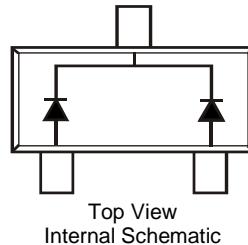


## Features

- 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 (Notes 3 & 4)**
- **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 208e3
- Polarity: See Diagram
- Weight: 0.008 grams (Approximate)



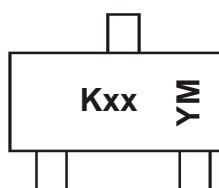
## Ordering Information (Note 5)

| Part Number | Compliance | Case  | Packaging          |
|-------------|------------|-------|--------------------|
| BAV70-7-F   | Standard   | SOT23 | 3000/Tape & Reel   |
| BAV70-13-F  | Standard   | SOT23 | 10,000/Tape & Reel |
| BAV70Q-7-F  | Automotive | SOT23 | 3000/Tape & Reel   |
| BAV70Q-13-F | Automotive | SOT23 | 10,000/Tape & Reel |

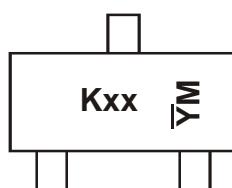
## Notes:

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 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. Products manufactured with Date Code 9W (week 39, 2009) and newer are built with Green Molding Compound. Products manufactured prior to Date Code 9W are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.
5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

## Marking Information



xx = Product Type Marking Code (xx=JJ)  
 YM = Date Code Marking for Shanghai  
       Assembly / Test site  
 Y = Year (ex: F = 2018)  
 M = Month (ex: 9 = September)



xx = Product Type Marking Code (xx=JJ)  
 YM = Date Code Marking for Chengdu  
       Assembly / Test site  
 Y = Year (ex: F = 2018)  
 M = Month (ex: 9 = September)

## Date Code Key

| Year  | 2000 | 2001 | ..... | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------|------|------|-------|------|------|------|------|------|------|------|------|------|------|
| Code  | L    | M    | ..... | A    | B    | C    | D    | E    | F    | G    | H    | I    | J    |
| 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                                     | $V_{RRM}$           |       |      |
| Working Peak Reverse Voltage  | $V_{RWM}$           | 75    | V    |
| DC Blocking Voltage   | $V_R$               |       |      |
| RMS Reverse Voltage   | $V_{R(\text{RMS})}$ | 53    | V    |
| Forward Continuous Current (Note 6)                                 | $I_{FM}$            | 300   | mA   |
| Average Rectified Output Current (Note 6)                           | $I_o$               | 150   | mA   |
| Repetitive Peak Forward Current                                     | $I_{FRM}$           | 450   | mA   |
| Non-Repetitive Peak Forward Surge Current<br>@ $t = 1.0\mu\text{s}$ | $I_{FSM}$           | 2.0   | A    |
| Non-Repetitive Peak Forward Surge Current<br>@ $t = 1.0\text{s}$    |                     | 1.0   |      |

**Thermal Characteristics**

| Characteristic                                      | Symbol          | Value       | Unit |
|---|-----------------|-------------|------|
| Power Dissipation (Note 6)                          | $P_D$           | 350         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 357         | °C/W |
| Operating and Storage Temperature Range             | $T_J, T_{STG}$  | -65 to +150 | °C   |

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

| Characteristic                     | Symbol      | Min | Max                           | Unit  | Test Condition   |
|------------------------------------|-------------|-----|-------------------------------|---|--|
| Reverse Breakdown Voltage (Note 7) | $V_{(BR)R}$ | 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 7)           | $I_R$       | —   | 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: 6. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com>.  
7. Short duration pulse test used to minimize self-heating effect.

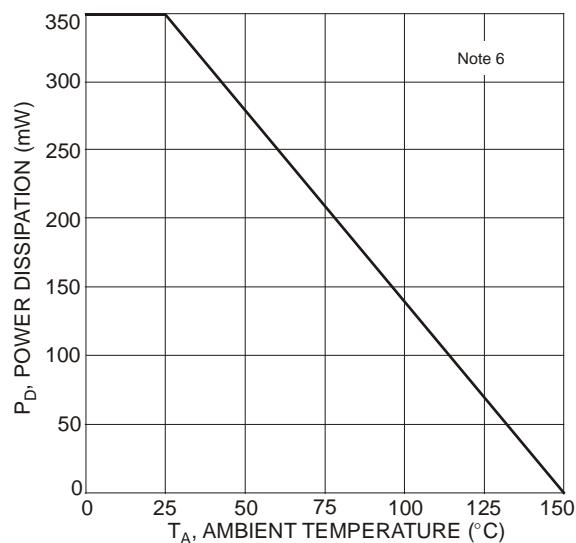


Fig. 1 Power Derating Curve, Total Package

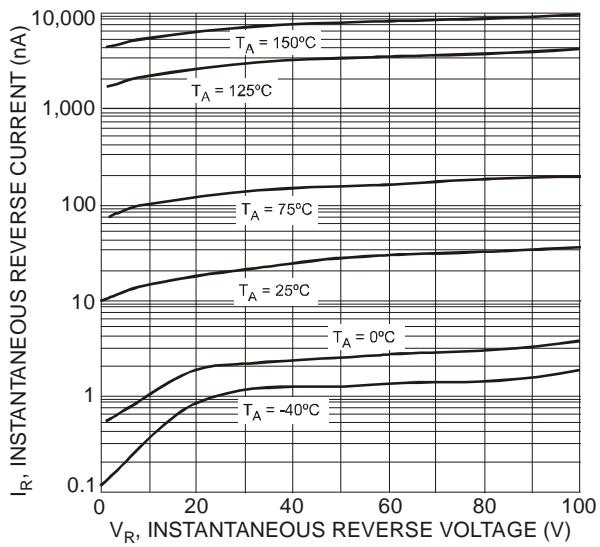


Fig. 3 Typical Reverse Characteristics, Per Element

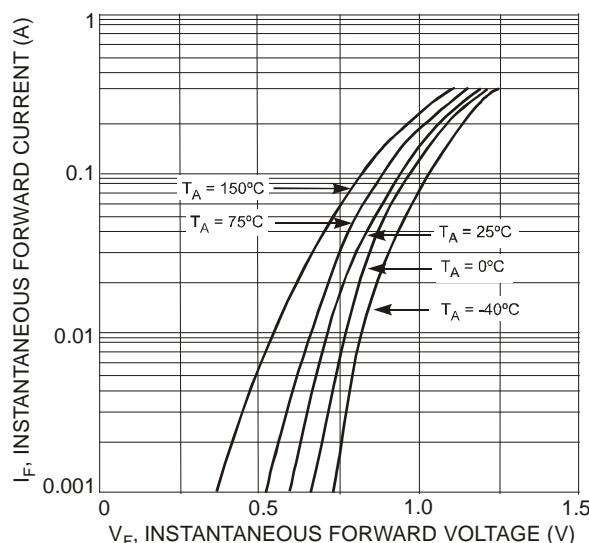


Fig. 2 Typical Forward Characteristics, Per Element

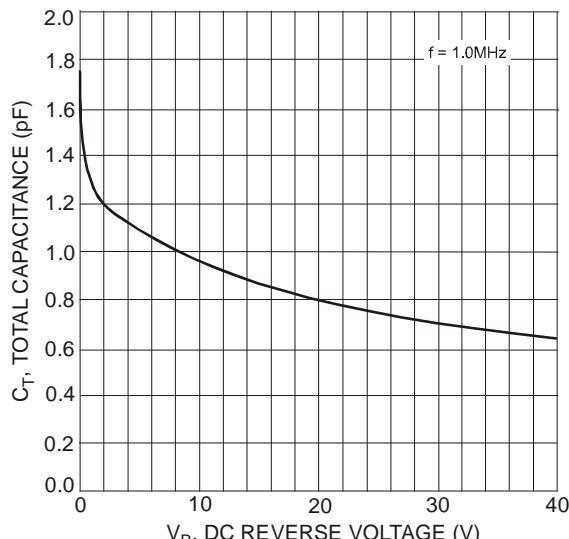
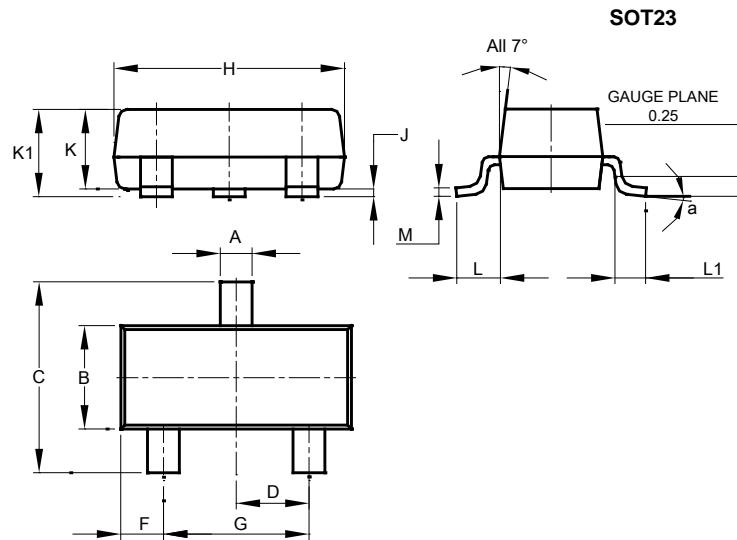


Fig. 4 Total Capacitance vs. Reverse Voltage, Per Element

## Package Outline Dimensions

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

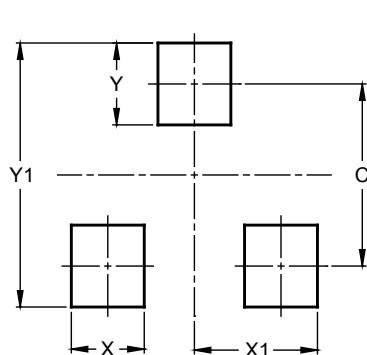


| SOT23     |       |       |       |
|-----------|-------|-------|-------|
| Dim       | Min   | Max   | Typ   |
| <b>A</b>  | 0.37  | 0.51  | 0.40  |
| <b>B</b>  | 1.20  | 1.40  | 1.30  |
| <b>C</b>  | 2.30  | 2.50  | 2.40  |
| <b>D</b>  | 0.89  | 1.03  | 0.915 |
| <b>F</b>  | 0.45  | 0.60  | 0.535 |
| <b>G</b>  | 1.78  | 2.05  | 1.83  |
| <b>H</b>  | 2.80  | 3.00  | 2.90  |
| <b>J</b>  | 0.013 | 0.10  | 0.05  |
| <b>K</b>  | 0.890 | 1.00  | 0.975 |
| <b>K1</b> | 0.903 | 1.10  | 1.025 |
| <b>L</b>  | 0.45  | 0.61  | 0.55  |
| <b>L1</b> | 0.25  | 0.55  | 0.40  |
| <b>M</b>  | 0.085 | 0.150 | 0.110 |
| <b>a</b>  | 0°    | 8°    | --    |

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>C</b>   | 2.0           |
| <b>X</b>   | 0.8           |
| <b>X1</b>  | 1.35          |
| <b>Y</b>   | 0.9           |
| <b>Y1</b>  | 2.9           |

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