General Purpose NPN Epitaxial Planar Transistor

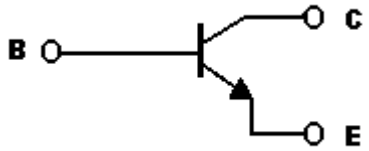
BTC5658Y3

Description

- The BTC5658Y3 is designed for use in driver stage of AF amplifier and low speed switching.
- Complementary to BTA2029Y3.
- Pb-free lead plating and halogen-free package.

Symbol

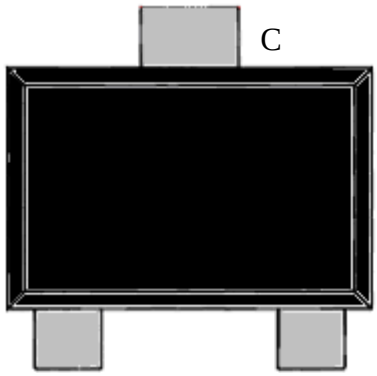
BTC5658Y3



B：Base
C：Collector
E：Emitter

Outline

SOT-723



Ordering Information

Device	Package	Shipping
BTC5658Y3-X-T5-G	SOT-723 (Pb-free lead plating and halogen-free package)	8000 pcs / tape & reel

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

Packing spec, T5 : 8000 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}	60	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current	I_C	150	mA
Power Dissipation @Ta=25℃	P_D	150	mW
Operating Junction Temperature Range	Tj	-55~+150	°C
Storage Temperature Range	Tstg	-55~+150	°C

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	60	-	-	V	I_C=50μA
BV_{CEO}	50	-	-	V	I_C=1mA
BV_{EBO}	7	-	-	V	I_E=50μA
I_{CBO}	-	-	100	nA	V_{CB}=60V
I_{EBO}	-	-	100	nA	V_{EB}=7V
*$V_{CE(sat)}$	-	0.1	0.3	V	I_C=50mA, I_B=5mA
*$V_{CE(sat)}$	-	0.2	0.5	V	I_C=100mA, I_B=10mA
*$V_{BE(sat)}$	-	0.8	1.1	V	I_C=50mA, I_B=5mA
*$V_{BE(sat)}$	-	0.9	1.2	V	I_C=100mA, I_B=10mA
*$V_{BE(ON)}$	-	0.64	0.7	V	V_{CE}=6V, I_C=1mA
h_{FE}	180	-	560	-	V_{CE}=6V, I_C=1mA
f_T	-	180	-	MHz	V_{CE}=12V, I_C=2mA, f=30MHz
Cob	-	2	3.5	pF	V_{CB}=12V, I_E=0A, f=1MHz

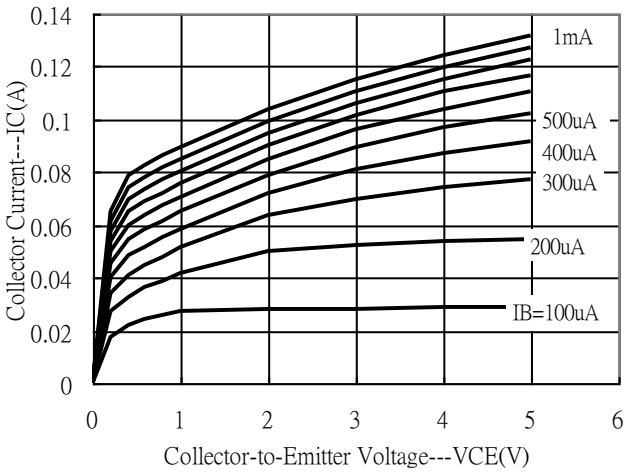
*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

Marking Code and Classification of h_{FE}

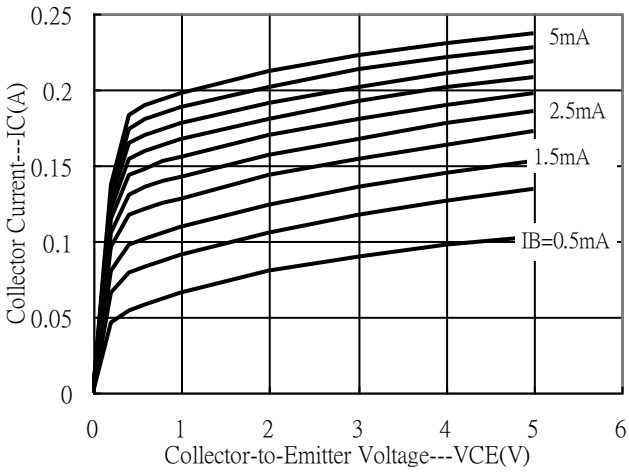
Rank	R	S
h_{FE} Range	180-390	270-560
Marking	BR	BS

Typical Characteristics

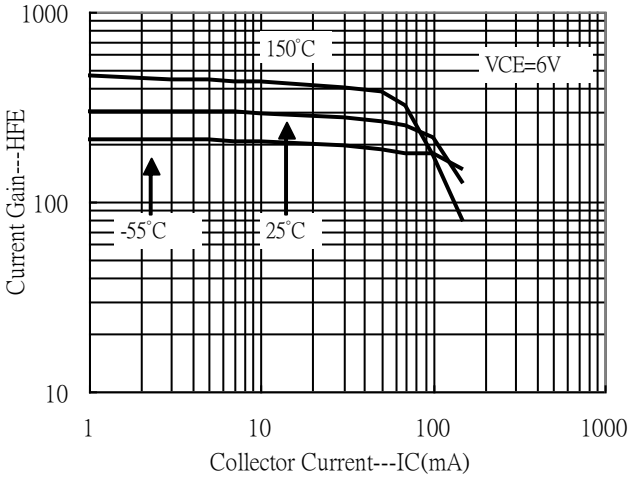
Emitter Grounded Output Characteristics



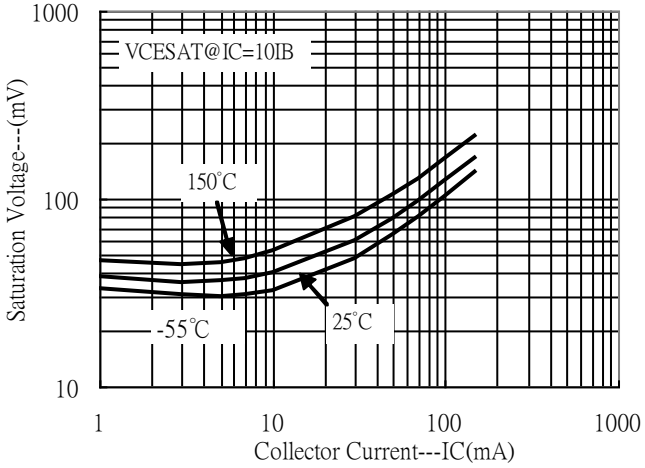
Emitter Grounded Output Characteristics



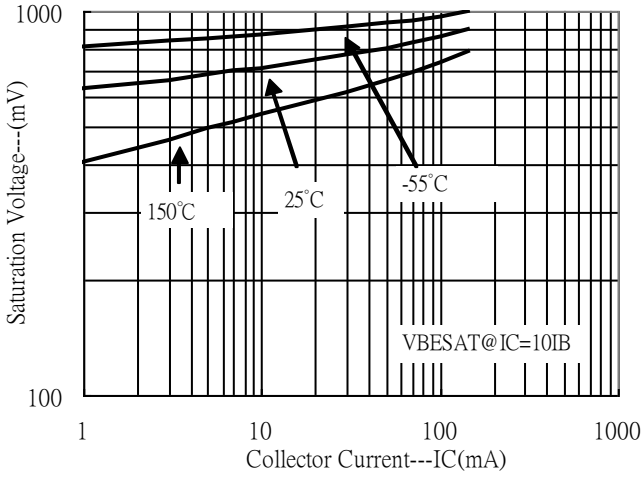
Current Gain vs Collector Current



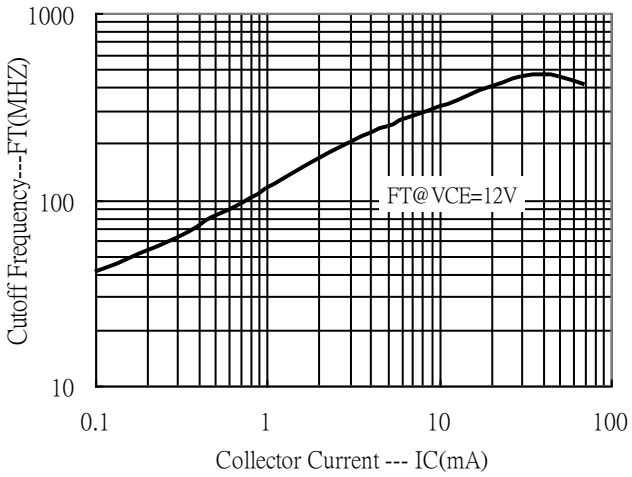
Saturation Voltage vs Collector Current



Saturation Voltage vs Collector Current

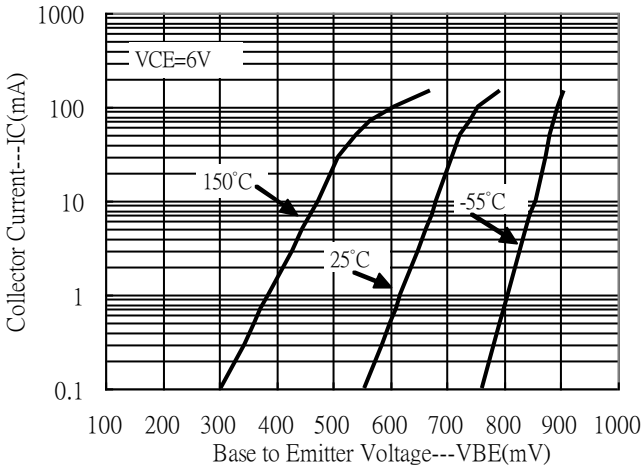


Cutoff Frequency vs Collector Current

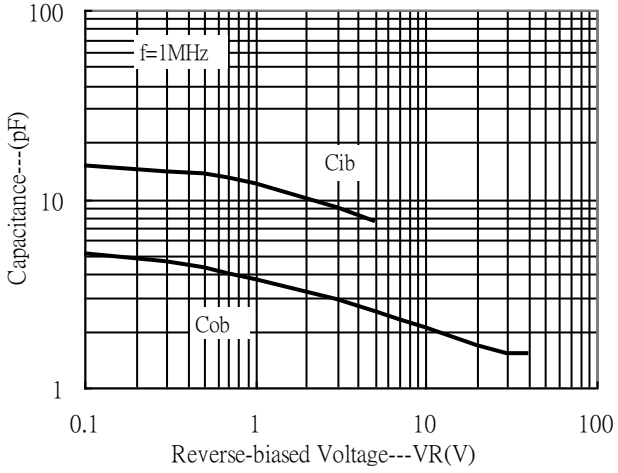


Typical Characteristics(Cont.)

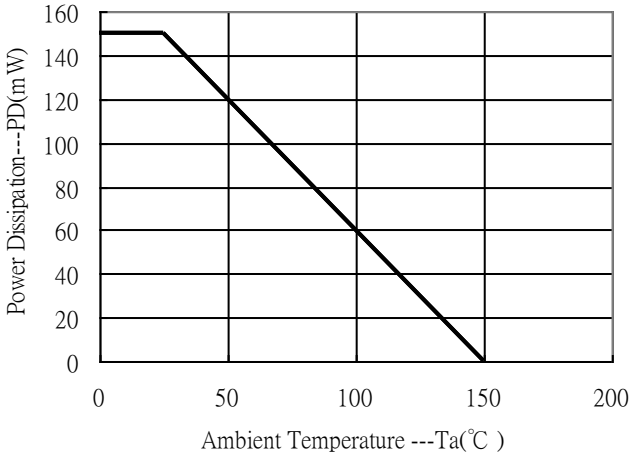
On Voltage vs Collector Current



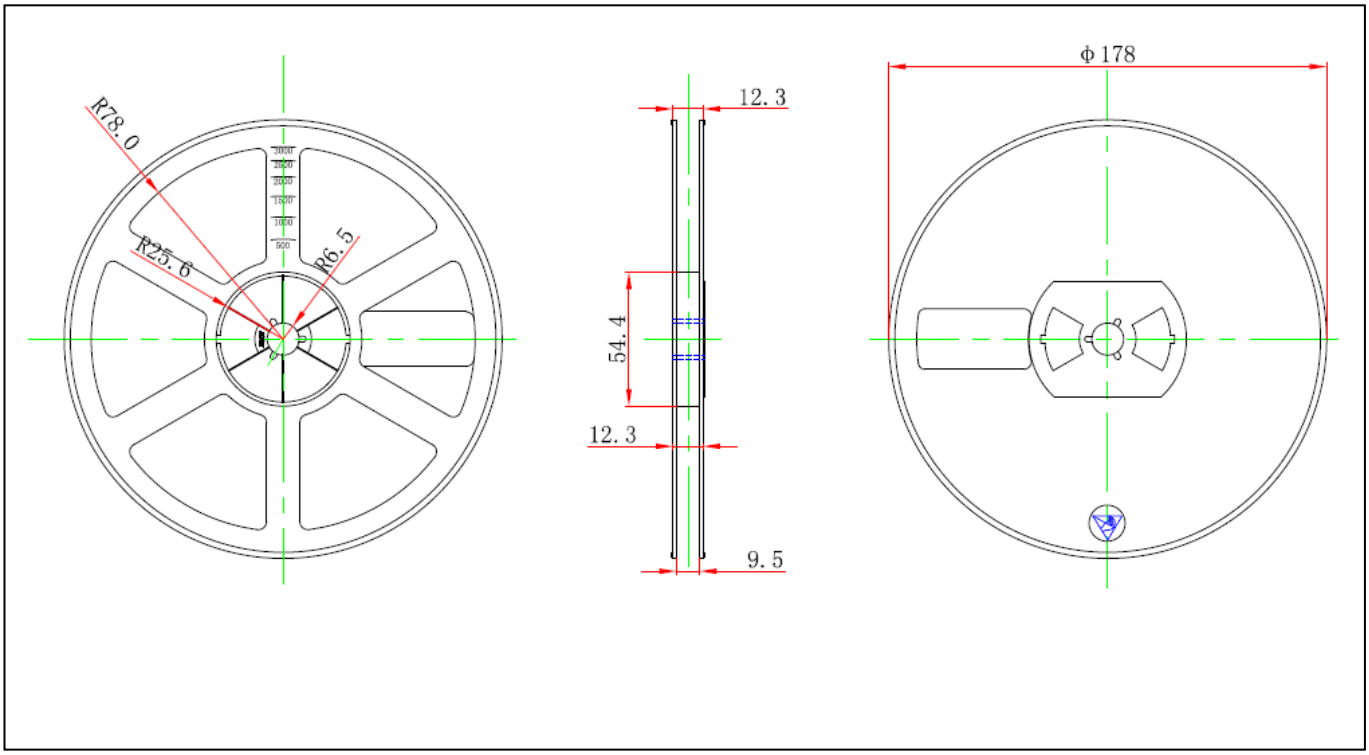
Capacitance vs Reverse-biased Voltage



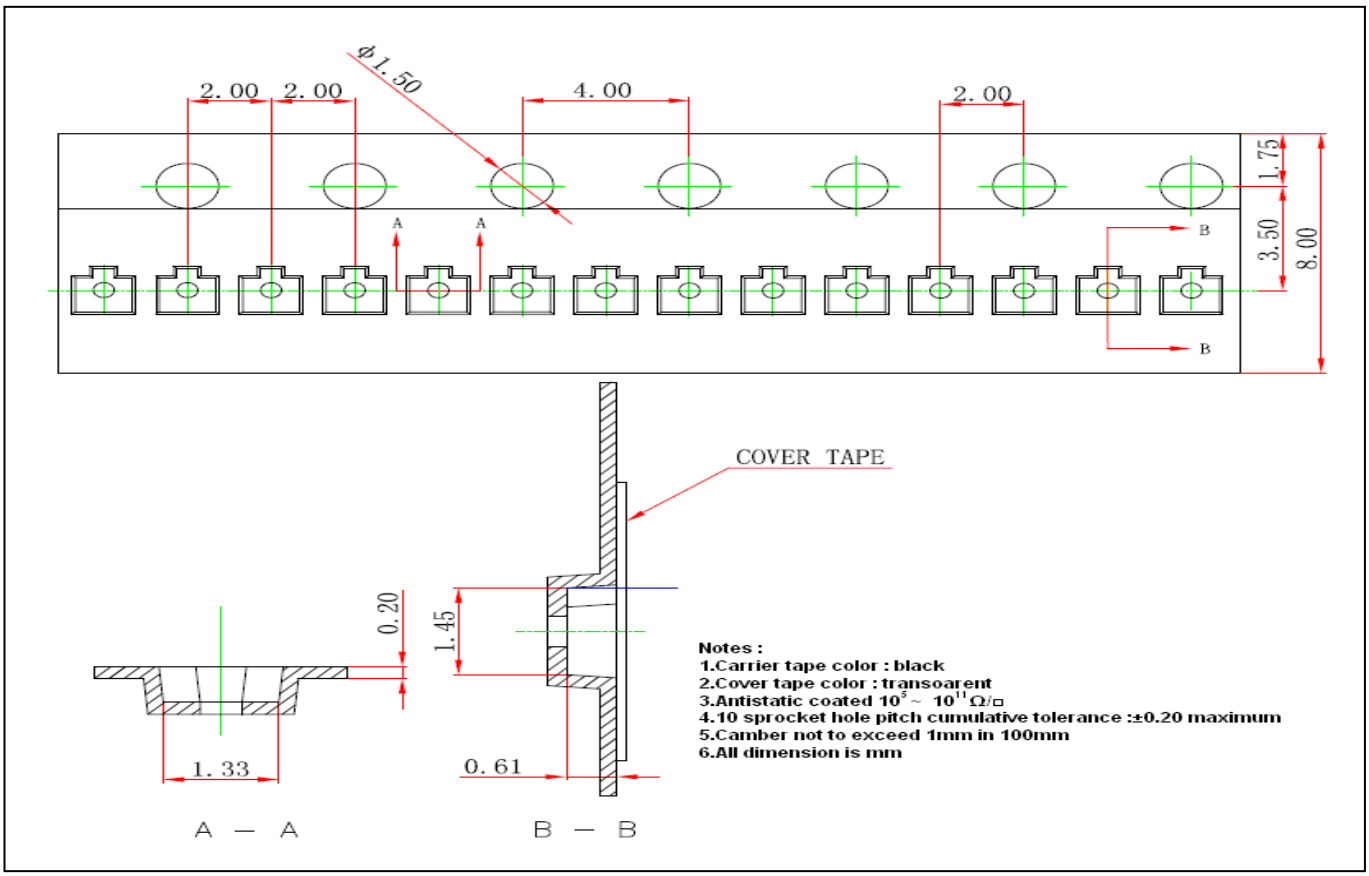
Power Derating Curve



Reel Dimension



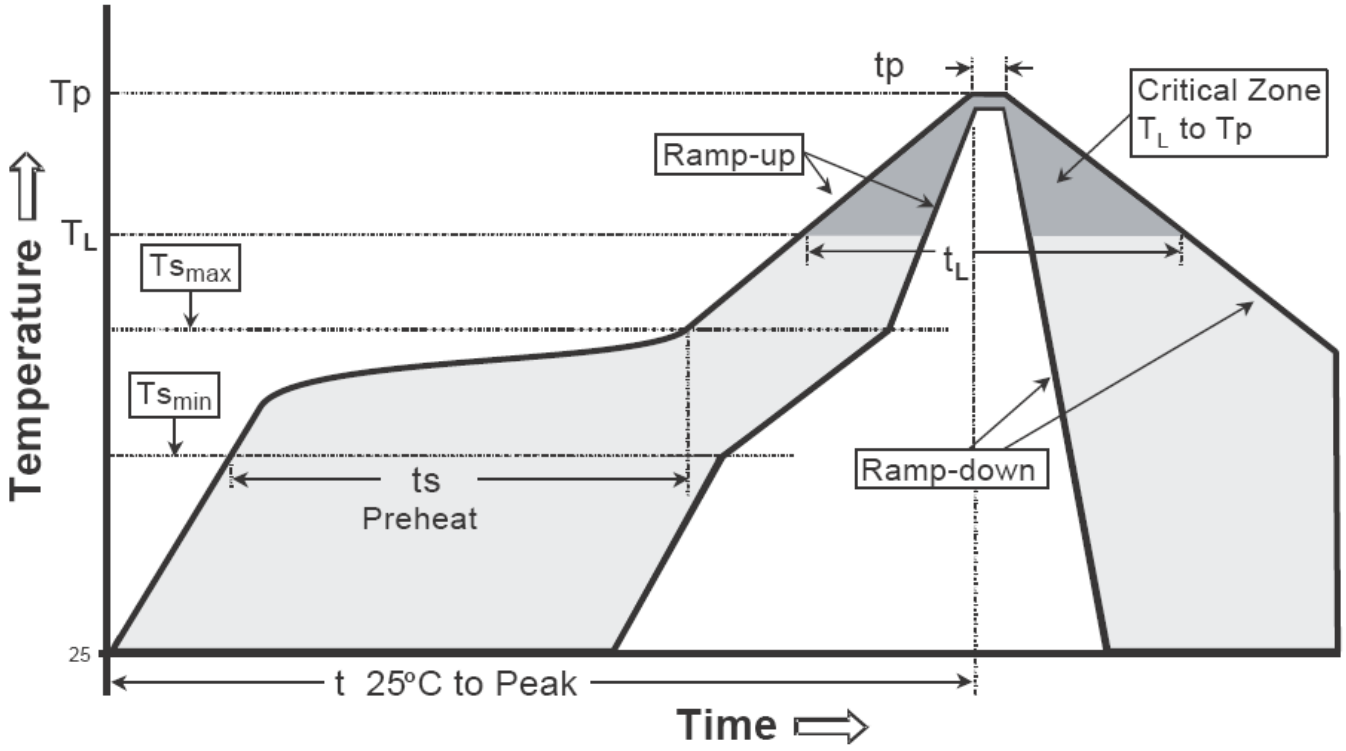
Carrier Tape Dimension



Recommended wave soldering condition

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

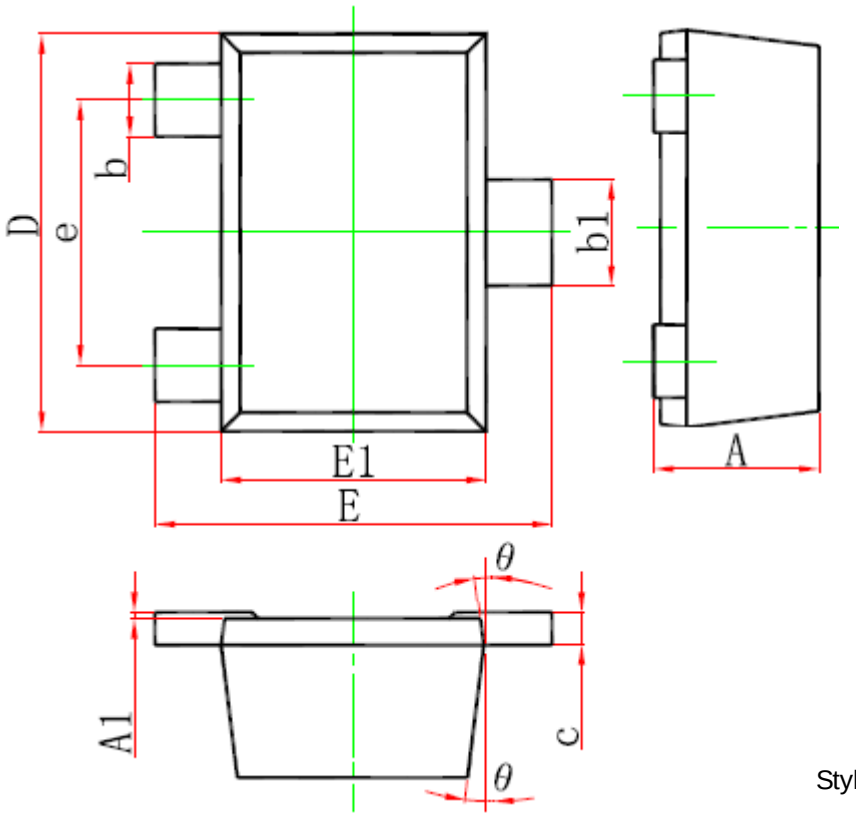
Recommended temperature profile for IR reflow

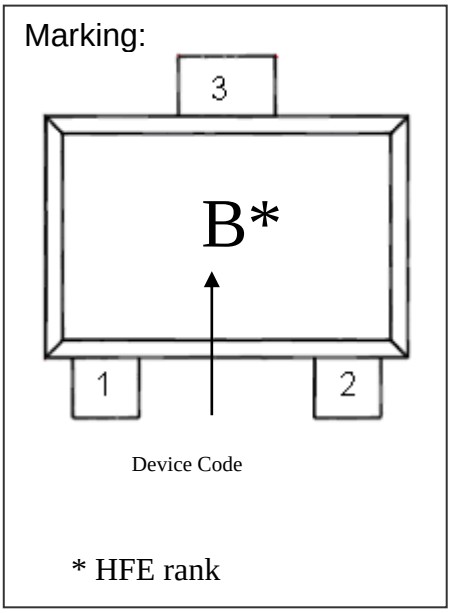


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (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-723 Dimension





3-Lead SOT-723 Plastic
Surface Mounted Package
CYStek Package Code: Y3

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

*Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.000	0.500	0.000	0.020	D	1.150	1.250	0.045	0.049
A1	0.000	0.050	0.000	0.002	E	1.150	1.250	0.045	0.049
b	0.170	0.270	0.007	0.011	E1	0.750	0.850	0.030	0.033
b1	0.270	0.370	0.011	0.015	e	0.800*		0.031*	
c	0.000	0.150	0.000	0.006	θ	7° REF		7° REF	

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.