

# NUF2230XV6

## 2 Line EMI Filter with ESD Protection

This device is a 2 line EMI filter array for wireless applications. Greater than -30 dB attenuation is obtained at frequencies from 800 MHz to 900 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 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

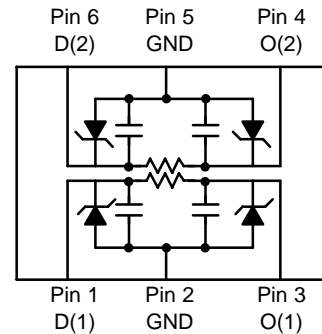
### Applications

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

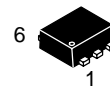


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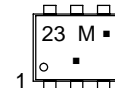
<http://onsemi.com>



### MARKING DIAGRAM



SOT-563  
CASE 463A



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

### ORDERING INFORMATION

| Device        | Package | Shipping†        |
|---------------|---------|------------------|
| NUF2230XV6T1  | SOT-563 | 4000/Tape & Reel |
| NUF2230XV6T1G | SOT-563 | 4000/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.

# NUF2230XV6

## 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   |

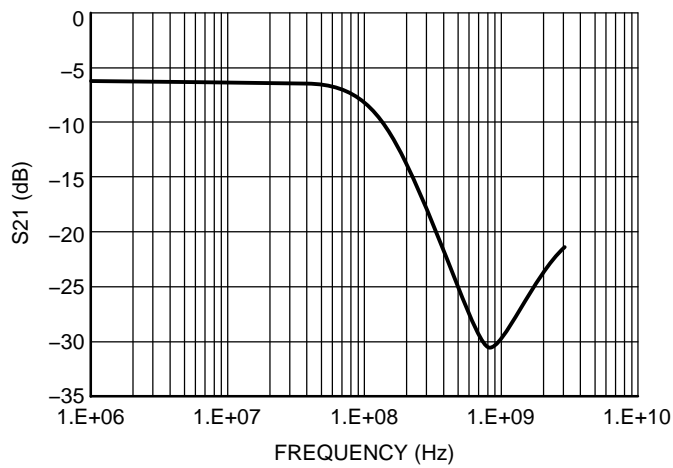
Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur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

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

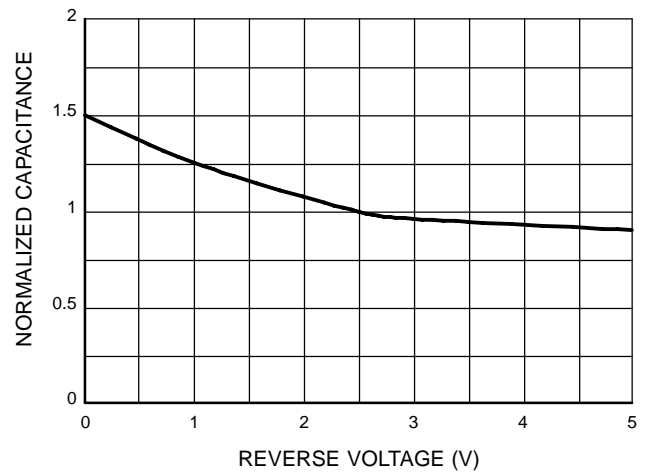
| Parameter                       | Symbol           | Test Conditions   | Min | Typ | Max | Unit |
|---------------------------------|------------------|---|-----|-----|-----|------|
| Maximum Reverse Working Voltage | V <sub>RWM</sub> |   |     |     | 5.0 | V    |
| Breakdown Voltage               | 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                                  | 90  | 100 | 110 | Ω    |
| Capacitance (Notes 1 and 2)     | C <sub>d</sub>   | V <sub>R</sub> = 2.5 V, f = 1.0 MHz                     |     | 16  |     | 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.

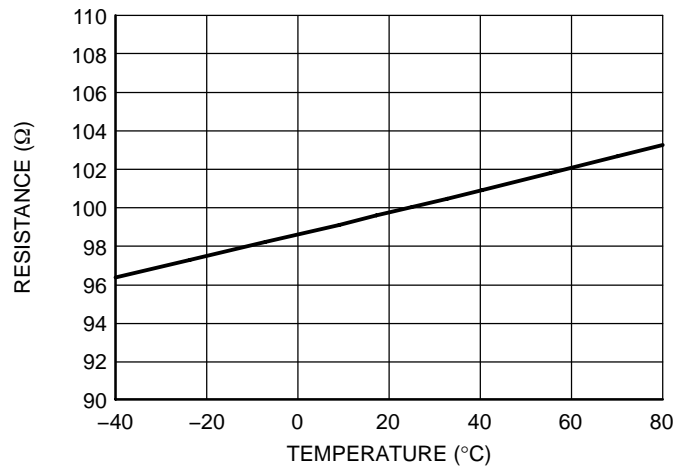
# NUF2230XV6



**Figure 1. Insertion Loss Characteristic  
(50 Ω Source and 50 Ω Lead Termination)**



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

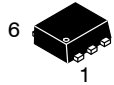


**Figure 3. Typical Resistance over Temperature**

# MECHANICAL CASE OUTLINE

## PACKAGE DIMENSIONS

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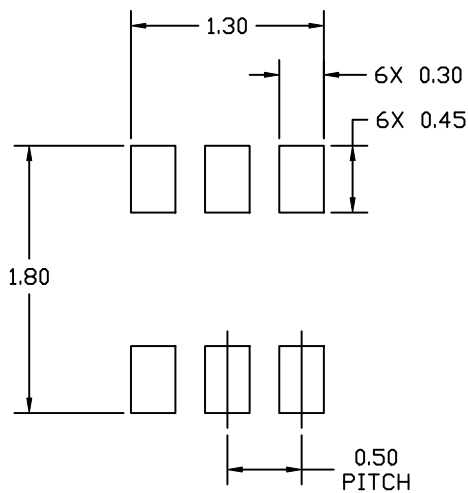
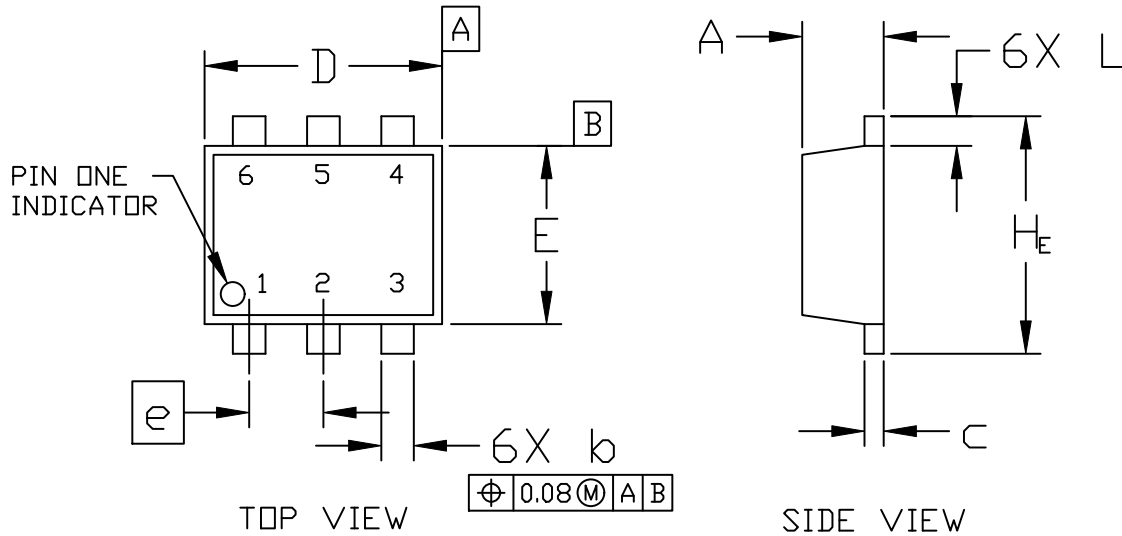
SCALE 4:1

**SOT-563, 6 LEAD**  
CASE 463A  
ISSUE H

DATE 26 JAN 2021

**NOTES:**

1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH THICKNESS. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.



| DIM            | MILLIMETERS |      |      |
|----------------|-------------|------|------|
|                | MIN.        | NOM. | MAX. |
| A              | 0.50        | 0.55 | 0.60 |
| b              | 0.17        | 0.22 | 0.27 |
| c              | 0.08        | 0.13 | 0.18 |
| D              | 1.50        | 1.60 | 1.70 |
| E              | 1.10        | 1.20 | 1.30 |
| e              | 0.50 BSC    |      |      |
| L              | 0.10        | 0.20 | 0.30 |
| H <sub>E</sub> | 1.50        | 1.60 | 1.70 |

**RECOMMENDED MOUNTING 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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CASE 463A  
ISSUE H

DATE 26 JAN 2021

STYLE 1:  
PIN 1. EMITTER 1  
2. BASE 1  
3. COLLECTOR 2  
4. EMITTER 2  
5. BASE 2  
6. COLLECTOR 1

STYLE 2:  
PIN 1. EMITTER 1  
2. EMITTER 2  
3. BASE 2  
4. COLLECTOR 2  
5. BASE 1  
6. COLLECTOR 1

STYLE 3:  
PIN 1. CATHODE 1  
2. CATHODE 1  
3. ANODE/ANODE 2  
4. CATHODE 2  
5. CATHODE 2  
6. ANODE/ANODE 1

STYLE 4:  
PIN 1. COLLECTOR  
2. COLLECTOR  
3. BASE  
4. EMITTER  
5. COLLECTOR  
6. COLLECTOR

STYLE 5:  
PIN 1. CATHODE  
2. CATHODE  
3. ANODE  
4. ANODE  
5. CATHODE  
6. CATHODE

STYLE 6:  
PIN 1. CATHODE  
2. ANODE  
3. CATHODE  
4. CATHODE  
5. CATHODE  
6. CATHODE

STYLE 7:  
PIN 1. CATHODE  
2. ANODE  
3. CATHODE  
4. CATHODE  
5. ANODE  
6. CATHODE

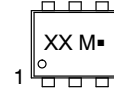
STYLE 8:  
PIN 1. DRAIN  
2. DRAIN  
3. GATE  
4. SOURCE  
5. DRAIN  
6. DRAIN

STYLE 9:  
PIN 1. SOURCE 1  
2. GATE 1  
3. DRAIN 2  
4. SOURCE 2  
5. GATE 2  
6. DRAIN 1

STYLE 10:  
PIN 1. CATHODE 1  
2. N/C  
3. CATHODE 2  
4. ANODE 2  
5. N/C  
6. ANODE 1

STYLE 11:  
PIN 1. EMITTER 2  
2. BASE 2  
3. COLLECTOR 1  
4. EMITTER 1  
5. BASE 1  
6. COLLECTOR 2

**GENERIC  
MARKING DIAGRAM\***



XX = Specific Device Code  
M = Month Code  
■ = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may not follow the Generic Marking.

|                         |                        |   |
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