



**THE DATASHEET OF  
FAN53611UC123X**



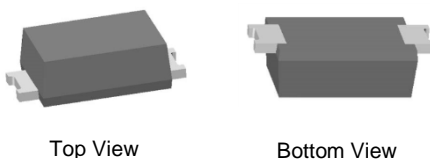
## Features

- Flat Lead Package Design for Low Profile and High Power Dissipation
- **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**

## Mechanical Data

- Case: SOD123F (Type B)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Band
- Terminals: Finish - Matte Tin Annealed over Copper Alloy Leadframe. Solderable per MIL-STD-202, Method 208 **e3**
- Polarity: Cathode Band
- Weight: 0.015 grams (Approximate)

SOD123F (Type B)



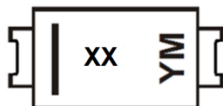
## Ordering Information (Note 4)

| Part Number      | Compliance | Case             | Packaging         |
|------------------|------------|------------------|-------------------|
| (Type Number)-7* | AEC-Q101   | SOD123F (Type B) | 3,000/Tape & Reel |

\*Add "-7" to the appropriate type number in Electrical Characteristics Table, example: 6.2V Zener = BZT52HC6V2WF-7.

- 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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



XX = Product Type Marking Code  
(See Electrical Characteristics Table)  
YM = Date Code Marking  
Y = Year (ex: C = 2015)  
M = Month (ex: 9 = September)

### 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 |
|--|----------------|-------|------|
| Forward Voltage (Note 5) @ I <sub>F</sub> = 10mA | V <sub>F</sub> | 0.9   | V    |
| Forward Current                                  | I <sub>F</sub> | 250   | mA   |

**Thermal Characteristics**

| Characteristic                                       | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                           | P <sub>D</sub>                    | 375         | mW   |
| Power Dissipation (Note 7)                           | P <sub>D</sub>                    | 830         | mW   |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 330         | °C/W |
| Thermal Resistance, Junction to Ambient Air (Note 7) | R <sub>θJA</sub>                  | 150         | °C/W |
| Operating and Storage Temperature Range              | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

- Note:
5. Short duration pulse test used to minimize self-heating effect.
  6. Device mounted on FR-4 PCB with minimum recommended pad layout, as shown in Diodes Incorporated's Suggested Pad Layout document, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
  7. Device mounted on FR-4 PCB with mounting pad for cathode 1cm<sup>2</sup>.

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

| Type Number  | Marking Codes | Zener Voltage Range (Note 8)     |         |                 | Maximum Zener Impedance (Note 9)  |                                   |                 | Temperature Coefficient          |             | Total Capacitance                              | Maximum Reverse Current (Note 8) |                  |
|--------------|---------------|----------------------------------|---------|-----------------|-----------------------------------|-----------------------------------|-----------------|----------------------------------|-------------|--|----------------------------------|------------------|
|              |               | V <sub>Z</sub> @ I <sub>ZT</sub> |         | I <sub>ZT</sub> | Z <sub>ZT</sub> @ I <sub>ZT</sub> | Z <sub>ZK</sub> @ I <sub>ZK</sub> | I <sub>ZK</sub> | T <sub>C</sub> @ I <sub>ZT</sub> |             | C <sub>T</sub> @ f = 1MHz, V <sub>R</sub> = 0V | I <sub>R</sub>                   | @ V <sub>R</sub> |
|              |               | Min (V)                          | Max (V) | mA              | Ω                                 |                                   |                 | mA                               | Min (mV/°C) | Max (mV/°C)                                    | Max (pF)                         | μA               |
| BZT52HC2V4WF | WX            | 2.2                              | 2.6     | 5               | 85                                | 400                               | 1               | -3.5                             | 0.0         | 450  | 50                               | 1                |
| BZT52HC2V7WF | W1            | 2.5                              | 2.9     | 5               | 83                                | 500                               | 1               | -3.5                             | 0.0         | 450  | 20                               | 1                |
| BZT52HC3V0WF | W2            | 2.8                              | 3.2     | 5               | 95                                | 500                               | 1               | -3.5                             | 0.0         | 450  | 10                               | 1                |
| BZT52HC3V3WF | W3            | 3.1                              | 3.5     | 5               | 95                                | 500                               | 1               | -3.5                             | 0.0         | 450  | 5                                | 1                |
| BZT52HC3V6WF | W4            | 3.4                              | 3.8     | 5               | 95                                | 500                               | 1               | -3.5                             | 0.0         | 450  | 5                                | 1                |
| BZT52HC3V9WF | W5            | 3.7                              | 4.1     | 5               | 95                                | 500                               | 1               | -3.5                             | 0.0         | 450  | 3                                | 1                |
| BZT52HC4V3WF | W6            | 4.0                              | 4.6     | 5               | 95                                | 500                               | 1               | -3.5                             | 0.0         | 450  | 3                                | 1                |
| BZT52HC4V7WF | W7            | 4.4                              | 5.0     | 5               | 78                                | 500                               | 1               | -3.5                             | 0.2         | 300  | 3                                | 2                |
| BZT52HC5V1WF | W8            | 4.8                              | 5.4     | 5               | 60                                | 480                               | 1               | -2.7                             | 1.2         | 300  | 2                                | 2                |
| BZT52HC5V6WF | W9            | 5.2                              | 6.0     | 5               | 40                                | 400                               | 1               | -2.0                             | 2.5         | 300  | 1                                | 2                |
| BZT52HC6V2WF | WA            | 5.8                              | 6.6     | 5               | 10                                | 150                               | 1               | 0.4                              | 3.7         | 200  | 3                                | 4                |
| BZT52HC6V8WF | WB            | 6.4                              | 7.2     | 5               | 8                                 | 80                                | 1               | 1.2                              | 4.5         | 200  | 2                                | 4                |
| BZT52HC7V5WF | WC            | 7.0                              | 7.9     | 5               | 10                                | 80                                | 1               | 2.5                              | 5.3         | 150  | 1                                | 5                |
| BZT52HC8V2WF | WD            | 7.7                              | 8.7     | 5               | 10                                | 80                                | 1               | 3.2                              | 6.2         | 150  | 0.7                              | 5                |
| BZT52HC9V1WF | WE            | 8.5                              | 9.6     | 5               | 10                                | 100                               | 1               | 3.8                              | 7.0         | 150  | 0.5                              | 6                |
| BZT52HC10WF  | WF            | 9.4                              | 10.6    | 5               | 10                                | 70                                | 1               | 4.5                              | 8.0         | 90   | 0.2                              | 7                |
| BZT52HC11WF  | WG            | 10.4                             | 11.6    | 5               | 10                                | 70                                | 1               | 5.4                              | 9.0         | 85   | 0.1                              | 8                |
| BZT52HC12WF  | WH            | 11.4                             | 12.7    | 5               | 10                                | 90                                | 1               | 6.0                              | 10.0        | 85   | 0.1                              | 8                |
| BZT52HC13WF  | WI            | 12.4                             | 14.1    | 5               | 10                                | 110                               | 1               | 7.0                              | 11.0        | 80   | 0.1                              | 8                |
| BZT52HC15WF  | WJ            | 13.8                             | 15.6    | 5               | 15                                | 110                               | 1               | 9.2                              | 13.0        | 75   | 0.05                             | 10.5             |
| BZT52HC16WF  | WK            | 15.3                             | 17.1    | 5               | 20                                | 170                               | 1               | 10.4                             | 14.0        | 75   | 0.05                             | 11.2             |
| BZT52HC18WF  | WL            | 16.8                             | 19.1    | 5               | 20                                | 170                               | 1               | 12.4                             | 16.0        | 70   | 0.05                             | 12.6             |
| BZT52HC20WF  | WM            | 18.8                             | 21.2    | 5               | 20                                | 220                               | 1               | 14.4                             | 18.0        | 60   | 0.05                             | 14.0             |
| BZT52HC22WF  | WN            | 20.8                             | 23.3    | 5               | 25                                | 220                               | 1               | 16.4                             | -           | 60   | 0.05                             | 15.4             |
| BZT52HC24WF  | WO            | 22.8                             | 25.6    | 5               | 30                                | 220                               | 1               | 18.4                             | -           | 55   | 0.05                             | 16.8             |
| BZT52HC27WF  | WP            | 25.1                             | 28.9    | 2               | 40                                | 250                               | 1               | 21.4                             | -           | 50   | 0.05                             | 18.9             |
| BZT52HC30WF  | WQ            | 28.0                             | 32.0    | 2               | 40                                | 250                               | 1               | 24.4                             | -           | 50   | 0.05                             | 21.0             |
| BZT52HC33WF  | WR            | 31.0                             | 35.0    | 2               | 40                                | 250                               | 1               | 27.4                             | -           | 45   | 0.05                             | 23.1             |
| BZT52HC36WF  | WS            | 34.0                             | 38.0    | 2               | 60                                | 250                               | 1               | 30.4                             | -           | 45   | 0.05                             | 25.2             |
| BZT52HC39WF  | WT            | 37.0                             | 41.0    | 2               | 75                                | 300                               | 1               | 33.4                             | -           | 45   | 0.05                             | 27.3             |
| BZT52HC43WF  | WU            | 40.0                             | 46.0    | 2               | 80                                | 325                               | 1               | 37.6                             | -           | 40   | 0.05                             | 30.1             |
| BZT52HC47WF  | WV            | 44.0                             | 50.0    | 2               | 90                                | 325                               | 1               | 42.0                             | -           | 40   | 0.05                             | 32.9             |

Notes: 8. Short duration pulse test used to minimize self-heating effect.  
9. f = 1kHz.

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Figure 1 Power Derating Curve

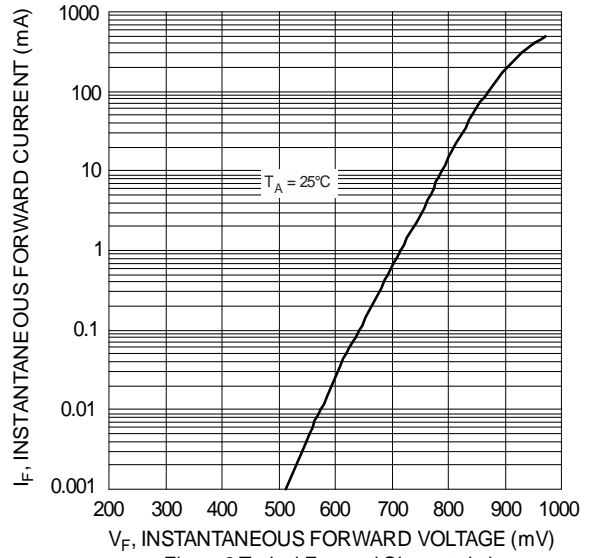


Figure 2 Typical Forward Characteristics

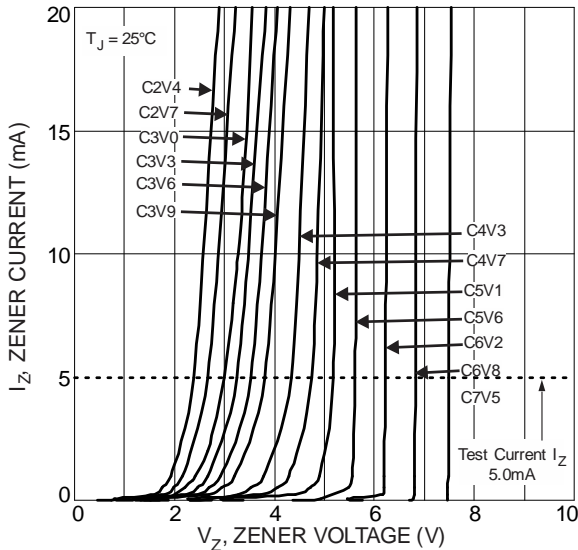


Figure 3 Typical Zener Breakdown Characteristics

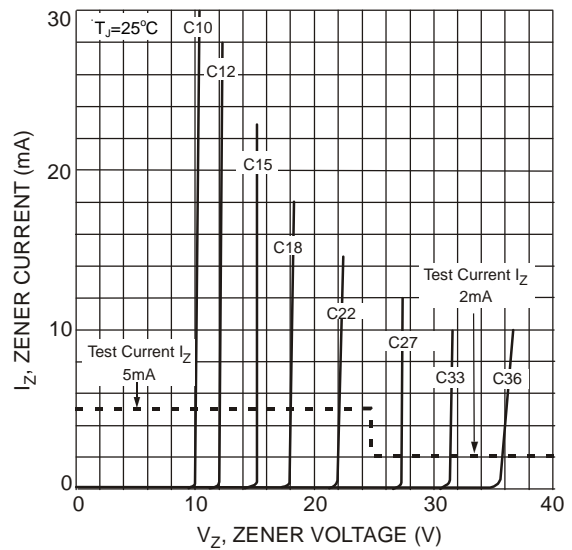


Figure 4 Typical Zener Breakdown Characteristics

**Package Outline Dimensions**

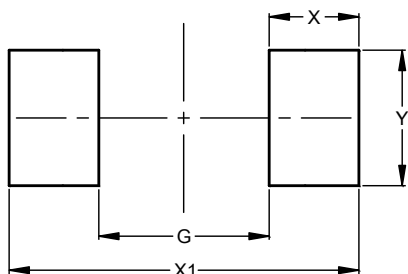
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



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



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

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