PNP Epitaxial Planar Transistor

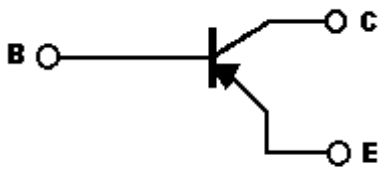
BTA1542N3

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

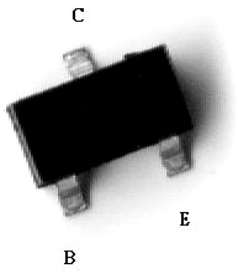
BTA1542N3



B：Base
C：Collector
E：Emitter

Outline

SOT-23



Ordering Information

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

Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, T1 : 3000 pcs / tape & reel, 7” reel

Product rank, zero for no rank products

Product name

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		Pd	225	mW
			0.9 (Note)	W
Junction Temperature		Tj	150	°C
Storage Temperature		Tstg	-55~+150	°C

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

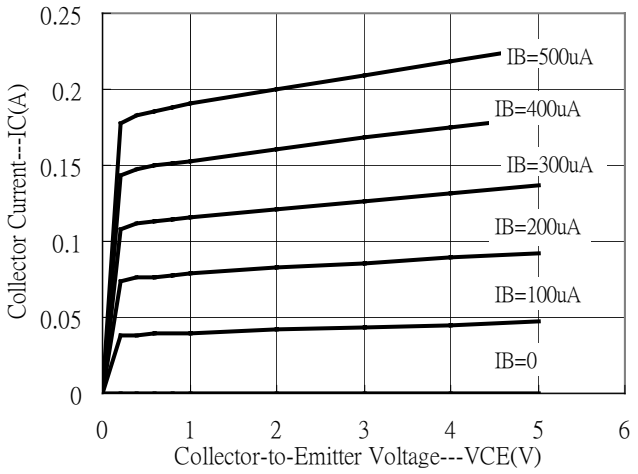
Characteristics (Ta=25°C)

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
Cob	-	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	

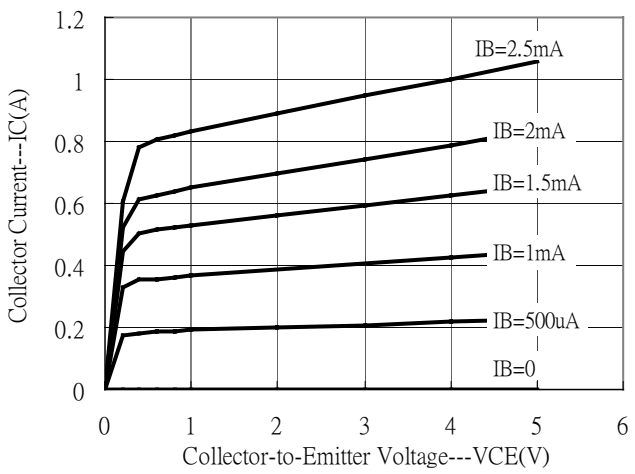
*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

Typical Characteristics

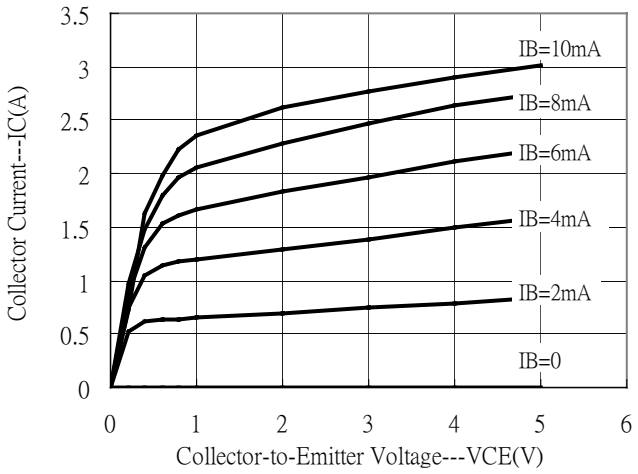
Output Characteristics



Output Characteristics



Output Characteristics



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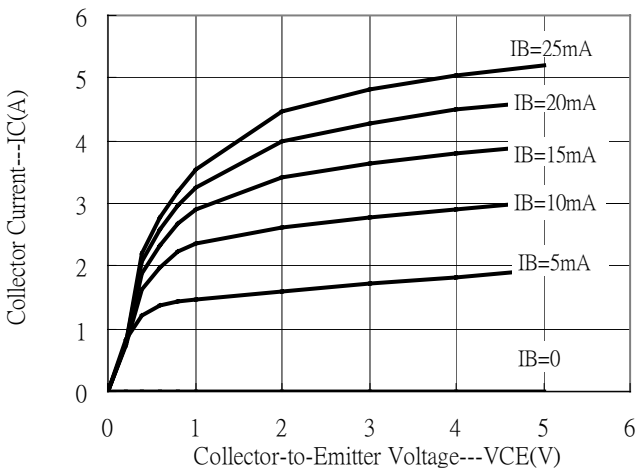
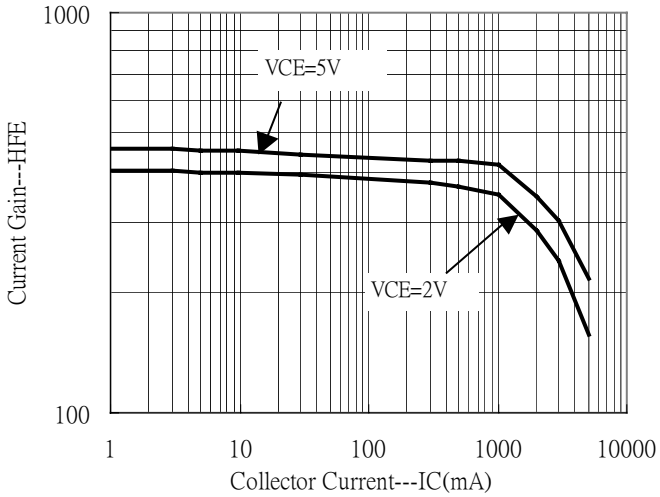
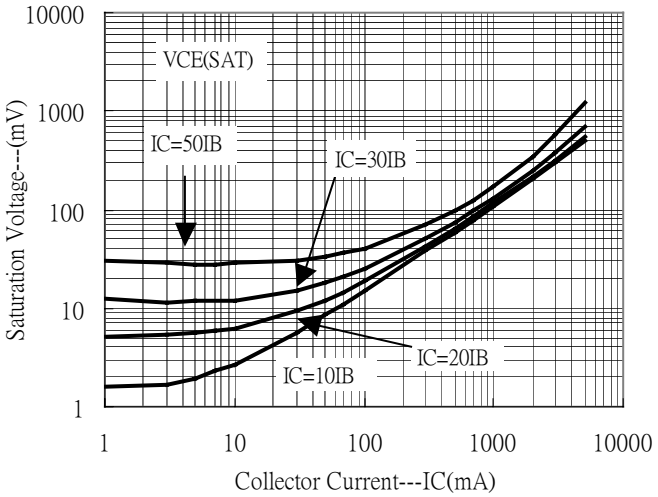


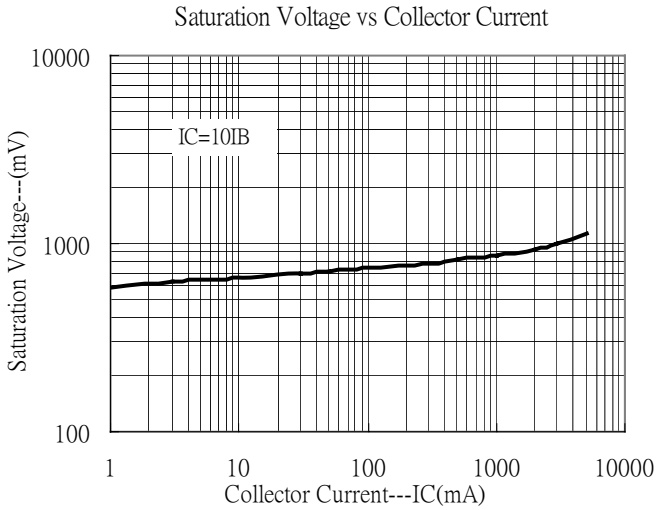
Current Gain vs Collector Current

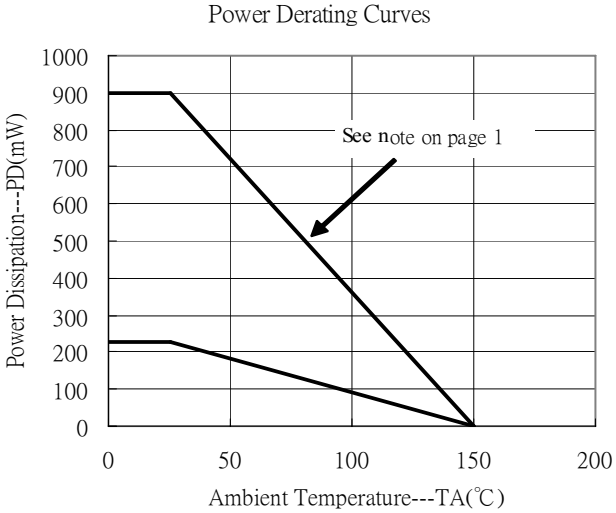


Saturation Voltage vs Collector Current

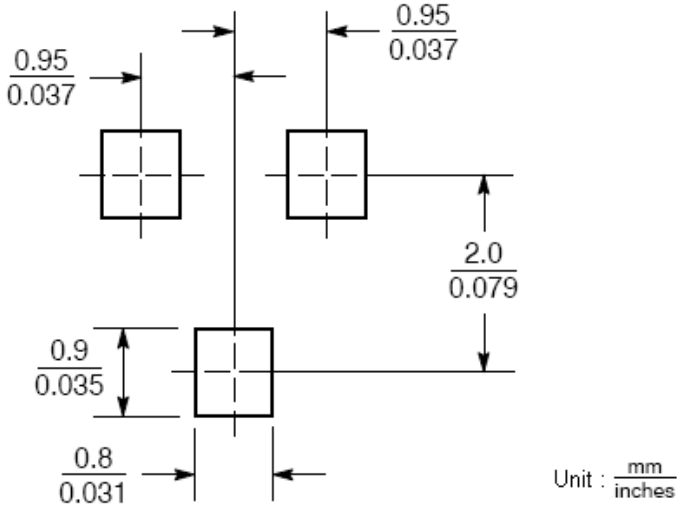


Typical Characteristics(Cont.)

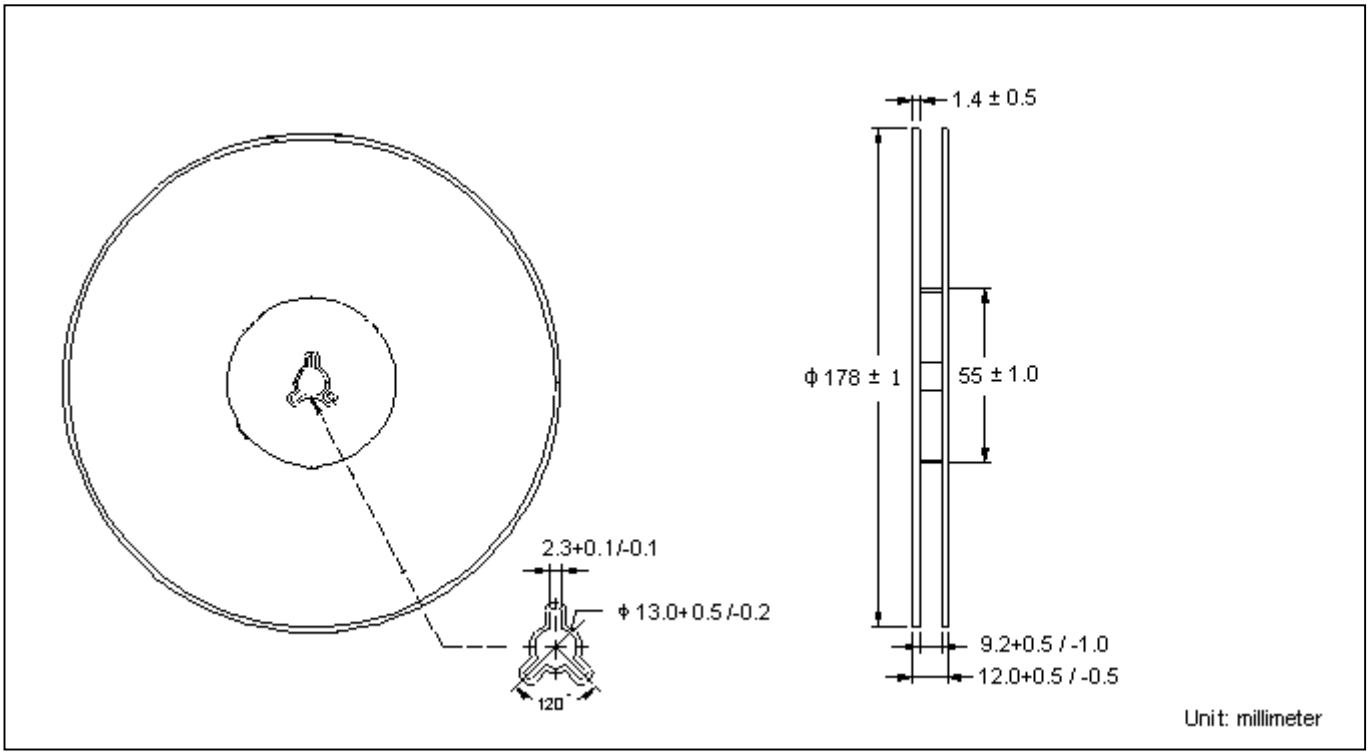




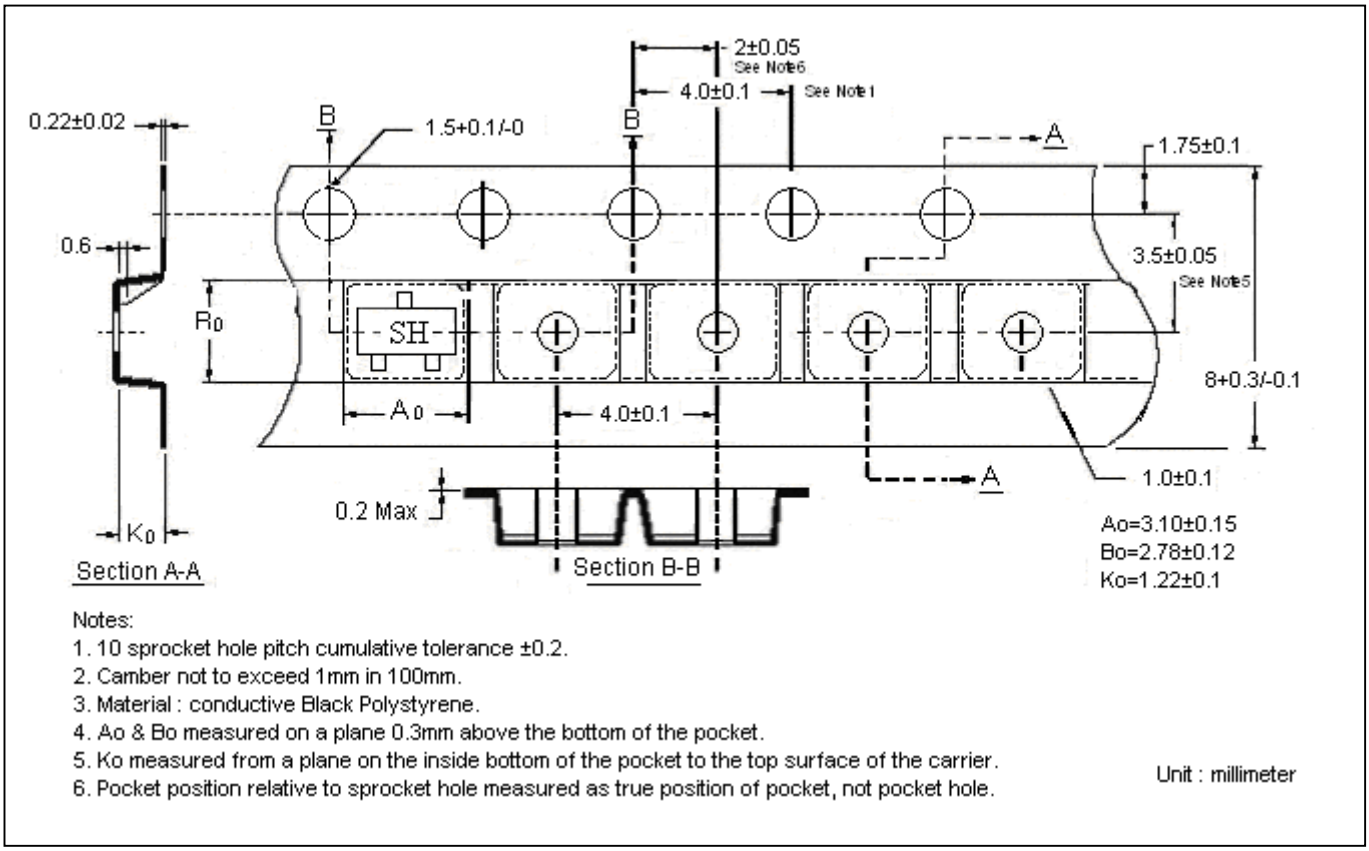
Recommended Soldering Footprint



Reel Dimension



Carrier Tape Dimension



Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

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

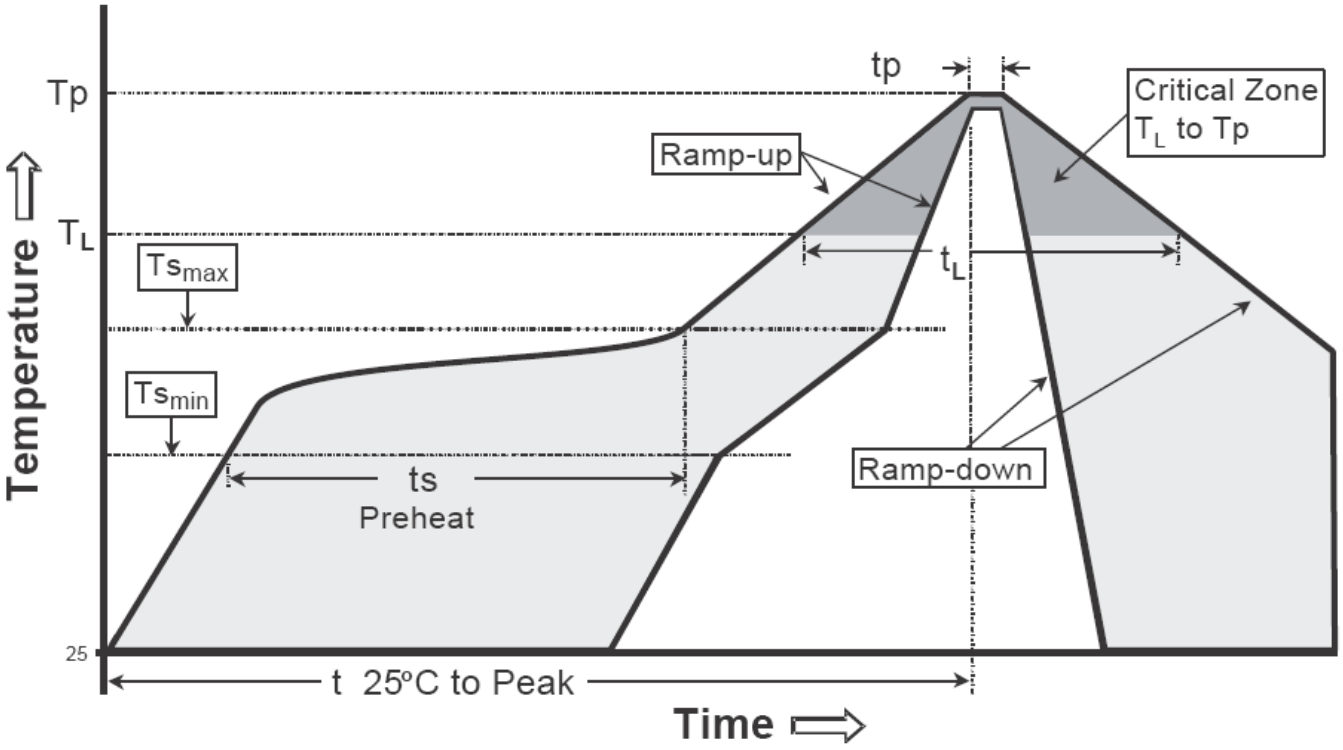
(3) Indicates device random number

(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

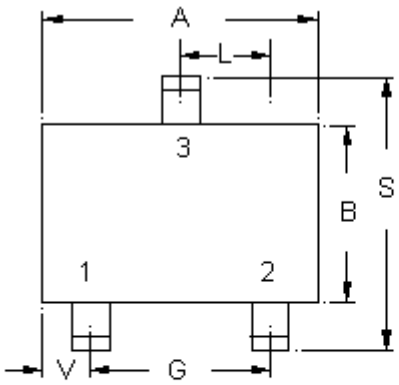
Recommended temperature profile for IR reflow

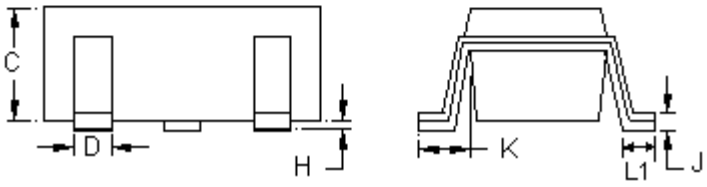


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − 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-23 Dimension

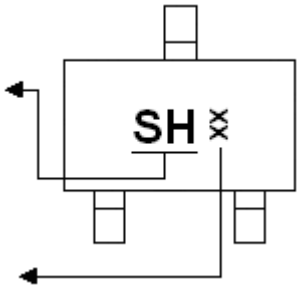




Product Code

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

Marking:



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.