



# THE DATASHEET OF BAT54S-7



**Product Summary** (@T<sub>A</sub> = +25°C)

V <sub>RRM</sub> (V)	I <sub>O</sub> (mA)	V <sub>Fmax</sub> (V)	I <sub>Rmax</sub> (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](#))

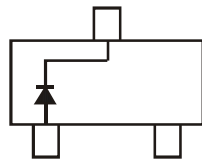
**Mechanical Data**

- 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)

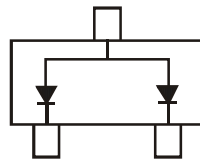
SOT23 (Standard)



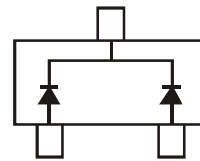
Top View



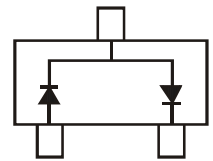
BAT54



BAT54A



BAT54C



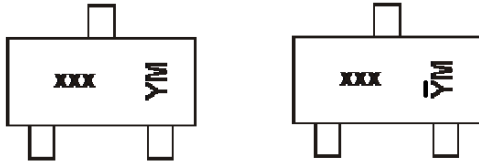
BAT54S

**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

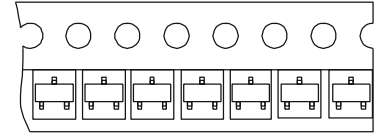
KL3 = BAT54C

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<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>R</sub> RRM	30	V
Working Peak Reverse Voltage	V <sub>R</sub> WWM		
DC Blocking Voltage	V <sub>R</sub>		
Average Rectified Output Current (Note 5)	I <sub>O</sub>	200	mA
Repetitive Peak Forward Current	I <sub>F</sub> FRM	300	mA
Forward Surge Current	I <sub>F</sub> FSM	600	mA

## Thermal Characteristics

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

## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

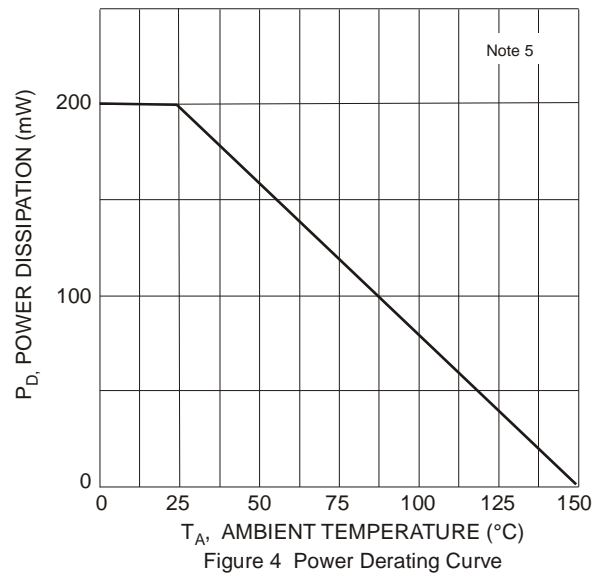
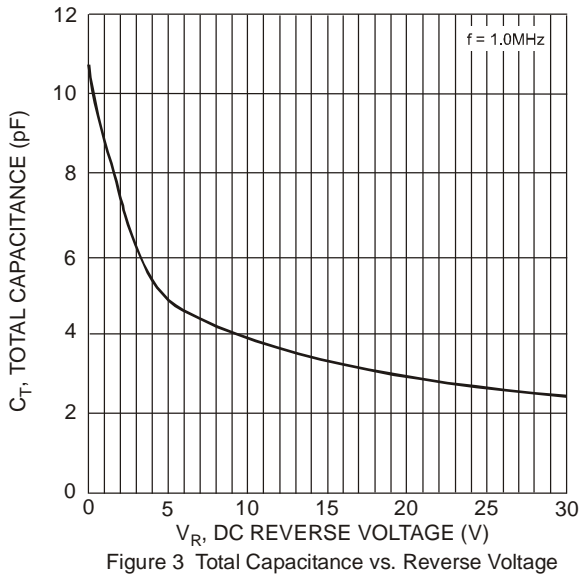
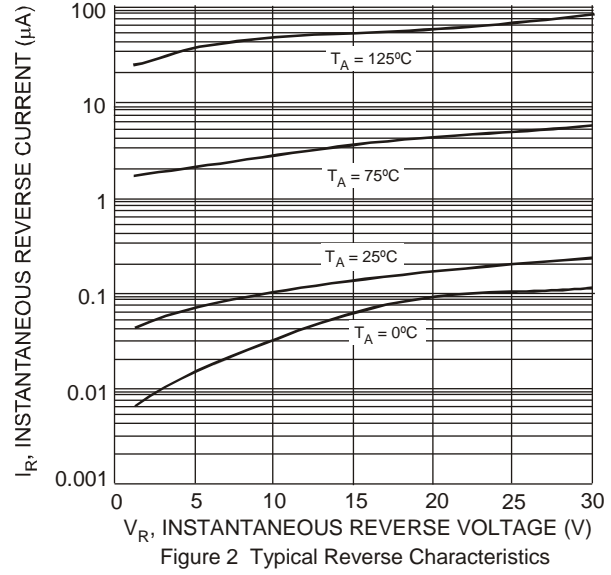
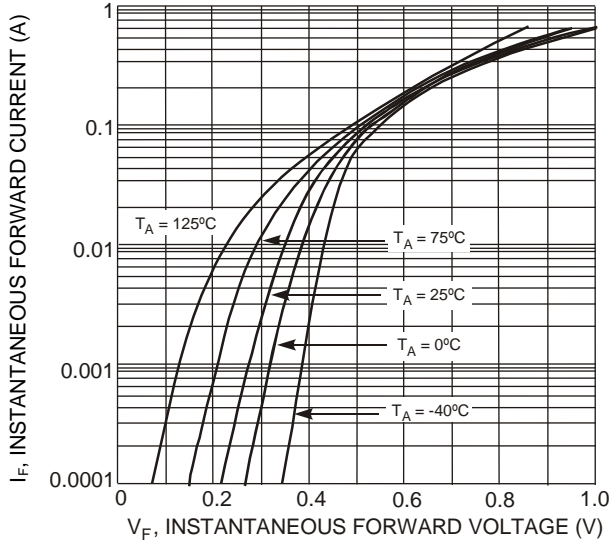
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	V <sub>(BR)R</sub>	30	—	—	V	I <sub>RS</sub> = 100μA
Forward Voltage	V <sub>F</sub>	—	—	240	mV	I <sub>F</sub> = 0.1mA
		—	—	320		I <sub>F</sub> = 1mA
		—	—	400		I <sub>F</sub> = 10mA
		—	—	500		I <sub>F</sub> = 30mA
		—	—	800		I <sub>F</sub> = 100mA
Reverse Leakage Current (Note 8)	I <sub>R</sub>	—	—	2.0	μA	V <sub>R</sub> = 25V
Total Capacitance	C <sub>T</sub>	—	—	10	pF	V <sub>R</sub> = 1.0V, f = 1.0MHz
Reverse Recovery Time	t <sub>RR</sub>	—	—	5.0	ns	I <sub>F</sub> = 10mA through I <sub>R</sub> = 10mA to I <sub>R</sub> = 1.0mA, R <sub>L</sub> = 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<sub>D</sub>/dT<sub>J</sub> < 1 / R<sub>θJA</sub>.

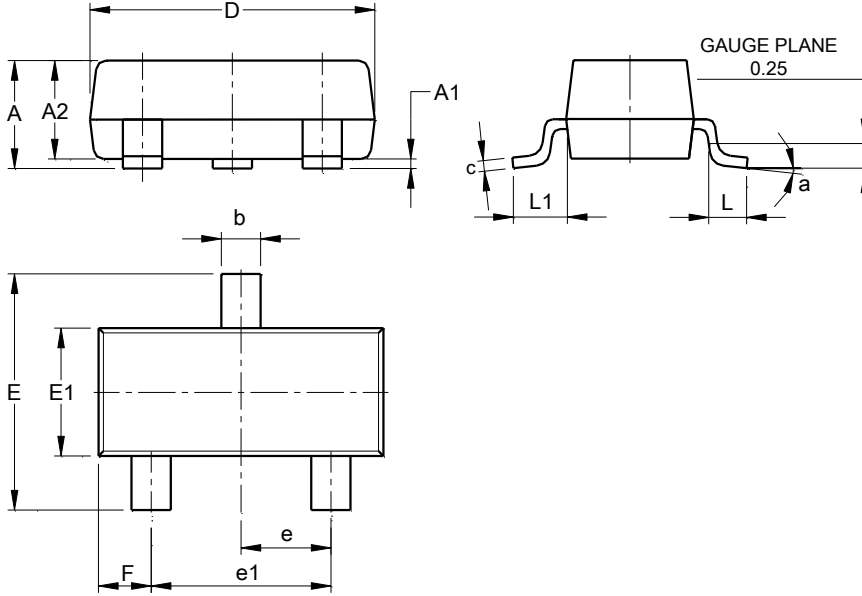
8. Short duration test pulse used to minimize self-heating effect.



**Package Outline Dimensions**

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

**SOT23 (Standard)**

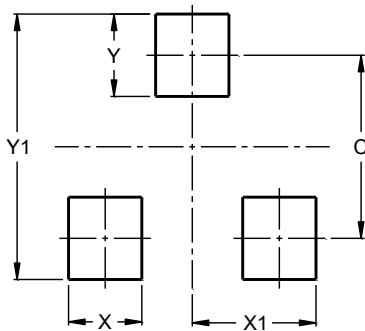


SOT23 (Standard)			
Dim	Min	Max	Typ
A	0.90	1.15	1.025
A1	0.00	0.10	0.05
A2	0.85	1.10	0.975
b	0.30	0.51	0.40
c	0.080	0.202	0.11
D	2.80	3.00	2.90
E	2.25	2.55	2.40
E1	1.20	1.40	1.30
e	0.89	1.03	0.915
e1	1.78	2.05	1.83
F	0.40	0.60	0.535
L1	0.45	0.61	0.55
L	0.25	0.55	0.40
a	0°	8°	--
All Dimensions in mm			

**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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