

Variable Gain Amplifiers

October 2006

Part Number			Frequency Range to -3 dB (MHz)	Gain Scaling ¹		Gain Range (dB)	Gain Accuracy (dB)	Preamp	E _n nV/√Hz	I _n pA/√Hz	Output Noise Max Gain (nV/√Hz)	Noise Figure (dB)	Output P1dB ² (dBm)	Output IP3 ² (dBm)	Z _m ³		Z _{out} ³		Supply Voltage (V)	Power/Channel (mW)	Power-Down	Comments
Single	Dual	Quad		Linear-in-dB	Linear										SE Ω	DIFF Ω	SE Ω	DIFF Ω				
Analog Control																						
	AD600		DC to 35	32	—	0 to +40	±0.2	No	1.4	—	158	—	—	—	100	—	2	—	±5	110	No	
	AD602		DC to 35	32	—	-10 to +30	±0.2	No	1.4	—	50	—	—	—	100	—	2	—	±5	110	No	AD602 is a lower absolute gain version of AD600
AD603			DC to 90	40	—	-11 to +31 +9 to +51	±0.5	No	1.3	—	46	8.8	19	15 (40 MHz)	100	—	2	—	±4.75 to ±6.3	125	No	Absolute gain settable via pin strap or external resistor; BW gets reduced for higher gains
	AD604		DC to 40	20 to 40	—	0 to +48 +6 to +54	±0.3	Yes	1.8	3	200	8.4	15	35 (10 MHz)	>1000	—	2	—	±5	220	Yes	Ultralow noise preamp
	AD605		DC to 40	20 to 40	—	-14 to +34 0 to +48	±0.2	No	1.8	2.7	94	8.4	15	33 (10 MHz)	175	350	2	—	5	90	Yes	Like AD604 but without preamp
AD8330			DC to 150	33.3	2	0 to +50	±0.5	No	5	—	62	—	—	27 (10 MHz)	—	1000	—	150	2.7 to 6	54 @ V _s = 2.7 V	Yes	Differential input/output
AD8331			DC to 120	50	—	-5 to +43 +7 to +55	±0.3	Yes	0.8	2.5	170	4.2	—	32 (10 MHz)	Prog	—	—	2	4.5 to 5.5	125	Yes	Single-ended input/differential output
	AD8332	AD8334	DC to 100	50	—	-5 to +43 +7 to +55	±0.3	Yes	0.8	2.5	150	4.2	—	32 (10 MHz)	Prog	—	—	—	4.5 to 5.5	145	Yes	Single-ended input/differential output
		AD8335	DC to 85	20	—	-10 to +38 -2 to +46	±0.2	Yes	1.3	2.4	80	7	18	31 (10 MHz)	—	—	—	1.2	4.5 to 5.5	95	Yes	Single-ended input/differential output; individual gain control per each channel
AD8336			DC to 100	50	—	-14 to +46 0 to +60	±0.2	Yes	3.0	3	600	—	11	—	—	—	2	—	±3 to ±12	150	No	Single-ended input/output, power save
AD8337			DC to 280	19.7	—	0 to +24	±0.25	Yes	2.2	4.8	34	14	—	28 (45 MHz)	—	—	—	—	4.5 to 10	78	No	Single-ended input/output
AD8367			DC to 500	45	—	-2.5 to +42.5	±0.2	No	1.9	—	—	6.2	8	27.5 (70 MHz)	200	—	50	—	2.7 to 5.5	110	Yes	Square law detector included for AGC applications; VGA or AGC mode
AD8368			LF to 1000	34	—	-12 to +22	±0.4	No	1.3	—	-143 dBm/Hz	9	16	33.7 (70 MHz)	50	—	50	—	4.5 to 5.5	60 mA	Yes	Single-ended input/output, VGA/AGC operation
ADL5330			1 MHz to 3 GHz	22	—	-34 to +22	±1.5	Yes	1.3	—	-150 dBm/Hz	7.8	22	31 (900 MHz)	25	50	25	50	4.75 to 6	1200	Yes	RF/IF voltage controlled amplifier/attenuator
	ADL5390		20 MHz to 2.4 GHz	—	3.5	5 to -27	±0.25	No	4.7	—	-149 dBm/Hz	21	11	24 (380 MHz)	250	500	25	50	4.75 to 5.25	135 mA	Yes	Vector modulator used as a VGA; can also change phase
ADL5391			DC to 2.0 GHz	—	1	0 to -42	±1	No	4.7	—	-133 dBm/Hz	40	15	26 (50 MHz)	250	500	38	75	4.5 to 5.5	135 mA	Yes	Multiplier used as a VGA with dc operation and very fast analog control
Digital Control																						
AD8369			0.001 to 600	45	—	-5 to +40	±0.5	No	2	—	—	7	3	19.5 (70 MHz)	—	200	—	200	3.0 to 5.5	170	Yes	4-bit interface 3 dB step
AD8370			0.001 to 700	—	28	-11 to +17 +6 to +34	±0.5	Yes	2.1	—	—	7.4	16	31 (70 MHz)	—	200	—	100	2.7 to 5.5	410	Yes	7-bit interface
Digitally Controlled Line Drivers																						
AD8320			150	—	0.077	-10 to +26	±0.2	Yes	5.3	—	73	—	22.5	34	220	—	75 ⁴	—	5 to 12	400 to 1160	Yes	High output power line driver; 36 dB gain range
AD8321			120	0.7526	—	-27.4 to +26	±0.2	Yes	20	—	60	15	19.5	23	820	900	75 ⁴	—	5 to 9	810	Yes	54 dB gain range
AD8322			180	6 dB/m.c. ⁵	0.23324 ⁶	-12.6 to +29.5	±0.2	Yes	12.5	—	63	11.8	19	—	210	235	—	75 ⁴	5	565	Yes	5 V line driver coarse step
AD8324			100	1	—	-25.5 to +33.5	±1.0	Yes	1.3	—	157	15.5	21	—	550	1100	—	75 ⁴	3.3	207	Yes	3 V low cost line driver
AD8325			100	0.75	—	-29.5 to +30	±0.2	Yes	10	—	56	13.8	18.5	—	800	1600	—	75 ⁴	5	665	Yes	5 V line driver fine step; output power control
AD8326			100	0.75	—	-26 to +27.5	±0.2	Yes	13.3	—	100	16.6	26.5	—	800	1600	—	75 ⁴	±5, 12	1500, 1885	Yes	Highest output power of all AD832x line drivers
AD8327			160	6 dB/m.c.	—	-18 to +30	±0.25	Yes	11	—	63	13.2	14.8	—	800	1600	75 ⁴	—	5	525	Yes	Coarse step line driver
AD8328			107	1	—	-27.5 to +31.5	±1.0	Yes	1.2	—	135	16.7	18.4	—	800	1600	—	75 ⁴	5	120	Yes	Low cost line driver

¹Gain scaling—analogue control: dB/V and V/V; digital control: dB/LSB and V/V/LSB.

²For all AD832x parts, the reference impedance for powers in dBm is 75 Ω; for all other parts it is 50 Ω.

³SE: single-ended; DIFF: differential.

⁴75 Ω Z_{out} also during power-down. All specifications for 75 Ω load resistance; however, the parts can be used with other load impedances.

⁵AD8322 gain scaling is 6 dB/m.c. where m.c. stands for major carry, and is 0.2332 V/V/LSB between major carries.

For more information on ADI Variable Gain Amplifiers, visit www.analog.com/vga.

