

NUF4105FC, NUF4115FC

4 Channel EMI Pi-Filter Array with ESD Protection +4 ESD Diodes

This device is a 4 channel EMI filter array for data lines. Greater than -40 dB attenuation is obtained at frequencies from 800 MHz to 2.2 GHz. It also offers ESD protection – clamping transients from static discharges to protect delicate data line circuitry. It is offered in 300 μm and 350 μm solder spheres.

Features

- EMI Filtering and ESD Protection for Data Lines
- Integration of 26 Discretes Offers Cost and Space Savings
- Exceeds IEC61000-4-2 (Level 4) Specifications
- Low Profile Flip-Chip Packaging
- MSL 1
- 300 μm Solder Spheres (NUF4105), Case 499D
- 350 μm Solder Spheres (NUF4115), Case 499F

Typical Applications

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

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$)

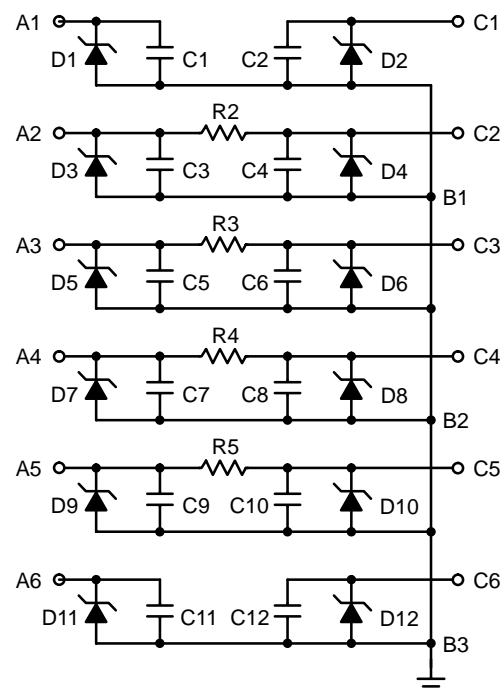
Rating	Symbol	Value	Unit
ESD Discharge IEC61000-4-2, – Air Discharge – Contact Discharge Human Body Model	V_{PP}	30 30 16	kV
DC Power per Resistor	P_R	100	mW
DC Power per Package	P_T	400	mW
Junction Temperature	T_J	150	$^\circ\text{C}$
Operating Temperature Range	T_{op}	-40 to +85	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +150	$^\circ\text{C}$



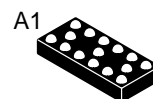
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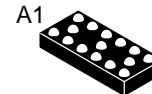
CIRCUIT DESCRIPTION



FLIP-CHIP
CASE 499D
300 μm Bumps



FLIP-CHIP
CASE 499F
350 μm Bumps



DEVICE MARKING

ON	NUF41xxYYWW
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xx = 05 or 15
YY = Year
WW = Work Week

ORDERING INFORMATION

Device	Package	Shipping
NUF4105FCT1	Flip-Chip	3000/Tape & Reel
NUF4115FCT1	Flip-Chip	3000/Tape & Reel

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ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Symbol	Characteristic	Min	Typ	Max	Unit
V _{BR}	I _Z = 10 mA	6.0	7.0	8.0	V
I _R	V _{RM} = 3.3 V per line	–	–	0.1	μA
R _{I/O}	I _R = 20 mA	80	100	120	Ω
C _{line}	V _R = 2.5 V, f = 1.0 MHz (Note 1)	–	53	–	pF

1. Measured from input/output pins to ground.

TYPICAL PERFORMANCE CURVES

(T_A = 25°C unless otherwise specified)

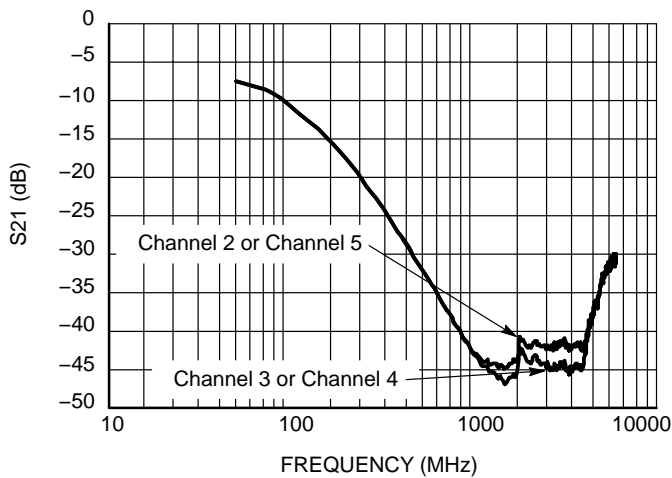


Figure 1. Insertion Loss Curve (S21 Measurement)

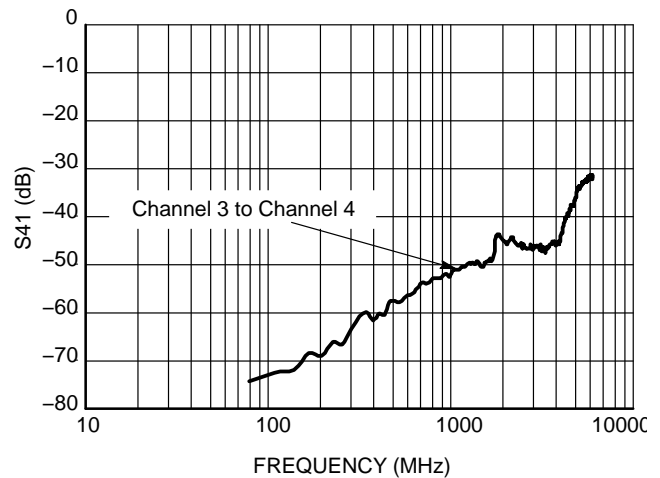


Figure 2. Analog Crosstalk Curve (S41 Measurement)

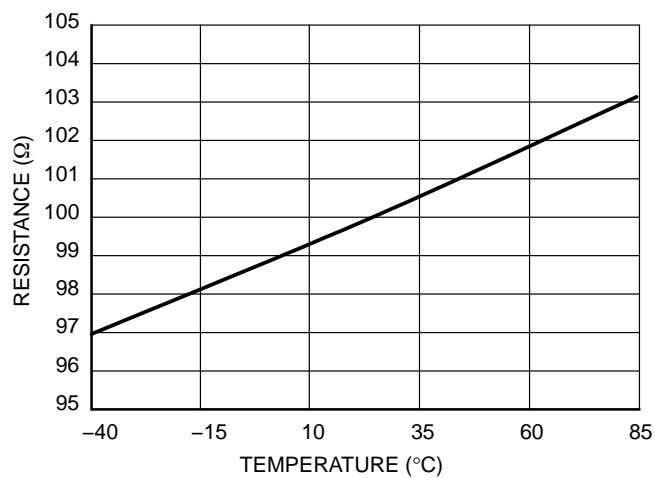


Figure 3. Resistance Over Temperature

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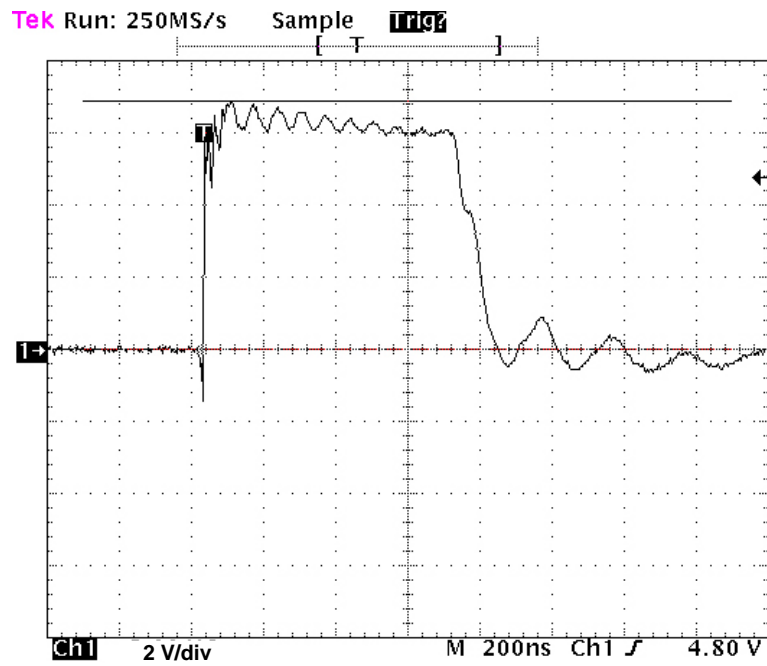


Figure 4. ESD Response for Human Body Model (+8.0 kV)

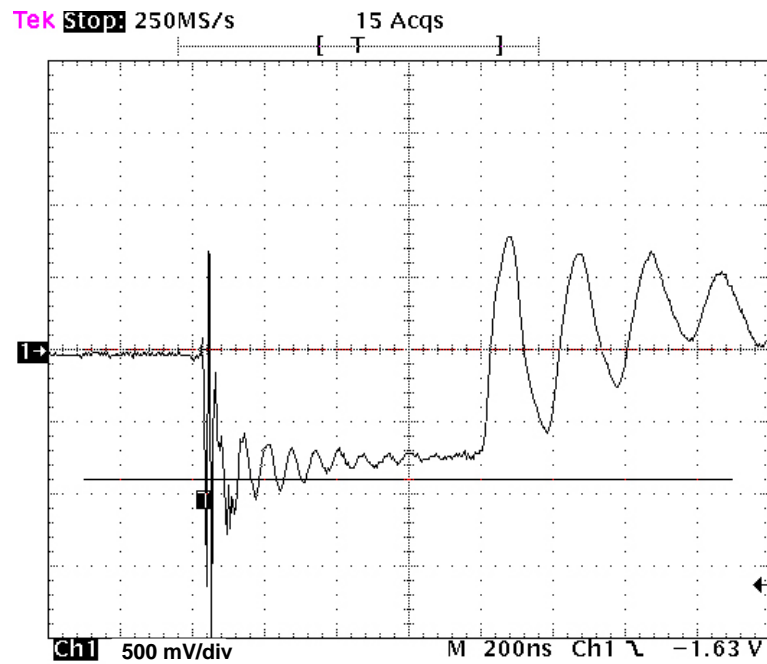


Figure 5. ESD Response for Human Body Model (-8.0 kV)

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Printed Circuit Board Recommendations

Parameter	500 μm Pitch 300 or 350 μm Solder Ball
PCB Pad Size	250 μm +25 -0
Pad Shape	Round
Pad Type	NSMD
Solder Mask Opening	350 μm \pm 25
Solder Stencil Thickness	125 μm
Stencil Aperture	250 x 250 μm sq.
Solder Flux Ratio	50/50
Solder Paste Type	No Clean Type 3 or Finer
Trace Finish	OSP Cu
Trace Width	150 μm Max

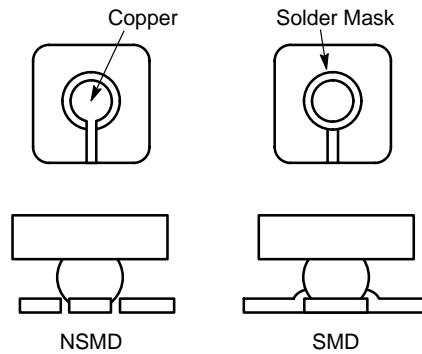


Figure 6. Solder Mask versus Non-Solder Mask Definition

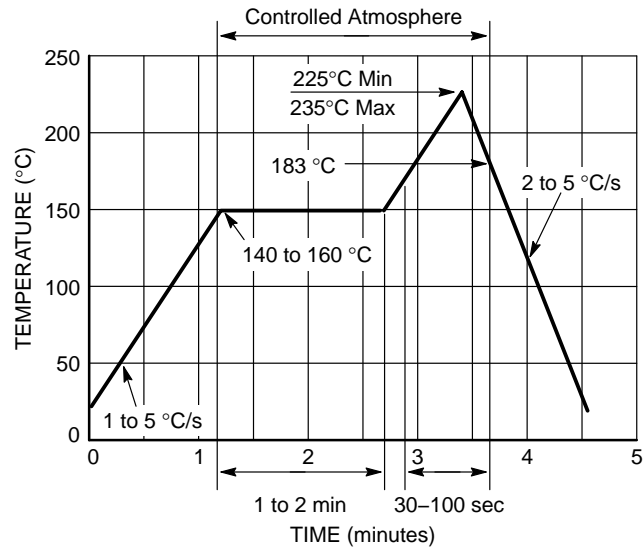
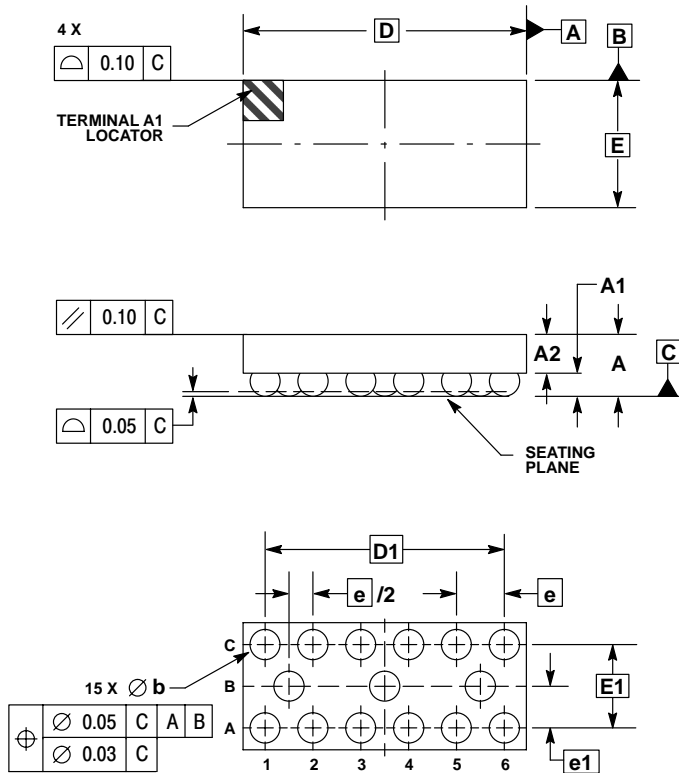


Figure 7. Solder Reflow Profile

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PACKAGE DIMENSIONS

15 PIN FLIP-CHIP CSP CASE 499D-01 ISSUE O



NOTES:

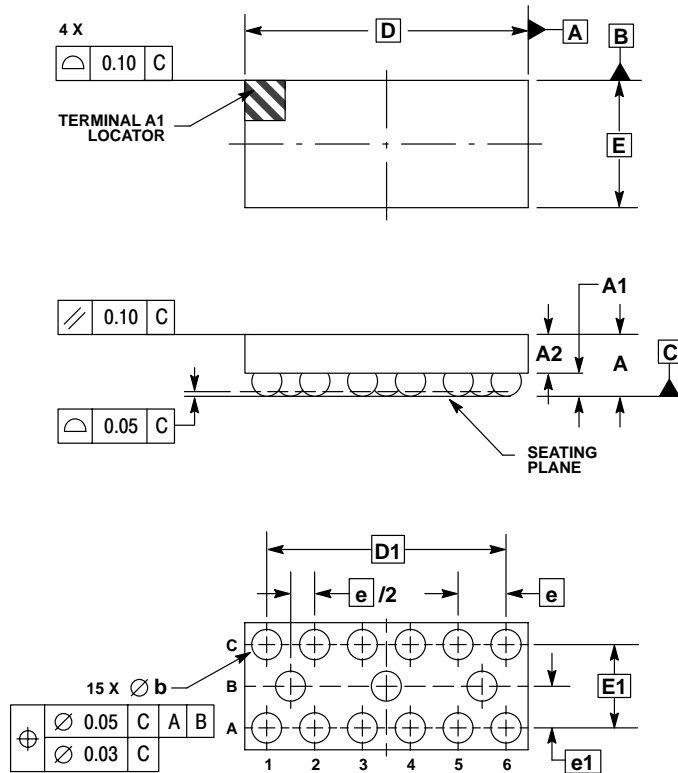
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETER.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

DIM	MILLIMETERS	
	MIN	MAX
A	---	0.700
A1	0.210	0.270
A2	0.380	0.430
D	2.960 BSC	
E	1.330 BSC	
b	0.290	0.340
e	0.500 BSC	
e1	0.435 BSC	
D1	2.500 BSC	
E1	0.870 BSC	

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PACKAGE DIMENSIONS


15 PIN FLIP-CHIP CSP CASE 499F ISSUE PRELIMINARY



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