



**THE DATASHEET OF
BAS20W-7-F**



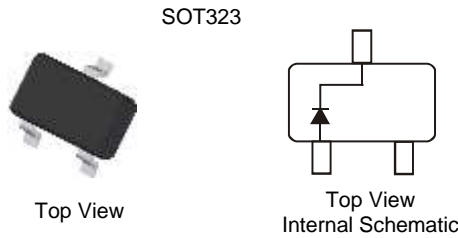
SURFACE MOUNT FAST SWITCHING DIODE

Features

- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- High Conductance
- **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**
- **An Automotive-Compliant Part is Available Under Separate Data Sheet ([BAS21WQ](#))**

Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead-Free Plating (Matte Tin Finish Annealed over Alloy 42 Leadframe)
- Weight: 0.006 grams (Approximate)

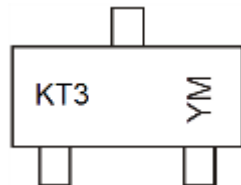


Ordering Information (Note 4)

| Part Number | Compliance | Case | Packaging |
|-------------|------------|--------|--------------------|
| BAS19W-7-F | AEC-Q101 | SOT323 | 3,000/Tape & Reel |
| BAS20W-7-F | AEC-Q101 | SOT323 | 3,000/Tape & Reel |
| BAS21W-7-F | AEC-Q101 | SOT323 | 3,000/Tape & Reel |
| BAS21W-13-F | AEC-Q101 | SOT323 | 10,000/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 <http://www.diodes.com/products/packages.html>.

Marking Information



KT3 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year ex: F = 2018
 M = Month ex: 9 = September

Date Code Key

| Year | 2000 | 2001 | ... | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|------|------|------|-----|------|------|------|------|------|------|------|------|------|------|
| Code | L | M | ... | F | G | H | I | J | K | L | M | N | O |

| 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 | BAS19W | BAS20W | BAS21W | Unit |
|---|---------------------|--------|--------|--------|------|
| Repetitive Peak Reverse Voltage | V _{RRM} | 120 | 200 | 250 | V |
| Working Peak Reverse Voltage | V _{RWM} | 100 | 150 | 200 | V |
| DC Blocking Voltage | V _R | | | | |
| RMS Reverse Voltage | V _{R(RMS)} | 71 | 106 | 141 | V |
| Forward Continuous Current (Note 5) | I _{FM} | 400 | | | mA |
| Average Rectified Output Current (Note 5) | I _O | 200 | | | mA |
| Non-Repetitive Peak Forward Surge Current | I _{FSM} | | | | A |
| @ t = 1.0μs | | | | | |
| @ t = 1.0s | | 2.5 | | | |
| | | 0.5 | | | |
| Repetitive Peak Forward Surge Current | I _{FRM} | 625 | | | mA |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation | P _D | 200 | mW |
| Thermal Resistance Junction to Ambient Air (Note 5) | R _{θJA} | 625 | °C/W |
| Operating and Storage Temperature Range | T _J , 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 6) | V _{(BR)R} | 120 | — | V | I _R = 100μA |
| BAS19W | | 200 | — | | |
| BAS20W | | 250 | — | | |
| BAS21W | | | | | |
| Forward Voltage | V _F | — | 1.0 1.25 | V | I _F = 100mA I _F = 200mA |
| Reverse Current @ Rated DC Blocking Voltage (Note 6) | I _R | — | 100 15 | nA μA | T _J = +25°C T _J = +100°C |
| Total Capacitance | C _T | — | 5.0 | pF | V _R = 0, f = 1.0MHz |
| Reverse Recovery Time | t _{RR} | — | 50 | ns | I _F = I _R = 30mA, I _{RR} = 0.1 x I _R , R _L = 100Ω |

- Notes:
- Part mounted on FR-4 PC board with minimum recommended pad layout per Diodes Inc.'s website at <http://www.diodes.com/package-outlines.html>.
I_{FM}, I_O are valid provided that terminals are kept at ambient temperature.
 - Short duration pulse test used to minimize self-heating effect.

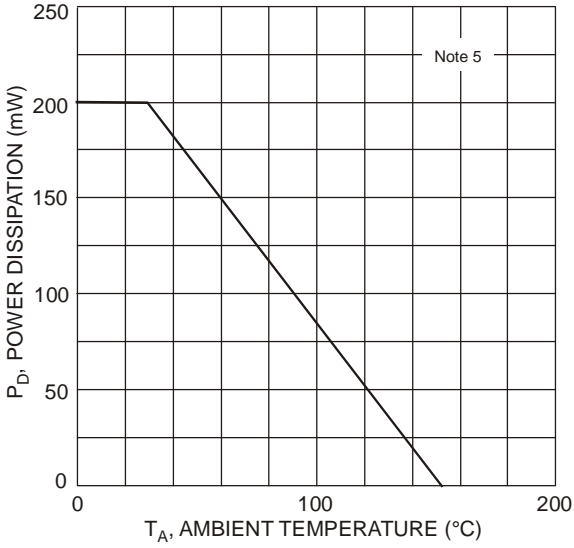


Fig. 1 Power Derating Curve

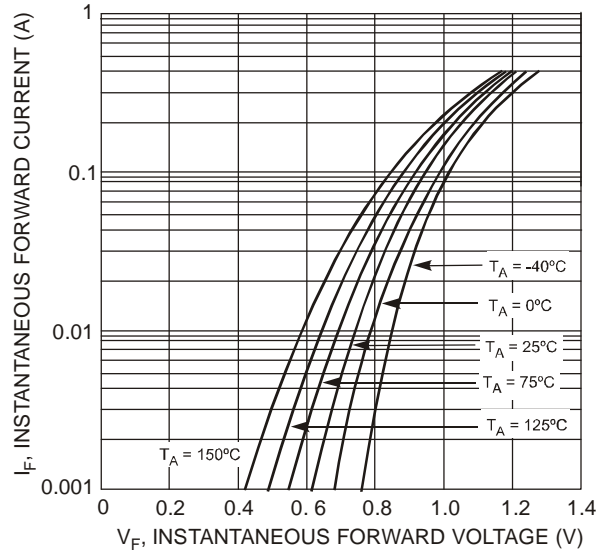


Fig. 2 Typical Forward Characteristics

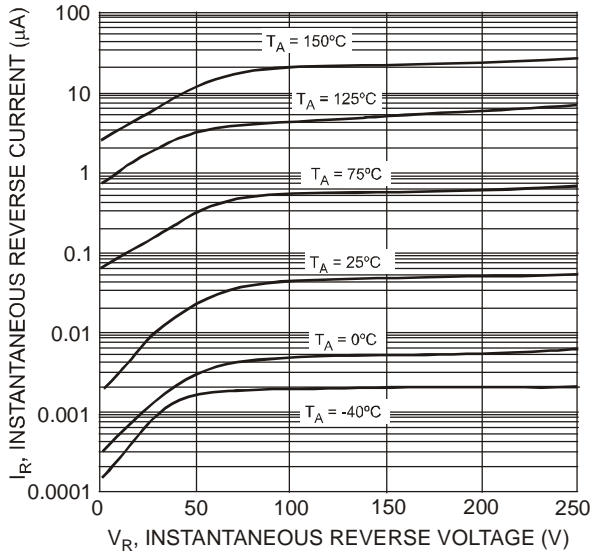


Fig. 3 Typical Reverse Characteristics

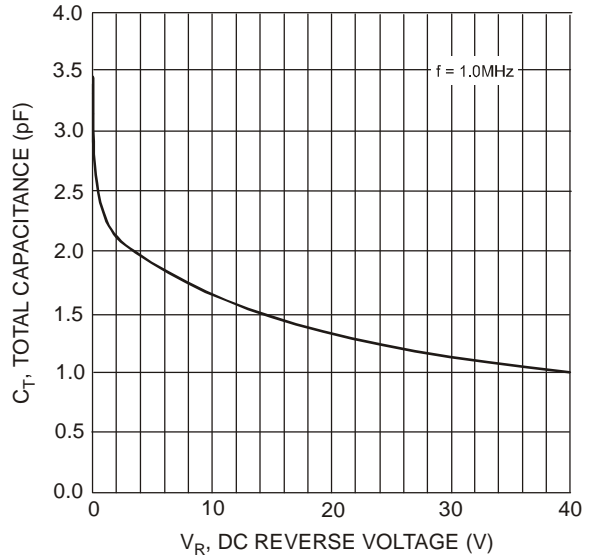
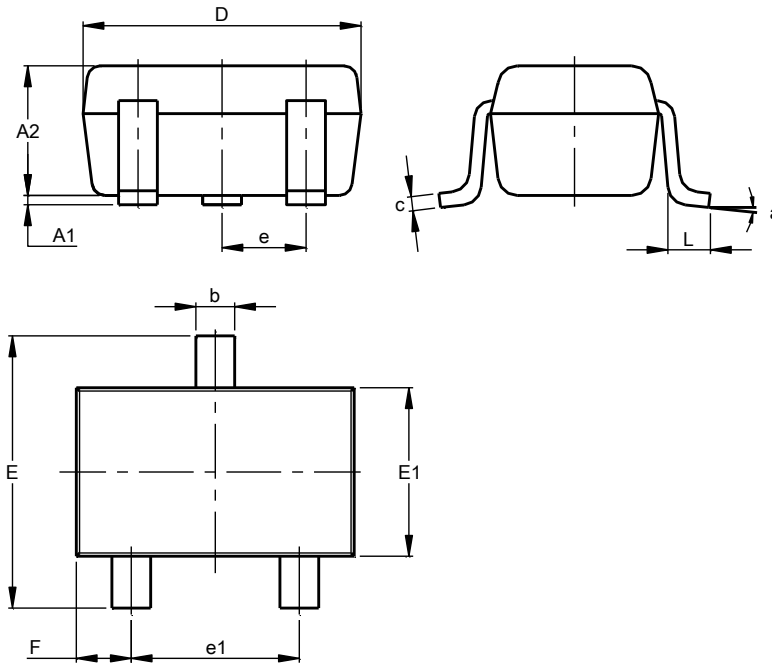


Fig. 4 Total Capacitance vs. Reverse Voltage

Package Outline Dimensions

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

SOT323

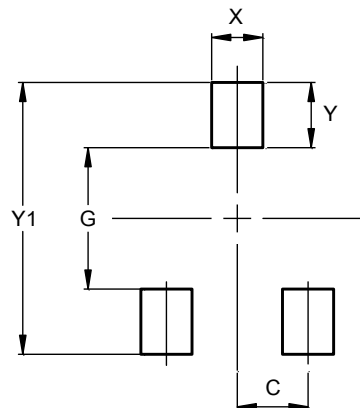


| SOT323 | | | |
|----------------------|-----------|-------|-------|
| Dim | Min | Max | Typ |
| A1 | 0.00 | 0.10 | 0.05 |
| A2 | 0.90 | 1.00 | 0.95 |
| b | 0.25 | 0.40 | 0.30 |
| c | 0.10 | 0.18 | 0.11 |
| D | 1.80 | 2.20 | 2.15 |
| E | 2.00 | 2.20 | 2.10 |
| E1 | 1.15 | 1.35 | 1.30 |
| e | 0.650 BSC | | |
| e1 | 1.20 | 1.40 | 1.30 |
| F | 0.375 | 0.475 | 0.425 |
| L | 0.25 | 0.40 | 0.30 |
| a | 0° | 8° | — |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

SOT323



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.650 |
| G | 1.300 |
| X | 0.470 |
| Y | 0.600 |
| Y1 | 2.500 |

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