

**DUAL SURFACE MOUNT LOW LEAKAGE DIODE**
**Features**

- Surface Mount Package Ideally Suited for Automated Insertion
- Very Low Leakage Current
- **Lead, Halogen, and Antimony Free, RoHS Compliant (Note 1)**
- **"Green" Device (Notes 2 & 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

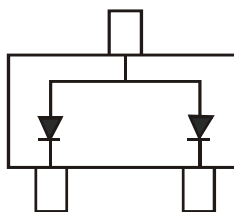
**Mechanical Data**

- Case: SOT23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Polarity: See Diagram
- Weight: 0.008 grams (approximate)

SOT23



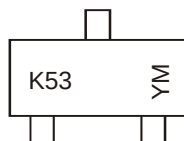
Top View


 Top View  
 Internal Schematic

**Ordering Information** (Note 4)

| Part Number  | Qualification | Case  | Packaging          |
|--------------|---------------|-------|--------------------|
| BAW156-7-F   | Commercial    | SOT23 | 3,000/Tape & Reel  |
| BAW156-13-F  | Commercial    | SOT23 | 10,000/Tape & Reel |
| BAW156Q-7-F  | Automotive    | SOT23 | 3,000/Tape & Reel  |
| BAW156Q-13-F | Automotive    | SOT23 | 10,000/Tape & Reel |

- Notes:
1. No purposefully added lead.
  2. Product manufactured with Date Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Product manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.
  3. Diodes Inc.'s "Green" Policy can be found on our website at <http://www.diodes.com>
  4. For packaging details, go to our website at <http://www.diodes.com>.

**Marking Information**


K53 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: Y = 2011)  
 M = Month (ex: 9 = September)

**Date Code Key**

| Year | 1998 | 1999 | ..... | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | J    | K    | ..... | T    | U    | V    | W    | X    | Y    | Z    | A    | B    | C    | D    | E    |

| 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                | I <sub>FM</sub>     | 160   | mA   |
| (Note 5)                                  |                     | 140   |      |
| Repetitive Peak Forward Current (Note 5)  | I <sub>FRM</sub>    | 500   | mA   |
| Non-Repetitive Peak Forward Surge Current | I <sub>FSM</sub>    | 4.0   | A    |
| @ t = 1.0μs                               |                     | 1.0   |      |
| @ t = 1.0ms                               |                     | 0.5   |      |
| @ t = 1.0s                                |                     |       |      |

**Thermal Characteristics**

| Characteristic                                      | Symbol                            | Value       | Unit |
|-----------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                          | P <sub>D</sub>                    | 250         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 5) | R <sub>θJA</sub>                  | 500         | °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 6) | V <sub>(BR)R</sub> | 85  | —   | —                          | V        | I <sub>R</sub> = 100μA                                                                                    |
| Forward Voltage                    | V <sub>F</sub>     | —   | —   | 0.90<br>1.0<br>1.1<br>1.25 | V        | I <sub>F</sub> = 1.0mA<br>I <sub>F</sub> = 10mA<br>I <sub>F</sub> = 50mA<br>I <sub>F</sub> = 150mA        |
| Leakage Current (Note 6)           | I <sub>R</sub>     | —   | —   | 5.0<br>80                  | nA<br>nA | V <sub>R</sub> = 75V<br>V <sub>R</sub> = 75V, T <sub>J</sub> = 150°C                                      |
| Total Capacitance                  | C <sub>T</sub>     | —   | 3   | —                          | 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: 5. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com>.  
 6. Short duration pulse test used to minimize self-heating effect.

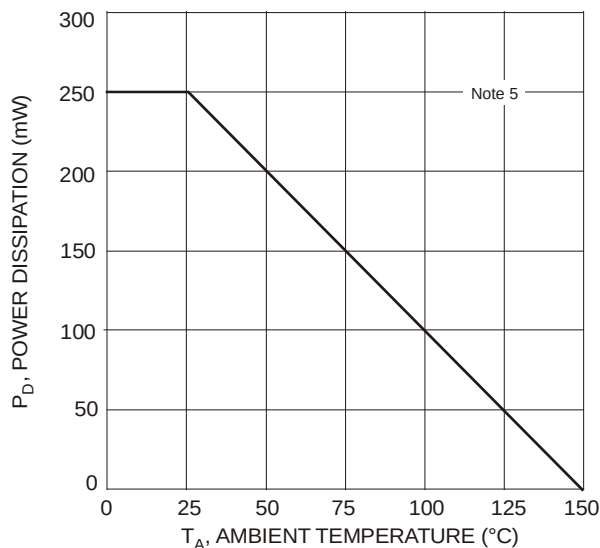


Fig. 1 Power Derating Curve, Total Package

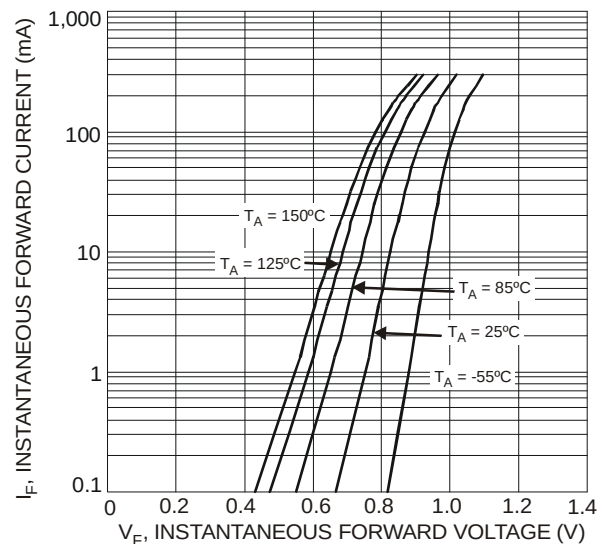


Fig. 2 Typical Forward Characteristics, Per Element

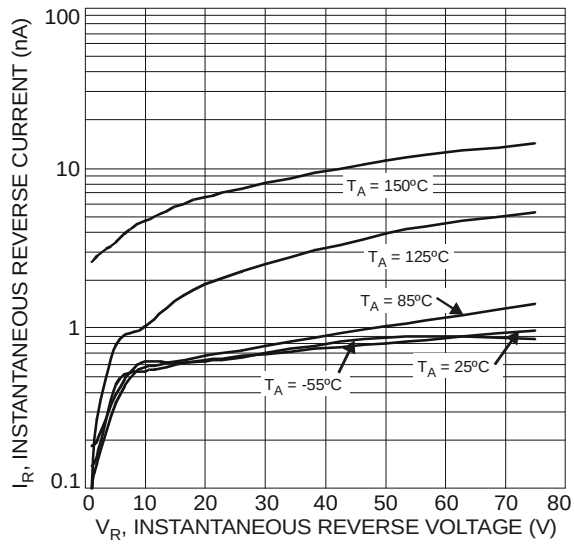


Fig. 3 Typical Reverse Characteristics, Per Element

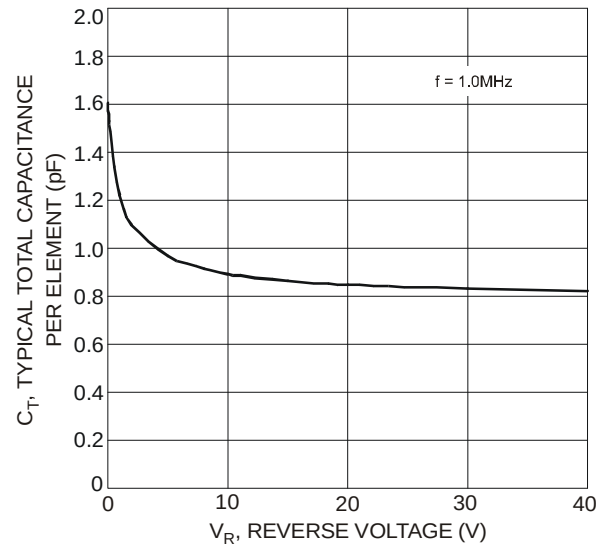
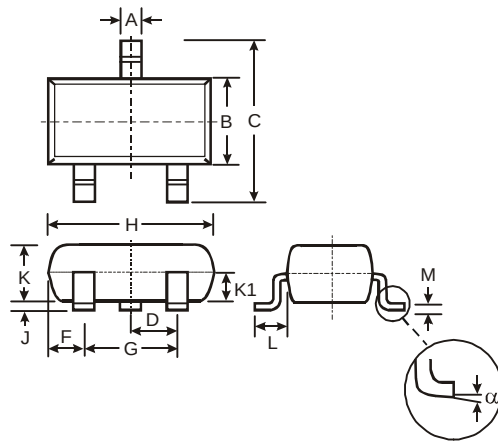


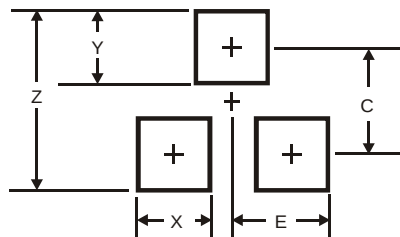
Fig. 4 Typical Capacitance vs. Reverse Voltage

## Package Outline Dimensions



| SOT23                |       |      |       |
|----------------------|-------|------|-------|
| Dim                  | Min   | Max  | Typ   |
| A                    | 0.37  | 0.51 | 0.40  |
| B                    | 1.20  | 1.40 | 1.30  |
| C                    | 2.30  | 2.50 | 2.40  |
| D                    | 0.89  | 1.03 | 0.915 |
| F                    | 0.45  | 0.60 | 0.535 |
| G                    | 1.78  | 2.05 | 1.83  |
| H                    | 2.80  | 3.00 | 2.90  |
| J                    | 0.013 | 0.10 | 0.05  |
| K                    | 0.903 | 1.10 | 1.00  |
| K1                   | -     | -    | 0.400 |
| L                    | 0.45  | 0.61 | 0.55  |
| M                    | 0.085 | 0.18 | 0.11  |
| $\alpha$             | 0°    | 8°   | -     |
| All Dimensions in mm |       |      |       |

## Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.9           |
| X          | 0.8           |
| Y          | 0.9           |
| C          | 2.0           |
| E          | 1.35          |

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