

NUF6107MN

4 Channel Data Line EMI Filter with 2 Channel USB Filter and ESD Protection

This device is a four-channel EMI filter array for data lines. Greater than -35 dB attenuation is obtained at frequencies from 800 MHz to 2.2 GHz. It also offers USB filtering circuitry with speed detection. This includes the inline resistors for impedance matching and EMI filtering. ESD protection is provided across all capacitors.

Features

- EMI Filtering and ESD Protection for Data Lines
- USB 1.1 and 2.0 Full Speed Filtering Provided
- Integration of 26 Discretes Offers Cost and Space Savings
- Low Profile DFN, Packaging, 3.0 x 1.35 mm
- MSL 1
- Compliant with IEC61000-4-2 (Level 4)
 > 8 kV Contact on all outputs and data lines
- This is a Pb-Free Device

Typical Applications

- EMI and USB Filtering and ESD Protection for Data Lines
- Cell Phones
- Handheld Portables
- Notebook Computers
- MP3 Players

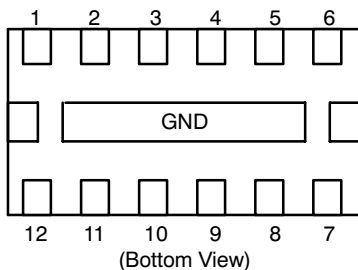
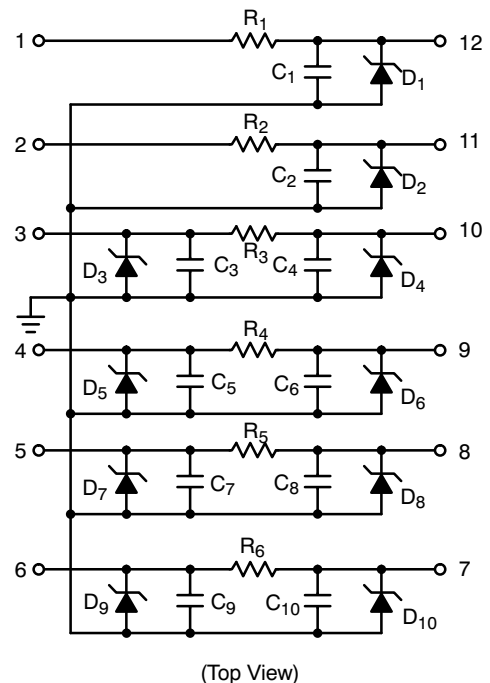


Figure 1. Pin Connections



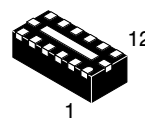
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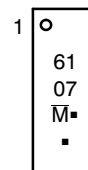


(Top View)

MARKING DIAGRAM



DFN12
CASE 506AD



6107= Specific Device Code

M = Month

▪ = Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

Device	Package	Shipping†
NUF6107MNTBG	DFN12 (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 pins 1 to 2 pins 3 to 12	Contact Discharge V_{PP}	2.0 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 ($T_A = 25^\circ\text{C}$ 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	6.8	8.0	V
Leakage Current	I_R	$V_{RWM} = 3.3 \text{ V per line}$	-	-	0.1	μA
EMI Filter Resistors	$R_3 - R_6$		80	100	120	Ω
USB Resistors; Impedance Matching	R_1, R_2		18	22	26	Ω
Diode Capacitance	$C3 - C10$	$V_R = 2.5 \text{ V}$	24	30	36	pF
Diode Capacitance	$C1, C2$	$V_R = 2.5 \text{ V}$	29	36	43	pF

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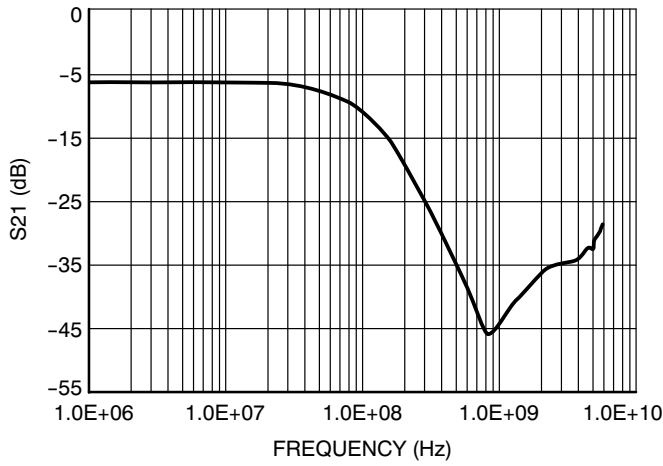


Figure 2. Insertion Loss Characteristics on Data Lines

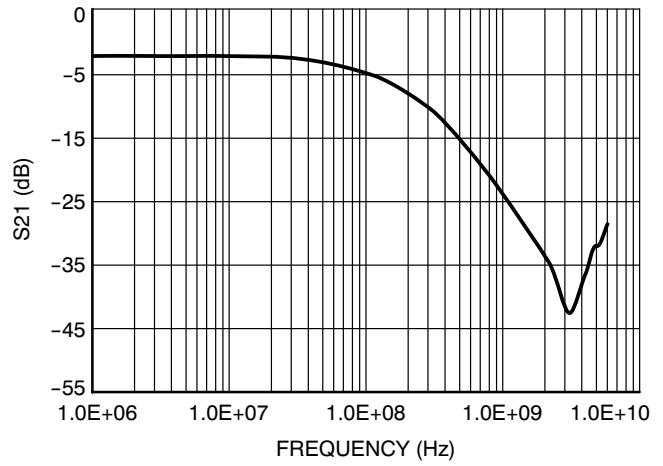


Figure 3. Insertion Loss Characteristics on USB Lines

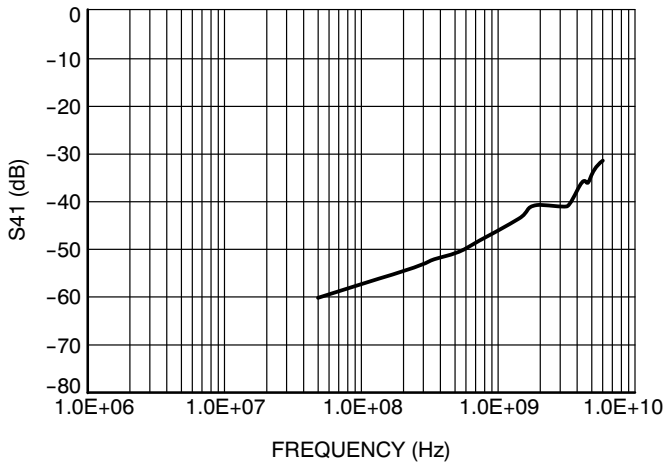


Figure 4. Typical Analog Crosstalk

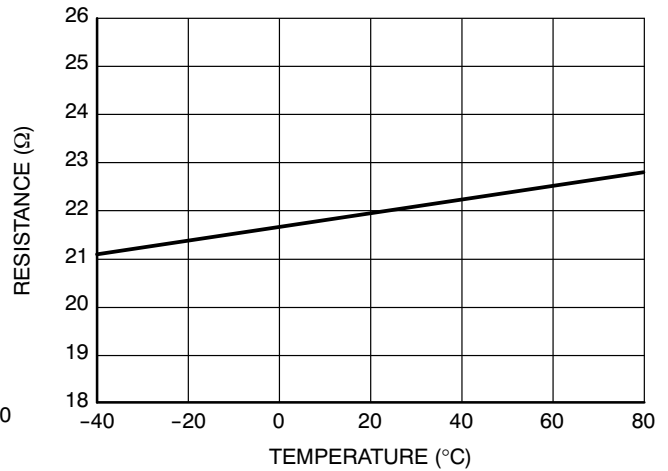


Figure 5. Typical Resistance over Temperature for R₁ and R₂

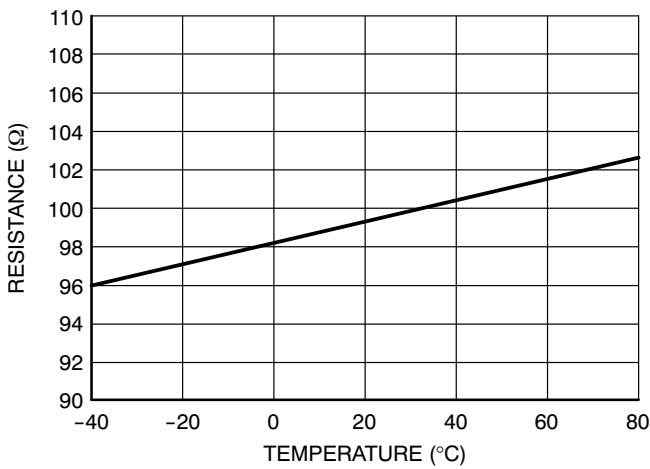


Figure 6. Typical Resistance over Temperature for R₃ - R₆

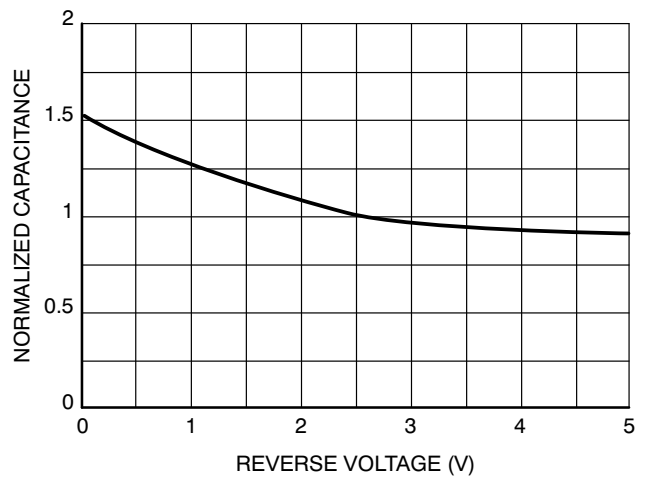
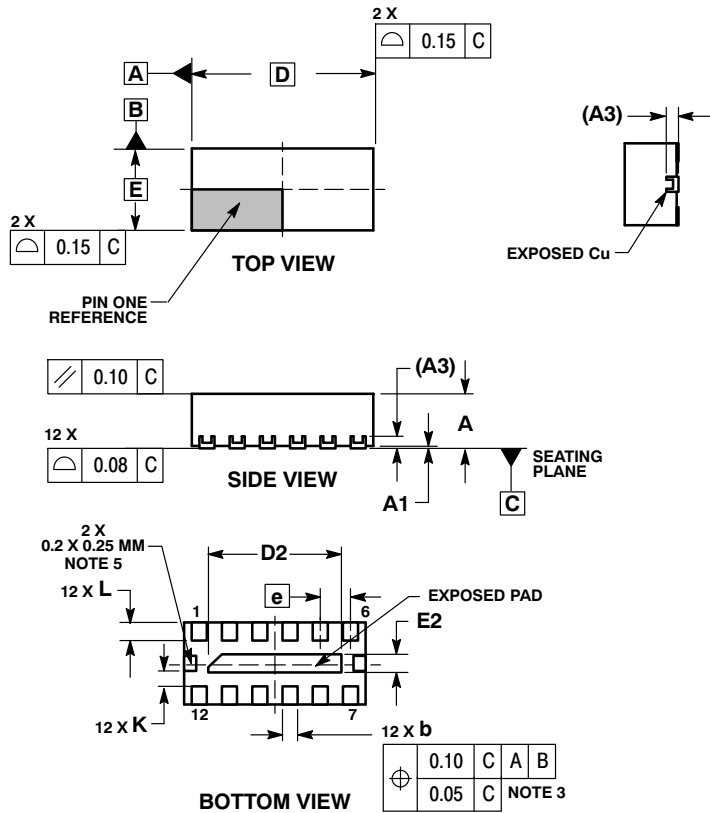


Figure 7. Typical Capacitance vs. Reverse Biased Voltage (Normalized Capacitance, Cd @ 2.5 V)

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PACKAGE DIMENSIONS

DFN12 3.0x1.35, 0.5P
CASE 506AD-01
ISSUE H

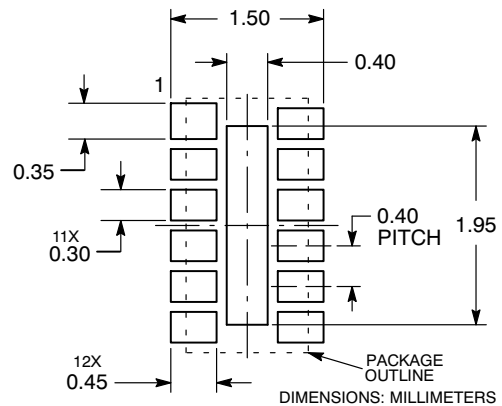


NOTES:

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETER.
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.
5. EXPOSED PADS CONNECTED TO DIE FLAG, USED AS TEST CONTACTS.

MILLIMETERS		
DIM	MIN	MAX
A	0.80	1.00
A1	0.00	0.05
A3	0.20	REF
b	0.18	0.30
D	3.00 BSC	
D2	2.10	2.30
E	1.35 BSC	
E2	0.20	0.40
e	0.50 BSC	
K	0.20	---
L	0.20	0.40

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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