

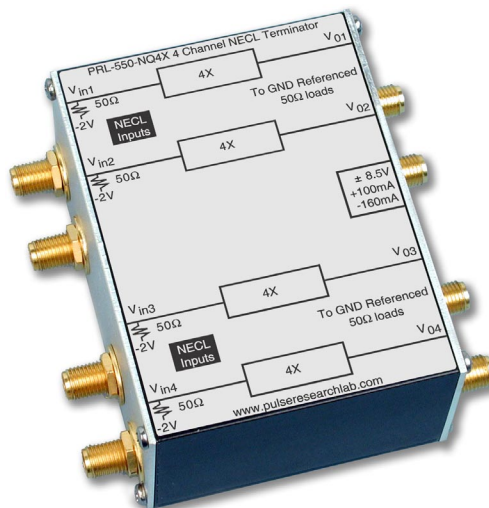
PRL-550NQ4X/PRL-550PQ4X FOUR CHANNEL NECL/PECL TERMINATORS

APPLICATIONS

- Allow direct connection of NECL/PECL signals to 50 Ω input instruments
- Provide standard 50 Ω/V_{TT} terminations for NECL/PECL signals and Ground Referenced Outputs
- Testing and monitoring GHz NECL/PECL signals in digital and wireless communication applications

FEATURES

- 43 ps Typical Rise Time (8 GHz bandwidth)
- 50 Ω /-2V Input Termination for NECL and 50 Ω /3V for PECL
- Ground Referenced Outputs protect sensitive instruments
- SMA I/O connectors
- 4X attenuation
- Self-contained 1.3 x 2.9 x 2.2-in. unit includes a $\pm 8.5V$ AC/DC Adapter



PRL-550NQ4X

INTRODUCTION

NECL/PECL logic levels are offset from ground. Without proper level shifting, these logic signals can not be connected to ground referenced 50 Ω input instruments, such as sampling 'scopes, network analyzers, scanners and counters, etc. Otherwise, either the NECL/PECL equipment outputs or the measurement instrument inputs may be made inoperative or damaged.

When driving a length of 50 Ω coaxial cable, an NECL/PECL output must be terminated into a 50 Ω load that is connected to a terminating voltage $V_{TT} = V_{CC} - 2V$. For NECL circuits operating with a supply voltage of either -5.2V or -4.5V, V_{CC} is 0 V, and V_{TT} is equal to -2V. For PECL circuits, where the supply voltage V_{CC} is +5V, V_{TT} is +3V.

NECL/PECL Terminators are level translators which convert NECL/PECL signals into signals that can be connected to ground referenced 50 Ω input instruments and, at the same time, provide standard 50 Ω/V_{TT} terminations required by NECL/PECL signals.

DESCRIPTION

The PRL-550NQ4X and PRL-550PQ4X are, respectively, Four Channel NECL and PECL Terminators. The PRL-550NQ4X is designed to interface with NECL circuits operating with a -5.2V or -4.5V supply. Each input has an equivalent 50 Ω resistor terminated to a voltage $V_{TT} = -2V$. The PRL-550PQ4X is designed to interface with PECL circuits operating with a +5V supply. Each input has an equivalent 50 Ω resistor terminated to a voltage $V_{TT} = +3V$. The outputs of these Terminators are designed for direct connection to ground referenced 50 Ω input instruments as shown in Figs. 1 and 2, respectively. These near ground level output signals* protect sensitive instruments and enhance measurement accuracy when these instruments are used.

Once an NECL or PECL signal is translated through a proper Terminator, it can be routed through 50 Ω scanners and other high frequency measuring instruments for processing. Each PRL-550NQ4X and PRL-550PQ4X Terminator is housed in an attractive 1.3 x 2.9 x 2.2-in. extruded aluminum enclosure and is supplied with a $\pm 8.5V$ AC/DC Adapter.

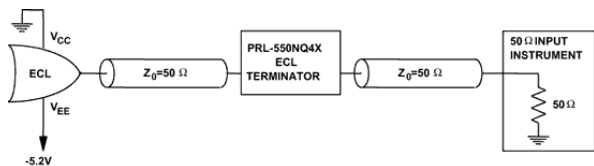


Fig. 1 NECL driving a 50 Ω input instrument using the PRL-550NQ4X

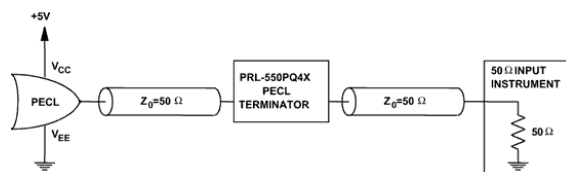
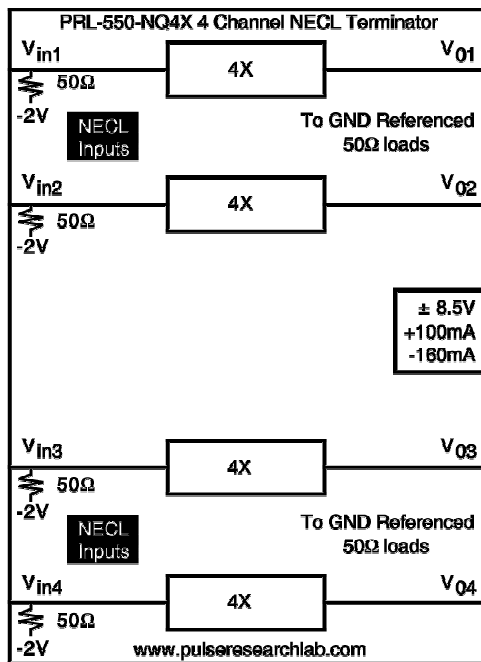


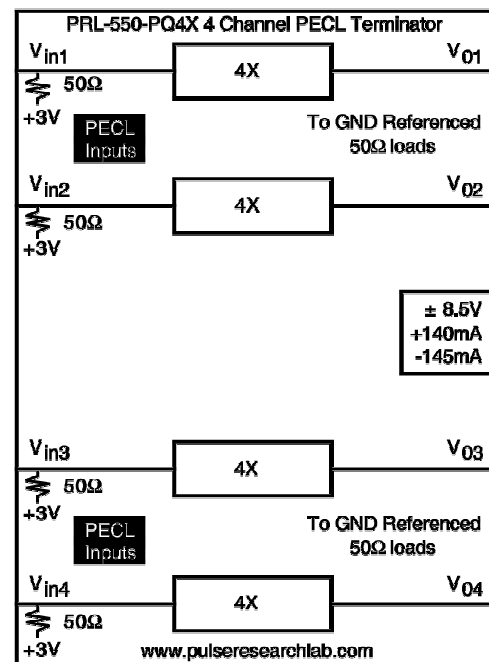
Fig. 2 PECL driving a 50 Ω input instrument using the PRL-550PQ4X

SPECIFICATIONS (0° C ≤ T_A ≤ 35°C)

Symbol	Parameter	PRL-550NQ4X			PRL-550PQ4X			Unit
		Min	Typ	Max	Min	Typ	Max	
R _{in}	Input Resistance	49.5	50	50.5	49.5	50	50.5	Ω
V _{TT}	Input Termination Voltage	-2.2	-2	-1.8	2.7	3	3.3	V
V _{OS}	Output Offset Voltage*	-20	0	20	-20	0	20	mV
	Signal Attenuation	11.8	12 (4X)	12.2	11.8	12 (4X)	12.2	dB
I _{DC}	DC Input Current		+60, -125	+85, -150		+80, -125	+120, -150	mA
V _{DC}	DC Input Voltage	±7.5	±8.5	±12	±7.5	±8.5	±12	V
V _{AC}	AC/DC Adaptor Input Voltage	103	115	127	103	115	127	V
t _{PLH}	Propagation Delay to output ↑		475	575		475	575	ps
t _{PHL}	Propagation Delay to output ↓		475	575		475	575	ps
t _r /t _f	Rise/Fall Times		43	61		43	61	ps
BW	Equivalent bandwidth	5.7	8		5.7	8		GHz
t _{SKW}	Skew between outputs		20	50		20	50	ps
	Cross Talk ↔ chs @ 1.4 GHz	34	40		34	40		dB
	Size	1.3 x 2.9 x 2.2			1.3 x 2.9 x 2.2			in.
	Weight	5			5			Oz



PRL-550NQ4X Block Diagram



PRL-550PQ4X Block Diagram

*The output offset and input termination voltages are factory set to 0 V and V_{TT} = V_{CC}-2 V, respectively, before the input is connected to an NECL/PECL device. When connected to an NECL/PECL device, the output low level will be slightly offset from ground depending on the low level output voltage of the connected device, which is typically V_{CC}-1.8 V. When its input is connected to an NECL or PECL device, the Terminator output Low level is typically +50 mV.