SURFACE MOUNT SCHOTTKY BARRIER DIODE

## Product Summary

| $V_R$ (V) | $I_F$ (mA) | $V_{F\ MAX}$ (V) @ +25°C | $I_{R\ MAX}$ (µA) @ +25°C |
|---|---|---|---|
| 70 | 1.0 | 0.41 | 0.1 |

## 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)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

## Description

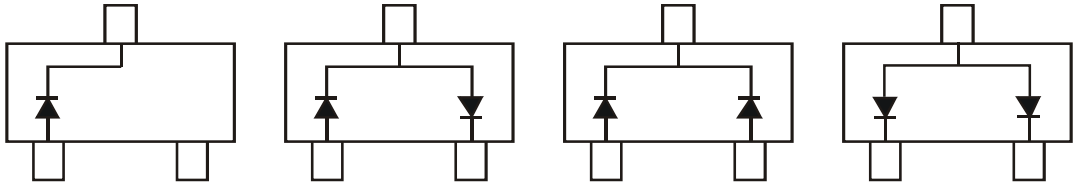
70mA surface mount Schottky Barrier Diode in SOT23 package, offers low forward voltage drop and fast switching capability, designed with PN Junction Guard Ring for Transient and ESD Protection.

## 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) (e3)
- Polarity: See Diagrams Below
- Weight: 0.008 grams (Approximate)

SOT23

Top View



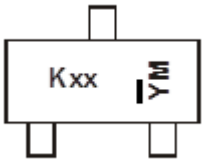
BAS70 BAS70-04 BAS70-05 BAS70-06

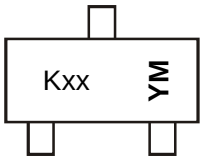
## Ordering Information (Notes 5 and 6)

| Part Number | Case | Packaging |
|---|---|---|
| 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 |

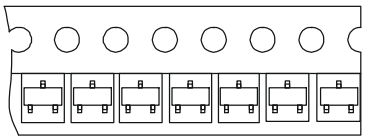
Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to https://www.diodes.com/quality/.
5. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.
6. 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 $Sb_2O_3$ Fire Retardants.

## Marking Information




Kxx = Product Type Marking Code:
K73, K7C = BAS70
K74, K7D = BAS70-04&BAS70-04Q
K75, K7E = BAS70-05
K76, K7F = BAS70-06
YM & YM= Date Code Marking
Y = Year (ex: G = 2019)
M = Month (ex: 2 = Feb)



Date Code Key

| Year | 2004 | …… | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Code | R | …… | B | C | D | E | F | G | H | J | K | L | M |

| 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°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 70 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 49 | V |
| Maximum Forward Continuous Current (Note 7) | $I_{FM}$ | 70 | mA |
| Non-Repetitive Peak Forward Surge Current @ t ≤ 1.0s | $I_{FSM}$ | 100 | mA |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Power Dissipation (Note 7) | $P_D$ | 200 | mW |
| Thermal Resistance Junction to Ambient Air (Note 7) | $R_{\theta JA}$ | 625 | °C/W |
| Operating Junction Temperature Range | $T_J$ | -55 to +125 | °C |
| Storage Temperature Range | $T_{STG}$ | -65 to +150 | °C |

## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
|---|---|---|---|---|---|
| Reverse Breakdown Voltage (Note 8) | $V_{(BR)R}$ | 70 | — | V | $I_R$ = 10μA |
| Forward Voltage | $V_F$ | —<br>— | 410<br>1000 | mV | $t_P$ <300μs, $I_F$ = 1.0mA<br>$t_P$ <300μs, $I_F$ = 15mA |
| Reverse Current (Note 8) | $I_R$ | — | 100 | nA | $t_P$ <300μs, $V_R$ = 50V |
| Total Capacitance | $C_T$ | — | 2.0 | pF | $V_R$ = 0V, f = 1.0MHz |
| Reverse Recovery Time | $t_{RR}$ | — | 5.0 | ns | $I_F$ = $I_R$ = 10mA to $I_R$ = 1.0mA, $R_L$ =100Ω |
| Reverse Recovery Time (For BAS70-04 only) | $t_{RR}$ | — | 2.0 | ns | $I_F$ = $I_R$ = 10mA to $I_R$ = 1.0mA, $R_L$ =100Ω |

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

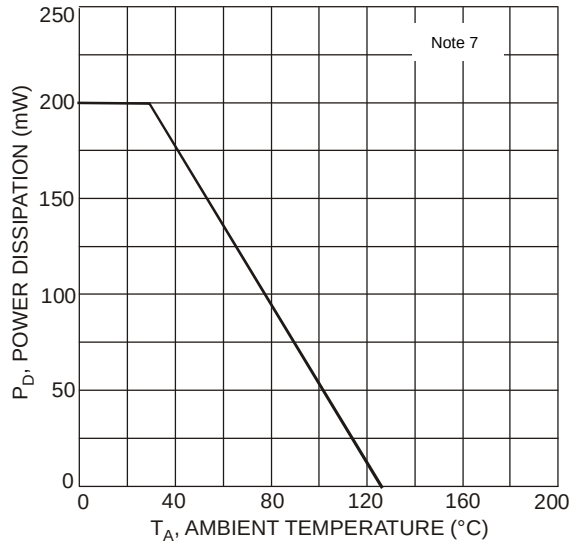



Figure 1 Power Derating Curve, Total Package

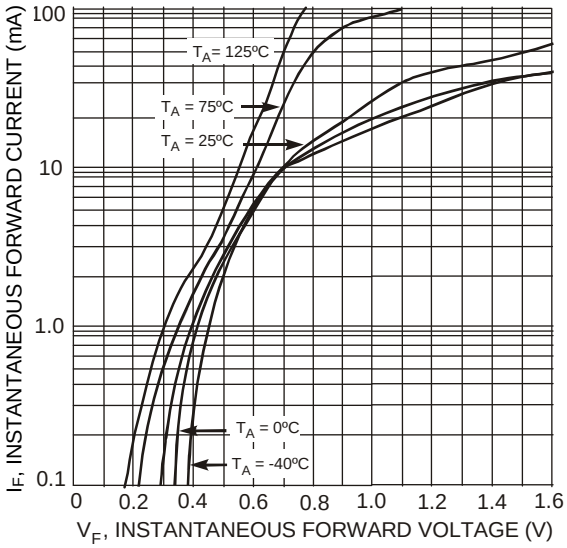



Figure 2 Typical Forward Characteristics

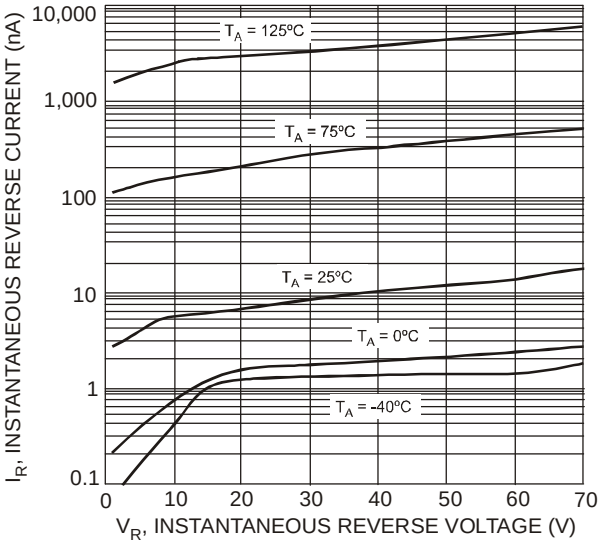



Figure 3 Typical Reverse Characteristics

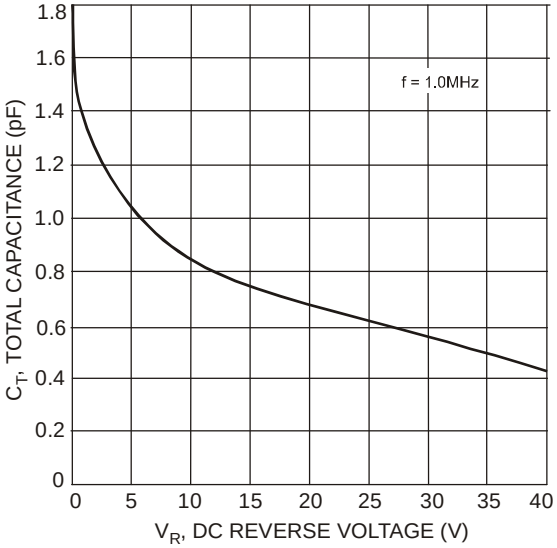
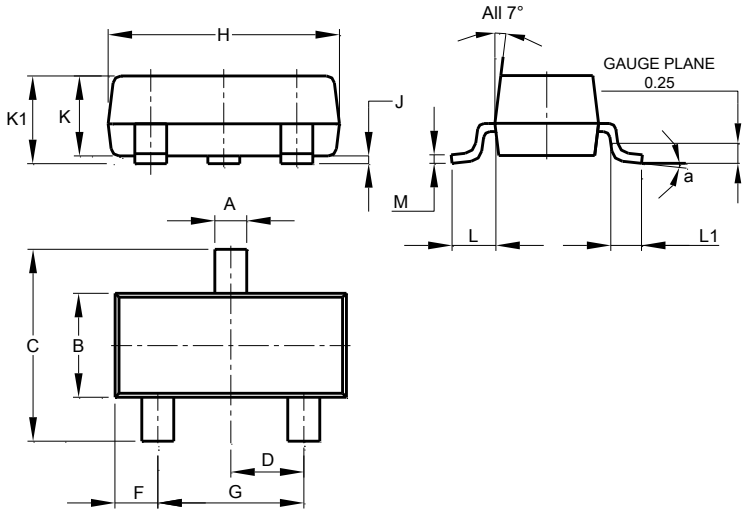



Figure 4 Total Capacitance vs. Reverse Voltage

## Package Outline Dimensions

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

SOT23

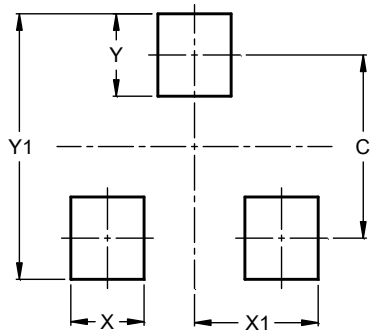



| SOT23 | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **Typ** |
| **A** | 0.37 | 0.51 | 0.40 |
| **B** | 1.20 | 1.40 | 1.30 |
| **C** | 2.30 | 2.50 | 2.40 |
| **D** | 0.89 | 1.03 | 0.915 |
| **F** | 0.45 | 0.60 | 0.535 |
| **G** | 1.78 | 2.05 | 1.83 |
| **H** | 2.80 | 3.00 | 2.90 |
| **J** | 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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