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[ON Semiconductor](#)  
[NUF3102MUTAG](#)

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# NUF3102MU

## Low Capacitance 3 Line EMI Filter with ESD Protection in UDFN8 Package

This device is a 3 line EMI filter array for wireless applications. Greater than -25 dB attenuation is obtained at frequencies from 800 MHz to 5.0 GHz. The NUF3102MU has a cut-off frequency of 150 MHz and can be used in applications for data rate up to 58 MHz or 116 Mbps. This UDFN package is specifically designed to enhance EMI filtering for low-profile or slim design electronics especially where space and height is a premium. 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 19 Discrete Components
- Compliance with IEC61000-4-2 (Level 4)
  - > 8 kV (Contact)
  - > 15 kV (Air)
- UDFN Package, 1.2 x 1.8 mm
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C  
Human Body Model = 3B
- This is a Pb-Free Device\*

### Benefits

- Reduces EMI/RFI Emmissions on a Data Line
- Low Profile Package; Typical Height of 0.5 mm
- Design-Friendly and Easy-to-Use Pin Configurations, Particularly for Portable Electronics
- Integrated Solution Offers Cost and Space Savings in UDFN Package
- Reduces Parasitic Inductances Which Offer a More "Ideal" Low Pass Filter Response
- Integrated Solution Improves System Reliability

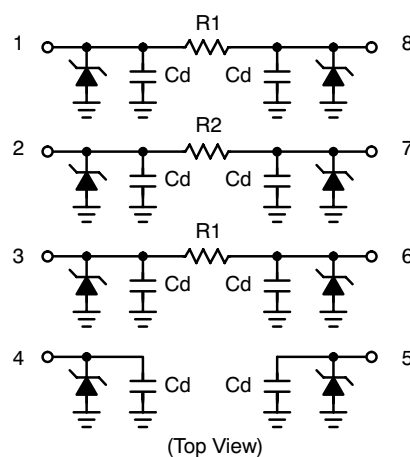
### Applications

- EMI Filtering and ESD Protection for Data Lines
- Keypad Interface and Protection for Portable Electronics
- Bottom Connector Interface for Mobile Handsets
- Notebook Computers and Digital Cameras
- LCD Display Interface in Mobile Handsets
- Camera Display Interface in Mobile Handsets



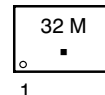
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<http://onsemi.com>



UDFN8  
CASE 517AD

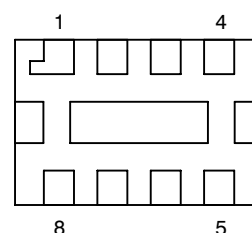
### MARKING DIAGRAM



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

(Note: Microdot may be in either location)

### PIN CONNECTIONS



### ORDERING INFORMATION

| Device       | Package            | Shipping†          |
|--------------|--------------------|--------------------|
| NUF3102MUTAG | UDFN8<br>(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.

## NUF3102MU

### MAXIMUM RATINGS

| Parameter  | Symbol           | Value      | Unit |
|--|------------------|------------|------|
| ESD Discharge IEC61000-4-2<br>Contact Discharge<br>Machine Model<br>Human Body Model | V <sub>PP</sub>  | 14         | kV   |
|  |                  | 0.4        |      |
|  |                  | 8.0        |      |
| 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.

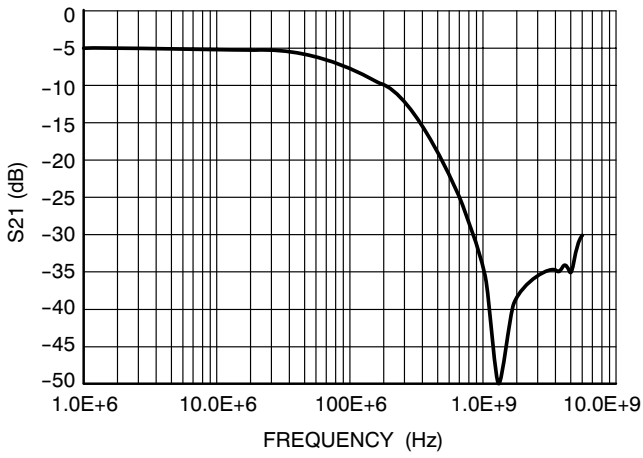
### ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise noted)

| 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> = 3.3 V                                |     |     | 100 | nA   |
| Resistance                      | R <sub>1</sub>   | I <sub>R</sub> = 10 mA                                  | 85  | 100 | 115 | Ω    |
| Resistance                      | R <sub>2</sub>   | I <sub>R</sub> = 10 mA                                  | 40  | 47  | 54  | Ω    |
| Capacitance (Notes 1 and 2)     | Cd               | V <sub>R</sub> = 2.5 V, f = 1.0 MHz                     | 10  | 13  | 16  | pF   |
| Cut-Off Frequency (Note 3)      | f <sub>3dB</sub> | Above this frequency,<br>appreciable attenuation occurs |     | 150 |     | MHz  |

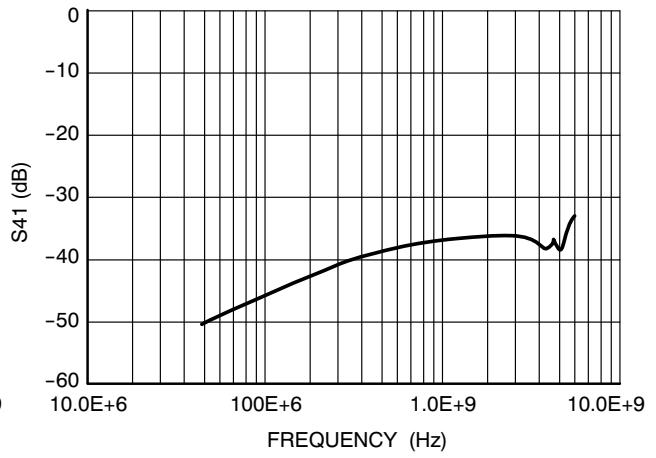
1. Measured at 25°C.
2. Total Line Capacitance is two times the Diode Capacitance (Cd).
3. 50 Ω source and 50 Ω load termination.

**NUF3102MU**

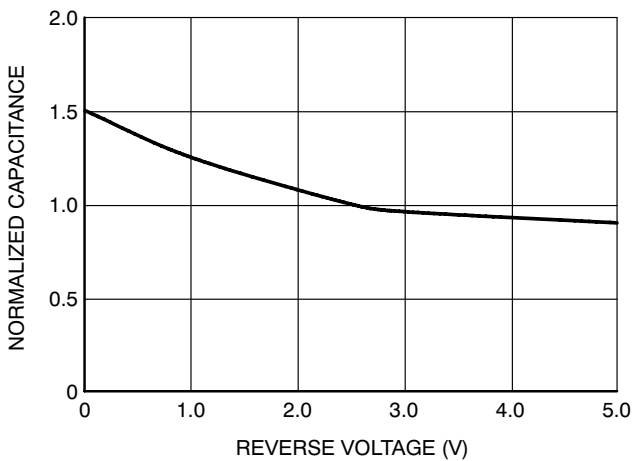
**TYPICAL PERFORMANCE CURVES** ( $T_A = 25^\circ\text{C}$  unless otherwise specified)



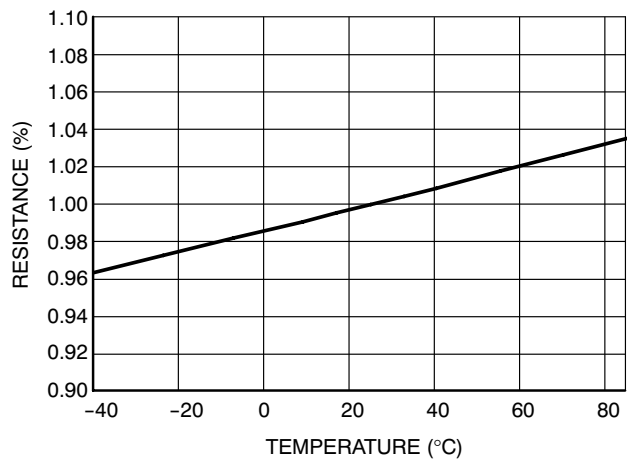
**Figure 1. Insertion Loss Characteristic (P1-P8) (P3-P6)**



**Figure 2. Analog Crosstalk Curve**



**Figure 3. Typical Capacitance vs. Reverse Biased Voltage (Normalized Capacitance  $C_d$  at 2.5 V)**

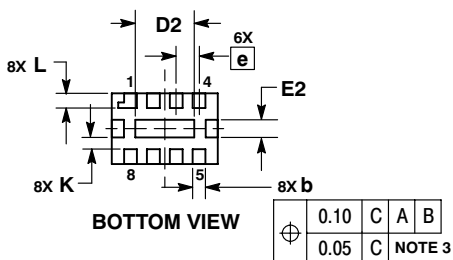
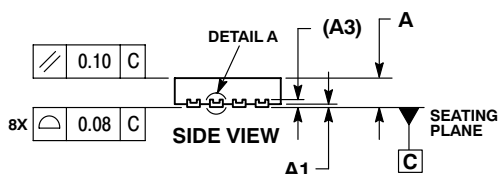
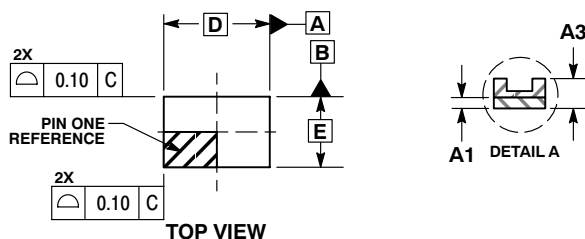


**Figure 4. Typical Normalized Resistance over Temperature**

## NUF3102MU

### PACKAGE DIMENSIONS

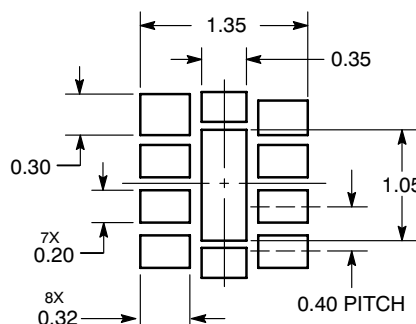
UDFN8, 1.8x1.2, 0.4P  
CASE 517AD-01  
ISSUE O



- 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.
  4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.


| MILLIMETERS |           |      |      |
|-------------|-----------|------|------|
| DIM         | MIN       | NOM  | MAX  |
| A           | 0.45      | 0.50 | 0.55 |
| A1          | 0.00      | 0.03 | 0.05 |
| A3          | 0.127 REF |      |      |
| b           | 0.15      | 0.20 | 0.25 |
| D           | 1.80 BSC  |      |      |
| D2          | 0.90      | 1.00 | 1.10 |
| E           | 1.20 BSC  |      |      |
| E2          | 0.20      | 0.30 | 0.40 |
| e           | 0.40 BSC  |      |      |
| K           | 0.20      | ---  | ---  |
| L           | 0.20      | 0.25 | 0.30 |

### 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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