

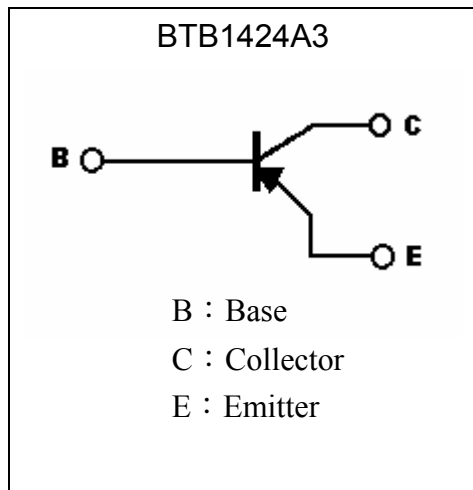
**Low Vcesat PNP Epitaxial Planar Transistor**

# BTB1424A3

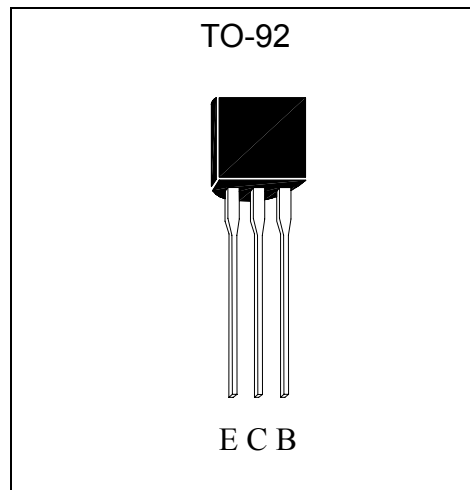
**Features**

- Low VCE(sat), typically -0.3 V at IC / IB = -2A / -0.2A
- Excellent current gain characteristics
- Complementary to BTD2150A3
- Pb-free package

**Symbol**



**Outline**



**Absolute Maximum Ratings** (Ta=25°C)

Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-50	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-50	V
Emitter-Base Voltage	V <sub>EB0</sub>	-5	V
Collector Current	I <sub>C(DC)</sub>	-3	A
	I <sub>C(pulse)</sub>	-7 (Note)	A
Power Dissipation	P <sub>d</sub>	750	mW
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature	T <sub>stg</sub>	-55~+150	°C

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

**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$V_{CB0}$	-50	-	-	V	$I_C = -50\mu A, I_E = 0$
$V_{CE0}$	-50	-	-	V	$I_C = -1mA, I_B = 0$
$V_{EBO}$	-5	-	-	V	$I_E = -50\mu A, I_C = 0$
$I_{CBO}$	-	-	-1	$\mu A$	$V_{CB} = -30V, I_E = 0$
$I_{EBO}$	-	-	-1	$\mu A$	$V_{EB} = -3V, I_C = 0$
* $V_{CE(sat)}$	-	-0.3	-0.5	V	$I_C = -2A, I_B = -0.2A$
* $V_{BE(sat)}$	-	-1	-2	V	$I_C = -2A, I_B = -0.2A$
* $h_{FE1}$	52	-	-	-	$V_{CE} = -2V, I_C = -20mA$
* $h_{FE2}$	180	-	560	-	$V_{CE} = -2V, I_C = -500mA$
$f_t$	-	80	-	MHz	$V_{CE} = -5V, I_C = -0.1A, f = 100MHz$
$C_{ob}$	-	55	-	pF	$V_{CB} = -10V, f = 1MHz$

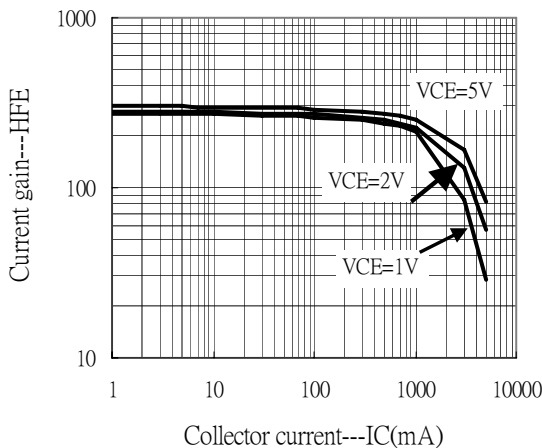
\*Pulse Test : Pulse Width  $\leq 380\mu s$ , Duty Cycle  $\leq 2\%$

**Classification Of  $h_{FE2}$**

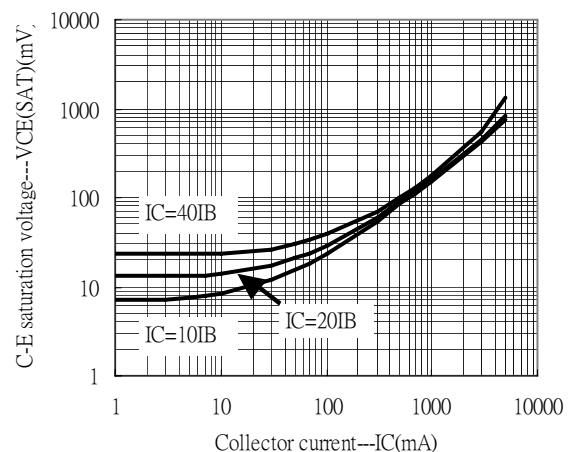
Rank	P	E
Range	180~390	270~560

**Characteristic Curves**

Current gain vs Collector current



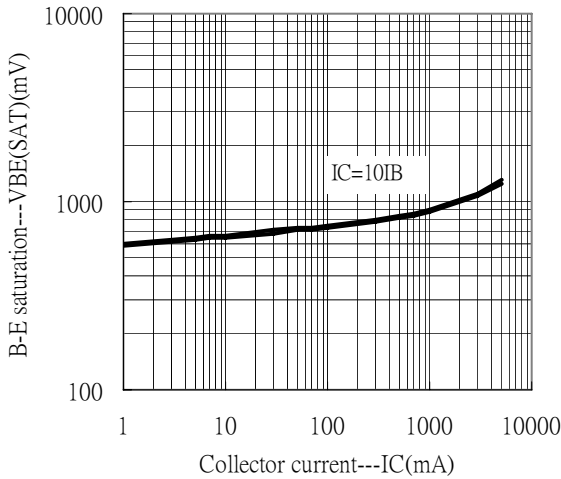
C-E saturation voltage vs Collector current



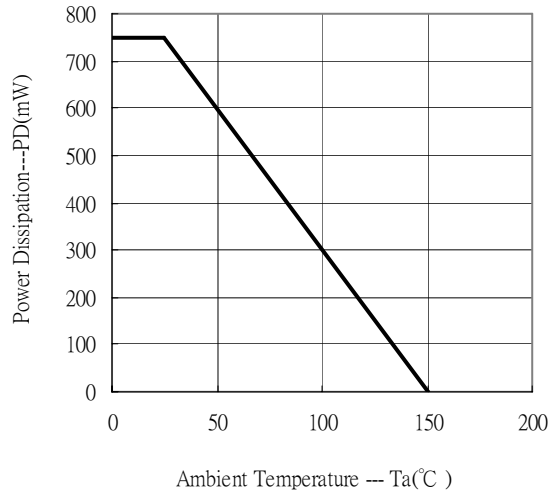


### Characteristic Curves(Cont.)

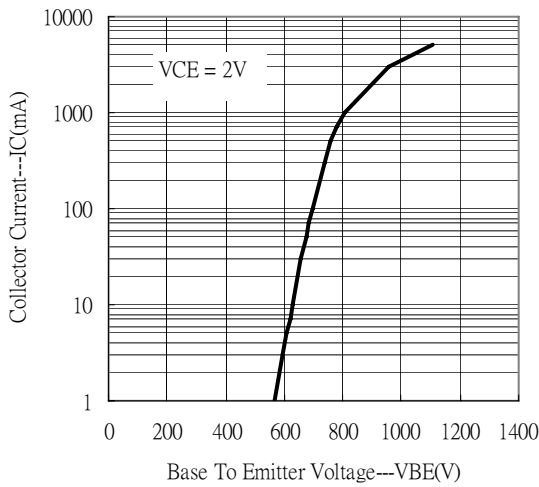
B-E saturation voltage vs Collector current



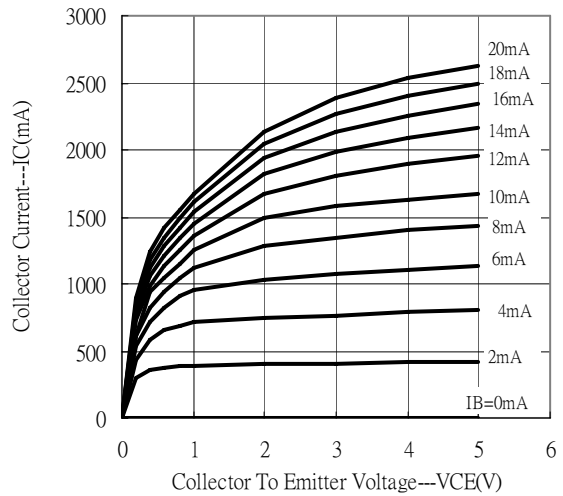
Power Derating Curve



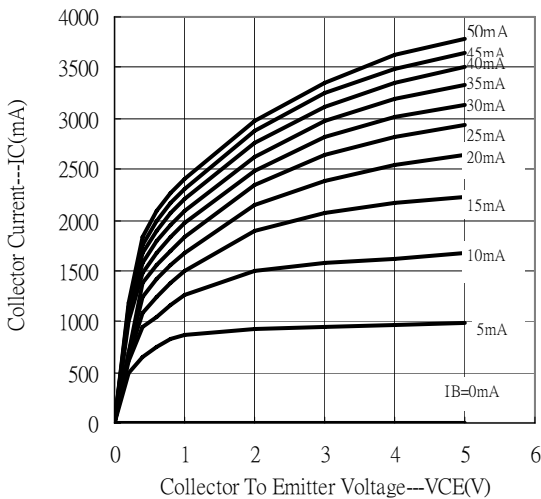
Grounded Emitter Propagation Characteristics



Grounded Emitter Output Characteristics



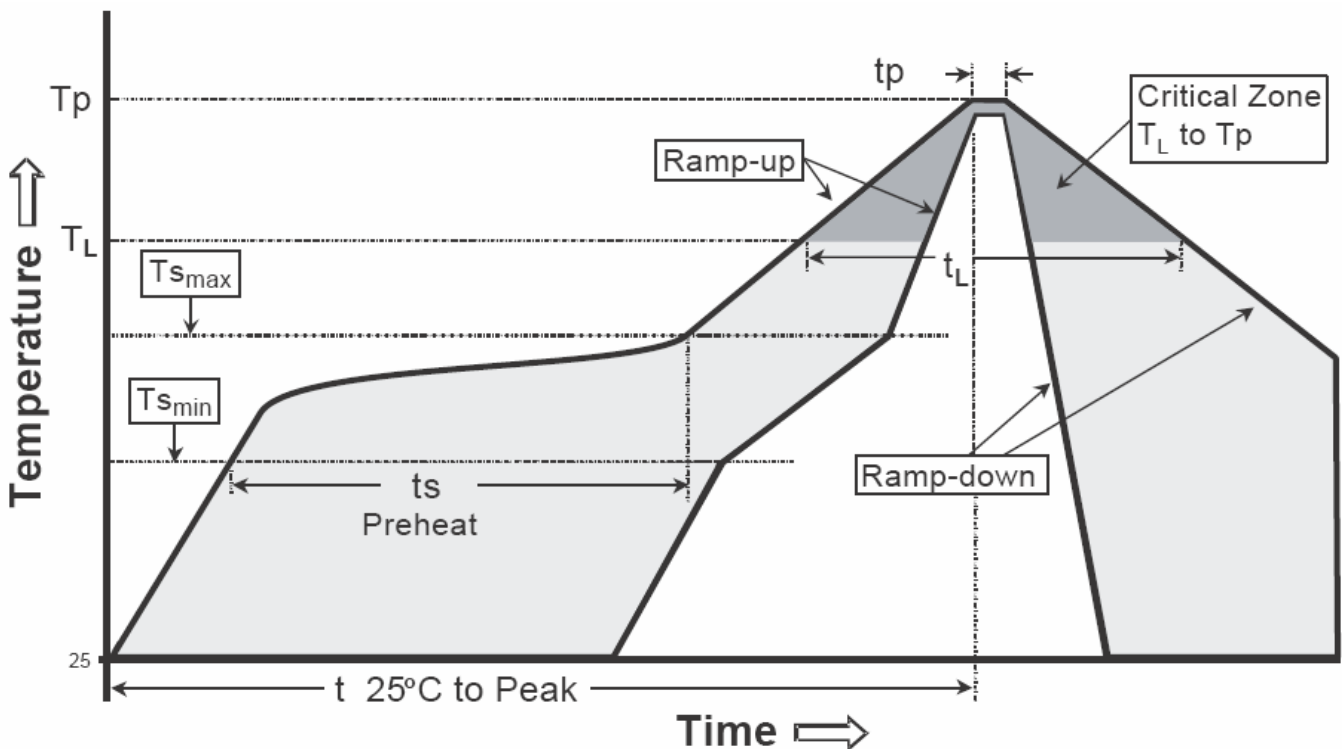
Grounded Emitter Output Characteristics



**Recommended wave soldering condition**

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

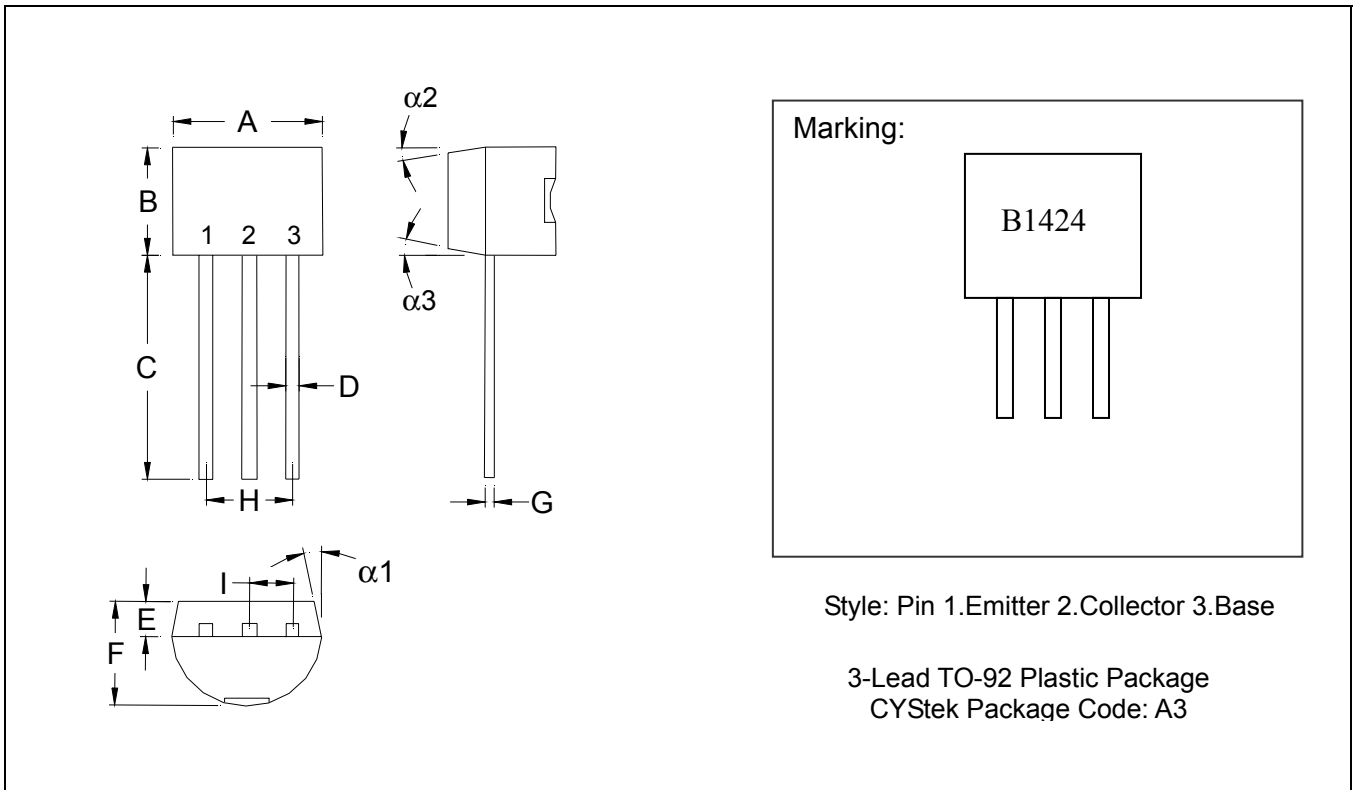
**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T <sub>s min</sub> )	100°C	150°C
-Temperature Max(T <sub>s max</sub> )	150°C	200°C
-Time(t <sub>s min</sub> to t <sub>s max</sub> )	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T <sub>L</sub> )	183°C	217°C
- Time (t <sub>L</sub> )	60-150 seconds	60-150 seconds
Peak Temperature(T <sub>p</sub> )	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-92 Dimension**



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1704	0.1902	4.33	4.83	G	0.0142	0.0220	0.36	0.56
B	0.1704	0.1902	4.33	4.83	H	-	*0.1000	-	*2.54
C	0.5000	-	12.70	-	I	-	*0.0500	-	*1.27
D	0.0142	0.0220	0.36	0.56	$\alpha 1$	-	*5°	-	*5°
E	-	*0.0500	-	*1.27	$\alpha 2$	-	*2°	-	*2°
F	0.1323	0.1480	3.36	3.76	$\alpha 3$	-	*2°	-	*2°

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: 42 Alloy ; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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