BAS70W I-04 I-05 I-06

## SURFACE MOUNT SCHOTTKY BARRIER DIODE

## Features

- Low Turn-on Voltage
- Fast Switching
- PN Junction Guard Ring for Transient and ESD Protection
- Ultra-Small Surface Mount Package
- Lead Free/RoHS Compliant (Note 3)
- "Green" Device (Note 4 and 5)


## Mechanical Data

- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 5. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagrams Below
- Marking Information: See Page 2
- Ordering Information: See Page 2
- Weight: 0.006 grams (approximate)

Top View

BAS70W

BAS70W-04

BAS70W-05

BAS70W-06

Maximum Ratings $@ T_{A}=25^{\circ} \mathrm{C}$ unless otherwise specified


## Thermal Characteristics

| Characteristic | Symbol | Value |  |
| :--- | :---: | :---: | :---: |
| Power Dissipation (Note 1) | $\mathrm{P}_{\mathrm{D}}$ | 200 | Unit |
| Thermal Resistance Junction to Ambient Air (Note 1) | $\mathrm{R}_{\theta \mathrm{JA}}$ | mW |  |
| Operating Temperature Range | $\mathrm{T}_{J}$ | 625 | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |
| Storage Temperature Range | $\mathrm{TSTG}_{S T}$ | -55 to +125 | -65 to +150 |
| ${ }^{\circ} \mathrm{C}$ |  |  |  |
| ${ }^{\circ} \mathrm{C}$ |  |  |  |

Electrical Characteristics $@ \mathrm{~T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$ unless otherwise specified

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
| :--- | :---: | :---: | :---: | :---: | :---: |
| Reverse Breakdown Voltage (Note 2) | $\mathrm{V}_{(\mathrm{BR}) \mathrm{R}}$ | 70 | - | - | $\mathrm{I}_{\mathrm{R}}=10 \mu \mathrm{~A}$ |
| Forward Voltage | $\mathrm{V}_{\mathrm{F}}$ | - | 410 | mV | $\mathrm{t}_{\mathrm{p}}<300 \mu \mathrm{~s}, \mathrm{I}_{\mathrm{F}}=1.0 \mathrm{~mA}$ <br> $\mathrm{t}_{\mathrm{p}}<300 \mu \mathrm{~s}, \mathrm{I}_{\mathrm{F}}=15 \mathrm{~mA}$ |
| Reverse Current (Note 2) | $\mathrm{I}_{\mathrm{R}}$ | - | 100 | nA | $\mathrm{t}_{\mathrm{p}}<300 \mu \mathrm{~s}, \mathrm{~V}_{\mathrm{R}}=50 \mathrm{~V}$ |
| Total Capacitance | $\mathrm{C}_{\mathrm{T}}$ | - | 2.0 | pF | $\mathrm{V}_{\mathrm{R}}=0 \mathrm{~V}, \mathrm{f}=1.0 \mathrm{MHz}$ |
| Reverse Recovery Time | $\mathrm{t}_{\mathrm{rr}}$ | - | 5.0 | ns | $\mathrm{I}_{\mathrm{F}}=\mathrm{I}_{\mathrm{R}}=10 \mathrm{~mA}$ to $\mathrm{I}_{\mathrm{R}}=1.0 \mathrm{~mA}$, <br> $\mathrm{I}_{\mathrm{rr}}=0.1 \times \mathrm{I}_{\mathrm{R}}, \mathrm{R}_{\mathrm{L}}=100 \Omega$ |

Notes: 1. Device mounted on FR-4 PCB, 1 inch $\times 0.85$ inch $\times 0.062$ inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, 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.
4. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
5. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.


Fig. 1 Typical Forward Characteristics


Fig. 3 Total Capacitance vs. Reverse Voltage


Fig. 2 Typical Reverse Characteristics


Fig. 4 Power Derating Curve, Total Package

Ordering Information (Notes 5 \& 6)

| Part Number | Case | Packaging |
| :---: | :--- | :---: |
| BAS70W-7-F | SOT-323 | 3000/Tape \& Reel |
| BAS70W-04-7-F | SOT-323 | $3000 /$ Tape \& Reel |
| BAS70W-05-7-F | SOT-323 | 3000/Tape \& Reel |
| BAS70W-06-7-F | SOT-323 | 3000/Tape \& Reel |

Notes: 6. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.
Marking Information


## Package Outline Dimensions



| SOT-323 |  |  |  |
| :---: | :---: | :---: | :---: |
| Dim | Min | Max | Typ |
| A | 0.25 | 0.40 | 0.30 |
| B | 1.15 | 1.35 | 1.30 |
| C | 2.00 | 2.20 | 2.10 |
| D | - | - | 0.65 |
| F | 0.30 | 0.40 | 0.425 |
| G | 1.20 | 1.40 | 1.30 |
| H | 1.80 | 2.20 | 2.15 |
| $\mathbf{J}$ | 0.0 | 0.10 | 0.05 |
| K | 0.90 | 1.00 | 1.00 |
| L | 0.25 | 0.40 | 0.30 |
| M | 0.10 | 0.18 | 0.11 |
| $\mathbf{\alpha}$ | $0^{\circ}$ | $8^{\circ}$ | - |
| All Dimensions in $\mathbf{~ m m}$ |  |  |  |
|  |  |  |  |

## Suggested Pad Layout



| Dimensions | Value (in mm) |
| :---: | :---: |
| $\mathbf{Z}$ | 2.8 |
| $\mathbf{X}$ | 0.7 |
| $\mathbf{Y}$ | 0.9 |
| $\mathbf{C}$ | 1.9 |
| $\mathbf{E}$ | 1.0 |

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