



**THE DATASHEET OF  
BAV21W-7-F**



## Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- High Reverse Breakdown Voltage
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The BAV20WQ and BAV21WQ are suitable for automotive applications requiring specific change control; these parts are AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Case: SOD123
- Case Material: Molded Plastic.  
UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Solderable per MIL-STD-202, Method 208 Lead Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe)
- Polarity: Cathode Band
- Type Code: BAV19W: A8 or T2 or T3  
BAV20W: T2 or T3  
BAV21W: T3
- Weight: 0.01 grams (Approximate)

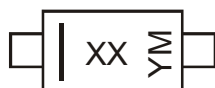


## Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
BAV19W-7-F	Commercial	SOD123	3,000/Tape and Reel
BAV20W-7-F	Commercial	SOD123	3,000/Tape and Reel
BAV20WQ-7-F	Automotive	SOD123	3,000/Tape and Reel
BAV21W-7-F	Commercial	SOD123	3,000/Tape and Reel
BAV21WQ-7-F	Automotive	SOD123	3,000/Tape and Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
  3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
  4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



XX = Product Type Marking Code (See Mechanical Data)  
 YM = Date Code Marking  
 Y = Year (ex: 1 = 2021)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	1998	.....	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Code	J	.....	I	J	K	L	M	N	O	P	R	S

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Maximum Ratings** (@  $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	BAV19W	BAV20W	BAV21W	Unit
Non-Repetitive Peak Reverse Voltage	$V_{RM}$	120	200	250	V
Peak Repetitive Reverse Voltage	$V_{RRM}$	100	150	200	V
Working Peak Reverse Voltage	$V_{RWM}$				
DC Blocking Voltage	$V_R$				
RMS Reverse Voltage	$V_{R(RMS)}$	71	106	141	V
Forward Continuous Current (Note 5)	$I_{FM}$	400			mA
Non-Repetitive Peak Forward Surge Current	$I_{FSM}$		@t = 1.0ms	2.5	A
			@t = 1.0s	0.5	
Repetitive Peak Forward Surge Current	$I_{FRM}$	625			mA

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	$P_D$	250	mW
Thermal Resistance Junction to Ambient Air (Note 6)	$R_{\theta JA}$	500	$^\circ\text{C}/\text{W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@  $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 7)	$V_{(BR)R}$	120	—	V	$I_R = 100\mu\text{A}$
		200			
		250			
Forward Voltage	$V_{FM}$	—	1.0 1.25	V	$I_F = 100\text{mA}$ $I_F = 200\text{mA}$
Peak Reverse Current @ Rated DC Blocking Voltage (Note 7)	$I_{RM}$	—	100 15	nA $\mu\text{A}$	$T_J = +25^\circ\text{C}$ $T_J = +100^\circ\text{C}$
Total Capacitance	$C_T$	—	5.0	pF	$V_R = 0, f = 1.0\text{MHz}$
Reverse Recovery Time	$t_{RR}$	—	50	ns	$I_F = I_R = 30\text{mA}$ , $I_{RR} = 0.1 \times I_R, R_L = 100\Omega$

- Notes:
5.  $I_{FM}$  is valid provided that terminals are kept at ambient temperature.
  6. Part mounted on FR-4 PC board with minimum recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
  7. Short duration pulse test used to minimize self-heating effect.

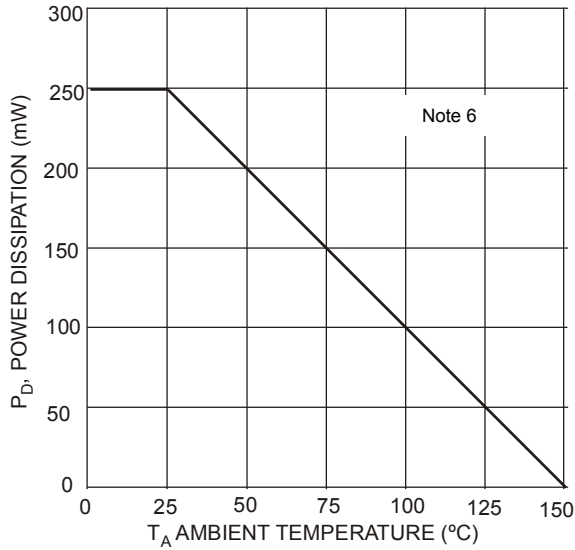


Fig. 1 Power Derating Curve

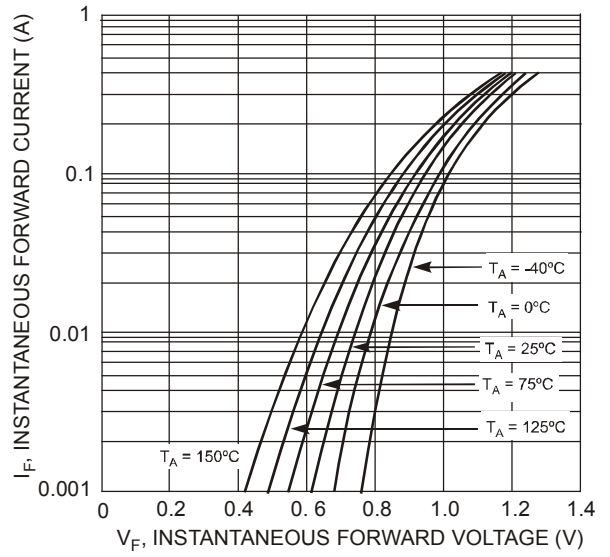


Fig. 2 Typical Forward Characteristics

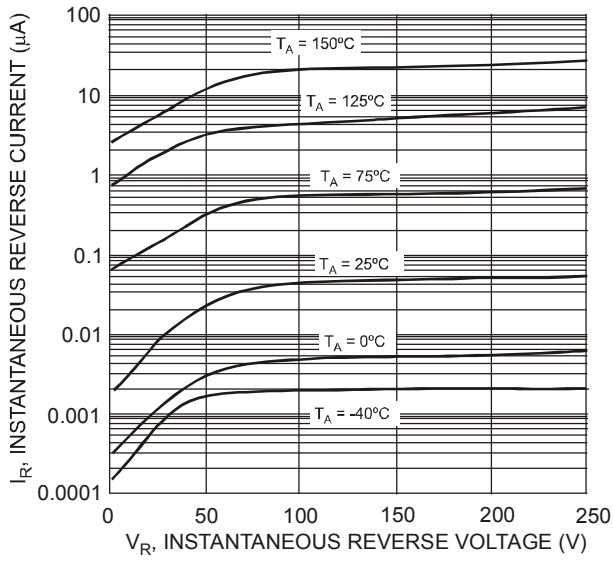


Fig. 3 Typical Reverse Characteristics

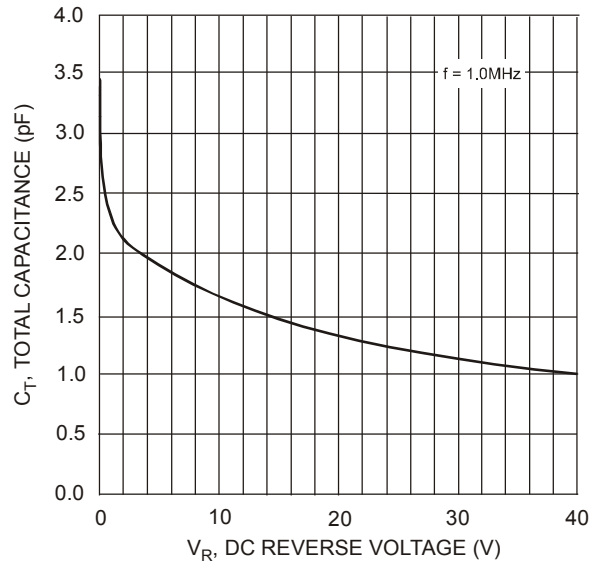
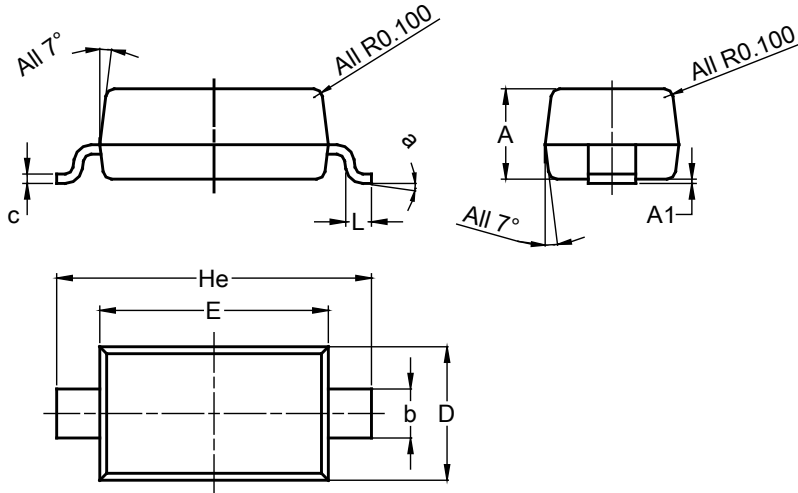


Fig. 4 Total Capacitance vs. Reverse Voltage

**Package Outline Dimensions**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD123

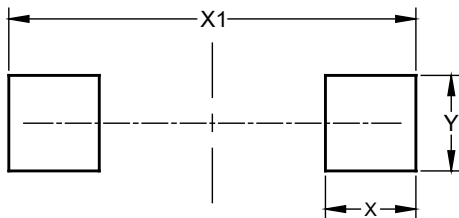


SOD123			
Dim	Min	Max	Typ
A	1.00	1.35	1.05
A1	0.00	0.10	0.05
b	0.52	0.62	0.57
c	0.10	0.15	0.11
D	1.40	1.70	1.55
E	2.55	2.85	2.65
He	3.55	3.85	3.65
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

**Suggested Pad Layout**

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOD123



Dimensions	Value (in mm)
X	0.900
X1	4.050
Y	0.950

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