

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

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

**Description**

200mA surface mount Schottky Barrier Diode in SOT23 (Standard) 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)**
- For automotive applications requiring specific change control (i.e.: parts qualified to AEC-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>
- An Automotive-Compliant Part is Available Under Separate Datasheet ([BAT54Q /AQ /CQ /SQ](#))

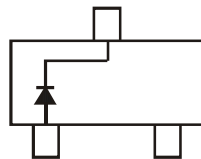
**Mechanical Data**

- Package: SOT23
- Package 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)

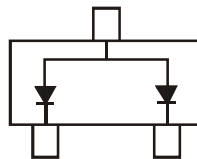
SOT23 (Standard)



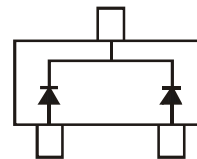
Top View



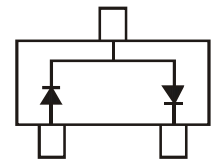
BAT54



BAT54A



BAT54C



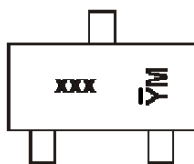
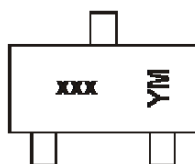
BAT54S

**Ordering Information** (Note 4)

| Part Number | Package          | Packing |             |
|-------------|------------------|---------|-------------|
|             |                  | Qty.    | Carrier     |
| BAT54-7-F   | SOT23 (Standard) | 3000    | Tape & Reel |
| BAT54A-7-F  | SOT23 (Standard) | 3000    | Tape & Reel |
| BAT54C-7-F  | SOT23 (Standard) | 3000    | Tape & Reel |
| BAT54S-7-F  | SOT23 (Standard) | 3000    | Tape & Reel |
| BAT54-13-F  | SOT23 (Standard) | 10,000  | Tape & Reel |
| BAT54A-13-F | SOT23 (Standard) | 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



xxx = Product Type Marking Code

KL1 = BAT54

KL2 = BAT54A

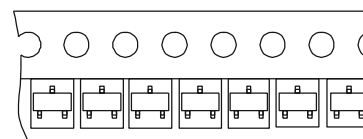
KL3 = BAT54C

KL4 = BAT54S

YM & YM = Date Code Marking

Y or Y = Year (ex: J = 2022)

M = Month (ex: D = Dec)



### Date Code Key

| Year | 2004 | .... | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | R    | .... | J    | K    | L    | M    | N    | O    | P    | R    | S    | T    |

| 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 5) | I <sub>O</sub>   | 200   | mA   |
| Repetitive Peak Forward Current           | I <sub>FRM</sub> | 300   | mA   |
| Forward Surge Current                     | I <sub>FSM</sub> | 600   | mA   |

## Thermal Characteristics

| Characteristic                                              | Symbol                            | Value       | Unit |
|-------------------------------------------------------------|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                                  | P <sub>D</sub>                    | 200         | mW   |
| Typical Thermal Resistance Junction to Ambient Air (Note 5) | R <sub>θJA</sub>                  | 500         | °C/W |
| Typical Thermal Resistance Junction to Case (Note 8)        | R <sub>θJC</sub>                  | 180         | °C/W |
| Operating and Storage Temperature Range (Note 6)            | T <sub>J</sub> , T <sub>STG</sub> | -65 to +150 | °C   |

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

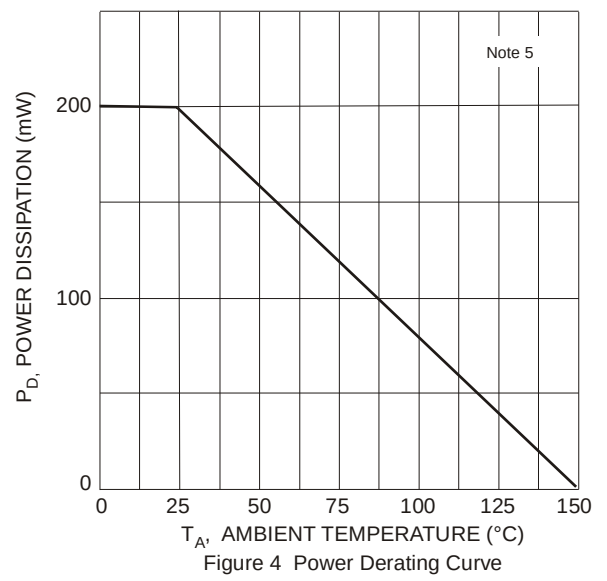
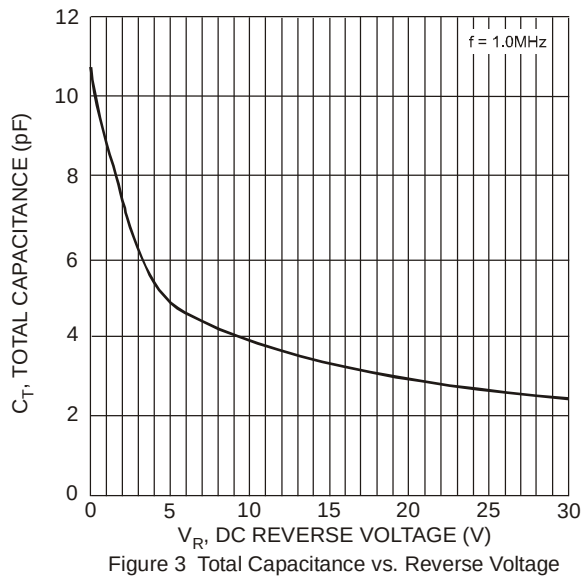
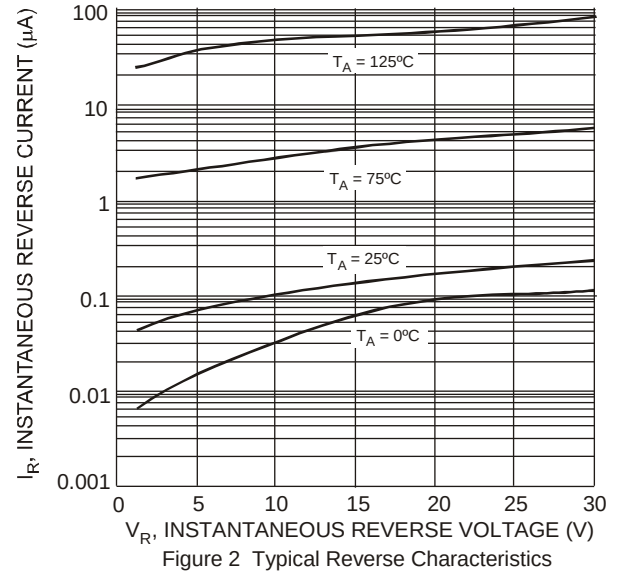
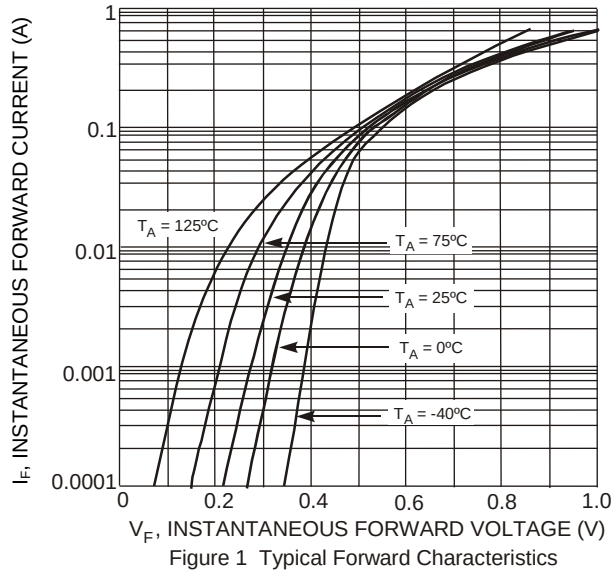
| Characteristic                     | Symbol             | Min | Typ | Max                             | Unit | Test Condition                                                                                                             |
|------------------------------------|--------------------|-----|-----|---------------------------------|------|----------------------------------------------------------------------------------------------------------------------------|
| Reverse Breakdown Voltage (Note 7) | 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 7)   | 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: 5. 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>.

6. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: dP<sub>D</sub>/dT<sub>J</sub> < 1/R<sub>θJA</sub>.

7. Short duration test pulse used to minimize self-heating effect.

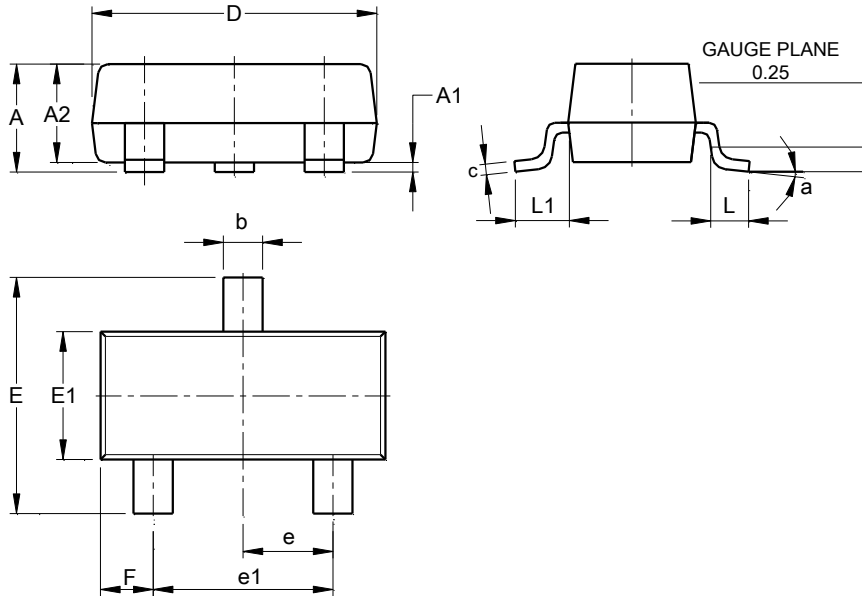
8. Device mounted on Polyimide substrate PC board. FR-4 2oz 1\*MRP layout.



## Package Outline Dimensions

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

### SOT23 (Standard)

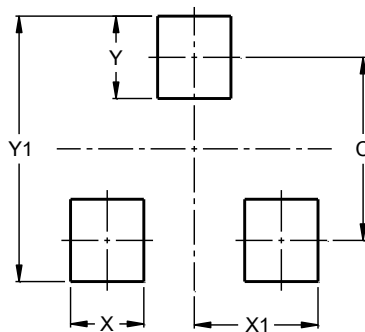


| SOT23 (Standard)     |       |       |       |
|----------------------|-------|-------|-------|
| Dim                  | Min   | Max   | Typ   |
| A                    | 0.90  | 1.15  | 1.025 |
| A1                   | 0.00  | 0.10  | 0.05  |
| A2                   | 0.85  | 1.10  | 0.975 |
| b                    | 0.30  | 0.51  | 0.40  |
| c                    | 0.080 | 0.202 | 0.11  |
| D                    | 2.80  | 3.00  | 2.90  |
| E                    | 2.25  | 2.55  | 2.40  |
| E1                   | 1.20  | 1.40  | 1.30  |
| e                    | 0.89  | 1.03  | 0.915 |
| e1                   | 1.78  | 2.05  | 1.83  |
| F                    | 0.40  | 0.60  | 0.535 |
| L1                   | 0.45  | 0.61  | 0.55  |
| L                    | 0.25  | 0.55  | 0.40  |
| a                    | 0°    | 8°    | --    |
| All Dimensions in mm |       |       |       |

## Suggested Pad Layout

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

### SOT23 (Standard)



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

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