

# NUF2441FC

## Integrated Passive Filter with ESD Protection

This device is designed for cell phone applications requiring **Headset and Speaker Phone, EMI Filtering and ESD Protection**. This device offers an integrated solution in a small package reducing PCB space and cost.

### Features:

- Provides EMI Filtering and ESD Protection
- Single IC Offers Cost Savings by Replacing 2 Inductors, 4 Capacitors, and 4 TVs Diodes
- Compliance with IEC61000-4-2, (Level 4) 30 kV (Contact), 30 kV (air)
- Flip-Chip Package
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C  
Human Body Model = 3B
- This is a Pb-Free Device\*

### Benefits:

- Flip-Chip Package Minimizes PCB Space
- Integrated Circuit Increases System Reliability versus Discrete Component Implementation
- TVs Devices Provide ESD Protection That is Better than a Discrete Implementation because the Small IC minimizes Parasitic Inductances

### Typical Applications:

- Cell Phones
- Communication Circuits

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

Rating	Symbol	Value	Unit
ESD Discharge IEC61000-4-2 Contact Discharge Air Discharge	$V_{pp}$	30 30	kV
Operating Temperature Range	$T_J$	-40 to +125	$^\circ\text{C}$
Storage Temperature Range	$T_{stg}$	-55 to +150	$^\circ\text{C}$
Lead Solder Temperature (10 second duration)	$T_L$	260	$^\circ\text{C}$

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

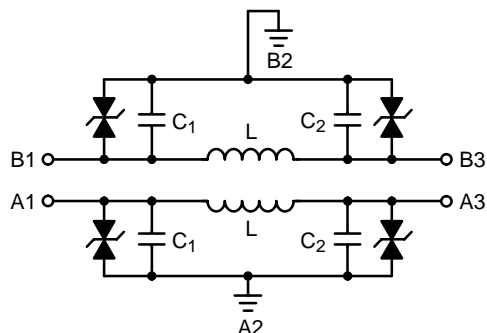
\*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



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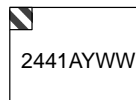
### CIRCUIT DESCRIPTION



### MARKING DIAGRAM

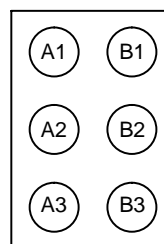


Flip-Chip  
CASE 499J



2441 = Specific Device Code  
A = Assembly Location  
Y = Year  
WW = Work Week

### PIN CONFIGURATION



(Bump View)

### ORDERING INFORMATION

Package	Device	Shipping <sup>†</sup>
NUF2441FCT1	Flip-Chip	3000/Tape & Reel
NUF2441FCT1G	Flip-Chip (Pb-Free)	3000/Tape & Reel

<sup>†</sup>For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

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## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C)

Device	Device Marking	V <sub>RWM</sub> (Volts)	V <sub>BR</sub> @ 1 mA (Volts)		Max I <sub>R</sub> @ V <sub>RWM</sub> = 12 V I/O Pin (μA)	Typical Capacitance C <sub>1</sub> + C <sub>2</sub> (pF) (Notes 1, 3, 4)	Typical Pass-Band Inductance L (nH)	Equivalent Series Resistance R <sub>S</sub> (Ω) (Note 2)	
			Min	Max				Typ	Max
NUF2441FCT1G	2441	12	13.7	17.7	0.1	250	2.9	0.28	0.35

1. Measured at 25°C, V<sub>R</sub> = 0, f = 1 MHz, Source A1, GND A2, Open A3.
2. Measured at room temperature.
3. Tolerance = ±20%.
4. Measured under zero light conditions.

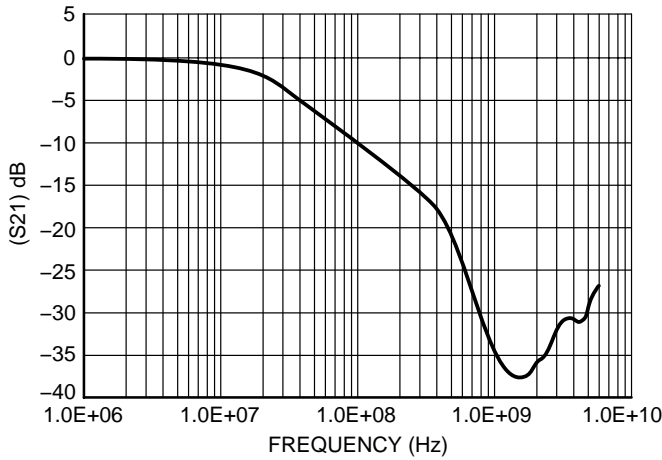


Figure 1. Insertion Loss Characteristic

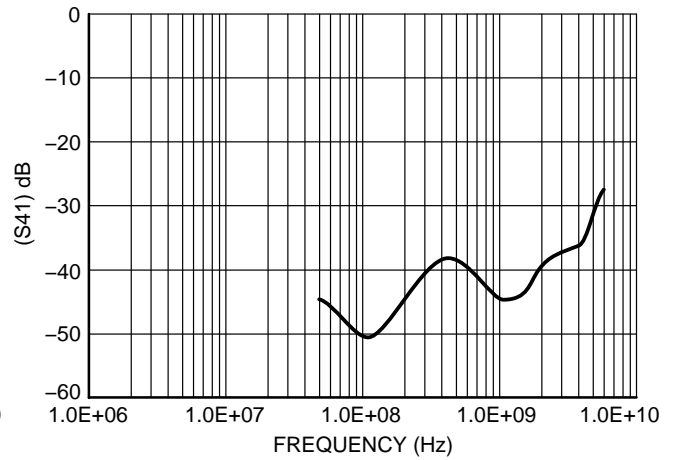


Figure 2. Analog Crosstalk

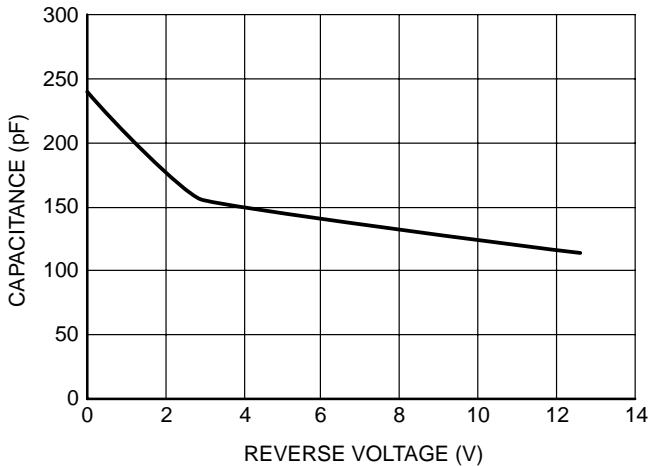


Figure 3. Typical Line Capacitance vs. Reverse Bias Voltage

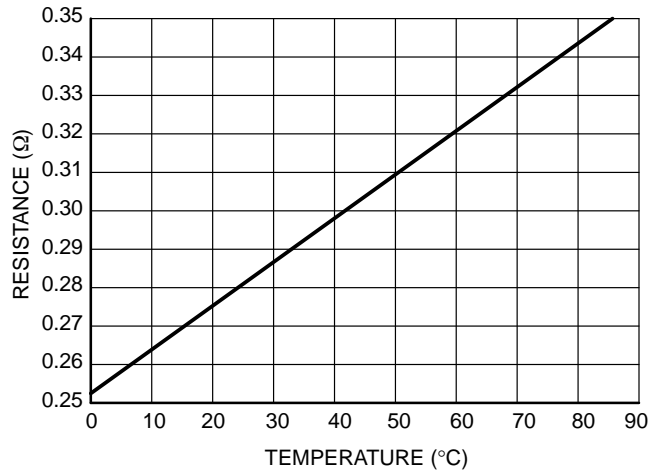
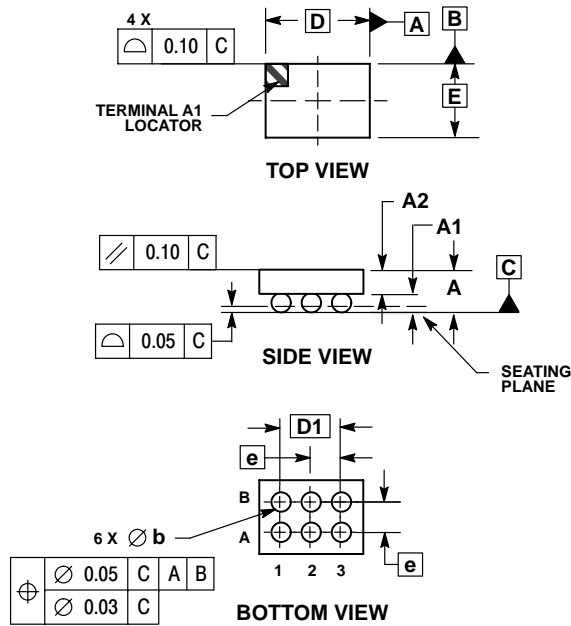


Figure 4. Typical Resistance vs. Temperature

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## PACKAGE DIMENSIONS

6 PIN FLIP-CHIP CSP  
CASE 499J-01  
ISSUE O




- NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 1994.
  2. CONTROLLING DIMENSION: MILLIMETERS.
  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	1.720 BSC	
E	1.220 BSC	
b	0.290	0.340
e	0.500 BSC	
D1	1.000 BSC	

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Patent Pending.

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**NUF2441FC/D**