

PRL-431AN-SMA

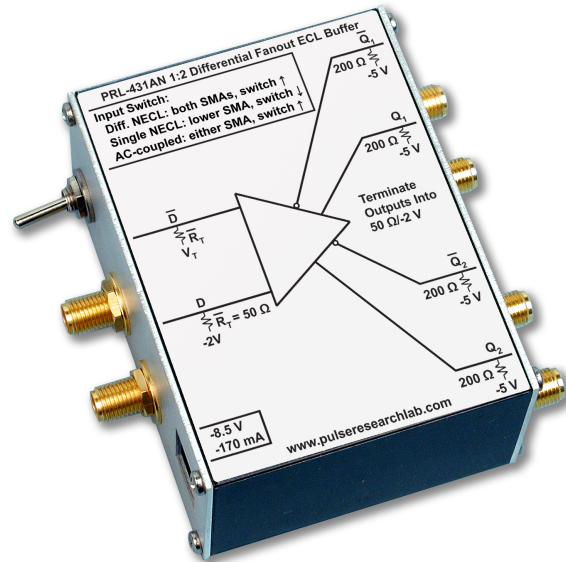
1:2 DIFFERENTIAL FANOUT NECL BUFFER

APPLICATIONS

- Fanout Single-ended Input signals into two pairs of Differential signals for driving long lines
- Ideal for receiving signals from long lines
- Fanout GHz Sine Wave signals into two pairs of Differential NECL signals
- An Essential Lab Tool for Working with NECL Circuits

FEATURES

- 4 GHz Typical f_{MAX}
- Single-ended or Differential Inputs
- Internal $50 \Omega/V_{TT}$ Input Terminations also accept AC coupled Signals
- Complementary Outputs drive 50Ω loads terminated to V_{TT} , AC coupled or floating 50Ω loads
- DC Coupled I/Os Compatible with ECLinPS or 10KH Devices
- SMA I/O Connectors
- Ready-to-Use 1.3 x 2.9 x 2.2-in. Module includes a $\pm 8.5 \text{ V}/+17 \text{ V}$ AC/DC Adapter



PRL-431AN-SMA NECL Fanout Buffer

DESCRIPTION

The PRL-431AN-SMA is a 1:2 Differential Fan Out NECL Buffer module. It is a Basic Lab Tool for applications where it is necessary to drive two different differential loads from a single single-ended or differential NECL source. It can also be used for converting GHz sine wave signals into differential NECL signals.

A switch selects either single-ended or differential inputs, as shown in Fig. 1. In the differential input mode, both inputs D and \bar{D} are terminated internally into $50 \Omega/V_{TT}$, where V_{TT} is -2 V for NECL, and, therefore, either one or both inputs can accept AC coupled signals as well. In the single input mode, signal should be connected to the D input only. The \bar{D} input is switched internally to V_{BB} , nominally -1.3 V for NECL, and termination resistor \bar{R}_T for the \bar{D} input is changed to 62Ω .

Complementary outputs are designed for driving 50Ω loads terminated into V_{TT} , AC coupled or floating 50Ω loads. Any single output from the PRL-431AN-SMA can drive a single-ended NECL input, but the complementary output should also be terminated into $50 \Omega/V_{TT}$ or AC coupled into $50 \Omega/\text{GND}$.

PRL-431AN-SMA is supplied with SMA I/O connectors. It is housed in a 1.3 x 2.9 x 2.2-in. extruded aluminum enclosure and supplied with a $\pm 8.5 \text{ V}/+17 \text{ V}$ AC/DC Adapter, although only the -8.5 V supply is used.

If mounting is desired, a pair of 35001420 mounting brackets can accommodate two PRL modules of the same length. Up to 4 PRL modules can also share a single PRL-760C AC/DC adapter, subject to current requirements. Additional modules can share a single adapter using the PRL-730 or PRL-736 voltage distribution modules. Please see the Accessories Section for more detail.

SPECIFICATIONS* ($0^{\circ}\text{C} \leq T_A \leq 35^{\circ}\text{C}$)

SYMBOL	PARAMETER	PRL-431AN-SMA			UNIT	Comments
		Min	Typ	Max		
R_{in}	Input Resistance	49.5	50.5	50.5	Ω	
V_{TT}	D Input Termination Voltage (fixed)	-2.2	-2.0	-1.8	V	
V_{T1}	\bar{D} Input Termination Voltage (variable)	-1.17	-1.30	-1.43	V	Switch Down
V_{T2}	\bar{D} Input Termination Voltage (variable)	-2.20	-2.00	-1.80	V	Switch Up
V_{IL}	Input Lo Voltage	-1.95	-1.60	-1.48	V	
V_{IH}	Input Hi Voltage	-1.13	-0.90	-0.81	V	
V_{OL}	Output Lo Voltage	-1.95	-1.70	-1.48	V	
V_{OH}	Output Hi Voltage	-1.13	-0.90	-0.81	V	
I_{DC}	DC Input Current		-165	-180	mA	
V_{DC}	DC Input Voltage	-7.5	-8.5	-12.0	V	
V_{AC}	AC/DC Adapter Input Voltage	103	115	127	V	
T_{PLH}	Propagation Delay to output \uparrow		500	950	ps	
T_{PHL}	Propagation Delay to output \downarrow		500	950	ps	
t_r / t_f	Rise/Fall Times (20%-80%)		250		ps	Note (1)
t_{SKEW}	Skew between Q & \bar{Q} outputs		20	75	ps	
f_{MAX}	Max clock frequency	3.5	4.0		GHz	Note (2)
V_{CMR}	Common Mode Range	-2.7		-0.4	V	
	Size				in.	
	Weight		5		Oz	w/o power supply
	Shipping weight		4		lb	w/power supply

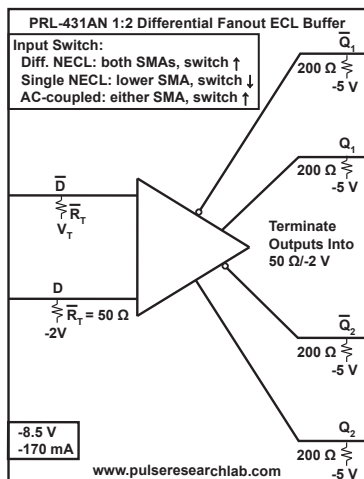


Fig. 1, PRL-431AN Block Diagram

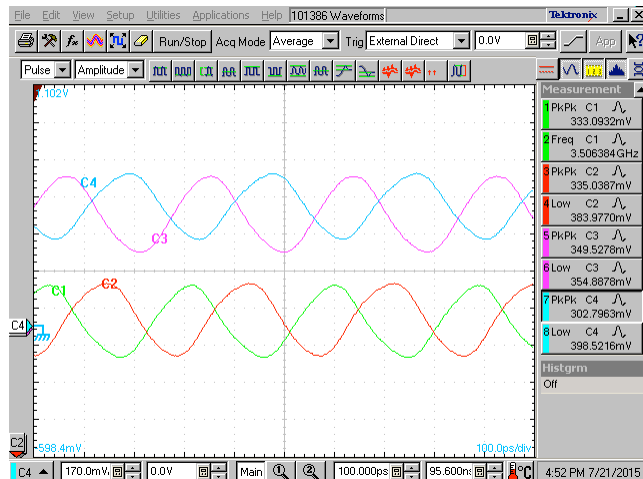


Fig. 2, PRL-431AN at 3.5 GHz Clock Rate

Notes:

(1). The output rise and fall times are measured with both the Q and \bar{Q} outputs terminated into $50 \Omega / V_{TT}$. An unused complementary output must be either terminated into $50 \Omega / V_{TT}$ or AC coupled into a 50Ω load. Otherwise, output waveform distortion and rise time degradation will occur. Use the PRL-550NQ4X, four channel NECL Terminator, for the $50 \Omega / V_{TT}$ termination and for connection of NECL signals to 50Ω input oscilloscopes.

(2). f_{MAX} is measured by inputting either a sinewave or a pair of complementary signal using the differential input mode (switch up). The complementary outputs are divided by eight using the PRL-255N in cascade, and then the outputs of the PRL-255N are measured using the PRL-550NQ4X, four channel NECL Terminator, connected to a sampling oscilloscope.

*All measurements are made with outputs terminated into $50 \Omega / V_{TT}$, using the PRL-550NQ4X, four-channel NECL Terminator, connected to a 50Ω input sampling oscilloscope.



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