

General Purpose NPN Epitaxial Planar Transistor

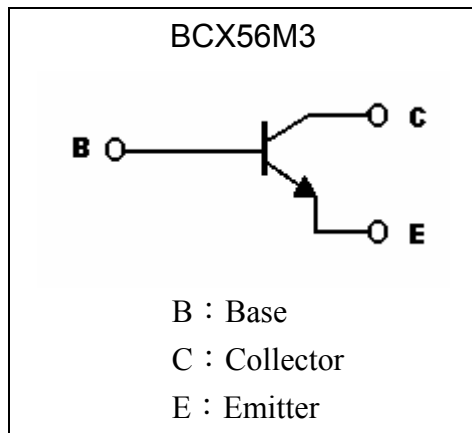
BCX56M3

BV_{CEO}	100V
I_C	1A
V_{CESAT}	0.13V(typ.)

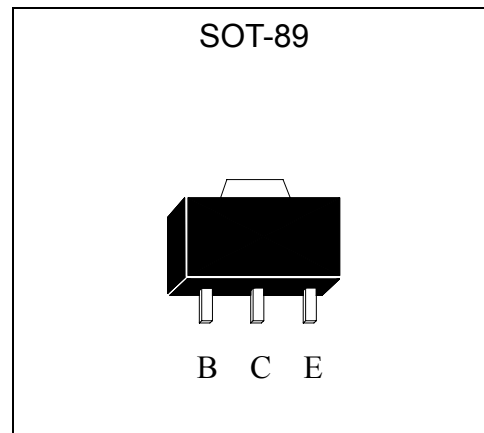
Features

- High breakdown voltage, $BV_{CEO} \geq 100V$
- Large continuous collector current capability
- Low collector saturation voltage
- Complementary to BCX53M3
- Pb-free lead plating package

Symbol



Outline



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	100	V
Emitter-Base Voltage	V_{EBO}	5	V
Collector Current(DC)	I_C	1	A
Collector Current(Pulse)	I_{CP}	2	A
Power Dissipation	P_d	0.6	W
		1 (Note 1)	W
		2 (Note 2)	W
Junction Temperature	T_j	150	°C
Storage Temperature	T_{stg}	-55~+150	°C

Note : 1. When mounted on FR-4 PCB with area measuring 10×10×1 mm

2. When mounted on ceramic with area measuring 40×40×1 mm

**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	100	-	-	V	$I_C=100\mu A$
BV_{CEO}	100	-	-	V	$I_C=10mA$
BV_{EBO}	5	-	-	V	$I_E=10\mu A$
I_{CBO}	-	-	100	nA	$V_{CB}=80V$
I_{EBO}	-	-	20	nA	$V_{EB}=4V$
* $V_{CE(sat)}$	-	0.13	0.3	V	$I_C=500mA, I_B=50mA$
* $V_{BE(on)}$	-	-	1	V	$V_{CE}=2V, I_C=500mA$
* $h_{FE 1}$	80	-	-	-	$V_{CE}=2V, I_C=5mA$
* $h_{FE 2}$	100	-	400	-	$V_{CE}=2V, I_C=150mA$
* $h_{FE 3}$	40	-	-	-	$V_{CE}=2V, I_C=500mA$
f_T	150	230	-	MHz	$V_{CE}=10V, I_C=50mA, f=100MHz$
Cob	-	6	15	pF	$V_{CB}=10V, I_E=0A, f=1MHz$

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

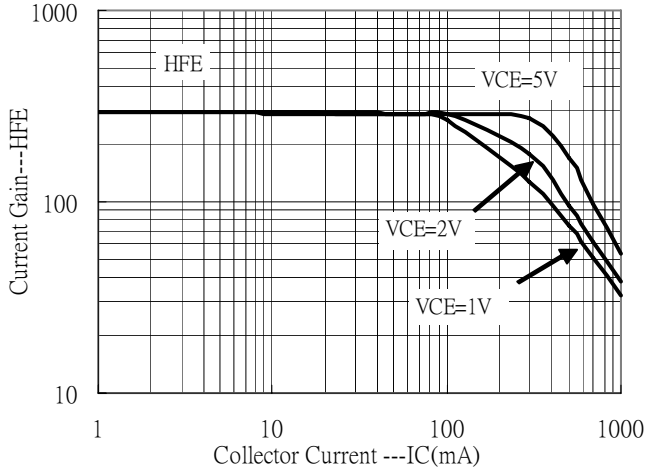
Rank	16	25
Range	100~250	160~400

Ordering Information

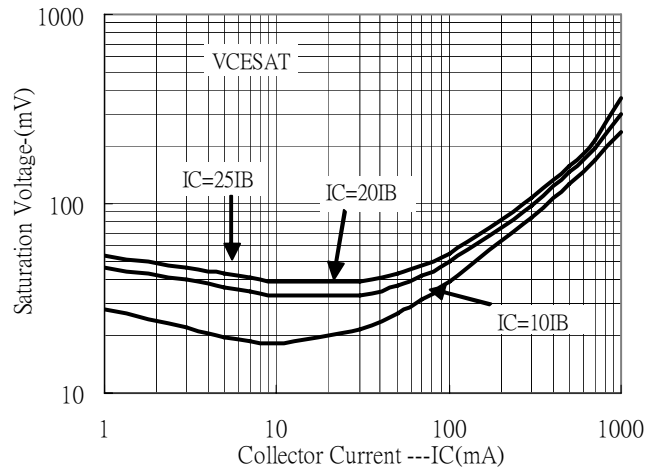
Device	Package	Shipping	Marking
BCX56M3	SOT-89 (Pb-free lead plating package)	1000 pcs / Tape & Reel	DF

Typical Characteristics

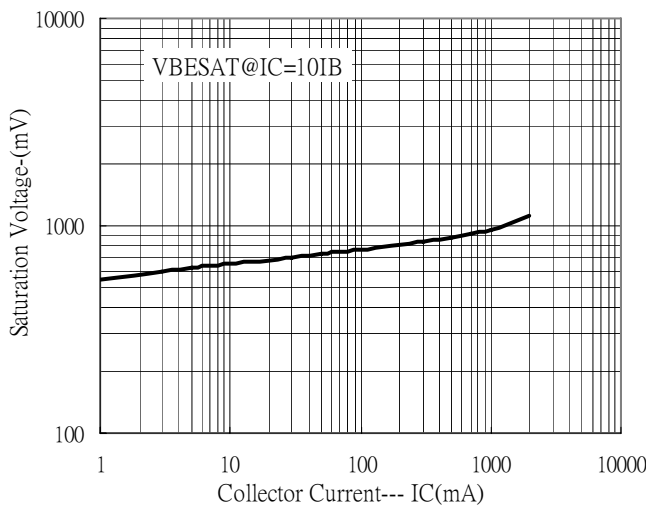
Current Gain vs Collector Current



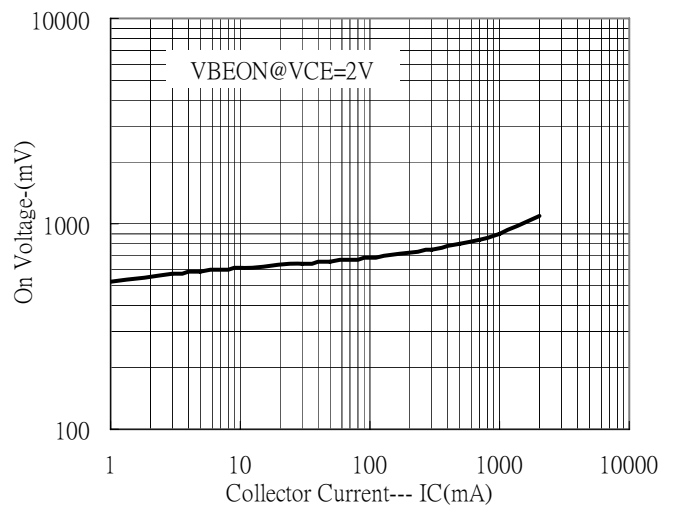
Saturation Voltage vs Collector Current



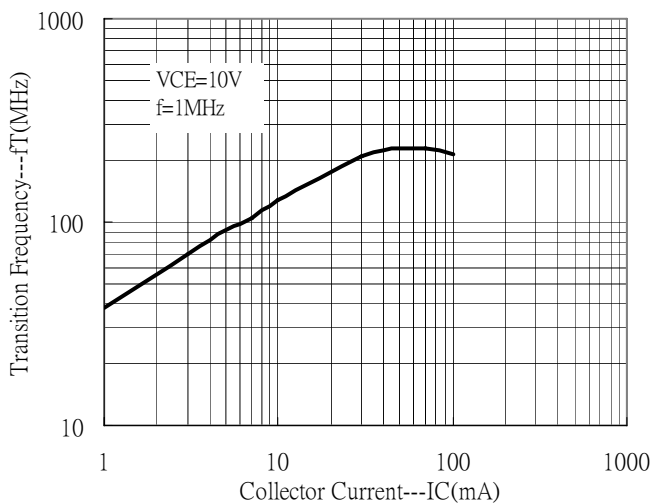
Saturation Voltage vs Collector Current



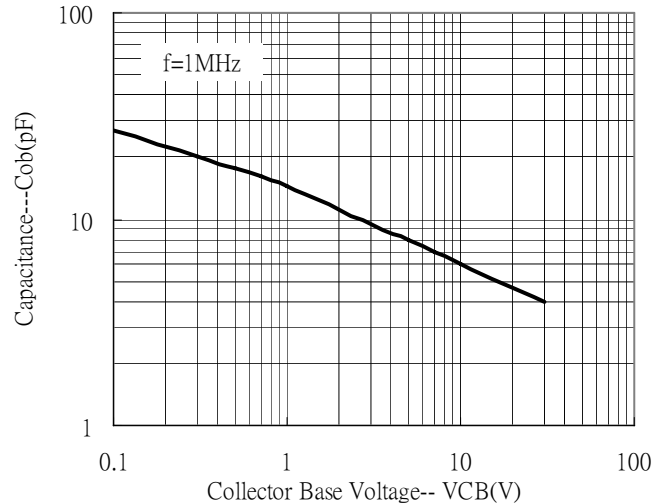
On Voltage vs Collector Current



Transition Frequency vs Collector Current



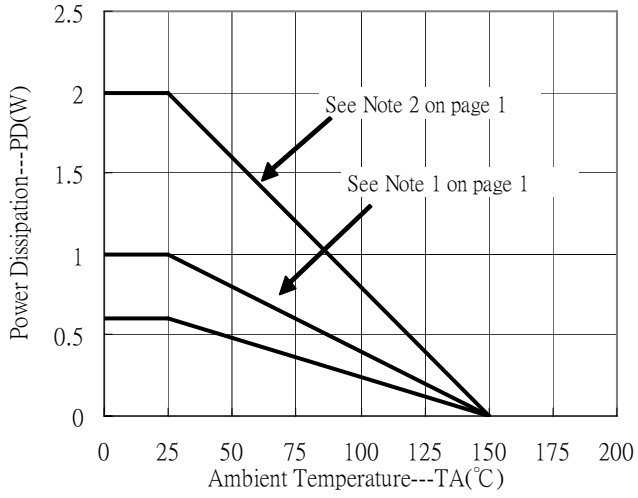
Capacitance Characteristics



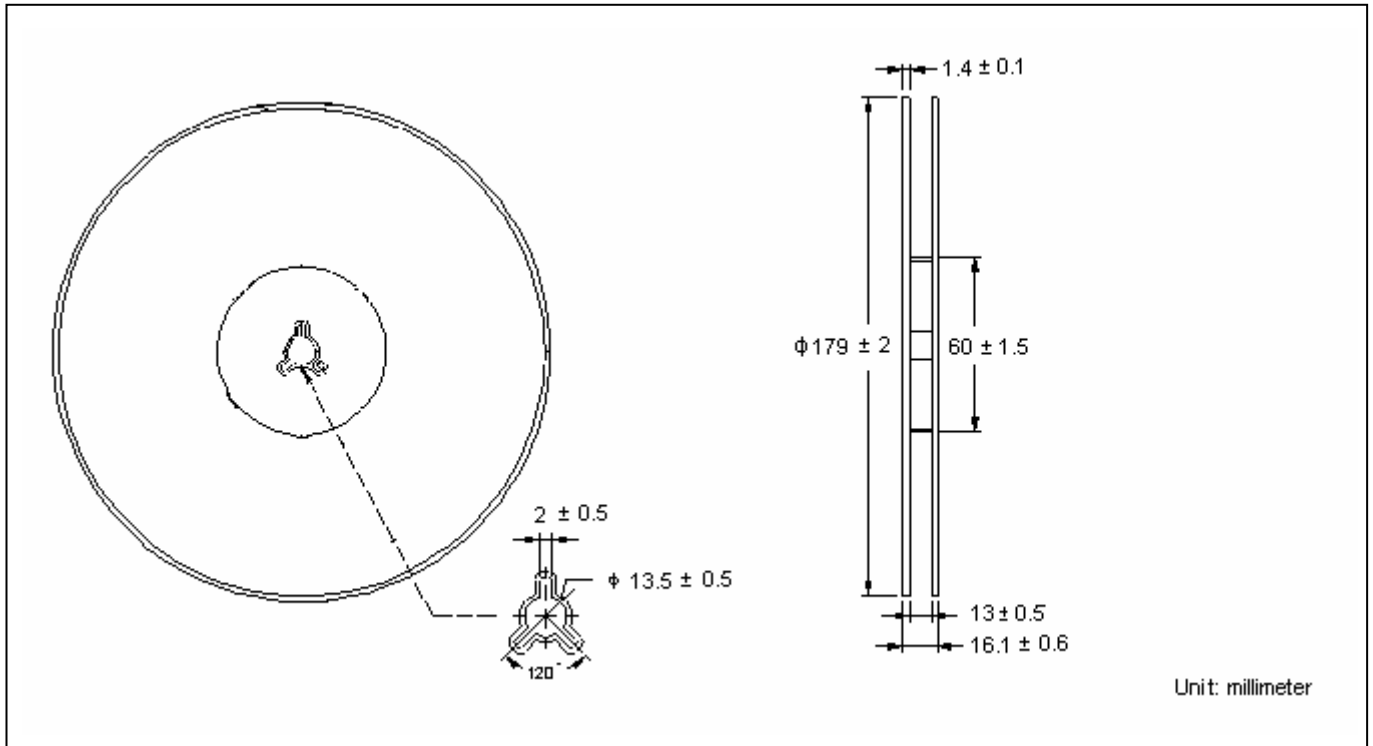


Typical Characteristics(Cont.)

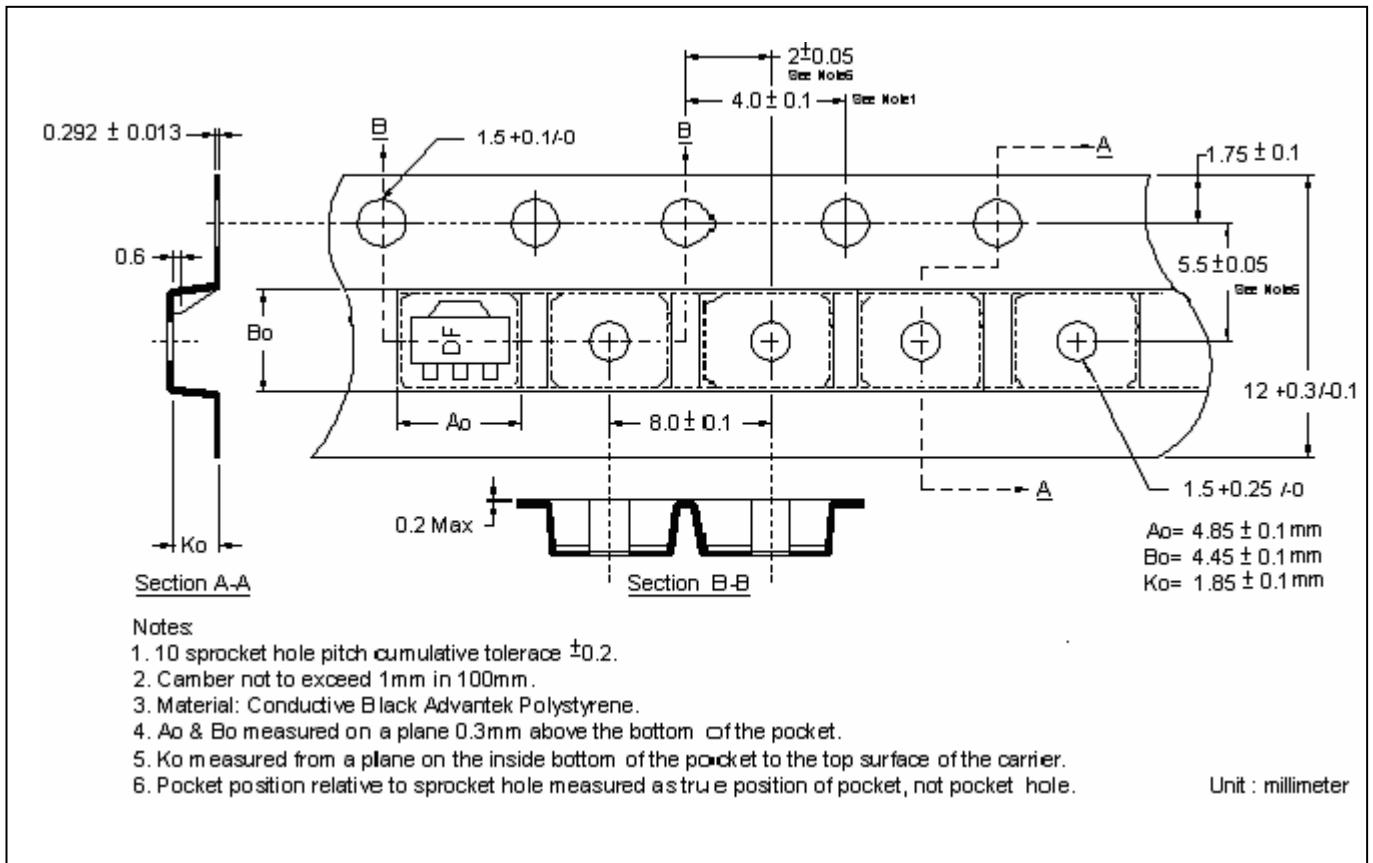
Power Derating Curves



Reel Dimension



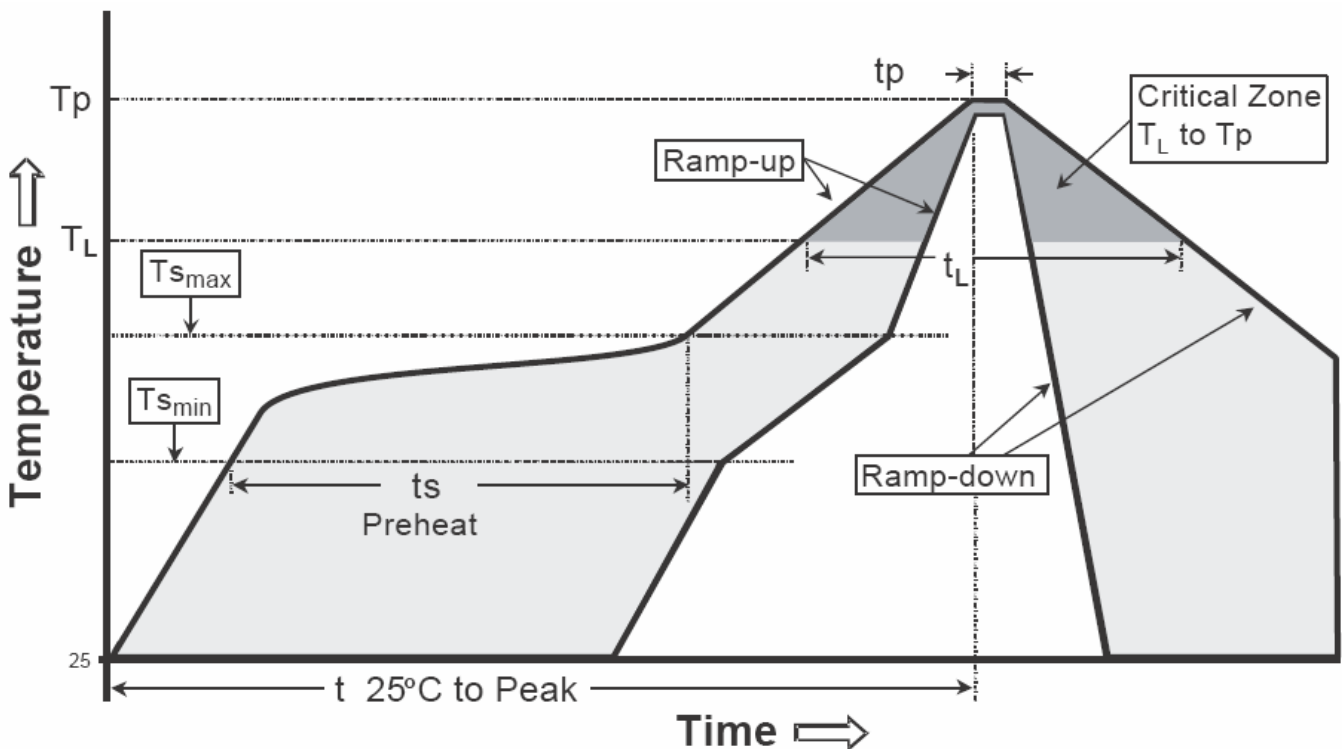
Carrier Tape Dimension



Recommended wave soldering condition

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

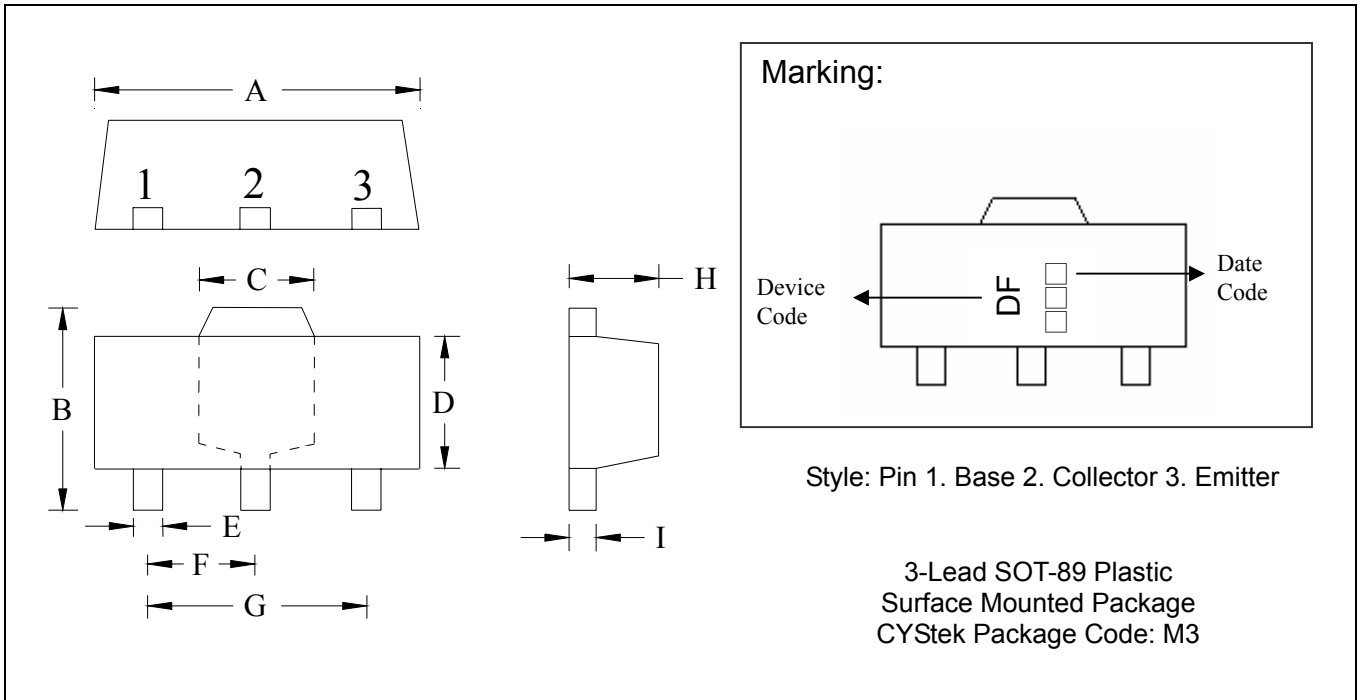
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (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



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.

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek **semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.