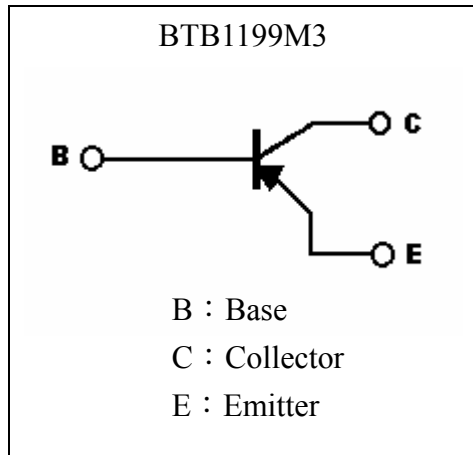
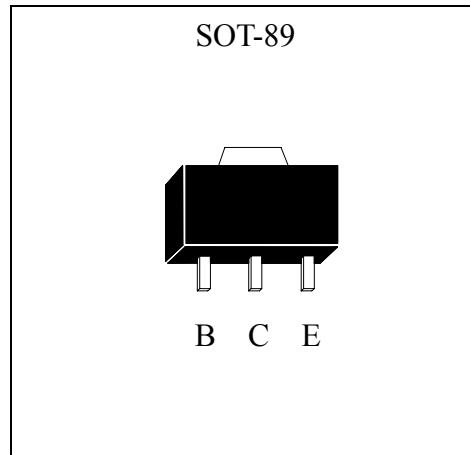


Low Vcesat PNP Epitaxial Planar Transistor

BTB1199M3

Features

- Low $V_{CE(sat)}$, $V_{CE(sat)} = -0.24V$ (typical), at $I_C / I_B = -500mA / -20mA$
- Pb-free package

Symbol

Outline

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

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-25	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current(DC)	I_C	-2	A
Peak Collector Current	I_{CM}	-4	A
Peak Base Current	I_{BM}	-200	mA
Power Dissipation	Pd	0.6	W
		1 *2	
		2 *3	
Junction Temperature	T_j	150	$^\circ C$
Storage Temperature	T_{stg}	-55~+150	$^\circ C$

 Note : *1 Single pulse, $P_w = 10ms$

 *2 When mounted on FR-4 PCB with area measuring $10 \times 10 \times 1 mm$

 *3 When mounted on ceramic with area measuring $40 \times 40 \times 1 mm$

**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	-40	-	-	V	I _C =-50μA, I _E =0
BV _{CE0}	-25	-	-	V	I _C =-1mA, I _B =0
BV _{EBO}	-5	-	-	V	I _E =-50μA, I _C =0
I _{CB0}	-	-	-100	nA	V _{CB} =-40V, I _E =0
I _{EBO}	-	-	-100	nA	V _{EB} =-5V, I _C =0
*V _{CE(sat)}	-	-0.24	-0.4	V	I _C =-500mA, I _B =-20mA
*V _{BE(on)}	-0.5	-	-0.8	V	V _{CE} =-1V, I _C =-10mA
*h _{FE 1}	120	-	390	-	V _{CE} =-1V, I _C =-100mA
*h _{FE 2}	40	-	-	-	V _{CE} =-1V, I _C =-700mA
f _T	-	120	-	MHz	V _{CE} =-5V, I _C =-10mA, f=100MHz
Cob	-	19	-	pF	V _{CB} =-10V, f=1MHz

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

Classification of hFE 1

Rank	Q	R
Range	120~270	180~390

Ordering Information

Device	Package	Shipping	Marking
BTB1199M3	SOT-89 (Pb-free)	1000 pcs / Tape & Reel	BA

Recommended Storage Condition:

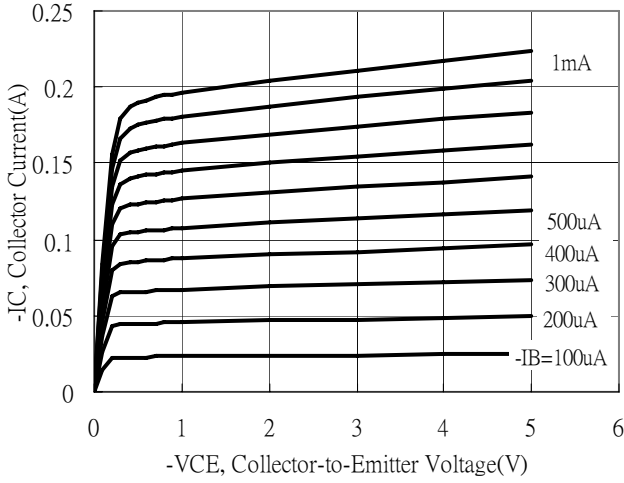
Temperature : ≤ 30 °C

Humidity : ≤ 60% RH

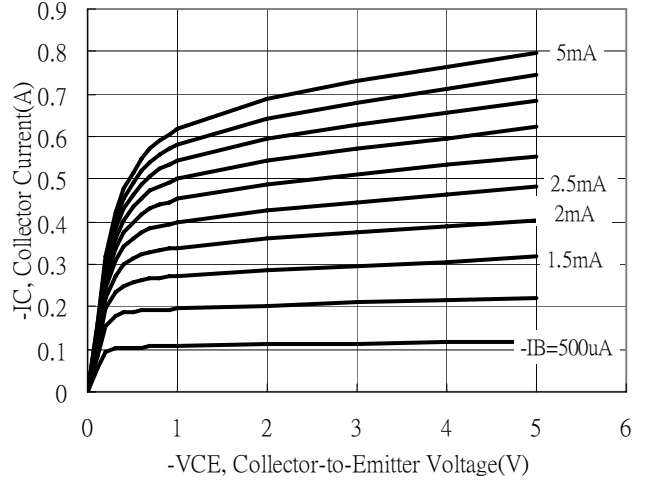


Typical Characteristics

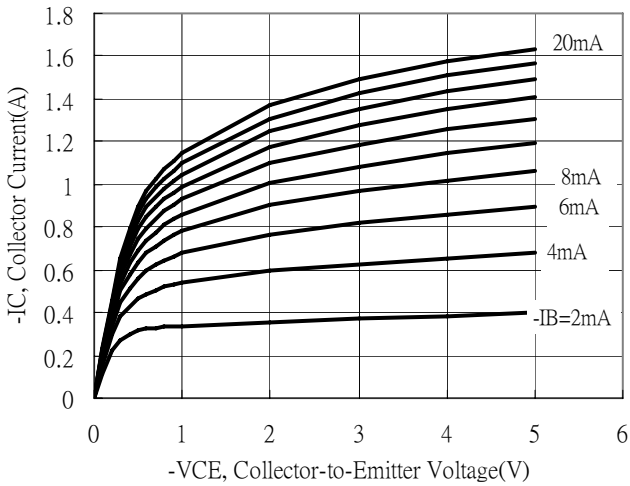
Emitter Grounded Output Characteristics



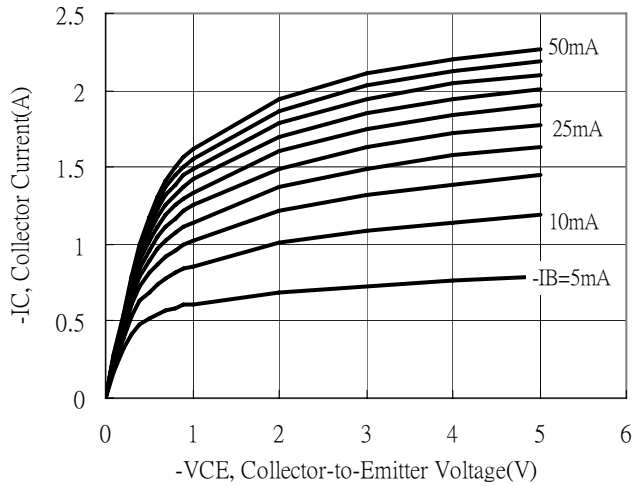
Emitter Grounded Output Characteristics



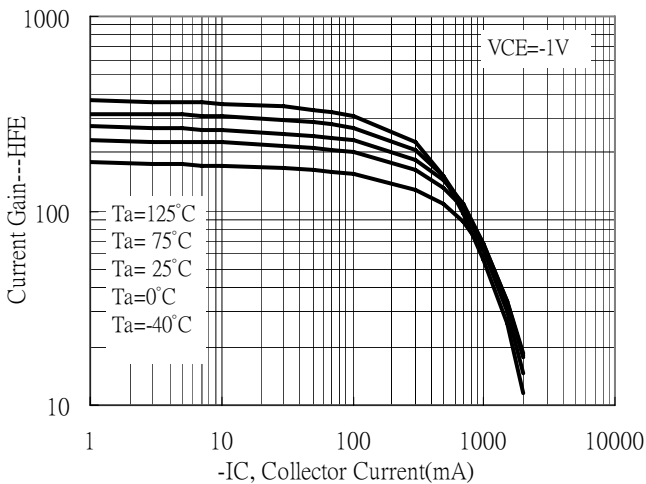
Emitter Grounded Output Characteristics



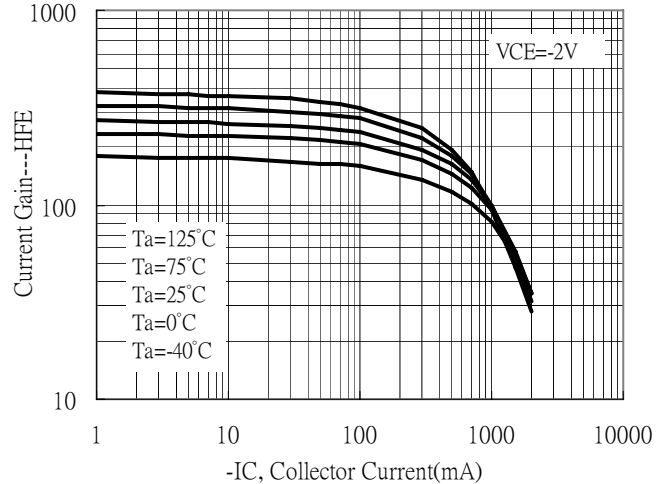
Emitter Grounded Output Characteristics



Current Gain vs Collector Current

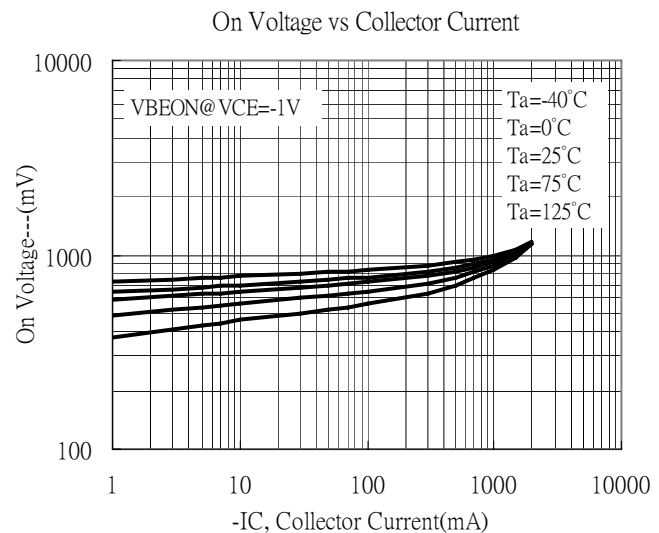
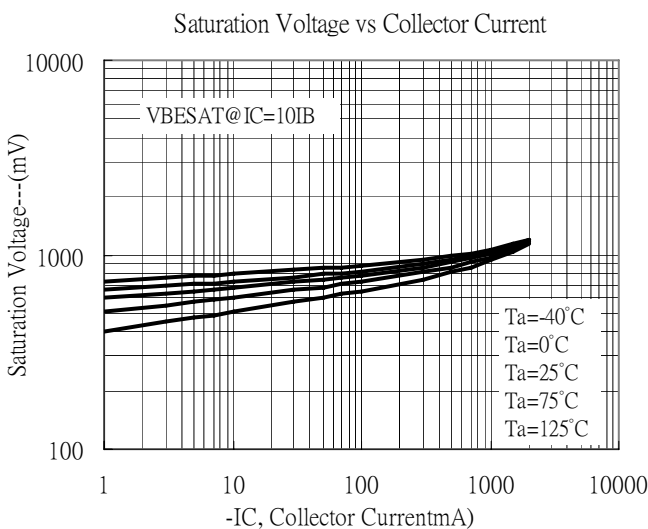
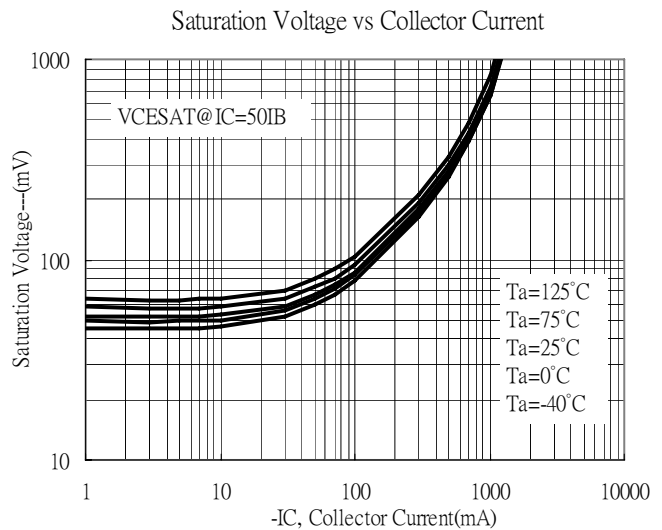
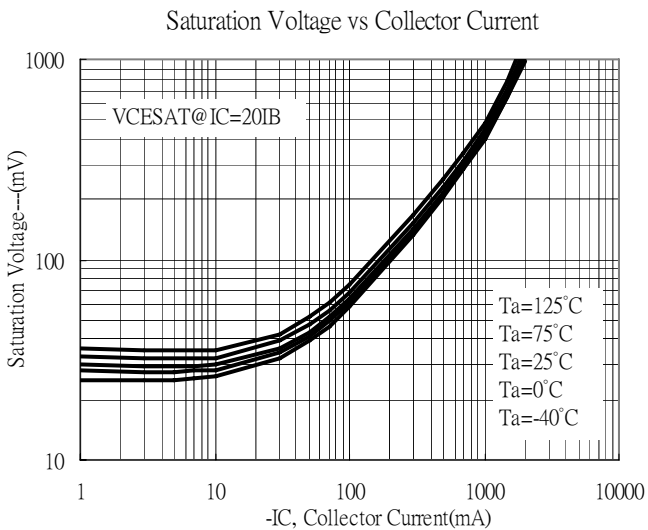
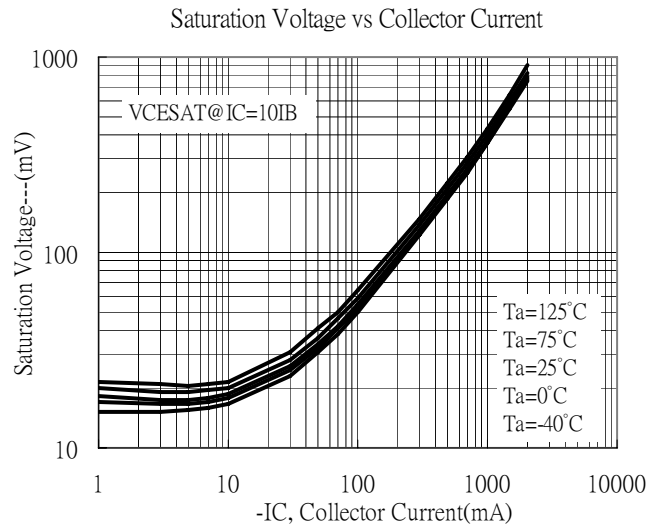
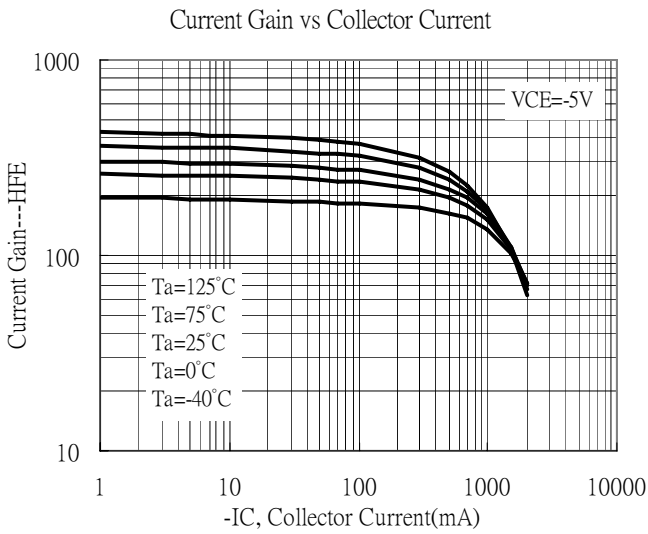


Current Gain vs Collector Current

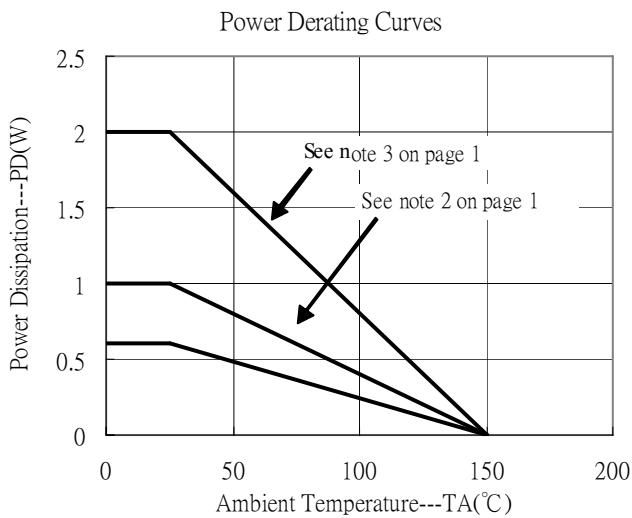
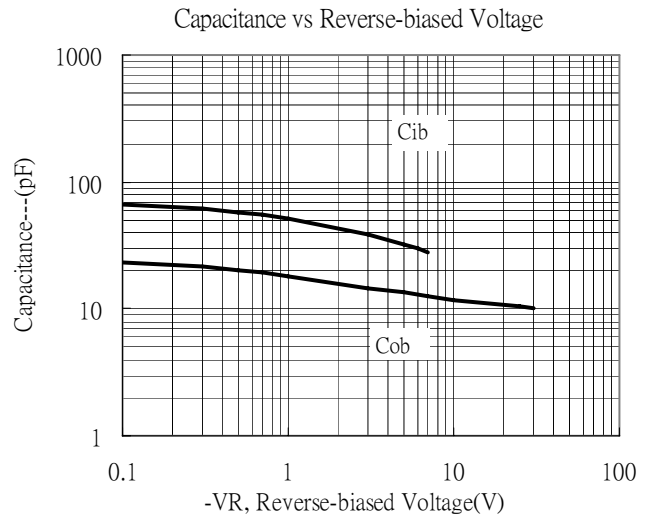
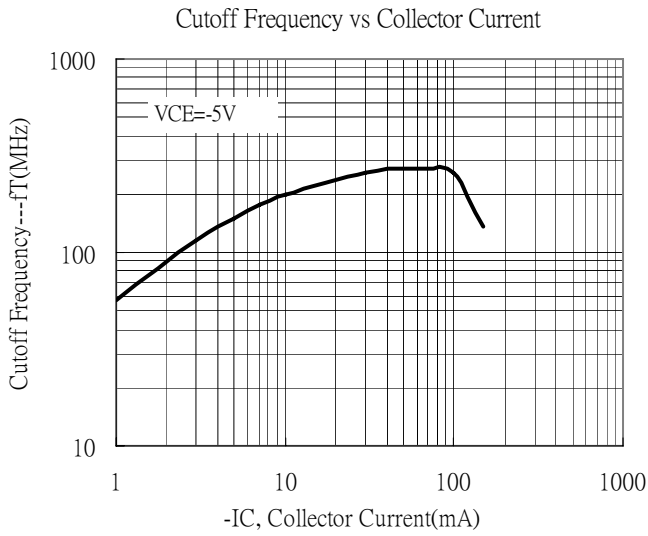




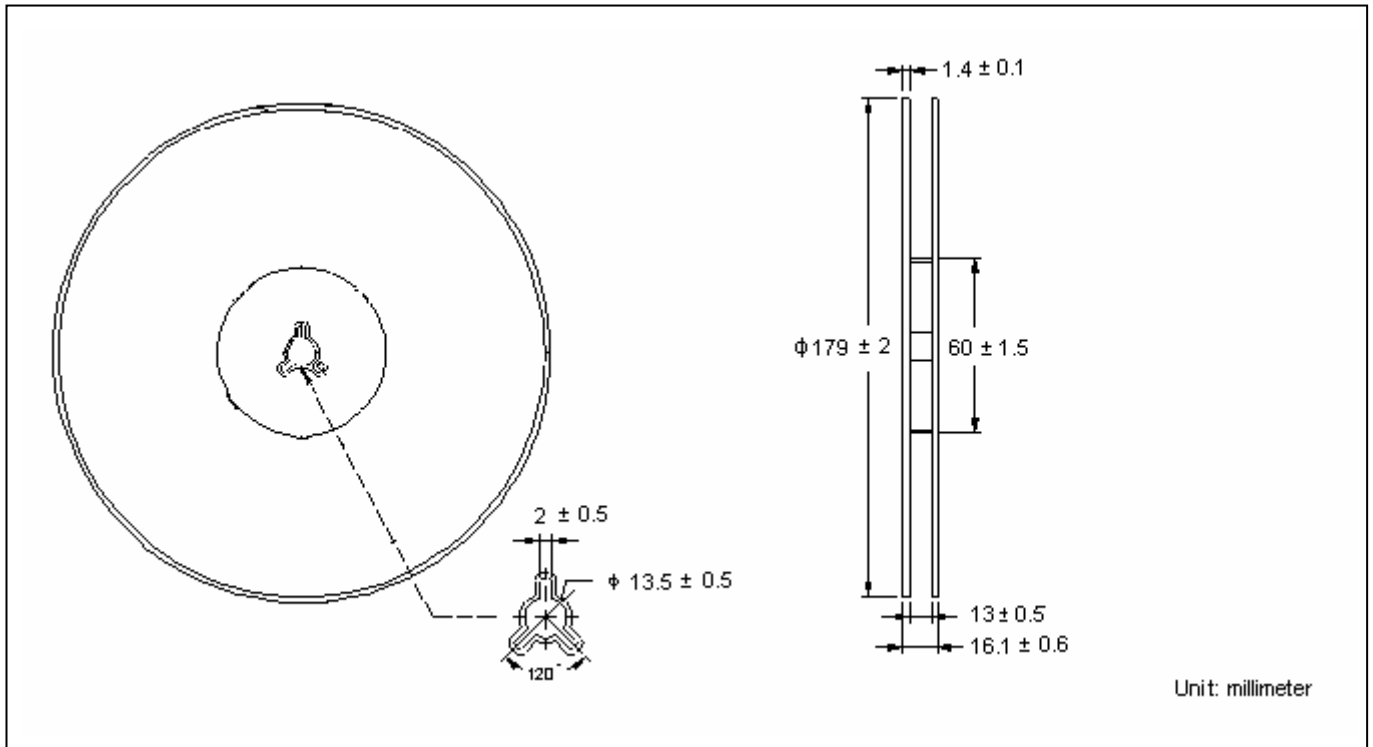
Typical Characteristics(Cont.)



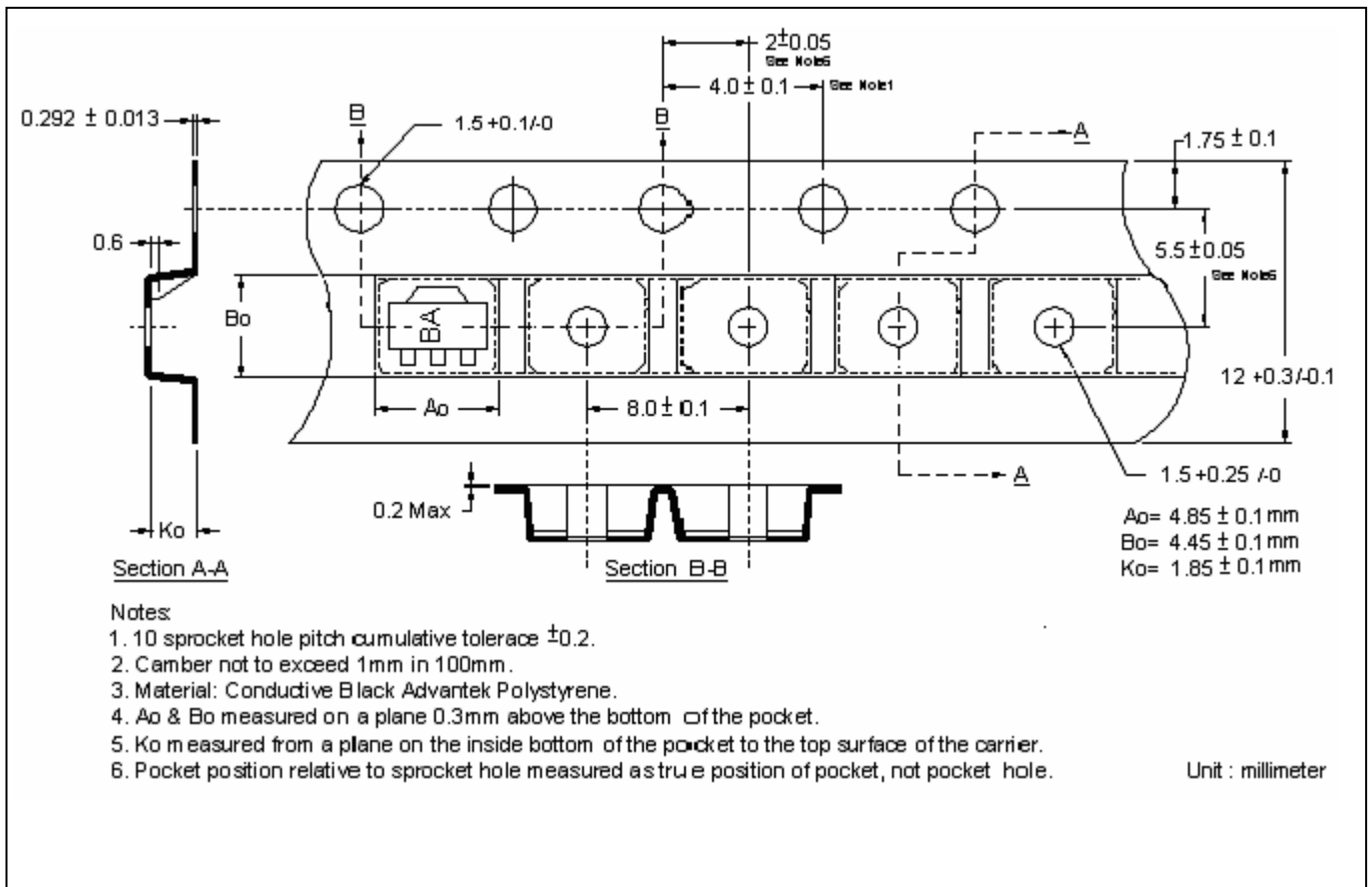
Typical Characteristics(Cont.)



Reel Dimension



Carrier Tape Dimension



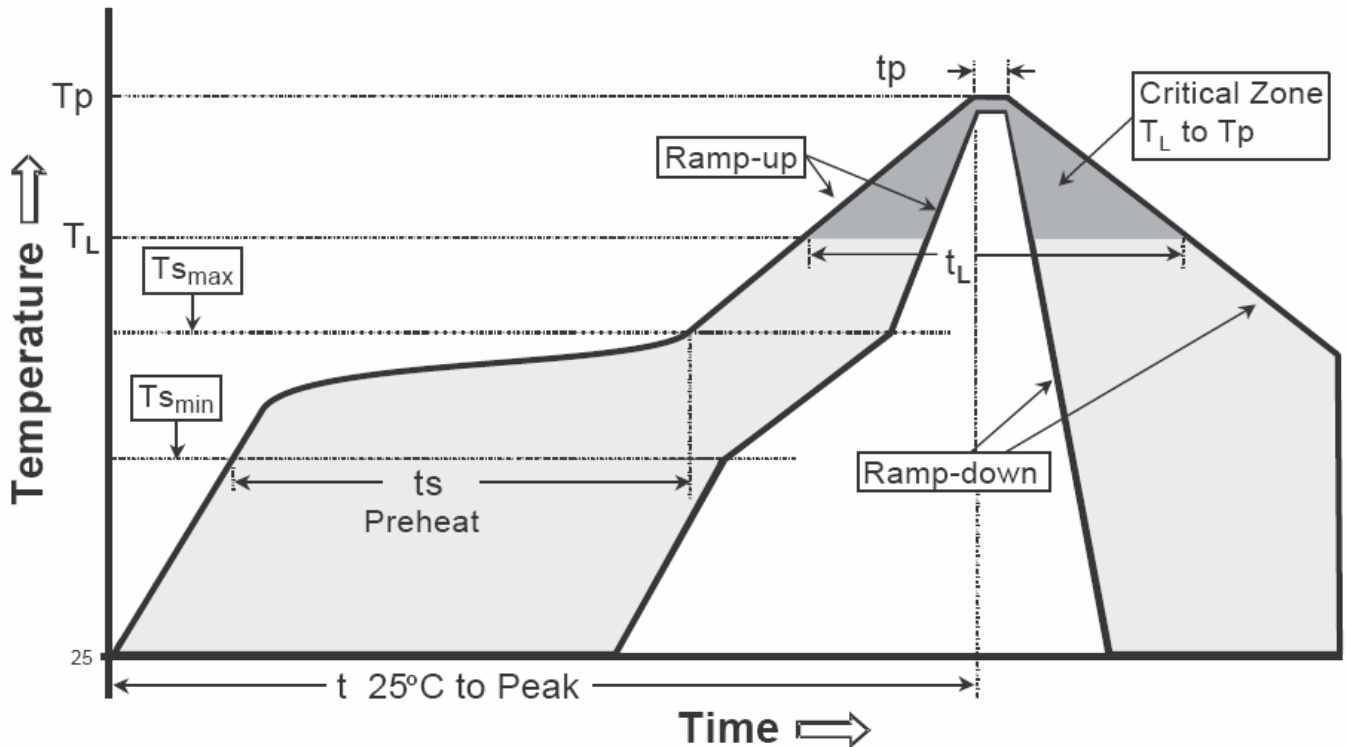
Notes:

1. 10 sprocket hole pitch cumulative tolerance ± 0.2 .
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. A_0 & B_0 measured on a plane 0.3mm above the bottom of the pocket.
5. K_0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Recommended wave soldering condition

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

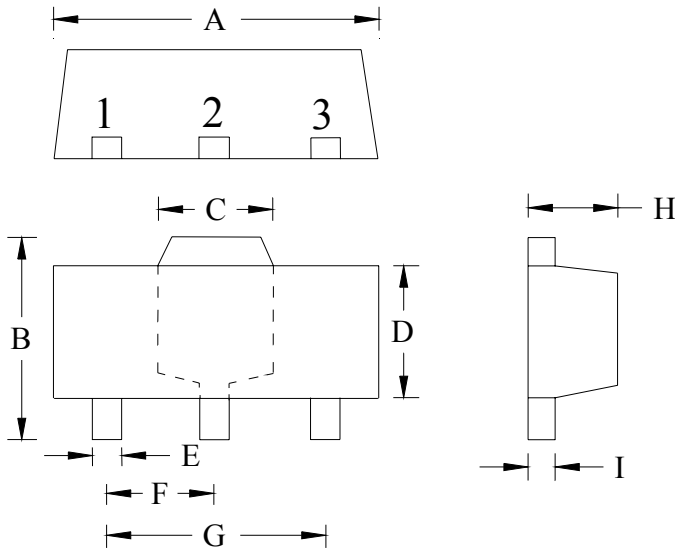
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T _{s min})	100°C	150°C
-Temperature Max(T _{s max})	150°C	200°C
-Time(t _{s min} to t _{s max})	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T _L)	183°C	217°C
- Time (t _L)	60-150 seconds	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.

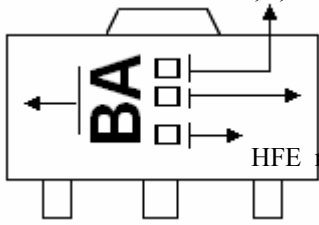
Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-89 Dimension



The diagram shows three views of the SOT-89 package: a top view with dimensions A, B, C, D, E, F, G, and three pins labeled 1, 2, and 3; a side view with dimensions H and I; and a perspective view showing the top surface with a dashed line indicating the lead connection area.

Marking:



month code: 1~9, A,B,C
 Year code : 6→2006, 7→2007,...
 Product Code BA
 HFE rank

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

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

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1732	0.1811	4.40	4.60	F	0.0591	TYP	1.50	TYP
B	0.1551	0.1673	3.94	4.25	G	0.1181	TYP	3.00	TYP
C	0.0610	REF	1.55	REF	H	0.0551	0.0630	0.0551	0.0630
D	0.0906	0.1024	2.30	2.60	I	0.0138	0.0173	0.0138	0.0173
E	0.0126	0.0205	0.32	0.52					

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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