

**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**

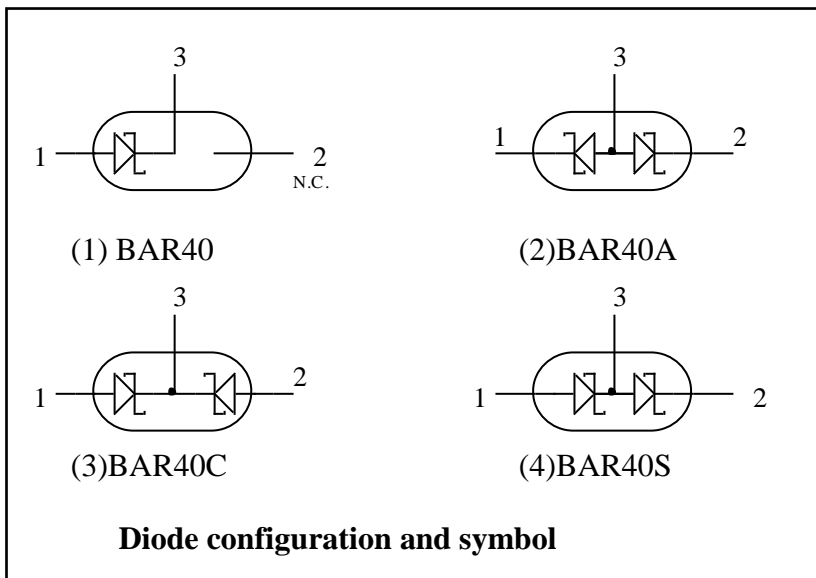
- Very small conduction losses
- Low forward voltage drop
- Small plastic SMD package
- Pb-free lead plating and halogen-free package

**Applications**

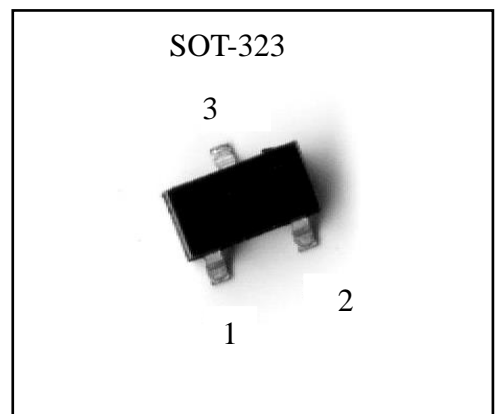
- Ultra high-speed switching
- Voltage clamping
- Protection circuits
- Blocking diodes

**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



**Outline**



**Marking:**

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



**Absolute Maximum Ratings**

- Maximum Temperatures
  - Storage Temperature T<sub>stg</sub> ..... -65~+150 °C
  - Operating Junction Temperature T<sub>j</sub> ..... -65~+150 °C
- Maximum Power Dissipation
  - Total Power Dissipation (Ta=25°C) P<sub>tot</sub> (Note) ..... 200 mW
- Maximum Thermal Resistance .....625 °C /W
- Maximum Voltages and Currents (Ta=25°C)
  - Repetitive Peak Reverse Voltage V<sub>RRM</sub>..... 40 V
  - Continuous Forward Current I<sub>F</sub> ..... 200 mA
  - Repetitive Peak Forward Current(tp≤1s,duty cycle≤0.5)..... 300mA
  - Non-repetitive Peak Forward Current (tp<10ms, sinusoidal) I<sub>FSM</sub>..... 600 mA

Note: for double diodes, P<sub>tot</sub> is the total power dissipation of both diodes.

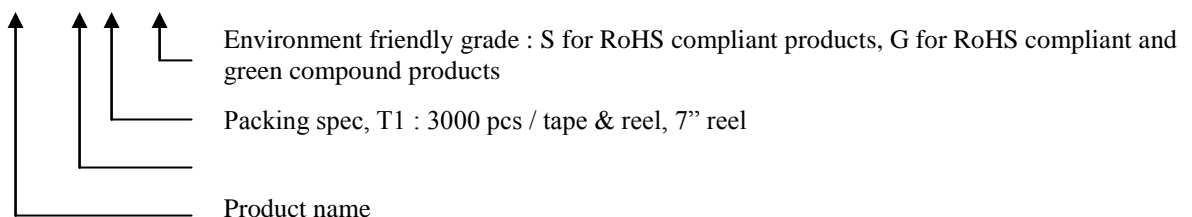
**Characteristics (Ta=25°C)**

Characteristic	Symbol	Condition	Min.	Max.	Unit
Reverse Breakdown Voltage	V <sub>BR</sub>	I <sub>R</sub> =100μA	40	-	V
Forward Voltage (Note 1)	V <sub>F</sub> (1)	I <sub>F</sub> =1mA	-	320	mV
	V <sub>F</sub> (2)	I <sub>F</sub> =40mA	-	500	mV
	V <sub>F</sub> (3)	I <sub>F</sub> =100mA	-	550	mV
Reverse Leakage Current (Note 2)	I <sub>R</sub>	V <sub>R</sub> =30V, T <sub>j</sub> =25°C	-	200	nA
Diode Capacitance	C <sub>D</sub>	V <sub>R</sub> =1V, f=1MHz	-	10	pF
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =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=5ms,duty cycle<2%.

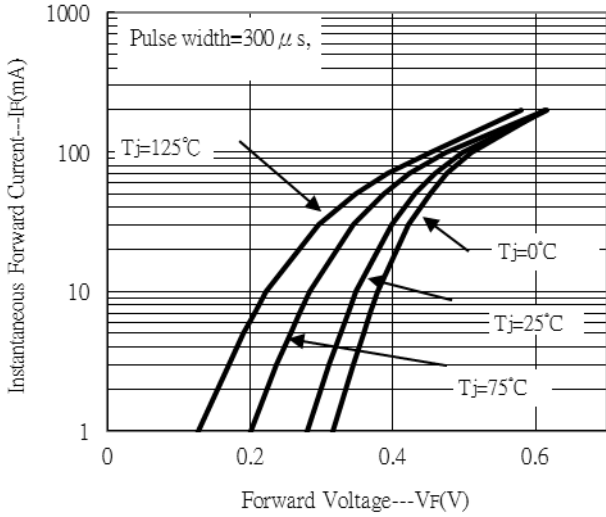
**Ordering Information**

Device	Package	Shipping	Marking
BAR40S3-0-T1-G	SOT-323 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel	B4
BAR40AS3-0-T1-G			B7
BAR40CS3-0-T1-G			5C
BAR40SS3-0-T1-G			B8

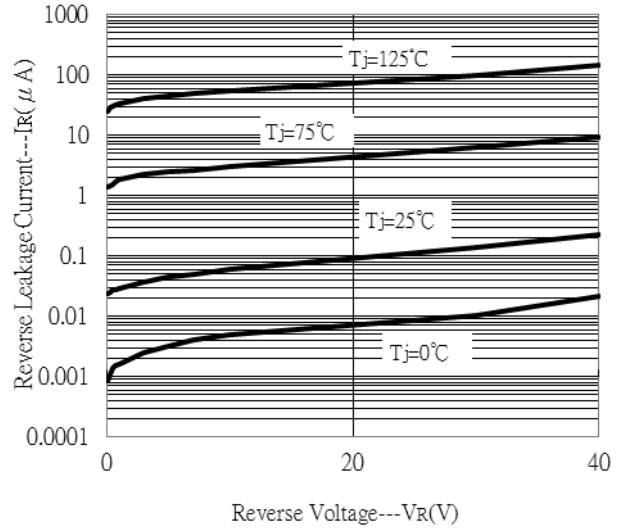


## Typical Characteristics

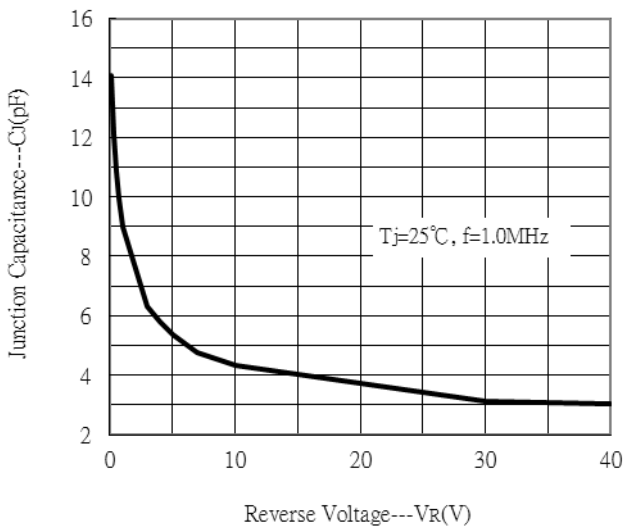
Forward Current vs Forward Voltage



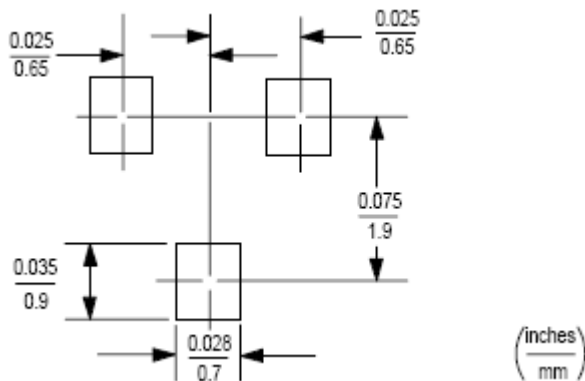
Reverse Leakage Current vs Reverse Voltage



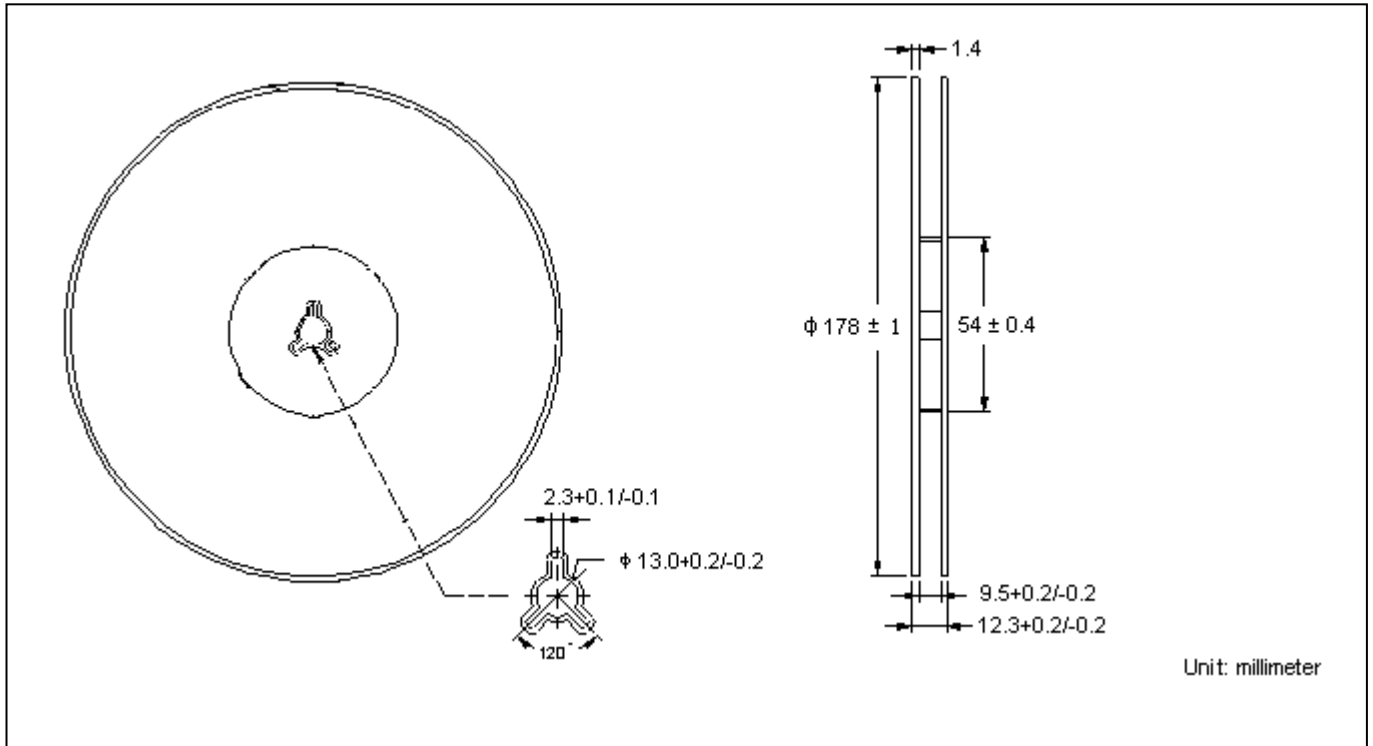
Junction Capacitance vs Reverse Voltage



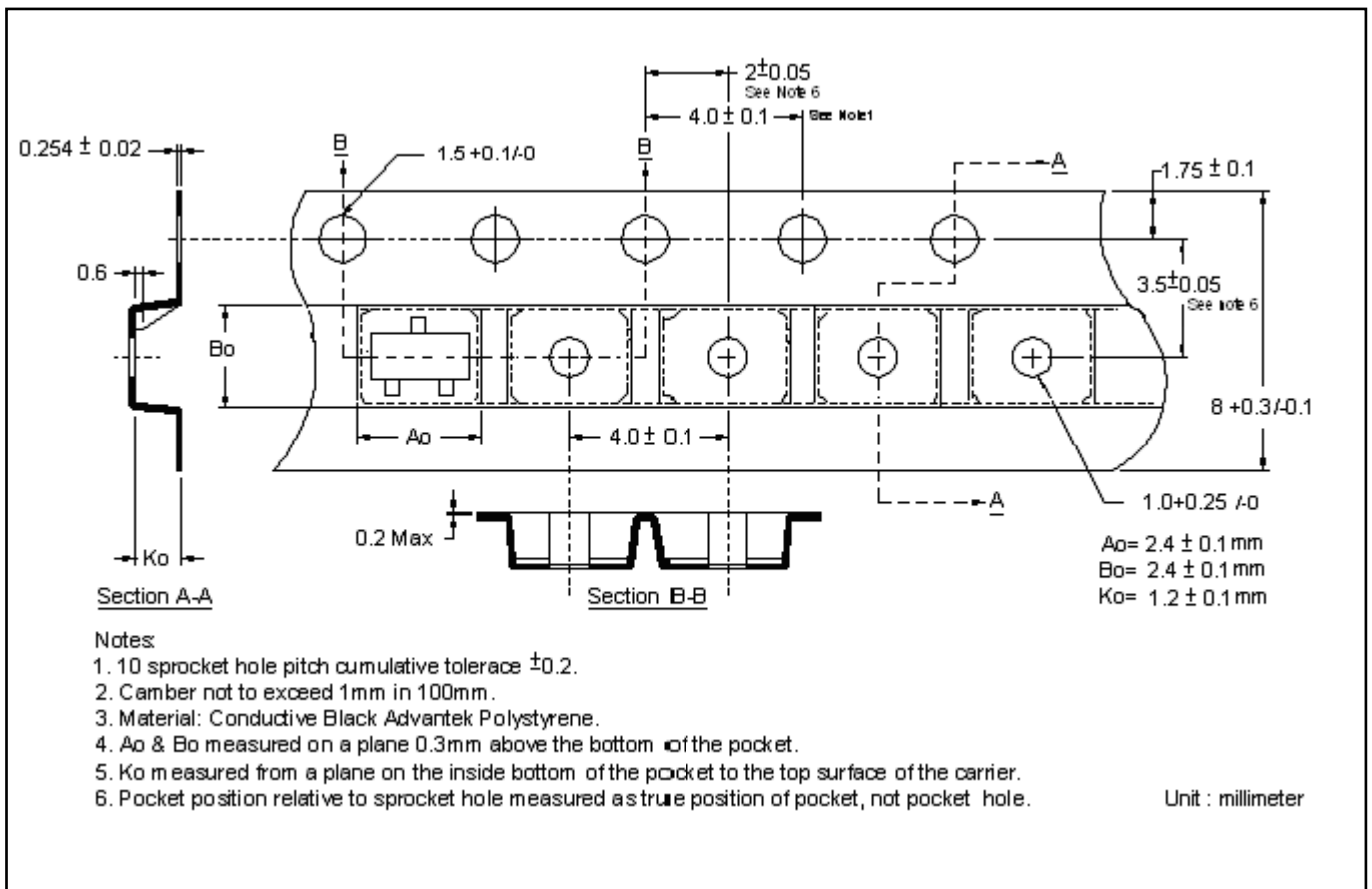
## Recommended Footprint



**Reel Dimension**



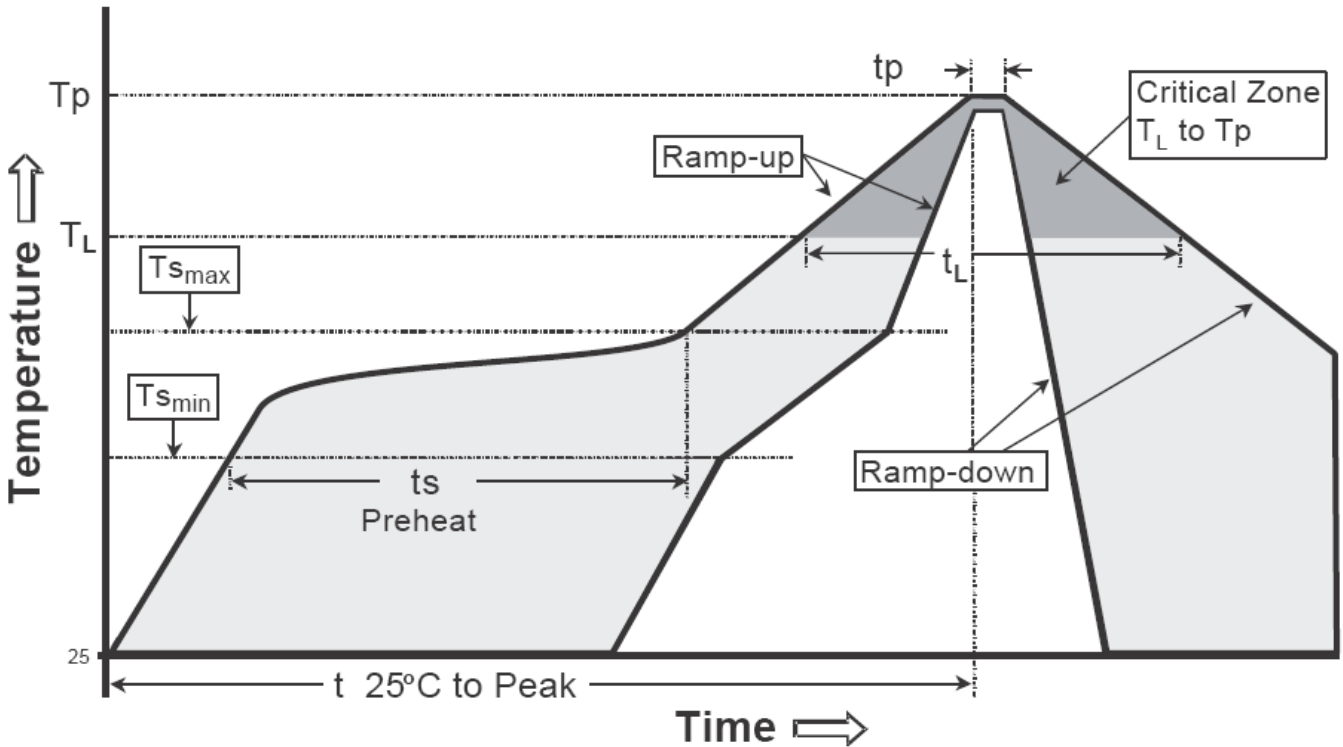
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

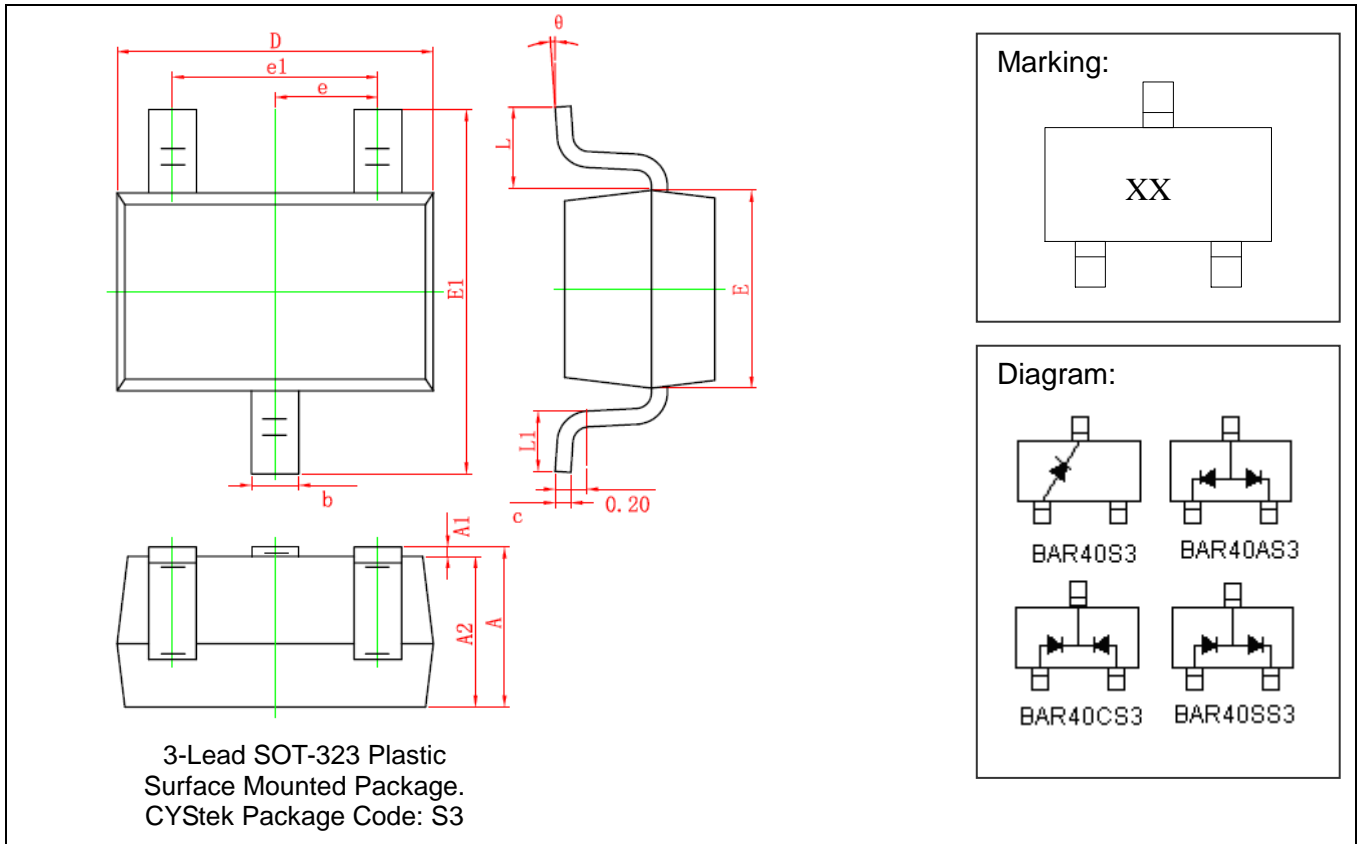
**Recommended temperature profile for IR reflow**



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.

**SOT-323 Dimension**



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

- 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)

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	E1	2.150	2.450	0.085	0.096
A1	0.000	0.100	0.000	0.004	e	0.650	TYP	0.026	TYP
A2	0.900	1.000	0.035	0.039	e1	1.200	1.400	0.047	0.055
b	0.200	0.400	0.008	0.016	L	0.525	REF	0.021	REF
c	0.080	0.150	0.003	0.006	L1	0.260	0.460	0.010	0.018
D	2.000	2.200	0.079	0.087	θ	0°	8°	0°	8°
E	1.150	1.350	0.045	0.053					

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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