Trench-based Schottky Diode, 500 mA, 30 V

NSR05301MX4

These 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
- 500 mA of Continuous Forward Current
- Low Forward Voltage Drop − 430 mV (Typical) @ I_F = 200 mA
- Low Reverse Current − 25 μA (Typical) @ V_R = 30 V
- Low Reverse Recovery Time − 9 ns Typical
- Low Capacitance − 19 pF Typical

Typical Applications

- Mobile and Wearable Devices
- LED Boost Converters
- Buck and Boost dc−dc Converters
- Reverse Voltage and Current Protection
- Clamping & Protection

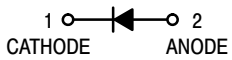
MAXIMUM RATINGS

Rating		Symbol	Value	Unit
Forward Current (DC)		I_F	500	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 Machine Model	ESD	>8.0 >400	kV 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



X4DFN2
CASE 718AA



D = Specific Device Code
M = Date Code

ORDERING INFORMATION

Device	Package	Shipping†
NSR05301MX4T5G	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.

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THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance Junction−to−Ambient (Note 1) Total Power Dissipation @ T_A = 25°C	$R_{\theta JA}$ P_D	614.9 203	°C/W mW
Thermal Resistance Junction−to−Ambient (Note 2) Total Power Dissipation @ T_A = 25°C	$R_{\theta JA}$ P_D	239.4 522	°C/W 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.

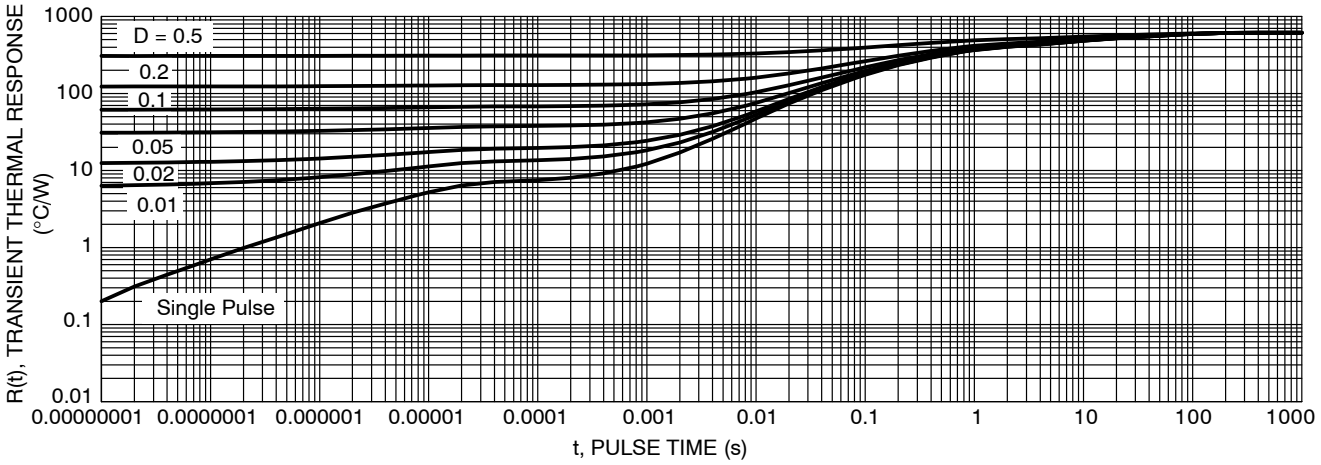


Figure 1. Thermal Response (Note 1)

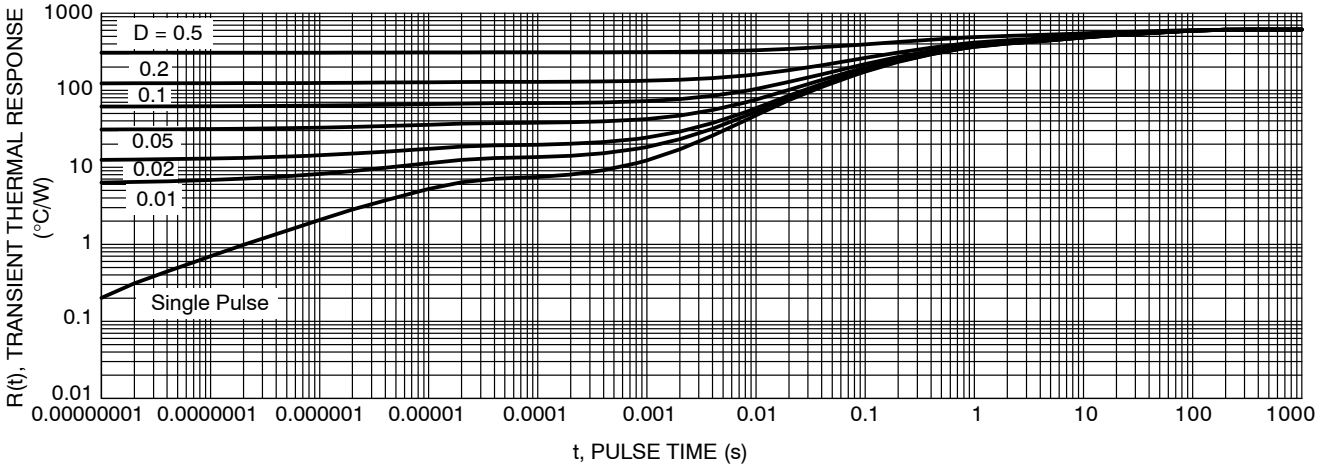


Figure 2. Thermal Response (Note 2)

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

Characteristic	Symbol	Min	Typ	Max	Unit
Reverse Leakage (V_R = 10 V) (V_R = 30 V)	I_R		 15 25	 50 100	μA
Forward Voltage (I_F = 100 mA) (I_F = 200 mA) (I_F = 500 mA)	V_F		 355 430 640	 480 540 800	mV
Total Capacitance (V_R = 5.0 V, f = 1 MHz)	C_T		19		pF
Reverse Recovery Time (I_F = I_R = 10 mA, $I_{R(REC)}$ = 1.0 mA)	t_{rr}		9.0	11	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

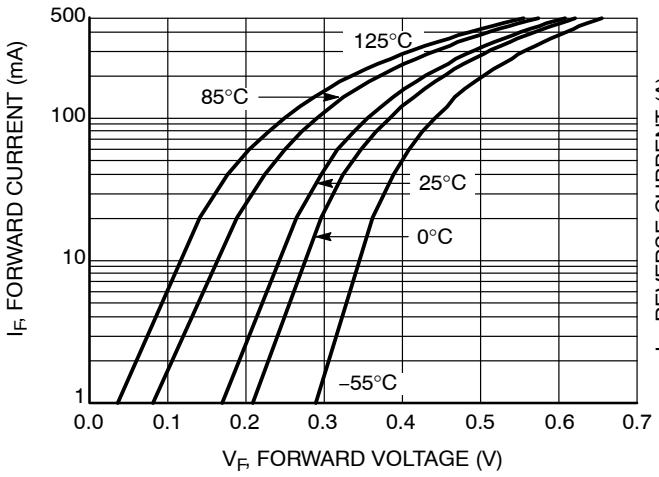


Figure 3. Forward Voltage

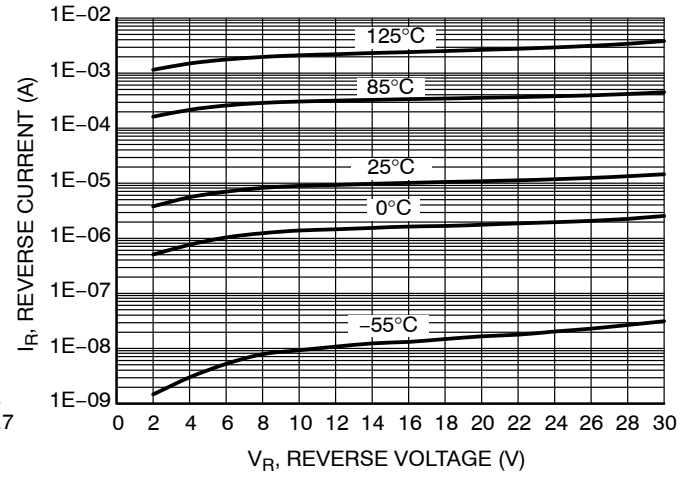


Figure 4. Leakage Current

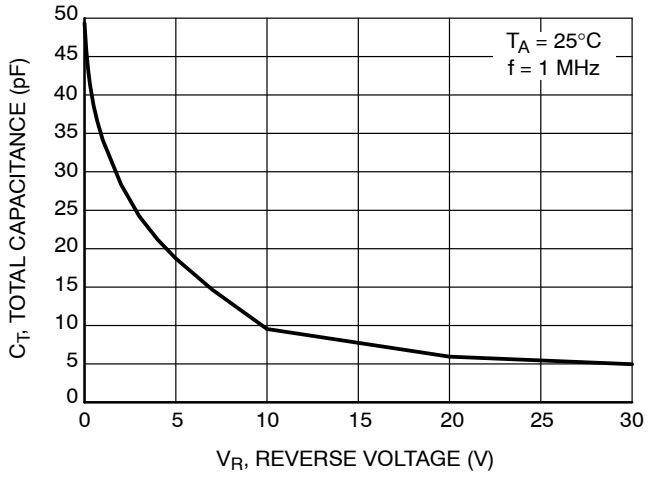
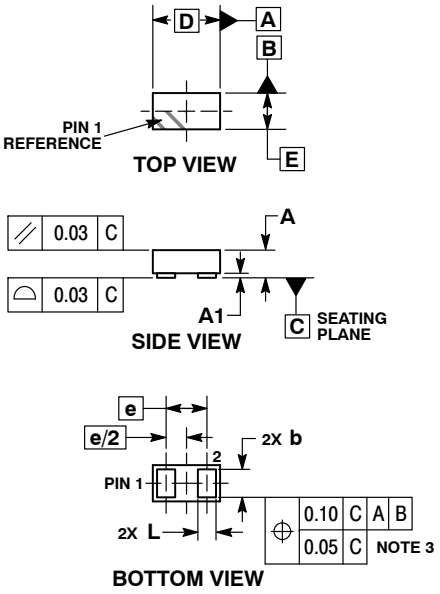


Figure 5. Total Capacitance

X4DFN2, 0.445x0.24, 0.27P
CASE 718AA
ISSUE A

SCALE 10:1

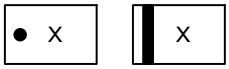
DATE 21 MAR 2017



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. EXPOSED COPPER ALLOWED AS SHOWN.

	MILLIMETERS		
DIM	MIN	NOM	MAX
A	0.15	0.18	0.21
A1	---	---	0.03
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		
L	0.105	0.120	0.135

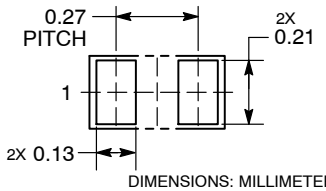
GENERIC MARKING DIAGRAMS*



X = Specific Device Code

*This information is generic. Please refer to device data sheet for actual part marking. Some products may not follow the Generic Marking.

RECOMMENDED MOUNTING FOOTPRINT*



DIMENSIONS: MILLIMETERS

See Application Note AND8398/D for more mounting details

*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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DESCRIPTION:	**X4DFN2, 0.445X0.24, 0.27P**		**PAGE 1 OF 1**

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