

# BAT54H

## 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) @  $I_F = 10 \text{ mA}$
- Device Marking: JV
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant\*

### MAXIMUM RATINGS ( $T_J = 125^\circ\text{C}$ unless otherwise noted)

Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	30	V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### 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/ $^\circ\text{C}$
Forward Current (DC)	$I_F$	200 Max	mA
Non-Repetitive Peak Forward Current, $t_p < 10 \text{ msec}$	$I_{FSM}$	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	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 to 150	$^\circ\text{C}$

1. FR-4 Minimum Pad

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



SOD-323  
CASE 477  
STYLE 1



### MARKING DIAGRAM



JV = Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

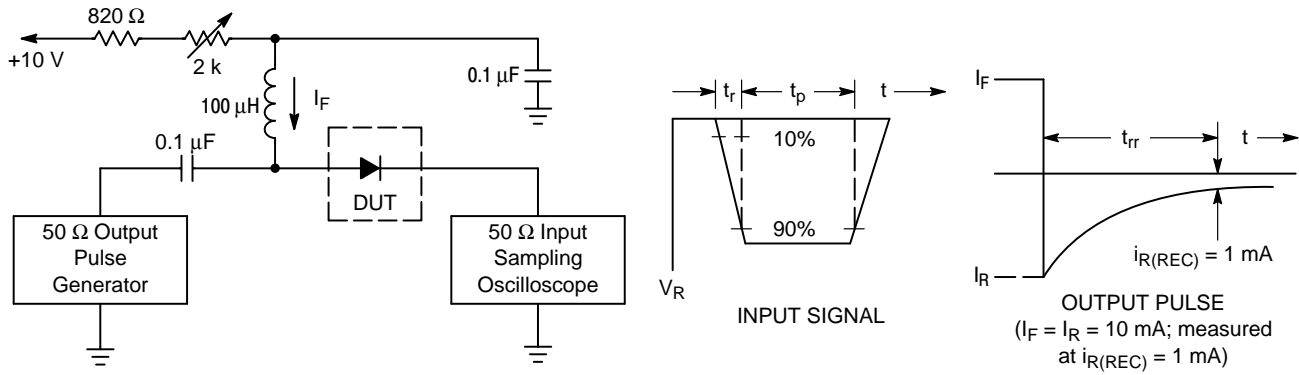
Device	Package	Shipping†
BAT54HT1G	SOD-323 (Pb-Free)	3,000 / Tape & Reel
NSVBAT54HT1G	SOD-323 (Pb-Free)	3,000 / Tape & Reel

†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.

# BAT54H

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

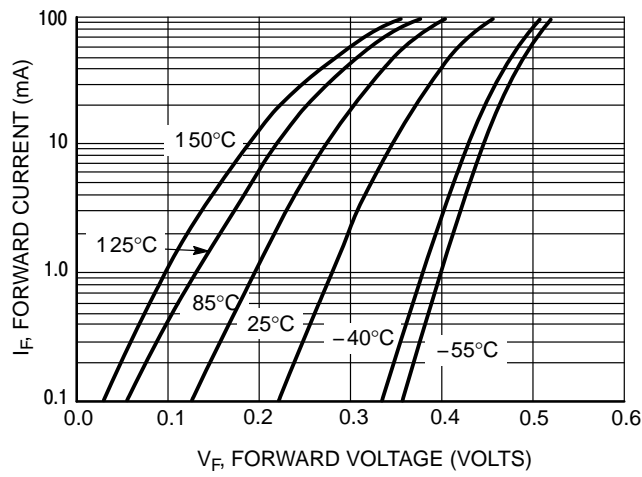
Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Breakdown Voltage ( $I_R = 10 \mu\text{A}$ )	$V_{(BR)R}$	30	-	-	V
Total Capacitance ( $V_R = 1.0 \text{ V}$ , $f = 1.0 \text{ MHz}$ )	$C_T$	-	7.6	10	pF
Reverse Leakage ( $V_R = 25 \text{ V}$ )	$I_R$	-	0.5	2.0	$\mu\text{A}_{dc}$
Forward Voltage ( $I_F = 0.1 \text{ mA}$ ) ( $I_F = 1.0 \text{ mA}$ ) ( $I_F = 10 \text{ mA}$ ) ( $I_F = 30 \text{ mA}$ ) ( $I_F = 100 \text{ mA}$ )	$V_F$	- - - - -	0.22 0.29 0.35 0.41 0.52	0.24 0.32 0.40 0.50 0.80	V
Reverse Recovery Time ( $I_F = I_R = 10 \text{ mA}_{dc}$ , $I_{R(REC)} = 1.0 \text{ mA}_{dc}$ ) Figure 1	$t_{rr}$	-	-	5.0	ns



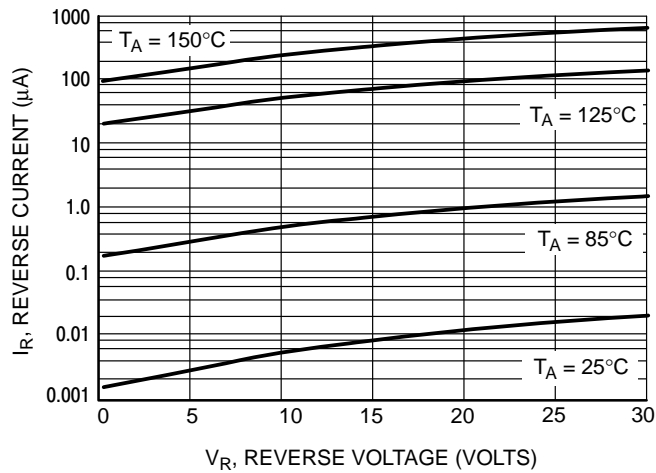
- Notes: 1. A 2.0 kΩ variable resistor adjusted for a Forward Current ( $I_F$ ) of 10 mA.  
 2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 10 mA.  
 3.  $t_p \gg t_{rr}$

Figure 1. Recovery Time Equivalent Test Circuit

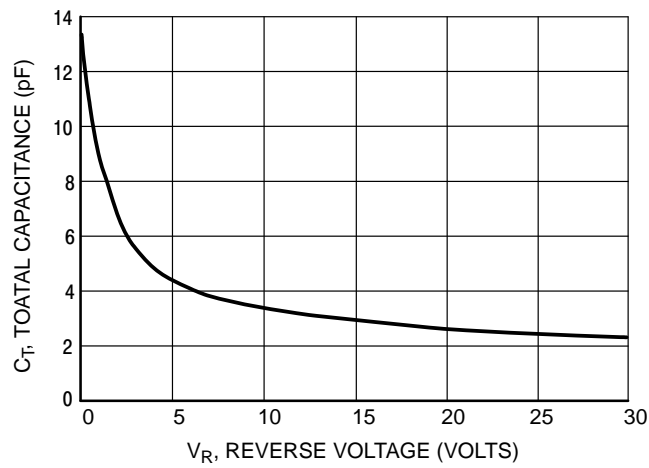
# BAT54H



**Figure 2. Forward Voltage**



**Figure 3. Leakage Current**

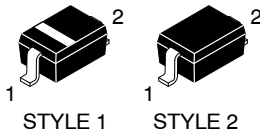


**Figure 4. Total Capacitance**

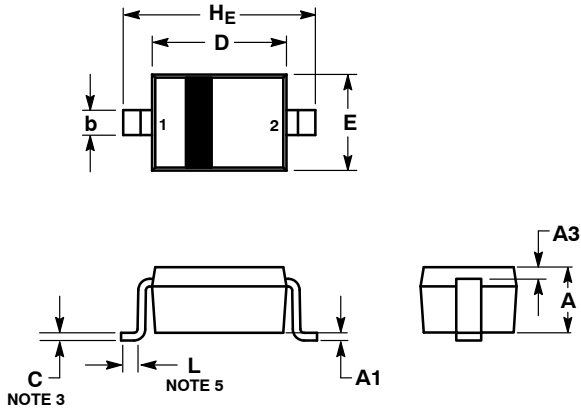
# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

ON Semiconductor®



SCALE 4:1



SOD-323  
CASE 477-02  
ISSUE H

DATE 13 MAR 2007

NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. LEAD THICKNESS SPECIFIED PER L/F DRAWING WITH SOLDER PLATING.
4. DIMENSIONS A AND B DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
5. DIMENSION L IS MEASURED FROM END OF RADIUS.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.031	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A3	0.15 REF			0.006 REF		
b	0.25	0.32	0.4	0.010	0.012	0.016
C	0.089	0.12	0.177	0.003	0.005	0.007
D	1.60	1.70	1.80	0.062	0.066	0.070
E	1.15	1.25	1.35	0.045	0.049	0.053
L	0.08			0.003		
HE	2.30	2.50	2.70	0.090	0.098	0.105

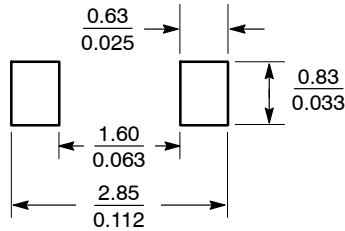
### GENERIC MARKING DIAGRAM\*



XX = Specific Device Code  
M = Date Code

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

### SOLDERING FOOTPRINT\*



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

STYLE 1:  
PIN 1. CATHODE (POLARITY BAND)  
2. ANODE

STYLE 2:  
NO POLARITY

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DESCRIPTION:	SOD-323	PAGE 1 OF 1

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