

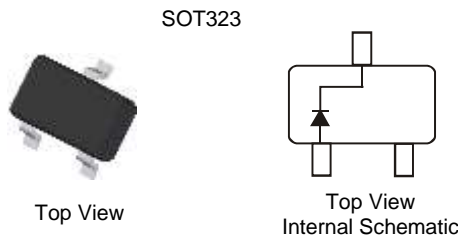
**SURFACE MOUNT FAST SWITCHING DIODE**

**Features**

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- High Conductance
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **An Automotive-Compliant Part is Available Under Separate Data Sheet ([BAS21WQ](#))**

**Mechanical Data**

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead-Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe)
- Weight: 0.006 grams (Approximate)

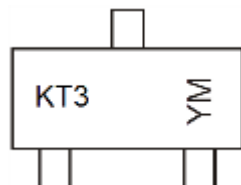


**Ordering Information** (Note 4)

Part Number	Compliance	Case	Packaging
BAS19W-7-F	AEC-Q101	SOT323	3,000/Tape & Reel
BAS20W-7-F	AEC-Q101	SOT323	3,000/Tape & Reel
BAS21W-7-F	AEC-Q101	SOT323	3,000/Tape & Reel
BAS21W-13-F	AEC-Q101	SOT323	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**



KT3 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: F = 2018  
 M = Month ex: 9 = September

Date Code Key

Year	2000	2001	...	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Code	L	M	...	F	G	H	I	J	K	L	M	N	O

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	BAS19W	BAS20W	BAS21W	Unit
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>	120	200	250	V
Working Peak Reverse Voltage	V <sub>RWM</sub>	100	150	200	V
DC Blocking Voltage	V <sub>R</sub>				
RMS Reverse Voltage	V <sub>R(RMS)</sub>	71	106	141	V
Forward Continuous Current (Note 5)	I <sub>FM</sub>	400			mA
Average Rectified Output Current (Note 5)	I <sub>O</sub>	200			mA
Non-Repetitive Peak Forward Surge Current	I <sub>FSM</sub>				A
@ t = 1.0μs					
@ t = 1.0s		2.5			
		0.5			
Repetitive Peak Forward Surge Current	I <sub>FRM</sub>	625			mA

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	200	mW
Thermal Resistance Junction to Ambient Air (Note 5)	R <sub>θJA</sub>	625	°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	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	V <sub>(BR)R</sub>	120	—	V	I <sub>R</sub> = 100μA
BAS19W		200	—		
BAS20W		250	—		
BAS21W					
Forward Voltage	V <sub>F</sub>	—	1.0 1.25	V	I <sub>F</sub> = 100mA I <sub>F</sub> = 200mA
Reverse Current @ Rated DC Blocking Voltage (Note 6)	I <sub>R</sub>	—	100 15	nA μA	T <sub>J</sub> = +25°C T <sub>J</sub> = +100°C
Total Capacitance	C <sub>T</sub>	—	5.0	pF	V <sub>R</sub> = 0, f = 1.0MHz
Reverse Recovery Time	t <sub>RR</sub>	—	50	ns	I <sub>F</sub> = I <sub>R</sub> = 30mA, I <sub>RR</sub> = 0.1 x I <sub>R</sub> , R <sub>L</sub> = 100Ω

- Notes:
- Part mounted on FR-4 PC board with minimum recommended pad layout per Diodes Inc.'s website at <http://www.diodes.com/package-outlines.html>.  
I<sub>FM</sub>, I<sub>O</sub> are valid provided that terminals are kept at ambient temperature.
  - Short duration pulse test used to minimize self-heating effect.

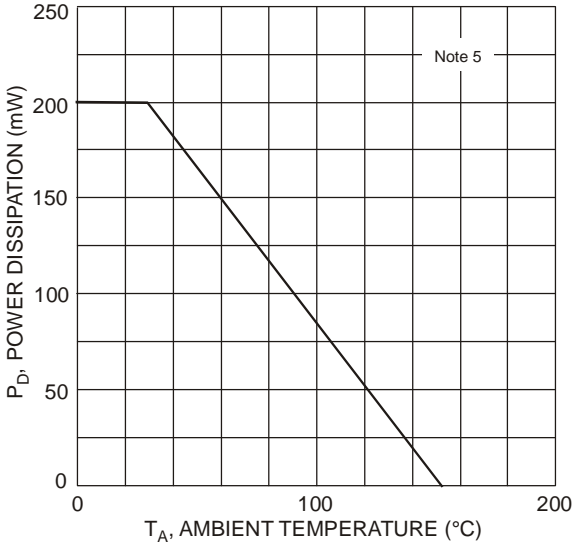


Fig. 1 Power Derating Curve

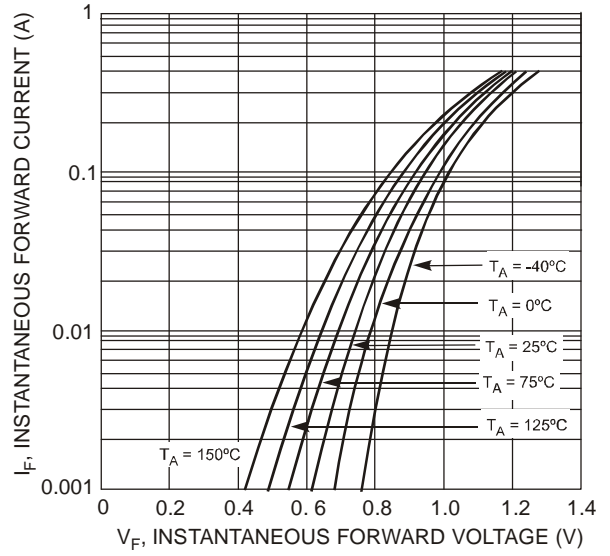


Fig. 2 Typical Forward Characteristics

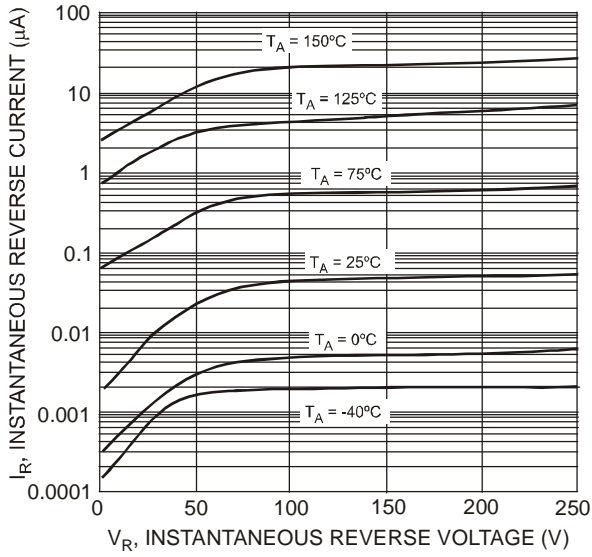


Fig. 3 Typical Reverse Characteristics

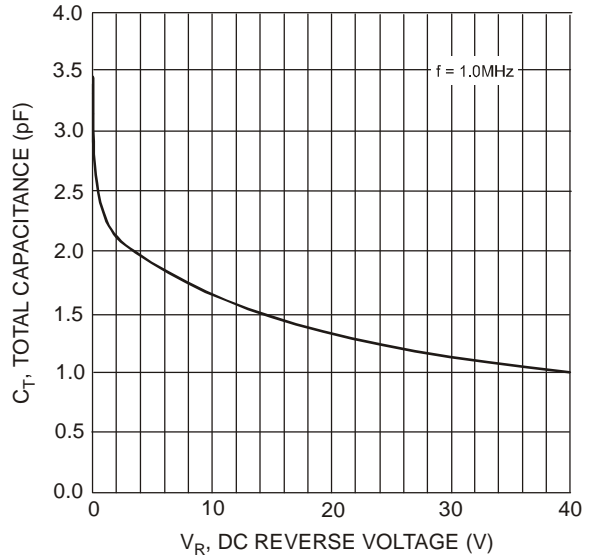
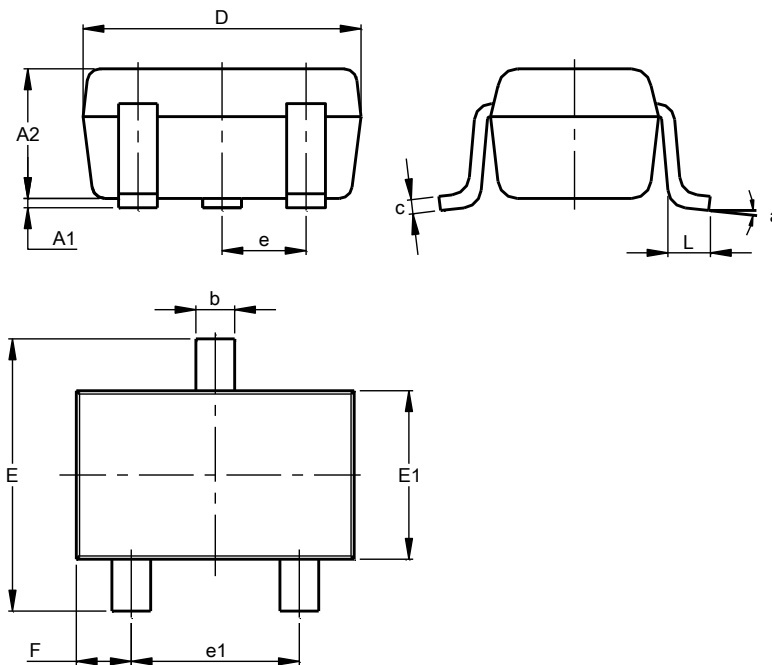


Fig. 4 Total Capacitance vs. Reverse Voltage

**Package Outline Dimensions**

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

**SOT323**

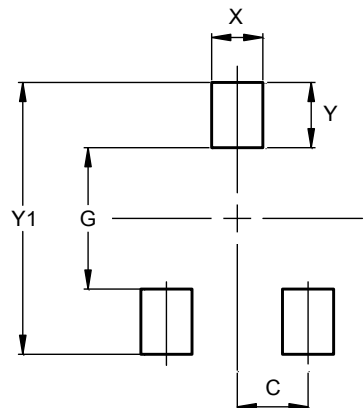


SOT323			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.90	1.00	0.95
b	0.25	0.40	0.30
c	0.10	0.18	0.11
D	1.80	2.20	2.15
E	2.00	2.20	2.10
E1	1.15	1.35	1.30
e	0.650 BSC		
e1	1.20	1.40	1.30
F	0.375	0.475	0.425
L	0.25	0.40	0.30
a	0°	8°	-
All Dimensions in mm			

**Suggested Pad Layout**

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

**SOT323**



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

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