

BAS40W-Q1 / BAS40W-04-Q1 / BAS40W-05-Q1 / BAS40W-06-Q1

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BAS40W-Q1 / BAS40W-04-Q1 / BAS40W-05-Q1 / BAS40W-06-Q1

**200mA Surface Mount Small Signal
Schottky Diodes 40V**

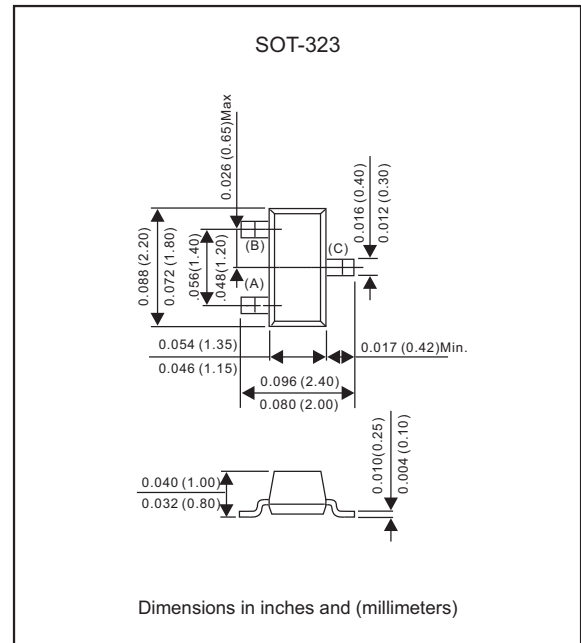
Features

- Low current rectification and high speed switching.
- Tiny surface mount type.
- Up to 200mA current capability.
- Low forward voltage drop ($V_F = 1.00V$ typ. @40mA)
- Silicon epitaxial planar chip, metal silicon junction.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- High speed ($t_{rr} < 5$ ns)
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free part, ex.BAS40W-Q1-H.

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-323
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any
- Weight : Approximated 0.006 gram

Package outline



Maximum ratings and Electrical Characteristics (AT $T_A = 25^\circ C$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Repetitive peak reverse voltage		V_{RRM}			40	V
Reverse voltage		V_R			40	V
Power dissipation		P_D			150	mW
Non-Repetitive forward current	$t_p < 1s$	I_{FSM}			600	mA
Forward current		I_F			200	mA
Junction temperature		T_J	-55		+125	$^\circ C$
Storage temperature		T_{STG}	-55		+125	$^\circ C$
Forward voltage	$I_F = 1$ mA	V_F			0.38	V
	$I_F = 40$ mA				1.00	
Reverse current	$V_R = 30$ V	I_R			0.2	μA
Diode capacitance	$V_R = 0$ V, $f = 1$ MHz	C_T			5.0	pF
Reverse recovery time	$I_F = 10$ mA, $V_R = 10$ mA, $I_{RR} = 0.1 \times I_R$, $RL = 100_{OHM}$	t_{rr}			5	ns

**Rating and characteristic curves for each diode
(BAS40W-Q1 / BAS40W-04-Q1 / BAS40W-05-Q1 / BAS40W-06-Q1)**

FIG.1-TYPICAL FORWARD VOLTAGE

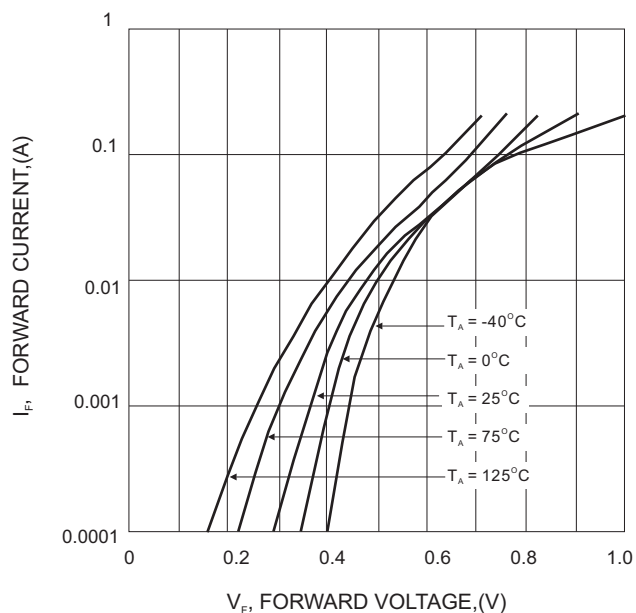


FIG.2-TYPICAL REVERSE CHARACTERISTICS

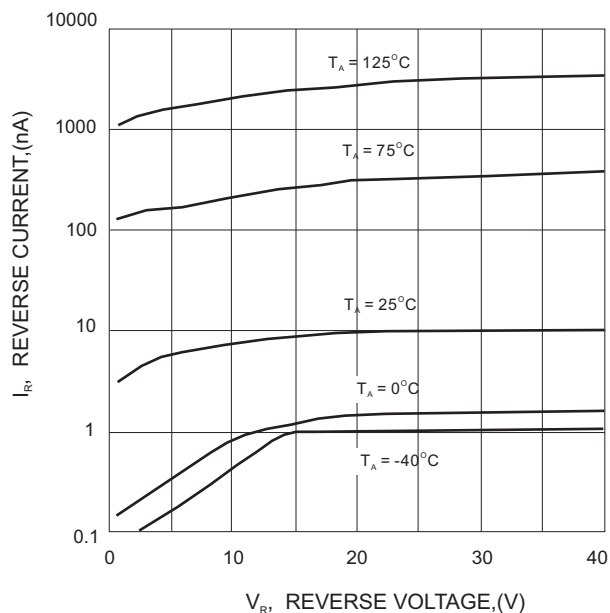


FIG.1-TYPICAL CAPACITANCE

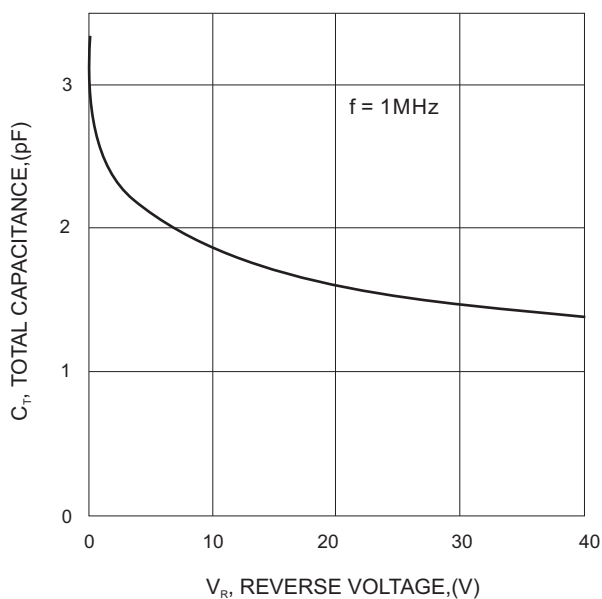
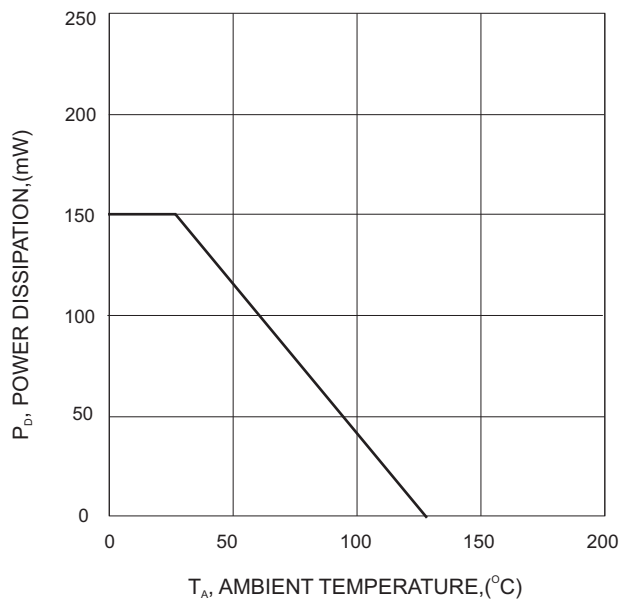
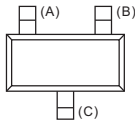
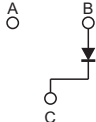
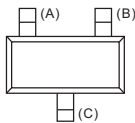
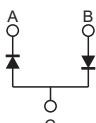
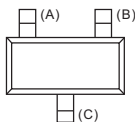
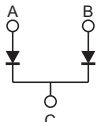
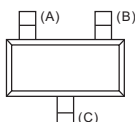
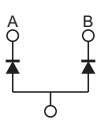


FIG.4-POWER DERATING CURVE



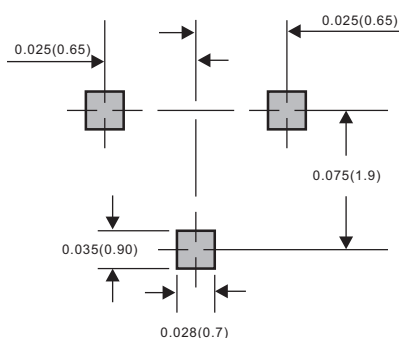
BAS40W-Q1 / BAS40W-04-Q1 / BAS40W-05-Q1 / BAS40W-06-Q1

Pinning information

Type number	Marking code	Simplified outline	Symbol
BAS40W-Q1	43		
BAS40W-04-Q1	44		
BAS40W-05-Q1	45		
BAS40W-06-Q1	46		

Suggested solder pad layout

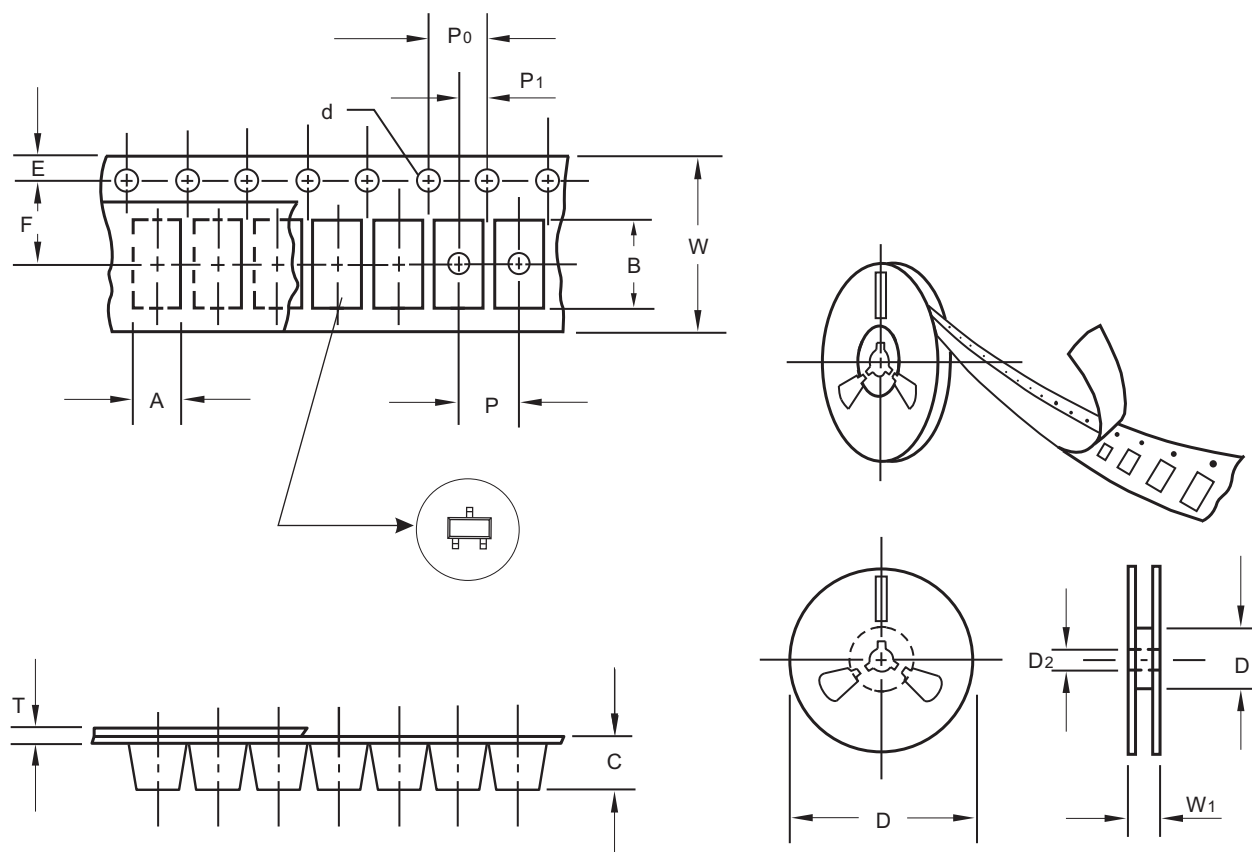
SOT-323



Dimensions in inches and (millimeters)

BAS40W-Q1 / BAS40W-04-Q1 / BAS40W-05-Q1 / BAS40W-06-Q1

Packing information



unit:mm

Item	Symbol	Tolerance	SOT-323
Carrier width	A	0.1	2.36
Carrier length	B	0.1	2.40
Carrier depth	C	0.1	1.20
Sprocket hole	d	0.1	1.50
13" Reel outside diameter	D	2.0	-
13" Reel inner diameter	D1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D1	min	62.00
Feed hole diameter	D2	0.5	13.00
Sprocket hole position	E	0.1	1.75
Punch hole position	F	0.1	3.50
Punch hole pitch	P	0.1	4.00
Sprocket hole pitch	P0	0.1	4.00
Embossment center	P1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W1	1.0	11.40

Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

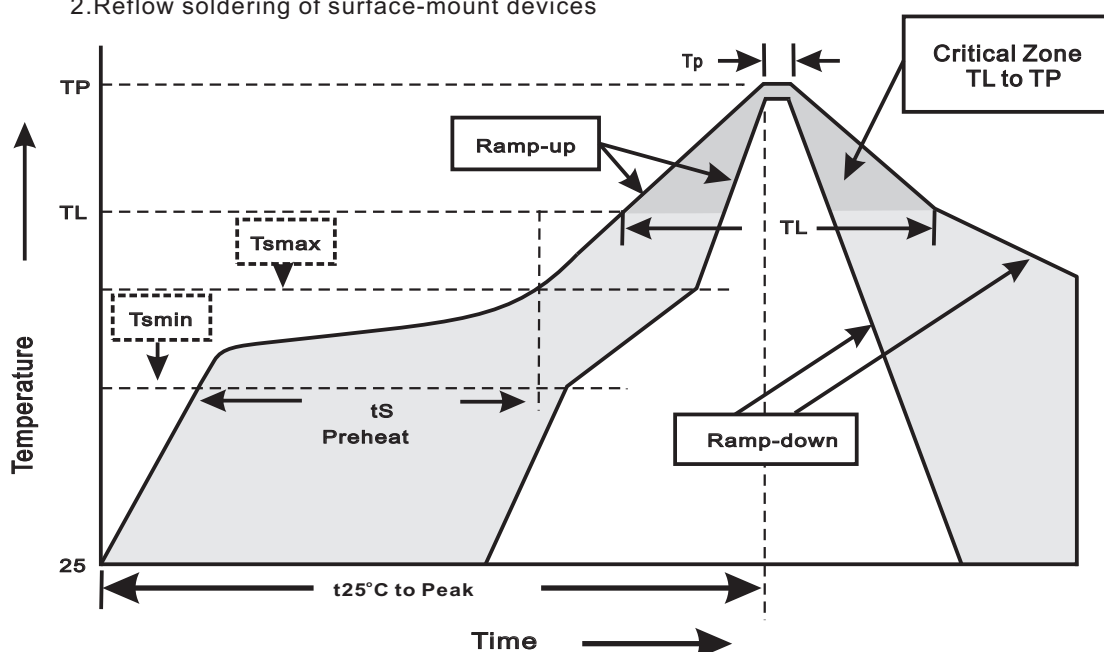
BAS40W-Q1 / BAS40W-04-Q1 / BAS40W-05-Q1 / BAS40W-06-Q1

Reel packing

PACKAGE	REEL SIZE	REEL (pcs)	COMPONENT SPACING (m/m)	BOX (pcs)	INNER BOX (m/m)	REEL DIA, (m/m)	CARTON SIZE (m/m)	CARTON (pcs)	APPROX. GROSS WEIGHT (kg)
SOT-323	7"	3,000	4.0	30,000	183*183*123	178	382*262*387	240,000	9.5

Suggested thermal profiles for soldering processes

- 1.Storage environment: Temperature=5°C~40°C Humidity=55%±25%
- 2.Reflow soldering of surface-mount devices



3.Reflow soldering

Profile Feature	Soldering Condition
Average ramp-up rate(T_L to T_P)	$< 3^\circ\text{C/sec}$
Preheat -Temperature Min(T_{smin}) -Temperature Max(T_{smax}) -Time(min to max)(t_s)	150°C 200°C 60~120sec
T_{smax} to T_L -Ramp-upRate	$< 3^\circ\text{C/sec}$
Time maintained above: -Temperature(T_L) -Time(t_L)	217°C 60~260sec
Peak Temperature(T_P)	255°C-0/+5°C
Time within 5°C of actual Peak Temperature(t_p)	10~30sec
Ramp-down Rate	$< 6^\circ\text{C/sec}$
Time 25°C to Peak Temperature	< 6 minutes

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High reliability test capabilities

Item Test	Conditions	Reference
1. MSL Preconditioning	24hr bake@125°C+168hrs@85°C /85%RH+3xIR@260°C+1flux immersion+alcohol+DI H2O rinse	JESD22-A113
2. Operation Life	Ta=25 °C, Rated Current (Io=Io max.)Test Duration:1000hrs	MIL-STD-750E METHOD 1027.3
3. High Temperature Reverse Bias	80% Rated VR (Tj=Tj max.)Test Duration:1000hrs	JESD22-A108
4. High Temperature Storage Life	Ta=125°C Test Duration: 1000hrs	JESD22 A-103
5. Temperature Cycle	-55°C(15min) to 150°C(15min)Test Cycles: 1000cycles	JESD22 A-104
6. Autoclave	P=2atm Ta=121°C RH=100% Test Duration:96hrs	JESD22 A-102
7. Intermittent Operational Life	Ta=25°C,On/Io Max. 2min, Off/2min, Test Cycles:15000cycles	MIL-STD-750E METHOD 1037
8. Solderability	245±5°C for 5sec	J-STD-002
9. Moisture Resistance	Ta=85°C/85% Relative humidity Test Duration:1000hrs	MIL-STD-750E METHOD 1021.2
10. Resistance To Solder Heat	260±5°C for 10sec	JESD22 B-106
11. High Temperature High Humidity Reverse Bias	Ta=85°C, 85%RH, with device reverse biased at 80% of rated breakdown voltage up to a maximum of 100V or limit of chamber Test Duration:1000hrs	JESD22-A101