

## Product Summary

$V_{RRM}$ (V)	$I_o$ (A)	$V_F$ (MAX) (V) @ +25°C	$I_R$ (MAX) (mA) @ +25°C
40	0.2	0.59	0.01

## Description and Applications

Packaged in X1-DFN1006-2 (SWP) (Type C) package, provides very low  $V_F$  and excellent reverse-leakage stability at high temperatures. It is ideal for use as a rectifier, freewheel diode or blocking diode in:

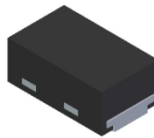
- DC-DC Converters
- AC-DC Adaptors

## Features and Benefits

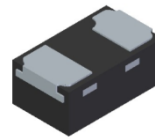
- Patented Trench Super Barrier Rectifier SBR<sup>®</sup> Technology
- With Visible And Solderable Side Pads
- Ultra-Low Forward Voltage Drop
- Superior Reverse Avalanche Capability
- Patented Super Barrier Rectifier Technology
- Soft, Fast Switching Capability
- **Totally Lead-Free & Fully RoHS Compliant (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 (SWP) (Type C)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish. Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.0854mg (Approximate)



Top View



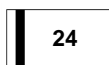
Bottom View

## Ordering Information (Note 4)

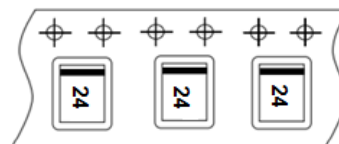
Part Number	Case	Packaging
SBR0240LPW-7B	X1-DFN1006-2 (SWP) (Type C)	10,000/Tape & Reel

- 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

## Marking Information



24 = Product Type Marking Code  
Bar Denotes Cathode



**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	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$	40	V
Working Peak Reverse Voltage	$V_{RWM}$		
DC Blocking Voltage	$V_{RM}$		
Average Rectified Output Current (See Figure 1)	$I_O$	200	mA
Non-Repetitive Peak Forward Surge Current 8.3ms Single Half Sine-Wave Superimposed on Rated Load	$I_{FSM}$	5	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Ambient $T_A = +25^\circ\text{C}$ (Note 5)	$R_{\theta JA}$	320	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_J, T_{STG}$	-65 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	$V_F$	—	0.15	0.21	V	$I_F = 0.1\text{mA}, T_J = +25^\circ\text{C}$
		—	0.22	0.28		$I_F = 1.0\text{mA}, T_J = +25^\circ\text{C}$
		—	0.29	0.35		$I_F = 10\text{mA}, T_J = +25^\circ\text{C}$
		—	0.38	0.49		$I_F = 100\text{mA}, T_J = +25^\circ\text{C}$
		—	0.45	0.59		$I_F = 200\text{mA}, T_J = +25^\circ\text{C}$
		—	0.42	0.56		$I_F = 200\text{mA}, T_J = +125^\circ\text{C}$
Leakage Current (Note 6)	$I_R$	—	1.5	—	$\mu\text{A}$	$V_R = 25\text{V}, T_J = +25^\circ\text{C}$
		—	2.5	10		$V_R = 40\text{V}, T_J = +25^\circ\text{C}$
		—	500	—		$V_R = 40\text{V}, T_J = +125^\circ\text{C}$
Total Capacitance	$C_T$	—	8	—	pF	$V_R = 5\text{V}, f = 1\text{MHz}$
Reverse Recovery Time	$t_{RR}$	—	3.8	—	ns	$I_F = 10\text{mA}, I_{RRM} = 0.1I_R, T_A = +25^\circ\text{C}$

Notes: 5. 1\*MRP FR-4 PC board 2oz. copper, minimum recommended pad layout per <http://www.diodes.com/package-outlines.html>.  
6. Short duration pulse test used to minimize self-heating effect.

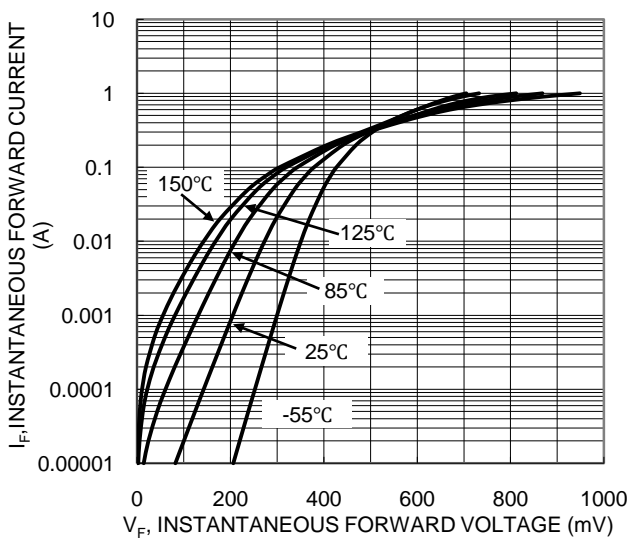


Fig. 1 Typical Forward Characteristics

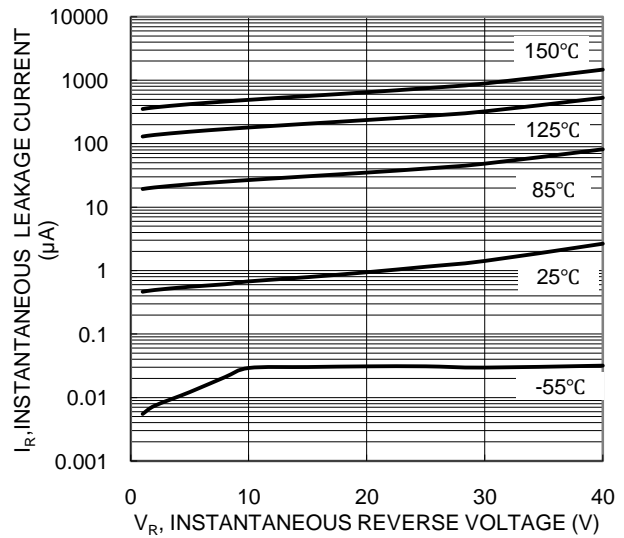


Fig. 2 Typical Reverse Characteristics

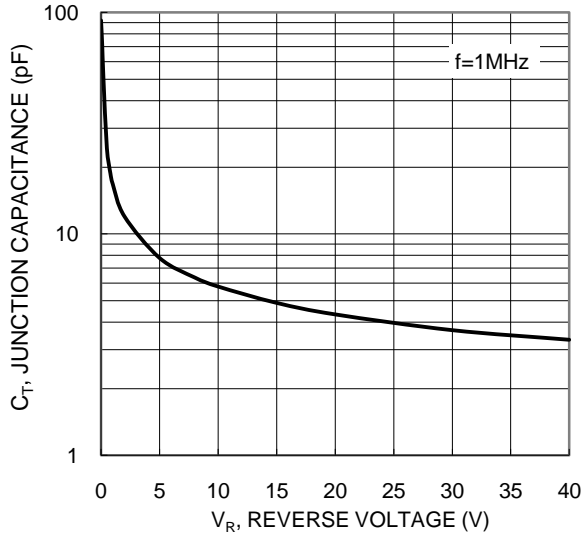


Fig. 3 Typical Junction Capacitance

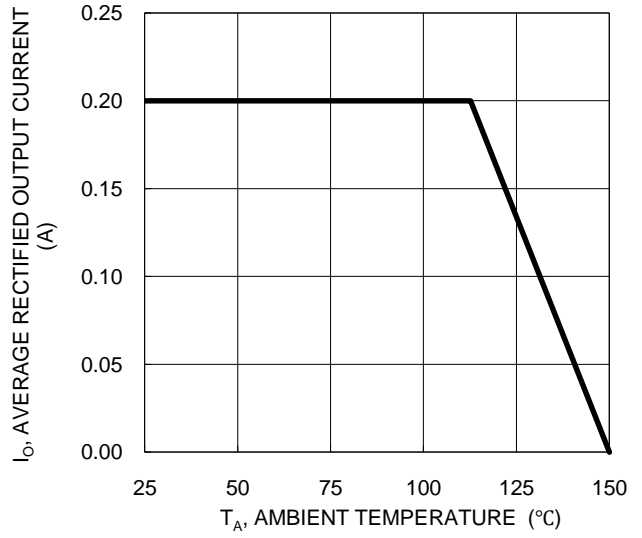


Fig. 4 DC Forward Current Derating

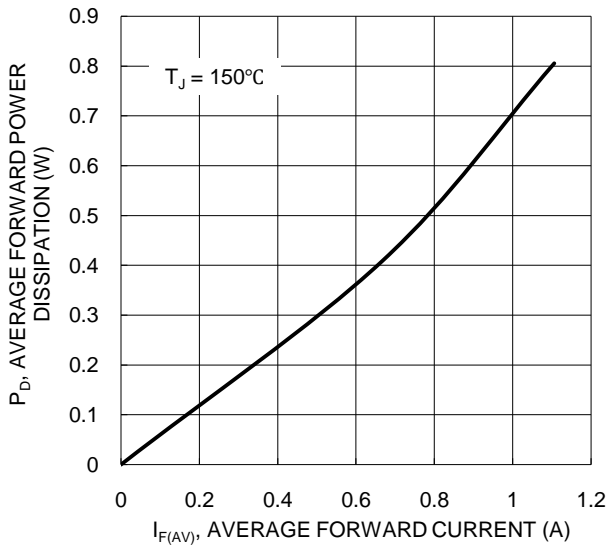
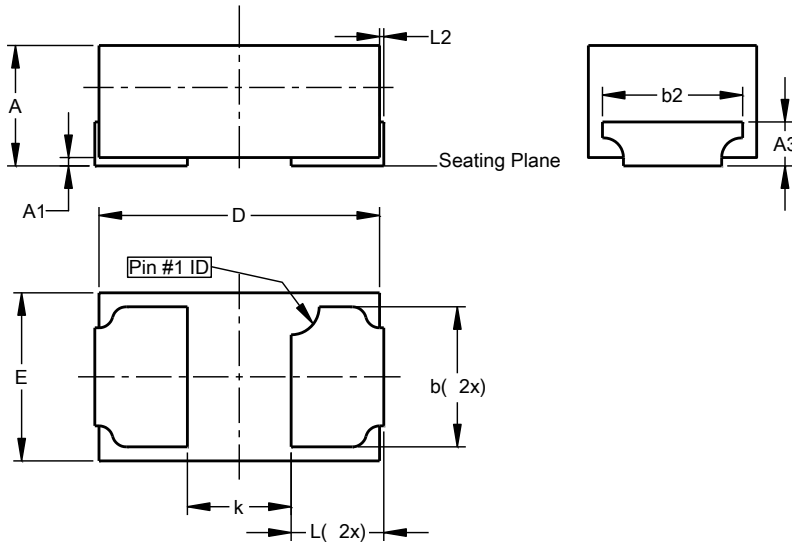


Fig. 5 Forward Power Dissipation

**Package Outline Dimensions**

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

**X1-DFN1006-2 (SWP) (Type C)**



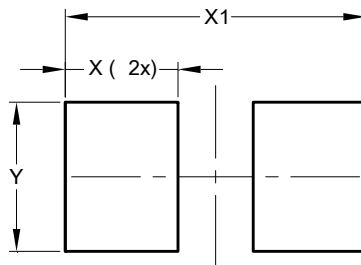
X1-DFN1006-2 (SWP) (Type C)			
Dim	Min	Max	Typ
A	0.37	0.47	0.42
A1	0.00	0.05	0.03
A3	0.17 REF		
b	0.47	0.57	0.52
b2	0.55 REF		
D	0.95	1.05	1.00
E	0.55	0.65	0.60
k	0.37 REF		
L	0.28	0.38	0.33
L2	0.15 REF		
All Dimensions in mm			

NEW PRODUCT

**Suggested Pad Layout**

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

**X1-DFN1006-2 (SWP) (Type C)**



Dimensions	Value (in mm)
X	0.45
X1	1.20
Y	0.60

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