

## Product Summary

| $V_R$ (V) | $I_F$ (mA) | $V_F$ MAX (V)<br>@ +25°C | $I_R$ MAX (μA)<br>@ +25°C |
|-----------|------------|--------------------------|---------------------------|
| 70        | 1.0        | 0.41                     | 0.1                       |

## Description

The 70mA surface-mount Schottky Barrier Diode in SOT23 package, offers low-forward voltage drop and fast switching capability, designed with PN Junction Guard Ring for Transient and ESD Protection.

## Features and Benefits

- Low Turn-On Voltage
- Fast Switching
- PN Junction Guard Ring for Transient and ESD Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- The BAS70-04Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

<https://www.diodes.com/quality/product-definitions/>

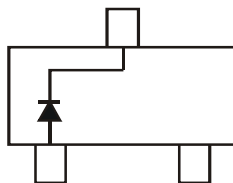
## Mechanical Data

- Package: SOT23
- Package 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 Diagrams Below
- Weight: 0.008 grams (Approximate)

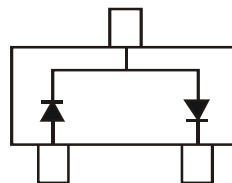
SOT23



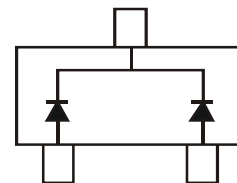
Top View



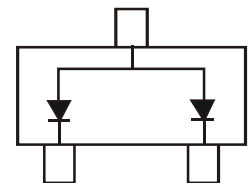
BAS70



BAS70-04



BAS70-05



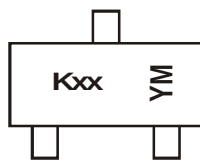
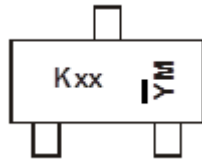
BAS70-06

## Ordering Information (Notes 4 & 5)

| Part Number    | Package | Packing |             |
|----------------|---------|---------|-------------|
|                |         | Qty.    | Carrier     |
| BAS70-7-F      | SOT23   | 3000    | Tape & Reel |
| BAS70-04-7-F   | SOT23   | 3000    | Tape & Reel |
| BAS70-04Q-7-F  | SOT23   | 3000    | Tape & Reel |
| BAS70-04Q-13-F | SOT23   | 10000   | Tape & Reel |
| BAS70-05-7-F   | SOT23   | 3000    | Tape & Reel |
| BAS70-06-7-F   | SOT23   | 3000    | 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
  5. 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 Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.

## Marking Information



Kxx = Product Type Marking Code:

K7C = BAS70

K7D = BAS70-04&BAS70-04Q

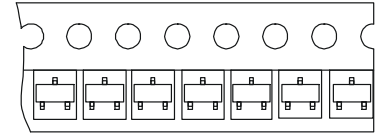
K7E = BAS70-05

K7F = BAS70-06

YM & YM = Date Code Marking

Y = Year (ex: K = 2023)

M = Month (ex: 2 = Feb)



### Date Code Key

| Year | 2007 | ... | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 |
|------|------|-----|------|------|------|------|------|------|------|------|------|------|
| Code | U    | ... | K    | L    | M    | N    | P    | R    | S    | T    | U    | V    |

| 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              | Value | Unit |
|------------------------------------------------------|---------------------|-------|------|
| Peak Repetitive Reverse Voltage                      | V <sub>RRM</sub>    | 70    | V    |
| Working Peak Reverse Voltage                         | V <sub>RWM</sub>    |       |      |
| DC Blocking Voltage                                  | V <sub>R</sub>      |       |      |
| RMS Reverse Voltage                                  | V <sub>R(RMS)</sub> | 49    | V    |
| Maximum Forward Continuous Current (Note 6)          | I <sub>FM</sub>     | 70    | mA   |
| Non-Repetitive Peak Forward Surge Current @ t ≤ 1.0s | I <sub>FSM</sub>    | 100   | mA   |

## Thermal Characteristics

| Characteristic                                      | Symbol           | Value       | Unit |
|-----------------------------------------------------|------------------|-------------|------|
| Power Dissipation (Note 6)                          | P <sub>D</sub>   | 200         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 6) | R <sub>θJA</sub> | 625         | °C/W |
| Operating Junction Temperature Range                | T <sub>J</sub>   | -55 to +125 | °C   |
| Storage Temperature Range                           | 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 7)        | V <sub>(BR)R</sub> | 70  | —           | V    | I <sub>R</sub> = 10μA                                                                           |
| Forward Voltage                           | V <sub>F</sub>     | —   | 410<br>1000 | mV   | t <sub>P</sub> < 300μs, I <sub>F</sub> = 1.0mA<br>t <sub>P</sub> < 300μs, I <sub>F</sub> = 15mA |
| Reverse Current (Note 7)                  | I <sub>R</sub>     | —   | 100         | nA   | t <sub>P</sub> < 300μs, V <sub>R</sub> = 50V                                                    |
| Total Capacitance                         | C <sub>T</sub>     | —   | 2.0         | pF   | V <sub>R</sub> = 0V, f = 1.0MHz                                                                 |
| Reverse Recovery Time                     | t <sub>RR</sub>    | —   | 5.0         | ns   | I <sub>F</sub> = I <sub>R</sub> = 10mA to I <sub>R</sub> = 1.0mA,<br>R <sub>L</sub> = 100Ω      |
| Reverse Recovery Time (For BAS70-04 Only) | t <sub>RR</sub>    | —   | 2.0         | ns   | I <sub>F</sub> = I <sub>R</sub> = 10mA to I <sub>R</sub> = 1.0mA,<br>R <sub>L</sub> = 100Ω      |

Notes: 6. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.

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

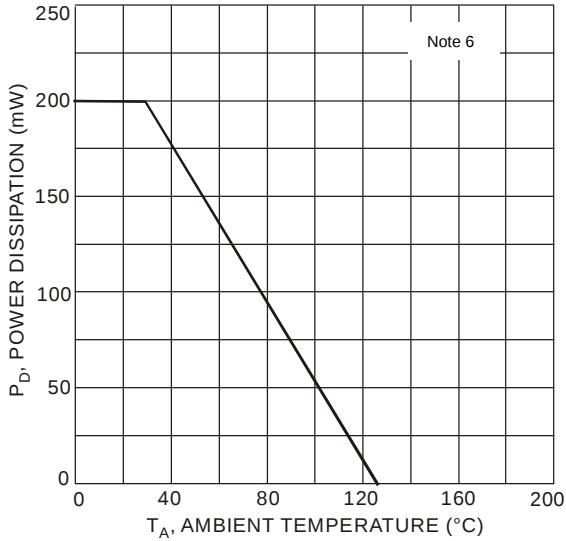


Figure 1 Power Derating Curve, Total Package

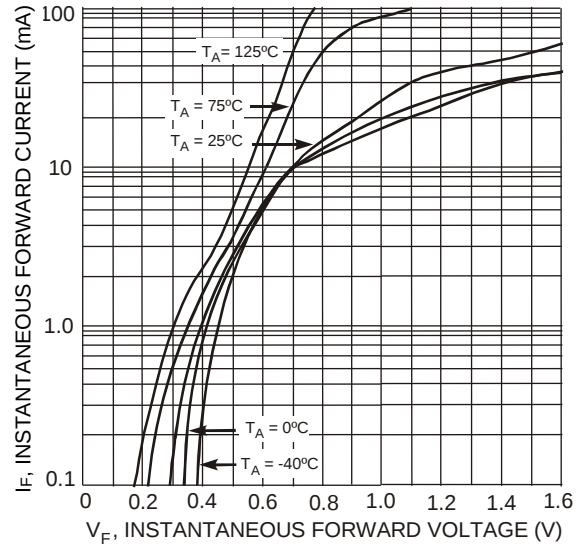


Figure 2 Typical Forward Characteristics

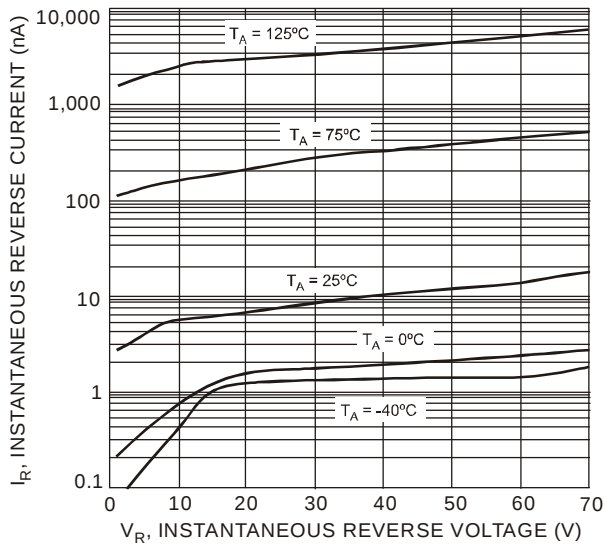


Figure 3 Typical Reverse Characteristics

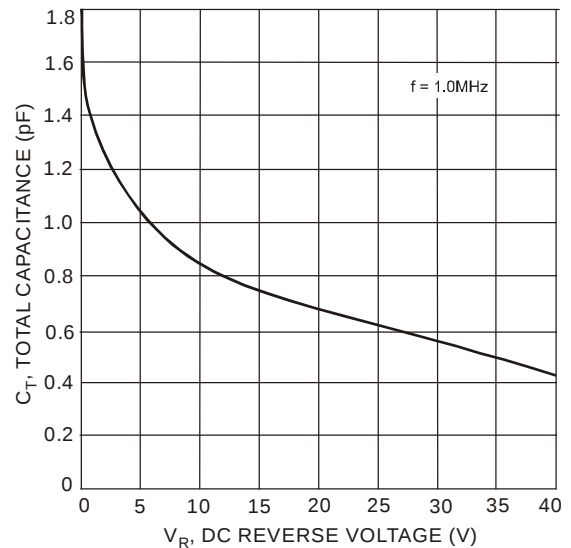
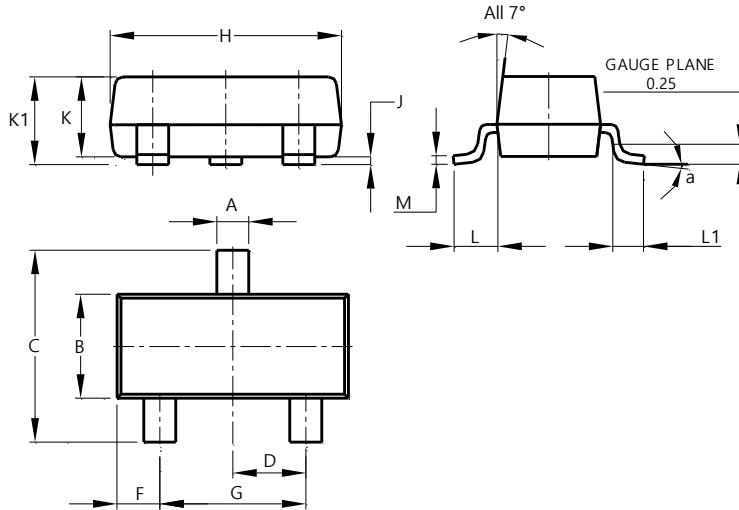


Figure 4 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

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

**SOT23**

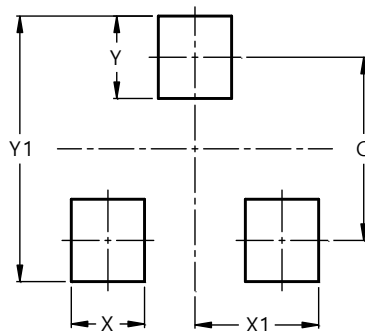


| SOT23                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.37  | 0.51  | 0.40  |
| B                    | 1.20  | 1.40  | 1.30  |
| C                    | 2.30  | 2.50  | 2.40  |
| D                    | 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                    | 0.890 | 1.00  | 0.975 |
| K1                   | 0.903 | 1.10  | 1.025 |
| L                    | 0.45  | 0.61  | 0.55  |
| L1                   | 0.25  | 0.55  | 0.40  |
| M                    | 0.085 | 0.150 | 0.110 |
| a                    | 0°    | 8°    | --    |
| All Dimensions in mm |       |       |       |

## Suggested Pad Layout

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

**SOT23**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.0           |
| X          | 0.8           |
| X1         | 1.35          |
| Y          | 0.9           |
| Y1         | 2.9           |

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