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NB3L202KMNGEVB

NB3L202K Evaluation Board User's Manual

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EVAL BOARD USER'S MANUAL

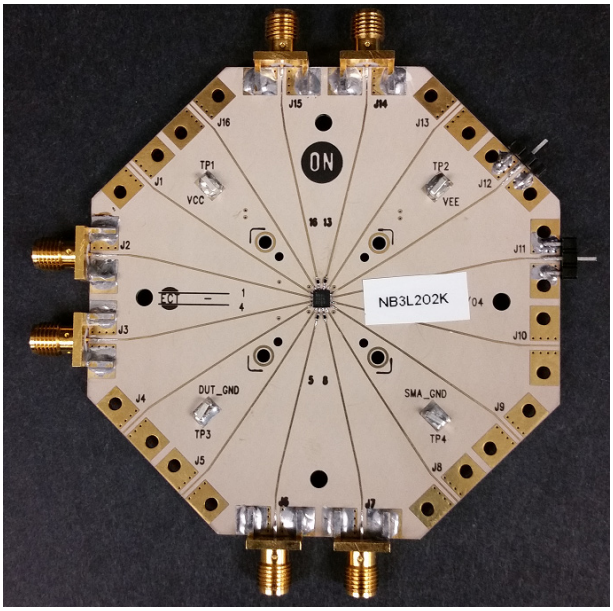
Introduction

The NB3L202K is a differential 1:2 HCSL Clock Fanout Buffer. Inputs can directly accept differential LVPECL, LVDS and HCSL signals. This evaluation board was designed to provide a flexible and convenient platform to quickly evaluate and characterize the operation of the NB3L202K.

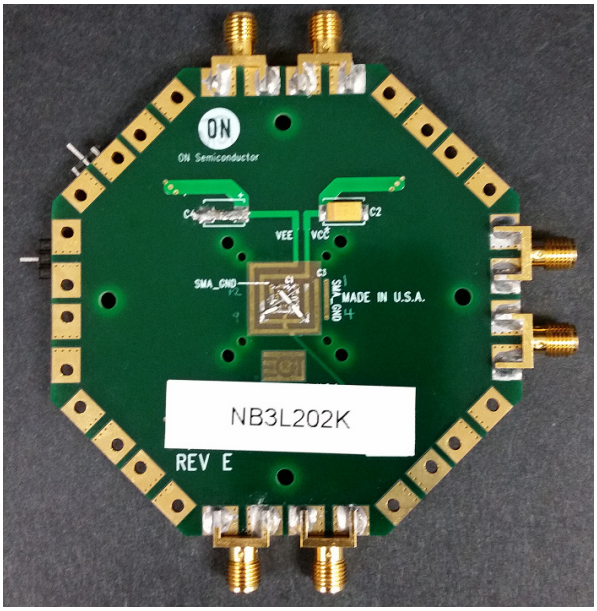
This manual should be used in conjunction with the device datasheet which contains full technical details on the device specifications and operation.

This evaluation board manual contains:

- Information on the NB3L202K Evaluation Board
- Block Diagram and Board Schematic
- Test and Measurement Setup Procedures
- Bill of Materials



Top View



Bottom View

Figure 1. NB3L202K Evaluation Board

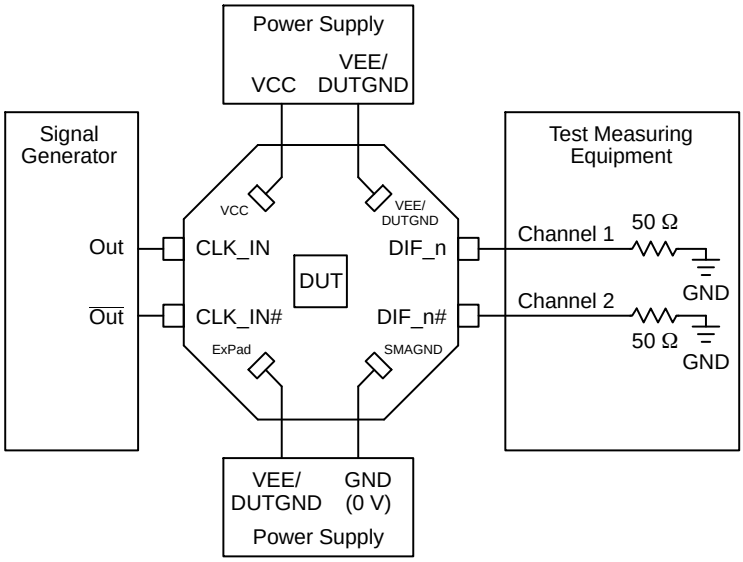


Figure 2. Basic Lab Setup

Equipment Required

- DC Power Supply
- Oscilloscope
- Signal Generator
- 50-Ω Cables

Power Supplies and Ground

On the top side of the evaluation board, there are four test points electrically connected to:

- TP1 = VCC
- TP2 = DUTGND
- TP3 = Exposed Pad
- TP4 = SMAGND = 0 V

TP1 is connected to VDD and VDDO. TP2, TP3 and TP4 are connected to GND.

Table 1. NB3L202K, HCSL OUTPUTS POWER SUPPLY CONFIGURATION

Device Pin Power Supply Connector	Power Supply
VDD	VCC = +3.3 V
DUTGND & SMAGND	0 V

Single Power Supply Connections

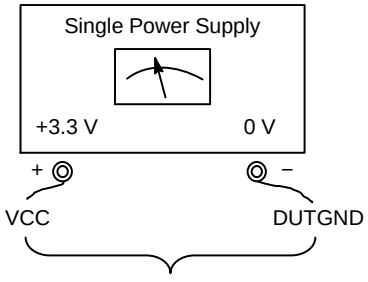


Figure 3. Single Power Supply Configuration

HCSL Output Loading/Termination

HCSL outputs are typically loaded and terminated with a series resistor (R_{Series}) = 33-Ω and 50-Ω to ground. This can be easily accomplished by connecting the HCSL outputs to the 50-Ω internal impedance in the oscilloscope. There are R_{Series} 33-Ω termination resistors installed for each HCSL output.

Output Enables − OE#

The OE# pins default Low when left open and will enable the outputs. To disable the outputs, connect the OE# pin to VDD.

CLK_IN & CLK_IN#

The CLK_IN and CLK_IN# inputs can be driven by a signal generator through the SMA connectors provided. To terminate the signal generator, 50-Ω resistors to GND are installed on the board.

Quick Start Lab Set-Up User's Guide

Test and Measurement Procedures

1. Connect TP1 (VCC) to the positive power supply.
2. Connect TP2 (DUTGND), TP3 (Exposed Pad) or TP4 (SMAGND) to GND power supply; they are all connected together.
3. Connect the outputs of the signal generator to the CLK_IN and CLK_IN# inputs with 50-Ω cables. There are 50-Ω resistors installed and connected to GND to terminate the outputs of the signal generator.
4. Connect the DIF_n and DIF_n# outputs to the appropriate 50-Ω oscilloscope head/channel. The board does not have 50-Ω output termination, thus use of the 50-Ω scope head is required. As an option, 50-Ω resistors can be carefully installed on each output on the board, and then use of a high impedance probe is required to measure outputs.

Power-Up Sequence

1. Turn on DUT power supply.
2. Setup the signal generator output levels and frequency for the CLK_IN & CLK_IN# inputs. For differential HCSL inputs, VIL = 0 V and VIH = 700 mV.
3. Monitor DIF_n & DIF_n# outputs on the oscilloscope.

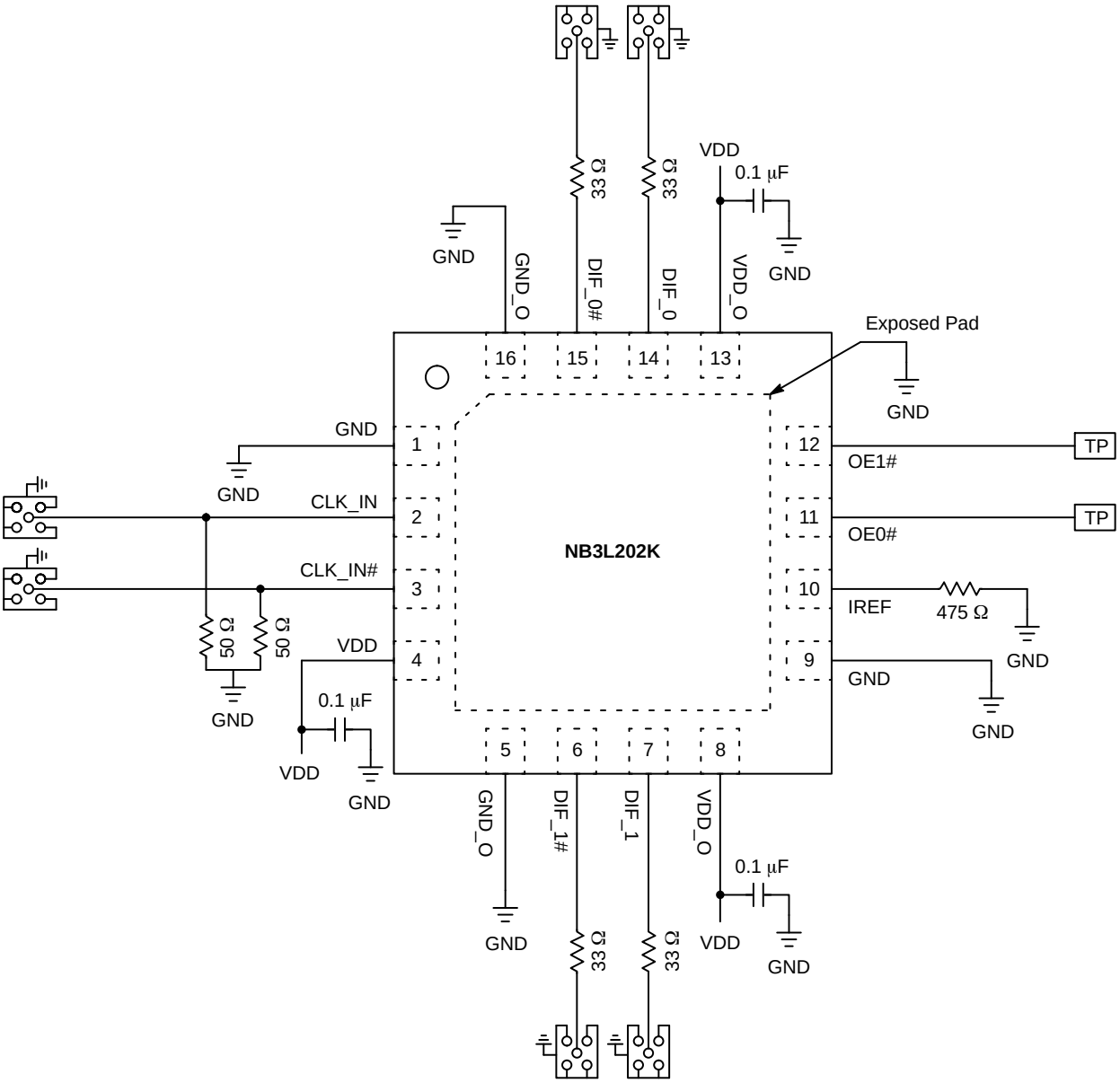
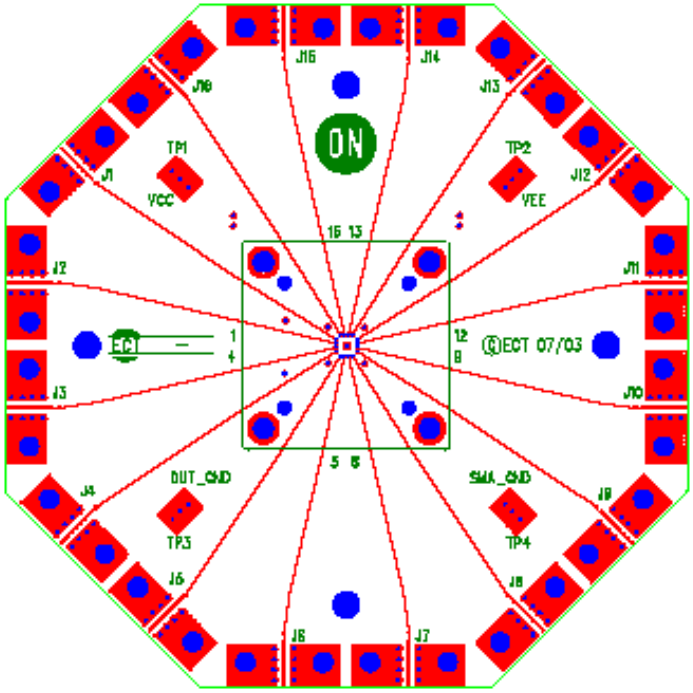
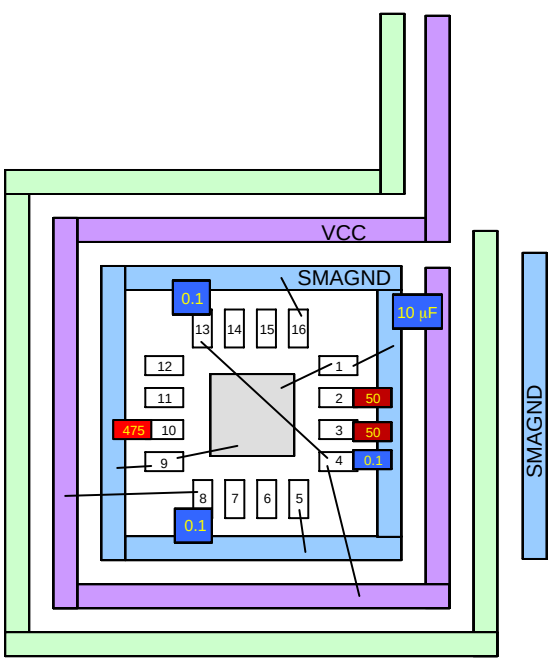


Figure 4. NB3L202KGEVB Schematic



Top View

Figure 5. NB3L202KGEVB On-board Resistor Locations



Bottom View

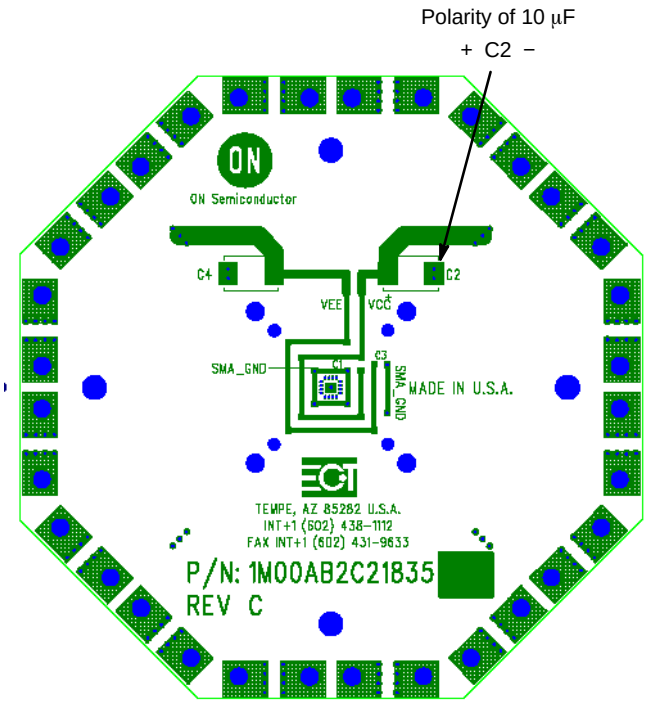


Figure 6. Configuration for NB3L202K

Table 2. BILL OF MATERIALS

Components	Qty.	Description	Manufacturer	Part Number
SMA Connector	6	SMA Connector, Side Launch, Gold Plated	Johnson	142−0701−801
Surface Mount Test Points	4	SMT Miniature Test Point	Keystone*	5015
Chip Capacitor	3	0.1 μF ±10% 0603	AVX Corporation*	0402ZD104KAT2A Digi-Key 478−1129−1−ND
Chip Capacitor	1	10 μF ±10%	AVX Corporation*	
Chip Resistor	2	50-Ω ±1% 0603 Precision Thick Film Chip Resistor	Vishay	FC0603−50BFTR−ND
Chip Resistor	4	33-Ω 0402 Chip Resistor	Panasonic	
Chip Resistor	1	475-Ω 0402 Precision Thick Film Chip Resistor	Vishay	
Evaluation Board	1	QFN 16 Evaluation Board	ON Semiconductor	ECLQFN16EVB
Device Under Test	1	DUT	ON Semiconductor	NB3L202KMNG

*Components are available through most distributors, i.e. www.newark.com, www.digikey.com.

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