Current Sensor Amplifier & Over Current Switch Using ACS714-30

Current sensor amplifier and over current switch projects is based on ACS714-30A current sensor and LM358 Op-amp, ½ of LM358 op-amp used as an amplifier for low voltage and 2nd 1/2 LM358 op-amp used as comparator which provides over current TTL output, trimmer potentiometer provided to set the over current limit. ACS714 sensor measures the current up to +/-30Amps, final output of the amplifier is 235mV/1A, and normally over current output is High-TTL, its goes low once the current over shoot than a set point. Circuit required 5V DC and 40mA, Onboard LED indicates the power. Resister divider R1, R3 provides bus voltage output for micro-controller interface to measure the bus voltage, choose appropriate value for R3,R1 as per your application and bus voltage, it's should be less than 5V DC.

ACS714 Current Sensor

The AllegroTM ACS714 provides economical and precise solutions for AC or DC current sensing in automotive systems. The device package allows for easy implementation by the customer. Typical applications include motor control, load detection and management, switch-mode power supplies, and overcurrent fault protection. The device consists of a precise, low-offset, linear Hall circuit with a copper conduction path located near the surface of the die. Applied current flowing through this copper conduction path generates a magnetic field which the Hall IC converts into a proportional voltage. Device accuracy is optimized through the close proximity of the magnetic signal to the Hall transducer. A precise, proportional voltage is provided by the low-offset, chopper-stabilized BiCMOS Hall IC, which is programmed for accuracy after packaging. The output of the device has a positive slope (>VIOUT(Q)) when an increasing current flows through the primary copper conduction path (from pins 1 and 2, to pins 3 and 4), which is the path used for current sampling. The internal resistance of this conductive path is 1.2 m Ω typical, providing low power loss. The thickness of the copper conductor allows survival of the device at up to 5× overcurrent conditions. The terminals of

Features

Supply 5V DC ACS714-30 low noise direct output 66mV/Amp LM358 Amplifier Output 235mV/Amp Over Current Output (Normally High-TTL Goes low at over current set point) Trimmer Preset to set the Over current limit Bus voltage output Power LED Screw Terminal for Current Header Connector for outputs and supply Header Connector Connections Pin 1 : VCC 5V DC Supply Pin 2 : Supply GND Pin 3 : VOP- ACS715-30 Sensor Direct Output 66mV/Amp Pin 4 : OP1- Amplifier Output 235mV/amp Pin 5 : OP2 Over Current Output (Normally High-TTL, Goes Low at Over Limit) Pin 6 : BSV- Bus Voltage Output



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BOM			
SR.	QNTY.	REF.	DESC.
1	1	CN1	6 PIN HEADER CONNECTOR
2	1	CN2	2 PIN SCREW TERMINAL
3	1	C1	10uF/16V SMD 1210
4	1	C2	0.1uF SMD 0805
5	1	C3	1uF SMD 0805
6	1	C4	100PF SMD 0805
7	1	D1	LED SMD 0805
8	1	PR1	5K 3MM SMD PRESET
9	4	R1,R2,R3,R4	100K SMD 0805
10	2	R5,R6	1K SMD 0805
11	1	R7	3K3 SMD 0805
12	1	R8	470E SMD 0805
13	1	U1	ACS714-30A SO8
14	1	U2	LM358 SO8









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