

Features

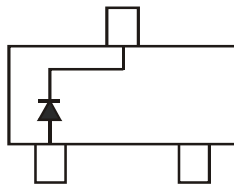
- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Surface Mount Package
- PN Junction Guard Ring for Transient and ESD Protection
- **Lead Free/RoHS Compliant (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **"Green" Device (Note 3 and 4)**

Mechanical Data

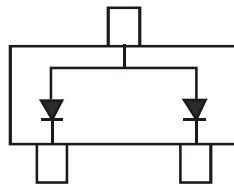
- Case: SOT-323
- Case Material: Molded Plastic, "Green" Molding Compound, Note 5. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagrams Below
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.006 grams (approximate)



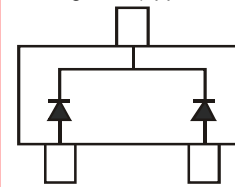
Top View



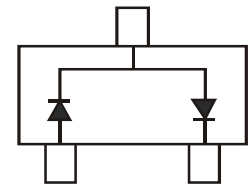
BAT54W-KL5



BAT54AW-KL6



BAT54CW-KL7



BAT54SW-KL8

25-07334

25-05599

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|--|---------------------|-------|------|
| Peak Repetitive Reverse Voltage | V_{RRM} | 30 | V |
| Working Peak Reverse Voltage | V_{RWM} | | |
| DC Blocking Voltage | V_R | | |
| Forward Continuous Current (Note 1) | I_F | 200 | mA |
| Repetitive Peak Forward Current (Note 1) | I_{FRM} | 300 | mA |
| Forward Surge Current (Note 1) | I_{FSM} | 600 | mA |
| | @ $t < 1.0\text{s}$ | | |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|---------------------------|
| Power Dissipation (Note 1) | P_D | 200 | mW |
| Thermal Resistance Junction to Ambient Air (Note 1) | $R_{\theta JA}$ | 625 | $^\circ\text{C}/\text{W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -65 to +125 | $^\circ\text{C}$ |

- Notes:
1. Mounted on FR-4 PC board with recommended pad layout which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
 2. No purposefully added lead.
 3. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
 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.

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|--------------------|-----|-----|----------------------------------|------|--|
| Reverse Breakdown Voltage (Note 5) | V _{(BR)R} | 30 | — | — | V | I _R = 100μA |
| Forward Voltage | V _F | — | — | 240 320 400 500 1000 | mV | I _F = 0.1mA I _F = 1mA I _F = 10mA I _F = 30mA I _F = 100mA |
| Reverse Leakage Current (Note 5) | I _R | — | — | 2.0 | μA | V _R = 25V |
| Total Capacitance | C _T | — | — | 10 | pF | V _R = 1.0V, f = 1.0MHz |
| Reverse Recovery Time | t _{rr} | — | — | 5.0 | ns | I _F = 10mA through I _R = 10mA to I _R = 1.0mA, R _L = 100Ω |

Notes: 5. Short duration pulse test used to minimize self-heating effect.

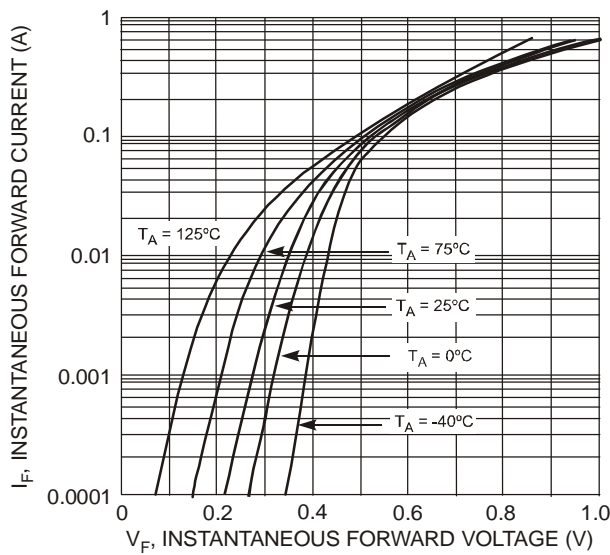


Fig. 1 Typical Forward Characteristics

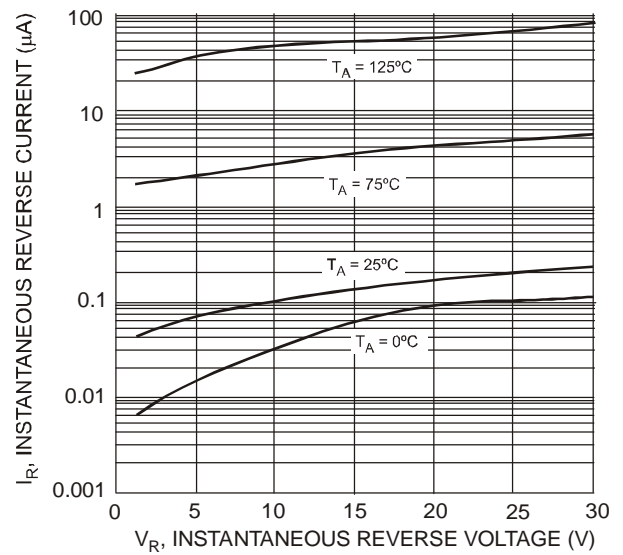


Fig. 2 Typical Reverse Characteristics

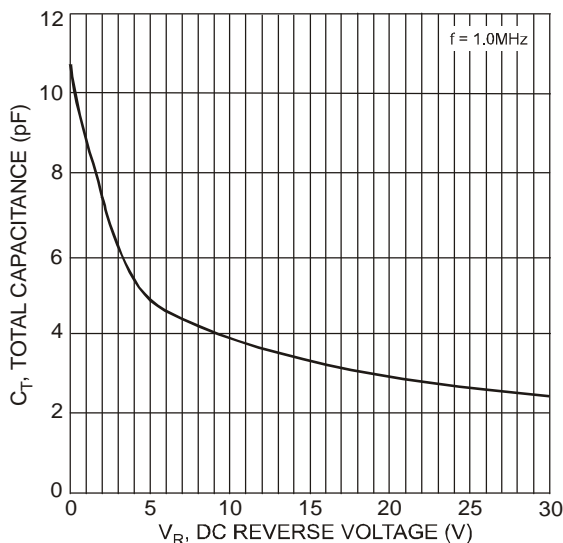


Fig. 3 Total Capacitance vs. Reverse Voltage

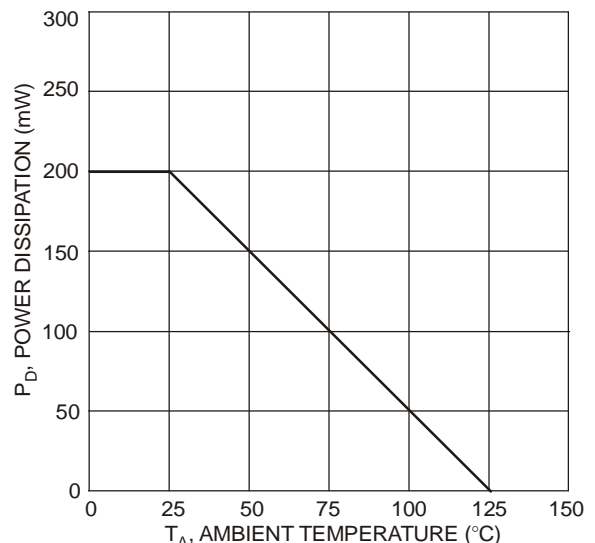


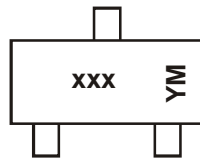
Fig. 4 Power Derating Curve

Ordering Information (Note 4 & 6)

| Part Number | Case | Packaging |
|-------------|---------|------------------|
| BAT54W-7-F | SOT-323 | 3000/Tape & Reel |
| BAT54AW-7-F | SOT-323 | 3000/Tape & Reel |
| BAT54CW-7-F | SOT-323 | 3000/Tape & Reel |
| BAT54SW-7-F | SOT-323 | 3000/Tape & Reel |

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



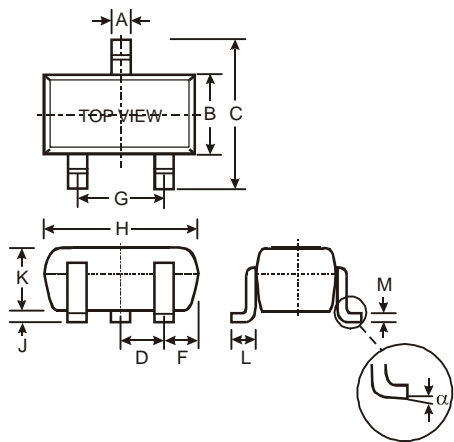
xxx = Product Type Marking Code
 KL5 = BAT54W
 KL6 = BAT54AW
 KL7 = BAT54CW
 KL8 = BAT54SW
 YM = Date Code Marking
 Y = Year (ex: N = 2002)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | L | M | N | P | R | S | T | U | V | W | X | Y | Z | A | B | C |

| 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 |

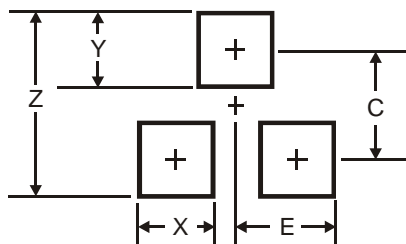
Package Outline Dimensions



| SOT-323 | | | |
|----------|------|------|-------|
| 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 |
| F | 0.30 | 0.40 | 0.425 |
| 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 |
| α | 0° | 8° | - |

All Dimensions in mm

Suggested Pad Layout



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

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