

SOLAR INPUT UNIT

High side current, voltage and power measurement

Power Supply Voltage = 3.3V
 Bus supply voltage = 5-20V
 Average Current = 450mA
 Overcurrent Fault Threshold = 1A
 Maximum Current Monitored (Imax) = 2A
 ADC RANGE (VSENSE_MAX=81.92mV)
 Rshunt < 40.96m

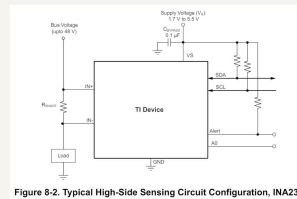


Figure 8-2: Typical High-Side Sensing Circuit Configuration, INA232

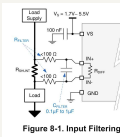
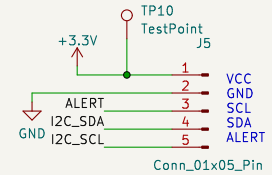
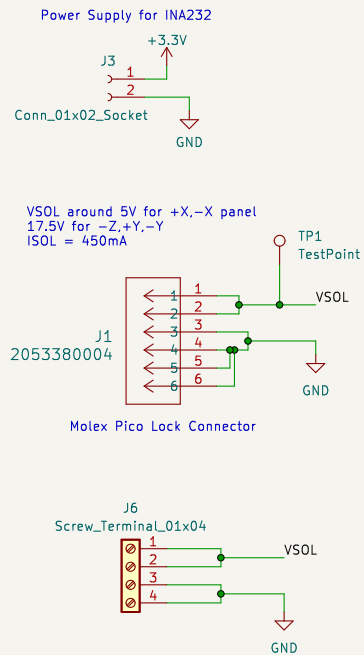


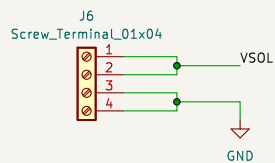
Figure 8-1: Input Filtering



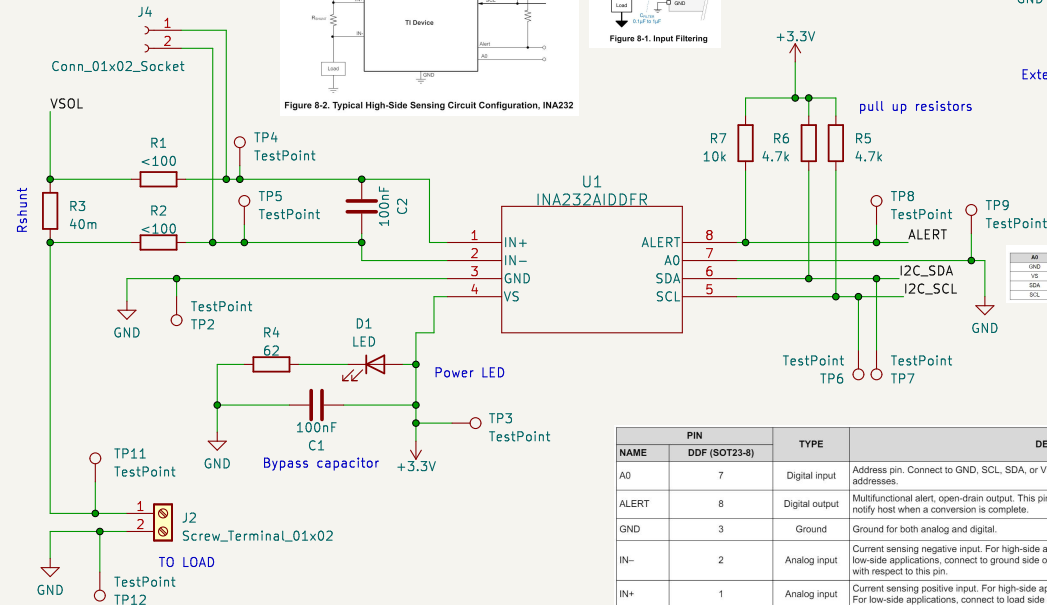
External Connection to Microcontroller



Molex Pico Lock Connector



Screw Terminals for Solar Power Input backup



Pin	Address	Target Address
A0	1000000	1010000
GND	1000001	1010001
VS	1000010	1010010
SDA	1000011	1010011
SCL	1000100	1010100

NAME	PIN	TYPE	DESCRIPTION
A0	7	Digital input	Address pin. Connect to GND, SCL, SDA, or VS. Table 7-1 lists the pin settings and corresponding addresses.
ALERT	8	Digital output	Multifunctional alert, open-drain output. This pin alerts to report fault conditions or can be configured to notify host when a conversion is complete.
GND	3	Ground	Ground for both analog and digital.
IN-	2	Analog input	Current sensing negative input. For high-side applications, connect to load side of sense resistor. For low-side applications, connect to ground side of sense resistor. Bus voltage measurements are made with respect to this pin.
IN+	1	Analog input	Current sensing positive input. For high-side applications, connect to bus voltage side of sense resistor. For low-side applications, connect to load side of sense resistor.
SCL	5	Digital input	Serial bus clock line, open-drain input.
SDA	6	Digital input/output	Serial bus data line, open-drain input/output.
VS	4	Power Supply	Power supply, 1.7 V to 5.5 V.

Author: Ameya Marakarkandy
 IIT Bombay Student Satellite Program

Sheet: /
 File: EPS_SolarInput.kicad_sch

Title: EPS Solar Input

Size: A4 Date: 2024-06-20
 KiCad E.D.A. eeschema 7.0.2

Rev: v01
 Id: 1/1