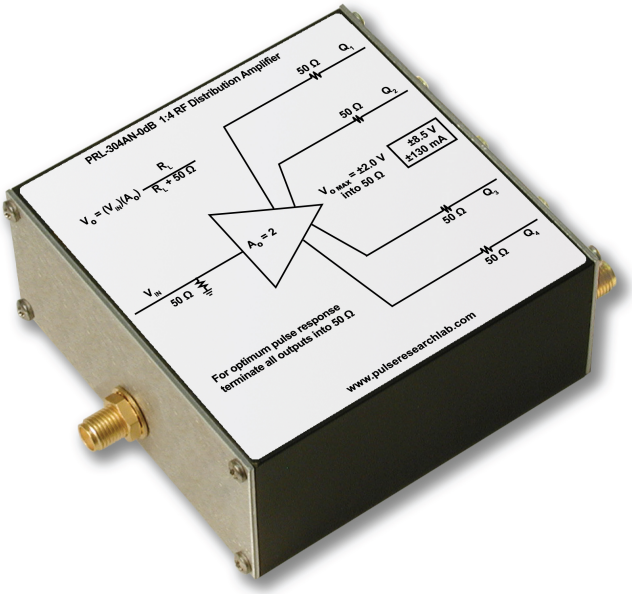
PRL-304AN-0dB, 1:4 RF Distribution Amplifier

APPLICATIONS

- 1:4 RF Signal Fanout
- Transmission Line Driver
- RF Receiver
- Pulse Amplifier
- General Purpose Wideband Amplifier

FEATURES

- Ready to Use Amplifier with Four Outputs
- 0.5 dB Gain Match Typical @ 10 MHz
- Small Signal 3 dB Bandwidth up to 412 MHz
- Clean Pulse Response
- 0 dB gain, $V_O = V_{IN}$ (R_L = 50 Ω), well suited for cascading
- ±2.0 V, 4.0 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-304AN-0dB, 1:4 RF Distribution Amplifier

DESCRIPTION

The PRL-304AN-0dB is a 0 dB gain, DC-coupled amplifier with four identical non-inverting outputs. The gain match between any pair of outputs is 0.5 dB typical @ 10 MHz, and the small signal bandwidth is 412 MHz typical. Maximum bipolar output is ±2.0V, or 4 V_{PP} into 50 Ω. For uni-polar signals, the maximum output is either +2.0 V or -2.0 V into 50 Ω. All outputs are 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-304AN is 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 pulse response, however, all outputs should be terminated into 50 Ω.

The PRL-304AN-0dB is housed in a 1.3H x 2.9W x 2.9L-in. aluminum enclosure, and four amplifier modules can share the included PRL-760C, 4-output ±8.5 V AC/DC adapter, by adding additional power cables. Besides the I/O and power connections, no other set up or connection is required. The PRL-304AN-0dB is a part of the PRL family of Mini Modular Instruments (MMIs).

The PRL-304AN-0dB may also be ordered without the power supply as part number PRL-304AN-0dB-OEM.

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SPECIFICATIONS (0° C ≤ T_A ≤ 35^oC)

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	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}
$V_{O\ MAXPP}$	V_O maximum, peak-peak, terminated into 50 Ω	±1.50	±2.0	±2.1	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

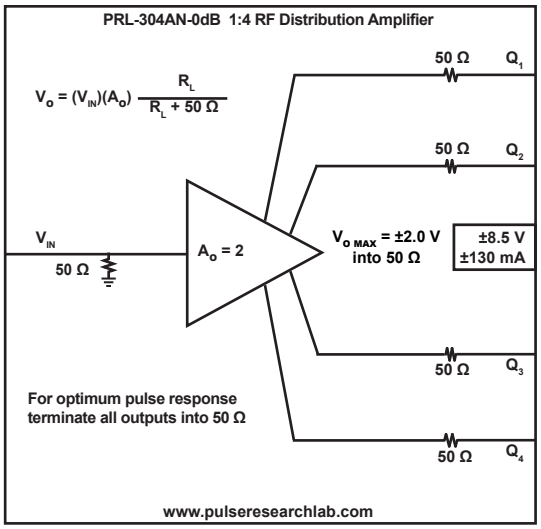

Fig. 1, PRL-304AN-0dB
1:4 RF Distribution Amplifier

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