

# NUF8010MU

## Low Capacitance 8 Line EMI Filter with ESD Protection in UDFN Package

This device is an 8 line EMI filter array for wireless applications. Greater than -20 dB typical attenuation is obtained at frequencies from 800 MHz to 5.0 GHz. The NUF8010MU has a typical cut-off frequency of 215 MHz. 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 40 Discrete Components
- Compliance with IEC61000-4-2 (Level 4)
- UDFN Package, 1.2 x 3.5 mm, 0.4 mm Pitch
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C  
Human Body Model = 3B
- This is a Pb-Free Device\*

### Benefits

- Reduces EMI/RFI Emissions 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

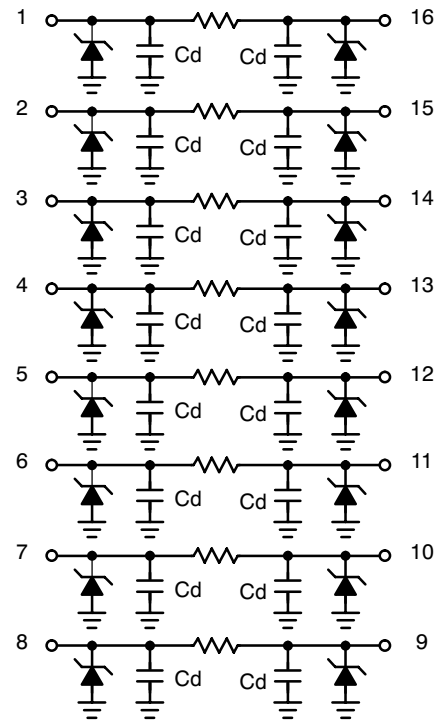
- EMI Filtering and ESD Protection for Data Lines
- Keypad Interface and Protection for Portable Electronics
- Bottom Connector Interface for Mobile Handsets
- Notebook Computers and Digital Cameras
- LCD Display Interface in Mobile Handsets
- Camera Display Interface in Mobile Handsets

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

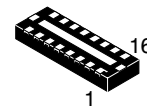


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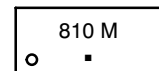
(Top View)



UDFN16  
MU SUFFIX  
CASE 517AF

- 810 = Specific Device Code
- M = Date and Assembly Location
- = Pb-Free Package

### MARKING DIAGRAM



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### ORDERING INFORMATION

Device	Package	Shipping†
NUF8010MUT2G	UDFN16 (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.

# NUF8010MU

## MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
ESD Discharge IEC61000-4-2 Contact Discharge	$V_{PP}$	8.0	kV
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 seconds)	$T_L$	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	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Reverse Working Voltage	$V_{RWM}$				5.0	V
Breakdown Voltage	$V_{BR}$	$I_R = 1.0\text{ mA}$	6.0	7.0	8.0	V
Leakage Current	$I_R$	$V_{RWM} = 3.3\text{ V}$			100	nA
Resistance	$R_A$	$I_R = 20\text{ mA}$	85	100	115	$\Omega$
Capacitance (Notes 1 and 2)	Cd			7.0	11	pF
Cut-Off Frequency (Note 3)	$f_{3dB}$	Above this frequency, appreciable attenuation occurs		215		MHz

1. Measured at  $25^\circ\text{C}$ ,  $V_R = 2.5\text{ V}$ ,  $f = 1.0\text{ MHz}$ .
2. Total Line Capacitance is 2 times the Diode Capacitance (Cd).
3.  $50\ \Omega$  source and  $50\ \Omega$  load termination.

# NUF8010MU

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

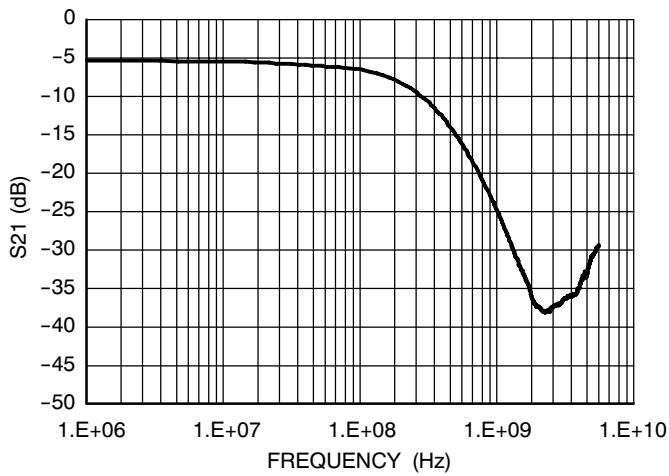


Figure 1. Typical Insertion Loss Characteristic

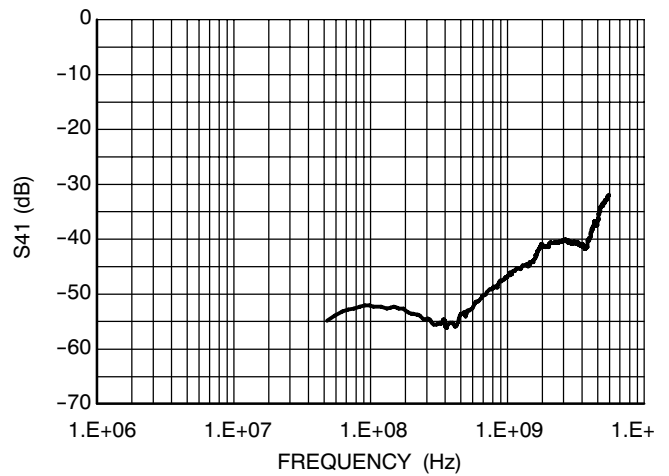


Figure 2. Typical Analog Crosstalk

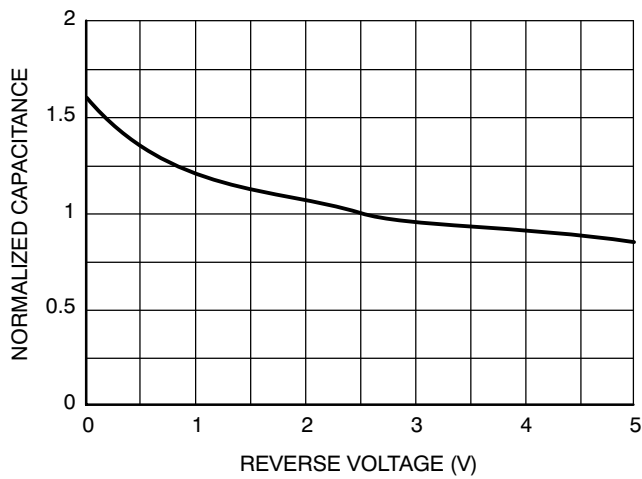


Figure 3. Typical Capacitance vs. Reverse Biased Voltage  
(Normalized Capacitance  $C_d$  at 2.5 V)

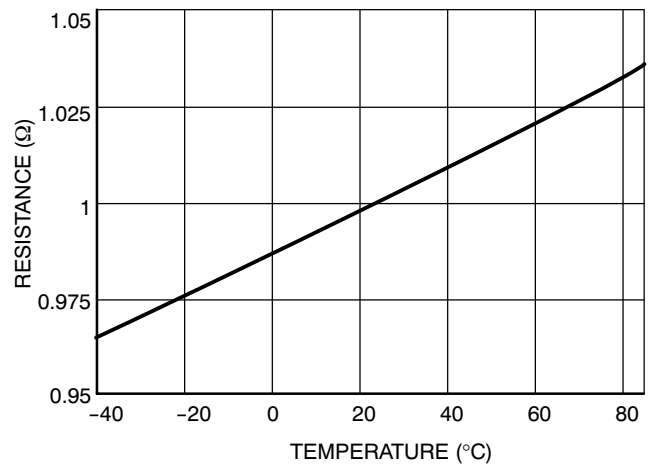
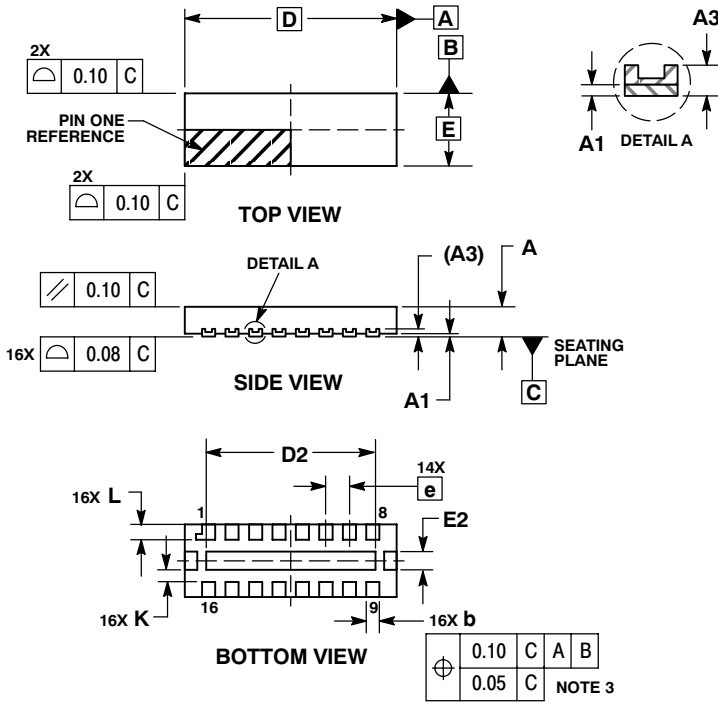


Figure 4. Typical Resistance over Temperature

# NUF8010MU

## PACKAGE DIMENSIONS

UDFN16, 3.5x1.2, 0.4P  
CASE 517AF-01  
ISSUE B

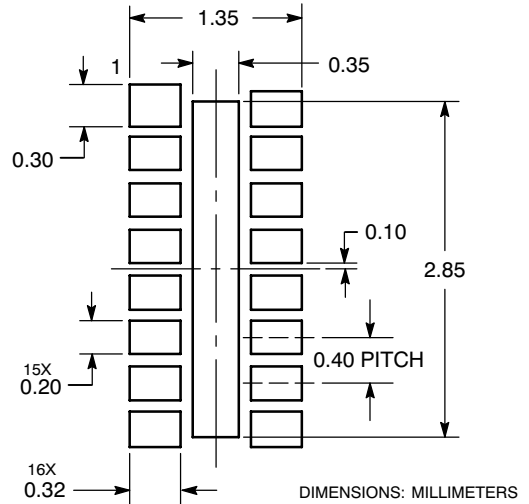


**NOTES:**

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.

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	3.50 BSC		
D2	2.70	2.80	2.90
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\***



\*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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