

**Product Summary (@T<sub>A</sub> = +25°C)**

|                            |                           |                             |                              |
|----------------------------|---------------------------|-----------------------------|------------------------------|
| <b>V<sub>RRM</sub> (V)</b> | <b>I<sub>o</sub> (mA)</b> | <b>V<sub>Fmax</sub> (V)</b> | <b>I<sub>Rmax</sub> (μA)</b> |
| 30                         | 200                       | 0.8                         | 2                            |

**Description**

200mA surface mount Schottky Barrier Diode in SOT23 package, offers low turn-on voltage and fast switching capability, designed with PN Junction Guard Ring for Transient and ESD Protection, totally lead-free finish and RoHS compliant, "Green" device.

**Features and Benefits**

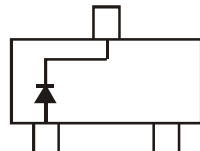
- Low Turn-on Voltage
- Fast Switching
- PN Junction Guard Ring for Transient and ESD Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

**Mechanical Data**

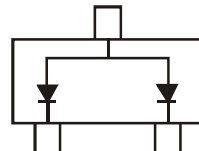
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208 (E3)
- Polarity: See Diagrams Below
- Weight: 0.008 grams (Approximate)



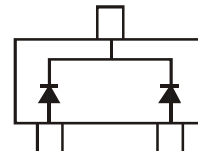
Top View



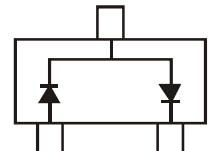
BAT54Q



BAT54AQ



BAT54CQ

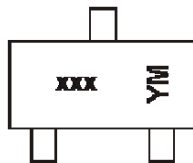


BAT54SQ

**Ordering Information (Note 5)**

| Part Number  | Compliance | Case  | Packaging          |
|--------------|------------|-------|--------------------|
| BAT54Q-7-F   | Automotive | SOT23 | 3000/Tape & Reel   |
| BAT54AQ-7-F  | Automotive | SOT23 | 3000/Tape & Reel   |
| BAT54CQ-7-F  | Automotive | SOT23 | 3000/Tape & Reel   |
| BAT54SQ-7-F  | Automotive | SOT23 | 3000/Tape & Reel   |
| BAT54Q-13    | Automotive | SOT23 | 10,000/Tape & Reel |
| BAT54AQ-13   | Automotive | SOT23 | 10,000/Tape & Reel |
| BAT54SQ-13   | Automotive | SOT23 | 10,000/Tape & Reel |
| BAT54CQ-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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to [http://www.diodes.com/product\\_compliance\\_definitions.html](http://www.diodes.com/product_compliance_definitions.html).
  5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

**Marking Information**


xxx = Product Type Marking Code

- KL1 = BAT54Q
- KL2 = BAT54AQ
- KL3 = BAT54CQ
- KL4 = BAT54SQ

YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)

Y or Y = Year (ex: D = 2016)

M = Month (ex: 9 = September)

**Date Code Key**

| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | W    | X    | Y    | Z    | 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<sub>A</sub> = +25°C, unless otherwise specified.)

| Characteristic                            | Symbol           | Value | Unit |
|---|------------------|-------|------|
| Peak Repetitive Reverse Voltage           | V <sub>RRM</sub> | 30    | V    |
| Working Peak Reverse Voltage              | V <sub>RWM</sub> |       |      |
| DC Blocking Voltage                       | V <sub>R</sub>   |       |      |
| Average Rectified Output Current (Note 6) | I <sub>O</sub>   | 200   | mA   |
| Repetitive Peak Forward Current           | I <sub>FRM</sub> | 300   | mA   |
| Forward Surge Current @ t < 1.0s          | I <sub>FSM</sub> | 600   | mA   |

### Thermal Characteristics

| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                                  | P <sub>D</sub>                    | 200         | mW   |
| Typical Thermal Resistance Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 500         | °C/W |
| Typical Thermal Resistance Junction to Case (Note 9)        | R <sub>θJC</sub>                  | 180         | °C/W |
| Operating and Storage Temperature Range (Note 7)            | 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 8) | V <sub>(BR)R</sub> | 30  | —   | —                               | V    | I <sub>RS</sub> = 100μA  |
| Forward Voltage                    | V <sub>F</sub>     | —   | —   | 240<br>320<br>400<br>500<br>800 | mV   | I <sub>F</sub> = 0.1mA<br>I <sub>F</sub> = 1mA<br>I <sub>F</sub> = 10mA<br>I <sub>F</sub> = 30mA<br>I <sub>F</sub> = 100mA |
| Reverse Leakage Current (Note 8)   | I <sub>R</sub>     | —   | —   | 2.0                             | μA   | V <sub>R</sub> = 25V   |
| Total Capacitance                  | C <sub>T</sub>     | —   | —   | 10                              | pF   | V <sub>R</sub> = 1.0V, f = 1.0MHz  |
| Reverse Recovery Time              | t <sub>RR</sub>    | —   | —   | 5.0                             | ns   | I <sub>F</sub> = 10mA through I <sub>R</sub> = 10mA to I <sub>R</sub> = 1.0mA, R <sub>L</sub> = 100Ω                       |

- Notes:
6. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
  7. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$ .
  8. Short duration test pulse used to minimize self-heating effect.
  9. Device mounted on Polyimide substrate PC board. FR-4 2oz 1\*MRP layout.

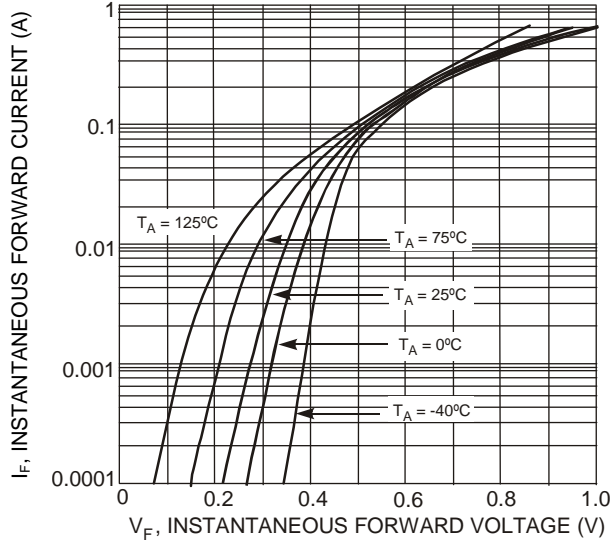


Figure 1 Typical Forward Characteristics

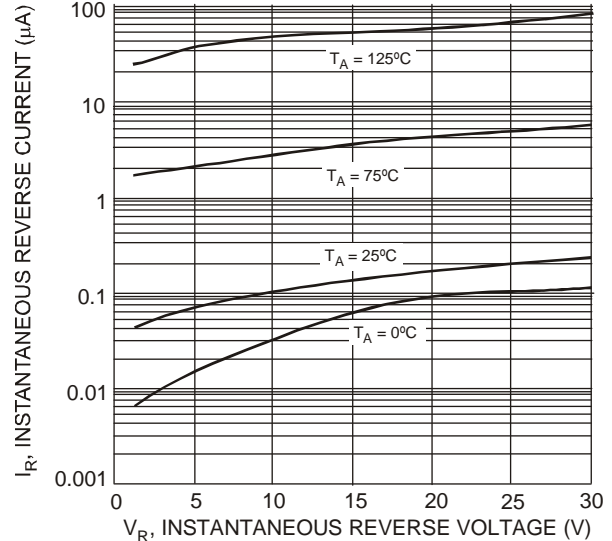


Figure 2 Typical Reverse Characteristics

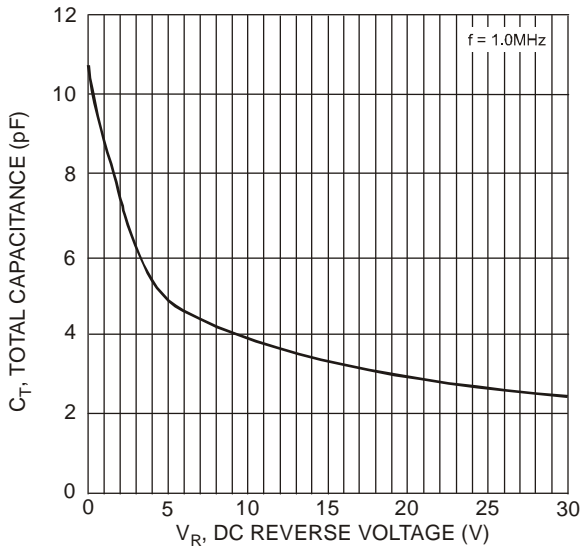


Figure 3 Total Capacitance vs. Reverse Voltage

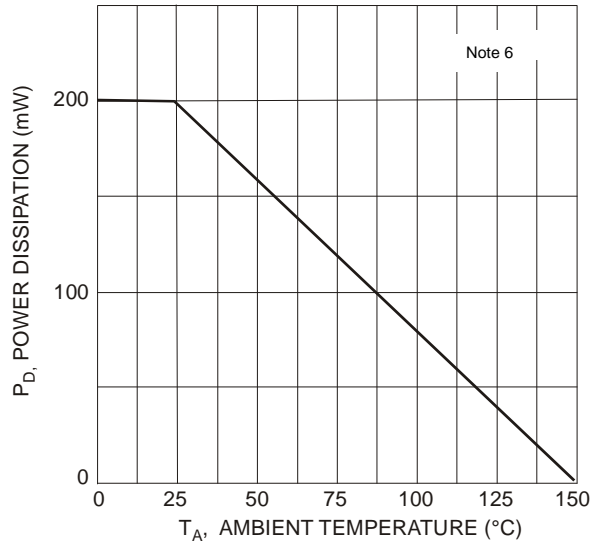
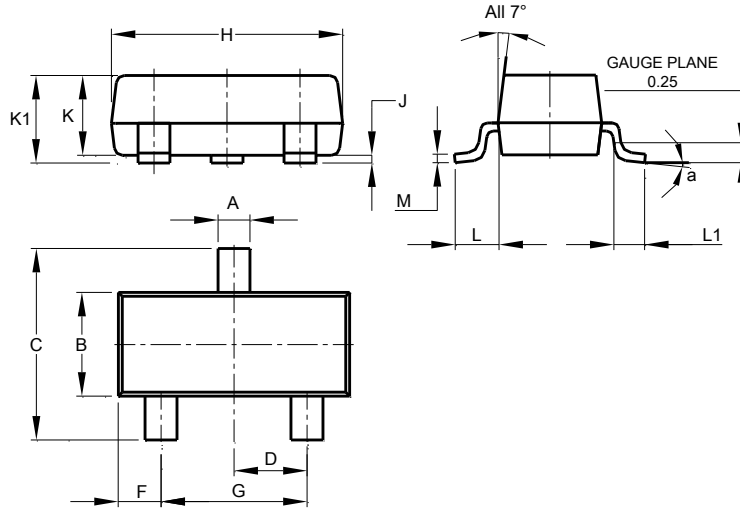


Figure 4 Power Derating Curve

**Package Outline Dimensions**

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

**SOT23**

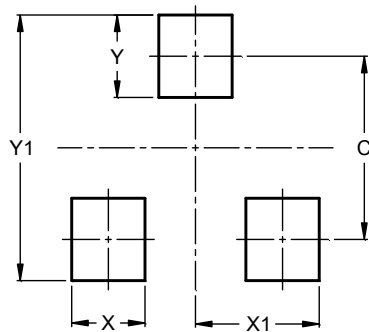


| SOT23                |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.37  | 0.51  | 0.40  |
| B                    | 1.20  | 1.40  | 1.30  |
| C                    | 2.30  | 2.50  | 2.40  |
| D                    | 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                    | 0.890 | 1.00  | 0.975 |
| K1                   | 0.903 | 1.10  | 1.025 |
| L                    | 0.45  | 0.61  | 0.55  |
| L1                   | 0.25  | 0.55  | 0.40  |
| M                    | 0.085 | 0.150 | 0.110 |
| a                    | 0°    | 8°    | --    |
| All Dimensions in mm |       |       |       |

**Suggested Pad Layout**

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

**SOT23**



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 2.0           |
| X          | 0.8           |
| X1         | 1.35          |
| Y          | 0.9           |
| Y1         | 2.9           |

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