Silicon PNP Epitaxial Planar Transistor

BTB1238AL3

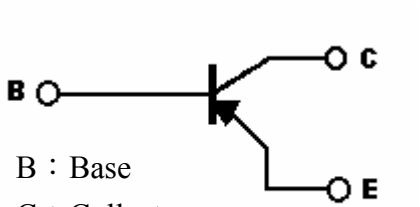
BV_{CEO}	-240V
I_C	-1A
$V_{CESAT(Max)}$	-0.3V

Description

- High BV_{CEO}
- High current capability
- RoHS compliant package
- Pb-free lead plating and halogen-free package

Symbol

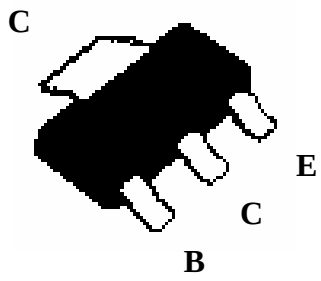
BTB1238AL3



B：Base
C：Collector
E：Emitter

Outline

SOT-223



Absolute Maximum Ratings (Ta=25°C, unless otherwise specified)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	-240	V
Collector-Emitter Voltage	V_{CEO}	-240	V
Emitter-Base Voltage	V_{EBO}	-7	V
Collector Current (DC)	I_C	-1	A
Collector Current (Pulse)	I_{CP}	-2	A
Base Current	I_B	-200	mA
Power Dissipation	P_D	3 (Note)	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	41.7	°C/W
Operating Junction and Storage Temperature Range	Tj ; Tstg	-55 ~ +150	°C

Note: The power which can be dissipated assuming the device is mounted in a typical manner on a P.C.B. with copper equal to 4 square inch minimum.

Characteristics (Ta=25°C, unless otherwise specified)

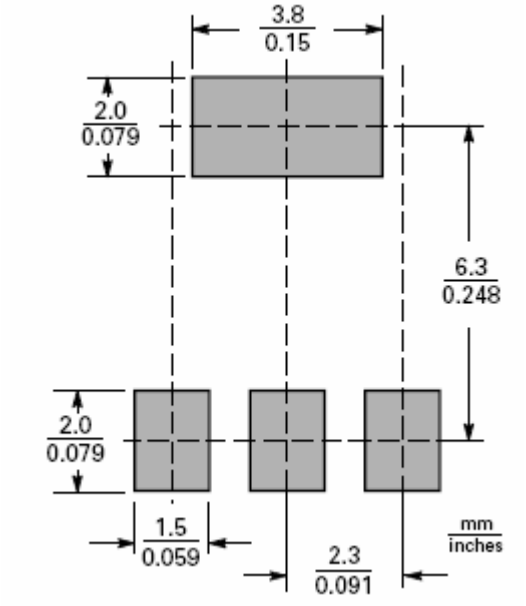
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	-240	-	-	V	I_C=-50μA, I_E=0
BV_{CEO}	-240	-	-	V	I_C=-1mA, I_B=0
BV_{EBO}	-7	-	-	V	I_E=-50μA, I_C=0
I_{CBO}	-	-	-100	nA	V_{CB}=-240V, I_E=0
I_{EBO}	-	-	-100	nA	V_{EB}=-7V, I_C=0
*$V_{CE(sat)}$	-	-	-0.3	V	I_C=-500mA, I_B=-50mA
*$V_{CE(sat)}$	-	-	-3	V	I_C=-1A, I_B=-100mA
*$V_{BE(sat)}$	-	-	-1.1	V	I_C=-1A, I_B=-100mA
*$V_{BE(on)}$	-	-	-0.9	V	V_{CE}=-5V, I_C=-150mA
$h_{FE}1$	120	-	400	-	V_{CE}=-5V, I_C=-100mA
$h_{FE}2$	60	-	-	-	V_{CE}=-5V, I_C=-500mA
f_T	-	140	-	MHz	V_{CE}=-5V, I_C=-150mA
Cob	-	27	-	pF	V_{CB}=-10V, I_E=0, f=1MHz

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

Ordering Information

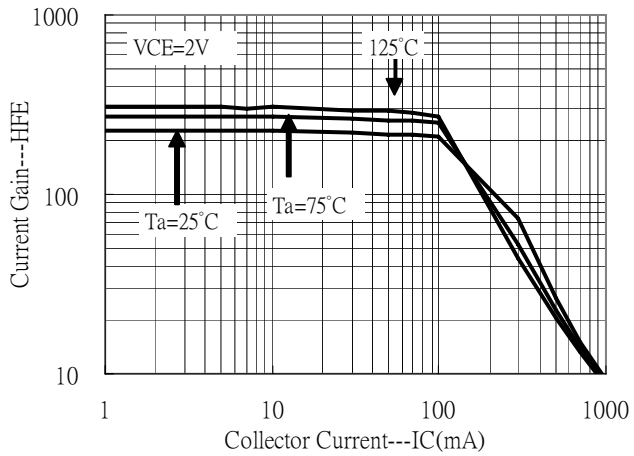
Device	Package	Shipping
BTB1238AL3-0-T3-G	SOT-223 (Pb-free lead plating and halogen-free package)	2500 pcs / Tape & Reel

Recommended soldering footprint

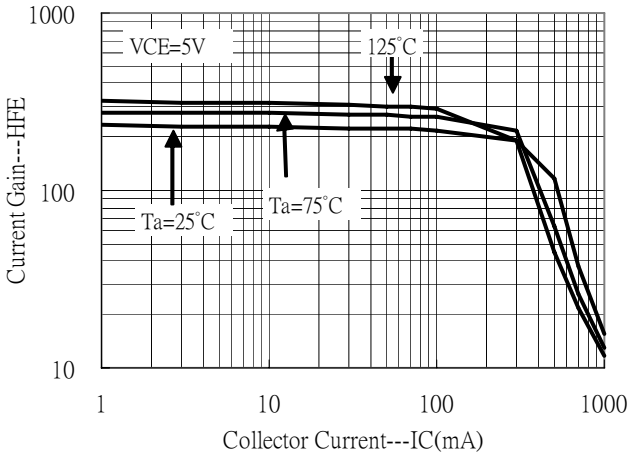


Typical Characteristics

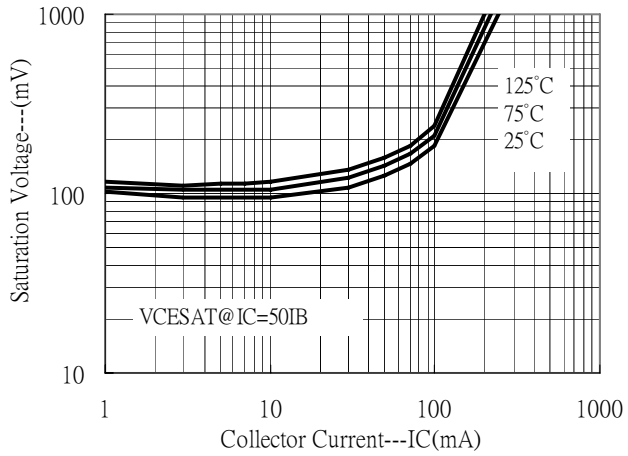
Current Gain vs Collector Current



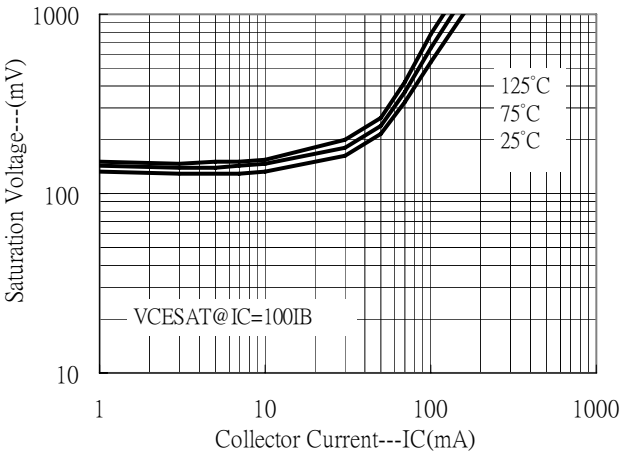
Current Gain vs Collector Current



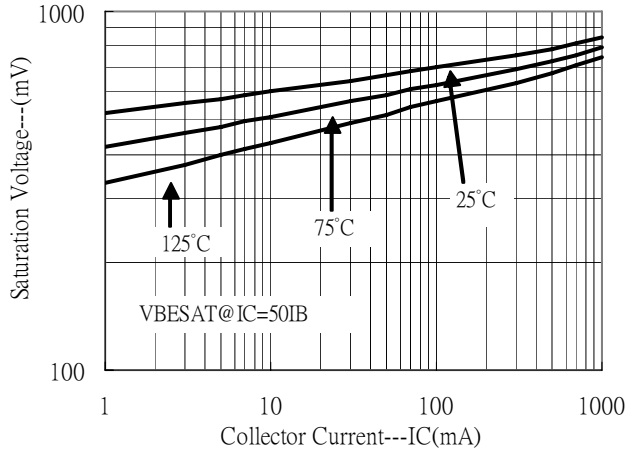
Saturation Voltage vs Collector Current



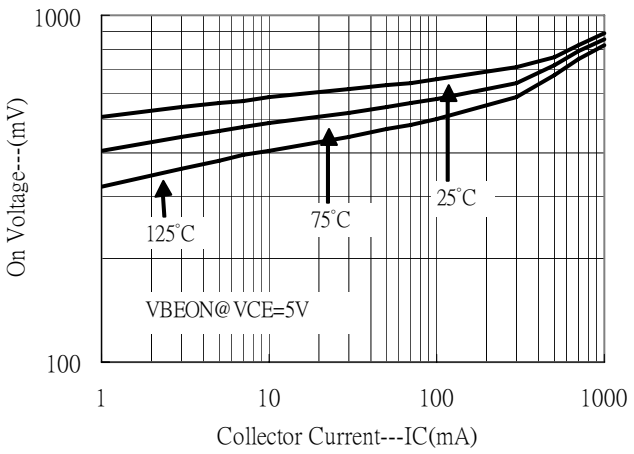
Saturation Voltage vs Collector Current



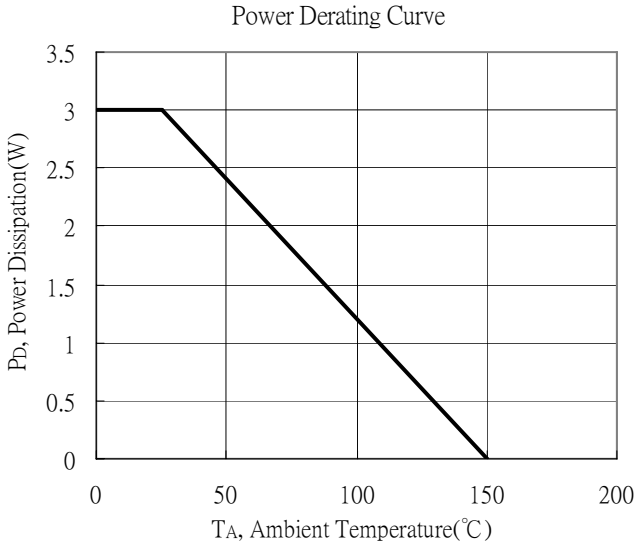
Saturation Voltage vs Collector Current



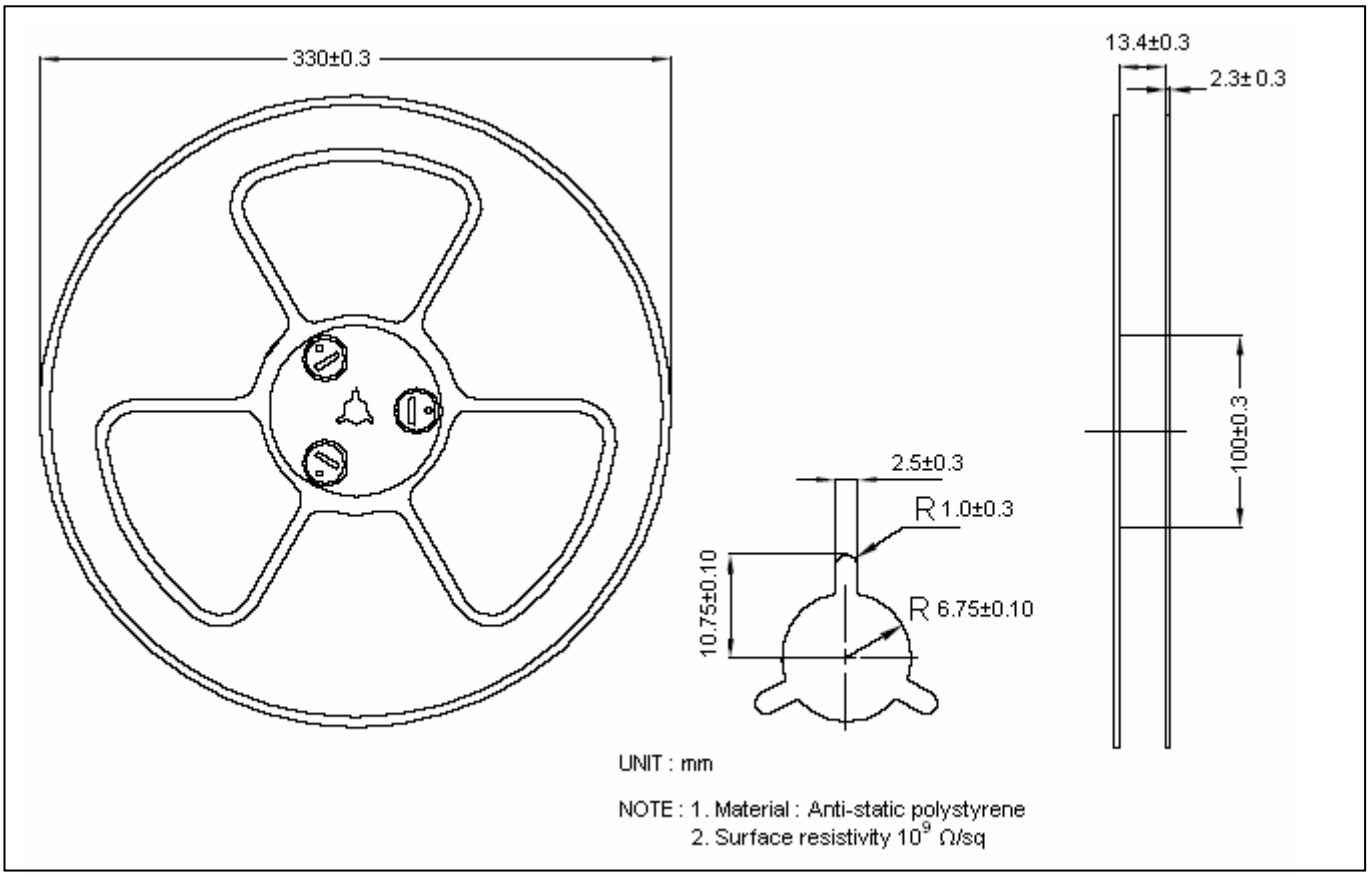
On Voltage vs Collector Current



Typical Characteristics(Cont.)



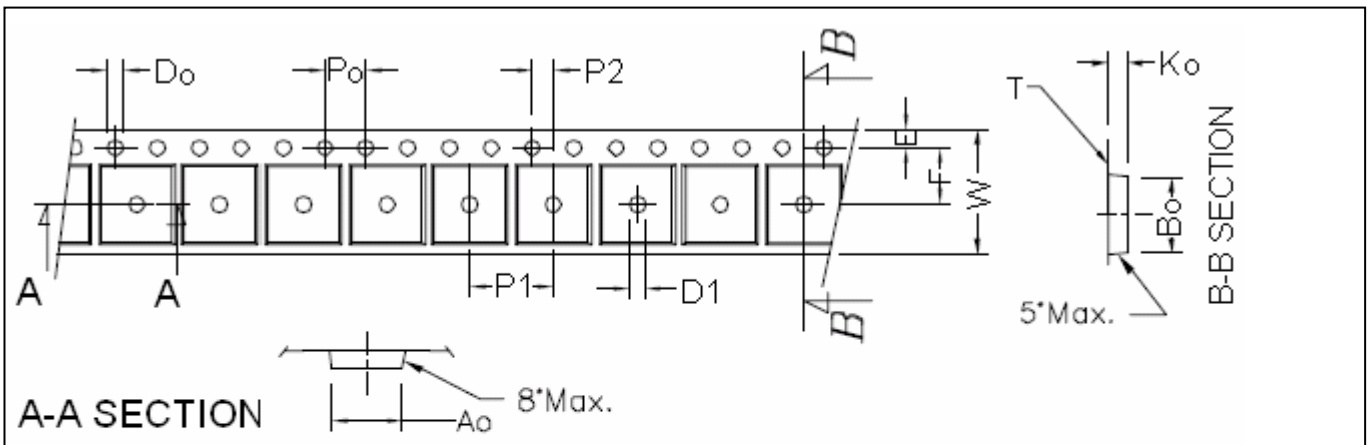
Reel Dimension



UNIT : mm

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

Carrier Tape Dimension



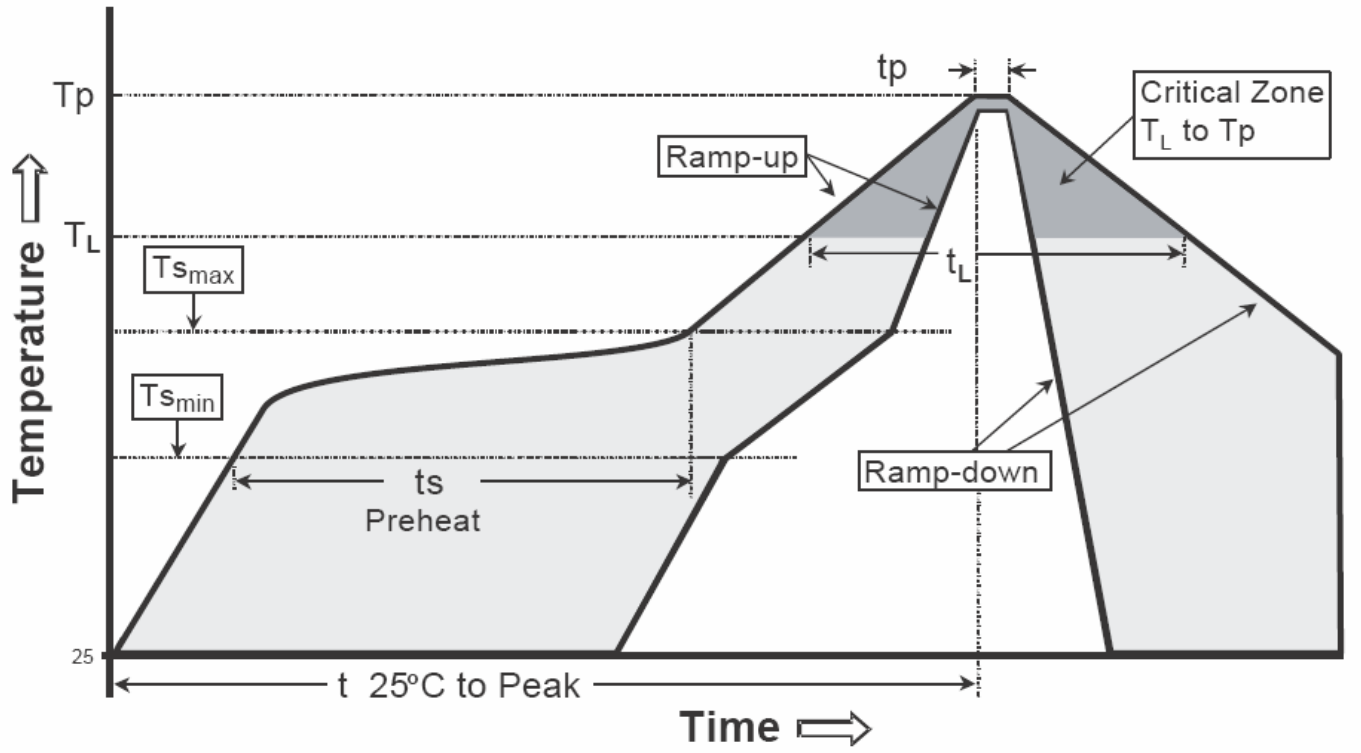
Symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	6.83±0.1	7.42±0.1	1.88±0.1	4.0±0.1	8.0±0.10	2.0±0.05	0.292±0.02
Symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	5.5±0.05	1.60±0.1	1.5±0.25	$12^{+0.3}_{-0.1}$	40.0±0.2	

Unit : mm

Recommended wave soldering condition

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

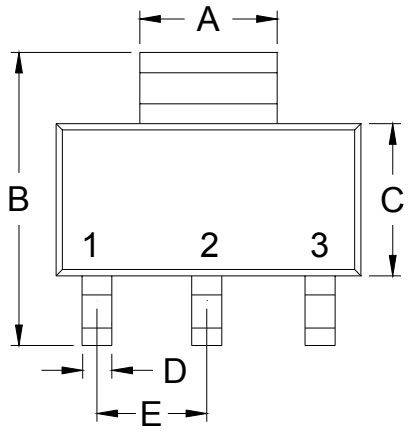
Recommended temperature profile for IR reflow

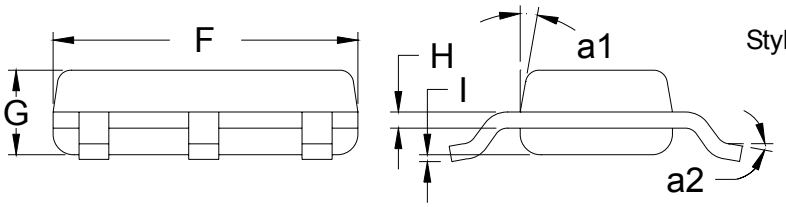


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(TP)	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.

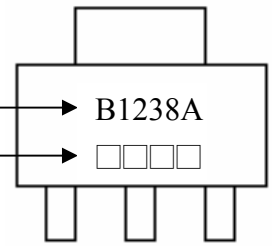
Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-223 Dimension





Marking:



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.