

A5947GET Evaluation Board User Guide

DESCRIPTION

This evaluation board is used to demonstrate the Allegro A5947GET three-phase sensorless fan driver 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

- APEK5947GET-01-T evaluation board

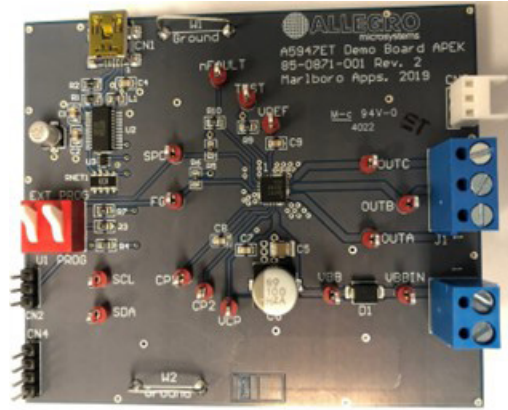


Figure 1: A5947GET Evaluation Board

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Table 1: A5947GET Evaluation Board Configurations

Configuration Name	Part Number
APEK5947GET-01-T	A5947GET-T

Table 2: General Specifications

Specification	Min.	Nom.	Max.	Units
Motor Supply Voltage (V_{BB})	4	–	40	V
VREF Output Voltage ($V_{BB} = 6$ to 40 V)	3.15	3.3	3.45	V
Input Logic Low Level	0	–	0.8	V
Input Logic High Level	2	–	5.5	V

CONFIGURING THE EVALUATION BOARD

SW1 controls whether the USB is interfacing with the on-board A5947 or through CN2 to an external A5947.

USING THE EVALUATION BOARD

EQUIPMENT REQUIRED

- Fan
- Voltage supply to power the fan
- Standard A Male to Mini B Male USB cable (not included)
- Personal computer for USB control (software required; see “Related Links”).

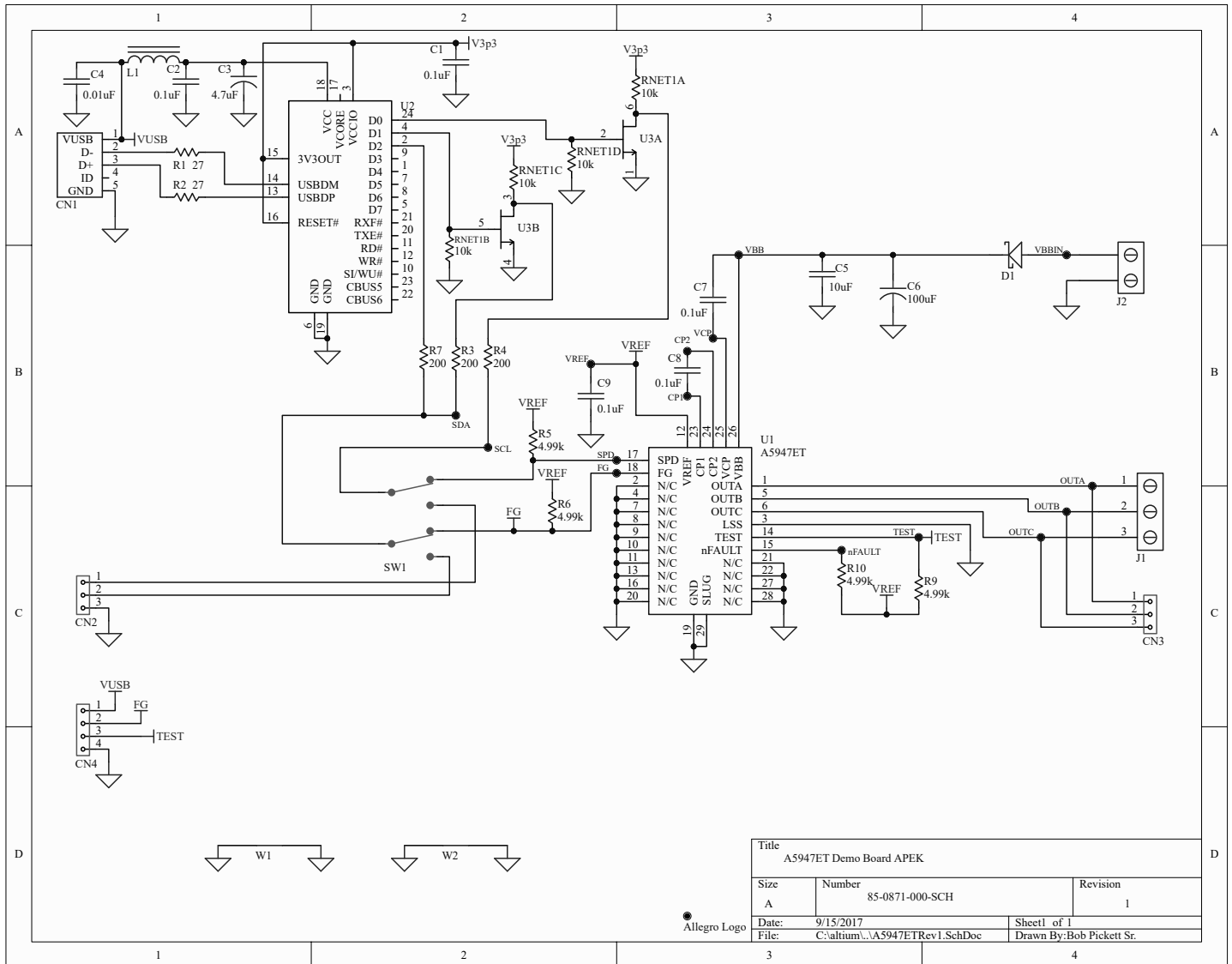
SETUP

1. Set the motor voltage supply to the intended voltage.
2. Turn off motor voltage supply.
3. Connect motor voltage supply to J2.
4. Connect the fan to either J1 (screw-down terminals) or CN3 (Molex 0022022035; Digikey WM3201-ND).

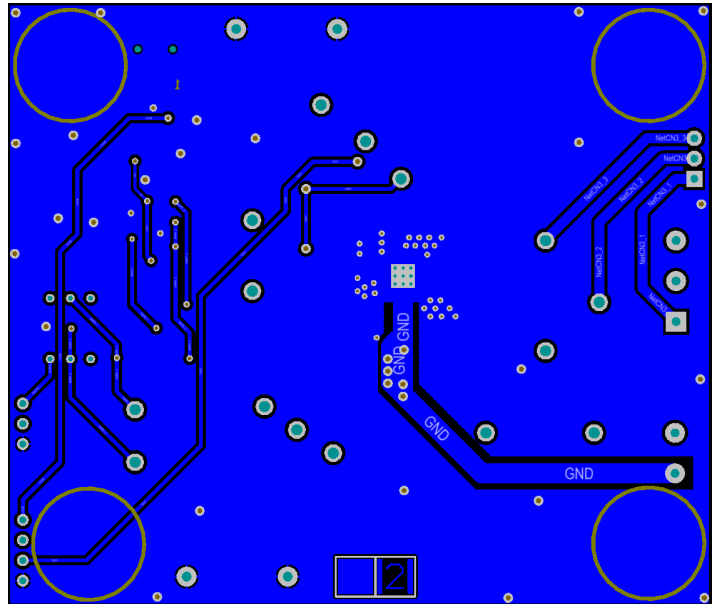
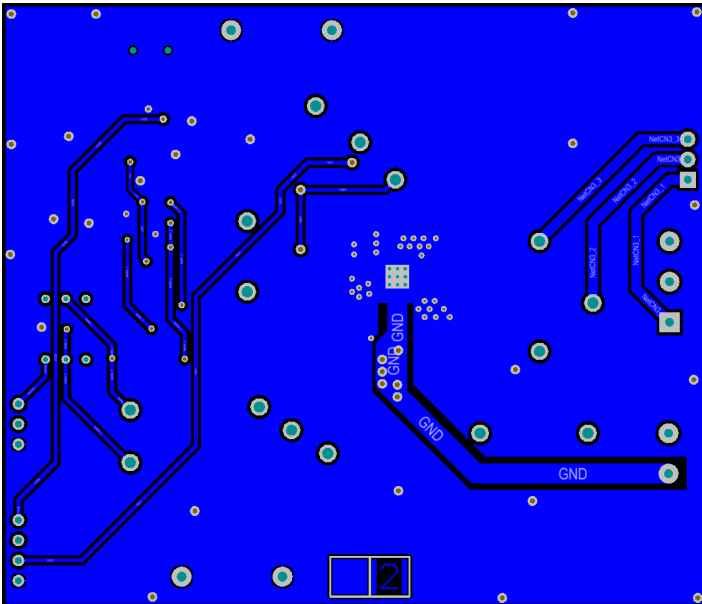
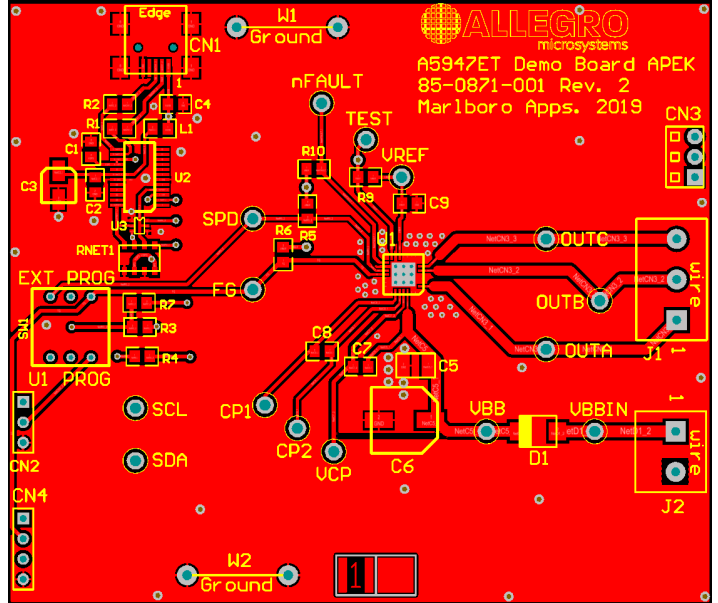
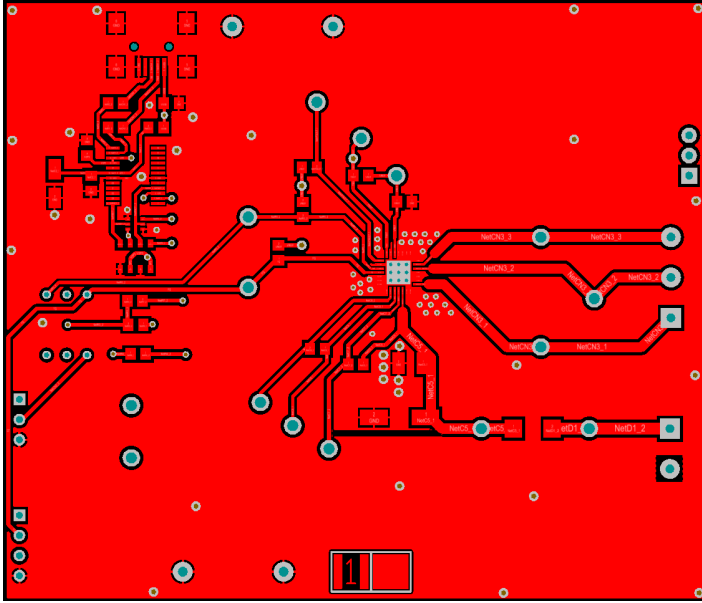
Note: Do not connect or disconnect the fan unless the outputs are either disabled or the VBB voltage is off.

5. If using the GUI, connect the USB cable to CN1 and a personal computer.
6. Turn the voltage supply on.

SCHEMATIC



LAYOUT



BILL OF MATERIALS

Table 3: APEK5947GET-01-T Evaluation Board Bill of Materials

ELECTRICAL COMPONENTS					
Designator	Quantity	Value	Description	Part Type	Footprint
C1, C2, C7, C8, C9	5	0.1 μ F	25 V Capacitor	Kemet C0805C104K3RACTU; Digikey 399-1168-1-ND	0805
C3	1	4.7 μ F	35 V Capacitor	Chemi-Con EMZA350ADA4R7MD61G; Digikey 565-2553-1-ND	UCC D61 Cap
C4	1	0.01 μ F	50 V Capacitor	Yageo CC0805KRX7R9BB103; Digikey 311-1136-1-ND	0805
C5	1	10 μ F	50 V Capacitor	Samsung CL32B106KBJNNWE; Digikey 1276-3388-1-ND	1210
C6	1	100 μ F	50 V Capacitor	Chemi-Con EMZA500ADA101MHA0G; Digikey 565-2569-1-ND	UCC HA0
CN1	1	–	USB Mini B Recepticle	EDAC 690-005-299-043; Digikey 151-1206-1-ND	EDAC 690-005-299-043
CN2, CN4	7	–	Cut from 50-Pin Strip	Samtec TSW-150-07-T-S; Digikey SAM1035-50-ND	3-Pin 0.1" Connector, 4-Pin 0.1" Connector
CN3	1	–	Molex 3-Pin Verticle Recepticle	Molex 0022022035; Digikey WM3201-ND	Molex 3-Pin 4455-N Vertical
CP1, CP2, FG, nFAULT, OUTA, OUTB, OUTC, SCL, SDA, SPD, TEST, VBB, VBBIN, VCP, VREF	15	–	Large Test Point	Keystone Electronics 5010; Digikey 36-5010-ND	PAD 57 125 TP HB
D1	1	–	Schottky Diode	Diodes Inc. B240-13-F; Digikey B240-FDICT-ND	DO-214AA
–	4	–	Rubber bumper	3M SJ-5303 (CLEAR); Digikey SJ5303-7-ND	Rubber bumper
J1	1	–	3-Pin Screw Down Connector	On Shore ED120/3DS; Digikey ED1610-ND	3-Pin screw down connector
J2	1	–	2-Pin Screw Down Connector	On Shore Technology ED120/2DS; Digikey ED1609-ND	2-pin screw down connector
L1	1	–	Ferrite bead	Laird MI0805K400R-10; Digikey 240-2389-1-ND	0805
–	1	–	PCB	85-0871-001 Rev. 2	–
R1, R2	2	27 Ω	1/8 W Resistor	Vishay/Dale CRCW080527R0FKEA; Digikey 541-27.0CCT-ND	0805
R3, R4, R7	3	200 Ω	1/8 W Resistor	Panasonic ERJ-6GEYJ201V; Digikey P200ACT-ND	0805
R5, R6, R9, R10	4	4.99 k Ω	1/8 W Resistor	Panasonic ERJ-6ENF4991V; Digikey P4.99KCCT-ND	0805
RNET1	1	10 k Ω	4 Isolated Resistors	CTS 744C083103JP; Digikey 744C083103JPCT-ND	CTS 744 Series
SW1	1	–	Dual SPDT Switch	Grayhill 76STC02T; Digikey GH7720-ND	76STC02T
U1	1	–	Three-Phase Sensorless Motor Driver	A5947ET	28-Pin ET
U2	1	–	USB 8-Bit FIFO IC	FTDI FT240XS-R; Digikey 768-1127-1-ND	SSOP-24 (150 mil)
U3	1	–	Dual N-CH FETs	Toshiba Semi SSM6N15AFU.LF; Digikey SSM6N15AFULFCT-ND	SOT-363
W1, W2	2	–	22 Gauge Bus Wire (300 mils above PCB)		Scope Ground

RELATED LINKS

A5947 Product Page: <https://www.allegromicro.com/en/products/motor-drivers/bldc-drivers/a5947>

Software Registration Site: <http://registration.allegromicro.com/login>

APPLICATION SUPPORT

For applications support contact, go to <https://www.allegromicro.com/en/about-allegro/contact-us/technical-assistance> and navigate to the appropriate region.

Revision History

Number	Date	Description
–	February 11, 2019	Initial release
1	February 13, 2020	Minor editorial updates
2	August 31, 2023	Extensive updates

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