General Purpose NPN Epitaxial Planar Transistor

BTC2655S3

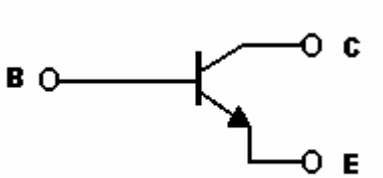
BV_{CEO}	50V
I_C	2A
$R_{CESAT(max)}$	300mΩ

Features

- High breakdown voltage, $BV_{CEO} \geq$ 50V
- Large continuous collector current capability
- Low collector saturation voltage
- Pb-free lead plating package

Symbol

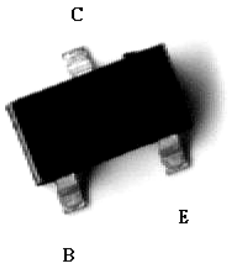
BTC2655S3



B：Base
C：Collector
E：Emitter

Outline

SOT-323



Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	V_{CBO}	100	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current (DC)	I_C	2	A
Collector Current (pulse)	I_{CP}	5 (Note)	A
Base Current	I_B	0.5	A
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

Note : Pulse test, pulse width≤300μs, duty cycle≤2%

Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV_{CBO}	100	-	-	V	I_C=50μA
BV_{CEO}	50	-	-	V	I_C=1mA
BV_{EBO}	7	-	-	V	I_E=50μA
I_{CBO}	-	-	100	nA	V_{CB}=100V
I_{EBO}	-	-	100	nA	V_{EB}=6V
*$V_{CE(sat)}$	-	-	35	mV	I_C=100mA, I_B=10mA
*$V_{CE(sat)}$	-	-	80	mV	I_C=250mA, I_B=10mA
*$V_{CE(sat)}$	-	125	200	mV	I_C=500mA, I_B=10mA
*$V_{CE(sat)}$	-	100	300	mV	I_C=1A, I_B=50mA
*$R_{CE(sat)}$	-	100	300	mΩ	I_C=1A, I_B=50mA
*$V_{CE(sat)}$	-	-	350	mV	I_C=1A, I_B=20mA
*$V_{BE(sat)}$	-	0.9	1.2	V	I_C=1A, I_B=50mA
*h_{FE} 1	200	-	400	-	V_{CE}=2V, I_C=500mA
*h_{FE} 2	80	-	-	-	V_{CE}=2V, I_C=1.5A
f_T	-	250	-	MHz	V_{CE}=2V, I_C=300mA, f=100MHz
Cob	-	13	-	pF	V_{CB}=10V, I_E=0A,f=1MHz
ton	-	40	-	ns	V_{CC}=30V, I_C=1A, I_B1=-I_B2=33mA, R_L=30Ω
tstg	-	500	-		
tf	-	120	-		

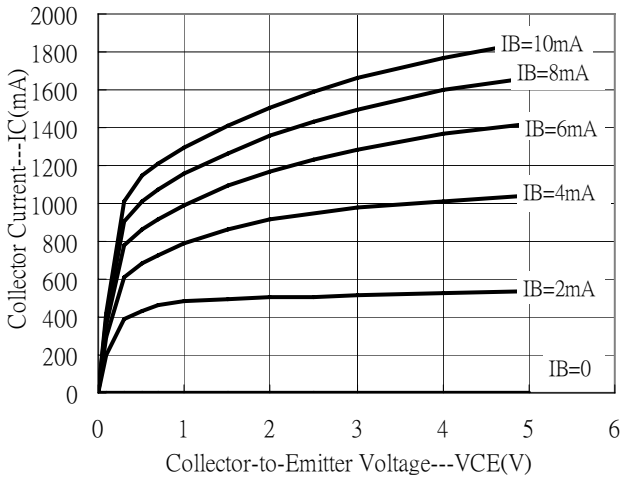
*Pulse Test: Pulse Width ≤300μs, Duty Cycle≤2%

Ordering Information

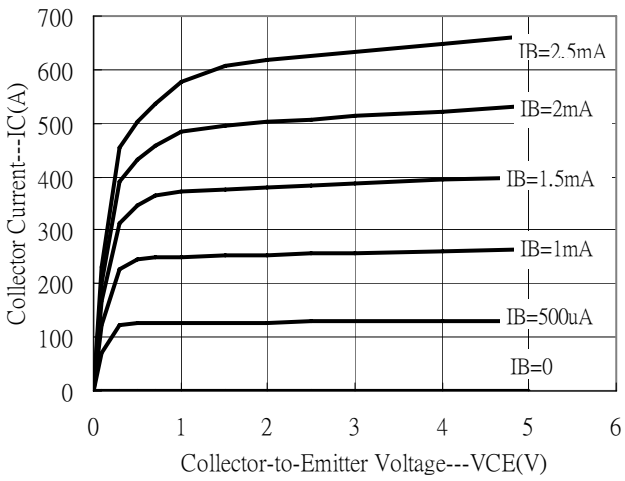
Device	Package	Shipping	Marking
BTC2655S3	SOT-323 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel	DG

Typical Characteristics

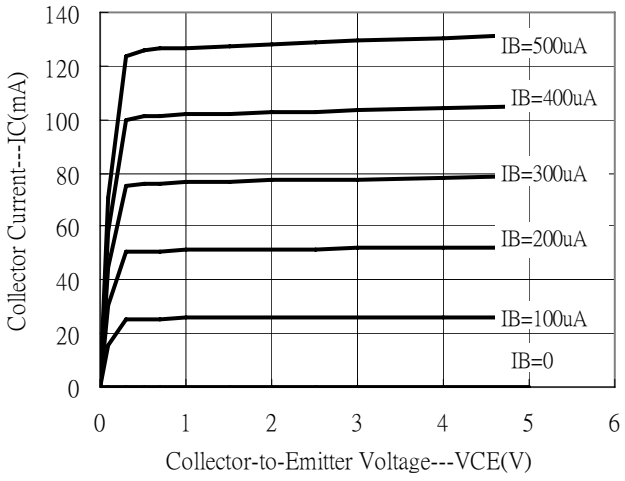
Emitter Grounded Output Characteristics



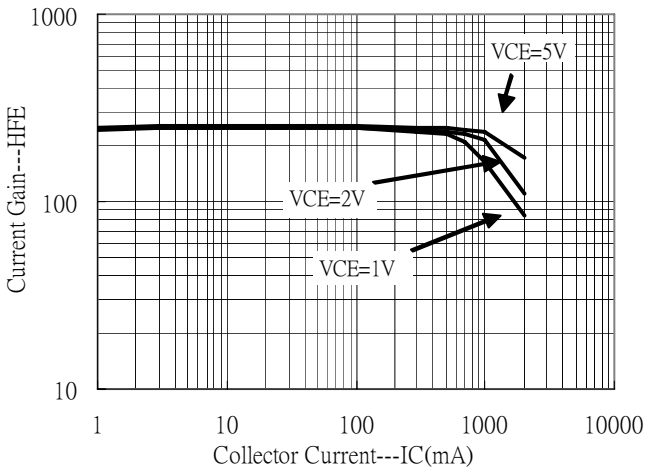
Emitter Grounded Output Characteristics



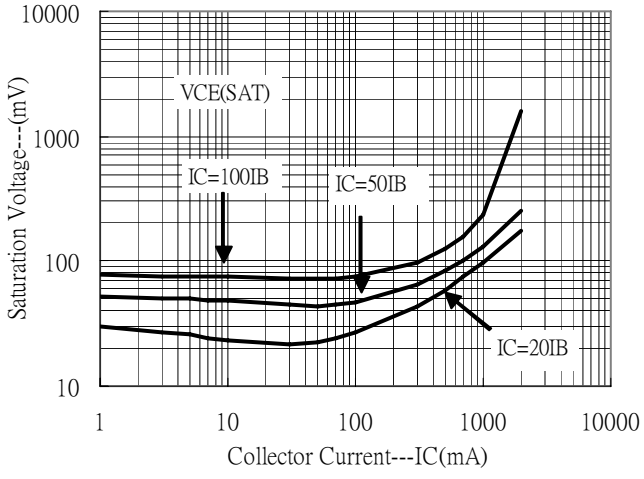
Emitter Grounded Output Characteristics



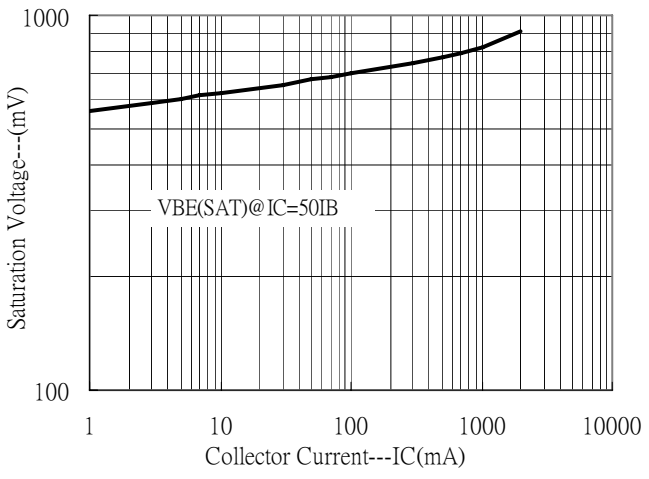
Current Gain vs Collector Current



Saturation Voltage vs Collector Current

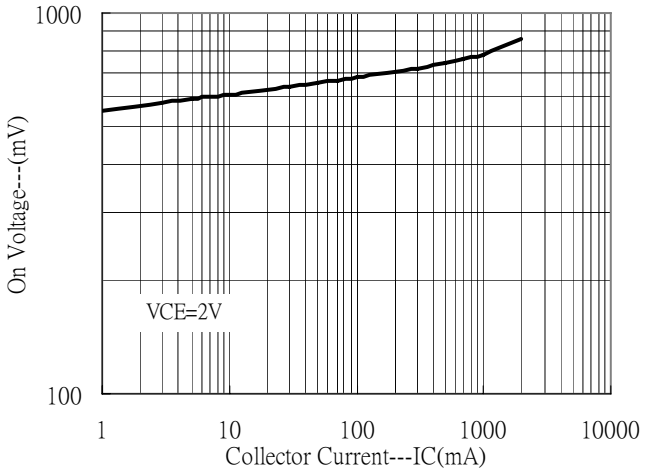


Saturation Voltage vs Collector Current

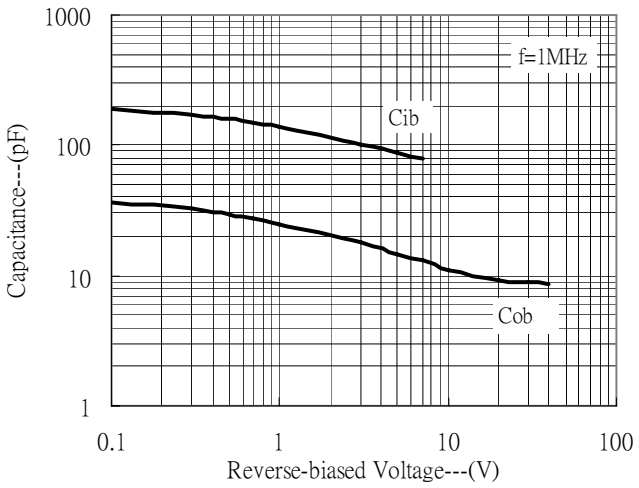


Typical Characteristics(Cont.)

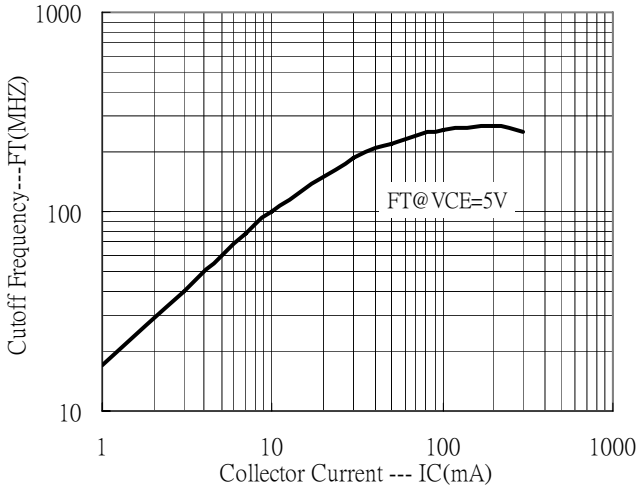
On Voltage vs Collector Current



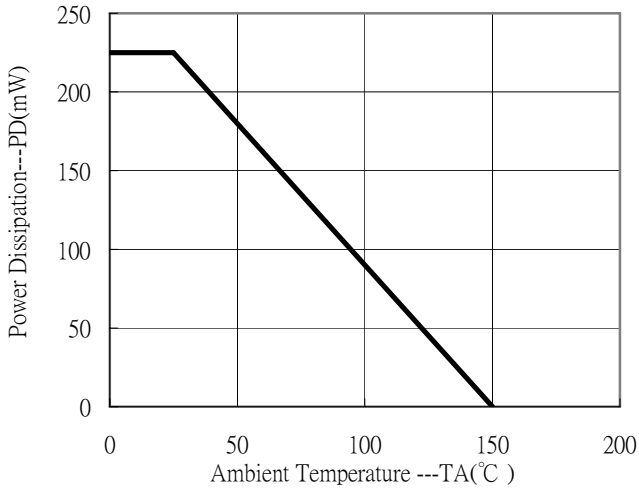
Capacitance Characteristics



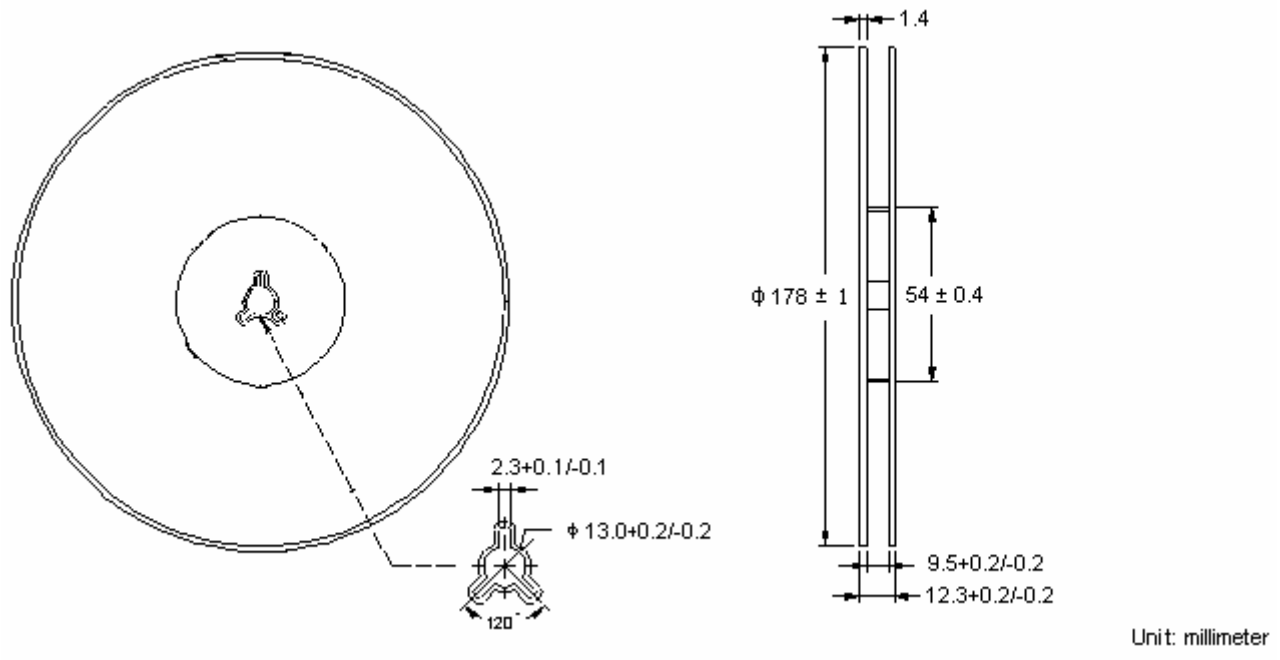
Cutoff Frequency vs Collector Current



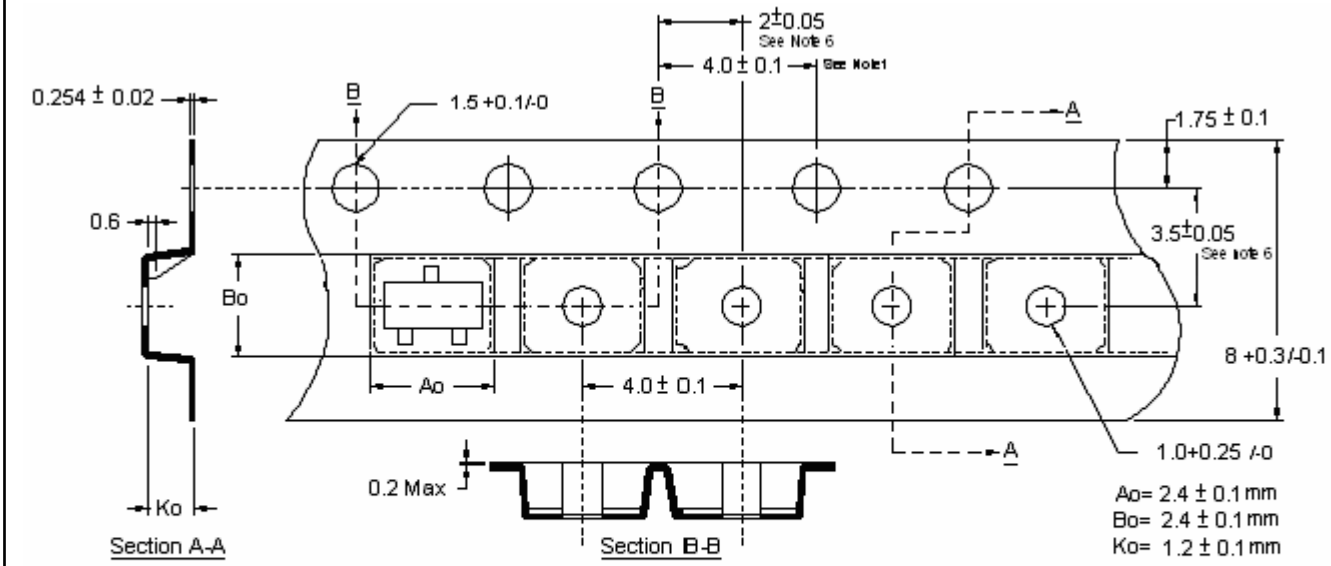
Power Derating Curve



Reel Dimension



Carrier Tape Dimension



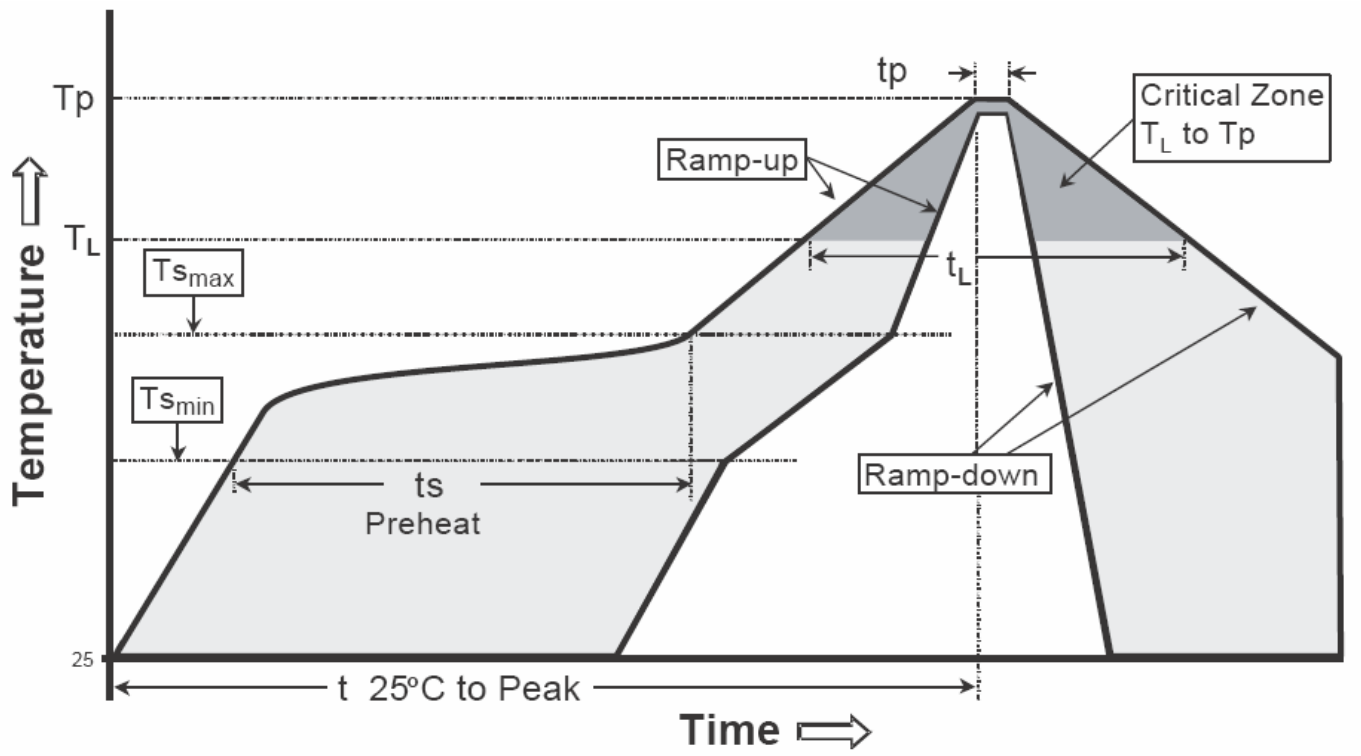
Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material : Condutive black polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
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

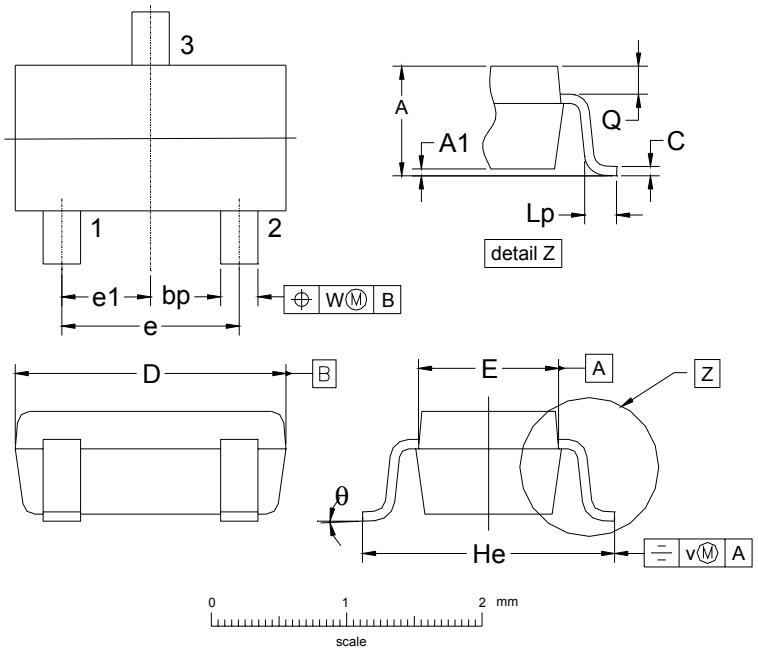
Recommended temperature profile for IR reflow

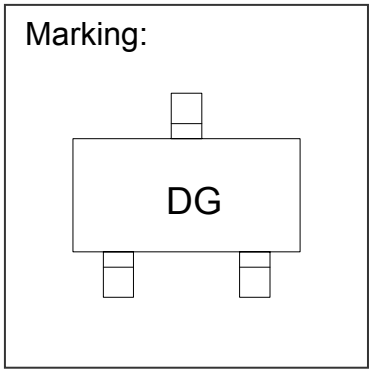


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (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 Pastic
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	0.0787	0.0886	2.00	2.25
bp	0.0118	0.0157	0.30	0.40	Lp	0.0059	0.0177	0.15	0.45
C	0.0039	0.0098	0.10	0.25	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	0.0512	-	1.3	-	θ	-	-	10°	0°

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.

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek ***semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.***
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.