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## Features

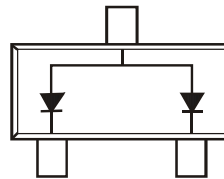
- Fast Switching Speed
- Surface Mount Package Ideally Suited for Automated Insertion
- For General Purpose Switching Applications
- Two Diode Elements Connected in a Common Anode Configuration
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

- Case: 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 ③
- Polarity: See Diagram
- Weight: 0.008 grams (approximate)



Top View



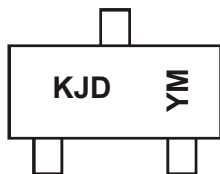
Top View  
Internal Schematic

## Ordering Information (Note 4)

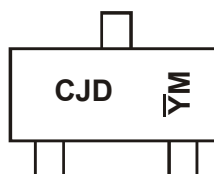
| Part Number | Compliance | Case  | Packaging          |
|-------------|------------|-------|--------------------|
| BAW56-7-F   | Standard   | SOT23 | 3,000/Tape & Reel  |
| BAW56-13-F  | Standard   | SOT23 | 10,000/Tape & Reel |
| BAW56Q-7-F  | Automotive | SOT23 | 3,000/Tape & Reel  |
| BAW56Q-13-F | Automotive | SOT23 | 10,000/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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



K = SAT (Shanghai Assembly / Test site)  
 JD = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: A = 2013)  
 M = Month (ex: 9 = September)



C = CAT (Chengdu Assembly / Test site)  
 JD = Product Type Marking Code  
 YM = Date Code Marking for Chengdu  
 Y = Year (ex: A = 2013)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year | 1998 | 1999 | 2000 | ..... | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|
| Code | J    | K    | L    | ..... | 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** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

| Characteristic                            | Symbol       | Value                  | Unit |   |
|---|--------------|------------------------|------|---|
| Non-Repetitive Peak Reverse Voltage       | $V_{RM}$     | 100                    | V    |   |
| Peak Repetitive Reverse Voltage           | $V_{RRM}$    | 75                     | V    |   |
| Working Peak Reverse Voltage              | $V_{RWM}$    |                        |      |   |
| DC Blocking Voltage                       | $V_R$        |                        |      |   |
| RMS Reverse Voltage                       | $V_{R(RMS)}$ | 53                     | V    |   |
| Forward Continuous Current (Note 5)       | $I_{FM}$     | 300                    | mA   |   |
| Non-Repetitive Peak Forward Surge Current | $I_{FSM}$    | @ $t = 1.0\mu\text{s}$ | 2.0  | A |
|   |              | @ $t = 1.0\text{s}$    | 1.0  |   |

**Thermal Characteristics**

| Characteristic                                      | Symbol          | Value       | Unit               |
|---|-----------------|-------------|--------------------|
| Power Dissipation (Note 5)                          | $P_D$           | 350         | mW                 |
| Thermal Resistance Junction to Ambient Air (Note 5) | $R_{\theta JA}$ | 357         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range             | $T_J, T_{STG}$  | -65 to +150 | $^\circ\text{C}$   |

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

| Characteristic                     | Symbol      | Min | Max                           | Unit  | Test Condition   |
|------------------------------------|-------------|-----|-------------------------------|---|--|
| Reverse Breakdown Voltage (Note 6) | $V_{(BR)R}$ | 75  | —                             | V   | $I_R = 2.5\mu\text{A}$   |
| Forward Voltage                    | $V_F$       | —   | 0.715<br>0.855<br>1.0<br>1.25 | V   | $I_F = 1.0\text{mA}$<br>$I_F = 10\text{mA}$<br>$I_F = 50\text{mA}$<br>$I_F = 150\text{mA}$   |
| Reverse Current (Note 6)           | $I_R$       | —   | 2.5<br>50<br>30<br>25         | $\mu\text{A}$<br>$\mu\text{A}$<br>$\mu\text{A}$<br>nA | $V_R = 75\text{V}$<br>$V_R = 75\text{V}, T_J = +150^\circ\text{C}$<br>$V_R = 25\text{V}, T_J = +150^\circ\text{C}$<br>$V_R = 20\text{V}$ |
| Total Capacitance                  | $C_T$       | —   | 2.0                           | pF  | $V_R = 0, f = 1.0\text{MHz}$   |
| Reverse Recovery Time              | $t_{rr}$    | —   | 4.0                           | ns  | $I_F = I_R = 10\text{mA}$ ,<br>$I_{rr} = 0.1 \times I_R, R_L = 100\Omega$  |

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.



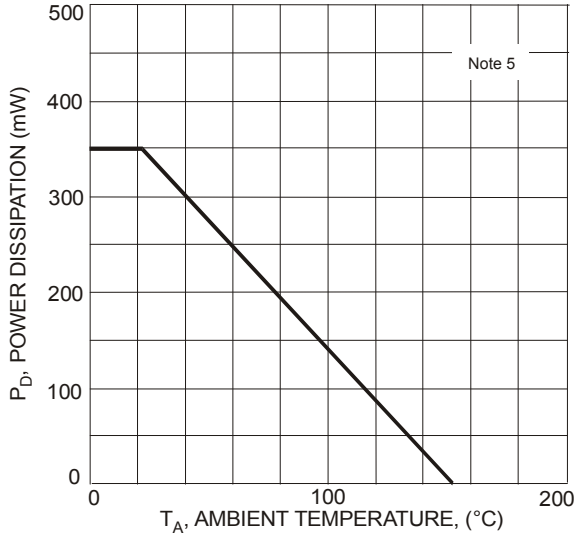


Fig. 1 Power Derating Curve, Total Package

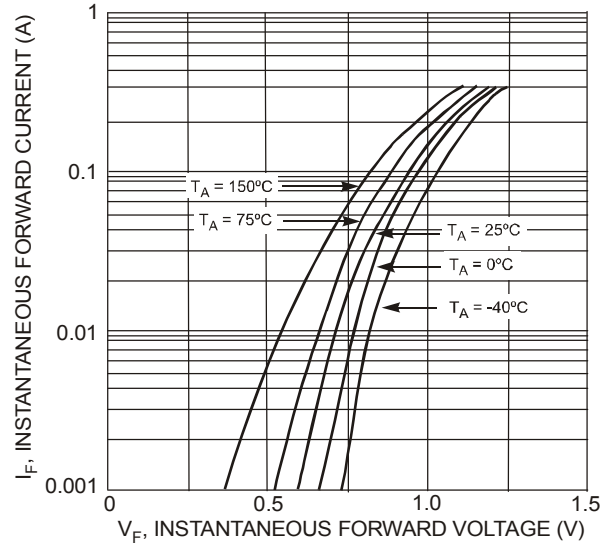


Fig. 2 Typical Forward Characteristics, Per Element

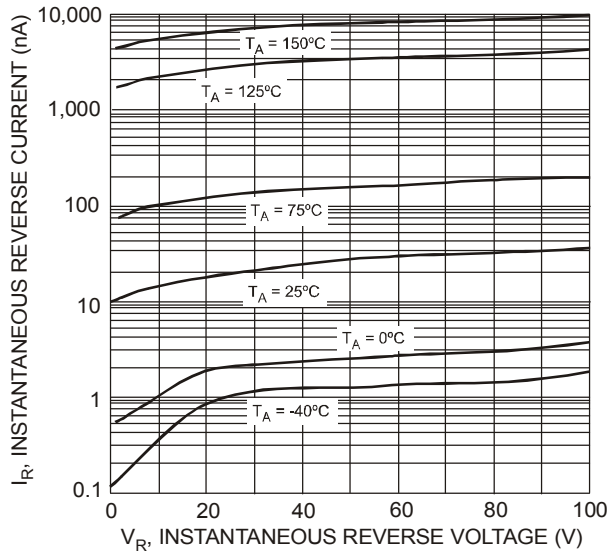


Fig. 3 Typical Reverse Characteristics, Per Element

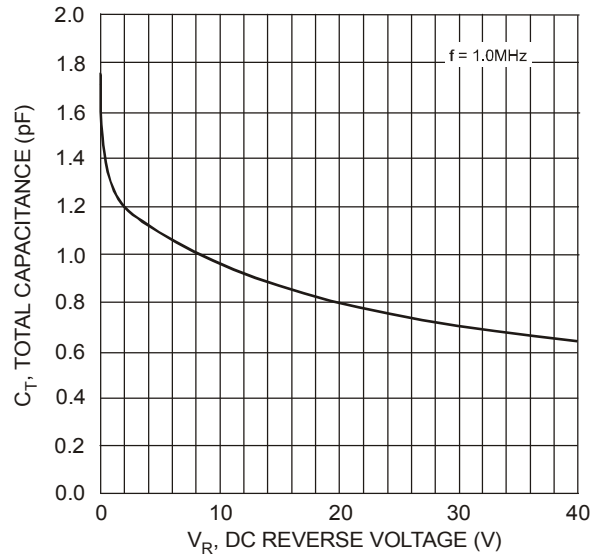
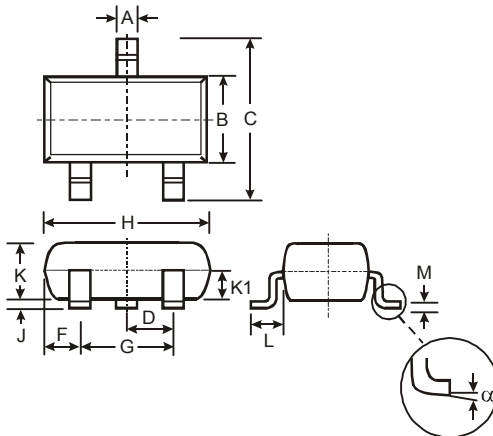


Fig. 4 Total Capacitance vs. Reverse Voltage, Per Element

## Package Outline Dimensions

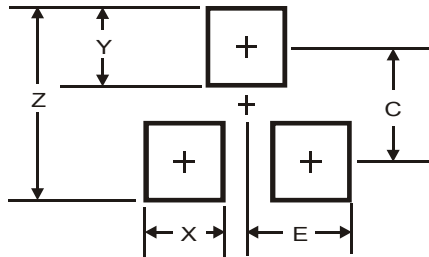
Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| 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

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



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

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