

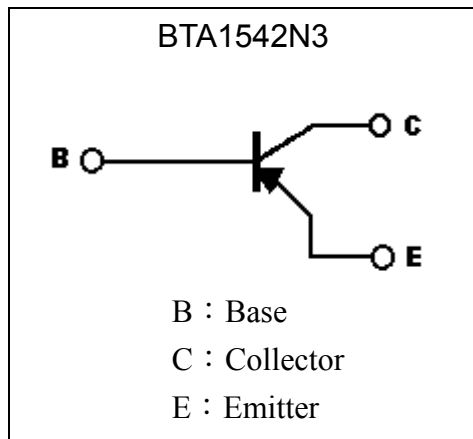
PNP Epitaxial Planar Transistor

BTA1542N3

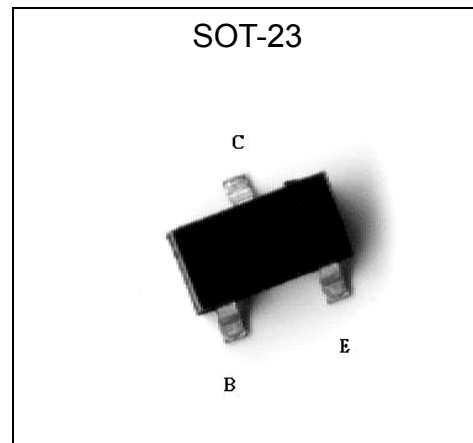
Features

- Large current capability
- Low collector-to-emitter saturation voltage
- High speed switching
- Ultra small package facilitates miniaturization in end products
- High allowable power dissipation
- Pb-free lead plating and halogen-free package

Symbol

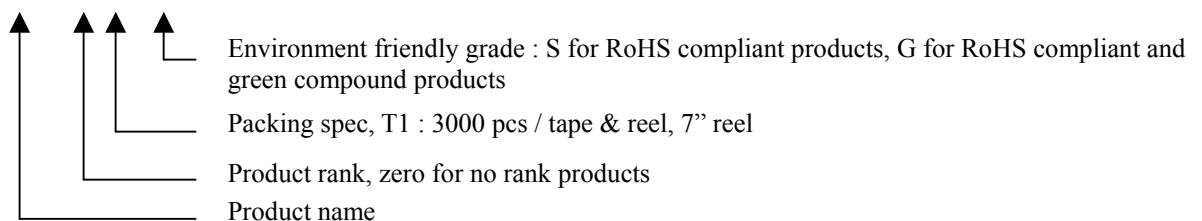


Outline



Ordering Information

Device	Package	Shipping
BTA1542N3-0-T1-G	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel





Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Collector-Base Voltage		V _{CBO}	-30	V
Collector-Emitter Voltage		V _{CEO}	-20	V
Emitter-Base Voltage		V _{EBO}	-5	V
Collector Current	DC	I _C	-3	A
	Pulse	I _{CP}	-5	
Base Current		I _B	-600	mA
Power Dissipation		P _d	225	mW
			0.9 (Note)	W
Junction Temperature		T _j	150	°C
Storage Temperature		T _{stg}	-55~+150	°C

Note : When device mounted on a ceramic board (600mm²×0.8mm)

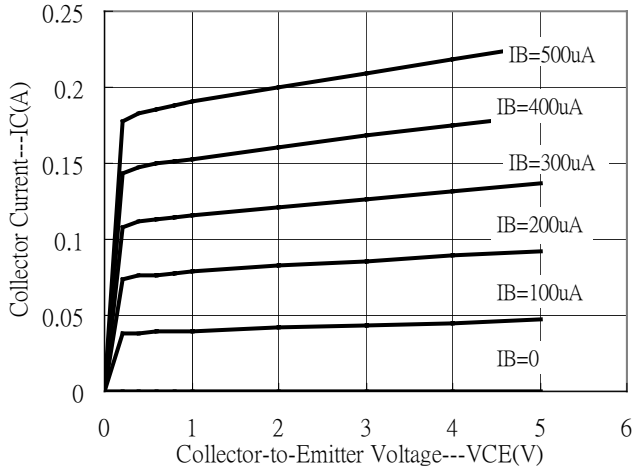
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CBO}	-30	-	-	V	I _C =-10μA, I _E =0
BV _{CEO}	-20	-	-	V	I _C =-1mA, I _B =0
BV _{EBO}	-5	-	-	V	I _E =-10μA, I _C =0
I _{CBO}	-	-	-100	nA	V _{CB} =-30V, I _E =0
I _{EBO}	-	-	-100	nA	V _{EB} =-4V, I _C =0
*V _{CE(sat)1}	-	-	-300	mV	I _C =-1.5A, I _B =-30mA
*V _{CE(sat)1}	-	-	-200	mV	I _C =-1.5A, I _B =-75mA
*V _{BE(sat)}	-	-	-1.2	V	I _C =-1.5A, I _B =-30mA
*h _{FE}	250	-	560	-	V _{CE} =-2V, I _C =-500mA
f _T	-	380	-	MHz	V _{CE} =-10V, I _C =-500mA
C _{ob}	-	25	-	pF	V _{CB} =-10V, I _E =0A, f=1MHz
ton	-	50	-	ns	V _{CC} =-12V, R _L =24Ω, I _C =20I _{B1} =-20I _{B2} =-500mA
tstg	-	270	-	ns	
tf	-	25	-	ns	

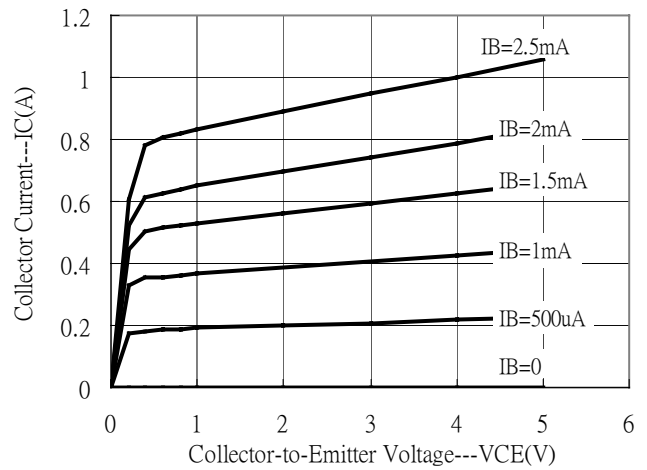
*Pulse Test : Pulse Width ≤380μs, Duty Cycle ≤2%

Typical Characteristics

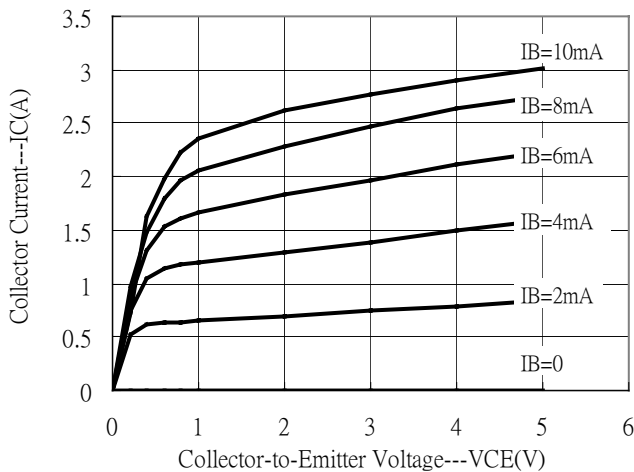
Output Characteristics



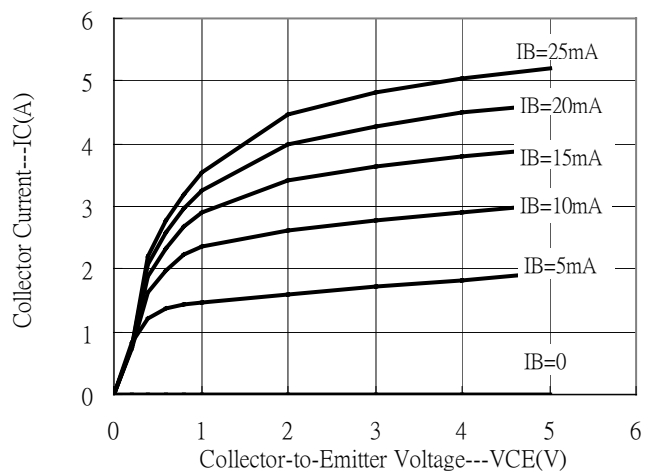
Output Characteristics



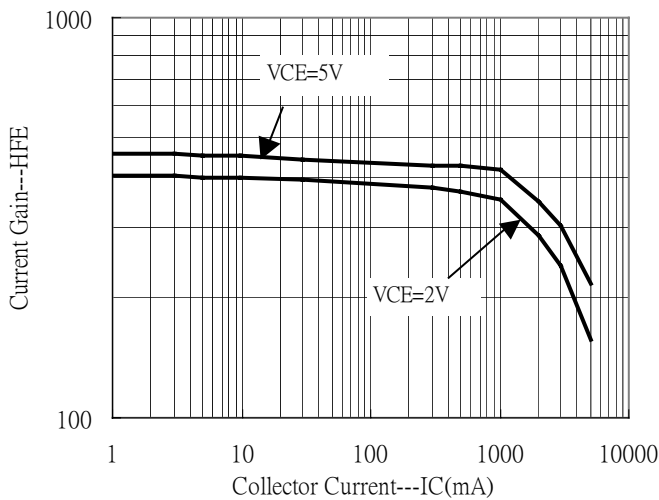
Output Characteristics



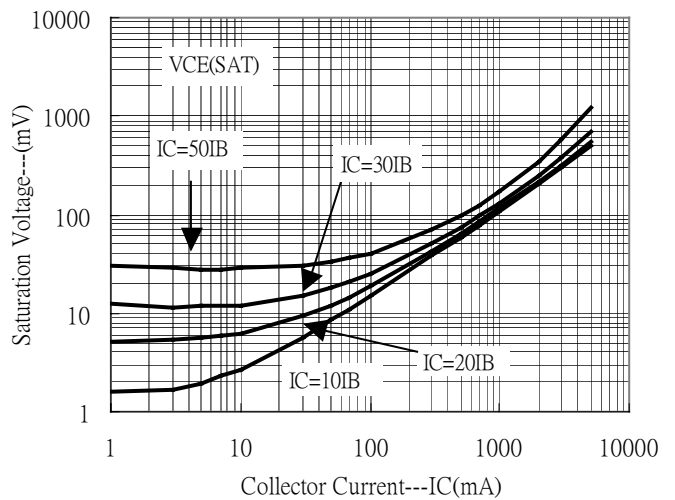
Output Characteristics



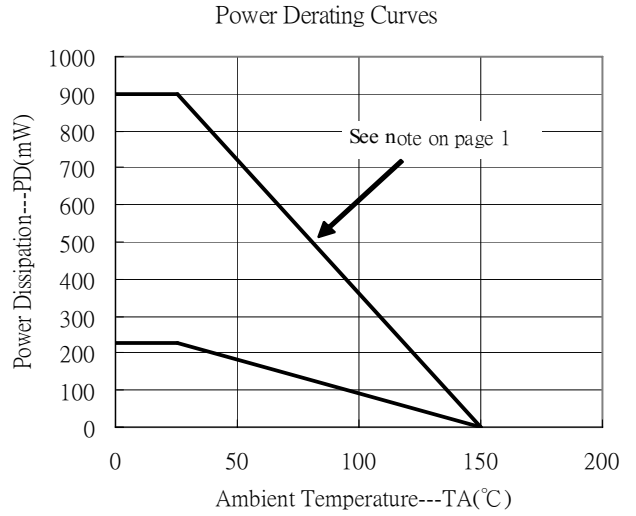
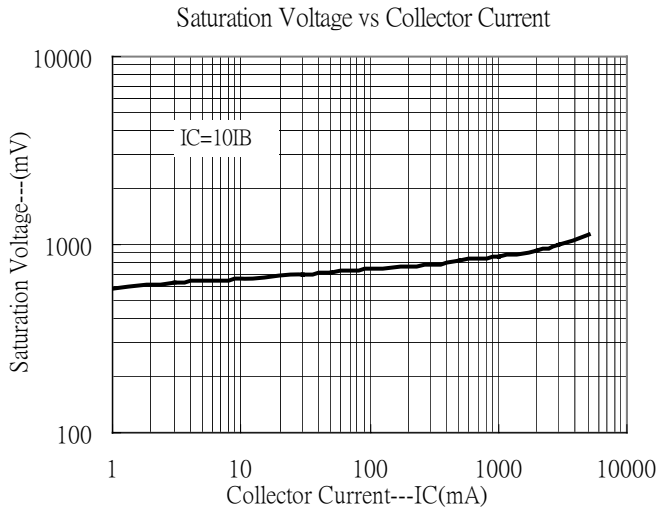
Current Gain vs Collector Current



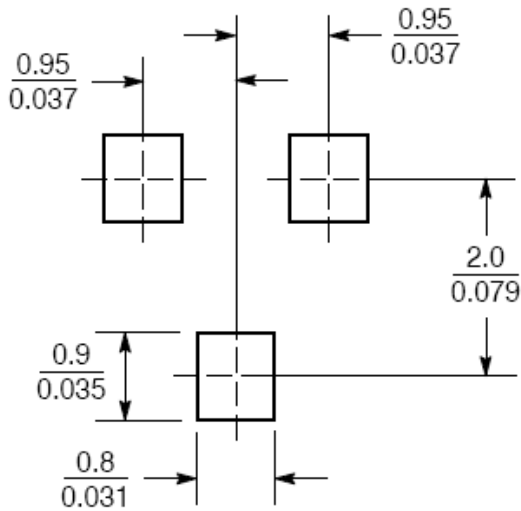
Saturation Voltage vs Collector Current



Typical Characteristics(Cont.)

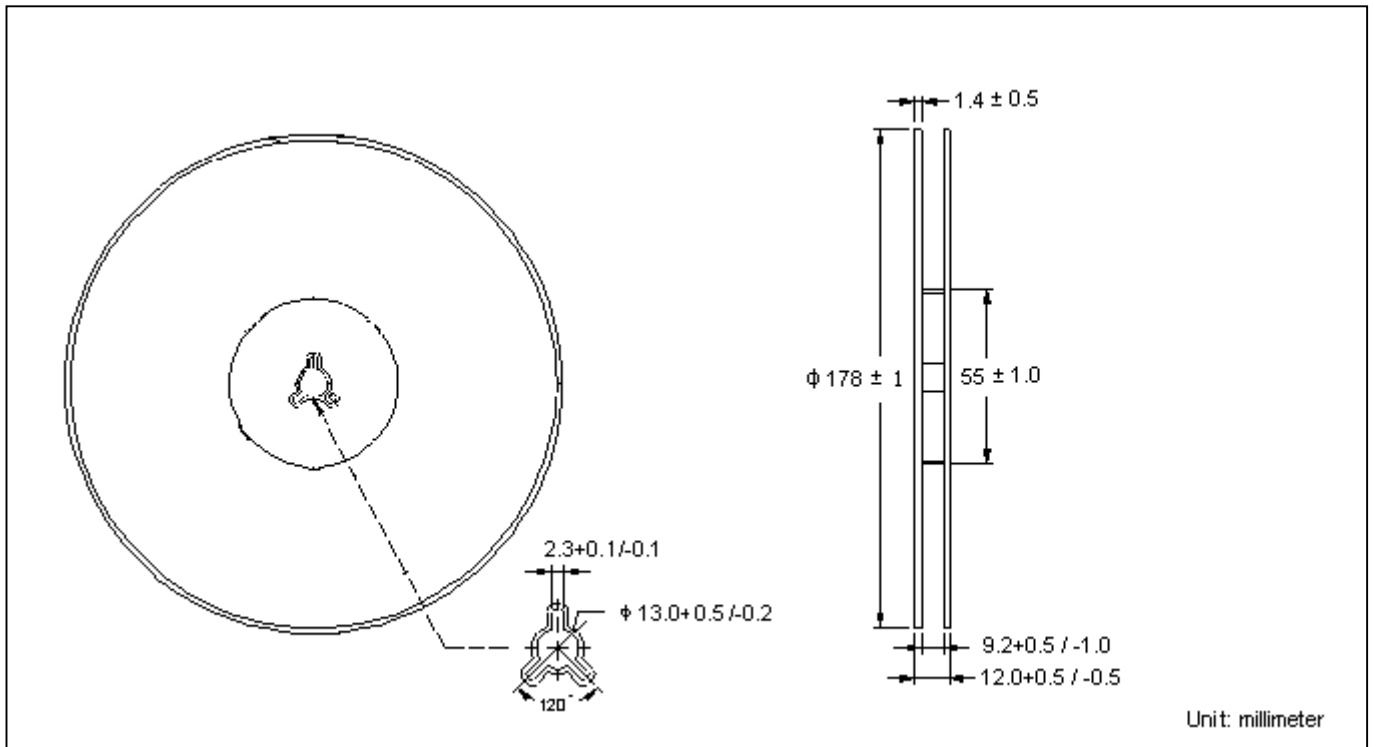


Recommended Soldering Footprint

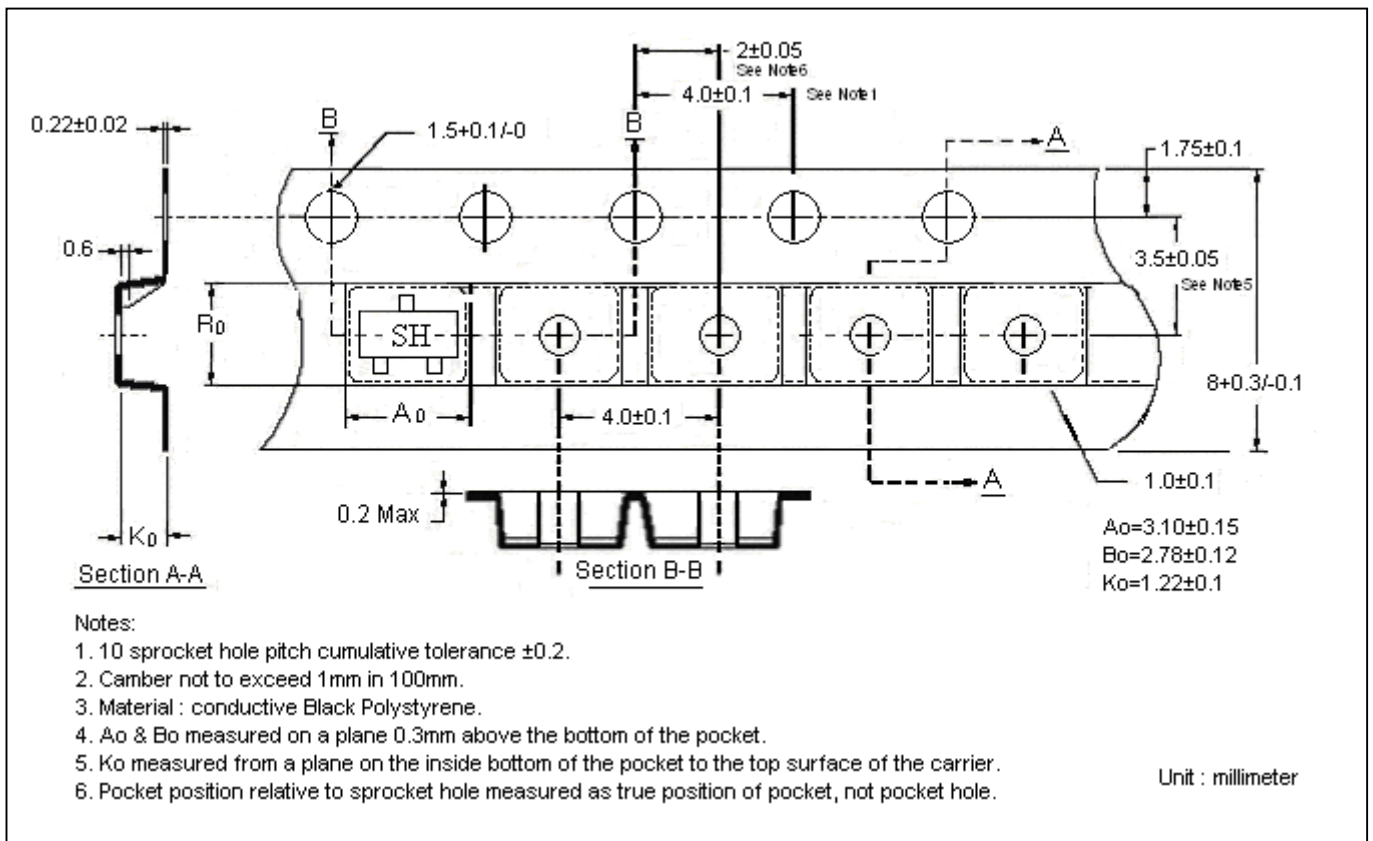


Unit : $\frac{\text{mm}}{\text{inches}}$

Reel Dimension



Carrier Tape Dimension





Product Designation

BT X XXXX XX
(1) (2) (3) (4)

(1) Indicates that transistor is bipolar

(2) Indicates polarity
A, B PNP
C, D NPN

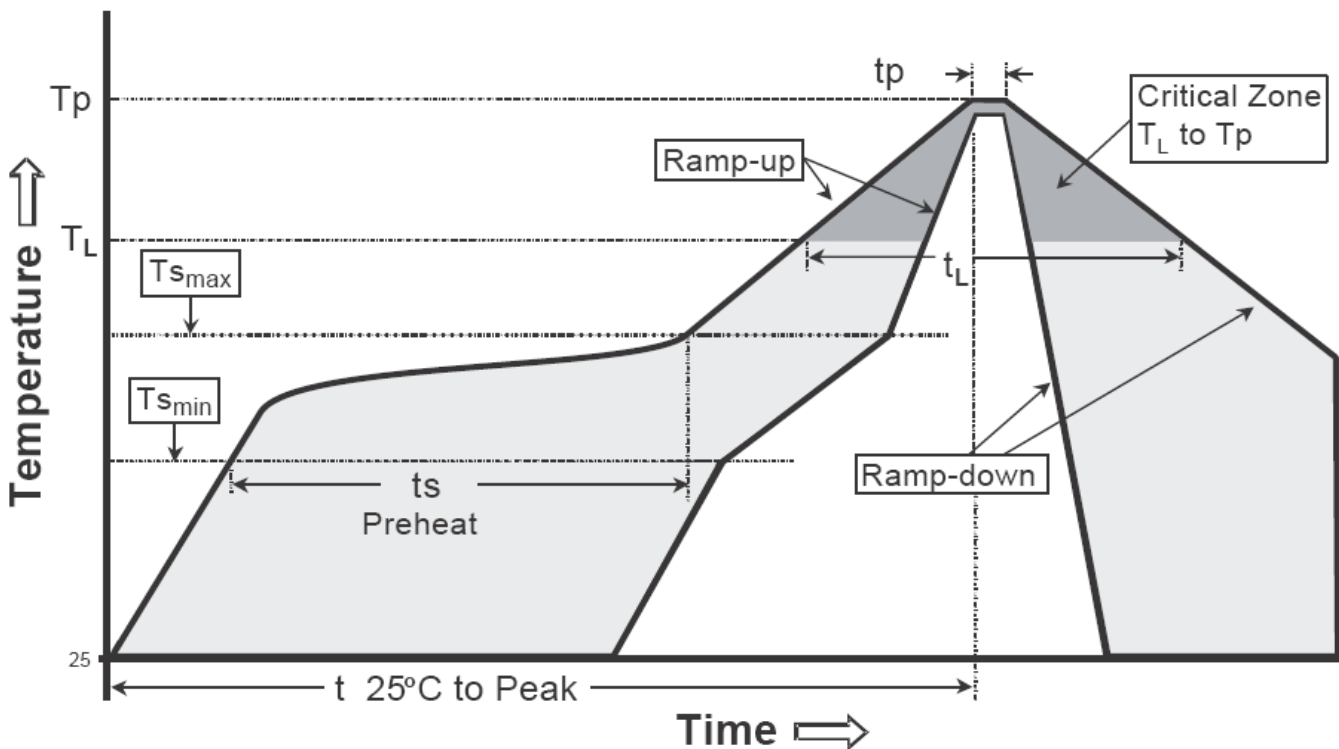
(3) Indicates device random number

(4) Indicates package shape
N3 . . . SOT-23
A3 . . . TO-92
E3 . . . TO-220AB
FP . . . TO-220FP
J3 . . . TO-252
I3 . . . TO-251
F3 . . . TO-263
D3 . . . TO-126ML
T3 . . . TO-126
L3 . . . SOT-223
M3 . . . SOT-89
S3 . . . SOT-323

Recommended wave soldering condition

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

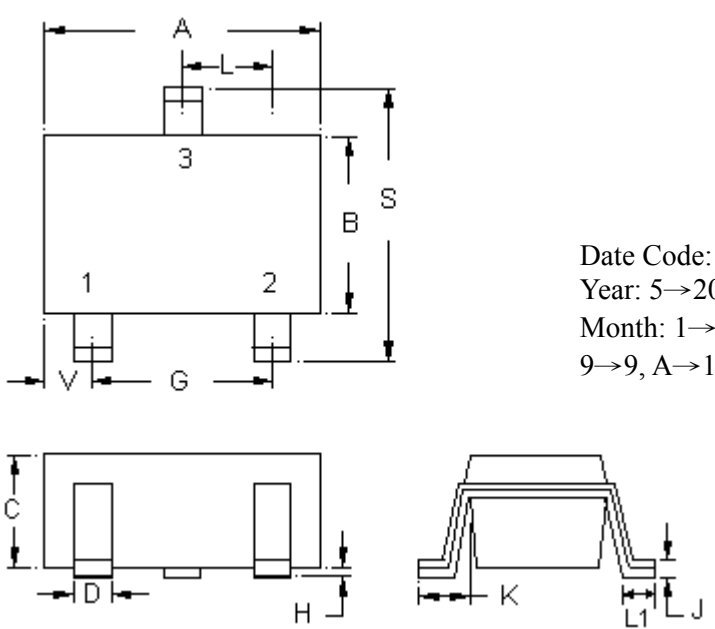
Recommended temperature profile for IR reflow



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.

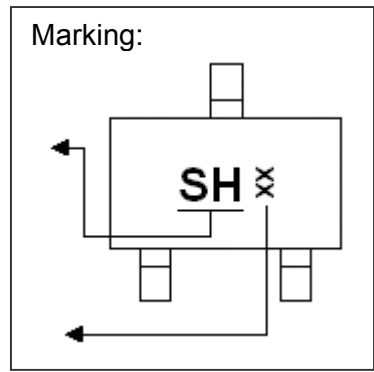
Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-23 Dimension



The diagram shows three views of the SOT-23 package: a top view with dimensions A, B, C, D, G, H, L, S, V; a side view with dimensions C, D, H, J; and a perspective view with dimensions K, L1, L2. The top view labels the pins as 1 (Base), 2 (Emitter), and 3 (Collector).

Marking:



The marking diagram shows a rectangular package with 'SH' and 'x' on the top surface. Arrows indicate the pin locations: Pin 1 (Base) on the left, Pin 2 (Emitter) on the right, and Pin 3 (Collector) on the top.

Product Code

Date Code: Year+Month
 Year: 5→2015, 6→2016
 Month: 1→1, 2→2, . . .
 9→9, A→10, B→11, C→12

3-Lead SOT-23 Plastic Surface Mounted Package
 CYStek Package Code: N3

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

*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50

- 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.