



# BAT54T/AT/CT/ST

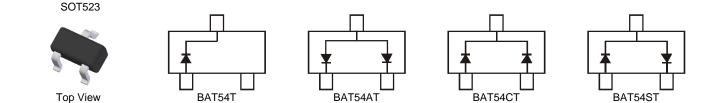
### SURFACE-MOUNT SCHOTTKY BARRIER DIODE

### Features

- Ultra-Small Surface-Mount Package
- Low-Forward Voltage Drop
- 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)
- An automotive-compliant part is available under separate datasheet (<u>BAT54TQ/STQ</u>)

### **Mechanical Data**

- Package: SOT523
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (3)
- Lead-Free Plating
- Polarity: See Diagrams Below
- Weight: 0.002 grams (Approximate)



# Ordering Information (Note 4)

Part Number	Package	Pa	Packing		
Fait Nulliber	Fackage	Qty.	Carrier		
BAT54T-7-F	SOT523	3,000	Tape & Reel		
BAT54AT-7-F	SOT523	3,000	Tape & Reel		
BAT54CT-7-F	SOT523	3,000	Tape & Reel		
BAT54ST-7-F	SOT523	3,000	Tape & Reel		

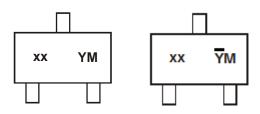
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.

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**



xx = Product Type Marking Code L1 = BAT54T L2 = BAT54AT L3 = BAT54CT L4 = BAT54ST YM or  $\overline{Y}M$  = Date Code Marking Y or  $\overline{Y}$  = Year (ex: K = 2023) M = Month (ex: 5 = May)

#### Date Code Key

Notes:

Year	2003	-	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Code	Р	-	K	L	М	Ν	Р	R	S	Т	U	V
Month	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec



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

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	Vrrm Vrwm Vr	30	V
Forward Continuous Current (Note 5)	lгм	200	mA
Repetitive Peak Forward Current	IFRM	300	mA
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine Wave Superimposed on Rated Load	IFSM	600	mA

# **Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	PD	220	mW
Typical Thermal Resistance, Junction to Ambient (Note 5)	Reja	570	°C/W
Operating and Storage Temperature Range	TJ, TSTG	-65 to +150	°C

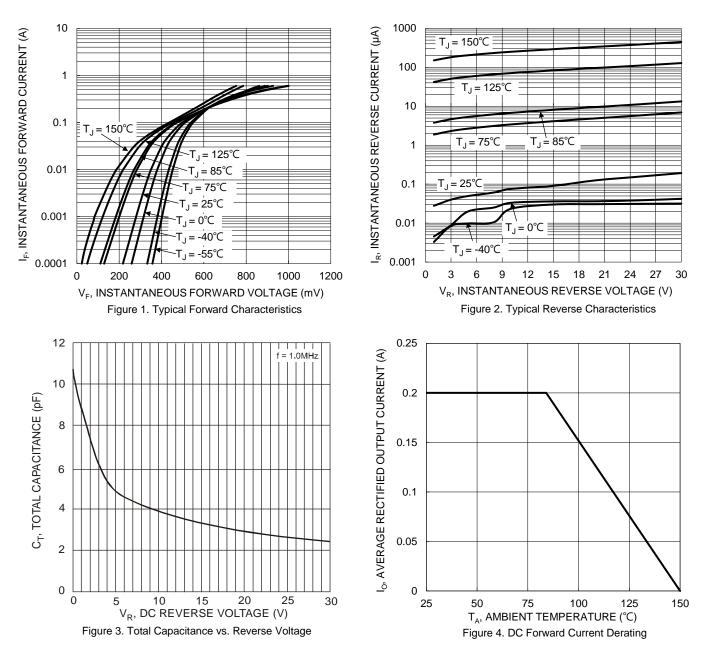
# Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	V(BR)R	30	_	—	V	I <sub>R</sub> = 100μA
Forward Voltage	VF			240 320 400 500 1,000	mV	IF = 0.1mA IF = 1mA IF = 10mA IF = 30mA IF = 100mA
Reverse Leakage Current (Note 6)	I <sub>R</sub>		_	2.0	μA	V <sub>R</sub> = 25V
Total Capacitance	Ст	_	_	10	pF	V <sub>R</sub> = 10V, f = 1.0MHz
Reverse Recovery Time	t <sub>RR</sub>	_	_	5.0	ns	IF = IR = 10mA IRR = 0.1 x IR, RL = 100Ω

Notes: 5. Device mounted on FR-4 substrate PC board with recommended pad layout, which can be found on our website at http://www.diodes.com/package-outlines.html.Short duration pulse test used to minimize self-heating effect.



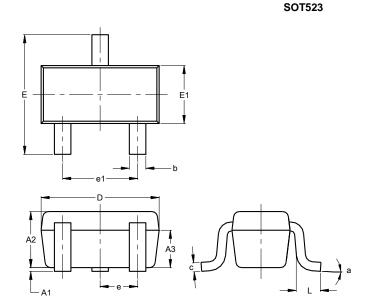
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### **Package Outline Dimensions**

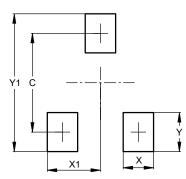
Please see http://www.diodes.com/package-outlines.html for the latest version.



SOT523							
Dim	Min	Max	Тур				
A1	0.00	0.10	0.05				
A2	0.60	0.80	0.75				
A3	0.45	0.65	0.50				
b	0.15	0.30	0.22				
С	0.10	0.20	0.12				
D	1.50	1.70	1.60				
Е	1.45	1.75	1.60				
E1	0.75	0.85	0.80				
е	0.50 BSC						
e1	0.90	1.10	1.00				
L	0.20	0.40	0.33				
а	0°		8°				
A	All Dimensions in mm						

# **Suggested Pad Layout**

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



### SOT523

Dimensions	Value (in mm)		
С	1.29		
Х	0.40		
X1	0.70		
Y	0.51		
Y1	1.80		

- Notes: 7. The suggested land pattern dimensions have been provided for reference only, as actual pad layouts may vary depending on application. These dimensions may be modified based on user equipment capability or fabrication criteria. A more robust pattern may be desired for wave soldering and is calculated by adding 0.2 mm to the 'Z' dimension. For further information, please reference document IPC-7351A, Naming Convention for Standard SMT Land Patterns, and for International grid details, please see document IEC, Publication 97.
  - 8. For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.



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