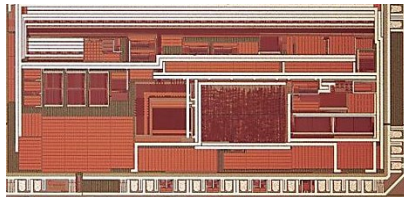


RHA2000 vs. RHD2000 Product Comparison



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10 December 2012

PARAMETER	RHA2000 Analog Output Series	RHD2000 Digital Output Series
Amplifier channels per chip	16, 32	16, 32, 64
Models available	16 inputs, common reference (RHA2116) 16 differential inputs (RHA2216) 32 inputs, common reference (RHA2132)	16 differential inputs (RHD2216) 32 inputs, common reference (RHD2132) 64 inputs, common reference (RHD2164)
Amplifier input-referred noise	2 μV_{rms}	2.4 μV_{rms}
Amplifier input range	± 5 mV	± 5 mV
Amplifier upper bandwidth range	10 Hz – 20 kHz (programmable using 2 off-chip resistors)	100 Hz – 20 kHz (programmable using on-chip registers)
Amplifier lower bandwidth range	0.02 Hz – 1.0 kHz (programmable using 1 off-chip resistor)	0.1 Hz – 500 Hz (programmable using on-chip registers)
Built in ADC?	No	Yes, 16-bit on-chip ADC; up to 30 kSamples/s/channel sampling rate
Chip output	Multiplexed, amplified analog voltage	Standard Serial Peripheral Interface (SPI) digital data stream; CMOS or LVDS levels
Auxiliary analog inputs?	None	3 aux. analog inputs; 0.10 – 2.45V range
Auxiliary digital outputs?	None	1 aux. digital output; 0/3.3V level
Supply voltage	3.0V or 3.3V	3.3V (derated operation at 3.0V)
Total power dissipation with ADC: Neural recording application (32 ch, 10 kHz amps, 30 kS/s/ch)	25 mW (CMOS bus) 96 mW (LVDS bus) (including off-chip ADC, LVDS I/O)	18 mW (CMOS bus) 37 mW (LVDS bus)
Total power dissipation with ADC: EMG recording application (16 ch, 1 kHz amps, 2 kS/s/ch)	4.6 mW (including off-chip ADC)	3.5 mW
Individual amplifier power up/down for power management?	No	Yes
<i>In situ</i> electrode impedance measurement capability?	Yes, single-frequency measurement using a small number of off-chip components	Yes, multi-frequency measurement requiring no off-chip components
Possible to sample all amplifiers during impedance measurement?	No	Yes
Packaged chip size (32 channel)	8 mm x 8 mm 56-pin QFN	8 mm x 8 mm 56-pin QFN
Bare die size (32 channel)	4.8 mm x 3.1 mm	4.8 mm x 4.1 mm