

## Features

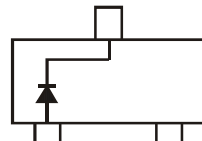
- Low Turn-on Voltage
- Fast Switching
- PN Junction Guard Ring for Transient and ESD Protection
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3 & 4)**
- **Qualified to AEC-Q101 Standards for High Reliability**

## Mechanical Data

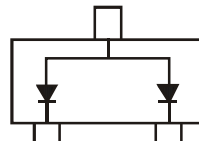
- Case: SOT23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish annealed over Alloy 42 leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Polarity: See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



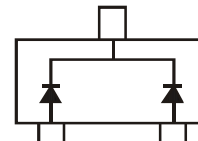
Top View



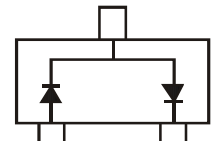
BAT54



BAT54A



BAT54C



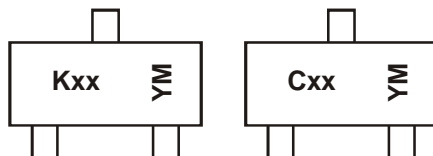
BAT54S

## Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
BAT54-7-F	Commercial	SOT23	3000/Tape & Reel
BAT54A-7-F	Commercial	SOT23	3000/Tape & Reel
BAT54C-7-F	Commercial	SOT23	3000/Tape & Reel
BAT54S-7-F	Commercial	SOT23	3000/Tape & Reel
BAT54Q-7-F	Automotive	SOT23	3000/Tape & Reel
BAT54AQ-7-F	Automotive	SOT23	3000/Tape & Reel
BAT54CQ-7-F	Automotive	SOT23	3000/Tape & Reel
BAT54SQ-7-F	Automotive	SOT23	3000/Tape & Reel
BAT54-13-F	Commercial	SOT23	10,000/Tape & Reel
BAT54A-13-F	Commercial	SOT23	10,000/Tape & Reel
BAT54Q-13	Automotive	SOT23	10,000/Tape & Reel
BAT54AQ-13	Automotive	SOT23	10,000/Tape & Reel
BAT54SQ-13	Automotive	SOT23	10,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
  2. See <http://www.diodes.com> 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. Products manufactured with date code VD (Week 50, 2008) and newer are built with Green Molding Compound. Products manufactured with date code prior to VD are built with Non-Green Molding Compound and may contain Halogens or Sb<sub>2</sub>O<sub>3</sub> Fire Retardants.
  5. For packaging details, go to our website at <http://www.diodes.com>.

## Marking Information



K = (SAT,Shanghai Assembly / test site)  
 C = (CAT/DTC, ChengDu Assembly / test site)  
 xx = Product Type Marking Code  
   L1 = BAT54  
   L2 = BAT54A  
   L3 = BAT54C  
   L4 = BAT54S  
 YM = Date Code Marking  
 Y = Year (ex: T = 2006)  
 M = Month (ex: 9 = September)

### Date Code Key

Year	1998	...	2002	2003	...	2009	2010	2011	2012	2013	2014	2015	2016	2017
Code	J	...	N	P	...	W	X	Y	Z	A	B	C	D	E
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** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	30	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_R$		
Forward Continuous Current (Note 6)	$I_F$	200	mA
Repetitive Peak Forward Current	$I_{FRM}$	300	mA
Forward Surge Current @ $t < 1.0\text{s}$	$I_{FSM}$	600	mA

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	$P_D$	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	500	$^\circ\text{C/W}$
Operating and Storage Temperature Range (Note 7)	$T_J, T_{STG}$	-65 to +150	$^\circ\text{C}$

**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	$V_{(BR)R}$	30	—	—	V	$I_{RS} = 100\mu\text{A}$
Forward Voltage	$V_F$	—	—	240	mV	$I_F = 0.1\text{mA}$
				320		$I_F = 1\text{mA}$
				400		$I_F = 10\text{mA}$
				500		$I_F = 30\text{mA}$
				800		$I_F = 100\text{mA}$
Reverse Leakage Current (Note 8)	$I_R$	—	—	2.0	$\mu\text{A}$	$V_R = 25\text{V}$
Total Capacitance	$C_T$	—	—	10	pF	$V_R = 1.0\text{V}, f = 1.0\text{MHz}$
Reverse Recovery Time	$t_{rr}$	—	—	5.0	ns	$I_F = 10\text{mA}$ through $I_R = 10\text{mA}$ to $I_R = 1.0\text{mA}, R_L = 100\Omega$

- Notes:
6. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at <http://www.diodes.com>.
  7. The heat generated must be less than the thermal conductivity from Junction-to-Ambient:  $dP_D/dT_J < 1/R_{\theta JA}$
  8. Short duration test pulse used to minimize self-heating effect.

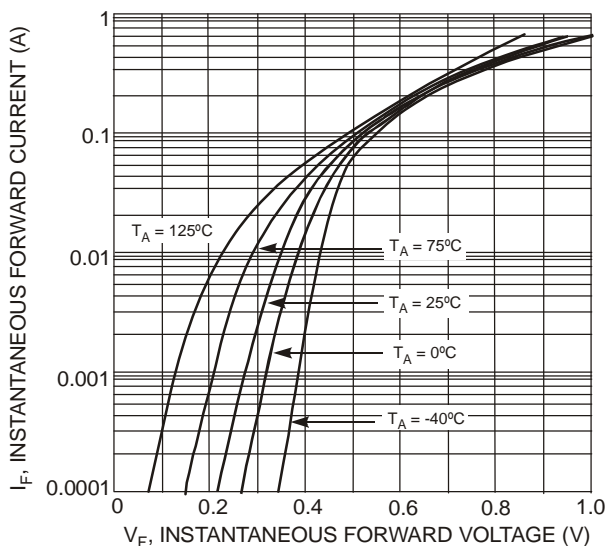


Fig. 1 Typical Forward Characteristics

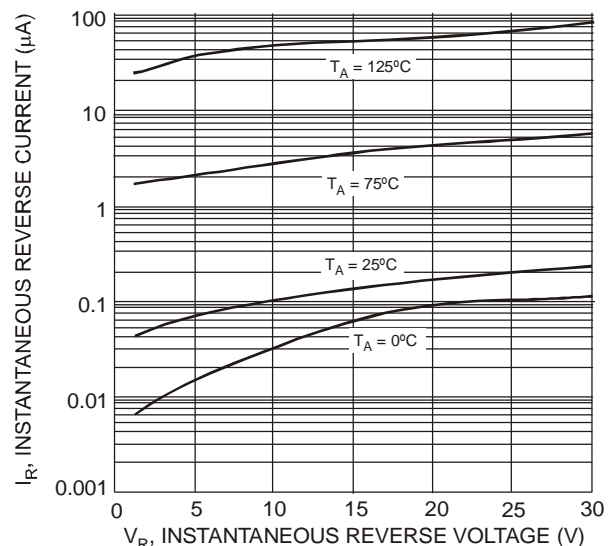


Fig. 2 Typical Reverse Characteristics

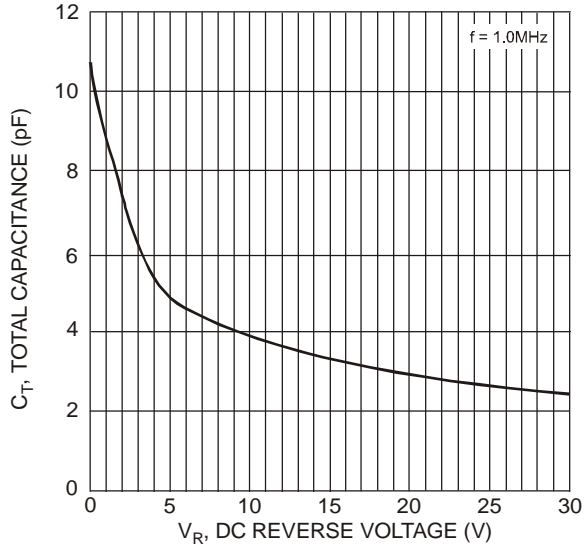


Fig. 3 Total Capacitance vs. Reverse Voltage

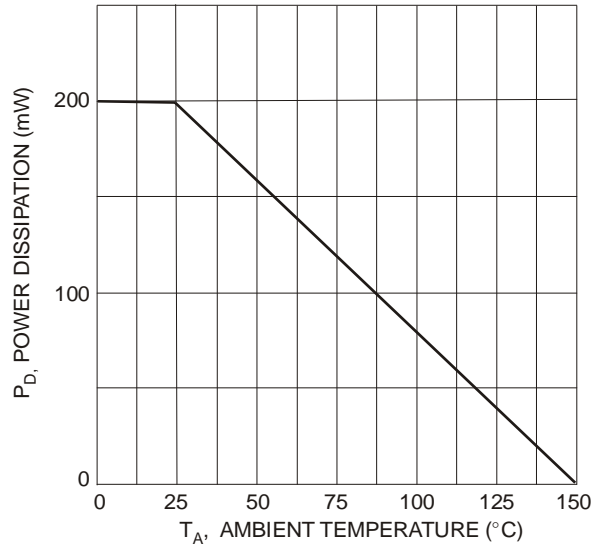
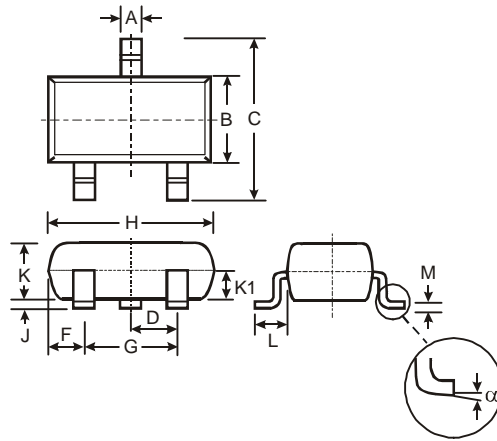


Fig. 4 Power Derating Curve

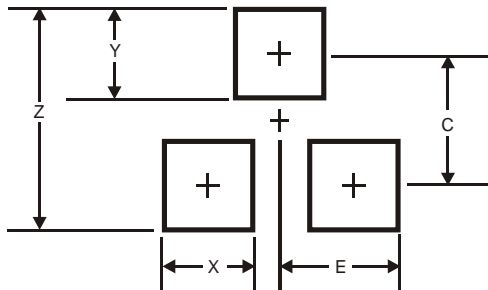
**Package Outline Dimensions**



SOT23			
Dim	Min	Max	Typ
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.903	1.10	1.00
K1	-	-	0.400
L	0.45	0.61	0.55
M	0.085	0.18	0.11
α	0°	8°	-

All Dimensions in mm

**Suggested Pad Layout**



Dimensions	Value (in mm)
Z	2.9
X	0.8
Y	0.9
C	2.0
E	1.35

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