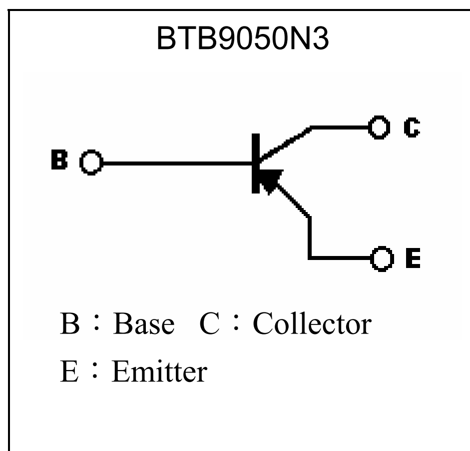
High Voltage PNP Epitaxial Planar Transistor

BTB9050N3

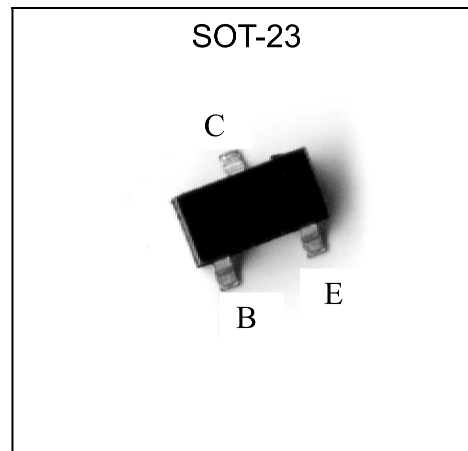
Description

- High breakdown voltage. (BV_{CEO}=-500V)
- Low saturation voltage, typical $V_{CE(sat)}$ =-0.13V at I_C/I_B =-20mA/-2mA.
- Complementary to BTNA45N3
- Pb-free package

Symbol



Outline



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-500	V
Collector-Emitter Voltage	V_{CEO}	-500	V
Emitter-Base Voltage	V_{EBO}	-7	V
Collector Current	I_C	-150	mA
Power Dissipation	P_D	300 (Note)	mW
Thermal Resistance, Junction-to-Ambient	Rth,ja	417 (Note)	°C/W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

Note : Device mounted on a FR-4 board with minimum pad size.

Characteristics (Ta=25°C)

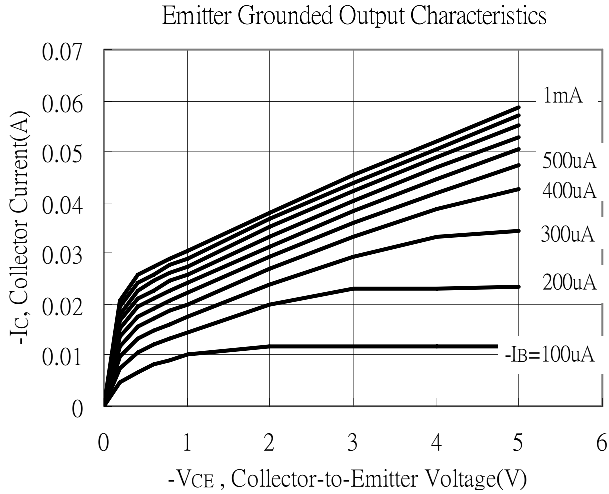
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	-500	-	-	V	I_C=-100μA
BV_{CEO}	-500	-	-	V	I_C=-1mA
BV_{EBO}	-7	-	-	V	I_E=-50μA
I_{CBO}	-	-	-100	nA	V_{CB}=-480V
I_{CES}	-	-	-10	nA	V_{CE}=-480V, V_{BE}=0V
I_{EBO}	-	-	-100	nA	V_{EB}=-7V
*$V_{CE(sat)}$	-	-0.13	-0.2	V	I_C=-20mA, I_B=-2mA
*$V_{CE(sat)}$	-	-0.11	-0.2	V	I_C=-50mA, I_B=-10mA
*$V_{BE(sat)}$	-	-0.8	-1.2	V	I_C=-50mA, I_B=-10mA
*h_{FE} 1	100	-	300	-	V_{CE}=-10V, I_C=-10mA
*h_{FE} 2	80	-	-	-	V_{CE}=-10V, I_C=-50mA
*h_{FE} 3	50	-	-	-	V_{CE}=-10V, I_C=-100mA
f_T	50	-	-	MHz	V_{CE}=-10V, I_C=-10mA, f=10MHz
Cob	-	12	-	pF	V_{CB}=-10V, I_E=0A, f=1MHz

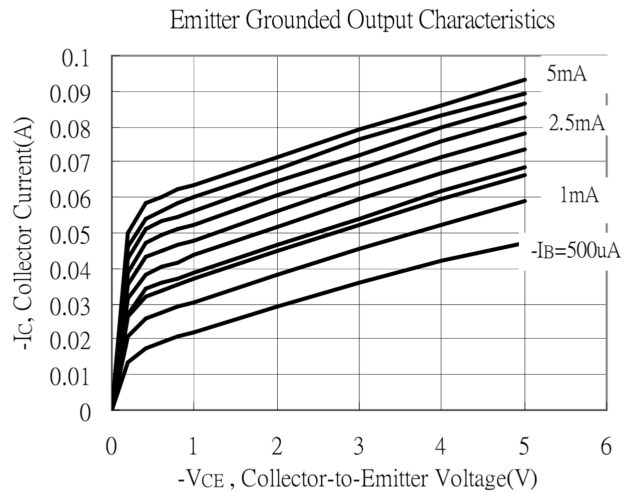
*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

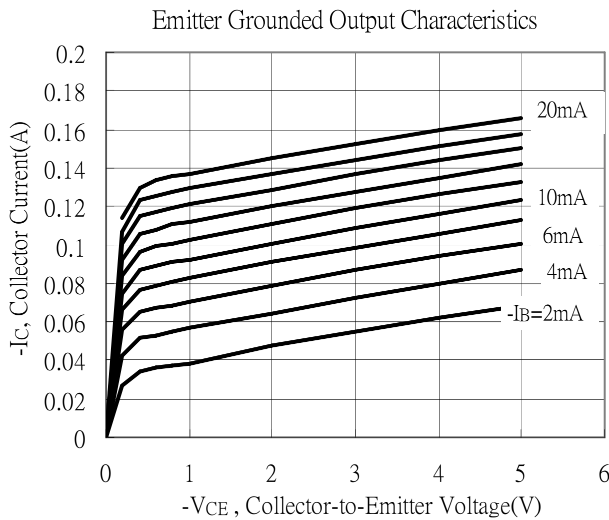
Ordering Information

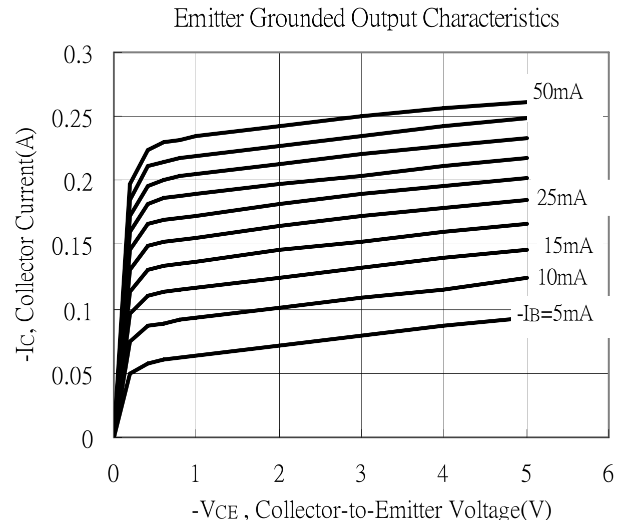
Device	Package	Shipping
BTB9050N3-0-T1-G	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

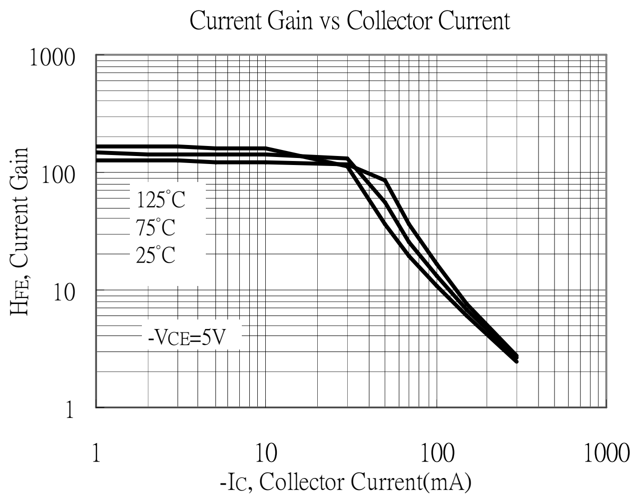
Typical Characteristics

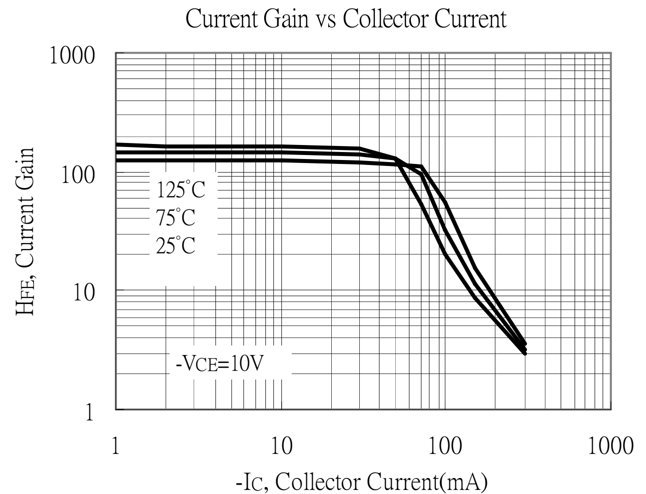




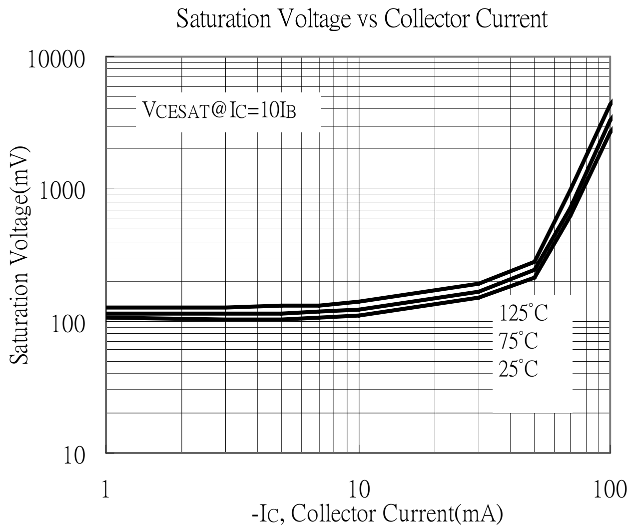


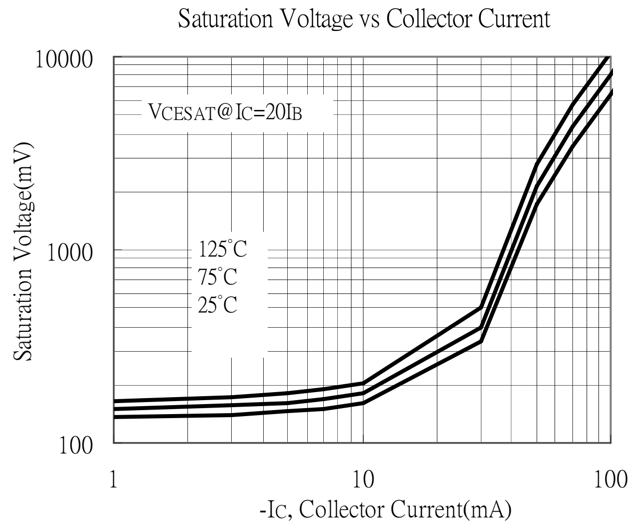


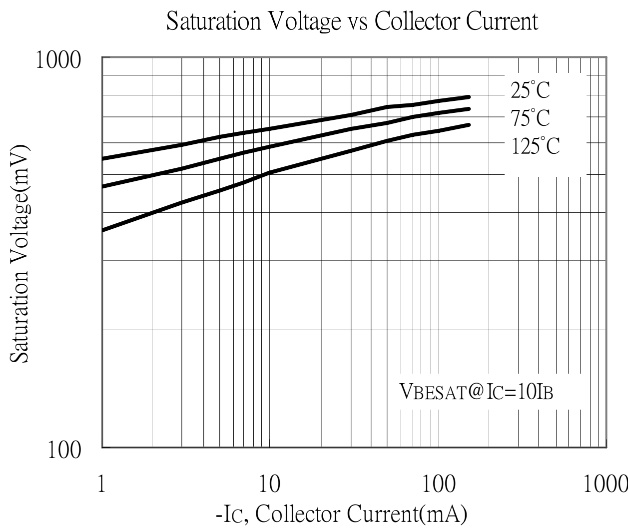


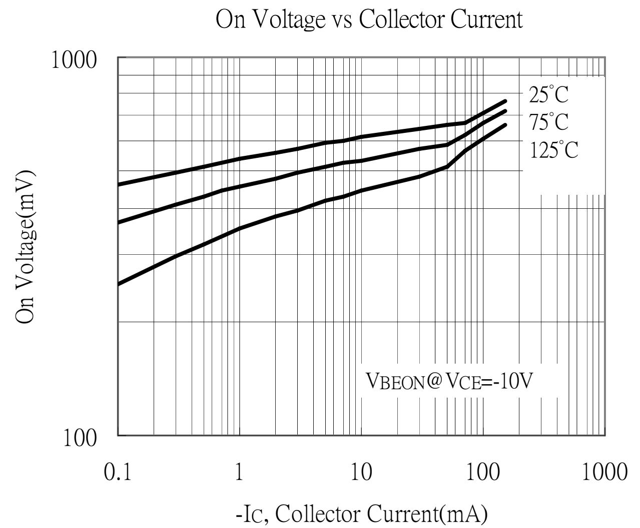


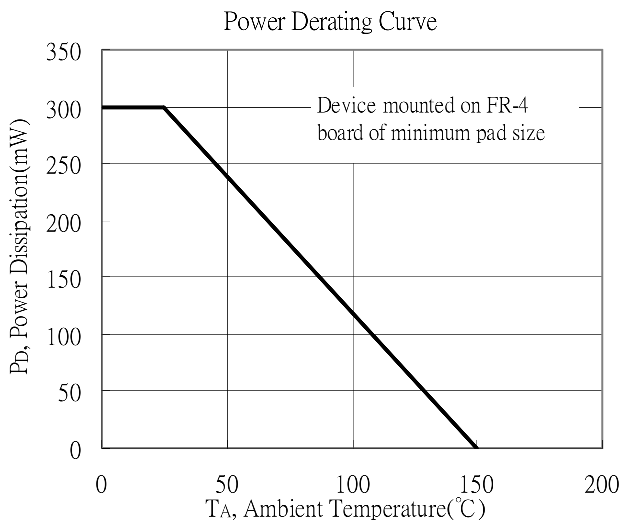
Typical Characteristics

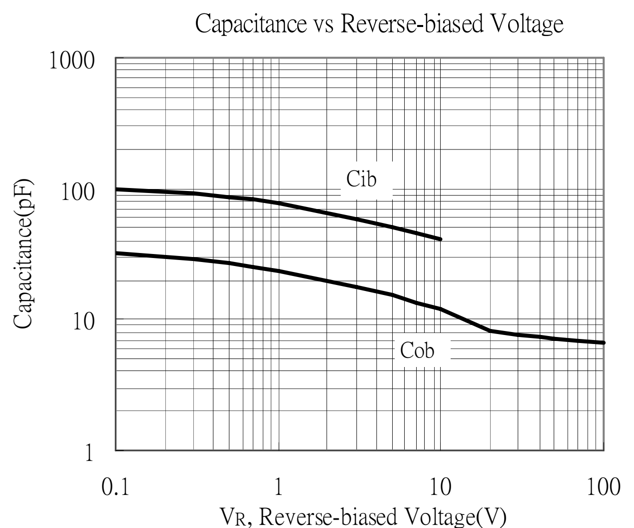




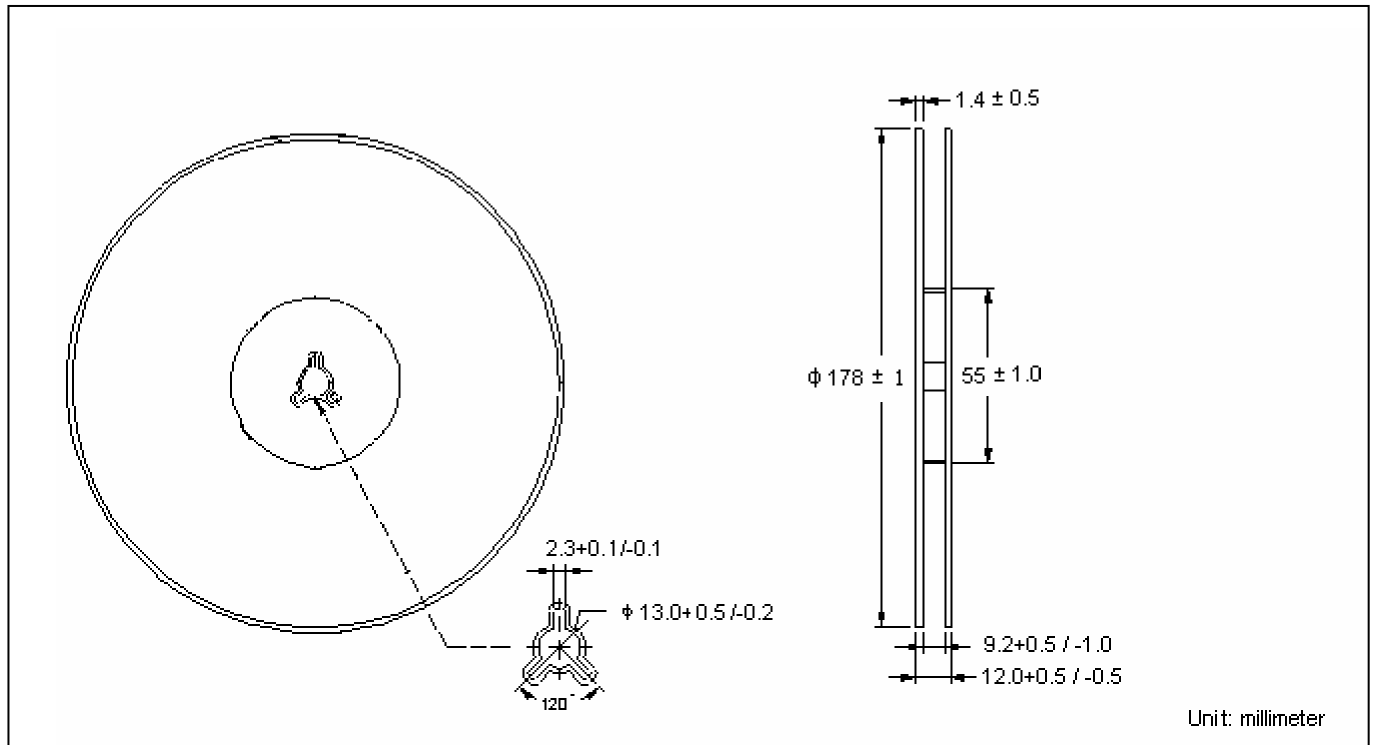




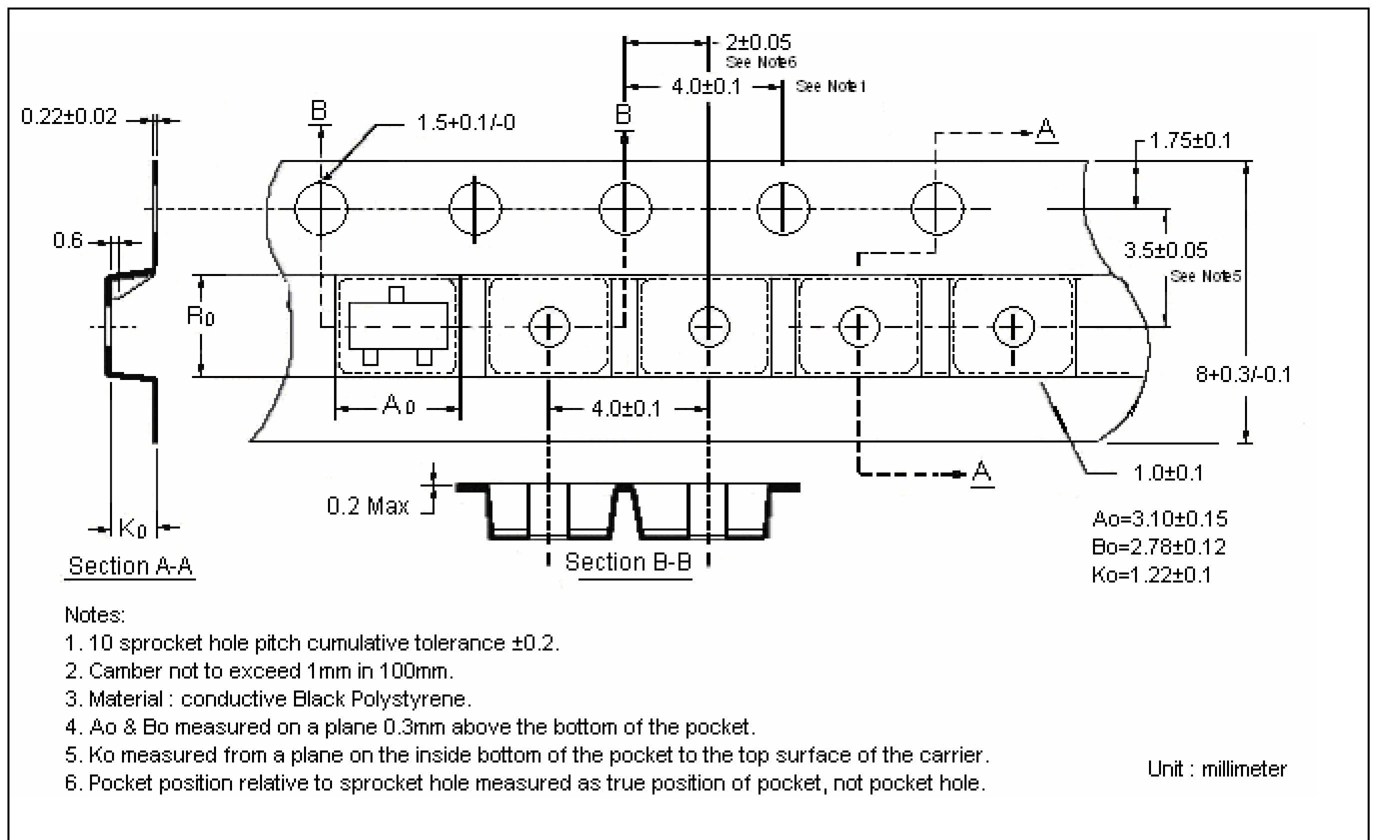




Reel Dimension



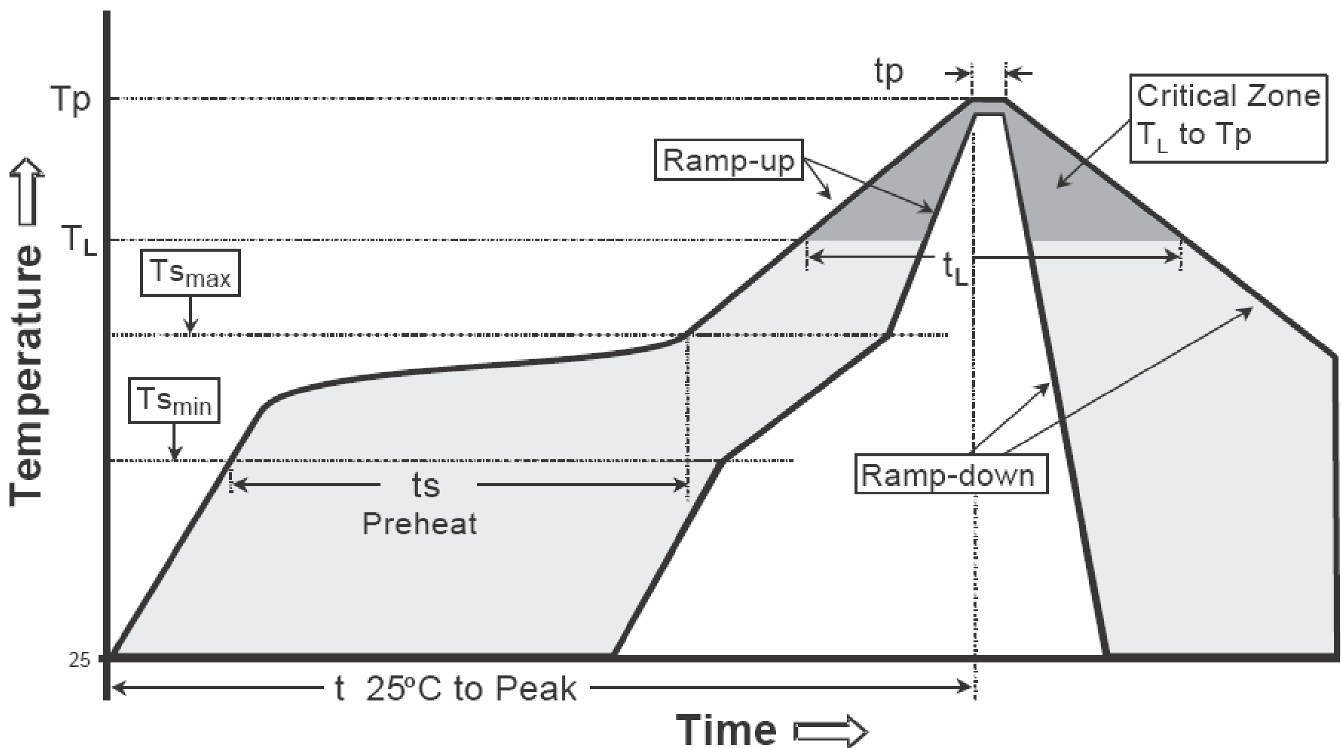
Carrier Tape Dimension



Recommended wave soldering condition

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

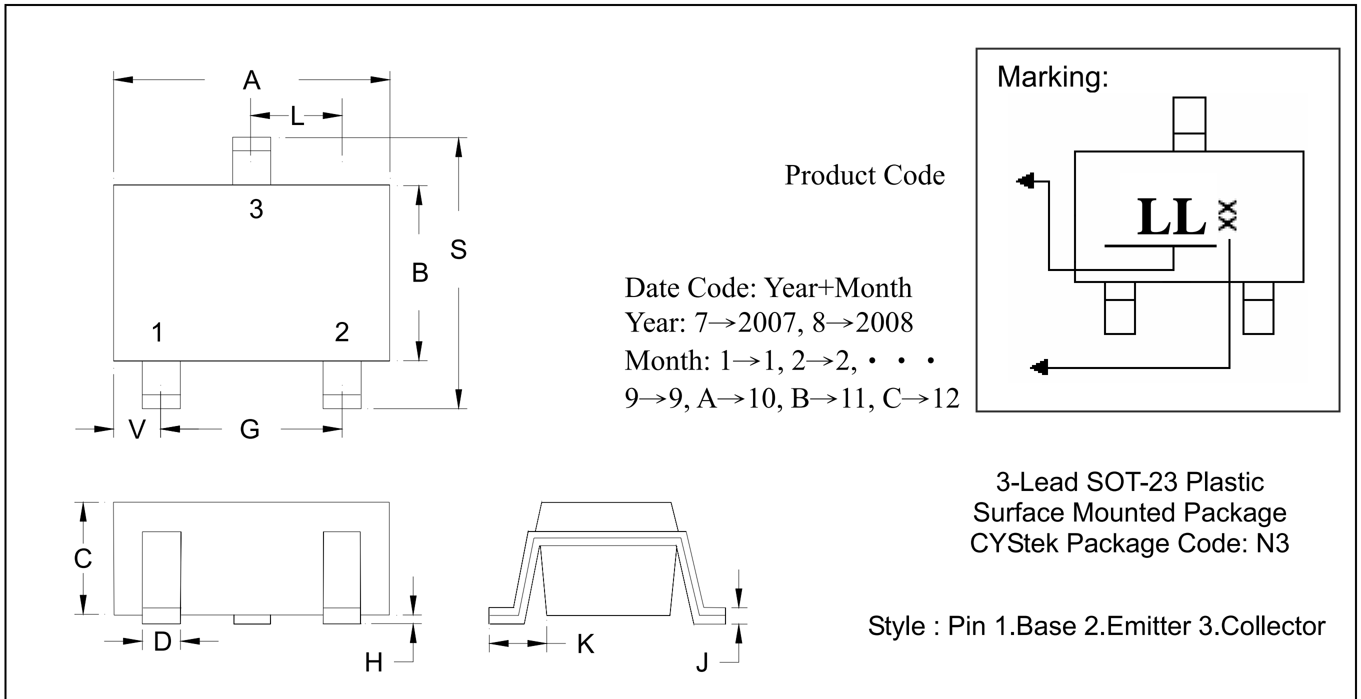
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts 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



*: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	0.0031	0.0071	0.08	0.18
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.

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.
- CYSrek ***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.