Small Signal Schottky diode

BAT54S2

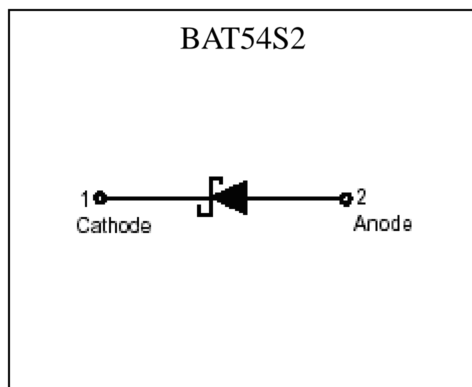
Features

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

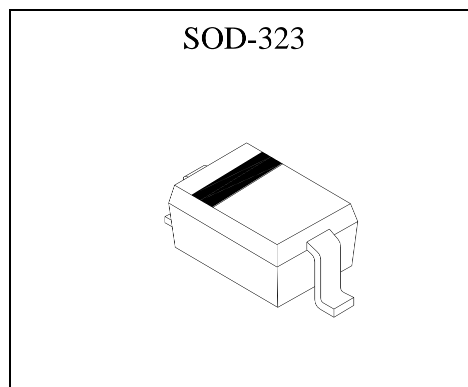
Applications

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

Symbol

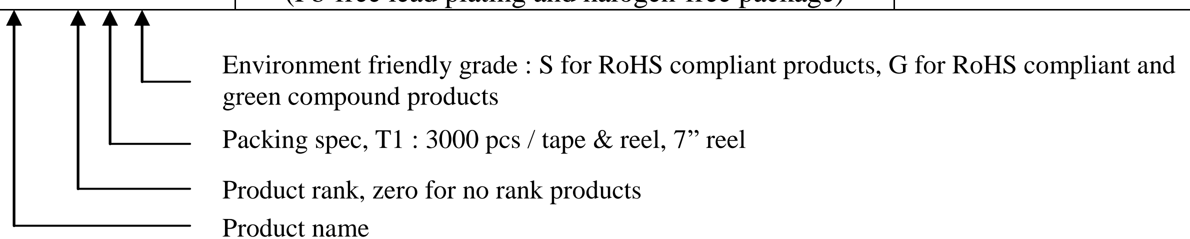


Outline



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_R	continuous reverse voltage		-	30	V
I_F	continuous forward current		-	200	mA
I_{FRM}	repetitive peak forward current	tp≤1s, δ≤0.5	-	300	mA
I_{FSM}	non-repetitive peak forward current	tp<10ms	-	600	mA
Ptot	total power dissipation	Tamb≤25℃	-	200	mW
Tstg	storage temperature		-65	+150	℃
Tj	operating junction temperature		-65	+150	℃
Tamb	operating ambient temperature		-65	+125	℃

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

Parameter	Symbol	Condition	Min.	Max.	Unit
Reverse Breakdown Voltage	V_{BR}	I_R=100μA	30	-	V
Forward Voltage (Note 1)	$V_F(1)$	I_F=0.1mA	-	240	mV
	$V_F(2)$	I_F=1mA	-	320	mV
	$V_F(3)$	I_F=10mA	-	400	mV
	$V_F(4)$	I_F=30mA	-	500	mV
	$V_F(5)$	I_F=100mA	-	800	mV
Reverse Leakage Current (Note 2)	I_R	V_R=25V	-	2	μA
Diode Capacitance	C_D	V_R=1V, f=1MHz	-	10	pF
Reverse Recovery Time	trr	when switched from I_F= 10mA to I_R=10mA; R_L=100Ω; measured at I_R=1mA	-	5	ns

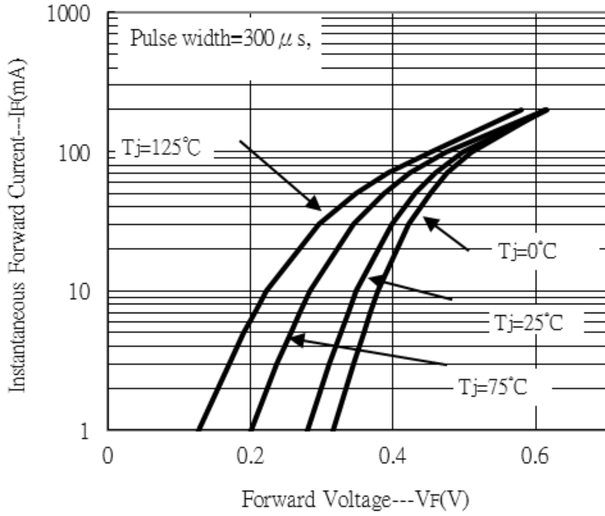
Notes: 1.pulse test, tp=380μs, duty cycle<2%.
2.pulse test, tp=300μs, duty cycle<2%.

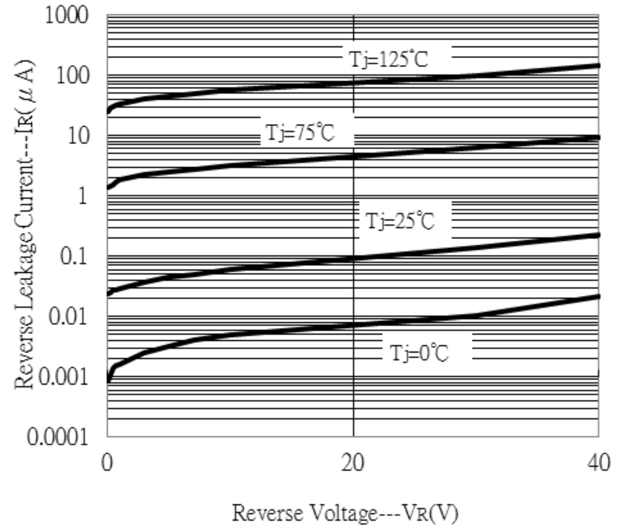
Thermal Characteristics

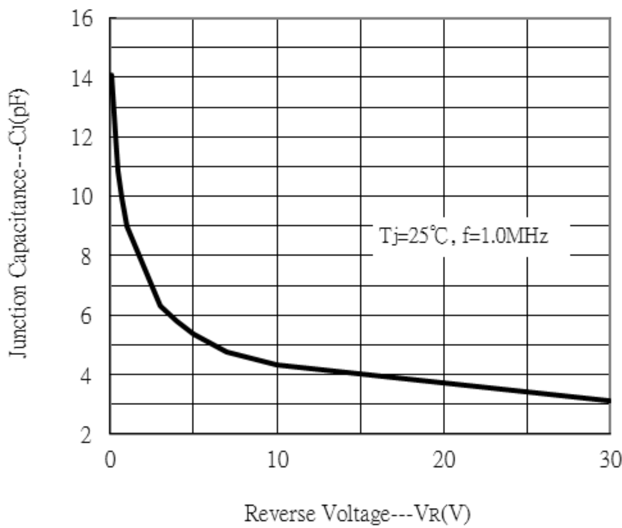
Symbol	Parameter	Conditions	Value	Unit
$R_{th\ j\text{-}a}$	thermal resistance from junction to ambient	note 1	635	K/W

Note 1 : Device mounted on a FR-4 PCB

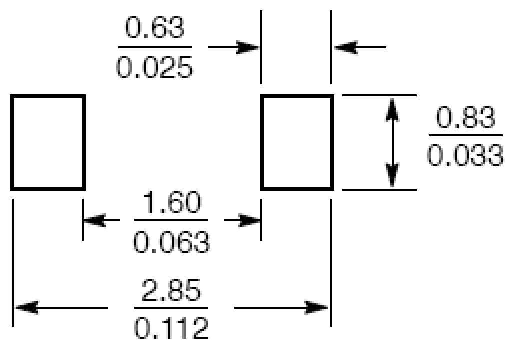
Typical Characteristics





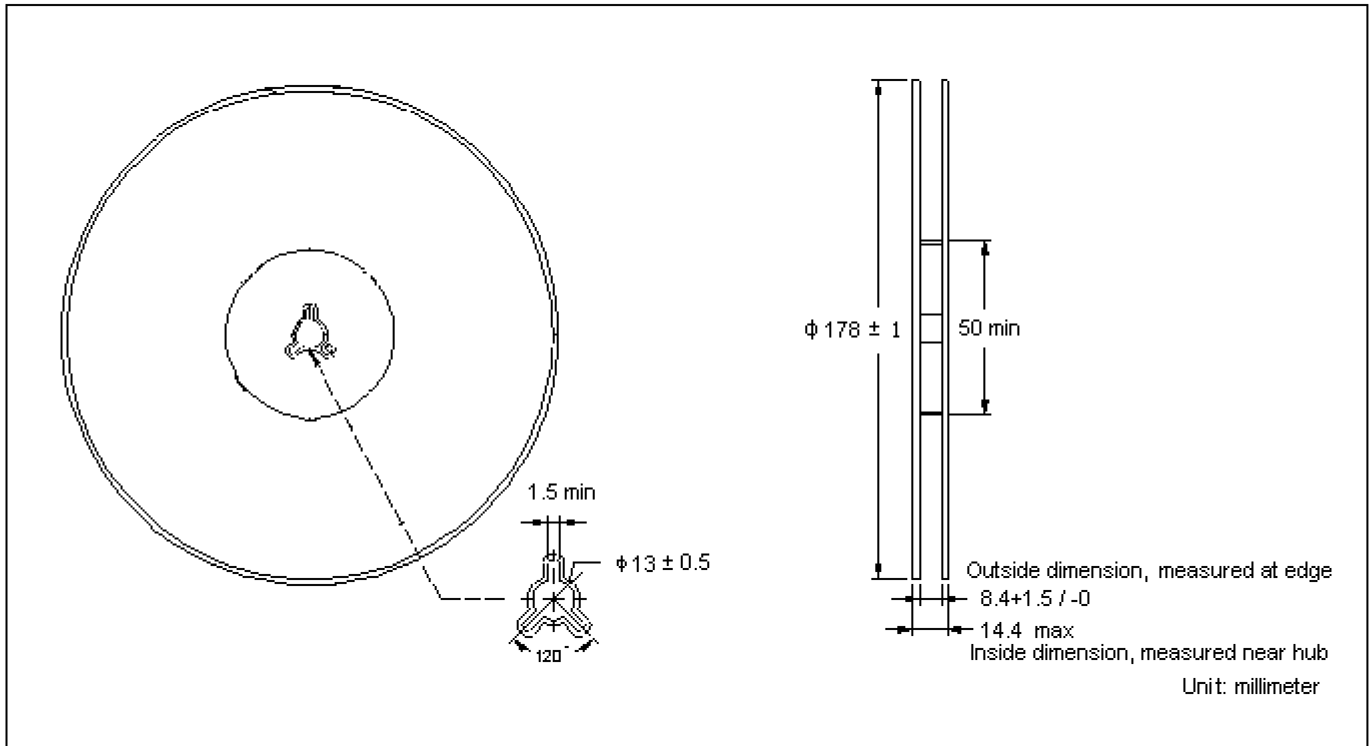


Recommended Footprint

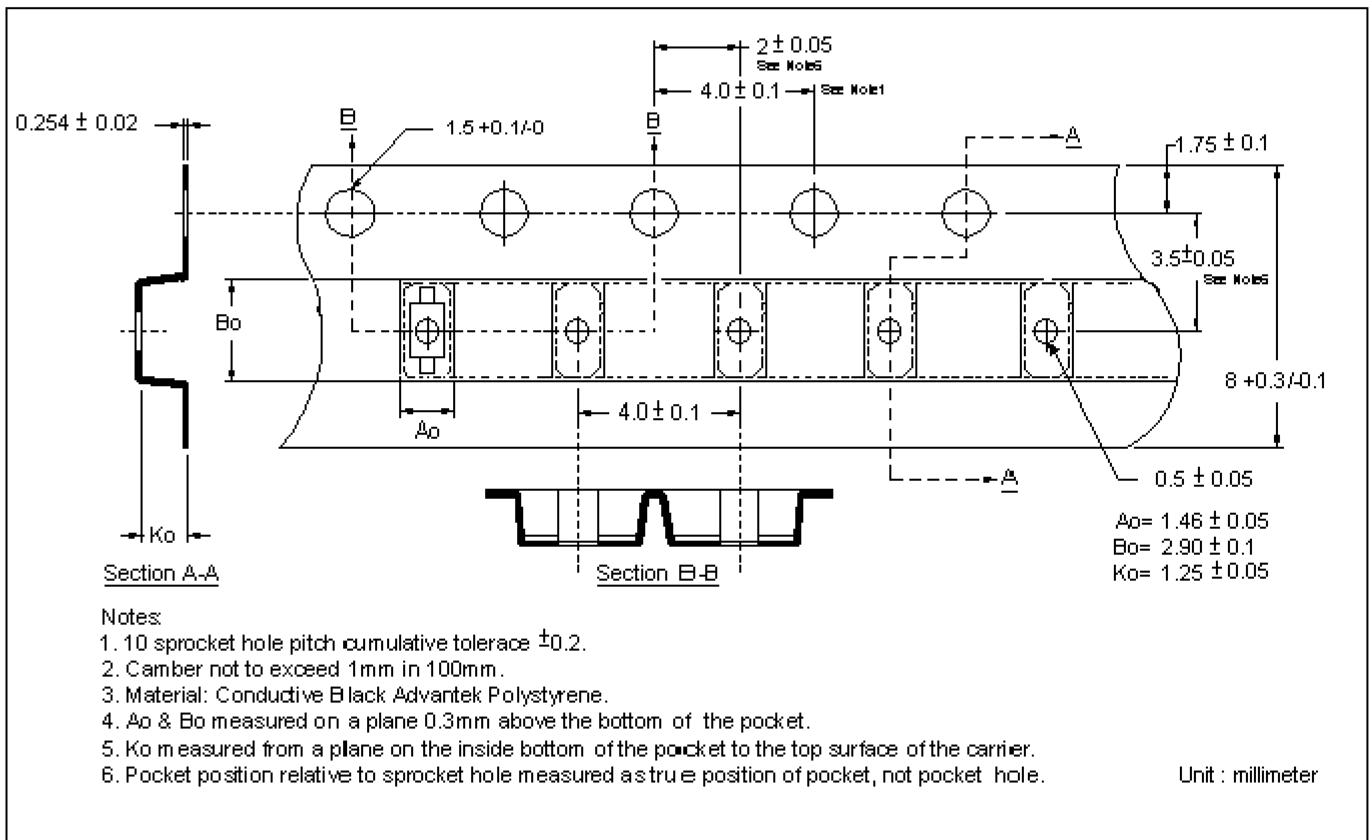


mm
inch

Reel Dimension



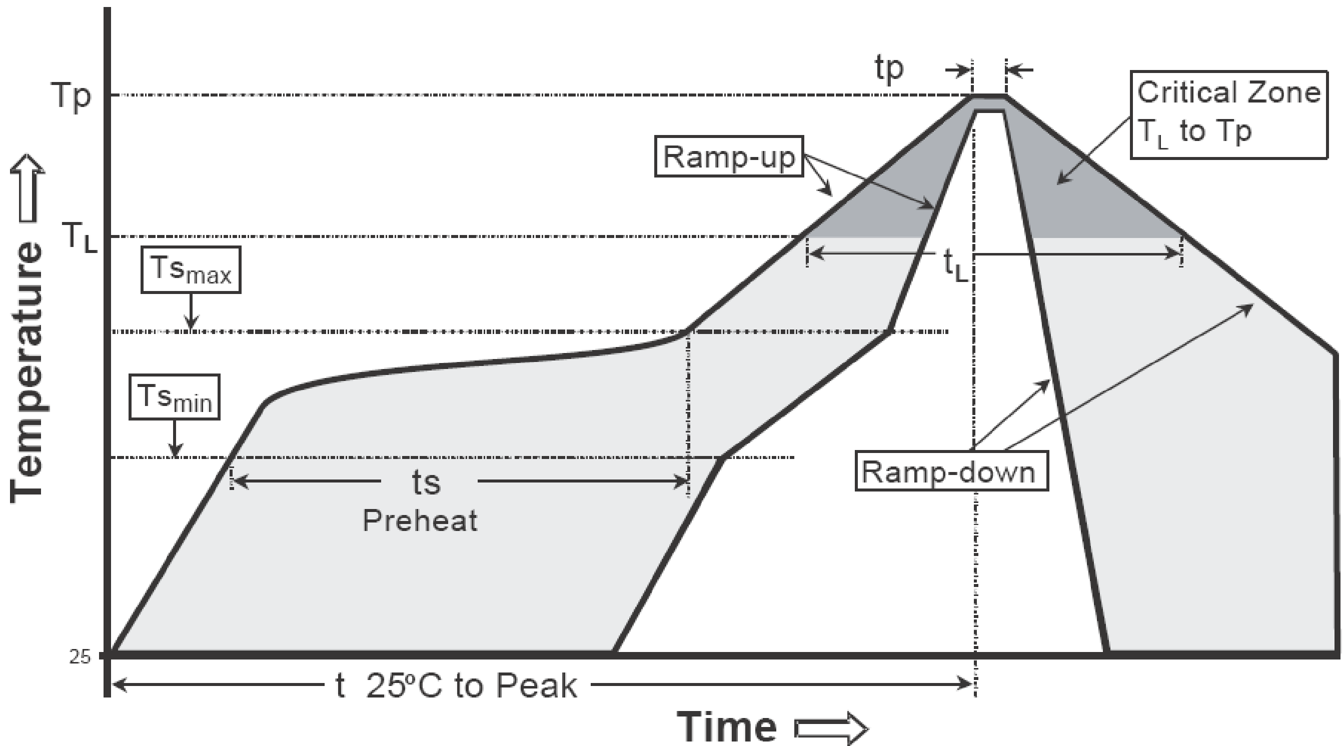
Carrier Tape Dimension



Recommended wave soldering condition

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

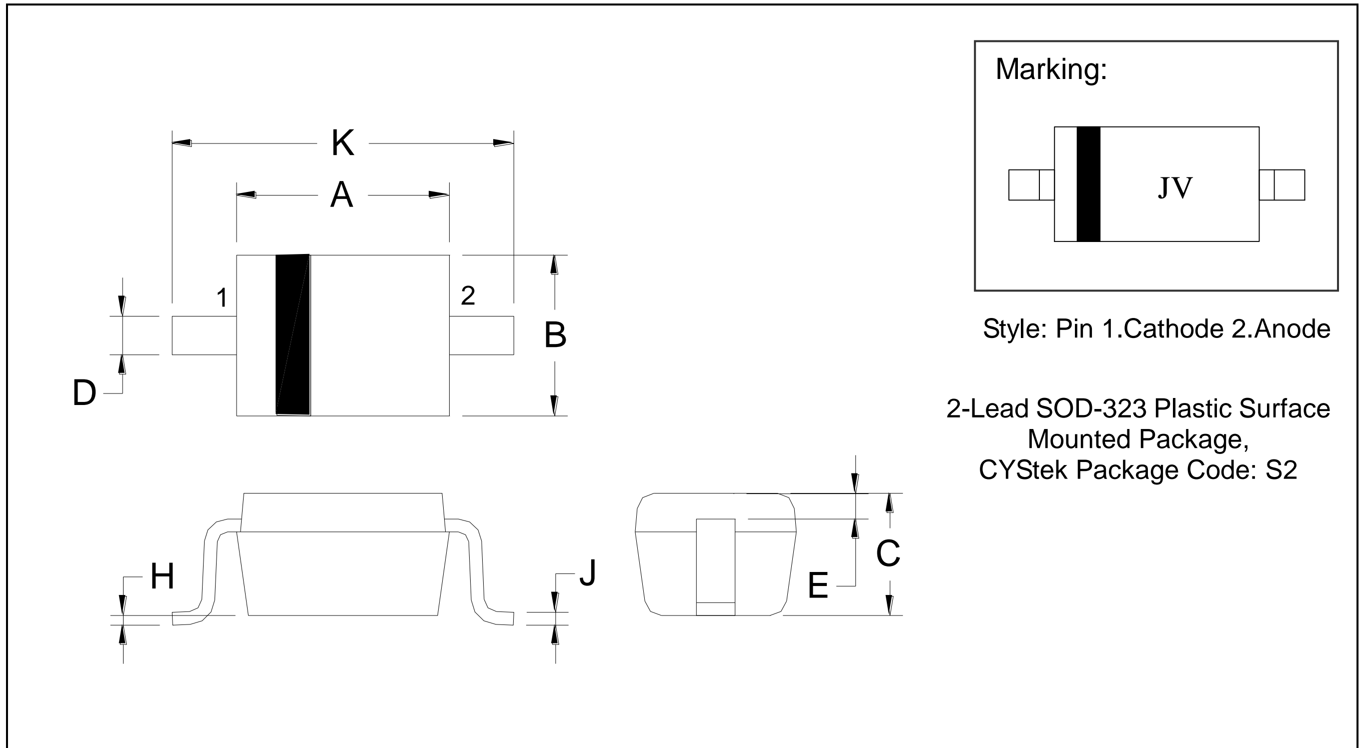
Recommended temperature profile for IR reflow



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) −Temperature Max(Ts max) −Time(ts min to ts 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.

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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