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Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

ON Semiconductor
NUF2900MNT1G

For any questions, you can email us directly:
sales@integrated-circuit.com

NUF2900MN

Two Line EMI Filter with ESD Protection for High Speed Data Interface

NUF2900MN is a two line EMI filter with ESD protection designed for high speed data interface. It offers greater than −30 dB attenuation at frequencies from 800 MHz to 6.0 GHz while supporting data rates as high as 250 Mbps (125 MHz).

Features

- Provides EMI Filtering and ESD Protection
- Maximum Data Rate up to 250 Mbps
- Maximum ESD Rating of:
  5.0 kV (Contact)
- DFN8, 2x2 mm Package
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C
  Human Body Model = 3B
- This is a Pb−Free Device*

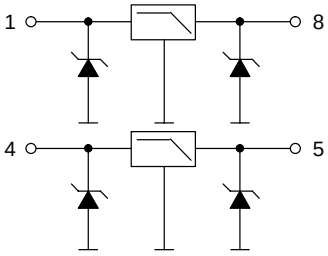
Applications

- EMI Filtering and ESD Protection for High Speed Data Interface
- Serializer / Deserializer
- Camera Imager Interface
- High Resolution Color LCD Display

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

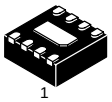
ON Semiconductor®

http://onsemi.com

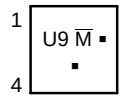


(Top View)

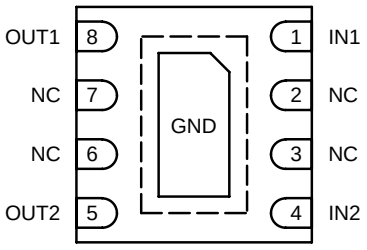
MARKING DIAGRAM



DFN8
CASE 506AA
PLASTIC



U9 = Specific Device Code
M = Date Code
▪ = Pb−Free Package
(Note: Microdot may be in either location)



(Bottom View)

ORDERING INFORMATION

Device	Package	Shipping†
NUF2900MNT1G	DFN8 (Pb−Free)	3000/Tape & Reel

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

MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
ESD Discharge IEC61000−4−2	Contact Discharge	V_{PP}	5.0	kV
Operating Temperature Range		T_{OP}	−40 to 85	°C
Storage Temperature Range		T_{stg}	−55 to 150	°C
Maximum Lead Temperature for Soldering Purposes (1.8 in from case for 10 s)		T_L	260	°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.

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

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Maximum Reverse Working Voltage		V_{RWM}			5.0	V
Breakdown Voltage	I_R = 1.0 mA	V_{BR}	6.0	7.0	8.3	V
Leakage Current	V_{RWM} = 3.3 V	I_R			0.1	μA
Resistance		R_A		3.6	5.0	Ω
Effective Capacitance (Note 1)		C_{eff}		10.4		pF
Inductance		L		22.1		nH
Capacitance (Note 2)		C_{line}		33		pF
Cut−Off Frequency (Note 3)	Above this frequency, appreciable attenuation occurs	f_{3dB}		350		MHz

1. Refer to “Effective Capacitance Calculation” below.
2. Measured at 25°C, V_R = 0 V, f = 1.0 MHz.
3. 50 Ω source and 50 Ω load termination.

Effective Capacitance Calculation

The capacitance of the NUF2900MN can be determined a number of ways. When evaluated using low frequency, low current capacitance measurement equipment C_{LINE} (line capacitance), it is determined to be approximately 33 pF. When used in systems that have signal rise and fall times of 1 ns or less $C_{EFFECTIVE}$ (effective capacitance), it is closer to 10.4 pF.

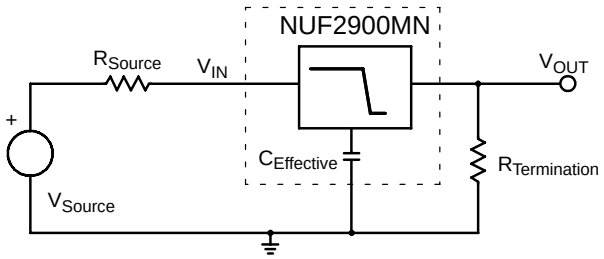
If the rise and fall times of a signal is determined by the capacitance of the NUF2900MN, then an “effective” capacitance can be calculated using the following function based on a simple “RC” combination.

$$V_{OUT} = V_{IN}\left(1 - e^{\frac{-t}{R_{Termination}C_{Effective}}}\right)$$

The rise time “t” is approximately 1.08 ns with V_{OUT} ~ 88% of V_{IN} where the network impedance is 50 Ω. When solving for $C_{EFFECTIVE}$, the capacitance is found to be 10.4 pF.

$$C_{Effective} = \frac{-t}{R \times \ln\left(1 - \frac{V_{OUT}}{V_{IN}}\right)}$$

$$C_{Effective} = \frac{-1.08ns}{50 \times \ln(1 - 0.88)}$$



If the data signal source has a rise and fall time slower than 1 ns, the NUF2900MN will have a filtered output with a similar rise and fall time. $C_{EFFECTIVE}$ will scale accordingly as rise/fall times increase until it reaches C_{LINE}.

NUF2900MN

TYPICAL PERFORMANCE CURVES

(T_A = 25°C unless otherwise specified)

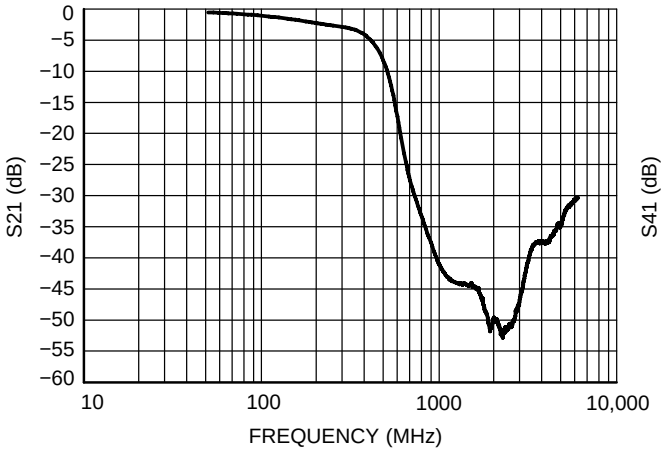


Figure 1. Typical Insertion Loss Characteristic (S21 Measurement)

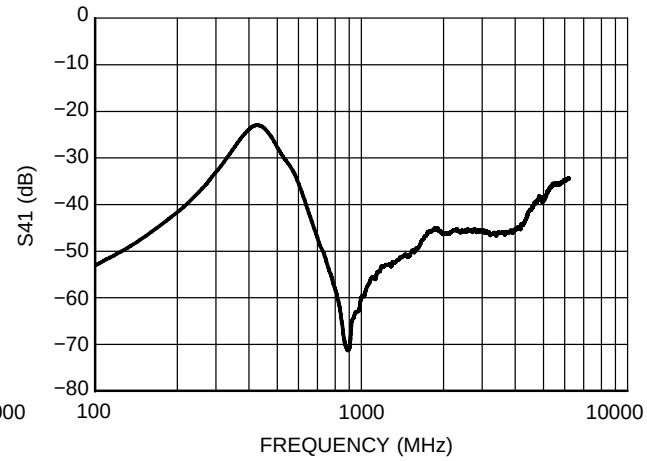


Figure 2. Analog Crosstalk Curve (S41 Measurement − 50 Ω Load)

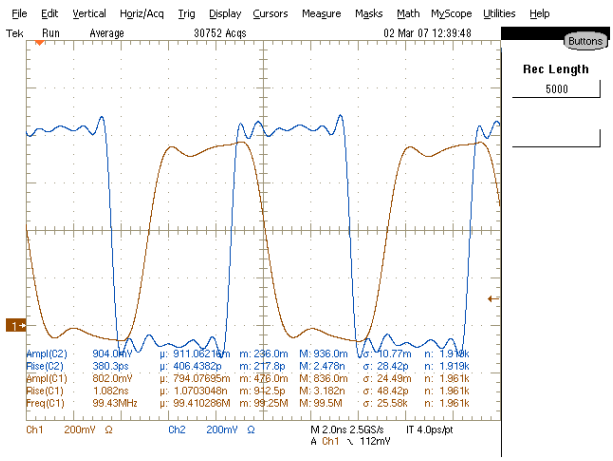


Figure 3. Actual High Speed (100 MHz) Pulse Wave Form of NUF2900MN

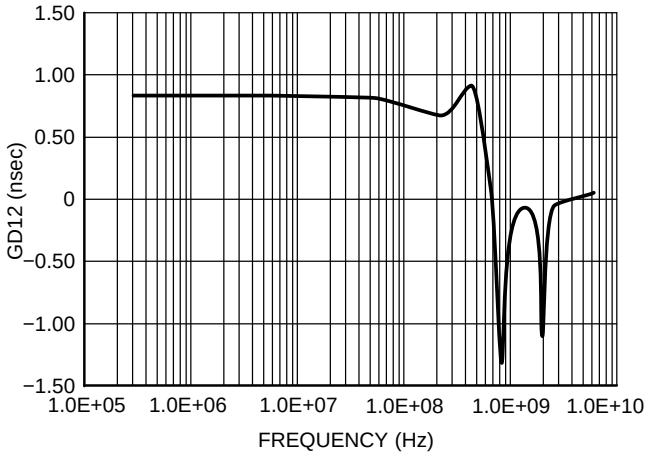


Figure 4. Group Delay Characteristics Simulation for NUF2900MN

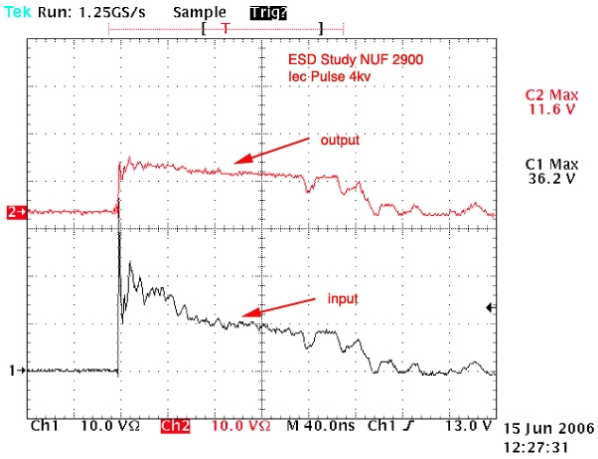
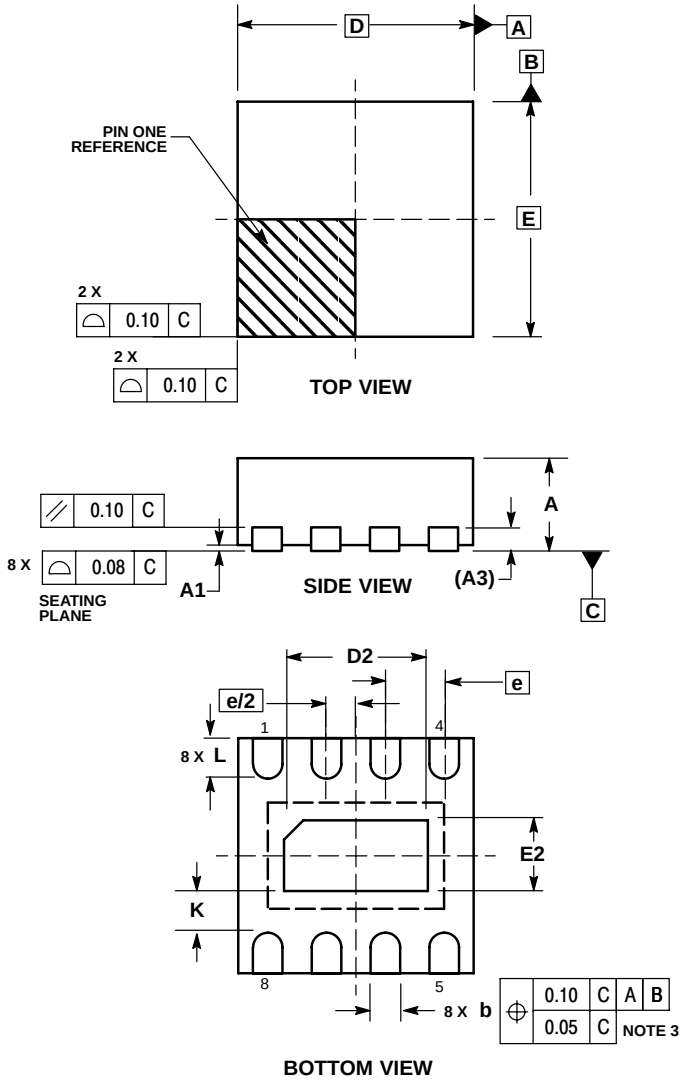


Figure 5. ESD Scope Trace − IEC Waveform Actual Response of NUF2900MN

NUF2900MN

PACKAGE DIMENSIONS

DFN8
CASE 506AA−01
ISSUE D



NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994 .
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.25 AND 0.30 MM FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.80	1.00
A1	0.00	0.05
A3	0.20 REF	
b	0.20	0.30
D	2.00 BSC	
D2	1.10	1.30
E	2.00 BSC	
E2	0.70	0.90
e	0.50 BSC	
K	0.20	−−−
L	0.25	0.35

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
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