## Switching Diode NSD070AL

## Features

- NSV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are $\mathrm{Pb}-$ Free, Halogen Free/BFR Free and are RoHS Compliant


## MAXIMUM RATINGS

| Rating | Symbol | Value | Unit |
| :--- | :---: | :---: | :---: |
| Reverse Voltage | $\mathrm{V}_{\mathrm{R}}$ | 70 | V |
| Forward Current (DC) | $\mathrm{I}_{\mathrm{F}}$ | 200 | mA |
| Non-Repetitive Peak Forward Current <br> $\mathrm{t}=1.0 \mathrm{~s}$ | $\mathrm{I}_{\mathrm{FSM}}$ | 500 | mA |

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.


ORDERING INFORMATION

| Device | Package | Shipping $^{\dagger}$ |
| :---: | :---: | :---: |
| NSD070ALT1G | SOT-23 <br> (Pb-Free) | $3,000 /$ <br> Tape \& Reel |
| NSVD070ALT1G | SOT-23 <br> (Pb-Free) | $3,000 /$ <br> Tape \& Reel |

$\dagger$ 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.

THERMAL CHARACTERISTICS

| Characteristic | Symbol | Min | Typ | Max | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Thermal Resistance Junction-to-Ambient (Note 1) Total Device Dissipation @ $\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}$ | $\begin{gathered} \mathrm{R}_{\text {BJA }} \\ \mathrm{P}_{\mathrm{D}} \end{gathered}$ | - | - | $\begin{aligned} & 556 \\ & 225 \end{aligned}$ | ${ }^{\circ} \mathrm{C} / \mathrm{W}$ mW |
| Junction and Storage Temperature Range | $\mathrm{T}_{\mathrm{J},} \mathrm{T}_{\text {stg }}$ | - | - | -65 to +150 | ${ }^{\circ} \mathrm{C}$ |

1. $\mathrm{FR}-4=1.0 \times 0.75 \times 0.062 \mathrm{in}$.

ELECTRICAL CHARACTERISTICS $\left(\mathrm{T}_{\mathrm{A}}=25^{\circ} \mathrm{C}\right.$ unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
| :---: | :---: | :---: | :---: | :---: | :---: |
| OFF CHARACTERISTICS |  |  |  |  |  |
| Reverse Breakdown Voltage $\left(\mathrm{V}_{\mathrm{R}}=70 \mathrm{Vdc}\right)$ | $\mathrm{V}_{\text {(BR) }}$ | 70 | - | - | V |
| $\begin{aligned} & \text { Reverse Voltage Leakage Current } \\ & \left(\mathrm{V}_{\mathrm{R}}=70 \mathrm{Vdc}\right) \\ & \left(\mathrm{V}_{\mathrm{R}}=70 \mathrm{Vdc}, \mathrm{~T}_{J}=150^{\circ} \mathrm{C}\right) \end{aligned}$ | $\mathrm{I}_{\mathrm{R}}$ | - |  | $\begin{aligned} & 5.0 \\ & 80 \end{aligned}$ | nA |
| Diode Capacitance $\left(\mathrm{V}_{\mathrm{R}}=0 \mathrm{~V}, \mathrm{f}=1.0 \mathrm{MHz}\right)$ | $C_{D}$ | - | 1.0 | 2.0 | pF |
| $\begin{gathered} \text { Forward Voltage } \\ \left(I_{\mathrm{F}}=1.0 \mathrm{~mA}\right) \\ \left(\mathrm{I}_{\mathrm{F}}=10 \mathrm{~mA}\right) \\ \left(\mathrm{F}_{\mathrm{F}}=50 \mathrm{~mA}\right) \\ \left(\mathrm{I}_{\mathrm{F}}=150 \mathrm{~mA}\right) \end{gathered}$ | $V_{\text {F }}$ | - | - - - | $\begin{gathered} 900 \\ 1000 \\ 1100 \\ 1250 \end{gathered}$ | mV |
| Reverse Recovery Time $\left(I_{F}=I_{R}=10 \mathrm{~mA}\right)$ (Figure 1) | $\mathrm{trr}^{\text {r }}$ | - | - | 3.0 | $\mu \mathrm{S}$ |

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 $2.0 \mathrm{k} \Omega$ variable resistor adjusted for a Forward Current $\left(\mathrm{I}_{\mathrm{F}}\right)$ of 10 mA .
2. Input pulse is adjusted so $\mathrm{I}_{\mathrm{R}(\text { peak })}$ is equal to 10 mA .
3. $t_{p}>t_{r r}$

Figure 1. Recovery Time Equivalent Test Circuit

NSD070AL
TYPICAL CHARACTERISTICS


Figure 2. Forward Voltage


Figure 3. Capacitance


SOT-23 (TO-236)
CASE 318
ISSUE AT
DATE 01 MAR 2023

## SCALE 4:1


DETAIL


NDTES:

1. DIMENSIDNING AND TQLERANCING PER ASME Y14.5M,1994.
2. CDNTRDLLING DIMENSIDN: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS DF THE BASE MATERIAL.
4. DIMENSIUNS D AND E DO NDT INCLUDE MDLD FLASH, PRDTRUSIINS, DR GATE BURRS.

| DIM | MILLIMETERS |  | INCHES |  |  |  |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | MIN. | NDM. | MAX. | MIN. | NDM. | MAX. |
| A | 0.89 | 1.00 | 1.11 | 0.035 | 0.039 | 0.044 |
| A1 | 0.01 | 0.06 | 0.10 | 0.000 | 0.002 | 0.004 |
| b | 0.37 | 0.44 | 0.50 | 0.015 | 0.017 | 0.020 |
| C | 0.08 | 0.14 | 0.20 | 0.003 | 0.006 | 0.008 |
| D | 2.80 | 2.90 | 3.04 | 0.110 | 0.114 | 0.120 |
| E | 1.20 | 1.30 | 1.40 | 0.047 | 0.051 | 0.055 |
| e | 1.78 | 1.90 | 2.04 | 0.070 | 0.075 | 0.080 |
| L | 0.30 | 0.43 | 0.55 | 0.012 | 0.017 | 0.022 |
| L1 | 0.35 | 0.54 | 0.69 | 0.014 | 0.021 | 0.027 |
| $H_{E}$ | 2.10 | 2.40 | 2.64 | 0.083 | 0.094 | 0.104 |
| T | $0^{\circ}$ | --- | $10^{\circ}$ | $0^{\circ}$ | --- | $10^{\circ}$ |



XXX = Specific Device Code
M = Date Code

- = Pb-Free Package
*This information is generic. Please refer to device data sheet for actual part marking. $\mathrm{Pb}-\mathrm{Fr}$ dee indicator, " G " or microdot " P ", may or may not be present. Some products may not follow the Generic Marking.


RECDMMENDED M MUNTING FOUTPRINT

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


## STYLES ON PAGE 2

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| STYLE 1 THRU 5: CANCELLED | STYLE 6: <br> PIN 1. BASE <br> 2. EMITTER <br> 3. COLLECTOR | STYLE 7: <br> PIN 1. EMITTER <br> 2. BASE <br> 3. COLLECTOR | STYLE 8: <br> PIN 1. ANODE <br> 2. NO CONNECTION <br> 3. CATHODE |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| STYLE 9: <br> PIN 1. ANODE <br> 2. ANODE <br> 3. CATHODE | STYLE 10: <br> PIN 1. DRAIN <br> 2. SOURCE <br> 3. GATE | STYLE 11: <br> PIN 1. ANODE <br> 2. CATHODE <br> 3. CATHODE-ANODE | STYLE 12: <br> PIN 1. CATHODE <br> 2. CATHODE <br> 3. ANODE | STYLE 13: <br> PIN 1. SOURCE <br> 2. DRAIN <br> 3. GATE | STYLE 14: <br> PIN 1. CATHODE <br> 2. GATE <br> 3. ANODE |
| STYLE 15: <br> PIN 1. GATE <br> 2. CATHODE <br> 3. ANODE | STYLE 16: <br> PIN 1. ANODE <br> 2. CATHODE <br> 3. CATHODE | STYLE 17: <br> PIN 1. NO CONNECTION <br> 2. ANODE <br> 3. CATHODE | STYLE 18: <br> PIN 1. NO CONNECTION <br> 2. CATHODE <br> 3. ANODE | STYLE 19: <br> PIN 1. CATHODE <br> 2. ANODE <br> 3. CATHODE-ANODE | STYLE 20 : <br> PIN 1. CATHODE <br> 2. ANODE <br> 3. GATE |
| STYLE 21: <br> PIN 1. GATE <br> 2. SOURCE <br> 3. DRAIN | STYLE 22: <br> PIN 1. RETURN <br> 2. OUTPUT <br> 3. INPUT | STYLE 23: <br> PIN 1. ANODE <br> 2. ANODE <br> 3. CATHODE | STYLE 24: <br> PIN 1. GATE <br> 2. DRAIN <br> 3. SOURCE | STYLE 25: <br> PIN 1. ANODE <br> 2. CATHODE <br> 3. GATE | STYLE 26: <br> PIN 1. CATHODE <br> 2. ANODE <br> 3. NO CONNECTION |
| STYLE 27: <br> PIN 1. CATHODE <br> 2. CATHODE <br> 3. CATHODE | STYLE 28: <br> PIN 1. ANODE <br> 2. ANODE <br> 3. ANODE |  |  |  |  |


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