High Current Gain Medium Power NPN Epitaxial Planar Transistor
AUDIO MUTING APPLICATION

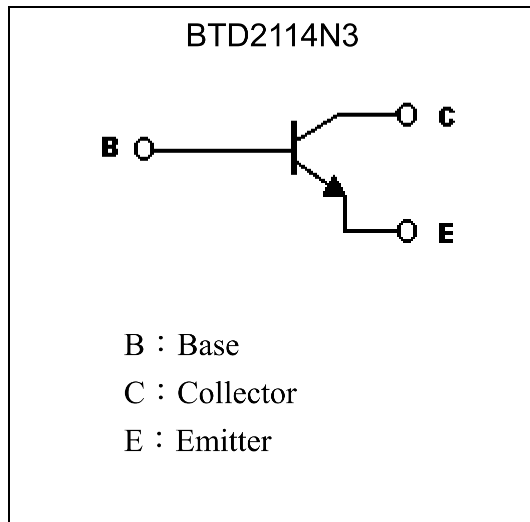
BTD2114N3

BV_{CEO}	20V
I_C	500mA
$R_{CE(SAT)}$	0.32Ω(typ)

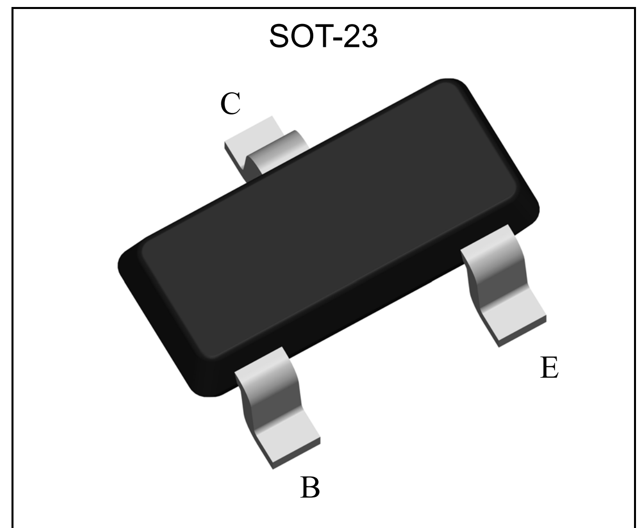
Features

- High Emitter-Base voltage, V_{EBO}=12V(min).
- High DC current gain, h_{FE}=1200(min.) @V_{CE}=3V, I_C=10mA.
- Low V_{CESAT}, V_{CESAT}=0.16V typ. @ I_C=500mA, I_B=20mA.
- Pb-free and halogen-free package.

Symbol

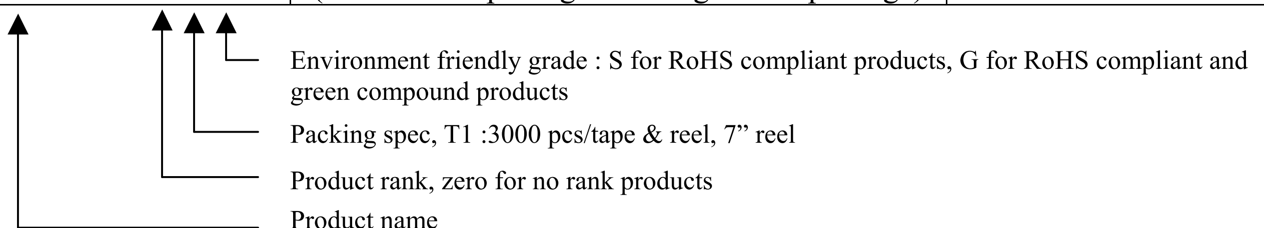


Outline



Ordering Information

Device	Package	Shipping
BTD2114N3-0-T1-G	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel



Absolute Maximum Ratings (Ta=25°C)

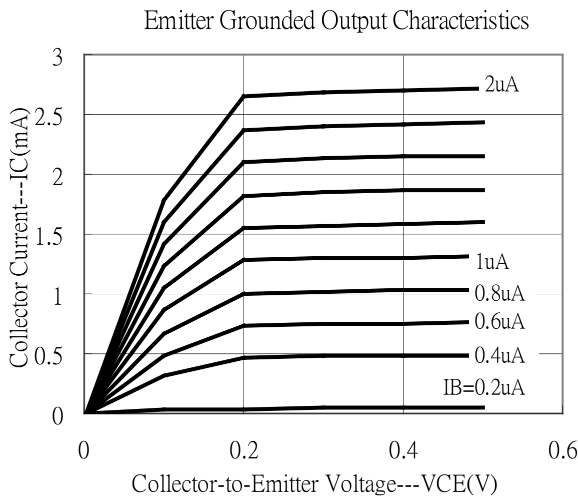
Parameter	Symbol	Limit	Unit
Collector-Base Voltage	V_{CBO}	30	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	12	V
Collector Current (DC)	I_C	500	mA
Collector Current (Pulse)	I_{CP}	1	A
Base Current	I_B	50	mA
Power Dissipation	P_D	225	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Operating Junction and Storage Temperature Range	Tj ; Tstg	-55~+150	°C

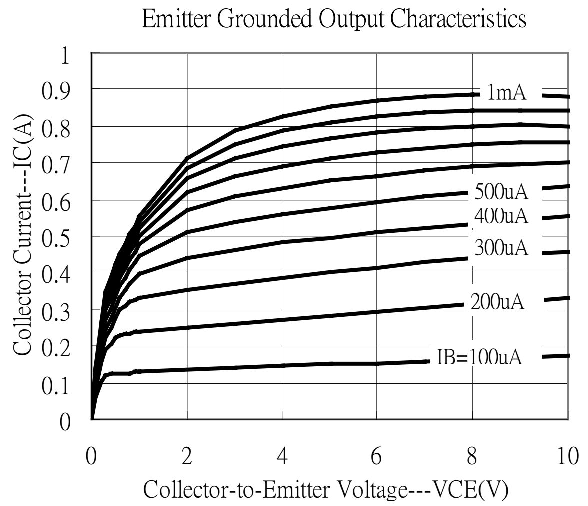
Characteristics (Ta=25°C)

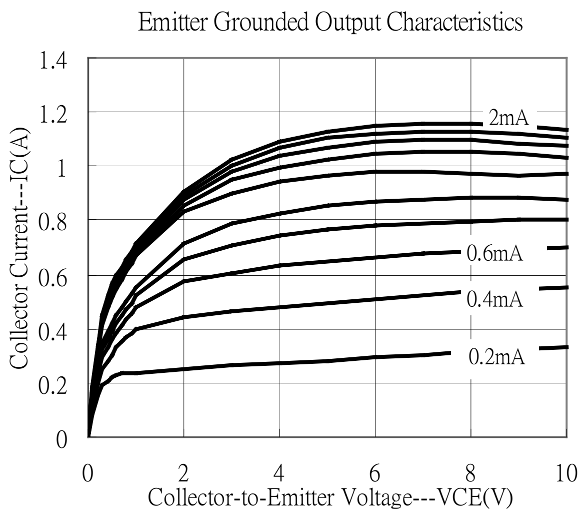
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	30	-	-	V	I_C=100μA, I_E=0
BV_{CEO}	20	-	-	V	I_C=1mA, I_B=0
BV_{EBO}	12	-	-	V	I_E=10μA, I_C=0
I_{CBO}	-	-	100	nA	V_{CB}=30V, I_E=0
I_{EBO}	-	-	100	nA	V_{EB}=12V, I_C=0
*$V_{CE(sat)}$	-	35	100	mV	I_C=100mA, I_B=10mA
*$V_{CE(sat)}$	-	0.16	0.3	V	I_C=500mA, I_B=20mA
*$R_{CE(sat)}$	-	0.32	0.6	Ω	I_C=500mA, I_B=20mA
*$V_{BE(sat)}$	-	0.79	1	V	I_C=100mA, I_B=10mA
*$h_{FE}1$	1200	-	2700	-	V_{CE}=3V, I_C=10mA
*$h_{FE}2$	900	-	-	-	V_{CE}=3V, I_C=100mA
f_T	-	300	-	MHz	V_{CE}=10V, I_C=50mA, f=100MHz
Cob	-	9	-	pF	V_{CB}=10V, f=1MHz
Ron	-	0.8	-	Ω	I_B=1mA, Vi=100mV(rms), f=1KHz

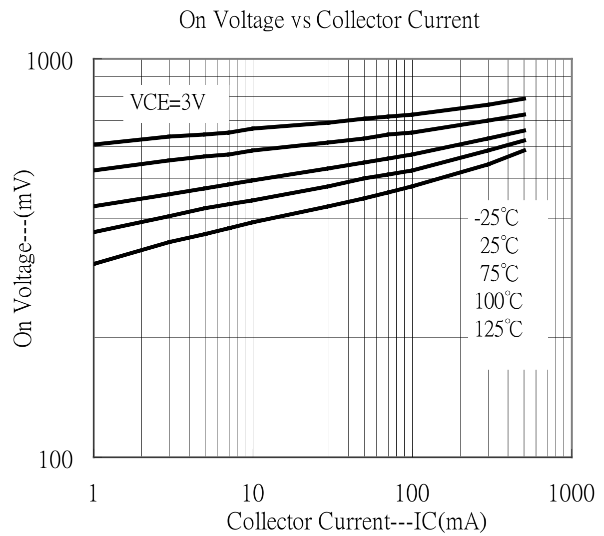
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

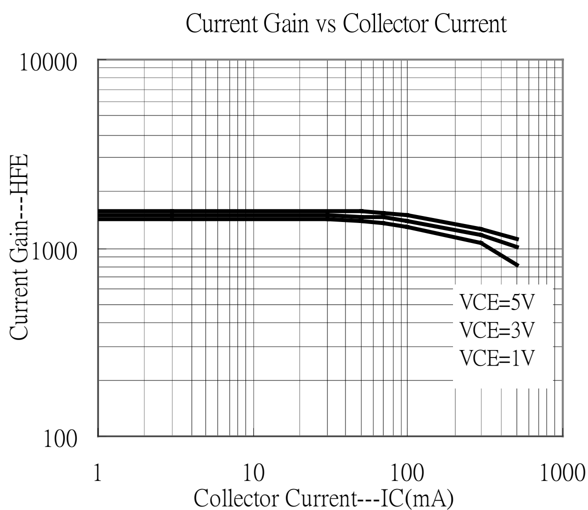
Typical Characteristics

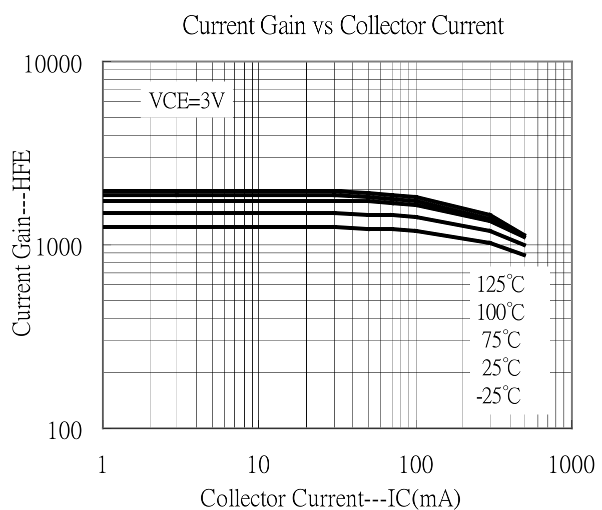




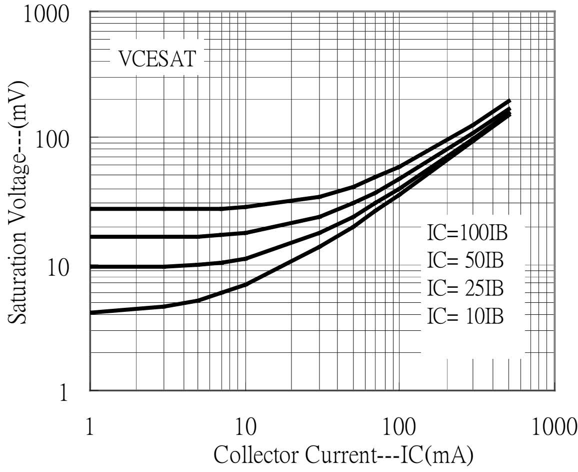


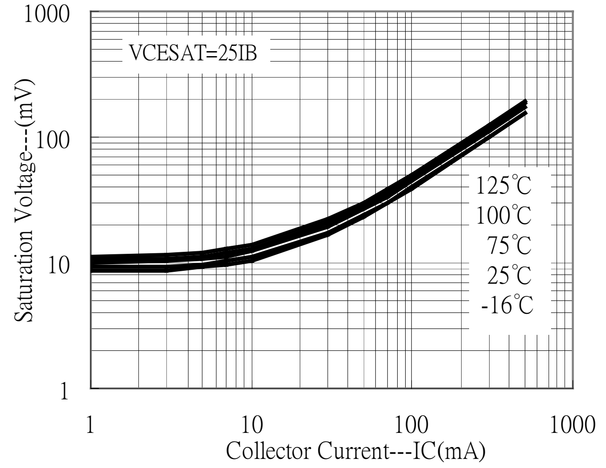


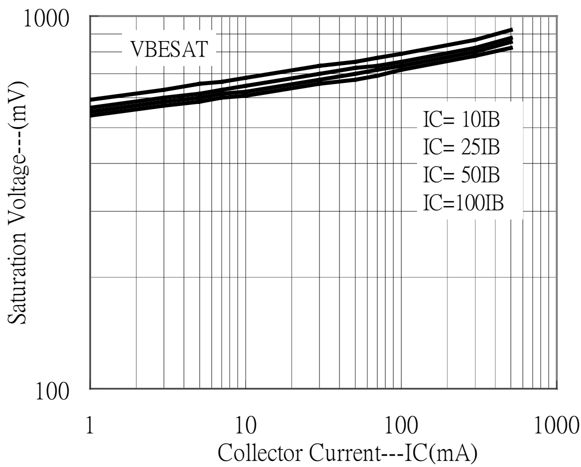


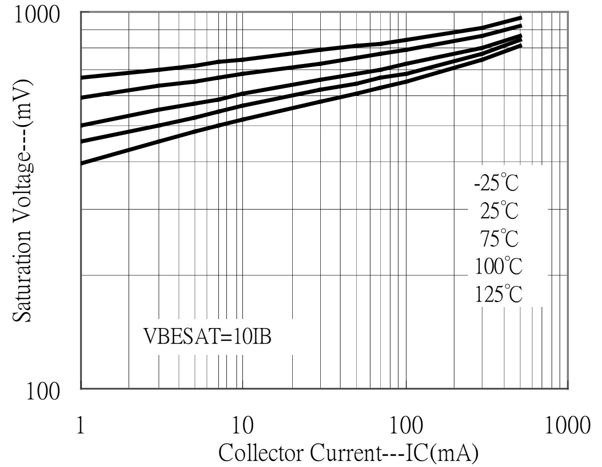


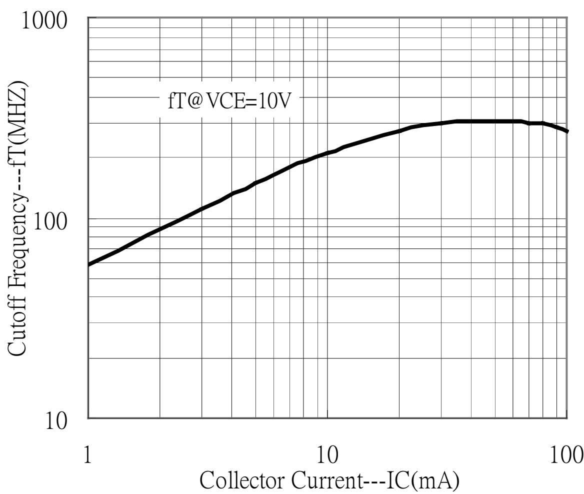
Typical Characteristics(Cont.)

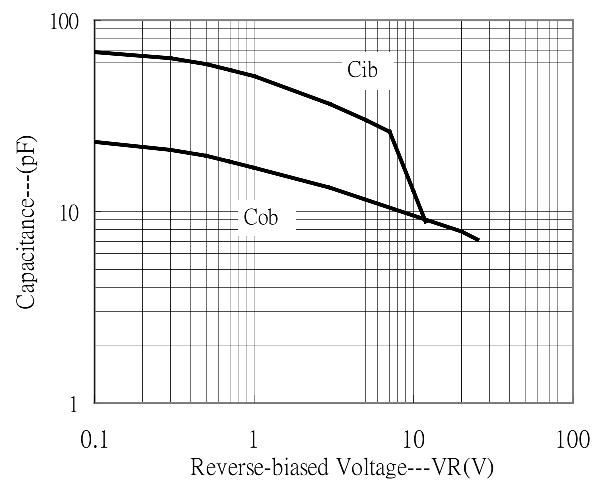






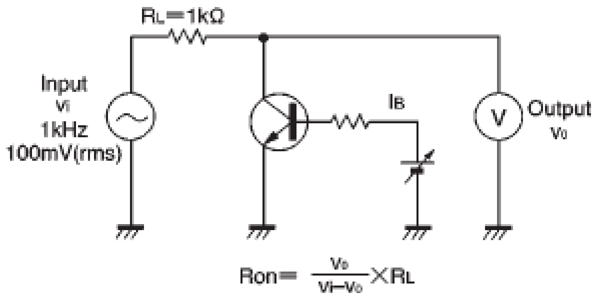


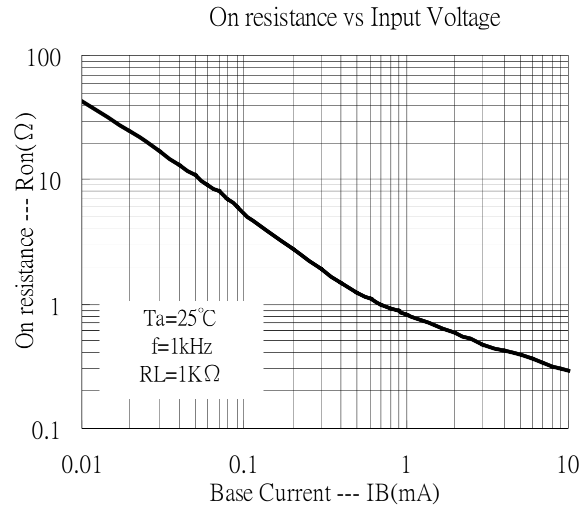




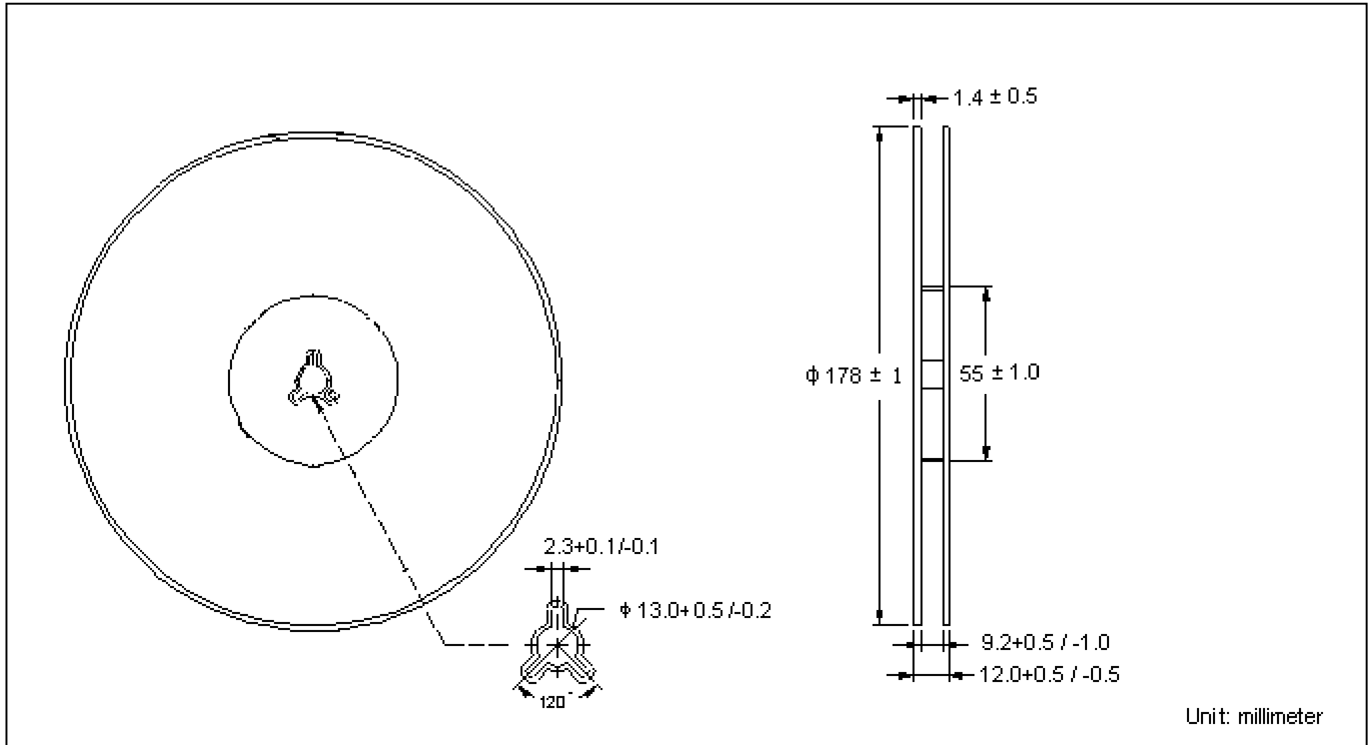
Typical Characteristics(Cont.)

•Ron measurement circuit

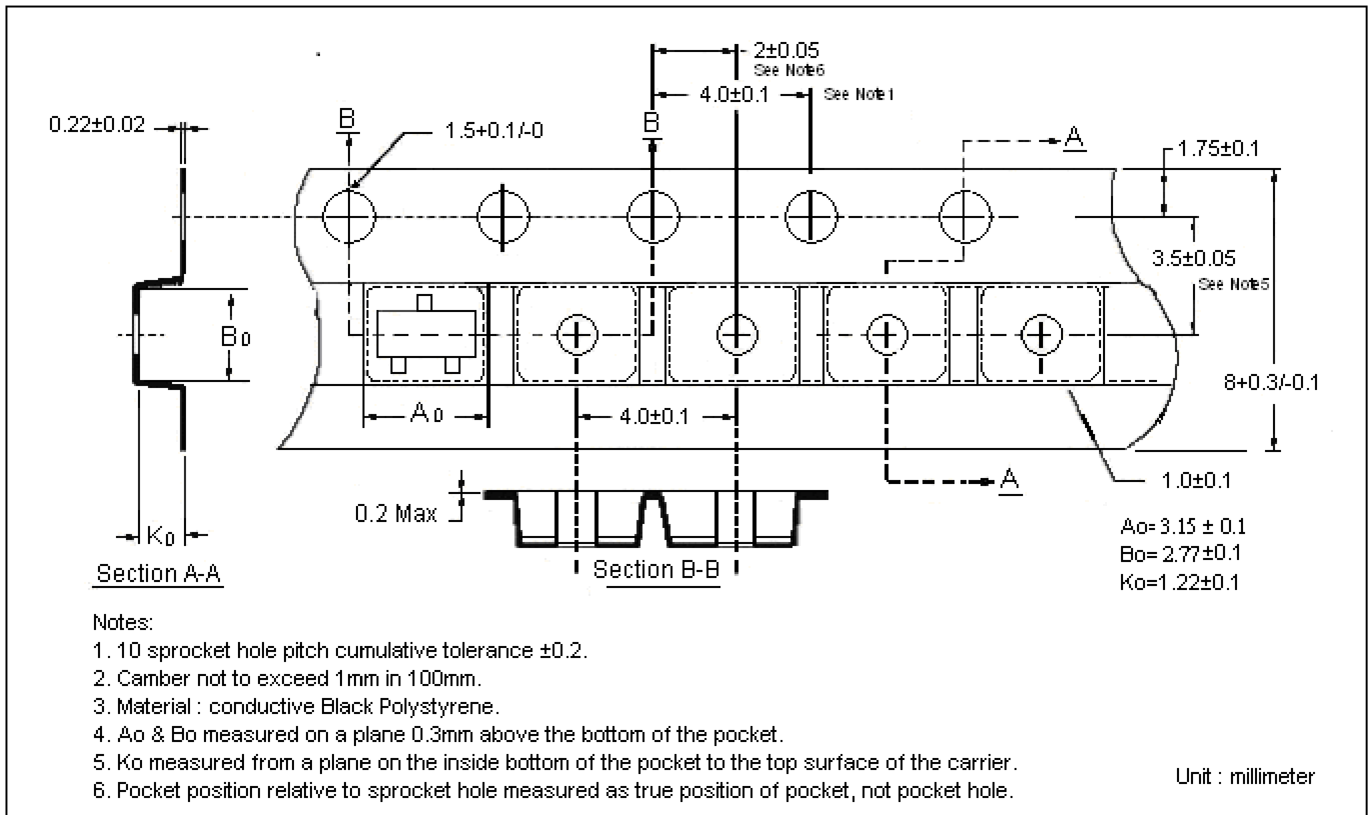




Reel Dimension



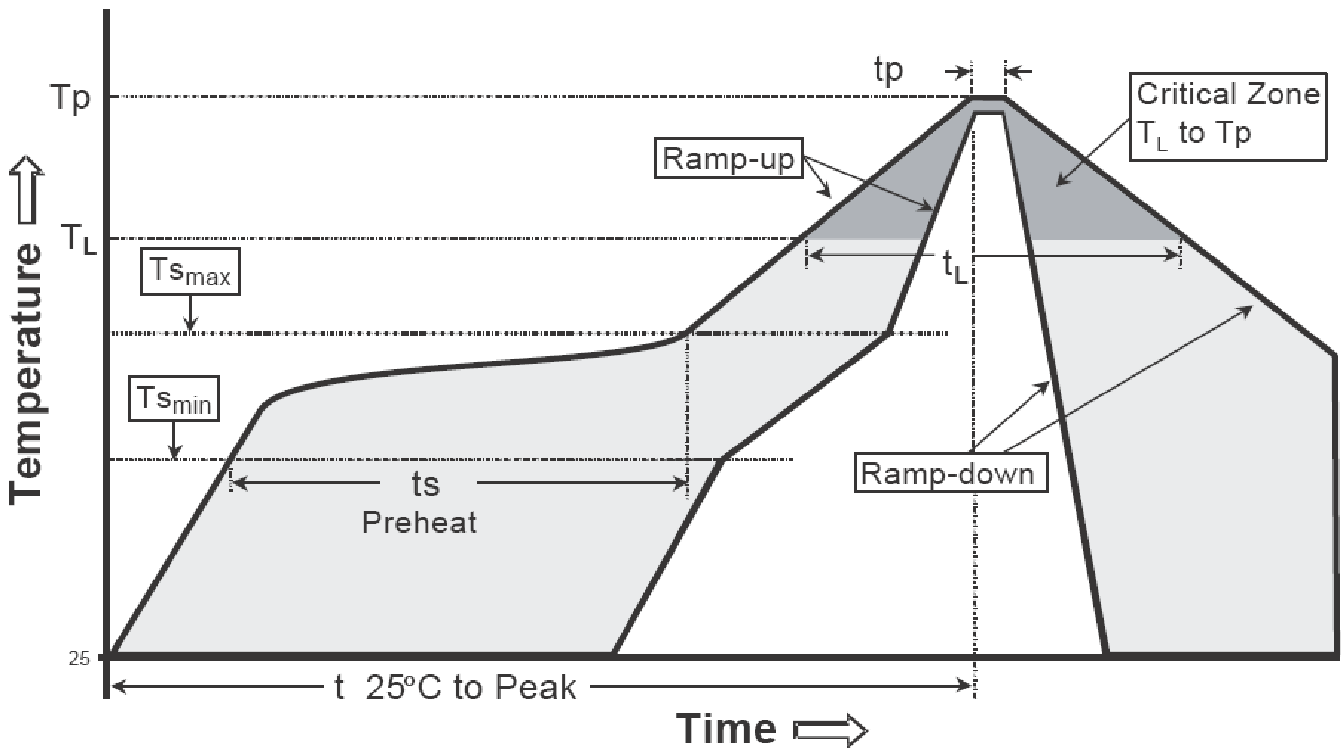
Carrier Tape Dimension



Recommended wave soldering condition

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

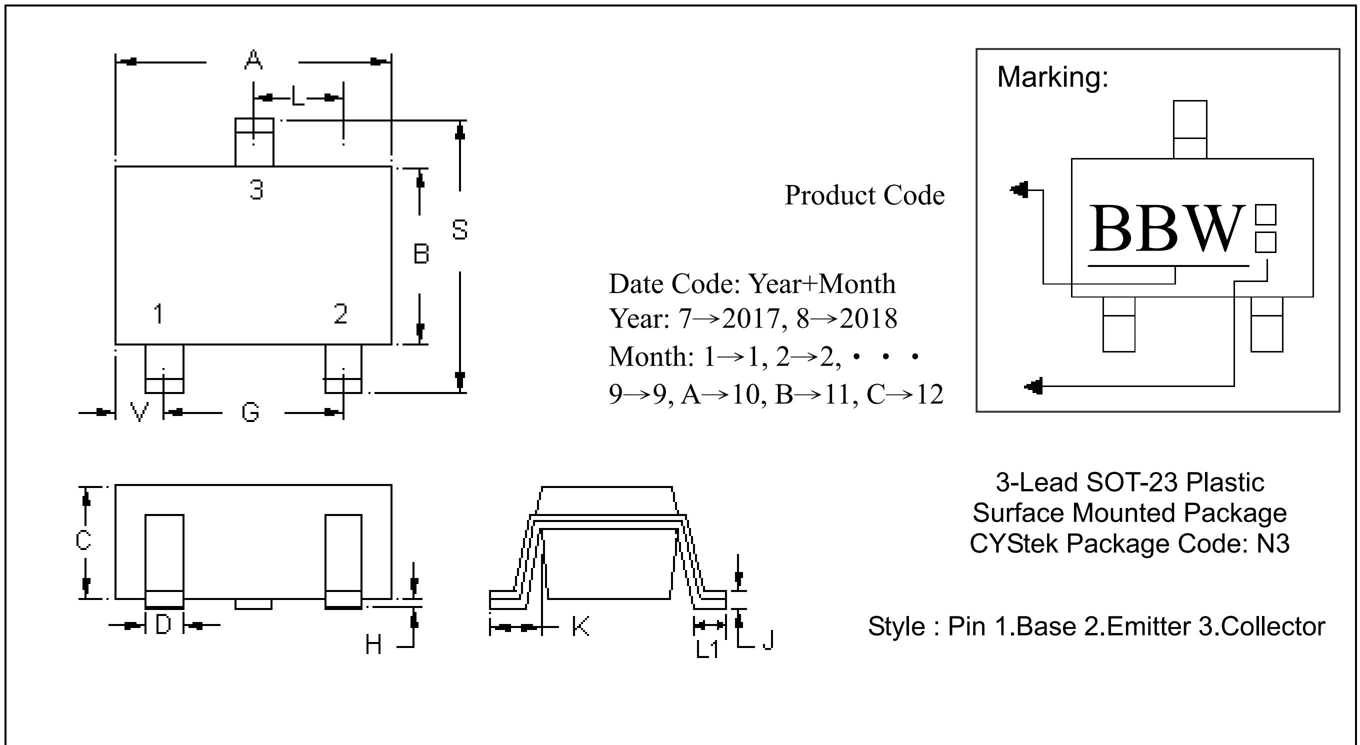
Recommended temperature profile for IR reflow



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	0.0551	1.20	1.40	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	0.1004	2.10	2.55
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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