

**Small Signal Schottky diode**

# BAT54SH

## Description

Planar silicon Schottky barrier diode encapsulated in a SOD-123 very small plastic SMD package.

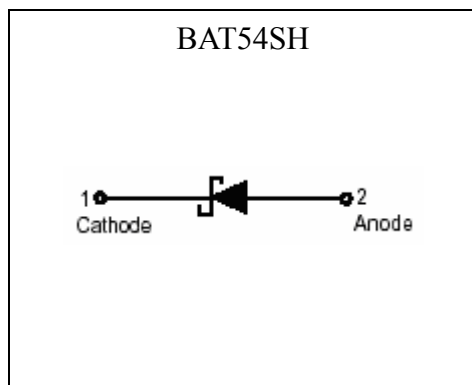
## Features

- Guard ring protected
- Low forward voltage drop
- Very small plastic SMD package
- Pb-free lead plating and halogen-free package

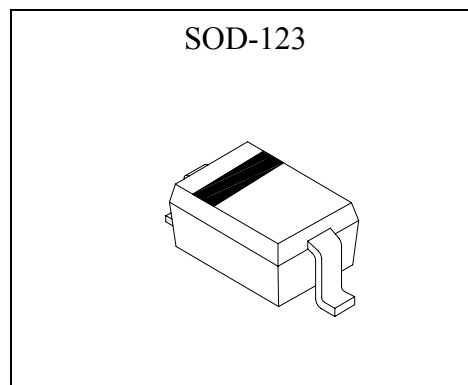
## Mechanical Data

- Case: Molded plastic, JEDEC SOD-123.
- Terminals: Pure tin plated, solderable per MIL-STD-202 method 208
- Polarity: Indicated by cathode band.
- Weight: 0.01 gram approximately

## Symbol



## Outline



## Ordering Information

Device	Package	Shipping	Marking
BAT54SH	SOD-123 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel	JV



Absolute Maximum Ratings

Symbol	Parameter	Conditions	Min	Max	Unit
V <sub>R</sub>	continuous reverse voltage		-	30	V
I <sub>F</sub>	continuous forward current		-	200	mA
I <sub>FRM</sub>	repetitive peak forward current	tp≤1s, δ≤0.5	-	300	mA
I <sub>FSM</sub>	non-repetitive peak forward current	tp<10ms	-	600	mA
P <sub>tot</sub>	total power dissipation	T <sub>amb</sub> ≤25°C	-	400	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
T <sub>j</sub>	operating junction temperature range		-65	+125	°C
T <sub>amb</sub>	operating ambient temperature range		-65	+125	°C

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

Parameter	Symbol	Condition	Min.	Max.	Unit
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>R</sub> =100μA	30	-	V
Forward Voltage (Note )	V <sub>F</sub> (1)	I <sub>F</sub> =0.1mA	-	240	mV
	V <sub>F</sub> (2)	I <sub>F</sub> =1mA	-	320	mV
	V <sub>F</sub> (3)	I <sub>F</sub> =10mA	-	400	mV
	V <sub>F</sub> (4)	I <sub>F</sub> =30mA	-	500	mV
	V <sub>F</sub> (5)	I <sub>F</sub> =100mA	-	800	mV
Reverse Leakage Current (Note )	I <sub>R</sub>	V <sub>R</sub> =25V	-	2	μA
Diode Capacitance	C <sub>D</sub>	V <sub>R</sub> =1V, f=1MHz	-	10	pF
Reverse Recovery Time	trr	when switched from I <sub>F</sub> = 10mA to I <sub>R</sub> =10mA; R <sub>L</sub> =100Ω; measured at I <sub>R</sub> =1mA	-	5	ns

Notes: pulse test, tp=300μs, duty cycle<2%.

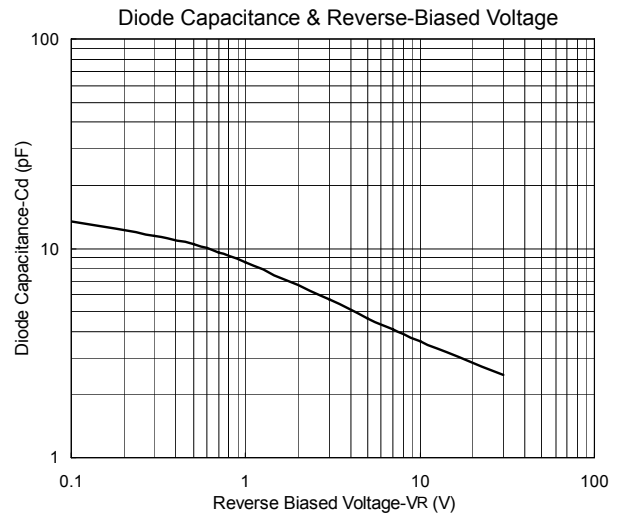
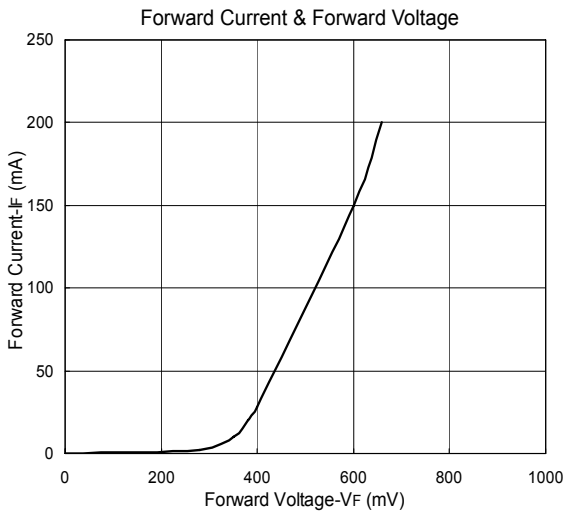
Thermal Characteristics

Symbol	Parameter	Conditions	Value	Unit
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	250	K/W

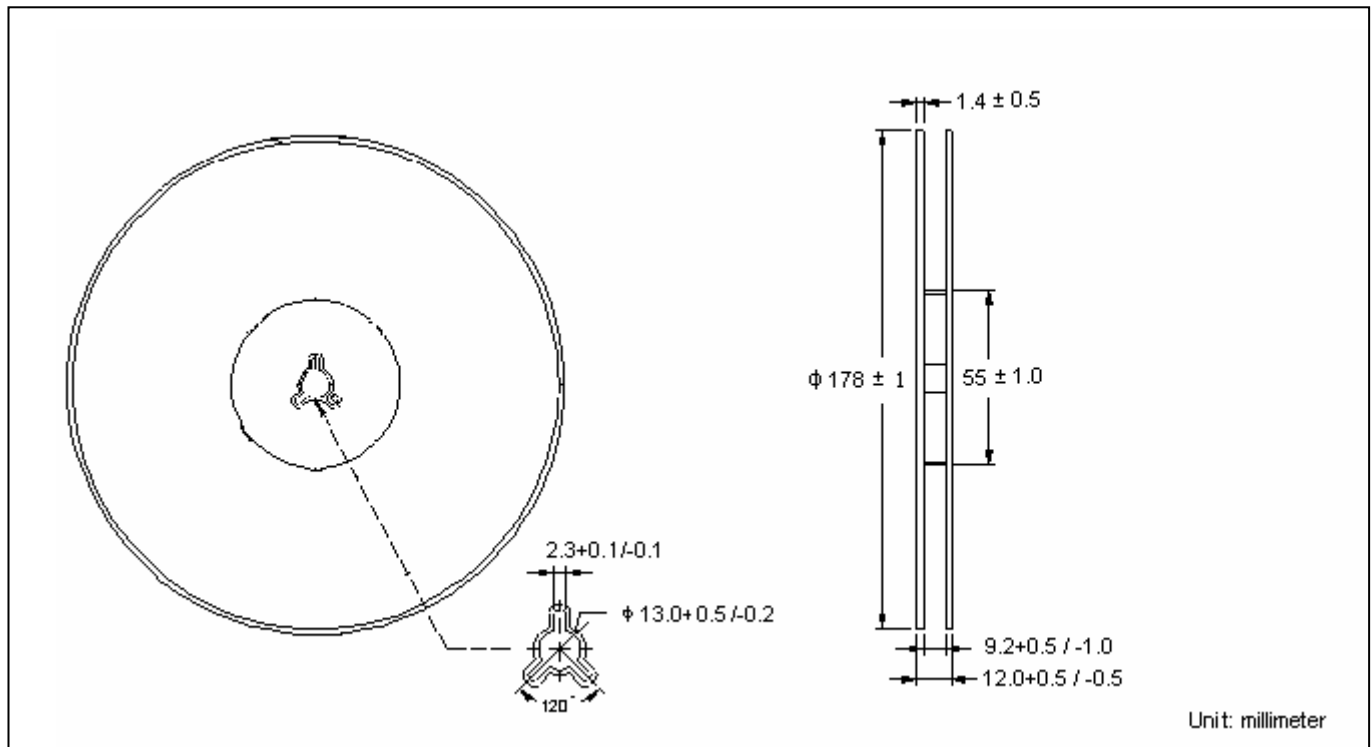
Note 1 : Device mounted on a FR-4 PCB



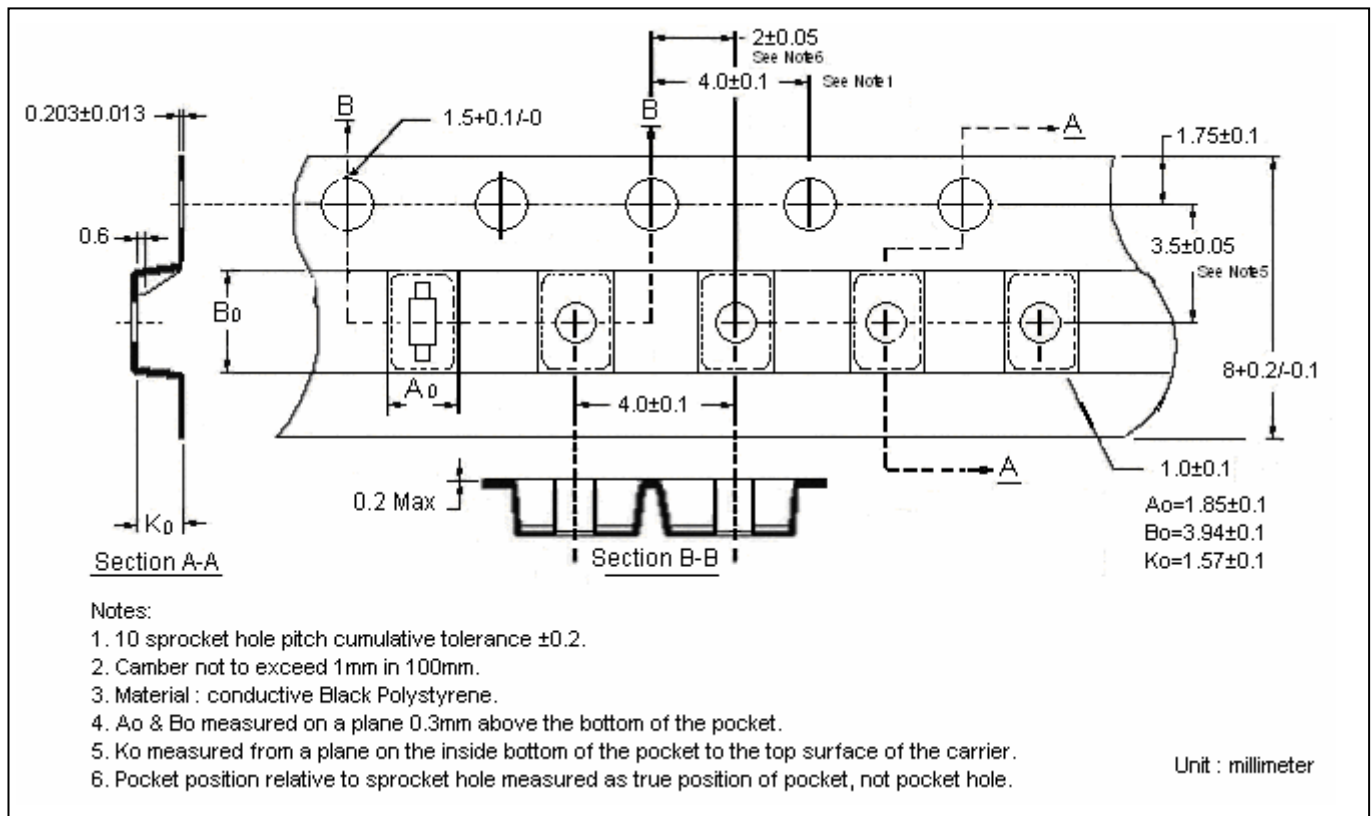
### Typical Characteristics



## Reel Dimension



## Carrier Tape Dimension



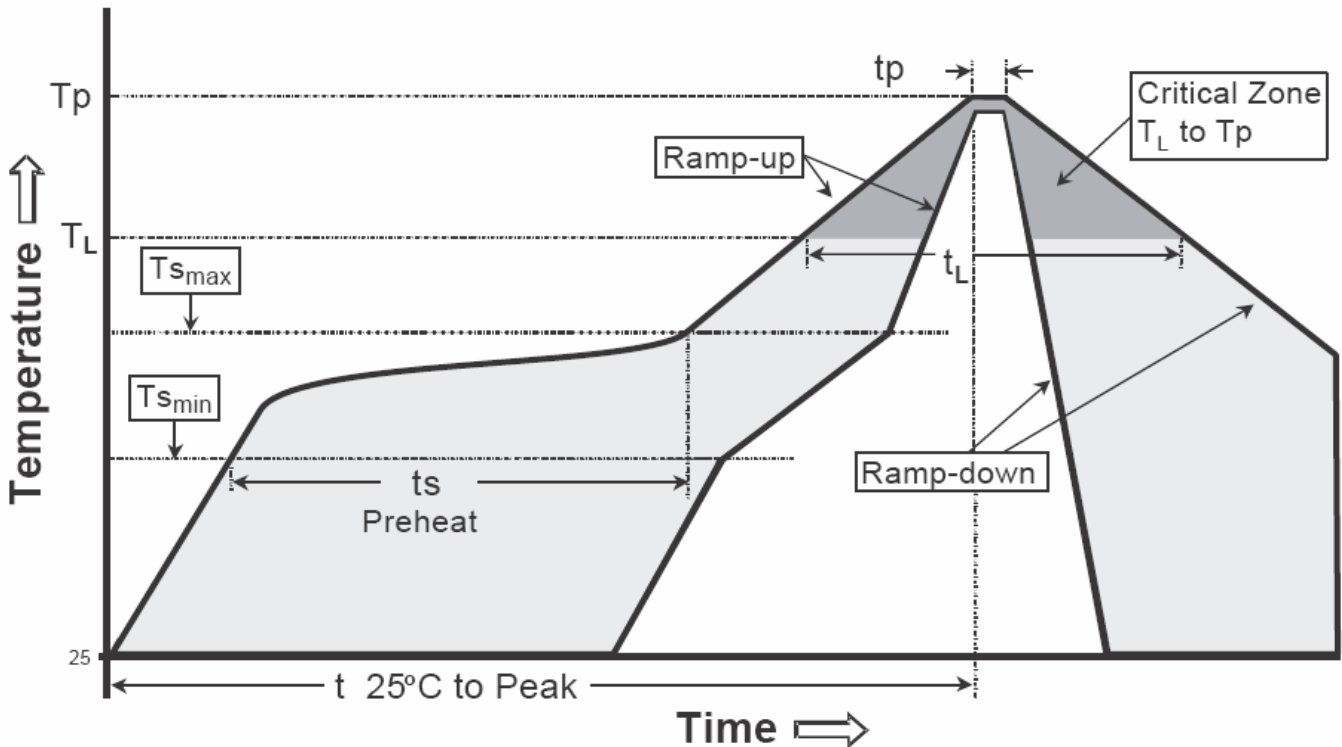
**Notes:**

1. 10 sprocket hole pitch cumulative tolerance  $\pm 0.2$ .
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4.  $A_0$  &  $B_0$  measured on a plane 0.3mm above the bottom of the pocket.
5.  $K_0$  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.

**Recommended wave soldering condition**

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

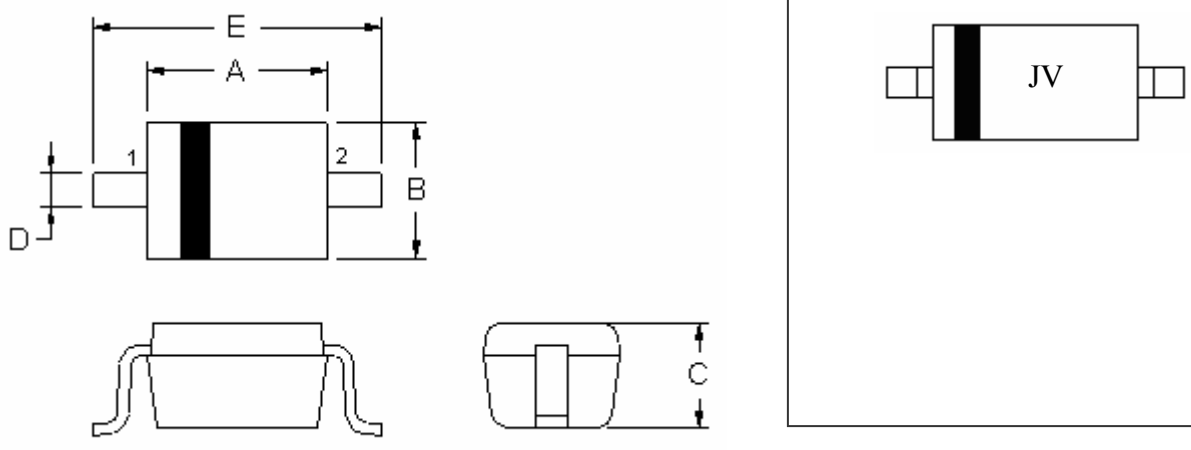
**Recommended temperature profile for IR reflow**



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.

**SOD-123 Dimension**



2-Lead SOD-123 Plastic  
 Surface Mounted Package  
 CYStek Package Code: SH

Style: Pin 1.Cathode 2.Anode

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.102	0.110	2.600	2.800	D	0.018	0.026	0.450	0.650
B	0.059	0.067	1.500	1.700	E	0.140	0.152	3.550	3.850
C	0.041	0.049	1.050	1.250					

Notes: 1.Controlling dimension : millimeters.  
 2.Lead thickness specified per L/F drawing with solder plating.  
 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.