1.0A SURFACE MOUNT SCHOTTKY BARRIER RECTIFIER

Product Summary

B120Q/BQ-B140Q/BQ

V_{RRM} (V)	I_O (A)	V_F Max (V) T_A = +25°C	I_R Max (mA) T_A = +25°C
20/30/40	1.0	0.5	0.5

B150Q/BQ, B160Q/BQ

V_{RRM} (V)	I_O (A)	V_F Max (V) T_A = +25°C	I_R Max (mA) T_A = +25°C
50/60	1.0	0.7	0.5

Features and Benefits

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- Surge Overload Rating to 30A Peak
- For Use in Low-Voltage, High-Frequency Inverters
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Notes 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

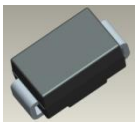
Description and Applications

This Schottky Barrier Rectifier is designed to meet the general requirements of commercial applications. It is ideally suited for use as:

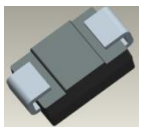
- Polarity Protection Diode
- Re-Circulating Diode
- Switching Diode
- Blocking Diode
- Freewheel Diode

Mechanical Data

- Case: SMA & SMB
- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish). Solderable per MIL-STD-202, Method 208 e3
- Polarity: Cathode Band or Cathode Notch
- Weight:
  - SMA 0.064 grams (Approximate)
  - SMB 0.093 grams (Approximate)



Top View



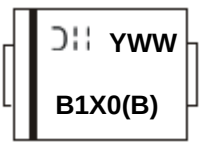
Bottom View

Ordering Information (Note 5)

Part Number	Qualification	Case	Packaging
B1X0Q-13-F	Automotive	SMA	5,000/Tape & Reel
B1X0BQ-13-F	Automotive	SMB	3,000/Tape & Reel

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
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



B1X0 = Product Type Marking Code, ex: B140Q (SMA Package)
B1X0B = Product Type Marking Code, ex: B160BQ (SMB Package)
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 16 for 2016)
WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load
For capacitance load, derate current by 20%.

Characteristic	Symbol	B120Q/BQ	B130Q/BQ	B140Q/BQ	B150Q/BQ	B160Q/BQ	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	20	30	40	50	60	V
RMS Reverse Voltage	$V_{R(RMS)}$	14	21	28	35	42	V
Average Rectified Output Current @ T_T = +130°C	I_O	1.0					A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	30					A

Thermal Characteristics

Characteristic	Symbol	B120Q/BQ	B130Q/BQ	B140Q/BQ	B150Q/BQ	B160Q/BQ	Unit
Typical Thermal Resistance Junction to Terminal (Note 6)	$R_{\theta JT}$	20					°C/W
Operating and Storage Temperature Range	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
Forward Voltage Drop B120Q/BQ, B130Q/BQ, B140Q/BQ	V_F	—	—	0.5	V	I_F = 1.0A
Forward Voltage Drop B150Q/BQ, B160Q/BQ	V_F	—	—	0.7	V	I_F = 1.0A
Leakage Current (Note 7)	I_R	—	—	0.5	mA	@ Rated V_R, T_A = +25°C
Leakage Current (Note 7)	I_R	—	—	10	mA	@ Rated V_R, T_A = +100°C
Total Capacitance	C_T	—	—	110	pF	V_R = 4V, f = 1MHz

Notes: 6. Thermal Resistance: Junction to terminal, unit mounted on PC board with 5.0 mm^2 (0.013 mm thick) copper pads as heat sink.
7. Short duration pulse test used to minimize self-heating effect.

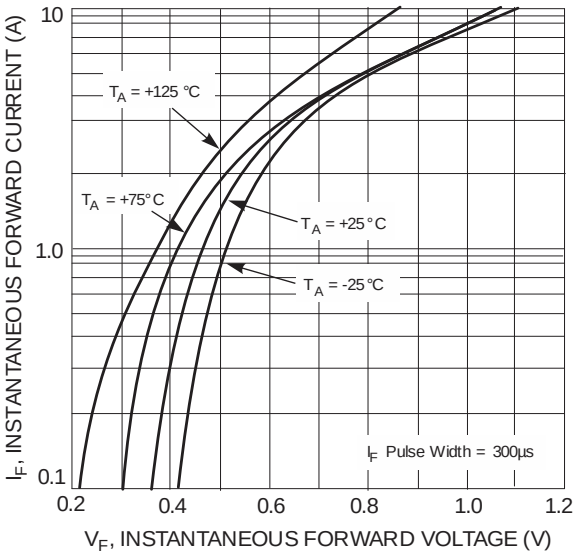


Fig.1 Typical Forward Characteristics - B120Q/BQ thru B140Q/BQ

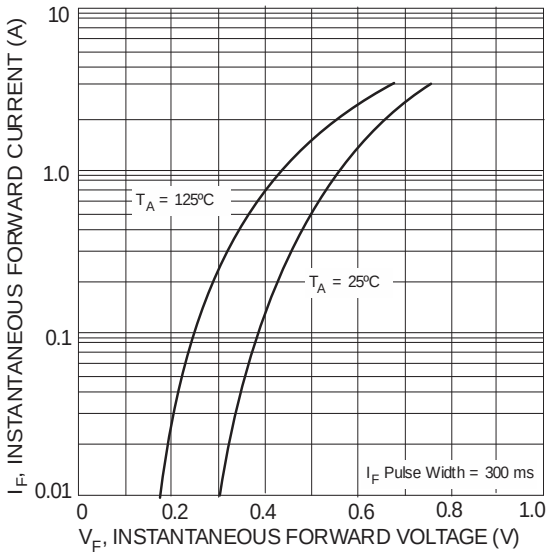


Fig.2 Typical Forward Characteristics - B150Q/BQ thru B160Q/BQ

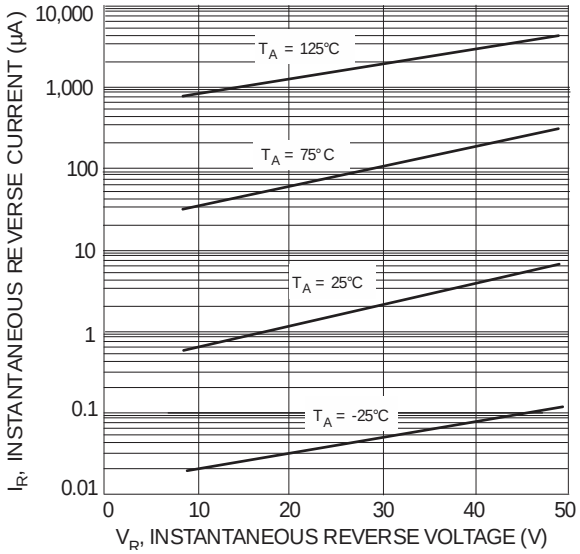


Fig.3 Typical Reverse Characteristics - B120Q/BQ thru B140Q/BQ

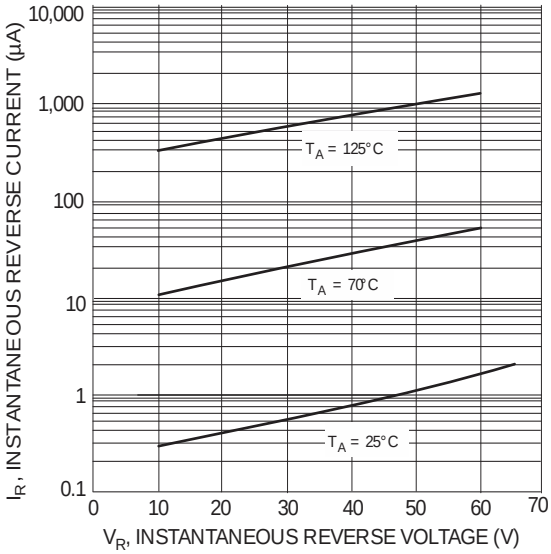


Fig.4 Typical Reverse Characteristics - B150Q/BQ thru B160Q/BQ

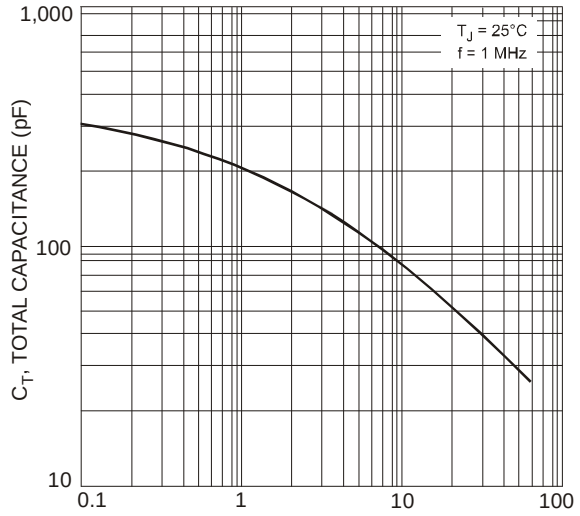


Fig. 5 Total Capacitance vs. Reverse Voltage

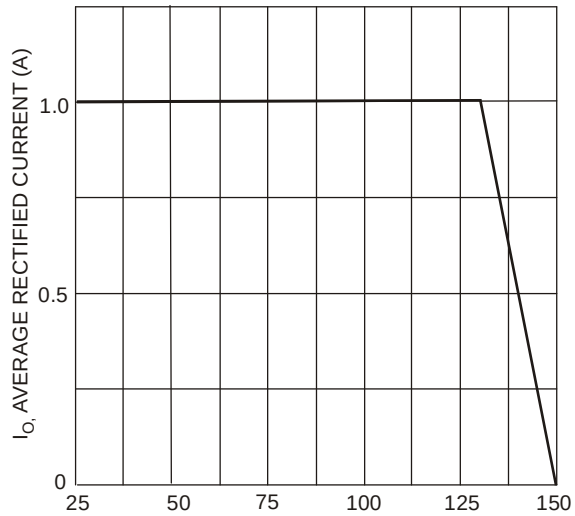


Fig. 6 Forward Current Derating Curve

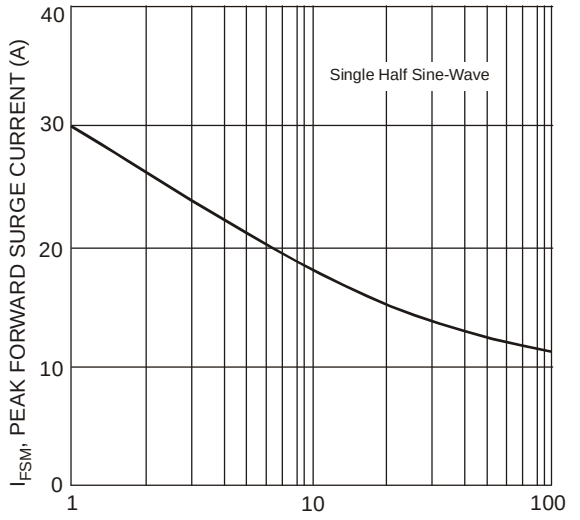
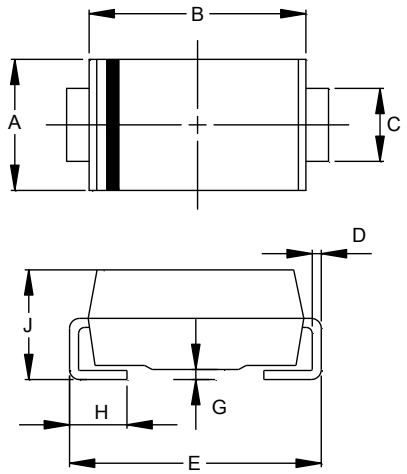


Fig. 7 Max Non-Repetitive Peak Forward Surge Current

Package Outline Dimensions

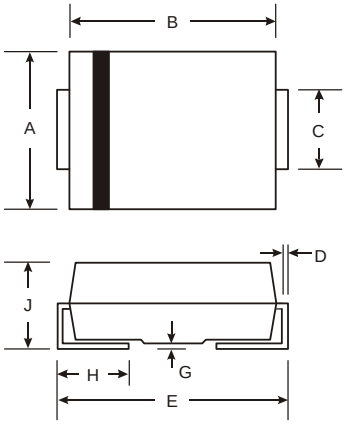
Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.

SMA



SMA		
Dim	**Min**	**Max**
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

SMB

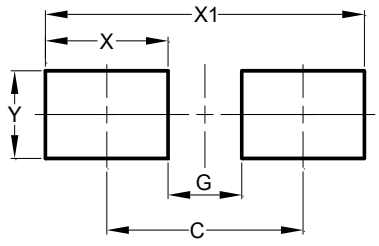


SMB		
Dim	**Min**	**Max**
A	3.30	3.94
B	4.06	4.57
C	1.96	2.21
D	0.15	0.31
E	5.00	5.59
G	0.05	0.20
H	0.76	1.52
J	2.00	2.50
All Dimensions in mm		

Suggested Pad Layout

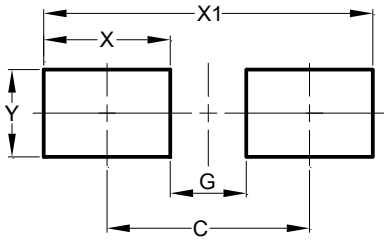
Please see AP02001 at http://www.diodes.com/_files/datasheets/ap02001.pdf for the latest version.

SMA



Dimensions	Value (in mm)
C	4.00
G	1.50
X	2.50
X1	6.50
Y	1.70

SMB



Dimensions	Value (in mm)
C	4.30
G	1.80
X	2.50
X1	6.80
Y	2.30

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