

# BAT54XV2T1

## 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
- Pb-Free Package is Available

### MAXIMUM RATINGS ( $T_J = 125^\circ\text{C}$ 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) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	200 1.57	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	635	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to 125	$^\circ\text{C}$

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.

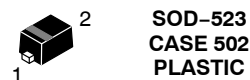
1. FR-4 Minimum Pad.



**ON Semiconductor**<sup>®</sup>

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



### 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 <sup>†</sup>
BAT54XV2T1	SOD-523	3000 / Tape & Reel
BAT54XV2T1G	SOD-523 (Pb-Free)	3000 / Tape & Reel
BAT54XV2T5G	SOD-523 (Pb-Free)	8000 / Tape & Reel

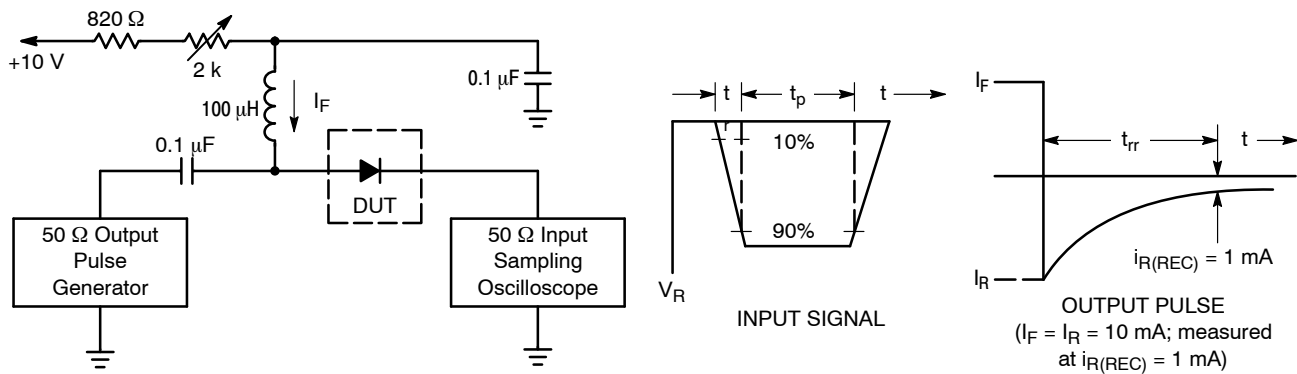
<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

**Preferred** devices are recommended choices for future use and best overall value.

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10\ \mu\text{A}$ )	$V_{(BR)R}$	30	-	-	V
Total Capacitance ( $V_R = 1.0\ \text{V}$ , $f = 1.0\ \text{MHz}$ )	$C_T$	-	7.6	10	pF
Reverse Leakage ( $V_R = 25\ \text{V}$ )	$I_R$	-	0.5	2.0	$\mu\text{A}$
Forward Voltage ( $I_F = 0.1\ \text{mA}$ )	$V_F$	-	0.22	0.24	V
Forward Voltage ( $I_F = 1.0\ \text{mA}$ )	$V_F$	-	0.29	0.32	V
Forward Voltage ( $I_F = 10\ \text{mA}$ )	$V_F$	-	0.35	0.40	V
Forward Voltage ( $I_F = 30\ \text{mA}$ )	$V_F$	-	0.41	0.5	V
Forward Voltage ( $I_F = 100\ \text{mA}$ )	$V_F$	-	0.52	0.8	V
Reverse Recovery Time ( $I_F = I_R = 10\ \text{mA}$ , $I_{R(\text{REC})} = 1.0\ \text{mA}$ ) Figure 1	$t_{rr}$	-	-	5.0	ns
Forward Current (DC)	$I_F$	-	-	200	mA
Repetitive Peak Forward Current	$I_{FRM}$	-	-	300	mA
Non-Repetitive Peak Forward Current ( $t < 1.0\ \text{s}$ )	$I_{FSM}$	-	-	600	mA



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

Figure 1. Recovery Time Equivalent Test Circuit

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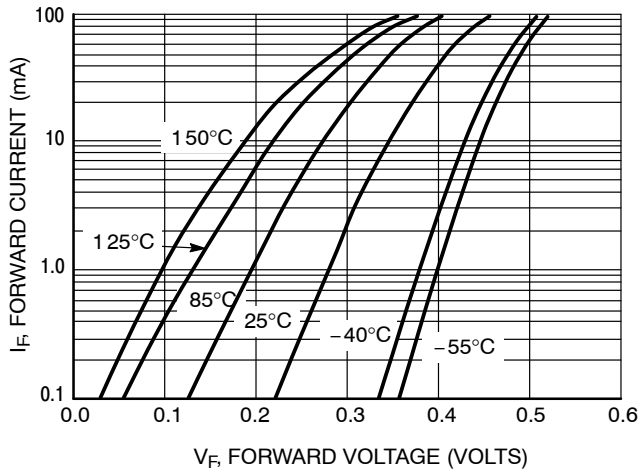


Figure 2. Forward Voltage

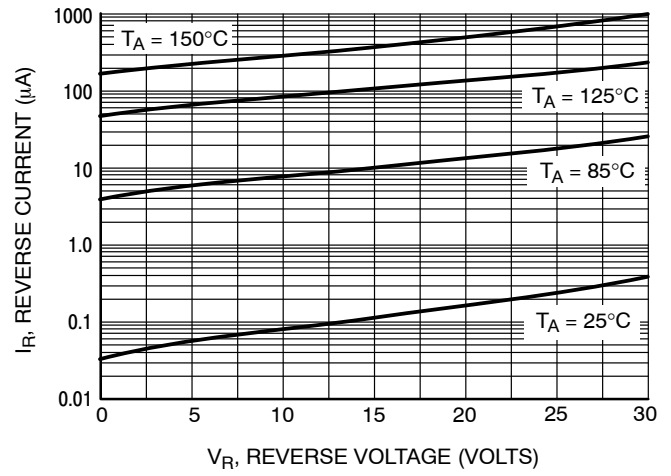


Figure 3. Leakage Current

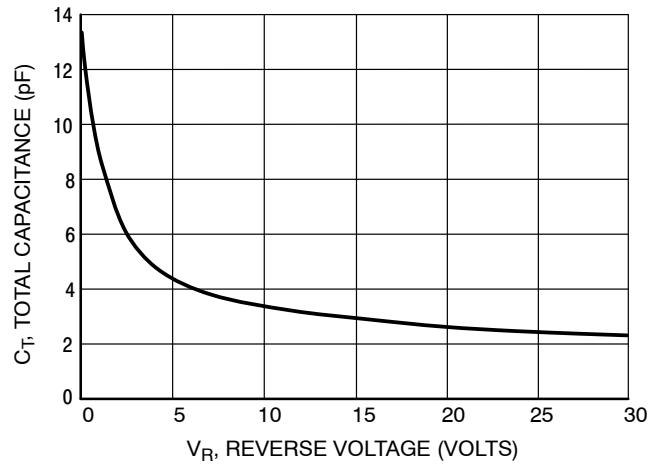
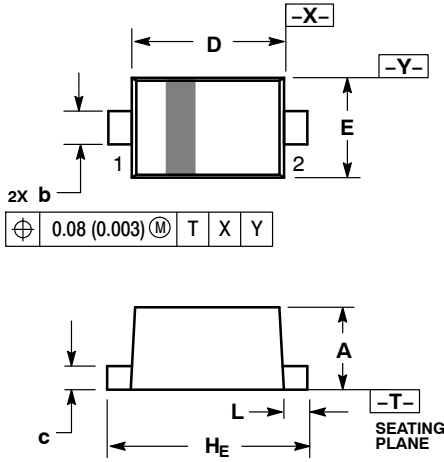


Figure 4. Total Capacitance

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## PACKAGE DIMENSIONS

SOD-523  
CASE 502-01  
ISSUE D

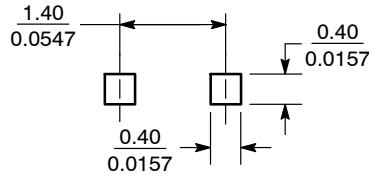


NOTES:

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.

DIM	MILLIMETERS			INCHES		
	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 <sub>E</sub>	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 (mm/inches)

\*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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