

## Features

- Low Forward Voltage Drop
- Fast Switching
- Ultra-Small Leadless Surface Mount Package
- 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**

## Mechanical Data

- Case: X1-DFN1006-2
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminal Connections: See Marking Information
- Terminals: Finish - NiPdAu Annealed over Copper Leadframe. Solderable per MIL-STD-202, Method 208<sup>(4)</sup>
- Weight: 0.001 grams (Approximate)

X1-DFN1006-2



Top View



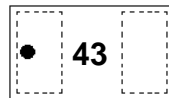
Bottom View

## Ordering Information (Note 4)

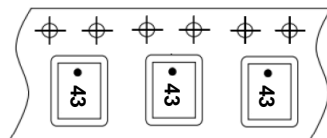
Part Number	Case	Packaging
BAS40LP-7	X1-DFN1006-2	3,000/Tape & Reel
BAS40LP-7B	X1-DFN1006-2	10,000/Tape & Reel

- 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](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>.

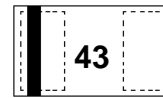
## Marking Information



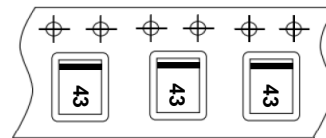
Top View  
Dot Denotes Cathode Side



From date code 1527 (YYWW),  
this changes to:



Top View  
Bar Denotes Cathode Side



43 = Part Marking Code

**Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Peak Repetitive Reverse Voltage	V <sub>RRM</sub>	40	V
Working Peak Reverse Voltage	V <sub>RWM</sub>		
DC Blocking Voltage	V <sub>R</sub>		
Forward Continuous Current	I <sub>FM</sub>	200	mA
Repetitive Peak Forward Current (Note 6)	I <sub>FRM</sub>	800	mA
Non-Repetitive Peak Forward Surge Current @ t <sub>p</sub> = 1.0s (Note 7)	I <sub>FSM</sub>	1,000	mA

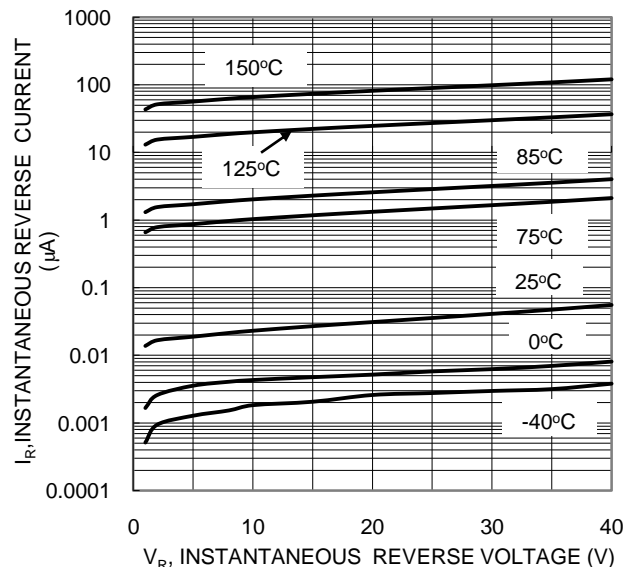
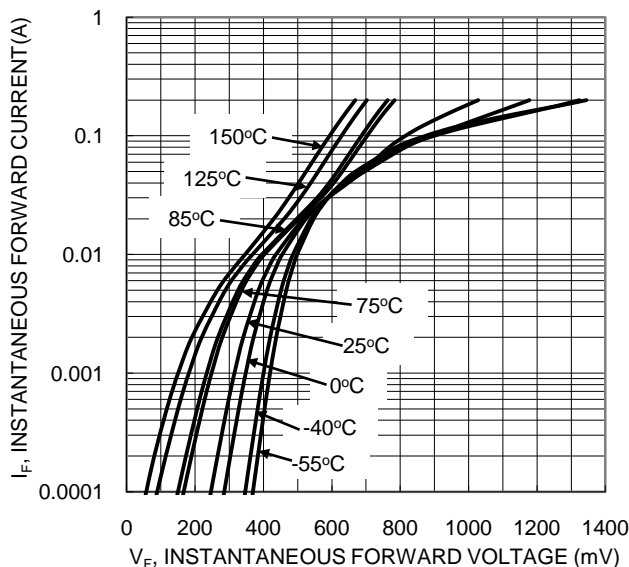
**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	250	mW
Typical Thermal Resistance, Junction to Ambient (Note 8)	R <sub>θJA</sub>	400	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +150	°C
Storage Temperature Range	T <sub>STG</sub>	-65 to +150	°C

**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Reverse Breakdown Voltage (Note 5)	V <sub>R</sub>	40	—	—	V	I <sub>R</sub> = 10μA
Forward Voltage (Note 5)	V <sub>F</sub>	—	—	380 1,000	mV	t <sub>p</sub> < 300μs, I <sub>F</sub> = 1.0mA t <sub>p</sub> < 300μs, I <sub>F</sub> = 40mA
Reverse Leakage Current (Note 5)	I <sub>R</sub>	—	20	200	nA	t <sub>p</sub> < 300μs, V <sub>R</sub> = 30V
Total Capacitance	C <sub>T</sub>	—	2.3	5.0	pF	V <sub>R</sub> = 0V, f = 1.0MHz
Reverse Recovery Time	t <sub>RR</sub>	—	—	5.0	ns	I <sub>F</sub> = I <sub>R</sub> = 10mA to I <sub>R</sub> = 1.0mA, R <sub>L</sub> = 100Ω

- Notes:
- Short duration pulse test used to minimize self-heating effect.
  - Repetitive peak forward current was tested with t<sub>p</sub> ≤ 1s and δ ≤ 0.8 square wave.
  - Non-repetitive peak forward current was tested with t<sub>p</sub> = 1s square wave.
  - 1\*MRP FR-4 PC board 2oz.Copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.



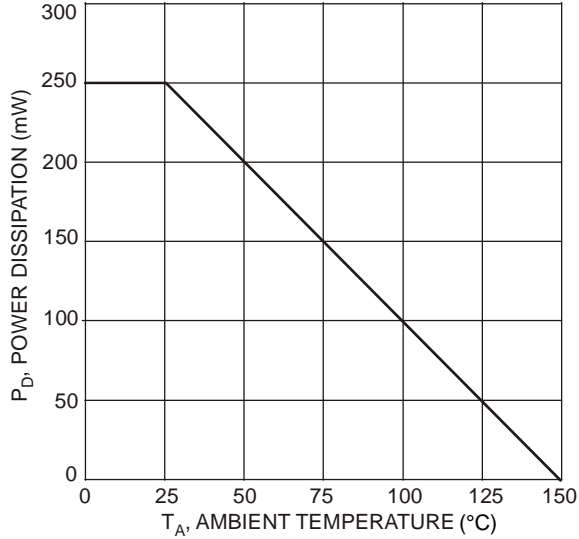


Fig. 3 Power Derating Curve

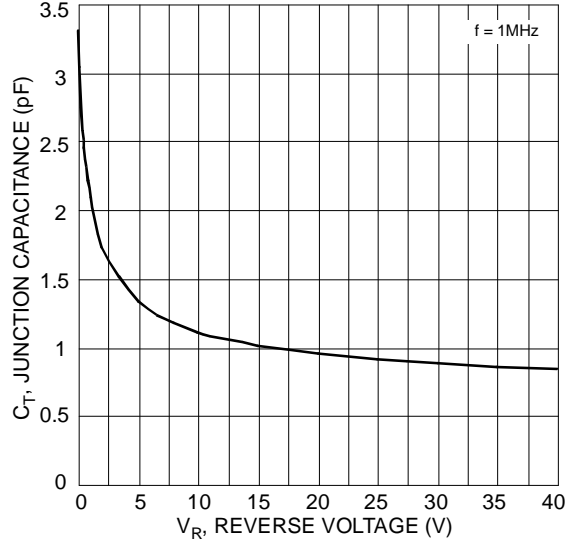


Fig. 4 Typical Junction Capacitance

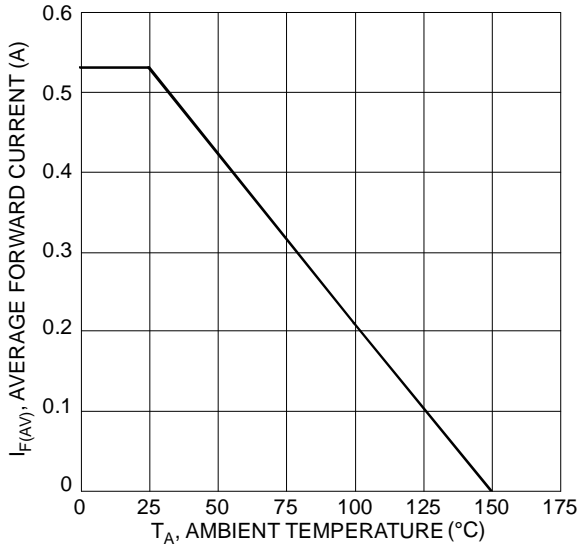


Fig. 5 Forward Current Derating Curve

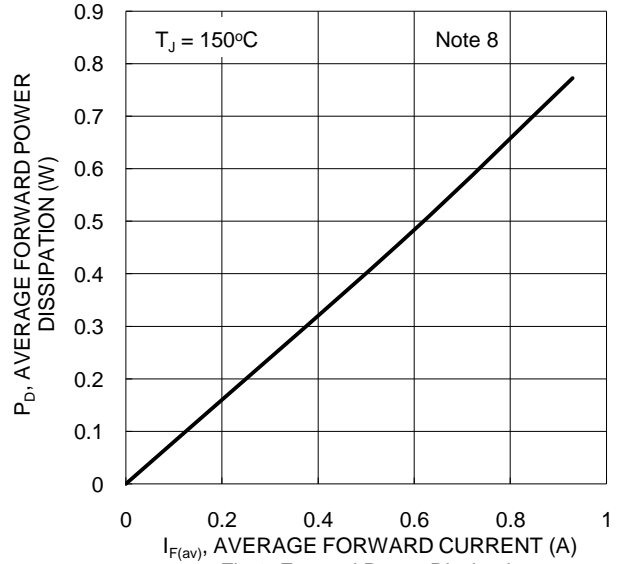


Fig. 6 Forward Power Dissipation

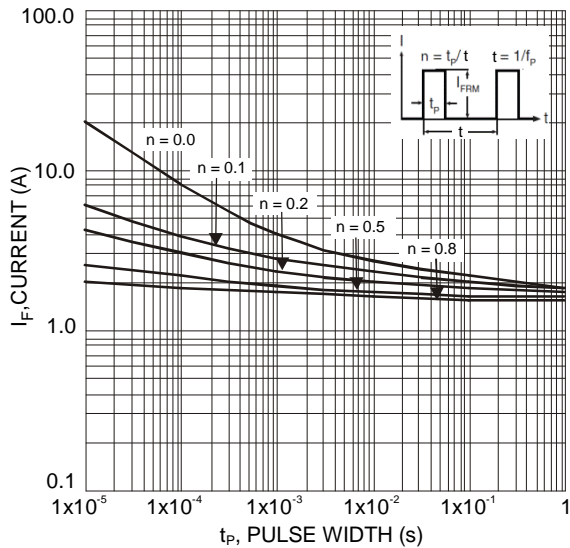
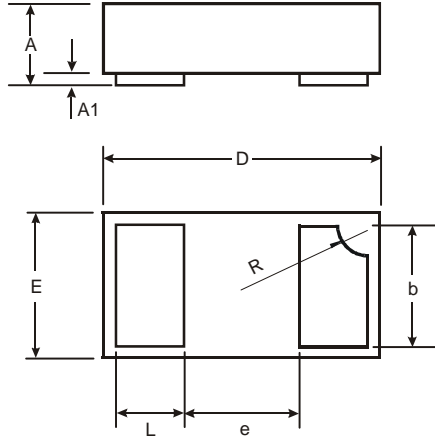


Fig. 7 Repetitive Forward Current with Pulse Duration

## Package Outline Dimensions

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

**X1-DFN1006-2**

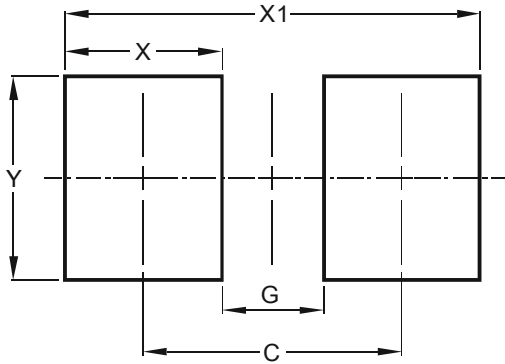


X1-DFN1006-2			
Dim	Min	Max	Typ
<b>A</b>	0.47	0.53	0.50
<b>A1</b>	0	0.05	0.03
<b>b</b>	0.45	0.55	0.50
<b>D</b>	0.95	1.075	1.00
<b>E</b>	0.55	0.675	0.60
<b>e</b>	-	-	0.40
<b>L</b>	0.20	0.30	0.25
<b>R</b>	0.05	0.15	0.10
<b>All Dimensions in mm</b>			

## Suggested Pad Layout

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

**X1-DFN1006-2**



Dimensions	Value (in mm)
<b>C</b>	0.70
<b>G</b>	0.30
<b>X</b>	0.40
<b>X1</b>	1.10
<b>Y</b>	0.70

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