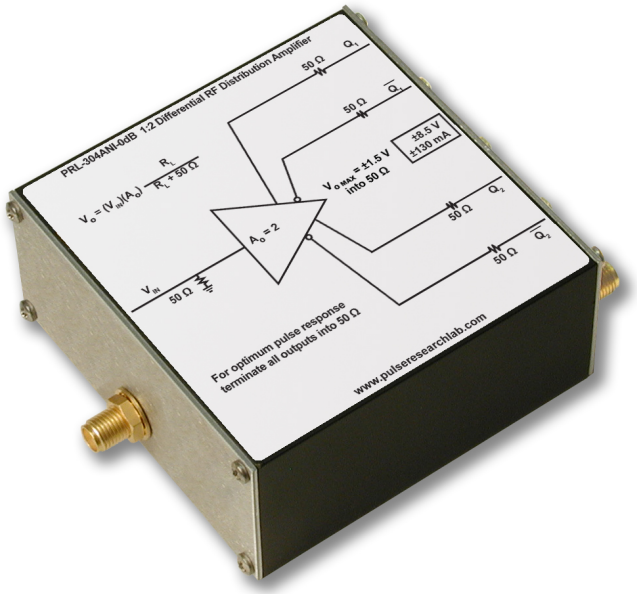
PRL-304ANI-0dB, 1:2 Differential RF Distribution Amplifier
Preliminary

APPLICATIONS

- 1:2 Differential 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 Pairs of Differential Outputs
- 0.5 dB Gain Match Typical @ 10 MHz
- Small Signal 3 dB Bandwidth up to 412 MHz (Preliminary)
- Clean Pulse Response
- 0 dB gain, $V_O = V_{IN}$ (R_L = 50 Ω), well suited for cascading
- ±1.5 V, 3.0 V_{PP}, Maximum Outputs, R_L = 50 Ω
- DC Coupled 50 Ω I/Os
- ±110 mA Supply Current Typical
- 1.3H x 2.9W x 2.9L-in. Module includes ±8.5 V AC/DC Adapter



PRL-304ANI-0dB, 1:4 RF Distribution Amplifier

DESCRIPTION

The PRL-304ANI-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 0.5 dB typical @ 10 MHz, and the small signal bandwidth is 412 MHz typical. Maximum output is ±1. 5 V, or 3.0 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-304ANI-0dB 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-304ANI-0dB is housed in a 1.3H x 2.9W x 2.9L-in. aluminum enclosure, and four amplifier modules can share a single PRL-760C, 4-output ±8.5 V AC/DC adapter. Besides the I/O and power connections, no other set up or connection is required. The PRL-304ANI-0dB is a part of the PRL family of Mini Modular Instruments (MMIs).

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PRELIMINARY SPECIFICATIONS (0^{o} C ≤ T_A ≤ 35^{o}C)

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

SYMBOL	PARAMETER	Min	Typ	Max	UNIT
R_{IN}	Input Resistance	49.5	50.0	50.5	Ω
R_{OUT}	Output Resistance	49.5	50.0	50.5	Ω
A_O	Open Circuit Voltage Gain, R_L > 1 MΩ		2		
A_L	Loaded Voltage Gain, R_L = 50 Ω		1		
A_{dB}	Voltage Gain in dB		0		dB
ΔV	Differential Gain Match @ 10 MHz, 1 V_{PP} Sinewave Input		0.5		dB
I_{DC1}	Quiescent DC Input Current, V_{IN} = 0 V		±50	±60	mA
I_{DC2}	DC Input Current @ 100MHz, V_O = ±1.5 V into 50 Ω		±125	±135	mA
V_{DC}	DC Input Voltage	±7.5	±8.5	±12.0	V
V_{AC1}	AC/DC Adapter Input Voltage, switched to "120 V"	103	115	127	V
V_{AC2}	AC/DC Adapter Input Voltage, switched to "230 V"	206	230	254	V
t_{PLH}	Propagation Delay to output ↑		1.8		ns
t_{PHL}	Propagation Delay to output ↓		1.8		ns
t_{r1}/t_{f1}	Small Signal Rise/Fall Times (V_O = ±200 mV)		850	1000	ps
BW1	Small Signal 3 dB Bandwidth	350	412		MHz
t_{r2}/t_{f2}	Large Signal Rise/Fall Times (V_O = ±1.25 V)		1.25	1.50	ns
BW2	Large Signal 3 dB Bandwidth	233	280		MHz
t_{SKEW}	Skew between any two outputs @ 25 MHz		100	250	ps
$V_{IN\ MAX\ DC}$	Maximum Input, DC Coupled	-2.0	±2.0	2.0	V
$V_{IN\ MAX\ AC}$	Maximum Input, AC Coupled	3.8	4.0	4.0	V_{pp}
$V_{O\ MAX}$	V_O maximum, all outputs terminated into 50 Ω	3.0	4.0	4.2	V_{pp}
	Size		1.3 x 2.9 x 2.9		in
	Weight, w/o AC adapter		5		Oz
	Shipping weight, w/AC adapter		4		lb

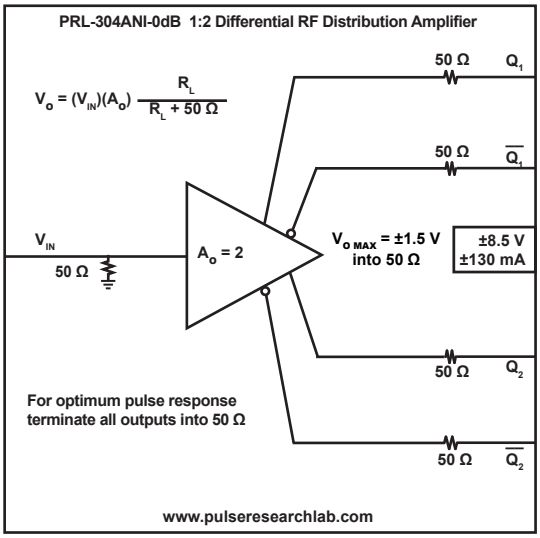

Fig. 1, PRL-304ANI-0dB
1:2 Differential RF Distribution Amplifier

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