BAS19W-Q1/BAS20W-Q1/BAS21W-Q1/ BAS21AW-Q1/BAS21CW-Q1/BAS21SW-Q1

List

BAS19W-Q1/BAS20W-Q1/BAS21W-Q1/ BAS21AW-Q1/BAS21CW-Q1/BAS21SW-Q1

200mW Surface Mount Switching Diode 120V-250V

Features

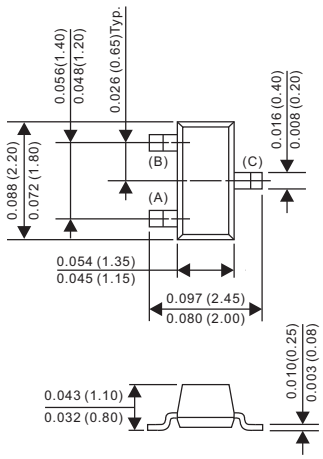
- Fast speed switching.
- For general purpose switching application.
- High conductance.
- Silicon epitaxial planar chip
- Lead-free parts meet RoHS requirements.
- Qualified to AEC-Q101 standards for high reliability.
- Suffix "-H" indicates Halogen-free part, ex.BAS19W-Q1-H.

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

SOT-323



Dimensions in inches and (millimeters)

Maximum ratings (AT T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
DC reverse voltage	BAS19SW-Q1 BAS20W-Q1 BAS21W-Q1/AW-Q1/CW-Q1/SW-Q1	V_R			120 200 250	V
Continuous forward current		I_O			200	mA
Repetitive peak forward current		I_{FRM}			625	mA
Non-repetitive peak forward current	tp<1s	I_{FSM}			500	mA
Power dissipation	T_A=25°C	P_D			200	mW
Thermal resistance	Junction to ambient	$R_{\theta JA}$		625		°C/W
Operating junction temperature range		T_J	-55		+150	°C
Storage temperature range		T_{STG}	-55		+150	°C

Electrical characteristics (AT T_A=25°C unless otherwise noted)

PARAMETER	CONDITIONS		Symbol	MIN.	TYP.	MAX.	UNIT
Reverse breakdown voltage	I_R=100μA	BAS19SW-Q1	$V_{(BR)R}$	120			V
		BAS20W-Q1		200			
		BAS21W-Q1/AW-Q1/CW-Q1/SW-Q1		250			
Forward voltage	I_F = 100 mA		V_F			1.0	V
	I_F = 200 mA					1.25	
Reverse leakage current	at rated V_R	BAS19SW-Q1	I_R			0.1	μA
		BAS20W-Q1				0.1	
		BAS21W-Q1/AW-Q1/CW-Q1/SW-Q1				0.1	
	at rated V_R T_A=150°C	BAS19SW-Q1				100	
		BAS20W-Q1				100	
		BAS21W-Q1/AW-Q1/CW-Q1/SW-Q1				100	
Total capacitance	V_R = 0 V, f = 1MHz		C_T			5.0	pF
Reverse recovery time	I_F=I_R =30mA, $I_{R(Rec)}$=3.0mA, R_L =100Ω		t_{rr}			50	ns

Rating and characteristic curves
(BAS19W-Q1/BAS20W-Q1/BAS21W-Q1/BAS21AW-Q1/BAS21CW-Q1/BAS21SW-Q1)

FIG.1-POWER DERATING CURVE

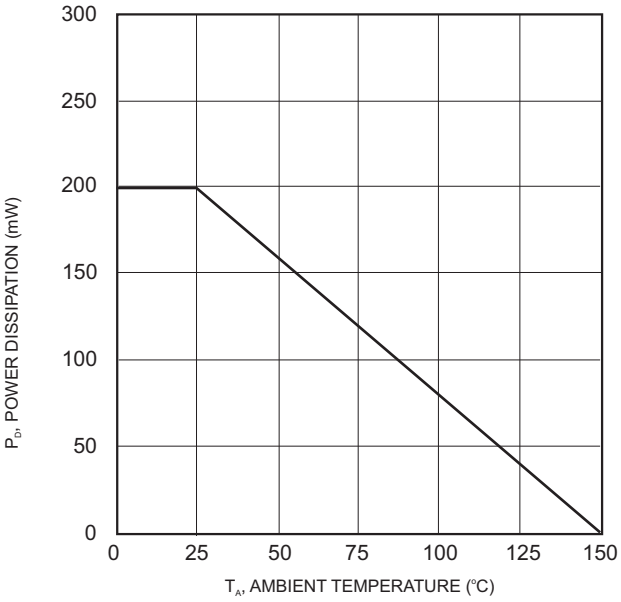


FIG.2-TYPICAL CAPACITANCE VS. REVERSE VOLTAGE

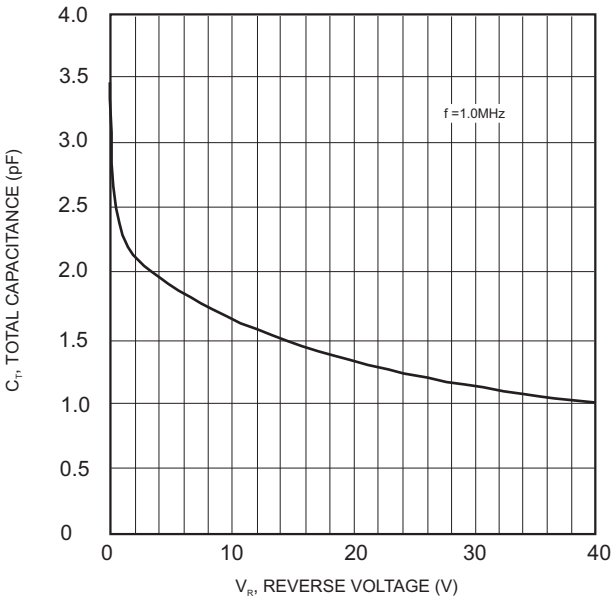


FIG.3 - LEAKAGE CURRENT VS JUNCTION TEMPERATURE

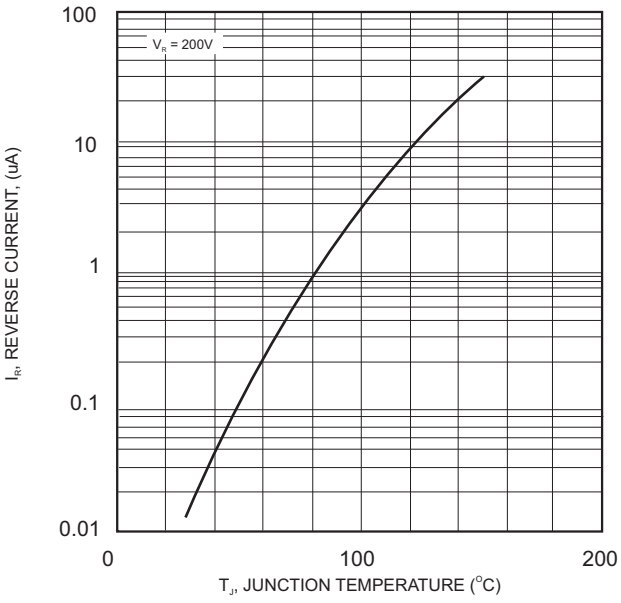
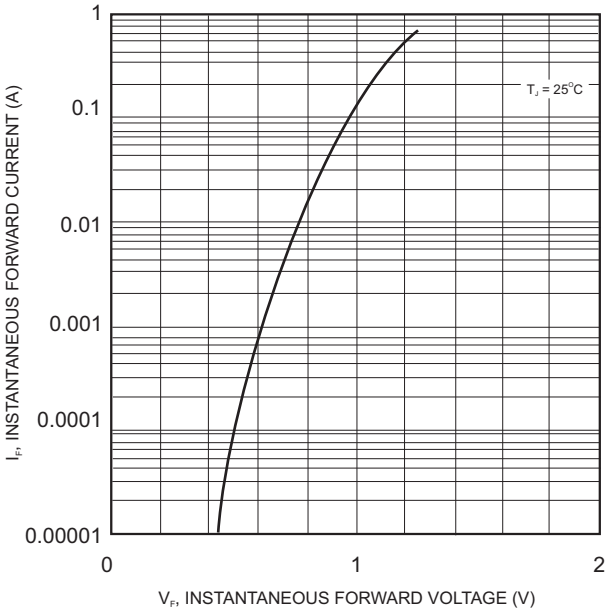
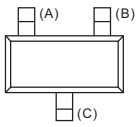
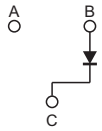
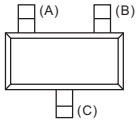
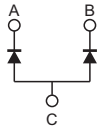
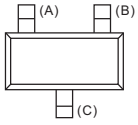
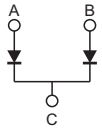
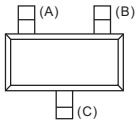
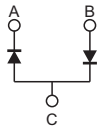


FIG.4-TYPICAL FORWARD CHARACTERISTICS



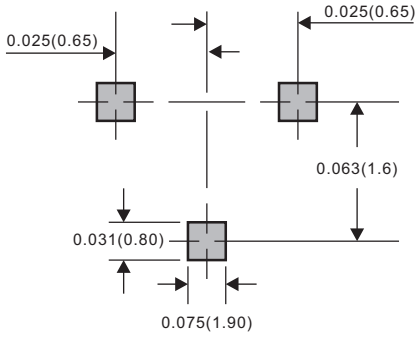
BAS19W-Q1/BAS20W-Q1/BAS21W-Q1/ BAS21AW-Q1/BAS21CW-Q1/BAS21SW-Q1

Pinning information

Type number	Marking code	Simplified outline	Symbol
BAS19W-Q1 BAS20W-Q1 BAS21W-Q1	T3 T3 T3		
BAS21AW-Q1	F2		
BAS21CW-Q1	F3		
BAS21SW-Q1	F4		

Suggested solder pad layout

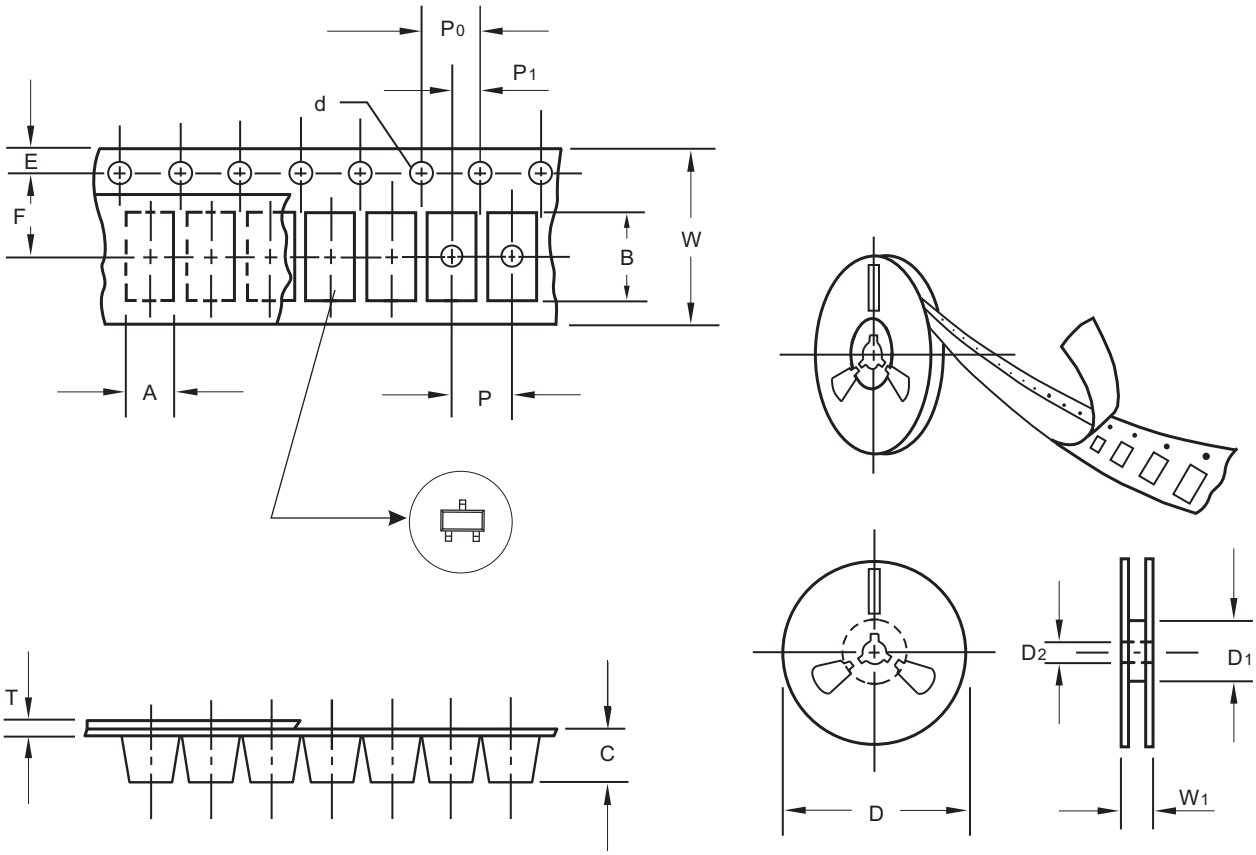
SOT-323



Dimensions in inches and (millimeters)

BAS19W-Q1/BAS20W-Q1/BAS21W-Q1/ BAS21AW-Q1/BAS21CW-Q1/BAS21SW-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	D_1	min	-
7" Reel outside diameter	D	2.0	178.00
7" Reel inner diameter	D_1	min	62.00
Feed hole diameter	D_2	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	P_0	0.1	4.00
Embossment center	P_1	0.1	2.00
Overall tape thickness	T	0.1	0.23
Tape width	W	0.3	8.00
Reel width	W_1	1.0	11.40

Note:Devices are packed in accor dance with EIA standar RS-481-A and specifications listed above.

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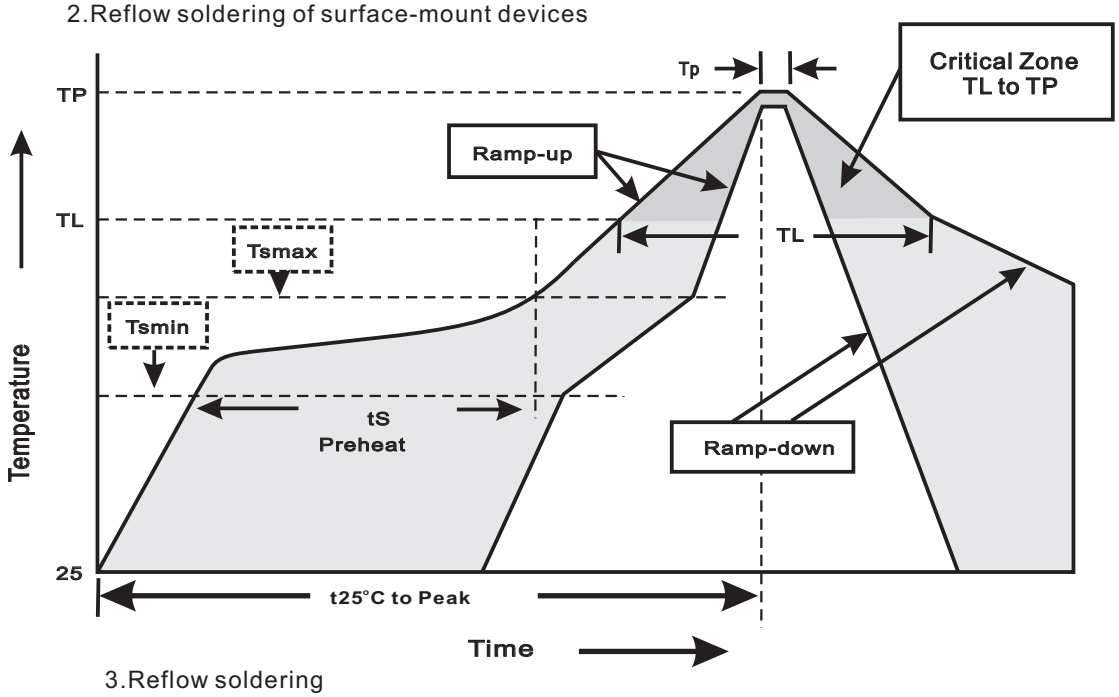
Reel packing

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*123*183	178	382*257*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°C/sec
Preheat -Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(min to max)(t_s)	 150°C 200°C 60~120sec
Tsmax to T_L -Ramp-upRate	<3°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°C/sec
Time 25°C to Peak Temperature	<6minutes

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High reliability test capabilities

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