

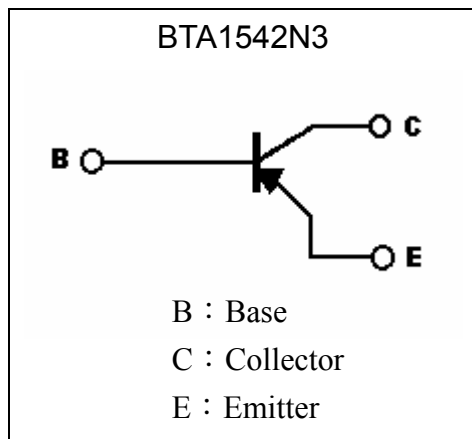
PNP Epitaxial Planar Transistor

BTA1542N3

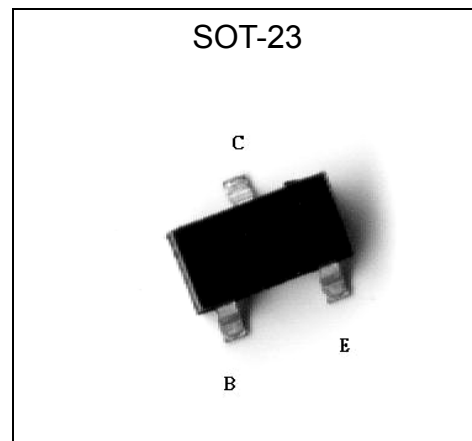
Features

- 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 package

Symbol



Outline



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CB0}	-30	V
Collector-Emitter Voltage	V_{CEO}	-20	V
Emitter-Base Voltage	V_{EB0}	-5	V
Collector Current	DC	I_C	-3
	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
t _{on}	-	50	-	ns	V _{CC} =-12V, R _L =24Ω, I _C =20I _{B1} =-20I _{B2} =-500mA
t _{stg}	-	270	-	ns	
t _f	-	25	-	ns	

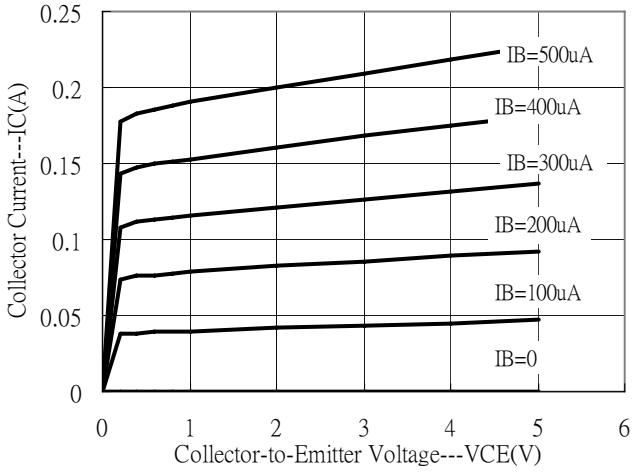
*Pulse Test : Pulse Width ≤380μs, Duty Cycle ≤2%

Ordering Information

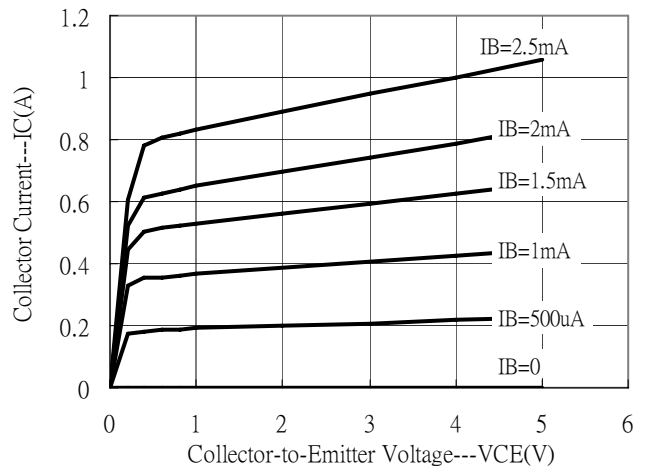
Device	Package	Shipping	Marking
BTA1542N3	SOT-23 (Pb-free)	3000 pcs / Tape & Reel	SH

Characteristic Curves

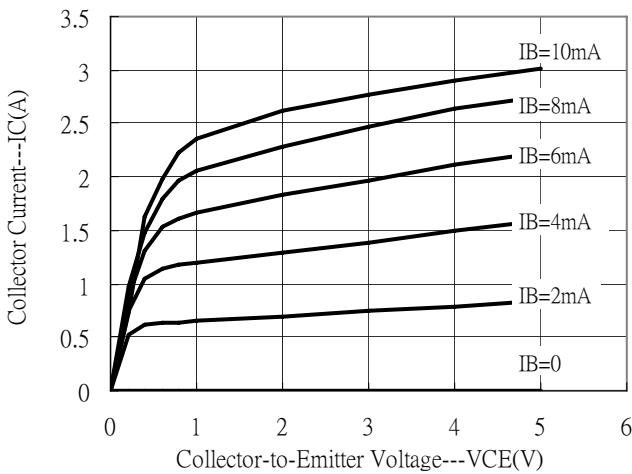
Output Characteristics



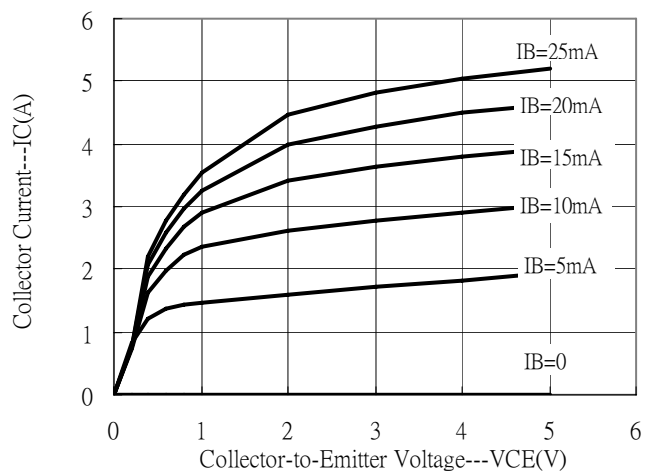
Output Characteristics



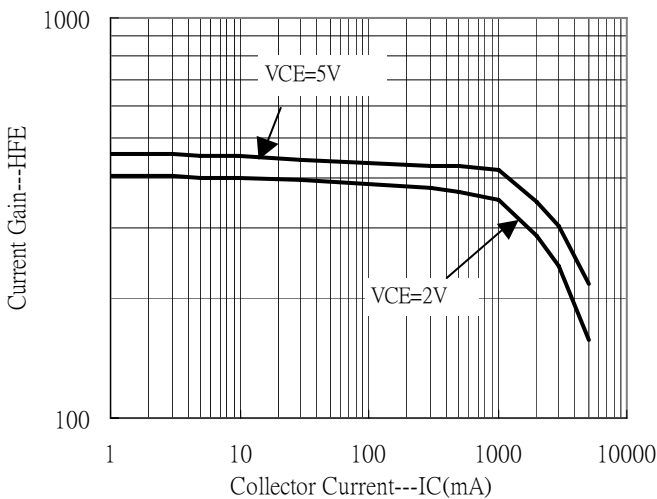
Output Characteristics



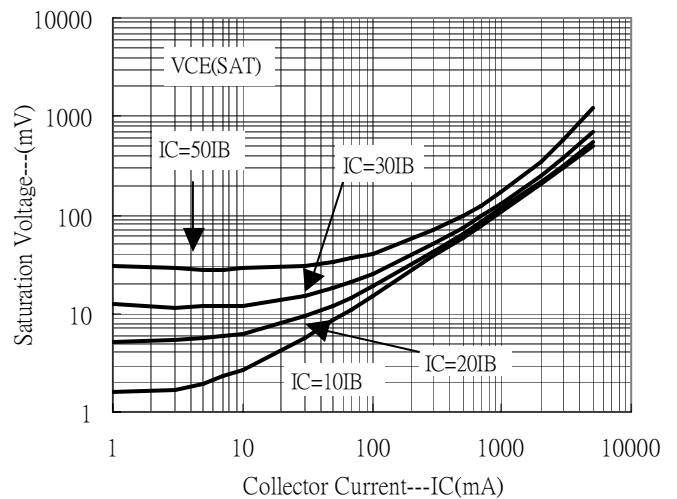
Output Characteristics



Current Gain vs Collector Current



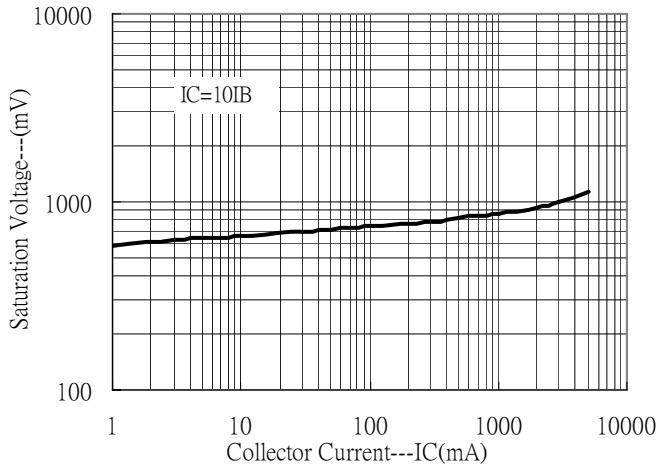
Saturation Voltage vs Collector Current



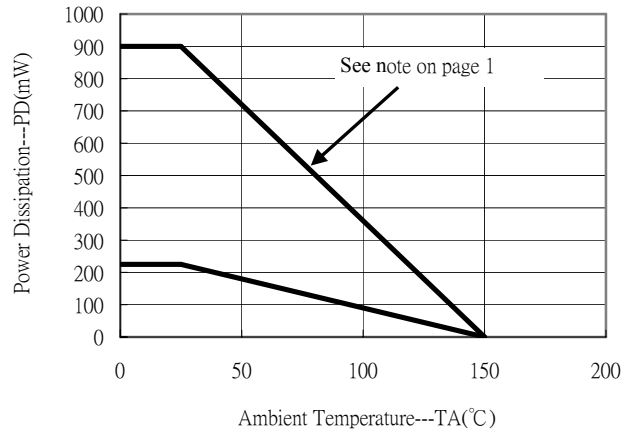


Characteristic Curves(Cont.)

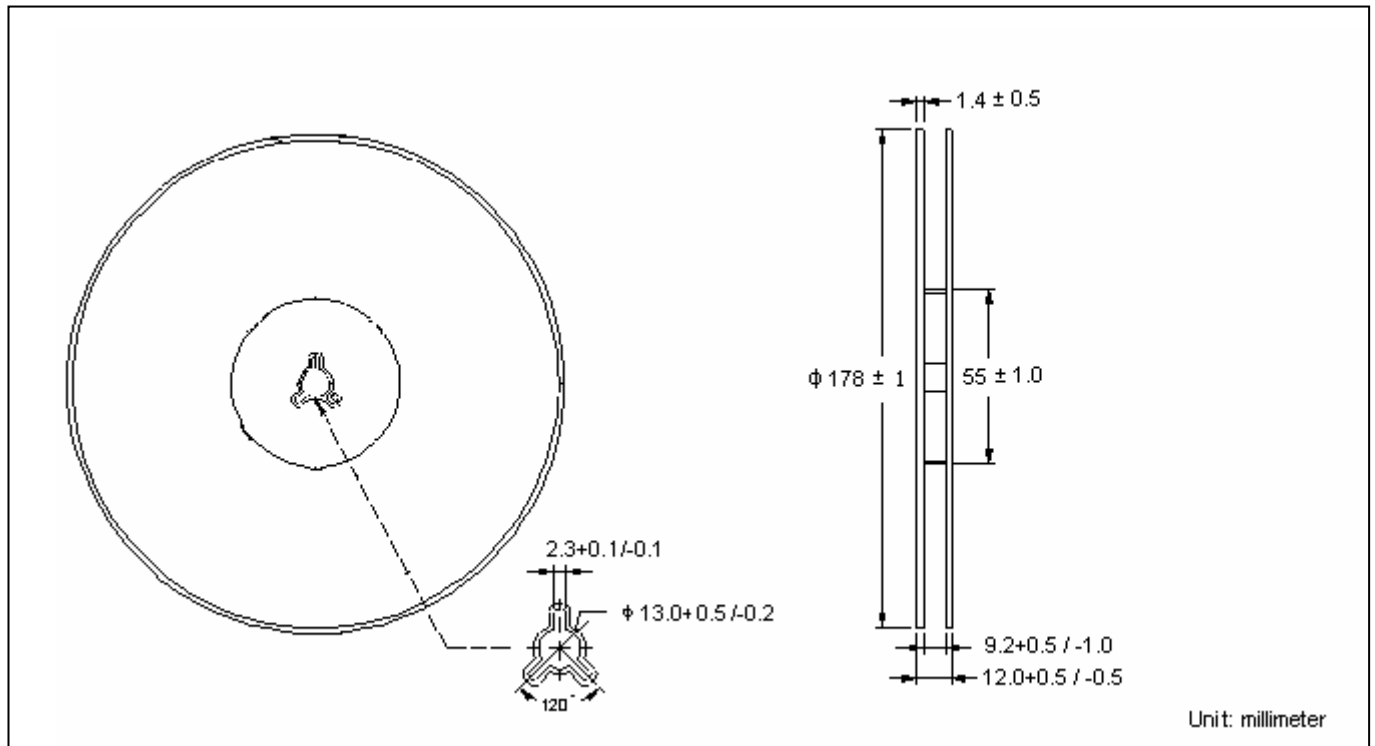
Saturation Voltage vs Collector Current



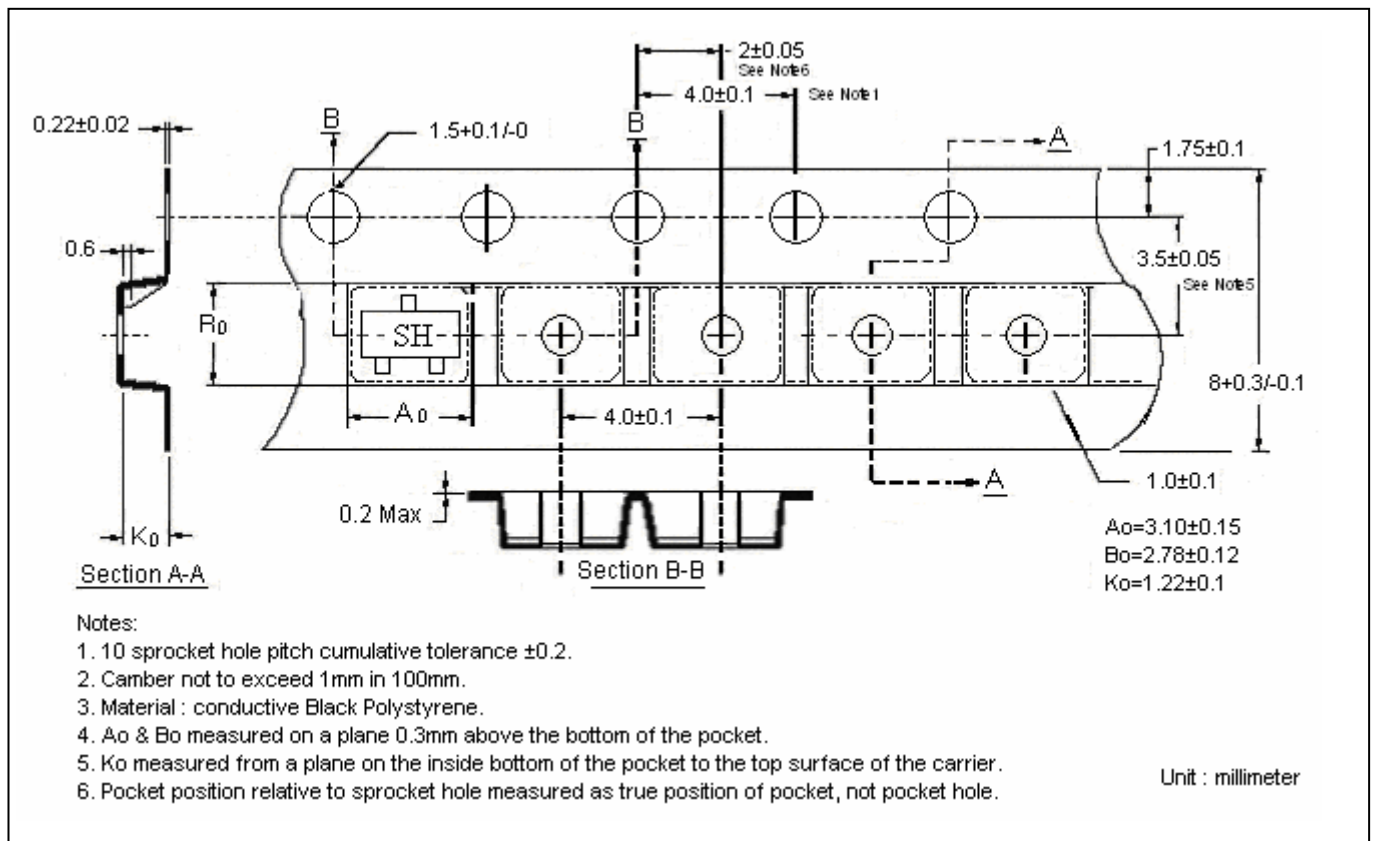
Power Derating Curves



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

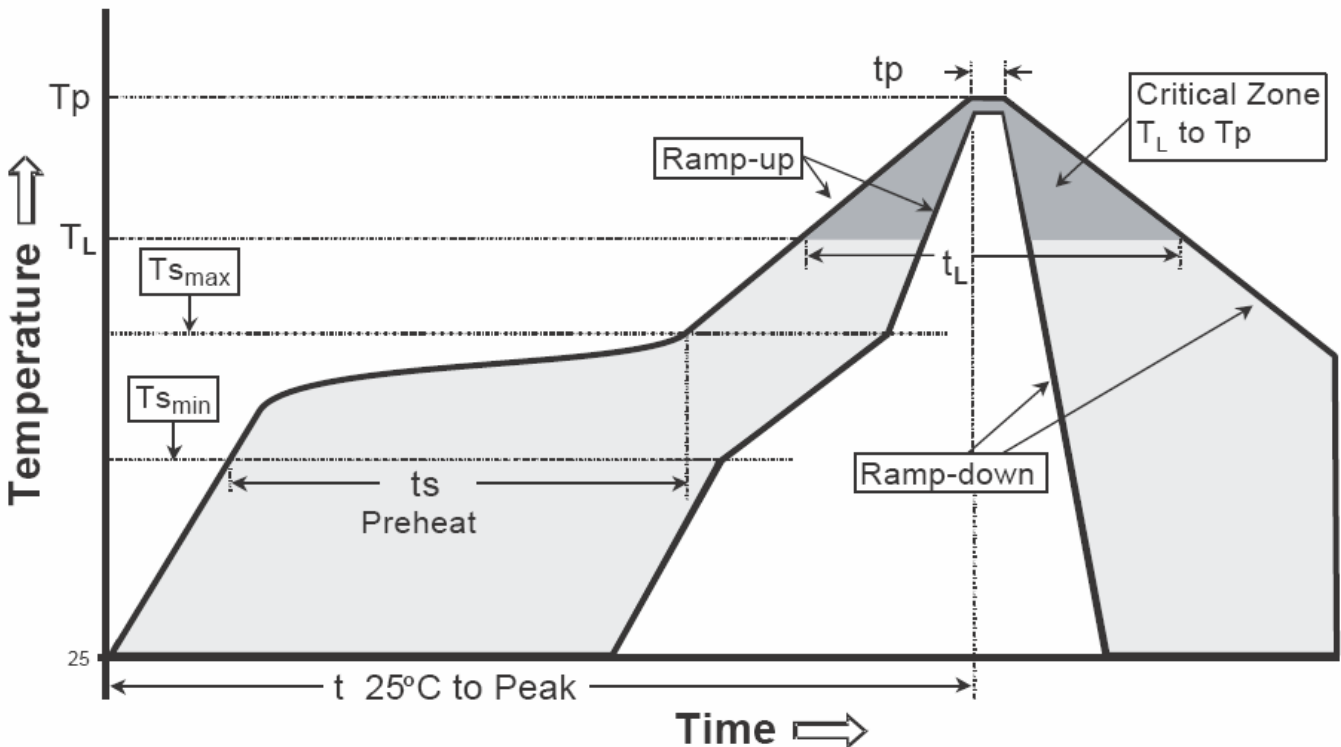
(3) Indicates device random number

(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

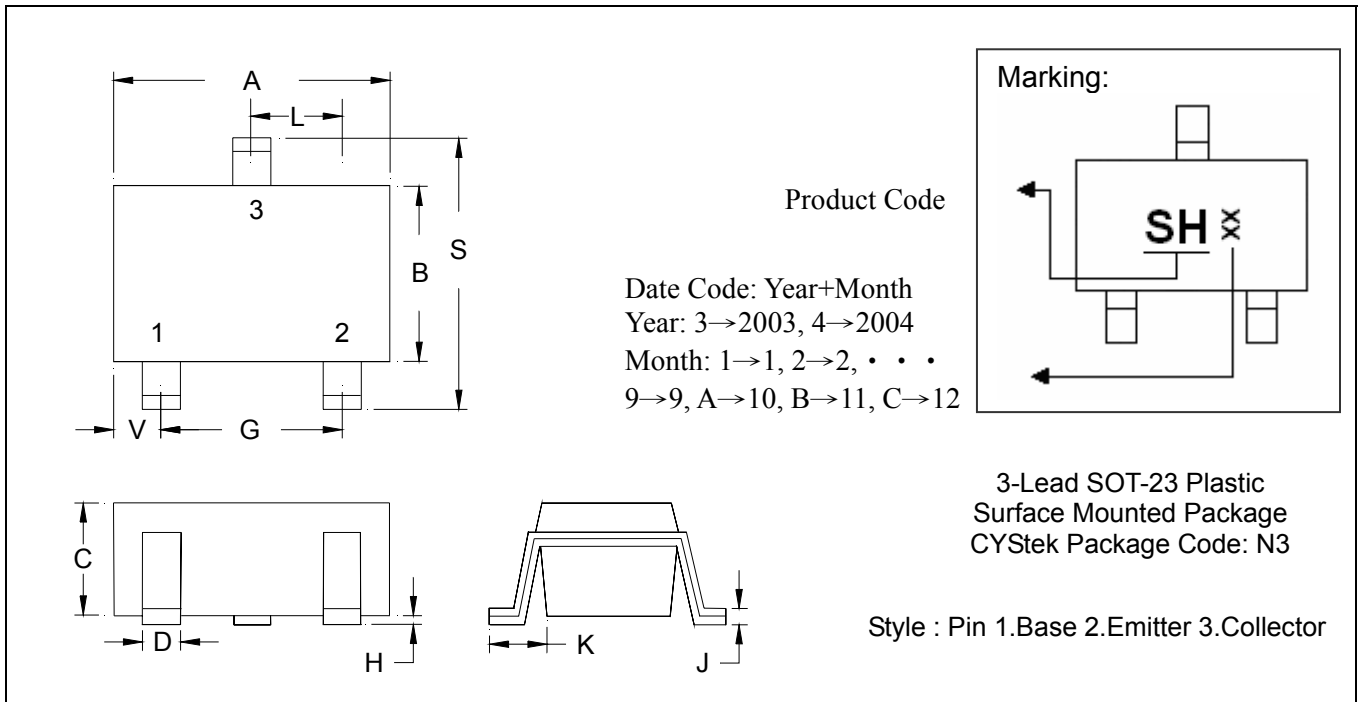
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (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-23 Dimension



*: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	0.0034	0.0070	0.085	0.177
B	0.0472	0.0630	1.20	1.60	K	0.0128	0.0266	0.32	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	0.0005	0.0040	0.013	0.10					

- 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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