ACS71020 Evaluation Board User Guide

DESCRIPTION

The Allegro ACS71020 evaluation board is pictured in Figure 1. Refer to Table 1 for symbol names and descriptions of onboard components. Note: Board is pictured without capacitors and resistors attached.

EVALUATION BOARD CONTENTS

- ASEK71020 Evaluation Board

Table 1: Summary of Evaluation Board Components

Symbol	Description
U1	Location of Allegro ACS71020
U2	Voltage regulator
C1/C2	0.1 µF regulator capacitors
C3	0.1 µF device bypass capacitor
R1	R_{SENSE} resistor voltage step down circuit; application specific
R2-R5	Digital I/O pull-up resistors (used for SPI or I^2C communication)

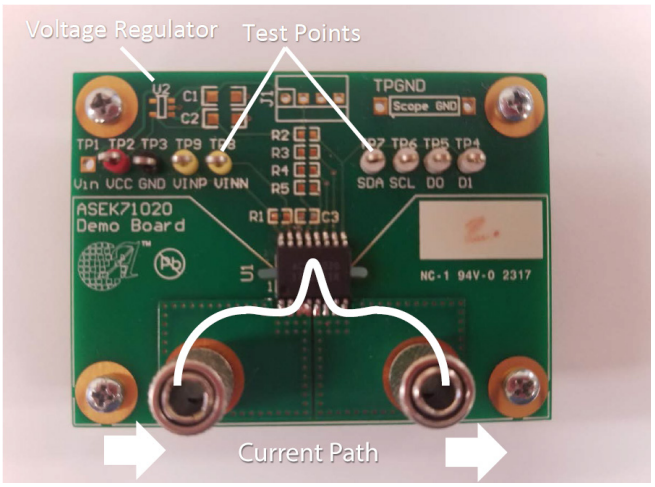


Figure 1: Allegro ACS71020 Current Sensor Evaluation Board

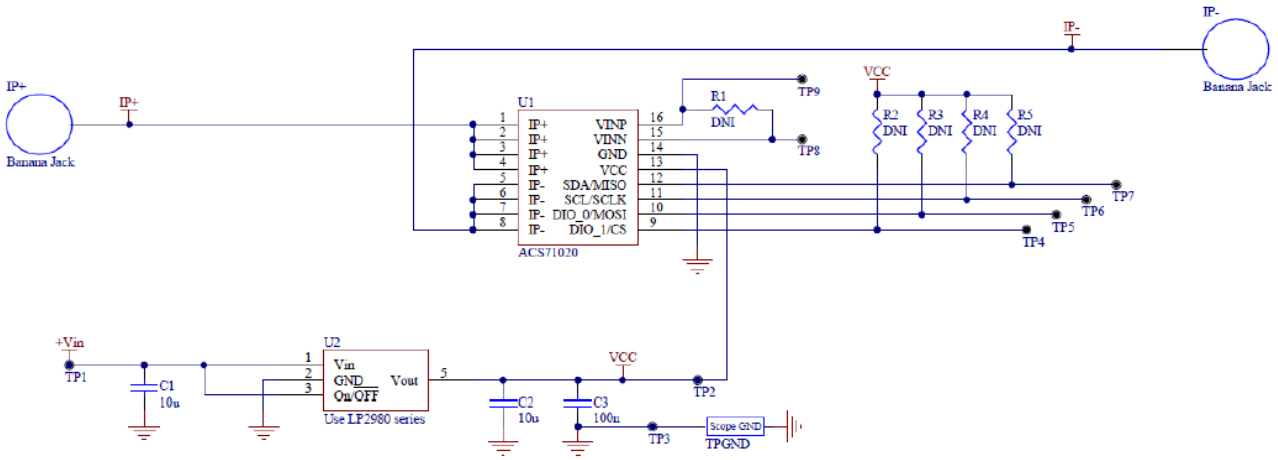
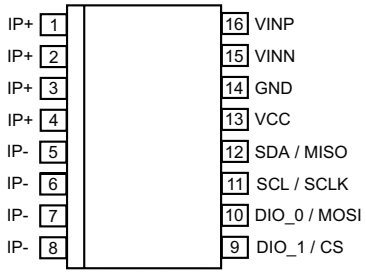


Figure 2: Schematic for ACS71020 Evaluation Board

PINOUT DIAGRAM AND TERMINAL LIST



Pinout Diagram

Table 2: Terminal List

Number	Name	Description	
		I²C	SPI
1, 2, 3, 4	IP+	Terminals for current being sensed; fused internally	
5, 6, 7, 8	IP-	Terminals for current being sensed; fused internally	
9	DIO_1/CS	Digital I/O 1	Chip Select (CS)
10	DIO_0/MOSI	Digital I/O 0	MOSI
11	SCL/SCLK	SCL	SCLK
12	SDA/MISO	SDA	MISO
13	VCC	Device power supply terminal	
14	GND	Device Power and Signal ground terminal	
15	VINN	Negative Input Voltage	
16	VINP	Positive Input Voltage	

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ACS71020 Recommended Application Circuit

A resistor divider circuit shall be used to step down measured the voltage of the system. The voltage across VINP and VINN shall not exceed 275 mV as stated in the datasheet. This application example steps the voltage down to ±250 mV for expected V_{peak}. The standard application schematic is shown in Figure 3. Refer to the ACS71020 device datasheet for more information.

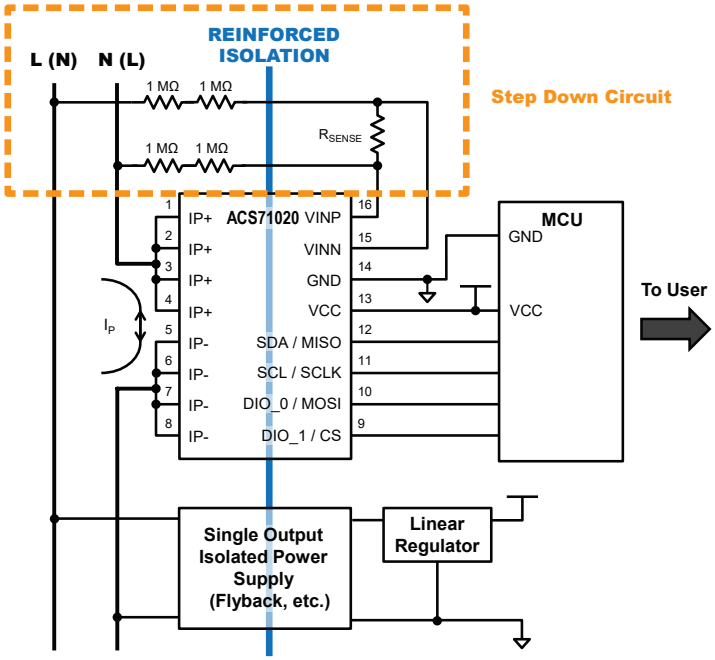

Figure 3: Recommended Application Circuit from Datasheet

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Step-Down Circuit

Figure 4 shows the step-down application circuit in finer detail. The appropriate value for the sense resistor “R” shall be determined by the user as to not exceed 275 mV across VINP and VINN.

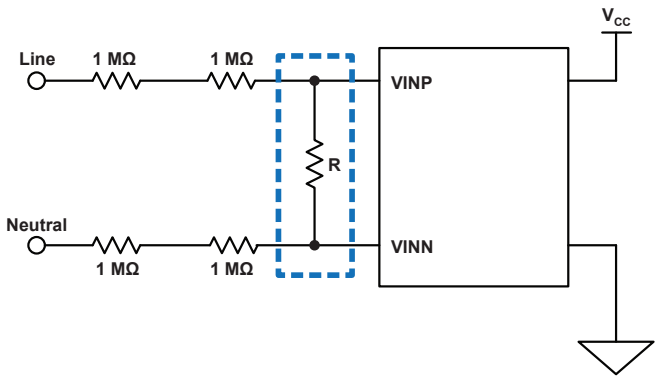

Figure 4: Step-Down Circuit

Table 3 shows recommended resistor values for popular application voltages, and assumes the step down circuit in Figure 4.

Table 3: Recommended R_{SENSE} based on V_{RMS}

V_{RMS} (V)	V_{peak} (V)	Range of V_{IN} (V)	R Max (Ω)	R_{SENSE} Recommended (kΩ)
50	70.7	0.25	14194	13
100	141.4	0.25	7085	5.6
110	155.54	0.25	6440	5.1
120	169.68	0.25	5902	4.7
150	212.1	0.25	4720	3.9
220	311.08	0.25	3217	2.2
240	339.36	0.25	2949	1.8

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Revision History

Number	Date	Description
–	July 12, 2017	Initial release
1	July 26, 2019	Minor editorial updates
2	August 16, 2023	Minor editorial updates

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