NUF2030XV6, NUF2042XV6

USB Upstream Terminator with ESD Protection

These devices are designed for applications requiring **Line Termination**, **EMI Filtering** and **ESD Protection**. They are intended for use in upstream USB ports, cellular phones, wireless equipment and computer applications. These devices offer an integrated solution in a small package (SOT−563) reducing PCB space and cost.

Features:

- Provides USB Line Termination, Filtering and ESD Protection
- Single IC Offers Cost Savings
- Bidirectional EMI Filtering Prevents Noise from Entering/Leaving the System
- Compliance with IEC61000−4−2 (Level 4)
    - 8 kV (Contact)
    - 15 kV (Air)
- ESD Ratings: Machine Model = C
    - Human Body Model = 3B
- These are Pb−Free Devices

Benefits:

- SOT−563 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:

- USB Hubs
- Computer Peripherals Using USB

MAXIMUM RATINGS (T_A = 25°C)

| Rating	Symbol	Value	Unit
Steady State Power	P_D	225	mW
Maximum Junction Temperature	$T_{J(max)}$	125	°C
Operating Temperature Range	T_J	−55 to +125	°C
Storage Temperature Range	T_{stg}	−55 to +125	°C
Lead Solder Temperature (10 second duration)	T_L	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.
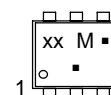
ON Semiconductor®

http://onsemi.com

CIRCUIT DESCRIPTION
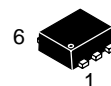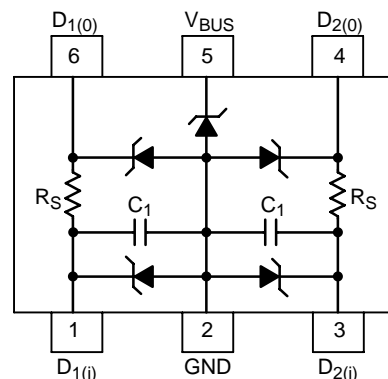
SOT−563
CASE 463A

MARKING DIAGRAM

xx   = Specific Device Code
(see table on page 5)
M   = Month Code
▪   = Pb−Free Package
(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

NUF2030XV6, NUF2042XV6

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

Device	V_{RWM} (V)	V_{BR} @ 1 mA (V)			I_R @ 3.3 V (nA)			Line Capacitance Vdc = 2.5 V f = 1 MHz (pF) (Note 1)			Series Resistor R_S (Ω)		
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	Min	Typ	Max
NUF2030XV6T1	5.25	5.6	6.8	8.0	–	10	100	–	30	36	17.6	22	26.4
NUF2042XV6T1	5.25	5.6	6.8	8.0	–	10	100	37.6	42	56.4	17.6	22	26.4

1. Measured between pins 1, 3, 4, 6 and ground with pin 5 also grounded.
2. For other resistance value (e.g. 33 Ω), please contact your local ON Semiconductor sales representative.

NUF2030XV6, NUF2042XV6

TYPICAL CHARACTERISTICS
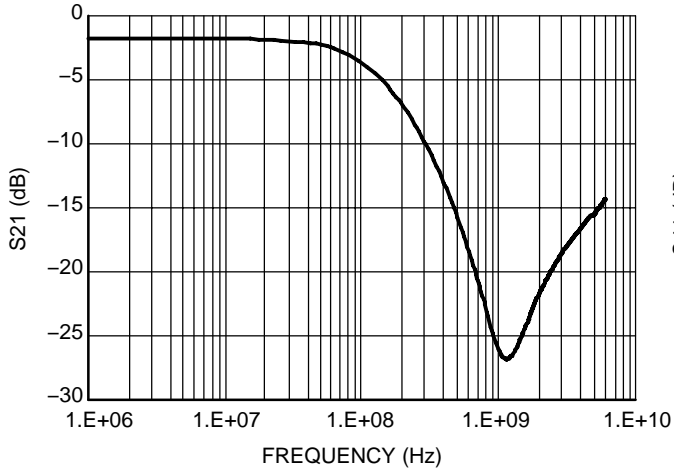
Figure 1. Insertion Loss Characteristics (NUF2030)
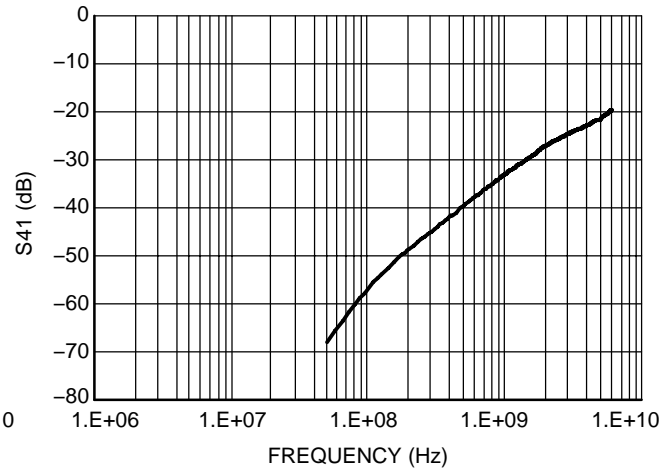
Figure 2. Analog Cross−Talk (NUF2030)
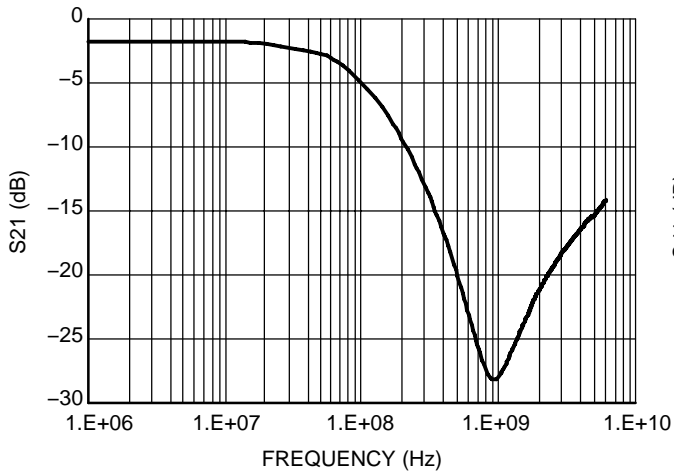
Figure 3. Insertion Loss Characteristics (NUF2042)
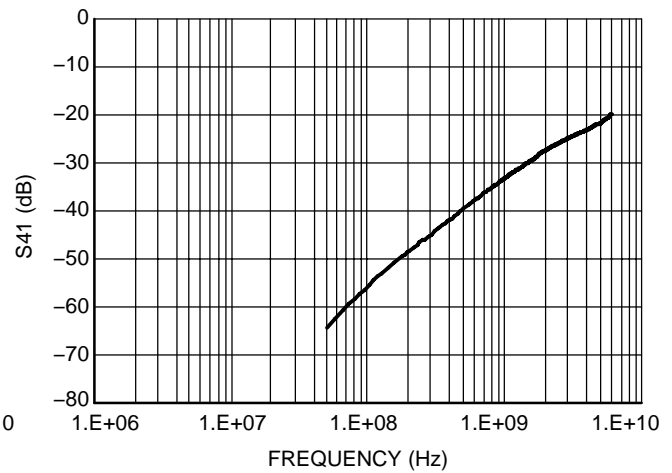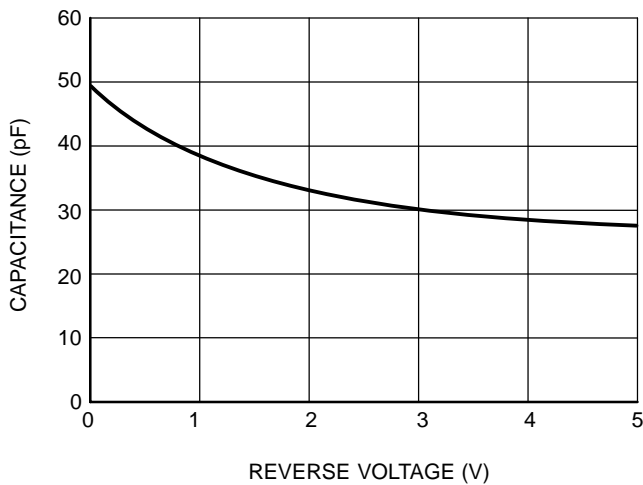
Figure 4. Analog Cross−Talk (NUF2042)

Figure 5. Typical Capacitance (NUF2030)

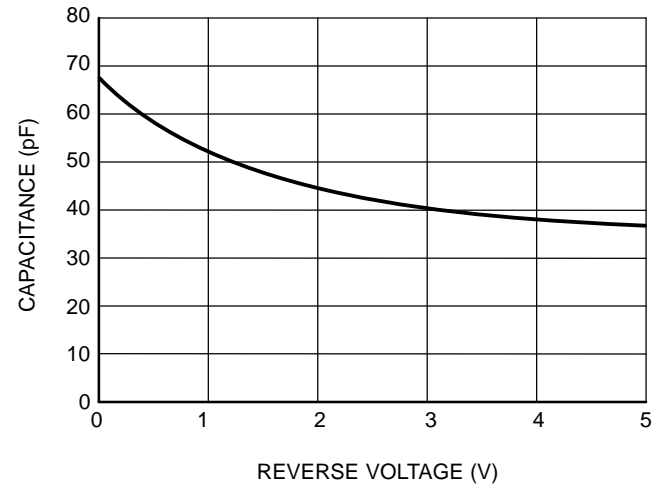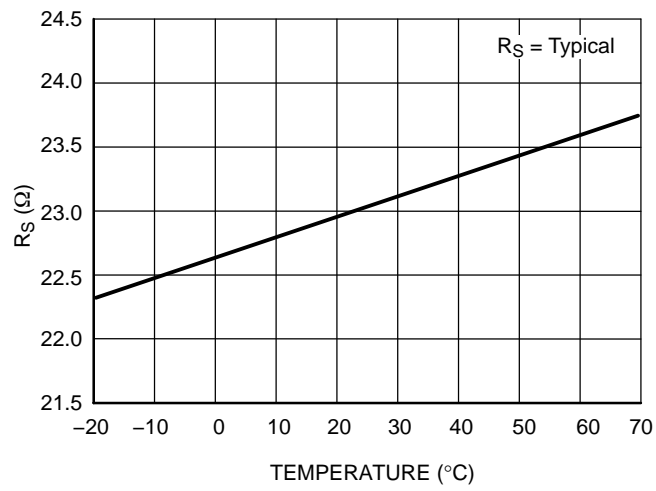**Figure 6. Typical Capacitance (NUF2042)**

**Figure 7. R_S versus Temperature
(NUF2030 and NUF2042)**

ORDERING INFORMATION

Device	Device Marking	Package	Shipping†
NUF2030XV6T1	30	SOT−563*	4000 / Tape & Reel
NUF2030XV6T1G	30	SOT−563*	4000 / Tape & Reel
NUF2042XV6T1	22	SOT−563*	4000 / Tape & Reel
NUF2042XV6T1G	22	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 Specifications Brochure, BRD8011/D.
*These packages are inherently Pb−Free.

ON Semiconductor®

6

1
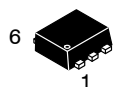
SCALE 4:1

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.

PIN ONE INDICATOR

TOP VIEW

⊕ | 0.08 (M) | A | B

SIDE VIEW

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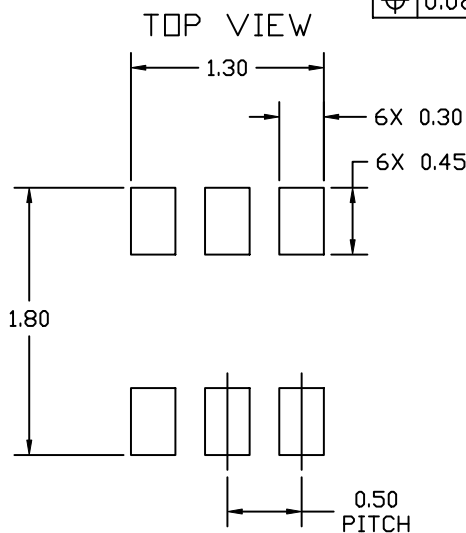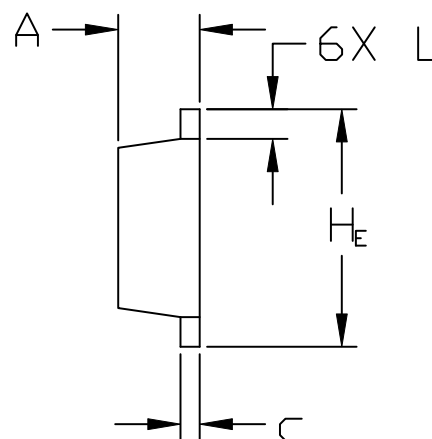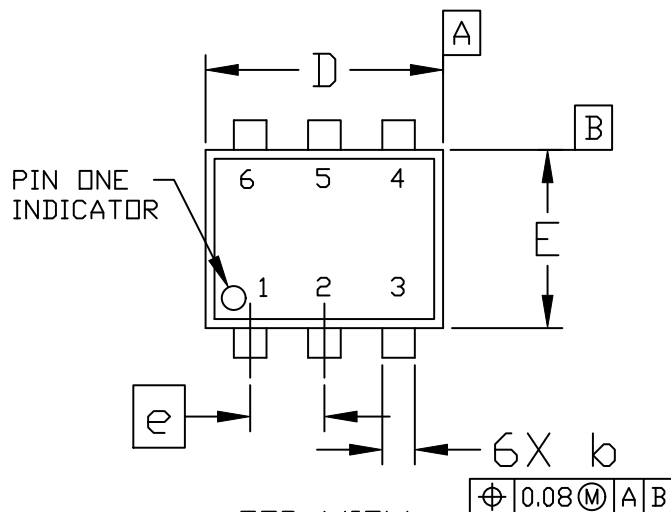
DIM	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.50	0.55	0.60
b	0.17	0.22	0.27
c	0.08	0.13	0.18
D	1.50	1.60	1.70
E	1.10	1.20	1.30
e	0.50 BSC		
L	0.10	0.20	0.30
H_E	1.50	1.60	1.70

DOCUMENT NUMBER:	98AON11126D	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	**SOT−563, 6 LEAD**		**PAGE 1 OF 2**

© Semiconductor Components Industries, LLC, 2019

www.onsemi.com

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 M∎

1
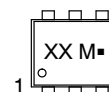
XX = Specific Device Code
M = Month Code
∎ = Pb−Free Package

*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.

DOCUMENT NUMBER:	98AON11126D	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.	
DESCRIPTION:	SOT−563, 6 LEAD		PAGE 2 OF 2

© Semiconductor Components Industries, LLC, 2019

www.onsemi.com

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Email Requests to: orderlit@onsemi.com

onsemi Website: www.onsemi.com

TECHNICAL SUPPORT
North American Technical Support:
Voice Mail: 1 800−282−9855 Toll Free USA/Canada
Phone: 011 421 33 790 2910

Europe, Middle East and Africa Technical Support:
Phone: 00421 33 790 2910
For additional information, please contact your local Sales Representative

◊