

4th Generation USB 2.0 Flash Media Controller with Integrated Card Power FETs

PRODUCT FEATURES

Data Brief

- Complete System Solution for interfacing SmartMedia™ (SM) or xD Picture Card™ (xD), Memory Stick™ (MS), High Speed Memory Stick (HSMS), Memory Stick PRO (MSPRO), MS Duo™, Secure Digital (SD), Mini-Secure Digital (Mini-SD), TransFlash (SD), MultiMediaCard™ (MMC), Reduced Size MultiMediaCard (RS-MMC), NAND Flash, Compact Flash™ (CF) and CF Ultra™ I & II, and CF form-factor ATA hard drives to USB 2.0 bus
 - Supports USB Bulk Only Mass Storage Compliant Bootable BIOS
- Support for simultaneous operation of all above devices. (only one at a time of each of the following groups supported: CF or ATA drive, SM or XD or NAND, SD or MMC)
- Compliant with xD specifications for either Card Reader/Writer or Player mode applications
- On-Chip 4-Bit High Speed Memory Stick and MS PRO Hardware Circuitry
- On-Chip firmware reads and writes High Speed Memory Stick and MS PRO
- 1-bit ECC correction performed in hardware for maximum efficiency
- On-chip power FETs for supplying flash media card power with minimum board components
- USB Bus Power Certified
- 3.3 Volt I/O
- Complete USB Specification 2.0 Compatibility for Bus Powered Operation
 - Includes USB 2.0 Transceiver
 - A Bi-directional Control and a Bi-directional Bulk Endpoint are provided.
- 8051 8 bit microprocessor
- Double Buffered Bulk Endpoint
 - Bi-directional 512 Byte Buffer for Bulk Endpoint
 - 64 Byte RX Control Endpoint Buffer
 - 64 Byte TX Control Endpoint Buffer
- Internal Program Memory
- On Board 24Mhz Crystal Driver Circuit
- Can be clocked by 48MHz external source
- On-Chip 1.8V Regulator for Low Power Core Operation
- Internal PLL for 480Mhz USB 2.0 Sampling, Configurable MCU clock
- Activity LED output
- Compatible with Microsoft WinXP, WinME, Win2K SP3, Apple OS10, Softconnex, and Linux Multi-LUN Mass Storage Class Drivers
- Win2K, Win98/98SE and Apple OS8.6 and OS9 Multi-LUN Mass Storage Class Drivers available from SMSC
- 128 Pin VTQFP Lead-free RoHS Compliant Package (1.0mm height, 14mm x14mm footprint)



ORDER NUMBER(S):

USB2226-NU-XX FOR 128 PIN, VTQFP LEAD-FREE ROHS COMPLIANT PACKAGE



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General Description

The USB2226 is a USB 2.0 Bulk Only Mass Storage Class Peripheral Controller intended for supporting CompactFlash (CF and CF Ultra I/II) in True IDE Mode only, SmartMedia (SM) and xD cards, Memory Stick (MS), Memory Stick DUO (MSDUO) and Memory Stick Pro (MSPRO), Secure Digital (SD), and MultiMediaCard (MMC) flash memory devices. It provides a single chip solution for the most popular flash memory cards in the market.

The device consists of a USB 2.0 PHY and SIE, buffers, Fast 8051 microprocessor with expanded scratchpad, and program SRAM, and CF, MS, SM and SD controllers. The SD controller supports both SD and MMC devices. SM controller supports both SM and xD cards.

The USB2226 can read and write the following card formats:

- Secure Digital (SD), High Capacity SD (HC-SD), High Speed SD (HS-SD), Mini-SD, Micro-SD
- MultiMediaCard (MMC), MMCplus (HS-MMC), High Capacity MMC (HC-MMC), RS-MMC, MMCmobile
- Memory Stick (MS), MS Duo, Memory Stick PRO (MSPRO), Memory Stick PRO-HG (Pro-HG)
- xD Picture Card, Type M, Type H
- SmartMedia (SM), TransFlash
- Compact Flash
- MicroDrive

Media activity LED output is also provided.

Internal power FETs are provided to directly supply power to the xD/SM, MMC/SD and MS/MSPRO cards.

The internal ROM program implements a multi-LUN CF/SD/MMC/SM/MS reader function with individual card power control and activity indication. SMSC also provides licenses** for Win98 and Win2K drivers and setup utilities. Note: Please check with SMSC for precise features and capabilities for the current ROM code release.

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Block Diagram

Revision 1.4 (10-08-07)

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SMSC USB2226

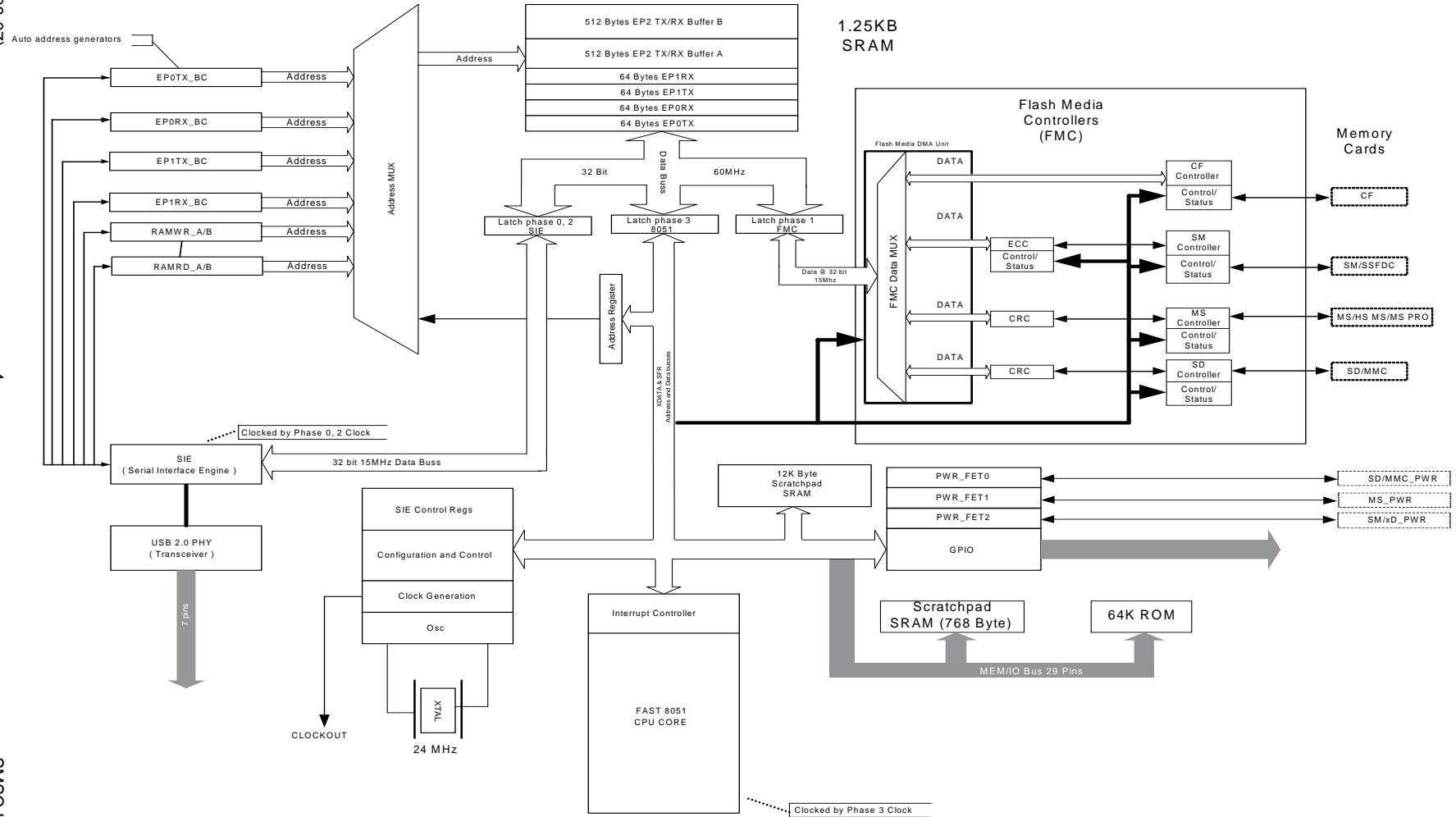


Figure 1 USB2226 Block Diagram

Data Brief

Package Outlines

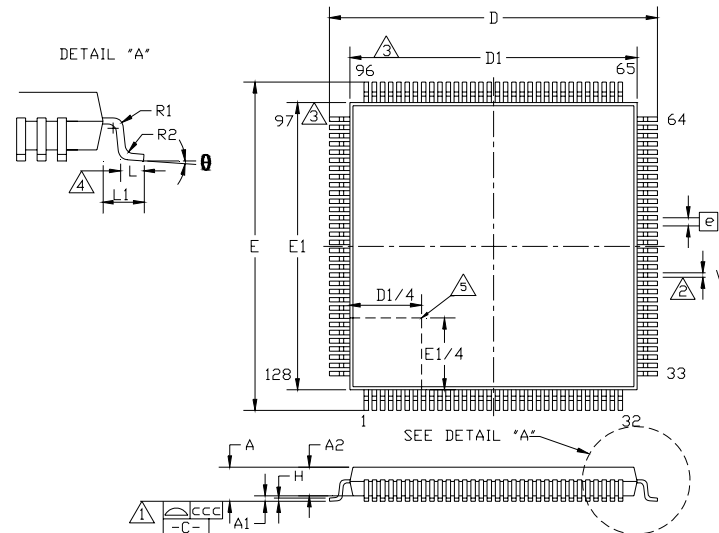


Figure 2 USB2226 128-Pin VTQFP Package Outline

Table 1 USB2226 128-Pin VTQFP Package Parameters

	MIN	NOMINAL	MAX	REMARKS
A	~	~	1.20	Overall Package Height
A1	0.05	~	0.15	Standoff
A2	0.95	~	1.05	Body Thickness
D	15.80	~	16.20	X Span
D1	13.80	~	14.20	X body Size
E	15.80	~	16.20	Y Span
E1	13.80	~	14.20	Y body Size
H	0.09	~	0.20	Lead Frame Thickness
L	0.45	0.60	0.75	Lead Foot Length
L1	~	1.00	~	Lead Length
e	0.40 Basic			Lead Pitch
q	0°	~	7°	Lead Foot Angle
W	0.13	0.18	0.23	Lead Width
R1	0.08	~	~	Lead Shoulder Radius
R2	0.08	~	0.20	Lead Foot Radius
ccc	~	~	0.08	Coplanarity

Notes:

1. Controlling Unit: millimeter.
2. Tolerance on the true position of the leads is ± 0.035 mm maximum.
Package body dimensions D1 and E1 do not include the mold protrusion.
3. Maximum mold protrusion is 0.25 mm.
4. Dimension for foot length L measured at the gauge plane 0.25 mm above the seating plane.
5. Details of pin 1 identifier are optional but must be located within the zone indicated.