

# NUF6402MN

## 4 Line EMI Filter with ESD Protection

This device is a 4 line EMI filter array for wireless applications. Greater than -30 dB attenuation is obtained at frequencies from 800 MHz to 3.0 GHz. It also offers ESD protection clamping transients from static discharges. ESD protection is provided across all capacitors.

### Features

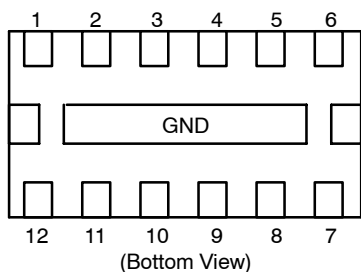
- EMI Filtering and ESD Protection
- Integration of 28 Discrete Components
- DFN Package, 1.35 x 3.0 mm
- Moisture Sensitivity Level 1
- ESD Ratings: IEC61000-4-2 (Level 4)  
Machine Model = C  
Human Body Model = 3B
- This is a Pb-Free Device\*

### Benefits

- Reduces EMI/RFI Emissions on a Data Line
- Integrated Solution Offers Cost and Space Savings in a DFN Package
- Excellent S21 Characteristics with very Low Parasitic Inductances
- Integrated Solution Improves System Reliability
- Compatible Footprint to BGA or Flip-Chip Package

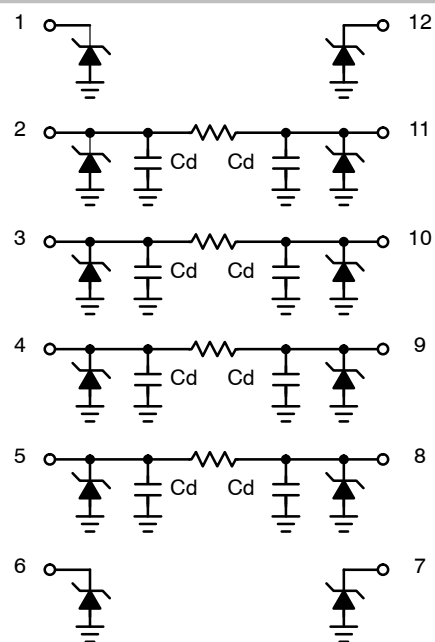
### Applications

- EMI Filtering and ESD Protection for Data Lines
- Wireless Phones
- PDAs and Handheld Products
- Digital Camera
- LCD Displays



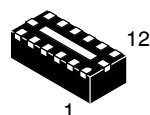
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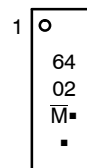


(Top View)

### MARKING DIAGRAM



**DFN12  
CASE 506AD**



6402= Specific Device Code

M = Month

■ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping†
NUF6402MNT1G	DFN12 (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 Specifications Brochure, BRD8011/D.

\*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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## MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
ESD Discharge IEC61000-4-2 Contact Discharge	V <sub>PP</sub>	8.0	kV
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 case for 10 seconds)	T <sub>L</sub>	260	°C

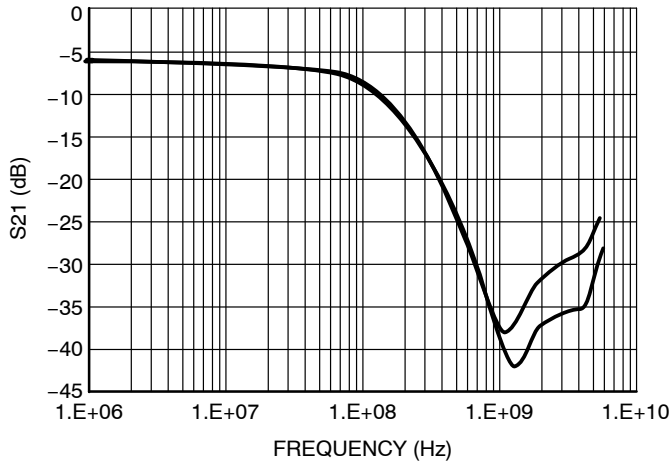
Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

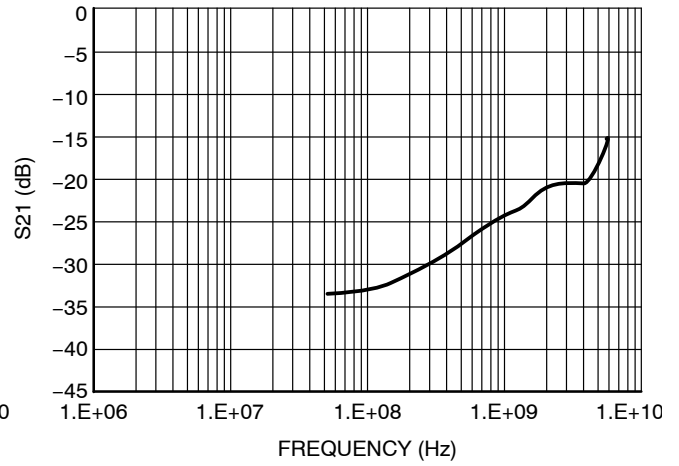
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Reverse Working Voltage	V <sub>RWM</sub>				5.0	V
Breakdown Voltage	V <sub>BR</sub>	I <sub>R</sub> = 1.0 mA	6.0	7.0	8.0	V
Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> = 3.0 V		0.1	1.0	μA
Resistance	R <sub>A</sub>	I <sub>R</sub> = 20 mA	85	100	115	Ω
Capacitance (Notes 1 and 2)	Cd	V <sub>R</sub> = 2.5 V, f = 1.0 MHz		17	20	pF
Cut-Off Frequency (Note 3)	f <sub>3dB</sub>	Above this frequency, appreciable attenuation occurs		95		MHz

1. Measured at 25°C, V<sub>R</sub> = 2.5 V, f = 1.0 MHz.
2. Total line capacitance is 2 times the Diode Capacitance (Cd).
3. 50 Ω source and 50 Ω load termination.

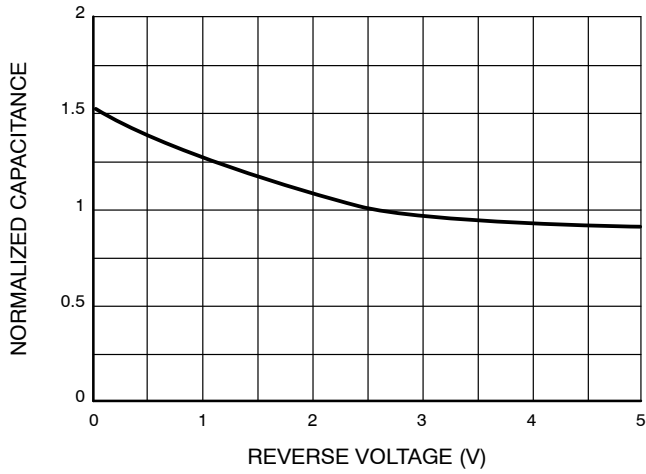
# NUF6402MN



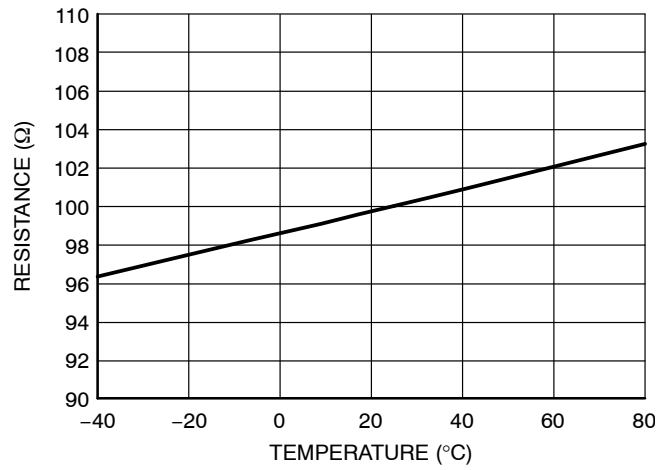
**Figure 4. Insertion Loss Characteristic**



**Figure 1. Analog Crosstalk Curve**



**Figure 2. Typical Capacitance vs. Reverse Biased Voltage  
(Normalized Capacitance, Cd @ 2.5 V)**



**Figure 3. Typical Resistance over Temperature**

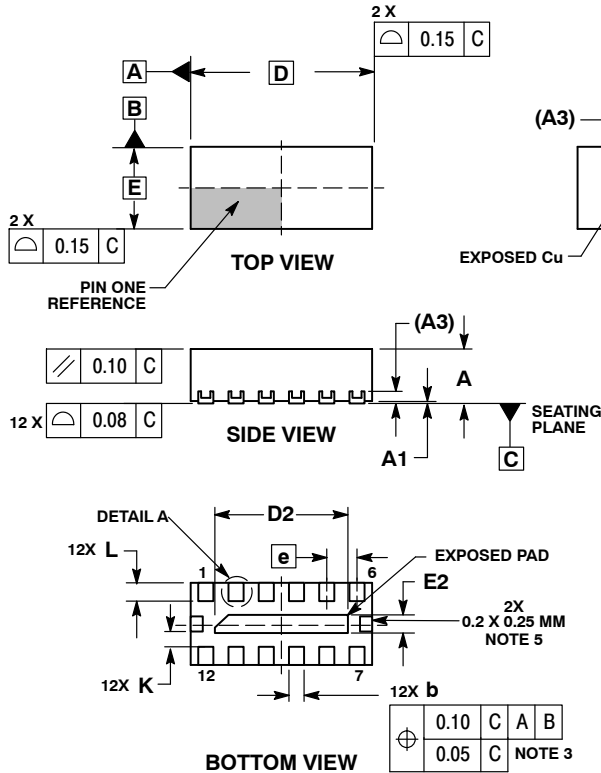
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## PACKAGE DIMENSIONS

DFN12 3.0x1.35, 0.5P

CASE 506AD-01

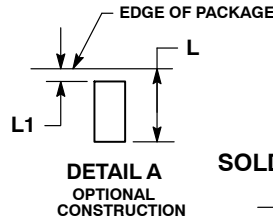
ISSUE J



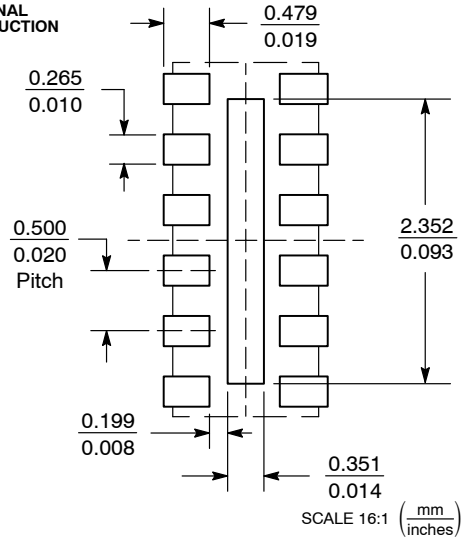
### NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETER.
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.
5. EXPOSED PADS CONNECTED TO DIE FLAG. USED AS TEST CONTACTS.

DIM	MILLIMETERS	
	MIN	MAX
A	0.80	1.00
A1	0.00	0.05
A3	0.20 REF	
b	0.18	0.30
D	3.00 BSC	
D2	2.10	2.30
E	1.35 BSC	
E2	0.20	0.40
e	0.50 BSC	
K	0.20	---
L	0.20	0.40
L1	0.00	0.15



### SOLDERING FOOTPRINT\*



\*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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