# Trench-based Schottky Diode, 100 mA, 30 V

# NSR01301MX4

These Trench Schottky diodes are optimized for low forward voltage drop and low leakage current that offers the most optimal power dissipation in applications. They are housed in space saving micro−packaging ideal for space constrained applications.

### Features

- Smallest Package Available (01005); 0.445mm x 0.24mm
- 100 mA of Continuous Forward Current
- Low Forward Voltage Drop − 450 mV (Typical) @ $I_F$ = 100 mA
- Low Reverse Current − 0.04 μA (Typical) @ $V_R$ = 30 V
- Very Low Reverse Recovery Time − 8 ns Maximum
- Low Capacitance − 20 pF Typical

### Typical Applications

- Mobile and Wearable Devices
- Camera Photo Flash
- Buck and Boost DC−DC Converters
- Reverse Current Protection
- Clamping & Protection

### MAXIMUM RATINGS

| Rating | | Symbol | Value | Unit |
|---|---|---|---|---|
| Forward Current (DC) | | $I_F$ | 100 | mA |
| Reverse Voltage | | $V_R$ | 30 | V |
| Repetitive Peak Forward Current (Pulse Wave = 1 sec, Duty Cycle = 66%) | | $I_{FRM}$ | 1.0 | A |
| ESD Rating: | Human Body Model<br>Machine Model | ESD | >8.0<br>>400 | kV<br>V |

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.

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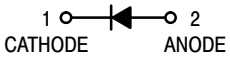
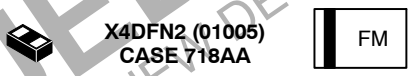



### MARKING DIAGRAM




F = Specific Device Code
M = Date Code

### ORDERING INFORMATION

| Device | Package | Shipping† |
|---|---|---|
| NSR01301MX4T5G | X4DFN2 (Pb−Free) | 10000 / 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.

## THERMAL CHARACTERISTICS

| Characteristic | Symbol | Max | Unit |
|---|---|---|---|
| Thermal Resistance<br>Junction−to−Ambient (Note 1)<br>Total Power Dissipation @ $T_A$ = 25°C | $R_{\theta JA}$<br>$P_D$ | 614.9<br>203 | °C/W<br>mW |
| Thermal Resistance<br>Junction−to−Ambient (Note 2)<br>Total Power Dissipation @ $T_A$ = 25°C | $R_{\theta JA}$<br>$P_D$ | 239.4<br>522 | °C/W<br>mW |
| Junction Temperature Range | $T_J$ | −55 to +125 | °C |
| Storage Temperature Range | $T_{STG}$ | −55 to +150 | °C |
| Lead Solder Temperature − Maximum (10 seconds) | $T_L$ | 260 | °C |

1. Mounted onto a 4 $in^2$ FR−4 board 10 $mm^2$ 1 oz. Cu 0.06' thick single−sided. Operating to steady state.
2. Mounted onto a 4 $in^2$ FR−4 board 2 $cm^2$ 1 oz. Cu 0.06' thick single−sided. Operating to steady state.

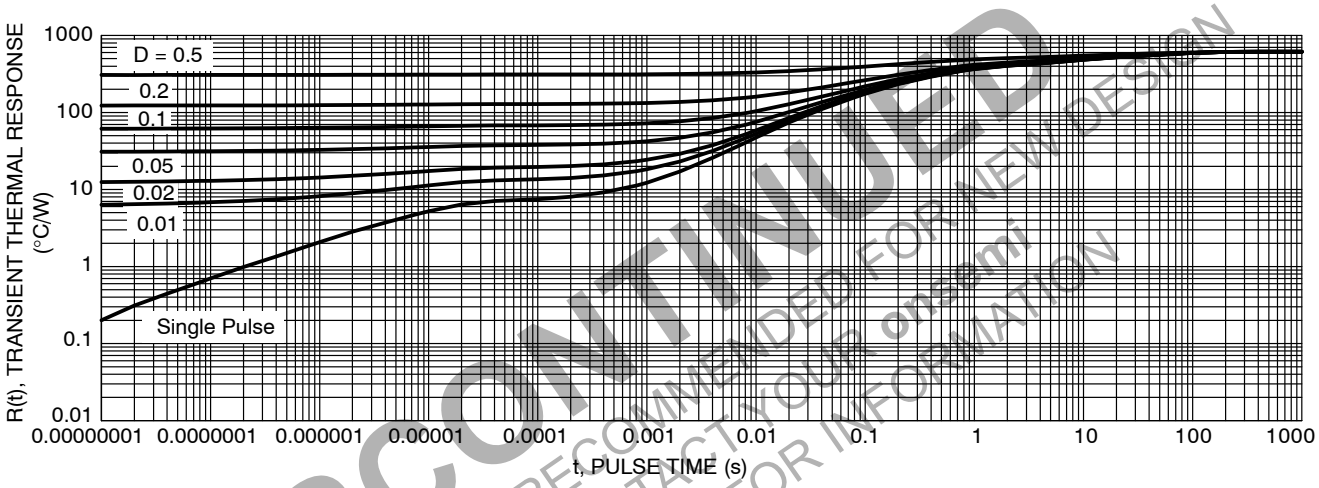



**Figure 1. Thermal Response (Note 1)**

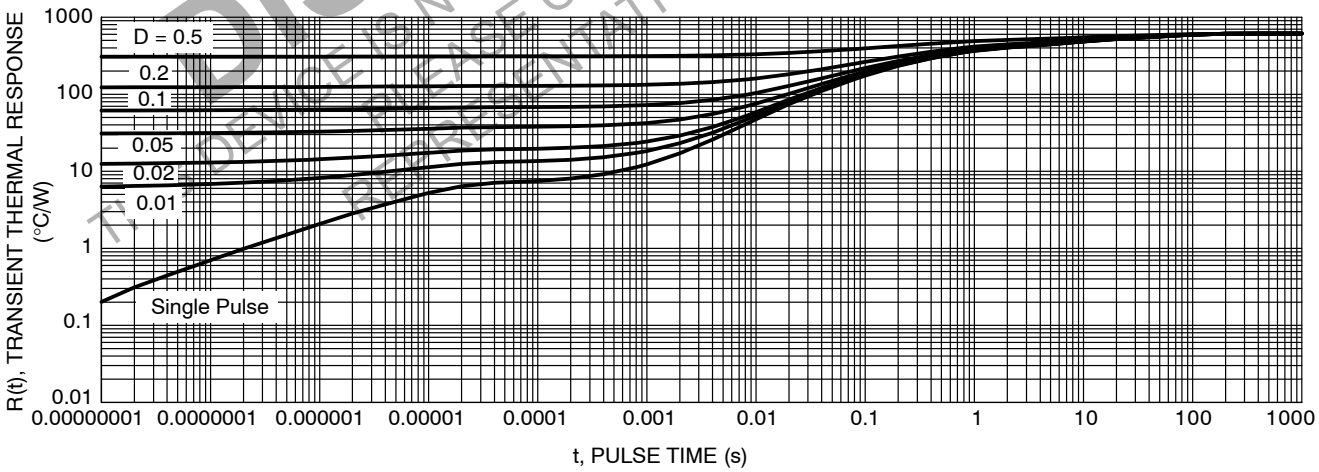



**Figure 2. Thermal Response (Note 2)**

**ELECTRICAL CHARACTERISTICS** ($T_A$ = 25°C unless otherwise noted)

| Characteristic | Symbol | Min | Typ | Max | Unit |
|---|---|---|---|---|---|
| Reverse Leakage<br>($V_R$ = 10 V)<br>($V_R$ = 30 V) | $I_R$ | | <br>0.02<br>0.04 | <br>4.0<br>20 | μA |
| Forward Voltage<br>($I_F$ = 10 mA)<br>($I_F$ = 50 mA)<br>($I_F$ = 100 mA) | $V_F$ | | <br>400<br>420<br>450 | <br>450<br>470<br>500 | mV |
| Total Capacitance<br>($V_R$ = 5.0 V, f = 1 MHz) | $C_T$ | | <br>20 | | pF |
| Reverse Recovery Time<br>($I_F$ = $I_R$ = 10 mA, $I_{R(REC)}$ = 1.0 mA) | $t_{rr}$ | | | <br>8.0 | 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.

## TYPICAL CHARACTERISTICS

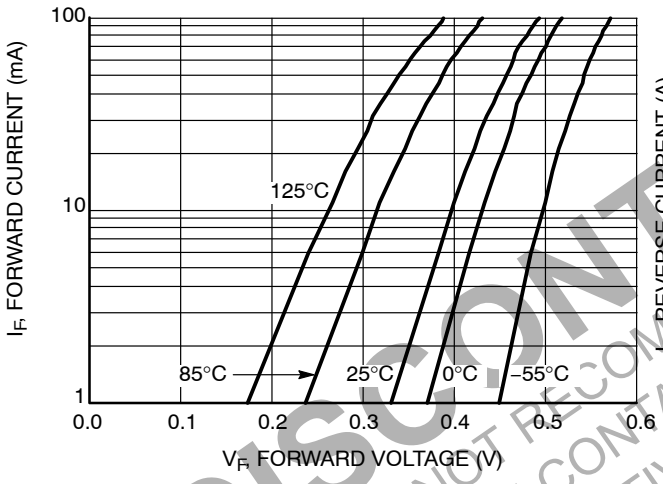



**Figure 3. Forward Voltage**

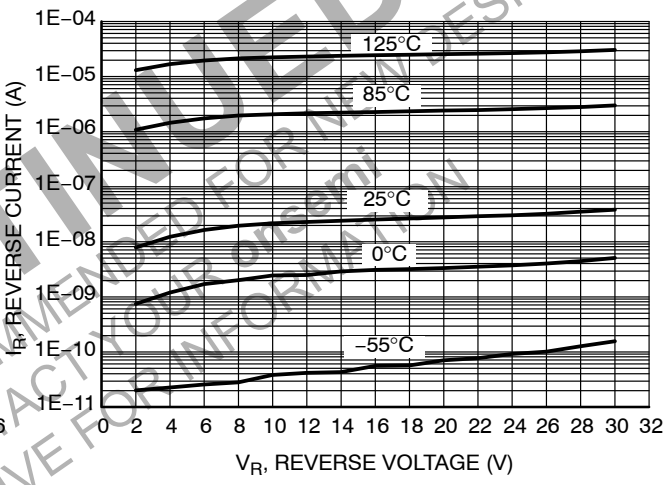



**Figure 4. Leakage Current**

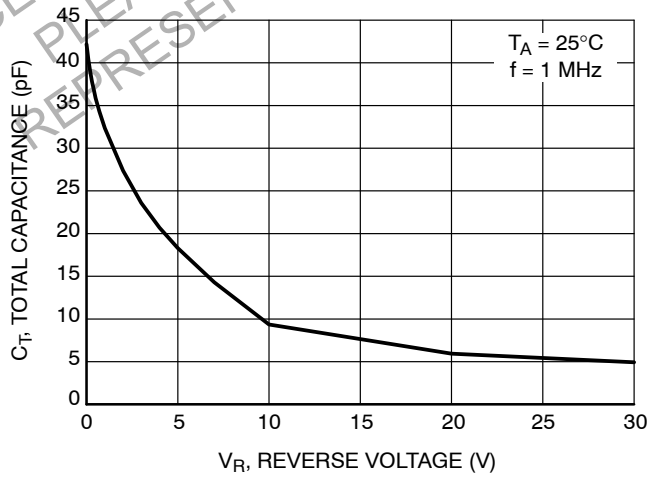
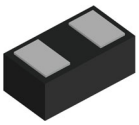
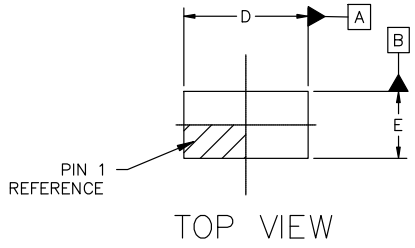



**Figure 5. Total Capacitance**

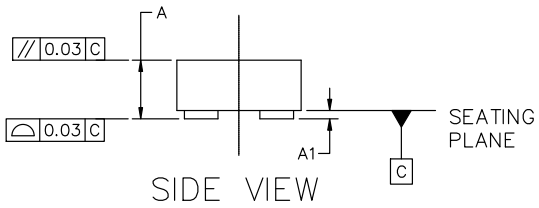


**X4DFN2, 0.44x0.24x0.18, 0.27P**
CASE 718AA
ISSUE B

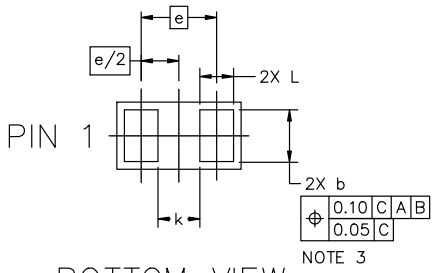
DATE 05 MAR 2025




TOP VIEW



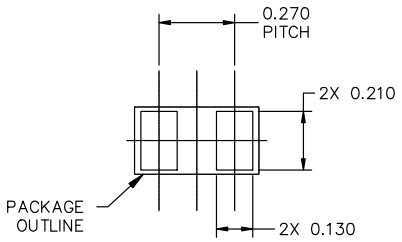

SIDE VIEW




BOTTOM VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING AS PER ASME Y14.5M, 2018.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. EXPOSED COPPER ALLOWED AS SHOWN.

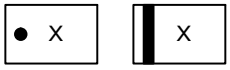
| MILLIMETERS | | | |
|---|---|---|---|
| DIM | MIN | NOM | MAX |
| A | 0.150 | 0.180 | 0.210 |
| A1 | --- | --- | 0.030 |
| b | 0.170 | 0.185 | 0.200 |
| D | 0.415 | 0.445 | 0.475 |
| E | 0.210 | 0.240 | 0.270 |
| e | 0.270 BSC | | |
| k | 0.125 | --- | --- |
| L | 0.105 | 0.120 | 0.135 |




RECOMMENDED MOUNTING FOOTPRINT

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

**GENERIC**
**MARKING DIAGRAMS***




X = Specific Device Code

*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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|---|---|---|---|
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| **DESCRIPTION:** | **X4DFN2, 0.44x0.24x0.18, 0.27P** | | **PAGE 1 OF 1** |

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