

## Features

- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Surface Mount Package
- PN Junction Guard Ring for Transient and ESD Protection
- **Qualified to AEC-Q101 Standards for High Reliability**
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3 & 4)**

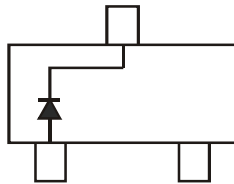
## Mechanical Data

- Case: SOT323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 5. 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 Diagrams Below
- Weight: 0.006 grams (approximate)

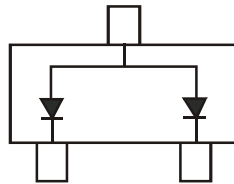
SOT323



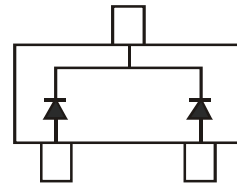
Top View



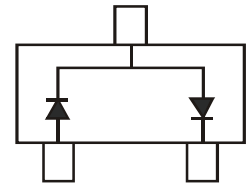
BAT54W-KL5



BAT54AW-KL6



BAT54CW-KL7



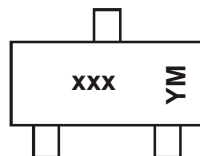
BAT54SW-KL8

## Ordering Information (Note 5)

| Part Number  | Case   | Packaging        |
|--------------|--------|------------------|
| BAT54W-7-F   | SOT323 | 3000/Tape & Reel |
| BAT54AW-7-F  | SOT323 | 3000/Tape & Reel |
| BAT54AWQ-7-F | SOT323 | 3000/Tape & Reel |
| BAT54CW-7-F  | SOT323 | 3000/Tape & Reel |
| BAT54SW-7-F  | SOT323 | 3000/Tape & Reel |
| BAT54SWQ-7-F | SOT323 | 3000/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> 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. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.
  5. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



- xxx = Product Type Marking Code  
 KL5 = BAT54W  
 KL6 = BAT54AW  
 KL7 = BAT54CW  
 KL8 = BAT54SW  
 YM = Date Code Marking  
 Y = Year (ex: N = 2002)  
 M = Month (ex: 9 = September)

### Date Code Key

| Year  | 2000 | 2001 | 2002 | 2003 | 2004 | ... | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|-------|------|------|------|------|------|-----|------|------|------|------|------|------|------|------|------|
| Code  | L    | M    | N    | P    | R    | ... | X    | Y    | Z    | A    | B    | C    | D    | E    | F    |
| 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>   |       |      |
| Forward Continuous Current (Note 6)      | I <sub>F</sub>   | 200   | mA   |
| Repetitive Peak Forward Current (Note 6) | I <sub>FRM</sub> | 300   | mA   |
| Forward Surge Current (Note 6)           | I <sub>FSM</sub> | 600   | mA   |

@ t < 1.0s

**Thermal Characteristics**

| Characteristic                                      | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation (Note 6)                          | P <sub>D</sub>                    | 200         | mW   |
| Thermal Resistance Junction to Ambient Air (Note 6) | R <sub>θJA</sub>                  | 625         | °C/W |
| Operating and Storage Temperature Range             | T <sub>J</sub> , T <sub>STG</sub> | -65 to +125 | °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>R</sub> = 100µA   |
| Forward Voltage                    | V <sub>F</sub>     | —   | —   | 240<br>320<br>400<br>500<br>1000 | 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: 6. Mounted on FR-4 PC 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.

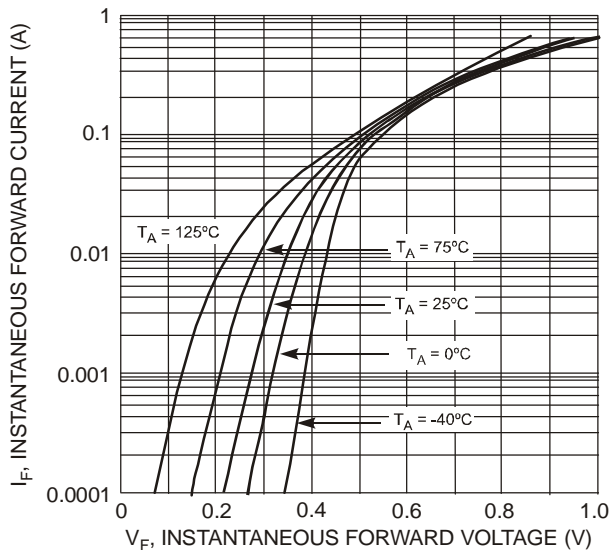


Fig. 1 Typical Forward Characteristics

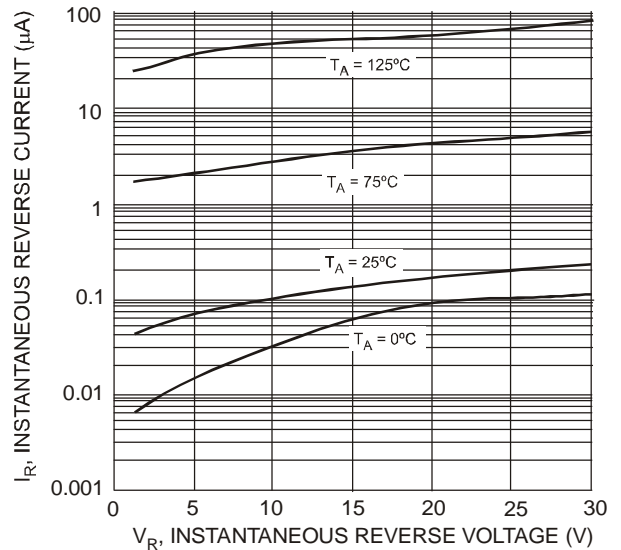


Fig. 2 Typical Reverse Characteristics

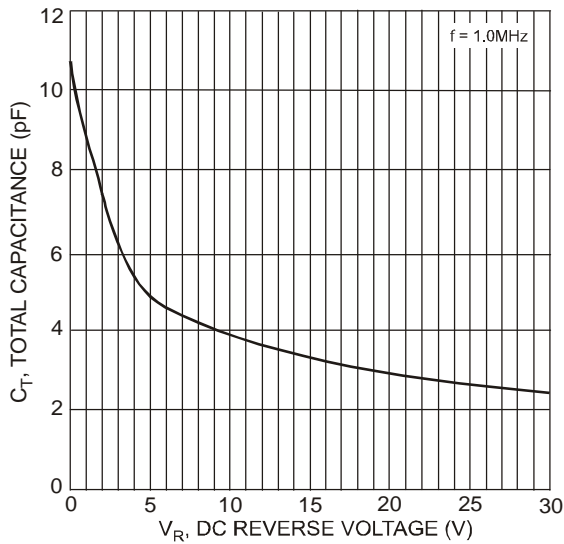


Fig. 3 Total Capacitance vs. Reverse Voltage

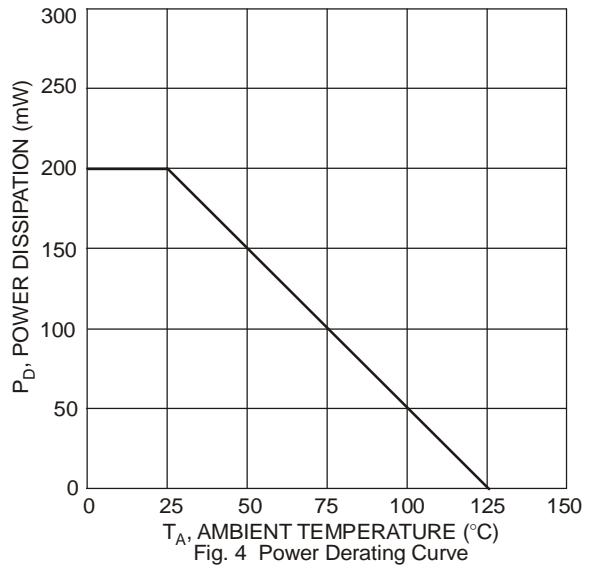
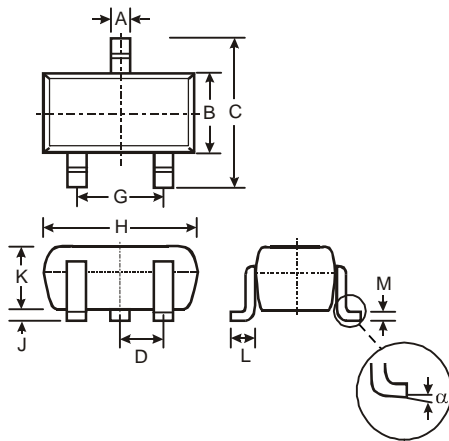


Fig. 4 Power Derating Curve

## Package Outline Dimensions

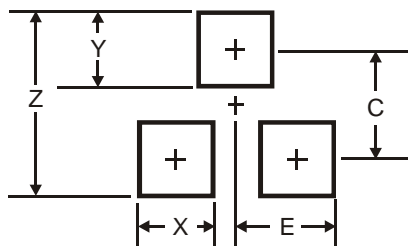
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



| SOT323               |      |      |      |
|----------------------|------|------|------|
| Dim                  | Min  | Max  | Typ  |
| A                    | 0.25 | 0.40 | 0.30 |
| B                    | 1.15 | 1.35 | 1.30 |
| C                    | 2.00 | 2.20 | 2.10 |
| D                    | -    | -    | 0.65 |
| G                    | 1.20 | 1.40 | 1.30 |
| H                    | 1.80 | 2.20 | 2.15 |
| J                    | 0.0  | 0.10 | 0.05 |
| K                    | 0.90 | 1.00 | 1.00 |
| L                    | 0.25 | 0.40 | 0.30 |
| M                    | 0.10 | 0.18 | 0.11 |
| $\alpha$             | 0°   | 8°   | -    |
| All Dimensions in mm |      |      |      |

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.8           |
| X          | 0.7           |
| Y          | 0.9           |
| C          | 1.9           |
| E          | 1.0           |

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