PNP Epitaxial Planar Transistor

BTB1580SN3

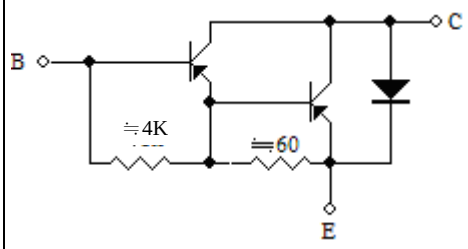
Description

The BTB1580SN3 is designed for use in general purpose amplifier and low speed switching application.

Pb-free lead plating package process is adopted.

Equivalent Circuit

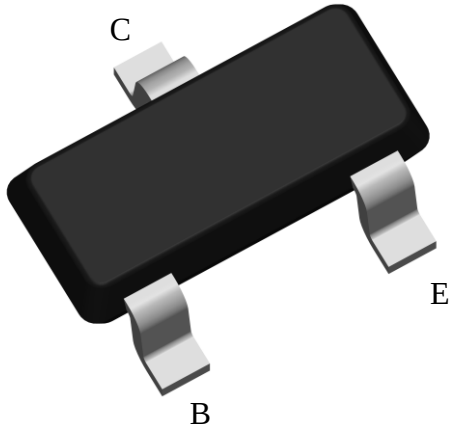
BTB1580SM3



B：Base
C：Collector
E：Emitter

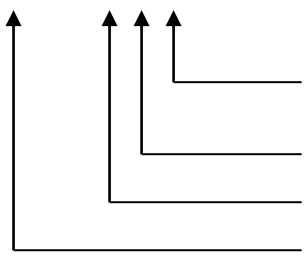
Outline

SOT-23



Ordering Information

Device	Package	Shipping
BTB1580SN3-0-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}	-120	V
Collector-Emitter Voltage	V_{CEO}	-120	
Emitter-Base Voltage	V_{EBO}	-5	
Collector Current (DC)	I_C	-2	A
Collector Current (Pulse)	I_{CP}	-4 (Note 1)	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	500	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	100	
Power Dissipation @ T_A=25°C	P_D	0.3	W
Power Dissipation @ T_C=25°C		1.5	
Opeearting Junction Temperature Range	Tj	-55~+175	°C
Storage Temperature Range	Tstg	-55~+175	

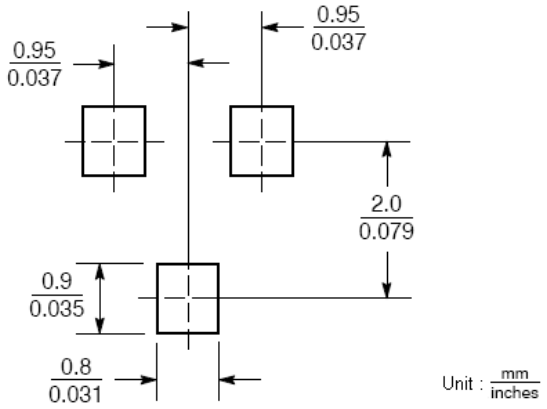
Note : 1. Single Pulse Pw≦350μs, Duty≦2%.

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CEO}	-120	-	-	V	I_C=-1mA, I_B=0
BV_{CBO}	-120	-	-	V	I_C=-100μA, I_E=0
I_{CBO}	-	-	-100	nA	V_{CB}=-120V, I_E=0
I_{CEO}	-	-	-1	μA	V_{CE}=-120V, I_B=0
I_{EBO}	-	-	-2	mA	V_{EB}=-5V, I_C=0
*$V_{CE(sat)}$	-	-	-1.8	V	I_C=-2A, I_B=-2mA
*$V_{BE(on)}$			-2.2	V	V_{CE}=-4V, I_C=-2A
*h_{FE}1	1000	-	-	-	V_{CE}=-4V, I_C=-1A
*h_{FE}2	1000	-	-	-	V_{CE}=-4V, I_C=-2A
Cob	-		200	pF	V_{CB}=-10V, I_E=0A, f=1MHz

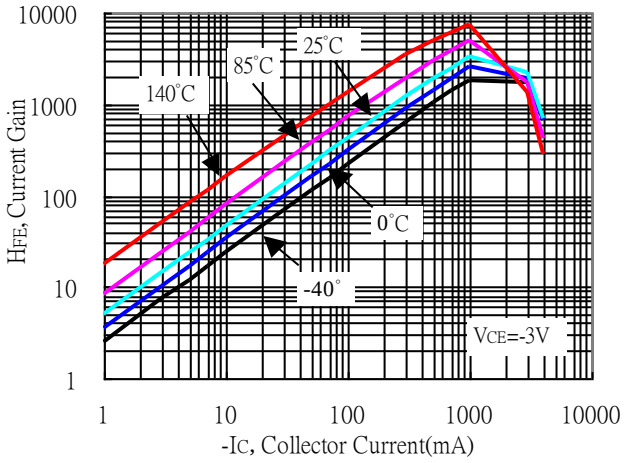
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Recommended Soldering Footprint

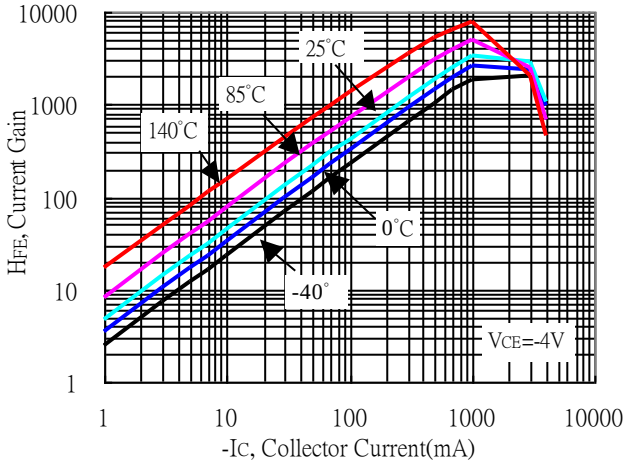


Typical Characteristics

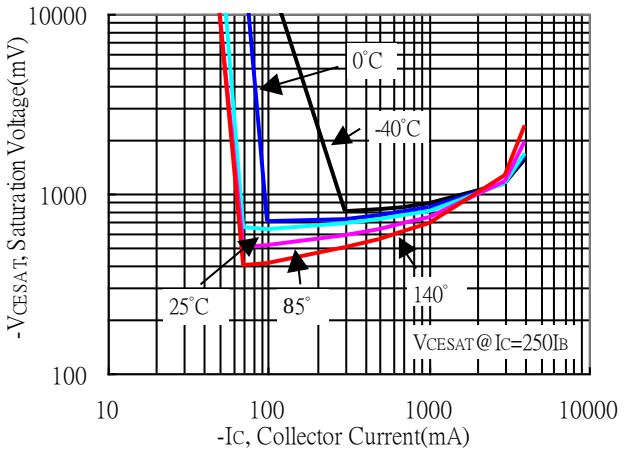
Current Gain vs Collector Current



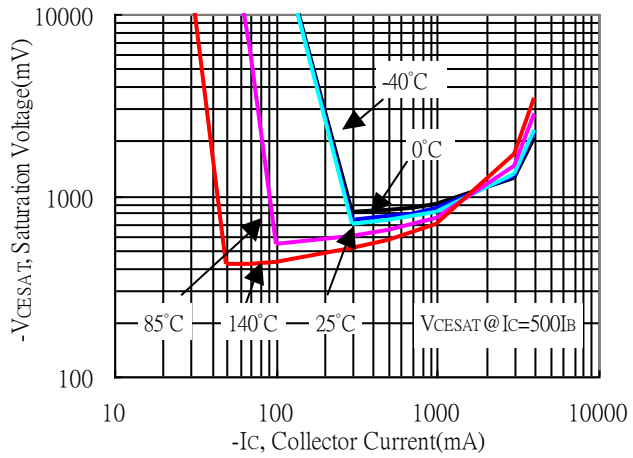
Current Gain vs Collector Current



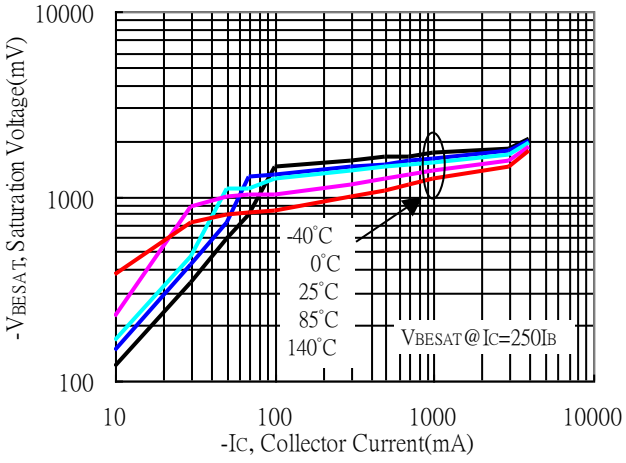
Saturation Voltage vs Collector Current



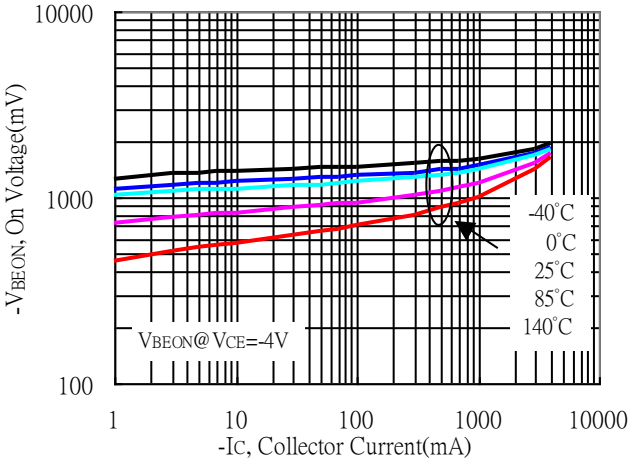
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current

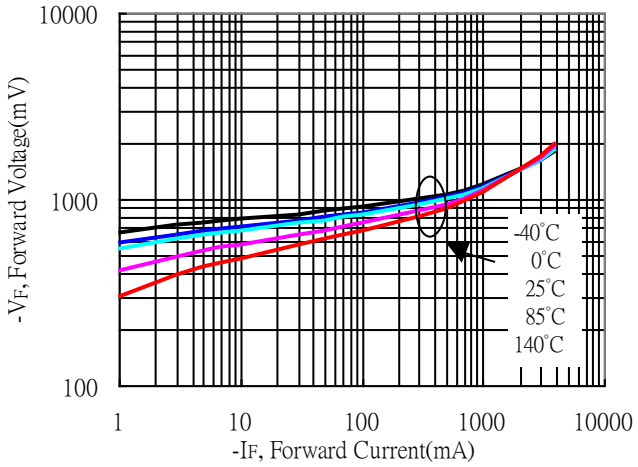


On Voltage vs Collector Current

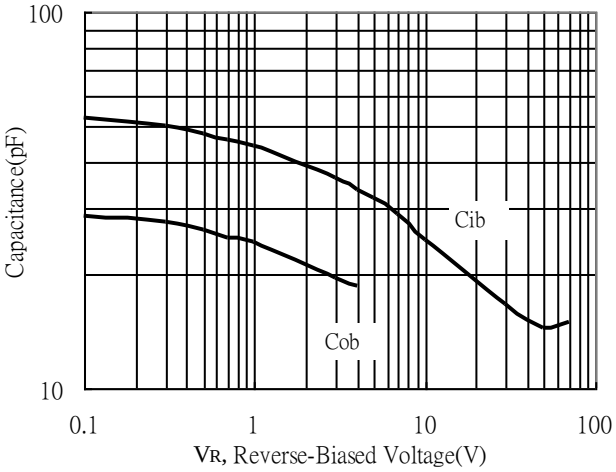


Typical Characteristics(Cont.)

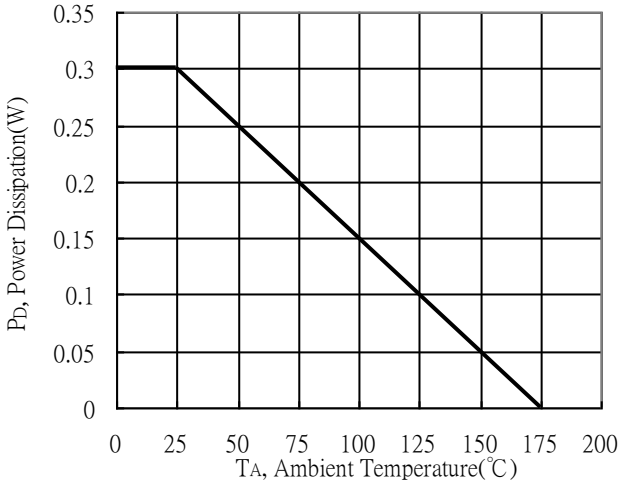
Built-in Diode Characteristics



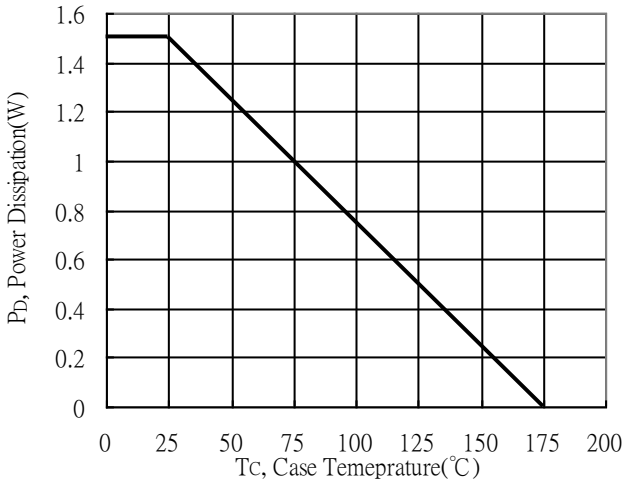
Capacitance vs Reverse-Biased Voltage



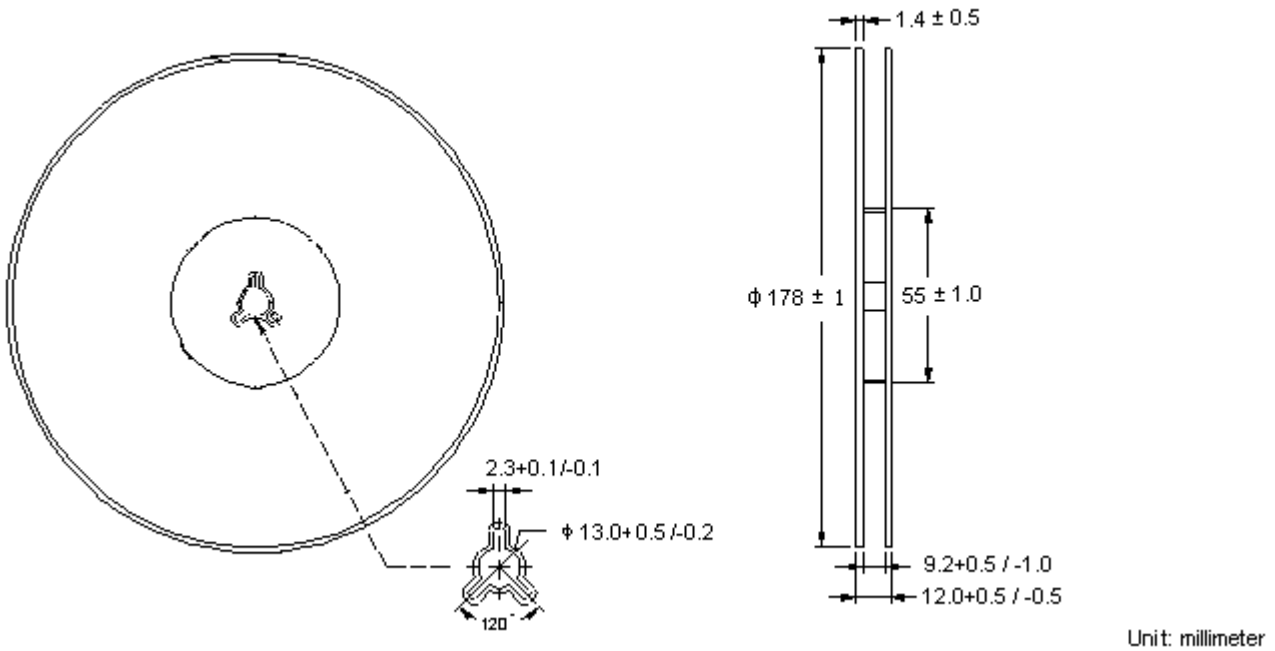
Power Derating Curves



Power Derating Curve

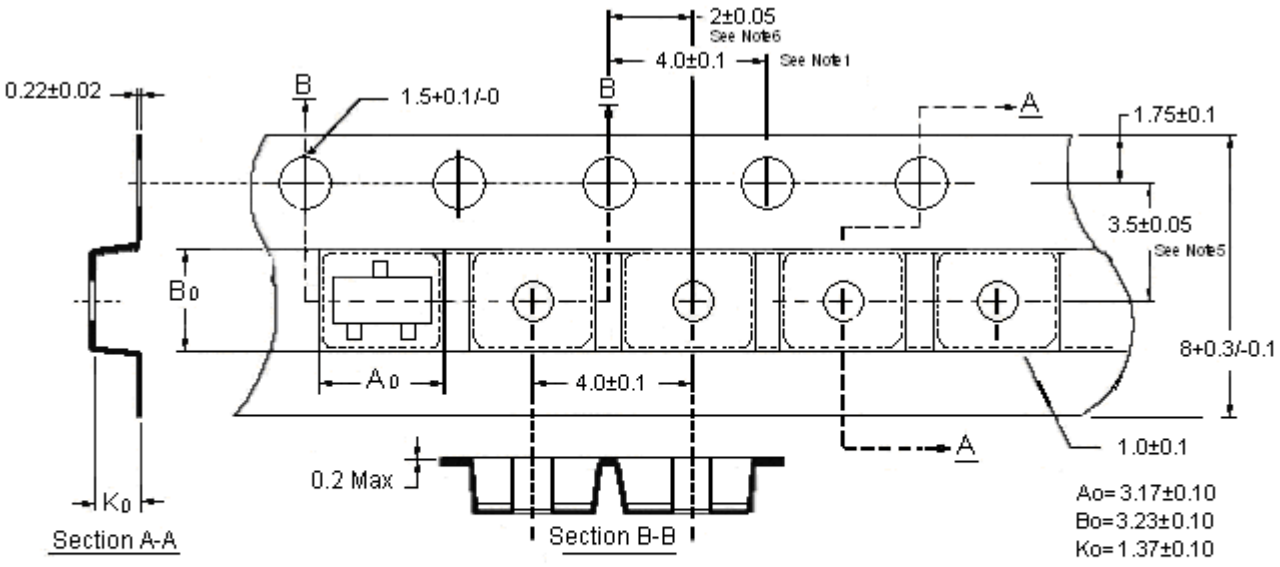


Reel Dimension



Unit: millimeter

Carrier Tape Dimension



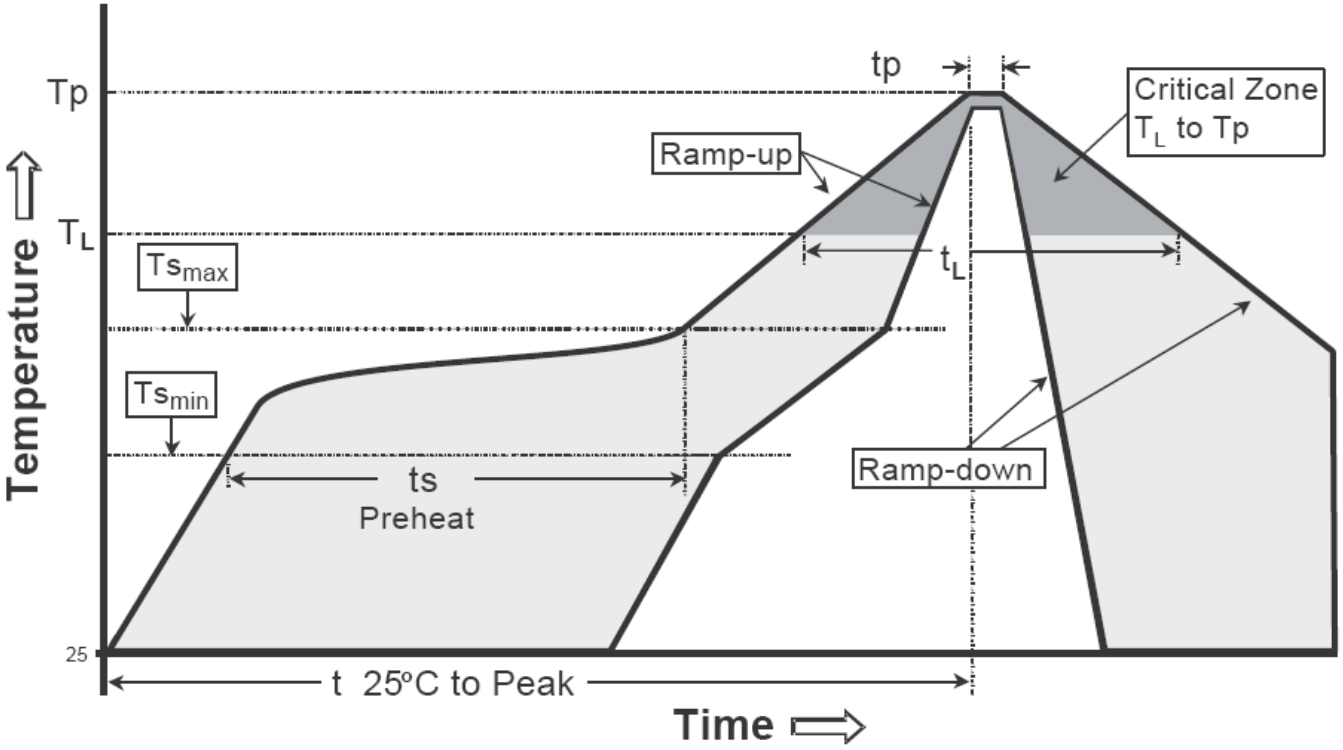
Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.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

Unit : millimeter

Recommended wave soldering condition

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

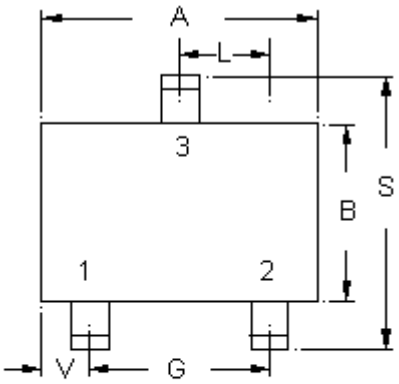
Recommended temperature profile for IR reflow

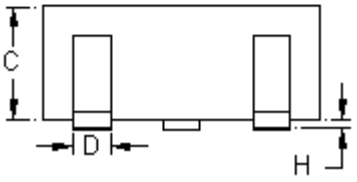


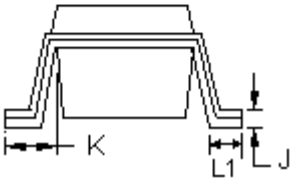
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature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

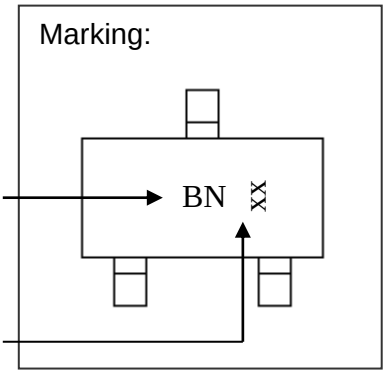






Device Code

Date Code: Year+Month
Year: 7→2017, 8→2018
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

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	0.0197	0.0283	0.50	0.72
C	0.0335	0.0453	0.89	1.15	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	0.0787	1.70	2.00	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0236	0.30	0.60

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.