

200mA, 30V Schottky Barrier Diode

FEATURES

- Fast switching speed
- Surface mount device type
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Adapters
- For switching power supply
- Inverter

MECHANICAL DATA

- Case: SOT-23
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 1A whisker test
- Weight: 8.00mg (approximately)

| KEY PARAMETERS | | |
|------------------------|--------|------|
| PARAMETER | VALUE | UNIT |
| I_F | 200 | mA |
| V_{RRM} | 30 | V |
| I_{FSM} | 600 | mA |
| V_F at $I_F = 100mA$ | 1 | V |
| $T_{J\ MAX}$ | 125 | °C |
| Package | SOT-23 | |



SOT-23

| ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise noted) | | | | | | |
|---|-----------|-------------|--------|--------|--------|------|
| PARAMETER | SYMBOL | BAT54 | BAT54A | BAT54C | BAT54S | UNIT |
| Marking code on the device | | KL1 | KL2 | KL3 | KL4 | |
| Power dissipation | P_D | 200 | | | | mW |
| Repetitive peak reverse voltage | V_{RRM} | 30 | | | | V |
| Repetitive peak forward current ($t_p \leq 1s; \delta \leq 0.5$) | I_{FRM} | 300 | | | | mA |
| Forward current | I_F | 200 | | | | mA |
| Non-Repetitive peak forward surge current @ $t < 1.0s$ | I_{FSM} | 600 | | | | mA |
| Junction temperature range | T_J | -55 to +125 | | | | °C |
| Storage temperature range | T_{STG} | -55 to +125 | | | | °C |

| THERMAL PERFORMANCE | | | |
|--|-----------------|------------|-------------|
| PARAMETER | SYMBOL | TYP | UNIT |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 500 | °C/W |

| ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted) | | | | | |
|---|--|---------------|------------|------------|---------------|
| PARAMETER | CONDITIONS | SYMBOL | MIN | MAX | UNIT |
| Forward voltage per diode ⁽¹⁾ | $I_F = 0.1\text{mA}, T_J = 25^\circ\text{C}$ | V_F | - | 0.24 | V |
| | $I_F = 1\text{mA}, T_J = 25^\circ\text{C}$ | | - | 0.32 | V |
| | $I_F = 10\text{mA}, T_J = 25^\circ\text{C}$ | | - | 0.40 | V |
| | $I_F = 30\text{mA}, T_J = 25^\circ\text{C}$ | | - | 0.50 | V |
| | $I_F = 100\text{mA}, T_J = 25^\circ\text{C}$ | | - | 1.00 | V |
| Reverse voltage | $I_R = 100\ \mu\text{A}, T_J = 25^\circ\text{C}$ | V_R | 30 | - | V |
| Reverse current @ rated V_R per diode ⁽²⁾ | $V_R = 25\ \text{V}, T_J = 25^\circ\text{C}$ | I_R | - | 2 | μA |
| Junction capacitance | $f = 1\text{MHz}, V_R = 1\text{V}$ | C_J | - | 10 | pF |
| Reverse recovery time | $I_F = I_R = 10\text{mA},$ $R_L = 100\Omega, I_{rr} = 1\text{mA}$ | t_{rr} | - | 5 | ns |

Notes:

1. Pulse test with PW = 0.3ms
2. Pulse test with PW = 30ms

| ORDERING INFORMATION | | |
|--|----------------|----------------|
| ORDERING CODE ⁽¹⁾⁽²⁾ | PACKAGE | PACKING |
| BAT5x RF | SOT-23 | 3K / 7" Reel |
| BAT5x RFG | SOT-23 | 3K / 7" Reel |

Notes:

1. "x" defines part no. from "4" to "4S"
2. "G" means green compound (halogen-free)

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Typical Forward Characteristics

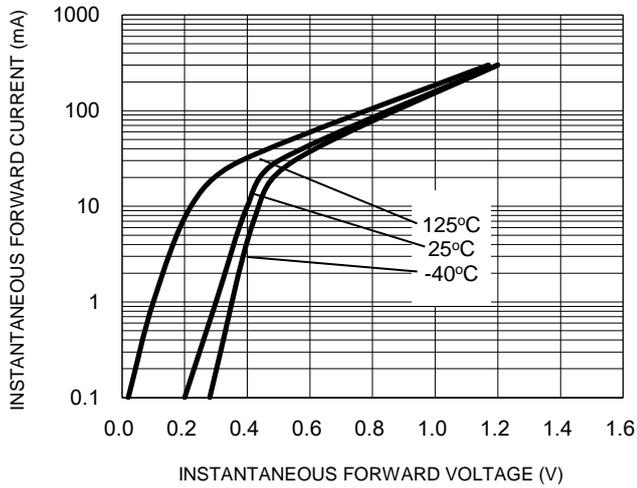


Fig.2 Typical Reverse Characteristics

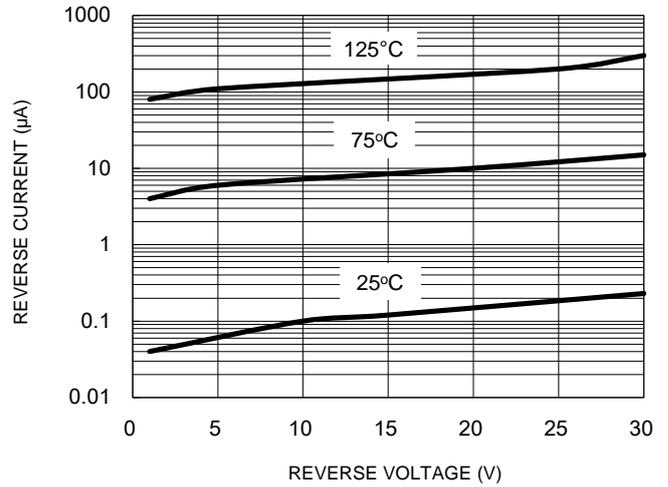


Fig.3 Admissible Power Dissipation Curve

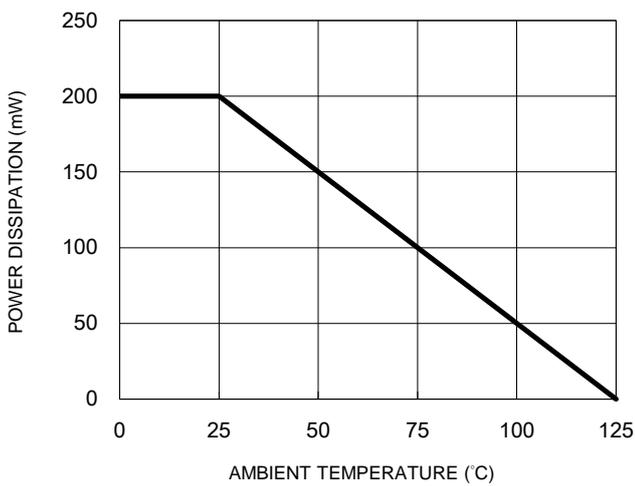
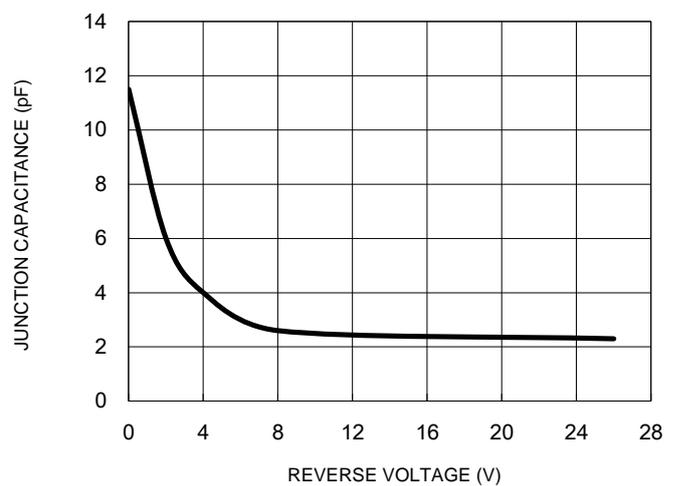
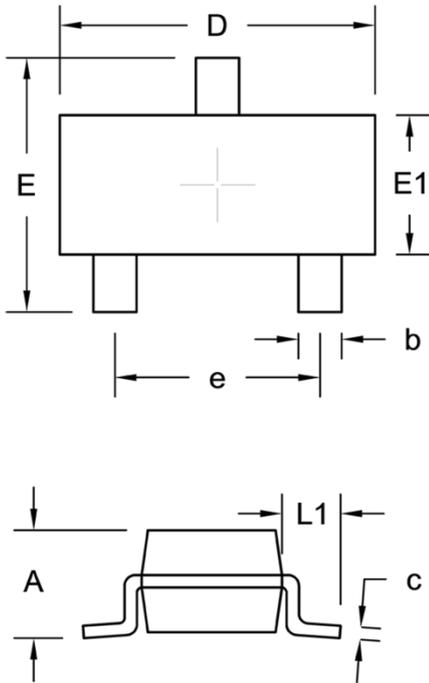


Fig.4 Typical Junction Capacitance



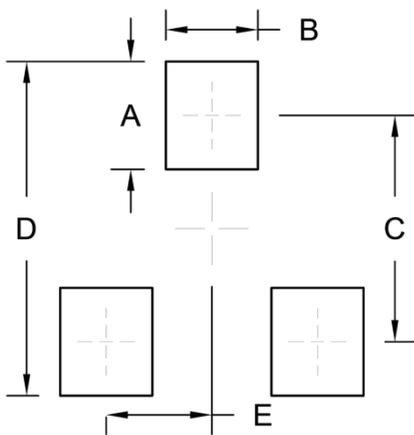
PACKAGE OUTLINE DIMENSION

SOT-23



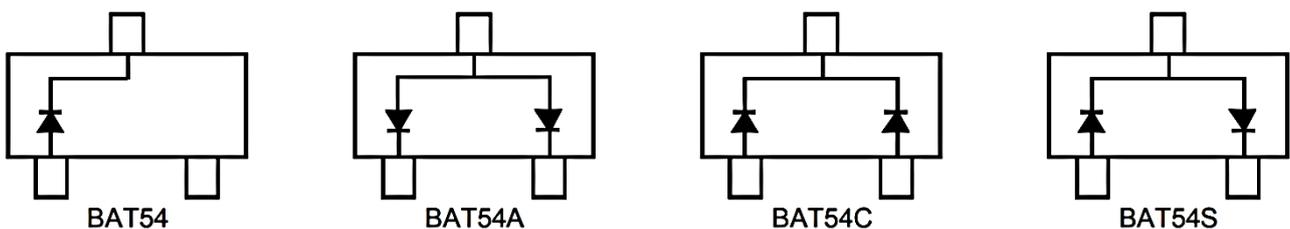
| DIM. | Unit (mm) | | Unit (inch) | |
|------|-----------|------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.89 | 1.12 | 0.035 | 0.044 |
| b | 0.30 | 0.50 | 0.012 | 0.020 |
| c | 0.08 | 0.20 | 0.003 | 0.008 |
| D | 2.80 | 3.04 | 0.110 | 0.120 |
| E | 2.10 | 2.64 | 0.083 | 0.104 |
| E1 | 1.20 | 1.40 | 0.047 | 0.055 |
| e | 1.90 BSC | | 0.075 BSC | |
| L1 | 0.54 REF. | | 0.021 REF. | |

SUGGESTED PAD LAYOUT



| Symbol | Unit (mm) | Unit (inch) |
|--------|-----------|-------------|
| A | 1.00 | 0.039 |
| B | 0.85 | 0.033 |
| C | 2.10 | 0.083 |
| D | 3.10 | 0.122 |
| E | 0.98 | 0.039 |

PIN CONFIGURATION



Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Purchasers are solely responsible for the choice, selection, and use of TSC products and TSC assumes no liability for application assistance or the design of Purchasers' products.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.