

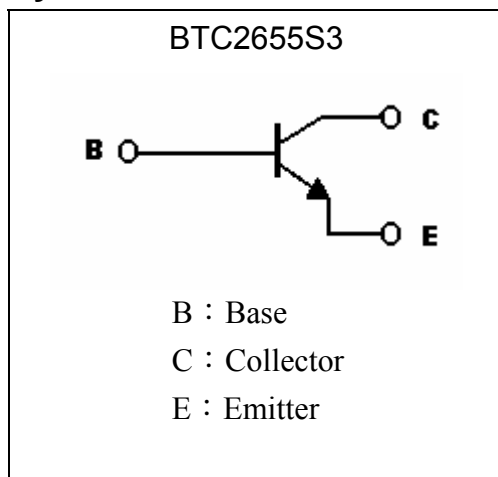
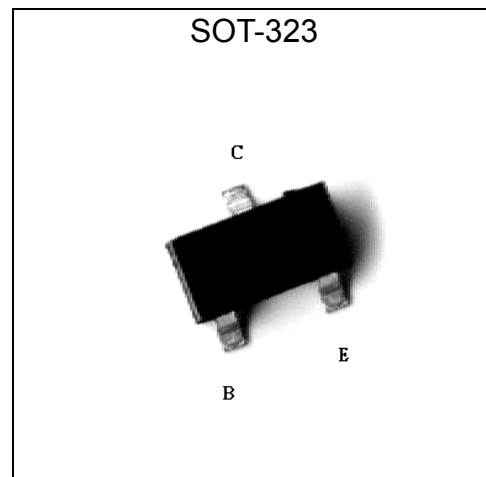
**General Purpose NPN Epitaxial Planar Transistor**

# BTC2655S3

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

**Features**

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

**Symbol**

**Outline**

**Absolute Maximum Ratings** ( $T_a=25^\circ C$ )

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	$^\circ C/W$
Operating Junction and Storage Temperature Range	$T_j ; T_{stg}$	-55~+150	$^\circ C$

 Note : Pulse test, pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$

**Characteristics (Ta=25°C)**

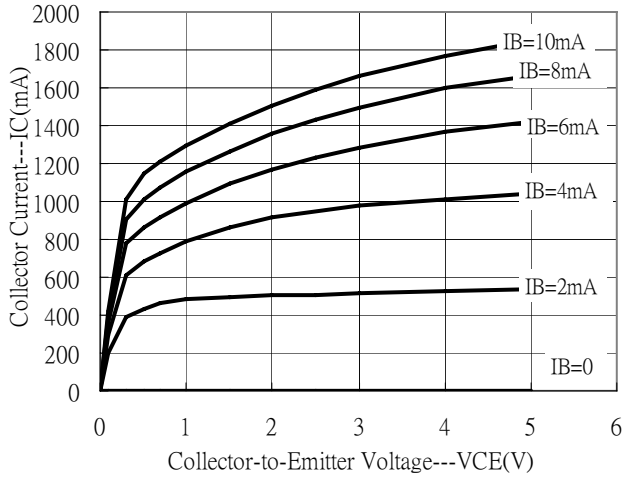
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
$BV_{CBO}$	100	-	-	V	$I_C=50\mu A$
$BV_{CEO}$	50	-	-	V	$I_C=1mA$
$BV_{EBO}$	7	-	-	V	$I_E=50\mu A$
$I_{CBO}$	-	-	100	nA	$V_{CB}=100V$
$I_{EBO}$	-	-	100	nA	$V_{EB}=6V$
* $V_{CE(sat)}$	-	-	35	mV	$I_C=100mA, I_B=10mA$
* $V_{CE(sat)}$	-	-	80	mV	$I_C=250mA, I_B=10mA$
* $V_{CE(sat)}$	-	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	m $\Omega$	$I_C=1A, I_B=50mA$
* $V_{CE(sat)}$	-	-	350	mV	$I_C=1A, I_B=20mA$
* $V_{BE(sat)}$	-	0.9	1.2	V	$I_C=1A, I_B=50mA$
* $h_{FE1}$	200	-	400	-	$V_{CE}=2V, I_C=500mA$
* $h_{FE2}$	80	-	-	-	$V_{CE}=2V, I_C=1.5A$
$f_T$	-	250	-	MHz	$V_{CE}=2V, I_C=300mA, f=100MHz$
$C_{ob}$	-	13	-	pF	$V_{CB}=10V, I_E=0A, f=1MHz$
$t_{on}$	-	40	-	ns	$V_{CC}=30V, I_C=1A, I_{B1}=-I_{B2}=33mA, R_L=30\Omega$
$t_{stg}$	-	500	-		
$t_f$	-	120	-		

\*Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ **Ordering Information**

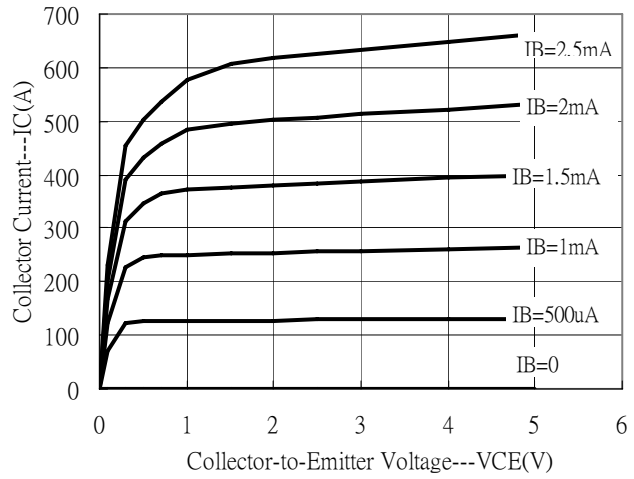
Device	Package	Shipping	Marking
BTC2655S3	SOT-323 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel	DG

**Typical Characteristics**

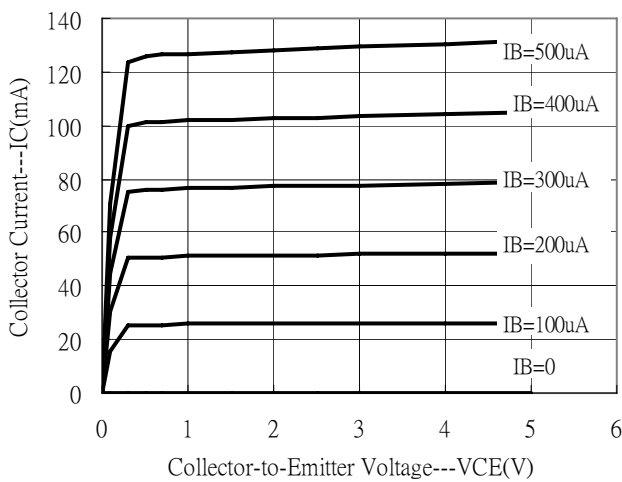
Emitter Grounded Output Characteristics



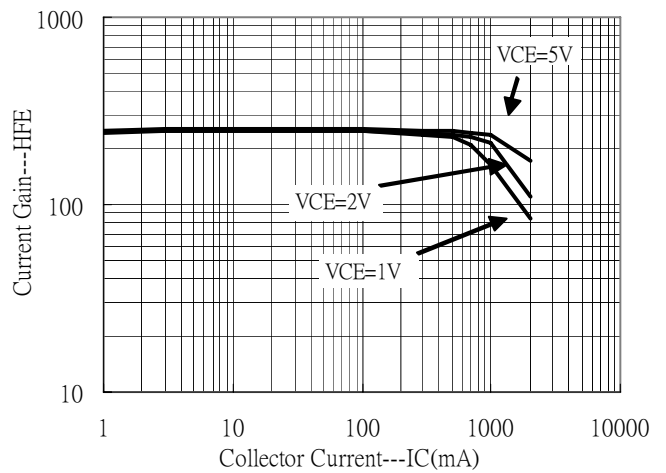
Emitter Grounded Output Characteristics



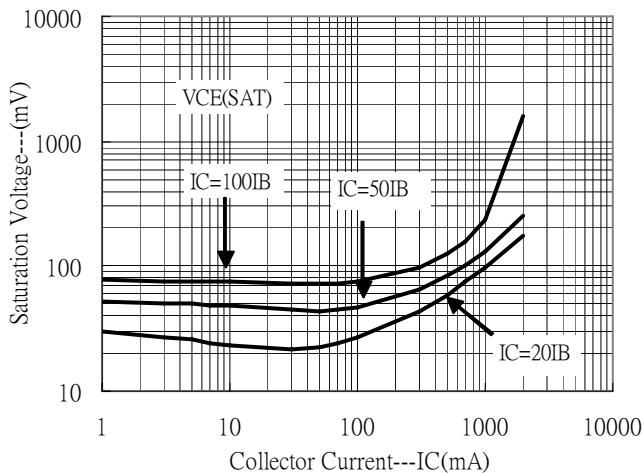
Emitter Grounded Output Characteristics



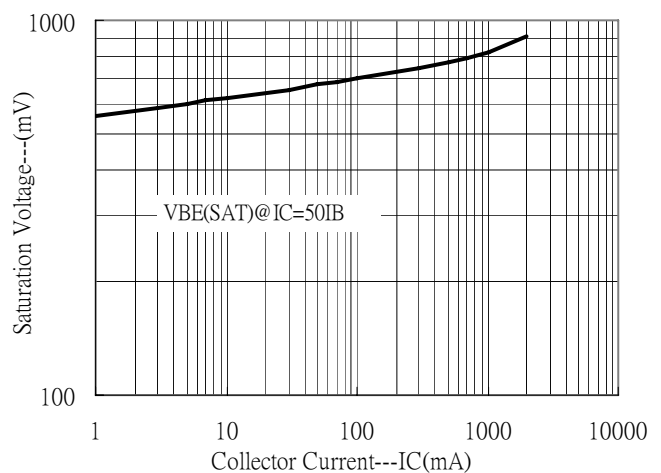
Current Gain vs Collector Current



Saturation Voltage vs Collector Current

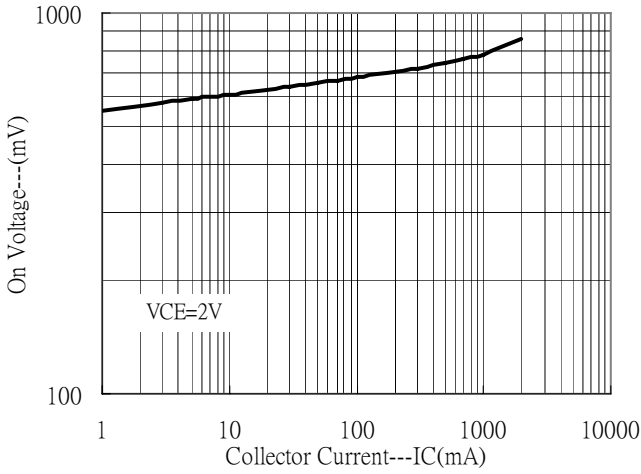


Saturation Voltage vs Collector Current

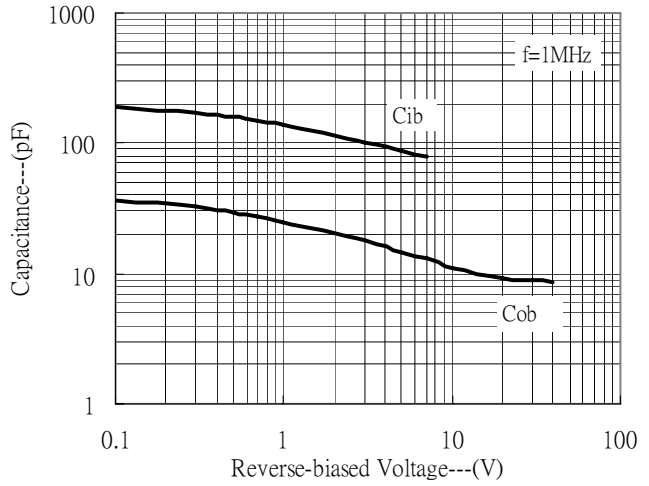


**Typical Characteristics(Cont.)**

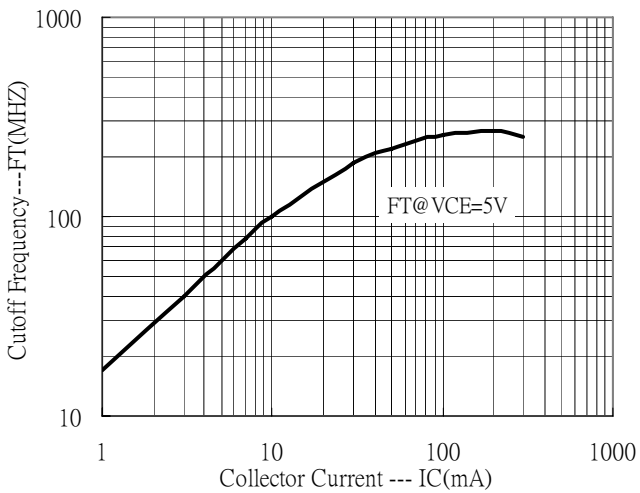
On Voltage vs Collector Current



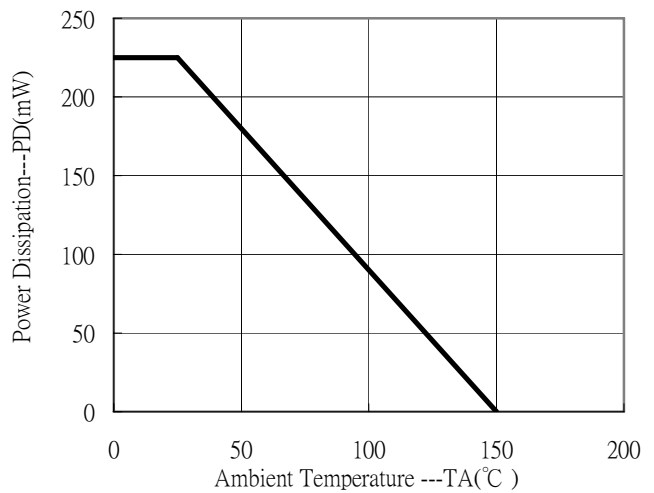
Capacitance Characteristics



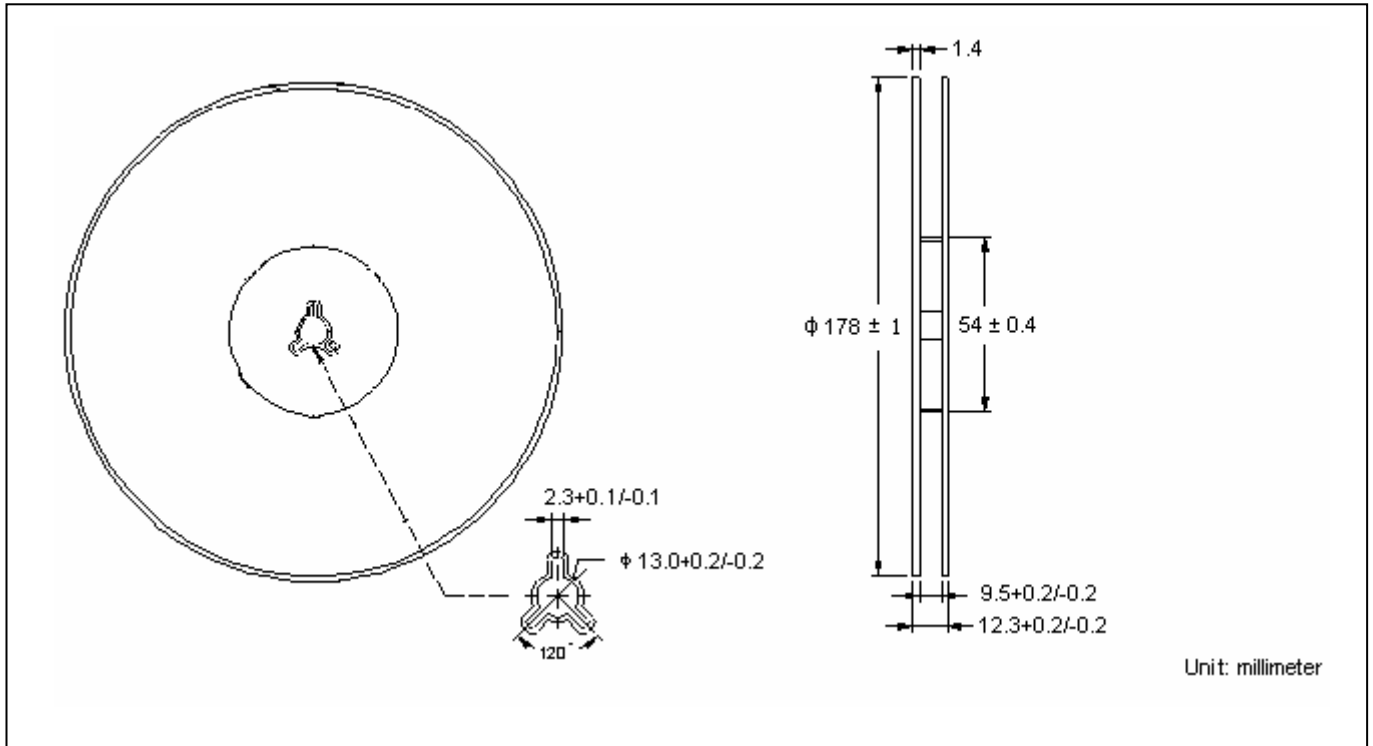
Cutoff Frequency vs Collector Current



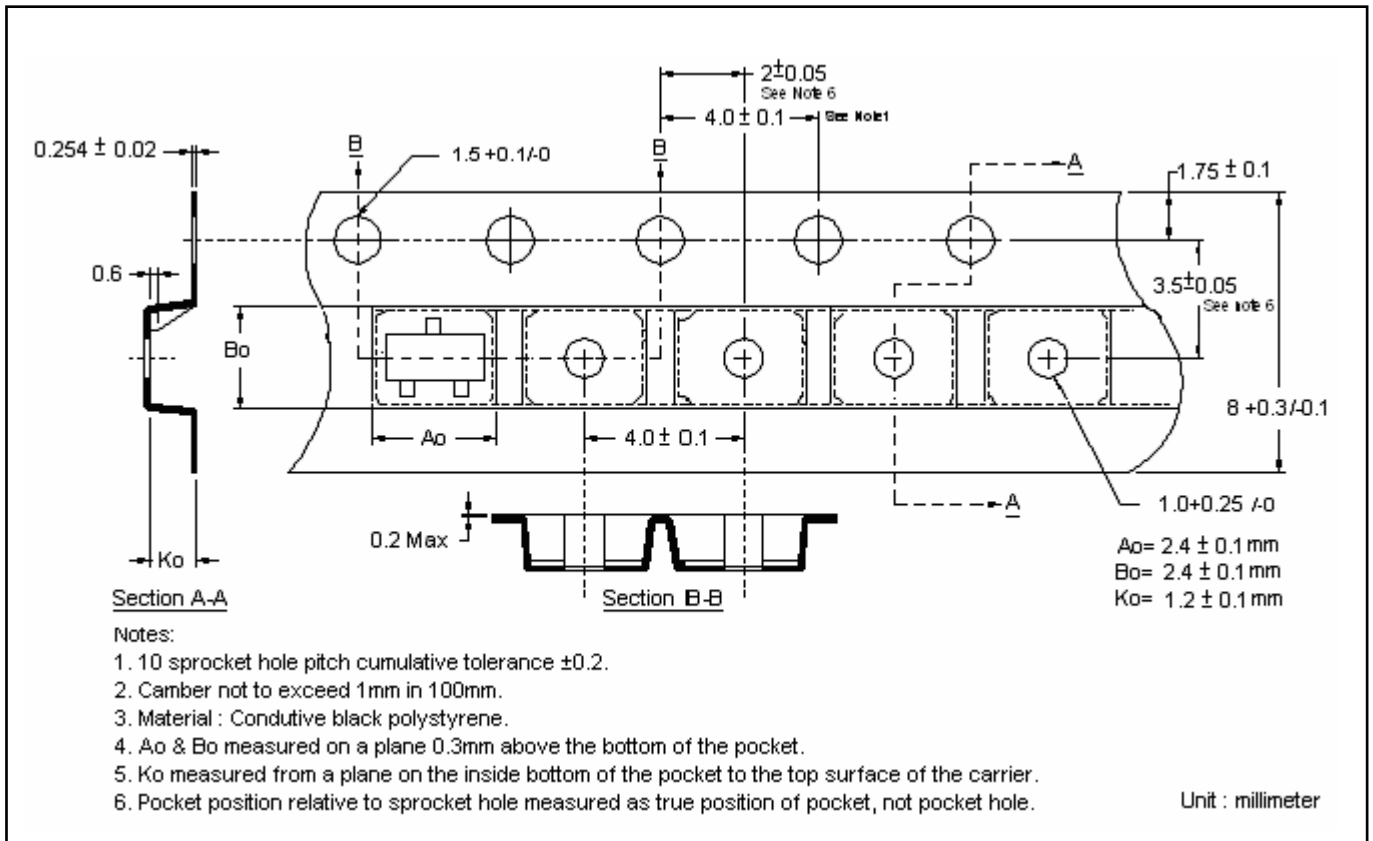
Power Derating Curve



### Reel Dimension



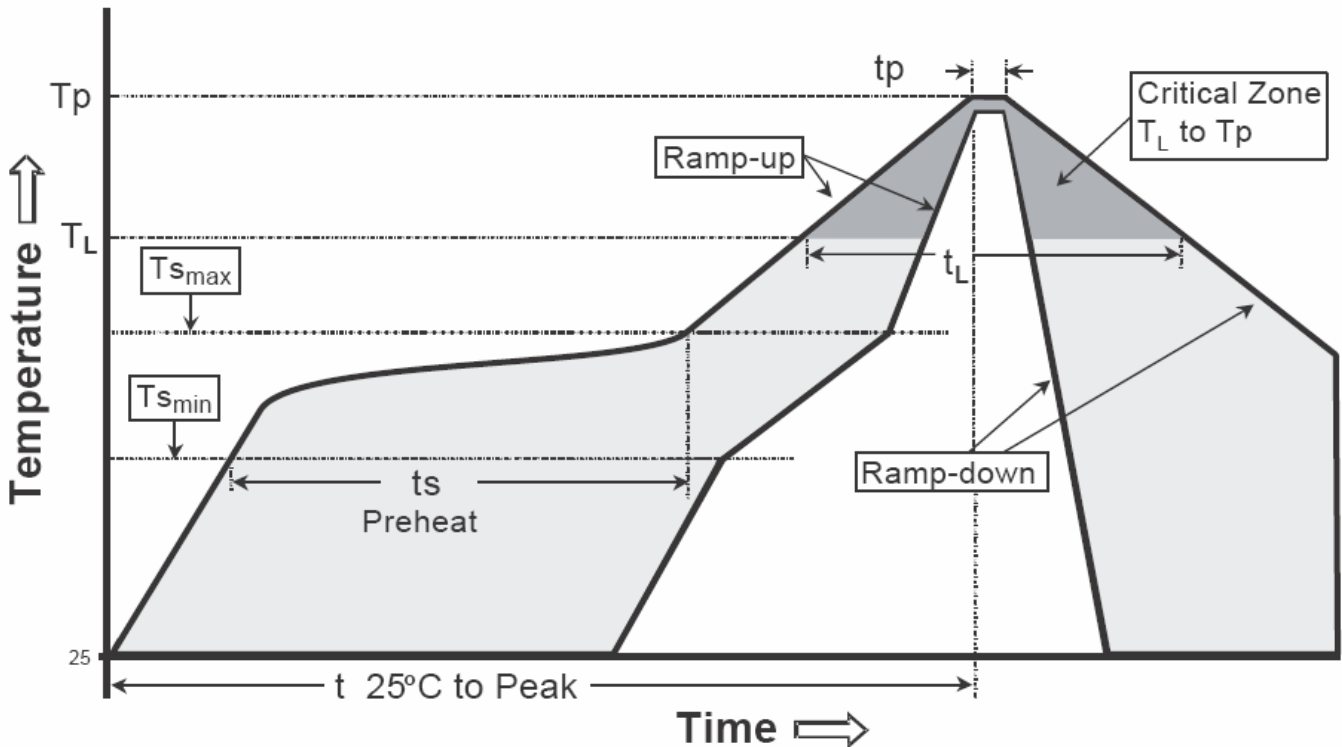
### Carrier Tape Dimension



**Recommended wave soldering condition**

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

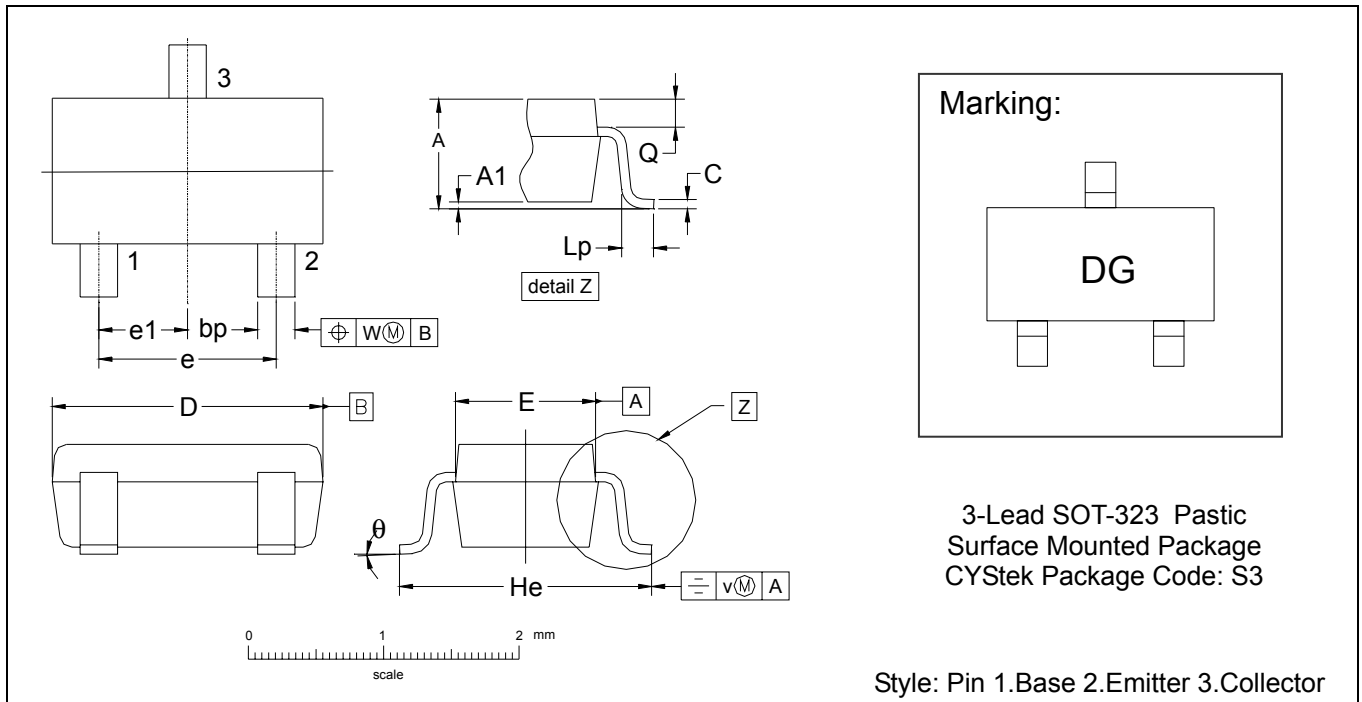
**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T <sub>s min</sub> )	100°C	150°C
-Temperature Max(T <sub>s max</sub> )	150°C	200°C
-Time(t <sub>s min</sub> to t <sub>s max</sub> )	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T <sub>L</sub> )	183°C	217°C
- Time (t <sub>L</sub> )	60-150 seconds	60-150 seconds
Peak Temperature(T <sub>P</sub> )	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**



\*: 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.

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