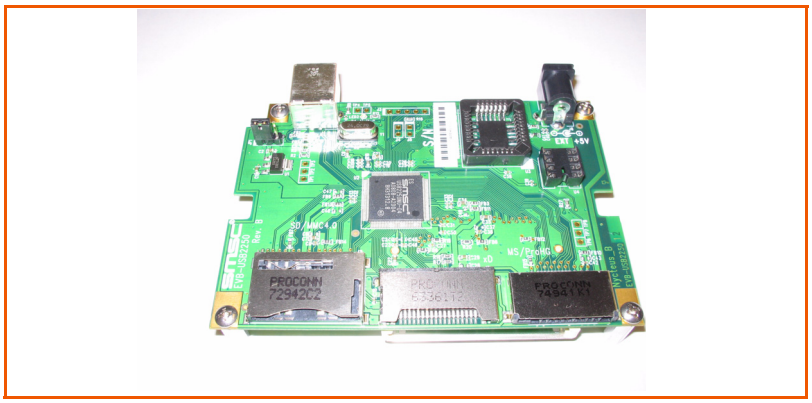
EVB-USB2250 User Manual Revision B



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1 Overview

The SMSC EVB-USB2250 is an Ultra Fast USB 2.0 Multi-Slot Flash Media Controller with CF, SD, MS, and xD connectors. The EVB-USB2250 Evaluation Board demonstrates a standalone Hi-Speed Mass Storage Class Peripheral Controller intended for reading and writing to more than 24 popular flash media formats from the Compact Flash™ (CF), SmartMedia™ (SM), xD Picture Card™ (xD), Memory Stick® (MS), Secure Digital (SD), and MultiMediaCard™ (MMC) families.

1.1 Features

- Operates either USB bus-powered or from a single voltage (+5.0 Volts, regulated) 'wall wart' external power supply.
- Supports these media types:
  - Compact Flash™ 4.1
  - MultiMediaCard™ 2.0 / 4.2
  - xD Picture Card™
  - Smart Media™ 1.2 / 1.3
  - Secure Digital (SD2.0, HS-SD, HC-SD)
  - Memory Stick® 1.43
  - Hi-Speed Memory Stick™
  - Memory Stick Pro-HG™
  - Memory Stick Duo Memory Stick Pro™
- Simultaneous access for up to four memory devices
- Flash memory socket for external firmware
- Single onboard +3.3 Volt regulator
- Internal individual FET power switch for each media socket
- Single 24 MHz crystal clock source
- Media activity LED
- RoHS compliant
- Optional serial EEPROM for customized configuration
- Optional ESD and EMI footprints are provided

1.2 General Description

The EVB-USB2250 is a platform featuring the USB2250 Flash Media Controller. The EVB-USB2250 connects to a USB 2.0 port (J1), and optionally to a 5.0 Volt external supply (JP2: 2.1mm, tip -- POS). The platform provides four media sockets supporting 24 different media formats. This platform demonstrates a small footprint, low-cost implementation of the USB2250 with a rich feature set. The platform features a socket for an onboard EEPROM for configuration and serial number data. The platform also features a socket for a flash memory for external firmware. The schematic for the EVB-USB2250 indicates the components that are required for each programming and configuration option.

2 Hardware Configuration

2.1 Hardware Description

The EVB-USB2250 has one onboard regulator which generates 3.3 Volts from the 5 Volt power supply. The USB2250 generates its own on-chip 1.8 Volt supply. The USB2250 Flash Media Controller consumes power from the 3.3 Volt supply and supplies voltage to all four media connectors. The EVB-USB2250 also supports an optional flash memory for external firmware or an optional serial EEPROM for customized configuration.

2.1.1 External Serial EEPROM

The EVB-USB2250 has a socket (U4) for an optional I^2C EEPROM. This option provides custom configuration of the USB2250. USBDM. Please visit http://www.smsc.com/main/catalog/usb225x.html to locate the USBDM available in the software release package. Scroll down to the bottom of the page and select “OBJ Hub Card Reader”. Then, read and accept the SMSC Software Download Agreement. If you select “Confirm”, then you will be taken to the USB225x release package zip file where you can download the tool set. The EVB-USB2250 is compatible with I^2C EEPROMs, 256 bytes or larger from several manufacturers in 8-pin DIP packages.

2.1.2 External Flash Memory

The EVB-USB2250 has a socket (U3) for optional flash memory. The flash memory stores external firmware that the USB2250 executes and can be updated in the field. The firmware can be uploaded from the USBDM utility. Most 8-bit wide flash memory that is 128 kilobytes or larger in a 32-pin PLCC package with access time of 70 ns or less are compatible with the EVB-USB2250.

2.1.3 Connector Description

The EVB-USB2250 has a standard set of media storage style connectors, which supports up to 24 popular flash media formats from the CompactFlash™ (CF), SmartMedia™ (SM), xD Picture Card™ (xD), Memory Stick® (MS), Secure Digital (SD), and MultimediaCard™ (MMC) families.

2.1.4 Power Supply

The EVB-USB2250 receives power from either the host via the upstream connector J1 or from J8 depending upon JP1 shunt installation. For host power shunt pins 2 and 3, or for self-powered operation shunt pins 1 and 2 of JP1.

Table 2.1 Connector Descriptions

CONNECTOR	TYPE
J2	SD/MMC4.0
J6	XD
J7	MS Normal Mount
J9	Compact Flash

2.1.5 Layout Considerations

The EVB-USB2250 is designed on four PCB layers--two signal layers and two supply layers. The PCB layer stack is shown in Table 1. All signals are routed on the top and bottom layers. Internal layers are ground and power.

Table 2.2 PCB Layer Stack

Component Side	
Solder mask	
Layer 1 Top	1.3 - 2.3 oz. Cu. finished weight
Pre-preg	4.0 - 4.5 mil FR-4
Layer 2, Ground	1.0 oz., nominal
Core	25 mil FR-4
Layer 3, Power	1.0 oz., nominal
Pre-preg	4.0 - 4.5 mil FR-4
Layer 4, Bottom	1.3 - 2.3 oz. Cu. finished weight
Solder mask	
Solder Side	

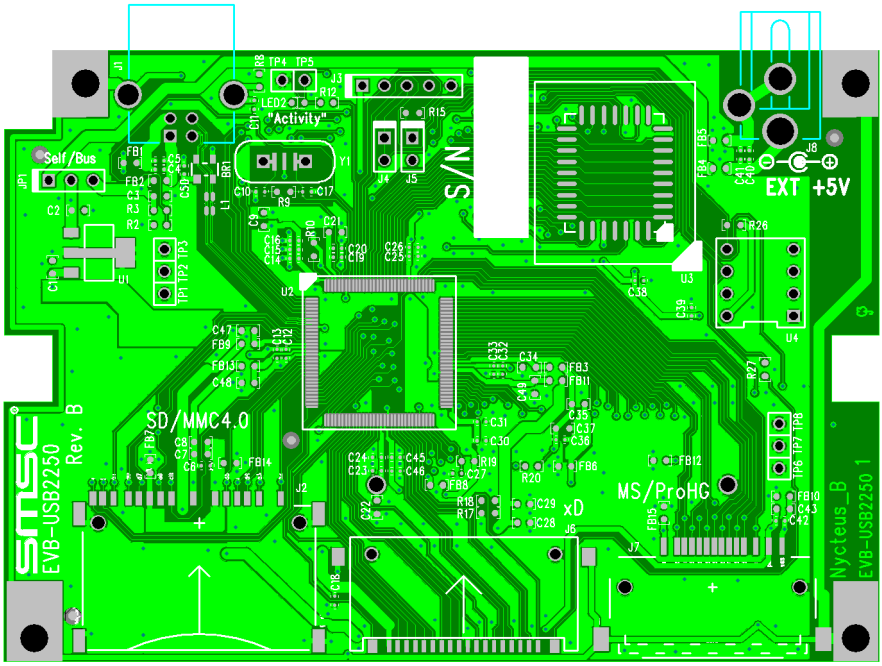


Figure 2.1 EVB-USB2250 top view

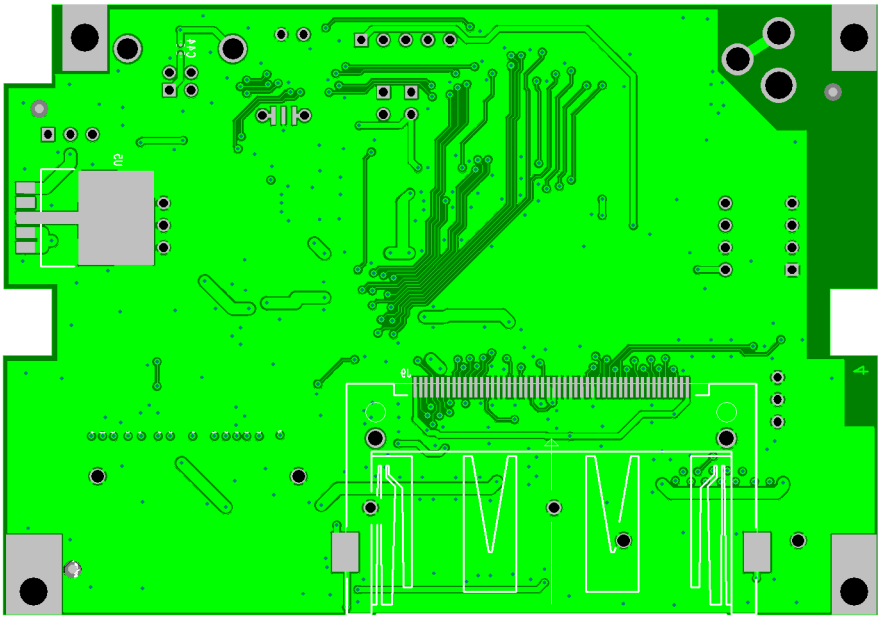


Figure 2.2 EVB-USB2250 bottom view