

# NSDEM11XV6T1, NSDEM11XV6T5

## 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   | mA <sub>dc</sub> |
| Peak Forward Current       | $I_{FM}$              | 300   | mA <sub>dc</sub> |
| Peak Forward Surge Current | $I_{FSM}$<br>(Note 1) | 2.0   | A <sub>dc</sub>  |

### THERMAL CHARACTERISTICS

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

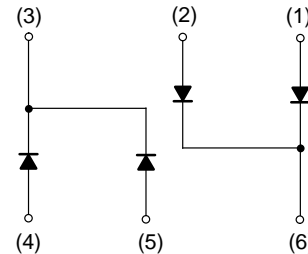
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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



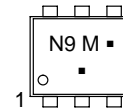
ON Semiconductor®

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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†        |
|---------------|----------------------|------------------|
| NSDEM11XV6T1  | SOT-563              | 4000/Tape & Reel |
| NSDEM11XV6T1G | SOT-563<br>(Pb-Free) | 4000/Tape & Reel |
| NSDEM11XV6T5  | SOT-563              | 8000/Tape & Reel |
| NSDEM11XV6T5G | SOT-563<br>(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 Specifications Brochure, BRD8011/D.

# NSDEM11XV6T1, NSDEM11XV6T5

## 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       | $V_R$                | $I_R = 100\ \mu\text{A}$  | 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) | $I_F = 5.0\text{ mA}, V_R = 6.0\text{ V}, R_L = 100\ \Omega, I_{rr} = 0.1\ I_R$ | –   | 4.0 | ns               |

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

## TYPICAL ELECTRICAL CHARACTERISTICS

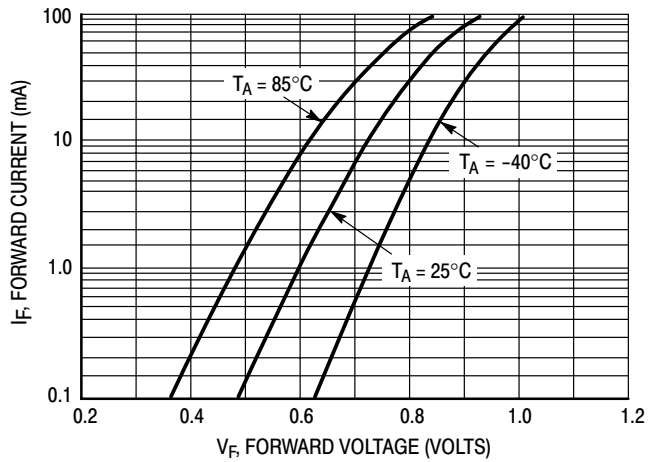


Figure 1. Forward Voltage

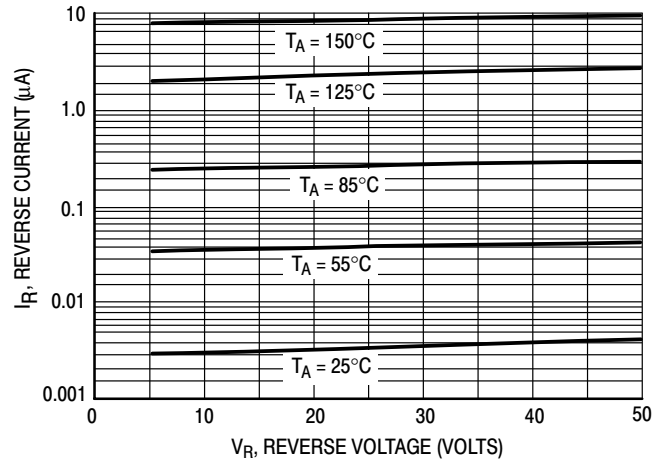


Figure 2. Reverse Current

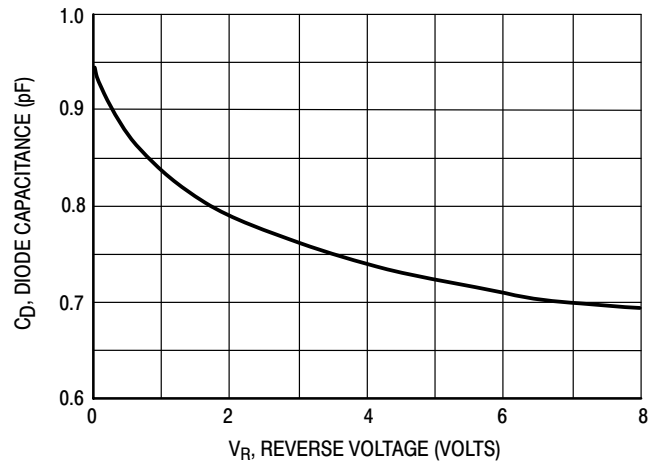
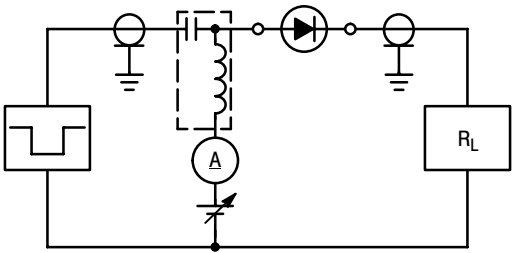
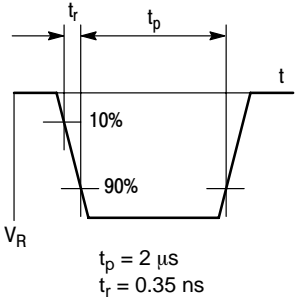


Figure 3. Diode Capacitance

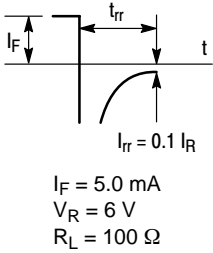
NSDEM11XV6T1, NSDEM11XV6T5



RECOVERY TIME EQUIVALENT TEST CIRCUIT



INPUT PULSE



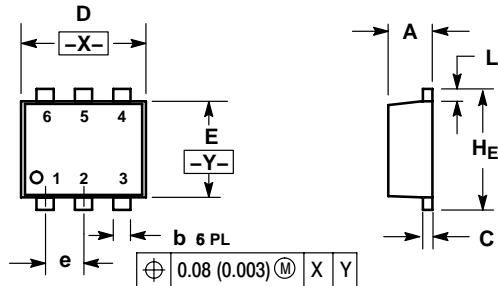
OUTPUT PULSE

Figure 4. Reverse Recovery Time Test Circuit for the NSDEM11XV6T1

# NSDEM11XV6T1, NSDEM11XV6T5

## PACKAGE DIMENSIONS

SOT-563, 6 LEAD  
CASE 463A-01  
ISSUE F

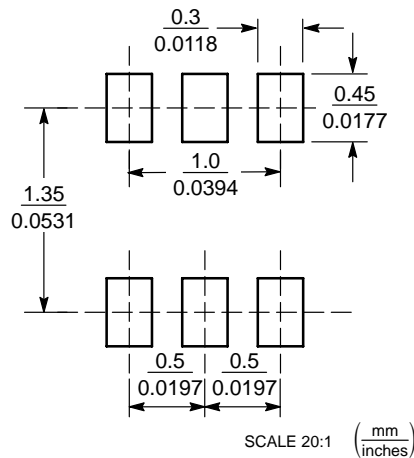


**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

| DIM            | MILLIMETERS |      |      | INCHES   |       |       |
|----------------|-------------|------|------|----------|-------|-------|
|                | MIN         | NOM  | MAX  | MIN      | NOM   | MAX   |
| A              | 0.50        | 0.55 | 0.60 | 0.020    | 0.021 | 0.023 |
| b              | 0.17        | 0.22 | 0.27 | 0.007    | 0.009 | 0.011 |
| C              | 0.08        | 0.12 | 0.18 | 0.003    | 0.005 | 0.007 |
| D              | 1.50        | 1.60 | 1.70 | 0.059    | 0.062 | 0.066 |
| E              | 1.10        | 1.20 | 1.30 | 0.043    | 0.047 | 0.051 |
| e              | 0.5 BSC     |      |      | 0.02 BSC |       |       |
| L              | 0.10        | 0.20 | 0.30 | 0.004    | 0.008 | 0.012 |
| H <sub>E</sub> | 1.50        | 1.60 | 1.70 | 0.059    | 0.062 | 0.066 |

## SOLDERING FOOTPRINT\*



\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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