

# NUF2240W1

## 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 800 MHz. 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 11 Discrete Components
- Compliance with IEC61000-4-2 (Level 4)  
> 8.0 kV (Contact)
- SC-88/SOT-363 Package
- Moisture Sensitivity Level 1
- ESD Ratings: Machine Model = C  
Human Body Model = 3B
- This is a Pb-Free Device

### Benefits

- Reduces EMI/RFI Emissions on a Data Line
- Integrated Solution Offers Cost and Space Savings in a SC-88/SOT-363 Package
- Reduces Parasitic Inductances Which Offer a More “Ideal” Low Pass Filter Response
- Integrated Solution Improves System Reliability

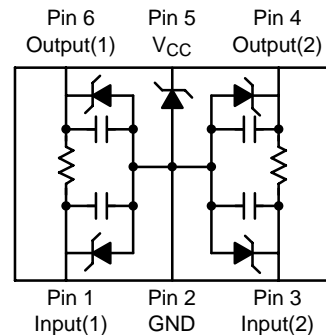
### Applications

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

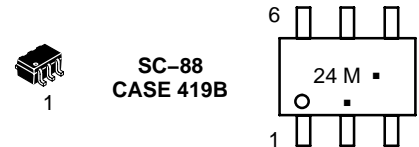


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<http://onsemi.com>



### MARKING DIAGRAM



24 = Specific Device Code  
M = Month Code  
▪ = Pb-Free Package  
(Note: Microdot may be in either location)

### ORDERING INFORMATION

| Device       | Package            | Shipping†        |
|--------------|--------------------|------------------|
| NUF2240W1T1G | SC-88<br>(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 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<br>Air Discharge<br>Contact Discharge                  | V <sub>PP</sub>  | 15<br>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   |

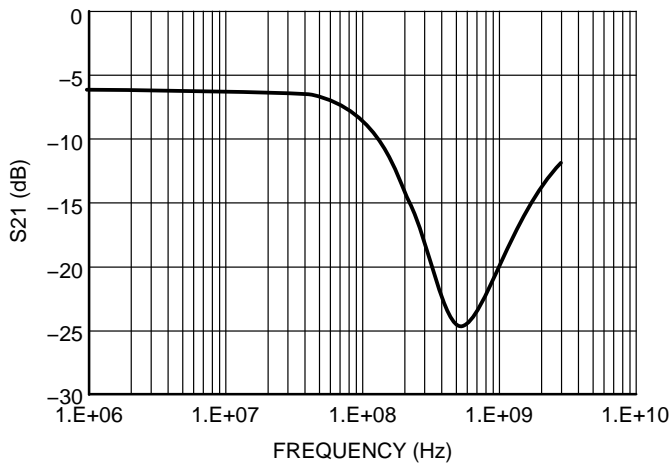
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

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

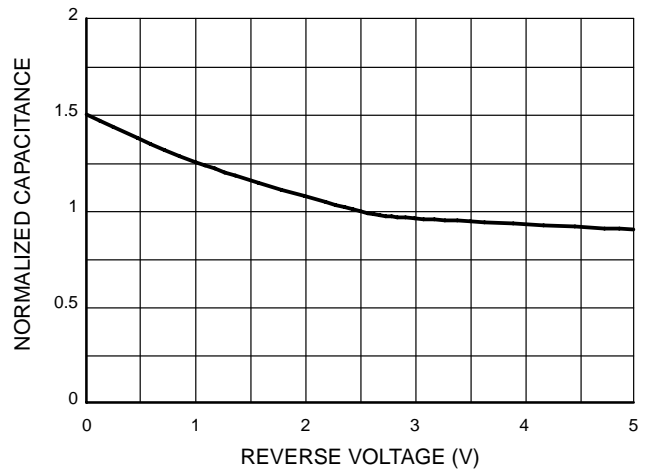
| Parameter                       | Symbol           | Test Conditions   | Min | Typ | Max | Unit |
|---------------------------------|------------------|---|-----|-----|-----|------|
| Maximum Reverse Working Voltage | V <sub>RWM</sub> |   |     |     | 5.0 | V    |
| Breakdown Voltage               | 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                     |     | 17  |     | pF   |
| Cut-Off Frequency (Note 3)      | f <sub>3dB</sub> | Above this frequency,<br>appreciable attenuation occurs |     | 125 |     | 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.

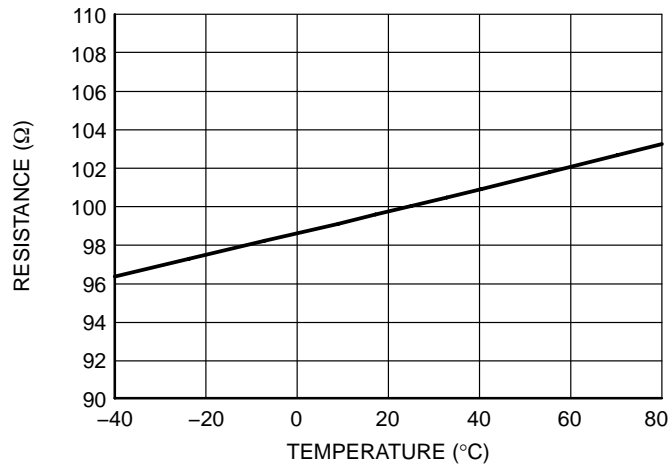
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**Figure 1. Insertion Loss Characteristic  
(50  $\Omega$  Source and 50  $\Omega$  Lead Termination)**



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

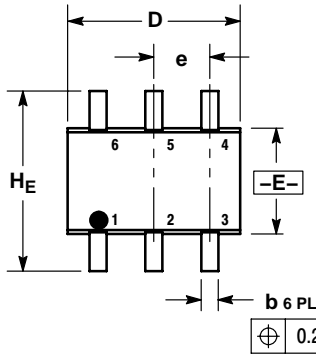


**Figure 3. Typical Resistance over Temperature**

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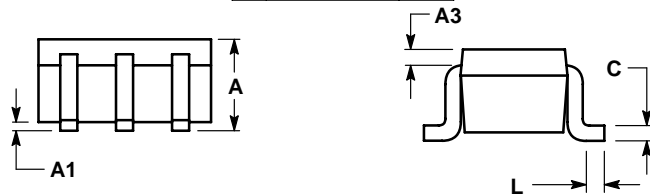
## PACKAGE DIMENSIONS

SC-88/SC70-6/SOT-363  
CASE 419B-02  
ISSUE V

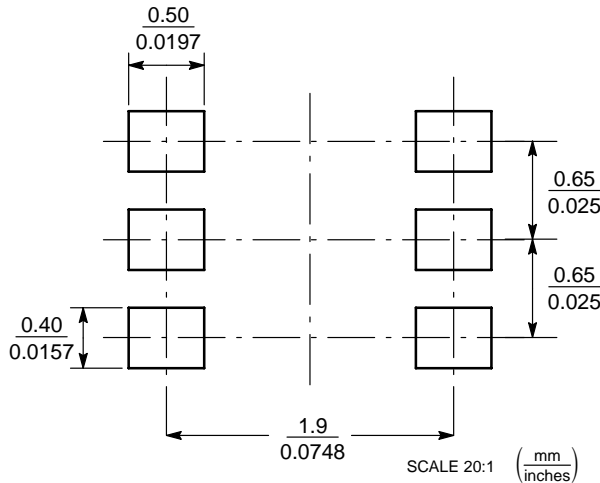


- NOTES:  
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.  
2. CONTROLLING DIMENSION: INCH.  
3. 419B-01 OBSOLETE, NEW STANDARD 419B-02.

| DIM | MILLIMETERS |      |      | INCHES    |       |       |
|-----|-------------|------|------|-----------|-------|-------|
|     | MIN         | NOM  | MAX  | MIN       | NOM   | MAX   |
| A   | 0.80        | 0.95 | 1.10 | 0.031     | 0.037 | 0.043 |
| A1  | 0.00        | 0.05 | 0.10 | 0.000     | 0.002 | 0.004 |
| A3  | 0.20 REF    |      |      | 0.008 REF |       |       |
| b   | 0.10        | 0.21 | 0.30 | 0.004     | 0.008 | 0.012 |
| C   | 0.10        | 0.14 | 0.25 | 0.004     | 0.005 | 0.010 |
| D   | 1.80        | 2.00 | 2.20 | 0.070     | 0.078 | 0.086 |
| E   | 1.15        | 1.25 | 1.35 | 0.045     | 0.049 | 0.053 |
| e   | 0.65 BSC    |      |      | 0.026 BSC |       |       |
| L   | 0.10        | 0.20 | 0.30 | 0.004     | 0.008 | 0.012 |
| HE  | 2.00        | 2.10 | 2.20 | 0.078     | 0.082 | 0.086 |



### SOLDERING FOOTPRINT\*



### SC-88/SC70-6/SOT-363

\*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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