General Purpose PNP Epitaxial Planar Transistor

BTB5213L3

Description

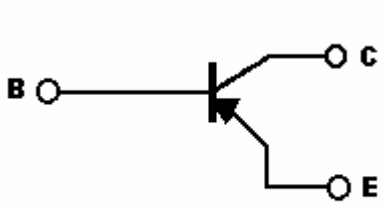
General purpose mainly intended for use in medium power industrial application and for audio amplifier output stage.

Features

- High collector current and low $V_{CE(SAT)}$.
- Complement to BTD5213L3.
- Pb-free lead plating package.

Symbol

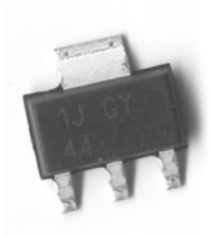
BTB5213L3



B：Base
C：Collector
E：Emitter

Outline

SOT-223



B C E

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-100	V
Collector-Emitter Voltage	V_{CEO}	-80	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current(DC)	I_C	-1	A
Collector Current(Pulse)	I_{CP}	-1.5	A
Power Dissipation @T_C=25℃	Pd	2	W
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	-100	-	-	V	I_C=-100μA
BV_{CEO}	-80	-	-	V	I_C=-10mA
BV_{EBO}	-5	-	-	V	I_E=-10μA
I_{CBO}	-	-	-100	nA	V_{CB}=-80V
I_{EBO}	-	-	-100	nA	V_{EB}=-5V
*$V_{CE(sat)}$1	-	-0.16	-0.3	V	I_C=-500mA, I_B=-50mA
*$V_{CE(sat)}$2	-	-	-0.6	V	I_C=-700mA, I_B=-35mA
*$V_{BE(sat)}$	-	-	-1.2	V	I_C=-1A, I_B=-50mA
*$V_{BE(on)}$	-	-	-1.0	V	V_{CE}=-2V, I_C=-500mA
*h_{FE}1	100	-	-	-	V_{CE}=-2V, I_C=-5mA
*h_{FE}2	100	-	400	-	V_{CE}=-2V, I_C=-150mA
*h_{FE}3	50	-	-	-	V_{CE}=-2V, I_C=-500mA
f_T	-	125	-	MHz	V_{CE}=-10V, I_C=-50mA, f=100MHz
Cob	-	-	10	pF	V_{CB}=-10V, I_E=0A,f=1MHz

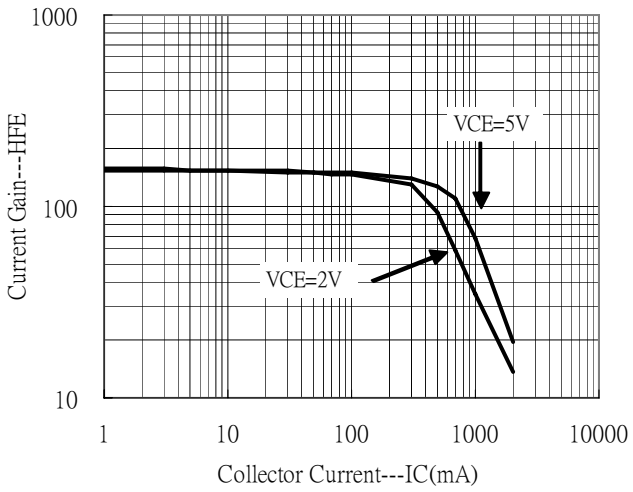
*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

Ordering Information

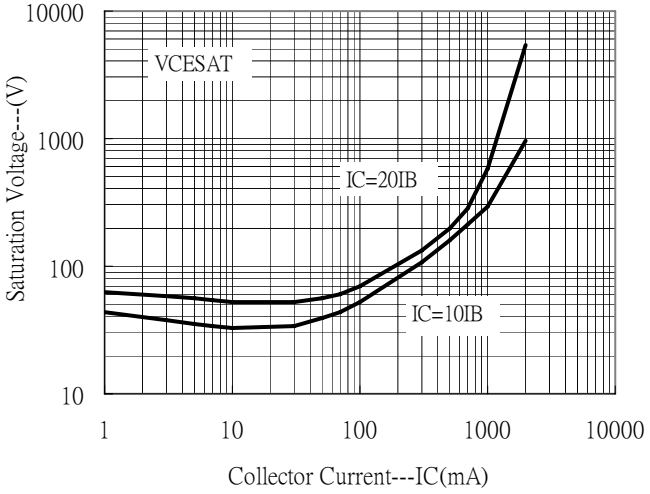
Device	Package	Shipping	Marking
BTB5213L3	SOT-223 (Pb-free lead plating package)	2500 pcs / Tape & Reel	AK

Typical Characteristics

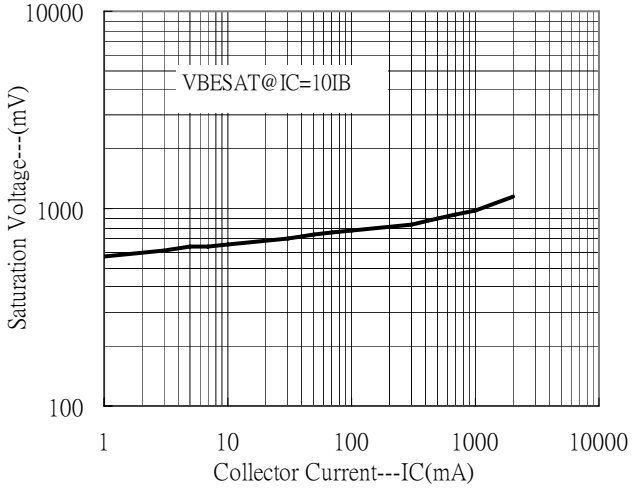
Current Gain vs Collector Current



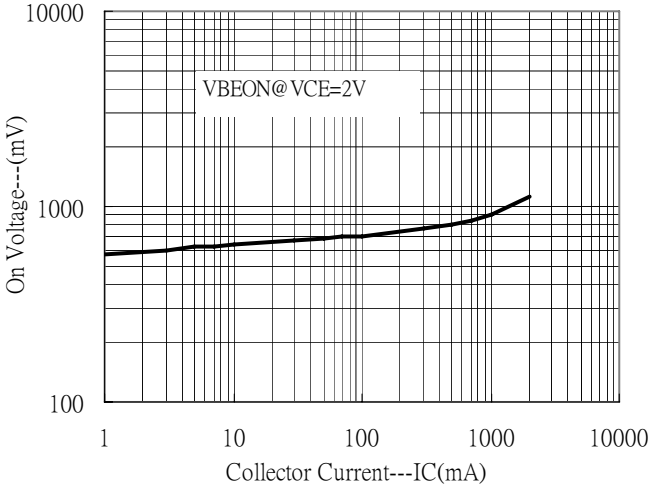
Saturation Voltage vs Collector Current



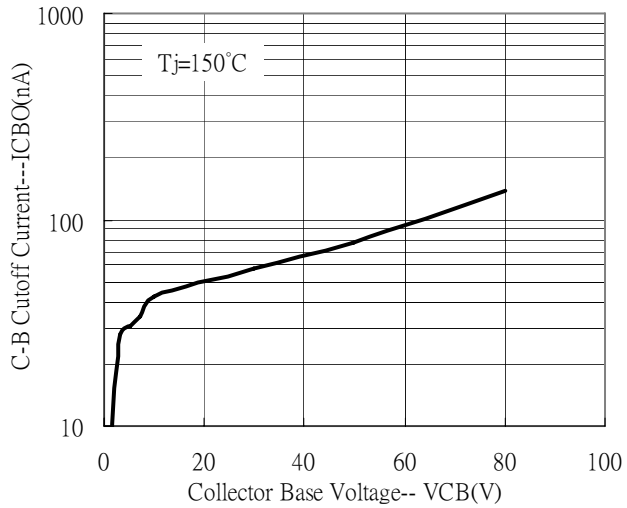
Saturation Voltage vs Collector Current



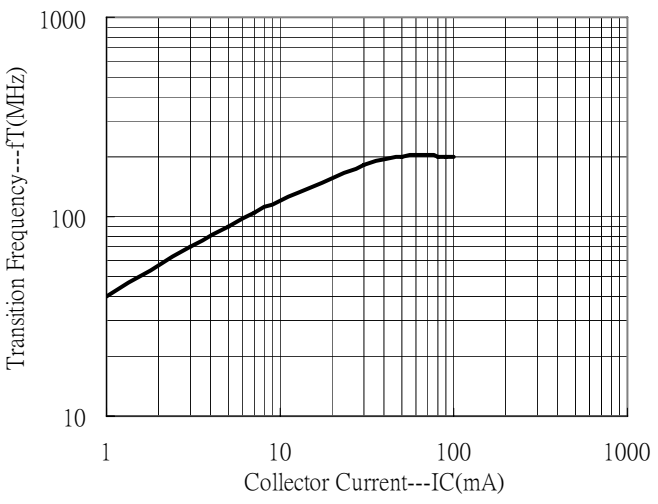
On Voltage vs Collector Current



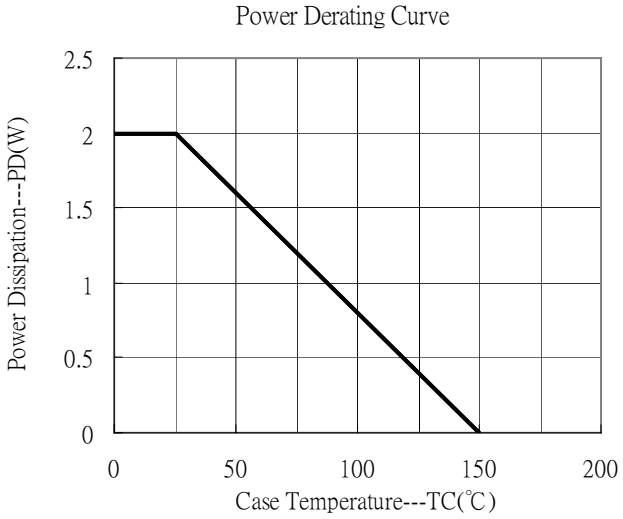
Typical Cutoff Current Characteristics



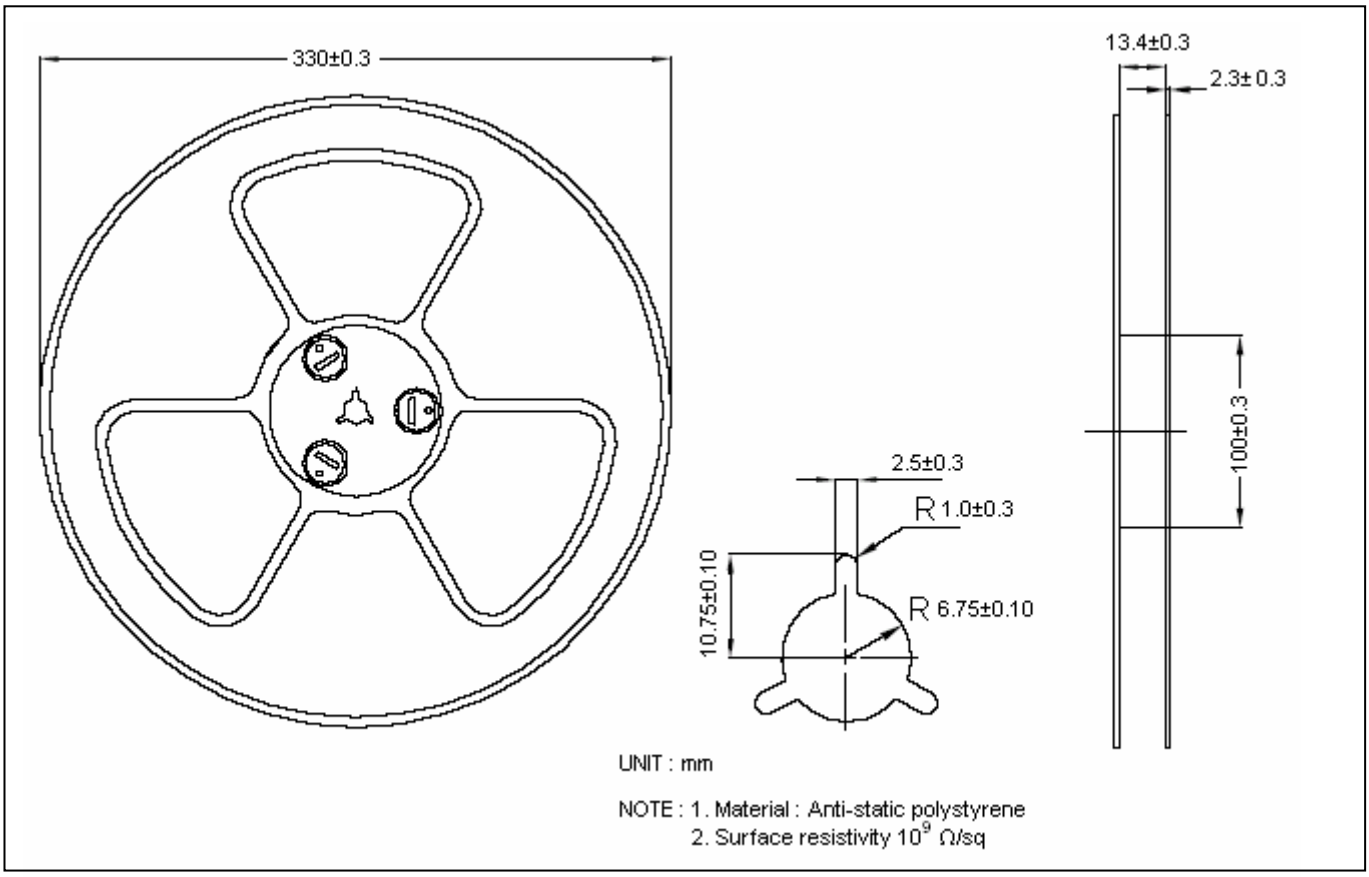
Transition Frequency vs Collector Current



Typical Characteristics(Cont.)



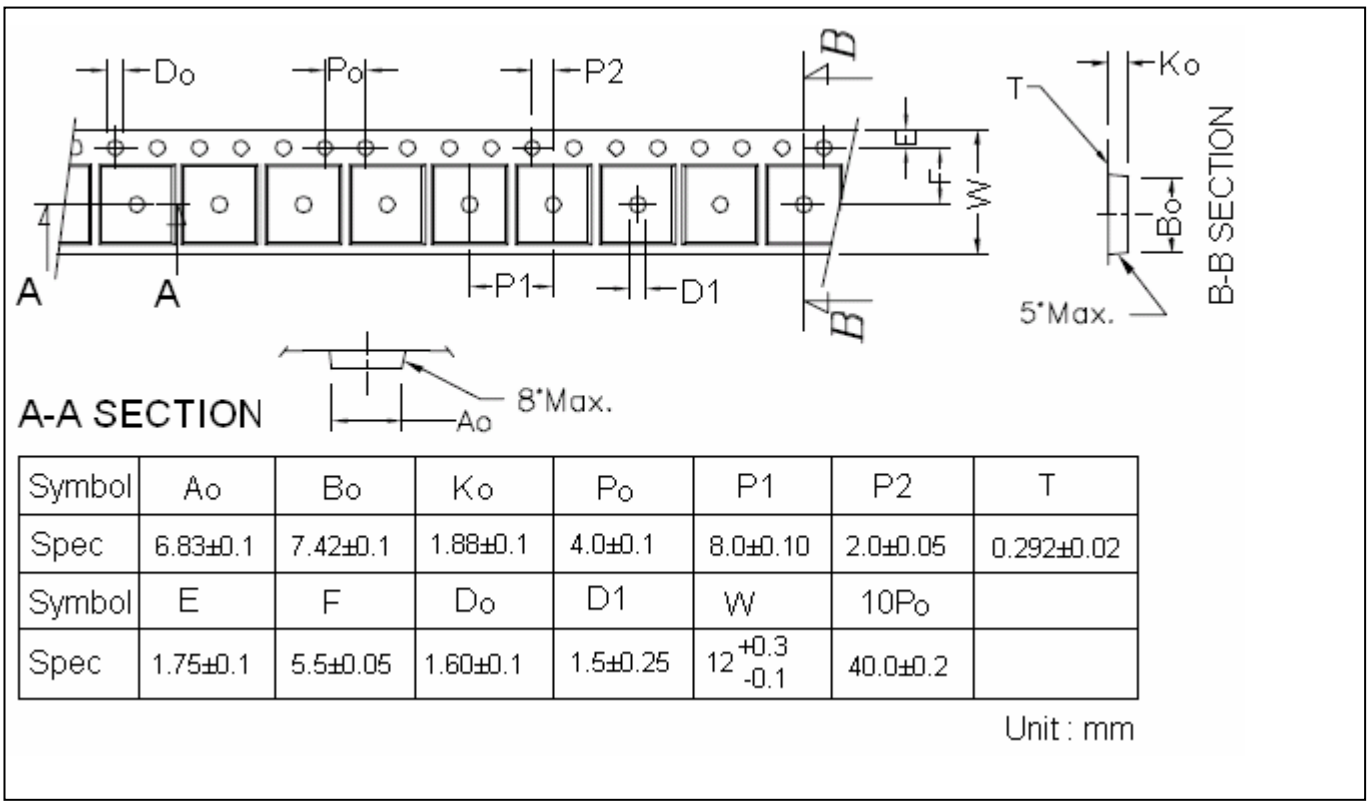
Reel Dimension



UNIT : mm

NOTE : 1. Material : Anti-static polystyrene
2. Surface resistivity 10^9 Ω/sq

Carrier Tape Dimension



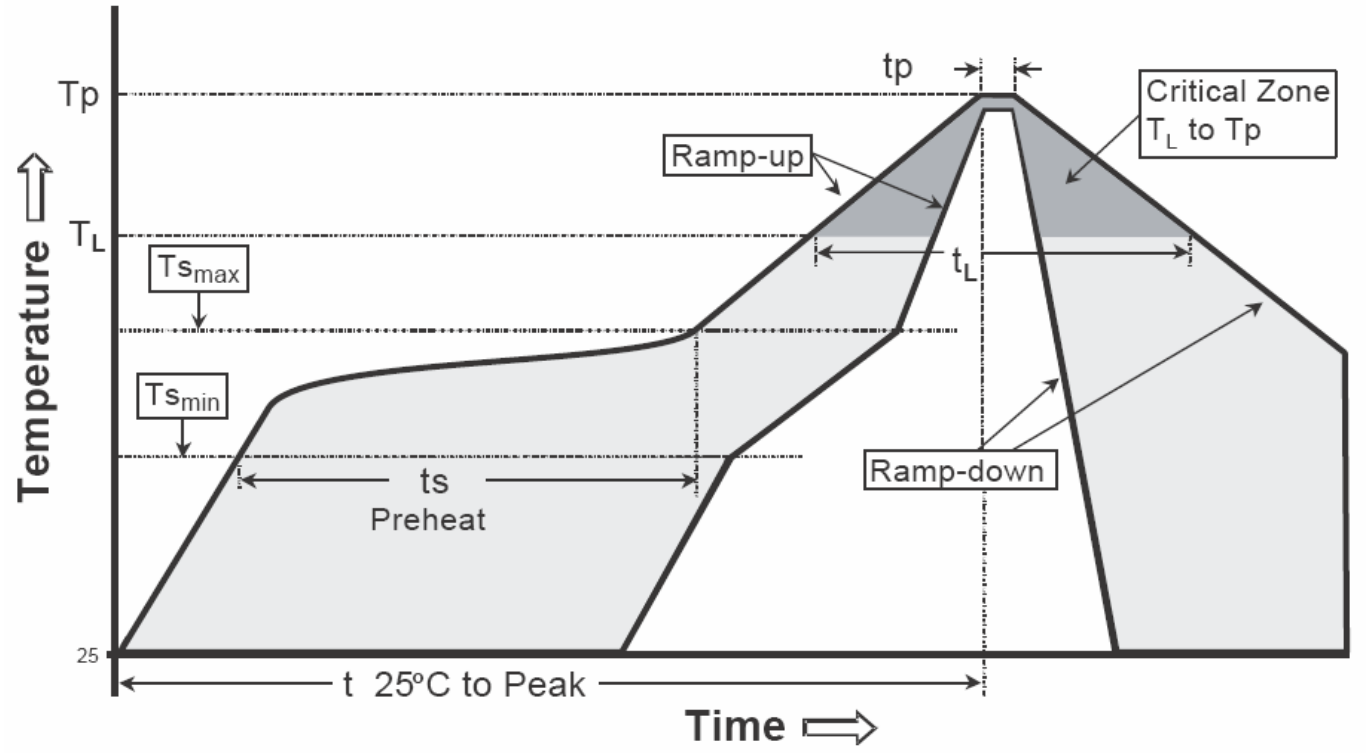
Symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	6.83±0.1	7.42±0.1	1.88±0.1	4.0±0.1	8.0±0.10	2.0±0.05	0.292±0.02
Symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	5.5±0.05	1.60±0.1	1.5±0.25	$12^{+0.3}_{-0.1}$	40.0±0.2	

Unit : mm

Recommended wave soldering condition

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

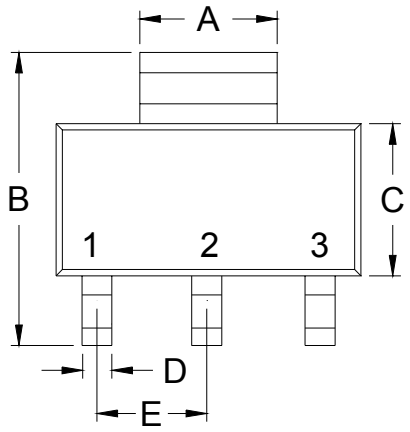
Recommended temperature profile for IR reflow

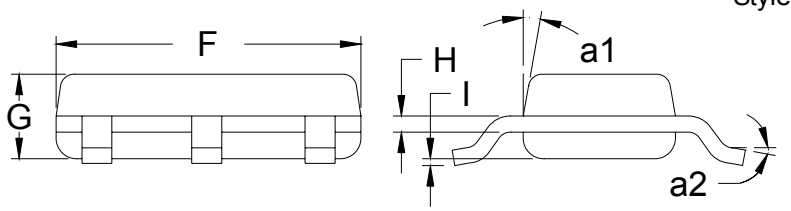


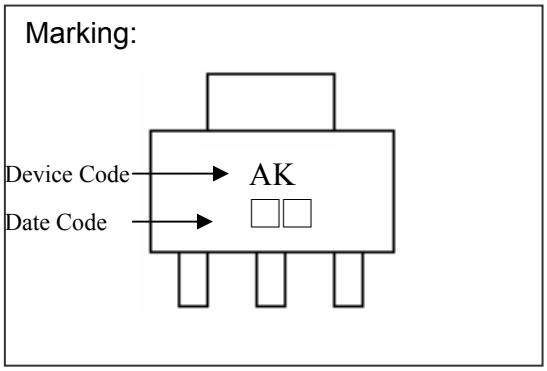
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (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-223 Dimension







Style: Pin 1.Base 2.Collector 3.Emitter

3-Lead SOT-223 Plastic
Surface Mounted Package
CYStek Package Code: L3

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1142	0.1220	2.90	3.10	G	0.0551	0.0709	1.40	1.80
B	0.2638	0.2874	6.70	7.30	H	0.0098	0.0138	0.25	0.35
C	0.1299	0.1457	3.30	3.70	I	0.0008	0.0039	0.02	0.10
D	0.0236	0.0315	0.60	0.80	a1	*13°	-	*13°	-
E	*0.0906	-	*2.30	-	a2	0°	10°	0°	10°
F	0.2480	0.2638	6.30	6.70					

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