SURFACE MOUNT SCHOTTKY BARRIER DIODE

Product Summary @T_A = +25°C

V_{RRM} (V)	I_O (mA)	V_{Fmax} (V)	I_{Rmax} (µA)
30	200	0.8	2

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)**
- **Qualified to AEC-Q101 Standards for High Reliability**

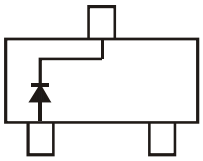
Description

200mA surface mount Schottky Barrier Diode in SOT23 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.

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 e3
- Polarity: See Diagrams Below
- Weight: 0.008 grams (approximate)

Top View



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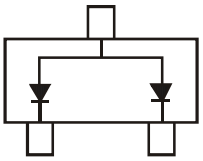

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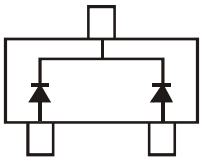

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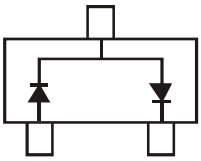


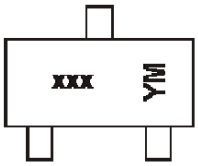
BAT54S

Ordering Information (Note 4)

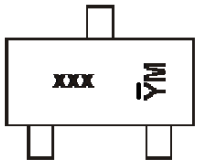
Part Number	Compliance	Case	Packaging
BAT54-7-F	Standard	SOT23	3000/Tape & Reel
BAT54A-7-F	Standard	SOT23	3000/Tape & Reel
BAT54C-7-F	Standard	SOT23	3000/Tape & Reel
BAT54S-7-F	Standard	SOT23	3000/Tape & Reel
BAT54Q-7-F	Automotive	SOT23	3000/Tape & Reel
BAT54AQ-7-F	Automotive	SOT23	3000/Tape & Reel
BAT54CQ-7-F	Automotive	SOT23	3000/Tape & Reel
BAT54SQ-7-F	Automotive	SOT23	3000/Tape & Reel
BAT54-13-F	Standard	SOT23	10,000/Tape & Reel
BAT54A-13-F	Standard	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/quality/lead_free.html 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 http://www.diodes.com/products/packages.html.

Marking Information



Shanghai A/T Site



Chengdu A/T Site

xxx = Product Type Marking Code
KL1 = BAT54
KL2 = BAT54A
KL3 = BAT54C
KL4 = BAT54S
YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)
ȲM = Date Code Marking for CAT (Chengdu Assembly/ Test site)
Y or Ȳ = Year (ex: A = 2013)
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°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	30	V
Forward Continuous Current (Note 5)	I_F	200	mA
Repetitive Peak Forward Current	I_{FRM}	300	mA
Forward Surge Current @ t < 1.0s	I_{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)	$R_{\theta JA}$	500	°C/W
Typical Thermal Resistance Junction to Case (Note 8)	$R_{\theta JC}$	180	°C/W
Operating and Storage Temperature Range (Note 6)	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 7)	$V_{(BR)R}$	30	—	—	V	I_{RS} = 100μA
Forward Voltage	V_F	—	—	240 320 400 500 800	mV	I_F = 0.1mA I_F = 1mA I_F = 10mA I_F = 30mA I_F = 100mA
Reverse Leakage Current (Note 7)	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.
6. The heat generated must be less than the thermal conductivity from Junction-to-Ambient: $dP_D/dT_J < 1/R_{\theta JA}$
7. Short duration test pulse used to minimize self-heating effect.
8. Device mounted on Polymide substrate PC board. FR4 2oz 1*MRP layout.

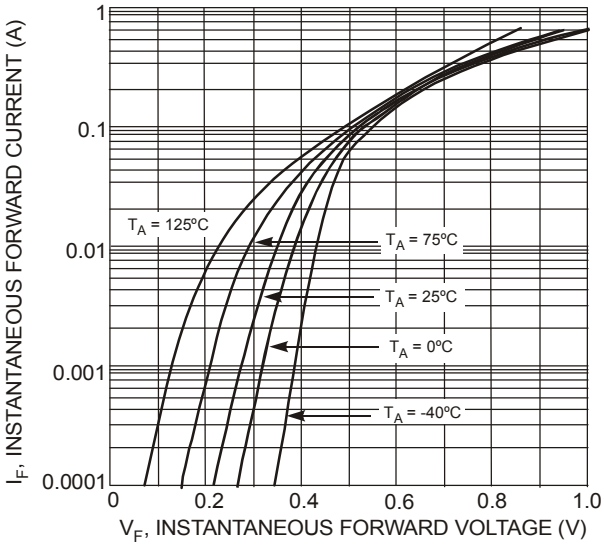


Figure 1 Typical Forward Characteristics

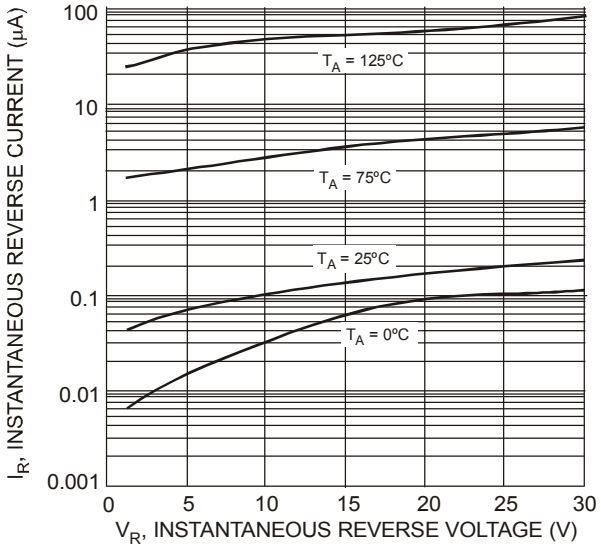


Figure 2 Typical Reverse Characteristics

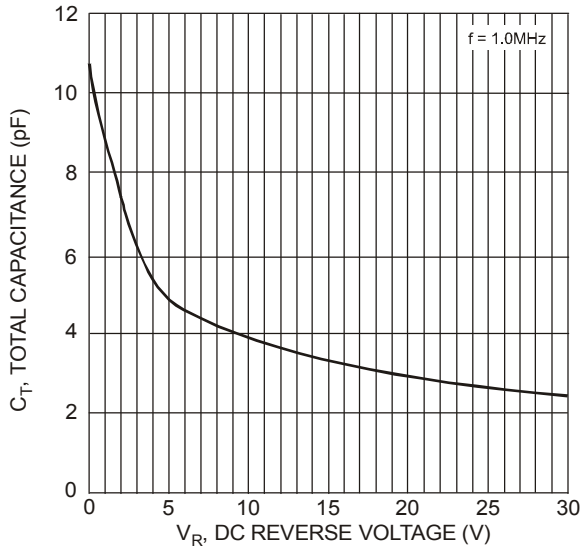


Figure 3 Total Capacitance vs. Reverse Voltage

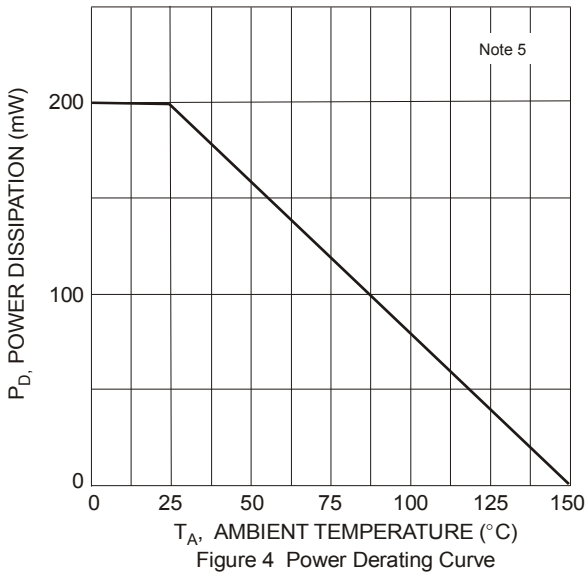
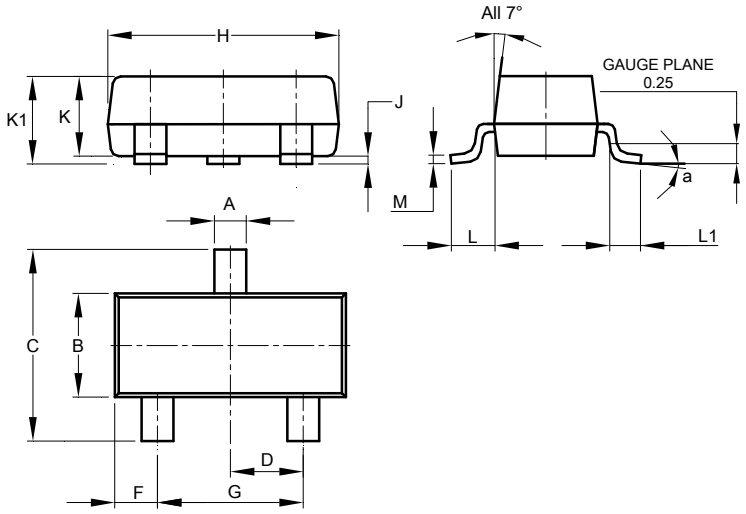


Figure 4 Power Derating Curve

Package Outline Dimensions

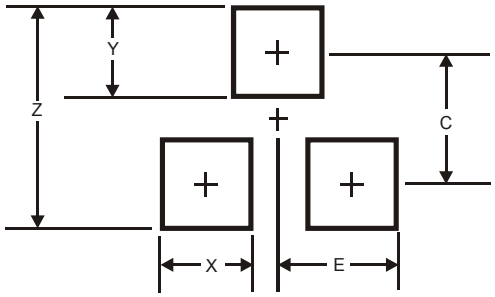
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



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	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
α	8°		
All Dimensions in mm			

Suggested Pad Layout

Please see AP02001 at http://www.diodes.com/datasheets/ap02001.pdf for the latest version.



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

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