

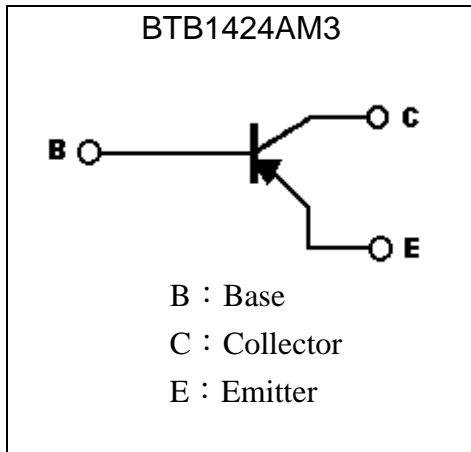
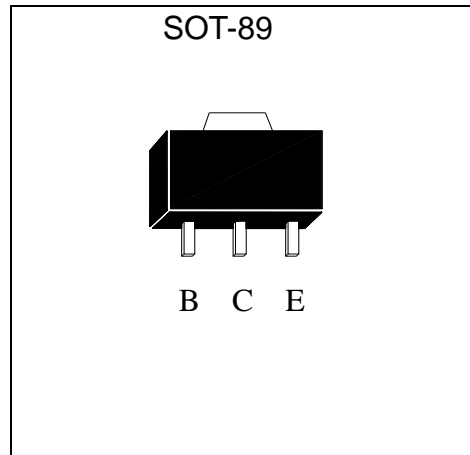
**Low  $V_{CE(sat)}$  PNP Epitaxial Planar Transistor**

# BTB1424AM3

$BV_{CEO}$	-50V
$I_C$	-3A
$V_{CESAT(typ)}$	-0.12V
$R_{CESAT(typ)}$	0.12 $\Omega$

**Features**

- Excellent DC current gain characteristics
- Low Saturation Voltage,  $V_{CE(sat)} = -0.12V(typ)$  @  $I_C = -1A, I_B = -50mA$ .
- Complementary to BTB2150AM3
- Pb-free lead plating and halogen-free package

**Symbol**

**Outline**

**Absolute Maximum Ratings** ( $T_a = 25^\circ C$ )

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	$V_{CBO}$	-50	V
Collector-Emitter Voltage	$V_{CEO}$	-50	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Collector Current(DC)	$I_C$	-3	A
Collector Current(Pulsed)	$I_{CP}$	-5	
Power Dissipation	$P_D$	1.5 (Note 1)	W
		2.1 (Note 2)	
ESD susceptibility		8000 (Note 3)	V
Operating Temperature Range	$T_j$	-55~+150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~+150	$^\circ C$



**Thermal Performance**

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient, max	R $\theta$ JA	83.3 (Note 1)	°C/W
		59.5 (Note 2)	
Thermal Resistance, Junction-to-Case, max	R $\theta$ JC	30	

Note 1: When mounted on 25mm×25mm×1.6 mm FR-4 PCB with high coverage of single sided 1 oz copper, in still air condition  
 2: When mounted on 50mm×50mm×1.6 mm FR-4 PCB with high coverage of single sided 1 oz copper, in still air condition  
 3 : Human body model, 1.5kΩ in series with 100pF

**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BVCBO	-50	-	-	V	IC=-50μA
BVCEO	-50	-	-	V	IC=-1mA
BVEBO	-6	-	-	V	IE=-50μA
ICBO	-	-	-0.1	μA	VCB=-20V
IEBO	-	-	-0.1	μA	VEB=-5V
*VCE(sat) 1	-	-0.12	-0.35	V	IC=-1A, IB=-50mA
*VCE(sat) 2	-	-0.2	-0.35	V	IC=-2A, IB=-100mA
*RCE(sat)	-	0.12	0.35	Ω	IC=-1A, IB=-50mA
*VBE(sat)	-0.5	-0.68	-0.85	V	IC=-30mA, IB=-3mA
*VBE(sat)	-0.5	-1.0	-1.2	V	IC=-2A, IB=-200mA
*hFE	180	-	560	-	VCE=-2V, IC=-500mA
fT	-	240	-	MHz	VCE=-2V, IC=-500mA, f=100MHz
Cob	-	35	-	pF	VCB=-10V, f=1MHz

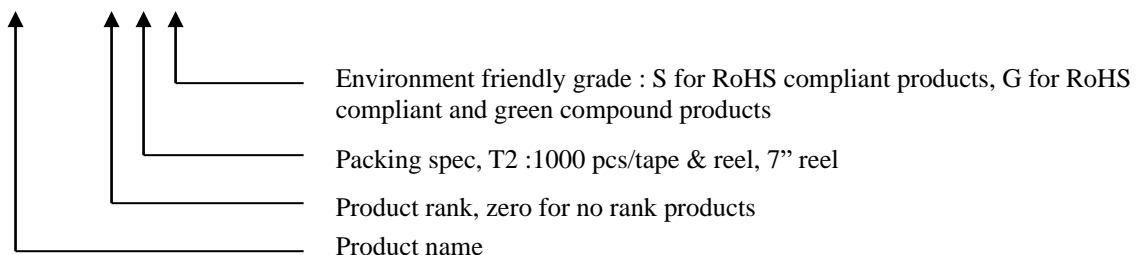
\*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

**Classification of hFE**

Rank	R	S
Range	180 ~ 390	270 ~ 560

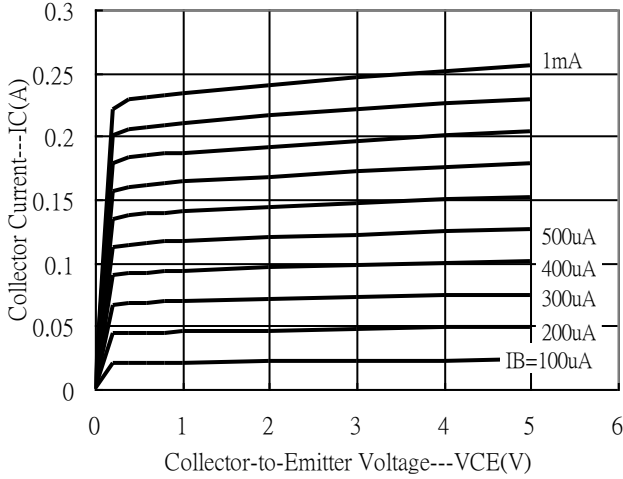
**Ordering Information**

Device	HFE Rank	Package	Shipping
BTB1424AM3-R-T2-G	R	SOT-89 (Pb-free lead plating and halogen-free package)	1000 pcs / Tape & Reel
BTB1424AM3-S-T2-G	S		

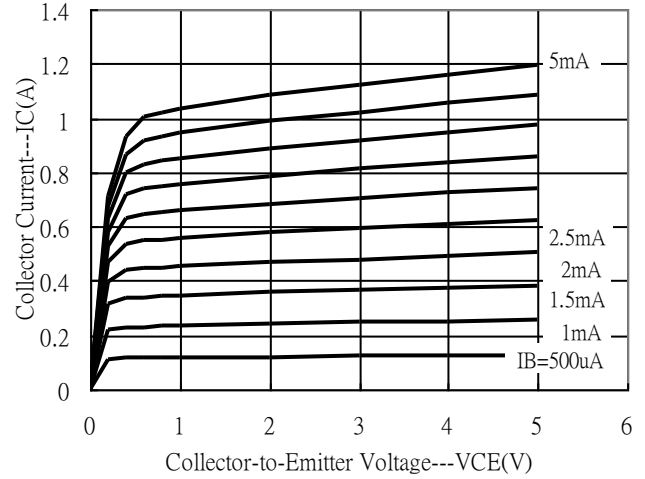


## Typical Characteristics

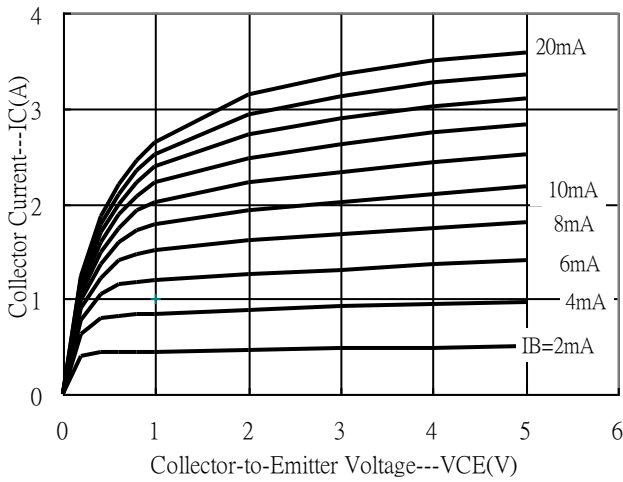
Emitter Grounded Output Characteristics



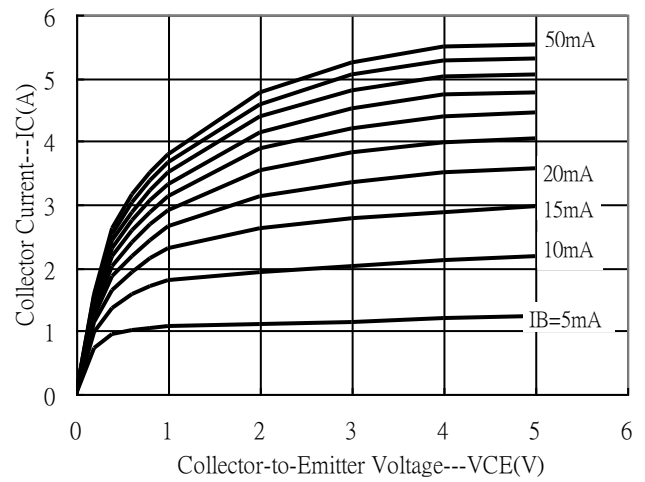
Emitter Grounded Output Characteristics



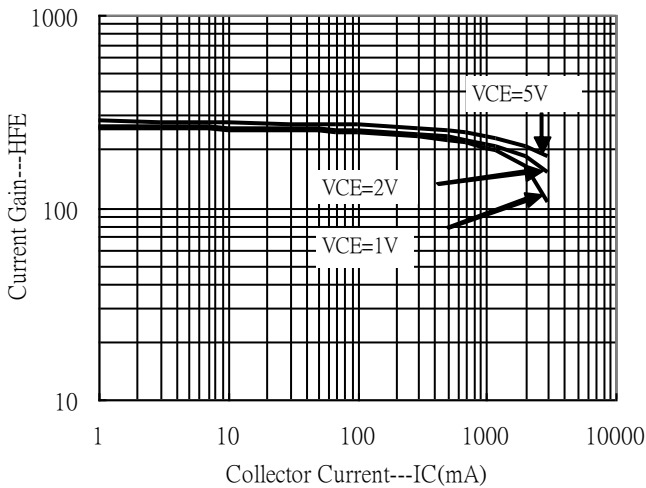
Emitter Grounded Output Characteristics



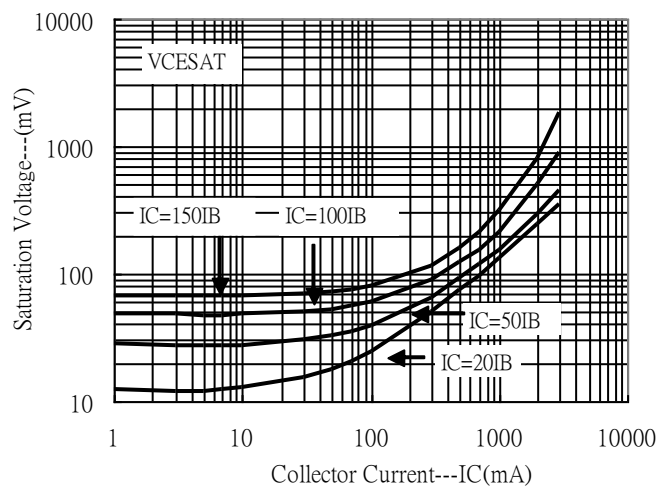
Emitter Grounded Output Characteristics



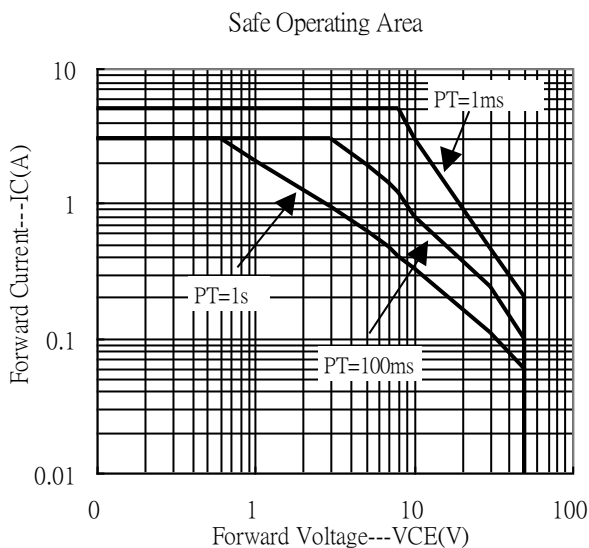
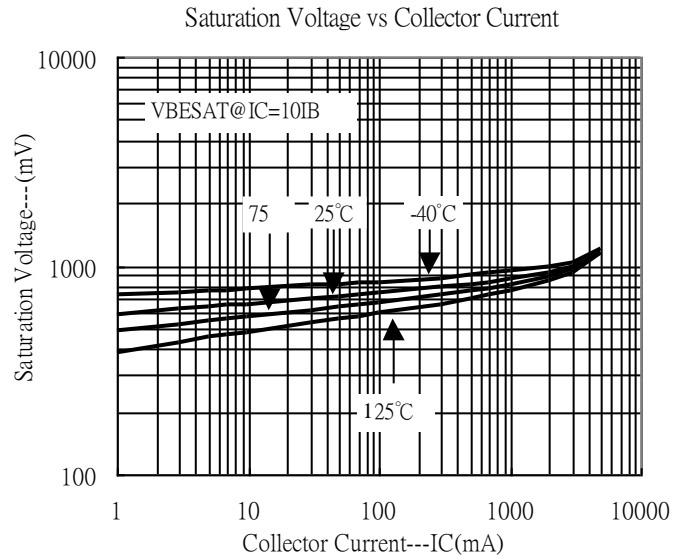
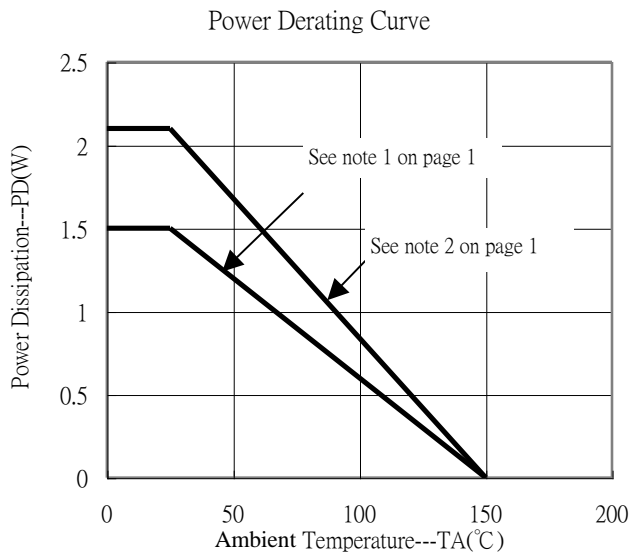
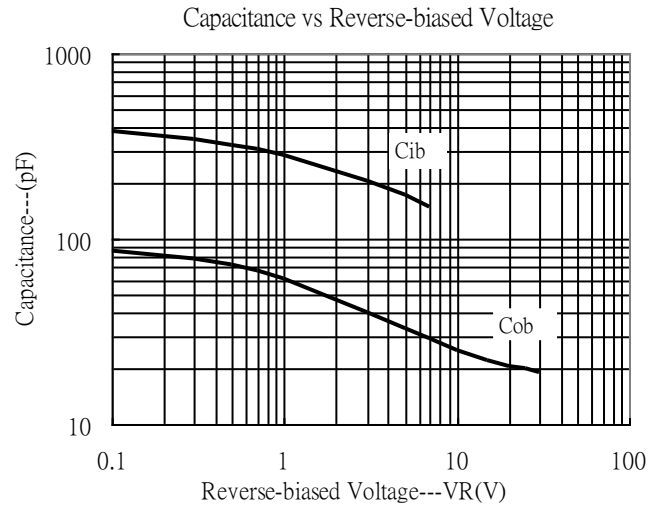
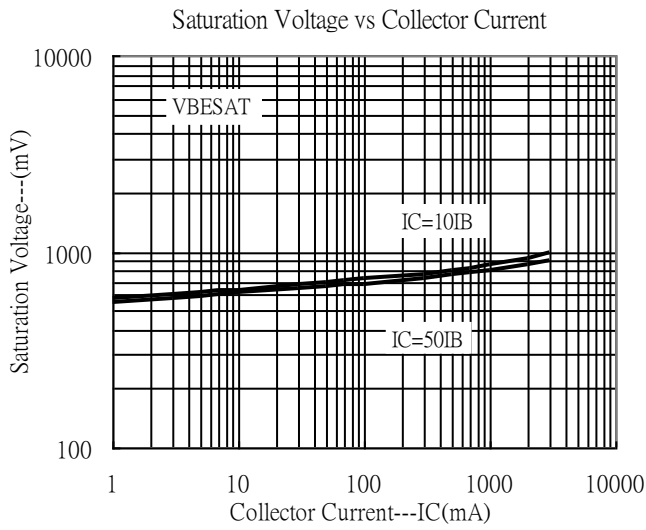
Current Gain vs Collector Current



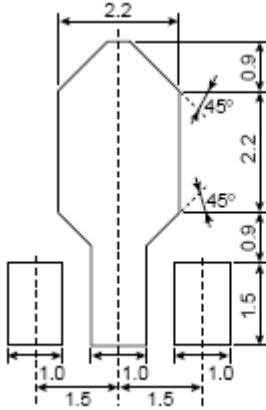
Saturation Voltage vs Collector Current



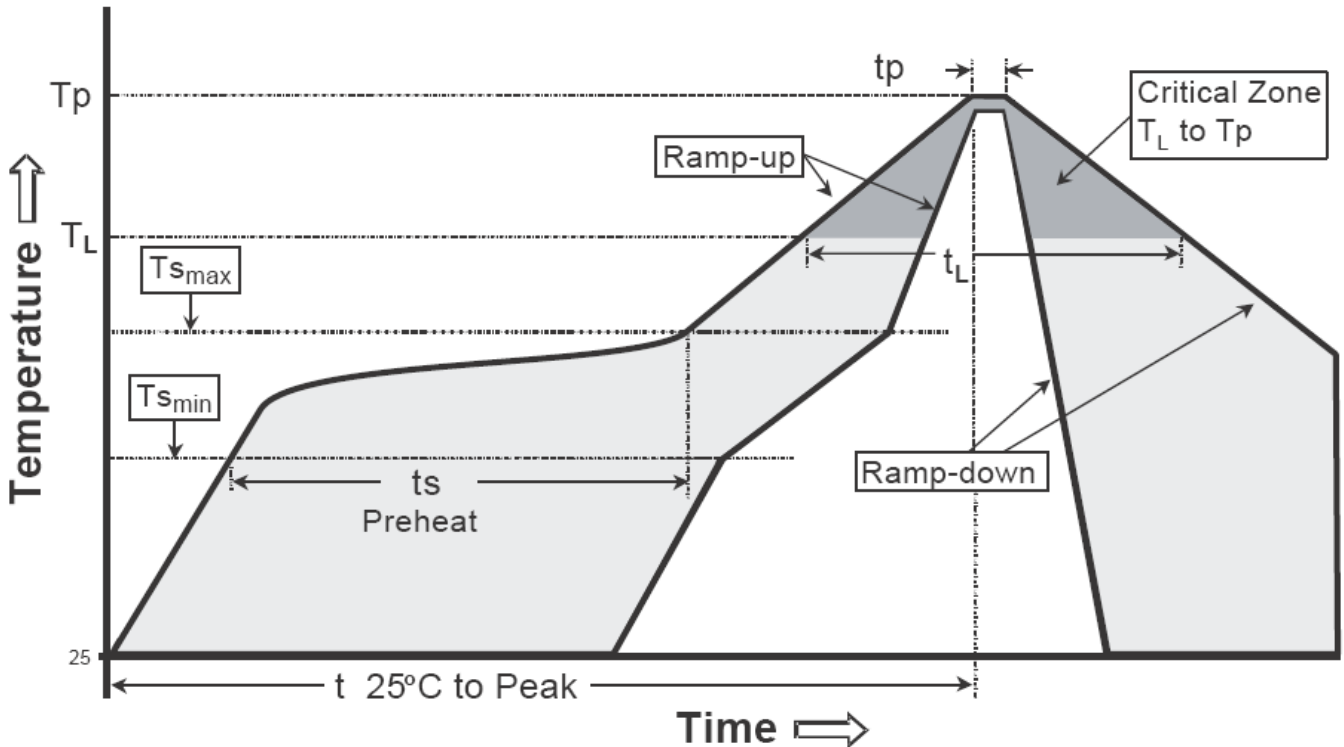
**Typical Characteristics(Cont.)**



### Recommended soldering footprint



unit : mm

**Recommended temperature profile for IR reflow**


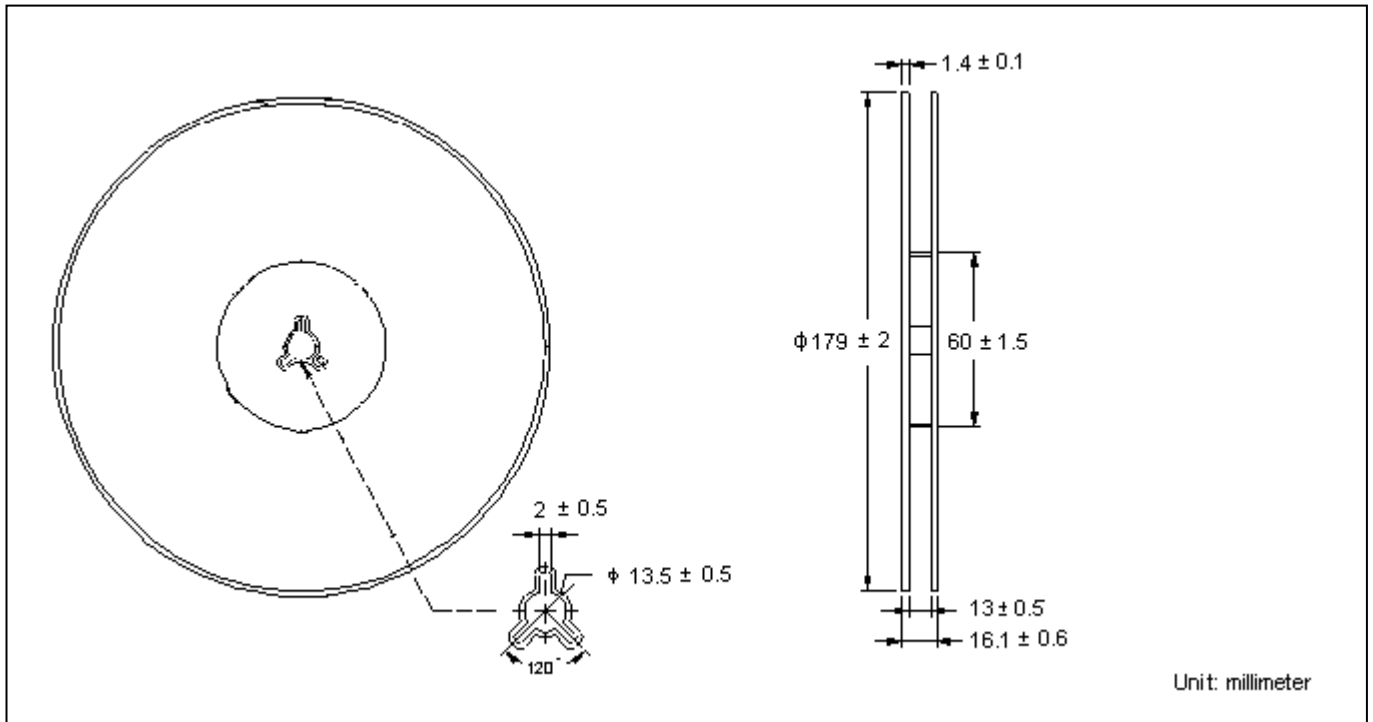
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T <sub>s min</sub> )	100°C	150°C
-Temperature Max(T <sub>s max</sub> )	150°C	200°C
-Time(t <sub>s min</sub> to t <sub>s max</sub> )	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(t <sub>p</sub> )	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.

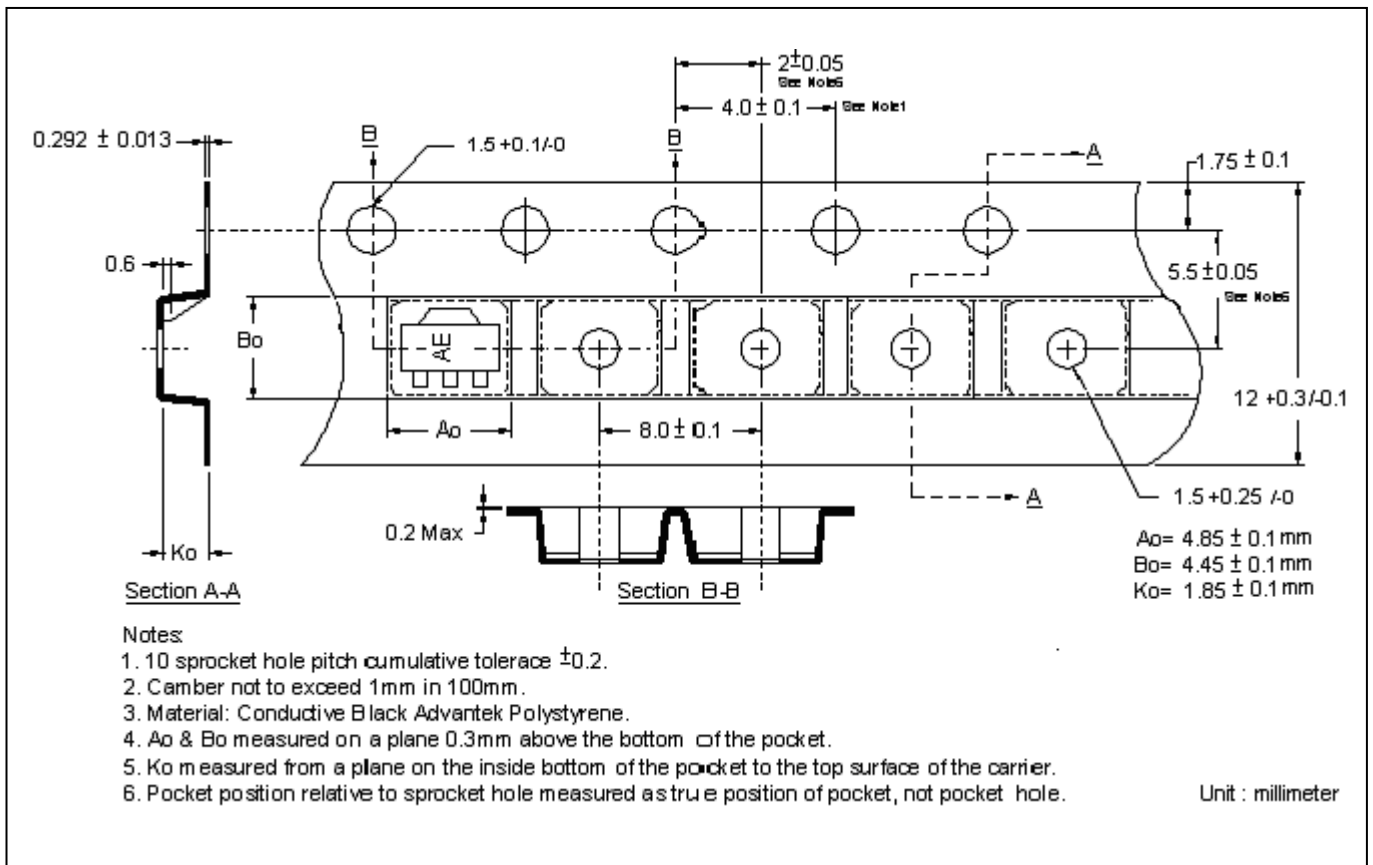
**Recommended wave soldering condition**

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

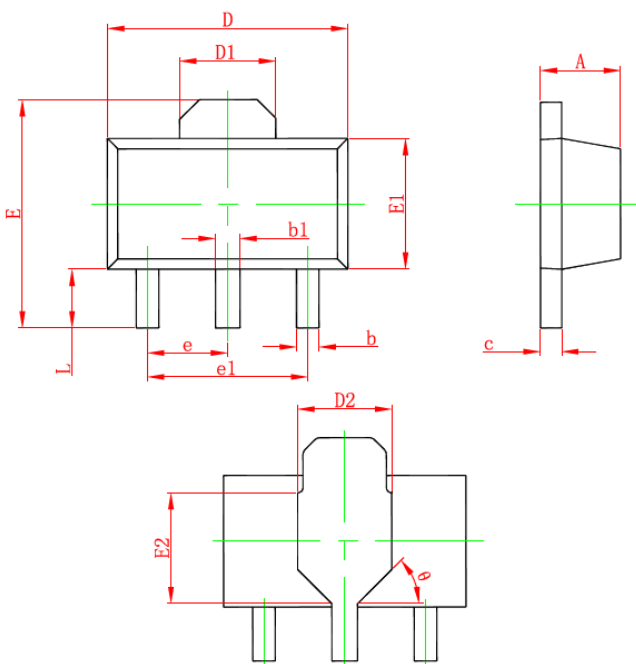
### Reel Dimension



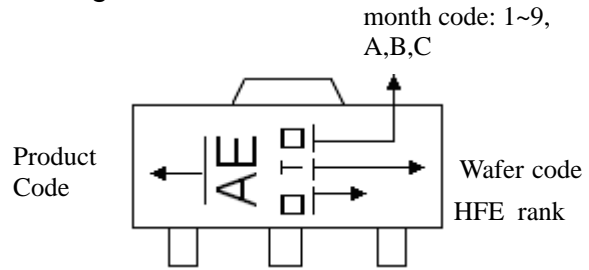
### Carrier Tape Dimension



**SOT-89 Dimension**



**Marking:**



month code: 1~9, A,B,C

Product Code

Wafer code

HFE rank

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

Date Code: Year+Month  
 Year: 3→2003, 4→2004  
 Month: 1→1, 2→2, . . .  
 9→9, A→10, B→11, C→12

3-Lead SOT-89 Plastic  
 Surface Mounted Package  
 CYS Package Code: M3

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.055	0.063	1.40	1.60	E	0.155	0.167	3.94	4.25
b	0.013	0.020	0.32	0.52	E1	0.091	0.102	2.30	2.60
b1	0.016	0.023	0.40	0.58	E2	0.075 REF.		1.90 REF.	
c	0.014	0.017	0.35	0.44	e	0.060 TYP.		1.50 TYP.	
D	0.173	0.181	4.40	4.60	e1	0.118 TYP.		3.00 TYP.	
D1	0.061 REF.		1.55 REF.		L	0.035	0.047	0.90	1.20
D2	0.069 REF.		1.75 REF.		θ	45°		45°	

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.

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