

# 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, 2x2 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

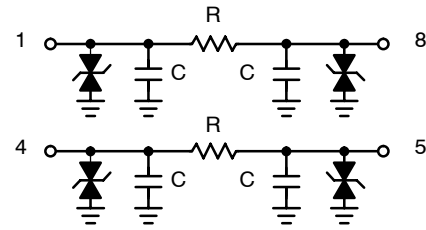
### Applications

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



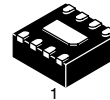
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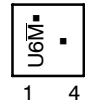


(Top View)

### MARKING DIAGRAM



DFN8  
CASE 506AA



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<br>(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 Contact Discharge                                | $V_{PP}$  | 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 | $f_{3dB}$ |      | 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 ( $C_d$ ).

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## TYPICAL PERFORMANCE CURVES

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

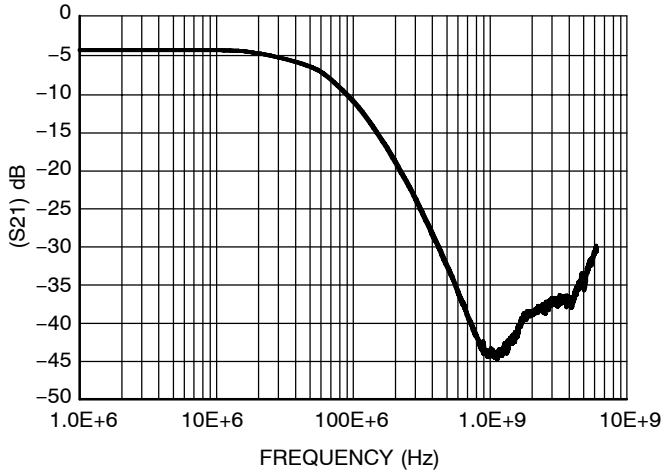


Figure 1. Insertion Loss Characteristics

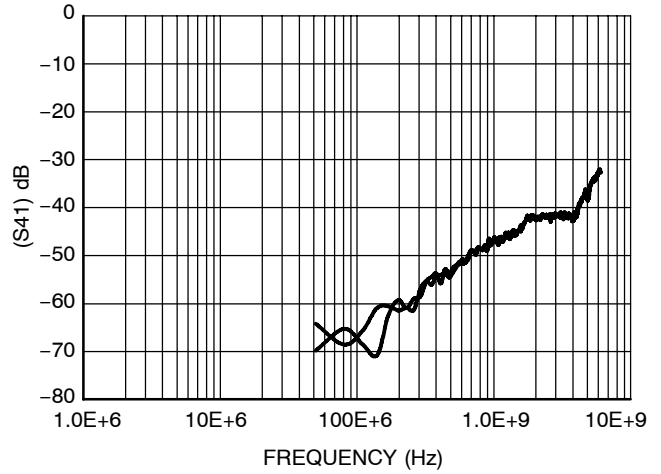


Figure 2. Analog Cross-Talk

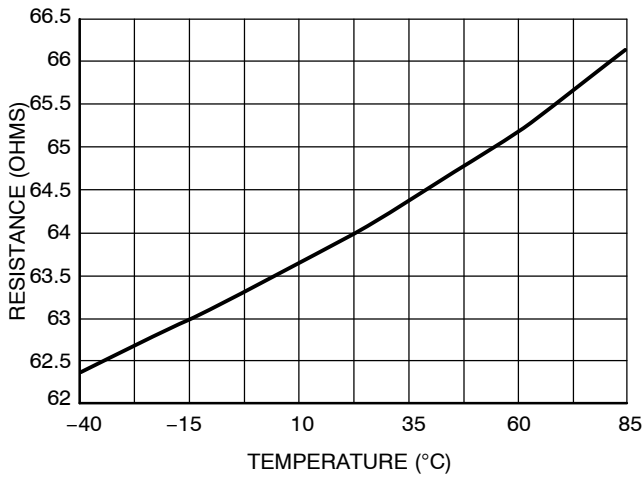


Figure 3. Typical Resistance over Temperature

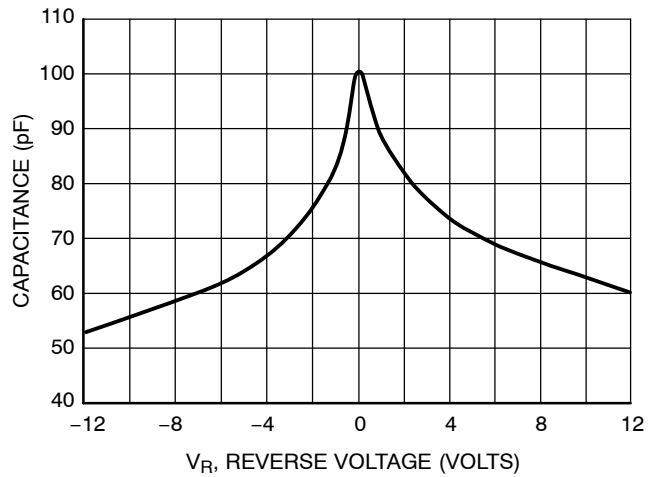
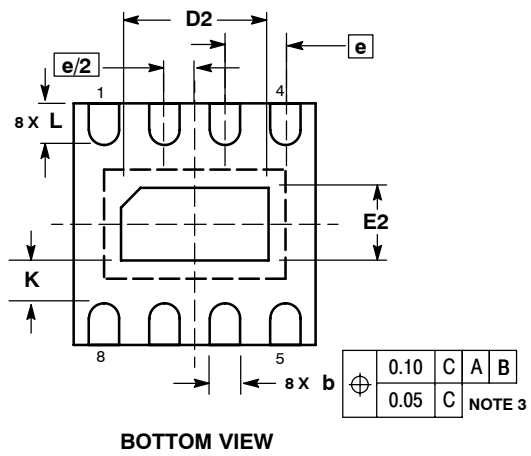
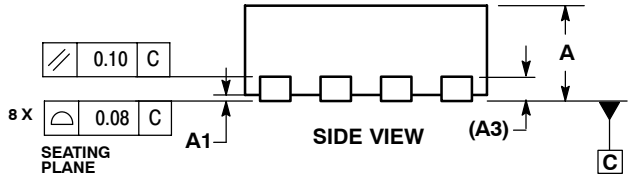
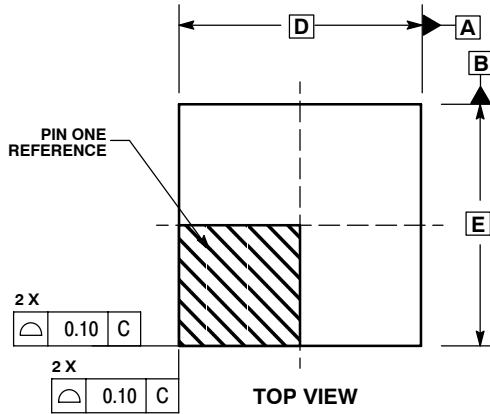


Figure 4. Typical Line Capacitance over Reverse Voltage

# NUF2116MN

## 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.

| 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   | 0.20        | ---  |
| L   | 0.25        | 0.35 |

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