

BAT54ALT1

Preferred Device

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) @ $I_F = 10 \text{ mA}$
- Pb-Free Packages are Available

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

Rating	Symbol	Value	Unit
Reverse Voltage	V_R	30	V
Forward Power Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_F	225 1.8	mW mW/ $^\circ\text{C}$
Forward Current (DC)	I_F	200 Max	mA
Junction Temperature	T_J	-55 to 125	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$

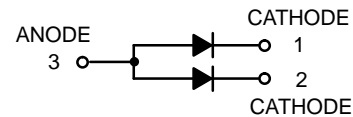
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.



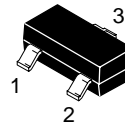
ON Semiconductor®

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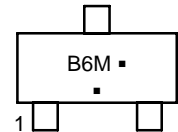
30 VOLT SCHOTTKY BARRIER DETECTOR AND SWITCHING DIODES



MARKING DIAGRAM



SOT-23
CASE 318
STYLE 12



B6 = Device Code
M = Date Code*
▪ = Pb-Free Package

(Note: Microdot may be in either location)

*Date Code orientation and/or overbar may vary depending upon manufacturing location.

ORDERING INFORMATION

Device	Package	Shipping†
BAT54ALT1	SOT-23	3000/Tape & Reel
BAT54ALT1G	SOT-23 (Pb-Free)	3000/Tape & Reel
BAT54ALT3	SOT-23	10,000/Tape & Reel
BAT54ALT3G	SOT-23 (Pb-Free)	10,000/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.

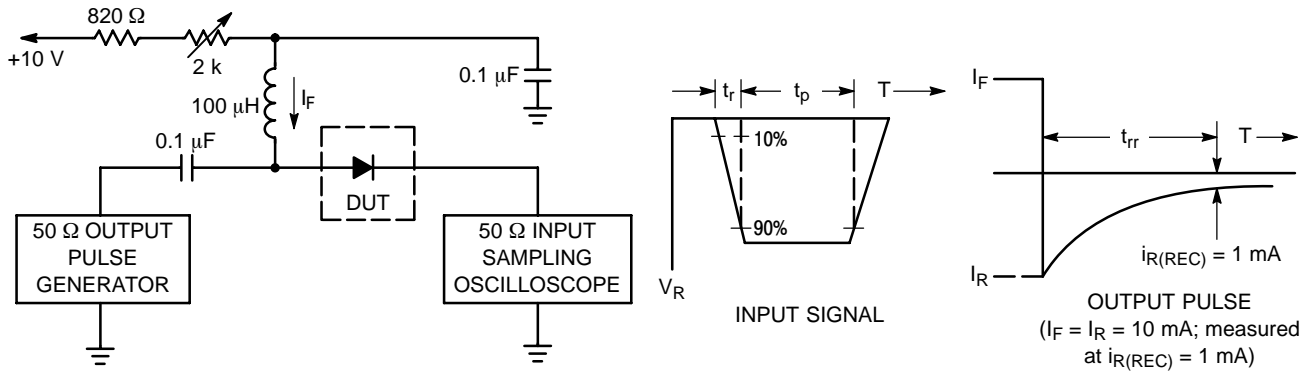
Preferred devices are recommended choices for future use and best overall value.

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

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	μA_{dc}
Forward Voltage ($I_F = 0.1 \text{ mA}_{dc}$)	V_F	–	0.22	0.24	V _{dc}
Forward Voltage ($I_F = 30 \text{ mA}_{dc}$)	V_F	–	0.41	0.5	V _{dc}
Forward Voltage ($I_F = 100 \text{ mA}_{dc}$)	V_F	–	0.52	0.8	V _{dc}
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
Forward Voltage ($I_F = 1.0 \text{ mA}_{dc}$)	V_F	–	0.29	0.32	V _{dc}
Forward Voltage ($I_F = 10 \text{ mA}_{dc}$)	V_F	–	0.35	0.40	V _{dc}
Forward Current (DC)	I_F	–	–	200	mA_{dc}
Repetitive Peak Forward Current	I_{FRM}	–	–	300	mA_{dc}
Non–Repetitive Peak Forward Current ($t < 1.0 \text{ s}$)	I_{FSM}	–	–	600	mA_{dc}

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- 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

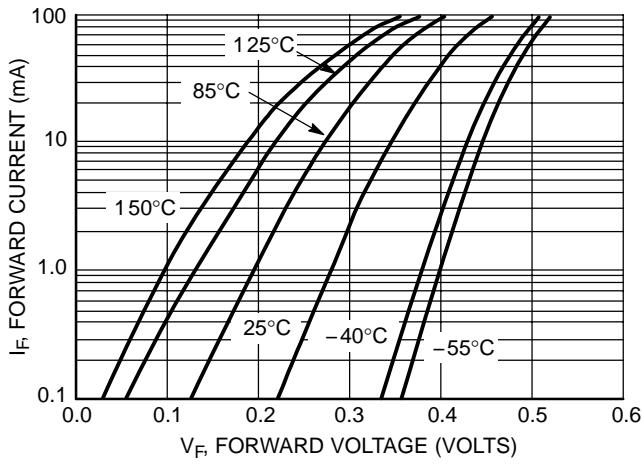


Figure 2. Forward Voltage

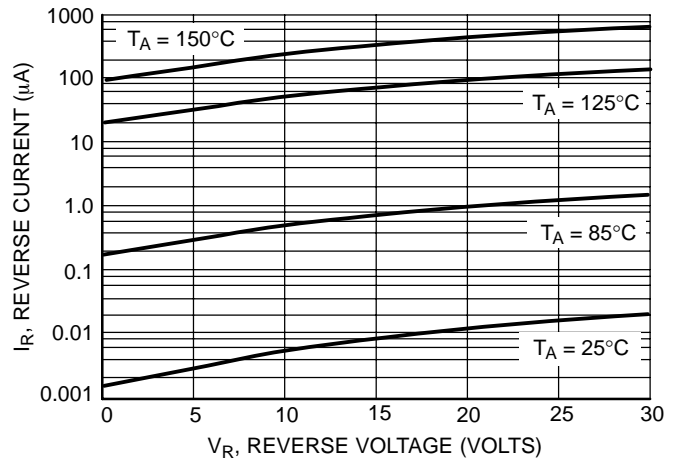


Figure 3. Leakage Current

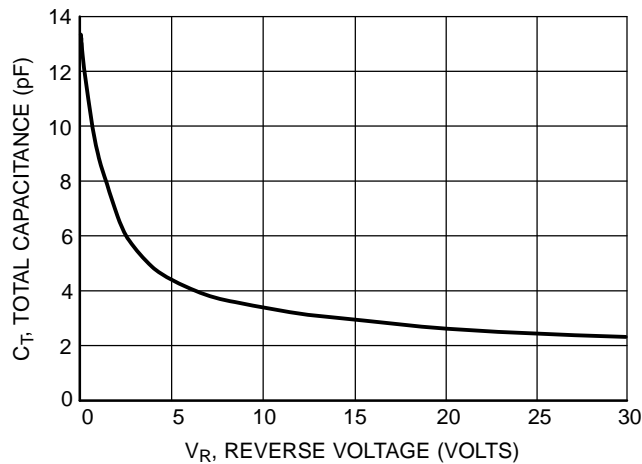
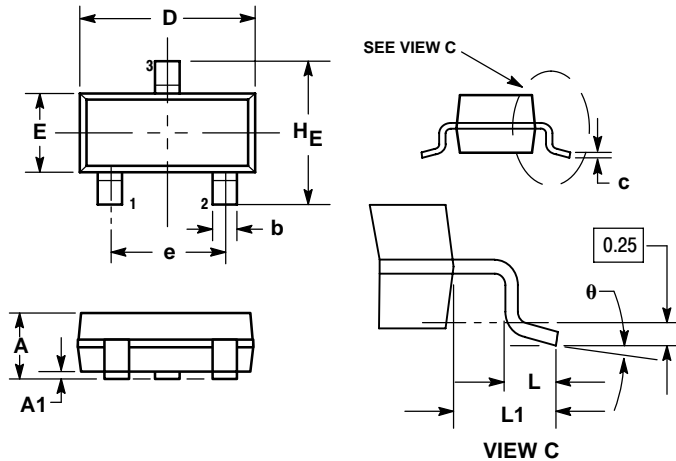


Figure 4. Total Capacitance

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PACKAGE DIMENSIONS

SOT-23 (TO-236)
CASE 318-08
ISSUE AN

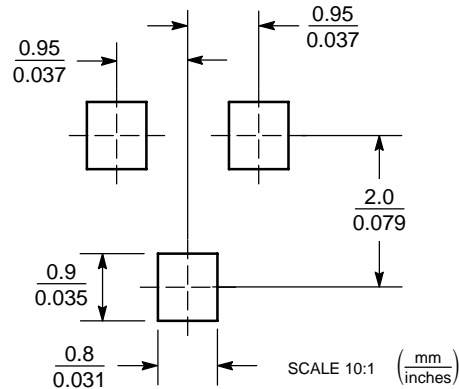


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.
 3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
 4. 318-01 THRU -07 AND -09 OBSOLETE, NEW STANDARD 318-08.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1.00	1.11	0.035	0.040	0.044
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.37	0.44	0.50	0.015	0.018	0.020
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.90	3.04	0.110	0.114	0.120
E	1.20	1.30	1.40	0.047	0.051	0.055
e	1.78	1.90	2.04	0.070	0.075	0.081
L	0.10	0.20	0.30	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
HE	2.10	2.40	2.64	0.083	0.094	0.104

STYLE 12:
PIN 1. CATHODE
2. CATHODE
3. ANODE

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.

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