



THE DATASHEET OF BAT54LPQ-7



Product Summary (@T_A = +25°C)

| V _{RRM} (V) | I _O (mA) | V _{F(MAX)} (V) | I _{R(MAX)} (μA) |
|----------------------|---------------------|-------------------------|--------------------------|
| 30 | 200 | 1 | 2.0 |

Features and Benefits

- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Leadless Surface Mount Package
- 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)**
- **The BAT54LPQ is suitable for automotive applications requiring specific change control; it is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

Applications

- SMPS
- Free Wheeling Diodes
- Reverse Polarity Protection
- DC-DC Converters
- General Switching Applications

Mechanical Data

- Case: X1-DFN1006-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: Cathode Bar
- Terminals: Finish - NiPdAu Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208 Ⓔ4
- Weight: 0.001 grams (Approximate)

X1-DFN1006-2



Top View

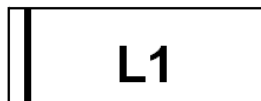


Bottom View

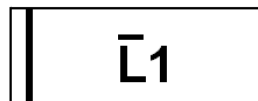
Ordering Information (Note 4)

| Part Number | Compliance | Case | Packaging |
|-------------|------------|--------------|--------------------|
| BAT54LPQ-7 | Automotive | X1-DFN1006-2 | 3000/Tape & Reel |
| BAT54LPQ-7B | Automotive | X1-DFN1006-2 | 10,000/Tape & Reel |

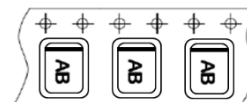
- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- 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


Top View



Top View



Bar Denotes Cathode Side

L1 or $\bar{L}1$ = Product Type Marking Code
Bar Denotes Cathode Side

Maximum Ratings (@T_A = +25°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 | | |
| Average Rectified Output Current | I _O | 200 | mA |
| Repetitive Peak Forward Current | I _{FRM} | 300 | mA |
| Forward Surge Current @ t < 1.0s | I _{FSM} | 600 | mA |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 5) | P _D | 250 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 5) | R _{θJA} | 400 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -65 to +125 | °C |

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|------------------------------------|--------------------|-----|-----|-------|------|--|
| Reverse Breakdown Voltage (Note 6) | V _{(BR)R} | 30 | — | — | V | I _R = 100μA |
| Forward Voltage | V _F | — | — | 240 | mV | I _F = 0.1mA |
| | | | | 320 | | I _F = 1mA |
| | | | | 400 | | I _F = 10mA |
| | | | | 500 | | I _F = 30mA |
| | | | | 1,000 | | I _F = 100mA |
| Reverse Leakage Current (Note 6) | 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. Part mounted on FR-4 PC board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.
6. Short duration pulse test used to minimize self-heating effect.

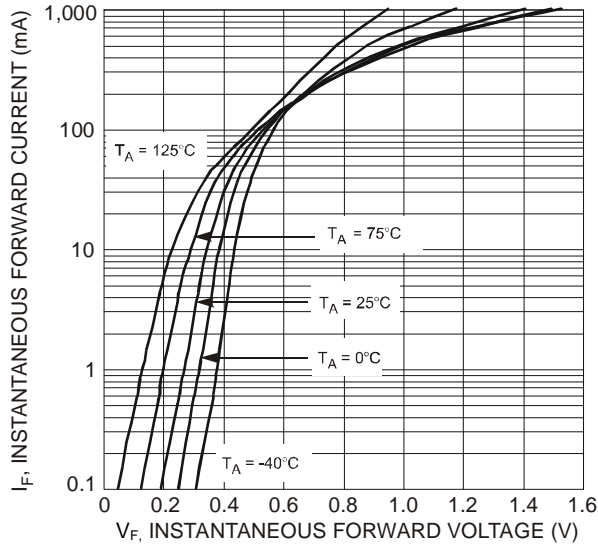


Fig. 1 Typical Forward Characteristics

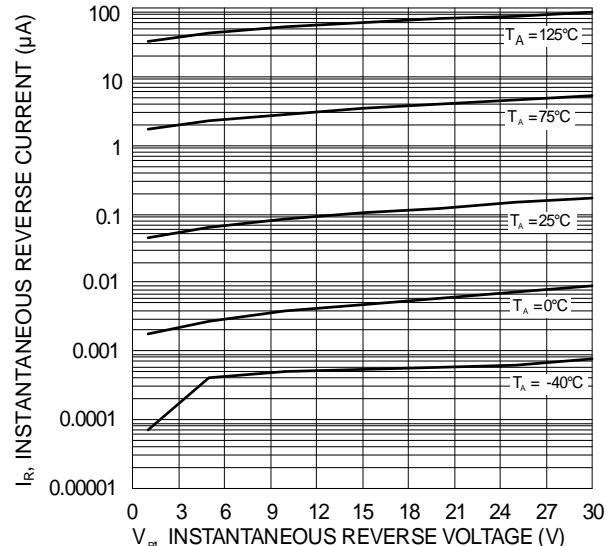


Fig. 2 Typical Reverse Characteristics

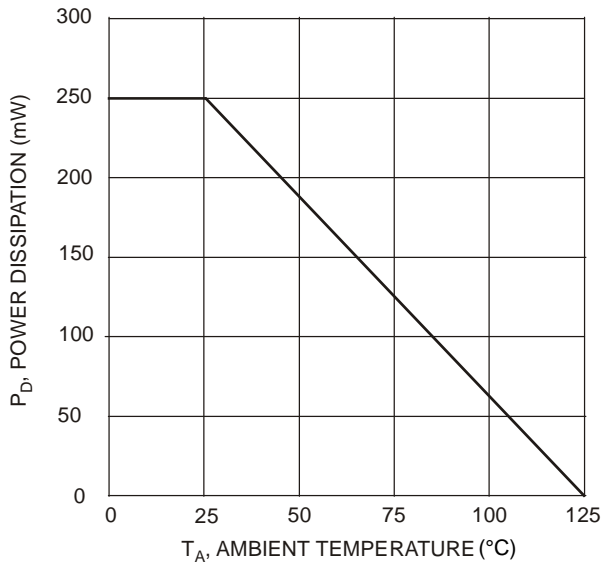
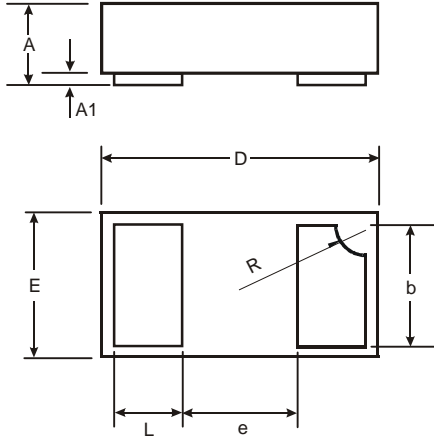


Fig. 3 Power Derating Curve

Package Outline Dimensions

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

X1-DFN1006-2

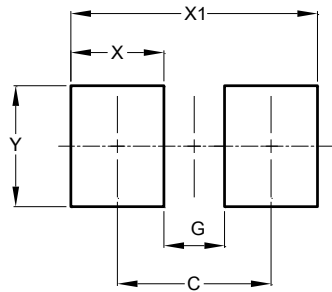


| X1-DFN1006-2 | | | |
|-----------------------------|------|-------|------|
| Dim | Min | Max | Typ |
| A | 0.47 | 0.53 | 0.50 |
| A1 | 0 | 0.05 | 0.03 |
| b | 0.45 | 0.55 | 0.50 |
| D | 0.95 | 1.075 | 1.00 |
| E | 0.55 | 0.675 | 0.60 |
| e | - | - | 0.40 |
| L | 0.20 | 0.30 | 0.25 |
| R | 0.05 | 0.15 | 0.10 |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

X1-DFN1006-2



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.70 |
| G | 0.30 |
| X | 0.40 |
| X1 | 1.10 |
| Y | 0.70 |

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