

## Product Summary

### B320AQ-B340AQ:

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> @ 3A (V)	I <sub>R(MAX)</sub> @ V <sub>RRM</sub> (mA)
20, 30, 40	3.0	0.50	0.5

### B350AQ-B360AQ:

V <sub>RRM</sub> (V)	I <sub>O</sub> (A)	V <sub>F(MAX)</sub> @ 3A (V)	I <sub>R(MAX)</sub> @ V <sub>RRM</sub> (mA)
50, 60	3.0	0.70	0.5

## Description and Applications

For use in low-voltage, high-frequency inverters, freewheeling, DC-DC converters, and polarity protection applications.

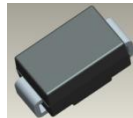
## Features

- Guard Ring Die Construction for Transient Protection
- Ideally Suited for Automated Assembly
- Low Power Loss, High Efficiency
- **Lead-Free Finish; 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)**

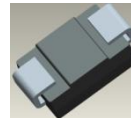
## Mechanical Data

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

### SMA



Top View



Bottom View

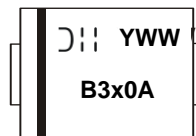
## Ordering Information (Note 5)

Part Number*	Compliance	Case	Packaging
B3XXAQ-13-F	Automotive	SMA	5,000/Tape & Reel

\* XX = Device Type, e.g. B320AQ-13-F (SMA Package).

- Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
  2. See [http://www.diodes.com/quality/lead\\_free/](http://www.diodes.com/quality/lead_free/) 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 <https://www.diodes.com/quality/>.
  5. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information (Note 6)



B3x0A = Product Type Marking Code, ex: B320AQ  
 ⌋|| = Manufacturers' Code Marking  
 YWW = Date Code Marking  
 Y = Last Digit of Year (ex: 8 for 2018)  
 WW = Week Code (01 to 53)

Note: 6. Device has a cathode band (as shown above) and may also have a cathode notch.

**Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

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

Characteristic	Symbol	B320AQ	B330AQ	B340AQ	B350AQ	B360AQ	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	20	30	40	50	60	V
Working Peak Reverse Voltage	$V_{RWM}$						
DC Blocking Voltage	$V_R$						
Average Rectified Output Current	$I_O$	3.0					A
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	80					A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Maximum Total Power Dissipation - Steady State, $T_A = +25^\circ\text{C}$ (Note 7)	$P_D$	850	mW
Typical Thermal Resistance, Junction to Ambient (Note 7)	$R_{\theta JA}$	140	$^\circ\text{C/W}$
Typical Thermal Resistance, Junction to Terminal (Note 8)	$R_{\theta JT}$	25	$^\circ\text{C/W}$
Typical Thermal Resistance, Junction to Ambient (Note 8)	$R_{\theta JA}$	100	$^\circ\text{C/W}$
Operating Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	$V_F$	—	—	0.50	V	$I_F = 3.0\text{A}$ , $T_A = +25^\circ\text{C}$
				0.70		
Leakage Current (Note 9)	$I_R$	—	—	0.5	mA	@ Rated $V_R$ , $T_A = +25^\circ\text{C}$
				20		@ Rated $V_R$ , $T_A = +100^\circ\text{C}$
Total Capacitance	$C_T$	—	200	—	pF	$V_R = 4\text{V}$ , $f = 1\text{MHz}$

Notes: 7. Device mounted on FR-4 PCB, with minimum recommended pad layout.  
8. Device mounted on glass epoxy substrate with 2mm x 3mm copper pad.  
9. Short duration pulse test used to minimize self-heating effect.

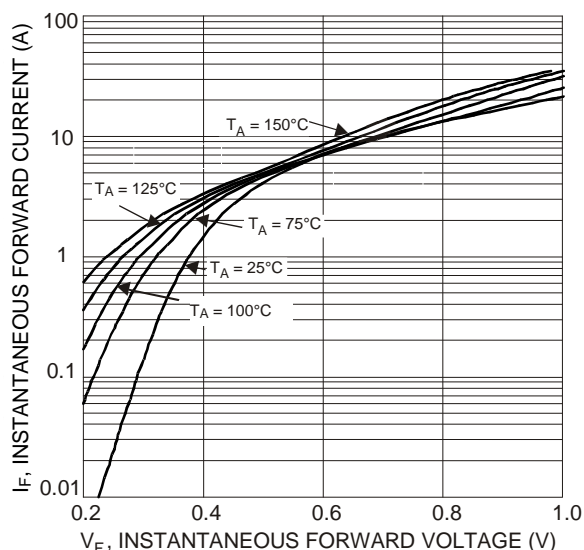


Fig. 1 Typical Forward Characteristics - B320AQ thru B340AQ

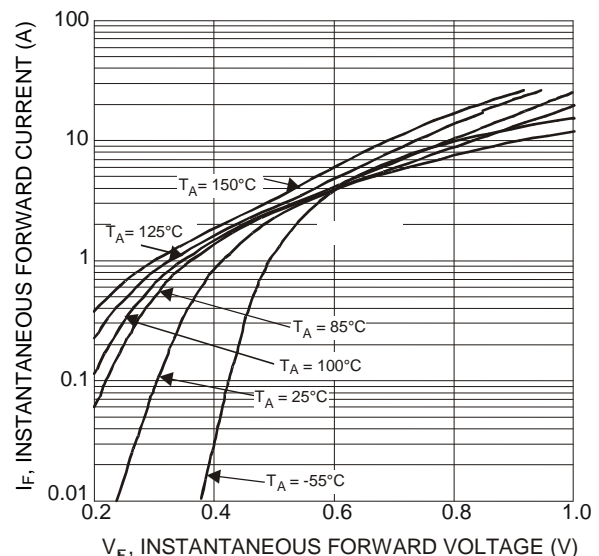


Fig. 2 Typ. Forward Characteristics - B350AQ thru B360AQ

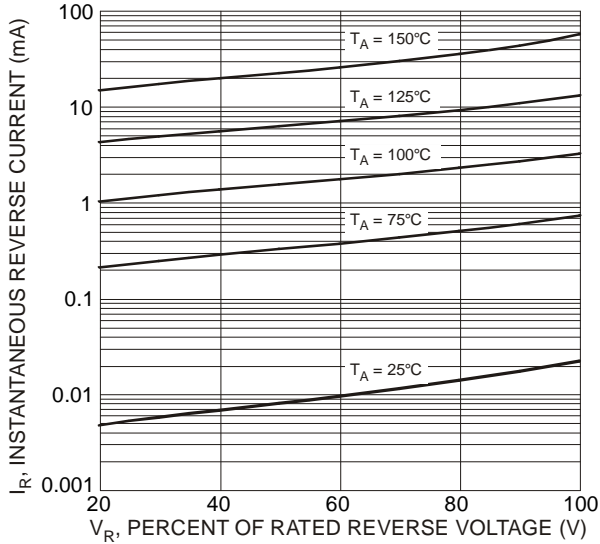


Fig. 3 Typical Reverse Characteristics, B320AQ thru B340AQ

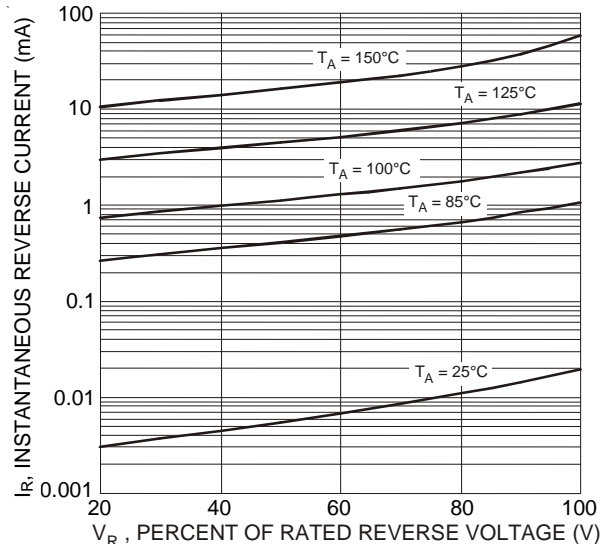


Fig. 4 Typical Reverse Characteristics, B350AQ thru B360AQ

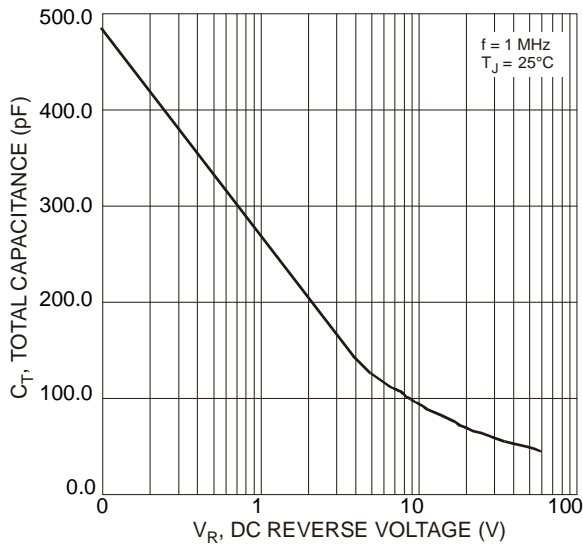


Fig. 5 Total Capacitance vs. Reverse Voltage

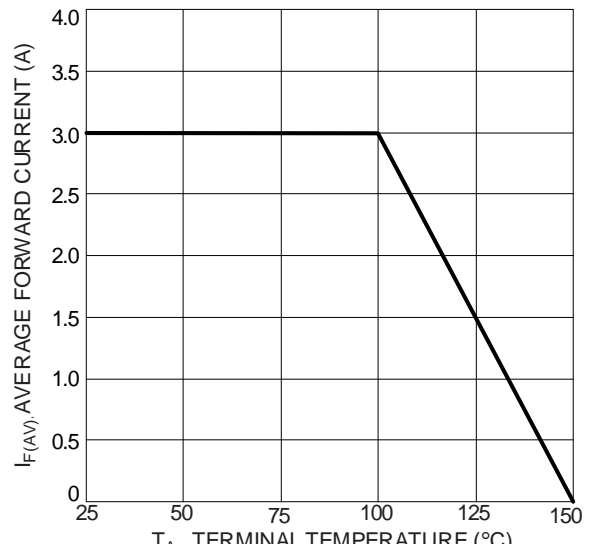


Fig. 6 Forward Current Derating Curve

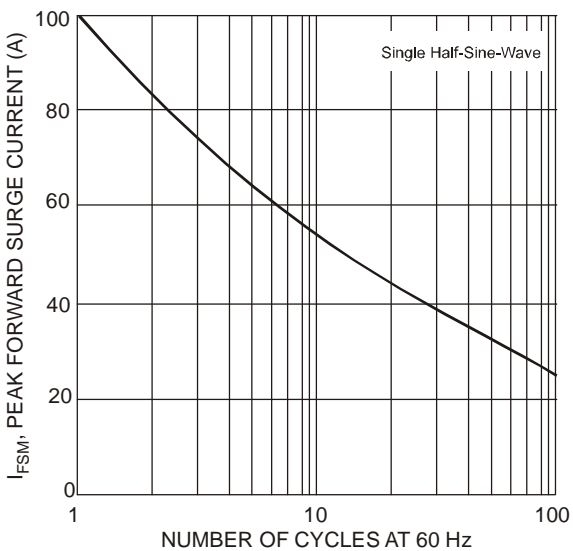


Fig. 7 Max Non-Repetitive Peak Fwd Surge Current

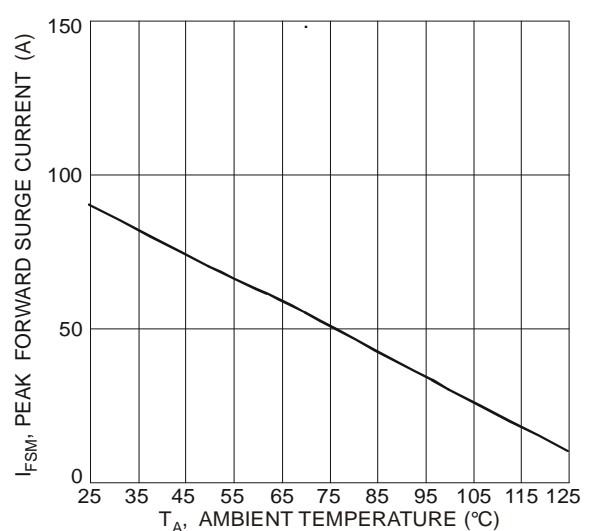
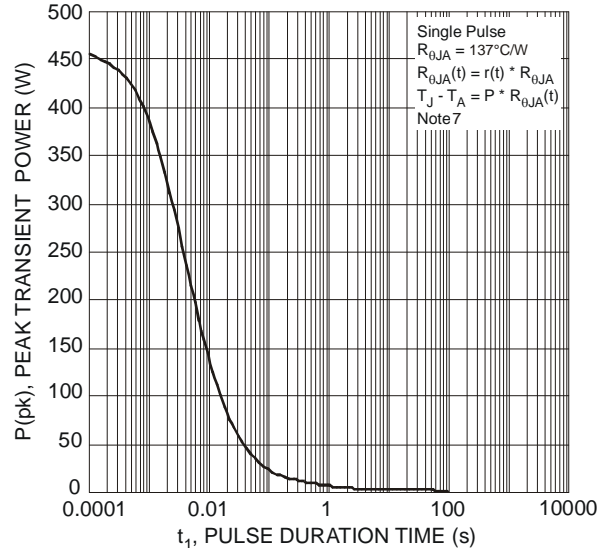
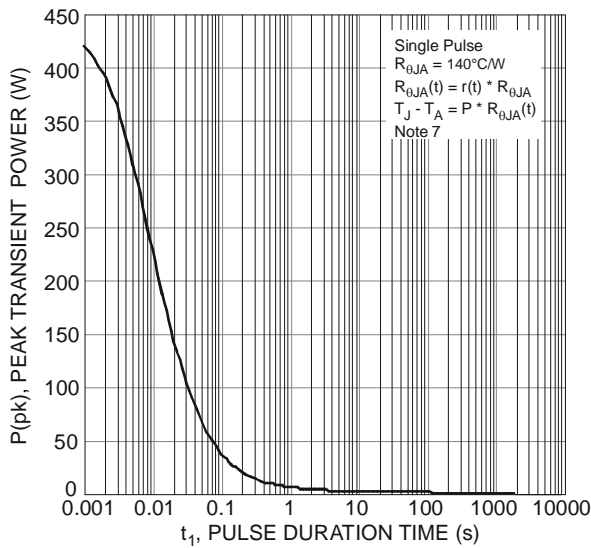
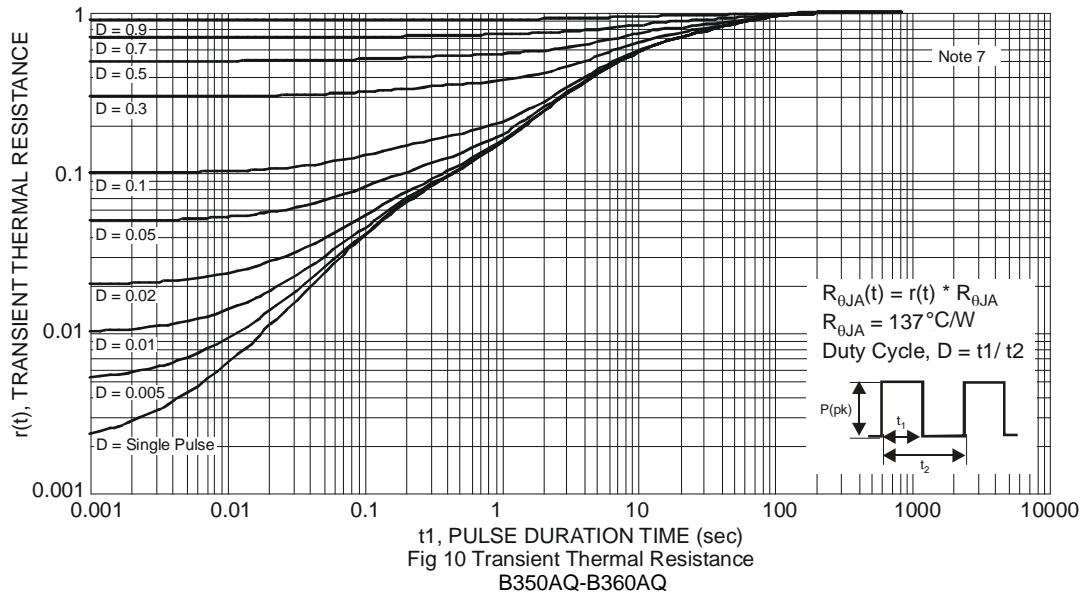
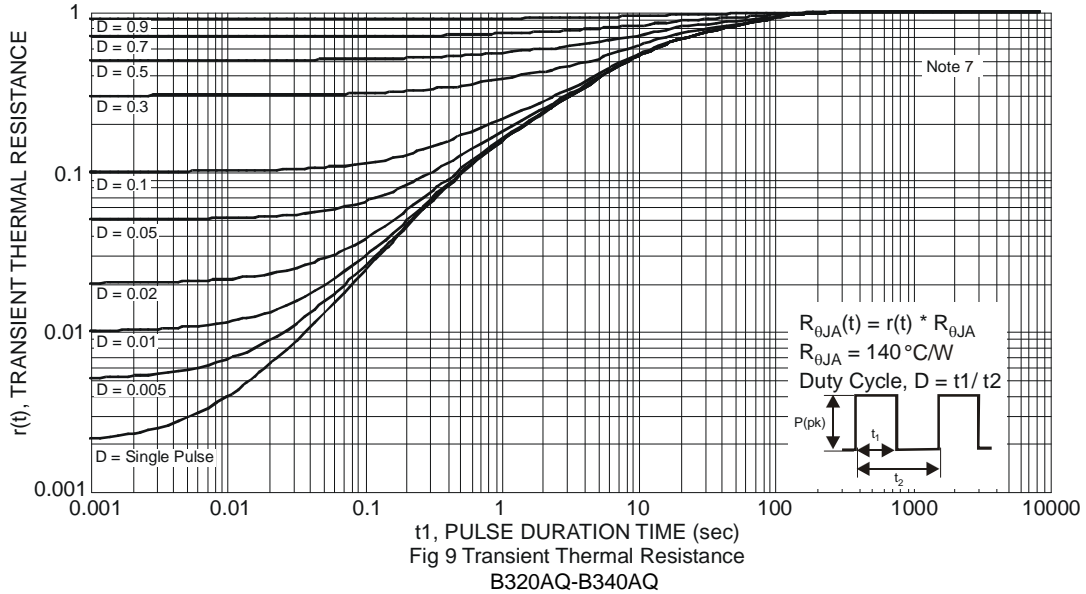


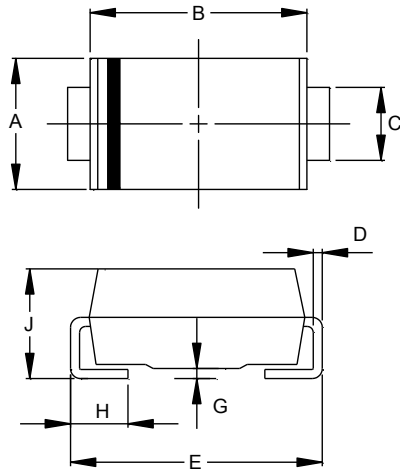
Fig. 8 Non-Repetitive Forward Surge Current Derating Curve



## Package Outline Dimensions

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

### SMA

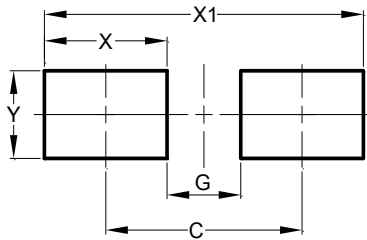


SMA		
Dim	Min	Max
A	2.29	2.92
B	4.00	4.60
C	1.27	1.63
D	0.15	0.31
E	4.80	5.59
G	0.05	0.20
H	0.76	1.52
J	1.96	2.40
All Dimensions in mm		

## Suggested Pad Layout

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

### SMA



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

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