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

NUF3102MU

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

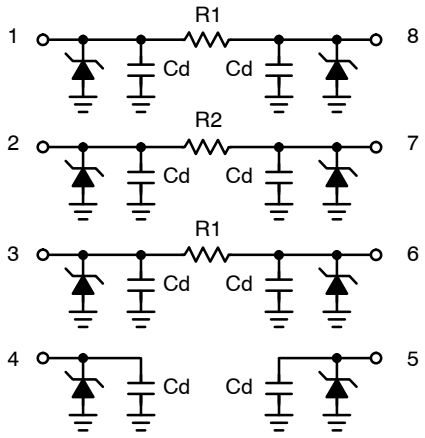
- EMI Filtering and ESD Protection
- Integration of 19 Discrete Components
- Compliance with IEC61000−4−2 (Level 4)
  - > 8 kV (Contact)
  - > 15 kV (Air)
- UDFN Package, 1.2 x 1.8 mm
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C
  Human Body Model = 3B
- These Devices are Pb−Free, Halogen Free/BFR Free and are RoHS Compliant

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

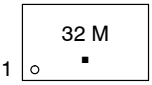


(Top View)



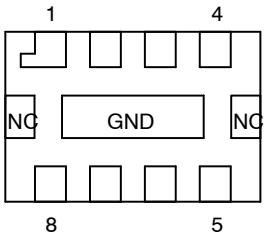
UDFN8
CASE 517AD

MARKING DIAGRAM



32 = Specific Device Code
M = Month Code
▪ = Pb−Free Package

PIN CONNECTIONS



ORDERING INFORMATION

Device	Package	Shipping†
NUF3102MUTAG	UDFN8 (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.

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MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
ESD Discharge IEC61000−4−2 Contact Discharge Machine Model Human Body Model	V_{PP}	 14 0.4 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 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	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Reverse Working Voltage	V_{RWM}				5.0	V
Breakdown Voltage	V_{BR}	I_R = 1.0 mA	6.0	7.0	8.0	V
Leakage Current	I_R	V_{RWM} = 3.3 V			100	nA
Resistance	R_1	I_R = 10 mA	85	100	115	Ω
Resistance	R_2	I_R = 10 mA	40	47	54	Ω
Capacitance (Notes 1 and 2)	Cd	V_R = 2.5 V, f = 1.0 MHz	10	13	16	pF
Cut−Off Frequency (Note 3)	f_{3dB}	Above this frequency, appreciable attenuation occurs		150		MHz

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

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.

TYPICAL PERFORMANCE CURVES (T_A= 25°C unless otherwise specified)

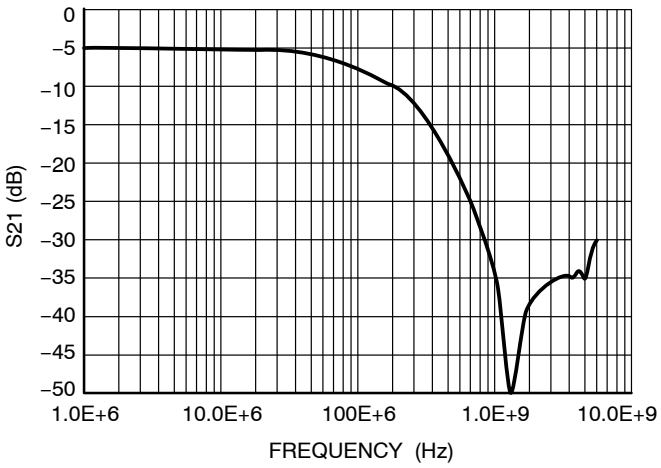


Figure 1. Insertion Loss Characteristic (P1−P8) (P3−P6)

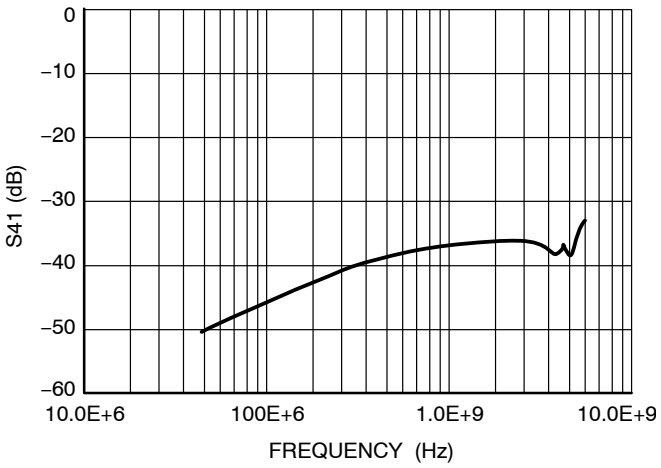


Figure 2. Analog Crosstalk Curve

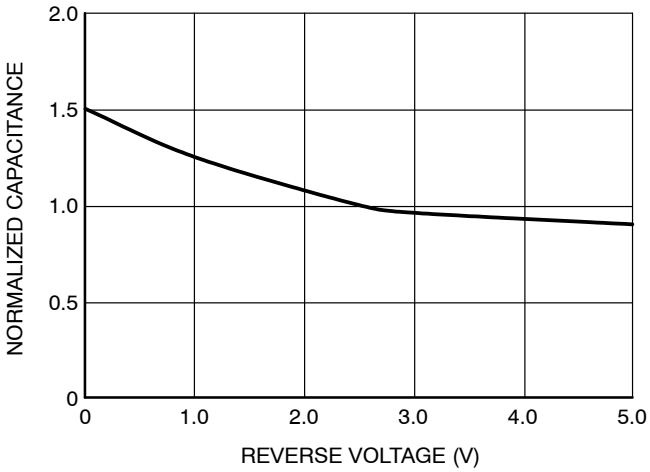


Figure 3. Typical Capacitance vs. Reverse Biased Voltage (Normalized Capacitance Cd at 2.5 V)

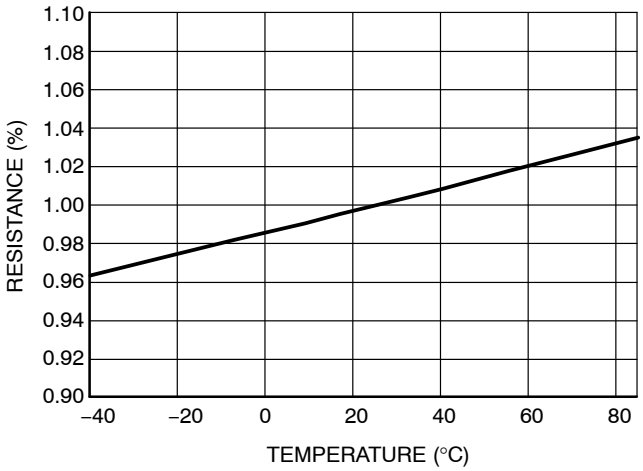


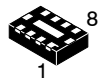
Figure 4. Typical Normalized Resistance over Temperature

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

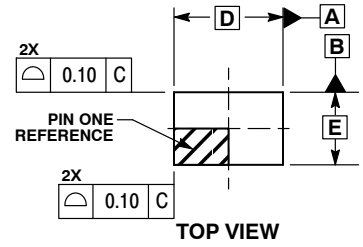
ON Semiconductor®

UDFN8 1.8x1.2, 0.4P
CASE 517AD
ISSUE D

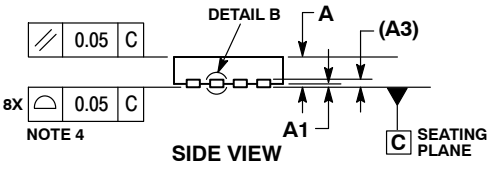
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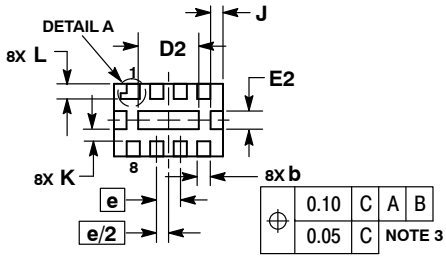
SCALE 4:1



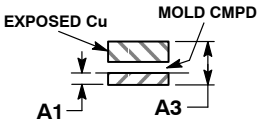
TOP VIEW



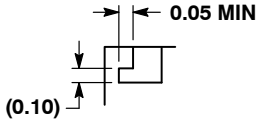
SIDE VIEW



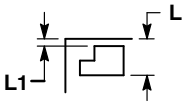
BOTTOM VIEW



DETAIL B
ALTERNATE CONSTRUCTIONS



DETAIL A

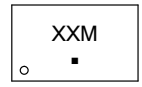


DETAIL A
OPTIONAL CONSTRUCTION

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 0.30 mm FROM TERMINAL.
4. COPLANARITY APPLIES TO THE EXPOSED PAD AS WELL AS THE TERMINALS.

	MILLIMETERS	
DIM	MIN	MAX
A	0.45	0.55
A1	0.00	0.05
A3	0.13 REF	
b	0.15	0.25
D	1.80 BSC	
E	1.20 BSC	
e	0.40 BSC	
D2	0.90	1.10
E2	0.20	0.30
J	0.19 REF	
K	0.20 TYP	
L	0.20	0.30
L1	---	0.10

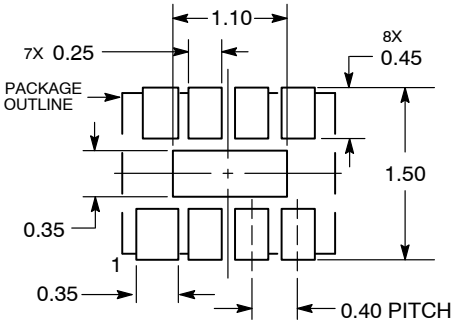
GENERIC MARKING DIAGRAM*



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

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G”, may or not be present.

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:	**UDFN8 1.8X1.2, 0.4P**	**PAGE 1 OF 1**

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