



THE DATASHEET OF BAT54A-7



Product Summary (@T_A = +25°C)

V _{RRM} (V)	I _O (mA)	V _{Fmax} (V)	I _{Rmax} (μA)
30	200	0.8	2

Description

200mA surface-mount Schottky Barrier Diode in SOT23 (Standard) package, offers low turn-on voltage and fast switching capability, designed with PN Junction Guard Ring for Transient and ESD Protection, totally lead-free finish and RoHS compliant, "Green" device.

Features and Benefits

- Low Turn-on Voltage
- Fast Switching
- PN Junction Guard Ring for Transient and ESD Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability.
<https://www.diodes.com/quality/product-definitions/>
- An automotive-compliant part is available under separate datasheet ([BAT54Q /AQ /CQ /SQ](#))

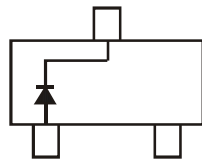
Mechanical Data

- Package: SOT23
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish Annealed over Alloy 42 Leadframe (Lead-Free Plating). Solderable per MIL-STD-202, Method 208
- Polarity: See Diagrams Below
- Weight: 0.008 grams (Approximate)

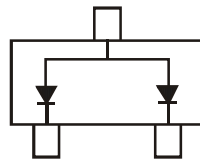
SOT23 (Standard)



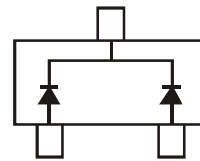
Top View



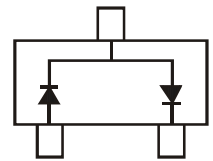
BAT54



BAT54A



BAT54C



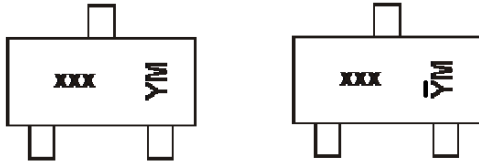
BAT54S

Ordering Information (Note 4)

Part Number	Package	Packing	
		Qty.	Carrier
BAT54-7-F	SOT23 (Standard)	3,000	Tape & Reel
BAT54A-7-F	SOT23 (Standard)	3,000	Tape & Reel
BAT54C-7-F	SOT23 (Standard)	3,000	Tape & Reel
BAT54S-7-F	SOT23 (Standard)	3,000	Tape & Reel
BAT54-13-F	SOT23 (Standard)	10,000	Tape & Reel
BAT54A-13-F	SOT23 (Standard)	10,000	Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
 3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



xxx = Product Type Marking Code

KL1 = BAT54

KL2 = BAT54A

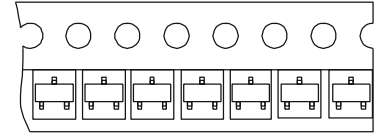
KL3 = BAT54C

KL4 = BAT54S

YM & $\bar{Y}M$ = Date Code Marking

Y or \bar{Y} = Year (ex: K = 2023)

M = Month (ex: D = December)



Date Code Key

Year	2004	-	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	R	-	K	L	M	N	P	R	S	T	U	V

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V _R RRM	30	V
Working Peak Reverse Voltage	V _R WWM		
DC Blocking Voltage	V _R		
Average Rectified Output Current (Note 5)	I _O	200	mA
Repetitive Peak Forward Current	I _F FRM	300	mA
Forward Surge Current	I _F FSM	600	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	200	mW
Typical Thermal Resistance Junction to Ambient Air (Note 5)	R _{θJA}	500	°C/W
Typical Thermal Resistance Junction to Case (Note 6)	R _{θJC}	180	°C/W
Operating and Storage Temperature Range (Note 7)	T _J , T _{STG}	-65 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V _{(BR)R}	30	—	—	V	I _{RS} = 100μA
Forward Voltage	V _F	—	—	240	mV	I _F = 0.1mA
		—	—	320		I _F = 1mA
		—	—	400		I _F = 10mA
		—	—	500		I _F = 30mA
		—	—	800		I _F = 100mA
Reverse Leakage Current (Note 8)	I _R	—	—	2.0	μA	V _R = 25V
Total Capacitance	C _T	—	—	10	pF	V _R = 1.0V, f = 1.0MHz
Reverse Recovery Time	t _{RR}	—	—	5.0	ns	I _F = 10mA through I _R = 10mA to I _R = 1.0mA, R _L = 100Ω

Notes: 5. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com/package-outlines.html>.

6. Device mounted on Polyimide substrate PC board. FR-4 2oz 1*MRP layout.

7. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: dP_D/dT_J < 1 / R_{θJA}.

8. Short duration test pulse used to minimize self-heating effect.

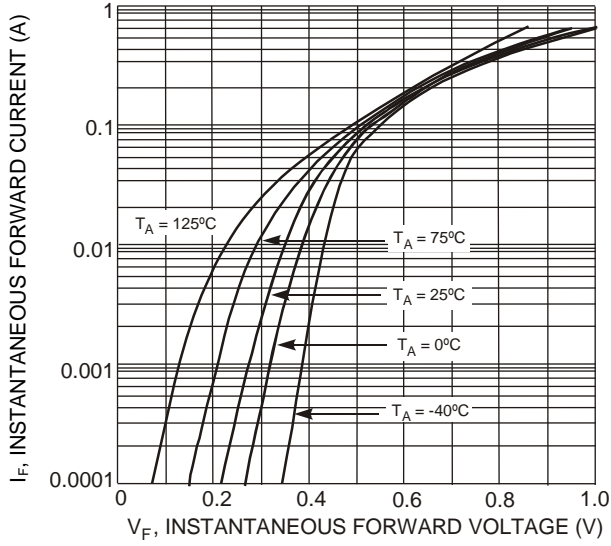


Figure 1 Typical Forward Characteristics

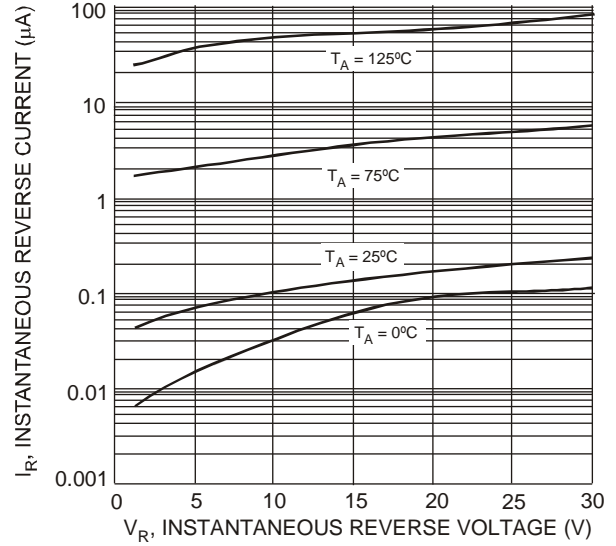


Figure 2 Typical Reverse Characteristics

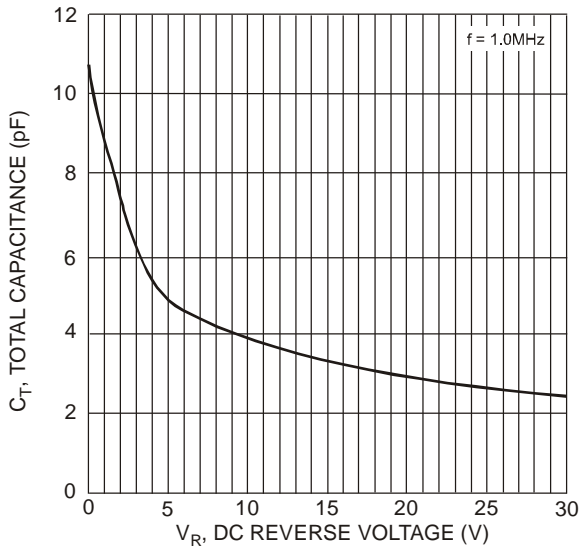


Figure 3 Total Capacitance vs. Reverse Voltage

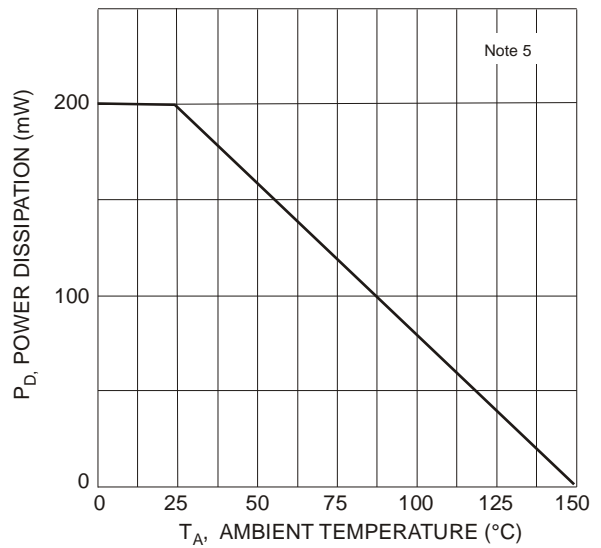
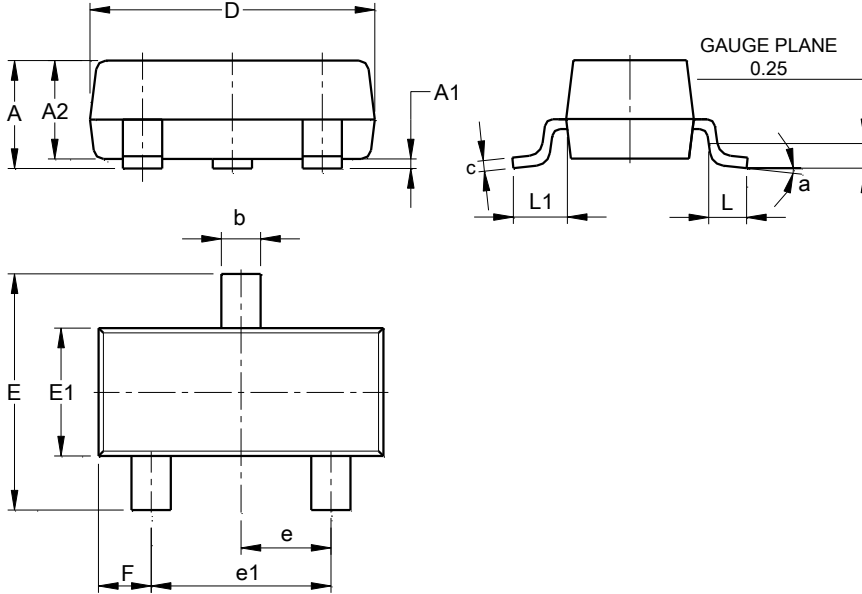


Figure 4 Power Derating Curve

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23 (Standard)

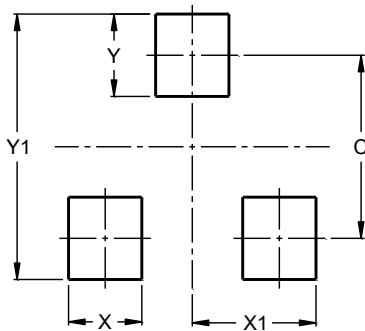


SOT23 (Standard)			
Dim	Min	Max	Typ
A	0.90	1.15	1.025
A1	0.00	0.10	0.05
A2	0.85	1.10	0.975
b	0.30	0.51	0.40
c	0.080	0.202	0.11
D	2.80	3.00	2.90
E	2.25	2.55	2.40
E1	1.20	1.40	1.30
e	0.89	1.03	0.915
e1	1.78	2.05	1.83
F	0.40	0.60	0.535
L1	0.45	0.61	0.55
L	0.25	0.55	0.40
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23 (Standard)



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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