# BAT54XV2T1G

# Schottky Barrier Diodes

These Schottky barrier diodes are designed for high−speed switching applications, circuit protection, and voltage clamping. Extremely low forward voltage reduces conduction loss. Miniature surface mount package is excellent for hand−held and portable applications where space is limited.

### Features

- Extremely Fast Switching Speed
- Low Forward Voltage − 0.35 V (Typ) @ $I_F$ = 10 mA
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

**MAXIMUM RATINGS** ($T_J$ = 125°C unless otherwise noted)

| Rating | Symbol | Value | Unit |
|---|---|---|---|
| Reverse Voltage | $V_R$ | 30 | V |

**THERMAL CHARACTERISTICS**

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Total Device Dissipation FR−5 Board, (Note 1) $T_A$ = 25°C<br>Derate above 25°C | $P_D$ | 200<br>1.57 | mW<br>mW/°C |
| Forward Current (DC) | $I_F$ | 200 Max | mA |
| Non−Repetitive Peak Forward Current, $t_p$ < 10 msec | $I_{FSM}$ | 600 | mA |
| Repetitive Peak Forward Current Pulse Wave = 1 sec, Duty Cycle = 66% | $I_{FRM}$ | 300 | mA |
| Thermal Resistance, Junction−to−Ambient | $R_{\theta JA}$ | 635 | °C/W |
| Junction and Storage Temperature | $T_J$, $T_{stg}$ | −55 to 125 | °C |

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. FR−4 Minimum Pad.

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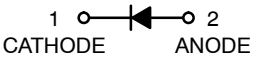
## 30 VOLT SILICON HOT−CARRIER DETECTOR AND SWITCHING DIODES





**SOD−523**
**CASE 502**
**PLASTIC**

**MARKING DIAGRAM**


JV = Device Code
M = Date Code*
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*Date Code orientation may vary depending upon manufacturing location.

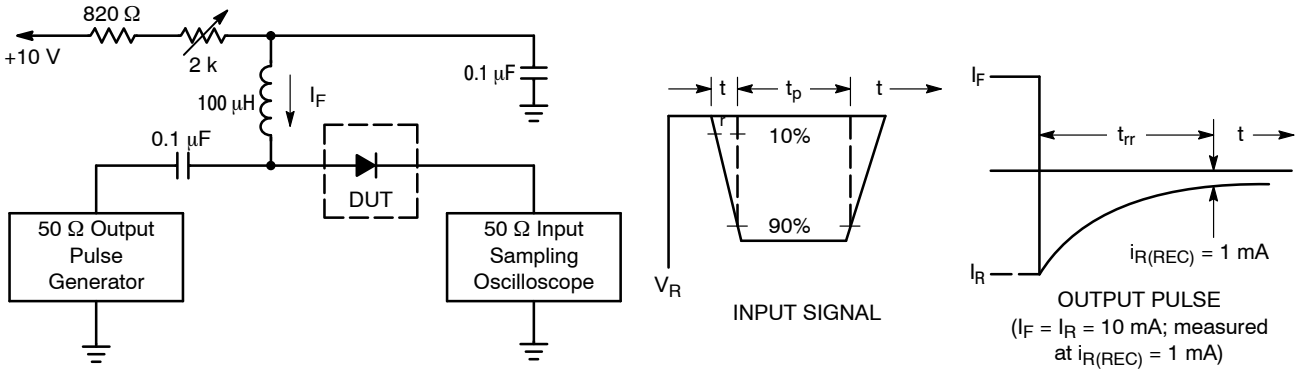
**ORDERING INFORMATION**

| Device | Package | Shipping† |
|---|---|---|
| BAT54XV2T1G | SOD−523 (Pb−Free) | 3000 / Tape & Reel |
| BAT54XV2T5G | SOD−523 (Pb−Free) | 8000 / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Reverse Breakdown Voltage ($I_R$ = 10 μA) | $V_{(BR)R}$ | 30 | – | – | V |
| Total Capacitance ($V_R$ = 1.0 V, f = 1.0 MHz) | $C_T$ | – | 7.6 | 10 | pF |
| Reverse Leakage ($V_R$ = 25 V) | $I_R$ | – | 0.5 | 2.0 | μA |
| Forward Voltage ($I_F$ = 0.1 mA) | $V_F$ | – | 0.22 | 0.24 | V |
| Forward Voltage ($I_F$ = 1.0 mA) | $V_F$ | – | 0.29 | 0.32 | V |
| Forward Voltage ($I_F$ = 10 mA) | $V_F$ | – | 0.35 | 0.40 | V |
| Forward Voltage ($I_F$ = 30 mA) | $V_F$ | – | 0.41 | 0.5 | V |
| Forward Voltage ($I_F$ = 100 mA) | $V_F$ | – | 0.52 | 0.8 | V |
| Reverse Recovery Time ($I_F$ = $I_R$ = 10 mA, $I_{R(REC)}$ = 1.0 mA) Figure 1 | $t_{rr}$ | – | – | 5.0 | ns |




Notes: 1. A 2.0 kΩ variable resistor adjusted for a Forward Current ($I_F$) of 10 mA.
2. Input pulse is adjusted so $I_{R(peak)}$ is equal to 10 mA.
3. $t_p \gg t_{rr}$

**Figure 1. Recovery Time Equivalent Test Circuit**

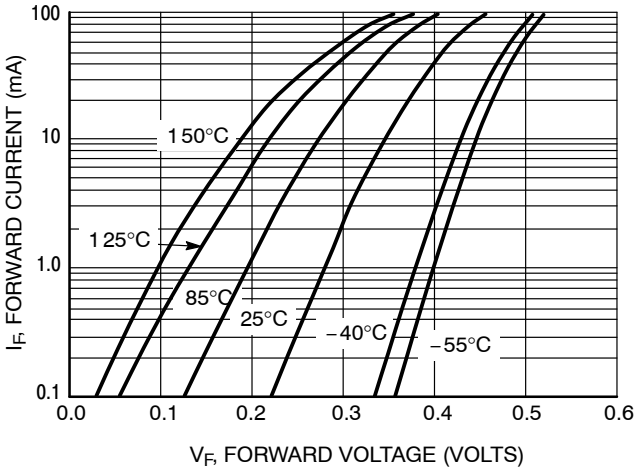



**Figure 2. Forward Voltage**

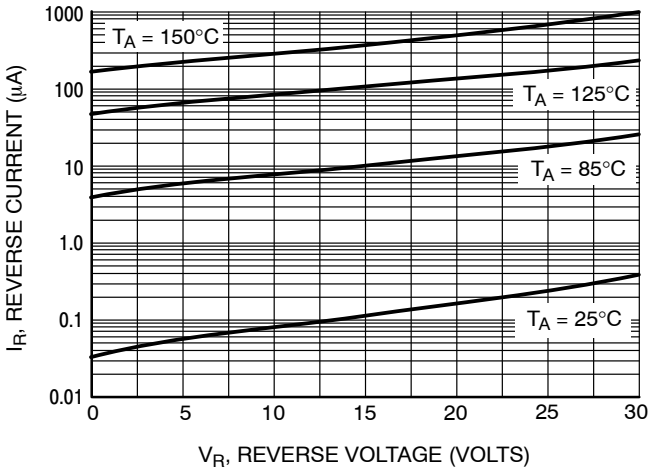



**Figure 3. Leakage Current**

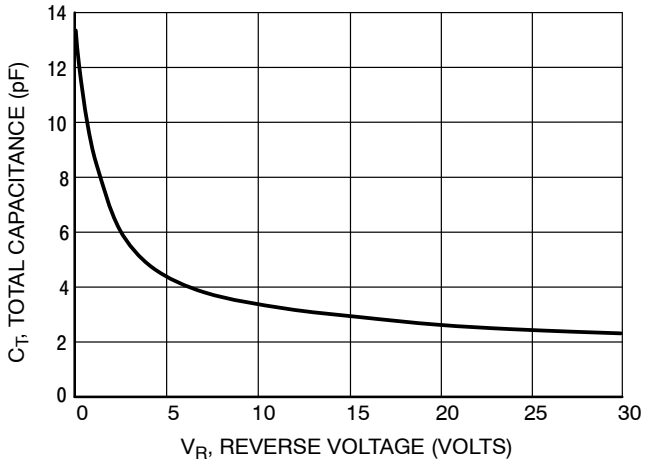
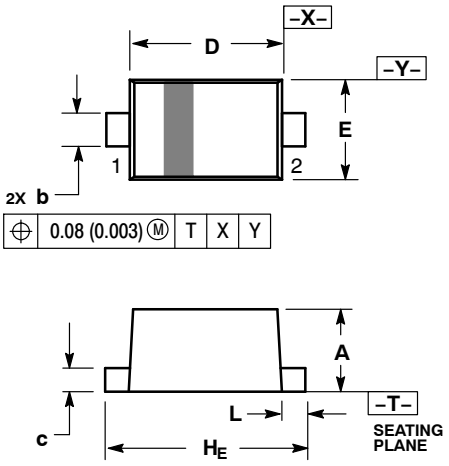



**Figure 4. Total Capacitance**

## PACKAGE DIMENSIONS

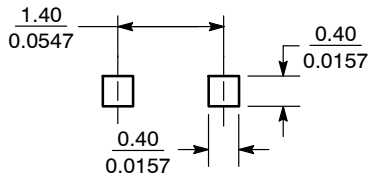
**SOD−523**
CASE 502−01
ISSUE D




NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| | MILLIMETERS | | | INCHES | | |
|---|---|---|---|---|---|---|
| DIM | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 0.50 | 0.60 | 0.70 | 0.020 | 0.024 | 0.028 |
| b | 0.25 | 0.30 | 0.35 | 0.010 | 0.012 | 0.014 |
| c | 0.07 | 0.14 | 0.20 | 0.0028 | 0.0055 | 0.0079 |
| D | 1.10 | 1.20 | 1.30 | 0.043 | 0.047 | 0.051 |
| E | 0.70 | 0.80 | 0.90 | 0.028 | 0.032 | 0.035 |
| $H_E$ | 1.50 | 1.60 | 1.70 | 0.059 | 0.063 | 0.067 |
| L | 0.15 | 0.20 | 0.25 | 0.006 | 0.008 | 0.010 |

## SOLDERING FOOTPRINT*




SCALE 10:1 $\left(\frac{\text{mm}}{\text{inches}}\right)$

*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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