



**THE DATASHEET OF  
BAT54W-7-F**



**Product Summary (@ +25°C)**

V <sub>RRM</sub> (V)	I <sub>F</sub> (mA)	V <sub>F</sub> Max (mV) @ 1mA	I <sub>R</sub> Max (µA) @ 25V
30	200	320	2

**Features and Benefits**

- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Surface Mount Package
- 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 ([BAT54WQ /AWQ /CWQ /SWQ](#))**

**Applications**

- SMPS
- DC-DC converters
- Freewheeling diodes
- Reverse polarity protections
- Blocking diodes

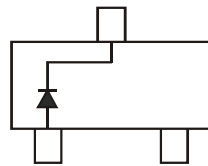
**Mechanical Data**

- Package: SOT323
- 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 ③
- Polarity: See Diagrams Below
- Weight: 0.006 grams (Approximate)

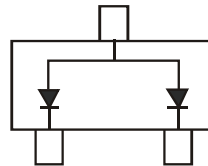
SOT323 (Standard)



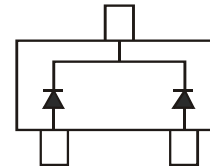
Top View



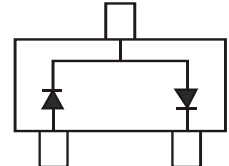
BAT54W



BAT54AW



BAT54CW



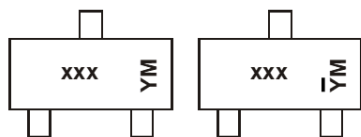
BAT54SW

**Ordering Information (Note 4)**

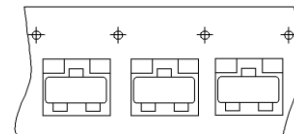
Part Number	Package	Packing	
		Qty.	Carrier
BAT54W-7-F	SOT323 (Standard)	3000	Tape & Reel
BAT54W-13-F	SOT323 (Standard)	10000	Tape & Reel
BAT54AW-7-F	SOT323 (Standard)	3000	Tape & Reel
BAT54AW-13-F	SOT323 (Standard)	10000	Tape & Reel
BAT54CW-7-F	SOT323 (Standard)	3000	Tape & Reel
BAT54CW-13-F	SOT323 (Standard)	10000	Tape & Reel
BAT54SW-7-F	SOT323 (Standard)	3000	Tape & Reel
BAT54SW-13-F	SOT323 (Standard)	10000	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  
 KL5 = BAT54W  
 KL6 = BAT54AW  
 KL7 = BAT54CW  
 KL8 = BAT54SW  
 YM & YM = Date Code Marking  
 Y & Y = Year (ex: J = 2022)  
 M = Month (ex: 9 = September)



Date Code Key

Year	2003	...	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031
Code	P	...	J	K	L	M	N	O	P	R	S	T

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 Working Peak Reverse Voltage DC Blocking Voltage	V <sub>RRM</sub> V <sub>RWM</sub> V <sub>R</sub>	30	V
Forward Continuous Current (Note 5)	I <sub>F</sub>	200	mA
Repetitive Peak Forward Current (Note 5)	I <sub>FRM</sub>	300	mA
Forward Surge Current (Note 5) @ t < 1.0s	I <sub>FSM</sub>	600	mA

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	200	mW
Thermal Resistance Junction to Ambient Air (Note 5)	R <sub>θJA</sub>	625	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-65 to +125	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 6)	V <sub>(BR)R</sub>	30	—	—	V	I <sub>R</sub> = 100μA
Forward Voltage	V <sub>F</sub>	—	—	240 320 400 500 1000	mV	I <sub>F</sub> = 0.1mA I <sub>F</sub> = 1mA I <sub>F</sub> = 10mA I <sub>F</sub> = 30mA I <sub>F</sub> = 100mA
Reverse Leakage Current (Note 6)	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. Mounted on FR-4 PC board with recommended pad layout which can be found on our website at <http://www.diodes.com/package-outlines.html>.
  6. Short duration pulse test used to minimize self-heating effect.

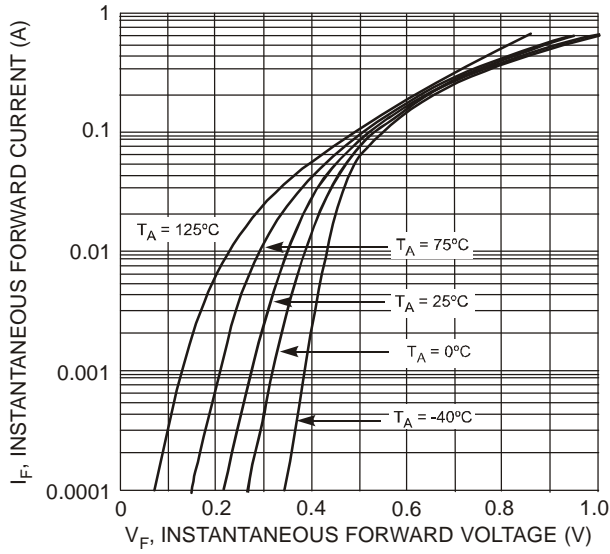


Fig. 1 Typical Forward Characteristics

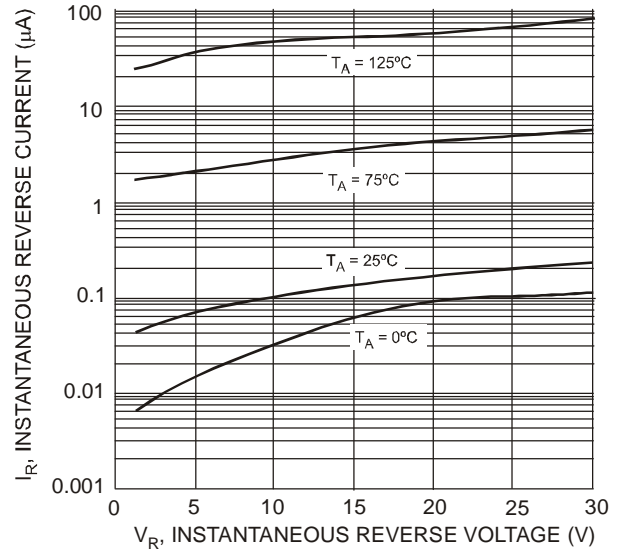


Fig. 2 Typical Reverse Characteristics

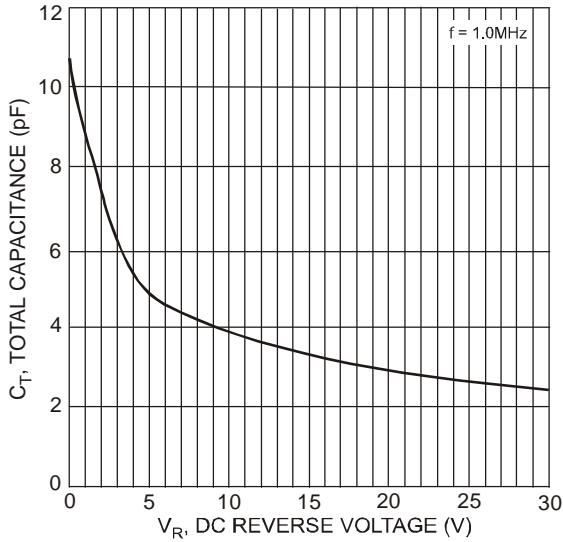


Fig. 3 Total Capacitance vs. Reverse Voltage

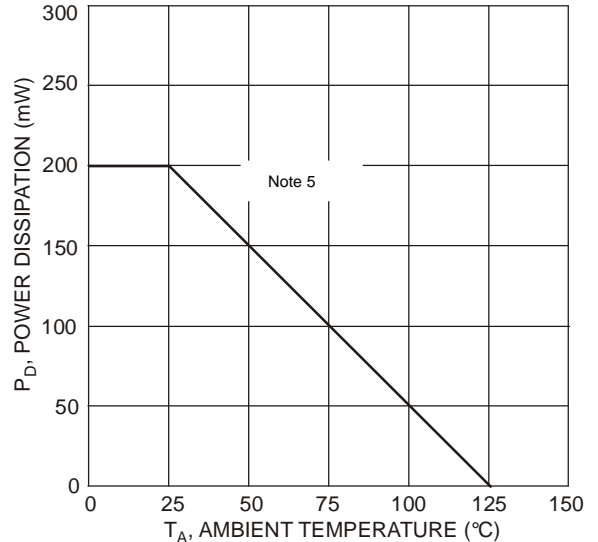
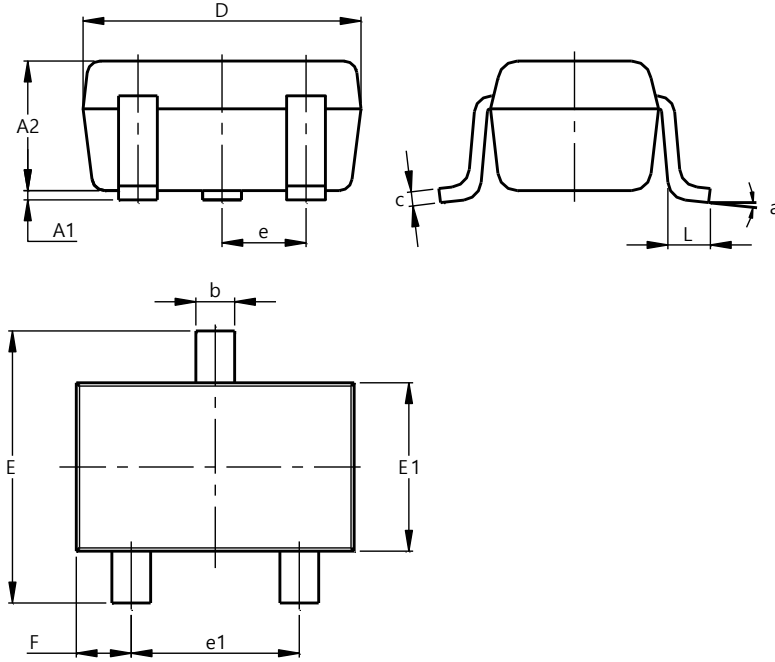


Fig. 4 Power Derating Curve

**Package Outline Dimensions**

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

**SOT323 (Standard)**

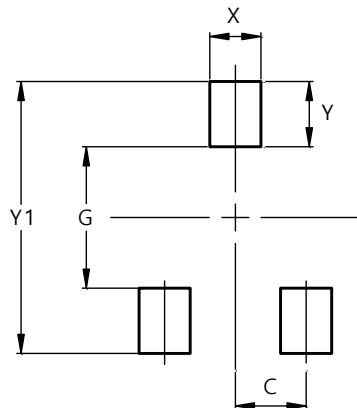


SOT323 (Standard)			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.80	1.00	0.90
b	0.20	0.40	0.30
c	0.08	0.18	0.13
D	1.80	2.20	2.00
E	2.00	2.45	2.225
E1	1.15	1.35	1.25
e	--	--	0.65
e1	1.20	1.40	1.30
F	0.25	0.475	0.3625
L	0.25	0.46	0.355
a	0°	8°	--
All Dimensions in mm			

**Suggested Pad Layout**

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

**SOT323 (Standard)**



Dimensions	Value (in mm)
C	0.650
G	1.300
X	0.470
Y	0.600
Y1	2.500

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