# 4 Line EMI Filter with ESD Protection

NUF4401MN is a 4 line EMI filter array for wireless applications. It offers greater than -35 dB attenuation at frequencies from 900 MHz to 2.4 GHz. This device also offers ESD protection—clamping transients from static discharges and ESD protection is provided across all capacitors.

### **Features**

- Provides EMI Filtering and ESD Protection
- Integration of 20 Discretes
- Compliance with IEC61000–4–2 (Level 4)

10 kV (Contact) 15 kV (Air)

- DFN8, 2x2 mm Package
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C Human Body Model = 3B
- This is a Pb-Free Device\*

#### **Benefits**

- Reduces EMI/RFI Emmisions on a Data Line
- Integrated Solution Offers Cost and Space Savings
- Reduces Parasitic Inductances Which Offer a More "Ideal" Low Pass Filter Response
- Integrated Solution Improves System Reliability

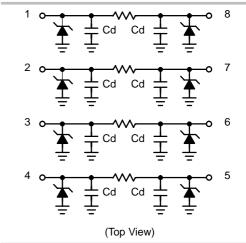
#### **Applications**

- EMI Filtering and ESD Protection on a Data Line
- Wireless Phones
- Handheld Products
- Notebook Computers
- LCD Displays



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### MARKING DIAGRAM

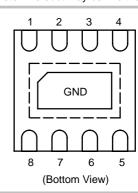


#### DFN8 CASE 506AQ PLASTIC



RS = Specific Device Code
M = Month Code
Pb-Free Package

(Note: Microdot may be in either location)



#### ORDERING INFORMATION

Device		Package	Shipping <sup>†</sup>		
NUF4401	MNT1G	DFN8 (Pb-Free)	3000 / Tape & Reel		

<sup>†</sup>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.

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

#### **MAXIMUM RATINGS**

Parameter			Value	Unit
ESD Discharge IEC61000-4-2	Discharge IEC61000-4-2 Contact Discharge			
Steady–State Power per Resistor	P <sub>R</sub>	100	mW	
Steady–State Power per Package	P <sub>T</sub>	400	mW	
Operating Temperature Range	T <sub>OP</sub>	-40 to 85	°C	
Storage Temperature Range	T <sub>stg</sub>	-55 to 150	°C	
Maximum Lead Temperature for Soldering Purposes (1.8 in from	T <sub>L</sub>	260	°C	

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

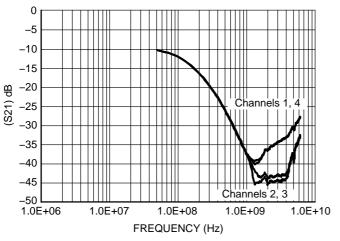
## **ELECTRICAL CHARACTERISTICS** (T<sub>J</sub> = 25°C unless otherwise noted)

Parameter	Test Conditions	Symbol	Min	Тур	Max	Unit
Maximum Reverse Working Voltage		$V_{RWM}$			5.0	V
Breakdown Voltage	I <sub>R</sub> = 1.0 mA	$V_{BR}$	6.0	7.0	8.0	V
Leakage Current	V <sub>RWM</sub> = 3.3 V	I <sub>R</sub>			100	nA
Resistance	I <sub>R</sub> = 20 mA	R <sub>A</sub>	170	200	230	Ω
Capacitance (Note 1, 3)	V <sub>R</sub> = 2.5 V, f = 1.0 MHz	C <sub>d</sub>	12	15	18	pF
Cut-Off Frequency (Note 2)	Above this frequency, appreciable attenuation occurs	f <sub>3dB</sub>		125		MHz

- 1. Measured at 25°C.
- 2.  $50~\Omega$  source and  $50~\Omega$  load termination. 3. Total line capacitance is 2 times the diode capacitance (C<sub>d</sub>).

## **TYPICAL PERFORMANCE CURVES**

(T<sub>A</sub> = 25°C unless otherwise specified)



2.0 BONE 1.5 1.5 0 1.0 0 1.0 2.0 3.0 4.0 5.0 REVERSE BIASED VOLTAGE (V)

Figure 1. Insertion Loss Characteristics

Figure 2. Typical Line Capacitance vs. Reverse Bias Voltage (Normalized to Capacitance @ 2.5 V)

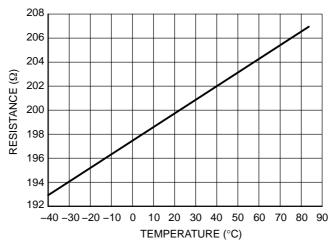
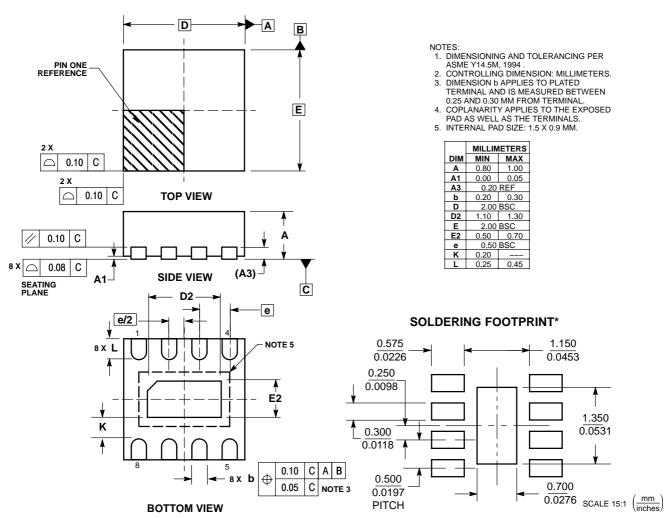


Figure 3. Typical Resistance vs. Temperature

#### PACKAGE DIMENSIONS

# **DFN8**CASE 506AQ-01 ISSUE A



\*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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