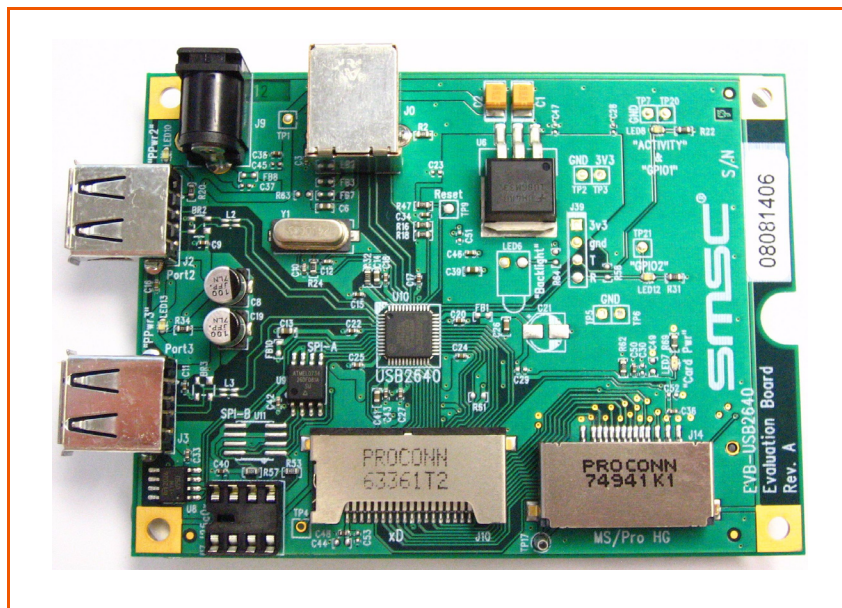


## EVB-USB2640 Evaluation Board Revision A



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## 1 Overview

EVB-USB2640 Revision A Evaluation Board for the SMSC USB2640 Ultra Fast USB 2.0 Multi-Format Flash Media Controller/USB Hub Combo. The goal of the EVB-USB2640 is to provide an application platform for developers of the following applications: Flash Media Card Reader/Writer, printers, desktop and mobile PCs, consumer A/V, and flat panel displays. The EVB-USB2640 demonstrates driver compatibility with Microsoft Vista, Windows XP, Windows ME, Windows 2K SP4, Apple OSx, and Linux Mass Storage Class Drivers.

### 1.1 Features

- Features the USB2640 in a 48 Pin QFN RoHS compliant package.
- Supports these Media Types: xD-Picture Card<sup>™</sup>, Secure Digital<sup>™</sup> (SD), Memory Stick<sup>™</sup> (MS) 4 & 8 bit, and MultiMedia Card<sup>™</sup> (MMC) 4 & 8 bit interfaces.
- Two USB 2.0 down stream hub ports with individual port power and over current sense.
- External SPI FLASH for USB downloadable firmware.
- External I<sup>2</sup>C EEPROM for configuration options.
- Low cost 4-Layer space saving design
- Operates from a single voltage (+5.0V, regulated) 'wall wart' external power supply.
- Internal FET Power Switch for all media types.
- Activity LED indicator.
- Card power LED indicator.
- Test header for firmware development and debug.
- Single crystal clock Source
- Single onboard +3.3V Regulator.
- Optional +3.3V power LED indicator.

### 1.2 General Description

The EVB-USB2640 is a demonstration and evaluation platform featuring the USB2640 Ultra Fast USB 2.0 Multi-Format Flash Media Controller/USB HUB Combo on a 4-layer RoHS compliant printed circuit board. It is designed to support internal default settings and either an external I<sup>2</sup>C EEPROM for customized functionality or SPI FLASH for external firmware.

An 8-Mbit SPI FLASH device is populated on the evaluation board to provide firmware updates via USB by using the SMSC provided USBDM utility.

Default configuration can be changed by adding an EEPROM into the provided socket, however, the SPI FLASH device has to first be removed. [Figure 1.1, "Top and Bottom Level Silk Screen and Copper Layers"](#) shows the top and bottom level silk screen and copper layer. The EVB-USB2640 is compatible with Microsoft Vista, Windows XP, Windows ME, Windows 2k SP4, Apple OSx and Linux Mass Storage Class Drivers.

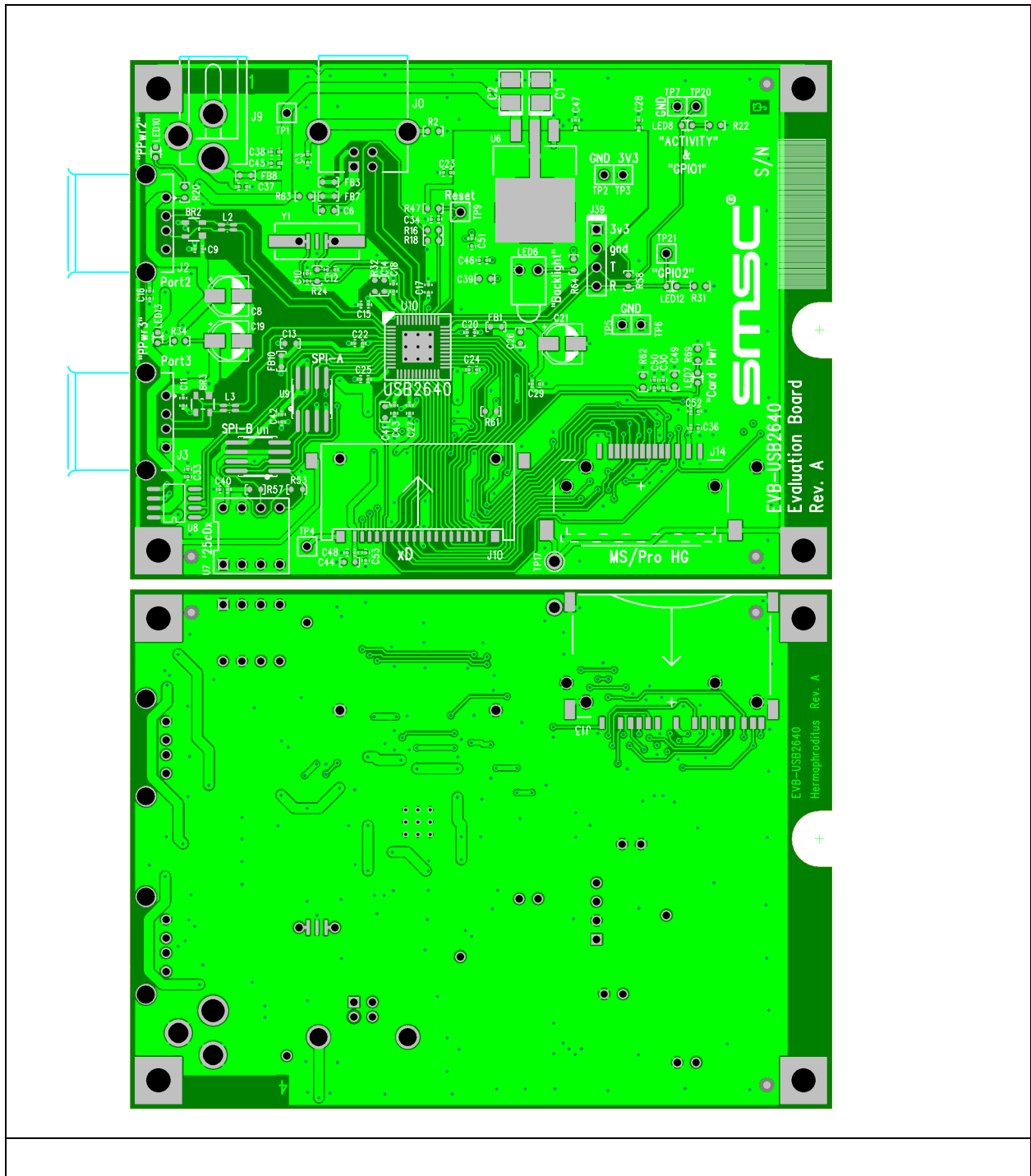


Figure 1.1 Top and Bottom Level Silk Screen and Copper Layers

## 2 Getting Started

The EVB-USB2640 is configured by internal default registers. In this configuration it operates as a USB 2.0 combo device with a three port USB HUB (two external ports) and a Flash Media Controller with SMSC standard VID/PID/DID settings.

### 2.1 Configuration

The SMSC EVB-USB2640 is designed for flexible configuration solutions. It demonstrates functionality with default internal register settings, USB host downloadable configuration EEPROM, or USB host downloadable external firmware to a SPI FLASH.

#### 2.1.1 Configuration source - Internal default

When the USB2640 does not detect an EEPROM or a valid SPI FLASH image upon power-up, the EVB-USB2640 uses internal default register settings; it sets the Vendor ID, Product ID, Language ID, and Device ID, and a few other choices from internal ROM code.

#### 2.1.2 Configuration source - External EEPROM

Upon power-up the USB2260 looks for an attached EEPROM on its I<sup>2</sup>C interface. The EVB-USB2640 provides an 8-pin DIP socket IC U7 for an external EEPROM of type 24C02 to customize the Media Controller's settings. The EEPROM contains 256 bytes of user customizable settings. Among the settings are Vendor ID, Product ID, and Device ID numbers. For details on the fields please see the USB2640 Software Release notes. To use EEPROM the SPI FLASH chip U9 must first be removed.

#### 2.1.3 Configuration source - External SPI FLASH

The installed SPI FLASH is initially blank. In this scenario the internal firmware will execute. External firmware updates can be downloaded via USB using the SMSC utility USBDM to the SPI FLASH. After downloading the USB2640 will execute out of the SPI FLASH.

#### 2.1.4 Power source - Self/Bus Powered

The EVB-USB2640 supports both self and bus powered operation. By default the EVB-USB2640 is populated for bus powered operation. Refer to the table below for resistor population options to change the power source.

**Table 2.1 Population Options for Self or Bus Powered Operation**

POWER SOURCE	R63
Bus Powered	Populate
Self Powered (Default)	Do not Populate

#### 2.1.5 Configuration source - USB Upstream

The EEPROM supporting the EVB-USB2640 is configured via a USB cable connected to the upstream connector with a SMSC configuration tool named USBDM see USB2640 Software Release Notes for details. USBDM allows for modification of Vendor ID, Product ID, Language ID, Device ID, and configuration settings - see [Figure 2.1, "USBDM Configuration Interface"](#).

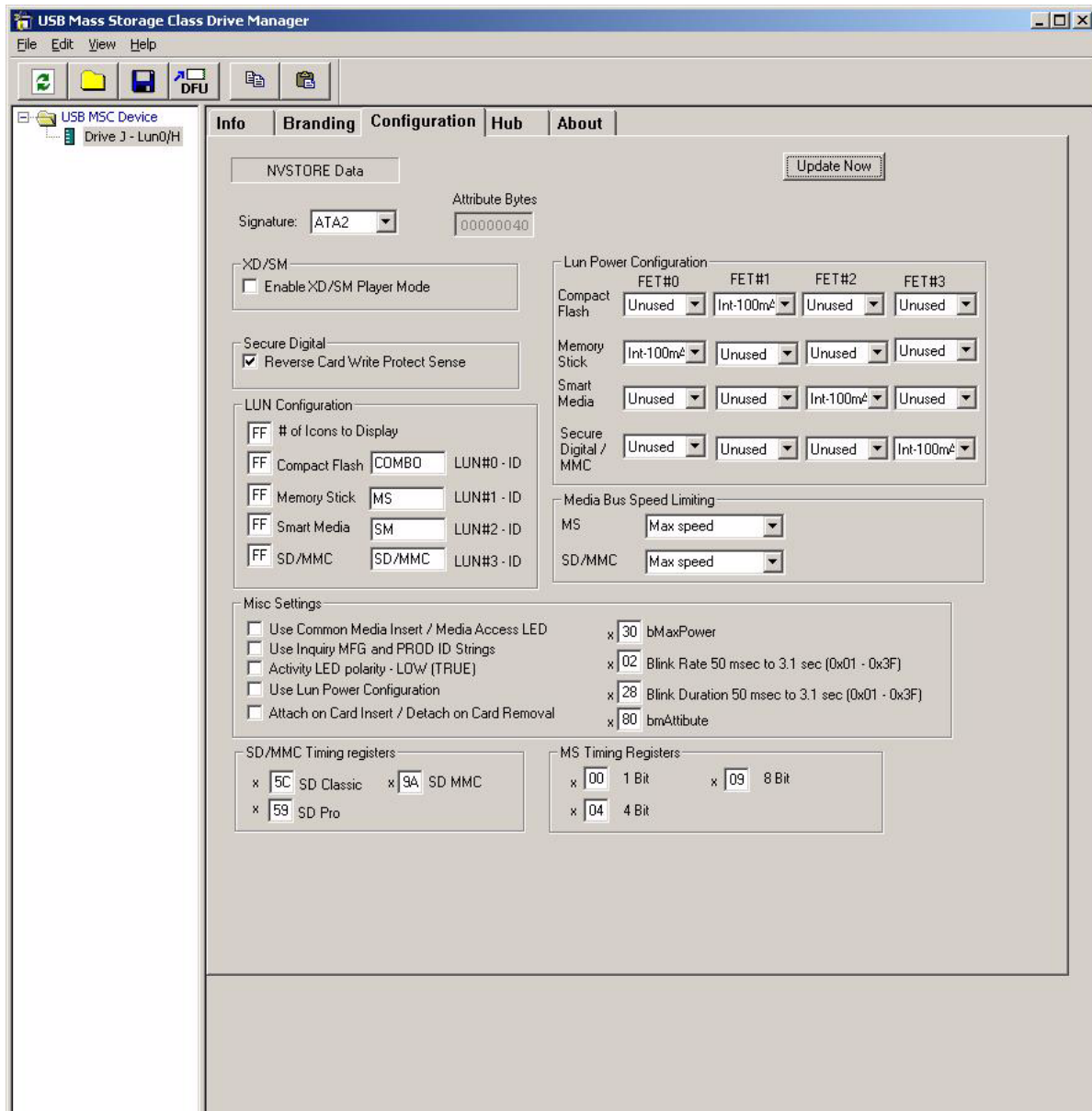


Figure 2.1 USBDM Configuration Interface