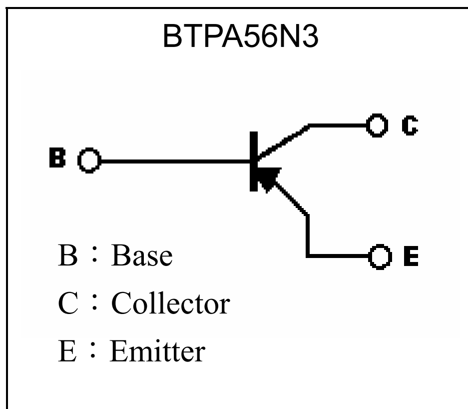
PNP Epitaxial Planar Transistor

BTPA56N3

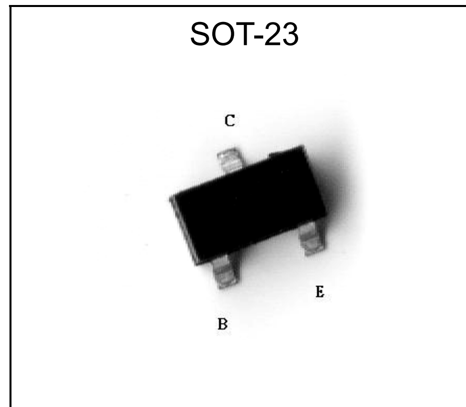
Features

- Low V_{CE}(sat), V_{CE}(sat)=-0.07 V (typ), at I_C / I_B = -100mA / -10mA
- Excellent current gain characteristics
- Pb-free lead plating and halogen-free package

Symbol



Outline



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-80	V
Collector-Emitter Voltage	V_{CEO}	-80	
Emitter-Base Voltage	V_{EBO}	-5	
Collector Current (DC)	I_C	-500	mA
Collector Current (Pulse)	I_{CP}	-1 (Note 1)	A
Base Current	I_B	-200	mA
Power Dissipation	P_D	0.225	W
Power Dissipation		0.35 (Note 2)	
Operating Junction and Storage Temperature Range	Tj ; Tstg	-65~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	556	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 2)	$R_{th,j-a}$	357	°C/W

Note：1. Single Pulse , Pw=300μs, duty cycle≤2%.
2. Device mounted on FR-4 board 1.6” ×1.6” ×0.06” .

Characteristics (Ta=25°C)

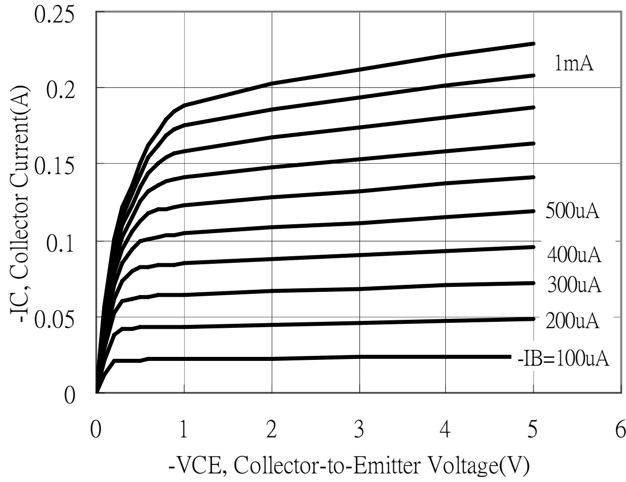
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	-80	-	-	V	I_C=-100μA, I_E=0
BV_{CEO}	-80	-	-	V	I_C=-1mA, I_B=0
BV_{EBO}	-5	-	-	V	I_E=-100μA, I_C=0
I_{CBO}	-	-	-100	nA	V_{CB}=-80V, I_E=0
I_{CES}	-	-	-100	nA	V_{CB}=-60V, I_E=0
I_{EBO}	-	-	-100	nA	V_{EB}=-5V, I_C=0
*$V_{CE(sat)}$	-	-70	-250	mV	I_C=-100mA, I_B=-10mA
*$V_{BE(sat)}$	-	-0.8	-1.2	V	I_C=-100mA, I_B=-10mA
*$V_{BE(on)}$	-	-0.73	-1.2	V	V_{CE}=-1V, I_C=-100mA
*h_{FE} 1	100	-	-	-	V_{CE}=-1V, I_C=-10mA
*h_{FE} 2	100	-	-	-	V_{CE}=-1V, I_C=-100mA
f_T	50	200	-	MHz	V_{CE}=-1V, I_C=-100mA, f=100MHz
Cob	-	7	-	pF	V_{CB}=-10V, f =1MHz

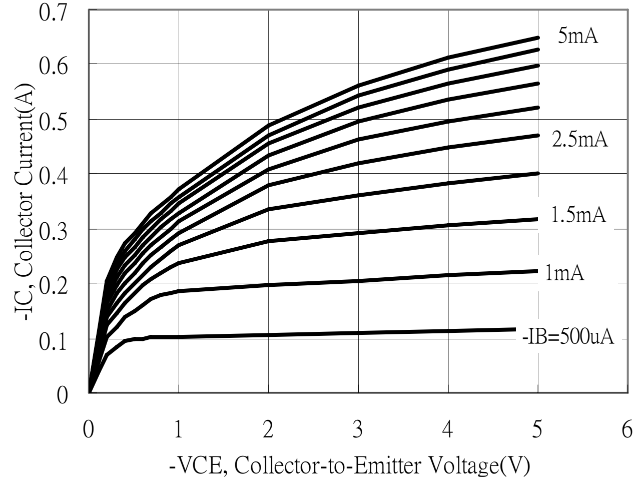
*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

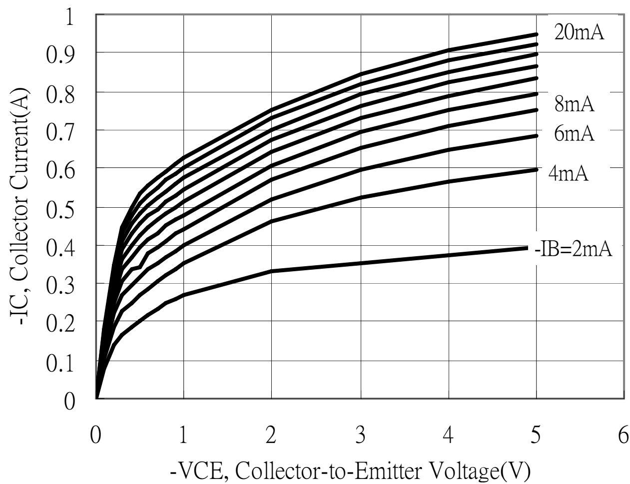
Ordering Information

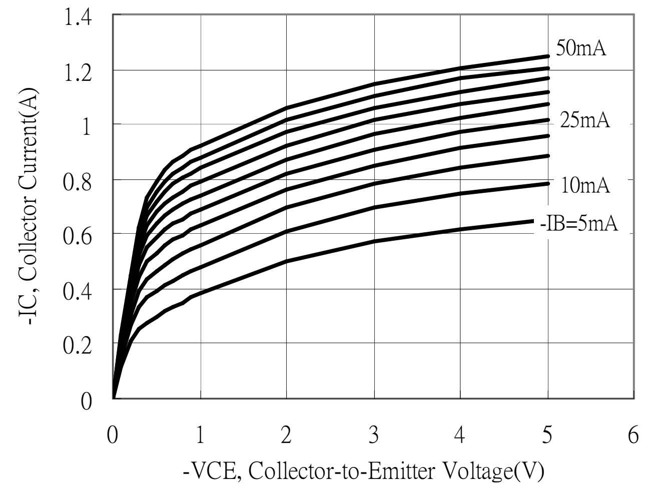
Device	Package	Shipping
BTPA56N3-0-T1-G	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

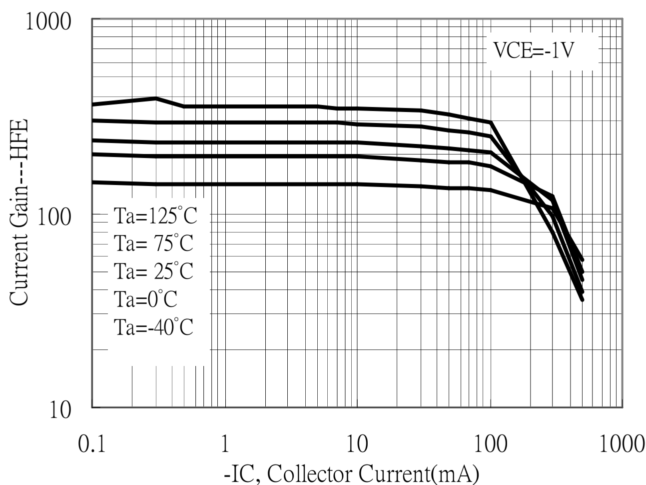
Typical Characteristics

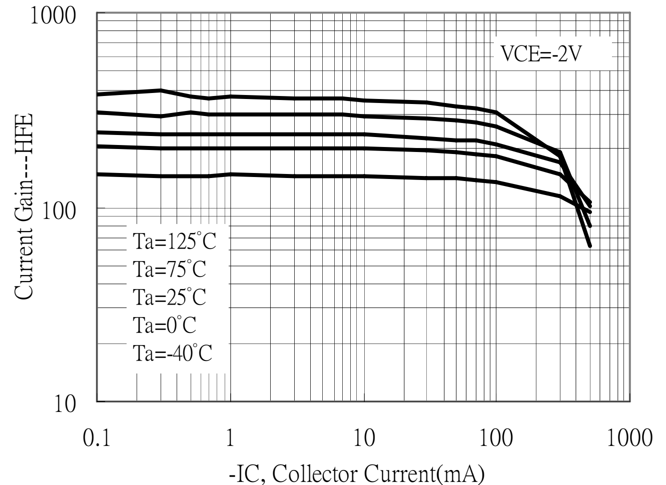




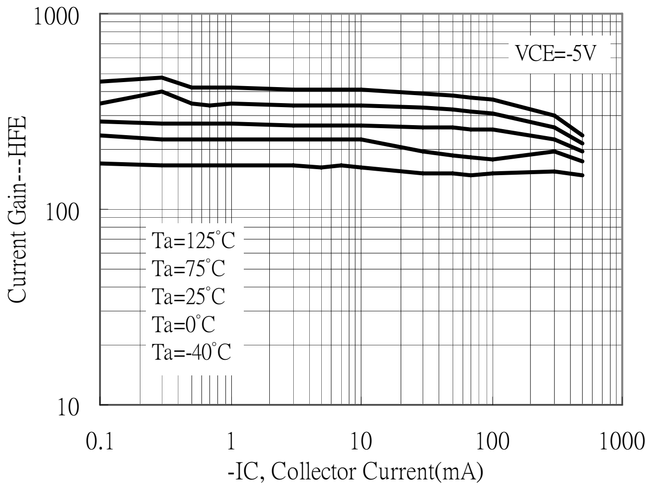


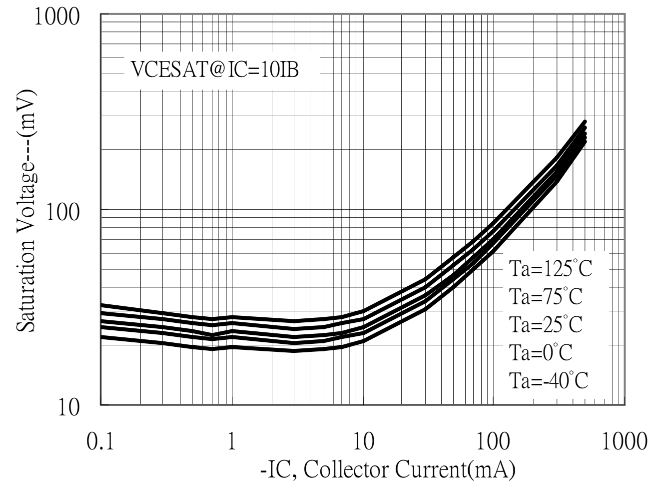


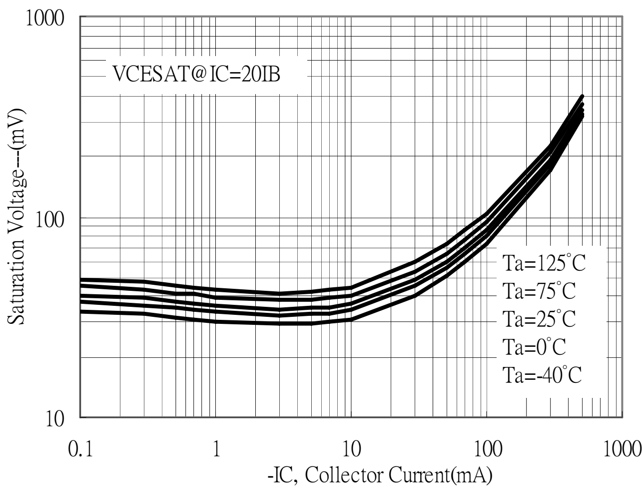


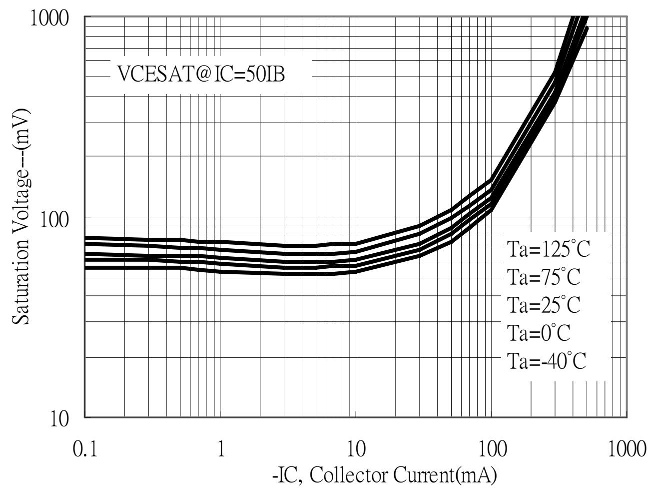


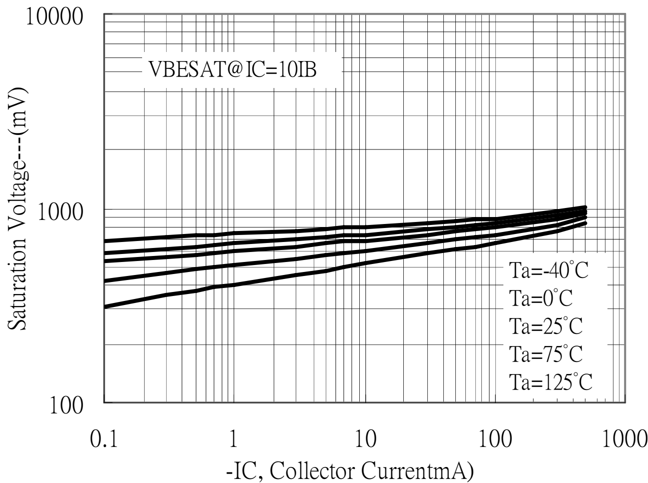
Typical Characteristics(Cont.)

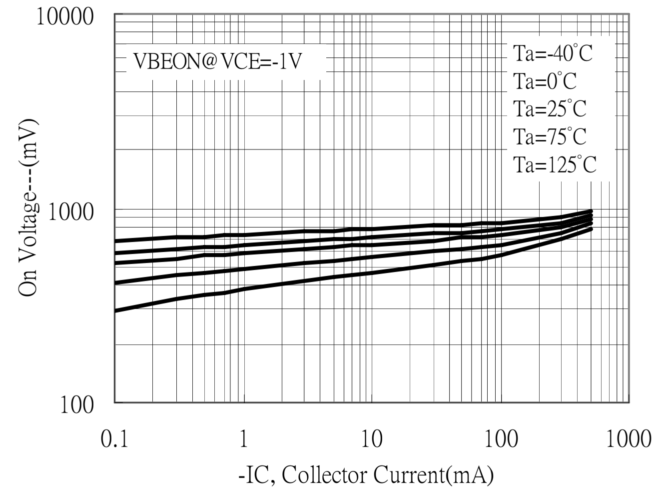




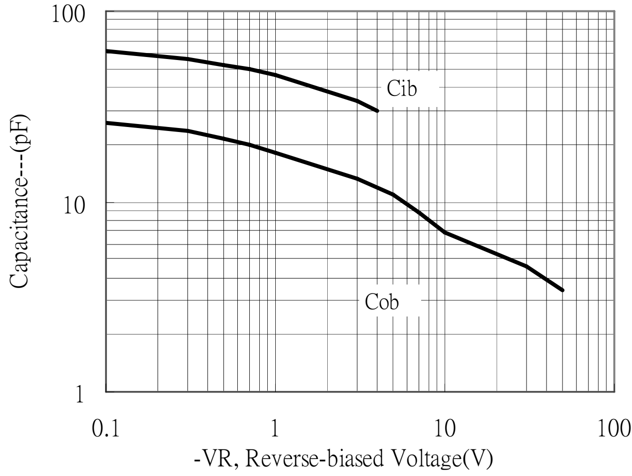


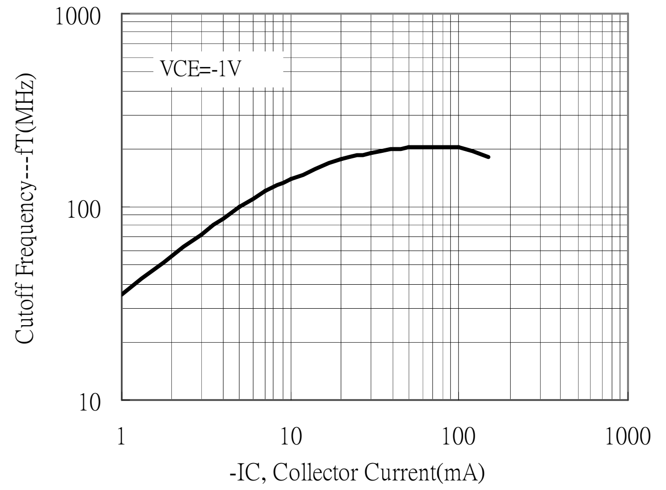


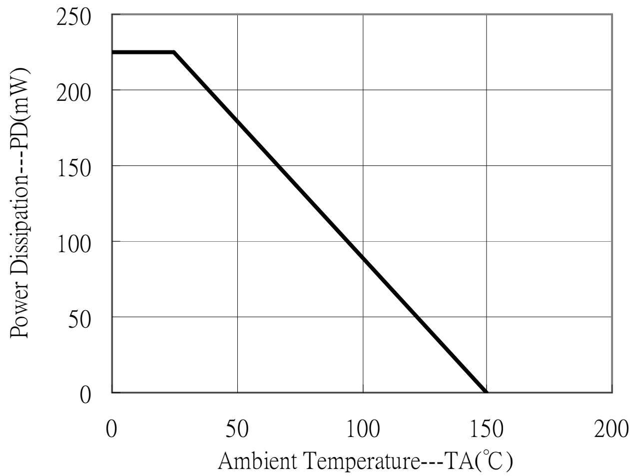




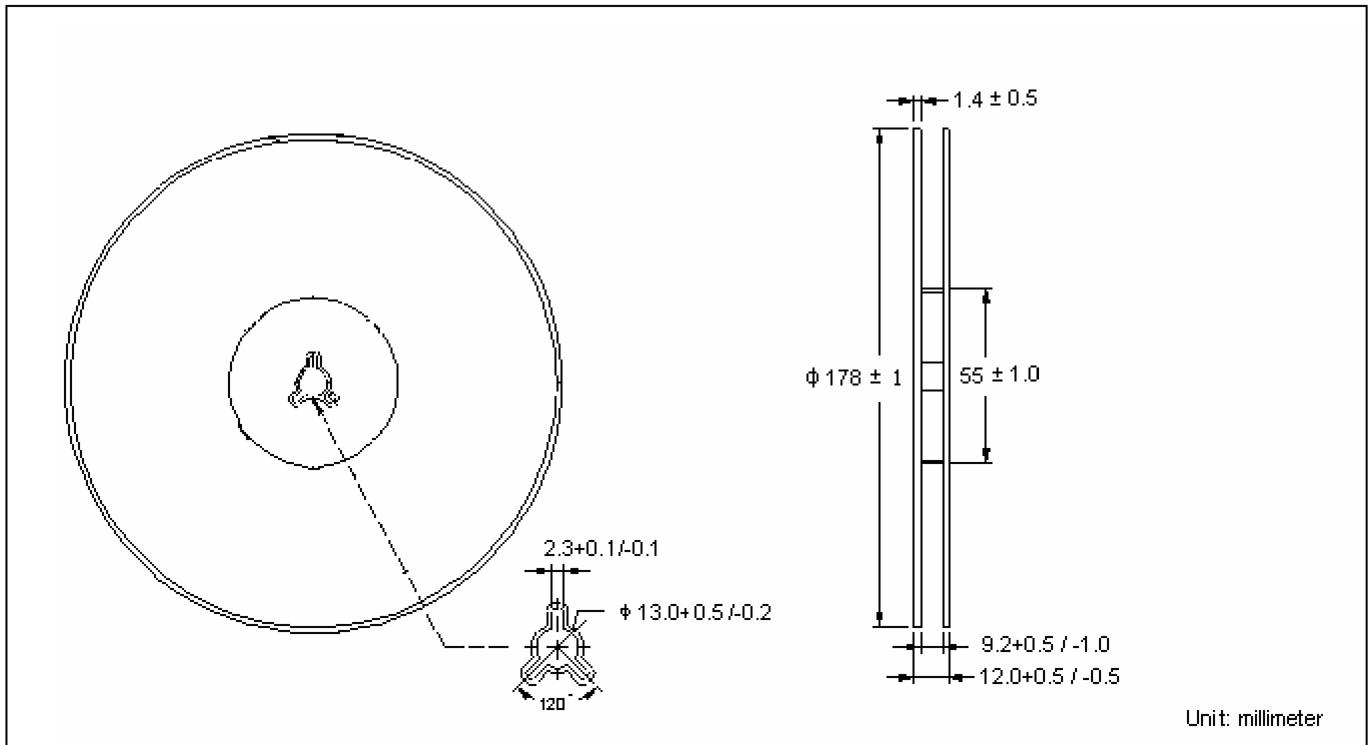
Typical Characteristics(Cont.)



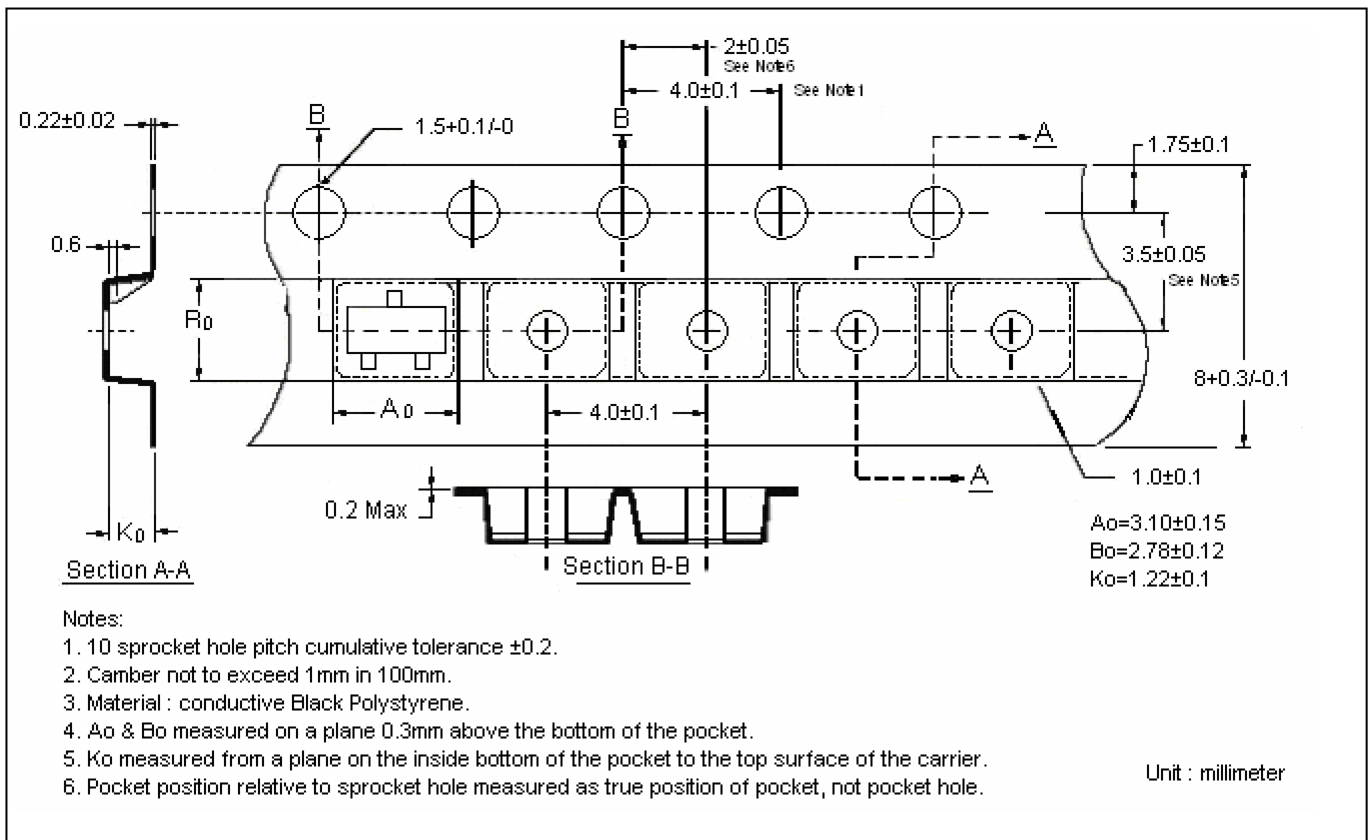




Reel Dimension



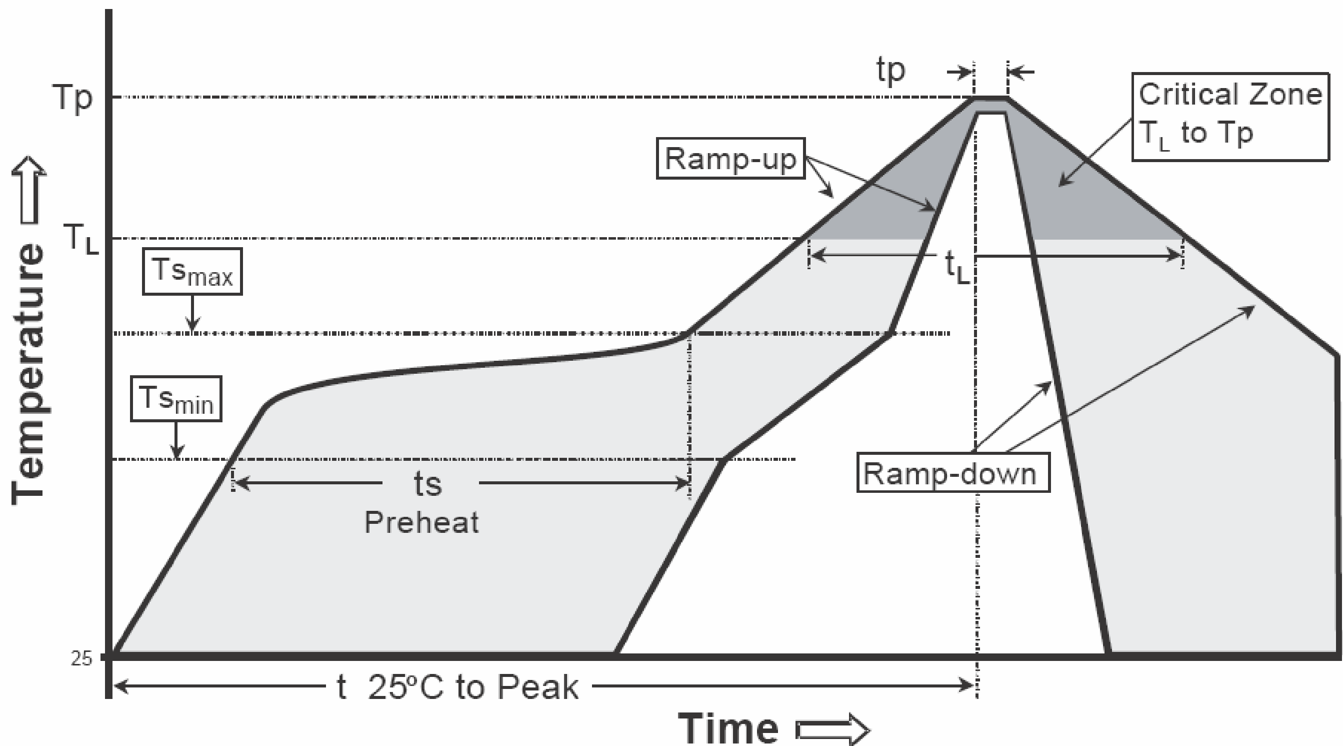
Carrier Tape Dimension



Recommended wave soldering condition

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

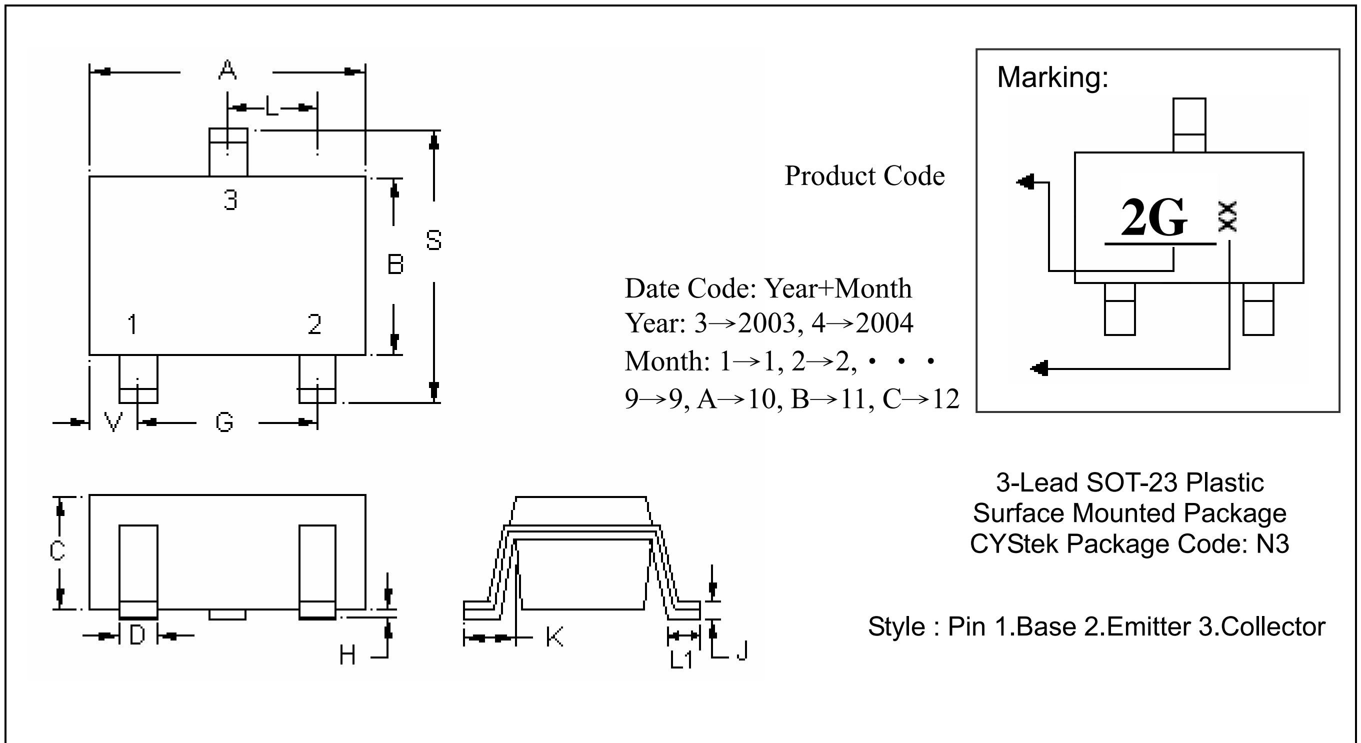
Recommended temperature profile for IR reflow



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(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



*: 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

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