BAT46WQ

SURFACE MOUNT SCHOTTKY BARRIER DIODE

Product Summary

V_R (V)	I_F (A)	V_F Max (V) @ +25°C	I_R Max (μA) @ +25°C
100	0.15	1.0	2.0

Features and Benefits

- High Breakdown Voltage
- Low Turn-On Voltage
- Guard Ring Construction for Transient 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**
- **PPAP Capable (Note 4)**

Description and Applications

This Schottky Barrier diode is designed to meet the stringent requirements of AEC-Q101. It is ideally suited to use as:

- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode

Mechanical Data

- Case: SOD123
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Matte Tin Finish Annealed over Alloy 42 Leadframe. Terminals: Solderable per MIL-STD-202, Method 208 e3
- Polarity: Cathode Band
- Weight: 0.01 grams (Approximate)

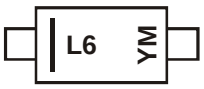
Top View

Ordering Information (Note 5)

Part Number	Case	Packaging
BAT46WQ-7-F	SOD123	3,000/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. Automotive products are AEC-Q101 qualified and are PPAP capable. Refer to http://www.diodes.com/product_compliance_definitions.html.
5. For packaging details, go to our website at http://www.diodes.com/products/packages.html.

Marking Information



L6 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: D = 2016)
M = Month (ex: 9 = September)

Date Code Key

Year	2004	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Code	R	B	C	D	E	F	G	H	I	J	K	L

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	100	V
Forward Continuous Current	I_F	150	mA
Repetitive Peak Forward Current (Note 6) @ t_P < 1.0s, Duty Cycle < 50%	I_{FRM}	350	mA
Forward Surge Forward Current (Note 6) @ t_P = 10ms	I_{FSM}	750	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	200	mW
Thermal Resistance, Junction to Ambient Air (Note 6) Thermal Resistance, Junction to Ambient Air (Note 7)	$R_{\theta JA}$	420 370	°C/W
Operating Temperature Range	T_J	-55 to +125	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 8)	$V_{(BR)R}$	100	—	—	V	I_R = 100µA
Forward Voltage	V_F	—	—	0.25 0.45 1.00	V	I_F = 0.1mA I_F = 10mA I_F = 250mA
Peak Reverse Current (Note 8)	I_R	—	—	0.3 5.0 0.5 7.5 1.0 15 2.0 20	µA	V_R = 1.5V V_R = 1.5V, T_J = +60°C V_R = 10V V_R = 10V, T_J = +60°C V_R = 50V V_R = 50V, T_J = +60°C V_R = 75V V_R = 75V, T_J = +60°C
Total Capacitance	C_T	—	20 12	—	pF	V_R = 0V, f = 1.0MHz V_R = 1.0V, f = 1.0MHz

Notes: 6. 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.
7. Part mounted on Polymide board with recommended pad layout, which can be found on our website at http://www.diodes.com/package-outlines.html.
8. Short duration pulse test used to minimize self-heating effect.

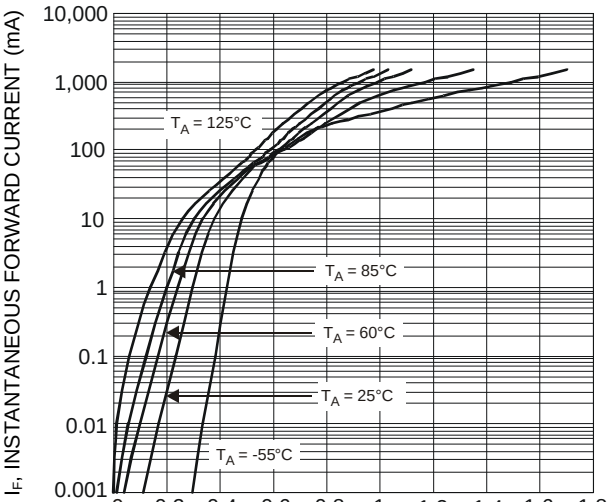


Figure 1 Typical Forward Characteristics

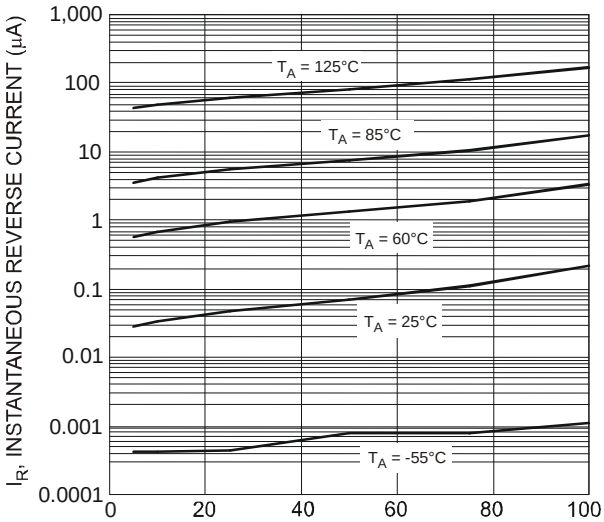


Figure 2 Typical Reverse Characteristics

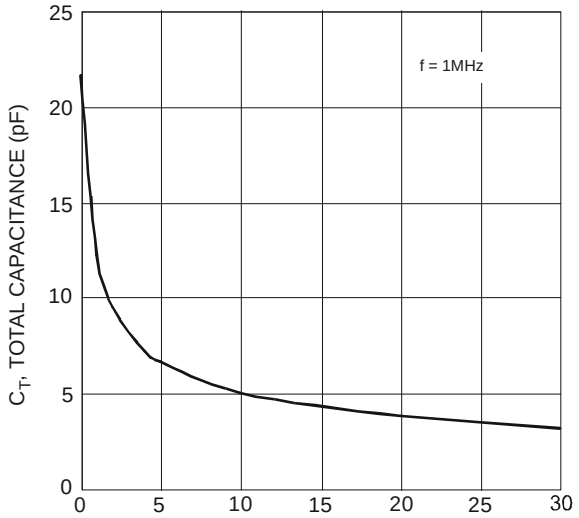


Figure 3 Total Capacitance vs. Reverse Voltage

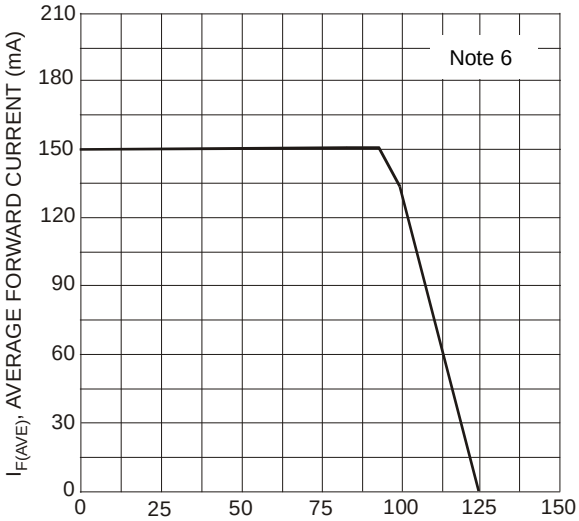


Figure 4 Forward Current Derating

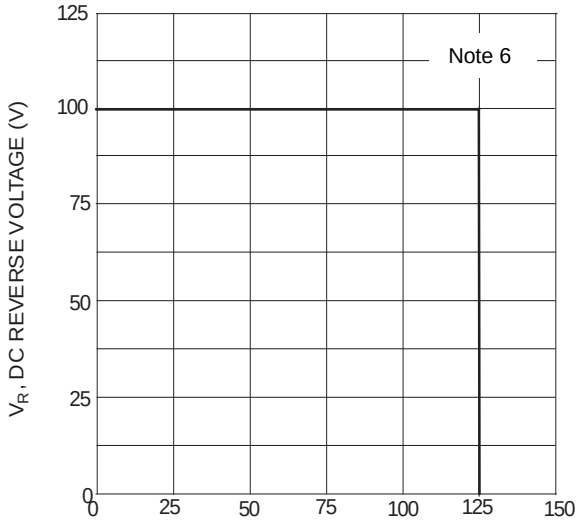


Figure 5 Operating Temperature Derating

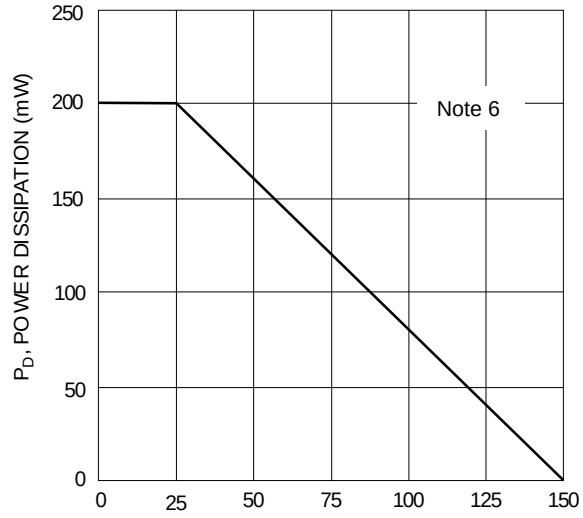
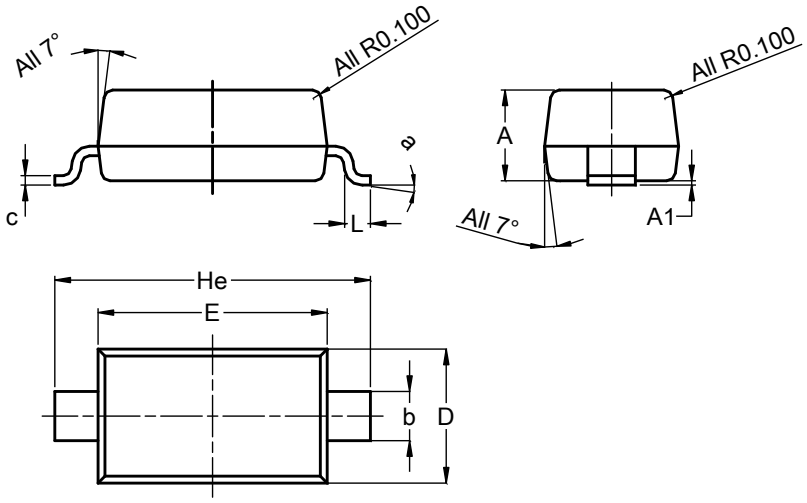


Figure 6 Power Derating Curve

Package Outline Dimensions

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

SOD123

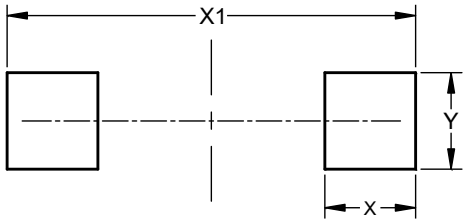


SOD123			
Dim	**Min**	**Max**	**Typ**
A	1.00	1.35	1.05
A1	0.00	0.10	0.05
b	0.52	0.62	0.57
c	0.10	0.15	0.11
D	1.40	1.70	1.55
E	2.55	2.85	2.65
He	3.55	3.85	3.65
L	0.25	0.40	0.30
a	0°	8°	--
All Dimensions in mm			

Suggested Pad Layout

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

SOD123



Dimensions	Value (in mm)
X	0.900
X1	4.050
Y	0.950

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