

General Purpose PNP Epitaxial Planar Transistor

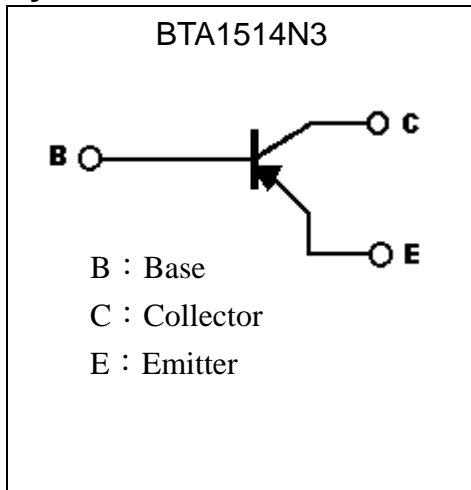
BTA1514N3

BV_{CEO}	-160V
I_C	-0.6A
$V_{CESAT(MAX)}$	-0.3V

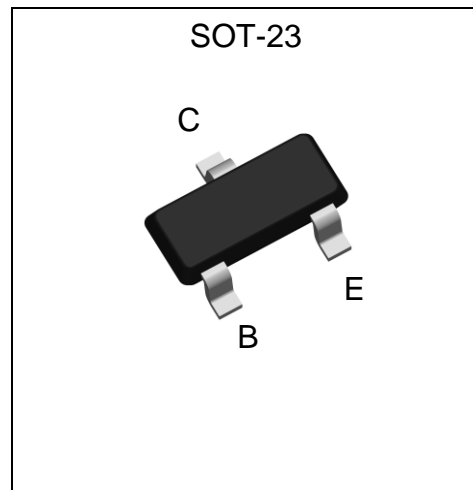
Description

- The BTA1514N3 is designed for general purpose application requiring high breakdown voltage.
- Large I_C , $I_{C(Max)} = -0.6A$
- High BV_{CEO} , $BV_{CEO} = -160V$
- Complementary to BTC3906N3.
- Pb-free lead plating and halogen-free package

Symbol

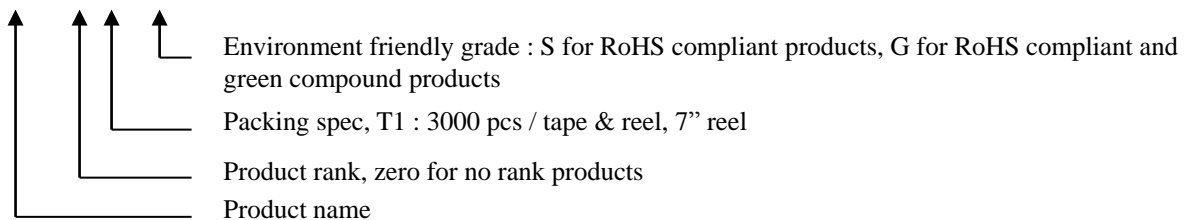


Outline



Ordering Information

Device	Package	Shipping
BTA1514N3-X-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 _{CB0}	-180	V
Collector-Emitter Voltage	V _{CEO}	-160	V
Emitter-Base Voltage	V _{EBO}	-5	V
Collector Current	I _C	-0.6	A
Power Dissipation	P _D	225	mW
Thermal Resistance, Junction to Ambient	R _{θJA}	556	°C/W
ESD susceptibility		8000 (Note)	V
Operating Junction and Storage Temperature Range	T _j ; T _{stg}	-55~+150	°C

Note : Human body model, 1.5kΩ in series with 100pF

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV _{CB0}	-180	-	-	V	I _C =-50μA
BV _{CEO}	-160	-	-	V	I _C =-1mA
BV _{EBO}	-5	-	-	V	I _E =-50μA
IC _{B0}	-	-	-50	nA	V _{CB} =-120V
IE _{B0}	-	-	-50	nA	V _{EB} =-4V
*V _{CE(sat)} 1	-	0.11	-0.16	V	I _C =-10mA, I _B =-1mA
*V _{CE(sat)} 2	-	0.25	-0.3	V	I _C =-50mA, I _B =-5mA
*V _{BE(sat)} 1	-	-	-1	V	I _C =-10mA, I _B =-1mA
*V _{BE(sat)} 2	-	-	-1	V	I _C =-50mA, I _B =-5mA
h _{FE} 1	100	-	-	-	V _{CE} =-5V, I _C =-1mA
h _{FE} 2	100	-	-	-	V _{CE} =-5V, I _C =-10mA
h _{FE} 3	50	-	-	-	V _{CE} =-5V, I _C =-50mA
h _{FE} 4	120	-	390	-	V _{CE} =-6V, I _C =-2mA
f _T	100	-	-	MHz	V _{CE} =-30V, I _C =-10mA, f=100MHz
C _{ob}	-	-	6	pF	V _{CB} =-10V, f=1MHz

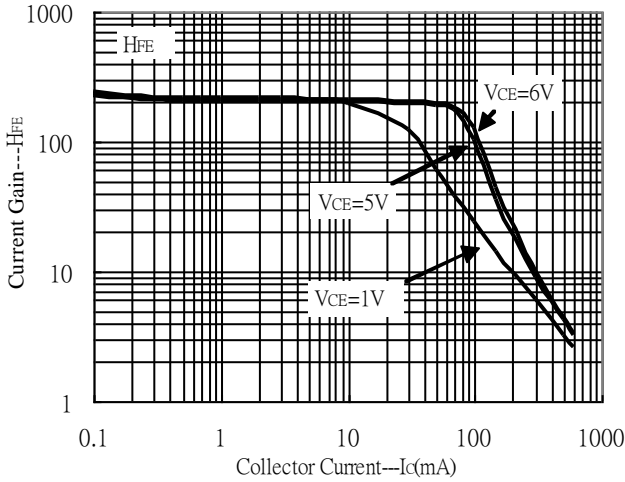
*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

Classification Of h_{FE} 4

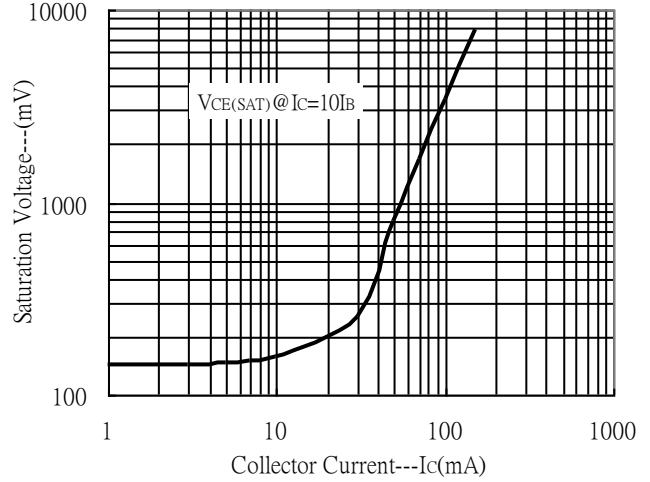
Rank	Q	R
Range	120~270	180~390

Typical Characteristics

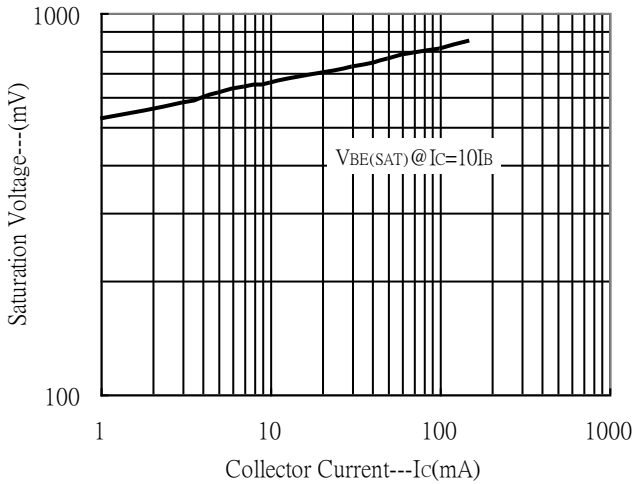
Current Gain vs Collector Current



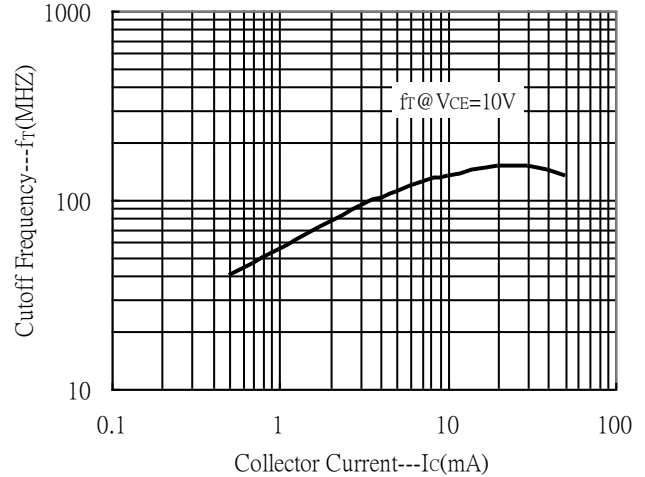
Saturation Voltage vs Collector Current



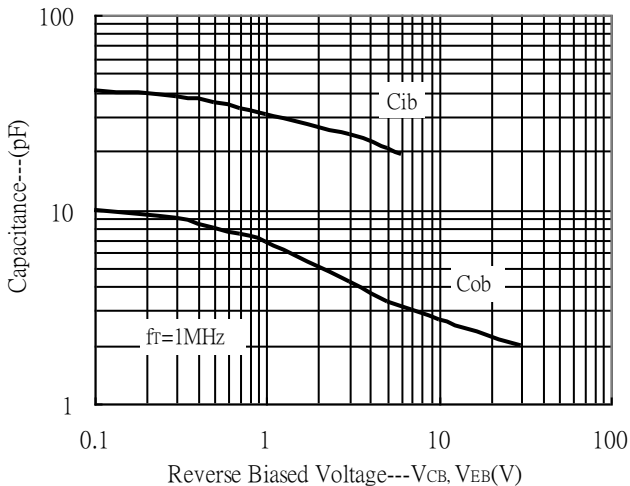
Saturation Voltage vs Collector Current



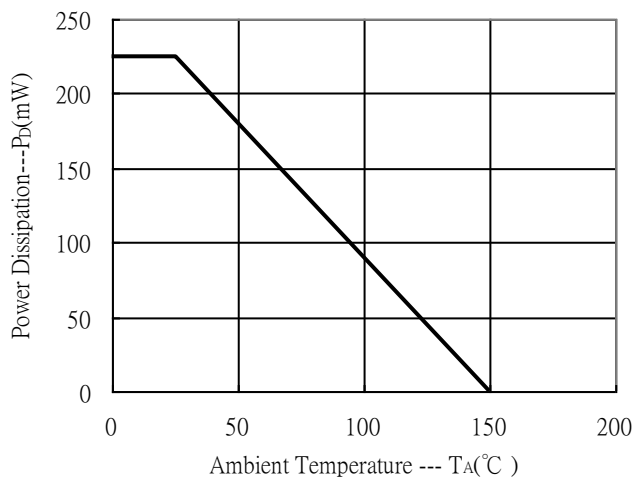
Cutoff Frequency vs Collector Current



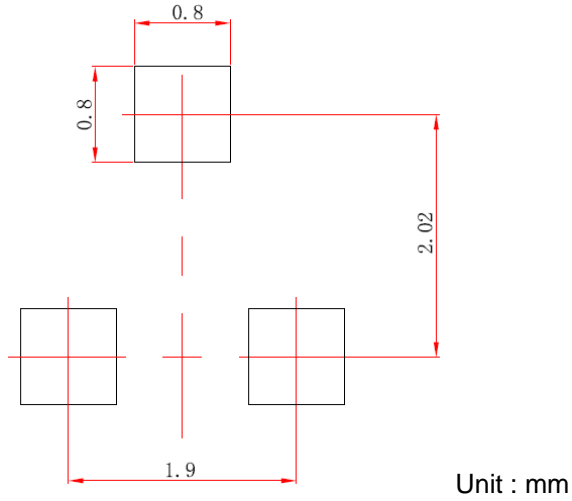
Capacitance Characteristics



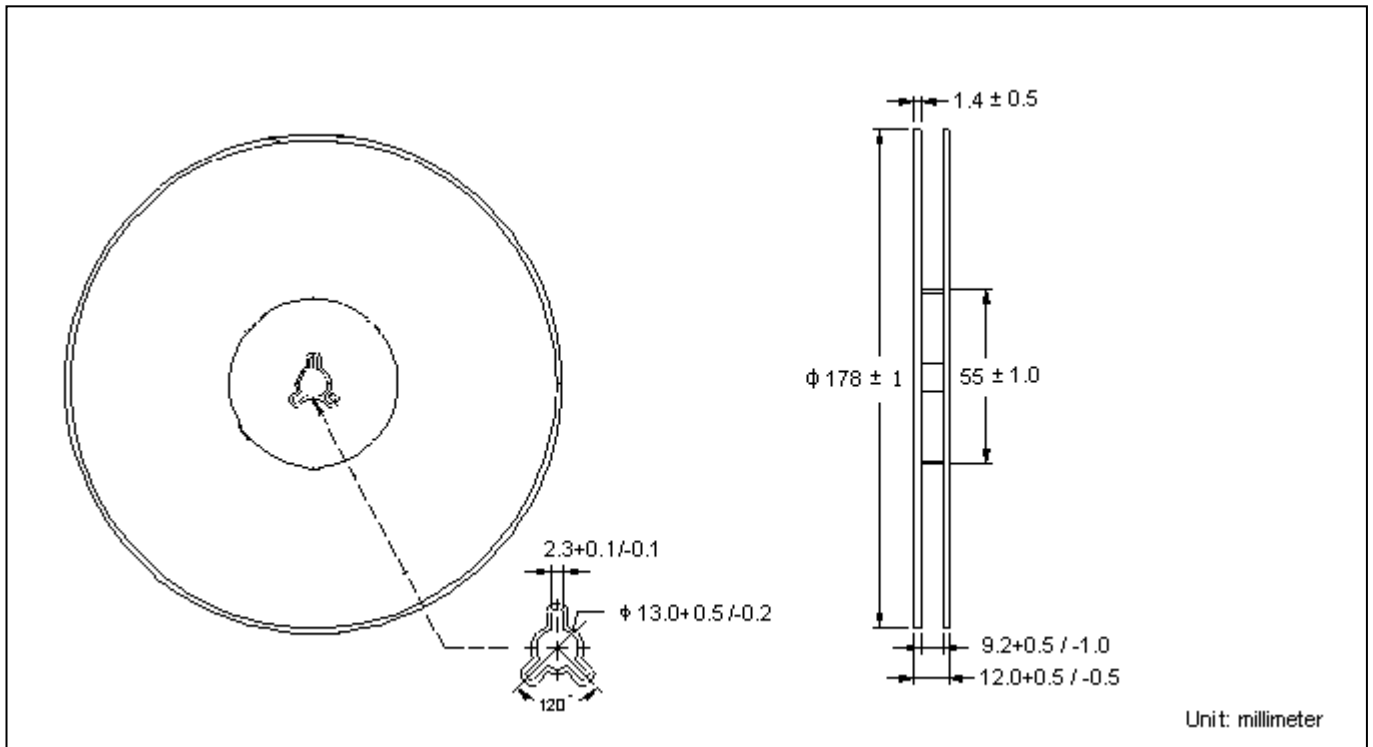
Power Derating Curve



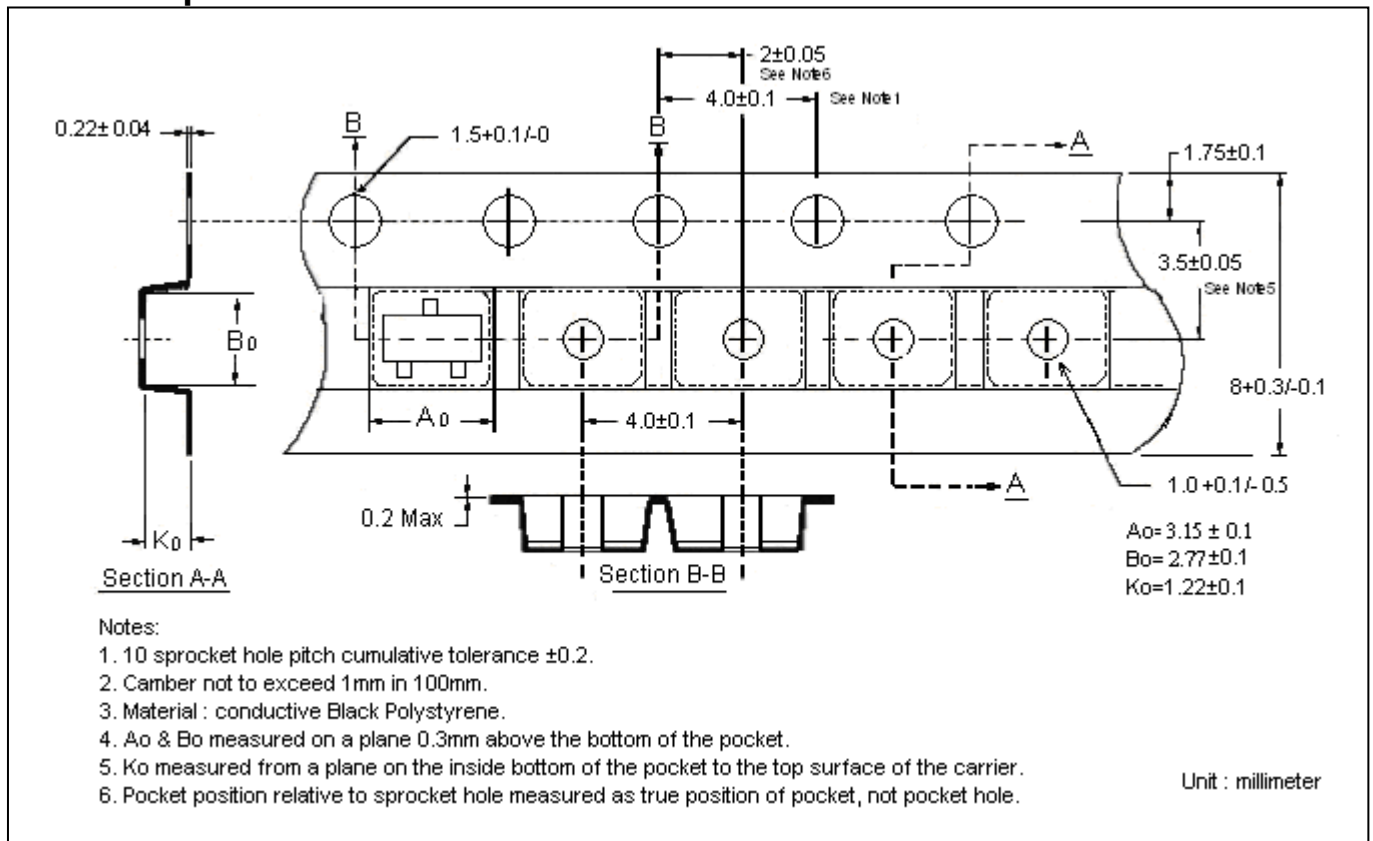
Recommended Soldering Footprint



Reel Dimension



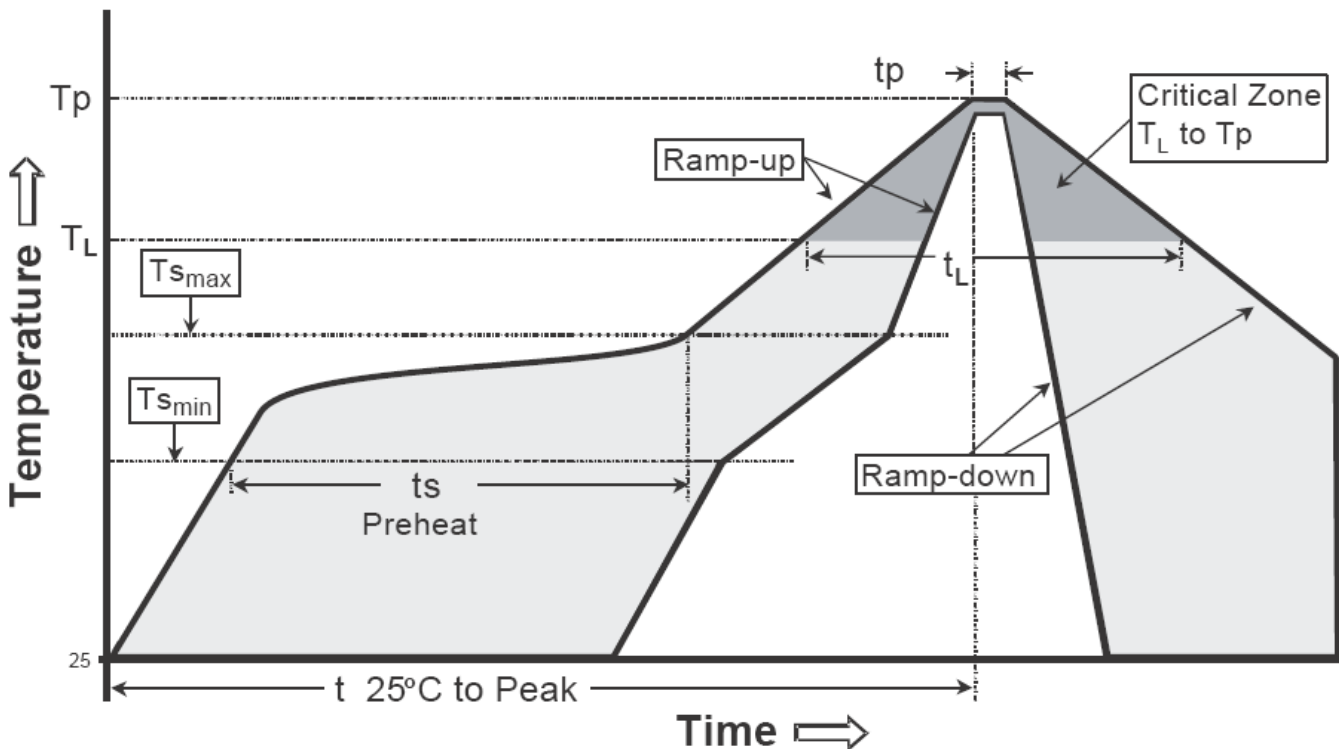
Carrier Tape Dimension



Recommended wave soldering condition

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

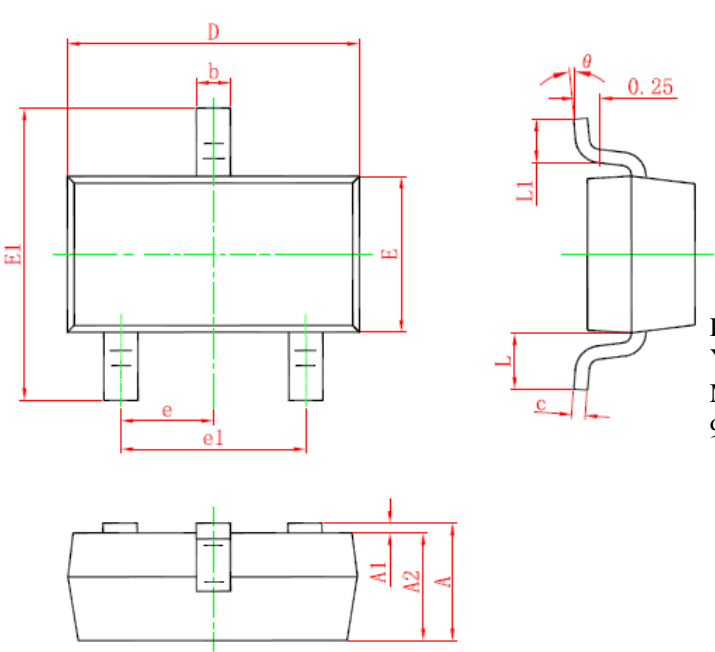
Recommended temperature profile for IR reflow



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-23 Dimension



The diagram shows three views of the SOT-23 package: a top view with dimensions D, b, E1, E, e, and e1; a side view with dimensions L1, L, c, and lead thickness 0.25; and a perspective view with dimensions A1, A2, and A. A marking diagram shows the package with '2L' and a date code '3 4 1 2'.

Marking:

Product Code

Date Code: Year+Month
 Year: 3→2003, 4→2004
 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	0.035	0.045	0.900	1.150	E1	0.089	0.100	2.250	2.550
A1	0.000	0.004	0.000	0.100	e	0.037 TYP.		0.950 TYP.	
A2	0.035	0.041	0.900	1.050	e1	0.071	0.079	1.800	2.000
b	0.012	0.020	0.300	0.500	L	0.022 REF.		0.550 REF.	
c	0.003	0.006	0.080	0.150	L1	0.012	0.020	0.300	0.500
D	0.110	0.118	2.800	3.000	θ	0°	8°	0°	8°
E	0.047	0.055	1.200	1.400					

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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