BAS19W/BAS20W/BAS21W/ BAS21AW/BAS21CW/BAS21SW

200mW Surface Mount Switching Diode 120V-250V

Features

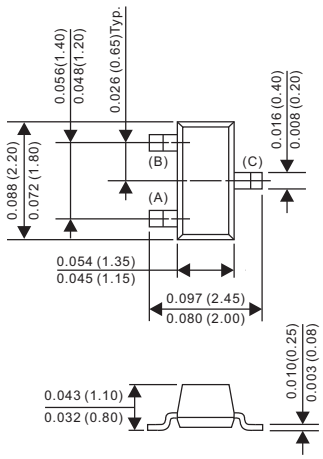
- Fast speed switching.
- For general purpose switching application.
- High conductance.
- Silicon epitaxial planar chip
- Lead-free parts meet RoHS requirments.
- Suffix "-H" indicates Halogen-free part, ex.BAS19W-H.

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 BAS20W BAS21W/AW/CW/SW	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	$V_{(BR)R}$	120			V
		BAS20W		200			
		BAS21W/AW/CW/SW		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	I_R			0.1	μA
		BAS20W				0.1	
		BAS21W/AW/CW/SW				0.1	
	at rated V_R, T_A=150°C	BAS19SW				100	
		BAS20W				100	
		BAS21W/AW/CW/SW				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/BAS20W/BAS21W/BAS21AW/BAS21CW/BAS21SW)

FIG.1-POWER DERATING CURVE

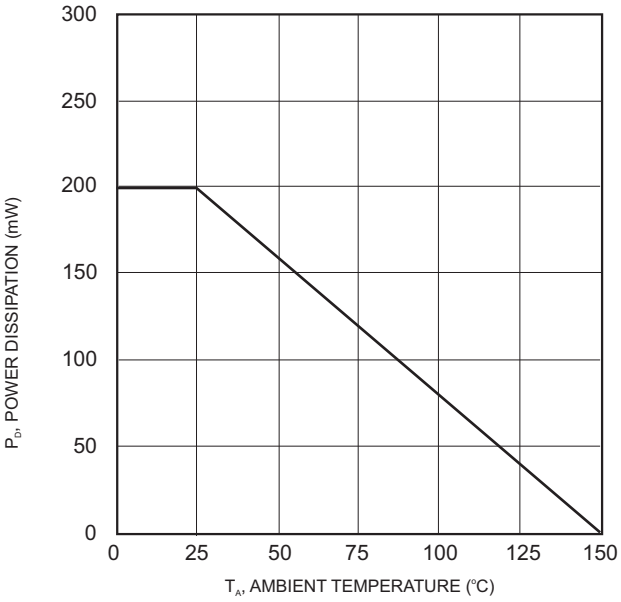


FIG.2-TYPICAL CAPACITANCE VS. REVERSE VOLTAGE

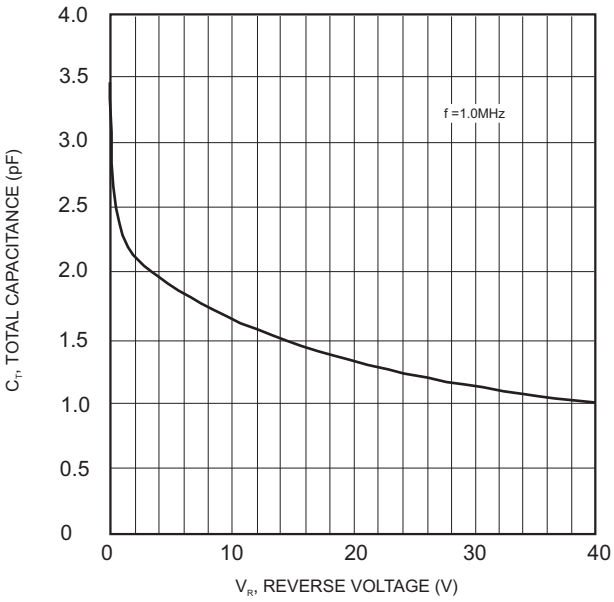


FIG.3 - LEAKAGE CURRENT VS JUNCTION TEMPERATURE

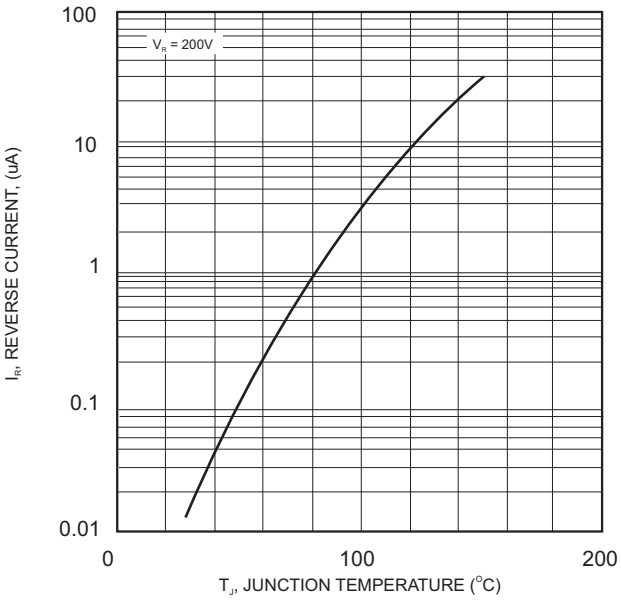
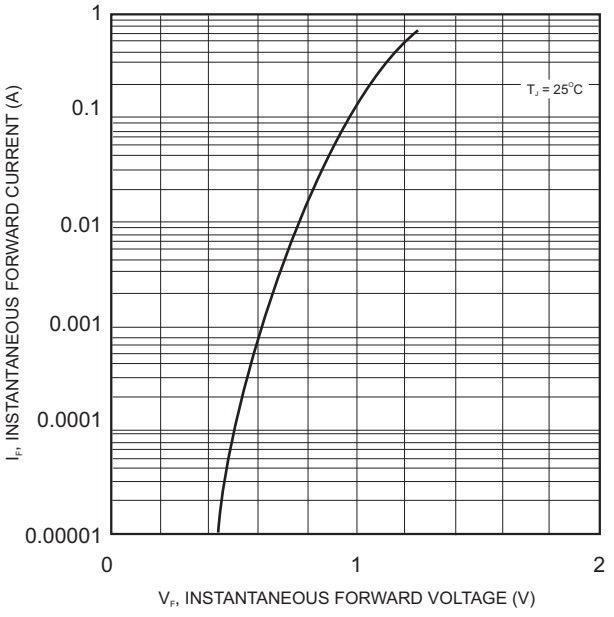
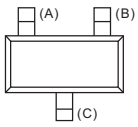
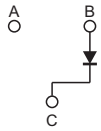
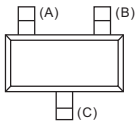
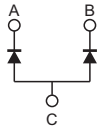
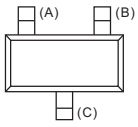
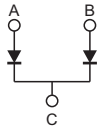
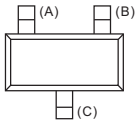
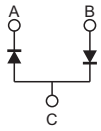


FIG.4-TYPICAL FORWARD CHARACTERISTICS



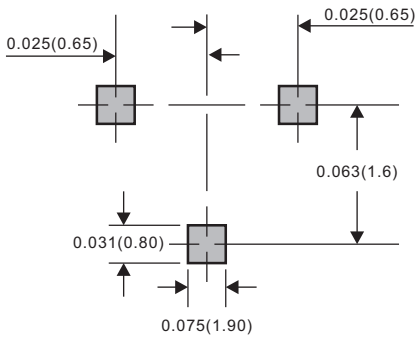
BAS19W/BAS20W/BAS21W/ BAS21AW/BAS21CW/BAS21SW

Pinning information

Type number	Marking code	Simplified outline	Symbol
BAS19W BAS20W BAS21W	KA8,T3 KT2,T3 KT3,T3		
BAS21AW	F2		
BAS21CW	F3		
BAS21SW	F4		

Suggested solder pad layout

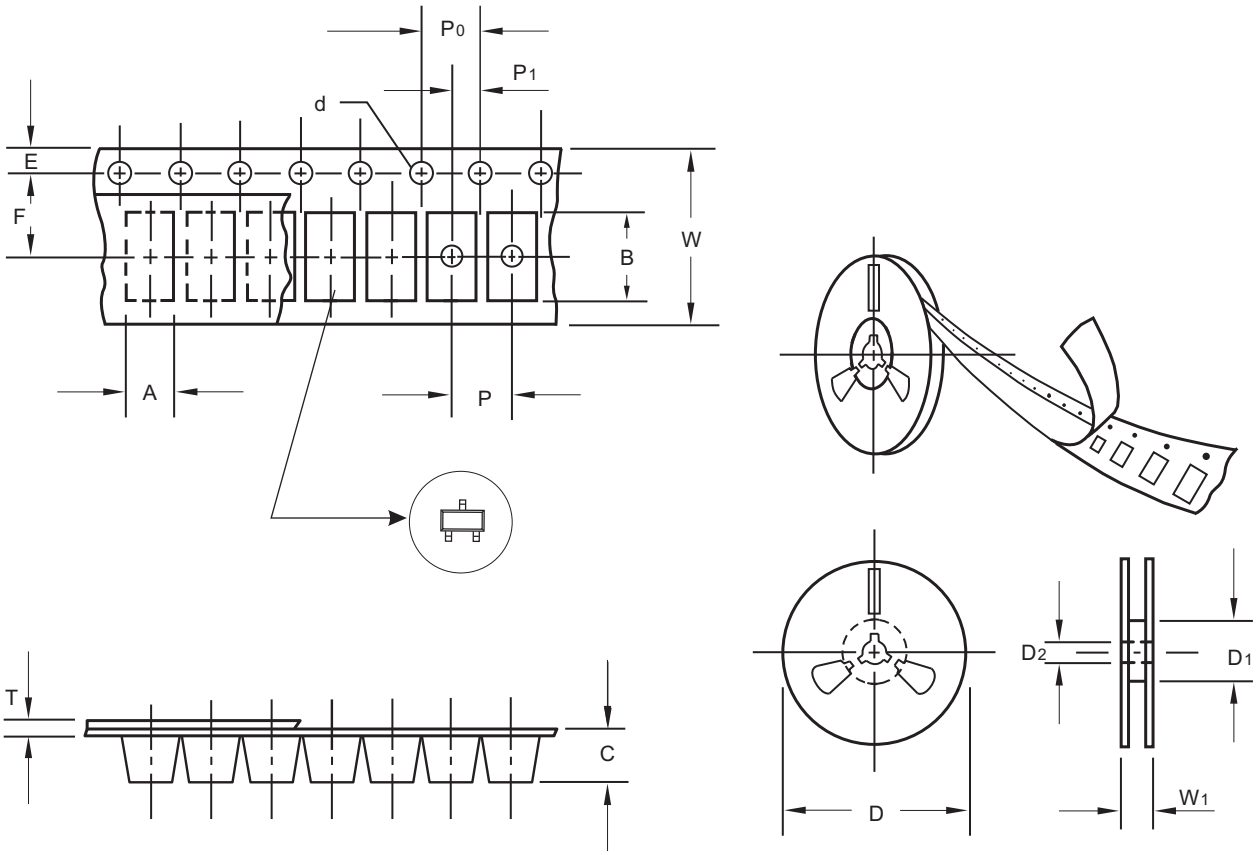
SOT-323



Dimensions in inches and (millimeters)

BAS19W/BAS20W/BAS21W/ BAS21AW/BAS21CW/BAS21SW

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.

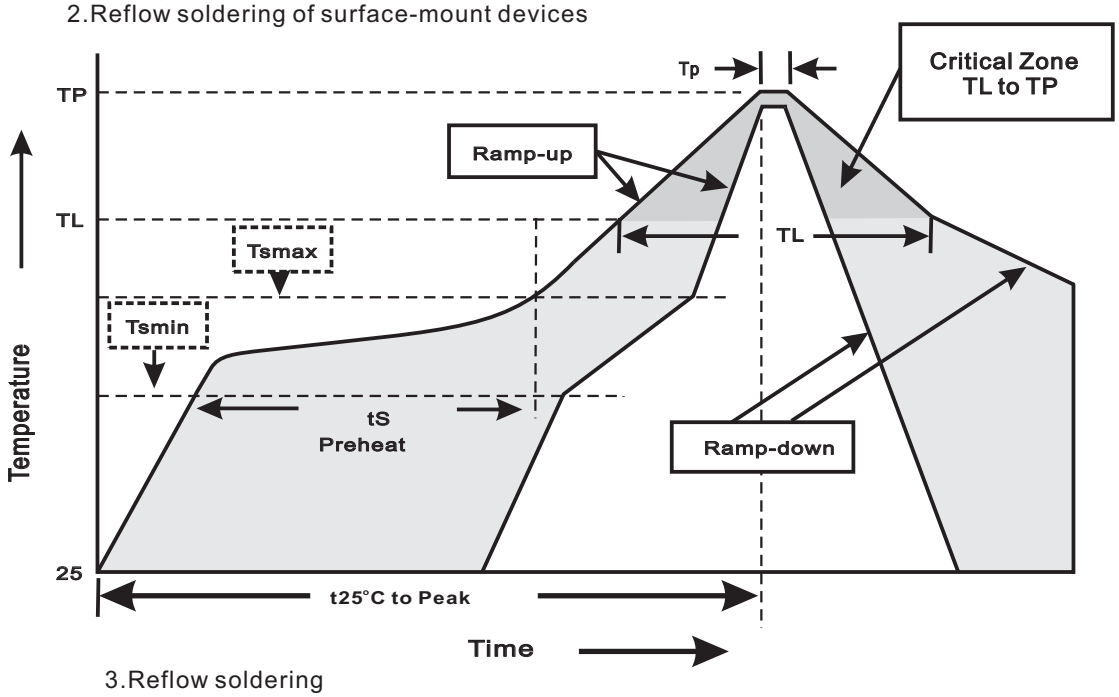
BAS19W/BAS20W/BAS21W/ BAS21AW/BAS21CW/BAS21SW

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

BAS19W/BAS20W/BAS21W/ BAS21AW/BAS21CW/BAS21SW

High reliability test capabilities

Item Test	Conditions	Reference
1. Solder Resistance	at 260±5°C for 10±2sec. immerse body into solder 1/16"±1/32"	MIL-STD-750D METHOD-2031
2. Solderability	at 245±5°C for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	V_R=80% rate at T_J=150°C for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at T_A=25°C for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	T_A = 25°C, I_F = I_O On state: power on for 5 min. off state: power off for 5 min. on and off for 500 cycles.	MIL-STD-750D METHOD-1036
6. Pressure Cooker	15P_{SIG} at T_A=121°C for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to +125°C dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	Peak Forward Surge Current	MIL-STD-750D METHOD-4066-2
9. Humidity	at T_A=85°C, RH=85% for 1000hrs.	MIL-STD-750D METHOD-1021
10. High Temperature Storage Life	at 175°C for 1000 hrs.	MIL-STD-750D METHOD-1031