

## 200mA, 100-150V Surface Mount Fast Switching Diode

### FEATURES

- Low power loss, high efficiency
- Ideal for automated placement
- High surge current capability
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

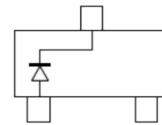
### APPLICATIONS

- Switching mode power supply (SMPS)

### MECHANICAL DATA

- Case: SOT-23
- Molding compound meets UL 94 V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight:  $8 \pm 0.5$  mg (approximately)

| KEY PARAMETERS       |            |      |
|----------------------|------------|------|
| PARAMETER            | VALUE      | UNIT |
| $I_F$                | 200        | mA   |
| $V_{RRM}$            | 100-150    | V    |
| $V_F$ at $I_F=200mA$ | 1.25       | V    |
| $T_{J\ MAX}$         | 150        | °C   |
| Package              | SOT-23     |      |
| Configuration        | Single die |      |



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |           |             |       |      |
|-----------------------------------------------------------------------------|-----------|-------------|-------|------|
| PARAMETER                                                                   | SYMBOL    | BAS19       | BAS20 | UNIT |
| Marking code on the device                                                  |           | JP          | JR    |      |
| Repetitive peak reverse voltage                                             | $V_{RRM}$ | 100         | 150   | V    |
| Power dissipation                                                           | $P_D$     | 250         |       | mW   |
| Forward current                                                             | $I_F$     | 200         |       | mA   |
| Junction temperature range                                                  | $T_J$     | -65 to +150 |       | °C   |
| Storage temperature range                                                   | $T_{STG}$ | -65 to +150 |       | °C   |

**THERMAL PERFORMANCE**

| PARAMETER                              | SYMBOL          | TYP | UNIT |
|----------------------------------------|-----------------|-----|------|
| Junction to ambient thermal resistance | $R_{\theta JA}$ | 500 | °C/W |

**ELECTRICAL SPECIFICATIONS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

| PARAMETER                      | CONDITIONS                                                                    |                                                   | SYMBOL          | MIN | MAX  | UNIT |
|--------------------------------|-------------------------------------------------------------------------------|---------------------------------------------------|-----------------|-----|------|------|
| Forward voltage <sup>(1)</sup> | I <sub>F</sub> = 100mA, T <sub>J</sub> = 25°C                                 |                                                   | V <sub>F</sub>  | -   | 1.00 | V    |
|                                | I <sub>F</sub> = 200mA, T <sub>J</sub> = 25°C                                 |                                                   |                 |     | 1.25 |      |
| Reverse voltage                | BAS19                                                                         | I <sub>R</sub> = 100 μA,<br>T <sub>J</sub> = 25°C | V <sub>R</sub>  | 100 | -    | V    |
|                                | BAS20                                                                         | I <sub>R</sub> = 100 μA,<br>T <sub>J</sub> = 25°C |                 | 150 | -    |      |
| Reverse current <sup>(2)</sup> | BAS19                                                                         | V <sub>R</sub> = 100 V,<br>T <sub>J</sub> = 25°C  | I <sub>R</sub>  | -   | 0.1  | μA   |
|                                | BAS20                                                                         | V <sub>R</sub> = 150 V,<br>T <sub>J</sub> = 25°C  |                 |     |      |      |
| Junction capacitance           | f=1 MHz, V <sub>R</sub> =0V                                                   |                                                   | C <sub>J</sub>  | -   | 5    | pF   |
| Reverse recovery time          | I <sub>F</sub> =I <sub>R</sub> = 30mA, I <sub>RR</sub> = 0.1 x I <sub>R</sub> |                                                   | t <sub>rr</sub> | -   | 50   | ns   |

**Notes:**

1. Pulse test with  $PW=0.3\text{ ms}$
2. Pulse test with  $PW=30\text{ ms}$

**ORDERING INFORMATION**

| ORDERING CODE | PACKAGE | PACKING        |
|---------------|---------|----------------|
| BASxx RF      | SOT-23  | 3K / 7" Reel   |
| BASxx RFG     | SOT-23  | 3K / 7" Reel   |
| BASxx R5      | SOT-23  | 10K / 13" Reel |
| BASxx R5G     | SOT-23  | 10K / 13" Reel |
| BASxx-B0 RF   | SOT-23  | 3K / 7" Reel   |
| BASxx-B0 RFG  | SOT-23  | 3K / 7" Reel   |
| BASxx-B0 R5   | SOT-23  | 10K / 13" Reel |
| BASxx-B0 R5G  | SOT-23  | 10K / 13" Reel |

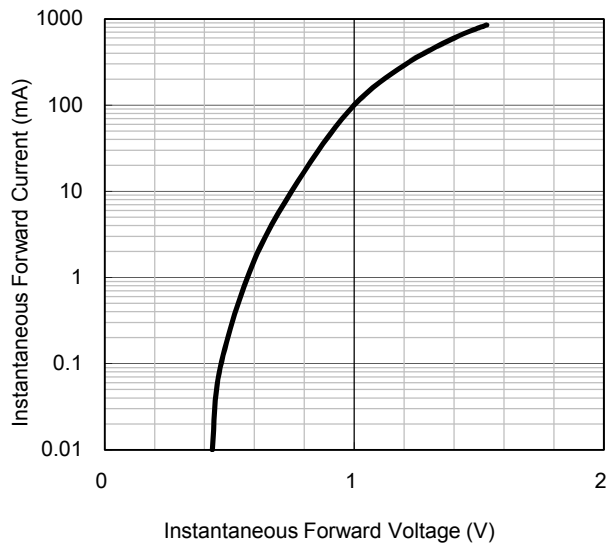
**Notes:**

1. "xx" is device code from "19" to "20"
2. "G" means green compound (halogen free)

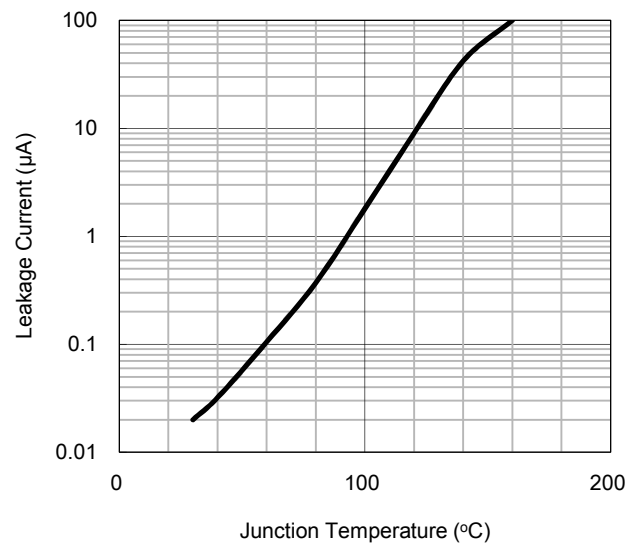
## CHARACTERISTICS CURVES

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

**Fig.1 Forward Characteristics**

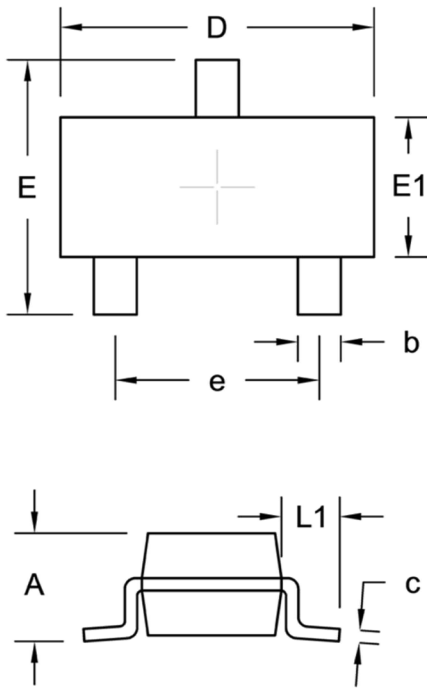


**Fig.2 Leakage Current VS. Junction temperature**



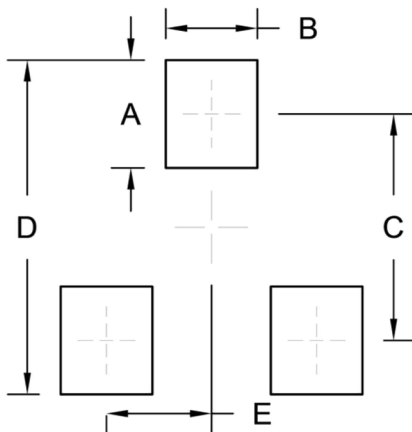
## PACKAGE OUTLINE DIMENSION

SOT-23



| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 0.89      | 1.12 | 0.035       | 0.044 |
| b    | 0.30      | 0.50 | 0.012       | 0.020 |
| c    | 0.08      | 0.20 | 0.003       | 0.008 |
| D    | 2.80      | 3.04 | 0.110       | 0.120 |
| E    | 2.10      | 2.64 | 0.083       | 0.104 |
| E1   | 1.20      | 1.40 | 0.047       | 0.055 |
| e    | 1.90 BSC  |      | 0.075 BSC   |       |
| L1   | 0.54 REF. |      | 0.021 REF.  |       |

## SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.00      | 0.039       |
| B      | 0.85      | 0.033       |
| C      | 2.10      | 0.083       |
| D      | 3.10      | 0.122       |
| E      | 0.98      | 0.039       |

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