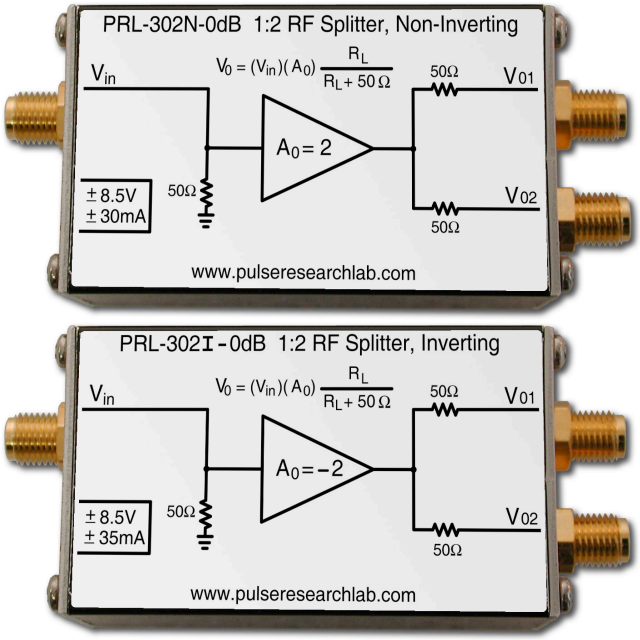
PRL-302N-0dB and PRL-302I-0dB, 1:2 RF Splitter Amplifiers

APPLICATIONS

- 1:2 RF signal Fanout
- Transmission Line Drivers
- Single-Ended to Differential Signal Conversion (6 dB passive power divider recommended)
- RF Receivers
- Pulse Amplifiers
- General Purpose Wideband Amplifiers

FEATURES

- Ready to Use Amplifiers each with Two Identical Outputs
- Small Signal 3 dB BW to 500 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_{P-P}, Maximum Outputs, R_L = 50 Ω
- DC Coupled 50 Ω I/Os
- ±35 mA Supply Current Maximum
- 1.0 x 1.3 x 2.2-in. Module includes ±8.5 V AC/DC adapter



PRL-302N-0dB and PRL-302I-0dB
1:2 RF Fanout Amplifiers

DESCRIPTION

The PRL-302N-0dB and PRL-302I-0dB are, respectively, DC coupled non-inverting and inverting, 0 dB 1:2 RF splitter amplifiers. Each amplifier has two identical 50 Ω back-terminated outputs and a 50 Ω-to-ground terminated input. The 0 db gain, $V_O = V_{IN}$ (R_L = 50 Ω), allows multiple amplifiers to be cascaded for signal distribution applications. One pair of these amplifiers (one inverting, one non-inverting) can produce two pairs of complementary RF signals (180° out of phase) when driven by a 6 dB passive power divider (assuming the input signal is already AC coupled).

These splitter amplifiers have been optimized for pulse response as well as for CW response, so that output overshoots and ringing for a fast pulse input are much smaller than those from amplifiers designed mainly for CW applications. With a 50 Ω back termination at each output, these amplifiers can drive long transmission lines with or without load terminations**.** For optimum output response both outputs should be terminated into 50 Ω.

Each amplifier is housed in a 1.0 x 1.3 x 2.2-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. These amplifiers are 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 50 Ω.
V_O = ±0.2 V (0.4 V_{P-P}) for small signal response, and V_O = ±1.25 V (2.5 V_{P-P}) for large signal response.

		PRL-302N-0dB			PRL-302I-0dB			
SYMBOL	**PARAMETER**	**Min**	**Typ**	**Max**	**Min**	**Typ**	**Max**	**UNIT**
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
A_O	Open Circuit Voltage Gain		2			-2		R_L = 1 MΩ
A_L	Loaded Voltage Gain		1			-1		R_L = 50 Ω
A_{dB}	Voltage Gain in dB		0			0		dB
I_{DC}	DC Input Current (NL) DC Input Current (V_O±1.25 V)		±17 ±25	±20 ±30		±20 ±30	±25 ±35	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 ↑		1.2			1.2		ns
t_{PHL}	Propagation Delay to output ↓		1.2			1.2		ns
t_R/t_F (10%-90%)	Small Signal Rise/Fall Times (V_O = ±0.2 V)		650	800		650	800	ps
BW	Small Signal 3 dB BW	437	530		437	530		MHz
t_R/t_F (10%-90%)	Large Signal Rise/Fall Times (V_O = ±1.25 V)		1.50	1.75		1.50	1.75	ns
BW	Large Signal 3 dB BW	200	233		200	233		MHz
t_{SKEW}	Skew between outputs		20	50		20	50	ps
	Size	1.0 x 1.3 x 2.2			1.0 x 1.3 x 2.2			in
	Weight	4			4			Oz

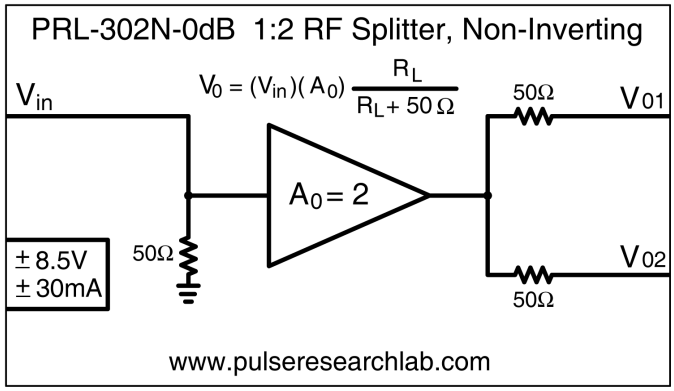

Fig. 1A: PRL-302N-0dB
1:2 Non-Inverting Splitter Amplifier

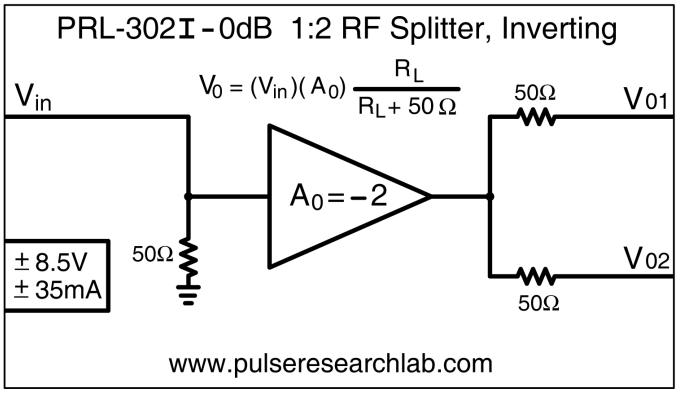

Fig. 1B: PRL-302I-0dB
1:2 Inverting Splitter Amplifier

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