

## 200mA, 250V SMD 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   |
| $V_{RRM}$            | 250    | V    |
| $I_{FSM}$            | 1      | A    |
| $V_F$ at $I_F=200mA$ | 1.25   | V    |
| $T_{J\ MAX}$         | 150    | °C   |
| Package              | SOT-23 |      |



| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise noted) |           |             |        |        |        |      |
|-----------------------------------------------------------------------------|-----------|-------------|--------|--------|--------|------|
| PARAMETER                                                                   | SYMBOL    | BAS21       | BAS21A | BAS21C | BSA21S | UNIT |
| Marking code on the device                                                  |           | JS          | JS2    | JS3    | JS4    |      |
| Power dissipation                                                           | $P_D$     | 225         |        |        |        | mW   |
| Repetitive peak reverse voltage                                             | $V_{RRM}$ | 250         |        |        |        | V    |
| Repetitive peak forward current                                             | $I_{FRM}$ | 625         |        |        |        | mA   |
| Forward current                                                             | $I_F$     | 200         |        |        |        | mA   |
| Non-Repetitive peak forward surge current<br>@ $t = 8.3ms$                  | $I_{FSM}$ | 1           |        |        |        | A    |
| Junction temperature range                                                  | $T_J$     | -55 to +150 |        |        |        | °C   |
| Storage temperature range                                                   | $T_{STG}$ | -55 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 per diode <sup>(1)</sup>               | $I_F = 100\text{mA}, T_J = 25^\circ\text{C}$                    | $V_F$    | -   | 1.00 | V             |
|                                                        | $I_F = 200\text{mA}, T_J = 25^\circ\text{C}$                    |          |     | 1.25 |               |
| Reverse voltage                                        | $I_R = 100\text{ }\mu\text{A}, T_J = 25^\circ\text{C}$          | $V_R$    | 250 | -    | V             |
| Reverse current @ rated $V_R$ per diode <sup>(2)</sup> | $V_R = 200\text{ V}, T_J = 25^\circ\text{C}$                    | $I_R$    | -   | 0.1  | $\mu\text{A}$ |
| Junction capacitance                                   | $f = 1\text{ MHz}, V_R = 1\text{V}$                             | $C_J$    | -   | 5    | pF            |
| Reverse recovery time                                  | $I_F = I_R = 30\text{mA}, R_L = 100\Omega, I_{RR} = 1\text{mA}$ | $t_{rr}$ | -   | 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        |
|---------------|---------|----------------|
| BAS2xx RF     | SOT-23  | 3K / 7" Reel   |
| BAS2xx RFG    | SOT-23  | 3K / 7" Reel   |
| BAS2xx R5     | SOT-23  | 10K / 13" Reel |
| BAS2xx R5G    | SOT-23  | 10K / 13" Reel |
| BAS2xx-B0 RF  | SOT-23  | 3K / 7" Reel   |
| BAS2xx-B0 RFG | SOT-23  | 3K / 7" Reel   |
| BAS2xx-B0 R5  | SOT-23  | 10K / 13" Reel |
| BAS2xx-B0 R5G | SOT-23  | 10K / 13" Reel |
| BAS2xx-D0 RF  | SOT-23  | 3K / 7" Reel   |
| BAS2xx-D0 RFG | SOT-23  | 3K / 7" Reel   |
| BAS2xx-D0 R5  | SOT-23  | 10K / 13" Reel |
| BAS2xx-D0 R5G | SOT-23  | 10K / 13" Reel |

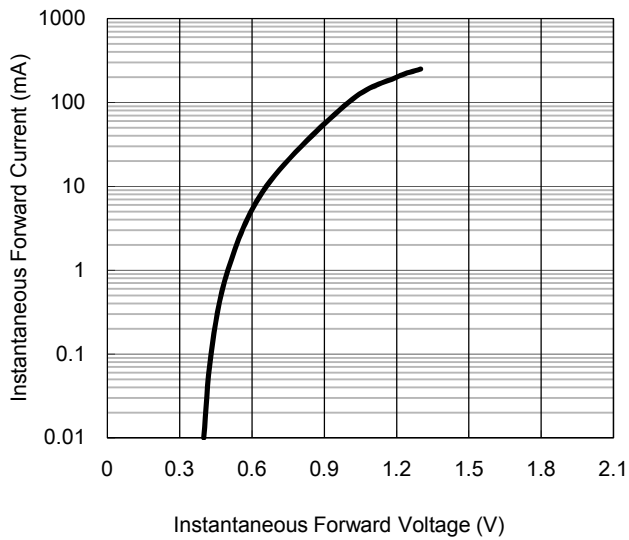
**Notes:**

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

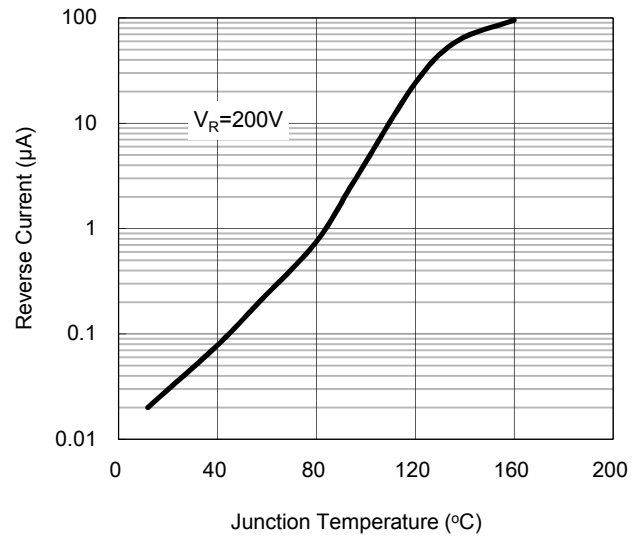
## CHARACTERISTICS CURVES

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

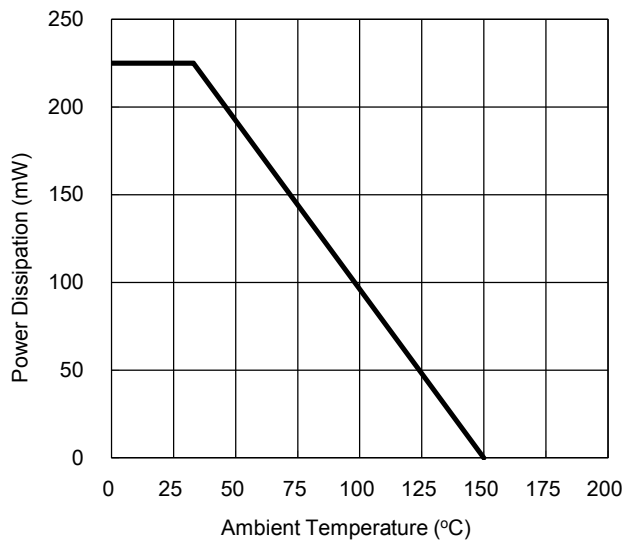
**Fig.1 Typical Forward Characteristics**



**Fig. 2 Reverse Current VS. Junction Temperature**

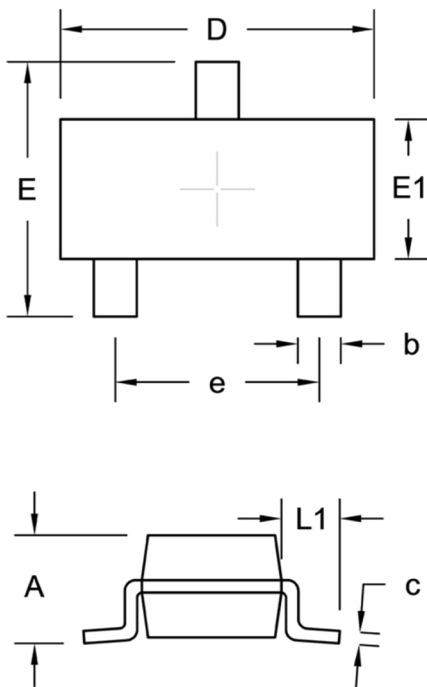


**Fig.3 Admissible Power Dissipation Curve**



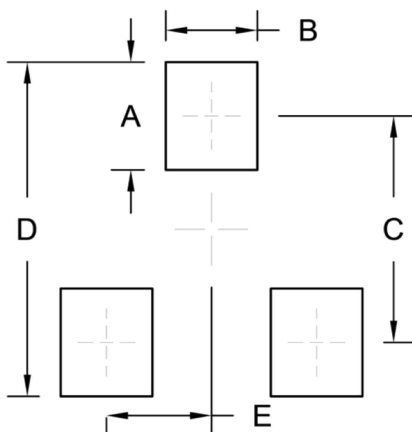
## PACKAGE OUTLINE DIMENSION

SOT-23



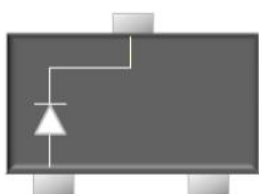
| DIM. | Unit (mm) |      | Unit (inch) |       |
|------|-----------|------|-------------|-------|
|      | Min.      | Max. | Min.        | Max.  |
| A    | 0.89      | 1.12 | 0.035       | 0.044 |
| b    | 0.30      | 0.50 | 0.012       | 0.020 |
| c    | 0.08      | 0.20 | 0.003       | 0.008 |
| 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

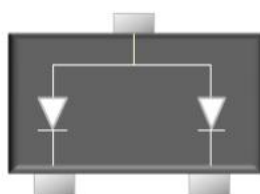


| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A      | 1.00      | 0.039       |
| B      | 0.85      | 0.033       |
| C      | 2.10      | 0.083       |
| D      | 3.10      | 0.122       |
| E      | 0.98      | 0.039       |

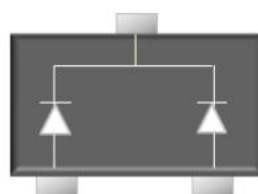
## PIN CONFIGURATION



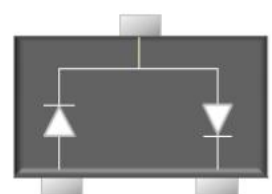
BAS21



BAS21A



BAS21C



BAS21S

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