Low Vcesat PNP Epitaxial Planar Transistor

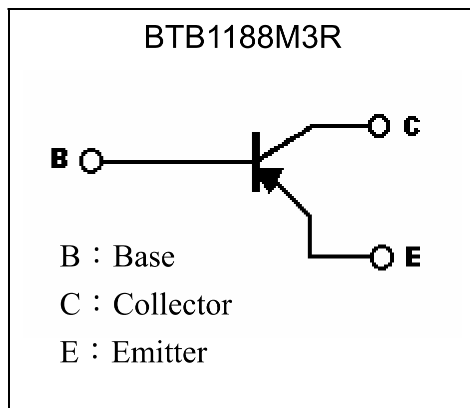
BTB1188M3R

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

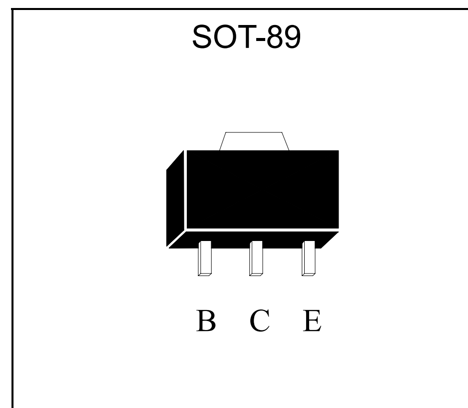
Features

- 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 (Ta=25°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	Pd	0.5	W
Power Dissipation	Pd	2 (Note 2)	W
ESD susceptibility		8000 (Note 3)	V
Operating Junction Temperature Range	Tj	-55~+150	°C
Storage Temperature Range	Tstg	-55~+150	°C

Note：1. Single Pulse , Pw=10ms
2. When mounting on a 40 ×40 ×0.7 mm ceramic board.
3. Human body model, 1.5kΩ in series with 100pF

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient (Note)	$R_{\theta JA}$	62.5	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	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%

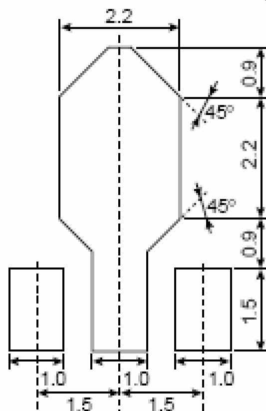
Classification Of hFE

Rank	R	S
Range	180~390	270~560

Ordering Information

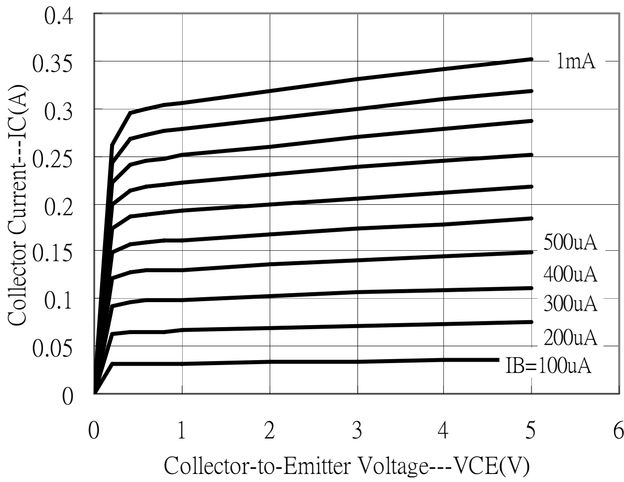
Device	H_{FE} rank	Package	Shipping
BTB1188M3R-R-T2-G	R	SOT-89 (Pb-free lead plating and halogen-free package)	1000 pcs / Tape & Reel
BTB1188M3R-S-T2-G	S		

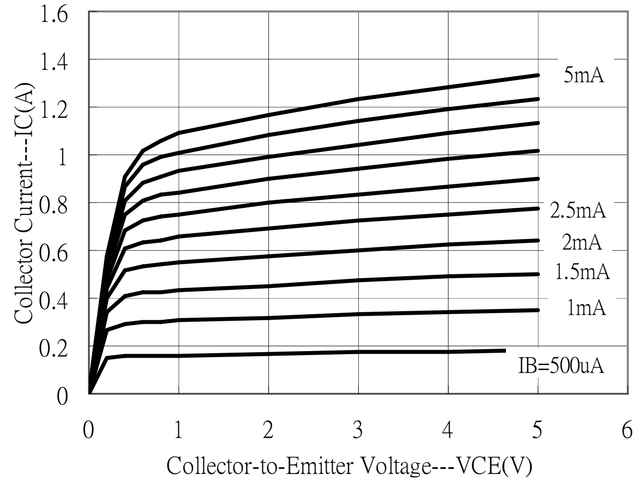
Recommended soldering footprint

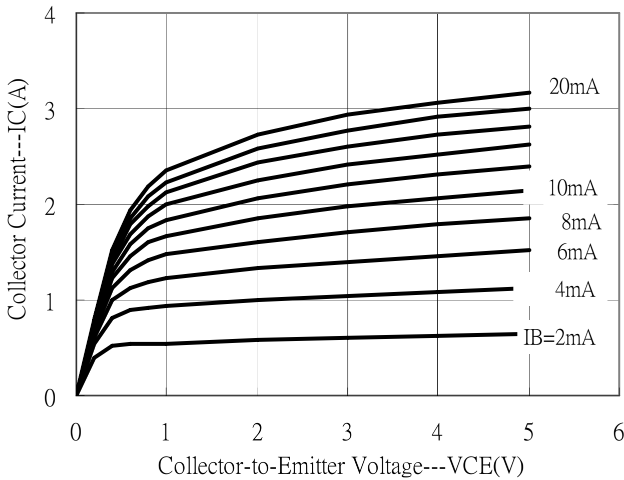


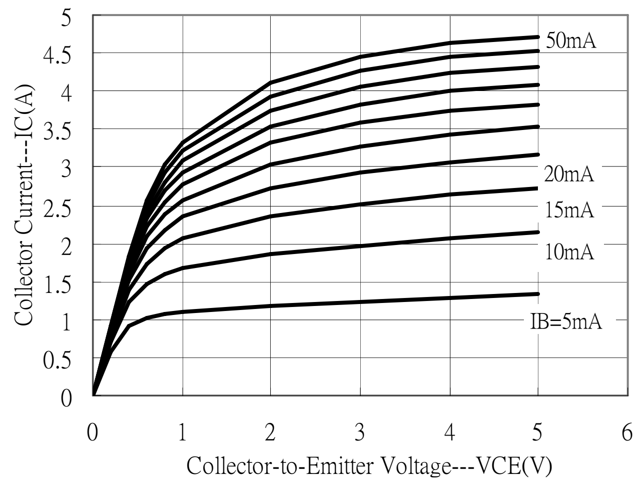
unit : mm

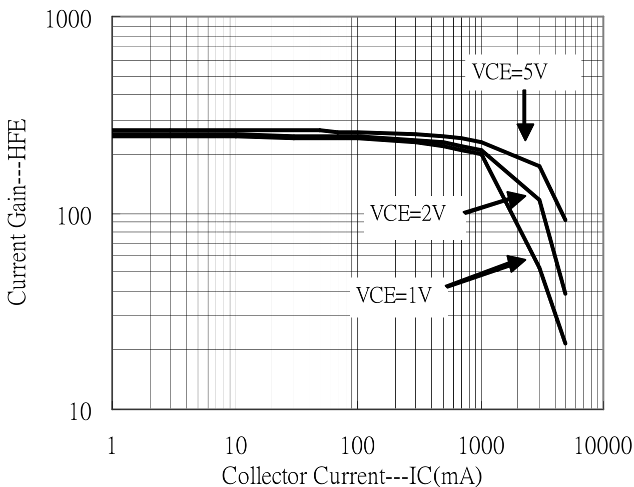
Typical Characteristics

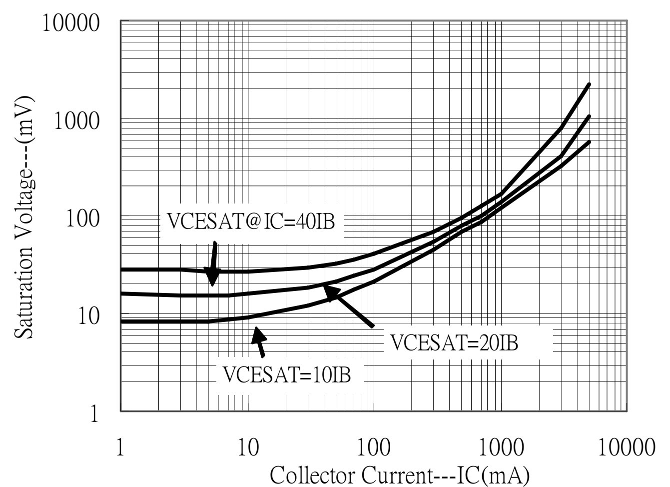




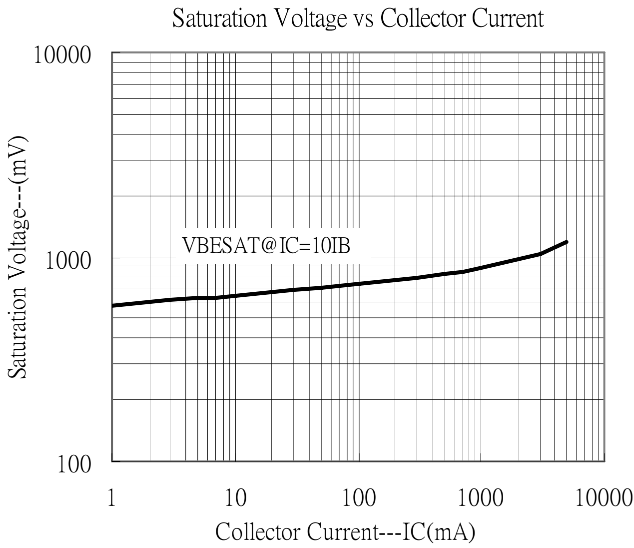


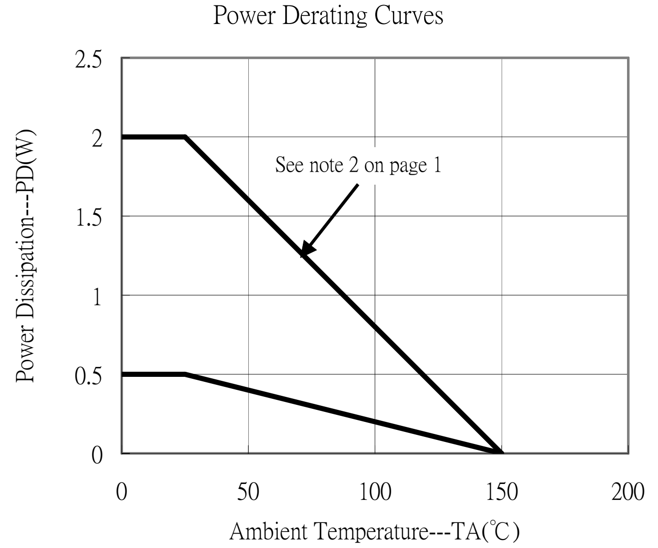


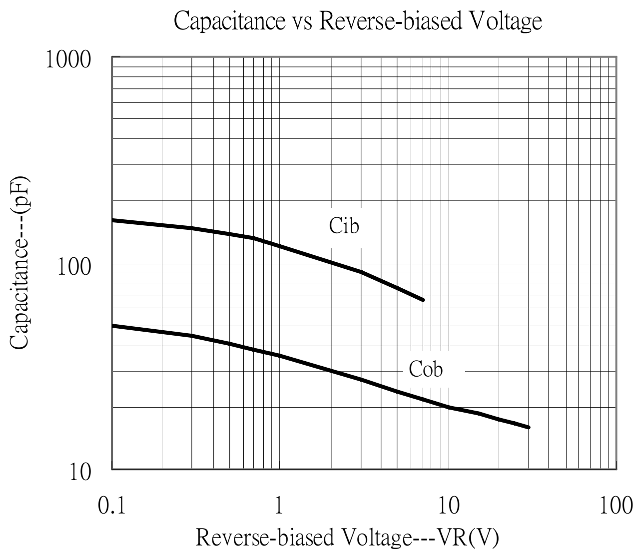




Typical Characteristics(Cont.)



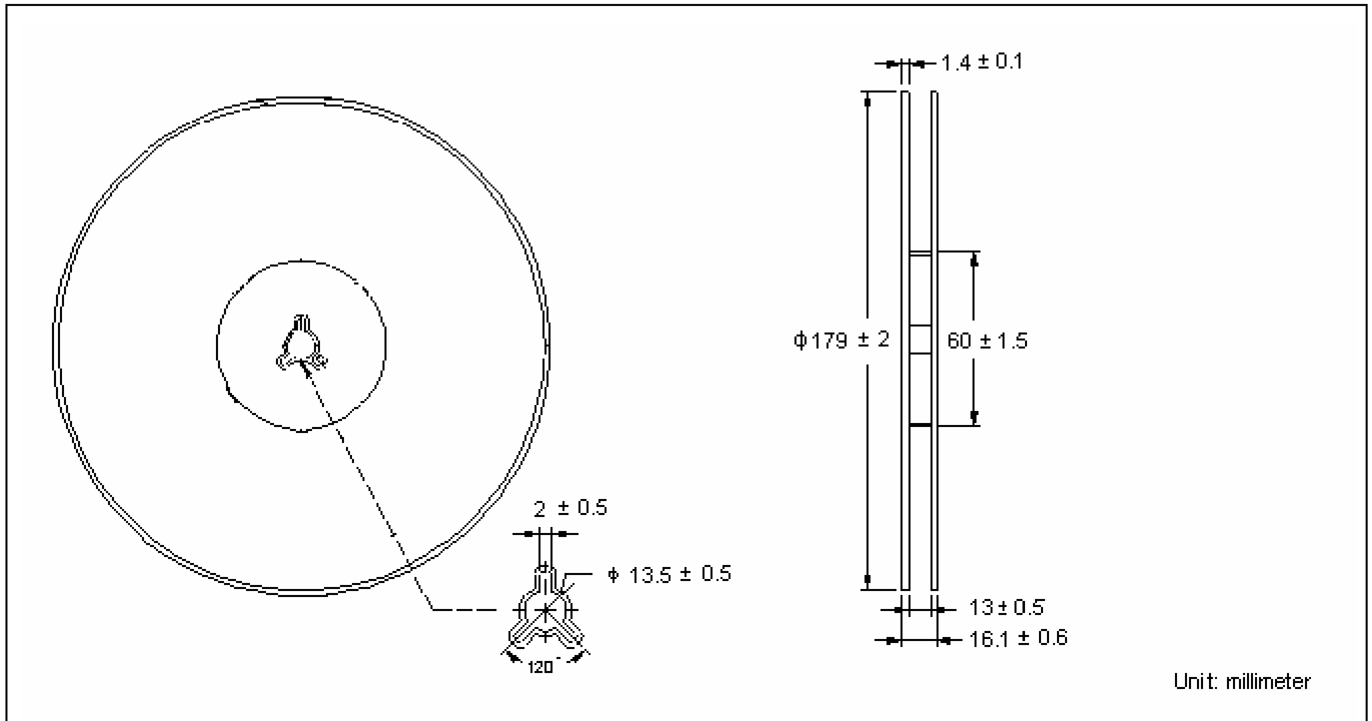




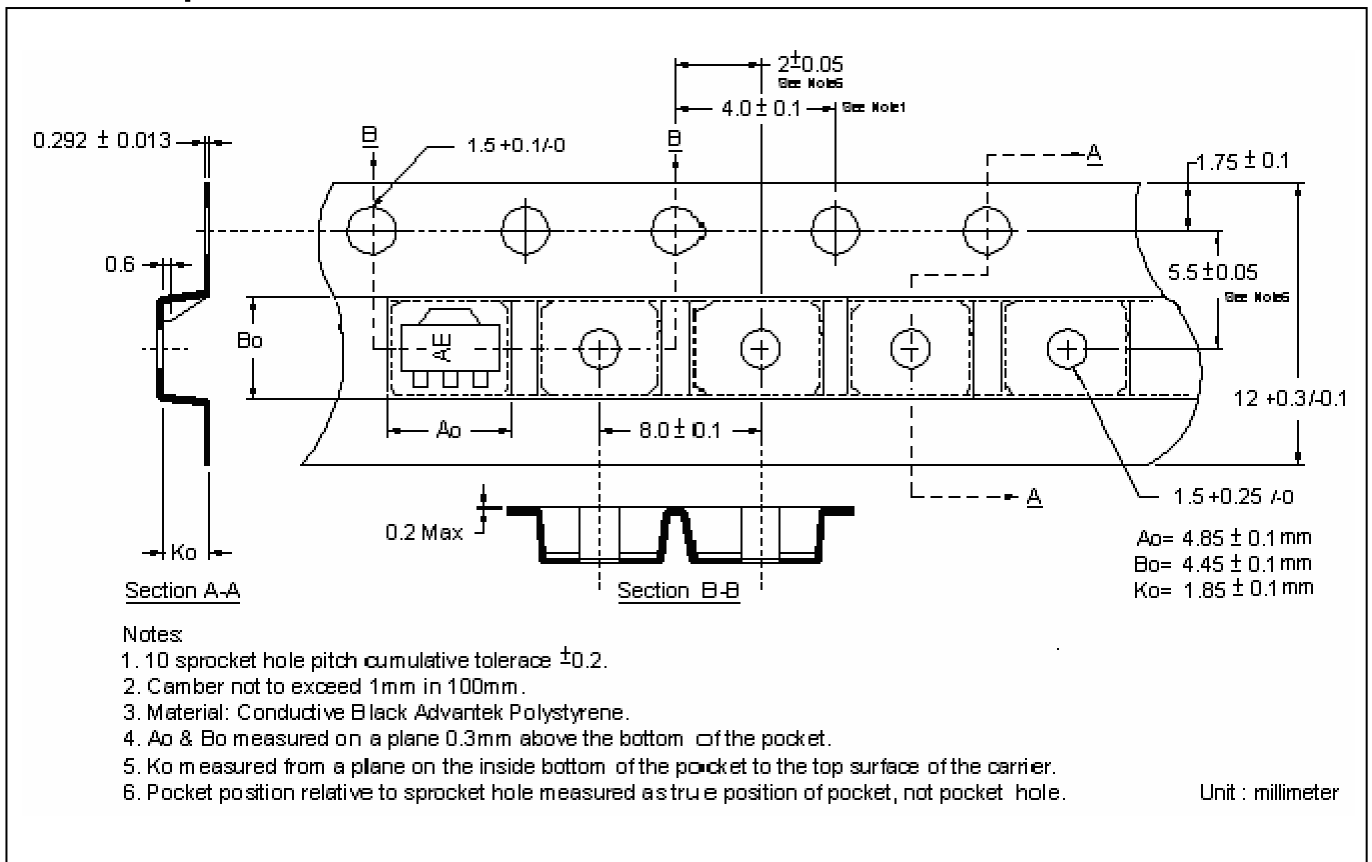
Recommended Storage Condition:

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

Reel Dimension



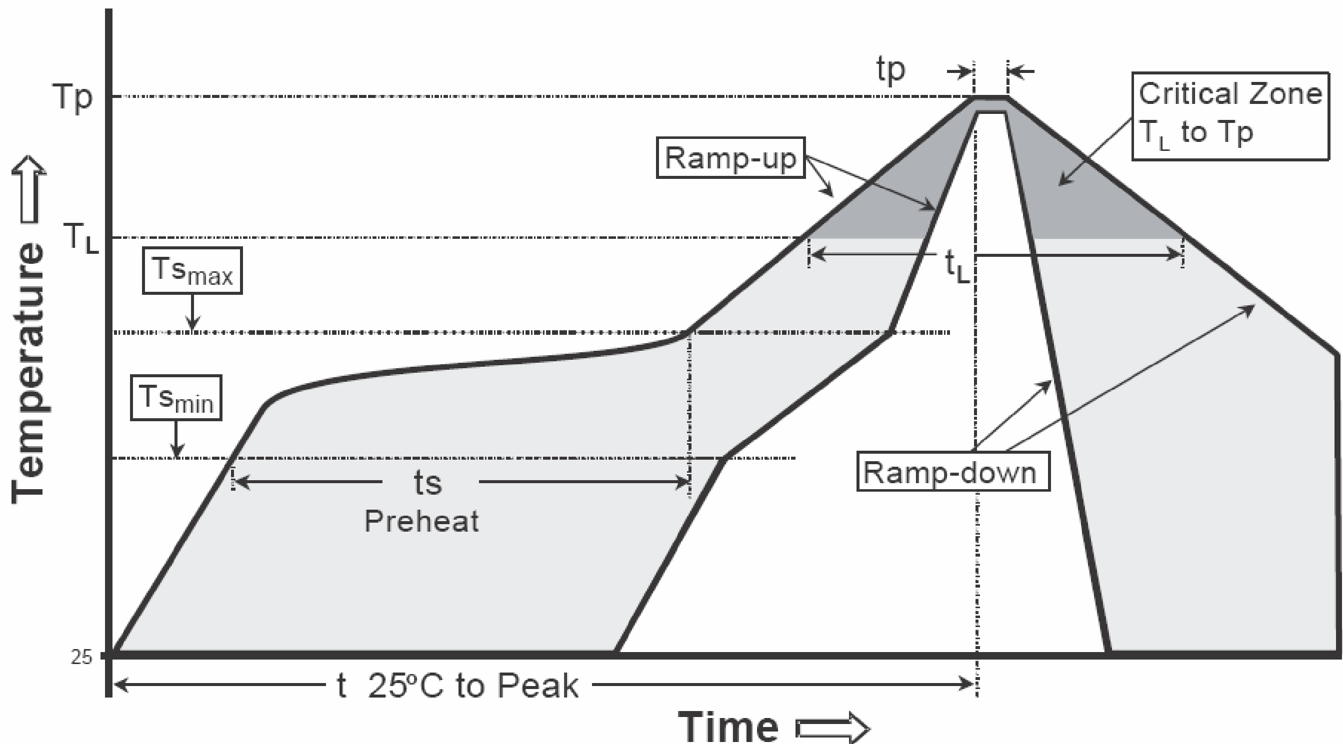
Carrier Tape Dimension



Recommended wave soldering condition

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

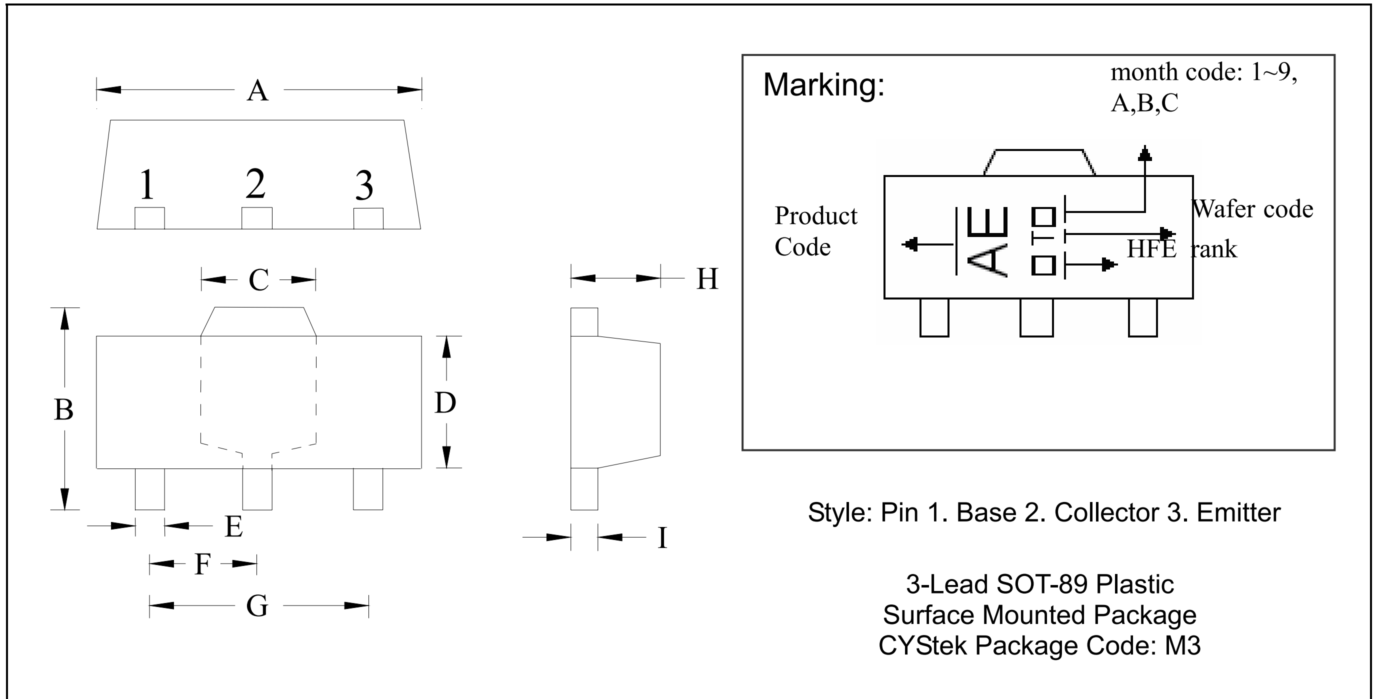
Recommended temperature profile for IR reflow



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(T_S min) −Temperature Max(T_S max) −Time(ts $_{min}$ to ts $_{max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	 183°C 60-150 seconds	 217°C 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



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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