

BAV19WS / BAV20WS / BAV21WS**List**

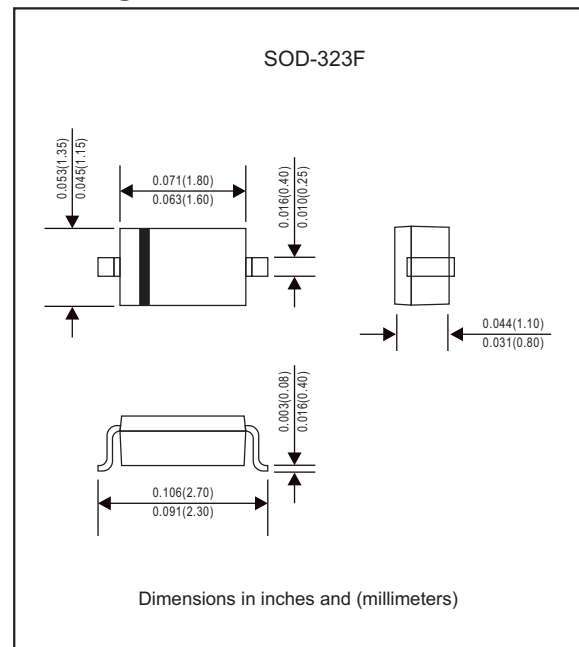
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BAV19WS / BAV20WS / BAV21WS**200mA Surface Mount
Switching Diode 100V-200V****Features**

- Low reverse current
- Surface mount package ideally suited for automatic insertion
- Fast switching speed
- For general purpose switching applications
- Silicon epitaxial planar chip
- Lead-free parts meet RoHS requirements
- Suffix "-H" indicates Halogen-free parts, ex. BAV19WS-H

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOD-323F
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight : Approximated 0.005 gram

Package outline**Maximum ratings** (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

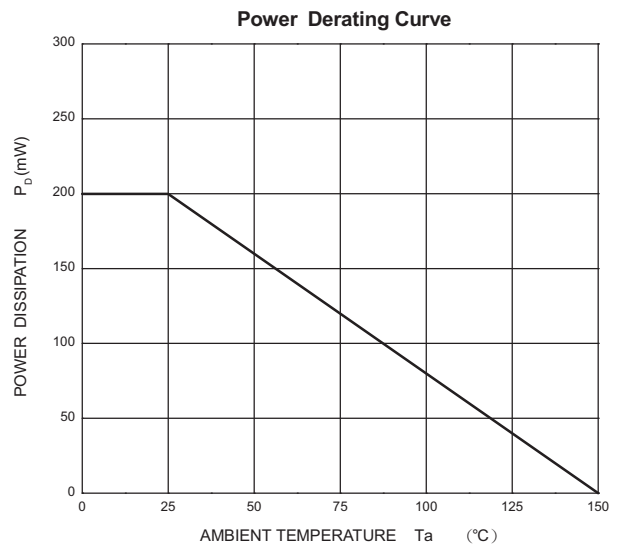
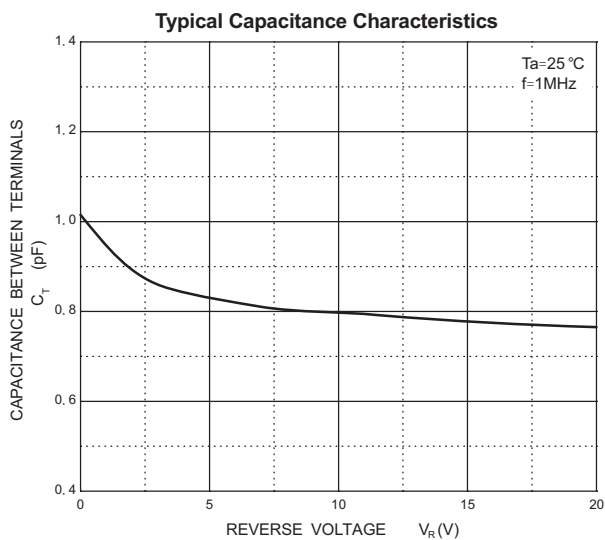
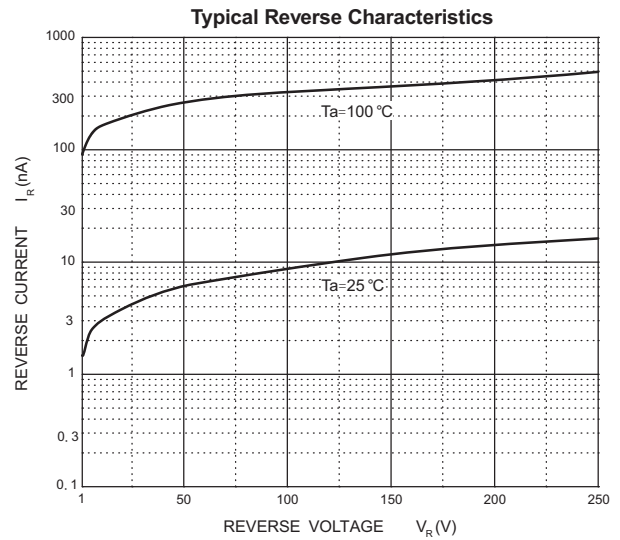
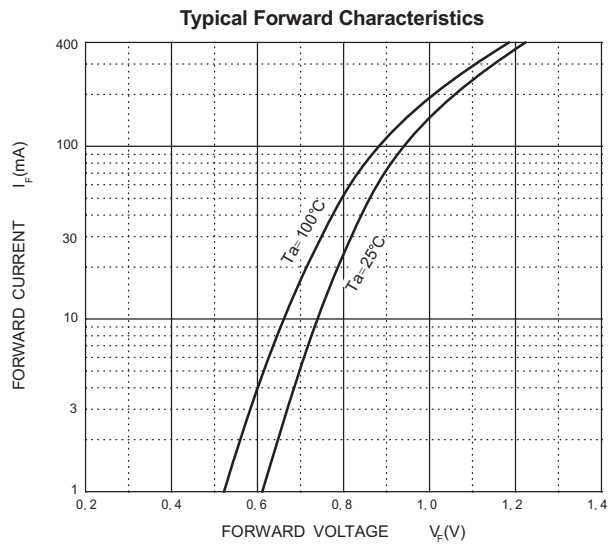
Parameter	Symbol	BAV19WS	BAV20WS	BAV21WS	Unit
Non-repetitive peak reverse voltage	V_{RRM}	120	200	250	V
Working peak reverse voltage	V_R	100	150	200	V
RMS reverse voltage	$V_{R(RMS)}$	70	105	140	V
Average rectified output current (Note 1)	I_O	200			mA
Non-repetitive peak forward surge current at $t=1.0\mu\text{s}$ $t=1.0\text{s}$	I_{FSM}	2.5 0.5			A
Repetitive peak forward current	I_{FRM}	625			mA
Power dissipation	P_D	200			mW
Typical thermal resistance junction to ambient air (Note 1)	$R_{\theta JA}$	625			$^\circ\text{C/W}$
Operating junction temperature range	T_J	-55 to +150			$^\circ\text{C}$
Storage temperature range	T_{STG}	-55 to +150			$^\circ\text{C}$

Electrical characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Conditions	Symbol	Min.	Max.	Unit
Reverse breakdown voltage	BAV19WS, $I_R=100\mu\text{A}$ BAV20WS, $I_R=100\mu\text{A}$ BAV21WS, $I_R=100\mu\text{A}$	V_{BR}	120 200 250		V
Forward voltage	$I_F=100\text{mA}$ $I_F=200\text{mA}$	V_F		1.00 1.25	V
Reverse leakage current	BAV19WS, $V_R=100\text{V}$ BAV20WS, $V_R=150\text{V}$ BAV21WS, $V_R=200\text{V}$	I_R		100 100 100	nA
Total capacitance	$V_R=0\text{V}$, $f=1.0\text{MHz}$	C_T		5.0	pF
Reverse recovery time	$I_F=I_R=30\text{mA}$, $I_{RR}=0.1 \times I_R$, $R_L=100\Omega$	t_{rr}		50	ns

Note 1: Valid provided that electrodes are kept at ambient temperature.

Rating and characteristic curves(BAV19WS / BAV20WS / BAV21WS)

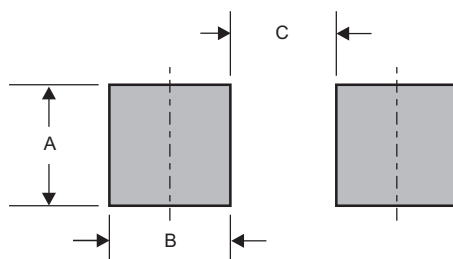


BAV19WS / BAV20WS / BAV21WS**Pinning information**

Pin	Simplified outline	Symbol
Pin1 cathode Pin2 anode		

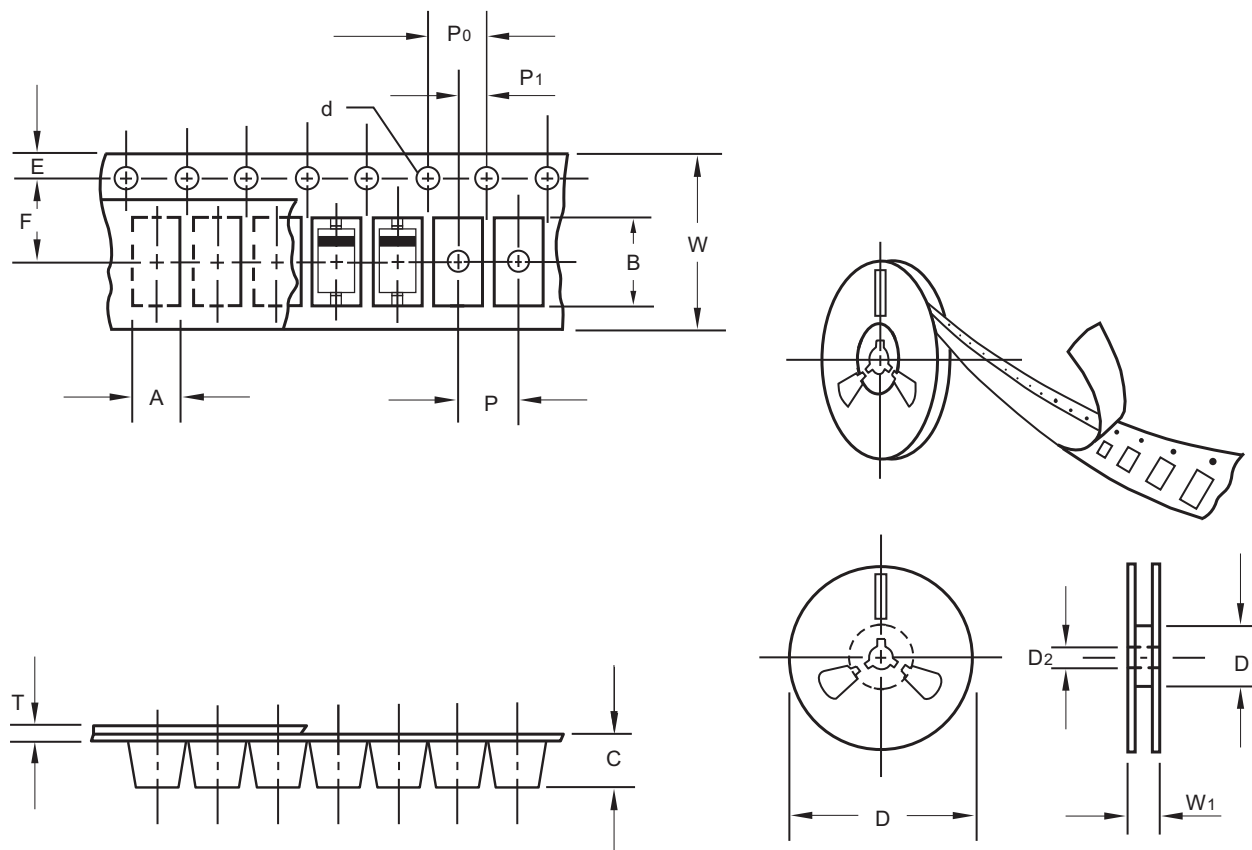
Marking

Type number	Marking code
BAV19WS	JP, A8, JX
BAV20WS	JR, T2
BAV21WS	JS, T3

Suggested solder pad layout

Dimensions in inches and (millimeters)

PACKAGE	A	B	C
SOD-323F	0.033 (0.83)	0.025 (0.63)	0.063 (1.60)

BAV19WS / BAV20WS / BAV21WS**Packing information**

unit:mm

Item	Symbol	Tolerance	SOD-323F
Carrier width	A	0.1	1.48
Carrier length	B	0.1	3.30
Carrier depth	C	0.1	1.25
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	54.40
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

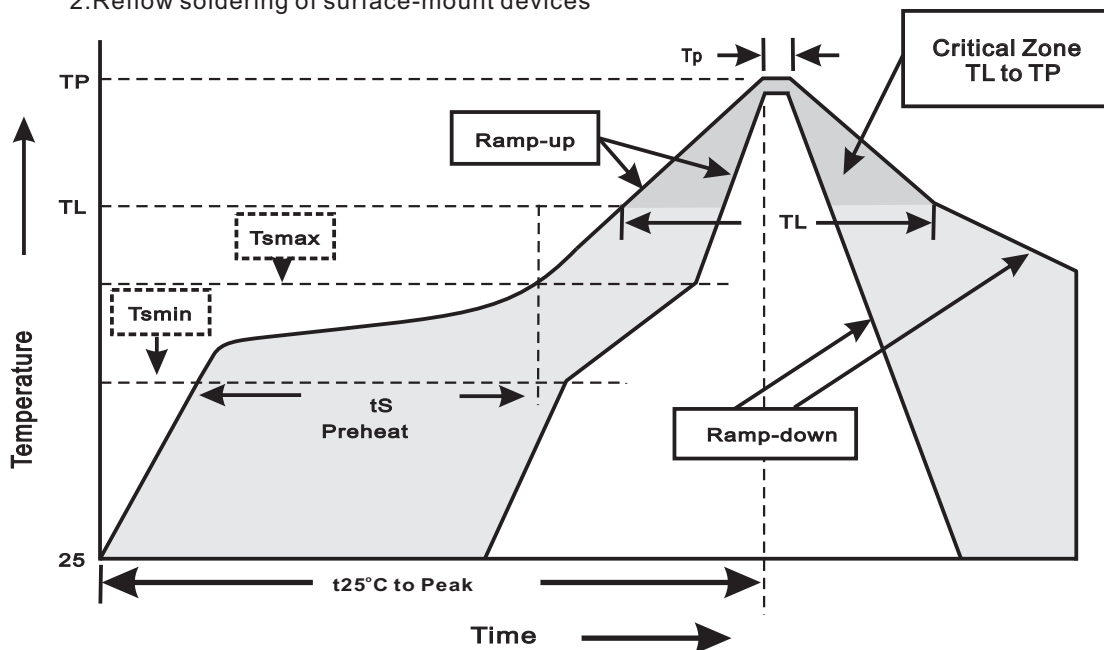
Note: Devices are packed in accordance with EIA standard RS-481-A and specifications listed above.

BAV19WS / BAV20WS / BAV21WS**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)
SOD-323F	7"	3,000	4.0	30,000	183*123*183	178	382*257*387	240,000	8.0

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(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°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

BAV19WS / BAV20WS / BAV21WS**High reliability test capabilities**

Item Test	Conditions	Reference
1. Solder Resistance	at $260 \pm 5^\circ\text{C}$ for $10 \pm 2\text{sec.}$	MIL-STD-750D METHOD-2031
2. Solderability	at $245 \pm 5^\circ\text{C}$ for 5 sec.	MIL-STD-202F METHOD-208
3. High Temperature Reverse Bias	$V_R = 80\%$ rate at $T_J = 150^\circ\text{C}$ for 168 hrs.	MIL-STD-750D METHOD-1038
4. Forward Operation Life	Rated average rectifier current at $T_A = 25^\circ\text{C}$ for 500hrs.	MIL-STD-750D METHOD-1027
5. Intermittent Operation Life	$T_A = 25^\circ\text{C}$, $I_F = I_O$ 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 $T_A = 121^\circ\text{C}$ for 4 hrs.	JESD22-A102
7. Temperature Cycling	-55°C to $+125^\circ\text{C}$ dwelled for 30 min. and transferred for 5min. total 10 cycles.	MIL-STD-750D METHOD-1051
8. Forward Surge	$t_p = 1.0\mu\text{s}$, one surge.	MIL-STD-750D METHOD-4066-2
9. Humidity	at $T_A = 85^\circ\text{C}$, 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