

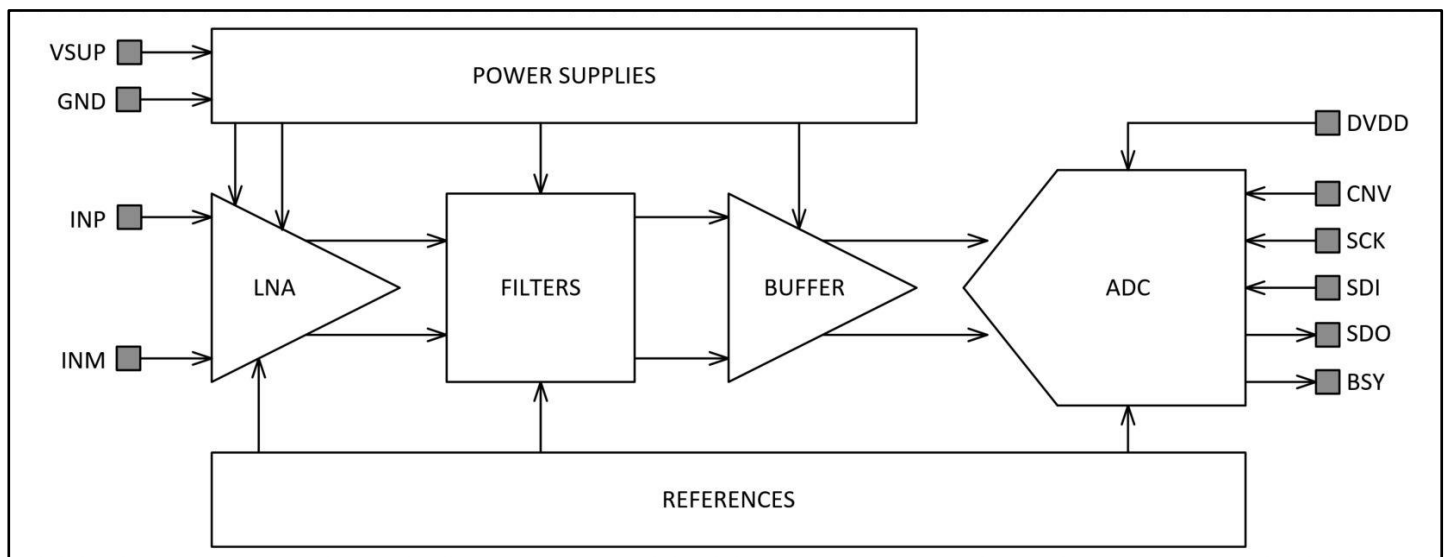
FEATURES

- High Performance Differential Sense Channel
- Low Input Referred Noise (< 0.5 μ V_{RMS})
- Selectable Bandwidth (0.5 to 10KHz)
- Selectable Gain (320, 640, 1280)
- 16 Bit ADC with Serial Outputs
- Compatible with FPGA and MCU

APPLICATIONS

- Closed-Loop Neuromodulation
- Neural Recording
- Biopotential Recording

CIRCUIT DIAGRAM



GENERAL DESCRIPTION

The CSI073 is a single-channel neural sensing circuit intended to facilitate research and evaluations leading to closed-loop neuromodulation systems and other closed-loop biopotential applications. The circuit is a low noise signal processing channel that amplifies, filters, and performs analog-to-digital conversion of neural or other biopotential signals. The circuit utilizes a low-noise amplifier, high-pass and low-pass filters, a buffer amplifier, and an analog to digital converter with an industry-standard serial interface for easy connection to an FPGA or MCU for subsequent digital signal processing.

IO DEFINITIONS

IO	NAME	DESCRIPTION
1	VSUP	Power Supply
2	DVDD	Digital IO Supply
3	GND	Ground
4	INP	Positive Input Signal
5	INM	Negative Input Signal
6	CNV	Conversion Request Input
7	SCK	Serial Clock Input
8	SDI	Serial Data Input
9	SDO	Serial Data Output
10	BSY	ADC Busy Output

ELECTRICAL SPECIFICATIONS

DESCRIPTION	MIN	TYP	MAX	UNITS
VSUP Supply Voltage		3.0		V
Digital IO High Voltage	DVDD – 0.2	DVDD	DVDD + 0.1	V
Digital IO Low Voltage	-0.1	0	0.2	V
Input Referred Noise			500	nV _{RMS}
Input Impedance	400			KΩ
Signal Gain	320	640	1280	V/V
Signal Bandwidth		10		KHz
High-Pass Filter Corner		0.5		Hz
ADC Sample Rate		250		Ks/s
ADC Resolution		16		bits
Common Mode Rejection		100		dB
Power Supply Rejection		110		dB