



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

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

NOTICE TO CUSTOMERS

All documentation becomes dated, and this manual is no exception. Microchip tools and documentation are constantly evolving to meet customer needs, so some actual dialogs and/or tool descriptions may differ from those in this document. Please refer to our web site (www.microchip.com) to obtain the latest documentation available.

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-RMII. Topics discussed in this chapter include:

- [Intended Use](#)
- [Document Layout](#)
- [Term Definitions](#)
- [Customer Support](#)
- [Document Revision History](#)

INTENDED USE

This Microchip product is intended to be used for developing or functional testing of control and sensor networks 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 only be achieved if the equipment is built into an appropriate housing.

EVB-LAN8670-RMII User's Guide

DOCUMENT LAYOUT

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

- [Chapter 1, Introduction](#) – This chapter introduces the EVB-LAN8670-RMII. It shows an illustration of the board. It furthermore lists the product features of the board.
- [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.

TERM DEFINITIONS

This user's guide uses the following term definitions:

Term	Description
RMII	Reduced Media Independent Interface
SoC	System on Chip

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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 C (May 2023)

Document refers to the EVB-LAN8670-RMII, EV06P90A-R3 board

- Updated:
 - [Figure 1-1](#), [Figure 2-1](#), [Figure 3-1](#) and [Figure 3-2](#)
 - Updated connector descriptions of J3 ([Table 2-2](#)) and J4 ([Table 2-3](#))

Revision B (July 2021)

Document refers to the EVB-LAN8670-RMII, EV06P90A-R1 board

- Removed document status and confidential ranking

Revision A (June 2021)

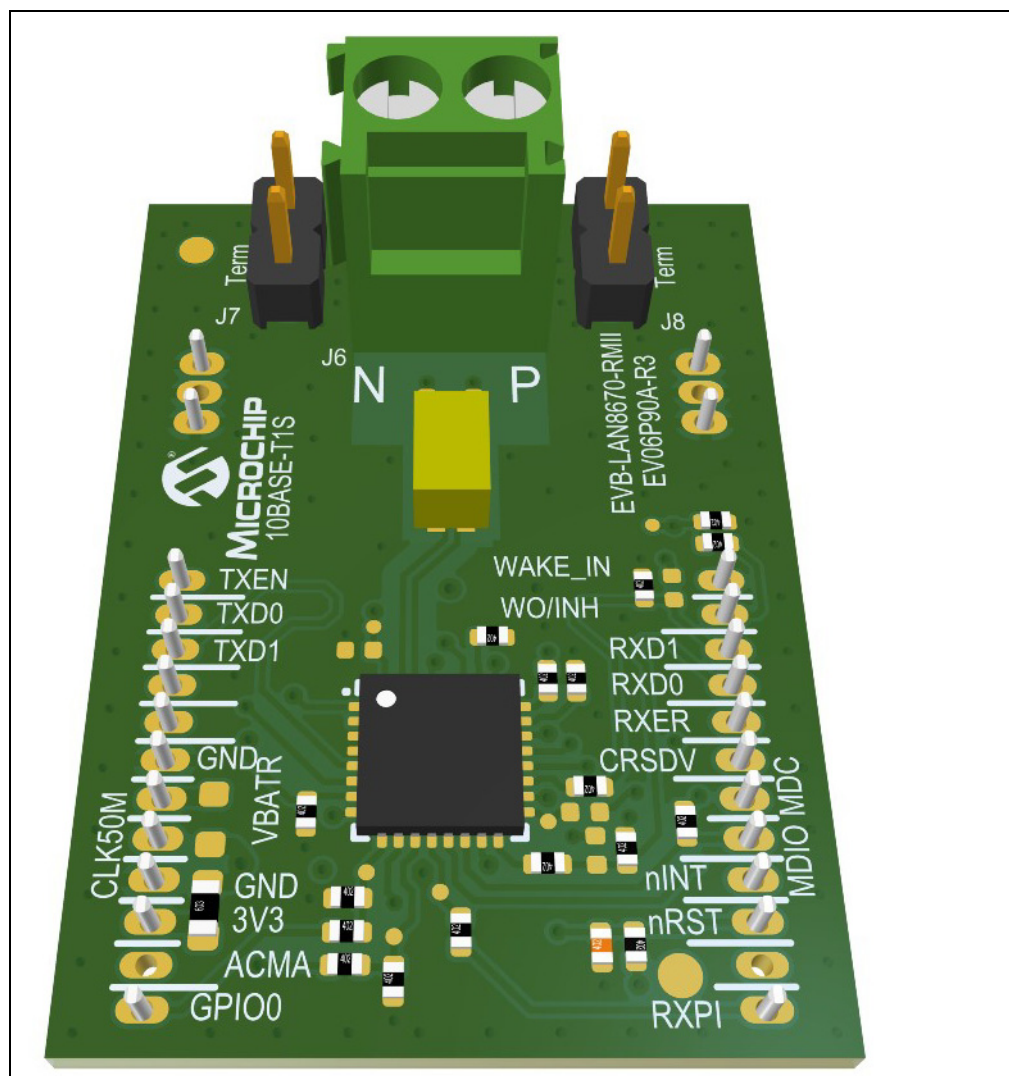
- Initial release of this document

Chapter 1. Introduction

1.1 OVERVIEW

The EVB-LAN8670-RMII enables Ethernet communication with the SAM E54 Curiosity Ultra Development board or the SAM E70 Xplained Ultra Evaluation Kit; however, it can also be used with other Microchip development hardware.

FIGURE 1-1: EVB-LAN8670-RMII



1.2 PRODUCT FEATURES

- RMII 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
- Reduced Media Independent Interface (RMII)
- Connects to MCUs offering RMII
- Connects to Microchip MCU evaluation boards
- Physical Layer Collision Avoidance (PLCA)
- Single 3.3V power supply
- Includes the Bus Interface Network (analog front end)
- Screw terminal for direct cable connection (no connector needed)
- Configurable on-board termination

Chapter 2. Board Details

2.1 ELECTRICAL CHARACTERISTICS

Parameter	Min.	Typ.	Max.	Unit
Board Operating Voltage	3	3.3	3.6	V

2.2 CONNECTORS

Connectors (J1-J4) are mounted on the bottom side of the board. The connectors are used to connect the EVB-LAN8670-RMII to a base board¹ that supports the signals and pins as provided.

2.2.1 J1, J2

Type: TMS-103-02-L-S, from Samtec
--

The connector pins are described in [Table 2-1](#).

TABLE 2-1: J1, J2 – PIN DESCRIPTION

Pin	Description
1, 2, 3	GND

1. Suitable base board examples include the: SAM E54 Curiosity Ultra Development board (<https://www.microchip.com/Developmenttools/ProductDetails/DM320210#additional-summary>) and the SAM E70 Xplained Ultra Evaluation Kit (<https://www.microchip.com/DevelopmentTools/ProductDetails/PartNO/DM320113>).

2.2.2 J3

Type: TMS-112-02-L-S, from Samtec
--

The connector pins are described in [Table 2-2](#).

TABLE 2-2: J3 – PIN DESCRIPTION

Pin	Description
1	TXEN
2	TXD0
3	TXD1
4, 5	NC
6, 9	GND
7	VBATR
8	CLK50M
10	3V3
11	ACMA
12	GPIO0

2.2.3 J4

Type: TMS-112-02-L-S, from Samtec
--

The connector pins are described in [Table 2-3](#).

TABLE 2-3: J4 – PIN DESCRIPTION

Pin	Description
1	WAKE_IN
2	WO/INH
3	RXD1
4	RXD0
5	RXER
6	CRSDV
7	MDC
8	MDIO
9	nINT
10	nRST
11	NC
12	RXPI

2.2.4 J6

This connector is mounted on the top side of the board. It is used as the interface to the network.

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

The terminal pins are described in [Table 2-4](#).

TABLE 2-4: J6 – 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.

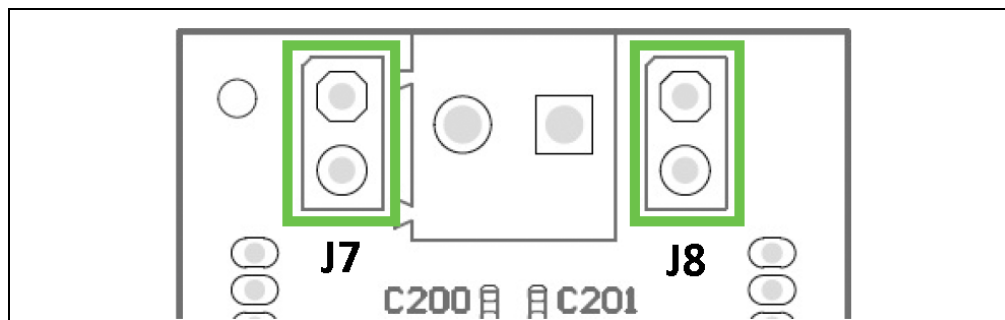
2.3.1 J7, J8

These jumpers 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.

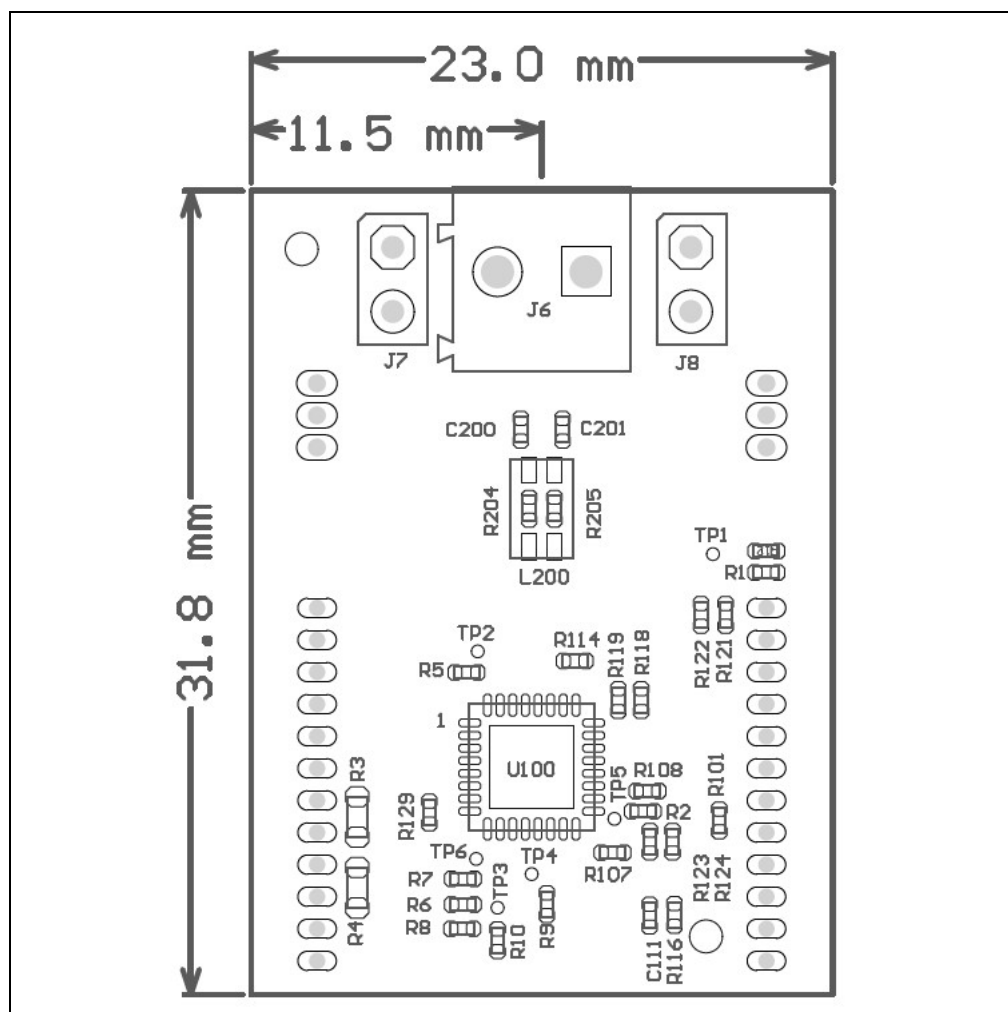
Figure 2-1 highlights the jumpers.

FIGURE 2-1: J7, J8 – JUMPER SETTING



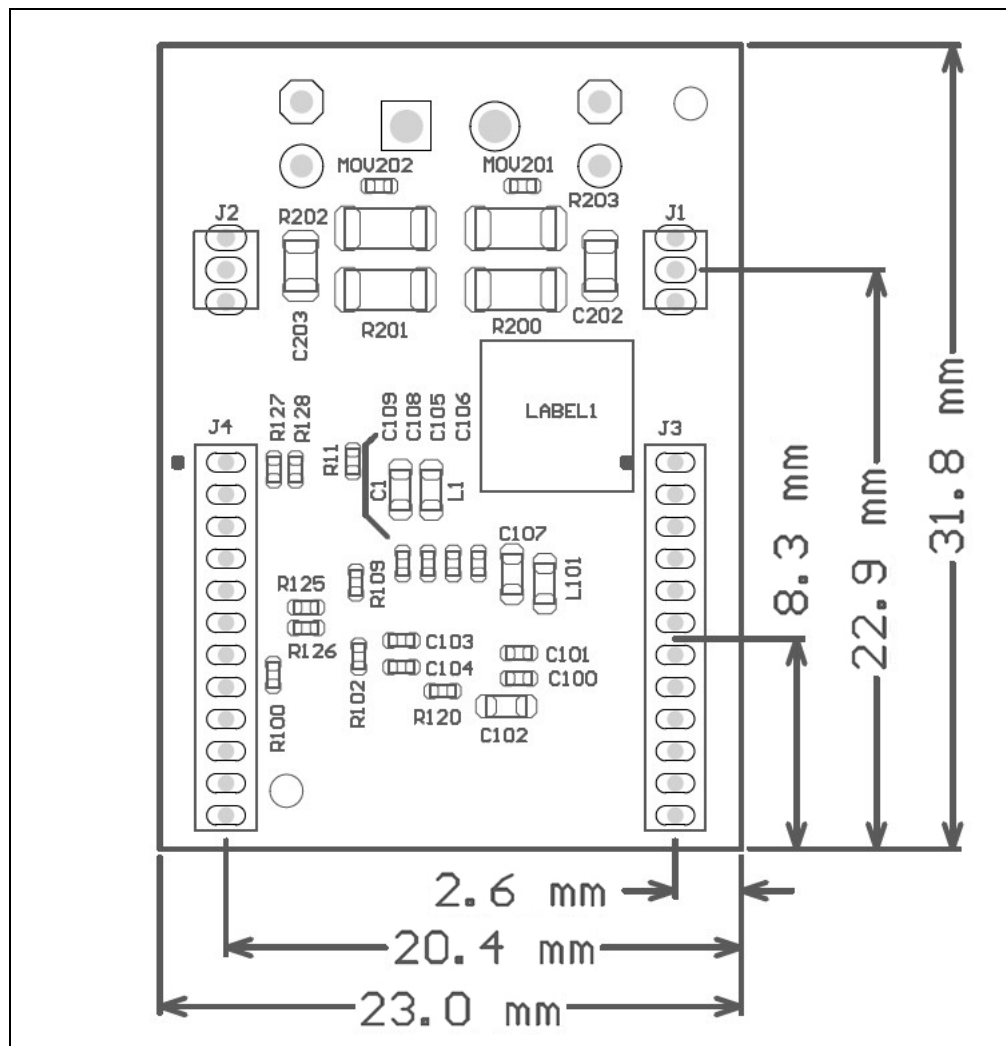
3.1 TOP VIEW AND MECHANICAL DIMENSIONS

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



3.2 BOTTOM VIEW AND MECHANICAL DIMENSIONS

FIGURE 3-2: ASSEMBLY PLAN – BOTTOM VIEW AND MECHANICAL DIMENSIONS



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