

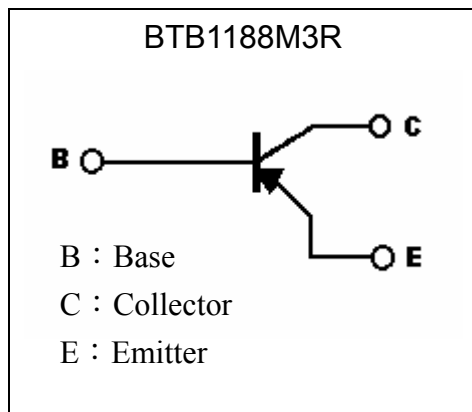
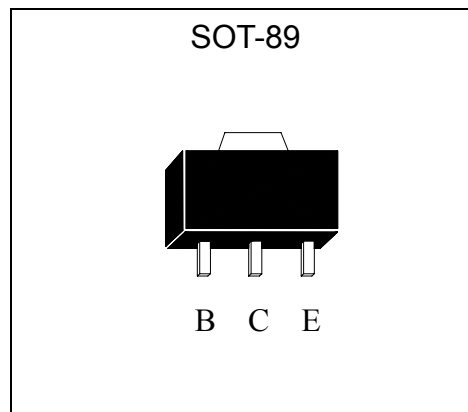
Low Vcesat PNP Epitaxial Planar Transistor

BTB1188M3R

BV_{CEO}	-30V
I_C	-2A
$R_{CESAT(typ)}$	0.22 Ω

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 BTD1766M3
- Pb-free lead plating and halogen-free package

Symbol

Outline

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

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-30	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current (DC)	I_C	-2	A
Collector Current (Pulse)	I_{CP}	-5 (Note 1)	A
Power Dissipation	P_d	0.5	W
Power Dissipation	P_d	2 (Note 2)	W
ESD susceptibility		8000 (Note 3)	V
Operating Junction Temperature Range	T_j	-55~+150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~+150	$^\circ\text{C}$

- Note : 1. Single Pulse , $P_w = 10\text{ms}$
 2. When mounting on a 40 x 40 x 0.7 mm ceramic board.
 3. Human body model, 1.5k Ω in series with 100pF

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient (Note)	R θ JA	62.5	°C/W
Thermal Resistance, Junction-to-Case	R θ JC	18	°C/W

Note : When mounting on a 40 × 40 × 0.7 mm ceramic board; 250°C/W when mounted on minimum copper pad.

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	-40	-	-	V	I _C =-50μA, I _E =0
BV _{CEO}	-30	-	-	V	I _C =-1mA, I _B =0
BV _{EBO}	-5	-	-	V	I _E =-50μA, I _C =0
I _{CBO}	-	-	-1	μA	V _{CB} =-20V, I _E =0
I _{EBO}	-	-	-1	μA	V _{EB} =-4V, I _C =0
*V _{CE(sat)}	-	-	-1	V	I _C =-3A, I _B =-0.1A
*h _{FE}	180	-	560	-	V _{CE} =-3V, I _C =-0.5A
f _T	-	100	-	MHz	V _{CE} =-5V, I _C =-0.1A, f=100MHz
Cob	-	50	-	pF	V _{CB} =-10V, f=1MHz

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

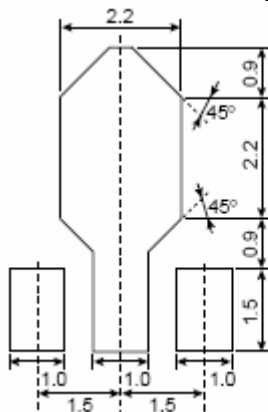
Classification Of hFE

Rank	R	S
Range	180~390	270~560

Ordering Information

Device	H _{FE} rank	Package	Shipping
BTB1188M3R-R-T2-G	R	SOT-89	1000 pcs / Tape & Reel
BTB1188M3R-S-T2-G	S	(Pb-free lead plating and halogen-free package)	

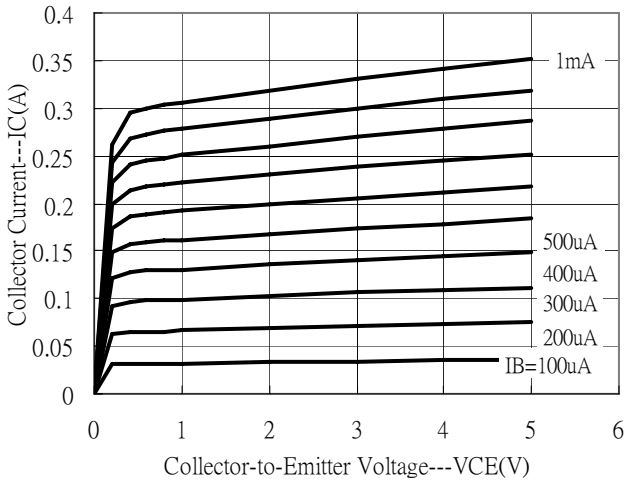
Recommended soldering footprint



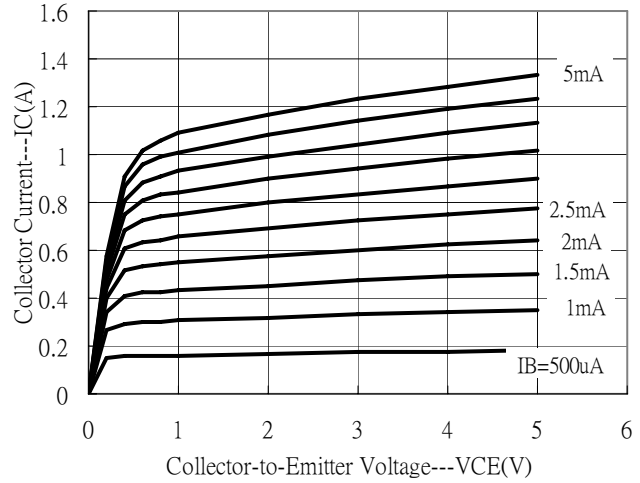
unit : mm

Typical Characteristics

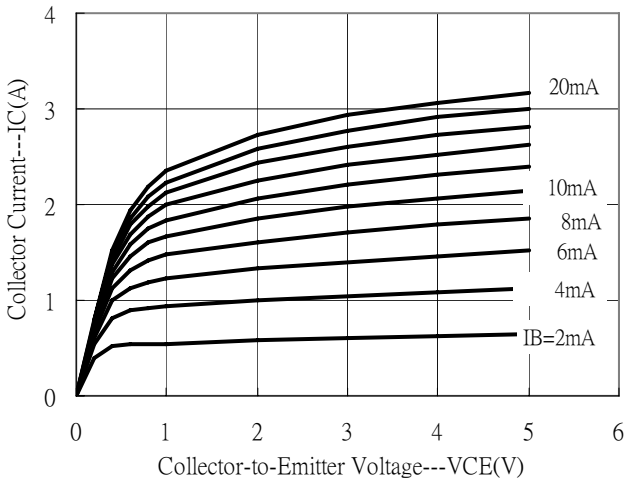
Emitter Grounded Output Characteristics



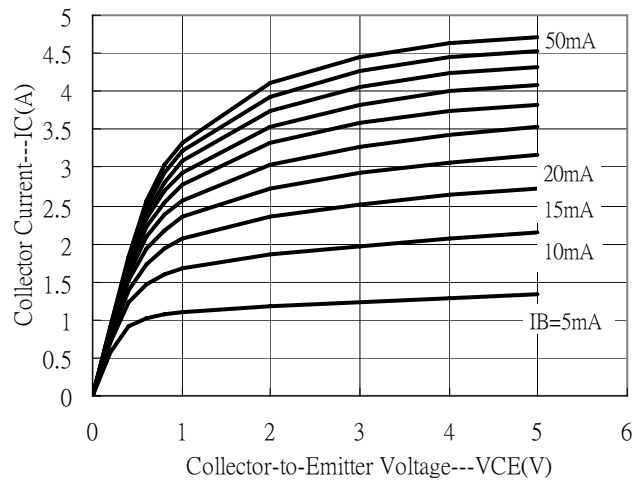
Emitter Grounded Output Characteristics



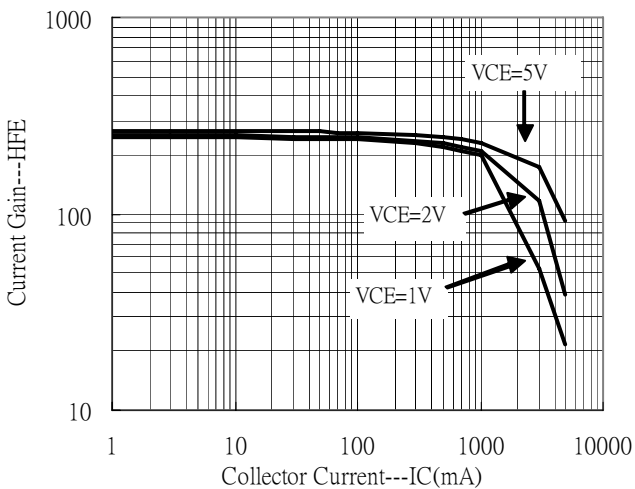
Emitter Grounded Output Characteristics



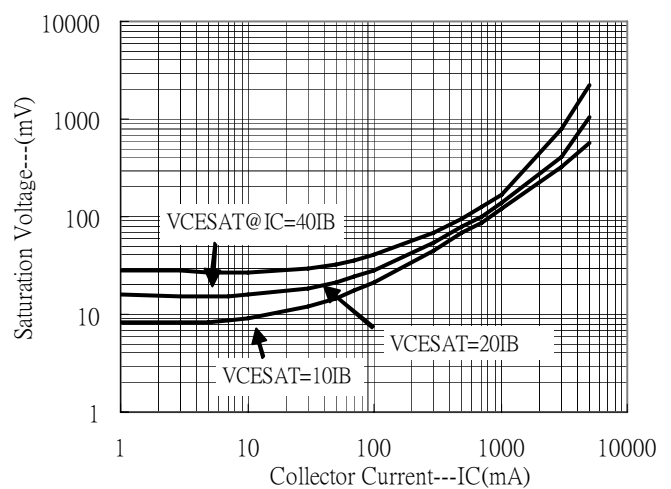
Emitter Grounded Output Characteristics



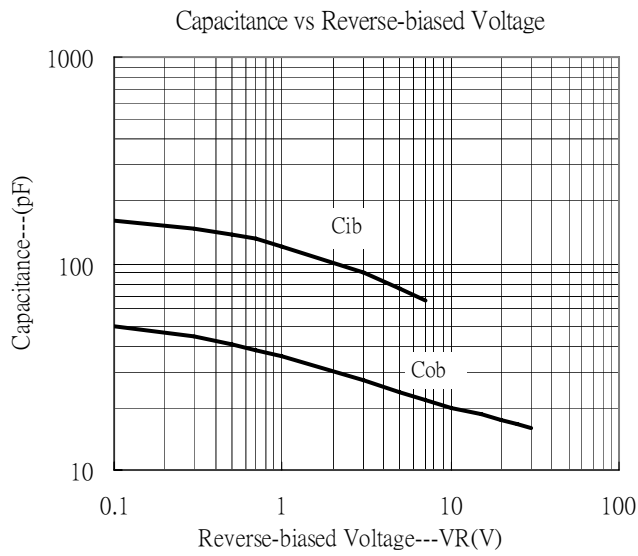
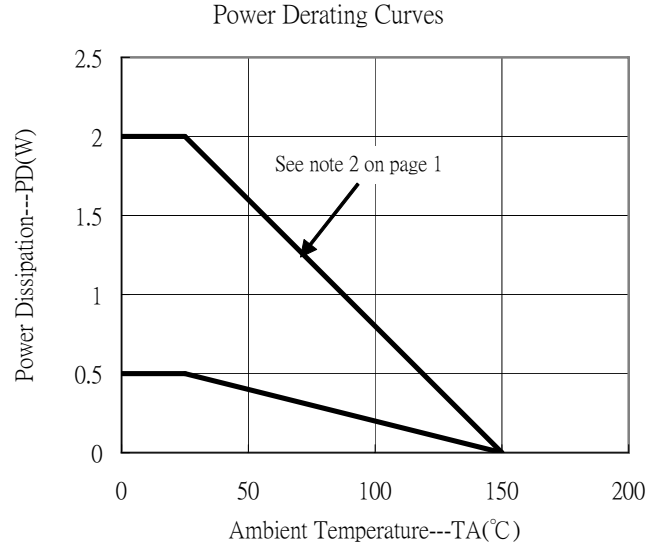
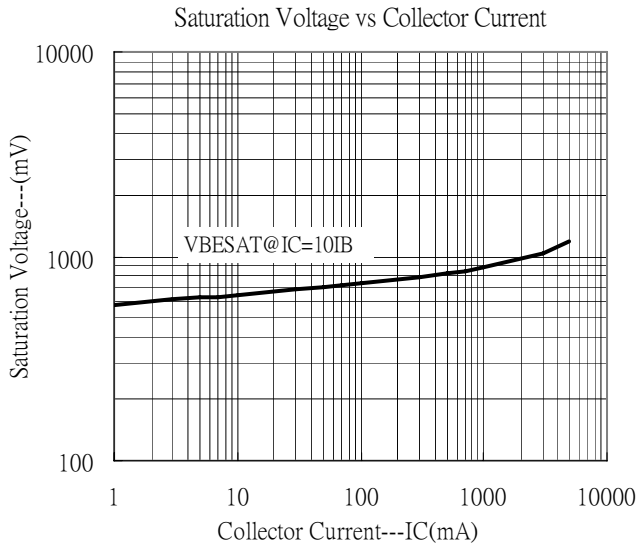
Current Gain vs Collector Current



Saturation Voltage vs Collector Current



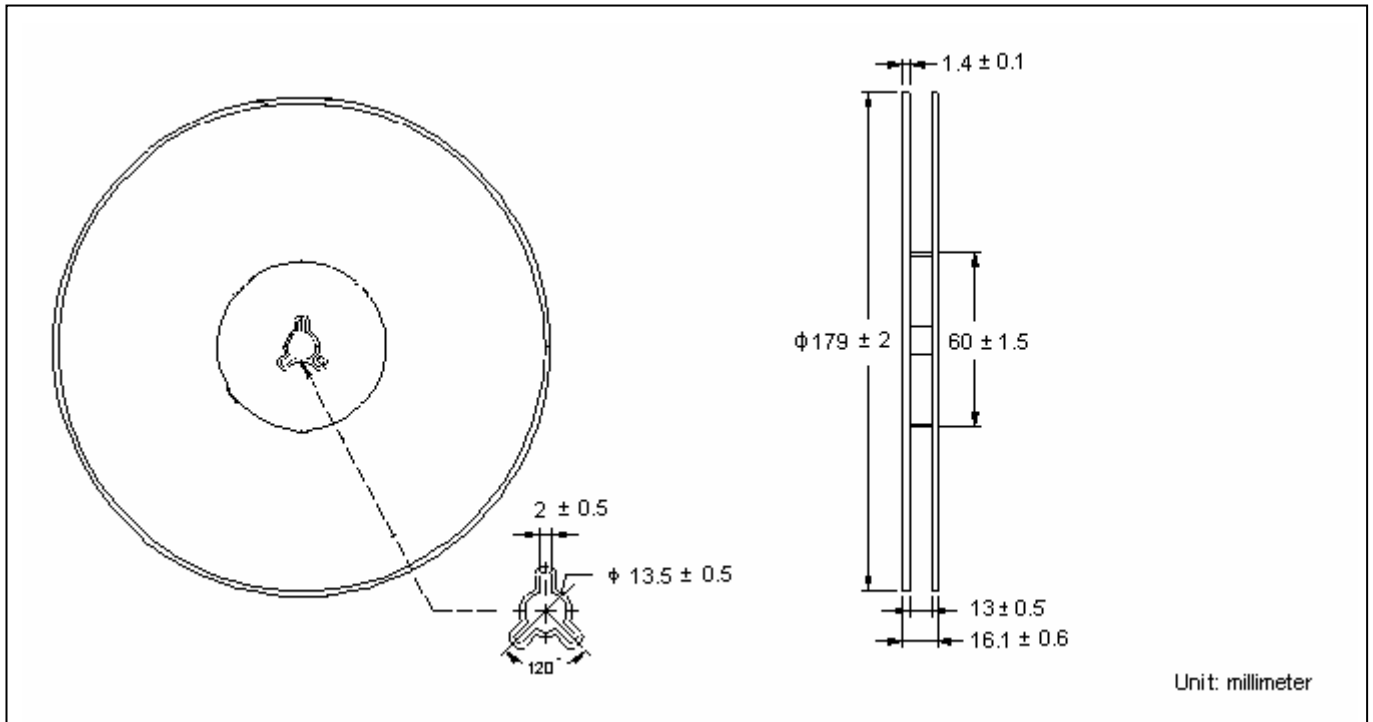
Typical Characteristics(Cont.)



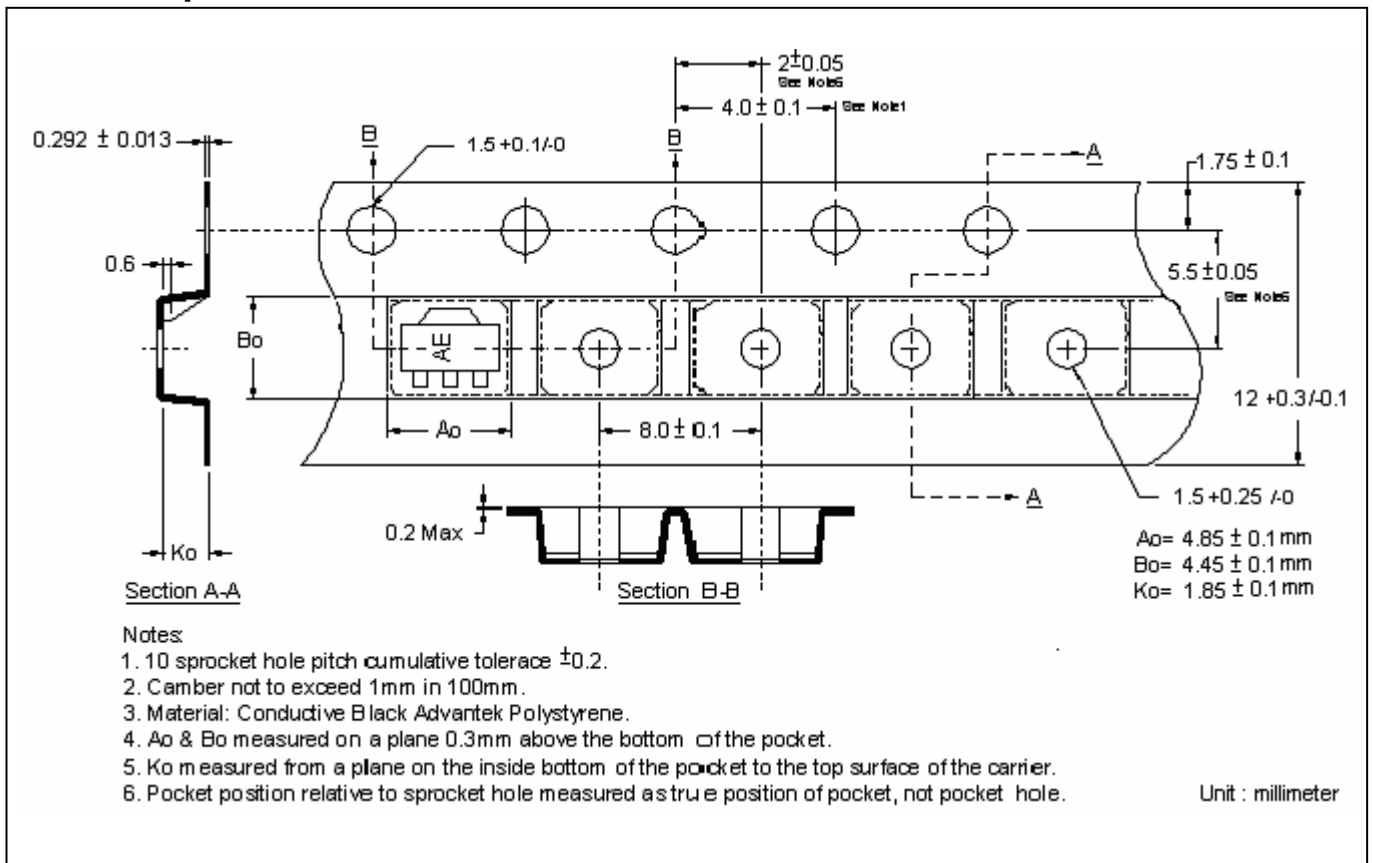
Recommended Storage Condition:

Temperature : 10~ 35 °C
 Humidity : 30~ 60% RH

Reel Dimension



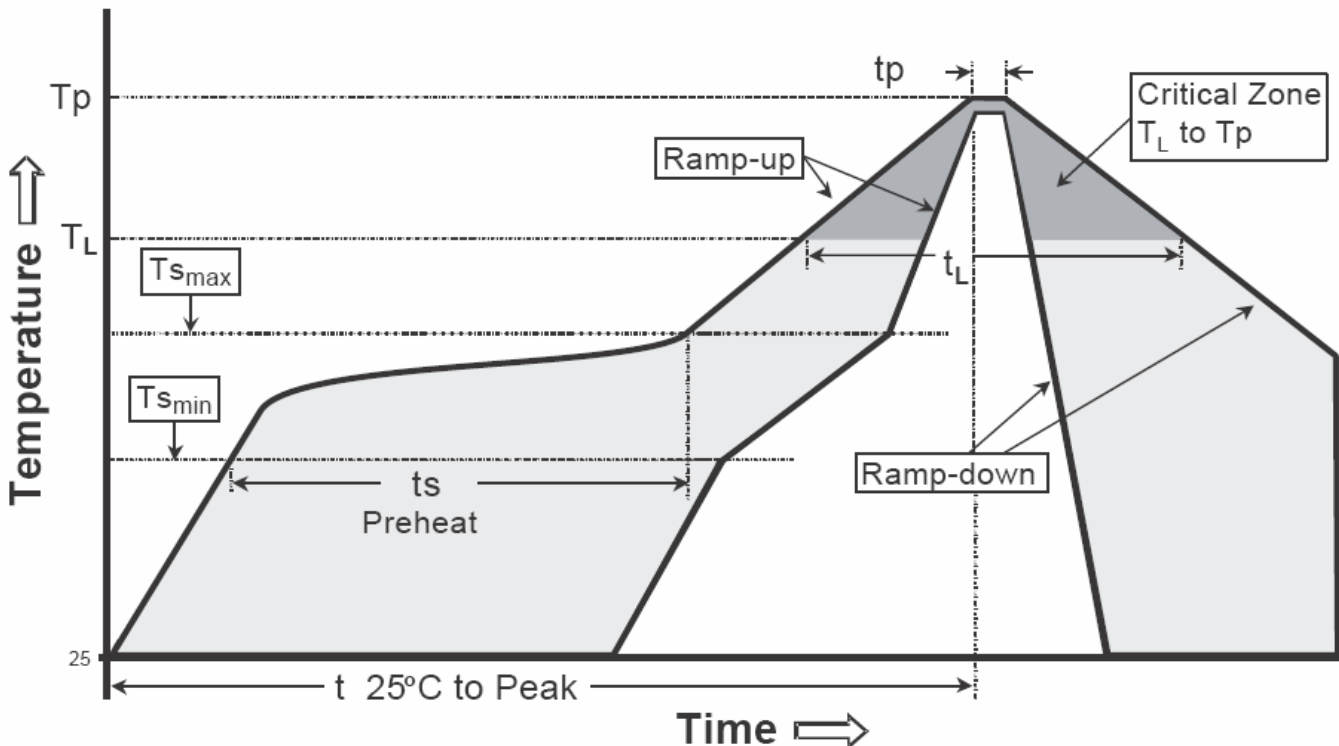
Carrier Tape Dimension



Recommended wave soldering condition

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

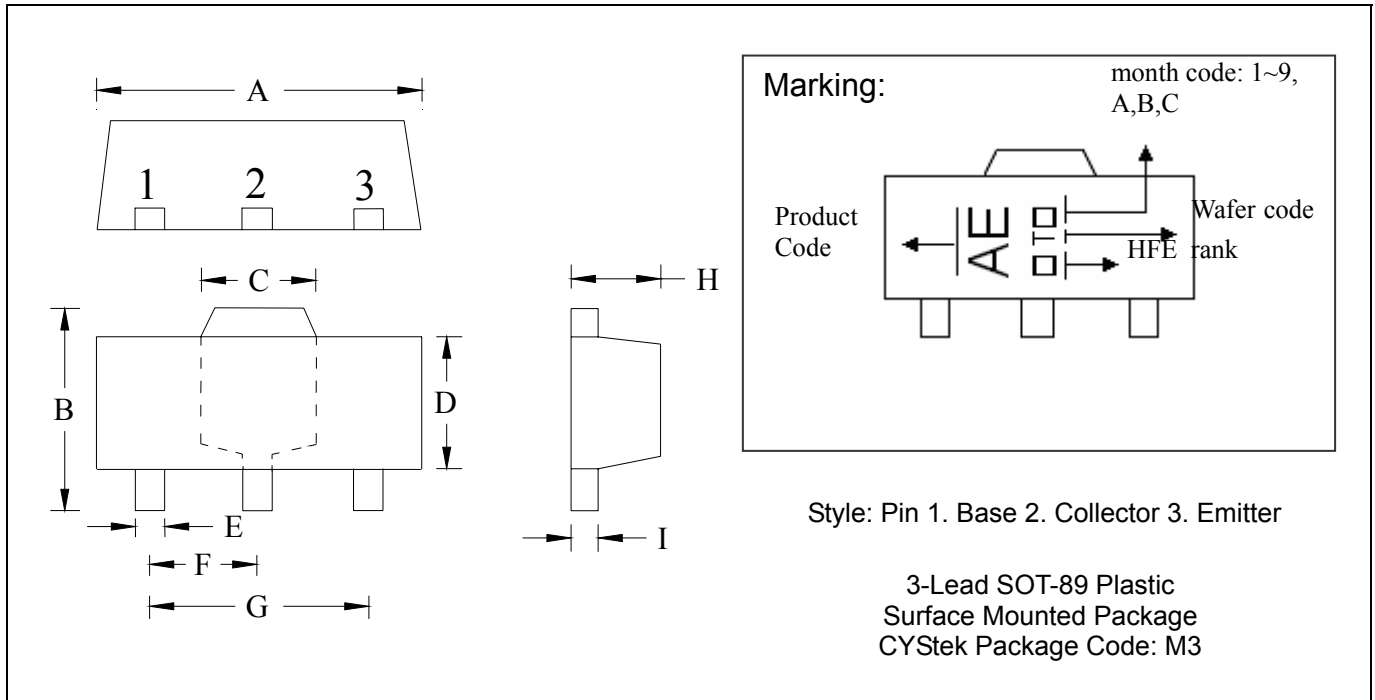
Recommended temperature profile for IR reflow



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



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	1.40	1.60
D	0.0906	0.1024	2.30	2.60	I	0.0138	0.0173	0.35	0.44
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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