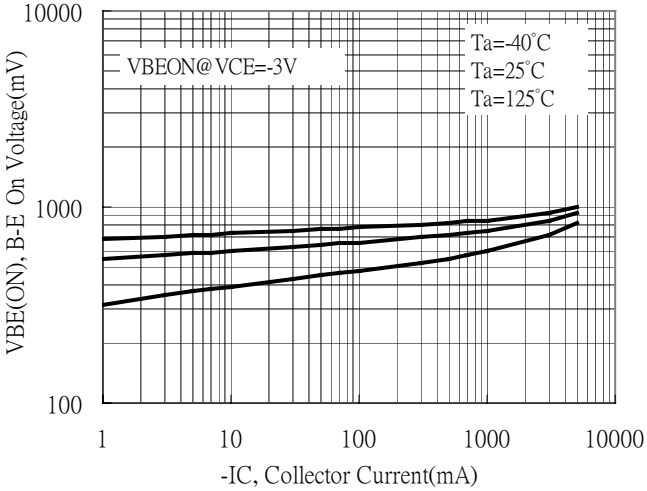
Saturation Voltage vs Collector Current



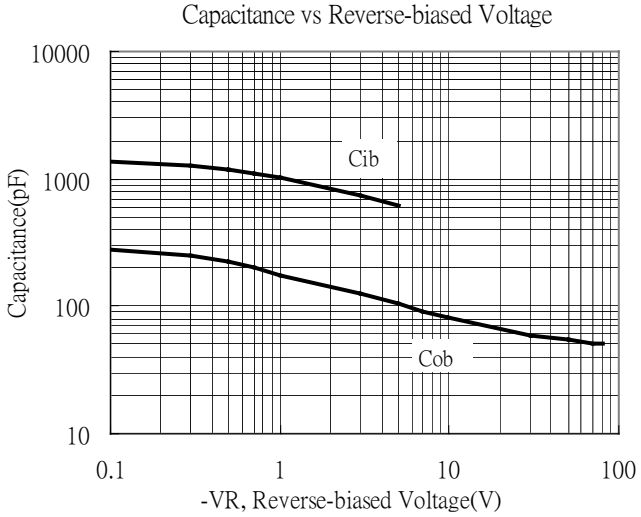
On Voltage vs Collector Current

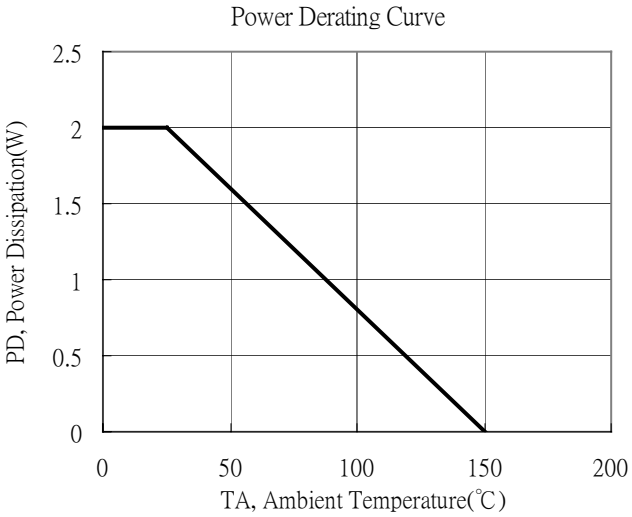


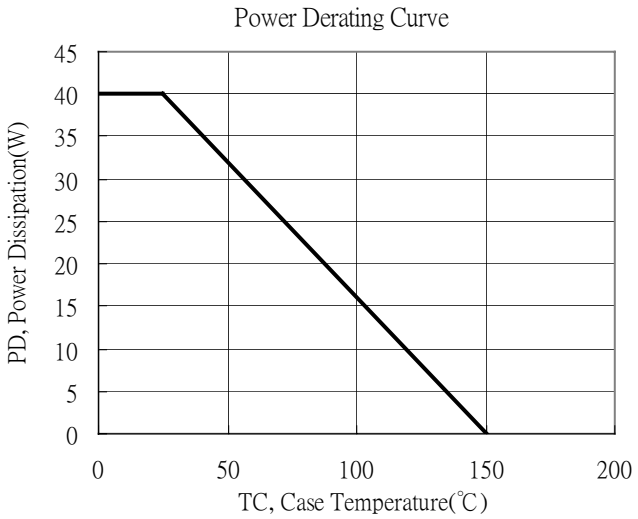
On Voltage vs Collector Current



Typical Characteristics(Cont.)



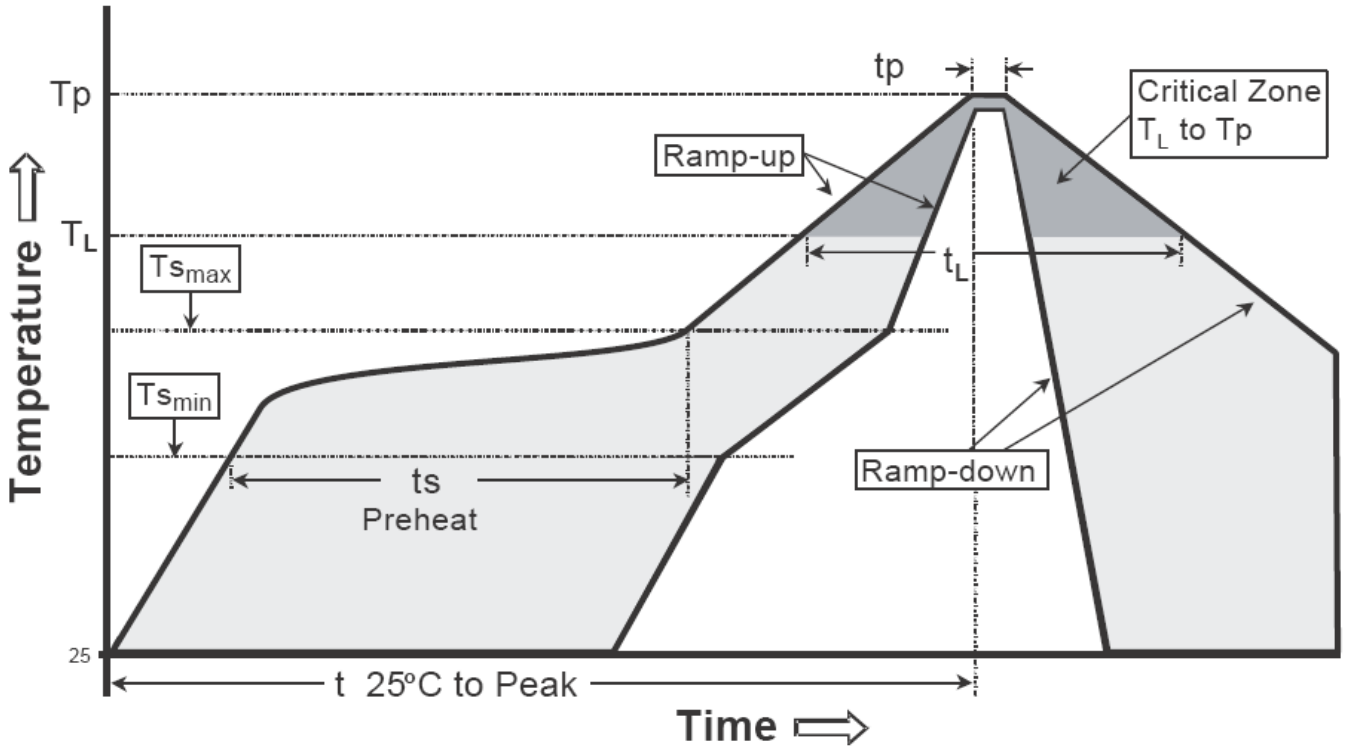




Recommended wave soldering condition

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

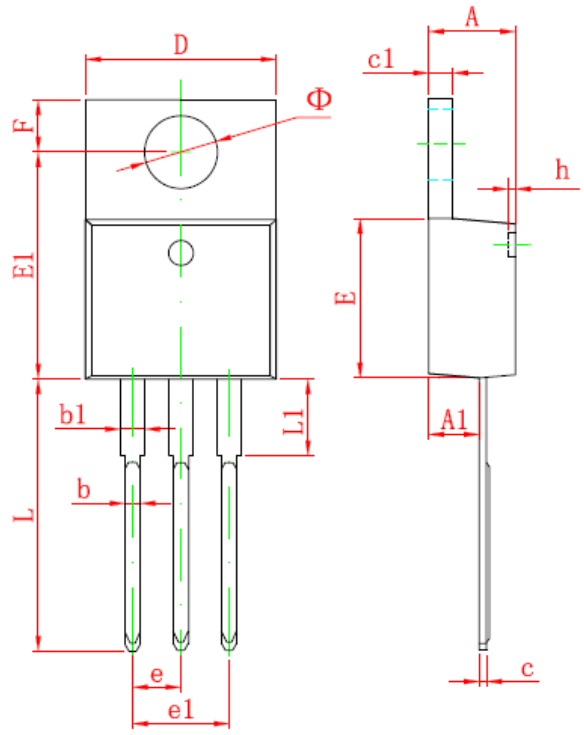
Recommended temperature profile for IR reflow



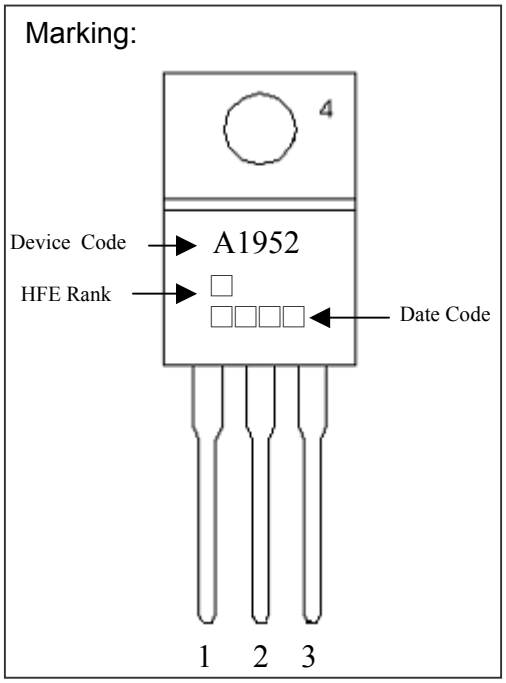
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L)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

Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-220 Dimension



3-Lead TO-220 Plastic Package
CYStek Package Code: E3



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

*: Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184	E1	12.060	12.460	0.475	0.491
A1	2.520	2.820	0.099	0.111	e	2.540*		0.100*	
b	0.710	0.910	0.028	0.036	e1	4.980	5.180	0.196	0.204
b1	1.170	1.370	0.046	0.054	F	2.590	2.890	0.102	0.114
c	0.310	0.530	0.012	0.021	h	0.000	0.300	0.000	0.012
c1	1.170	1.370	0.046	0.054	L	13.400	13.800	0.528	0.543
D	10.010	10.310	0.394	0.406	L1	3.560	3.960	0.140	0.156
E	8.500	8.900	0.335	0.350	Φ	3.735	3.935	0.147	0.155

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.