Lead-free

## Features

- Low Turn-on Voltage
- Fast Switching
- PN Junction Guard Ring for Transient and ESD Protection
- Lead Free/RoHS Compliant (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability


## Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- 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

| SOT-23 |  |  |
| :---: | :---: | :---: |
| Dim | Min | Max |
| A | 0.37 | 0.51 |
| B | 1.20 | 1.40 |
| C | 2.30 | 2.50 |
| D | 0.89 | 1.03 |
| E | 0.45 | 0.60 |
| G | 1.78 | 2.05 |
| H | 2.80 | 3.00 |
| $\mathbf{J}$ | 0.013 | 0.10 |
| K | 0.903 | 1.10 |
| L | 0.45 | 0.61 |
| $\mathbf{M}$ | 0.085 | 0.180 |
| $\alpha$ | $0^{\circ}$ | $8^{\circ}$ |
| All Dimensions in mm |  |  |

- Weight: 0.008 grams (approximate)


Maximum Ratings $@ T_{A}=25^{\circ} \mathrm{C}$ unless otherwise specified

| Characteristic | Symbol | Value | Unit |
| :--- | :---: | :---: | :---: |
| Peak Repetitive Reverse Voltage | $V_{\text {RRM }}$ <br> $V_{R W M}$ <br> $V_{R}$ | 30 | V |
| Working Peak Reverse Voltage |  |  |  |
| DC Blocking Voltage | $\mathrm{I}_{\mathrm{F}}$ |  |  |
| Forward Continuous Current (Note 2) | $\mathrm{I}_{\text {FRM }}$ | 200 | mA |
| Repetitive Peak Forward Current | $\mathrm{I}_{\text {FSM }}$ | 300 | mA |
| Forward Surge Current | $\mathrm{P}_{\mathrm{d}}$ | 600 | mA |
| Power Dissipation (Note 2) | $\mathrm{R}_{\text {日JA }}$ | 200 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 2) | $\mathrm{T}_{\mathrm{j},}, \mathrm{T}_{\text {STG }}$ | -65 to +125 | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ |
| Operating and Storage Temperature Range |  | ${ }^{\circ} \mathrm{C}$ |  |

Electrical Characteristics $@ T_{A}=25^{\circ} \mathrm{C}$ unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Reverse Breakdown Voltage (Note 1) | $\mathrm{V}_{(\mathrm{BR}) \mathrm{R}}$ | 30 | - | - | V | $\mathrm{I}_{\mathrm{RS}}=100 \mu \mathrm{~A}$ |
| Forward Voltage | $\mathrm{V}_{\mathrm{F}}$ | - | - | $\begin{aligned} & 240 \\ & 320 \\ & 400 \\ & 500 \\ & 800 \\ & \hline \end{aligned}$ | mV | $\begin{aligned} & I_{I}=0.1 \mathrm{~mA} \\ & I_{F}=1 \mathrm{~mA} \\ & I_{F}=10 \mathrm{~mA} \\ & I_{F}=30 \mathrm{~mA} \\ & I_{F}=100 \mathrm{~mA} \end{aligned}$ |
| Reverse Leakage Current (Note 1) | $\mathrm{I}_{\mathrm{R}}$ | - | - | 2.0 | $\mu \mathrm{A}$ | $\mathrm{V}_{\mathrm{R}}=25 \mathrm{~V}$ |
| Total Capacitance | $\mathrm{C}_{\text {T }}$ | - | - | 10 | pF | $\mathrm{V}_{\mathrm{R}}=1.0 \mathrm{~V}, \mathrm{f}=1.0 \mathrm{MHz}$ |
| Reverse Recovery Time | $\mathrm{trr}_{\text {r }}$ | - | - | 5.0 | ns | $\begin{aligned} & \mathrm{I}_{\mathrm{F}}=10 \mathrm{~mA} \text { through } \mathrm{I}_{\mathrm{R}}=10 \mathrm{~mA} \\ & \text { to } \mathrm{I}_{\mathrm{R}}=1.0 \mathrm{~mA}, \mathrm{R}_{\mathrm{L}}=100 \Omega \end{aligned}$ |

Notes: 1. Short duration test pulse used to minimize self-heating effect.
2. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
3. No purposefully added lead.


Fig. 3 Typical Capacitance vs. Reverse Voltage


Fig. 2 Typical Reverse Characteristics

$\mathrm{T}_{\mathrm{A}}$, AMBIENT TEMPERATURE ( ${ }^{\circ} \mathrm{C}$ )
Fig. 4 Power Derating Curve

Ordering Information (Note 4)

| Device | Packaging | Shipping |
| :---: | :---: | :---: |
| BAT54-7-F | SOT-23 | $3000 /$ Tape \& Reel |
| BAT54A-7-F | SOT-23 | $3000 /$ Tape \& Reel |
| BAT54C-7-F | SOT-23 | $3000 /$ Tape \& Reel |
| BAT54S-7-F | SOT-23 | $3000 /$ Tape \& Reel |

Notes: 4. For Packaging Details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

## Marking Information



XXX = Product Type Marking Code (See Page 1)
YM = Date Code Marking
Y = Year ex: $T=2006$
M = Month ex: 9 = September

Date Code Key

| Year | 1998 | 1999 | $\mathbf{2 0 0 0}$ | $\mathbf{2 0 0 1}$ | $\mathbf{2 0 0 2}$ | $\mathbf{2 0 0 3}$ | $\mathbf{2 0 0 4}$ | $\mathbf{2 0 0 5}$ | $\mathbf{2 0 0 6}$ | $\mathbf{2 0 0 7}$ | $\mathbf{2 0 0 8}$ | $\mathbf{2 0 0 9}$ | $\mathbf{2 0 1 0}$ | $\mathbf{2 0 1 1}$ | $\mathbf{2 0 1 2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Code | J | K | L | M | N | P | R | S | T | U | V | W | X | Y | Z |


| 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 |

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