Audio EMI Filter, 4 Line, with ESD Protection

NUF4220MN

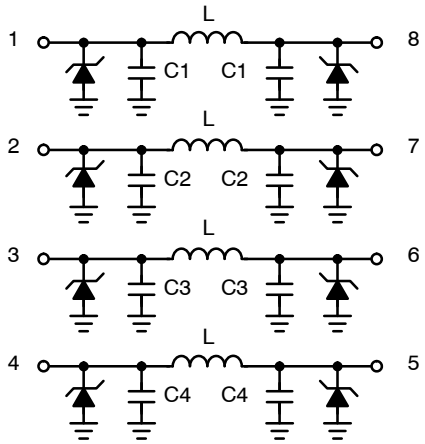
NUF4220MN is a 4 line LC EMI filter array designed for audio applications. It offers greater than −30 dB attenuation at frequencies from 800 MHz to 5.0 GHz, with no line loss. This part is a single chip solution for audio interface applications, 2 speaker lines with a microphone line. This device also 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)
  18 kV (Contact)
- DFN8, 2x2 mm Package
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C
  Human Body Model = 3B
- Excellent Line Efficiency with Low Line Resistance < 1.1 Ω max
- This is a Pb-Free Device*

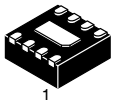
Applications

- Headset
- MP3s
- PDAs
- Digital Cameras
- Portable DVDs
- Handfree Interface

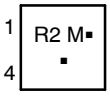


(Top View)

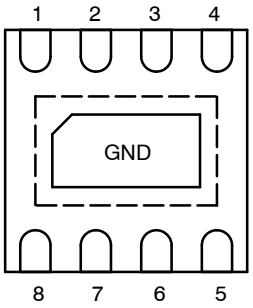
MARKING DIAGRAM



DFN8
CASE 506AA
PLASTIC



R2 = Specific Device Code
M = Date Code
▪ = Pb-Free Package



(Bottom View)

ORDERING INFORMATION

Device	Package	Shipping†
NUF4220MNT1G	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.

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

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MAXIMUM RATINGS

Parameter		Symbol	Value	Unit
ESD Discharge IEC61000-4-2	Contact Discharge	V_{PP}	18	kV
Steady-State Power per Inductor		P_L	90	mW
Steady-State Power per Package		P_T	360	mW
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 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.

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	8.0	V
Leakage Current	V_{RWM} = 3.3 V	I_R			0.1	μA
Inductance		L		4.9		nH
Series Resistance		R_S	0.6	0.85	1.1	Ω
Capacitance (Note 1, 3)		C_d		205		pF
Cut-Off Frequency (Note 2)	Above this frequency, appreciable attenuation occurs	f_{3dB}		16		MHz

1. Measured at 25 °C, V_R = 0 V, f = 1.0 MHz.
2. 50 Ω source and 50 Ω load termination.
3. Total line capacitance is 2 times the diode capacitance (C_d).

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TYPICAL PERFORMANCE CURVES

(T_A = 25 °C unless otherwise specified)

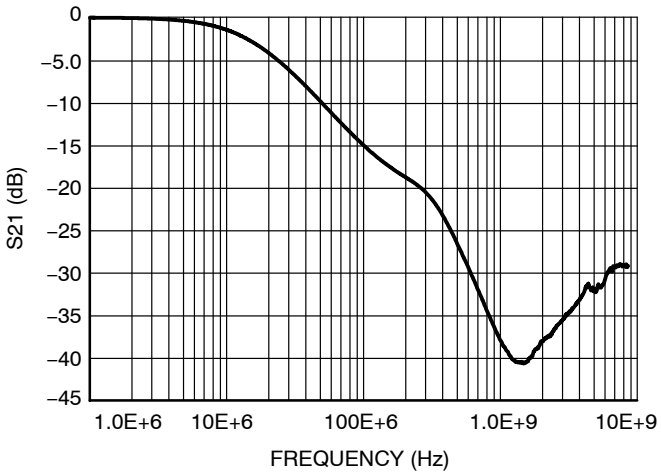


Figure 1. Typical Insertion Loss Characteristics

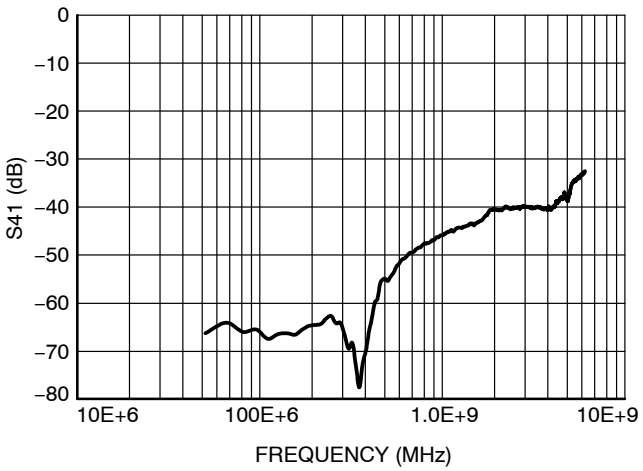


Figure 2. Typical Analog Crosstalk

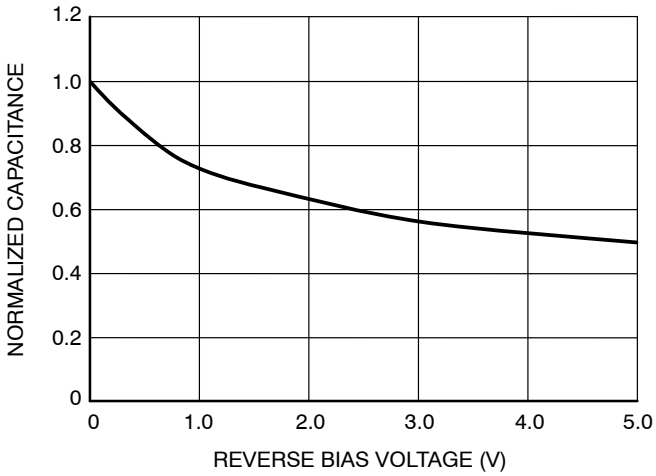


Figure 3. Typical Line Capacitance vs. Reverse Bias Voltage (Normalized to Capacitance @ 0 V)

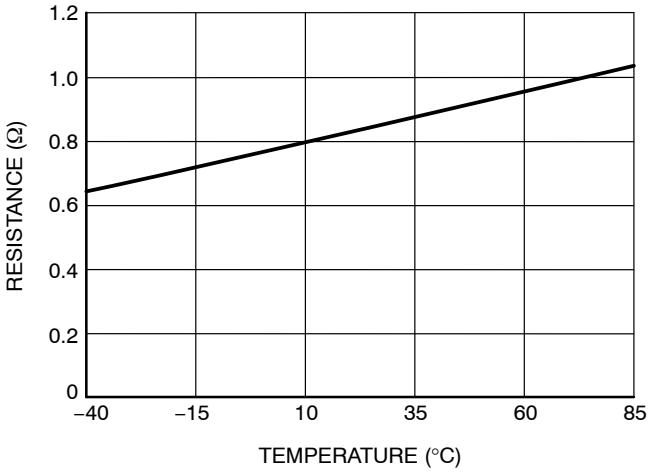


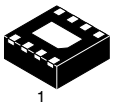
Figure 4. Typical Resistance Over Temperature

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REVISION HISTORY

Revision	Description of Changes	Date
0	Initial production document version release.	4/2/2011
1	Document rebranded to **onsemi** format.	1/12/2026

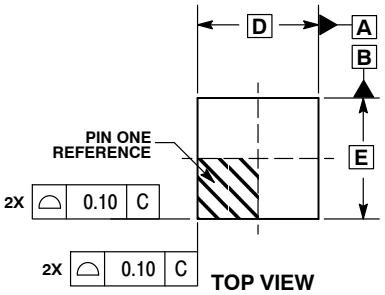
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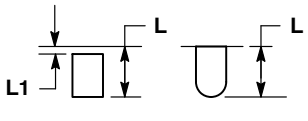


SCALE 4:1

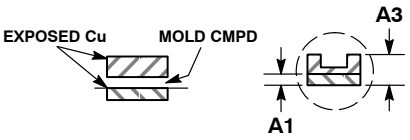
DFN8 2x2, 0.5P
CASE 506AA
ISSUE F

DATE 04 MAY 2016





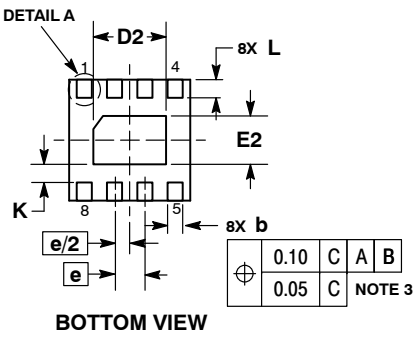
DETAIL A
OPTIONAL CONSTRUCTIONS



DETAIL B
ALTERNATE CONSTRUCTIONS

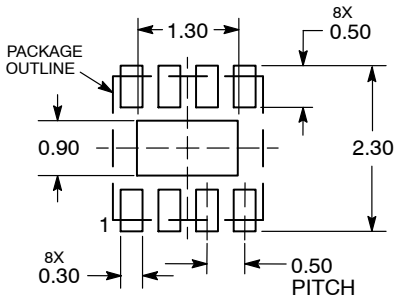
NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994 .
2. CONTROLLING DIMENSION: MILLIMETERS.
3. DIMENSION b APPLIES TO PLATED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.20 MM FROM TERMINAL TIP.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	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	0.30 REF	
L	0.25	0.35
L1	---	0.10



BOTTOM VIEW

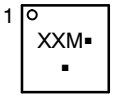
RECOMMENDED SOLDERING FOOTPRINT*



DIMENSIONS: MILLIMETERS

*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 DIAGRAM*



XX = Specific Device Code
M = Date Code
▪ = Pb−Free Device

*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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DESCRIPTION:	**DFN8, 2.0X2.0, 0.5MM PITCH**		**PAGE 1 OF 1**

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