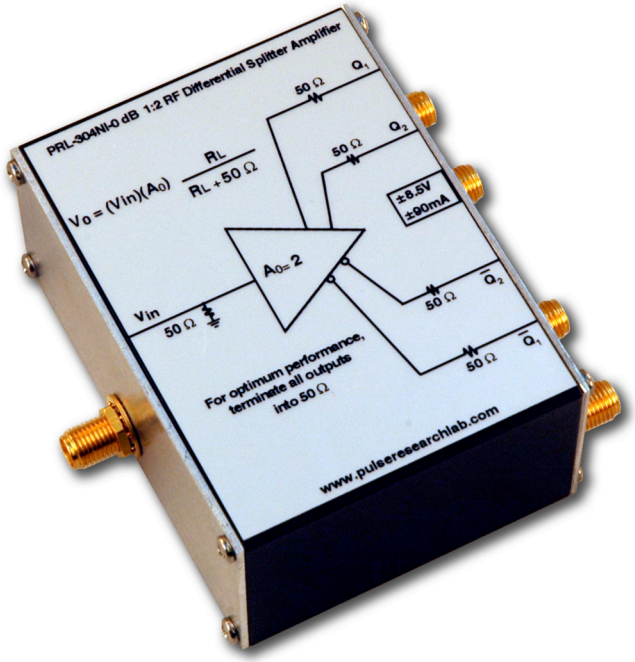
PRL-304NI-0dB, 1:2 Differential RF Splitter Amplifier

APPLICATIONS

- 1:2 RF Signal Fanout
- Transmission Line Driver
- Single-Ended to Differential Signal Conversion
- RF Receiver
- Pulse Amplifier
- General Purpose Wideband Amplifier

FEATURES

- Ready to Use Amplifier with Two Identical Pairs of Differential Outputs
- 0.1 dB Differential Gain Match Typical @ 10 MHz
- Small Signal 3 dB BW to 430 MHz
- Clean Pulse Response
- 0 dB gain, $V_O = V_{IN}$ (R_L = 50 Ω), well suited for cascading
- ±1.25 V, 2.5 V_{PP}, Maximum Outputs, R_L = 50 Ω
- DC Coupled 50 Ω I/Os
- ±90 mA Supply Current Maximum
- 1.3H x 2.8W x 2.2L-in. Module includes ±8.5V AC/DC Adapter



PRL-304NI, 1:2 RF Splitter Amplifier

DESCRIPTION

The PRL-304NI-0dB is a 0 dB gain, DC-coupled 1:2 differential output RF splitter amplifier. It converts a single-ended input into two pairs of identical differential outputs. The gain match between any pair of differential output is 0.1 dB typical @ 10 MHz, and the small signal bandwidth is 430 MHz typical. Maximum output is ±1.25 V, or 2.5 V_{PP} into 50 Ω. Each output is 50 Ω back-terminated, and the input has a 50 Ω-to-ground termination. The 0 dB gain, $V_O = V_{IN}$ (R_L = 50 Ω), allows multiple amplifiers to be cascaded for signal distribution applications.

The PRL-304NI has been optimized both for pulse response and for CW response, so that output overshoots and ringing for a fast pulse input are much smaller compared to those from amplifiers designed mainly for CW applications. With a 50 Ω back termination at each output, the amplifier can drive long transmission lines with or without load terminations**.** For optimum output response all outputs should be terminated into 50 Ω.

The PRL-304NI is housed in a 1.3H x 2.9W x 2.2L-in. aluminum enclosure and is supplied with a ±8.5 V AC/DC adapter. Besides the I/O and power connections, no other set up or connection is required. The PRL-304NI is a part of the PRL family of **M**ini **M**odular **I**nstruments (MMIs).

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SPECIFICATIONS (0^0 C ≤ T_A ≤ 35^0C)

Unless otherwise specified, dynamic measurements are made with all outputs terminated into 50Ω.

SYMBOL	PARAMETER	Min	Typ	Max	UNIT
R_{in}	Input Resistance	49.5	50	50.5	Ω
R_{out}	Output Resistance	49.5	50	50.5	Ω
A_O	Open Circuit Voltage Gain, R_L> 1MΩ		2		
A_L	Loaded Voltage Gain, R_L=50 Ω		1		
AdB	Voltage Gain in dB		0		dB
DA	Diff. Gain Match @ 10 MHz, 1 V_{PP} Sinewave Input		0.1	0.2	dB
I_{DC}	DC Input Current (NL) DC Input Current (V_O±1.25 V into 50 Ω)		±30 ±82	±35 ±90	mA
V_{DC}	DC Input Voltage	±7.5	±8.5	±12	V
V_{AC}	AC/DC Adapter Input Voltage	103	115	127	V
t_{PLH}	Propagation Delay to output ↑		1.35		ns
t_{PHL}	Propagation Delay to output ↓		1.35		ns
t_r/t_f (10%-90%)	Small Signal Rise/Fall Times (V_O = ±200 mV)		800	1000	ps
BW	Small Signal 3 dB Bandwidth	350	437		MHz
t_r/t_f (10%-90%)	Large Signal Rise/Fall Times (V_O = ±1.25 V)		1.4	1.6	ns
BW	Large Signal 3 dB Bandwidth	225	250		MHz
t_{SKEW}	Skew between outputs		200	350	ps
	Size	1.3 x 2.9 x 2.2			in.
	Weight	4			Oz

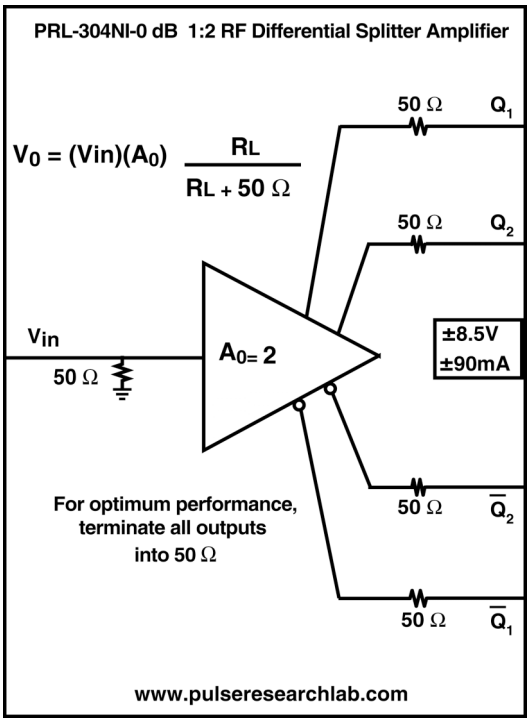

Fig. 1, PRL-304NI-0dB
1:2 Differential Splitter Amplifier

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