Small Signal Schottky (double) diodes

BAT54N3/BAT54AN3
BAT54CN3/BAT54SN3

Description

Planar silicon Schottky barrier diodes encapsulated in a SOT-23 small plastic SMD package.
Single diodes and double diodes with different pinning are available.

Features

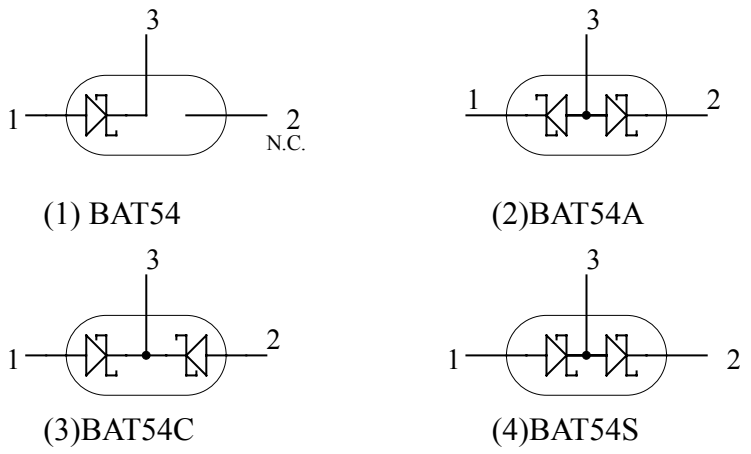
- Very small conduction losses
- Low forward voltage drop
- Small plastic SMD package
- Pb-free lead-free and halogen-free package

Applications

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

Pinning

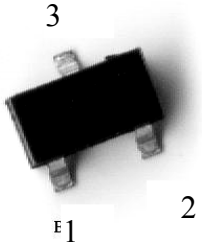
Pin	Description			
	BAT54	BAT54A	BAT54C	BAT54S
1	A	K1	A1	A1
2	NC	K2	A2	K2
3	K	A1,A2	K1,K2	K1,A1



Diode configuration and symbol

Outline

SOT-23



Marking:

Type	Marking Code
BAT54 N3	JV3
BAT54AN3	B6
BAT54CN3	5C
BAT54SN3	LD3

Absolute Maximum Ratings

- Maximum Temperatures
  Storage Temperature Tstg..... -65 ~ +150 °C
  Operating Junction Temperature Tj …… -65 ~ +150°C
- Maximum Power Dissipation
  Total Power Dissipation (Ta=25°C) Ptot (Note) ..... 230 mW
- Maximum Voltages and Currents (Ta=25°C)
  Repetitive Peak Reverse Voltage V_{RRM}..... 30 V
  Continuous Forward Current I_F ..... 200 mA
  Repetitive Peak Forward Current(tp≤1s,duty cycle≤0.5)…… 300mA
  Non-repetitive Peak Forward Current (tp<10ms, sinusoidal) I_{FSM} ..... 600 mA

Note : For double diodes, Ptot is the total power dissipation of both diodes.

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient, max	$R_{\theta JA}$	435	°C/W
Thermal Resistance, Junction-to-Case, max	$R_{\theta JC}$	270	

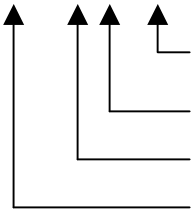
Characteristics (Ta=25°C)

Characteristic	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,Tj=25℃	-	2	μA
Diode Capacitance	C_D	V_R=1V, f=1MHz	-	10	pF
Reverse Recovery Time	trr	I_F=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=5ms,duty cycle<2%.

Ordering Information

Device	Package	Shipping	Marking
BAT54N3-0-T1-G	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel	JV3
BAT54AN3-0-T1-G			B6
BAT54CN3-0-T1-G			5C
BAT54SN3-0-T1-G			LD3



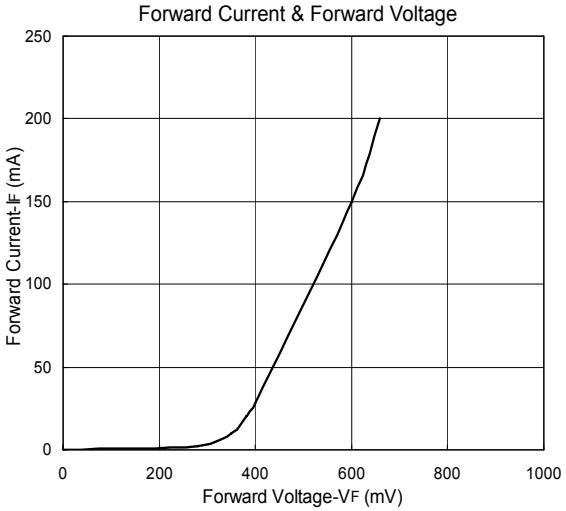
Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

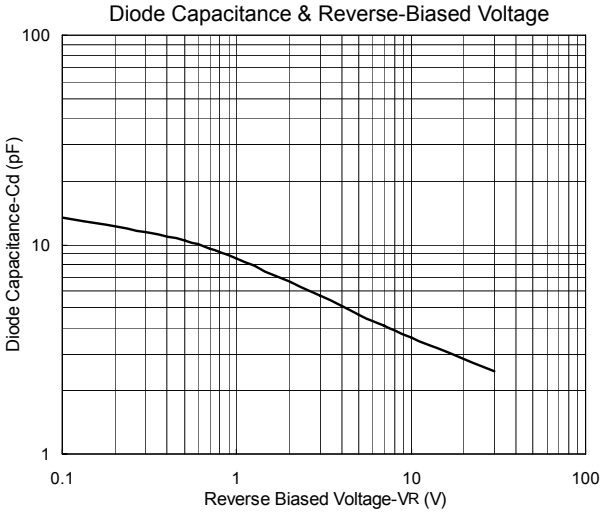
Packing spec, T1 : 3000 pcs / tape & reel, 7" reel

Product rank, zero for no rank products

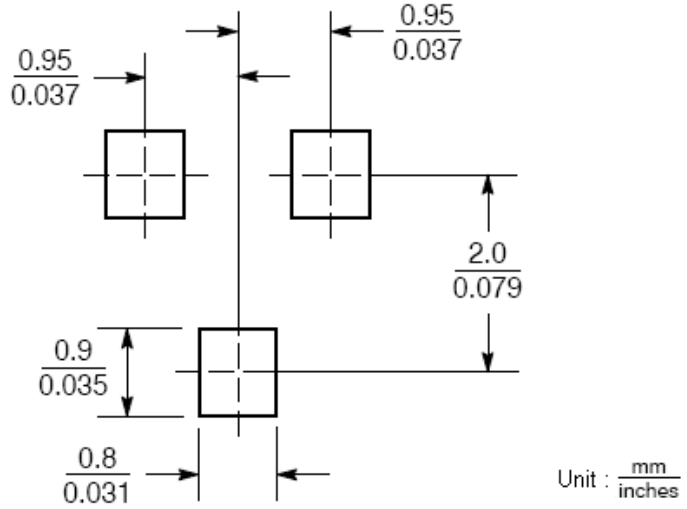
Product name

Typical Characteristics





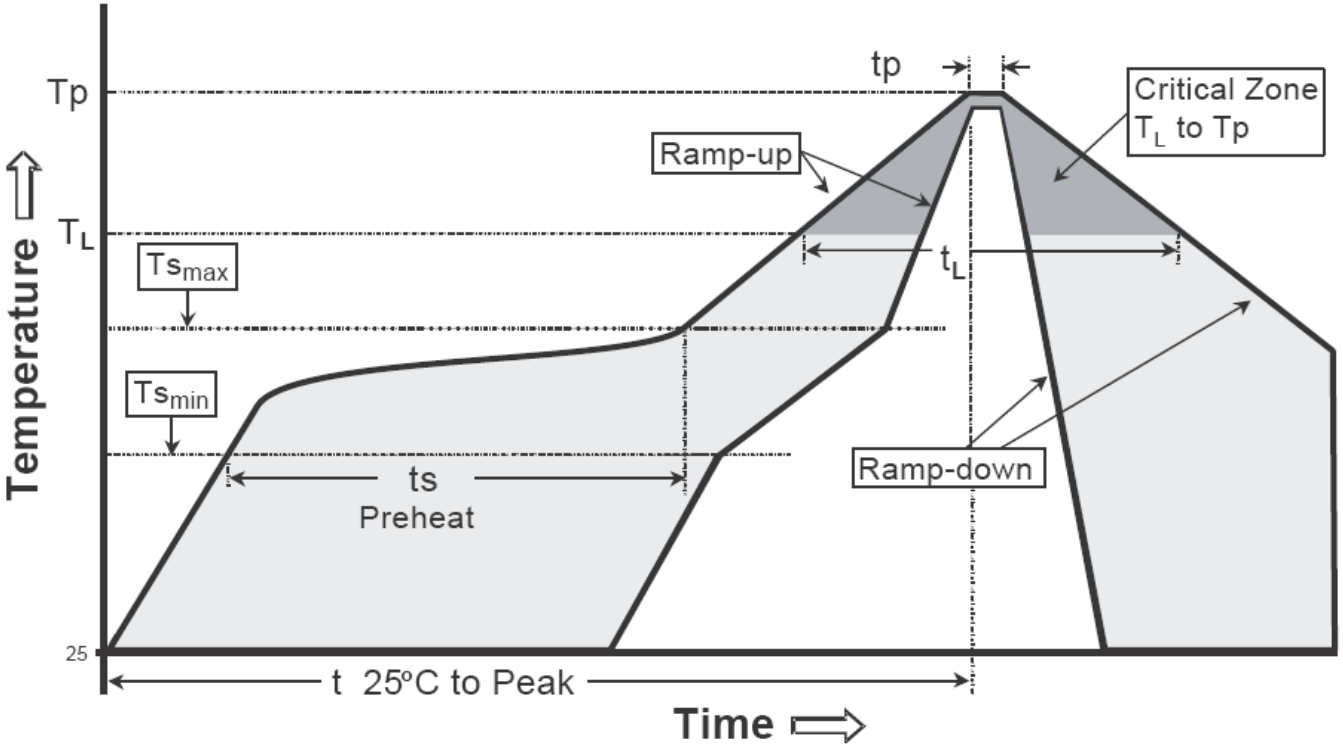
Recommended Soldering Footprint



Recommended wave soldering condition

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

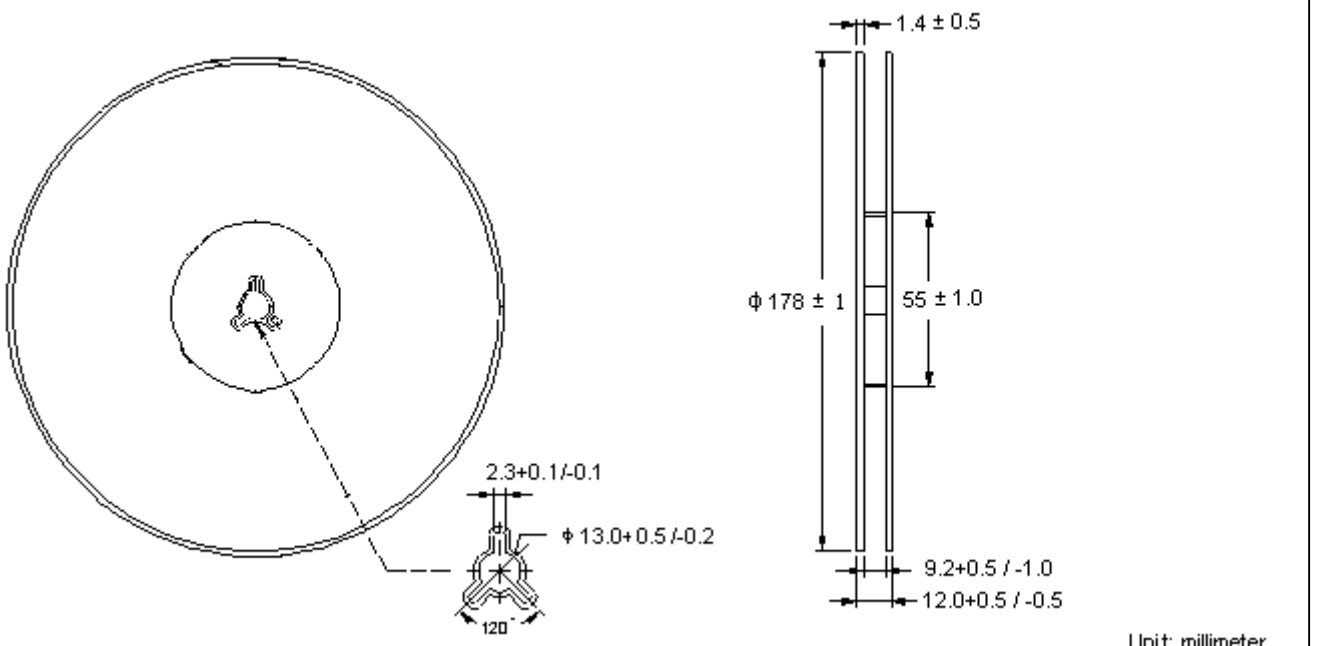
Recommended temperature profile for IR reflow



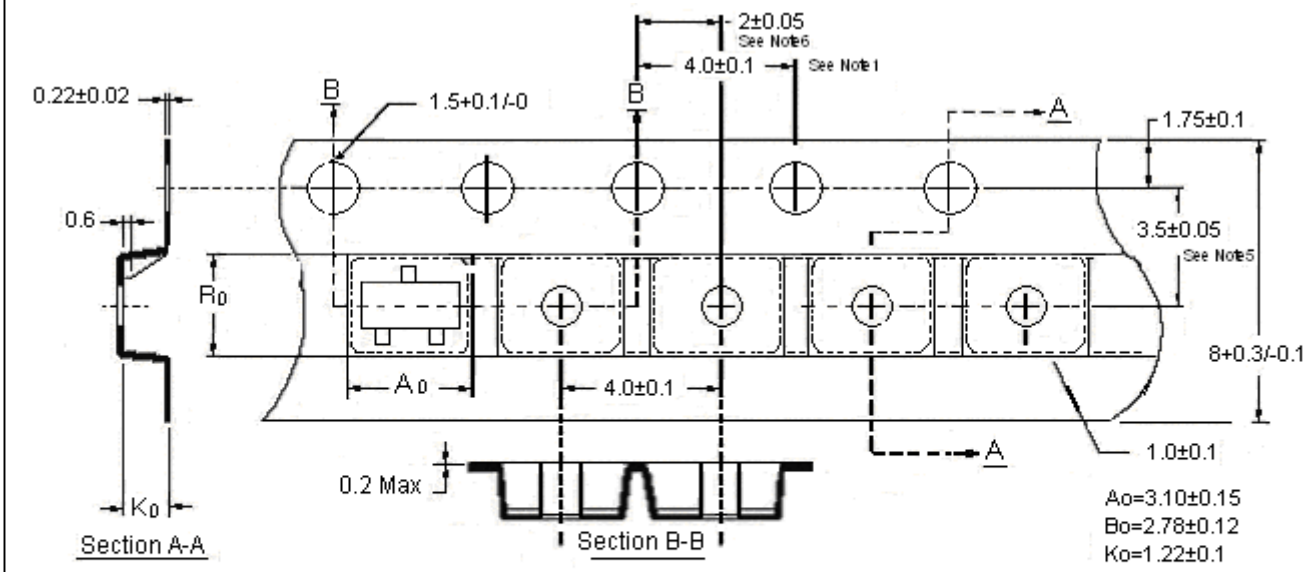
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 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.

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 : conductive 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

SOT-23 Dimension

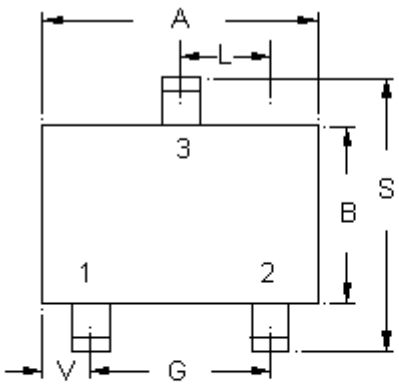
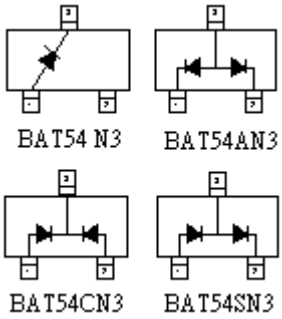
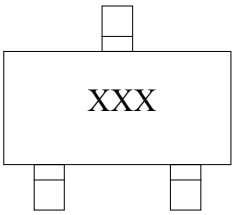
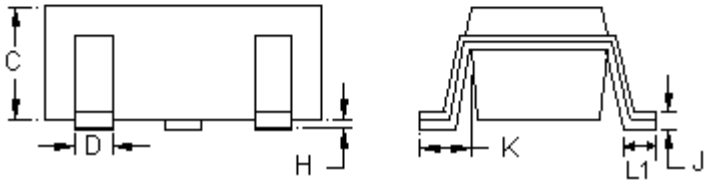


Diagram:



Marking:





3-Lead SOT-23 Plastic Surface Mounted Package. CYStek Package Code: N3

- BAT54 N3: Single Diode (Marking Code JV3)
- BAT54AN3: Common Anode. (Marking Code B6)
- BAT54CN3: Common Cathode. (Marking Code 5C)
- BAT54SN3: Series Connected. (Marking Code LD3)

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50

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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