

# Small Signal Schottky diode

# BAT54S2

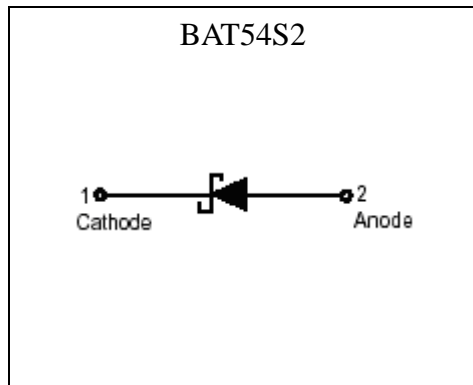
## Features

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

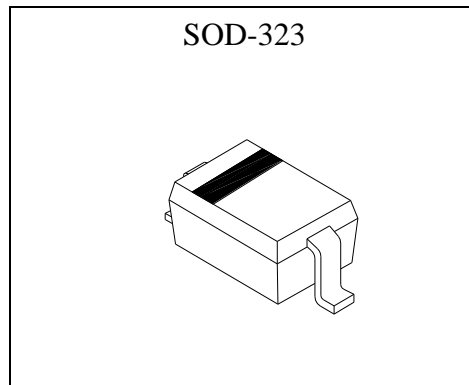
## Applications

- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes

## Symbol

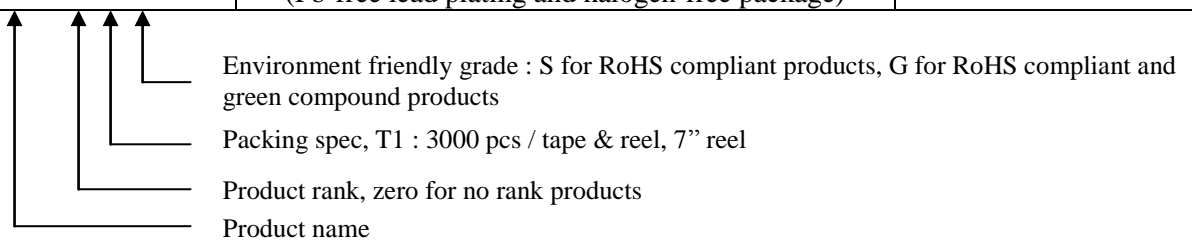


## Outline



## Ordering Information

Device	Package	Shipping
BAT54S2-0-T1-G	SOD-323 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel



**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	-	200	mW
T <sub>stg</sub>	storage temperature		-65	+150	°C
T <sub>j</sub>	operating junction temperature		-65	+150	°C
T <sub>amb</sub>	operating ambient temperature		-65	+125	°C

**Characteristics** (T<sub>a</sub>=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 1)	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 2)	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: 1.pulse test, tp=380μs, duty cycle<2%.  
2.pulse test, tp=300μs, duty cycle<2%.

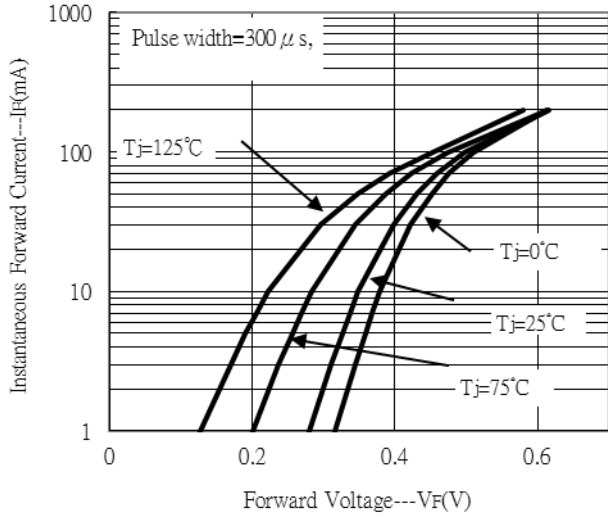
**Thermal Characteristics**

Symbol	Parameter	Conditions	Value	Unit
R <sub>th j-a</sub>	thermal resistance from junction to ambient	note 1	635	K/W

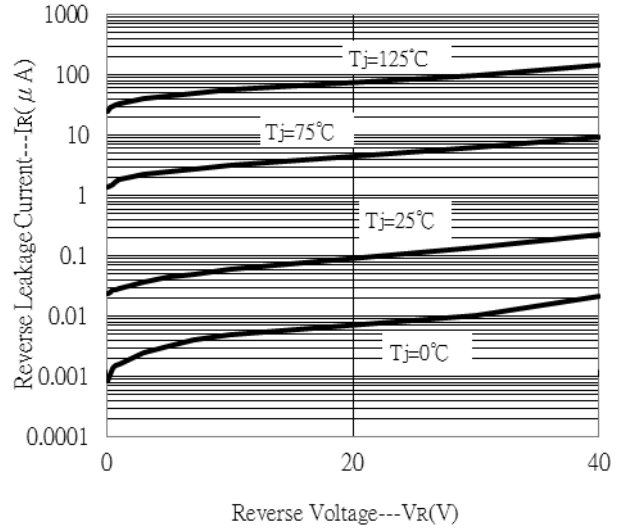
Note 1 : Device mounted on a FR-4 PCB

## Typical Characteristics

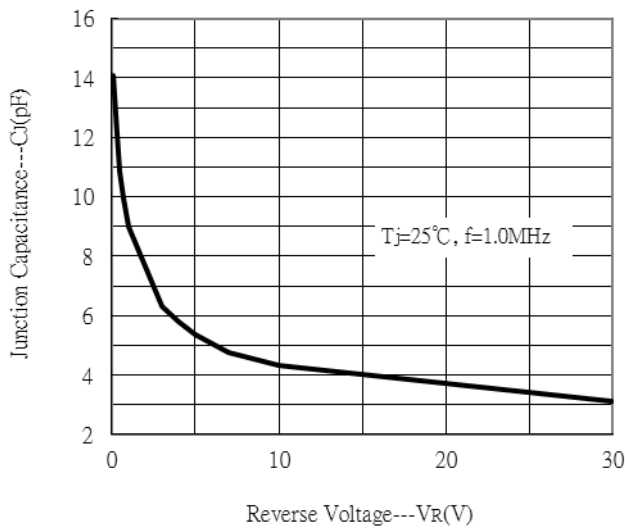
Forward Current vs Forward Voltage



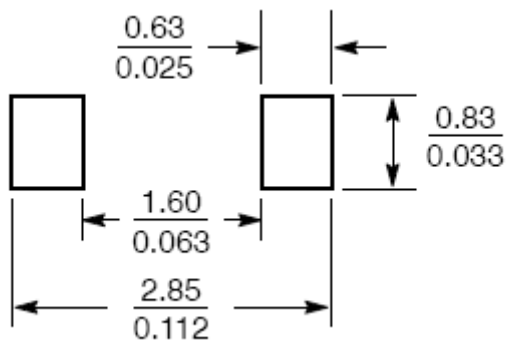
Reverse Leakage Current vs Reverse Voltage



Junction Capacitance vs Reverse Voltage

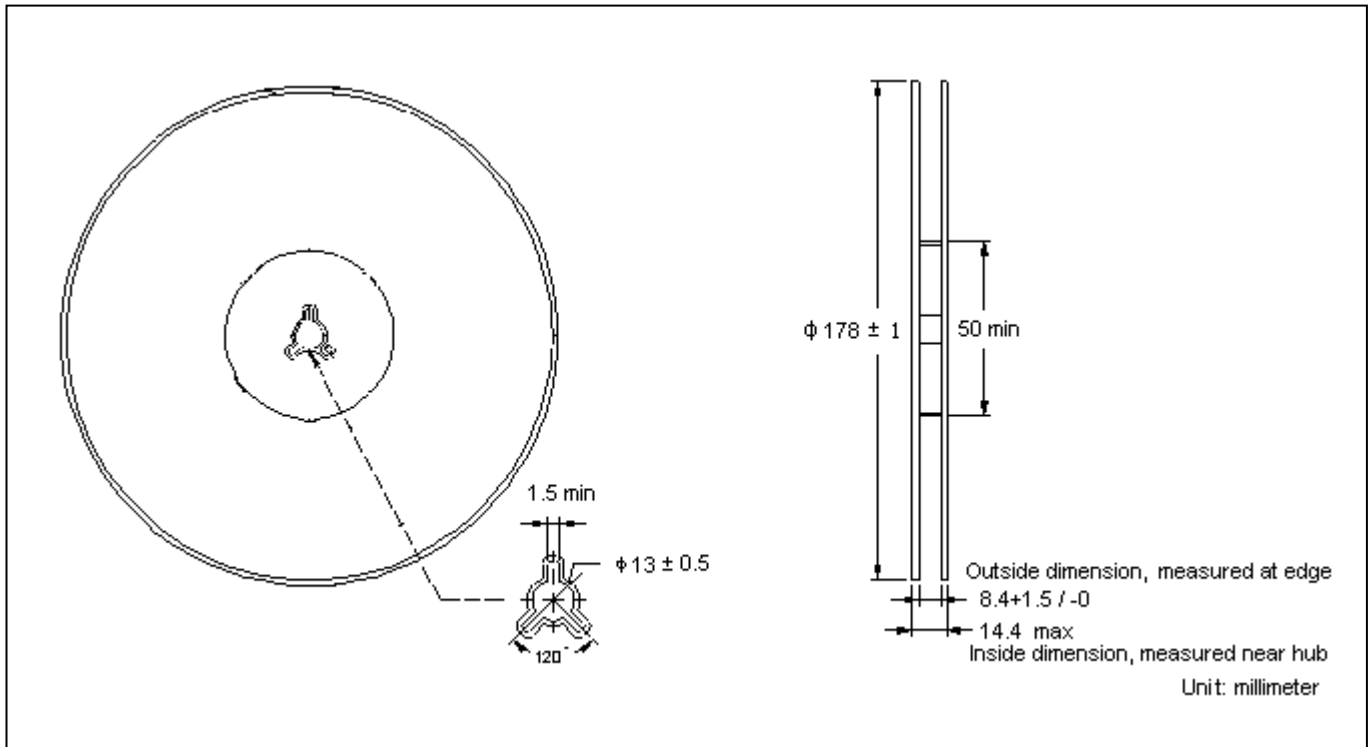


## Recommended Footprint

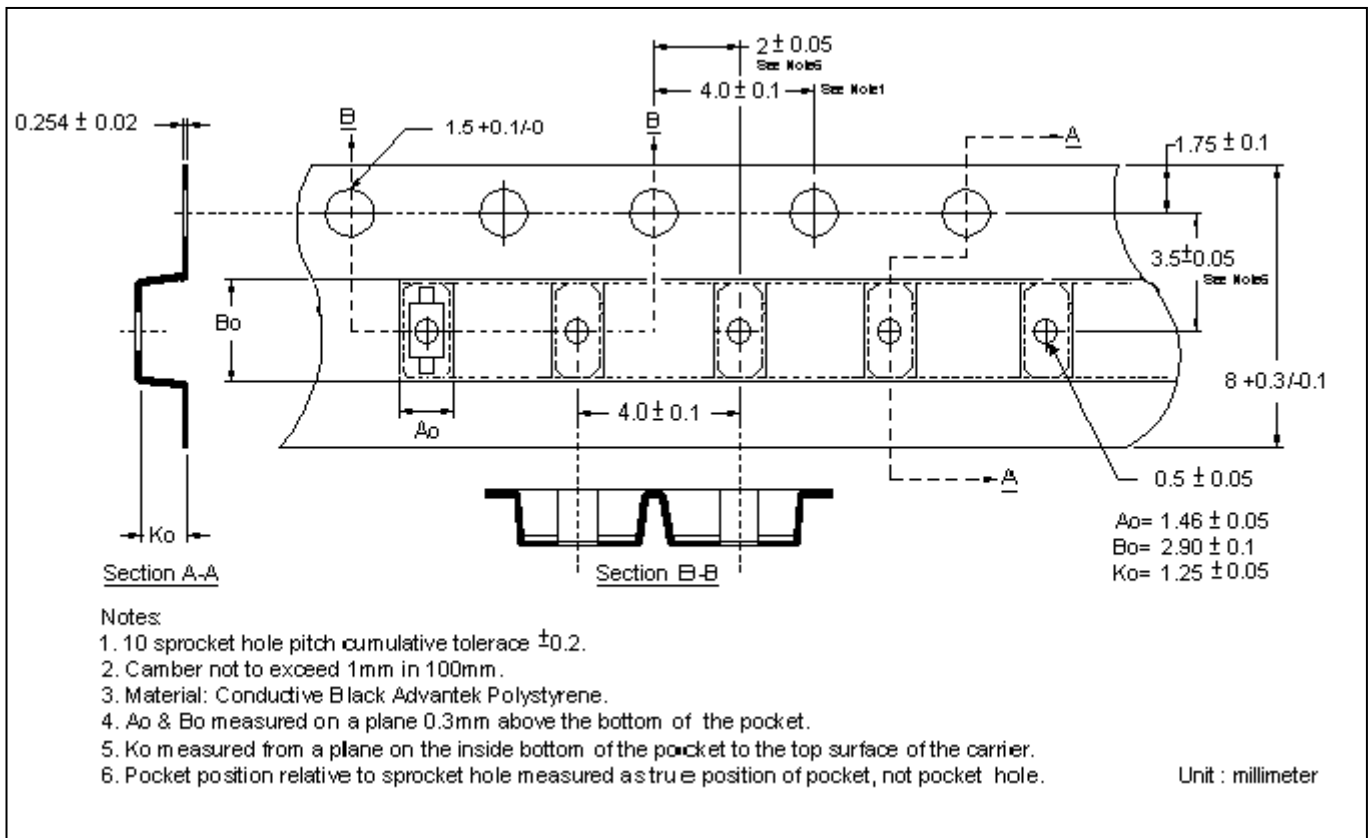


mm  
 inch

**Reel Dimension**



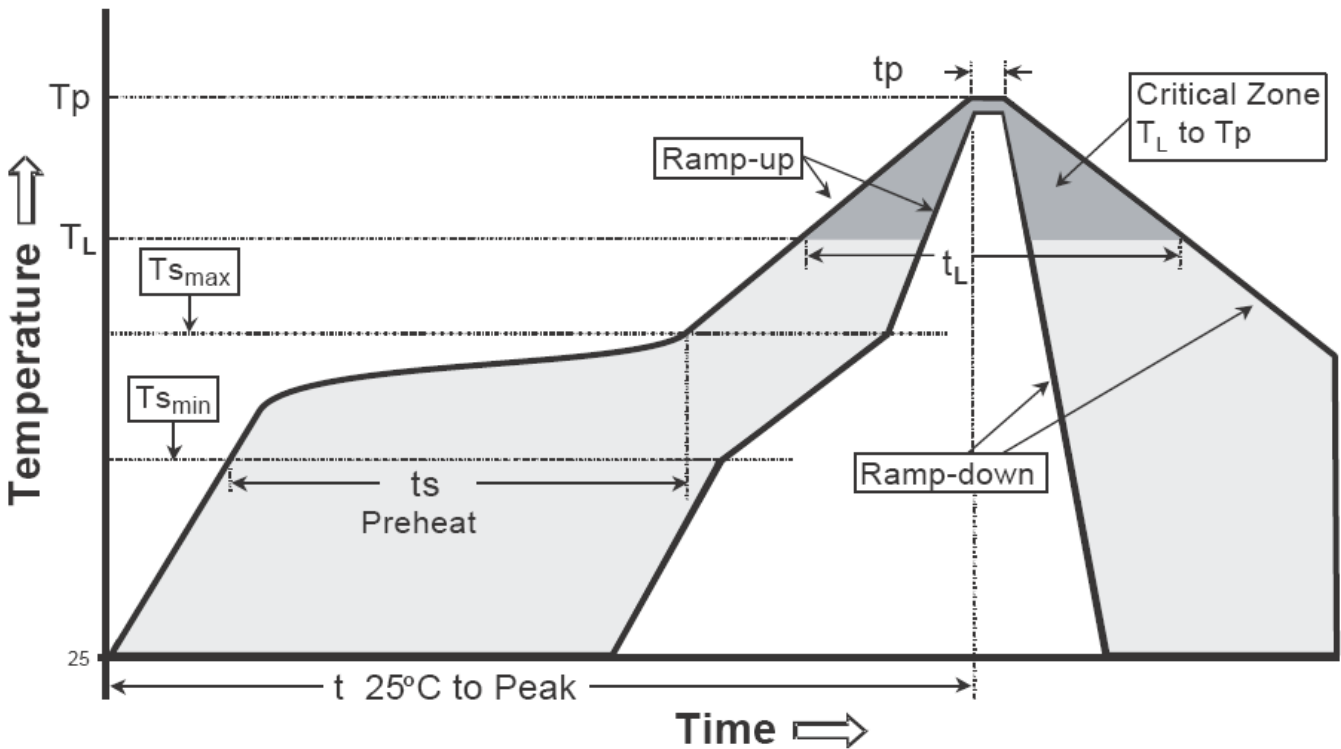
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

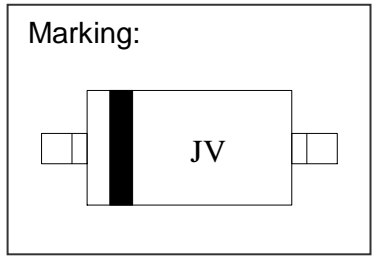
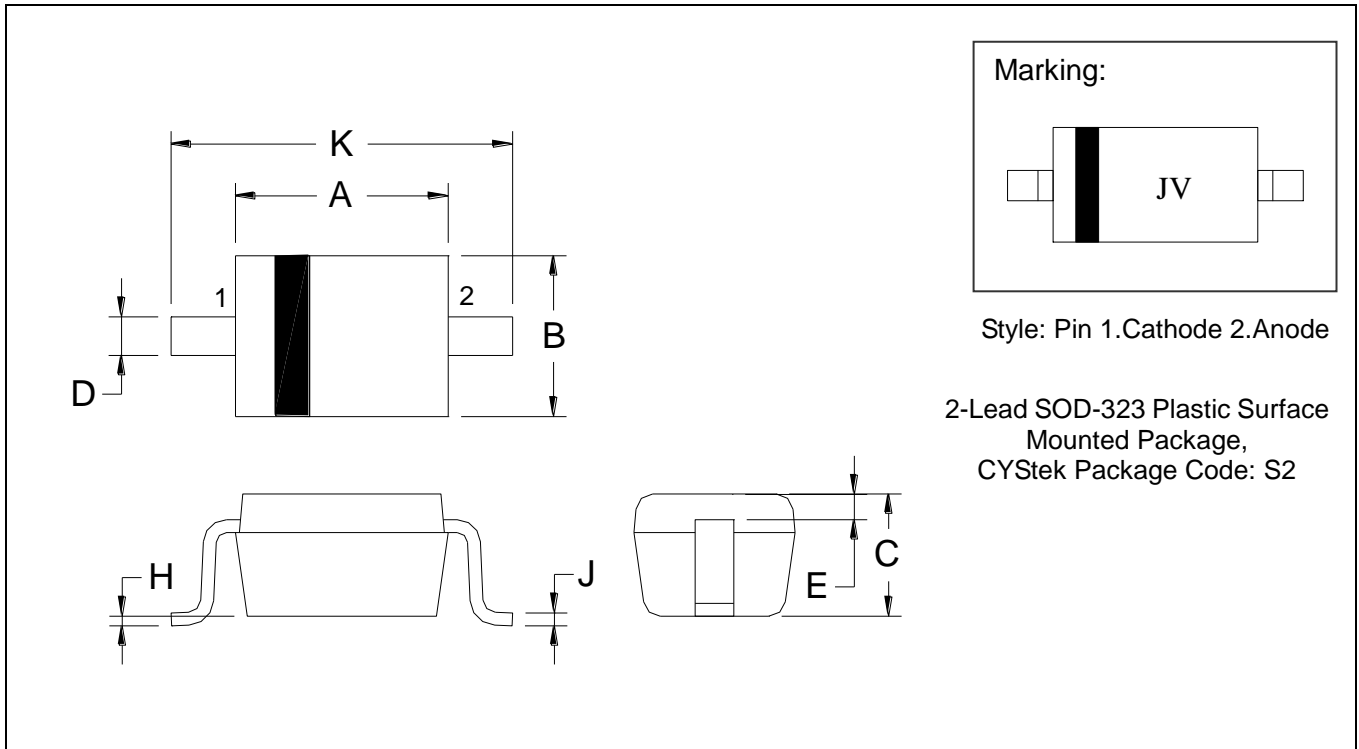
**Recommended temperature profile for IR reflow**



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(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (Tl)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(Tp)	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-323 Dimension**



Style: Pin 1.Cathode 2.Anode

2-Lead SOD-323 Plastic Surface Mounted Package,  
 CYStek Package Code: S2

\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0630	0.0709	1.60	1.80	E	0.0060 REF		0.15 REF	
B	0.0453	0.0531	1.15	1.35	H	0.0000	0.0040	0.00	0.10
C	0.0315	0.0394	0.80	1.00	J	0.0035	0.0070	0.089	0.177
D	0.0098	0.0157	0.25	0.40	K	0.0906	0.1063	2.30	2.70

- 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.

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