



# BAS19 / BAS20 / BAS21

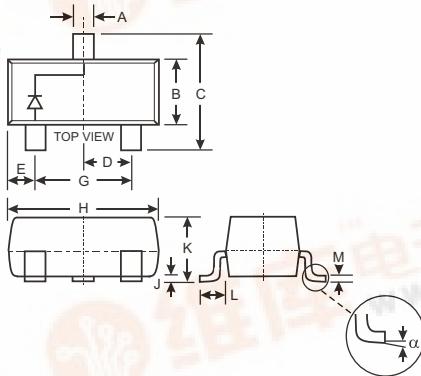
## SURFACE MOUNT FAST SWITCHING DIODE

### Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automatic Insertion
- For General Purpose Switching Applications
- High Conductance
- Lead Free/RoHS Compliant (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

### Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagram
- BAS19 Marking: KA8, KT3, KT2 (See Page 3)
- BAS20 Marking: KT2, KT3 (See Page 3)
- BAS21 Marking: KT3 (See Page 3)
- Weight: 0.008 grams (approximate)



| SOT-23 |       |       |
|--------|-------|-------|
| Dim    | Min   | Max   |
| A      | 0.37  | 0.51  |
| B      | 1.20  | 1.40  |
| C      | 2.30  | 2.50  |
| D      | 0.89  | 1.03  |
| E      | 0.45  | 0.60  |
| G      | 1.78  | 2.05  |
| H      | 2.80  | 3.00  |
| J      | 0.013 | 0.10  |
| K      | 0.903 | 1.10  |
| L      | 0.45  | 0.61  |
| M      | 0.085 | 0.180 |
|        | 0     | 8     |

All Dimensions in mm

### Maximum Ratings @ $T_A = 25^\circ C$ unless otherwise specified

| Characteristic  | Symbol             | BAS19 | BAS20       | BAS21 | Unit |
|---|--------------------|-------|-------------|-------|------|
| Repetitive Peak Reverse Voltage   | $V_{RRM}$          | 120   | 200         | 250   | V    |
| Working Peak Reverse Voltage<br>DC Blocking Voltage                                   | $V_{RWM}$<br>$V_R$ | 100   | 150         | 200   | V    |
| RMS Reverse Voltage   | $V_{R(RMS)}$       | 71    | 106         | 141   | V    |
| Forward Continuous Current (Note 1)   | $I_{FM}$           |       | 400         |       | mA   |
| Average Rectified Output Current (Note 1)   | $I_O$              |       | 200         |       | mA   |
| Non-Repetitive Peak Forward Surge Current @ $t = 1.0\text{ s}$<br>@ $t = 1.0\text{s}$ | $I_{FSM}$          |       | 2.5<br>0.5  |       | A    |
| Repetitive Peak Forward Surge Current (Note 1)  | $I_{FRM}$          |       | 625         |       | mA   |
| Power Dissipation (Note 1)  | $P_d$              |       | 250         |       | mW   |
| Thermal Resistance Junction to Ambient Air (Note 1)                                   | $R_{JA}$           |       | 500         |       | C/W  |
| Operating and Storage Temperature Range   | $T_j, T_{STG}$     |       | -65 to +150 |       | C    |

### Electrical Characteristics @ $T_A = 25^\circ C$ unless otherwise specified

| Characteristic                                       | Symbol                        | Min               | Max         | Unit    | Test Condition  |
|--|-------------------------------|-------------------|-------------|---------|---|
| Reverse Breakdown Voltage (Note 2)                   | $BAS19$<br>$BAS20$<br>$BAS21$ | 120<br>200<br>250 |             | V       | $I_R = 100\text{ A}$  |
| Forward Voltage                                      | $V_F$                         |                   | 1.0<br>1.25 | V       | $I_F = 100\text{mA}$<br>$I_F = 200\text{mA}$                        |
| Reverse Current @ Rated DC Blocking Voltage (Note 2) | $I_R$                         |                   | 100<br>15   | nA<br>A | $T_j = 25^\circ C$<br>$T_j = 100^\circ C$                           |
| Total Capacitance                                    | $C_T$                         |                   | 5.0         | pF      | $V_R = 0, f = 1.0\text{MHz}$  |
| Reverse Recovery Time                                | $t_{rr}$                      |                   | 50          | ns      | $I_F = I_R = 30\text{mA}$ ,<br>$I_{rr} = 0.1 \times I_R, R_L = 100$ |

Note 1. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

2. Short duration pulse test used to minimize self-heating effect.

3. No purposefully added lead.

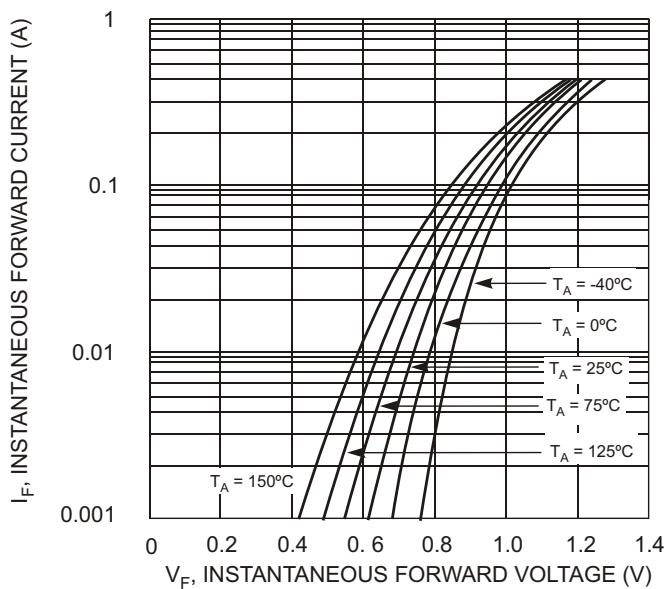


Fig. 1 Typical Forward Characteristics

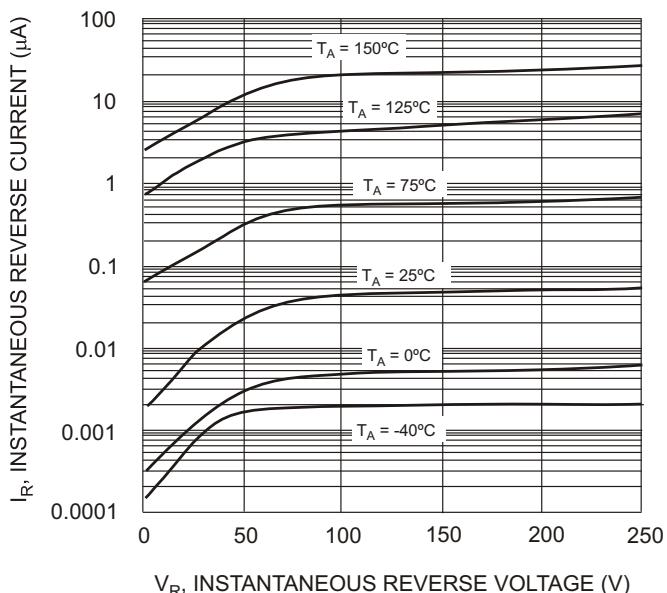


Fig. 2 Typical Reverse Characteristics

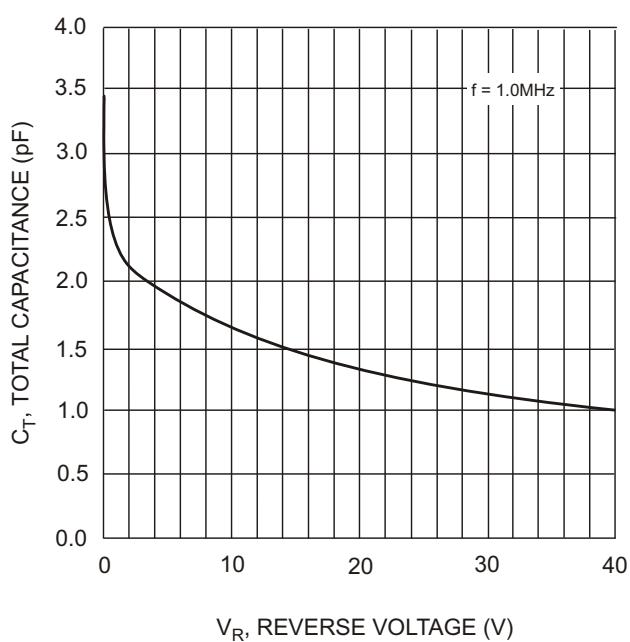


Fig. 3 Typical Capacitance vs. Reverse Voltage

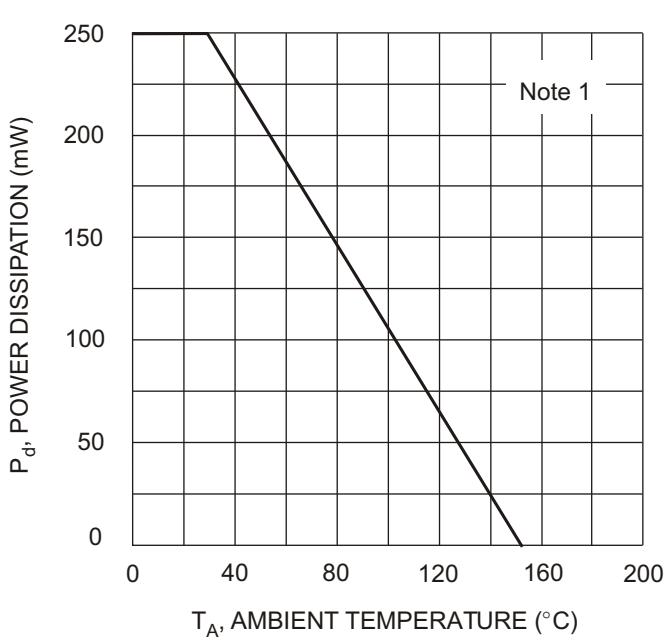


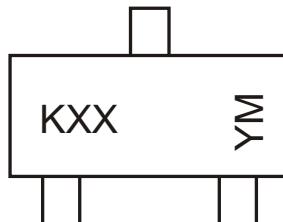
Fig. 4 Power Derating Curve, Total Package

## Ordering Information (Note 4)

| Device    | Packaging | Shipping         |
|-----------|-----------|------------------|
| BAS19-7-F | SOT-23    | 3000/Tape & Reel |
| BAS20-7-F | SOT-23    | 3000/Tape & Reel |
| BAS21-7-F | SOT-23    | 3000/Tape & Reel |

Notes: 4. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



KXX = Product Type Marking Code (See Page 1)

YM = Date Code Marking

Y = Year ex: N = 2002

M = Month ex: 9 = September

### Date Code Key

| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | L    | M    | N    | P    | R    | S    | T    | U    | V    | W    | X    | Y    | Z    |

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

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