Lead-free Green

## SURFACE MOUNT SCHOTTKY BARRIER DIODE

## Features

- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Surface Mount Package
- PN Junction Guard Ring for Transient and ESD Protection
- 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 4. 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

BAS40W

BAS40W-04

BAS40W-05

BAS40W-06

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

| Characteristic | Symbol | Value | Unit |
| :--- | :---: | :---: | :---: |
| Peak Repetitive Reverse Voltage | $V_{R R M}$ <br> $V_{R W M}$ <br> Working Peak Reverse Voltage <br> DC Blocking Voltage | $V_{R}$ | 40 |
| RMS Reverse Voltage | $V_{R(R M S)}$ | 28 | V |
| Forward Continuous Current (Note 1) | $\mathrm{I}_{\mathrm{FM}}$ | 200 | V |
| Non-Repetitive Peak Forward Surge Current $@ \mathrm{t}=1.0 \mathrm{~s}$ | $\mathrm{I}_{\mathrm{FSM}}$ | 600 | mA |

## 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 |  |
| Storage Temperature Range | $\mathrm{T}_{\mathrm{STG}}$ | -55 to +125 | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |

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

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Reverse Breakdown Voltage (Note 2) | $\mathrm{V}_{(\mathrm{BR}) \mathrm{R}}$ | 40 | - | V | $\mathrm{I}_{\mathrm{R}}=10 \mu \mathrm{~A}$ |
| Forward Voltage | $V_{F}$ | - | $\begin{gathered} \hline 380 \\ 1000 \\ \hline \end{gathered}$ | $\begin{aligned} & \mathrm{mV} \\ & \mathrm{mV} \end{aligned}$ | $\begin{aligned} & \mathrm{I}_{\mathrm{F}}=1.0 \mathrm{~mA}, \mathrm{t}_{\mathrm{p}}<300 \mu \mathrm{~s} \\ & \mathrm{I}_{\mathrm{F}}=40 \mathrm{~mA}, \mathrm{t}_{\mathrm{p}}<300 \mu \mathrm{~s} \end{aligned}$ |
| Leakage Current (Note 2) | $\mathrm{I}_{\mathrm{R}}$ | - | 200 | nA | $\mathrm{V}_{\mathrm{R}}=30 \mathrm{~V}$ |
| Total Capacitance | $\mathrm{C}_{\text {T }}$ | - | 5.0 | pF | $\mathrm{V}_{\mathrm{R}}=0, \mathrm{f}=1.0 \mathrm{MHz}$ |
| Reverse Recovery Time | $\mathrm{trr}_{\text {r }}$ | - | 5.0 | ns | $\begin{aligned} & \mathrm{I}_{\mathrm{F}}=\mathrm{I}_{\mathrm{R}}=10 \mathrm{~mA}, \\ & \mathrm{I}_{\mathrm{rr}}=0.1 \times \mathrm{I}_{\mathrm{R}}, \mathrm{R}_{\mathrm{L}}=100 \Omega \end{aligned}$ |

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## Ordering Information (Notes 5 \& 6)

| Part Number | Case | Packaging |
| :---: | :---: | :---: |
| BAS40W-7-F | SOT-323 | $300 /$ Tape \& Reel |
| BAS40W-04-7-F | SOT-323 | $3000 /$ Tape \& Reel |
| BAS40W-05-7-F | SOT-323 | $300 /$ Tape \& Reel |
| BAS40W-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 |  |
| $\mathbf{L}$ | 0.25 | 0.40 | 0.30 |  |
| $\mathbf{M}$ | 0.10 | 0.18 | 0.11 |  |
| $\mathbf{\alpha}$ | $0^{\circ}$ | $8^{\circ}$ | - |  |
| $\mathbf{A l l}$ Dimensions in $\mathbf{~ m m}$ |  |  |  |  |
|  |  |  |  |  |

## Suggested Pad Layout



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

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[^0]:    Notes: 1. Device mounted on FR4 PC board with recommended pad layout, 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.
    . 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.

