ASEK33022

A33022 Evaluation Subkit User Guide

DESCRIPTION

The ASEK33022-SUBKIT-T allows the A33022 angle sensor to connect to the Allegro ASEK-20 evaluation programmer.

FEATURES

The subkit features a main daughter board as well as socketed and surface mount granddaughter boards for both single and dual die devices. A33022 angle sensors are not included in the subkit.

EVALUATION SUBKIT CONTENTS

- ASEK Angle Dual Channel Daughter Board (TED-0003293)
- A33022 Socketed Single Die Granddaughter Board (TED-0003881)
- A33022 Socketed Dual Die Granddaughter Board (TED-0003883)
- A33022 SMT Single Die Granddaughter Board (TED-0003880)
- A33022 SMT Dual Die Granddaughter Board (TED-0003882)

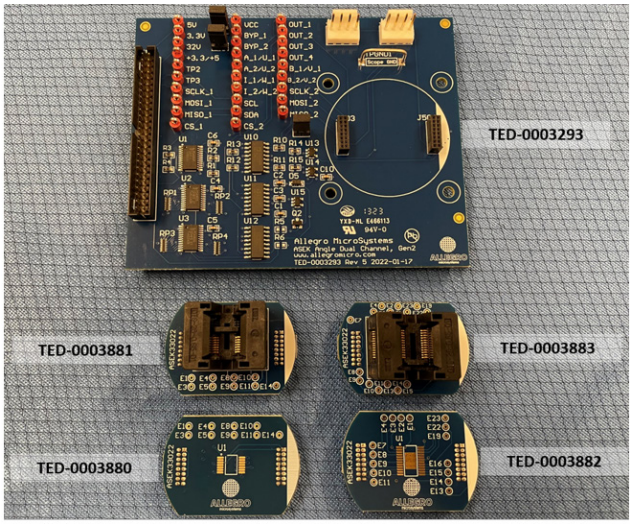

Figure 1: A33022 Evaluation Subkit

Table of Contents

USING THE EVALUATION BOARD

Hardware Setup

1. Connect the ASEK-20 to a personal computer.
   A. ASEK-20 can be ordered separately as the “ASEK-20-T-KIT”.
2. Connect the DC power cable to the 5 V port on the ASEK-20, plug the DC power supply to a 110V/220AC 60/50Hz outlet with the proper adapter.
3. Connect the ribbon cable to the ASEK-20 programmer and the J1 connector of the daughterboard (TED-0003292).
4. Mount a granddaughter board onto the daughter board.
5. Place an A33022 device into the daughter board (if using a socket).
6. Switch the ASEK-20 Off-On switch to “on” position.

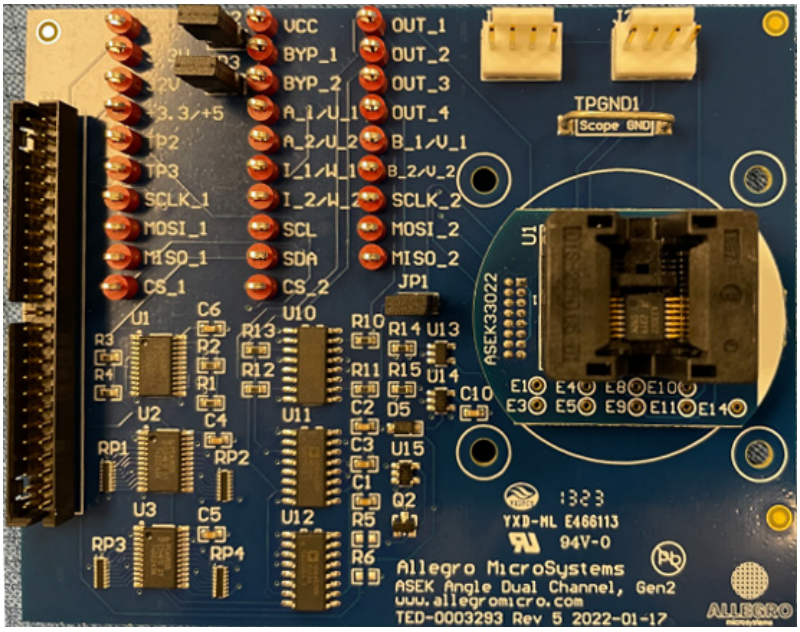

Figure 2: A33022 Single Die Mounted on Daughter Board

Additional Instructions

A33022 Software

A33022 software may be found on the Allegro Software portal, once registered, at: https://registration.allegromicro.com/login

ASEK-20 USB Driver

If the appropriate COM port driver is not installed automatically, latest versions may be found on the FTDI website:

http://www.ftdichip.com/Drivers/VCP.htm

A33022 Sample Devices

A33022 samples are not included with the ASEK-33022-SUBKIT-T. Contact your local FAE or Sales Representative for samples.

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

BILL OF MATERIALS

Table 1: ASEK Angle Dual Channel Daughter Board Evaluation Kit Bill of Materials (TED-0003293)

ELECTRICAL COMPONENTS				
Designator	**Quantity**	**Description**	**Manufacturer**	**Manufacturer Part Number**
C1, C2, C3, C4, C5, C6, C10	7	Capacitor, 0603, mono, X7R, 50 V, 100 nF	AVX	06035C104K4T2A
R10, R11, R12, R13	4	Resistor, 0603, 100 mW, thick film, 1%, 4.75 kΩ	Panasonic	ERJ-3EKF4751V
R3, R4, R14, R15	4	Resistor, 0603, 100 mW, thick film, 1%, 10.0 kΩ	Panasonic	ERJ-3EKF1002V
R1, R2	2	Resistor, 0603, 100 mW, thick film, 1%, 100 kΩ	Panasonic	ERJ-3EKF1003V
RP1, RP2, RP3, RP4	4	Resistor array, SMT, 10 kΩ, 1506, individual	Panasonic	EXB-2HV103JV
R5, R6	2	Do not install		
D5	1	Diode, SOD-123, MBR0540	Micro Semi	MBR0540-TP
Q2	1	Transistor, SOT-23, PFET, BSS84	Fairchild	BSS84
U10, U11, U12	3	IC, SOIC-16, quad FET switch, NO, R_{DS} < 10 Ω	Analog Devices	ADG452BRZ
U1, U2, U3	3	IC, TSSOP-24, I2C buss extender	NXP	PCA9555PW,118
U13, U14, U15	3	IC, SOT-23-5, single OR	TI	SN74AHC1G32DBVR
J1	1	Connector, through-hole, straight, gold plating, 50 circuit, 2 mm × 2 mm	Molex	87831-5020
J2, J3	2	Connector, through-hole, header, Molex 100 mil, 4 circuit, gold	Molex	22-11-2042
J503, J504	2	Connector, through-hole, 0.05” pitch, dual row, gold, 16 pins	Sullins	LPPB082CFFN-RC
JS1, JS2, JS3	3	Jumper, 2-pin shunt, gold plating	Sullins	SSC02SYAN
JP1, JP2, JP3	3	Jumper, 2-pin male, gold plating	AMP	9-146277-0-02
+3.3/+5, 3.3V, 5V, 32V, A_1/U_1, A_2/U_2, B_1/V_1, B_2/V_2, BYP_1, BYP_2, CS_1, CS_2, I_1/W_1, I_2/W_2, MISO_1, MISO_2, MOSI_1, MOSI_2, OUT_1, OUT_2, OUT_3, OUT_4, SCL, SCLK_1, SCLK_2, SDA, TP2, TP3, VCC	29	Test point, through-hole, compact, for 62 mil PCB, any color	Keystone	5005
TPGND1	1	Jumper, through-hole, used as scope ground, bend from 18g wire, install 0.25 inch above PCB		
RB1, RB2, RB3, RB4	4	Bumpon, rubber, 0.5 inch square, black	3M	SJ-5518 (black)
PCB	1	PCB, as from TED-0003293 Rev 5 gerber files		

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

Table 2: A33022 Socketed Single Die Granddaughter Board Bill of Materials (TED-0003881)

ELECTRICAL COMPONENTS				
Designator	**Quantity**	**Description**	**Manufacturer**	**Manufacturer Part Number**
C1, C2	2	Capacitor, 0603, mono, X7R, 50 V, 100 nF	AVX	06035C104K4T2A
U1	1	Socket, through-hole, TSSOP14	Enplas	OTS-14(28)-0.65-01-00
J503, J504	2	Connector, through-hole, 0.05" pitch, dual row, gold, 16 pins	Sullins	GRPB082VWVN-RC
PCB	1	PCB, as from TED-0003881 Rev 1 Gerber files		

Table 3: A33022 Socketed Dual Die Granddaughter Board Bill of Materials (TED-0003883)

ELECTRICAL COMPONENTS				
Designator	**Quantity**	**Description**	**Manufacturer**	**Manufacturer Part Number**
C1, C2, C3	3	Capacitor, ceramic, 0.1 µF 50V X7R 0603	AVX	06035C104K4T2A
U1	1	Socket, through-hole, TSSOP24	Enplas	OTS-24(28)-0.65-02
J503, J504	2	Connector, through-hole, 0.05" pitch, dual row, gold, 16 pins	Sullins	GRPB082VWVN-RC
PCB	1	PCB, as from TED-0003883 Rev 1 Gerber files		

Table 4: A33022 SMT Single Die Granddaughter Board Bill of Materials (TED-0003880)

ELECTRICAL COMPONENTS				
Designator	**Quantity**	**Description**	**Manufacturer**	**Manufacturer Part Number**
U1	1	Do not install	Allegro	A33022
C1, C2	2	Capacitor, 0603, mono, X7R, 50 V, 100 nF	AVX	06035C104K4T2A
J503, J504	2	Connector, through-hole, 0.05" pitch, dual row, gold, 16 pins	Sullins	GRPB082VWVN-RC
PCB	1	PCB, as from TED-0003880 Rev 1 Gerber files		

Table 5: A33022 SMT Dual Die Granddaughter Board Bill of Materials (TED-0003882)

ELECTRICAL COMPONENTS				
Designator	**Quantity**	**Description**	**Manufacturer**	**Manufacturer Part Number**
U1	1	Do not install	Allegro	A33022
C1, C2, C3	3	Capacitor, ceramic, 0.1 µF 50 V X7R 0603	AVX	06035C104K4T2A
J503, J504	2	Connector, through-hole, 0.05" pitch, dual row, gold, 16 pins	Sullins	GRPB082VWVN-RC
PCB	1	PCB, as from TED-0003882 Rev 1 Gerber files		

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

SCHEMATICS

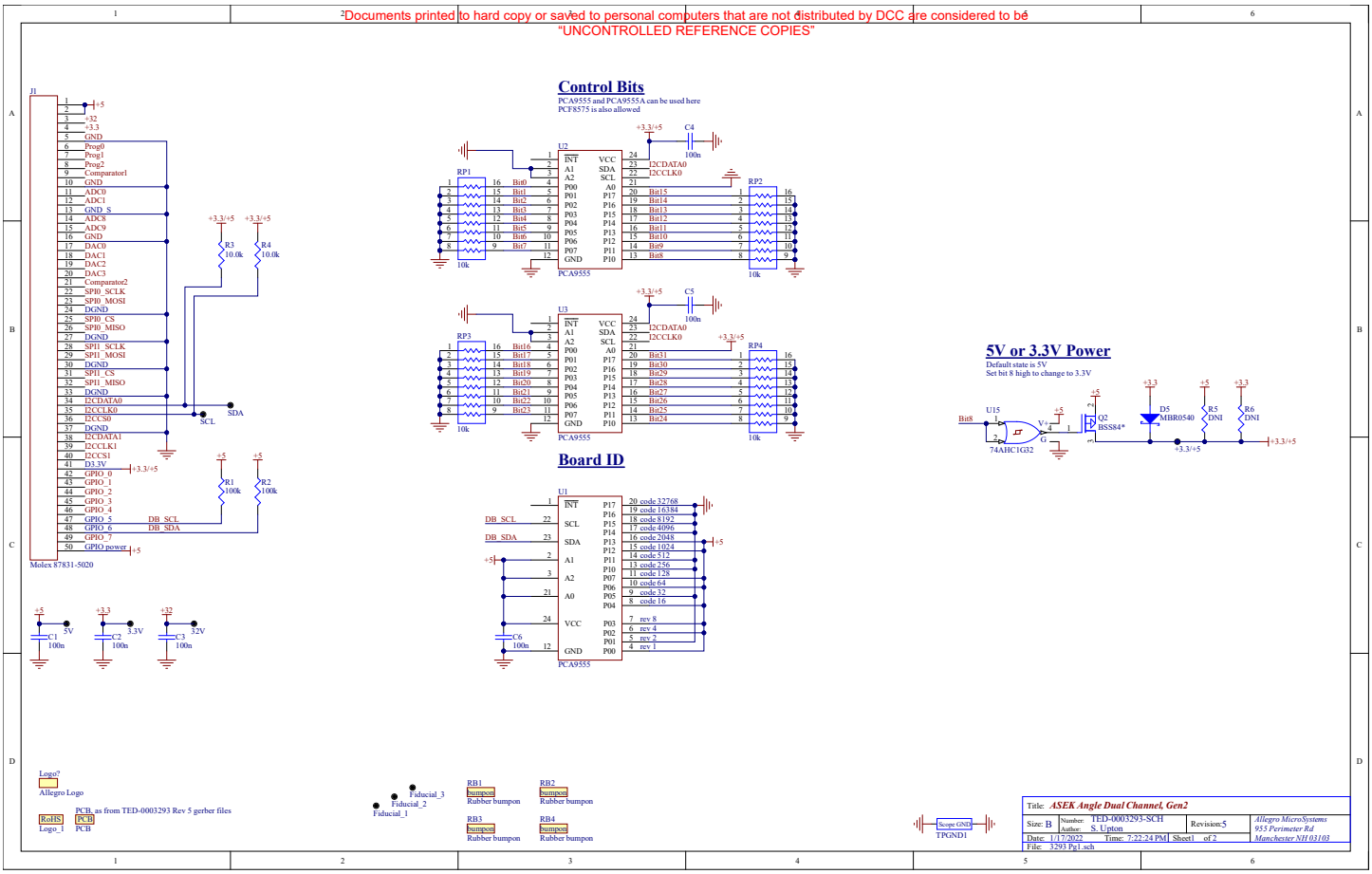

Figure 3: ASEK Angle Dual Channel Daughter Board Schematics, page 1 (TED-0003293)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

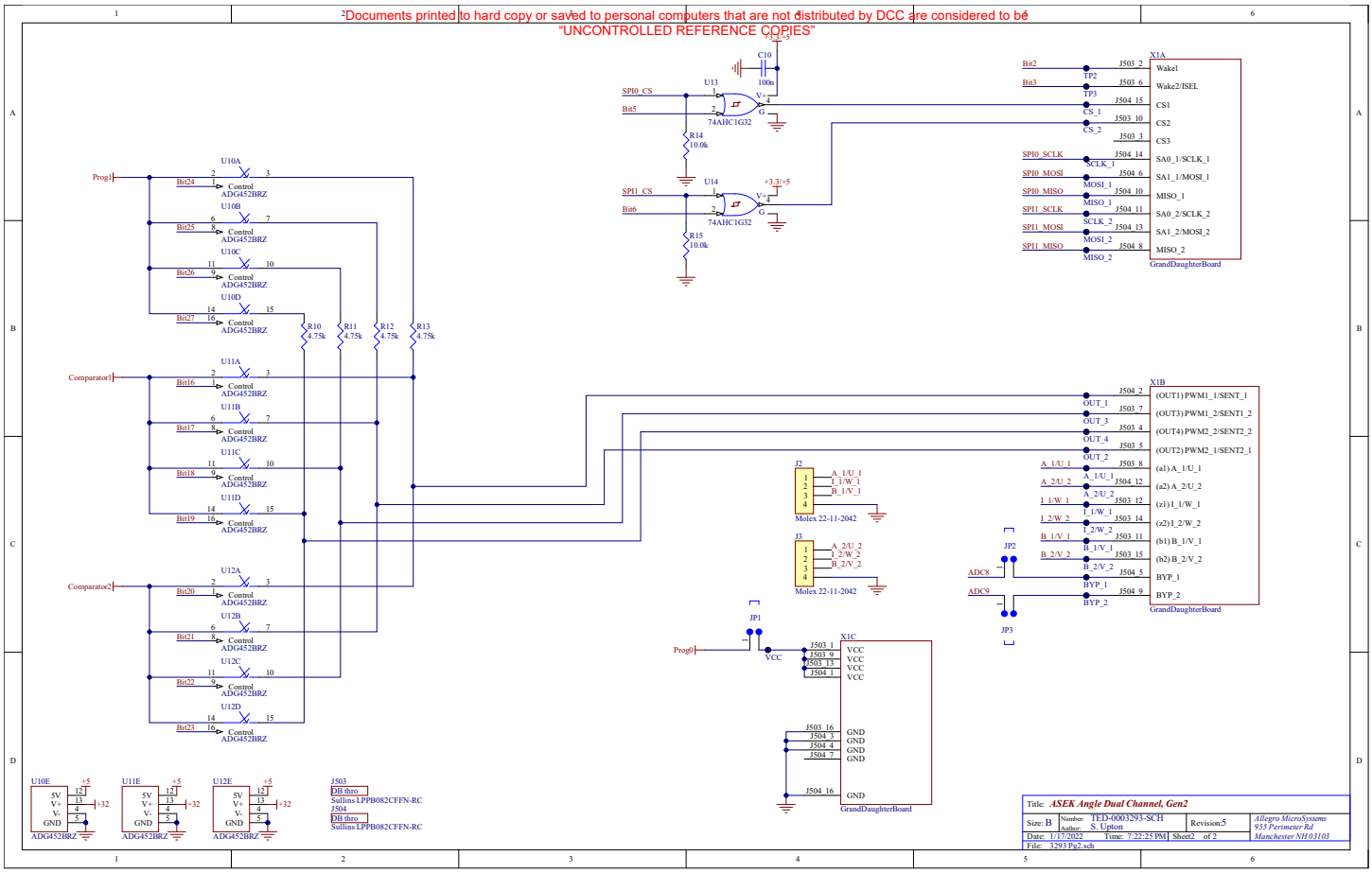

Figure 4: ASEK Angle Dual Channel Daughter Board Schematic, page 2 (TED-0003293)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

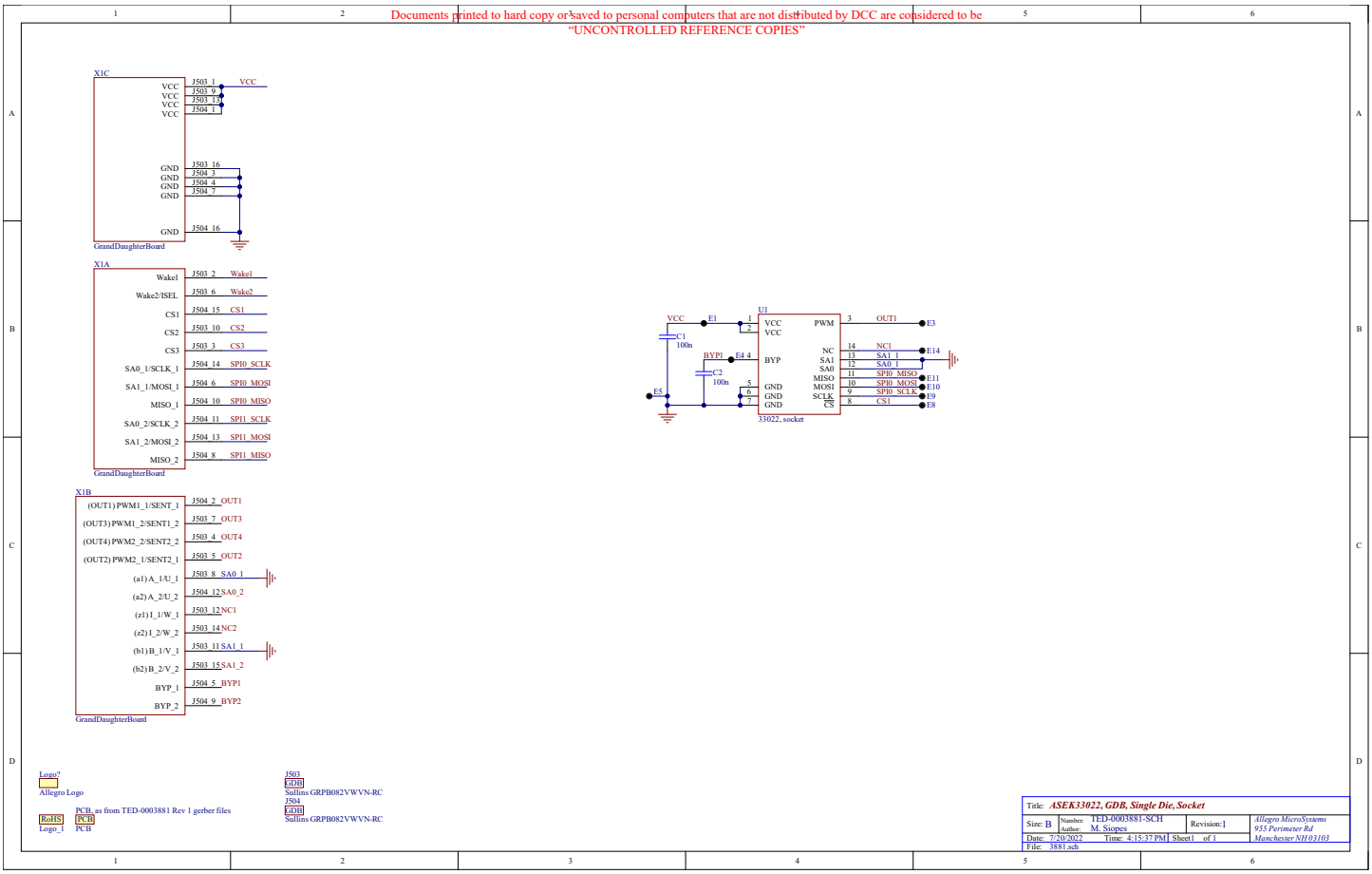

Figure 5: A33022 Socketed Single Die Granddaughter Board Schematic (TED-0003881)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

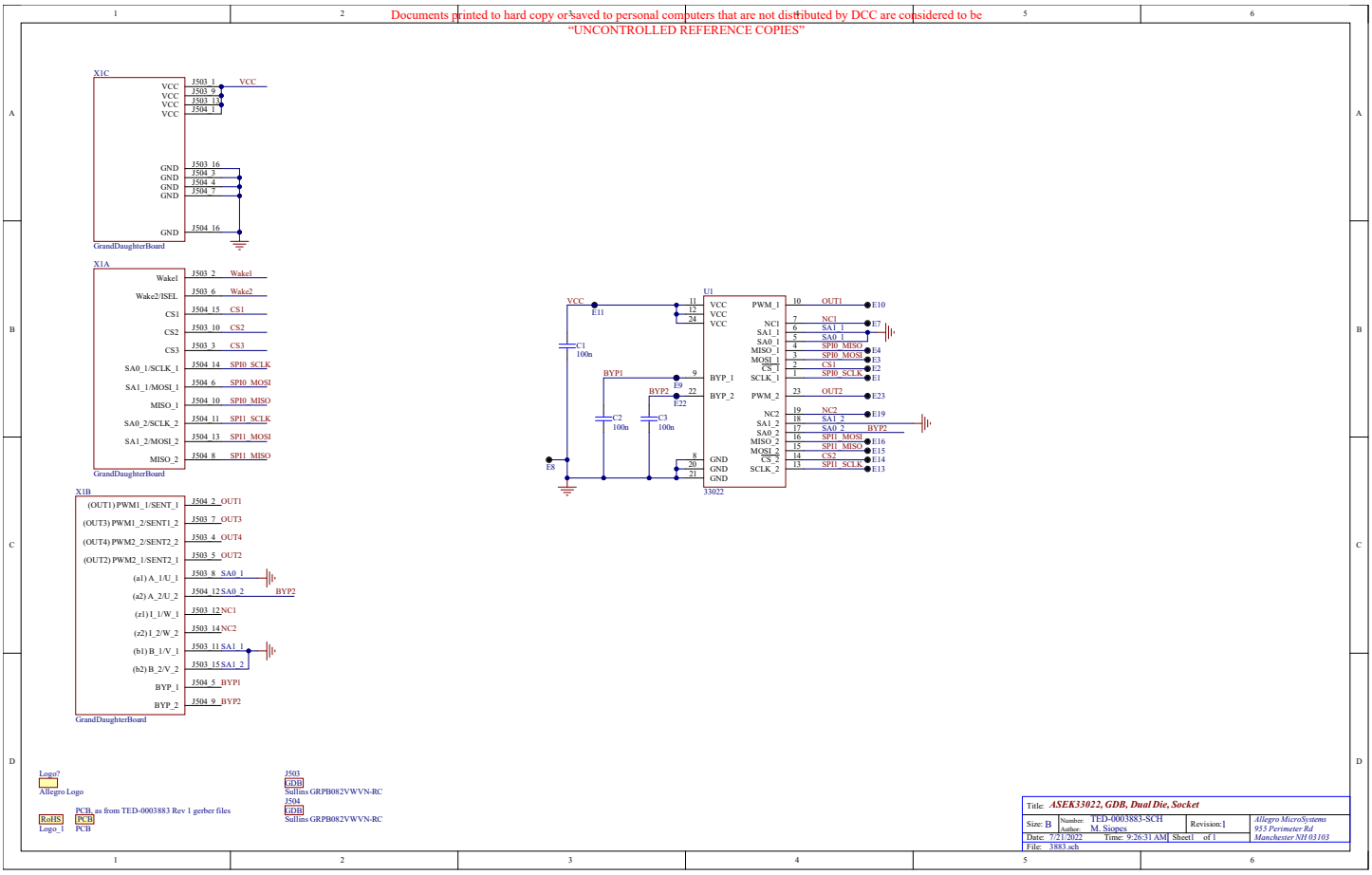

Figure 6: A33022 Socketed Dual Die Granddaughter Board Schematic (TED-0003883)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

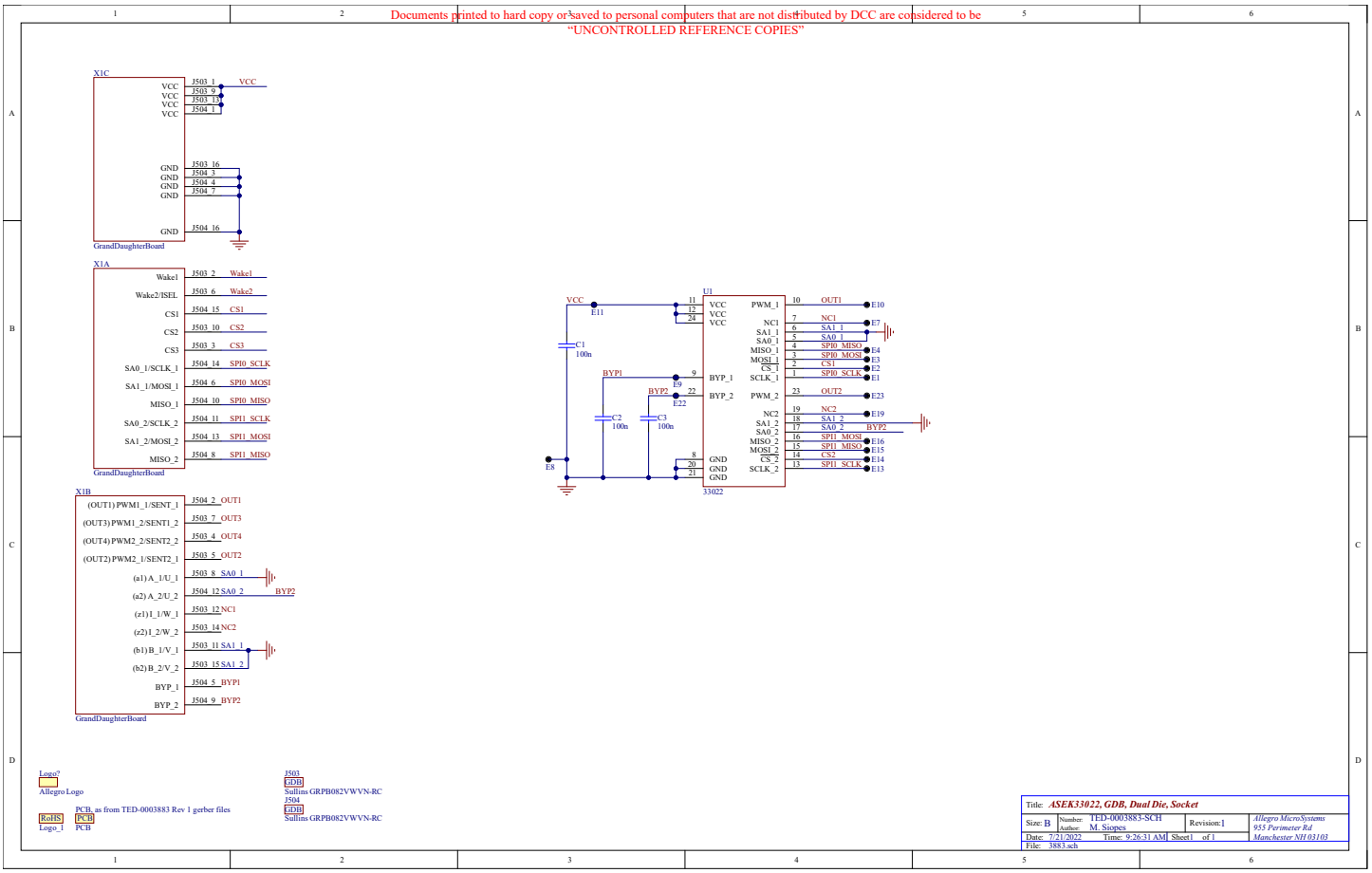

Figure 7: A33022 SMT Single Die Granddaughter Board Schematic (TED-0003880)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

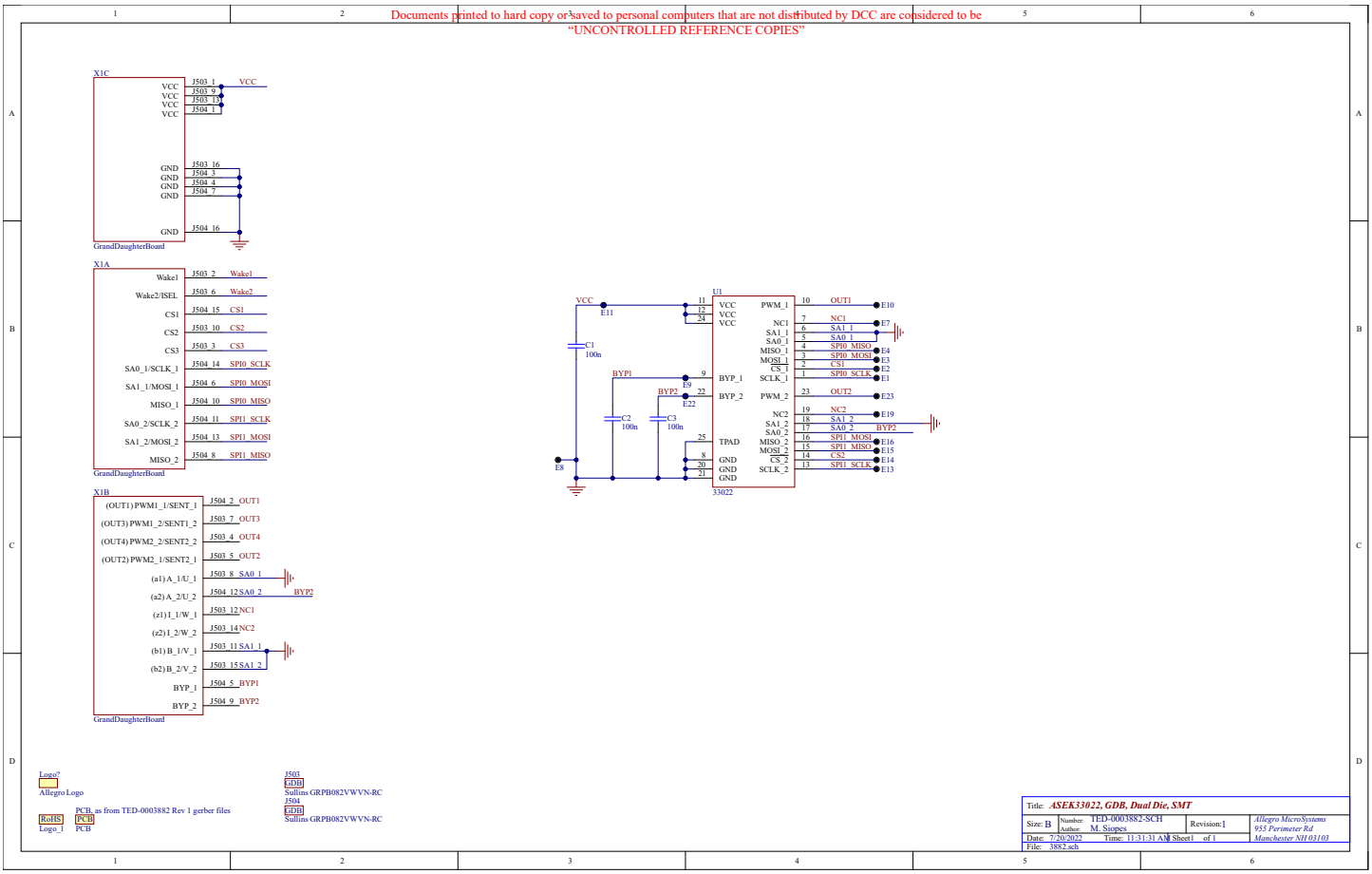

Figure 8: A33022 SMT Dual Die Granddaughter Board Schematic (TED-0003882)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

LAYOUTS

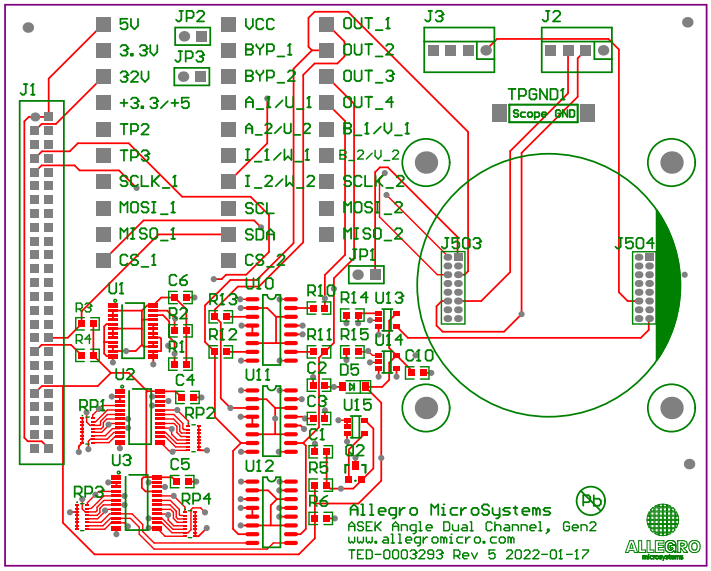

Figure 9: ASEK Angle Dual Channel Daughter Board Top Layout (TED-0003293)

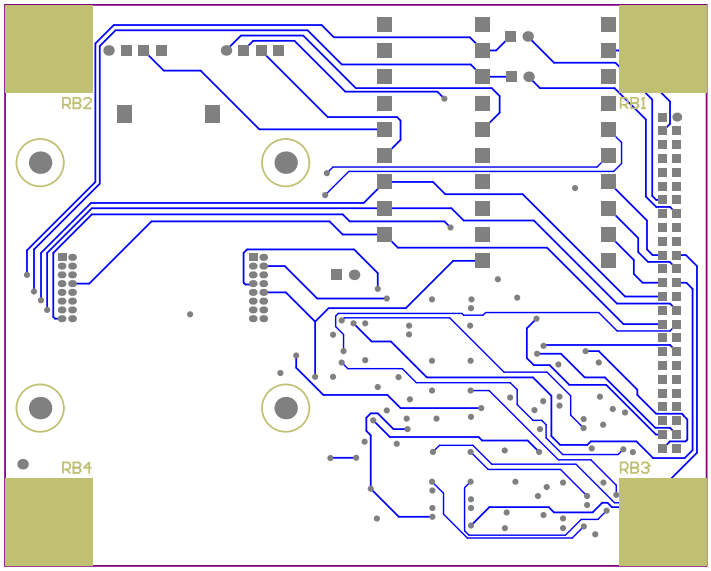

Figure 10: ASEK Angle Dual Channel Daughter Board Bottom Layout (TED-0003293)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

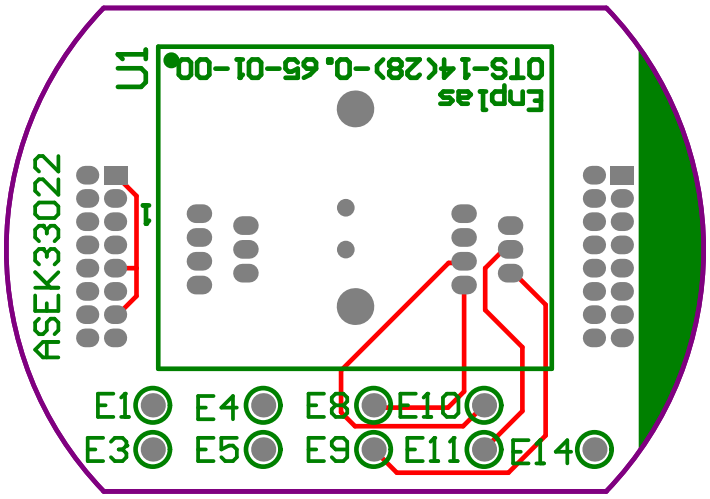

Figure 11: A33022 Socketed Single Die Granddaughter Board Top Layer (TED-0003881)

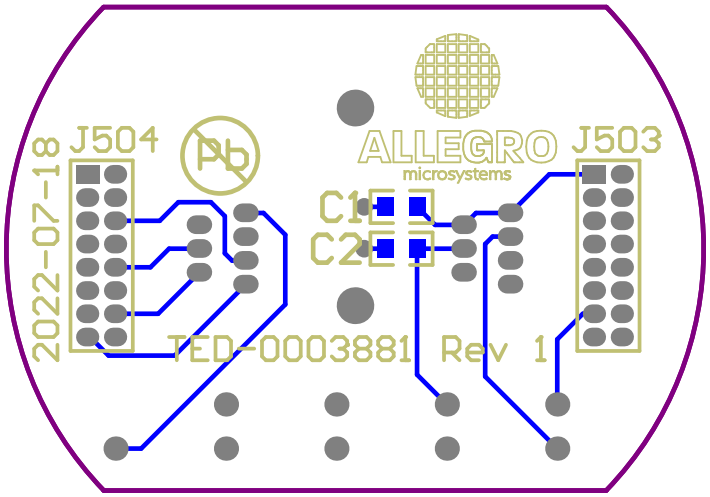

Figure 12: A33022 Socketed Single Die Granddaughter Board Bottom Layer (TED-0003881)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

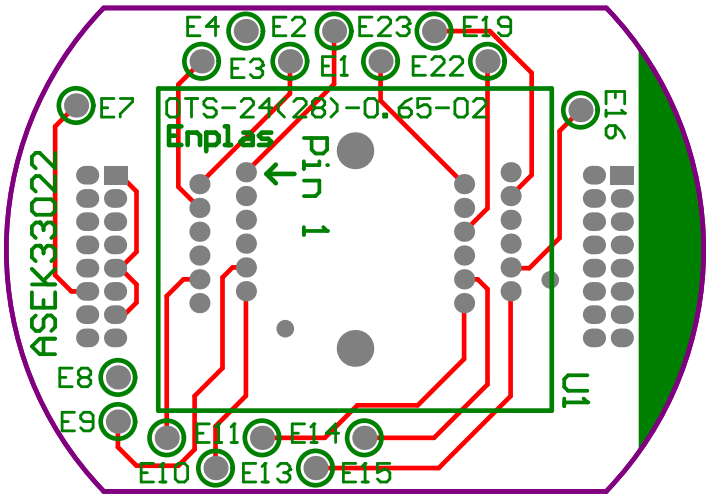

Figure 13: A33022 Socketed Dual Die Granddaughter Board Top Layer (TED-0003883)

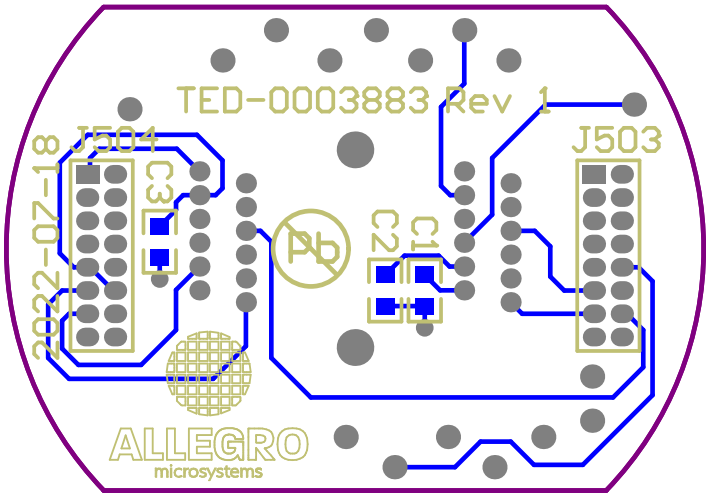

Figure 14: A33022 Socketed Dual Die Granddaughter Board Bottom Layer (TED-0003883)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

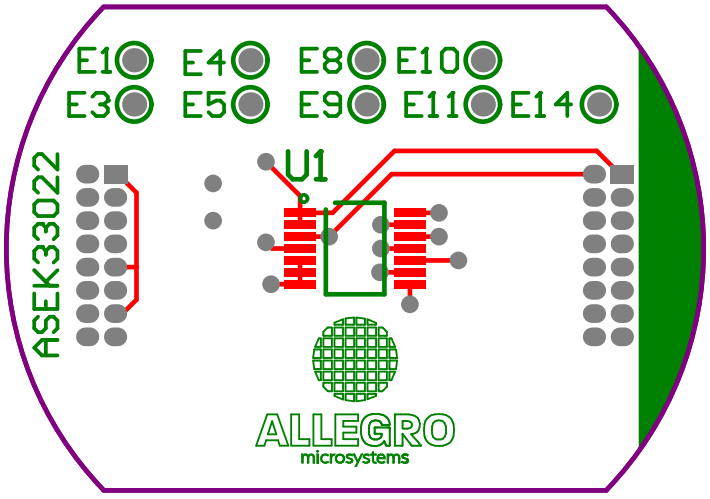

Figure 15: A33022 SMT Single Die Granddaughter Board Top Layer (TED-0003880)

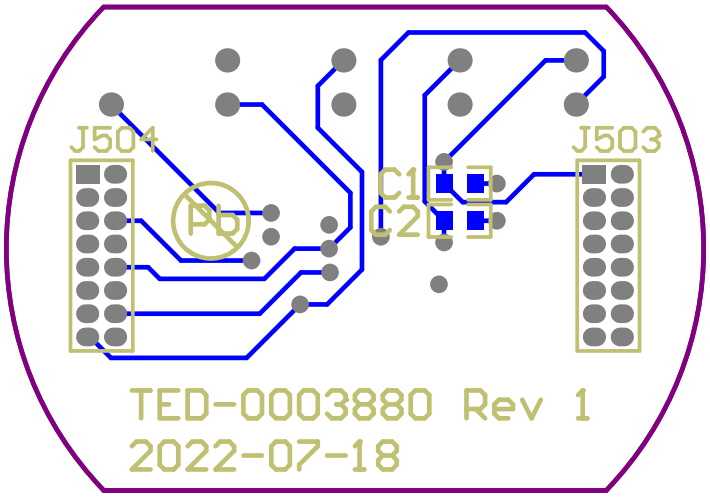

Figure 16: A33022 SMT Single Die Granddaughter Board Bottom Layer (TED-0003880)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

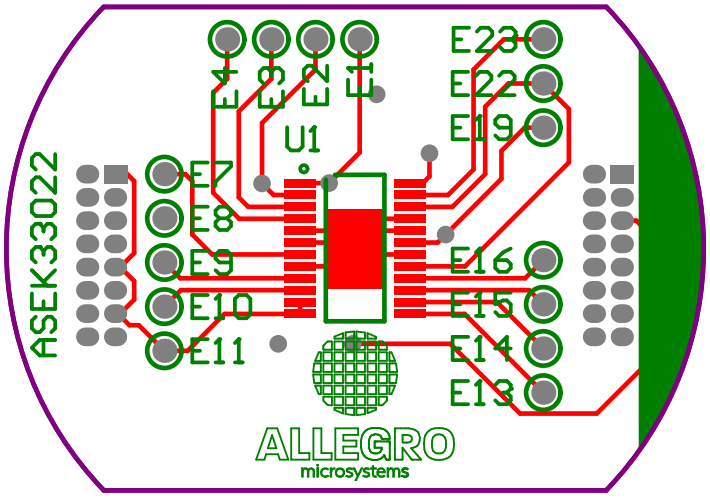

Figure 17: A33022 SMT Dual Die Granddaughter Board Top Layer (TED-0003882)

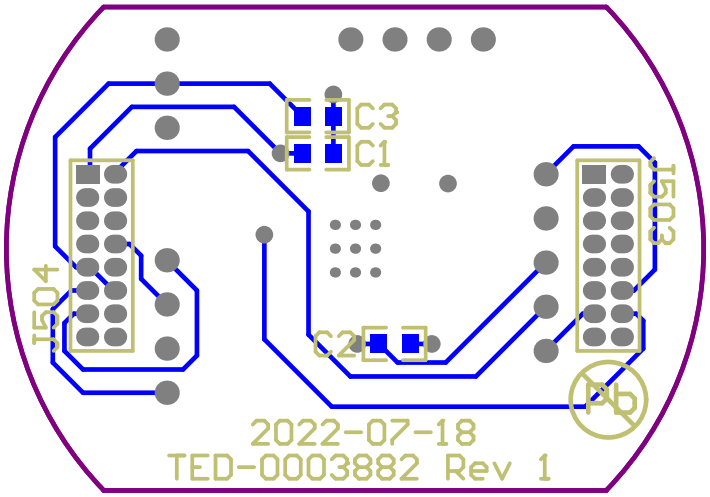

Figure 18: A33022 SMT Dual Die Granddaughter Board Bottom Layer (TED-0003882)

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

RELATED LINKS

Product Webpage: https://www.allegromicro.com/en/products/sense/linear-and-angular-position/angular-position-sensor-ics/a33022

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com

Revision History

Number	Date	Description
–	May 1, 2024	Initial release

For the latest version of this document, visit our website:
www.allegromicro.com

Allegro MicroSystems
955 Perimeter Road
Manchester, NH 03103-3353 U.S.A.
www.allegromicro.com