



# 32 BIT ADC BOARD



# PROJECT OVERVIEW

## 32 Bit Analog To Digital Converter Using ADS1263

- Implementation of a 32 bit , high resolution ADC for precise data acquisition.
- The high-resolution, low-noise technique employs oversampling, noise shaping, and decimation to convert an analog input signal into a high-accuracy digital output

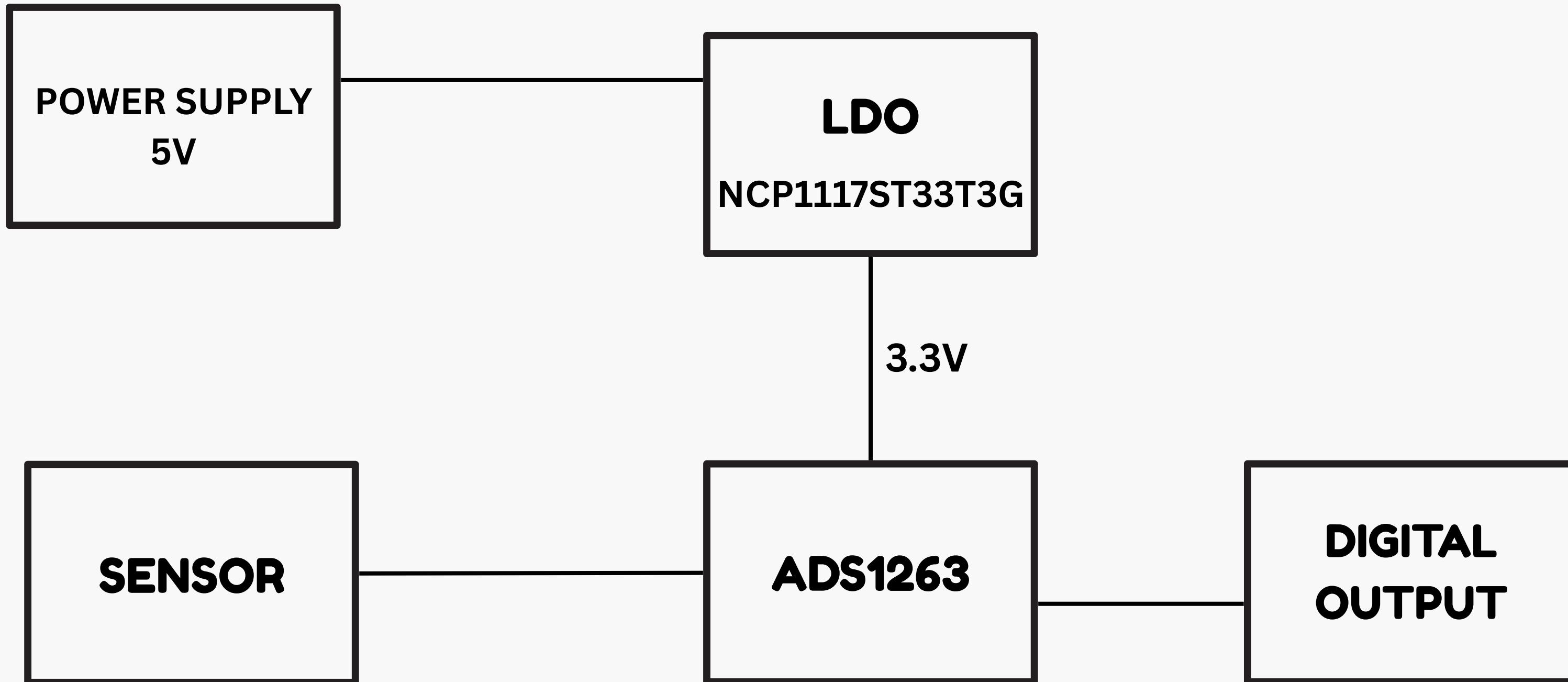
## Why 32-bit

- Captures extremely fine variations in analog signals - Accuracy
- Enables accurate measurement of minute analog signals with minimal quantization error.
- Ideal for applications requiring high signal-to-noise ratio.

## Components Required

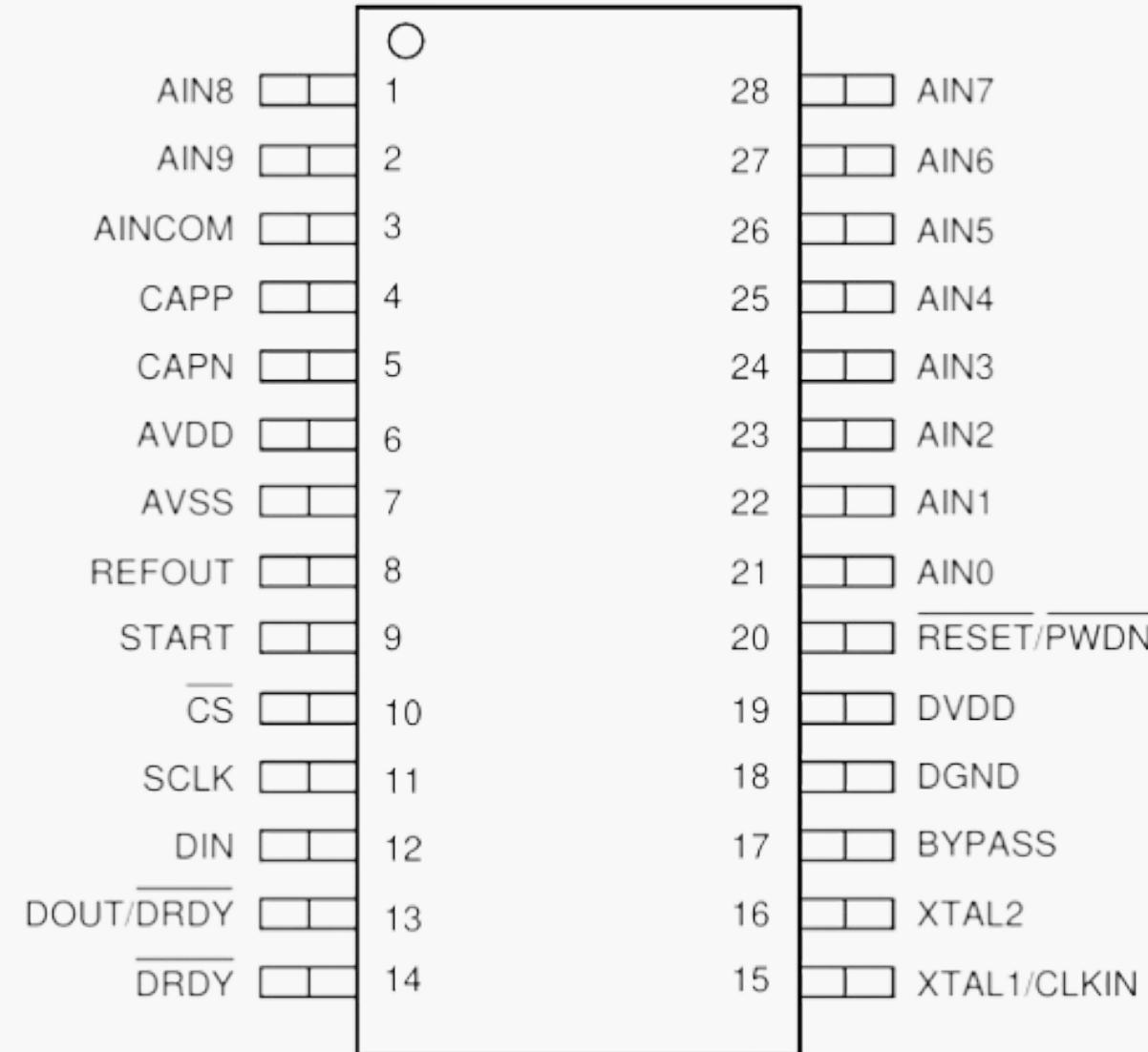
- ADS1263IPWR
- LDO : NCP1117ST33T3G

# BLOCK DIAGRAM



# PIN CONFIGURATION

## ADS1263IPWR



DVDD - Digital - Digital power supply

DND - Digital ground

BYPASS - Subregulator

XTAL1 - Internal oscillator connected to ground

XTAL2 - NO CONNECTION

CAPP , CAPN - Internal Capacitors

AVDD - Positive analog power supply

AVSS - Negative analog power supply

REFOUT - Internal reference voltage output

START - Start conversion control

CS - Serial interface chip

SCLK - Serial interface shift clock

DIN - Serial interface data input

DRDY - Data ready inductor

DOUT - Digital output

RESET - Digital input - Reset(active low) hold low to power down the ADC

AINO - AIN9 - Analog input/output

# TECHNICAL SPECIFICATIONS

- It includes two ADC's : a 32 bit primary device and a 24 bit secondary converter
- The ADC operates with the internal reference voltage - 2.5V
- A 32-bit ADC provides output data rates from 2.5 SPS to 38400 SPS
- Analog input voltage - 5V
- Digital input voltage - 3.3V
- The flexible analog front end (AFE) incorporates two sensor-excitation current sources suitable for direct RTD measurement.

# NCP1117ST33T3G

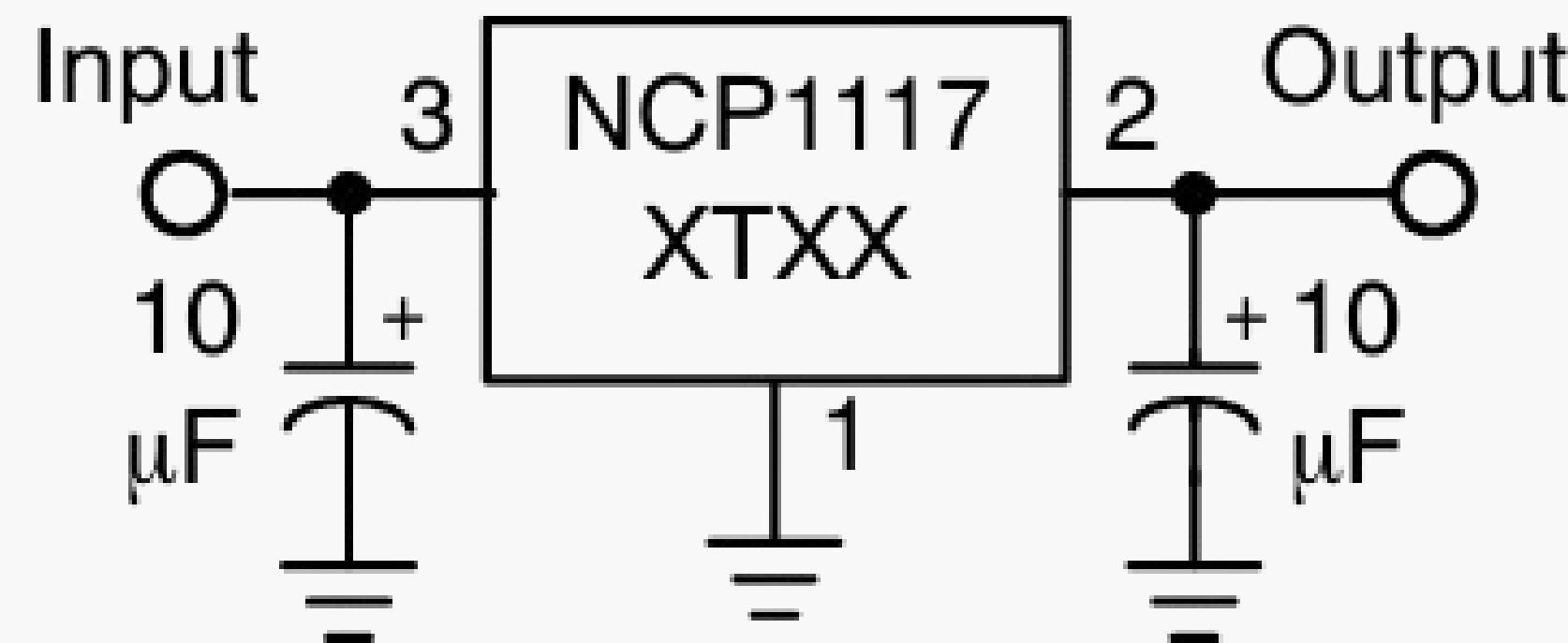
Output Current - 1A

Input Voltage - Upto 20V

Output Voltage - 3.23V - 3.36V

1.2V Maximum dropout Voltage at 800mA

## PIN CONFIGURATION



IN - 5V

OUT - 3.3V to supply DVDD

# USING AN LDO FOR

- The 5V is supplied to the input of the NCP1117ST33T3G , configurable output LDO to supply DVDD.
- LDO reduces it to 3.3V to supply to DVDD.
- Does not produce any ripple and have a fixed output voltage

## APPLICATIONS

- **Medical Diagnostics and monitoring**

Used in ECG EEG and other bio potential measurement devices.

- **Aerospace and Defence system**

Radar , sonar and secure communication sysytems

- **Industrial automation and control**

Precision motor control , weigh Modules and sensor feedback loops.

Temperature controllers - Food processors

Converting weight from strain gauge load cells

Continuous reading of sensor adjustments

# BILL OF MATERIALS

Components	Price (Rs)	Manufacturer	Package
ADS1262IPWR	2.8K	Texas Instruments	28-TSSOP
NCP1117ST503G	51.20	Texas Instruments	SOT-223

# REFERENCES

<https://www.onsemi.com/pdf/datasheet/ncp1117-d.pdf>

[https://www.ti.com/general/docs/suppproductinfo.tsp?  
distId=10&gotoUrl=https%3A%2F%2Fwww.ti.com%2Flit%2Fgpn%2Fads1263](https://www.ti.com/general/docs/suppproductinfo.tsp?distId=10&gotoUrl=https%3A%2F%2Fwww.ti.com%2Flit%2Fgpn%2Fads1263)