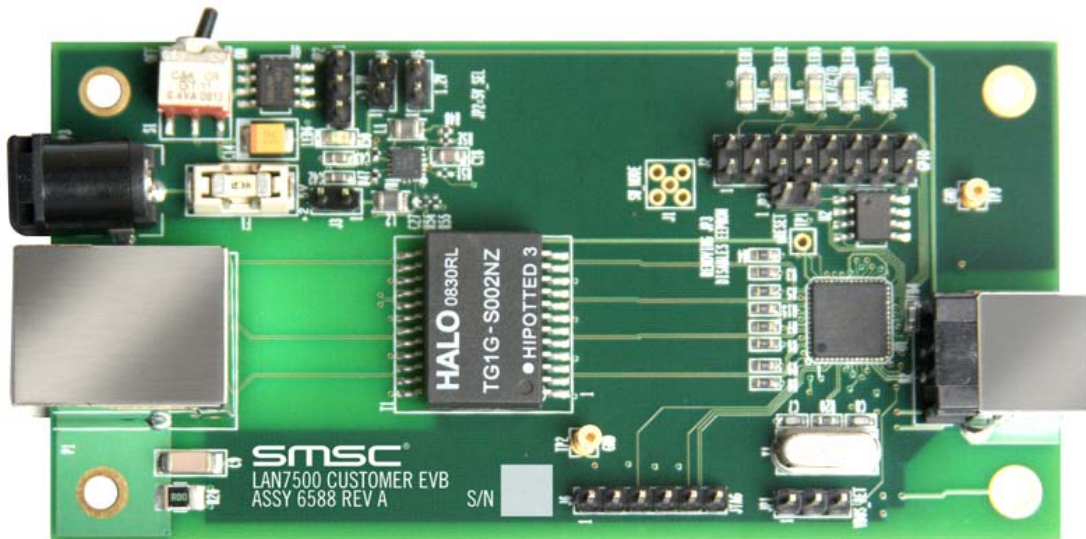


## EVB-LAN7500 Evaluation Board User Manual



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## 1 Introduction

The LAN7500 is a high performance Hi-Speed USB 2.0 to 10/100/1000 Ethernet controller. With applications ranging from embedded systems, set-top boxes, and PVR's, to USB port replicators, USB to Ethernet dongles and test instrumentation, the device is a high performance and cost competitive USB to Ethernet connectivity solution.

The LAN7500 contains an integrated 10/100/1000 Ethernet MAC and PHY, Filtering Engine, USB PHY, Hi-Speed USB 2.0 device controller, TAP controller, EEPROM controller, and a FIFO controller with a total of 32 KB of internal packet buffering.

The internal USB 2.0 device controller and USB PHY are compliant with the USB 2.0 Hi-Speed standard. The device implements Control, Interrupt, Bulk-in, and Bulk-out USB Endpoints.

The Ethernet controller supports auto-negotiation, auto-polarity correction, HP Auto-MDIX, and is compliant with the IEEE 802.3, IEEE 802.3u, IEEE 802.3ab standards. ARP and NS offload is also supported.

The EVB-LAN7500 is an Evaluation Board (EVB) that utilizes the LAN7500 to provide a fully functional USB to Ethernet interface. The EVB-LAN7500 provides a fully integrated Ethernet port and USB port via the onboard RJ45 and USB Type B connectors. The EVB-LAN7500 is fully configurable for both self- and bus-powered modes of operation and provides an external +5V power supply barrel connector for use with a wall-mounted power supply when in self-powered mode. Additional headers provide access to the LAN7500 GPIO/LEDs. The onboard 4K EEPROM can be used to load the EVB-LAN7500's USB configuration parameters and MAC address. The EEPROM can be optionally disabled via a jumper.

LAN7500 software drivers are available for Windows XP, Windows Vista, Mac OSX, Linux, and Win CE. Additional manufacturing and diagnostic tools are available for debugging and external EEPROM configuration.

A simplified block diagram of the EVB-LAN7500 can be seen in [Figure 1.1](#).

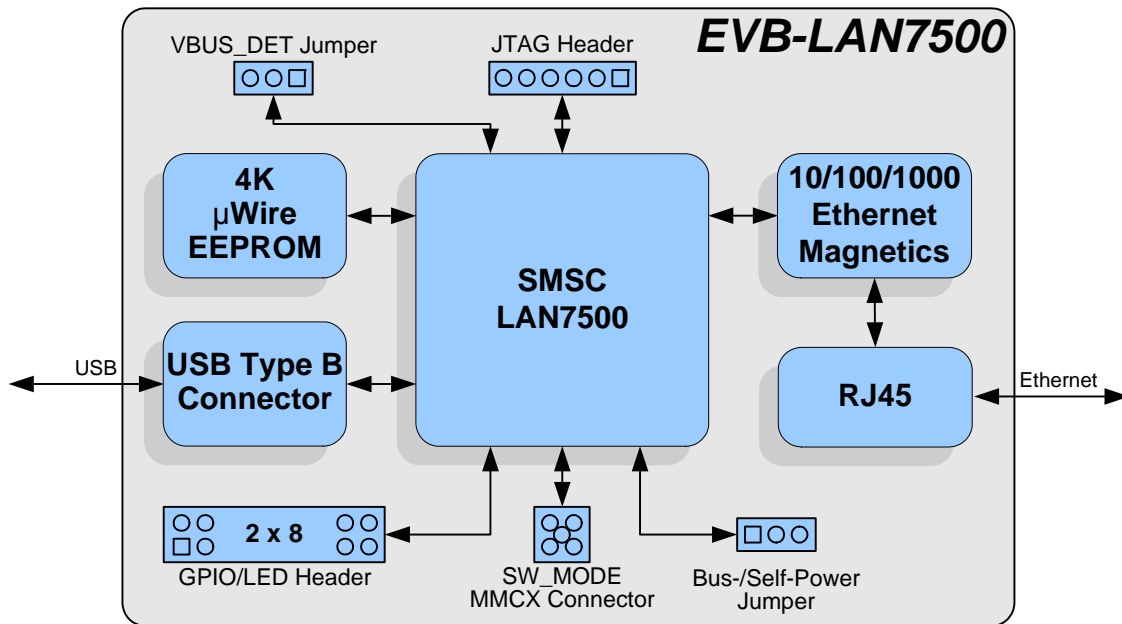


Figure 1.1 EVB-LAN7500 Block Diagram

## 1.1 References

Concepts and material available in the following documents may be helpful when using the EVB-LAN7500.

Table 1.1 References

DOCUMENT	LOCATION
SMSC LAN7500 Datasheet	<a href="http://www.smsc.com/lan7500">http://www.smsc.com/lan7500</a>
AN8-13 Suggested Magnetics	<a href="http://www.smsc.com/lan7500">http://www.smsc.com/lan7500</a>
SMSC EVB-LAN7500 Evaluation Board Schematic	<a href="http://www.smsc.com/lan7500">http://www.smsc.com/lan7500</a>

## 2 Board Details

The following sections describe the various board features including jumpers, LEDs, test points and system connections. A top view of the EVB-LAN7500 is shown in Figure 2.1.

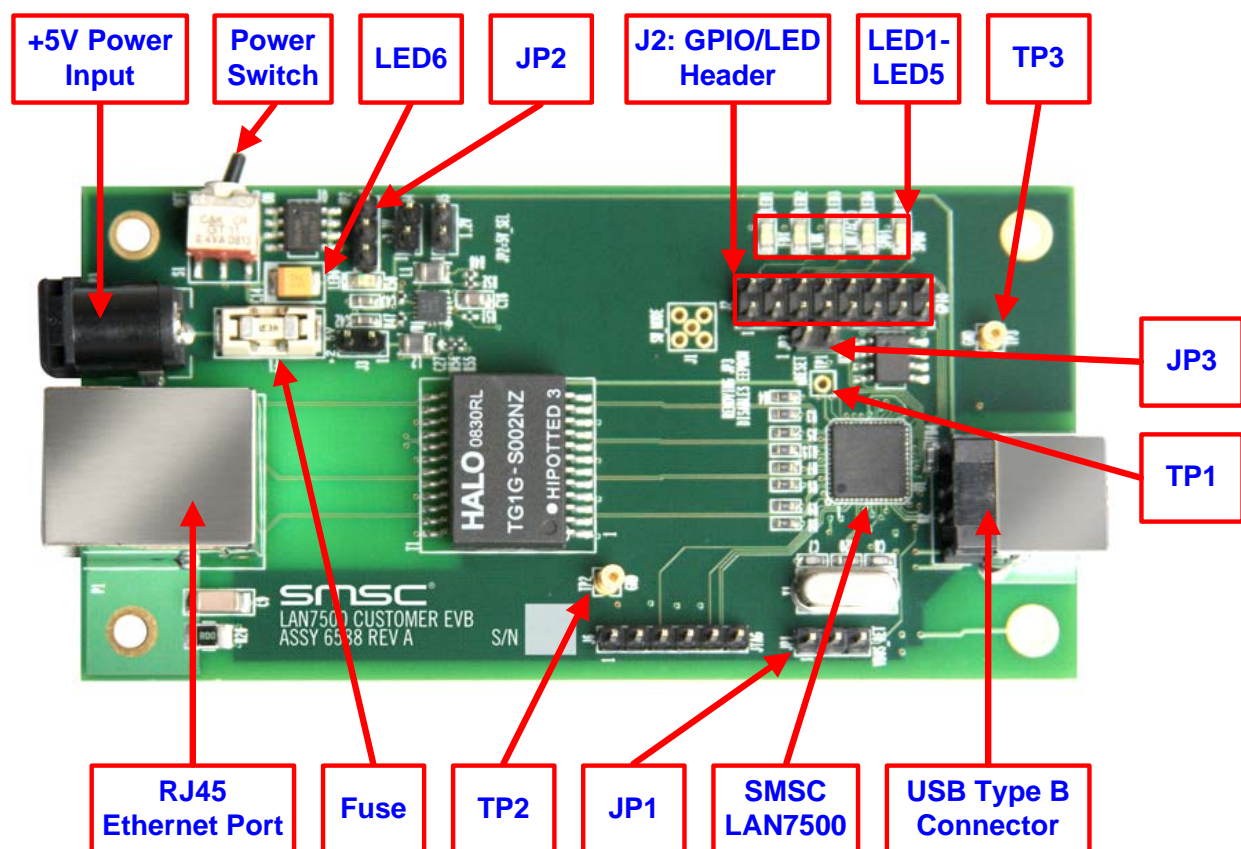


Figure 2.1 EVB-LAN7500 Top View

## 2.1 Jumpers

The following tables describe the default settings and jumper descriptions for the EVB-LAN7500. These defaults are the recommended configurations for evaluation of the EVB-LAN7500. These settings may be changed as needed, however, any deviation from the default settings should be approached with care and knowledge of the schematics and datasheet. An incorrect jumper setting may disable the board.

**Note:** The EVB-LAN7500 jumpers and EEPROM are programmed for self-powered operation by default. To operate in bus-powered mode, the jumpers must be reconfigured and the EEPROM must be reprogrammed using the SMSC Windows Manufacturing Utility or DOS Utility Suite. Refer to [www.smsc.com](http://www.smsc.com) for additional information.

**Note:** A dashed line in the *Settings* column indicates the board's default jumper setting.

**Table 2.1 Jumpers**

JUMPER PAIR	DESCRIPTION	SETTINGS	
JP1	VBUS_DET Select	1 2	Bus-Powered Operation
		2---3	Self-Powered Operation
JP2	+5V Power Select	1 2	Bus-Powered Operation
		2---3	Self-Powered Operation
JP3	EEPROM Enable/Disable	1---2	<b>IN:</b> EEPROM Enabled <b>OUT:</b> EEPROM Disabled

## 2.2 LEDs

**Table 2.2 LEDs**

REFERENCE	INDICATION															
LED1	Ethernet Full Duplex															
LED2	Ethernet Link															
LED3	Ethernet Activity															
LED4	Speed 0															
	This signal, combined with Speed 1, indicates the current Ethernet link speed. The speed is indicated as shown below:															
	<table border="1"> <thead> <tr> <th>SPEED (Mbps)</th> <th>SPEED 0 (LED4)</th> <th>SPEED 1 (LED5)</th> </tr> </thead> <tbody> <tr> <td>No Link</td> <td>Off</td> <td>Off</td> </tr> <tr> <td>10</td> <td>On</td> <td>Off</td> </tr> <tr> <td>100</td> <td>Off</td> <td>On</td> </tr> <tr> <td>1000</td> <td>On</td> <td>On</td> </tr> </tbody> </table>	SPEED (Mbps)	SPEED 0 (LED4)	SPEED 1 (LED5)	No Link	Off	Off	10	On	Off	100	Off	On	1000	On	On
	SPEED (Mbps)	SPEED 0 (LED4)	SPEED 1 (LED5)													
	No Link	Off	Off													
10	On	Off														
100	Off	On														
1000	On	On														

Table 2.2 LEDs (continued)

REFERENCE	INDICATION
LED5	Speed 1 This signal, combined with Speed 0, indicates the current Ethernet link speed. Refer to the LED4 (Speed 0) description for additional information.
LED6	3.3V Power Good <b>Note:</b> When measuring the suspend current, LED6 or R27 must be unpopulated.

## 2.3 Test Points

Table 2.3 Test Points

TEST POINT	DESCRIPTION	CONNECTION
TP1	Unpopulated nRESET testpoint	nRESET
TP2	Single pin populated gold post GND testpoint	GND
TP3	Single pin populated gold post GND testpoint	GND

## 2.4 System Connections

Table 2.4 System Connections

CONNECTOR	DESCRIPTION	PART
P1	RJ45	Stewart SS-6488S-A-NF
P2	USB Type-B Plug (Right Angle)	AMP 292304-1
P3	+5V Power Supply Barrel Connector (for self-powered mode only)	CUI PJ-102AH

## 2.5 Headers

Table 2.5 Headers

HEADER	DESCRIPTION
J1	Internal use only (DNP)
J2	GPIO header
J3	+2.5V power header
J4	+3.3V power header
J5	+1.2V power header
J6	JTAG interface - Internal use only

**Table 2.6 GPIO/LED J2 Header Pinout**

HEADER PIN	DESCRIPTION	HEADER PIN	DESCRIPTION
1	VDDVARIO: +2.5V	9	GPIO7
2	VDDVARIO: +2.5V	10	GPIO6
3	GPIO1/LED1	11	GPIO9
4	GPIO0/LED0	12	GPIO8
5	GPIO3/LED3	13	GPIO11
6	GPIO2/LED2	14	GPIO10
7	GPIO5	15	Ground
8	GPIO4/LED4	16	Ground

## 2.6 Switches

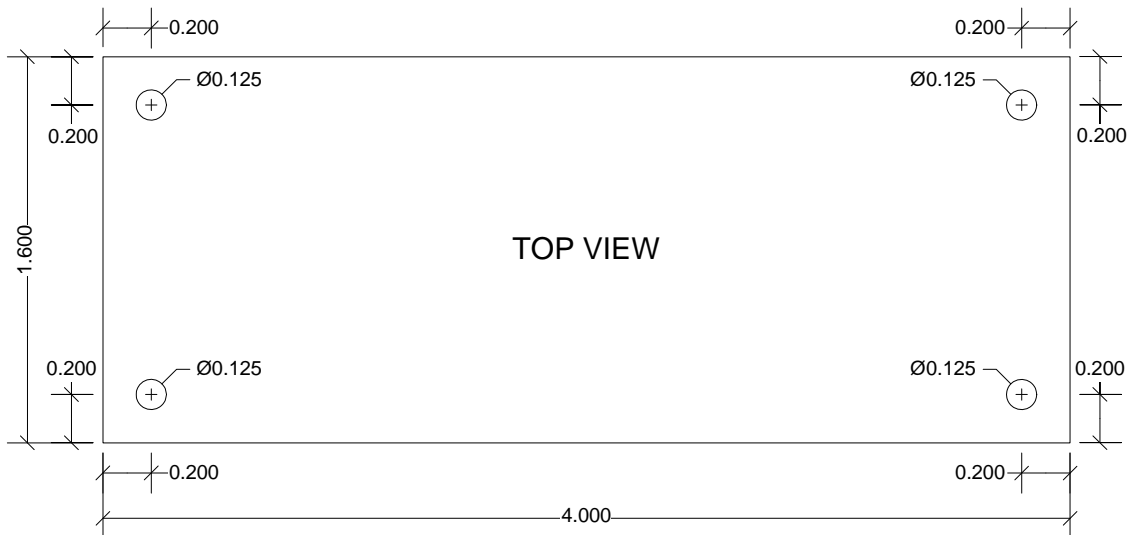
**Table 2.7 Power Switch**

SWITCH	DESCRIPTION	FUNCTION
S1	SPDT tiny toggle power switch	Connects +5V brick power to board

**Note:** The EVB-LAN7500 includes a 3A fuse (F1) to protect from overcurrent conditions. If this fuse becomes damaged, it can be replaced with a 3A Littlefuse-154003.

## 2.7 Mechanicals

Figure 2.2 details the EVB-LAN7500 mechanical dimensions.



**Figure 2.2 EVB-LAN7500 Mechanicals**

### 3 User Manual Revision History

Table 3.1 Customer Revision History

REVISION LEVEL & DATE	SECTION/FIGURE/ENTRY	CORRECTION
Rev. 1.0 (11-29-12)		Document co-branded: Microchip logo added, modification to legal disclaimer.
Rev. 1.0 (11-03-10)		Initial release.