

# NUF2220XV6

## 2 Line EMI Filter with ESD Protection

This device is a 2 line EMI filter array for wireless applications. Greater than -20 dB attenuation is obtained at frequencies from 800 MHz to 2.4 GHz. 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 10 Discrete Components
- Compliance with IEC61000-4-2 (Level 4)  
    > 8.0 kV (Contact)
- SOT-563 Package
- Moisture Sensitivity Level 1
- ESD Ratings:      Machine Model = C  
                          Human Body Model = 3B
- These are Pb-Free Devices

### Benefits

- Reduces EMI/RFI Emissions on a Data Line
- Integrated Solution Offers Cost and Space Savings in a SOT-563 Package
- Reduces Parasitic Inductances Which Offer a More “Ideal” Low Pass Filter Response
- Integrated Solution Improves System Reliability

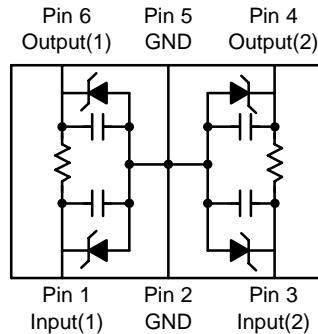
### Applications

- EMI Filtering and ESD Protection for Data Lines
- Wireless Phones
- PDAs and Handheld Products
- Notebook Computers
- LCD Displays



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### MARKING DIAGRAM



20 = Specific Device Code

M = Month Code

■ = Pb-Free Package

(Note: Microdot may be in either location)

### ORDERING INFORMATION

Device	Package	Shipping <sup>†</sup>
NUF2220XV6T1	SOT-563	4000/Tape & Reel
NUF2220XV6T1G	SOT-563	4000/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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## MAXIMUM RATINGS (T<sub>J</sub> = 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
ESD Discharge IEC61000-4-2 Air Discharge Contact Discharge	V <sub>PP</sub>	15 8.0	kV
Steady-State Power per Resistor	P <sub>R</sub>		mW
Steady-State Power per Package	P <sub>T</sub>		mW
Operating Temperature Range	T <sub>OP</sub>	-40 to 85	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°C
Maximum Lead Temperature for Soldering Purposes (1.8 in from case for 10 seconds)	T <sub>L</sub>	260	°C

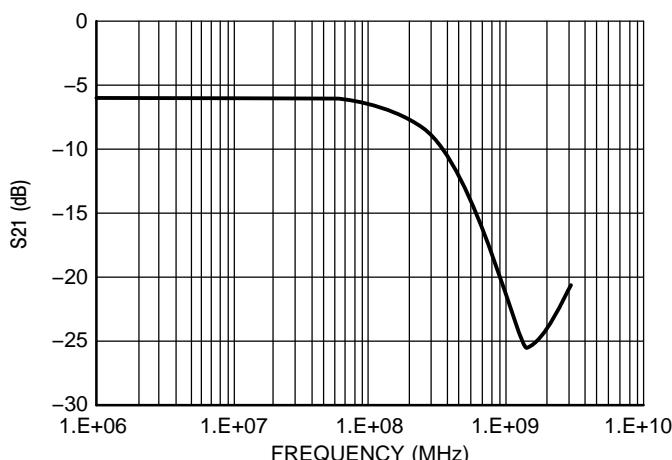
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

## ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25°C unless otherwise noted)

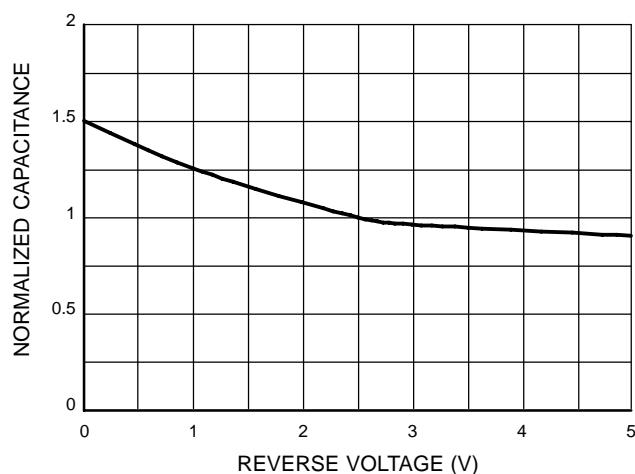
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Maximum Reverse Working Voltage	V <sub>RWM</sub>				5.0	V
Breakdown Voltage	V <sub>BR</sub>	I <sub>R</sub> = 1.0 mA	6.0	7.0		V
Leakage Current	I <sub>R</sub>	V <sub>RWM</sub> = 3.0 V			1.0	µA
Resistance	R <sub>A</sub>	I <sub>R</sub> = 20 mA	85	100	115	Ω
Capacitance (Notes 1 and 2)	C <sub>d</sub>	V <sub>R</sub> = 2.5 V, f = 1.0 MHz		7.0		pF
Cut-Off Frequency (Note 3)	f <sub>3dB</sub>	Above this frequency, appreciable attenuation occurs		275		MHz

1. Measured at 25°C, V<sub>R</sub> = 2.5 V, f = 1.0 MHz.
2. Total line capacitance is 2 times the Diode Capacitance (C<sub>d</sub>).
3. 50 Ω source and 50 Ω load termination.

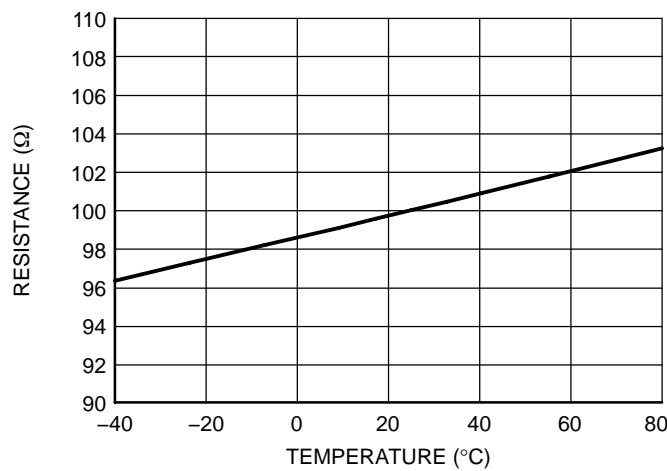
## NUF2220XV6



**Figure 1. Insertion Loss Characteristic  
(50  $\Omega$  Source and 50  $\Omega$  Lead Termination)**



**Figure 2. Typical Capacitance vs.  
Reverse Biased Voltage  
(Normalized Capacitance,  $C_d$  @ 2.5 V)**

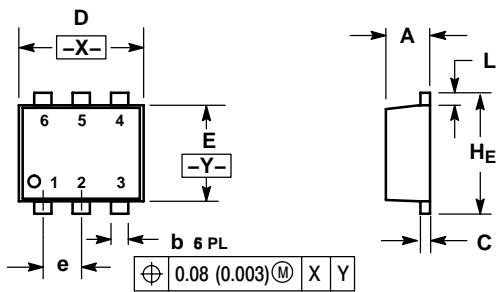


**Figure 3. Typical Resistance over Temperature**

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## PACKAGE DIMENSIONS

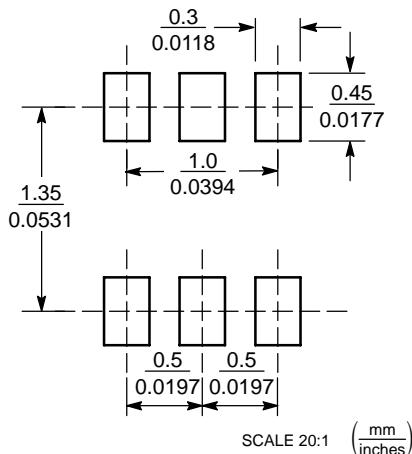
### SOT-563, 6 LEAD CASE 463A-01 ISSUE F



NOTES:  
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
 2. CONTROLLING DIMENSION: MILLIMETERS  
 3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.50	0.55	0.60	0.020	0.021	0.023
b	0.17	0.22	0.27	0.007	0.009	0.011
C	0.08	0.12	0.18	0.003	0.005	0.007
D	1.50	1.60	1.70	0.059	0.062	0.066
E	1.10	1.20	1.30	0.043	0.047	0.051
e	0.5 BSC			0.02 BSC		
L	0.10	0.20	0.30	0.004	0.008	0.012
H_E	1.50	1.60	1.70	0.059	0.062	0.066

### 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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