# 10BASE-T1S Ethernet PHY Transceiver LAN8670 USB Evaluation Board (EVB-LAN8670-USB)

# User's Guide

Note: This User's Guide, although specific to the LAN8670, can provide some useful information for those implementing LAN8671 and LAN8672 within their designs. Please contact Microchip support for additional evaluation board information and for further support with your evaluation needs.

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ISBN: 978-1-6683-4383-8

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# Preface

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## INTRODUCTION

This chapter contains general information that will be useful to know before using the EVB-LAN8670-USB. Topics discussed in this chapter include:

- Intended Use
- Document Layout
- Customer Support
- Document Revision History

## INTENDED USE

This Microchip product is intended to be used for developing or functional testing of 10BASE-T1S Ethernet network devices by persons with experience in this field of knowledge.

**Note:** The operation of this Microchip product is only permitted with original Microchip devices.
Do not interfere with the product's original state. Otherwise, user safety, faultless operation and electromagnetic compatibility are not ensured.
To avoid electric shocks and short circuits use this device only in an appropriate environment.
This open device may exceed the limits of electromagnetic interference. Electromagnetic compatibility can be only achieved if the equipment is built into an appropriate housing.

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## DOCUMENT LAYOUT

This user's guide describes how to use the EVB-LAN8670-USB. The document is organized as follows:

- Chapter 1, Introduction – This chapter introduces the EVB-LAN8670-USB. It shows an illustration of the board and lists the product features.
- Chapter 2, Board Details – This chapter gives an overview of jumpers, connectors and electrical characteristics.
- Chapter 3, Assembly Plan and Mechanical Dimensions – This chapter shows the assembly plan (top and bottom views) and the mechanical dimensions of the board.

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- Distributor or Representative
- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

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Technical support is available through the web site at:

http://www.microchip.com/support.

## DOCUMENT REVISION HISTORY

**Revision D (July 2024)**

*Document refers to the EVB-LAN8670-USB, EV08L38A-R5 board*

- Updated Figure 1-1
- Table 2-2:
  - Added note
  - Added description for LED2

**Revision C (April 2023)**

*Document refers to the EVB-LAN8670-USB, EV08L38A-R4 board*

- Updated Figure 1-1, Figure 3-1 and Figure 3-2

**Revision B (July 2021)**

*Document refers to the EVB-LAN8670-USB, EV08L38A-R2 board*

- Removed document status and confidential ranking

**Revision A (May 2021)**

- Initial release of this document


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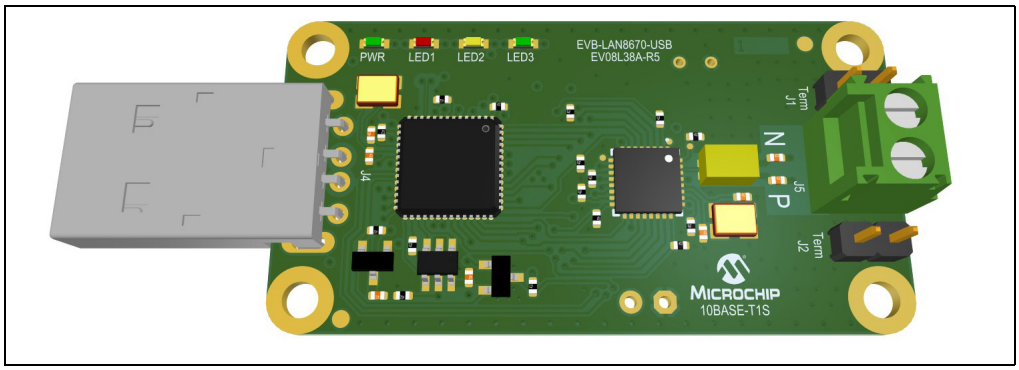
# Chapter 1. Introduction

## 1.1 OVERVIEW

The EVB-LAN8670-USB utilizes Microchip's LAN9500A, which is a Hi-Speed USB 2.0 to 10/100 Ethernet controller, to interconnect a USB interface with a 10BASE-T1S Ethernet network interface. Thus, the adapter serves as a network card that connects applications via USB to the 10BASE-T1S network interface.

**FIGURE 1-1: EVB-LAN8670-USB**




## 1.2 PRODUCT FEATURES

- USB to 10BASE-T1S interface card
- 10BASE-T1S single-pair Ethernet physical layer transceiver LAN8670
- Supports multidrop mixing segments
- Connects to a USB host
- Physical Layer Collision Avoidance (PLCA)
- Screw terminal for direct cable connection (no connector needed)
- Configurable on-board termination

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# Chapter 2. Board Details

## 2.1 ELECTRICAL CHARACTERISTICS

| Parameter | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|
| USB Connector Voltage | 4.75 | 5 | 5.25 | V |

## 2.2 CONNECTORS

All connectors are mounted on the top side of the board.

### 2.2.1 USB Connector

The EVB-LAN8670-USB provides a USB connector (J4) to connect to a USB device.

| | |
|---|---|
| **Type:** | 0480370001, standard type A, from Molex® |

### 2.2.2 Network Connector

The network connector (J5) is used as the interface to the network.

| | |
|---|---|
| **Type:** | 691214110002, fixed terminal block, from Würth Elektronik |

The terminal pins are described in Table 2-1.

**TABLE 2-1: J5 – PIN DESCRIPTION**

| Pin | Description |
|---|---|
| Terminal 1 | TRX_P |
| Terminal 2 | TRX_N |

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## 2.3 JUMPERS

All jumpers are mounted on the top side of the board. The location of the jumpers is depicted in Figure 3-1.

### 2.3.1 Termination

The termination jumpers (J1 and J2) are used for enabling 100 Ohm edge termination at the ends of a 10BASE-T1S segment.

**Note:** Both jumpers must be closed to enable edge termination.

## 2.4 LEDS

All LEDs are mounted on the top side of the board.

Table 2-2 gives an overview of the LEDs and the states they signal.

**TABLE 2-2: LEDS**

| Name | State | Description | Note |
|---|---|---|---|
| PWR | Off | The EVB-LAN8670-USB is not powered. | — |
| | On (green) | The EVB-LAN8670-USB is powered. | |
| LED1 | Off | Future use | |
| | On (red) | | |
| LED2 | Off | The EVB-LAN8670-USB does not send or receive data. | Note 1 |
| | Blinking (yellow) | The EVB-LAN8670-USB sends or receives data. | |
| LED3 | Off | Future use | — |
| | On (green) | | |

**Note 1:** It is recommended to use the latest Windows® 10 or Linux® driver, which can be found at: https://www.microchip.com/en-us/development-tool/EV08L38.


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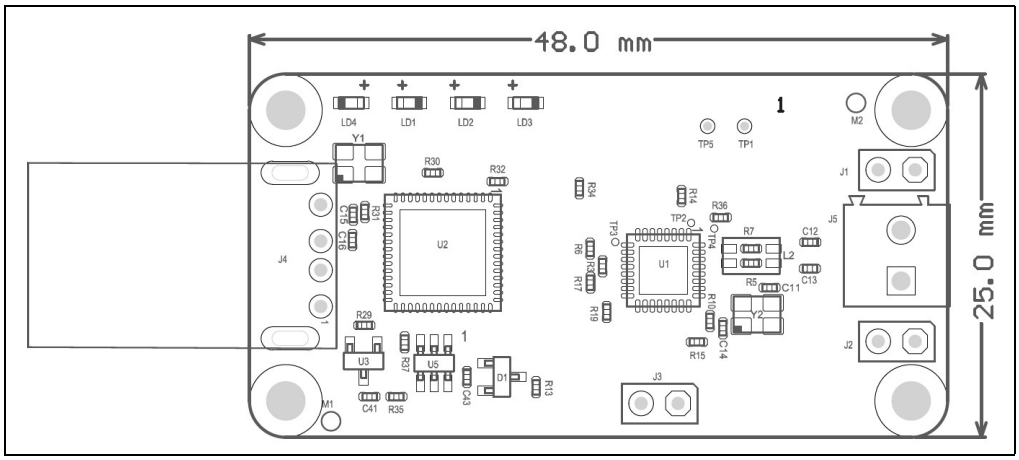
# Chapter 3. Assembly Plan and Mechanical Dimensions

## 3.1 TOP VIEW AND MECHANICAL DIMENSIONS

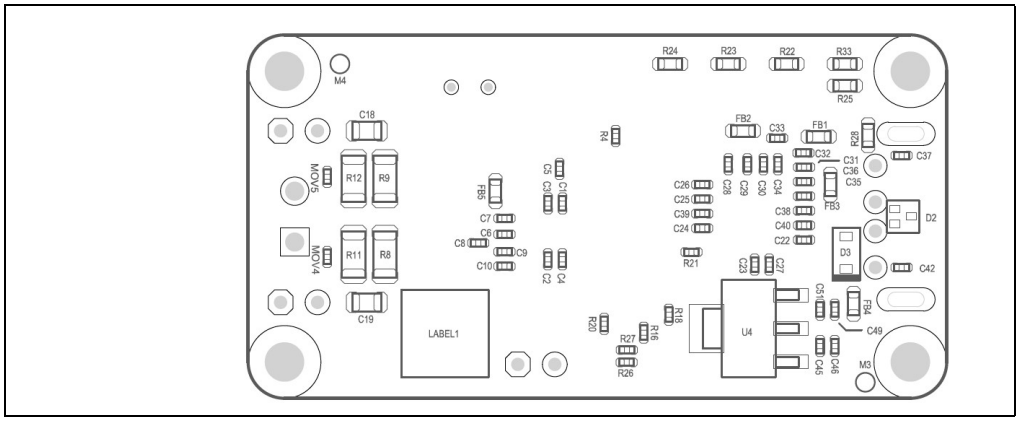
The mechanical dimensions are shown in Figure 3-1.

**FIGURE 3-1: ASSEMBLY PLAN – TOP VIEW AND MECHANICAL DIMENSIONS**




## 3.2 BOTTOM VIEW

**FIGURE 3-2: ASSEMBLY PLAN – BOTTOM VIEW**



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