

A5932GES Evaluation Board User Guide

DESCRIPTION

This evaluation board is used to demonstrate the Allegro A5932GES Three-Phase Sinusoidal Sensorless fan controller IC

FEATURES

- USB communications to allow a GUI to control the device via I²C
- Switch to program devices that have been embedded into a fan

EVALUATION BOARD CONTENTS

- A5932GES-01-T evaluation board

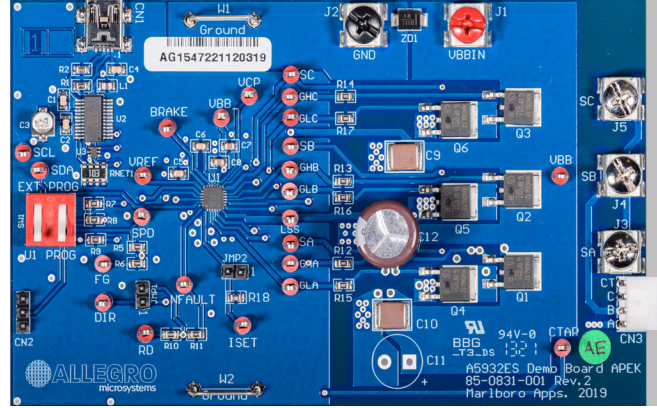


Figure 1: A5932GES Evaluation Board

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Table 1: A5932GES Evaluation Kit/Board Configurations

Configuration Name	Part Number
APEK5932GES-01-T	APEK5932GES-T

Table 2: General Specifications

Specification	Min	Nom	Max	Units
Motor Supply Voltage (V_{BB})	5.5	–	50	V
VREF Output Voltage	2.7	2.86	2.95	V
Input Logic Low Level	0	–	0.8	V
Input Logic High Level	2	–	5.5	V

USING THE EVALUATION BOARD

Equipment Required

- Fan
- Voltage supply to power fan
- Standard A Male to Mini B Male USB cable (not included)
- Personal computer for USB control

Setup

1. Set the motor voltage supply to the intended voltage.
2. Turn off motor voltage supply.
3. Connect motor voltage supply to J1/J2.
4. Connect the fan to either CN3 (screw-down terminals) or J1–J5 (screw terminals).

Note: Do not connect or disconnect the fan, unless the outputs are either disabled or the VBB voltage is off.

5. If using the GUI, connect the USB cable to CN1 and a personal computer. Using the GUI requires SW1 to be set to "U1 PROG" position.
6. Turn the voltage supply on.

SCHEMATIC

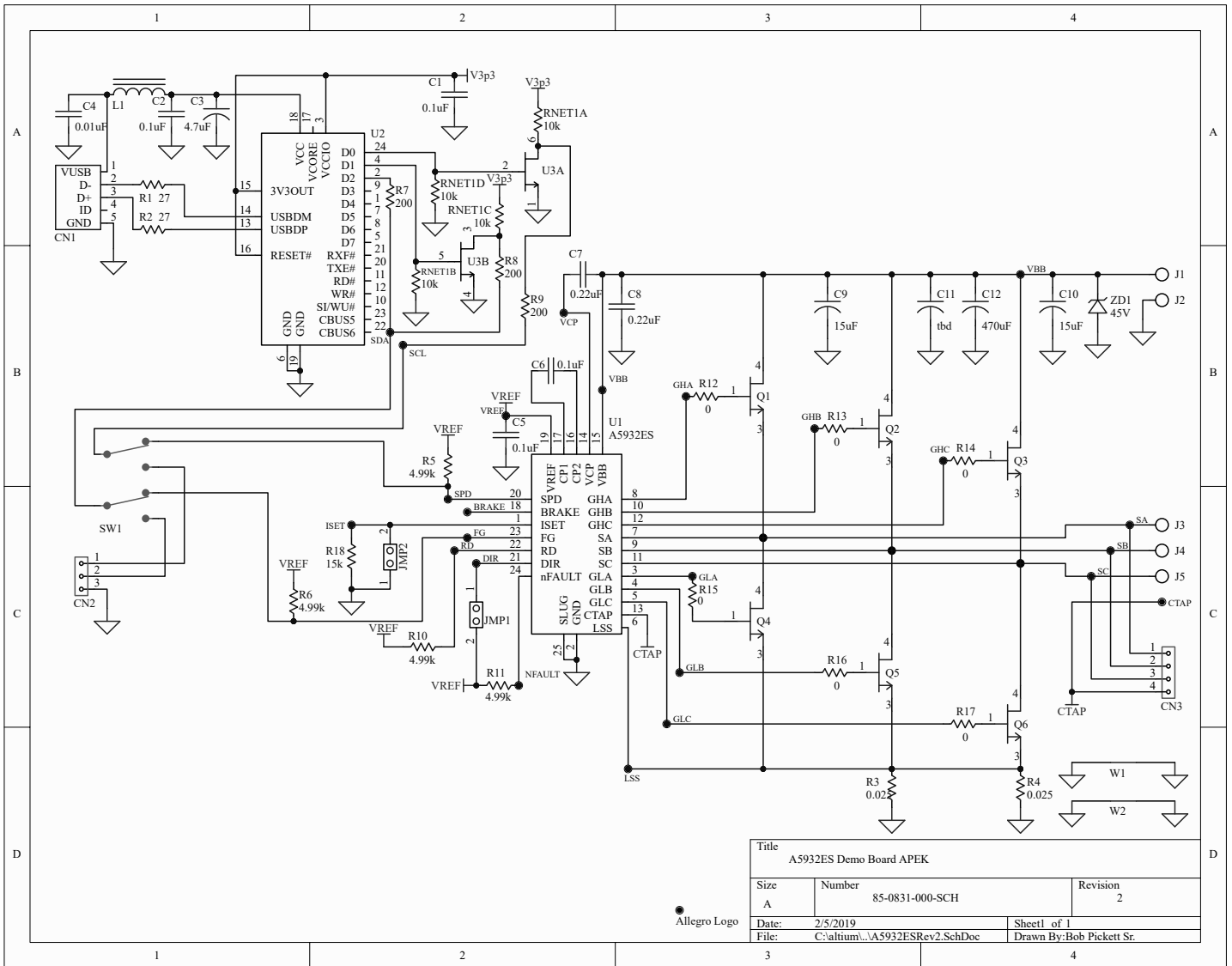


Figure 2: A5932 evaluation board schematic

LAYOUT

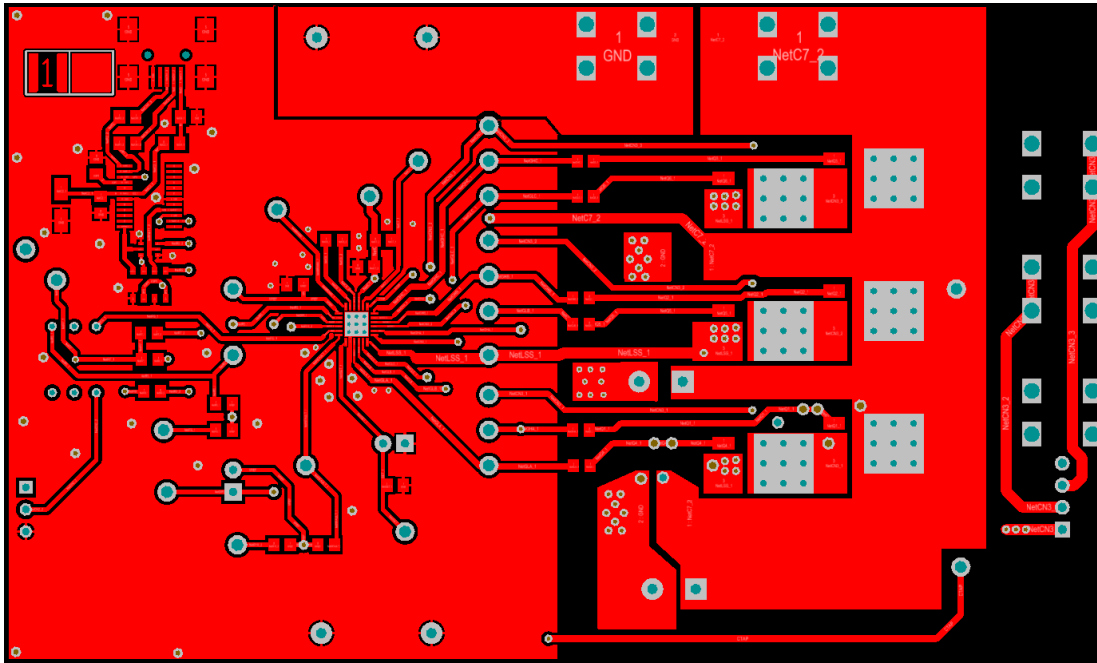


Figure 3: Top layer copper

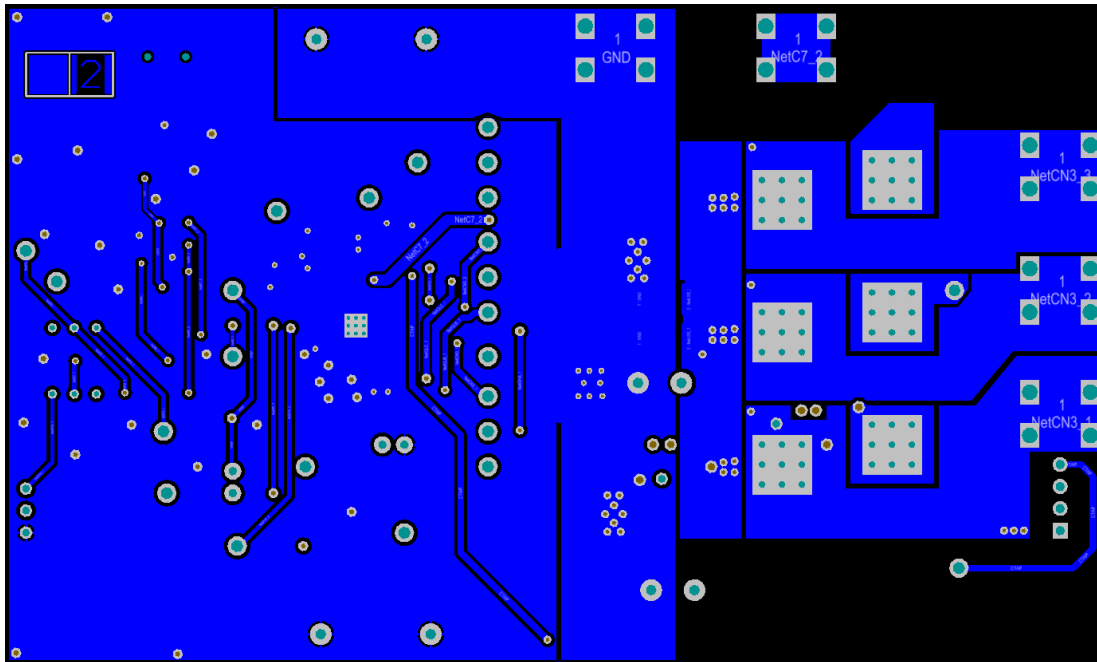


Figure 4: Bottom layer copper

BILL OF MATERIALS

Table 3: A5932 Evaluation Board Bill of Materials

ELECTRICAL COMPONENTS					
Designator	Quantity	Value	Description	Manufacturer	Manufacturer Part Number
BRAKE, CTAP, DIR, FG, GHA, GHB, GHC, GLA, GLB, GLC, ISET, LSS, NFAULT, RD, SA, SB, SC, SCL, SDA, SPD, VBB, VBB_, VCP, VREF	24		Large Test Point	Keystone Electronics	Keystone Electronics 5010; Digikey 36-5010-ND
C1, C2, C5, C6	4	0.1 µF	50 V Capacitor	TDK	TDK CEU4J2X7R1H104K125AE; Digikey 445-7856-1-ND
C3	1	4.7 µF	35 V Capacitor	Chemi-Con	Chemi-Con EMZA350ADA4R7MD61G; Digikey 565-2553-1-ND
C4	1	0.01 µF	50 V Capacitor	Yageo	Yageo CC0805KRX7R9BB103; Digikey 311-1136-1-ND
C7, C8	2	0.22 µF	50 V Capacitor	Murata	Murata GCM21BR71H224KA37L; Digikey 490-4970-1-ND
C9, C10	2	15 µF	100 V Capacitor	TDK; Digikey	TDK CGA9P3X7S2A156M250KB; Digikey 445-7948-1-ND
C11	1	TBD	50 V Capacitor	N/A	N/A
C12	1	470 µF	50 V Capacitor	Chemi-Con	Chemi-Con EKY-500ELL471MK20S; Digikey 565-1610-ND
CN1	1		USB 2.0 Connector	EDAC	EDAC 690-005-299-043; Digikey 151-1206-1-ND
CN2, JMP1, JMP2	7 PINS		Cut from 50-Pin Strip	Samtec	Samtec TSW-150-07-T-S; Digikey SAM1035-50-ND
CN3	1		4-Pin Right Angle Molex Header	Molex	Molex 0022162040; Digikey WM3213-ND
J1	1		Red Screw Connector Terminal	Keystone Electronics	Keystone 7701-2; Digikey 36-7701-2-ND
J2	1		Black Screw Connector Terminal	Keystone Electronics	Keystone 7701-3; Digikey 36-7701-3-ND
J3, J4, J5	3		Screw Connector Terminal	Keystone Electronics	Keystone 7701; Digikey 36-7701-ND
L1	1		Ferrite Bead	Laird	Laird MI0805K400R-10; Digikey 240-2389-1-ND
Q1, Q2, Q3, Q4, Q5, Q6	6		60 V 50 A N-FET	Infineon	Infineon IPD50N06S4L12ATMA2; Digikey IPD50N06S4L12ATMA2CT-ND
R1, R2	2	27	1/8 W Resistor	Vishay/Dale	Vishay/Dale CRCW080527R0FKEA; Digikey 541-27.0CCT-ND
R3, R4	2	0.025	3 W Resistor	Bourns	Bourns CRA2512-FZ-R025ELF; Digikey CRA2512-FZ-R025ELFCT-ND
R5, R6, R10, R11	4	4.99 k	1/8 W Resistor	Panasonic	Panasonic ERJ-6ENF4991V; Digikey P4.99KCCT-ND
R7, R8, R9	3	200	1/8 W Resistor	Panasonic	Panasonic ERJ-6GEYJ201V; Digikey P200ACT-ND
R12, R13, R14, R15, R16, R17	6	0	1/8 W Resistor	Panasonic	Panasonic ERJ-6GEY0R00V; Digikey P0.0ACT-ND
R18	1	15 k	1/8 W Resistor	Stackpole	Stackpole RMCF0805FT15K0; Digikey RMCF0805FT15K0CT-ND
RNET1	1	10 k	4 Isolated Resistors	CTS	CTS 744C083103JP; Digikey 744C083103JPCT-ND
SW1	1		Dual SPDT Switch	Grayhill	Grayhill 76STC02T; Digikey GH7720-ND
U1	1		3-Phase Fan Driver	Allegro MicroSystems	A5932ES
U2	1		/uSB 8-bit FIFO IC	FTDI	FTDI FT240XS-R; Digikey 768-1127-1-ND
U3	1		Dual N-CH FETs	Toshiba Semi	Toshiba Semi SSM6N15AFU,LF; Digikey SSM6N15AFULFCT-ND
W1, W2	1		22-Gauge Buss Wire (300 mils above PCB)		
ZD1	1	45 V	TVS Diode	Bourns; Digikey	Bourns SMBJ45A; Digikey SMBJ45ABCT-ND
OTHER COMPONENTS					
Designator	Quantity	Value	Description	Manufacturer	Manufacturer Part Number
PCB	1				
	4		Bump on Foot	3M	

RELATED LINKS

<https://www.allegromicro.com/en/products/motor-drivers/bldc-drivers/a5932>

<https://registration.allegromicro.com/login>

Revision History

Number	Date	Description
–	December 5, 2023	Initial release
1	February 13, 2023	Update to title

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