

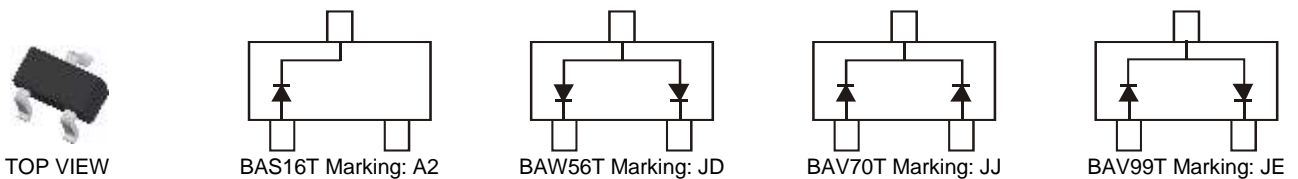
## Features

- Ultra-Small Surface Mount Package
- Fast Switching Speed
- For General Purpose Switching Applications
- High Conductance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **The Q BAV99TQ suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**  
<https://www.diodes.com/quality/product-definitions/>
- **This part is qualified to JEDEC standards (as referenced in AEC-Q) for High Reliability.**  
<https://www.diodes.com/quality/product-definitions/>

## Mechanical Data

- Case: SOT-523
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead-Free Plating); Solderable per MIL-STD-202, Method 208
- Polarity: See Diagrams Below
- Weight: 0.002 grams (Approximate)

SOT-523

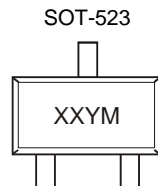


## Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
BAS16T-7-F	Standard	SOT523	3000/Tape & Reel
BAW56T-7-F	Standard	SOT523	3000/Tape & Reel
BAV70T-7-F	Standard	SOT523	3000/Tape & Reel
BAV99T-7-F	Standard	SOT523	3000/Tape & Reel
BAV99T-13-F	Standard	SOT523	10,000/Tape & Reel
BAV99TQ-13-F	Automotive	SOT523	10,000/Tape & 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 <http://www.diodes.com/products/packages.html>.

## Marking Information



XX = Product Type Marking Code (See this page, e.g. A2 = BAS16T)  
 YM = Date Code Marking  
 Y = Year (ex: H = 2020)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	2002	2003	2004	.....	2020	2021	2022	2023	2024	2025	2026
Code	N	P	R	.....	H	I	J	K	L	M	N

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<sub>A</sub> = +25°C unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>R(RM)</sub>	85	V
Working Peak Reverse Voltage	V <sub>R(WM)</sub>		
DC Blocking Voltage	V <sub>R</sub>		
RMS Reverse Voltage	V <sub>R(RMS)</sub>	60	V
Forward Continuous Current (Note 5)	Single Diode Double Diode	I <sub>FM</sub>	155
			75
Repetitive Peak Forward Current	I <sub>FRM</sub>	500	mA
Non-Repetitive Peak Forward Surge Current	I <sub>FSM</sub>	@ t = 1.0µs	4.0
		@ t = 1.0ms	1.0
		@ t = 1.0s	0.5

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	150	mW
Thermal Resistance Junction to Ambient (Note 5)	R <sub>θJA</sub>	833	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	V <sub>(BR)R</sub>	85	—	—	V	I <sub>R</sub> = 100µA
Forward Voltage	V <sub>F</sub>	—	—	0.715	V	I <sub>F</sub> = 1.0mA
				0.855		I <sub>F</sub> = 10mA
				1.0		I <sub>F</sub> = 50mA
				1.25		I <sub>F</sub> = 150mA
Leakage Current (Note 6)	I <sub>R</sub>	—	—	2.0	µA	V <sub>R</sub> = 75V
				100	µA	V <sub>R</sub> = 75V, T <sub>J</sub> = +150°C
				60	µA	V <sub>R</sub> = 25V, T <sub>J</sub> = +150°C
				30	nA	V <sub>R</sub> = 25V
Total Capacitance	C <sub>T</sub>	—	1.5	—	pF	V <sub>R</sub> = 0, f = 1.0MHz
Reverse Recovery Time	t <sub>rr</sub>	—	—	4.0	ns	I <sub>F</sub> = I <sub>R</sub> = 10mA, I <sub>rr</sub> = 0.1 × I <sub>R</sub> , R <sub>L</sub> = 100Ω

Notes: 5. Device mounted on FR-4 PC board with recommended pad layout, which can be found on our website at [https:// www.diodes.com/package-outlines.html](https://www.diodes.com/package-outlines.html).  
6. Short duration pulse test used to minimize self-heating effect.

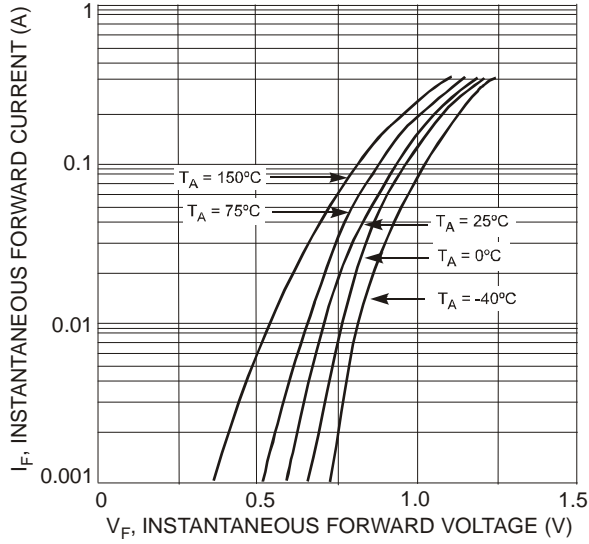


Fig. 1 Typical Forward Characteristics, Per Element

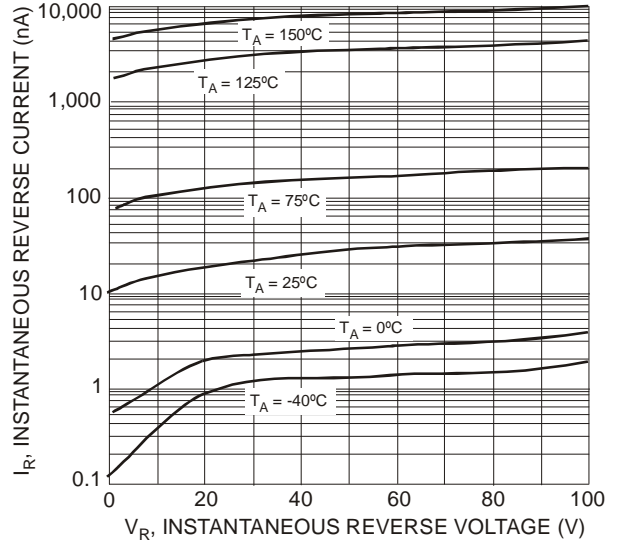


Fig. 2 Typical Reverse Characteristics, Per Element

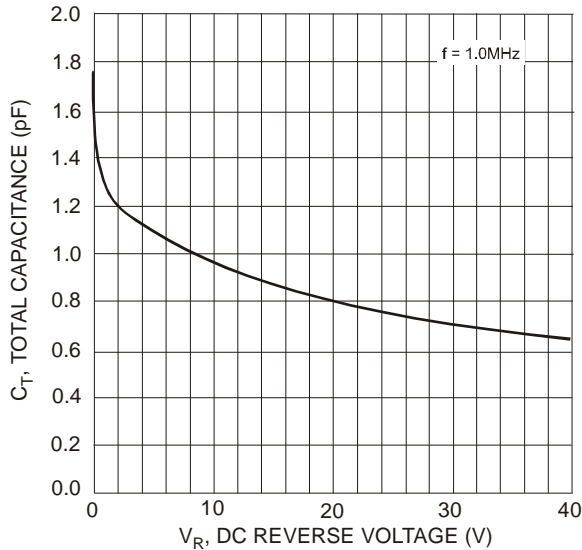


Fig. 3 Total Capacitance vs. Reverse Voltage, Per Element

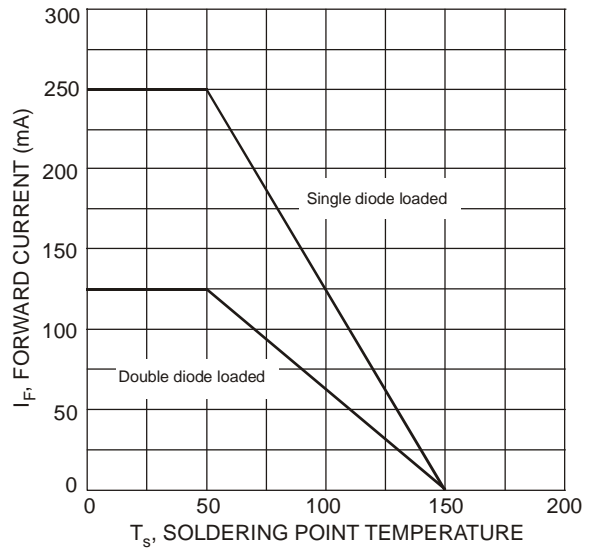
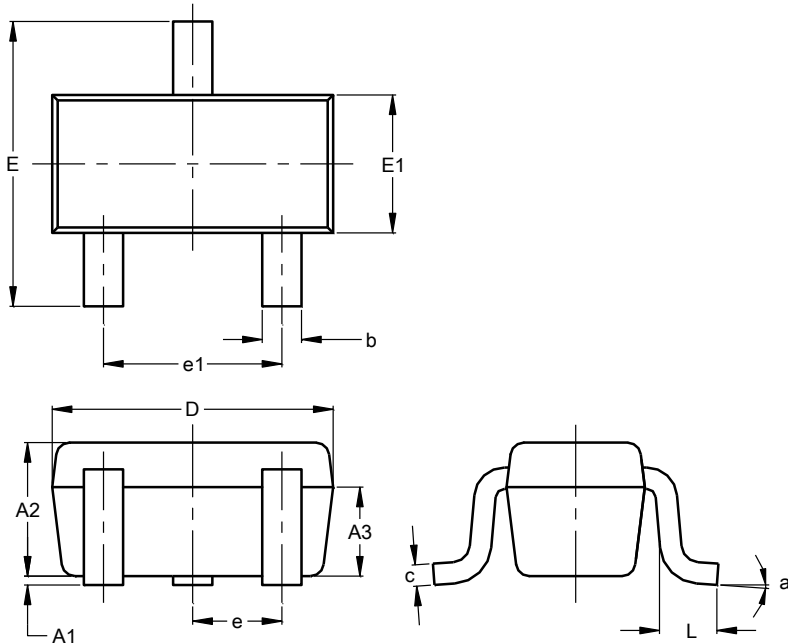


Fig. 4 Current Derating Curve, Total Package

**Package Outline Dimensions**

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

**SOT523**

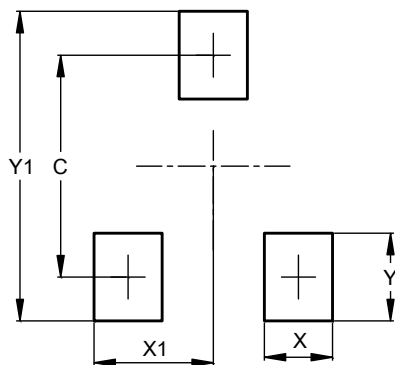


SOT523			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.60	0.80	0.75
A3	0.45	0.65	0.50
b	0.15	0.30	0.22
c	0.10	0.20	0.12
D	1.50	1.70	1.60
E	1.45	1.75	1.60
E1	0.75	0.85	0.80
e	0.50 BSC		
e1	0.90	1.10	1.00
L	0.20	0.40	0.33
a	0°	--	8°
All Dimensions in mm			

**Suggested Pad Layout**

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

**SOT523**



Dimensions	Value (in mm)
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80