

PIN Diode

Single PIN Diode for Attenuator and RF Switch

NSDP301MX2W, NSVDP301MX2W

Low r_s characteristics is enable to use high frequency applications. This PIN diode is designed to realize compact and efficient designs. NSDP301MX2W in a X2DFNW2 miniature package enables designers to meet the challenging task of achieving higher efficiency and meeting reduced space requirements. In addition, wettable flank package improves the quality at mounted to PCB.

Features

- Low Series Resistance ($r_s = 1.3 \Omega$ typ.)
- Small Interterminal Capacitance ($C = 0.33$ pF typ.)
- Less Parasitic Components
- Small-sized Package
- Wettable Flank Package
- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free and are RoHS Compliant

Typical Applications

- RF Attenuator
- RF Switch

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

Parameter	Symbol	Value	Unit
Reverse Voltage	V_R	80	V
Forward Current	I_F	100	mA
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$

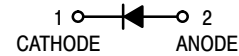
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Reverse Voltage	V_R	$I_R = 1 \mu\text{A}$	80			V
Reverse Current	I_R	$V_R = 80$ V			50	nA
Forward Voltage	V_F	$I_F = 1$ mA		0.78	0.81	V
Series Resistance	r_s	$I_F = 10$ mA, $f = 100$ MHz		1.3		Ω
Interterminal Capacitance	C	$V_R = 0$ V, $f = 1$ MHz		0.33		pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

80 V, 100 mA
 $r_s = 1.3 \Omega$ typ.
 PIN Diode



X2DFNW2
CASE 711BG

MARKING DIAGRAM



RG = Specific Device Code
 M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NSDP301MX2WT5G	X2DFNW2 (Pb-Free)	8000 / Tape & Reel
NSVDP301MX2WT5G	X2DFNW2 (Pb-Free)	8000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, [BRD8011/D](#).

TYPICAL CHARACTERISTICS

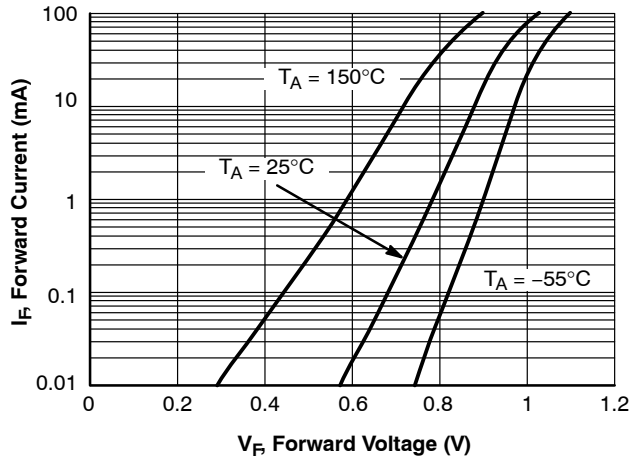


Figure 1. $I_F - V_F$

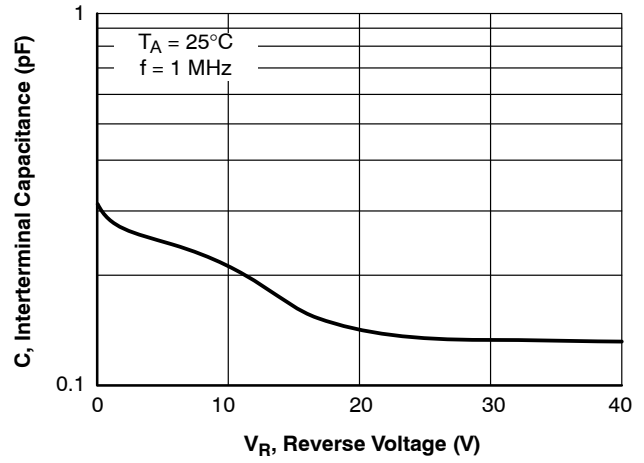


Figure 2. $C - V_R$

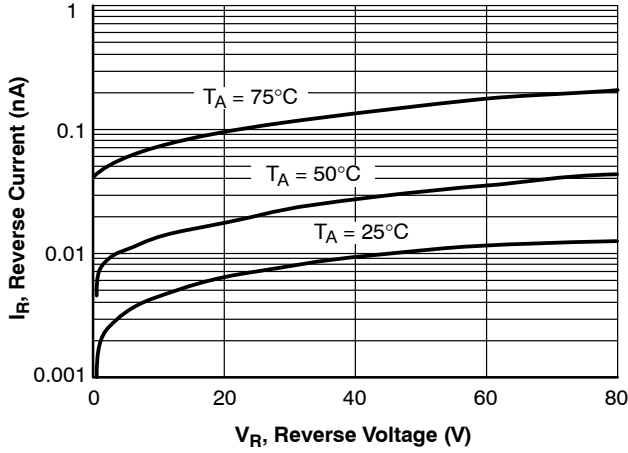


Figure 3. $I_R - V_R$

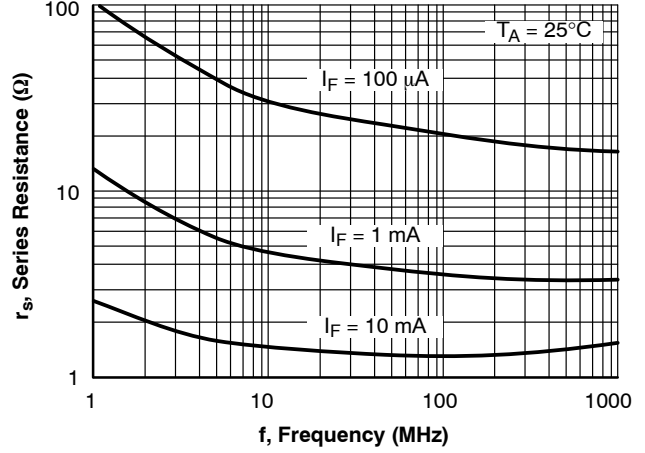


Figure 4. $r_s - f$

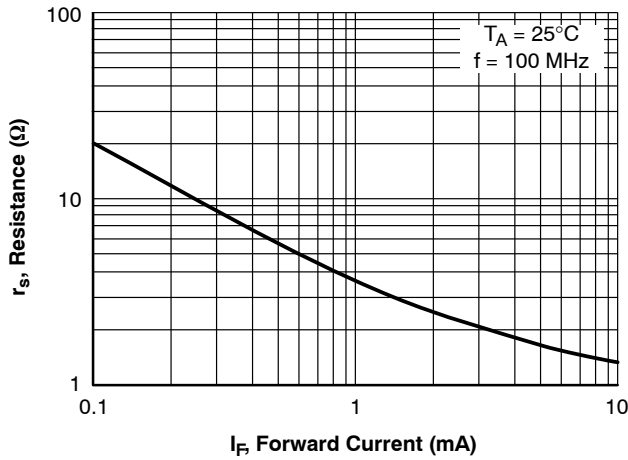


Figure 5. $r_s - I_F$

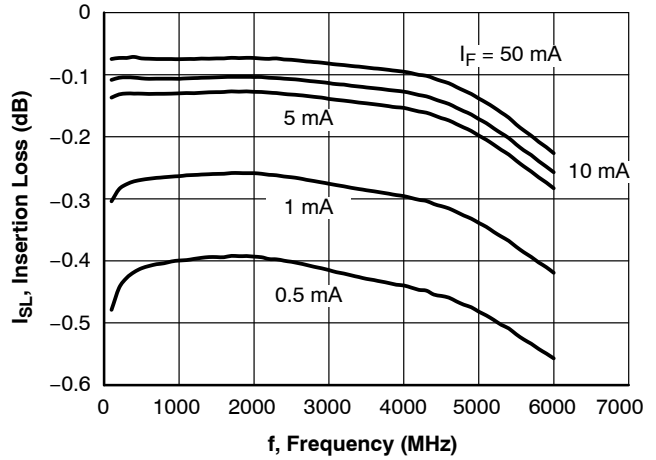


Figure 6. Insertion Loss

NSDP301MX2W, NSVDP301MX2W

TYPICAL CHARACTERISTICS (Continued)

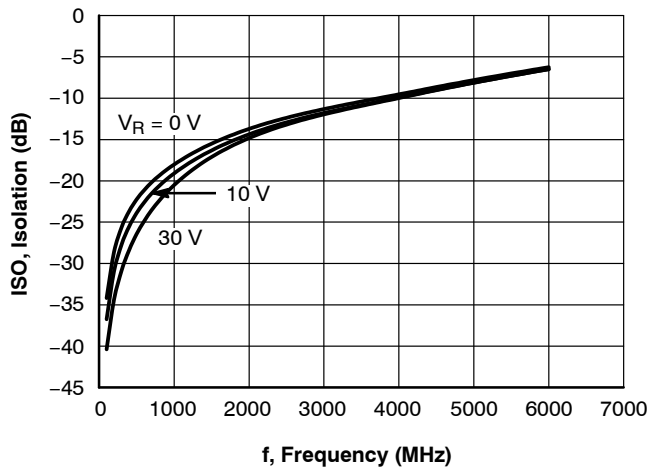


Figure 7. Isolation

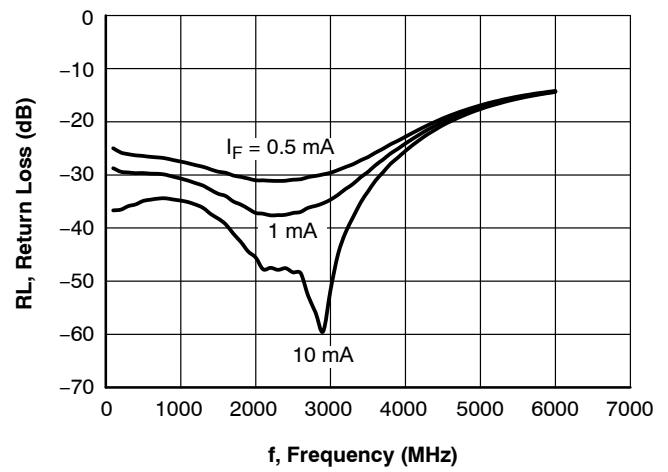
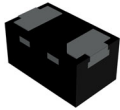


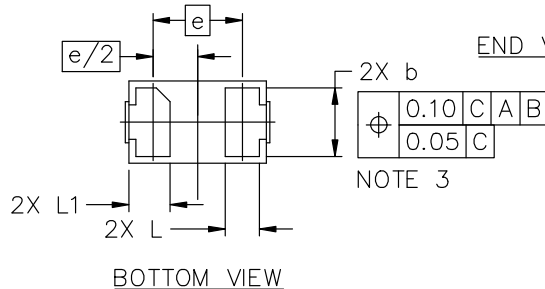
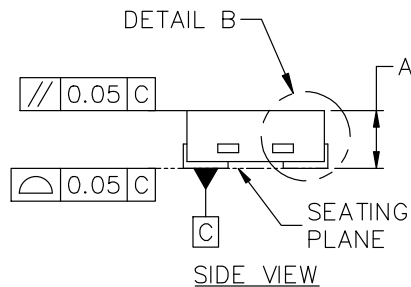
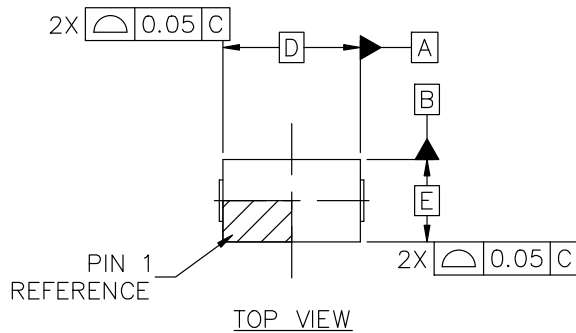
Figure 8. Return Loss

MECHANICAL CASE OUTLINE PACKAGE DIMENSIONS



X2DFNW2 1.00x0.60x0.37, 0.65P
CASE 711BG
ISSUE D

DATE 29 FEB 2024



GENERIC MARKING DIAGRAM*

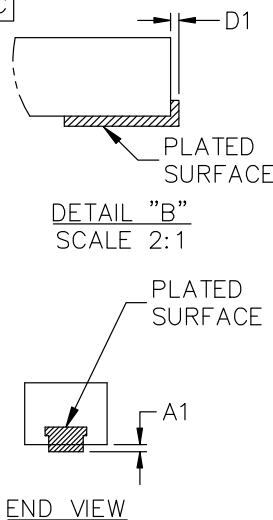


XX = Specific Device Code
M = Date Code

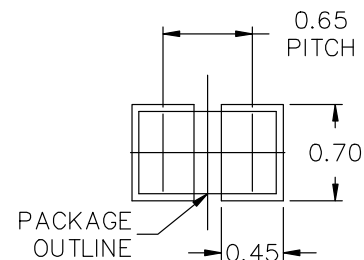
*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G", may or not be present. Some products may not follow the Generic Marking.

NOTES:

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
2. ALL DIMENSION ARE IN MILLIMETERS.
3. DIMENSION b APPLIES TO THE PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 FROM THE TERMINAL TIP.



DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.34	0.37	0.40
A1	---	---	0.05
b	0.45	0.50	0.55
D	1.00 BSC		
D1	---	---	0.05
E	0.60 BSC		
e	0.65 BSC		
L	0.22 REF		
L1	0.24	0.28	0.34



RECOMMENDED MOUNTING FOOTPRINT*

* FOR ADDITIONAL INFORMATION ON OUR Pb-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DOWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERM/D.

DOCUMENT NUMBER:	98AON15241G	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
DESCRIPTION:	X2DFNW2 1.00x0.60x0.37, 0.65P	PAGE 1 OF 1

onsemi and onsemi are trademarks of Semiconductor Components Industries, LLC dba onsemi or its subsidiaries in the United States and/or other countries. onsemi reserves the right to make changes without further notice to any products herein. onsemi makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does onsemi assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. onsemi does not convey any license under its patent rights nor the rights of others.

onsemi, **Onsemi**, and other names, marks, and brands are registered and/or common law trademarks of Semiconductor Components Industries, LLC dba "**onsemi**" or its affiliates and/or subsidiaries in the United States and/or other countries. **onsemi** owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of **onsemi**'s product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. **onsemi** reserves the right to make changes at any time to any products or information herein, without notice. The information herein is provided "as-is" and **onsemi** makes no warranty, representation or guarantee regarding the accuracy of the information, product features, availability, functionality, or suitability of its products for any particular purpose, nor does **onsemi** assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. Buyer is responsible for its products and applications using **onsemi** products, including compliance with all laws, regulations and safety requirements or standards, regardless of any support or applications information provided by **onsemi**. "Typical" parameters which may be provided in **onsemi** data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. **onsemi** does not convey any license under any of its intellectual property rights nor the rights of others. **onsemi** products are not designed, intended, or authorized for use as a critical component in life support systems or any FDA Class 3 medical devices or medical devices with a same or similar classification in a foreign jurisdiction or any devices intended for implantation in the human body. Should Buyer purchase or use **onsemi** products for any such unintended or unauthorized application, Buyer shall indemnify and hold **onsemi** and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that **onsemi** was negligent regarding the design or manufacture of the part. **onsemi** is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:

Technical Library: www.onsemi.com/design/resources/technical-documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support

For additional information, please contact your local Sales Representative at
www.onsemi.com/support/sales