

# NSDEMN11XV6T1, NSDEMN11XV6T5

## Common Cathode Quad Array Switching Diode

This Common Cathode Epitaxial Planar Quad Diode is designed for use in ultra high speed switching applications. This 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  $C_D$
- Pb-Free Packages are Available

### 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 | $I_{FSM}$<br>(Note 1) | 2.0   | Adc  |

### THERMAL CHARACTERISTICS

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

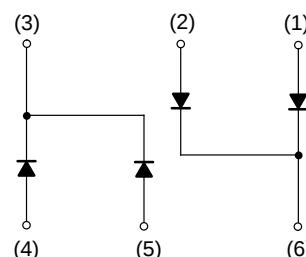
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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



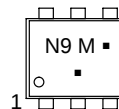
ON Semiconductor®

<http://onsemi.com>



SOT-563  
CASE 463A  
PLASTIC

### MARKING DIAGRAM



N9 = Specific Device Code  
M = Date Code  
■ = Pb-Free Package  
(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device         | Package              | Shipping <sup>†</sup> |
|----------------|----------------------|-----------------------|
| NSDEMN11XV6T1  | SOT-563              | 4000/Tape & Reel      |
| NSDEMN11XV6T1G | SOT-563<br>(Pb-Free) | 4000/Tape & Reel      |
| NSDEMN11XV6T5  | SOT-563              | 8000/Tape & Reel      |
| NSDEMN11XV6T5G | SOT-563<br>(Pb-Free) | 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.

# NSDEMN11XV6T1, NSDEMN11XV6T5

## ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ )

| Characteristic                  | Symbol               | Condition                                                                                   | Min | Max | Unit             |
|---------------------------------|----------------------|---------------------------------------------------------------------------------------------|-----|-----|------------------|
| Reverse Voltage Leakage Current | $I_R$                | $V_R = 70\text{ V}$                                                                         | –   | 0.1 | $\mu\text{A}$ dc |
| Forward Voltage                 | $V_F$                | $I_F = 100\text{ mA}$                                                                       | –   | 1.2 | Vdc              |
| Reverse Breakdown Voltage       | $V_R$                | $I_R = 100\text{ }\mu\text{A}$                                                              | 80  | –   | Vdc              |
| Diode Capacitance               | $C_D$                | $V_R = 6.0\text{ V}, f = 1.0\text{ MHz}$                                                    | –   | 3.5 | pF               |
| Reverse Recovery Time           | $t_{rr}$<br>(Note 3) | $I_F = 5.0\text{ mA}, V_R = 6.0\text{ V}, R_L = 100\text{ }\Omega, I_{rr} = 0.1\text{ }I_R$ | –   | 4.0 | ns               |

3.  $t_{rr}$  Test Circuit on following page.

## TYPICAL ELECTRICAL CHARACTERISTICS

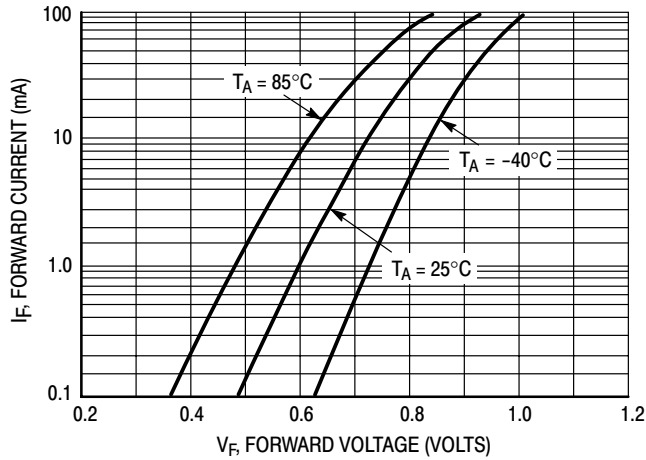


Figure 1. Forward Voltage

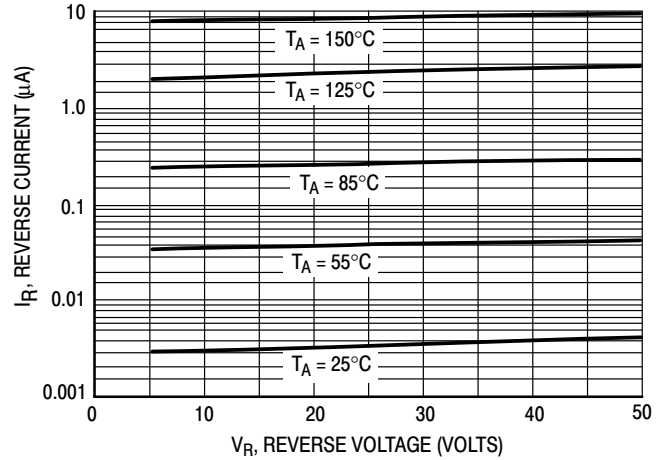


Figure 2. Reverse Current

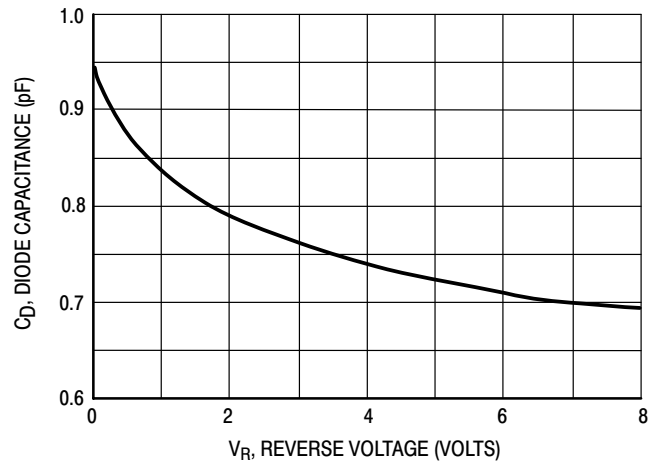


Figure 3. Diode Capacitance

NSDEMN11XV6T1, NSDEMN11XV6T5

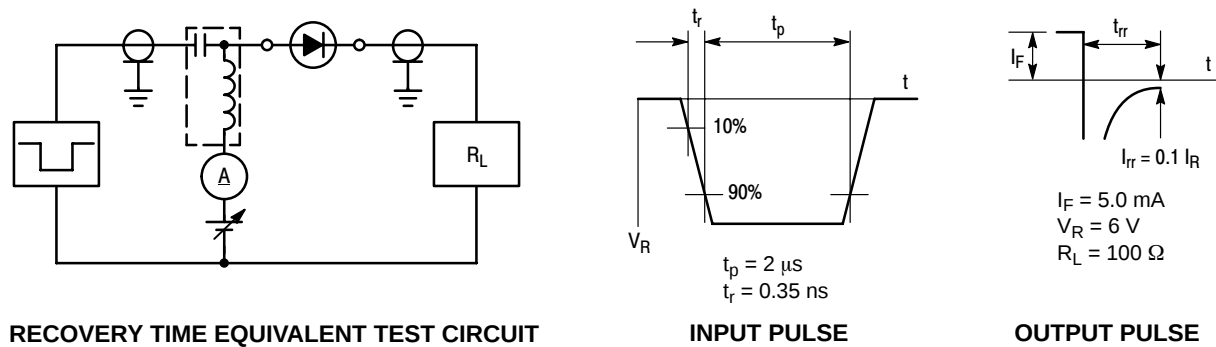


Figure 4. Reverse Recovery Time Test Circuit for the NSDEMN11XV6T1

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

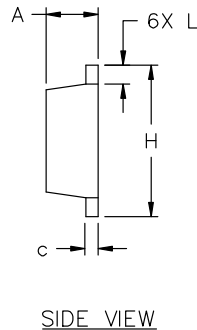
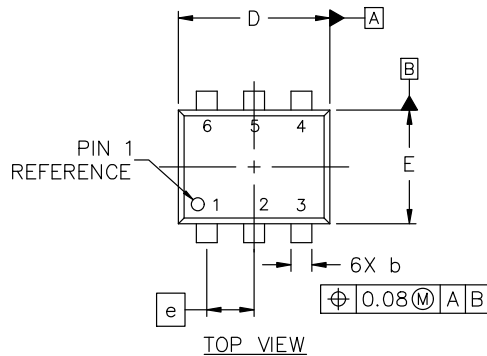


**SOT-563-6 1.60x1.20x0.55, 0.50P**  
**CASE 463A**  
**ISSUE J**

**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 |

**STYLE 1:**  
**PIN** 1. EMITTER 1  
 2. BASE 1  
 3. COLLECTOR 2  
 4. EMITTER 2  
 5. BASE 2  
 6. COLLECTOR 1

**STYLE 2:**  
**PIN** 1. EMITTER 1  
 2. EMITTER 2  
 3. BASE 2  
 4. COLLECTOR 2  
 5. BASE 1  
 6. COLLECTOR 1

**STYLE 3:**  
**PIN** 1. CATHODE 1  
 2. CATHODE 1  
 3. ANODE/ANODE 2  
 4. CATHODE 2  
 5. CATHODE 2  
 6. ANODE/ANODE 1

**STYLE 4:**  
**PIN** 1. COLLECTOR  
 2. COLLECTOR  
 3. BASE  
 4. EMITTER  
 5. COLLECTOR  
 6. COLLECTOR

**STYLE 5:**  
**PIN** 1. CATHODE  
 2. CATHODE  
 3. ANODE  
 4. ANODE  
 5. CATHODE  
 6. CATHODE

**STYLE 6:**  
**PIN** 1. CATHODE  
 2. ANODE  
 3. CATHODE  
 4. CATHODE  
 5. CATHODE  
 6. CATHODE

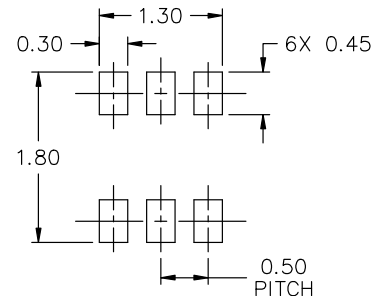
**STYLE 7:**  
**PIN** 1. CATHODE  
 2. ANODE  
 3. CATHODE  
 4. CATHODE  
 5. ANODE  
 6. CATHODE

**STYLE 8:**  
**PIN** 1. DRAIN  
 2. DRAIN  
 3. GATE  
 4. SOURCE  
 5. DRAIN  
 6. DRAIN

**STYLE 9:**  
**PIN** 1. SOURCE 1  
 2. GATE 1  
 3. DRAIN 2  
 4. SOURCE 2  
 5. GATE 2  
 6. DRAIN 1

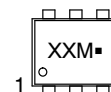
**STYLE 10:**  
**PIN** 1. CATHODE 1  
 2. N/C  
 3. CATHODE 2  
 4. ANODE 2  
 5. N/C  
 6. ANODE 1

**STYLE 11:**  
**PIN** 1. EMITTER 2  
 2. BASE 2  
 3. COLLECTOR 1  
 4. EMITTER 1  
 5. BASE 1  
 6. COLLECTOR 2



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

|                         |                                        |                                                                                                                                                                                  |
|-------------------------|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
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