

PRL-350TTL DUAL CHANNEL COMPARATOR, TTL OUTPUT

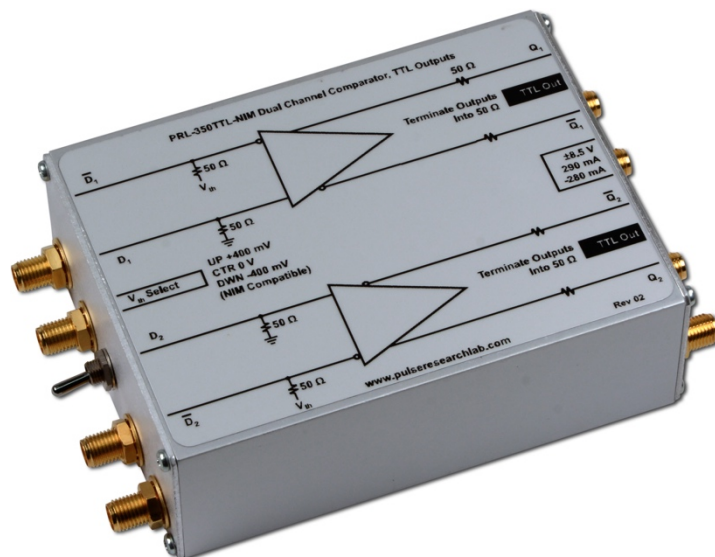
PRL-350TTL-NIM DUAL CHANNEL NIM-INPUT COMPARATOR, TTL OUTPUT

APPLICATIONS

- Window Comparators
- High Speed Timing
- Line Receivers
- Threshold Detection
- Peak Detection
- NIM translation

FEATURES

- $f_{MAX} > 250$ MHz
- 1.1 ns Typical t_r for PRL-350TTL
- ± 50 mV, 0 V or -50 mV Preset Input Threshold Voltage
- ± 400 mV, 0V or -400 mV for models with $-NIM$ suffix
- -2.0 V to $+3.0$ V Input Common Mode Range
- 10 mV_{P-P} Minimum Input @ 150 MHz
- DC Coupled 50 Ω Inputs
- Complementary TTL Outputs
- SMA I/O Connectors
- Self-contained 1.3 x 2.9 x 3.9-in. module includes AC/DC Adapter



PRL-350TTL-NIM
Dual Channel Comparator, TTL Outputs

DESCRIPTION

The PRL-350TTL and PRL-350TTL-NIM are ready-to-use, high-speed dual-channel comparator modules. Both models have a typical maximum clock frequency in excess of 250 MHz and have complementary TTL outputs designed for driving 50 Ω transmission lines with or without 50 Ω load terminations.

Both models have DC coupled 50 Ω inputs and outputs. For the standard PRL-350TTL, the input threshold voltage, V_{TH} , can be selected from a set of preset values of -50 mV, 0 V or $+50$ mV using a common three-position switch. For the PRL-350TTL-NIM, V_{TH} can be selected from -400 mV, 0 V, or $+400$ mV. The -400 mV threshold setting is intended for NIM-compatible signals. The 0V threshold setting is intended for signals with zero crossings, such as a sinewaves or AC-coupled square waves, etc. The input threshold voltage can also be varied independently in each channel by applying an external DC bias voltage or shunt resistor to the $\bar{D}$ input.

- If the external DC bias has a sufficiently low output impedance, it will over-ride the internally-generated V_{TH} , and the toggle switch setting is a don't-care.
- For an external shunt resistor, V_{TH} will be the result of the resistor-divider network formed by the selected internal V_{TH} , the internal 50 Ohm termination, and the external shunt resistor. The external shunt resistor should be placed as close as possible to the $\bar{D}$ input, e.g. by using the male end of the PRL-PINET-SMF or similar device.

The input Common Mode Range, V_{CMR} , is -2.0 V to $+3.0$ V.

These high-speed comparators are Mini Modular Instruments™ that can be used as peak detectors, threshold detectors, sinewave-to-square wave converters, window comparators or differential line receivers, etc. Typical minimum input voltage of 10 mV_{P-P} into 50 Ω is required for up to 150 MHz for the TTL output. It is recommended that the non-driven input be terminated into 50 Ω when the input frequency is near f_{MAX} and its amplitude is less than 20 mV_{P-P}.

Each unit is supplied with a ± 8.5 V AC/DC Adapter and housed in a 1.3 x 2.9 x 3.9-in. extruded aluminum enclosure.



PRL-350TTL_TTL-NIM.pdf
PRL-350TTL Series Datasheet
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1234 Francisco Street, Torrance, CA 90502
Tel: 310-515-5330 Fax: 310-515-0068
Email: sales@pulseresearchlab.com
www.pulseresearchlab.com

SPECIFICATIONS (0° C ≤ T_A ≤ 35° C)

Unless otherwise specified, dynamic measurements are made with all outputs terminated into 50 Ω/V_{TT}, where V_{TT} = 0 V for TTL outputs.

SYMBOL	PARAMETER	PRL-350TTL			PRL-350TTL-NIM			UNIT
		Min	Typ	Max	Min	Typ	Max	
R _{in}	Input Resistance	49.5	50.0	50.5	49.5	50.0	50.5	Ω
R _{out}	Output Resistance	49.5	50.0	50.5	49.5	50.0	50.5	Ω
V _{TH+}	Preset positive threshold voltage	45	0	55	396	400	404	mV
V _{TH-}	Preset negative threshold voltage	-55	-50	-45	-404	-400	-396	mV
V _{TH0}	Preset zero threshold voltage ⁽¹⁾	-2	0	2	-2	0	2	mV
V _{OL}	Output Low Level	-0.5	0	0.5	-0.5	0	0.5	V
V _{OH}	Output High Level	2.0	2.2	2.4	2.0	2.2	2.4	V
I _{DC1}	DC Input Current, +8.5 VDC		300	325		300	325	mA
I _{DC2}	DC Input Current, -8.5 VDC		-285	-300		-285	-300	mA
V _{DC}	DC Input Voltage	±7.5	±8.5	±12	±7.5	±8.5	±12	V
V _{AC}	AC/DC Adapter Input Voltage	103	115	127	103	115	127	V
t _{PLH}	Propagation Delay to output ↑		2			2		ns
t _{PHL}	Propagation Delay to output ↓		2			2		ns
t _r /t _f	Rise/Fall Times ⁽²⁾		1100	1250		1100	1250	ps
t _{SKEW}	Skew between any 2 outputs		200	400		200	400	ps
V _{IN I**}	Minimum Input Voltage @ 150MHz ⁽³⁾	20	10		20	10		mV _{PP}
V _{IN II**}	Minimum Input Voltage @ 250MHz ⁽³⁾	40	20		40	20		mV _{PP}
V _{CM}	Input Common Mode Range	-2.0		+3.0	-2.0		+3.0	V
f _{MAX}	Max Clock Frequency ⁽⁴⁾	250	300		250	300		MHz
	Size	1.3 x 2.9 x 3.9			1.3 x 2.9 x 3.9			in.
	Weight	7			7			Oz

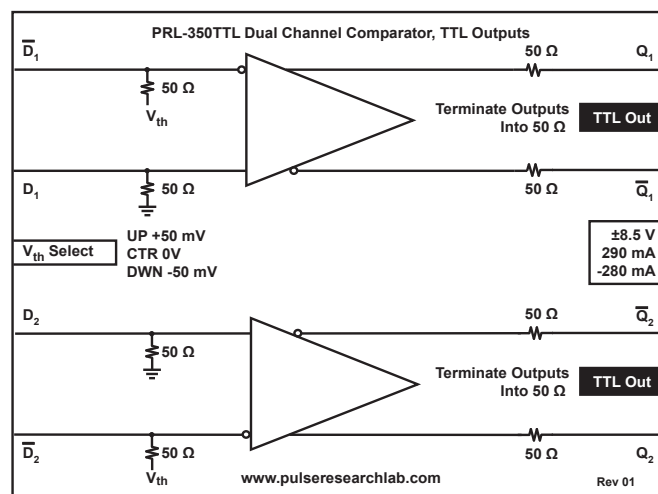


Fig. 1A PRL-350TTL Block Diagram

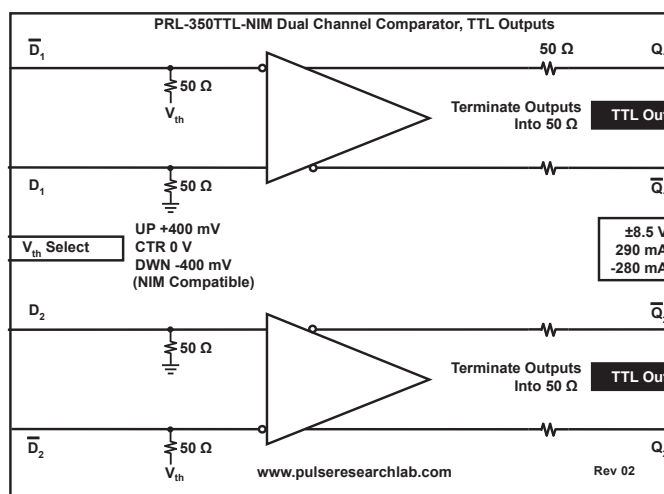


Fig. 1B PRL-350TTL-NIM Block Diagram

(1) If the switch is set to the center position (0 V threshold) a non-driven channel may oscillate and induce jitter in the driven channel. Connect any unused output to any input to stop the oscillation.

(2) 10%-90% for TTL outputs.

For the PRL-350TTL, very slight output waveform distortion and rise time degradation will occur when an unused complementary output is not terminated. For optimum performance, however, all outputs should be terminated.

(3) In order to reduce jitter near f_{MAX}, terminate the non-driven input into 50 Ω when the input voltage is less than 20 mV_{PP}.