

# NSD16F3T5G

## Switching Diode

The NSD16F3T5G device is a spin-off of our popular SOT-23 three-leaded device. It is designed for switching applications and is housed in the SOT-1123 surface mount package. This device is ideal for low-power surface mount applications where board space is at a premium.

### Features

- Reduces Board Space
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS Compliant

### MAXIMUM RATINGS

| Rating                     | Symbol          | Value | Unit |
|----------------------------|-----------------|-------|------|
| Reverse Voltage            | $V_R$           | 75    | Vdc  |
| Forward Current            | $I_F$           | 200   | mAdc |
| Peak Forward Surge Current | $I_{FM(surge)}$ | 500   | mAdc |

### THERMAL CHARACTERISTICS

| Characteristic  | Symbol                      | Max            | Unit                       |
|---|-----------------------------|----------------|----------------------------|
| Total Device Dissipation, $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$<br>(Note 1)           | 290<br>2.3     | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction-to-Ambient  | $R_{\theta JA}$<br>(Note 1) | 432            | $^\circ\text{C}/\text{W}$  |
| Total Device Dissipation, $T_A = 25^\circ\text{C}$<br>Derate above $25^\circ\text{C}$ | $P_D$<br>(Note 2)           | 347<br>2.8     | mW<br>mW/ $^\circ\text{C}$ |
| Thermal Resistance,<br>Junction-to-Ambient  | $R_{\theta JA}$<br>(Note 2) | 360            | $^\circ\text{C}/\text{W}$  |
| Thermal Resistance,<br>Junction-to-Lead 3   | $R_{\psi JL}$<br>(Note 2)   | 143            | $^\circ\text{C}/\text{W}$  |
| Junction and Storage Temperature Range  | $T_J, T_{stg}$              | -55 to<br>+150 | $^\circ\text{C}$           |

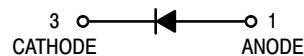
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. 100 mm<sup>2</sup> 1 oz, copper traces.
2. 500 mm<sup>2</sup> 1 oz, copper traces.

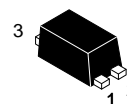


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NSD16F3T5G



SOT-1123  
CASE 524AA  
STYLE 2

### MARKING DIAGRAM



T = Device Code  
M = Date Code

### ORDERING INFORMATION

| Device     | Package               | Shipping†        |
|------------|-----------------------|------------------|
| NSD16F3T5G | SOT-1123<br>(Pb-Free) | 8000/Tape & Reel |

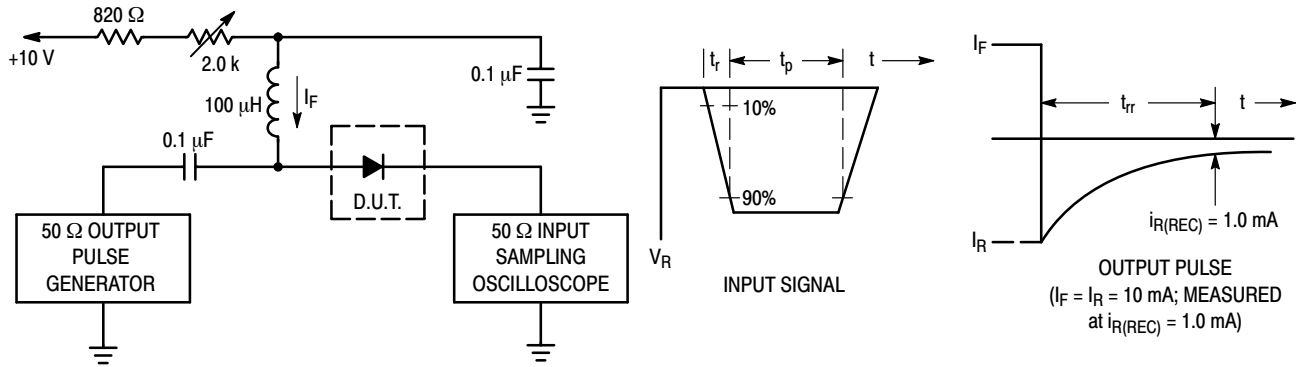
†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

# NSD16F3T5G

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

| Characteristic  | Symbol     | Min | Max                        | Unit            |
|---|------------|-----|----------------------------|-----------------|
| <b>OFF CHARACTERISTICS</b>  |            |     |                            |                 |
| Reverse Voltage Leakage Current<br>( $V_R = 100\text{ Vdc}$ )<br>( $V_R = 75\text{ Vdc}, T_J = 150^\circ\text{C}$ )<br>( $V_R = 25\text{ Vdc}, T_J = 150^\circ\text{C}$ ) | $I_R$      | –   | 1.0<br>50<br>30            | $\mu\text{Adc}$ |
| Reverse Breakdown Voltage<br>( $I_{BR} = 100\ \mu\text{Adc}$ )  | $V_{(BR)}$ | 75  | –                          | Vdc             |
| Forward Voltage<br>( $I_F = 1.0\ \text{mAdc}$ )<br>( $I_F = 10\ \text{mAdc}$ )<br>( $I_F = 50\ \text{mAdc}$ )<br>( $I_F = 150\ \text{mAdc}$ )                             | $V_F$      | –   | 715<br>855<br>1000<br>1250 | mV              |
| Diode Capacitance<br>( $V_R = 0, f = 1.0\ \text{MHz}$ )   | $C_D$      | –   | 2.0                        | pF              |
| Forward Recovery Voltage<br>( $I_F = 10\ \text{mAdc}, t_r = 20\ \text{ns}$ )  | $V_{FR}$   | –   | 1.75                       | Vdc             |
| Reverse Recovery Time<br>( $I_F = I_R = 10\ \text{mAdc}, R_L = 50\ \Omega$ )  | $t_{rr}$   | –   | 6.0                        | ns              |
| Stored Charge<br>( $I_F = 10\ \text{mAdc}$ to $V_R = 5.0\ \text{Vdc}, R_L = 500\ \Omega$ )  | $Q_S$      | –   | 45                         | pC              |

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.



- Notes: 1. A 2.0 k $\Omega$  variable resistor adjusted for a Forward Current ( $I_F$ ) of 10 mA.  
 2. Input pulse is adjusted so  $I_{R(\text{peak})}$  is equal to 10 mA.  
 3.  $t_p \gg t_{rr}$

**Figure 1. Recovery Time Equivalent Test Circuit**

# NSD16F3T5G

## TYPICAL CHARACTERISTICS

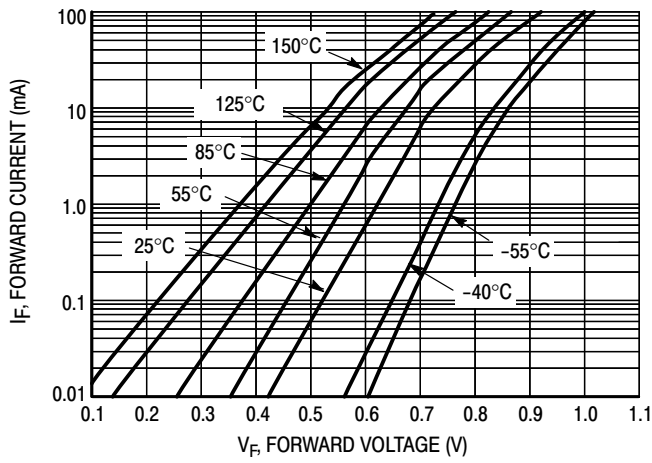


Figure 2.  $V_F$  vs.  $I_F$

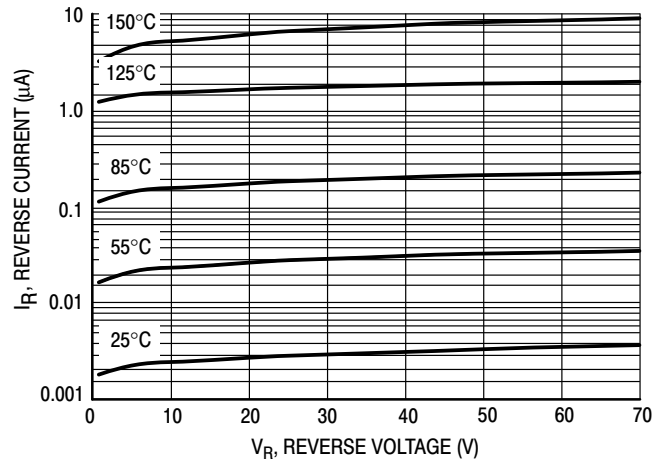


Figure 3.  $I_R$  vs.  $V_R$

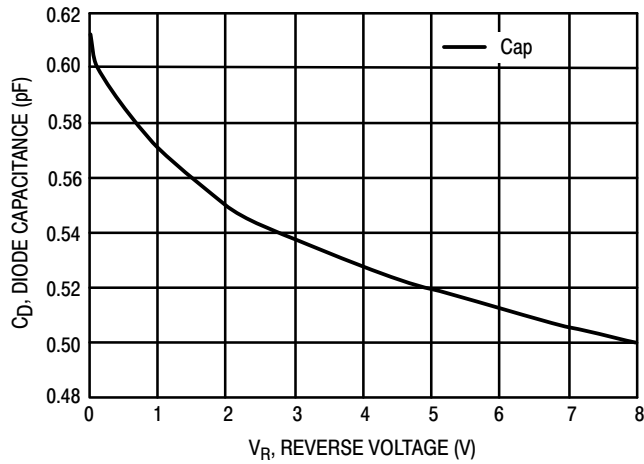
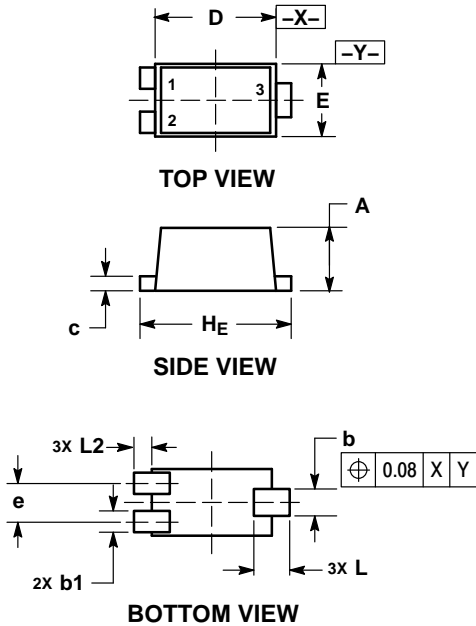


Figure 4. Capacitance

# NSD16F3T5G

## PACKAGE DIMENSIONS

SOT-1123  
CASE 524AA  
ISSUE C

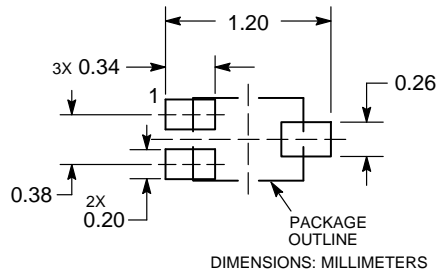


- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
  4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS, OR GATE BURRS.

| DIM            | MILLIMETERS |      |
|----------------|-------------|------|
|                | MIN         | MAX  |
| A              | 0.34        | 0.40 |
| b              | 0.15        | 0.28 |
| b1             | 0.10        | 0.20 |
| c              | 0.07        | 0.17 |
| D              | 0.75        | 0.85 |
| E              | 0.55        | 0.65 |
| e              | 0.35        | 0.40 |
| H <sub>E</sub> | 0.95        | 1.05 |
| L              | 0.185       | REF  |
| L2             | 0.05        | 0.15 |

- STYLE 2:  
PIN 1. ANODE  
2. N/C  
3. CATHODE

### SOLDERING 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.

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