SURFACE MOUNT SCHOTTKY BARRIER DIODE

Product Summary @T_A = +25°C

V_{RRM} (V)	I_O (mA)	V_{Fmax} (V)	I_{Rmax} (µA)
40	200	1.0	0.2

Features and Benefits

- Low Forward Voltage Drop
- Fast Switching
- PN Junction Guard Ring for Transient and ESD Protection
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

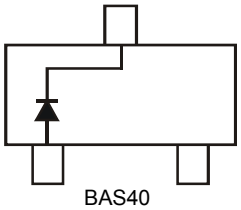
Description

200mA surface mount Schottky Barrier Diode in SOT23 package, offers low forward voltage drop and fast switching capability, designed with PN Junction Guard Ring for Transient and ESD Protection, totally lead-free finish and RoHS compliant, "Green" device.

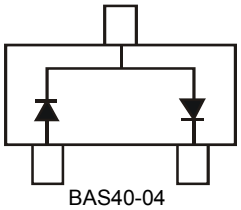
Mechanical Data

- Case: SOT23
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Solderable per MIL-STD-202, Method 208 e3
- Lead Free Plating (Matte Tin Finish annealed over Alloy 42 leadframe).
- Polarity: See Diagrams Below
- Weight: 0.008 grams (approximate)

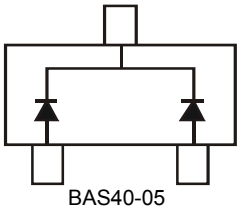
Top View



BAS40



BAS40-04



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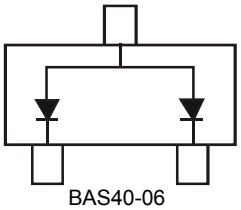

BAS40-06

Ordering Information (Note 4 & 5)

Part Number	Case	Packaging
BAS40-7-F / BAS40Q-7-F	SOT23	3000/Tape & Reel
BAS40-04-7-F / BAS40-04Q-7-F	SOT23	3000/Tape & Reel
BAS40-05-7-F / BAS40-05Q-7-F	SOT23	3000/Tape & Reel
BAS40-06-7-F / BAS40-06Q-7-F	SOT23	3000/Tape & Reel
BAS40-13-F / BAS40Q-13-F	SOT23	10000/Tape & Reel
BAS40-04-13-F / BAS40-04Q-13-F	SOT23	10000/Tape & Reel
BAS40-05-13-F / BAS40-05Q-13-F	SOT23	10000/Tape & Reel
BAS40-06-13-F / BAS40-06Q-13-F	SOT23	10000/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.
5. Products manufactured with Date Code V9 (week 33, 2008) and newer are built with Green Molding Compound. Products manufactured prior to Date Code V9 are built with Non-Green Molding Compound and may contain Halogens or Sb_2O_3 Fire Retardants.

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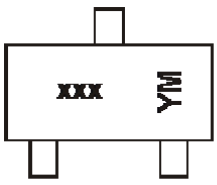
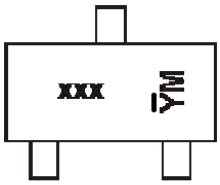
Marking Information



Shanghai A/T Site



Chengdu A/T Site

xxx = Product Type Marking Code
K43 = BAS40
K44 = BAS40-04
K45 = BAS40-05
K46 = BAS40-06
YM = Date Code Marking for SAT (Shanghai Assembly/ Test site)
$\bar{Y}$M = Date Code Marking for CAT (Chengdu Assembly/ Test site)
Y or $\bar{Y}$ = Year (ex: A = 2013)
M = Month (ex: 9 = September)

Date Code Key

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Code	K	L	M	N	P	R	S	T	U	V	W	X	Y	Z	A	B	C

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	40	V
Forward Continuous Current (Note 6)	I_{FM}	200	mA
Forward Surge Current (Note 6) @ t < 1.0s	I_{FSM}	600	mA

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 6)	P_D	350	mW
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	357	°C/W
Operating Temperature Range	T_J	-55 to +125	°C
Storage Temperature Range	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)	$V_{(BR)R}$	40	—	—	V	I_R = 10μA
Forward Voltage	V_F	—	—	380 1000	mV	t_p < 300μs, I_F = 1.0mA t_p < 300μs, I_F = 40mA
Reverse Leakage Current (Note 7)	I_R	—	20	200	nA	t_p < 300μs, V_R = 30V
Total Capacitance	C_T	—	4.0	5.0	pF	V_R = 0V, f =1.0MHz
Reverse Recovery Time	t_{rr}	—	—	5.0	ns	I_F = I_R = 10mA to I_R = 1.0mA, R_L = 100Ω

Notes: 6. Part mounted on FR-4 board with recommended pad layout, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
7. Short duration pulse test used to minimize self-heating effect.

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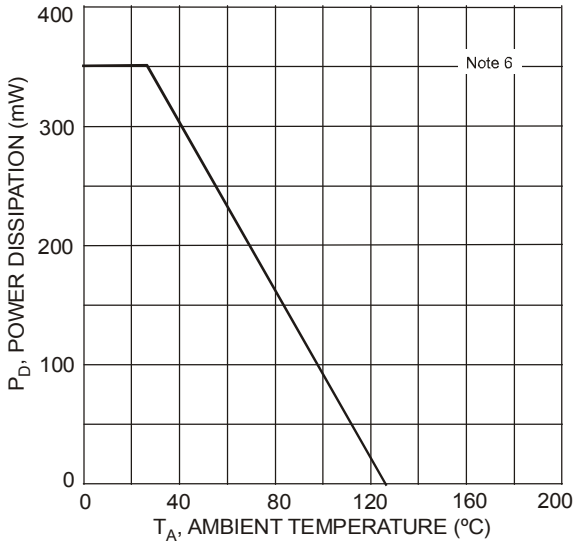

Figure 1 Power Derating Curve, Total Package

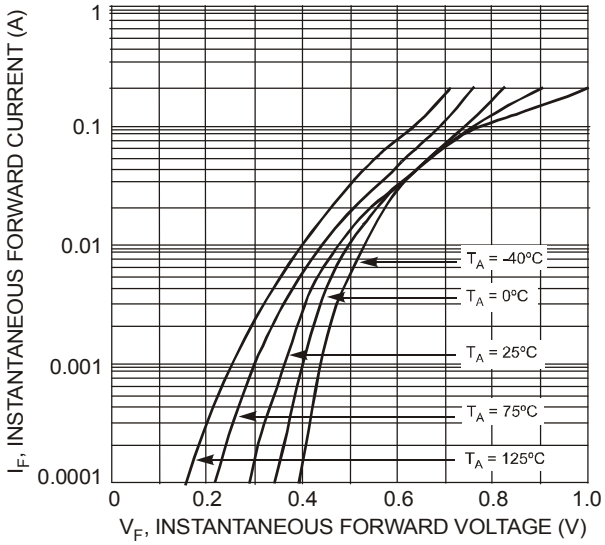

Figure 2 Typical Forward Characteristics

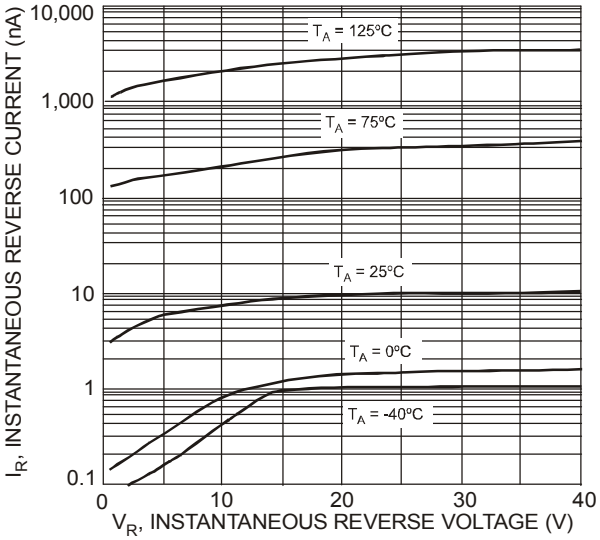

Figure 3 Typical Reverse Characteristics

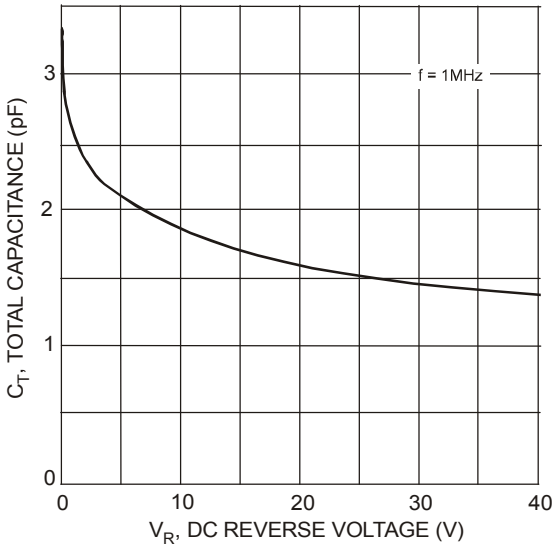

Figure 4 Total Capacitance vs. Reverse Voltage

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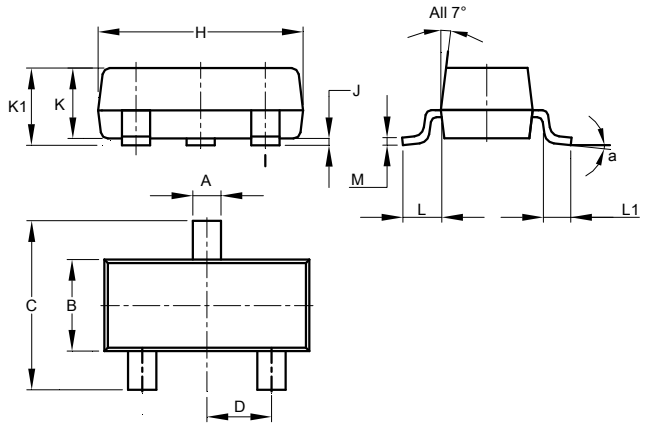
Package Outline Dimensions

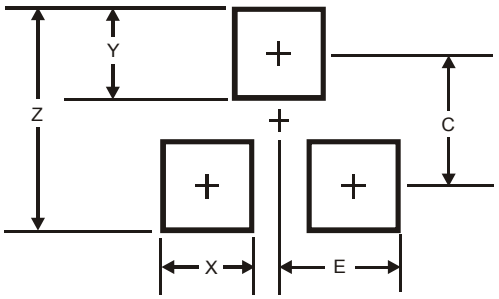
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



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
a	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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