

Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- High Conductance
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 1 and 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

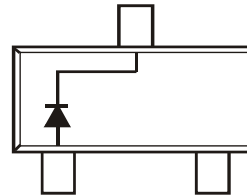
Mechanical Data

- Case: SOT23
- 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: See Diagram
- Weight: 0.008 grams (approximate)

SOT23



Top View

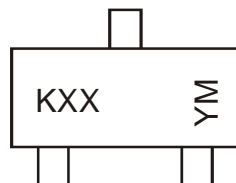

 Top View
 Internal Schematic

Ordering Information (Note 3)

Part Number	Qualification	Case	Packaging
BAS19-7-F	Commercial	SOT23	3,000/Tape & Reel
BAS20-7-F	Commercial	SOT23	3,000/Tape & Reel
BAS20-13-F	Commercial	SOT23	10,000/Tape & Reel
BAS20Q-13-F	Automotive	SOT23	10,000/Tape & Reel
BAS21-7-F	Commercial	SOT23	3,000/Tape & Reel
BAS21Q-7-F	Automotive	SOT23	3,000/Tape & Reel
BAS21-13-F	Commercial	SOT23	10,000/Tape & Reel
BAS21Q-13-F	Automotive	SOT23	10,000/Tape & Reel

- Notes:
1. No purposefully added lead. Halogen and Antimony Free.
 2. Product manufactured with Data Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb₂O₃ Fire Retardants.
 3. For packaging details, go to our website at <http://www.diodes.com>.

Marking Information



KXX = Product Type Marking Code
 BAS19 Marking: KA8, KT3; KT2
 BAS20 Marking: KT2, KT3
 BAS21 Marking: KT3
 YM = Date Code Marking
 Y = Year (ex: Y = 2011)
 M = Month (ex: 9 = September)

Date Code Key

Year	2000	2001	2002	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	L	M	N	W	X	Y	Z	A	B	C	D	E

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	BAS19	BAS20	BAS21	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	120	200	250	V
Working Peak Reverse Voltage DC Blocking Voltage	V_{RWM} V_R	100	150	200	V
RMS Reverse Voltage	$V_{R(RMS)}$	71	106	141	V
Forward Continuous Current (Note 4)	I_{FM}		400		mA
Average Rectified Output Current (Note 4)	I_O		200		mA
Non-Repetitive Peak Forward Surge Current @ $t = 1.0\mu\text{s}$ @ $t = 1.0\text{s}$	I_{FSM}		2.5 0.5		A
Repetitive Peak Forward Surge Current (Note 4)	I_{FRM}		625		mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 4)	P_D	250	mW
Thermal Resistance Junction to Ambient Air (Note 4)	$R_{\theta JA}$	500	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-65 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 5) BAS19 BAS20 BAS21	$V_{(BR)R}$	120 200 250	—	V	$I_R = 100\mu\text{A}$
Forward Voltage	V_F	—	1.0 1.25	V	$I_F = 100\text{mA}$ $I_F = 200\text{mA}$
Reverse Current @ Rated DC Blocking Voltage (Note 5)	I_R	—	100 15	nA μA	$T_J = 25^\circ\text{C}$ $T_J = 100^\circ\text{C}$
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: 4. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com>.
5. Short duration pulse test used to minimize self-heating effect.

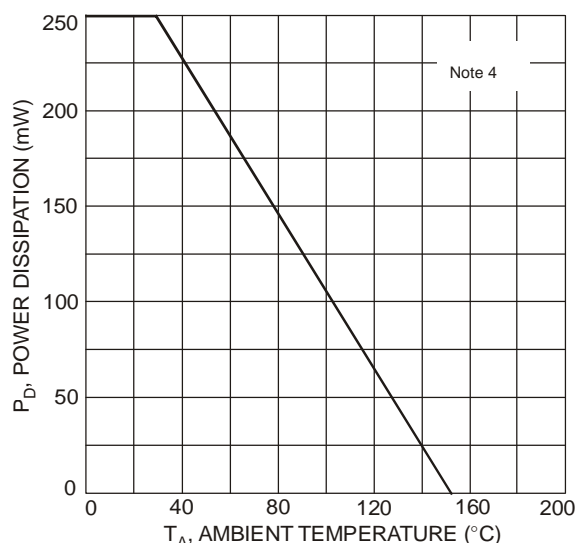


Fig. 1 Power Derating Curve

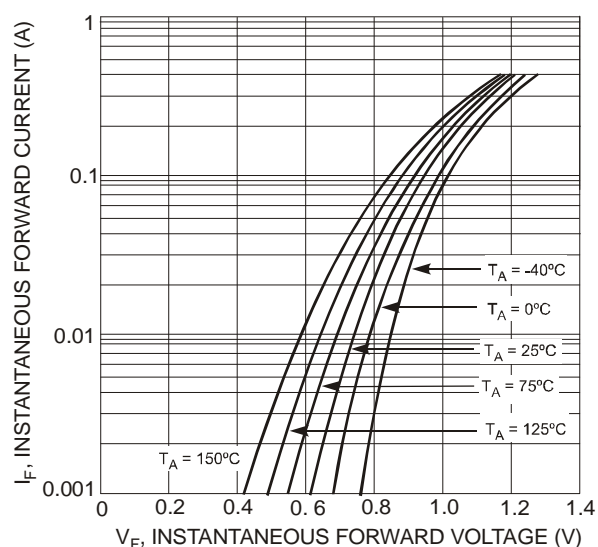


Fig. 2 Typical Forward Characteristics

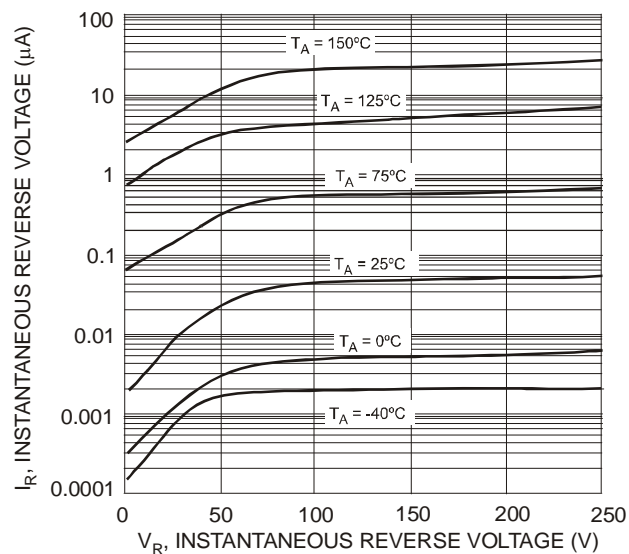


Fig. 3 Typical Reverse Characteristics

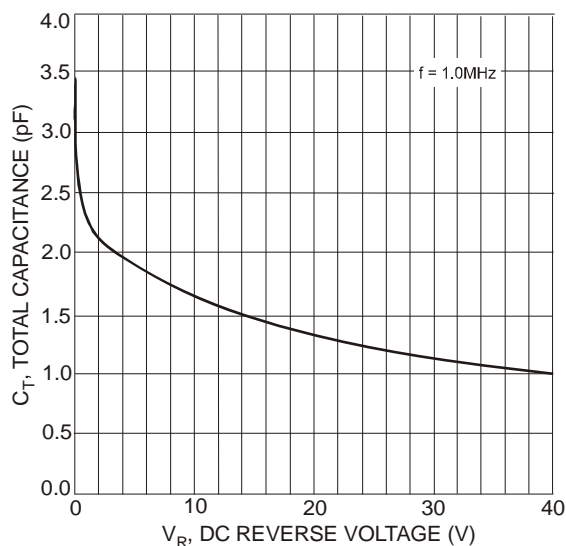
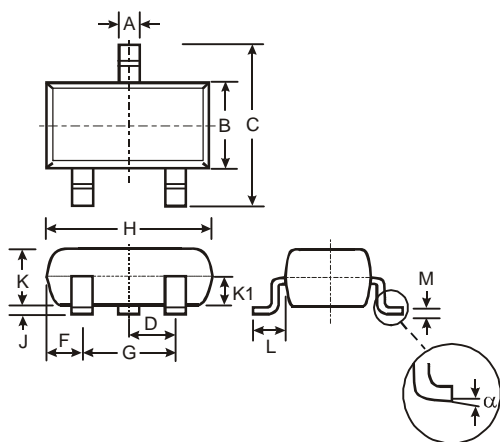


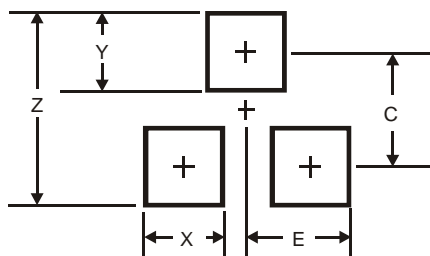
Fig. 4 Total Capacitance vs. Reverse Voltage

Package Outline Dimensions



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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