



Quick Start Guide

QG001019

TMF8821-SHIELD

Quick Start Guide

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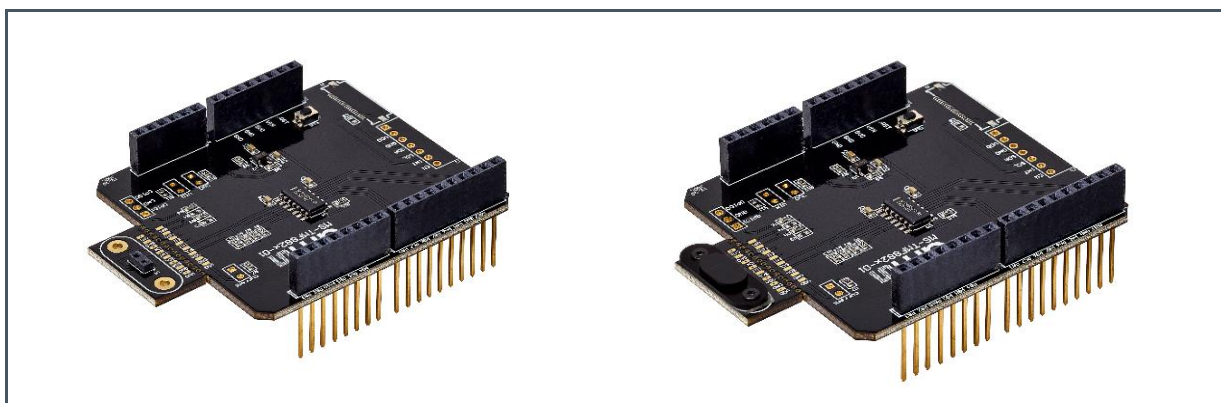
1 Out of the Box

The TMF8821-SHIELD board is an Arduino UNO form factor development platform for quick evaluation of the TMF8821 multi-zone dToF sensor.

Featuring a small (20 mm x 12 mm) sensor breakaway board, this kit can be easily integrated into custom, prototype hardware.

Several cover glass and air gap spacers are provided, this helps to evaluate the system for optimal optical performance.

Figure 1:
TMF8821-SHIELD With and Without Air Gap Spacer & Cover Glass



No.	Item	Description
1	TMF8821-SHIELD	Main PCB with TMF8821 sensor breakaway board
2	x4 Cover Glass	0.5 mm / 0.6 mm / 0.7 mm / 0.8 mm - thickness
3	x4 Air gap spacers	0.17 mm / 0.25 mm / 0.38 mm / 0.5 mm - thickness
4	2 screws	Screws for securing cover glass to PCB
5	Screwdriver	Screwdriver for securing screws

2 Software Installation

The TMF8821-SHIELD is designed to operate with a variety of MCU hardware platforms.

A Software Development Kit (SDK) for the TMF8821 has been developed to run on the NXP LPC55S69-EVK.

SDK source code examples include:

- Sensor calibration
- Simple configuration (9 zone distance reporting)
- Histogram output (9 zone configuration and 128bin reporting)
- Custom SPAD maps (reconfigure device to 4x4 mode)

LPC55S69 SDK download [LINK](#)

Please download the latest revision of the SDK, TMF8821_Driver_SDK_Source_vx.xx.zip from ams.com and refer to TMF8821_Software_Development_Kit_Getting_Started_Guide.pdf for installation and operations details.

3 Hardware Overview

The TMF8821-SHIELD board is an Arduino UNO form factor development platform for quick evaluation of the TMF8821 multi-zone dToF sensor.

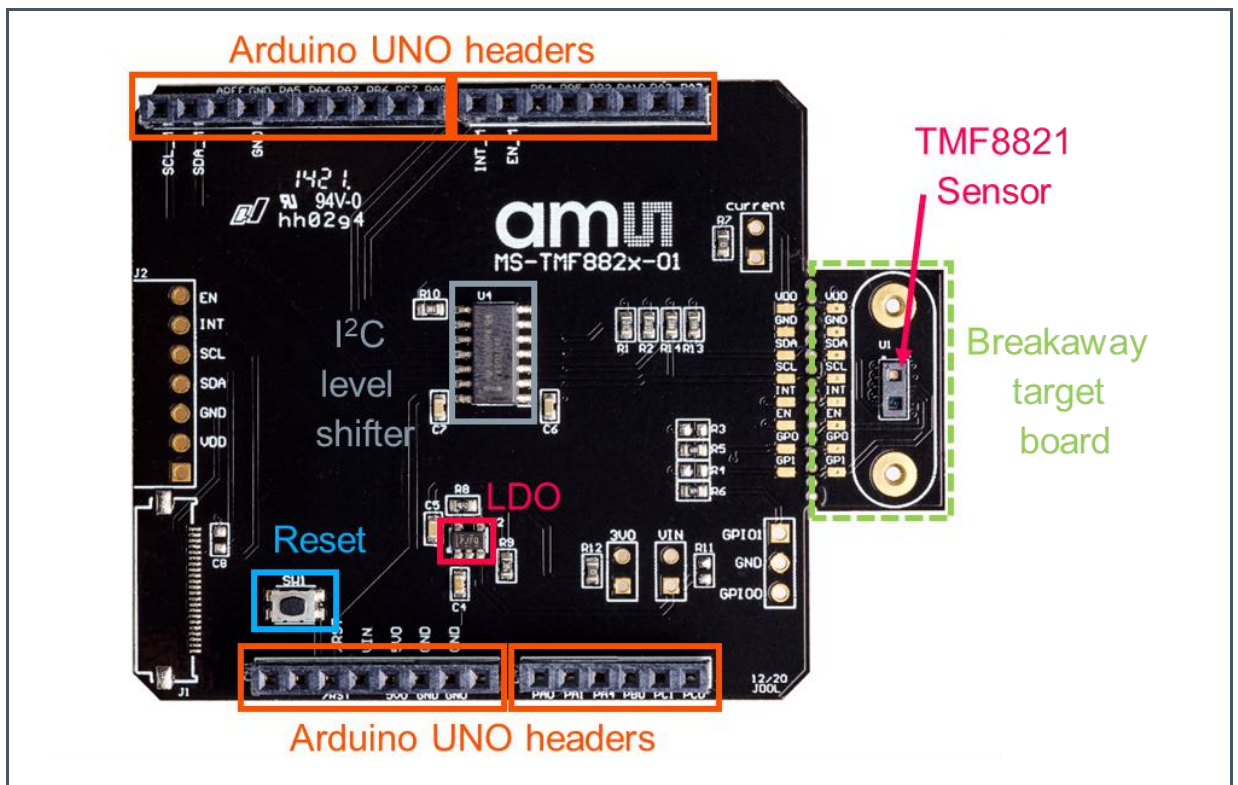
Featuring a small sensor breakaway board, this EVM can be integrated into custom, prototype hardware. The EVM includes an I²C level shifter and supply voltage regulator to allow the EVM to be used with input voltages up to 5 V.

4 cover glass and air gap spacers are provided, to enabling evaluation of the optical performance.

Key features

- Arduino UNO form factor development board
- TMF8821 sensor mounted on breakaway board
- Cover glass samples included, 0.5 mm / 0.6 mm / 0.7 mm / 0.8 mm - thicknesses
- Air gap spacer samples included, 0.17 mm / 0.25 mm / 0.38 mm / 0.5 mm - thicknesses
- Breakaway board Vdd current sense test point
- Reset button
- Onboard LDO and I²C level shifter

Figure 2:
TMF8821-SHIELD Hardware Overview

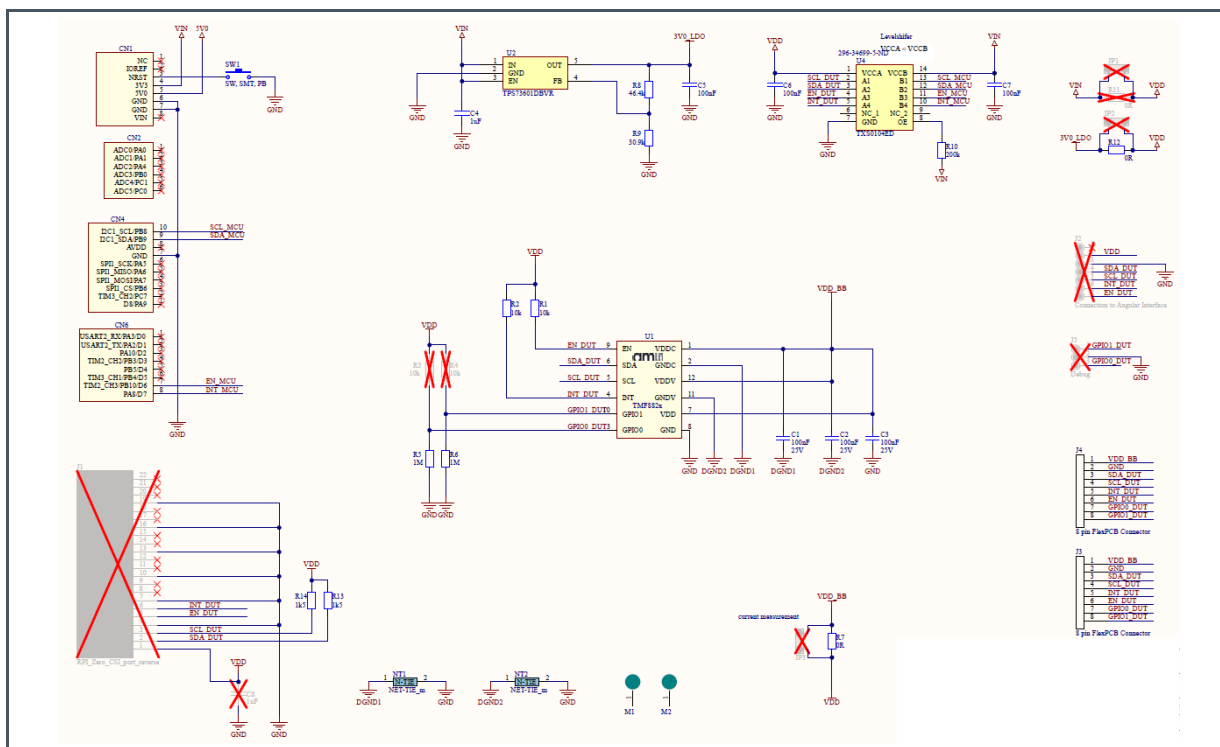


**Attention**

Please check latest TMF8821 datasheet for maximum supply and IO voltages. Failure to adhere to these voltage levels may result in permanent damage to the TMF8821-SHIELD.

4 Schematic

Figure 3:
TMF8821-SHIELD Schematic



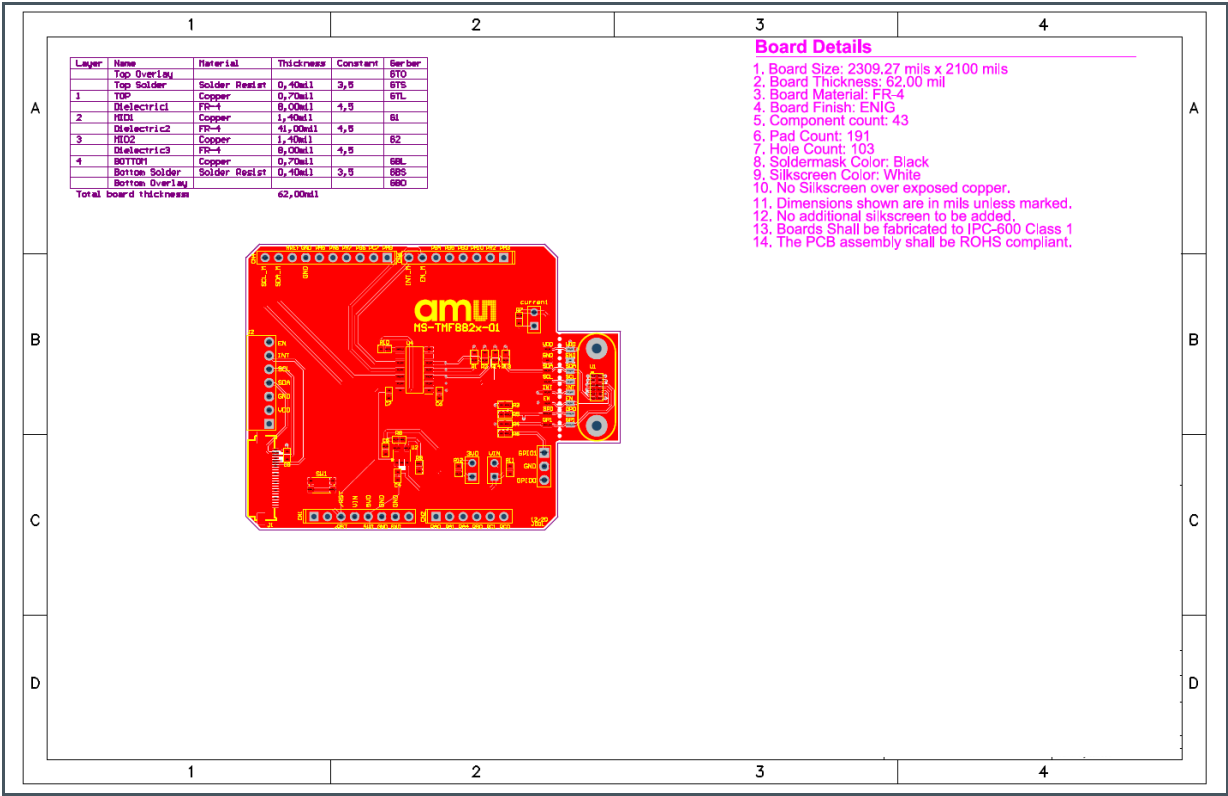
5 Bill of Materials

Figure 4:
Bill of Materials

Bill of Materials TMF882x sensor shield amun						
Source Data From: MS-TMF882x_Shield-01.PrjPcb						
Project: MS-TMF882x_Shield-01.PrjPcb						
Variant: Default Build						
Creation Date 11.03.2021 15:52						
Print Date: 11-Mar-21 3:52:17 PM						
Designator	Comment	Manufacturer	Manufacturer Part Number	Description	Name Error:	Quantity
C1, C2, C3	0.1uF,6V3, 0402, 10%	Murata	GRM155R71E104KE14D	Cap Ceramic 0.1uF 25V X7R 10% SMD 0402 125C Paper T/R, GRM155R71E104KE14D		3
C4	1uF	Murata	GRM188R71A105KA81D	CAP CER 1UF 10V X7R 0803		1
C5, C6, C7	0.1uF	Murata	GRM188R72A104KA35D	Multilayer Ceramic Capacitors MLCC - SMD/SMT 0.1uF 6.3Volts X7R 10%		3
CN1, CN6	8Pin Arduino Conn	Samtec	SSQ-108-04-G-S	Conn Socket Strip SKT 8 POS 2.54mm Solder ST Thru-Hole		2
CN2	8Pin Arduino Conn	Samtec	SSQ-108-04-G-S	Conn Socket Strip SKT 8 POS 2.54mm Solder ST Thru-Hole		1
CN4	10Pin Arduino Conn	Samtec	SSQ-110-04-G-S	Conn Socket Strip SKT 10 POS 2.54mm Solder ST Thru-Hole		1
M1, M2	Mounting Hole	PennEngineering	SMTSO-M1.6-1ET	Mounting nut M1.6 thread, Mounting nut M1.6 thread		2
R1, R2	10k	Vishay	CRCW080310K0FKEA	VISHAY - CRCW080310K0FKEA - SMD Chip Resistor, 0803 [1608 Metric], 10 kohm, CRCW e3 Series, 75 V, Thick Film, 100 mW		2
R5, R6	1M	VishayDale	CRCW08031M00FKEAHP	VISHAY - CRCW08031M00FKEAHP - RES, AEC-Q200, THICK FILM, 1M, 0803		2
R7, R12	0R	Multicomp	MC0.063W08030R	MULTICOMP MC0803W08030R Chip SMD Resistor, MC Series, 0.063 W, 50 V, 0803 [1608 Metric]		2
R8	46.4k	Multicomp	MC0.063W08031%46K4FR	RESISTOR, 46K4, 0.063W, 1%, 0803, REEL		1
R9	30.9k	Vishay	CRCW080330K9FKEA	RES SMD 30.9K OHM 1% 1/10W 0803		1
R10	200k	Vishay	CRCW0201200KFNEED	Res Thick Film 0201 200K Ohm 1% 1/20W ±200ppm/°C Molded SMD SMD Paper T/R		1
R13, R14	1k5	Vishay	CRCW08031K50FKEA	Res Thick Film 0803 1.5K Ohm 1% 0.1W(1/10W) ±100ppm/°C Pad SMD Automotive T/R		2
SW1	SW, SMT, PB	ITT / C&K Components	KMR221GLFS	SW, SMT, PB, KMR221GLFS		1
U1	TOF	ams AG	TMF882x	TOF TMF882x		1
U2	TPS73801DBVR	TI	TPS73801DBVR	Adj Low Dropout Regulator		1
U4	TXS0104ED	Texas Instruments	TXS0104ED	TEXAS INSTRUMENTS - TXS0104ED - Voltage Level Translator, Bidirectional, 4 Input, 1 mA, 165 ns, 24 Mbps, 1.65 V to 3.6 V, SOIC-14		1
						28
Approved		Notes				
		Parts with alternate marked as YES may be replaced by an equivalent with preapproval from AMS.				
		Parts from ams AG will be consigned				

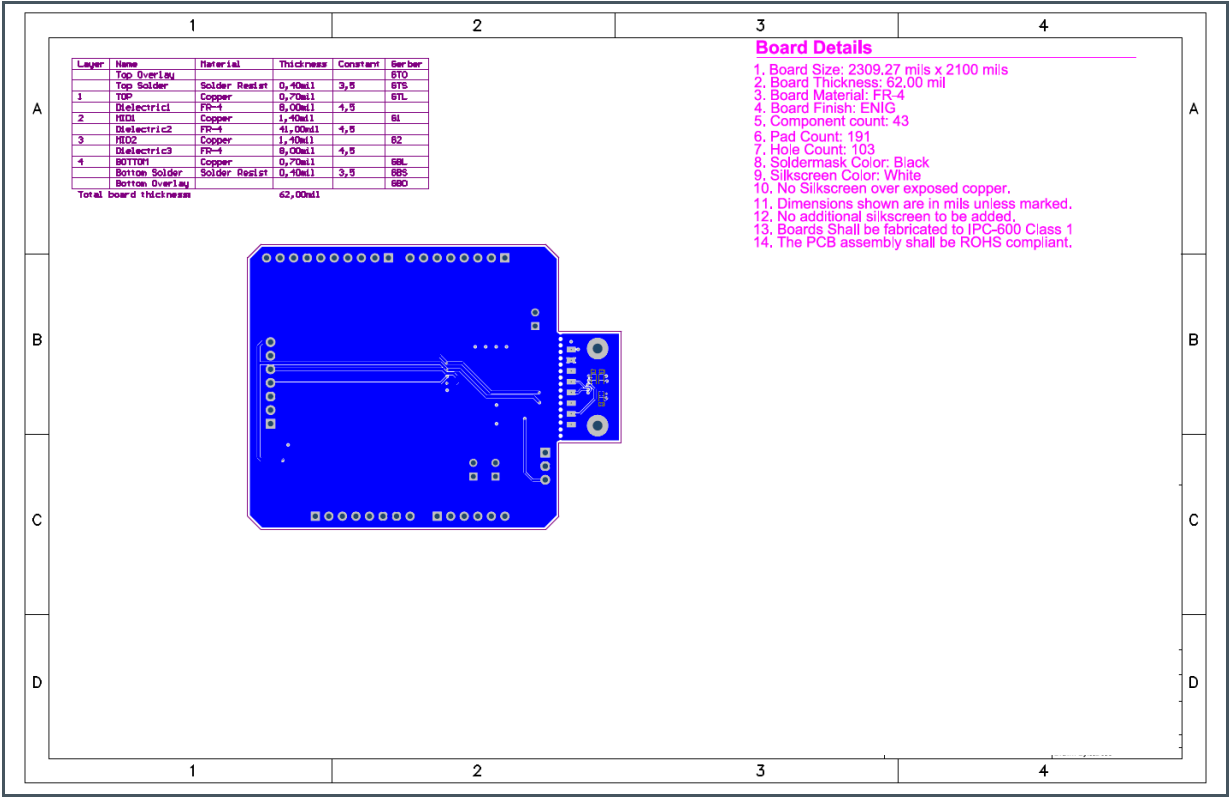
6 Layout

Figure 5:
Layer 1⁽¹⁾



⁽¹⁾ Full layout details can be found in TMF882x_AD001003_1-00.pdf.

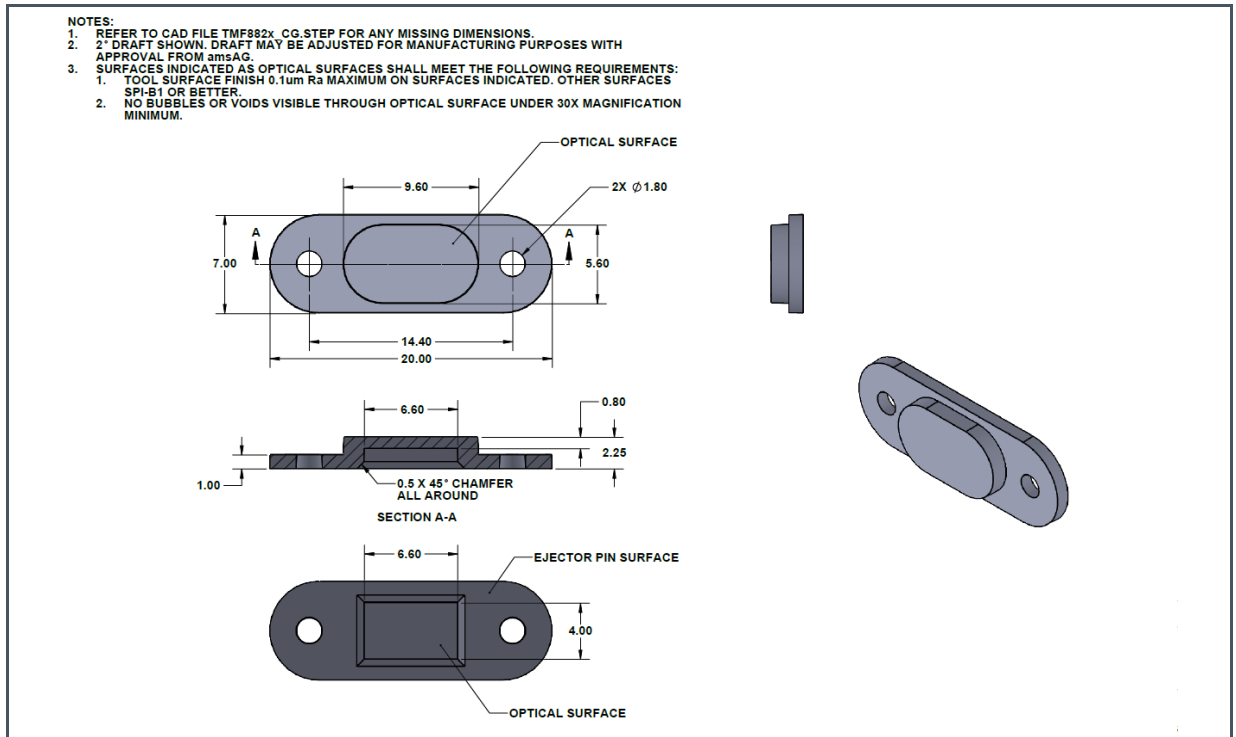
Figure 6:
Layer 4⁽¹⁾



(1) Full layout details can be found in TMF882x_AD001003_1-00.pdf.

7 Cover Glass Drawing

Figure 7:
Cover Glass Mechanical Drawing



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