

# NUF2116MN

## 2 Line Audio EMI Filter with ESD Protection

This device is a 2 line audio EMI filter array designed for speaker applications. It offers greater than  $-35$  dB attenuation at frequencies from  $800$  MHz to  $3.0$  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 10 Discretes
- Compliance with IEC61000-4-2 (Level 4)  
 $30$  kV (Contact)
- DFN8,  $2 \times 2$  mm Package
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C  
Human Body Model = 3B
- Matching Series Impedances for Speaker Applications
- This is a Pb-Free Device

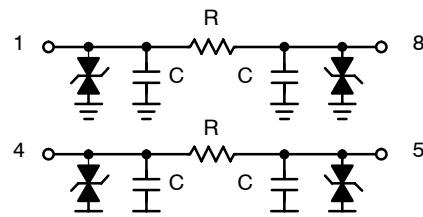
### Applications

- Wireless Phones
- MP3s
- PDAs
- Digital Cameras
- Portable DVDs



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<http://onsemi.com>



(Top View)

### MARKING DIAGRAM



DFN8  
CASE 506AA



1 4

U6 = Specific Device Code

M = Date Code

▪ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
NUF2116MNT1G	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.

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

# NUF2116MN

## MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
ESD Discharge IEC61000-4-2	$V_{PP}$	30	kV
Steady-State Power per Resistor @ 25°C	$P_R$	180	mW
Steady-State Power per Package @ 25°C	$P_T$	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 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 ( $T_J = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Test Conditions	Symbol	Min	Typ	Max	Unit
Maximum Reverse Working Voltage		$V_{RWM}$	–	–	12	V
Breakdown Voltage	$I_R = 1.0 \text{ mA}$	$V_{BR}$	13.7	15.7	17.7	V
Leakage Current	$V_{RWM} = 12 \text{ V}$	$I_R$	–	–	0.1	$\mu\text{A}$
Resistance	$I_F = 40 \text{ mA}$	$R$	53	64	75	$\Omega$
Capacitance per Diode (Notes 1, 3)		$C_d$	42	50	55	pF
Cut-Off Frequency (Note 2)	Above this frequency, appreciable attenuation occurs	$f_{3\text{dB}}$		55		MHz

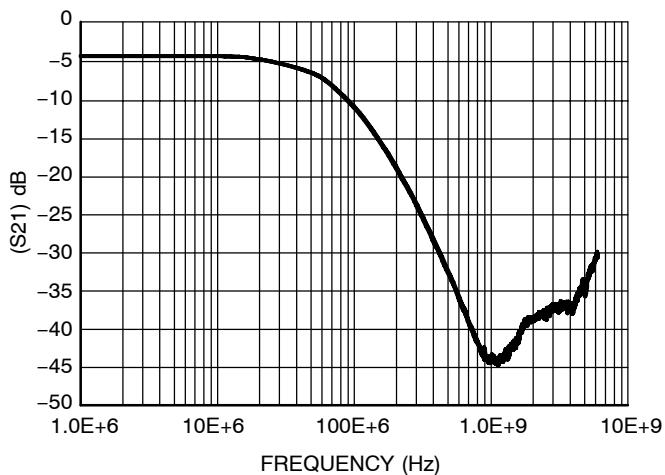
1. Measured at 25°C,  $V_R = 0 \text{ V}$ ,  $f = 1.0 \text{ MHz}$ .

2. 50  $\Omega$  source and 50  $\Omega$  load termination.

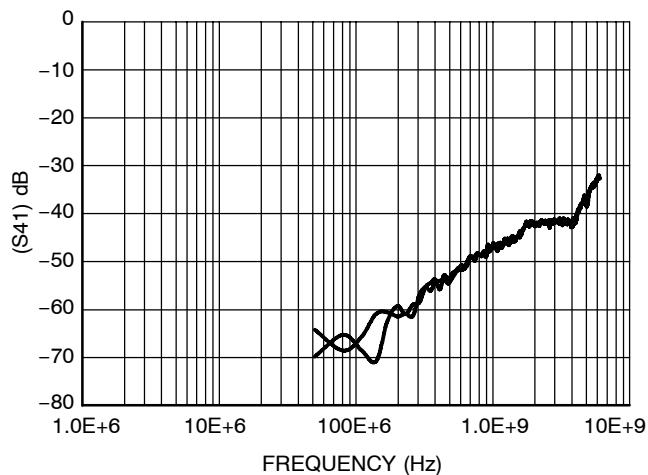
3. Total line capacitance is 2 times the diode capacitance ( $C_d$ ).

**TYPICAL PERFORMANCE CURVES**

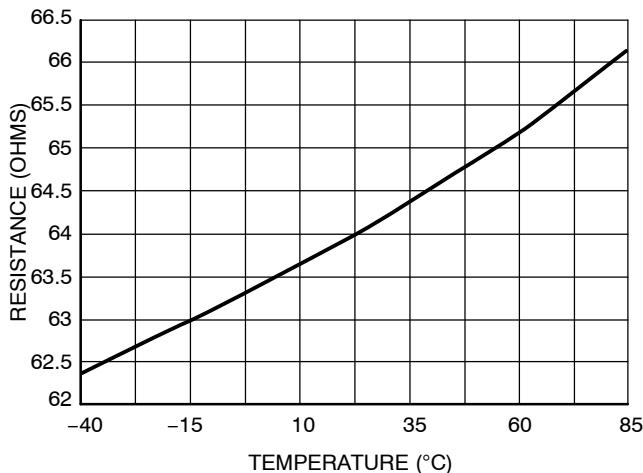
( $T_A = 25^\circ\text{C}$  unless otherwise specified)



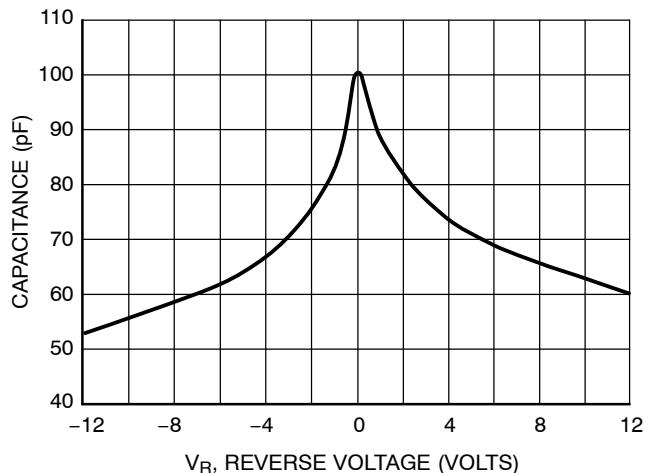
**Figure 1. Insertion Loss Characteristics**



**Figure 2. Analog Cross-Talk**



**Figure 3. Typical Resistance over Temperature**



**Figure 4. Typical Line Capacitance over Reverse Voltage**

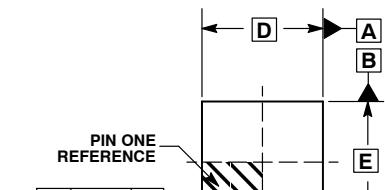
# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

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SCALE 4:1



TOP VIEW

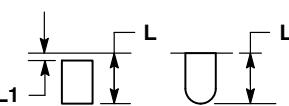
DFN8 2x2, 0.5P  
CASE 506AA-01  
ISSUE E

DATE 22 JAN 2010

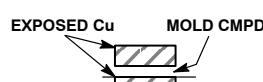
NOTES:

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.

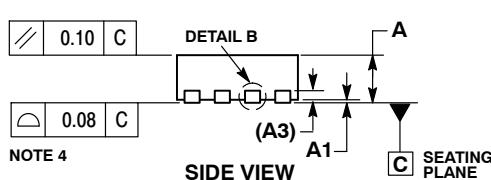
DIM	MILLIMETERS	
	MIN	MAX
A	0.80	1.00
A1	0.00	0.05
A3	0.20 REF	
b	0.20	0.30
D	2.00 BSC	
D2	1.10	1.30
E	2.00 BSC	
E2	0.70	0.90
e	0.50 BSC	
K	0.30 REF	
L	0.25	0.35
L1	---	0.10



DETAIL A  
OPTIONAL CONSTRUCTIONS

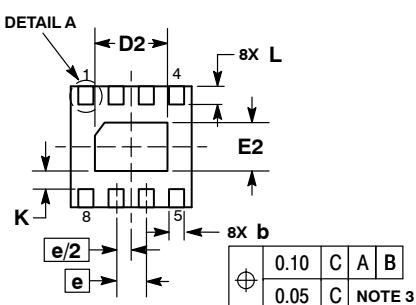


DETAIL B  
OPTIONAL CONSTRUCTION



NOTE 4

SIDE VIEW



BOTTOM VIEW

GENERIC  
MARKING DIAGRAM\*



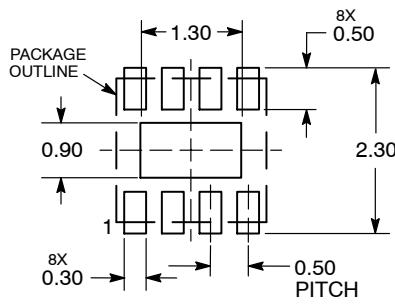
XX = Specific Device Code

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.

RECOMMENDED  
SOLDERING FOOTPRINT\*



DIMENSIONS: MILLIMETERS

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

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