Schottky Barrier Diodes

BAT54T1G, SBAT54T1G

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 Volts (Typ) @ I_F = 10 mAdc
- S 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

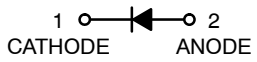
MAXIMUM RATINGS (T_J = 125°C unless otherwise noted)

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	30	V
Forward Power Dissipation, FR−5 Board (Note 1) @ T_A = 25°C Derate above 25°C	P_F	 400 4.0	 mW mW/°C
Thermal Resistance, Junction−to−Case	$R_{\theta JL}$	174	°C/W
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	492	°C/W
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
Junction Temperature	T_J	−55 to 125	°C
Storage Temperature Range	T_{stg}	−55 to +150	°C

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.

1. FR-5 = 1.0 x 0.75 x 0.062 in.

30 VOLT SCHOTTKY BARRIER DETECTOR AND SWITCHING DIODES



SOD−123
CASE 425
STYLE 1

MARKING DIAGRAM

SB = Device Code
M = Date Code
▪ = Pb−Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

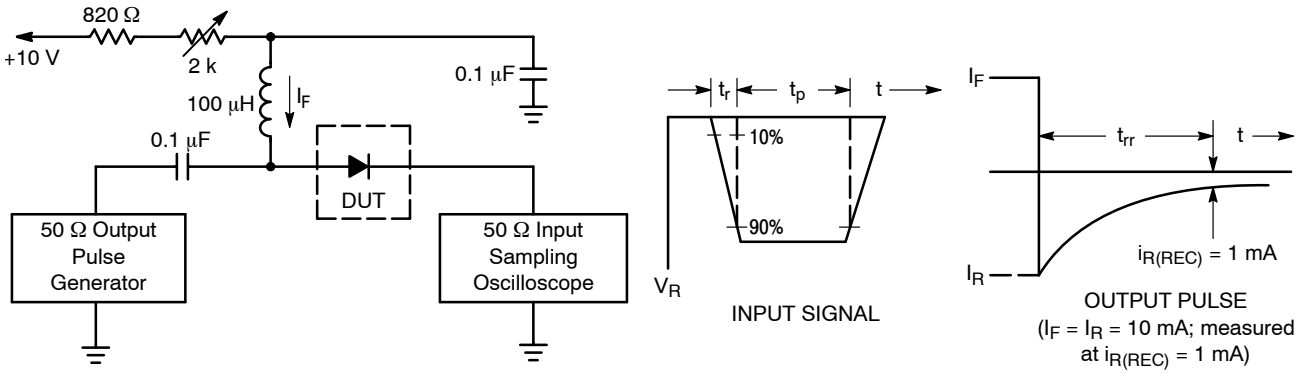
Device	Package	Shipping†
BAT54T1G	SOD−123 (Pb−Free)	3000 / Tape & Reel
SBAT54T1G	SOD−123 (Pb−Free)	3000 / Tape & Reel

†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	–	0.2	2.0	μAdc
Forward Voltage (I_F = 0.1 mAdc)	V_F	–	0.22	0.24	Vdc
Forward Voltage (I_F = 30 mAdc)	V_F	–	0.41	0.5	Vdc
Forward Voltage (I_F = 100 mAdc)	V_F	–	0.52	0.8	Vdc
Reverse Recovery Time (I_F = I_R = 10 mAdc, $I_{R(REC)}$ = 1.0 mAdc, Figure 1)	t_{rr}	–	–	5.0	ns
Forward Voltage (I_F = 1.0 mAdc)	V_F	–	0.29	0.32	Vdc
Forward Voltage (I_F = 10 mAdc)	V_F	–	0.35	0.40	Vdc

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.



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

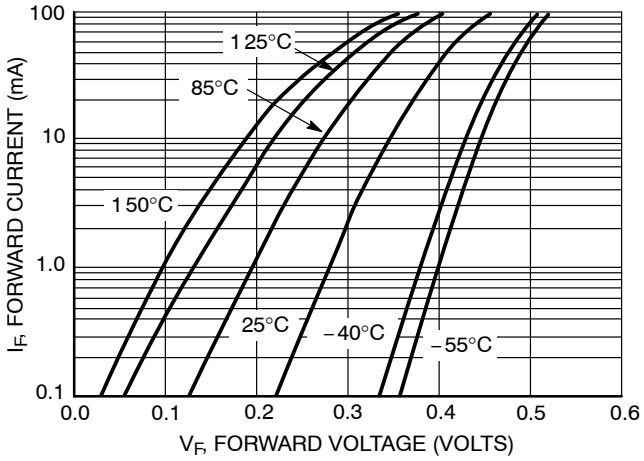


Figure 2. Forward Voltage

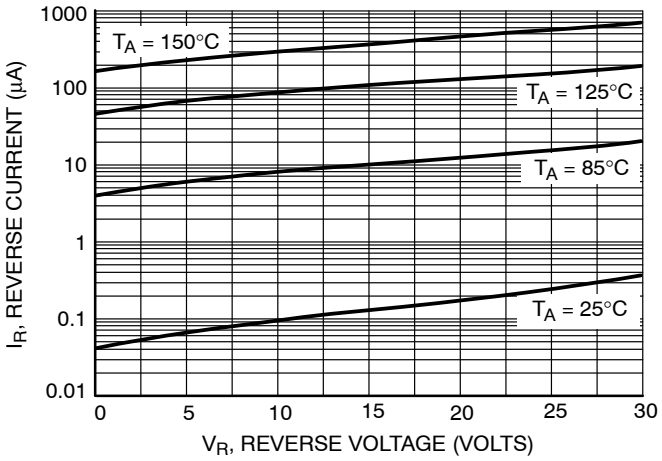


Figure 3. Leakage Current

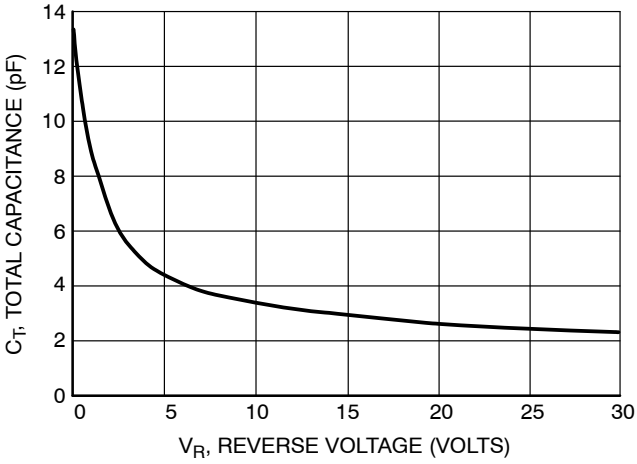
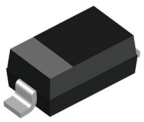
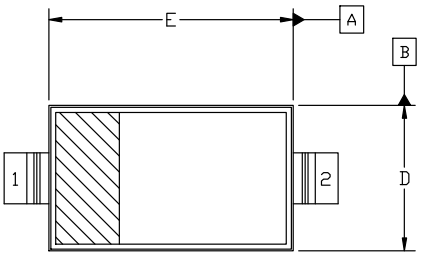


Figure 4. Total Capacitance

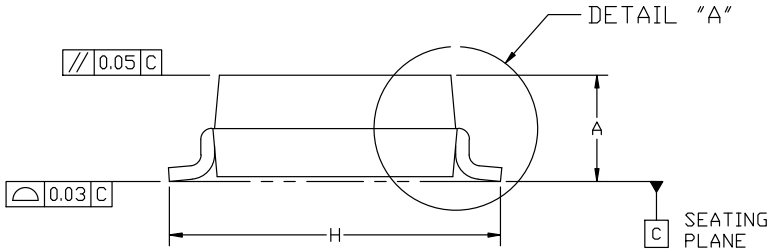


SOD−123 2−LEAD, 1.60x2.69x1.16
CASE 425
ISSUE H

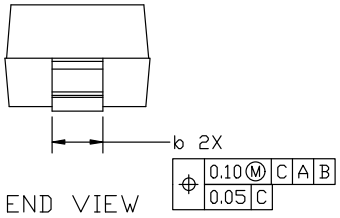
DATE 29 FEB 2024



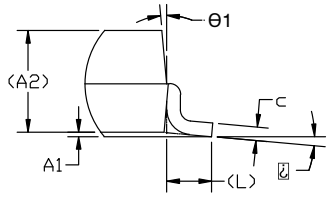
TOP VIEW



SIDE VIEW



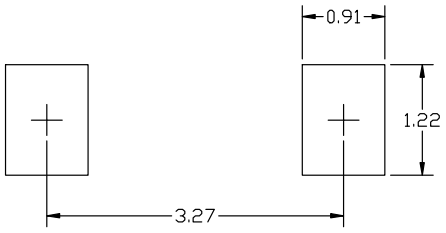
END VIEW



DETAIL "A"

NOTES:
1. DIMENSION AND TOLERANCING PER ASME Y14.5M, 2018
2. CONTROLLING DIMENSION: MILLIMETERS

	MILLIMETER		
DIM	MIN.	NOM.	MAX.
A	0.94	1.17	1.35
A1	0.00	0.05	0.10
A2		1.16 REF.	
b	0.51	0.61	0.71
c	–	–	0.15
D	1.40	1.60	1.80
E	2.54	2.69	2.84
H	3.56	3.68	3.86
L		0.25 REF.	
∠	0°		10°
θ1	0°		10°



RECOMMENDED MOUNTING FOOTPRINT

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

GENERIC MARKING DIAGRAM*

XXX = Specific Device Code
M = Date Code
▪ = Pb−Free Package
(Note: Microdot may be in either location)

*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. Some products may not follow the Generic Marking.

STYLE 1:
PIN 1. CATHODE
2. ANODE

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DESCRIPTION:	**SOD−123 2−LEAD, 1.60x2.69x1.16**	**PAGE 1 OF 1**

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