

# Common Anode Quad Array Switching Diode

## NSDEMP11XV6T1, NSDEMP11XV6T5

These Common Anode Epitaxial Planar QUAD Diodes are designed for use in ultra high speed switching applications. The NSDEMP11XV6T1 device is housed in the SOT-563 package which is designed for low power surface mount applications, where board space is at a premium.

### Features

- Fast  $t_{rr}$
- Low  $C_D$
- These are Pb-Free Devices

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

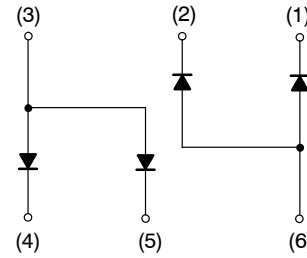
Rating	Symbol	Value	Unit
Reverse Voltage	$V_R$	80	Vdc
Peak Reverse Voltage	$V_{RM}$	80	Vdc
Forward Current	$I_F$	100	mAdc
Peak Forward Current	$I_{FM}$	300	mAdc
Peak Forward Surge Current	$I_{FSM}$ (Note 1)	2.0	Adc

### THERMAL CHARACTERISTICS

Characteristic (One Junction Heated)	Symbol	Max	Unit
Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	357 (Note 2) 2.9 (Note 2)	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	350 (Note 2)	$^\circ\text{C}/\text{W}$
Characteristic (Both Junctions Heated)	Symbol	Max	Unit
Total Device Dissipation $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	500 (Note 2) 4.0 (Note 2)	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	250 (Note 2)	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

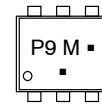
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1.  $t = 1 \mu\text{s}$
2. FR-4 @ Minimum Pad



SOT-563  
CASE 463A  
PLASTIC

### MARKING DIAGRAM



P9 = Device Code  
M = Date Code  
▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
NSDEMP11XV6T1	SOT-563*	4000/Tape & Reel
NSDEMP11XV6T1G	SOT-563*	4000/Tape & Reel
NSDEMP11XV6T5	SOT-563*	8000/Tape & Reel
NSDEMP11XV6T5G	SOT-563*	8000/Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

\*This package is inherently Pb-Free.

# NSDEMP11XV6T1, NSDEMP11XV6T5

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

Characteristic	Symbol	Condition	Min	Max	Unit
Reverse Voltage Leakage Current	I <sub>R</sub>	V <sub>R</sub> = 70 V	-	0.1	μAdc
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 100 mA	-	1.2	Vdc
Reverse Breakdown Voltage	V <sub>R</sub>	I <sub>R</sub> = 100 μA	0	-	Vdc
Diode Capacitance	C <sub>D</sub>	V <sub>R</sub> = 6.0 V, f = 1.0 MHz	-	3.5	pF
Reverse Recovery Time	t <sub>rr</sub> (Note 3)	I <sub>F</sub> = 5.0 mA, V <sub>R</sub> = 6.0 V, R <sub>L</sub> = 100 Ω, I <sub>rr</sub> = 0.1 I <sub>R</sub>	-	4.0	ns

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.

3. t<sub>rr</sub> Test Circuit for NSDEMP11XV6T1 in Figure 4.

## TYPICAL ELECTRICAL CHARACTERISTICS

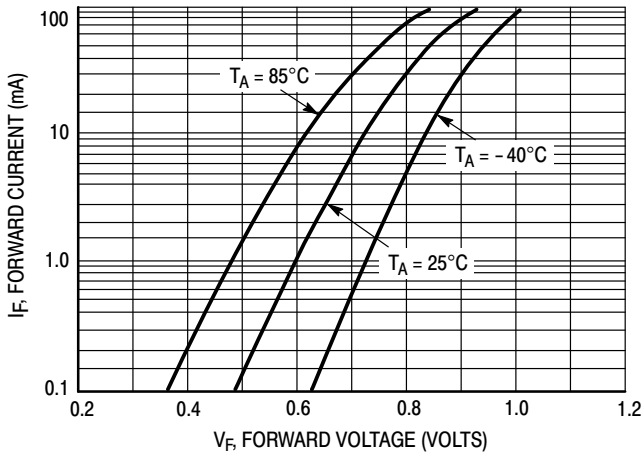


Figure 1. Forward Voltage

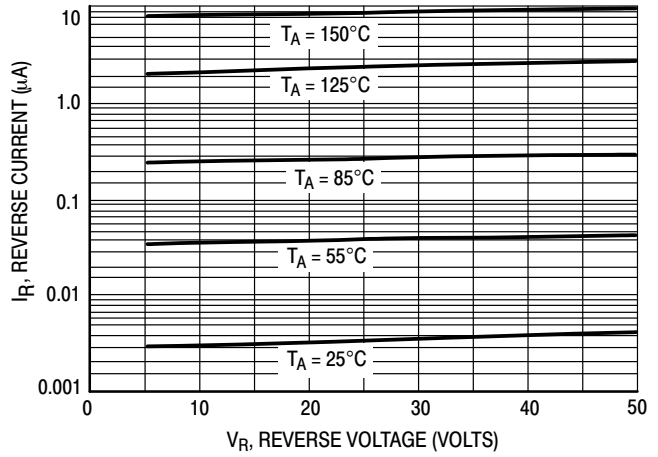


Figure 2. Reverse Current

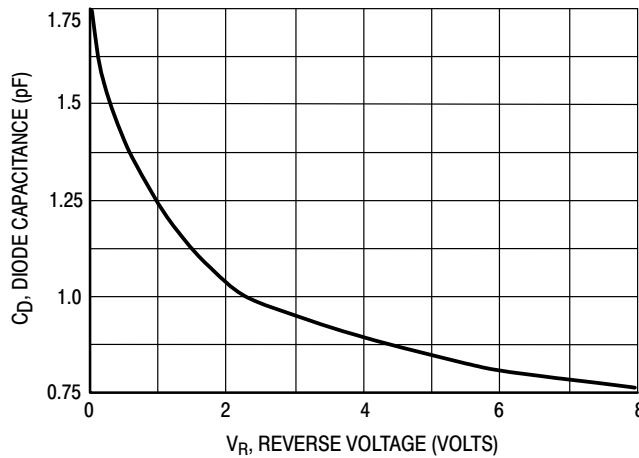
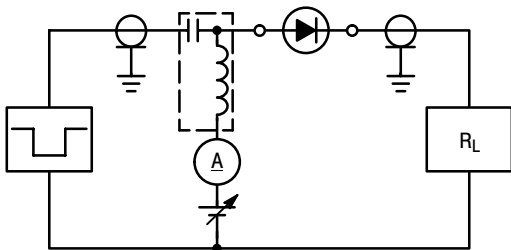
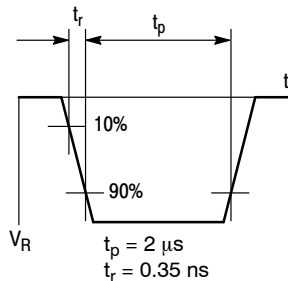


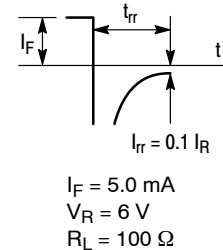
Figure 3. Diode Capacitance



RECOVERY TIME EQUIVALENT TEST CIRCUIT



INPUT PULSE

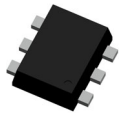


OUTPUT PULSE

Figure 4. Reverse Recovery Time Test Circuit for the NSDEMP11XV6T1

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

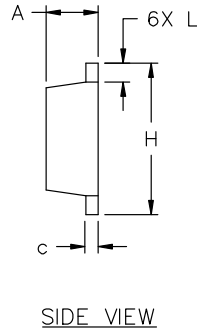
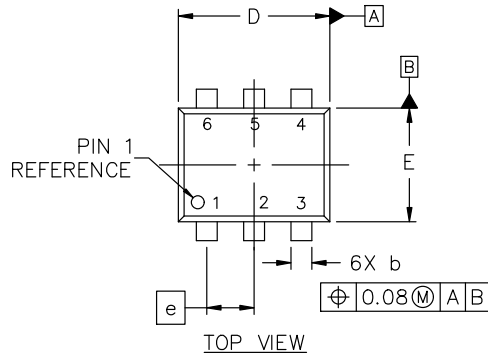


**SOT-563-6 1.60x1.20x0.55, 0.50P**  
**CASE 463A**  
**ISSUE J**

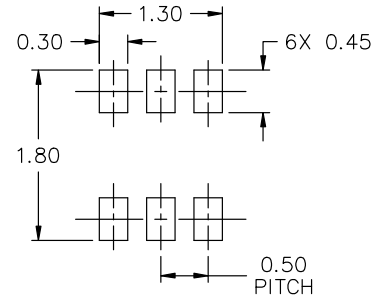
DATE 15 FEB 2024

**NOTES:**

1. DIMENSIONING AND TOLERANCING CONFORM TO ASME Y14.5-2018.
2. ALL DIMENSION ARE IN MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.



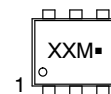
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.50	0.55	0.60
b	0.17	0.22	0.27
c	0.08	0.13	0.18
D	1.50	1.60	1.70
E	1.10	1.20	1.30
e	0.50 BSC		
H	1.50	1.60	1.70
L	0.10	0.20	0.30



- |  |   |  |
|--|---|--|
| <p><b>STYLE 1:</b><br/>         PIN 1. EMITTER 1<br/>         2. BASE 1<br/>         3. COLLECTOR 2<br/>         4. EMITTER 2<br/>         5. BASE 2<br/>         6. COLLECTOR 1</p> | <p><b>STYLE 2:</b><br/>         PIN 1. EMITTER 1<br/>         2. EMITTER 2<br/>         3. BASE 2<br/>         4. COLLECTOR 2<br/>         5. BASE 1<br/>         6. COLLECTOR 1</p>  | <p><b>STYLE 3:</b><br/>         PIN 1. CATHODE 1<br/>         2. CATHODE 1<br/>         3. ANODE/ANODE 2<br/>         4. CATHODE 2<br/>         5. CATHODE 2<br/>         6. ANODE/ANODE 1</p> |
| <p><b>STYLE 4:</b><br/>         PIN 1. COLLECTOR<br/>         2. COLLECTOR<br/>         3. BASE<br/>         4. EMITTER<br/>         5. COLLECTOR<br/>         6. COLLECTOR</p>      | <p><b>STYLE 5:</b><br/>         PIN 1. CATHODE<br/>         2. CATHODE<br/>         3. ANODE<br/>         4. ANODE<br/>         5. CATHODE<br/>         6. CATHODE</p>                | <p><b>STYLE 6:</b><br/>         PIN 1. CATHODE<br/>         2. ANODE<br/>         3. CATHODE<br/>         4. CATHODE<br/>         5. CATHODE<br/>         6. CATHODE</p>                       |
| <p><b>STYLE 7:</b><br/>         PIN 1. CATHODE<br/>         2. ANODE<br/>         3. CATHODE<br/>         4. CATHODE<br/>         5. ANODE<br/>         6. CATHODE</p>               | <p><b>STYLE 8:</b><br/>         PIN 1. DRAIN<br/>         2. DRAIN<br/>         3. GATE<br/>         4. SOURCE<br/>         5. DRAIN<br/>         6. DRAIN</p>                        | <p><b>STYLE 9:</b><br/>         PIN 1. SOURCE 1<br/>         2. GATE 1<br/>         3. DRAIN 2<br/>         4. SOURCE 2<br/>         5. GATE 2<br/>         6. DRAIN 1</p>                     |
| <p><b>STYLE 10:</b><br/>         PIN 1. CATHODE 1<br/>         2. N/C<br/>         3. CATHODE 2<br/>         4. ANODE 2<br/>         5. N/C<br/>         6. ANODE 1</p>              | <p><b>STYLE 11:</b><br/>         PIN 1. EMITTER 2<br/>         2. BASE 2<br/>         3. COLLECTOR 1<br/>         4. EMITTER 1<br/>         5. BASE 1<br/>         6. COLLECTOR 2</p> |  |

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

**GENERIC MARKING DIAGRAM\***



- XX = Specific Device Code
- M = Month Code
- = Pb-Free Package

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

<b>DOCUMENT NUMBER:</b>	<b>98AON11126D</b>	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.
<b>DESCRIPTION:</b>	<b>SOT-563-6 1.60x1.20x0.55, 0.50P</b>	<b>PAGE 1 OF 1</b>

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](http://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](http://www.onsemi.com/design/resources/technical-documentation)  
onsemi Website: [www.onsemi.com](http://www.onsemi.com)

### ONLINE SUPPORT: [www.onsemi.com/support](http://www.onsemi.com/support)

For additional information, please contact your local Sales Representative at [www.onsemi.com/support/sales](http://www.onsemi.com/support/sales)

