Low Vcesat NPN Epitaxial Planar Transistor

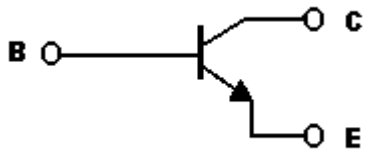
BTD2444S3

Features

- The BTD2444S3 is designed for general purpose low frequency power amplifier applications.
- Low $V_{CE}(sat)$, $V_{CE}(sat)$=40mV (typical), at I_C / I_B = 50mA / 2.5mA
- Pb-free lead plating and halogen-free package

Symbol

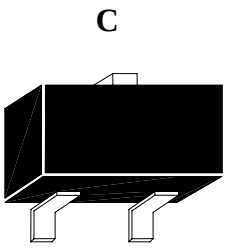
BTD2444S3



B：Base
C：Collector
E：Emitter

Outline

SOT-323



Ordering Information

Device	Package	Shipping
BTD2444S3-0-T1-G	SOT-323 (Pb-free and halogen-free package)	3000 pcs / Tape & Reel

Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, T1 : 3000 pcs / tape & reel, 7” reel

Product rank, zero for no rank products

Product name

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	40	V
Collector-Emitter Voltage	V_{CEO}	25	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current (DC)	I_C	800	mA
Collector Current (Pulse)	I_{CP}	1.5 (Note)	A
Power Dissipation	Pd	225	mW
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	-55~+150	°C

Note : Single pulse, Pw=10ms

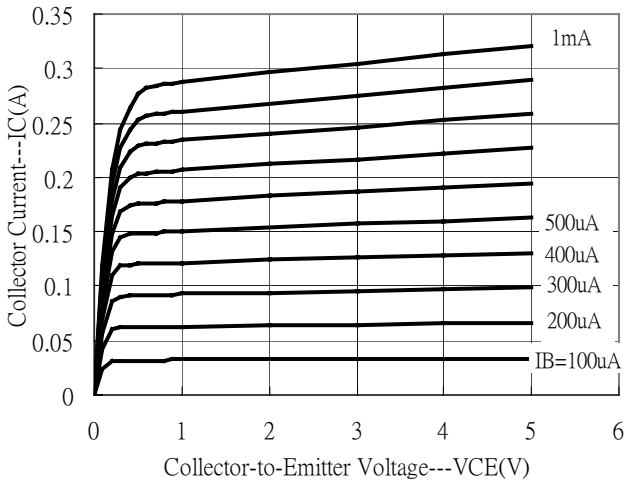
Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	40	-	-	V	I_C=100μA, I_E=0
BV_{CEO}	25	-	-	V	I_C=2mA, I_B=0
BV_{EBO}	6	-	-	V	I_E=100μA, I_C=0
I_{CBO}	-	-	0.5	μA	V_{CB}=30V, I_E=0
I_{EBO}	-	-	0.5	μA	V_{EB}=6V, I_C=0
*$V_{CE(sat)}$1	-	40	60	mV	I_C=50mA, I_B=2.5mA
*$V_{CE(sat)}$2	-	0.2	0.3	V	I_C=400mA, I_B=20mA
*$V_{CE(sat)}$3	-	0.3	0.5	V	I_C=800mA, I_B=80mA
*$V_{BE(on)}$	-	-	1	V	V_{CE}=1V, I_C=10mA
*h_{FE}1	180	-	560	-	V_{CE}=1V, I_C=100mA
*h_{FE}2	40	-	-	-	V_{CE}=1V, I_C=500mA
*h_{FE}3	82	-	-	-	V_{CE}=2V, I_C=50mA
f_T	100	-	-	MHz	V_{CE}=5V, I_C=50mA, f=100MHz
Cob	-	6	-	pF	V_{CB}=10V, f=1MHz

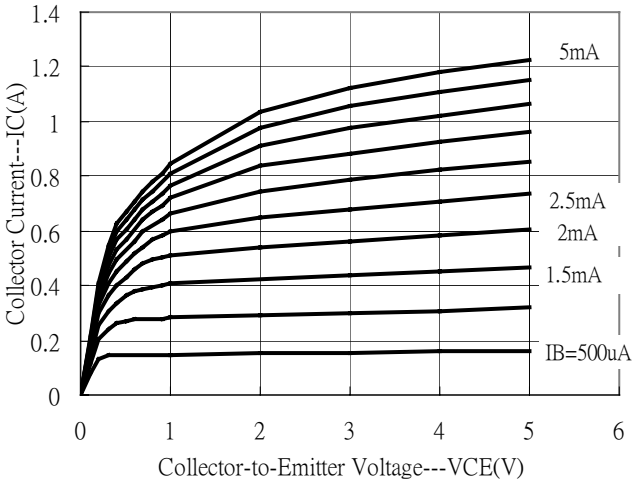
*Pulse Test : Pulse Width ≤380μs, Duty Cycle≤2%

Typical Characteristics

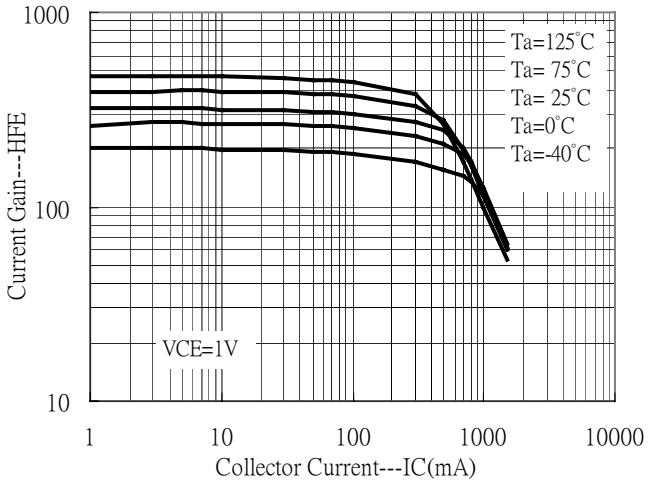
Emitter Grounded Output Characteristics



Emitter Grounded Output Characteristics



Current Gain vs Collector Current



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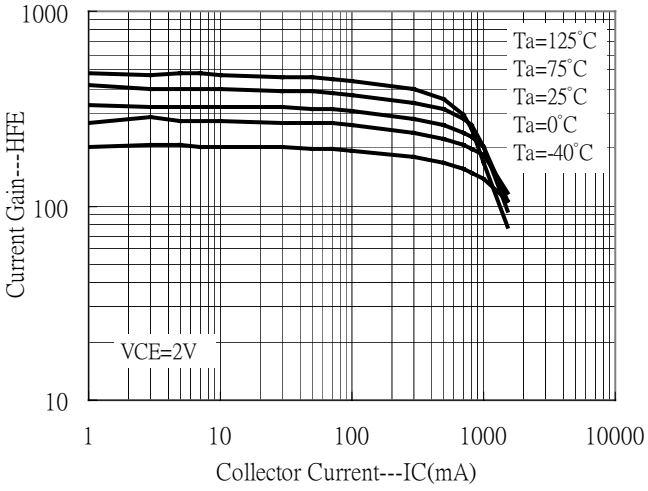

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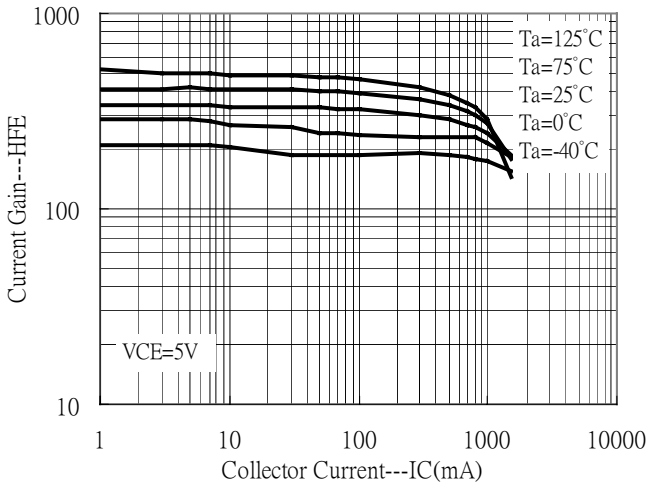
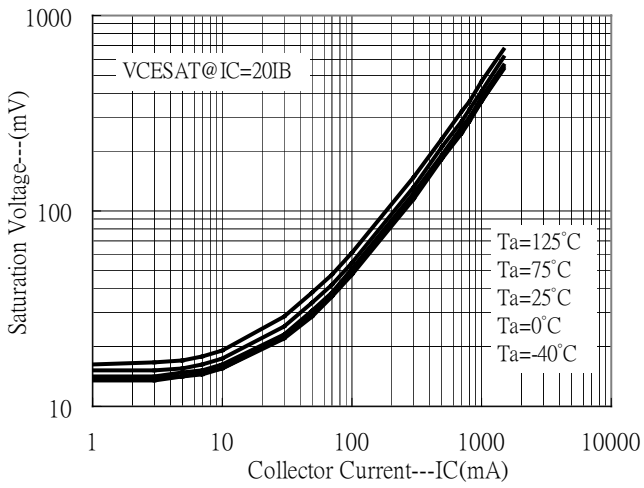
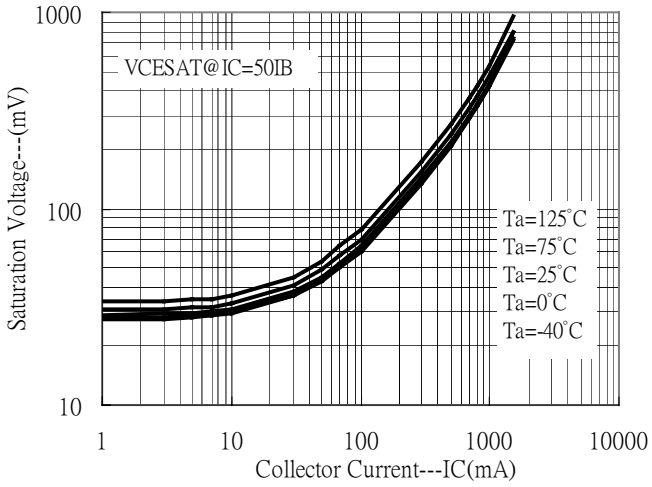


Saturation Voltage vs Collector Current

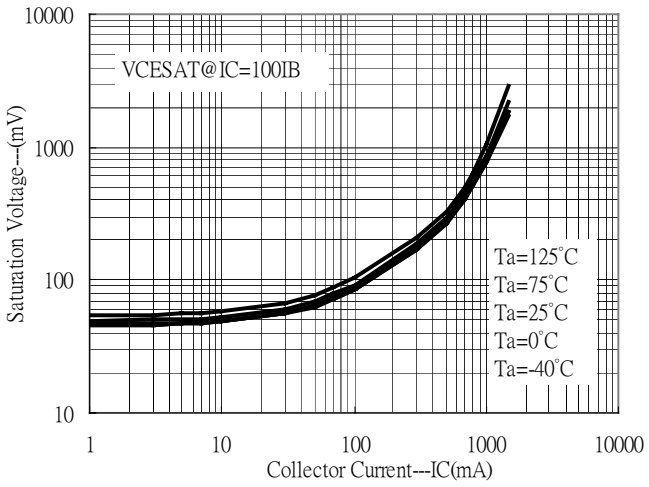


Typical Characteristics(Cont.)

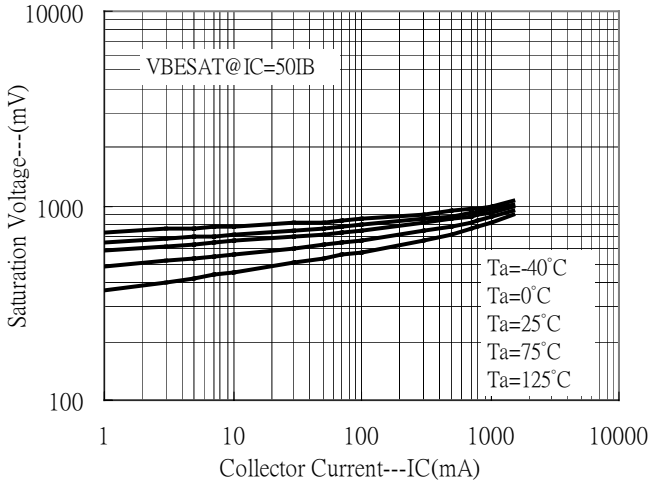
Saturation Voltage vs Collector Current



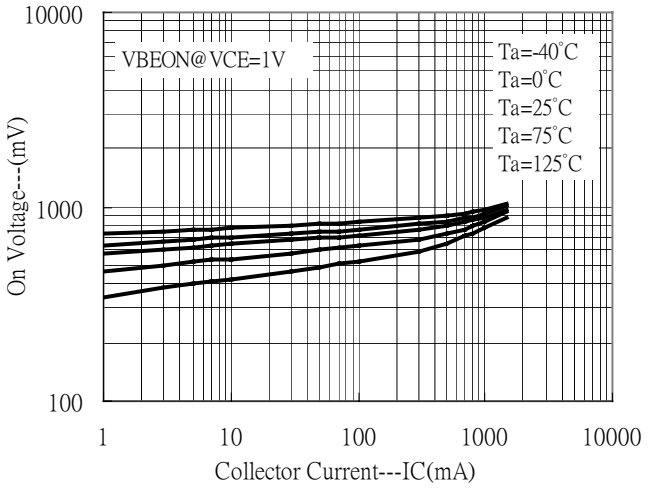
Saturation Voltage vs Collector Current



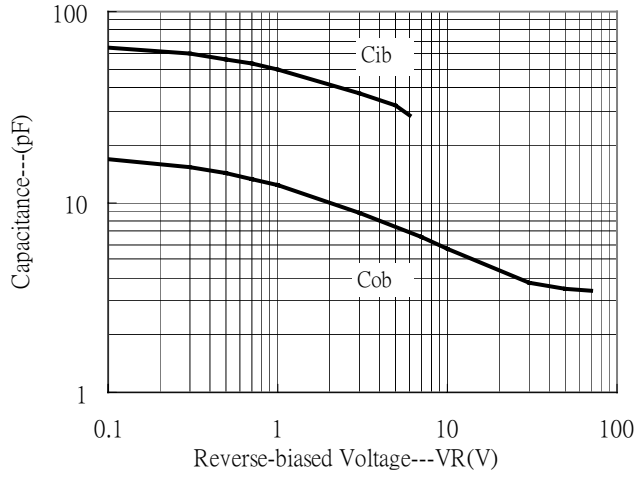
Saturation Voltage vs Collector Current



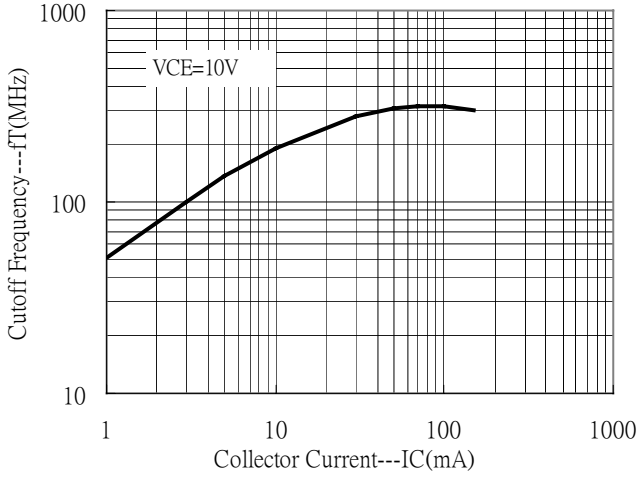
On Voltage vs Collector Current



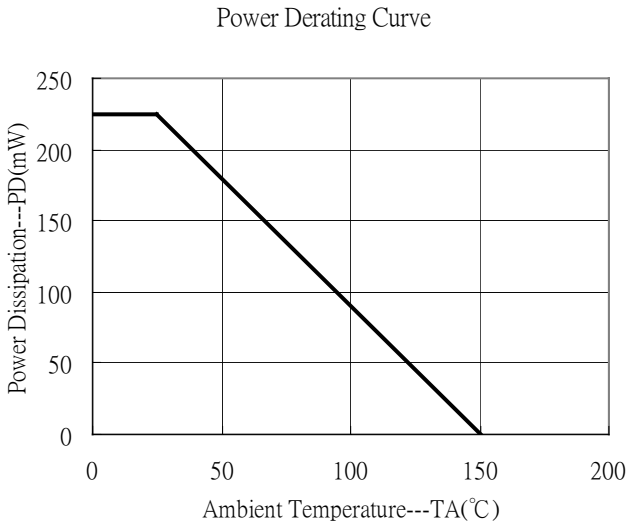
Capacitance vs Reverse-biased Voltage



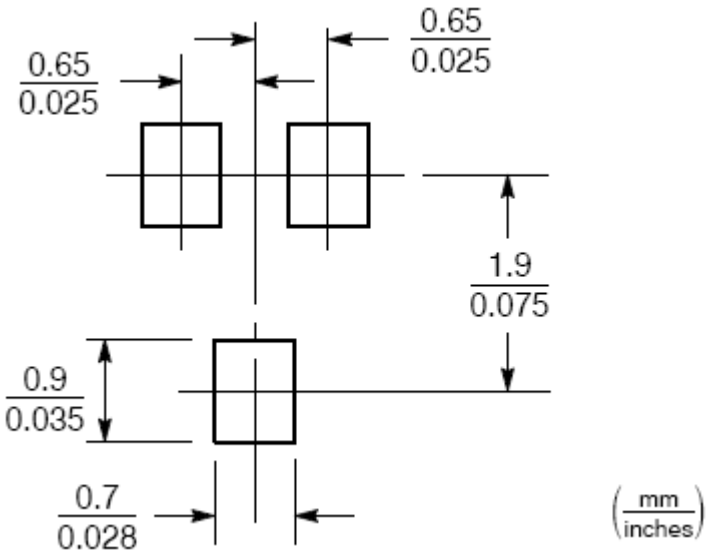
Cutoff Frequency vs Collector Current



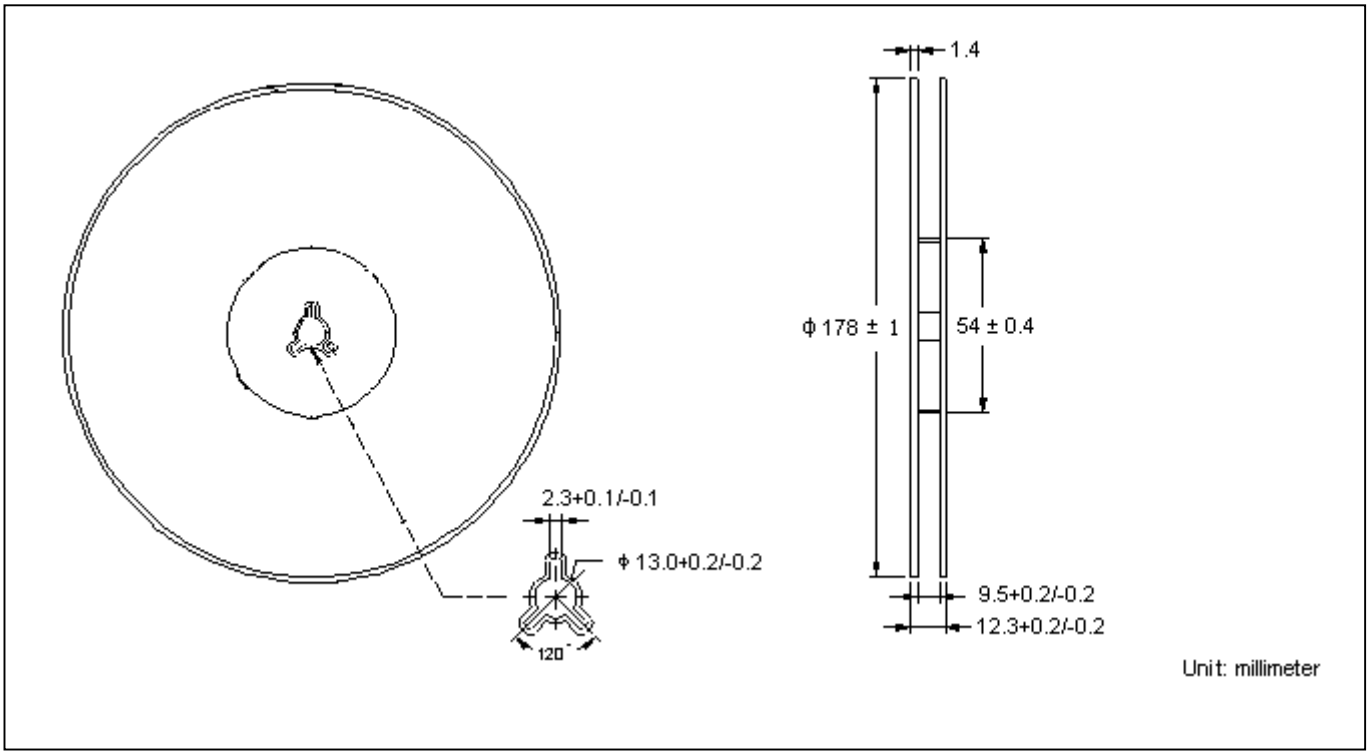
Typical Characteristics(Cont.)



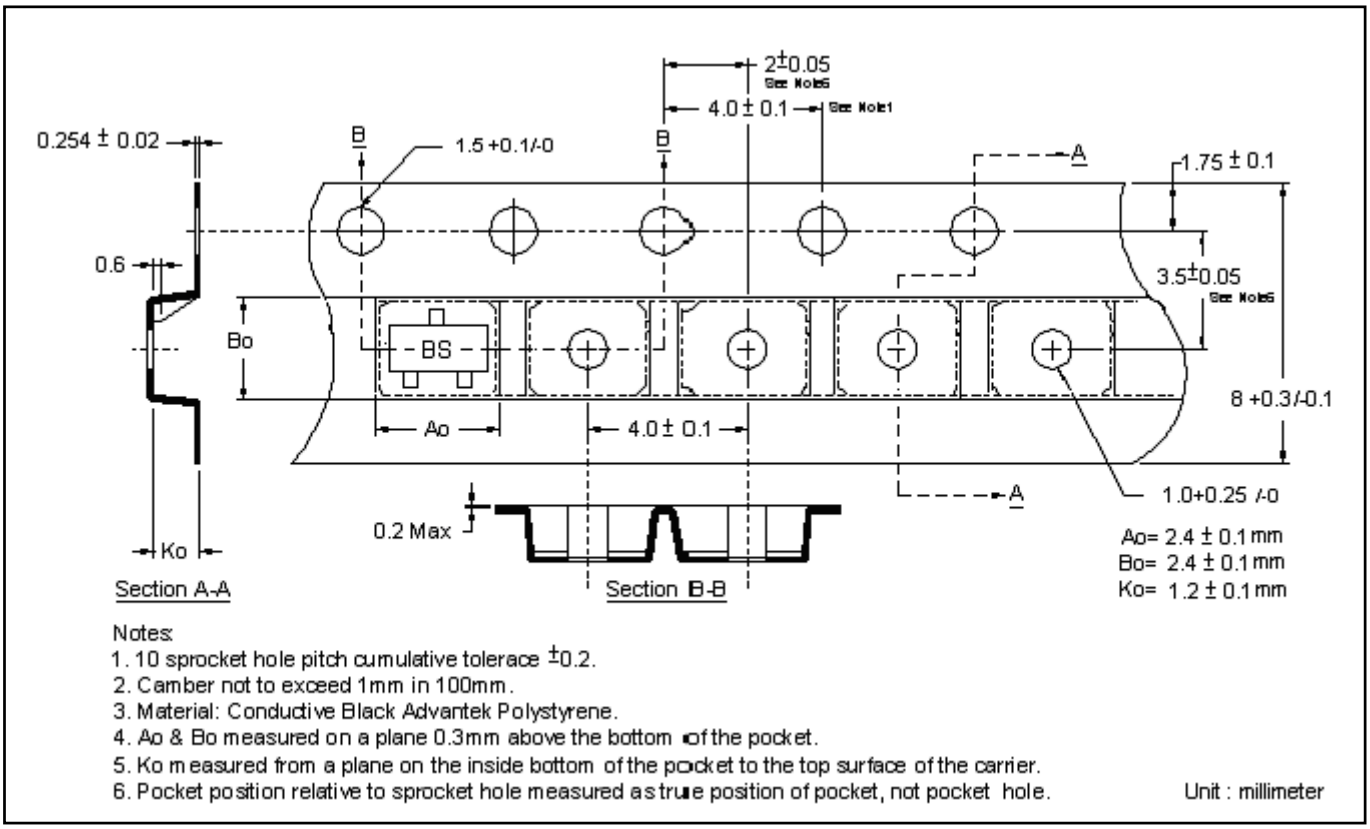
Recommended Soldering Footprint



Reel Dimension



Carrier Tape Dimension



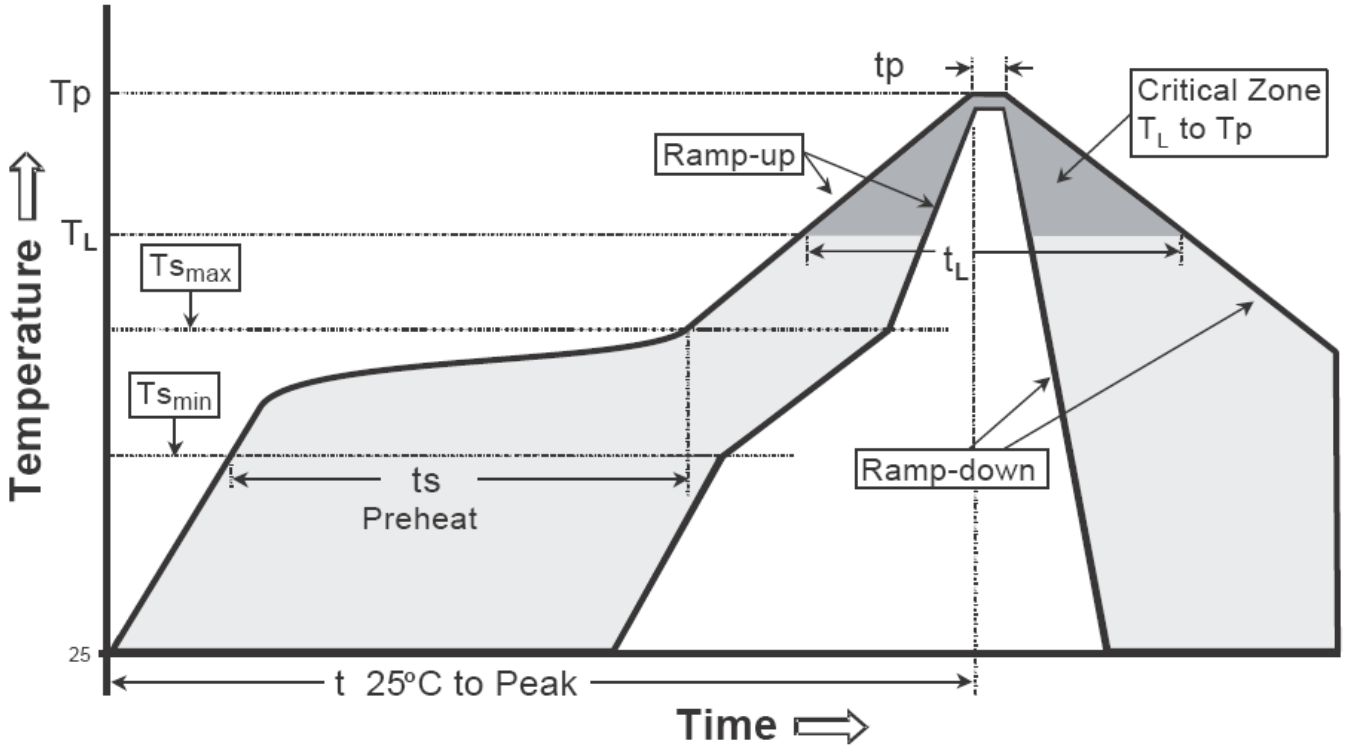
Notes:
1. 10 sprocket hole pitch cumulative tolerace ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

Recommended wave soldering condition

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

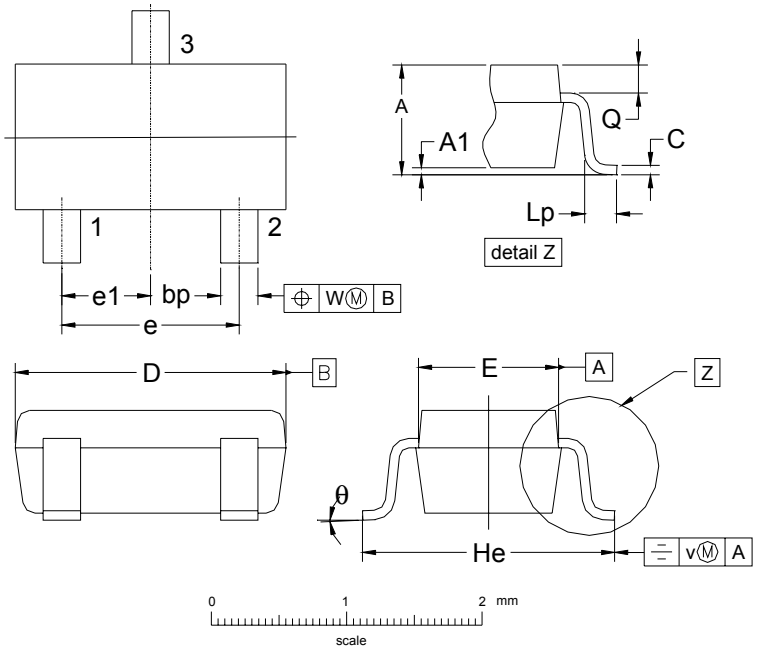
Recommended temperature profile for IR reflow

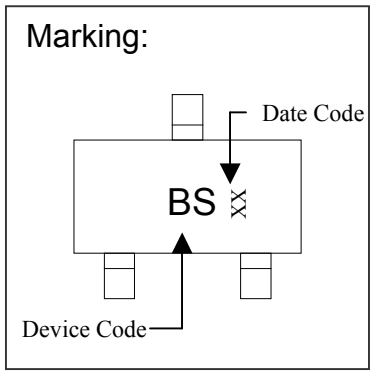


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (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-323 Dimension





3-Lead SOT-323 Plastic
Surface Mounted Package
CYStek Package Code: S3

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

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0315	0.0433	0.80	1.10	e1	0.0256*		0.65*	
A1	0.0000	0.0039	0.00	0.10	He	0.0846	0.0965	2.15	2.45
bp	0.0078	0.0157	0.20	0.40	Lp	0.0105	0.0181	0.26	0.46
C	0.0031	0.0059	0.08	0.15	Q	0.0051	0.0091	0.13	0.23
D	0.0709	0.0866	1.80	2.20	v	0.0079	-	0.2	-
E	0.0453	0.0531	1.15	1.35	w	0.0079	-	0.2	-
e	0.0472	0.0551	1.20	1.40	θ	0°	8°	0°	8°

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.