Small Signal Schottky (double) diodes

BAR40S3/BAR40AS3
BAR40CS3/BAR40SS3

Description

Planar silicon Schottky barrier diodes encapsulated in a SOT-323 small plastic SMD package.
Single diodes and double diodes with different pinning are available.

Features

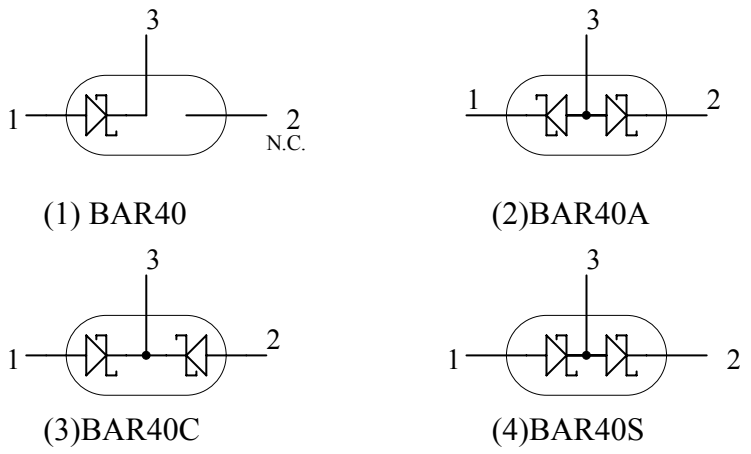
- Very small conduction losses
- Low forward voltage drop
- Small plastic SMD package
- Pb-free package

Applications

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

Pinning

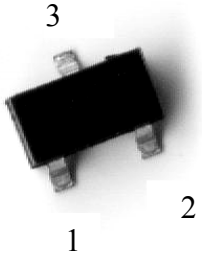
Pin	Description			
	BAR40	BAR40A	BAR40C	BAR40S
1	A	K1	A1	A1
2	NC	K2	A2	K2
3	K	A1,A2	K1,K2	K1,A1



Diode configuration and symbol

Outline

SOT-323



Marking:

Type	Marking Code
BAR40 S3	B4
BAR40AS3	B7
BAR40CS3	5C
BAR40SS3	B8

Absolute Maximum Ratings

- Maximum Temperatures
  Storage Temperature Tstg..... -65~+150 °C
  Junction Temperature Tj .....-55~ +125°C
- Maximum Power Dissipation
  Total Power Dissipation (Ta=25°C) Ptot (Note) ..... 200 mW
- Maximum Voltages and Currents (Ta=25°C)
  Repetitive Peak Reverse Voltage V_{RRM}..... 40 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

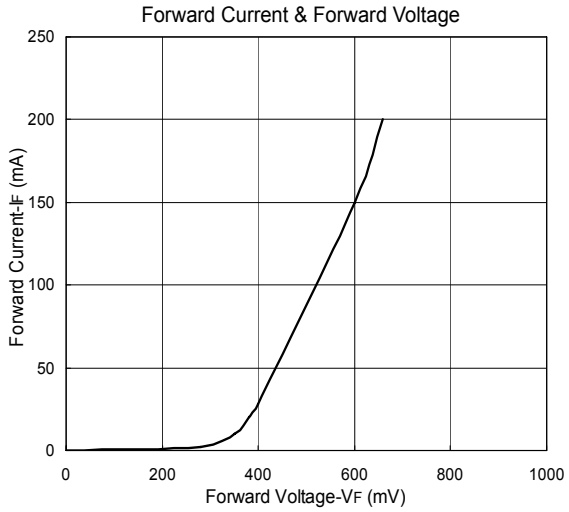
Note: for double diodes, Ptot is the total power dissipation of both diodes.

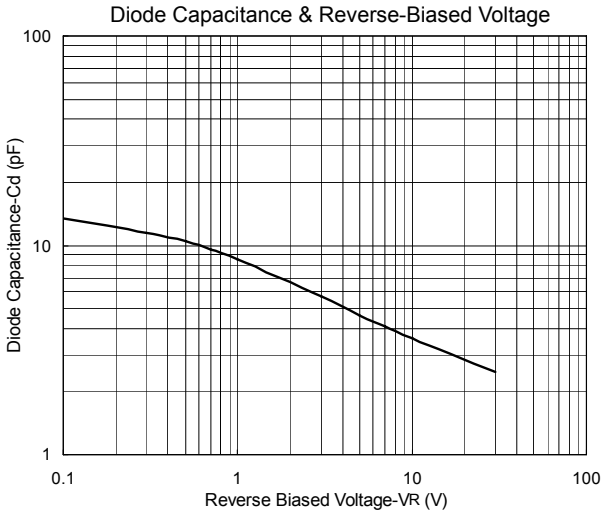
Characteristics (Ta=25°C)

Characteristic	Symbol	Condition	Min.	Max.	Unit
Reverse Breakdown Voltage	V_{BR}	I_R=100μA	40	-	V
Forward Voltage (Note 1)	V_F(1)	I_F=1mA	-	320	mV
	V_F(2)	I_F=40mA	-	500	mV
	V_F(3)	I_F=100mA	-	550	mV
Reverse Leakage Current (Note 2)	I_R	V_R=30V, Tj=25℃	-	200	nA
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

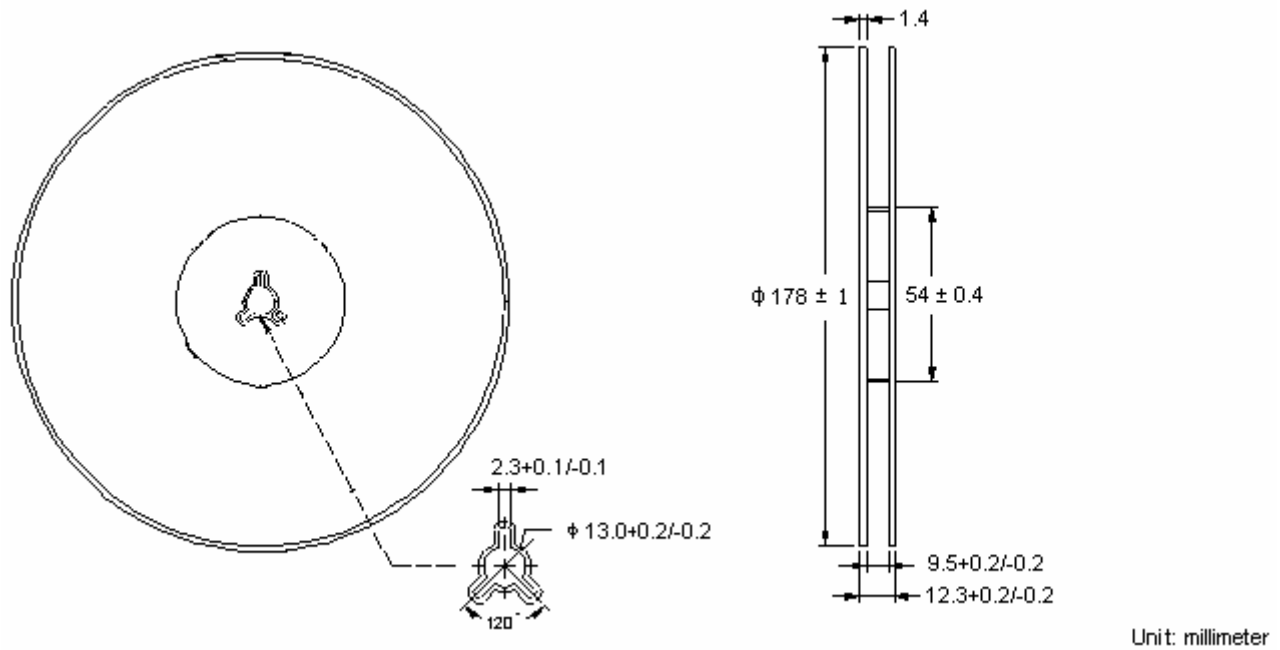
Notes: 1.pulse test, tp=380μs,duty cycle<2%.
2.pulse test, tp=5ms,duty cycle<2%.

Characteristic Curves

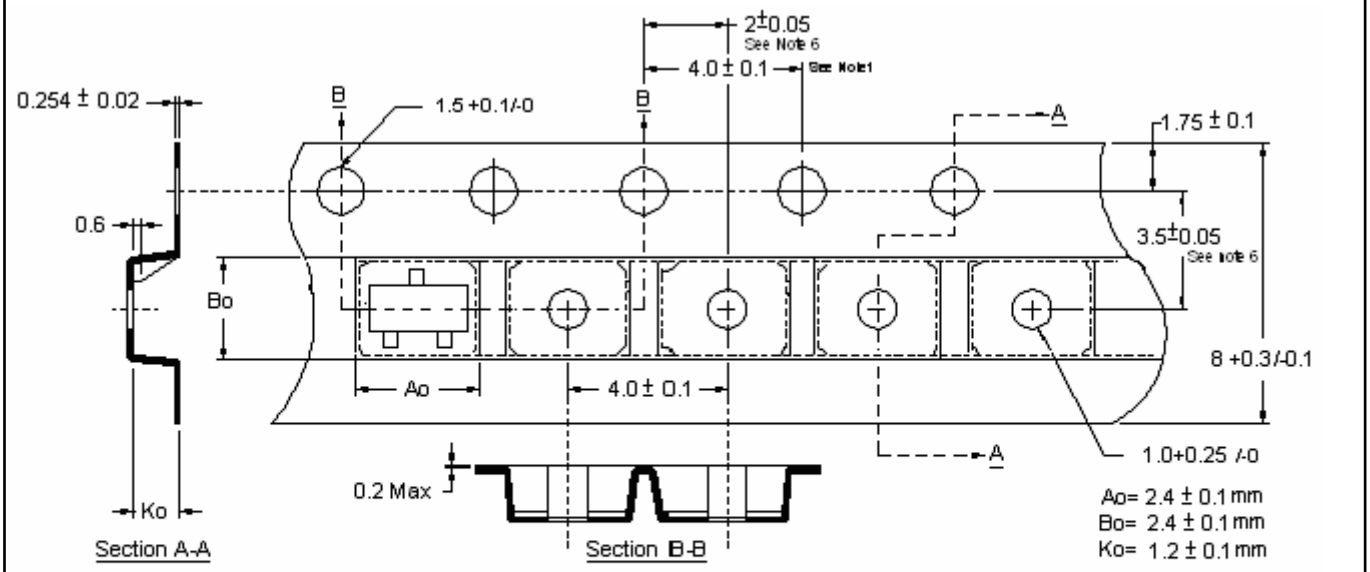




Reel Dimension



Carrier Tape Dimension



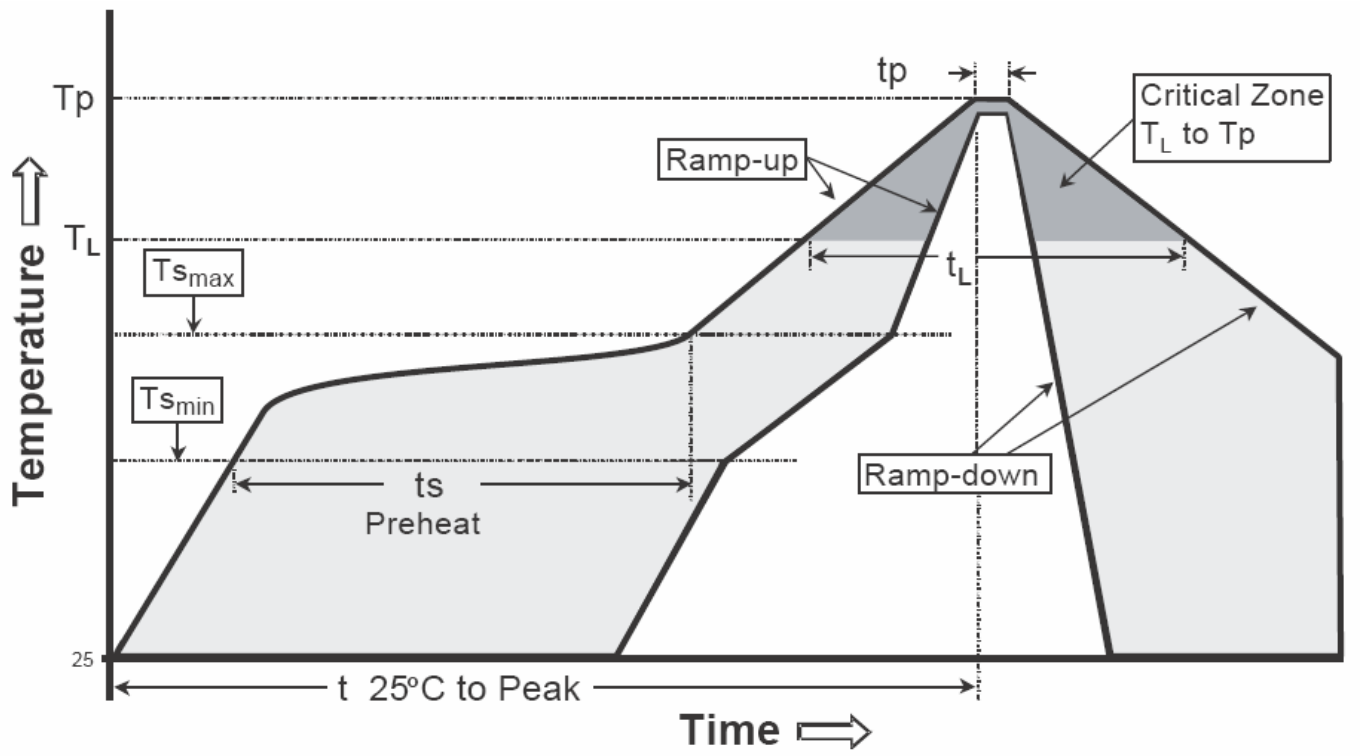
Notes:
1. 10 sprocket hole pitch cumulative tolerace ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

Recommended wave soldering condition

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

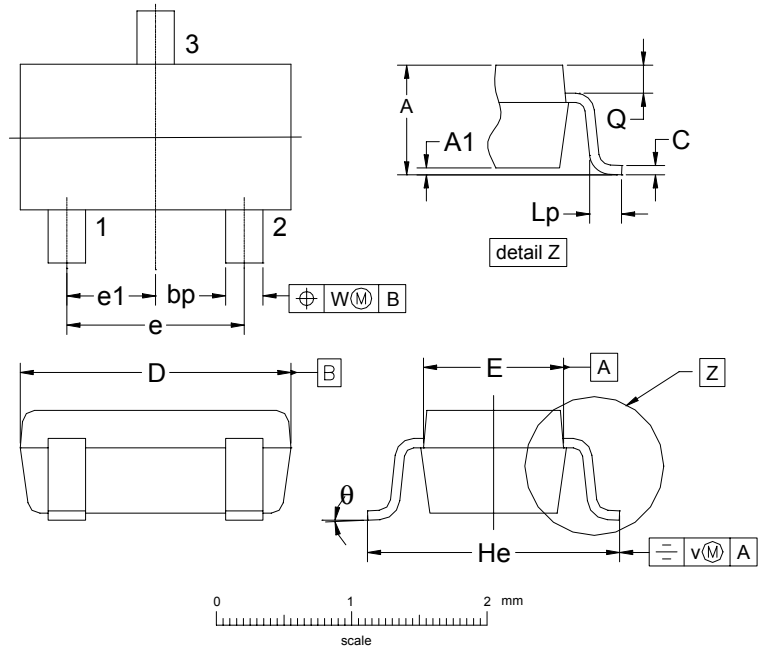
Recommended temperature profile for IR reflow



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.

SOT-323 Dimension



3-Lead SOT-323 Plastic
Surface Mounted Package.
CYStek Package Code: S3

Marking:

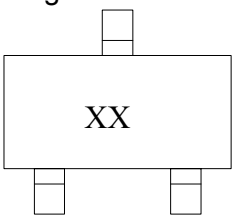
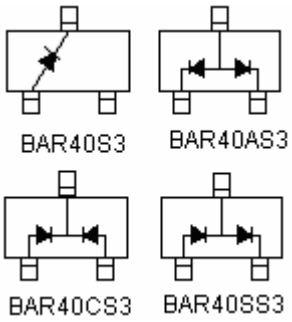


Diagram:



- BAR40 S3 : Single Diode (Marking Code B4)
- BAR40AS3 : Common Anode. (Marking Code B7)
- BAR40CS3 : Common Cathode. (Marking Code 5C)
- BAR40SS3 : Series Connected. (Marking Code B8)

*: 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.