

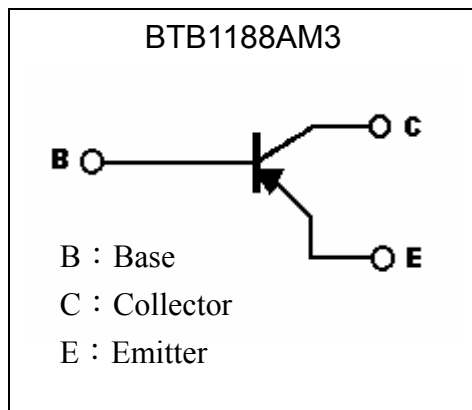
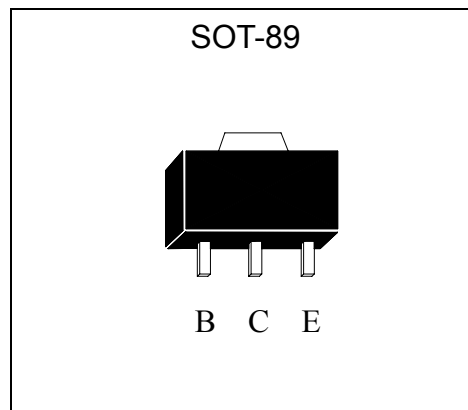
**Low Vcesat PNP Epitaxial Planar Transistor**

# BTB1188AM3

$BV_{CEO}$	-40V
$I_C$	-2A
$R_{CESAT}(typ)$	0.22 $\Omega$

**Features**

- Low  $V_{CE}(sat)$ ,  $V_{CE}(sat)=-0.65$  V (typical), at  $I_C / I_B = -3A / -0.1A$
- Excellent current gain characteristics
- Complementary to BTB1766AM3
- Pb-free lead plating 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	$V_{CEO}$	-40	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Collector Current (DC)	$I_C$	-2	A
Collector Current (Pulse)	$I_{CP}$	-4 (Note 1)	A
Power Dissipation	$P_d$	0.6	W
Power Dissipation	$P_d$	2 (Note 2)	W
ESD susceptibility		8000 (Note 3)	V
Operating Junction and Storage Temperature Range	$T_j ; T_{stg}$	-55~+150	$^{\circ}C$

**Thermal Data**

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	30.4	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	208	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 2)	$R_{th,j-a}$	125	°C/W

- Note : 1. Single Pulse ,  $P_w=10ms$   
 2. When mounting on a 40 x40 x0.7 mm ceramic board.  
 3. Human body model, 1.5k $\Omega$  in series with 100pF

**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$BV_{CBO}$	-50	-	-	V	$I_C=-50\mu A, I_E=0$
$BV_{CEO}$	-40	-	-	V	$I_C=-1mA, I_B=0$
$BV_{EBO}$	-6	-	-	V	$I_E=-50\mu A, I_C=0$
$I_{CBO}$	-	-	-100	nA	$V_{CB}=-50V, I_E=0$
$I_{EBO}$	-	-	-100	nA	$V_{EB}=-6V, I_C=0$
* $V_{CE(sat)}$	-	-0.2	-0.4	V	$I_C=-700mA, I_B=-35mA$
* $V_{CE(sat)}$	-	-0.45	-0.8	V	$I_C=-2A, I_B=-0.2A$
* $V_{CE(sat)}$	-	-0.65	-1	V	$I_C=-3A, I_B=-0.1A$
* $h_{FE}$	180	-	560	-	$V_{CE}=-3V, I_C=-0.5A$
$f_T$	-	180	-	MHz	$V_{CE}=-5V, I_C=-0.1A, f=100MHz$
Cob	-	20	-	pF	$V_{CB}=-10V, f=1MHz$

\*Pulse Test : Pulse Width  $\leq 380\mu s$ , Duty Cycle  $\leq 2\%$ **Classification Of  $h_{FE}$** 

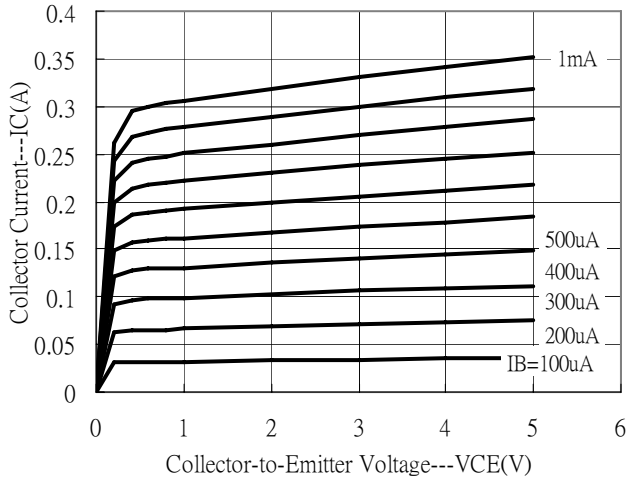
Rank	R	S
Range	180~390	270~560

**Ordering Information**

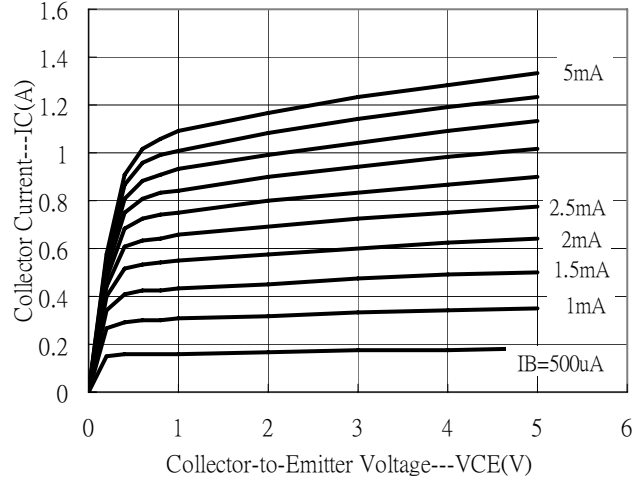
Device	Package	Shipping
BTB1188AM3	SOT-89 (Pb-free lead plating)	1000 pcs / Tape & Reel

## Typical Characteristics

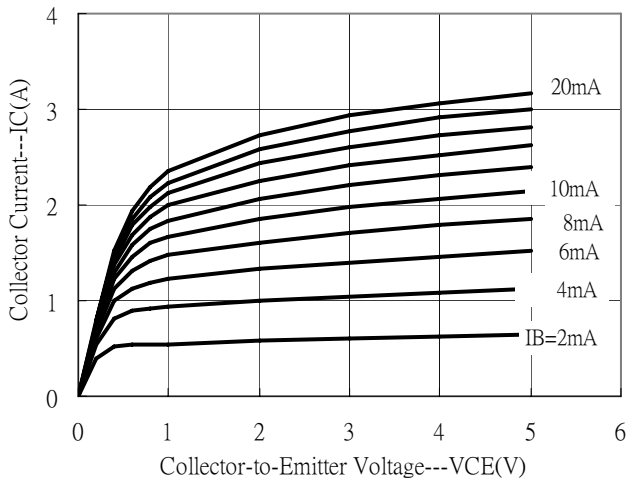
Emitter Grounded Output Characteristics



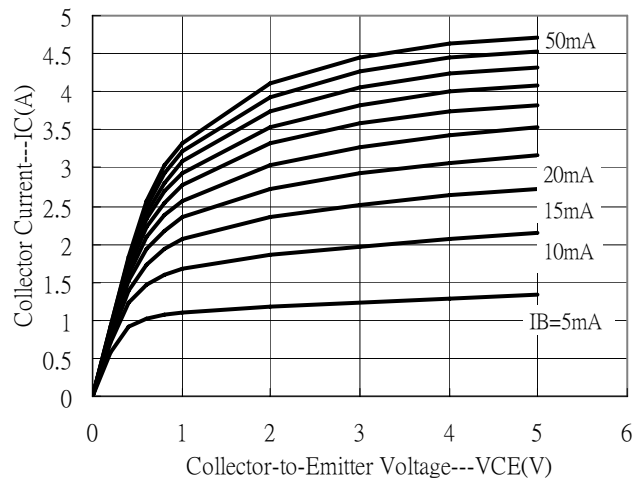
Emitter Grounded Output Characteristics



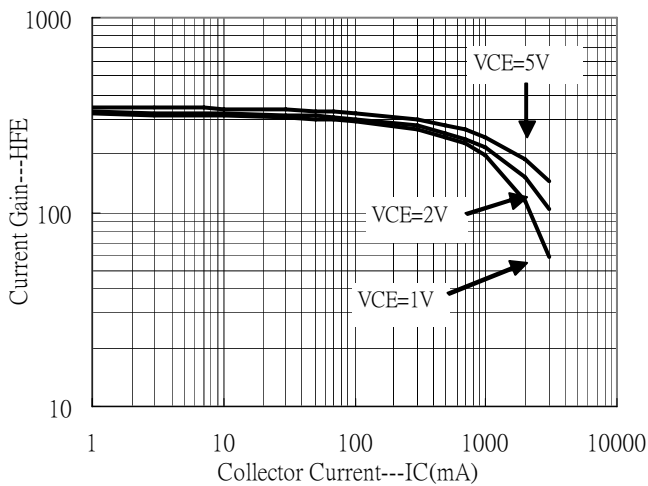
Emitter Grounded Output Characteristics



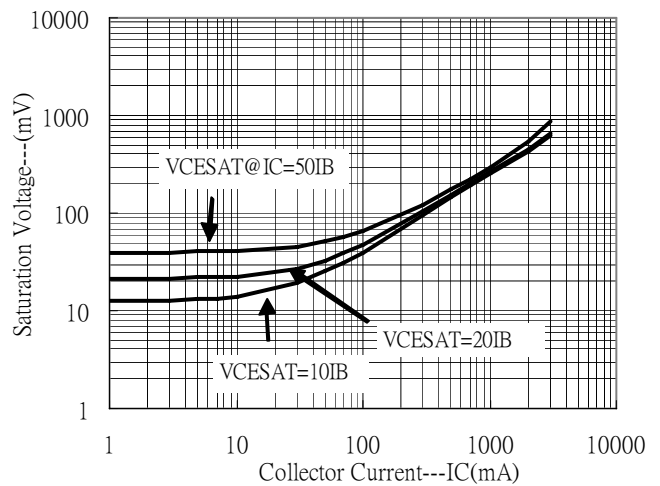
Emitter Grounded Output Characteristics



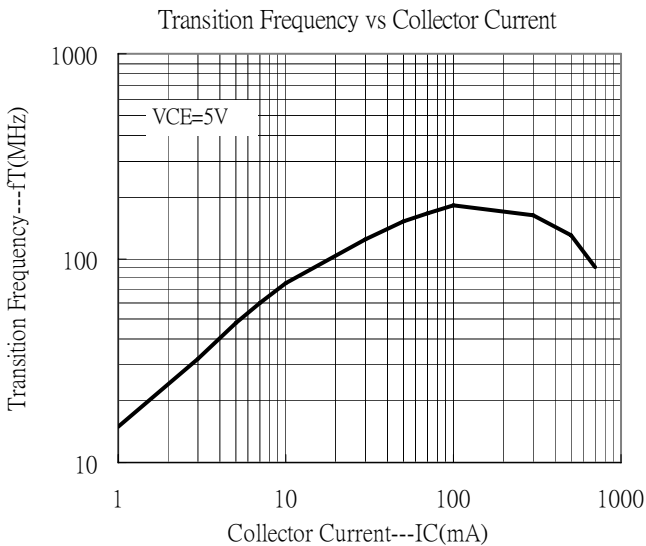
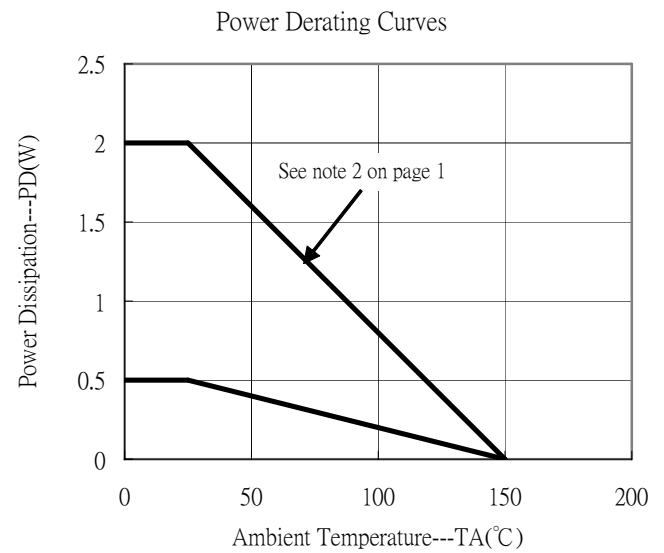
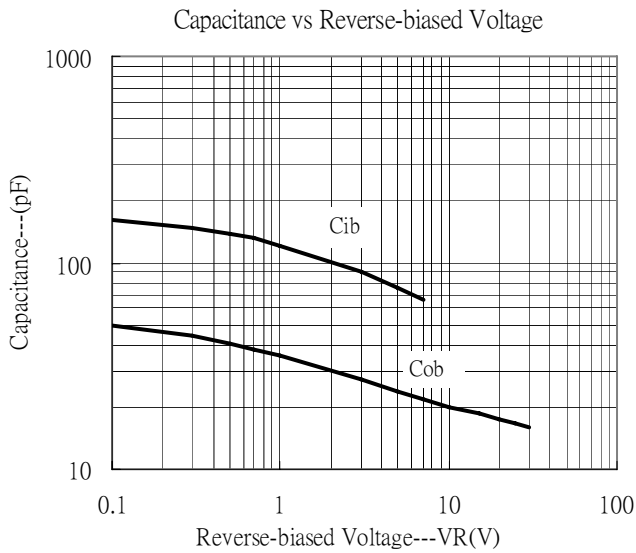
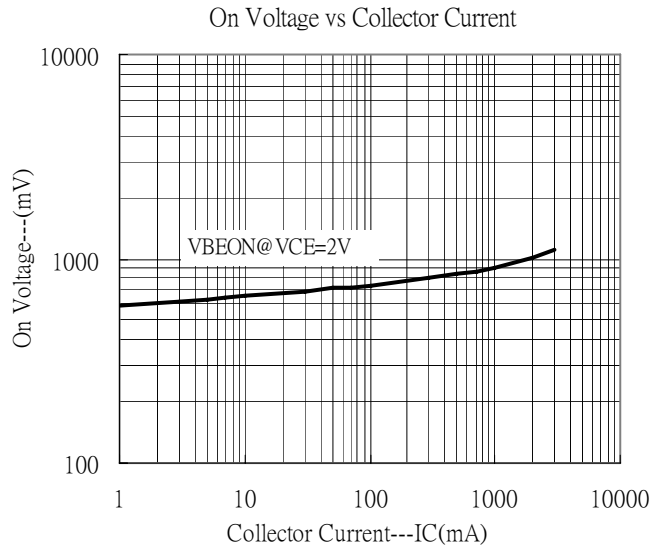
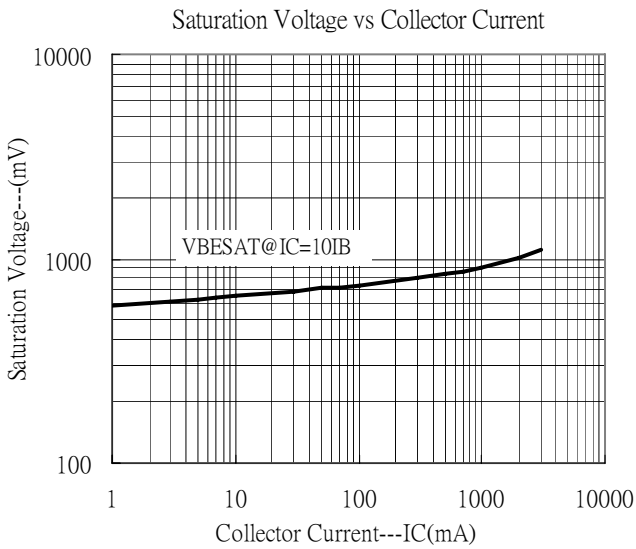
Current Gain vs Collector Current



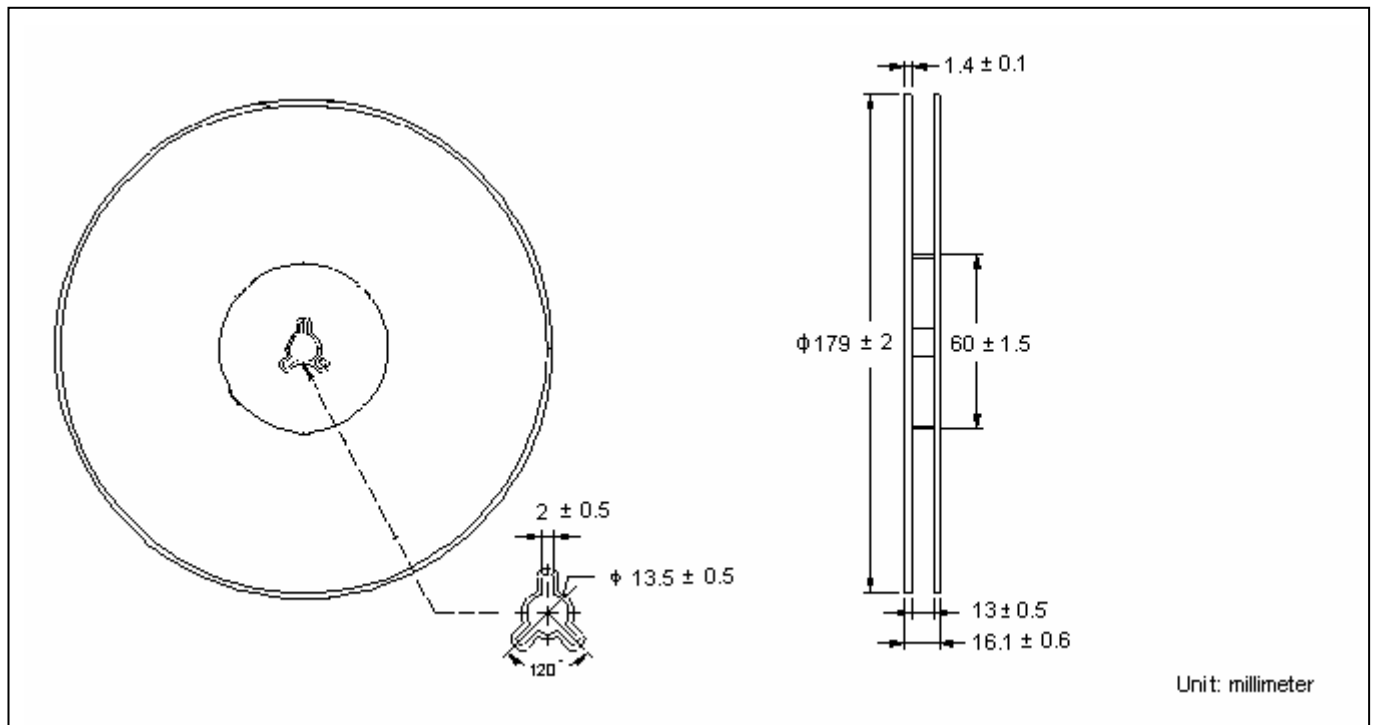
Saturation Voltage vs Collector Current



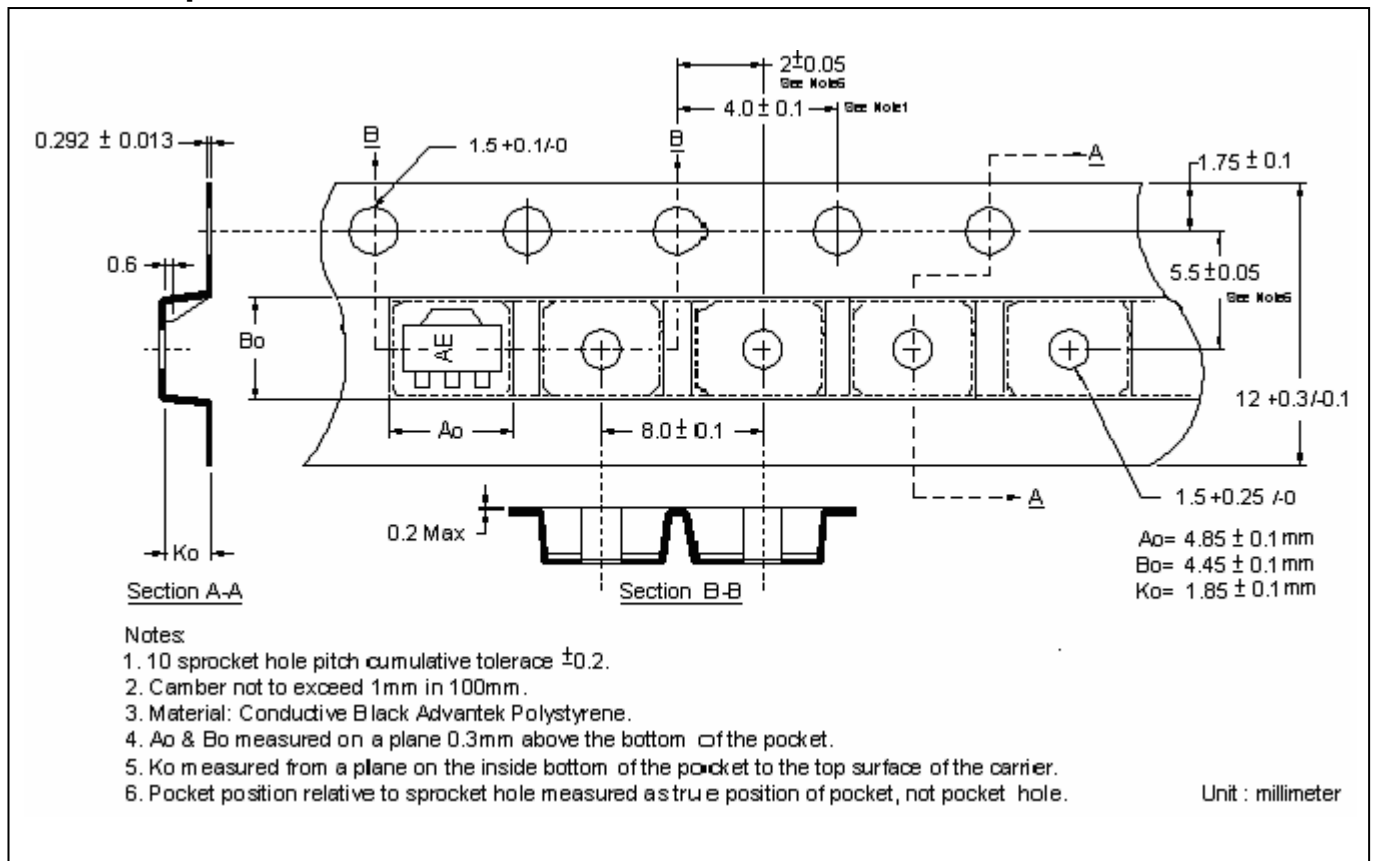
**Typical Characteristics(Cont.)**



### Reel Dimension



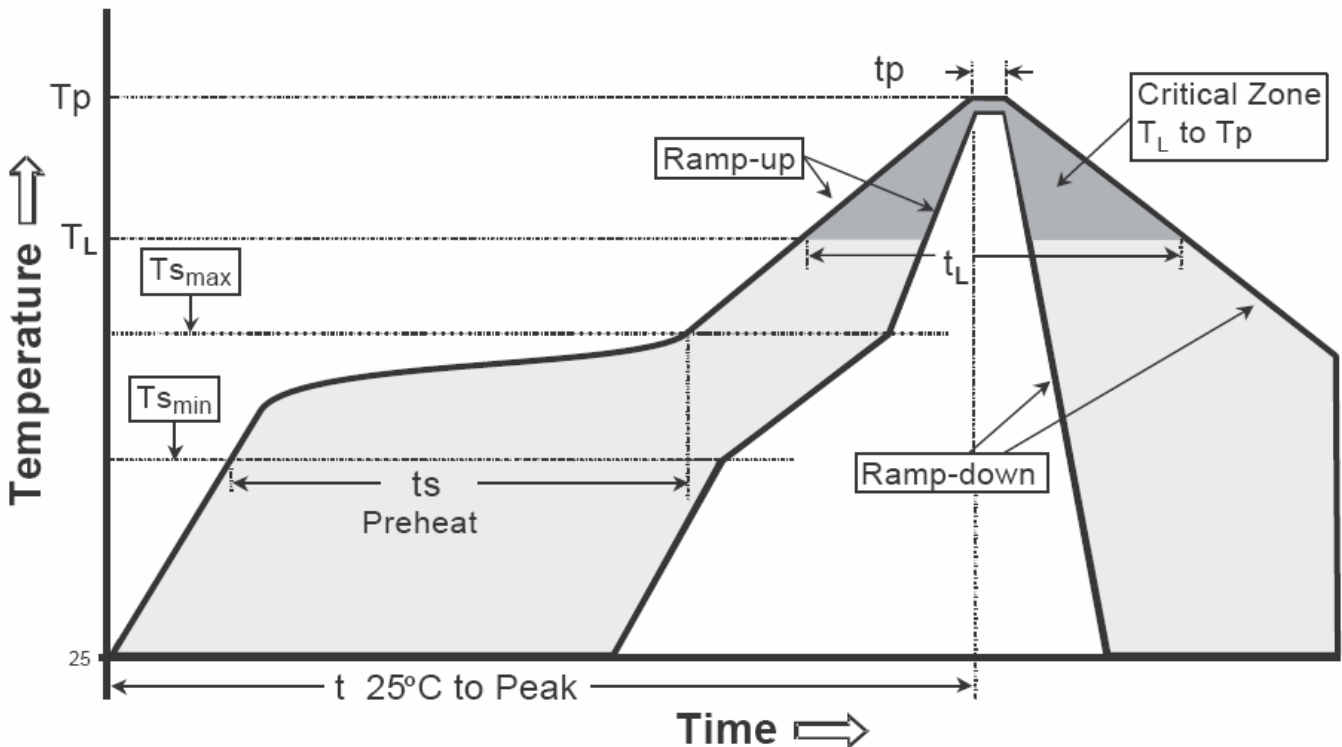
### Carrier Tape Dimension



**Recommended wave soldering condition**

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

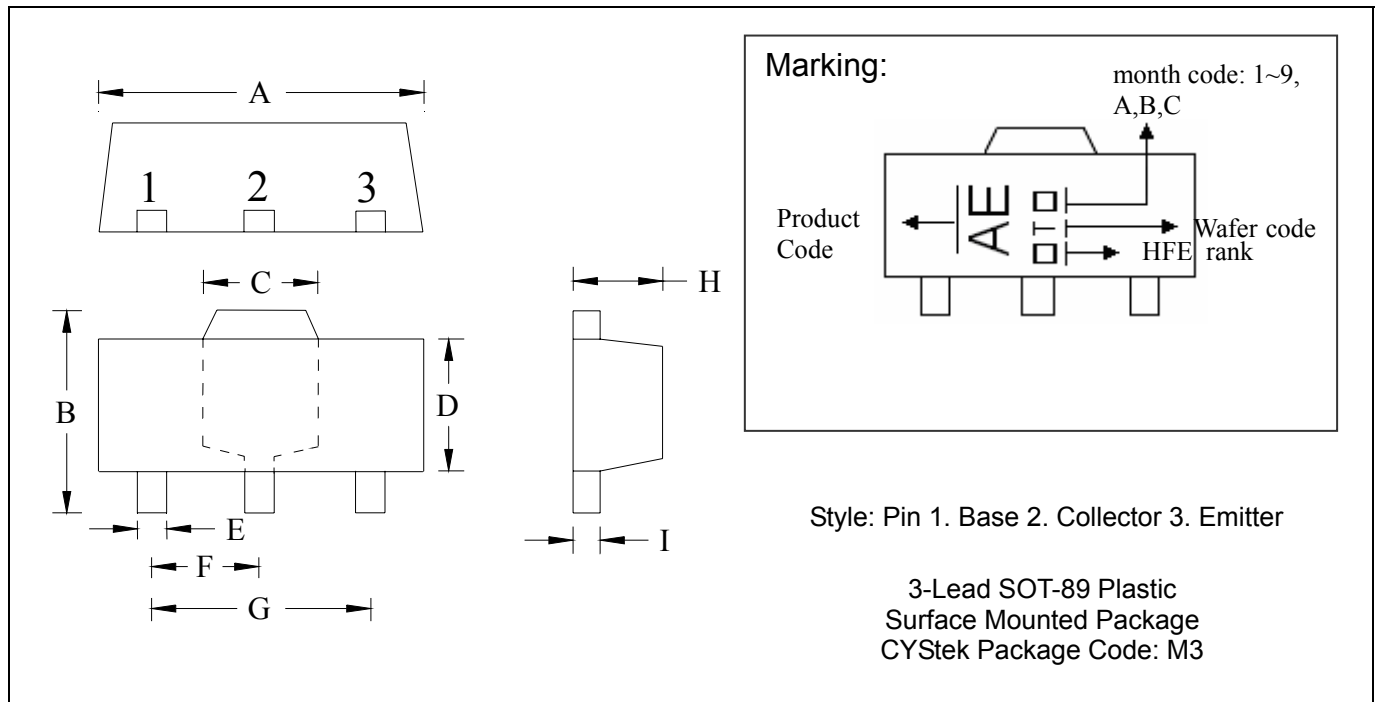
**Recommended temperature profile for IR reflow**



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)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (Tl)	183°C	217°C
- Time (tL)	60-150 seconds	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.

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

**SOT-89 Dimension**



\*: 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	0.0583	0.0598	1.48	1.527
B	0.1594	0.1673	4.05	4.25	G	0.1165	0.1197	2.96	3.04
C	0.0591	0.0663	1.50	1.70	H	0.0551	0.0630	1.40	1.60
D	0.0945	0.1024	2.40	2.60	I	0.0138	0.0161	0.35	0.41
E	0.01417	0.0201	0.36	0.51					

- 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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