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 and Sales for additional evaluation board information and for further support with your evaluation needs.

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Preface

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Documents are identified with a "DS" number. This number is located on the bottom of each page, in front of the page number. The numbering convention for the DS number is "DSXXXXXA", where "XXXXX" is the document number and "A" is the revision level of the document.

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 testing 10BASE-T1S Ethernet network devices by persons with experience in this field of knowledge.

Note: The operation of this Microchip product is only admitted 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.

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.

CUSTOMER SUPPORT

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

Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at:

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DOCUMENT REVISION HISTORY

Revision B (July 2021)

- Removed document status and confidential ranking

Revision A (May 2021)

- Initial release of this document

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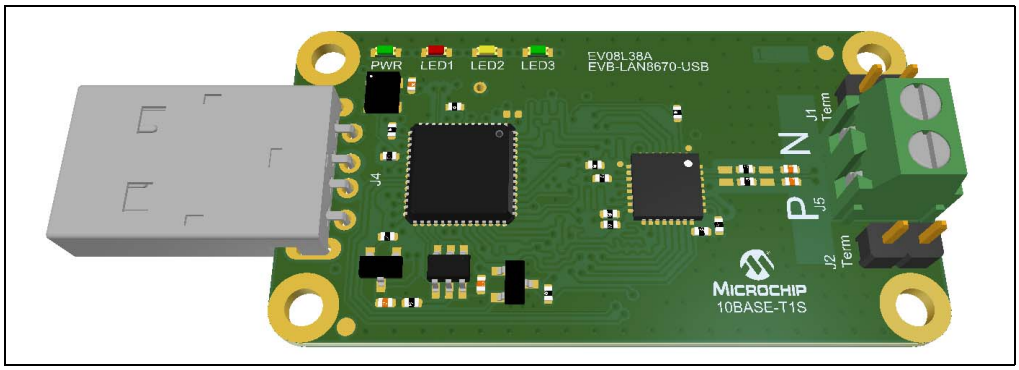
Chapter 1. Introduction

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
- 10 Mbit/s short-reach single-pair Ethernet physical layer transceiver
  - Half-duplex point-to-point link segments
  - Half-duplex 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

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.

The table below gives an overview of the LEDs and the states they signal.

Name	State	Description
PWR	Off	The EVB-LAN8670-USB is not powered.
	On (green)	The EVB-LAN8670-USB is powered.
LED 1	Off	Future use
	On (red)	
LED 2	Off	
	On (yellow)	
LED 3	Off	
	On (green)	

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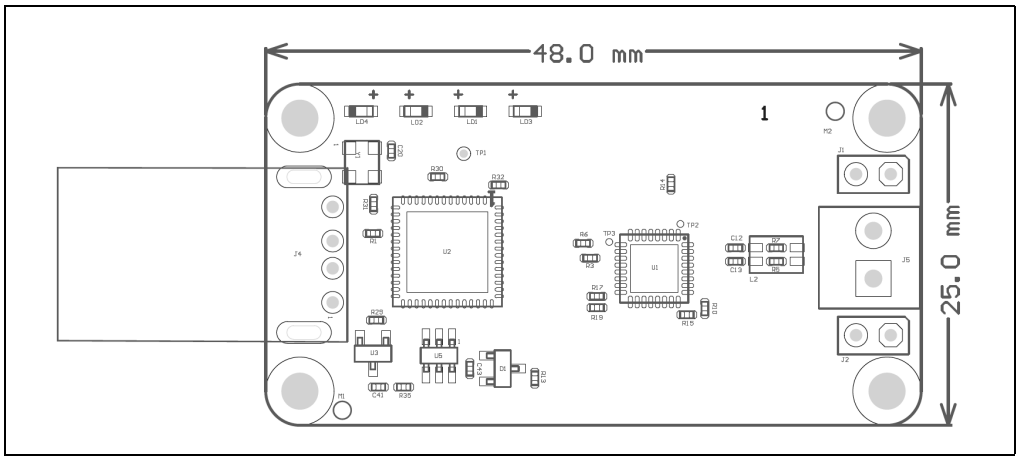
Chapter 3. Assembly Plan and Mechanical Dimensions

3.1 TOP VIEW AND MECHANICAL DIMENSIONS

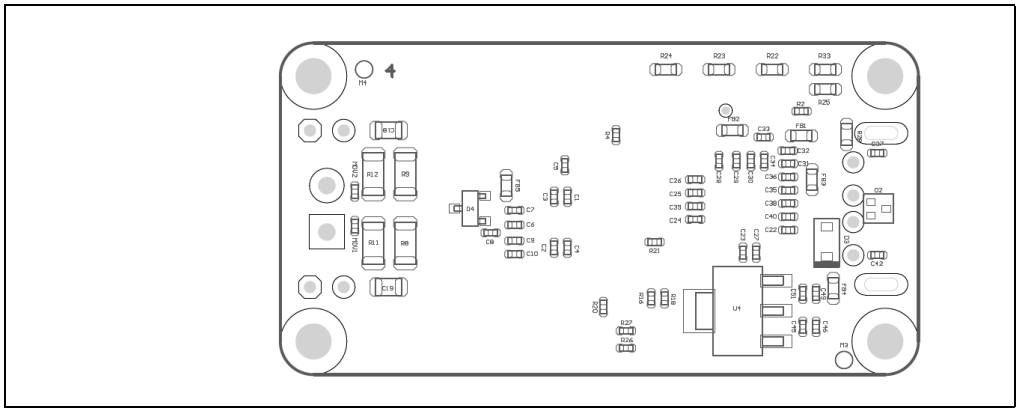
The mechanical dimensions are shown in Figure 3-1.

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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