

## A4988SET Evaluation Board User Guide

### DESCRIPTION

This evaluation board is used to demonstrate the Allegro A4988SET DMOS microstepping driver with translator motor driver IC.

### FEATURES

- Screw-down connectors for all required external connections
- Onboard controls of inputs via DIP switches

### EVALUATION BOARD CONTENTS

- APEK4988SET-01-T evaluation board

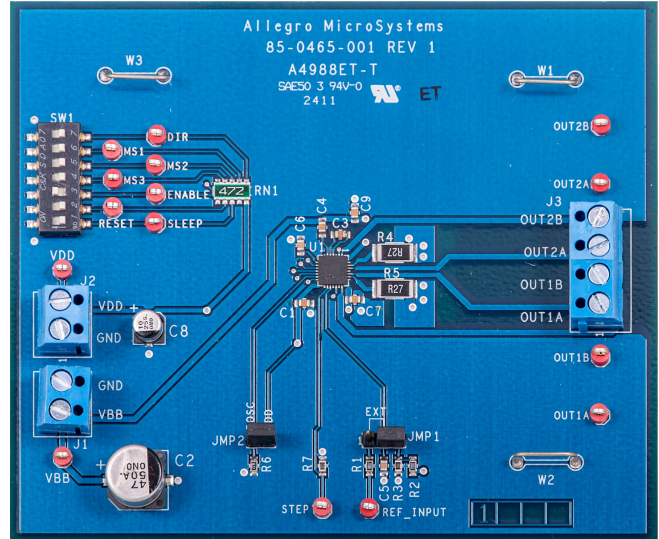


Figure 1: A4988SET Evaluation Board

Table 1: A4988SET Evaluation Board Configurations

Configuration Name	Part Number
APEK4988SET-01-T	A4988SET-T

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Table 2: General Specifications

Specification	Min.	Nom.	Max.	Units
Motor Supply Voltage ( $V_{BB}$ ) Operating	8	–	35	V
VREF Output Voltage ( $V_{BB} = 8$ to $35$ V)	0	–	4	V
Input Logic Low Level	0	–	$V_{DD} \times 0.3$	V
Input Logic High Level	$V_{DD} \times 0.7$	–	–	V
Logic Supply Voltage Range ( $V_{DD}$ )	3	–	5.5	V

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## USING THE EVALUATION BOARD

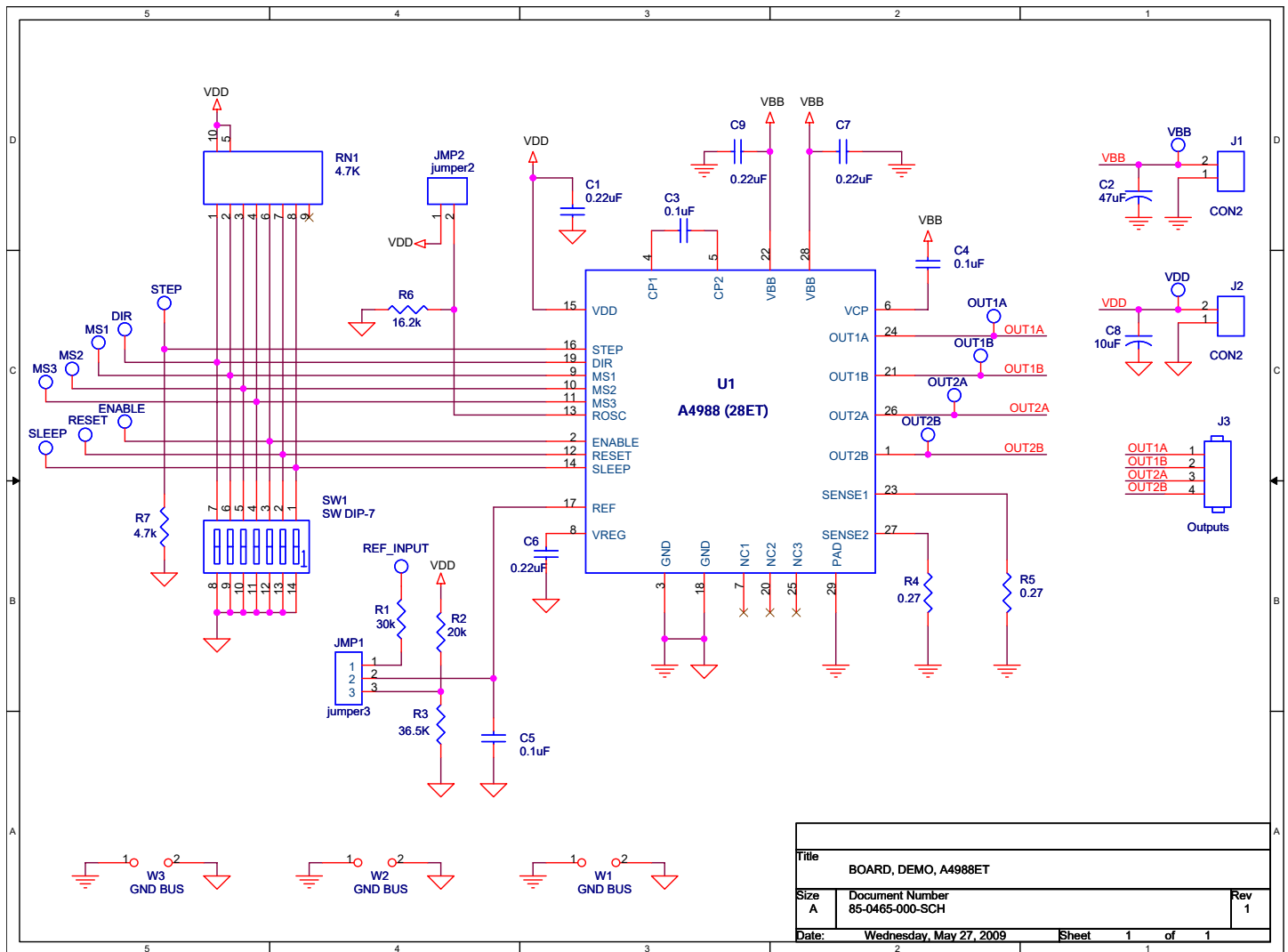
### EQUIPMENT REQUIRED

- DC motor
- Voltage supplies for VDD and VBB
- Function generator to drive the STEP input

### SETUP

1. Set the motor supply voltage (VBB) to the intended voltage.
2. Set the logic supply voltage (VDD) to the intended voltage.
3. Configure the function generator to provide proper waveform to STEP input
4. Ensure VREF is set to limit the output current to the desired level via R2/R3 or provide the appropriate voltage on REF\_INPUT test point which will also require JMP1 shunt to be installed between pins 1 and 2. See datasheet for selecting proper REF input voltage.
5. With both voltage supplies off, connect motor to J3.  
**Note: Do not connect or disconnect the motor unless the outputs are either disabled or the VBB voltage is off.**
6. Connect the logic voltage supply to J2, connect the motor voltage supply to J1, connect function generator to STEP test point.
7. Turn the voltage supplies on and enable the function generator.

# SCHEMATIC



# LAYOUT

ALL COMPONENTS MUST BE ROHS COMPLIANT.

USE LEAD FREE SOLDER

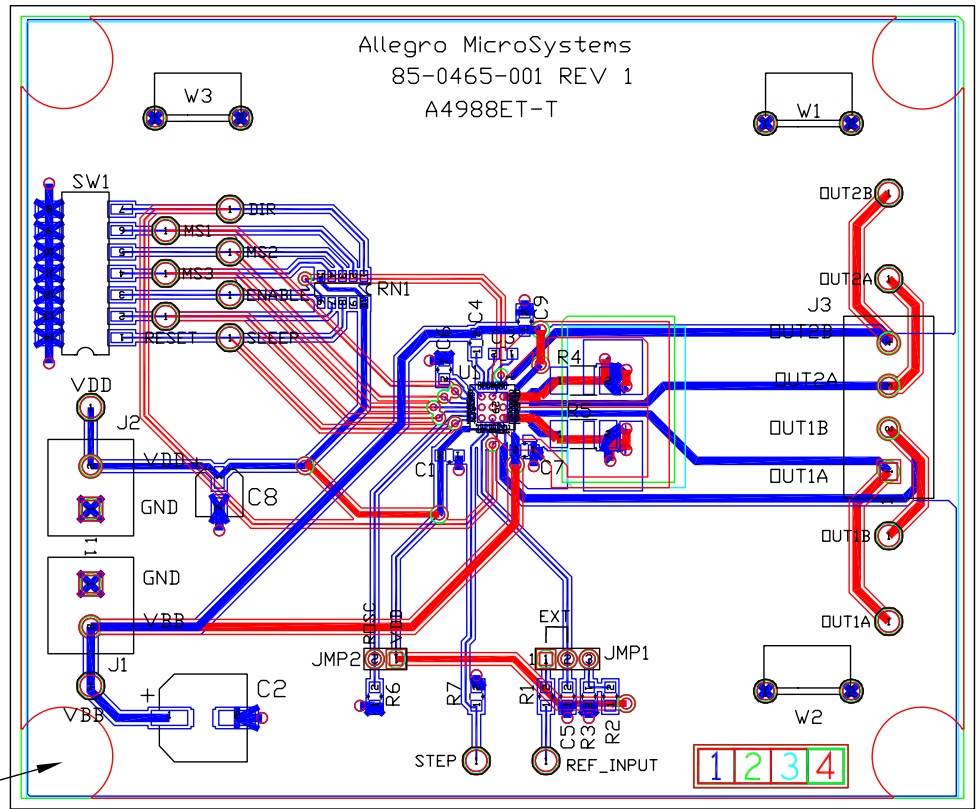
VIEW IS TOP SILKSCREEN


THIS BOARD HAS 4 LAYERS

U1 THERMAL PAD SHOULD BE SOLDERED DIRECTLY TO THE EXPOSED SURFACE ON THE PCB

MAKE W1, W2 & W3 WIRES A FINISHED HEIGHT OF .25"-.4" FROM THE BOARD.

PLACE BUMPONS ON BOTTOM 4 CORNERS OF PC BOARD.



 <p>Allegro™ MicroSystems, Inc. BOX 15036 WORCESTER, MA 01615-0036</p>	TITLE BOARD, DEMO, A4988ET	
	DRAWING NO. 85-0465-000-ASY	REV. 1
	T E Joyce Roche	
	DO NOT SCALE DRAWING	DATE 06/17/09
	SIZE A	SCALE NONE
TOLERANCE UNLESS OTHERWISE SPECIFIED +/-		SHEET 1 of 1

## BILL OF MATERIALS

**Table 3: APEK4988xES-01-T Evaluation Board Bill of Materials**

ELECTRICAL COMPONENTS						
Designator	Quantity	Value	Description	Manufacturer	Manufacturer Number	PCB Footprint
C1, C6, C7, C9	4	0.22 $\mu$ F	Cap, 50 V, X7R, CER,10%	Kemet	C0805C224K5RACTU	smd0805
C2	1	47 $\mu$ F	Cap, 50 V, VS,ELECT, SMD	Panasonic	EEE-1HA470P	smd400elec
C8	1	10 $\mu$ F	Cap, 25 V, VS,ELECT, SMD	Panasonic	EEE-1EA100SR	smd200elec146
C3, C4, C5	3	0.1 $\mu$ F	Cap, 100 V, X7R, CER,10%	Kemet	C0805C104K1RACTU	smd0805
DIR, ENABLE, MS1, MS2, MS3, OUT1A, OUT1B, OUT2A, OUT2B, REF_INPUT, RESET, SLEEP, STEP, VBB, VDD	15	–	RED, Test Point PC Compact 0.063" D	Keystone Electronics	5005	tp
JMP1	1	–	Header 1" SGL, 3POS	Samtec Inc	TSW-103-07-G-S	JUMPER3
J1, J2	2	–	Terminal Block, 5.08 mm, vert. 2 pos.	On Shore Technology	ED120/2DS	tb-ed120-2
J3	1	–	Terminal Block, 5.08 mm, vert. 4 pos.	On Shore Technology	ED120/4DS	tb-ed120-4
JMP2	1	–	Header 1" SGL, 2POS	Samtec Inc	TSW-102-07-G-S	JUMPER2
R1	1	30.0 k $\Omega$	RES, 1/8 W 1% 0805 SMD	Yageo Corp	RC0805FR-0730KL	smd0805
R2	1	20.0 k $\Omega$	RES, 1/8 W 1% 0805 SMD	Yageo Corp	RC0805FR-0720KL	smd0805
R3	1	36.5 k $\Omega$	RES, 1/8 W 1% 0805 SMD	Rohm	MCR10EZHF3652	smd0805
R4, R5	2	0.27 $\Omega$	RES, SMD, 2512, 1 W, 5%	Panasonic	ERJ-1TRQJR27U	smd2512
R6	1	16.2 k $\Omega$	RES, 1/8 W 1% 0805 SMD	Yageo Corp	RC0805FR-0716K2L	smd0805
R7	1	4.7 k $\Omega$	RES, 1/8 W 1% 0805 SMD	Rohm	MCR10EZHF4701	smd0805
RN1	1	4.7 k $\Omega$	Res Array, 10 pin, SMD, BUS	CTS Corporation	745C101472JPTR	smd10p_126x50
SW1	1	–	Dip Switch, SMD, 7 pos	ITT Industries/ C&K Div.	SDA07H1SBD	smd_dip14_3
U1	1	–	DMOS Microstepping Driver with Translator	Allegro MicroSystems	A4988SET	mlp-28_5x5
W1, W2, W3	3	–	20 AWG Solid Bus Wire, about 1" long, finished height of 0.25" to 0.4" from board	any	any	tp4
–	4	–	Bumpon, Hemisphere, Black, place on bottom 4 corners of PC board	3M/ESM	SJ5003	–
For JMP1 and JMP2	2	–	CONN, jumper shorting tin JMP1 place between pins 2 and 3	Sullins Electronics	STC02SYAN	–
PCB	1	–	A4988ET-T, Printed Circuit Board, ROHS compliant		85-0465-001	–

Replacement for capacitors and resistors must be equivalent to listed component.

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## RELATED LINKS

A4988 Product Page: <https://www.allegromicro.com/en/products/motor-drivers/brush-dc-motor-drivers/a4988>

## 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.

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## Revision History

Number	Date	Description
-	July 26, 2023	Initial release

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