

## NB7NQ621M

# 3.3 V Dual-Mode HDMI 2.1®, DisplayPort™ 1.4a and DisplayPort™ (DP++) 12 Gbps Level Shifter/ Linear Redriver

## Product Overview

For complete documentation, see the data sheet.

The NB7NQ621M is a 3.3 V DualMode DisplayPort (DP++) quadchannel linear redriver supporting HDMI® 2.1 Fixed Rate Link (FRL) up to 12 Gbps, TMDS up to 6 Gbps, and DisplayPort v1.4a Main Link (ML) up to 8.1 Gbps (HBR3). Signal integrity degrades from PCB traces, transmission cables, and intersymbol interference (ISI). The NB7NQ621M compensates for these losses by engaging varying levels of user selectable flat gain and equalization to create the best eye opening for the outgoing data signals. The NB7NQ621M is a linear redriver and is inherently transparent to link training signals resulting in shorter system integration and software development cycles. The redriver input and output signals may be either AC or DC coupled, which can eliminate the need for additional level shifter components from the data channels. The NB7NQ621M is equipped with I2C programmability for convenient adjustments to operation mode, channel power down, flat gain, equalization, and output swing settings. It supports 5V to 3.3V level shifting for HDMI hot plug detection pins and supports DisplayPort AUX channel monitoring for lane count and power state. NB7NQ621M's supplementary graphical user interface (GUI) was developed to help system designers optimize their system for the best settings. After optimization, the GUI can generate the register values and register settings in order to simplify software development.

### Features

- 3.3 V (±5%) Power Supply
  - Quad Channel Redriver Supporting Data Rates up to 12 Gbps
  - Up to 15 dB of Equalization at 6 GHz
  - I2C Programming Supporting Fast-mode Transfer up to 400 kbps
  - Pin-strapping/GPIO for Global Settings Only
  - Active AUX Monitoring (lane count and power level)
  - Integrated Input Termination and Selectable Output Termination
  - Hot Plug Detection and 3.3 V Level Shifting
  - Operating Temperature Range: -40°C to +85°C
  - These are Pb-free Devices
- For more features, see the data sheet

### Benefits

- I2C Programming
- Level Shifting
- Integrated Termination

### Applications

- HDMI® 2.1 and DisplayPort™ v1.4a
- Gaming Consoles and Graphics Cards
- Set-top Boxes and Blu-ray Players
- Desktops, Notebooks, and Docking Stations

### End Products

- Gaming Consoles and Graphics Cards
- Desktops, Notebooks, and Docking Stations
- Set-top Boxes and Blu-ray Players

## Part Electrical Specifications

Product	Pricing (\$/Unit)	Compliance	Status	Supply Voltage (V)	Protocol	Channel Count	Data Rate (Gbps)	Lane/Ports	Programming Interfaces	Package Type
NB7NQ621MMU TWG	1.6666		Active	3.3	HDMI, DisplayPort	4	12	1	Pinstrap, I2C	X2QFN38, 4.05x4.50, 0.4P