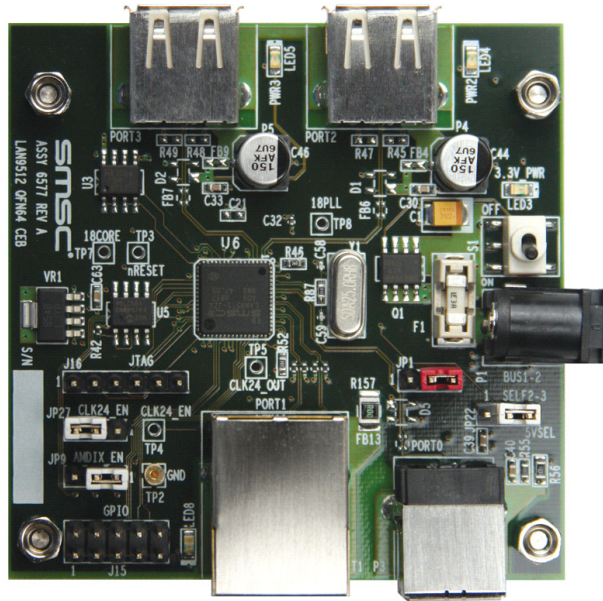


LAN9512 Evaluation Board User Manual



Copyright © 2012 SMSC or its subsidiaries. All rights reserved.

Circuit diagrams and other information relating to SMSC products are included as a means of illustrating typical applications. Consequently, complete information sufficient for construction purposes is not necessarily given. Although the information has been checked and is believed to be accurate, no responsibility is assumed for inaccuracies. SMSC reserves the right to make changes to specifications and product descriptions at any time without notice. Contact your local SMSC sales office to obtain the latest specifications before placing your product order. The provision of this information does not convey to the purchaser of the described semiconductor devices any licenses under any patent rights or other intellectual property rights of SMSC or others. All sales are expressly conditional on your agreement to the terms and conditions of the most recently dated version of SMSC's standard Terms of Sale Agreement dated before the date of your order (the "Terms of Sale Agreement"). The product may contain design defects or errors known as anomalies which may cause the product's functions to deviate from published specifications. Anomaly sheets are available upon request. SMSC products are not designed, intended, authorized or warranted for use in any life support or other application where product failure could cause or contribute to personal injury or severe property damage. Any and all such uses without prior written approval of an Officer of SMSC and further testing and/or modification will be fully at the risk of the customer. Copies of this document or other SMSC literature, as well as the Terms of Sale Agreement, may be obtained by visiting SMSC's website at <http://www.smcs.com>. SMSC is a registered trademark of Standard Microsystems Corporation ("SMSC"). Product names and company names are the trademarks of their respective holders.

The Microchip name and logo, and the Microchip logo are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SMSC DISCLAIMS AND EXCLUDES ANY AND ALL WARRANTIES, INCLUDING WITHOUT LIMITATION ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND AGAINST INFRINGEMENT AND THE LIKE, AND ANY AND ALL WARRANTIES ARISING FROM ANY COURSE OF DEALING OR USAGE OF TRADE. IN NO EVENT SHALL SMSC BE LIABLE FOR ANY DIRECT, INCIDENTAL, INDIRECT, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES; OR FOR LOST DATA, PROFITS, SAVINGS OR REVENUES OF ANY KIND; REGARDLESS OF THE FORM OF ACTION, WHETHER BASED ON CONTRACT; TORT; NEGLIGENCE OF SMSC OR OTHERS; STRICT LIABILITY; BREACH OF WARRANTY; OR OTHERWISE; WHETHER OR NOT ANY REMEDY OF BUYER IS HELD TO HAVE FAILED OF ITS ESSENTIAL PURPOSE, AND WHETHER OR NOT SMSC HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

1 Introduction

The LAN9512 is a high performance, Hi-Speed USB 2.0 hub with a 10/100 Ethernet controller. The LAN9512 contains an integrated USB 2.0 hub, two integrated downstream USB 2.0 PHYs, an integrated upstream USB 2.0 PHY, a 10/100 Ethernet PHY, a 10/100 Ethernet controller, a TAP controller, and an EEPROM controller.

The EVB9512 is an Evaluation Board (EVB) that utilizes the LAN9512 to provide a two port USB 2.0 hub with an integrated 10/100 Ethernet controller. The EVB9512 provides USB connectivity via one type B upstream USB connector and two type A downstream USB connectors. An RJ-45 integrated magnetics Ethernet jack with link/activity LEDs provides 10/100 Ethernet connectivity. The EVB9512 supports both bus-powered and self-powered modes of operation.

The EVB9512 includes a 512x8 Microwire EEPROM that may be used to automatically load USB descriptors, USB device configuration, and the MAC address upon reset. A GPIO header provides access to the LAN9512's general purpose I/O signals. For debugging purposes, the internal LAN9512 TAP controller is accessible via the included JTAG header.

A simplified block diagram of the EVB9512 can be seen in [Figure 1.1](#).

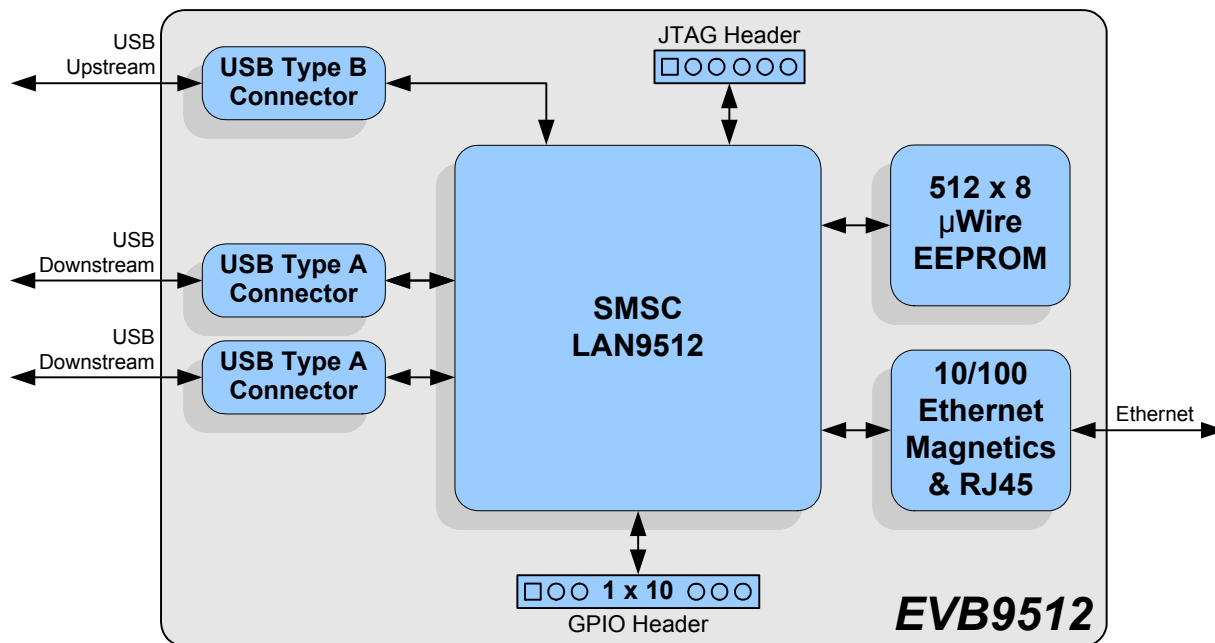


Figure 1.1 EVB9512 Block Diagram

1.1 References

Concepts and material available in the following documents may be helpful when using the EVB9512.

Table 1.1 References

DOCUMENT	LOCATION
SMSC LAN9512 Datasheet	http://www.smsc.com/main/datasheet.html
AN8-13 Suggested Magnetics	http://www.smsc.com/main/appnotes.html
SMSC EVB9512 Evaluation Board Schematic	http://www.smsc.com/

2 Board Details

The following sections describe the various board features, including jumpers, LEDs, test points, system connections, and power. A top view of the EVB9512 is shown in [Figure 2.1](#).

Note: The LAN9512 device is RoHS compliant. However, support components on the EVB9512 board are not necessarily RoHS compliant.

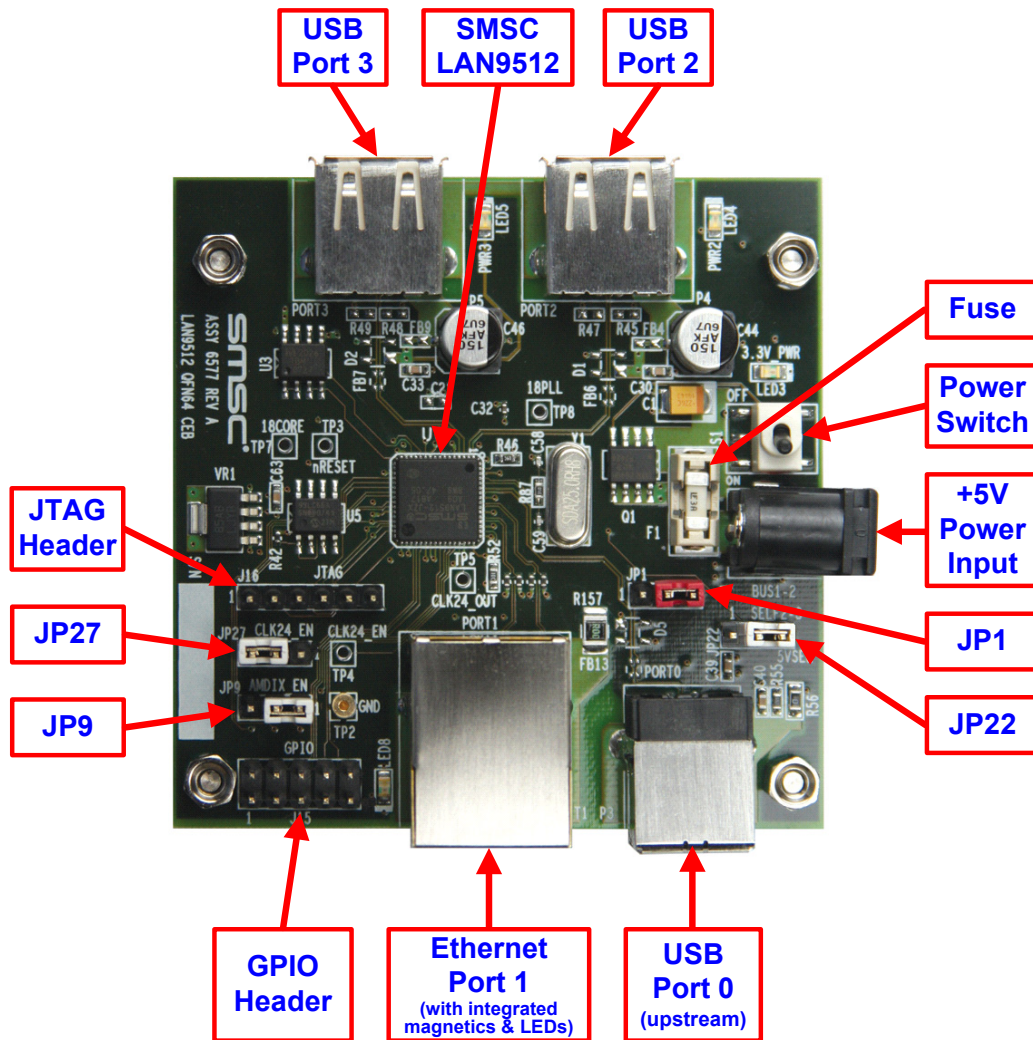


Figure 2.1 EVB9512 Top View

2.1 Jumpers

Table 2.1 describes the default settings and jumper descriptions for the EVB9512. These defaults are the recommended configurations for evaluation of the LAN9512. 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: A dashed line in the *Settings* column of Table 2.1 indicates the board's default jumper setting.

Table 2.1 Jumpers

JUMPER	DESCRIPTION	SETTINGS	
JP1	5 volt select jumper	1 2	Populate when bus-powered
		2---3	Populate when self-powered (+5V power brick must be attached)
JP9	Auto-MDIX jumper	1---2	Auto-MDIX enabled
		2 3	Auto-MDIX disabled
JP22	VBUS_DET jumper	1 2	Populate when bus-powered
		2---3	Populate when self-powered
JP27	CLK24_EN jumper	1 2	Populate to enable 24MHz CLK24_OUT
		2---3	Populate to disable 24MHz CLK24_OUT

2.2 LEDs

Table 2.2 LEDs

REFERENCE	COLOR	INDICATION
LED3	Green	+3.3V power active
LED4	Green	Power on downstream port 2
LED5	Green	Power on downstream port 3
LED8	Green	Full duplex on Ethernet port
T1	Green	Link/activity on Ethernet port
T1	Yellow	Speed on Ethernet port

2.3 Test Points

Table 2.3 Test Points

TEST POINT	DESCRIPTION	CONNECTION
TP2	Single pin populated gold post GND testpoint	GND
TP3	Single pin unpopulated nRESET	nRESET
TP4	Single pin unpopulated CLK24_EN	CLK24_EN
TP5	Single pin unpopulated CLK24_OUT	CLK24_OUT
TP7	Single pin unpopulated VDD18CORE	VDD18CORE
TP8	Single pin unpopulated VDD18USBPLL	VDD18USBPLL

2.4 System Connections

Table 2.4 System Connections

PLUG/HEADER	DESCRIPTION	PART
J15	10-pin populated GPIO header	10-pin (1x10) header
J16	6-pin populated JTAG header	6-pin (1x6) header
P1	+5V DC power connector	Barrel plug, 2.0mm, center positive
P3	USB type B right angle - upstream	AMP 292304-1
P4	USB type A right angle - downstream	FCI 87520-0010BLF
P5	USB type A right angle - downstream	FCI 87520-0010BLF

2.5 Power

Table 2.5 Power Switch

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

The EVB9512 supports both bus-powered and self-powered modes of operation. The following subsections detail the proper power settings for bus-powered and self-powered operation.

2.5.1 Bus-Powered Operation

For bus-powered operation, the EVB9512 must be configured as follows:

- JP1 must be in the 1-2 position
- JP22 must be in the 1-2 position
- The S1 power switch must be in the open position
- The +5V power brick must be disconnected from the P1 barrel plug

2.5.2 Self-Powered Operation

For self-powered operation, the EVB9512 must be configured as follows:

- JP1 must be in the 2-3 position (5V select)
- JP22 must be in the 2-3 position
- The S1 power switch must be in the closed position
- The +5V power brick must be connected to the P1 barrel plug

Note: The EVB9512 includes a 2A fuse (F1) to protect from overcurrent conditions during self-powered operation. If this fuse becomes damaged, it can be replaced with a 2A Littelfuse-154002.

Note: Self-powered operation is the default EVB9512 configuration.

2.6 Mechanicals

Figure 2.2 details the EVB9512 mechanical dimensions and properties.

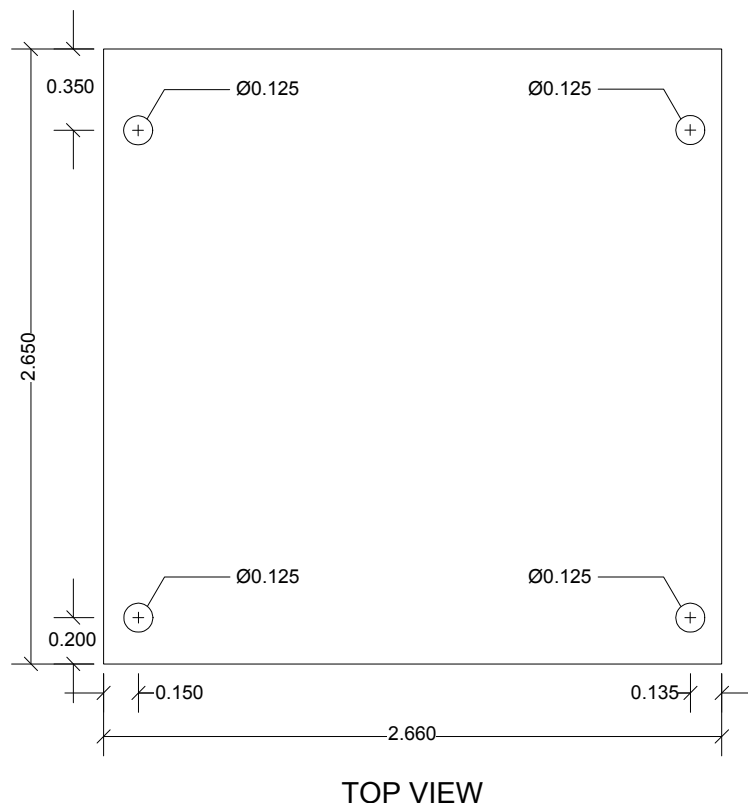


Figure 2.2 EVB9512 Mechanicals

3 Revision History

Table 3.1 Customer Revision History

REVISION LEVEL & DATE	SECTION/FIGURE/ENTRY	CORRECTION
Rev. 1.0 (12-04-12)		Document co-branded: Microchip logo added, modification to legal disclaimer.
Rev. 1.0 (05-21-09)		Initial Release

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Ethernet Development Tools](#) category:

Click to view products by [Microchip](#) manufacturer:

Other Similar products are found below :

[KSZ8852HLEYA](#) [TDKEZW5-DEV](#) [XAUI-RISER-B](#) [DP83848H-MAU-EK](#) [ZENETSC0100ZACG](#) [XTIB-E](#) [EVB-LAN9218I-MINI](#)
[KSZ8081MNX-EVAL](#) [KSZ8081RNB-EVAL](#) [KSZ8091RNB-EVAL](#) [KSZ8852HLE-EVAL](#) [KSZ8863FLL-EVAL](#) [KSZ8873MLL-EVAL](#) [2971](#)
[TDKEZW3-DEV](#) [PD70201EVB47F](#) [KSZ8895MQX-EVAL](#) [PD70201EVB47](#) [PD-IM-7648M](#) [PD-IM-7648T4](#) [PD-IM-7604-4MH](#)
[EV09H26A](#) [EV44F42A](#) [PD-IM-7618T4H](#) [PD-IM-7618T4](#) [EVAL-ADIN1300FMCZ](#) [EVAL-ADIN1200FMCZ](#) [KIT-A1006-SHIELD](#)
[VSC8258EV](#) [VSC8211EV](#) [VSC8584EV](#) [VSC8574EV](#) [EV16T60A](#) [ioShield_A](#) [DP83620-EVK/NOPB](#) [STEVAL-TDE001V1](#) [STEVAL-](#)
[PCC010V1](#) [EVB9512](#) [DP83848T-MAU-EK](#) [DP83848I-POE-EK](#) [DP83848K-MAU-EK](#) [DP83848I-MAU-EK/NOPB](#) [KSZ8041NL-EVAL](#)
[KSZ8091RNA-EVAL](#) [KSZ8999-EVAL](#) [KSZ8031RNL-EVAL](#) [KSZ8051MLL-EVAL](#) [KSZ8842-16MQL-EVAL](#) [WIZ550S2E-232-EVB](#)
[ALT4532-EVA-01](#)