

## 1A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

### Features

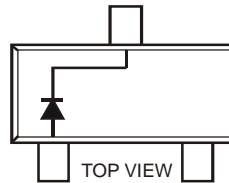
- Very Low Forward Voltage Drop
- High Conductance
- For Use in DC-DC Converter, PCMCIA, and Mobile Telecommunications Applications
- **Lead, Halogen and Antimony Free, RoHS Compliant "Green" Device (Notes 1 and 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

### Mechanical Data

- Case: SOT-23
- 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)



Top View



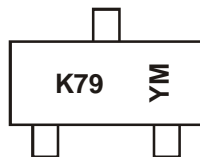
Schematic and Pin Configuration

### Ordering Information (Note 3)

| Part Number | Case   | Packaging        |
|-------------|--------|------------------|
| BAT1000-7-F | SOT-23 | 3000/Tape & Reel |

- Notes:
1. No purposefully added lead. Halogen and Antimony Free.
  2. Product manufactured with Data 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. For packaging details, go to our website at <http://www.diodes.com>.

### Marking Information



K79 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: N = 2002)  
 M = Month (ex: 9 = September)

#### Date Code Key

| Year | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | N    | P    | R    | S    | T    | U    | V    | W    | X    | Y    | Z    |

| 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

Single phase, half wave, 60Hz, resistive or inductive load.  
For capacitance load, derate current by 20%.

| Characteristic  | Symbol       | Value | Unit |
|---|--------------|-------|------|
| Peak Repetitive Reverse Voltage   | $V_{RRM}$    | 40    | V    |
| Working Peak Reverse Voltage  | $V_{RWM}$    |       |      |
| DC Blocking Voltage   | $V_R$        |       |      |
| RMS Reverse Voltage   | $V_{R(RMS)}$ | 28    | V    |
| Average Rectified Current   | $I_O$        | 1.0   | A    |
| Non-Repetitive Peak Forward Surge Current<br>8.3ms Single half sine-wave superimposed on rated load | $I_{FSM}$    | 5.5   | A    |

**Thermal Characteristics**

| Characteristic   | Symbol          | Value       | Unit               |
|--|-----------------|-------------|--------------------|
| Power Dissipation (Note 4)                                   | $P_D$           | 500         | mW                 |
| Typical Thermal Resistance, Junction to Ambient Air (Note 4) | $R_{\theta JA}$ | 200         | $^\circ\text{C/W}$ |
| Operating Temperature Range                                  | $T_J$           | -40 to +125 | $^\circ\text{C}$   |
| Storage Temperature Range                                    | $T_{STG}$       | -40 to +150 | $^\circ\text{C}$   |

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                     | Symbol      | Min | Typ | Max | Unit          | Test Condition                        |
|------------------------------------|-------------|-----|-----|-----|---------------|---------------------------------------|
| Reverse Breakdown Voltage (Note 5) | $V_{(BR)R}$ | 40  | —   | —   | V             | $I_R = 300\mu\text{A}$                |
| Forward Voltage                    | $V_F$       | —   | 225 | 270 | mV            | $I_F = 50\text{mA}$                   |
|                                    |             |     | 235 | 290 |               | $I_F = 100\text{mA}$                  |
|                                    |             |     | 290 | 340 |               | $I_F = 250\text{mA}$                  |
|                                    |             |     | 340 | 400 |               | $I_F = 500\text{mA}$                  |
|                                    |             |     | 390 | 450 |               | $I_F = 750\text{mA}$                  |
|                                    |             |     | 420 | 500 |               | $I_F = 1000\text{mA}$                 |
|                                    |             |     | 475 | 600 |               | $I_F = 1500\text{mA}$                 |
| Reverse Current (Note 5)           | $I_R$       | —   | —   | 100 | $\mu\text{A}$ | $V_R = 30\text{V}$                    |
| Total Capacitance                  | $C_T$       | —   | 175 | —   | pF            | $V_R = 0\text{V}, f = 1.0\text{MHz}$  |
|                                    |             |     | 25  | —   | pF            | $V_R = 25\text{V}, f = 1.0\text{MHz}$ |

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

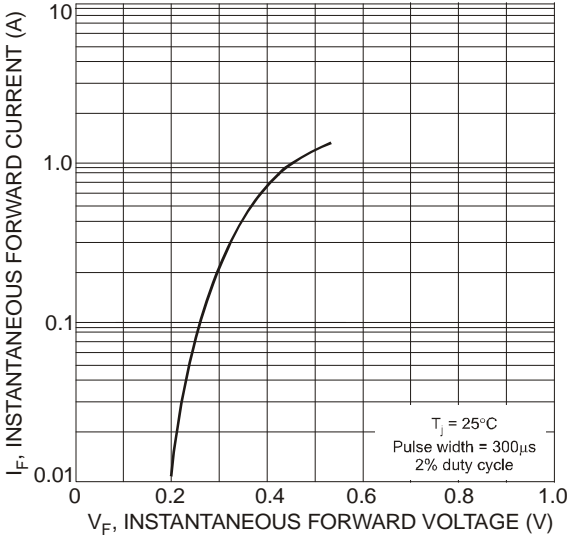


Fig. 1 Typical Forward Characteristics

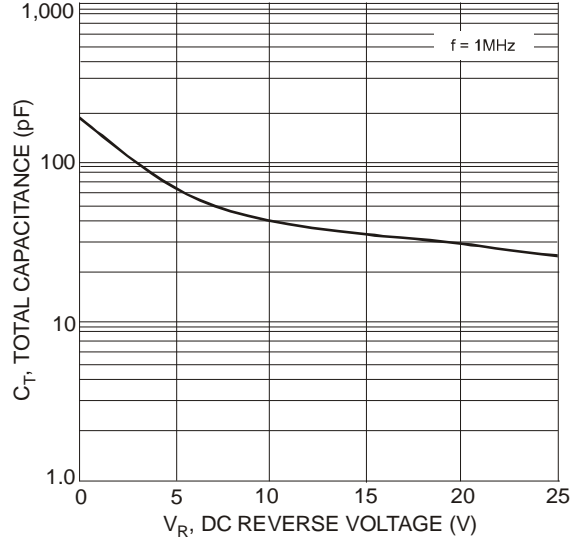


Fig. 2 Total Capacitance vs. Reverse Voltage

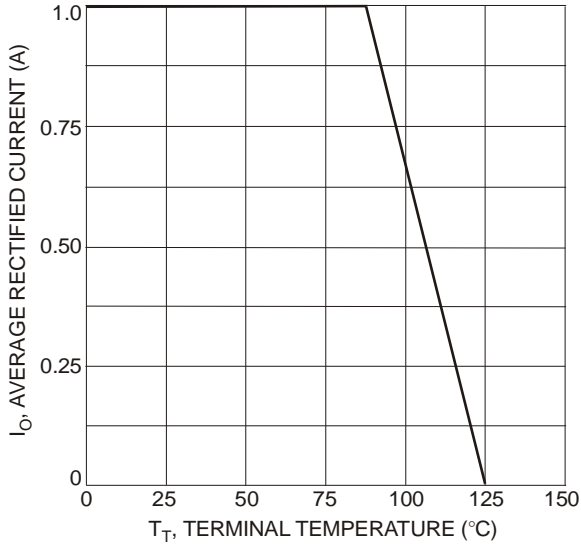


Fig. 3 Forward Current Derating Curve

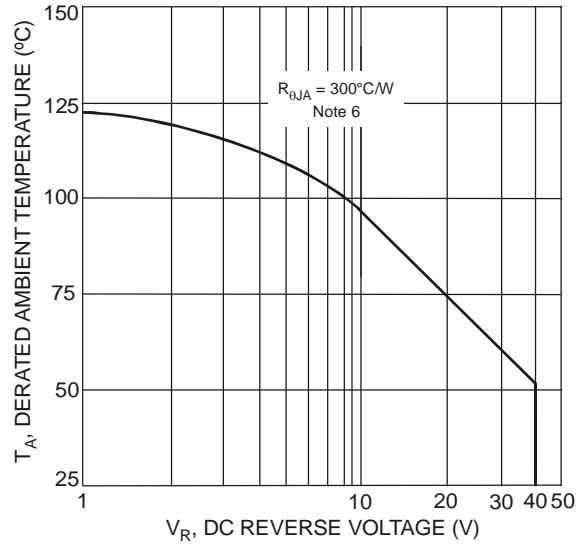
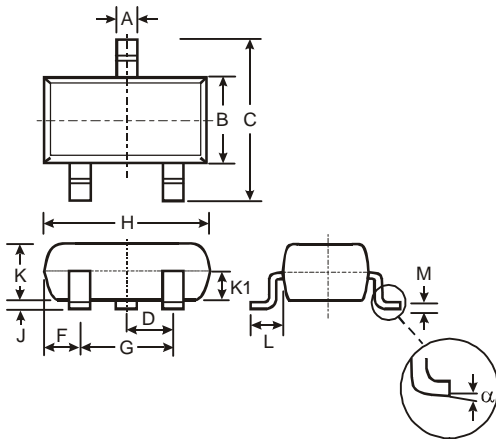


Fig. 4 Operating Temperature Derating

Notes: 6. Assumed application thermal conditions.  $R_{\theta JA}$  varies depending on application.

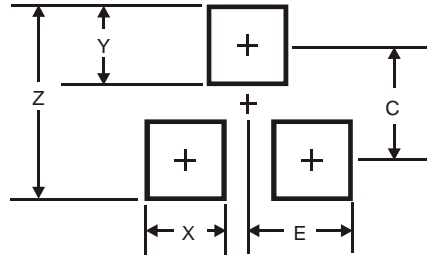
## Package Outline Dimensions



| SOT-23   |       |      |       |
|----------|-------|------|-------|
| 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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