

## Product Summary (@T<sub>A</sub> = +25°C)

| V <sub>R</sub> | I <sub>R</sub> | t <sub>rr</sub> |
|----------------|----------------|-----------------|
| 85V            | 5nA            | 3μs             |

## Description

The BAV116HWFQ is an 85V, 5nA and 3μs switching diode that is optimized for ultra-low leakage current.

## Applications

It is ideally suited for use in applications such as the following:

- Mobile
- Portable Electronics
- Consumer Electronics
- Automotive

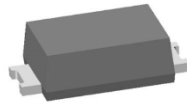
## Features

- Ultra Low Leakage Current (5nA @ V<sub>R</sub> = 75V)
- Flat Leadframe Design for Improved Thermal Transfer
- Low Capacitance
- **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)**

## Mechanical Data

- Case: SOD123F
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Bar
- Terminals: Matte Tin Finish Annealed over Copper Alloy Leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.018 grams (Approximate)

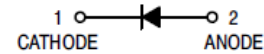
### SOD123F



Top View



Bottom View



## Ordering Information (Note 5)

| Product      | Compliance | Case    | Packaging         |
|--------------|------------|---------|-------------------|
| BAV116HWFQ-7 | Automotive | SOD123F | 3,000/Tape & Reel |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See [http://www.diodes.com/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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 [http://www.diodes.com/quality/product\\_compliance\\_definitions/](http://www.diodes.com/quality/product_compliance_definitions/).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information

### SOD123F



TW = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex.: C = 2015)  
 M = Month (ex: O = October)  
 Bar Denotes Cathode Side

### Date Code Key

| Year | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|------|------|------|------|------|------|------|------|
| Code | C    | D    | E    | F    | G    | H    | I    |

| 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>    | 85          | V    |
| Working Peak Reverse Voltage              | V <sub>RWM</sub>    |             |      |
| DC Blocking Voltage                       | V <sub>R</sub>      |             |      |
| RMS Reverse Voltage                       | V <sub>R(RMS)</sub> | 60          | V    |
| Forward Continuous Current (Note 6)       | I <sub>FM</sub>     | 215         | mA   |
| Repetitive Peak Forward Current           | I <sub>FRM</sub>    | 500         | mA   |
| Non-Repetitive Peak Forward Surge Current | I <sub>FSM</sub>    | @ t = 1.0μs | 4.0  |
|   |                     | @ t = 1.0ms | 1.0  |
|   |                     | @ t = 1.0s  | 0.5  |

**Thermal Characteristics**

| Characteristic                                      | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                          | P <sub>D</sub>                    | 375         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 330         | °C/W |
| Thermal Resistance Junction to Solder Point         | R <sub>θJSP</sub>                 | 70          | °C/W |
| Operating and Storage Temperature Range             | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                     | Symbol             | Min | Typ | Max  | Unit | Test Condition  |
|------------------------------------|--------------------|-----|-----|------|------|---|
| Reverse Breakdown Voltage (Note 7) | V <sub>(BR)R</sub> | 85  | —   | —    | V    | I <sub>R</sub> = 100μA  |
| Forward Voltage                    | V <sub>F</sub>     | —   | —   | 0.9  | V    | I <sub>F</sub> = 1.0mA  |
|                                    |                    |     |     | 1.0  |      | I <sub>F</sub> = 10mA   |
|                                    |                    |     |     | 1.1  |      | I <sub>F</sub> = 50mA   |
|                                    |                    |     |     | 1.25 |      | I <sub>F</sub> = 150mA  |
| Leakage Current (Note 7)           | I <sub>R</sub>     | —   | —   | 5.0  | nA   | V <sub>R</sub> = 75V  |
|                                    |                    |     |     | 80   | nA   | V <sub>R</sub> = 75V, T <sub>J</sub> = +150°C   |
| Total Capacitance                  | C <sub>T</sub>     | —   | 2   | —    | pF   | V <sub>R</sub> = 0, f = 1.0MHz  |
| Reverse Recovery Time              | t <sub>rr</sub>    | —   | —   | 3.0  | μs   | I <sub>F</sub> = I <sub>R</sub> = 10mA,<br>I <sub>rr</sub> = 0.1 x I <sub>R</sub> , R <sub>L</sub> = 100Ω |

Notes: 6. Part mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.  
7. Short duration pulse test used to minimize self-heating effect.

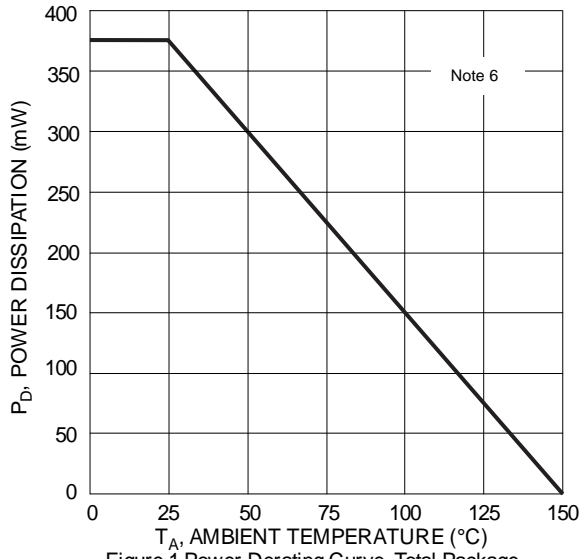


Figure 1 Power Derating Curve, Total Package

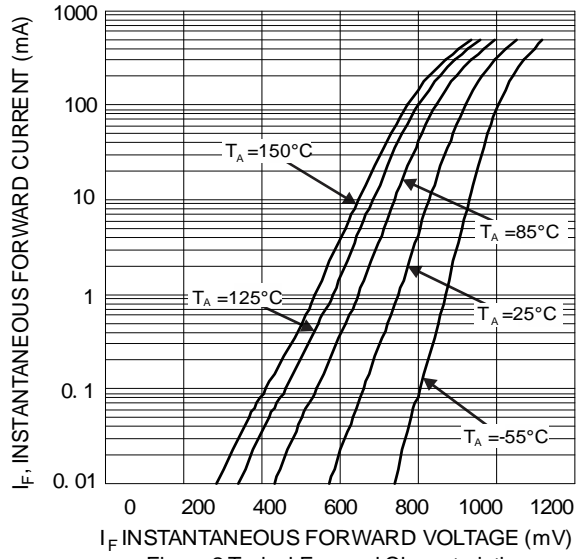


Figure 2 Typical Forward Characteristics

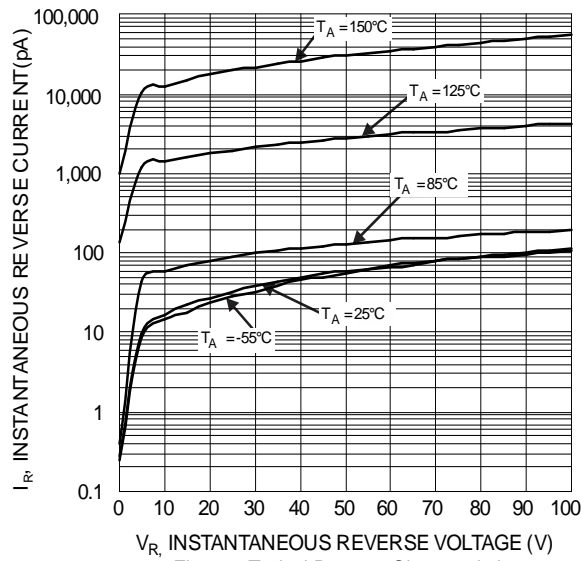


Figure 3 Typical Reverse Characteristics

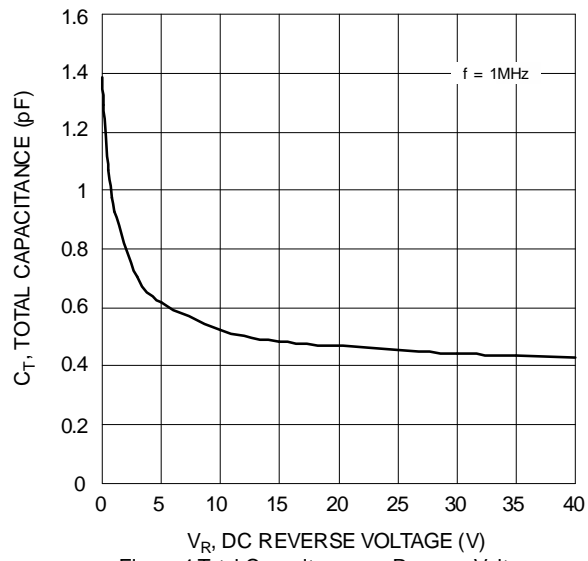
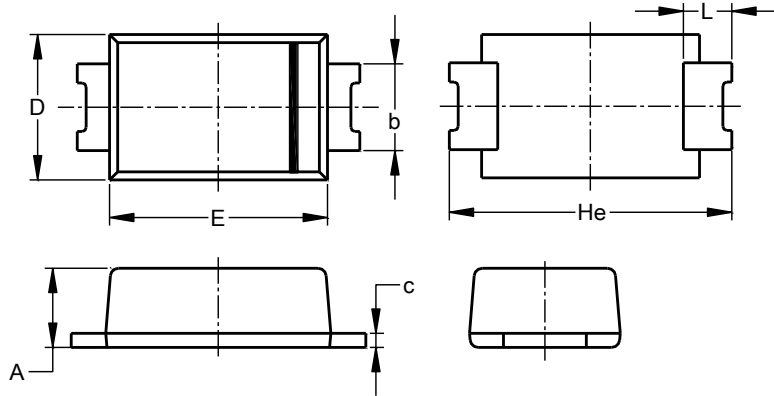


Figure 4 Total Capacitance vs. Reverse Voltage

**Package Outline Dimensions**

Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.

**SOD123F (Type B)**

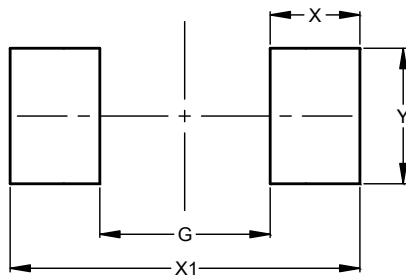


| SOD123F (Type B)     |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.81 | 1.15 | —    |
| b                    | 0.80 | 1.35 | —    |
| c                    | 0.05 | 0.30 | —    |
| D                    | 1.70 | 1.90 | 1.80 |
| E                    | 2.60 | 2.80 | 2.70 |
| He                   | 3.30 | 3.70 | 3.50 |
| L                    | 0.35 | 0.85 | —    |
| All Dimensions in mm |      |      |      |

**Suggested Pad Layout**

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.

**SOD123F (Type B)**



| Dimensions | Value (in mm) |
|------------|---------------|
| G          | 1.90          |
| X          | 1.00          |
| X1         | 3.90          |
| Y          | 1.50          |

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