

Product Summary (@T_A = +25°C)

| V _{RRM} (V) | I _o (mA) | V _{Fmax} (V) | I _{Rmax} (μA) |
|----------------------|---------------------|-----------------------|------------------------|
| 30 | 200 | 0.8 | 2 |

Description

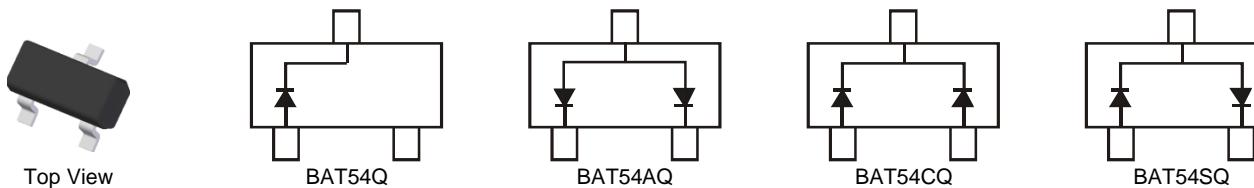
200mA surface mount Schottky Barrier Diode in SOT23 package, offers low turn-on voltage and fast switching capability, designed with PN Junction Guard Ring for Transient and ESD Protection, totally lead-free finish and RoHS compliant, "Green" device.

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)



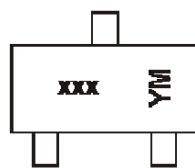
Ordering Information (Note 5)

| 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:

- No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
- See 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.
- Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
- 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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|--|-----------|-------|------|
| Peak Repetitive Reverse Voltage | V_{RRM} | | |
| Working Peak Reverse Voltage | V_{RWM} | 30 | V |
| DC Blocking Voltage | V_R | | |
| Average Rectified Output Current (Note 6) | I_O | 200 | mA |
| Repetitive Peak Forward Current | I_{FRM} | 300 | mA |
| Forward Surge Current @ $t < 1.0\text{s}$ | I_{FSM} | 600 | mA |

Thermal Characteristics

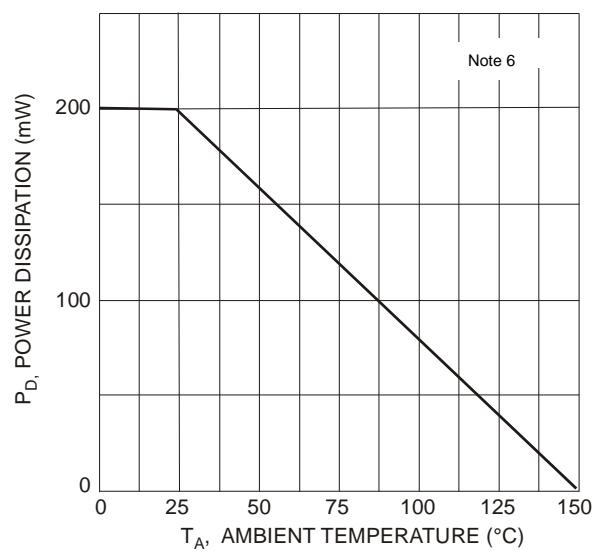
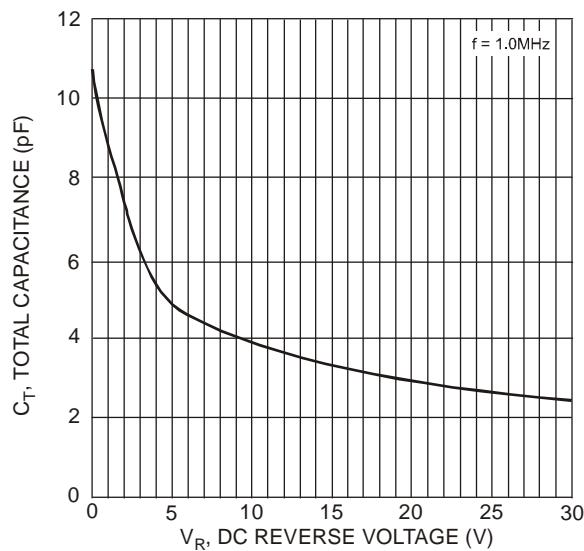
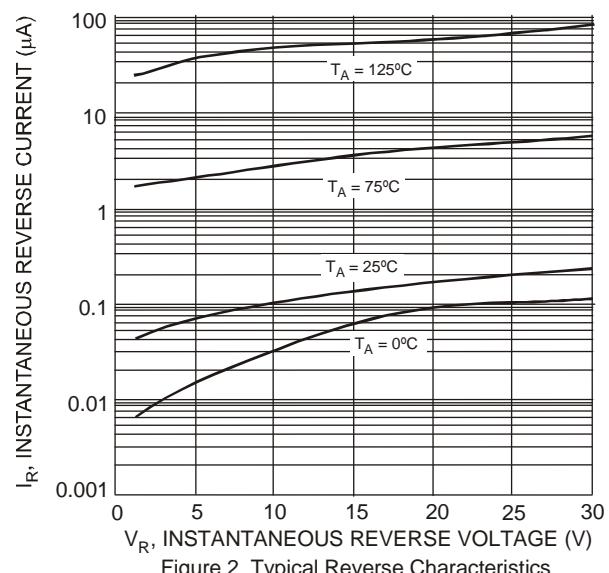
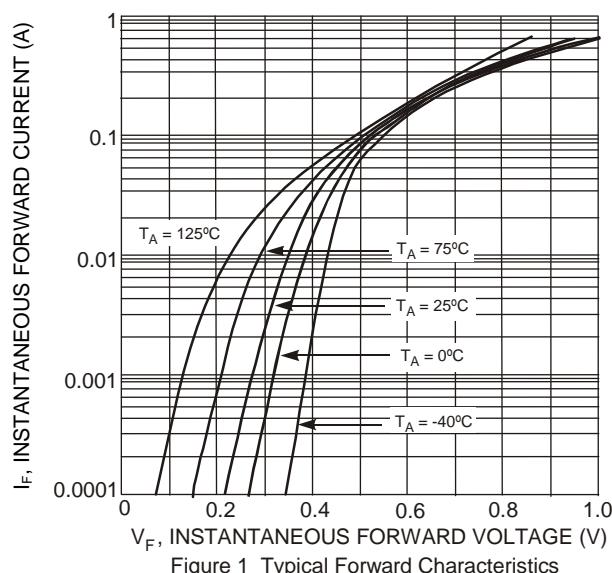
| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|------|
| Power Dissipation (Note 6) | P_D | 200 | mW |
| Typical Thermal Resistance Junction to Ambient Air (Note 6) | $R_{\theta JA}$ | 500 | °C/W |
| Typical Thermal Resistance Junction to Case (Note 9) | $R_{\theta JC}$ | 180 | °C/W |
| Operating and Storage Temperature Range (Note 7) | T_J, T_{STG} | -65 to +150 | °C |

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|-------------|-----|-----|---------------------------------|---------------|--|
| Reverse Breakdown Voltage (Note 8) | $V_{(BR)R}$ | 30 | — | — | V | $I_{RS} = 100\mu\text{A}$ |
| Forward Voltage | V_F | — | — | 240 320 400 500 800 | mV | $I_F = 0.1\text{mA}$ $I_F = 1\text{mA}$ $I_F = 10\text{mA}$ $I_F = 30\text{mA}$ $I_F = 100\text{mA}$ |
| Reverse Leakage Current (Note 8) | I_R | — | — | 2.0 | μA | $V_R = 25\text{V}$ |
| Total Capacitance | C_T | — | — | 10 | pF | $V_R = 1.0\text{V}, f = 1.0\text{MHz}$ |
| Reverse Recovery Time | t_{RR} | — | — | 5.0 | ns | $I_F = 10\text{mA}$ through $I_R = 10\text{mA}$ to $I_R = 1.0\text{mA}, R_L = 100\Omega$ |

Notes:

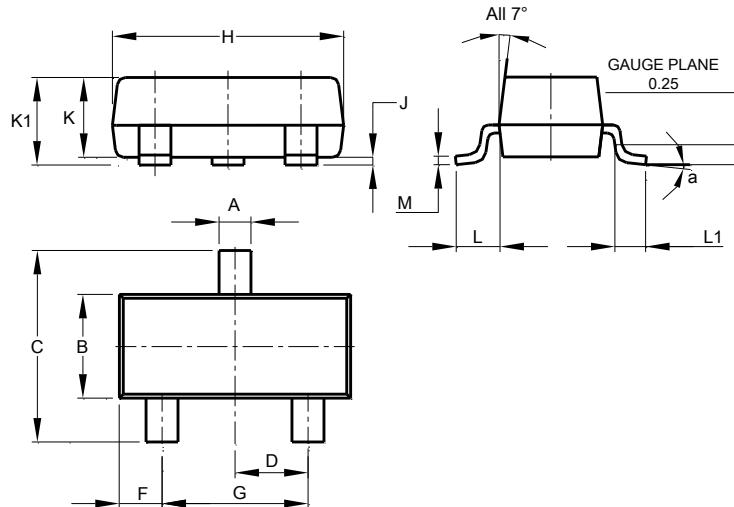
6. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
7. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$.
8. Short duration test pulse used to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



Package Outline Dimensions

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

SOT23



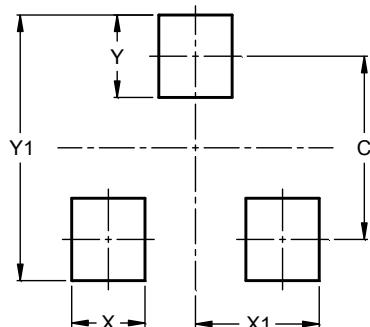
| SOT23 | | | |
|-------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10 | 0.05 |
| K | 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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