

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[®] 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)**
- **The SBR0240LPWQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

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
- Terminals: Matte Tin Finish. Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.0854mg (Approximate)

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



Top View



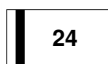
Bottom View

Ordering Information (Note 4)

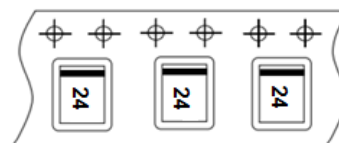
Part Number	Compliance	Case	Packaging
SBR0240LPWQ-7B	Automotive	X1-DFN1006-2 (SWP) (Type C)	10,000/Tape & Reel

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See <https://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. 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°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 Working Peak Reverse Voltage DC Blocking Voltage	V _{RRM} V _{RWM} V _{RM}	40	V
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
Electrostatic Discharge	HBM	4000	V
Electrostatic Discharge	MM	400	V
Electrostatic Discharge	CDM	1000	V

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Power Dissipation, T _A = +25°C (Note 5)	P _D	500	mW
Typical Power Dissipation, T _A = +25°C (Note 6)	P _D	1000	mW
Typical Thermal Resistance, Junction to Ambient, T _A = +25°C (Note 5)	R _{θJA}	250	°C/W
Typical Thermal Resistance, Junction to Ambient, T _A = +25°C (Note 6)	R _{θJA}	125	°C/W
Typical Thermal Resistance, Junction to Case, T _A = +25°C (Note 5)	R _{θJC}	35	°C/W
Typical Thermal Resistance, Junction to Case, T _A = +25°C (Note 6)	R _{θJC}	18	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Forward Voltage Drop	V _F	—	0.15	0.21	V	I _F = 0.1mA, T _J = +25°C
		—	0.22	0.28		I _F = 1.0mA, T _J = +25°C
		—	0.29	0.35		I _F = 10mA, T _J = +25°C
		—	0.38	0.49		I _F = 100mA, T _J = +25°C
		—	0.45	0.59		I _F = 200mA, T _J = +25°C
		—	0.42	0.56		I _F = 200mA, T _J = +125°C
Leakage Current (Note 7)	I _R	—	1.5	—	μA	V _R = 25V, T _J = +25°C
		—	2.5	10		V _R = 40V, T _J = +25°C
		—	500	—		V _R = 40V, T _J = +125°C
Total Capacitance	C _T	—	8	—	pF	V _R = 5V, f = 1MHz
Reverse Recovery Time	t _{RR}	—	3.3	—	ns	I _F = 10mA, I _{RRM} = 0.1I _R , T _A = +25°C

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

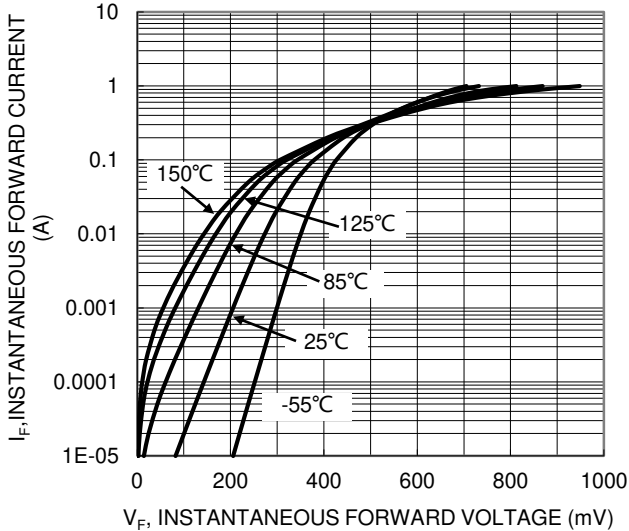


Fig. 1 Typical Forward Characteristics

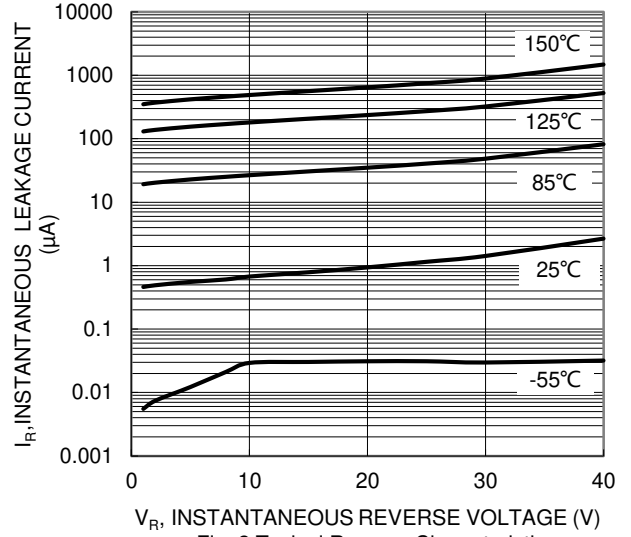


Fig. 2 Typical Reverse Characteristics

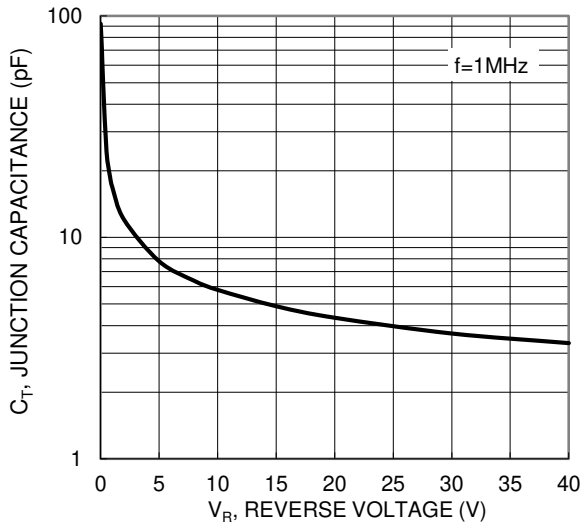


Fig. 3 Typical Junction Capacitance

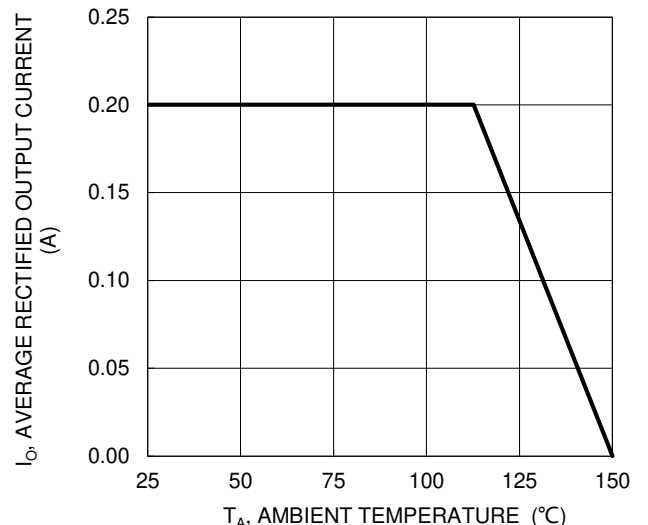


Fig. 4 DC Forward Current Derating

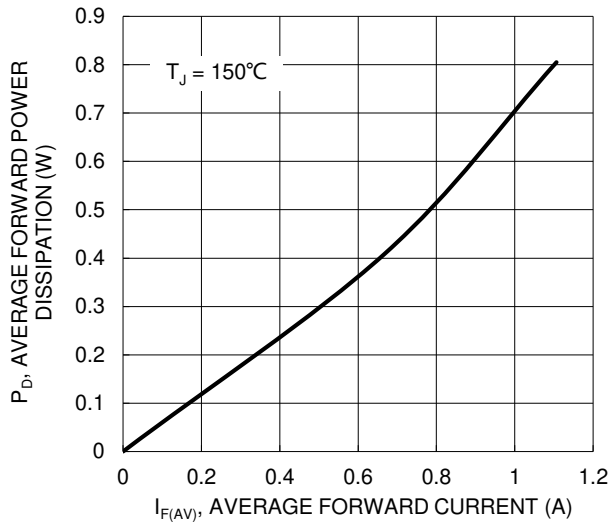


Fig. 5 Forward Power Dissipation

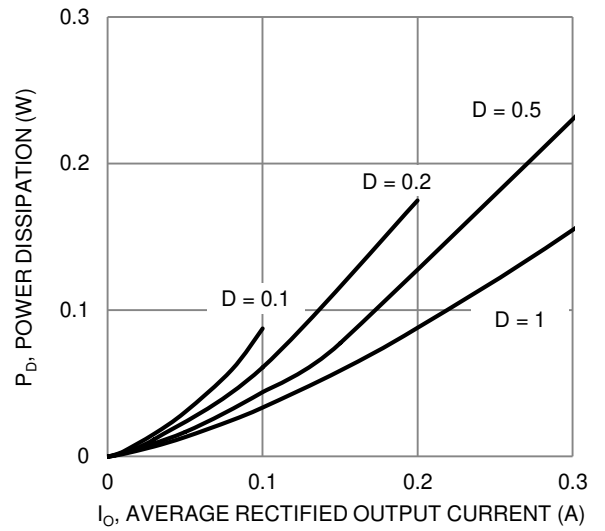


Fig. 6 Forward Power Dissipation $T_J = 125^\circ\text{C}$

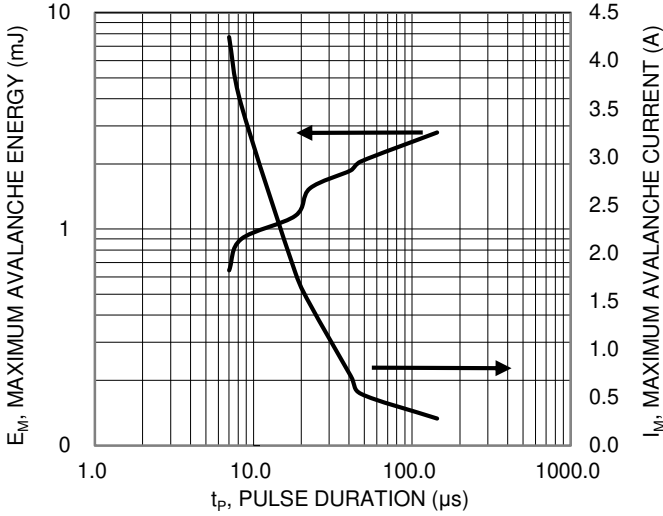


Fig. 7 Single Pulse Max. Avalanche Energy and Current

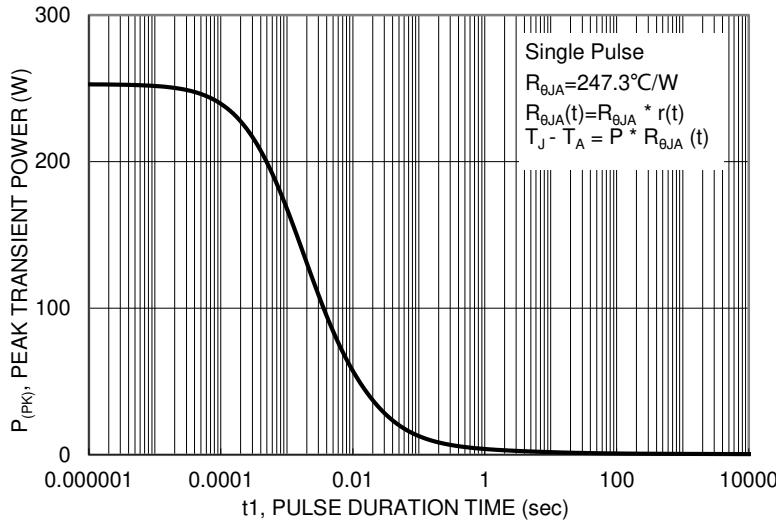


Fig. 8 Single Pulse Maximum Power Dissipation

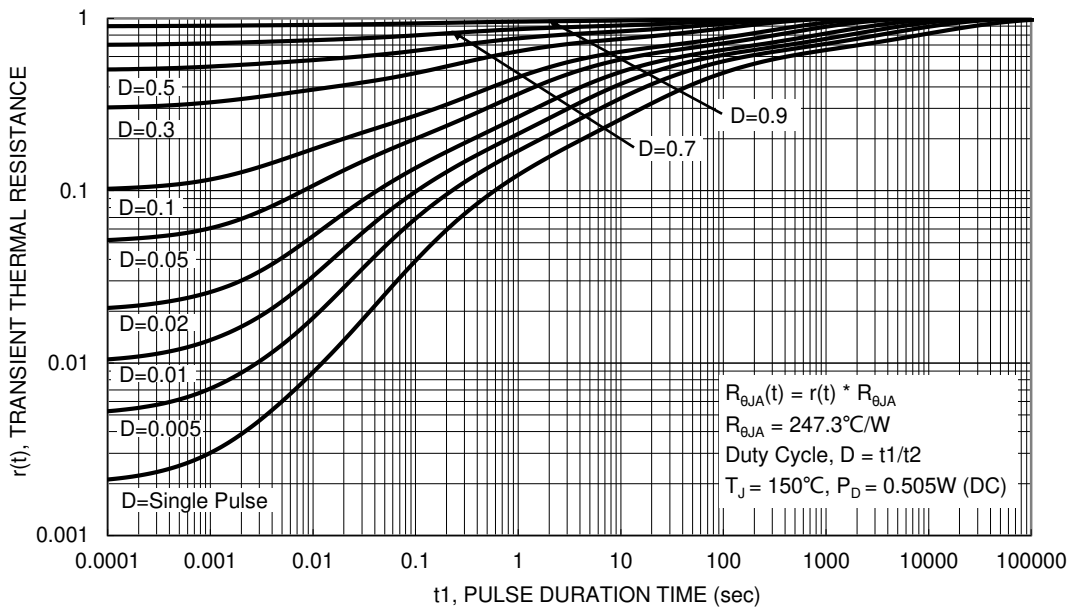
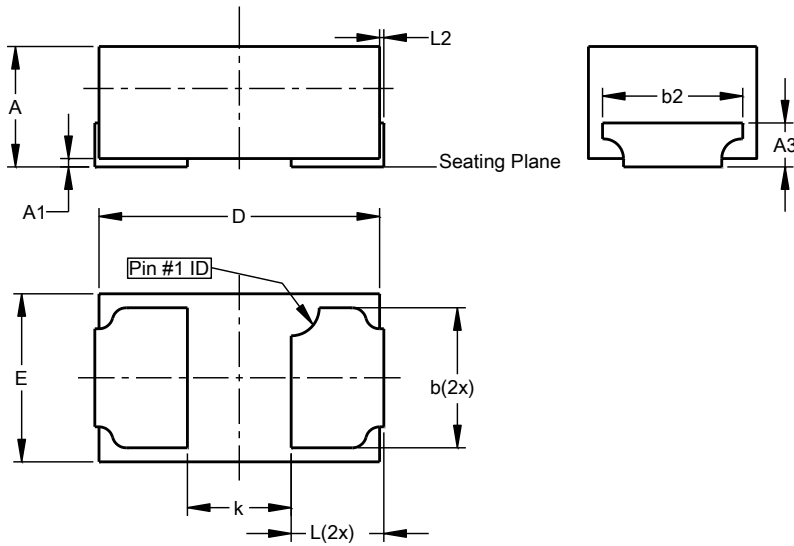


Fig. 9 Transient Thermal Resistance

Package Outline Dimensions

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

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

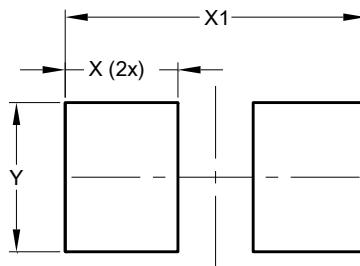


X1-DFN1006-2 (SWP) (Type C)			
Dim	Min	Max	Typ
A	0.37	0.47	0.42
A1	0.00	0.05	0.03
A3	0.17 REF		
b	0.47	0.57	0.52
b2	0.55 REF		
D	0.95	1.05	1.00
E	0.55	0.65	0.60
k	0.37 REF		
L	0.28	0.38	0.33
L2	0.15 REF		
All Dimensions in mm			

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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