

HS Endpoint Processor with USB 2.0, Smart Card, & FMC for Secure Token & Storage

PRODUCT FEATURES

Data Brief

General Description

The SMSC SEC2410/SEC4410 are USB 2.0 compliant, hi-speed bulk-only mass storage class peripheral controllers. They are intended to be used to read and write to popular flash media, including Secure Digital (SD), and MultiMediaCard™ (MMC) families.

The SMSC SEC2410/SEC4410 are fully integrated, single-chip solutions capable of ultra-high performance operation. Average sustained transfer rates exceeding 35 MB/s are possible if the media and host can support those rates. The SMSC SEC2410/SEC4410 includes provisions to read/write to secure media formats, as well as support AES encryption, without performance impact. SMSC's TrustSpan™ Technology enables digital systems to securely communicate, process, move and store information on system boards, across networks and through the cloud.

General Features

- The SEC2410/SEC4410 is available in two lead-free RoHS compliant packages:
 - 64-pin QFN (9x9 mm) package
 - 72-pin QFN (10x10 mm) package that includes debug pins to interface to standard ARM debug tools
- Hardware-controlled data flow architecture for all self-mapped media
- Pipelined hardware support for access to non-self-mapped media
- Order number (see next page) with *i* denote the products that support the industrial temperature range of -40°C to 85°C
- Support included for secure media format on a licensed, customized basis
 - SD Secure

Hardware Features

- Single-chip flash media controller containing:
 - A multiplexed interface for use with combo card sockets
 - SD/MMC flash media reader/writer
- SDIO and MMC streaming mode support
- Extended configuration options
- Media Activity LED
- GPIO configuration and polarity
 - Up to 32 GPIOs for special function use
 - One GPIO with up to 200 mA drive
- On board 24 MHz crystal driver circuit
- Optional external 24 MHz clock input
- Internal card power FET
 - 200 mA
 - "Fold-back" short circuit protection
- ARM M3 32-bit microprocessor
 - 60 MHz execution speed at 1 cycle per instruction (minimum)
 - 32 KBytes of internal SRAM for a general purpose scratchpad
 - 96 KByte SRAM available for code execution
 - 32 KByte internal code ROM
 - JTAG interface
- Supports a single external 3.3 V supply source; internal regulators provide 1.2 V internal core voltage for additional bill of materials and power savings
- Optimized pinout improves signal routing, easing implementation for improved signal integrity
- 1.2 V reference voltage for HSIC (SEC4410 only)

Flash Media Specification Compliance

- Secure Digital 2.0
 - HS-SD, SDHC, SDXC
 - TransFlash™ and reduced form factor media
- MultiMediaCard
 - MMC version 4.2: 1/4/8-bit
 - eMMC version 4.4

Software Features

- Customizable vendor-specific data
- Reduced memory footprint



Applications

- Secure dongles and storage
- Flash media card reader/writers
- Desktop and mobile PCs
- Consumer A/V and media players/viewers

■ Compatible with

- Microsoft® Vista™ and Vista ReadyBoost™
- Windows® 7, XP, ME, 2K SP4
- Apple Mac OSx®
- Linux Mass Storage Class Drivers

Order Numbers:

ORDER NUMBERS	LEAD-FREE ROHS COMPLIANT PACKAGE	PACKAGE SIZE (mm)	TEMPERATURE RANGE
SEC2410/SEC2410i-JZX	64QFN	9x9	0°C to 85°C
SEC4410/SEC4410i-JZX			-40°C to 85°C
SEC2410/SEC2410i-AKZE	72QFN	10x10	0°C to 85°C
SEC4410/SEC4410i-AKZE			-40°C to 85°C

This product meets the halogen maximum concentration values per IEC61249-2-21
For RoHS compliance and environmental information, please visit www.smSC.com/rohs



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Overview

The SMSC SEC2410/SEC4410 are flash media card reader solutions fully compliant with the *USB 2.0 Specification*. All required resistors on the USB ports are integrated into the device. This includes all series termination resistors on D+ and D- pins and all required pull-down and pull-up resistors. The over-current sense inputs for the downstream facing ports have internal pull-up resistors.

Hardware Features

- Complete *USB Specification 2.0* compatibility
- Single chip flash media controller in 64-pin and 72-pin QFN, lead-free RoHS compliant packages
- SEC2410/SEC4410 support commercial temperatures from 0°C to +70°C
- SEC2410i/SEC4410i support industrial temperatures from -40°C to +85°C
- Up to 32 GPIOs
 - Configuration and polarity for special function use such as LED indicators, button inputs, and power control to memory devices
 - The number of actual GPIOs depends on the implemented configuration
- One GPIO available with up to 200 mA drive and “fold-back” short circuit protection
- ARM M3 32-bit microprocessor
 - 60 MHz - single cycle execution
 - 32 KB internal SRAM | 96 KB code SRAM | 32 KB internal
- Supports a single external 3.3 V supply source; internal regulators provide 1.2 V internal core voltage for additional bill of materials and power savings

Compliance with the following flash media card specifications:

- Secure Digital 2.0
 - HS-SD, SDHC, SDXC
 - TransFlash™ and reduced form factor media
- MultiMediaCard
 - MMC version 4.2: 1/4/8 bit MMC
 - eMMC version 4.4

Software Features

- Supports USB Mass Storage Compliant Bootable BIOS
- Supports firmware upgrade via USB bus for SPI Flash and SD/MMC cards (“boot block flash” not required).
- Compatible with Microsoft Vista; Windows 7, XP, and 2K SP3&4; Apple OS10; and Linux Multi-LUN Mass Storage Class Drivers

Block Diagrams

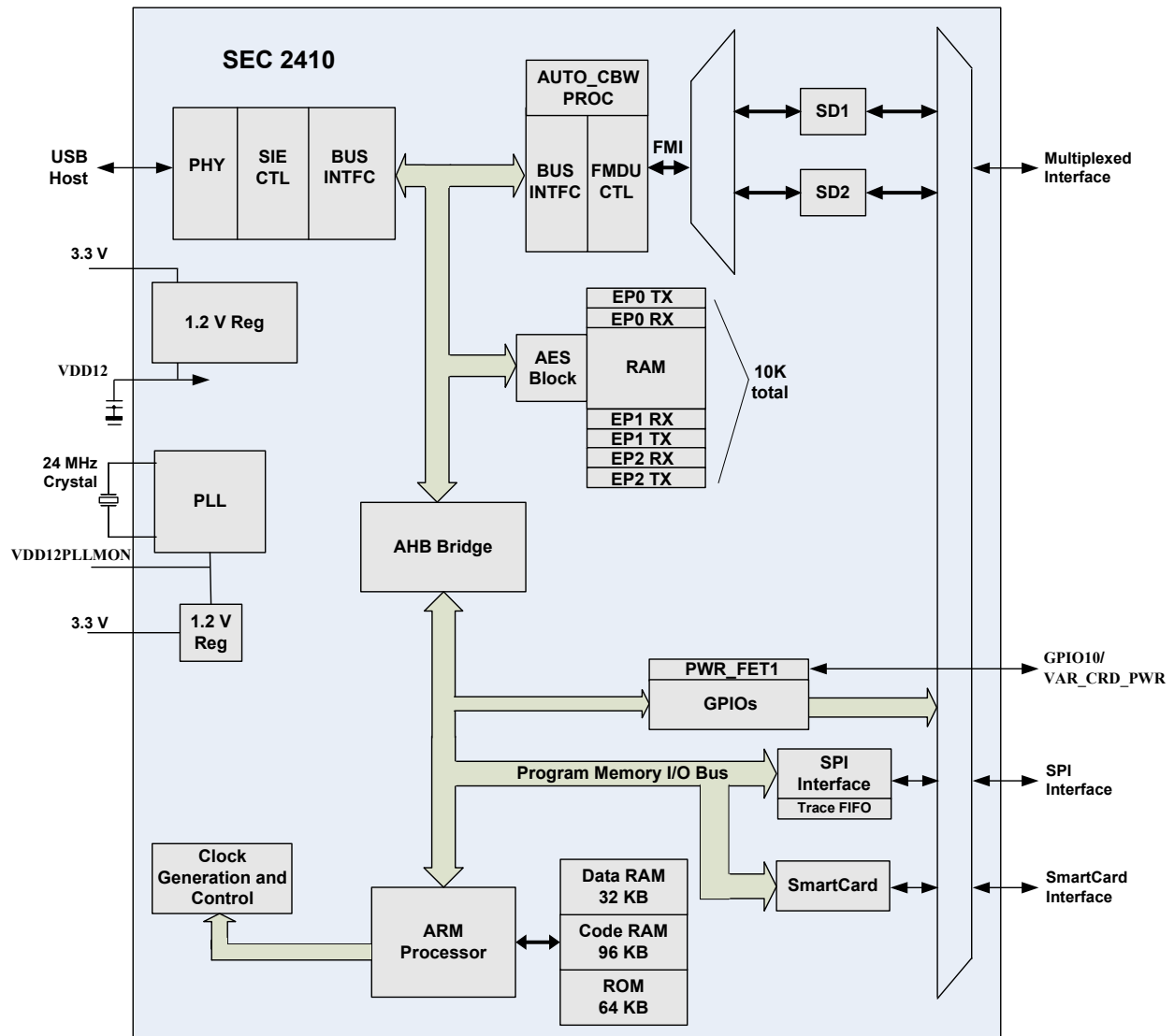


Figure 1 SEC2410 Block Diagram

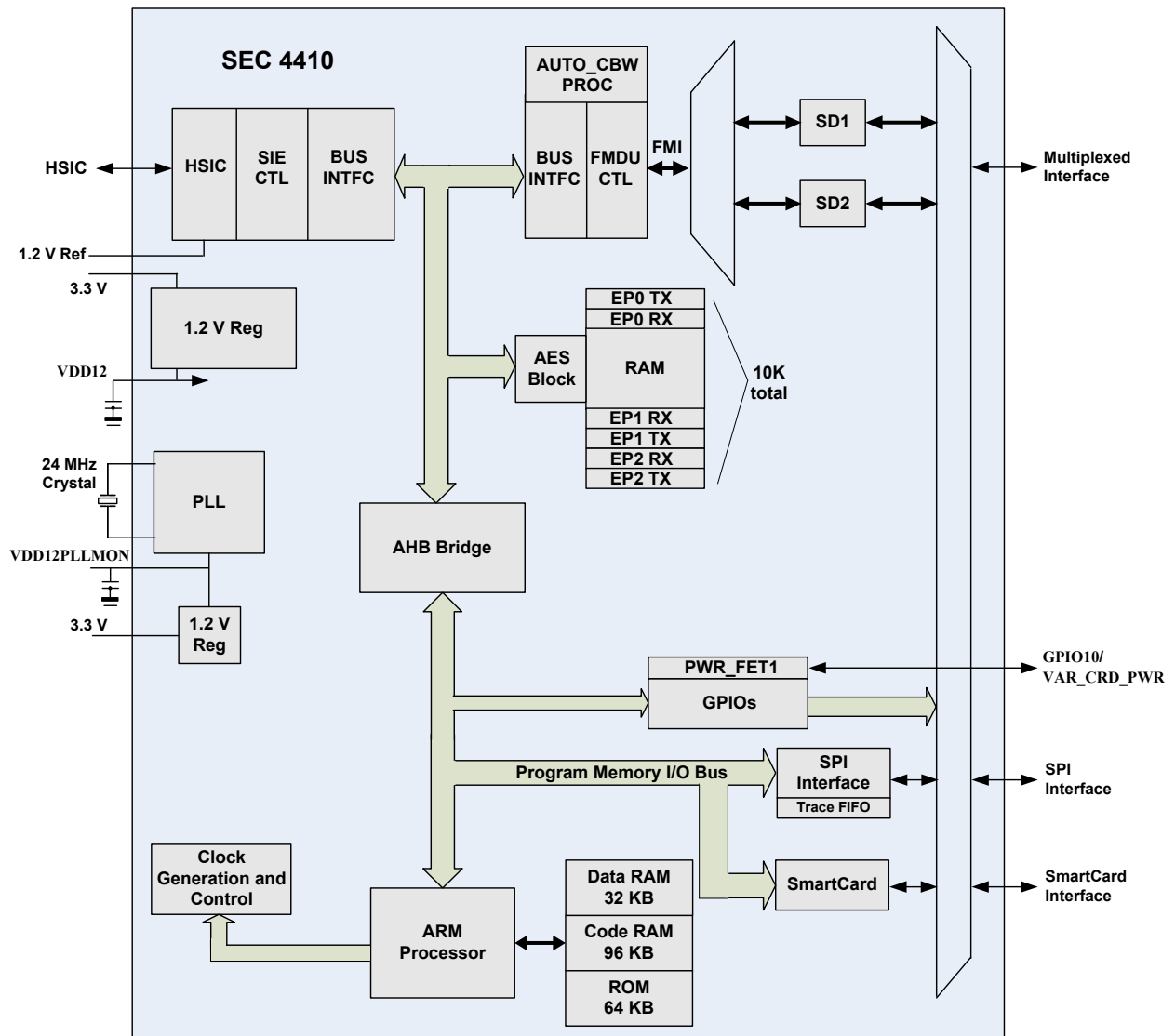
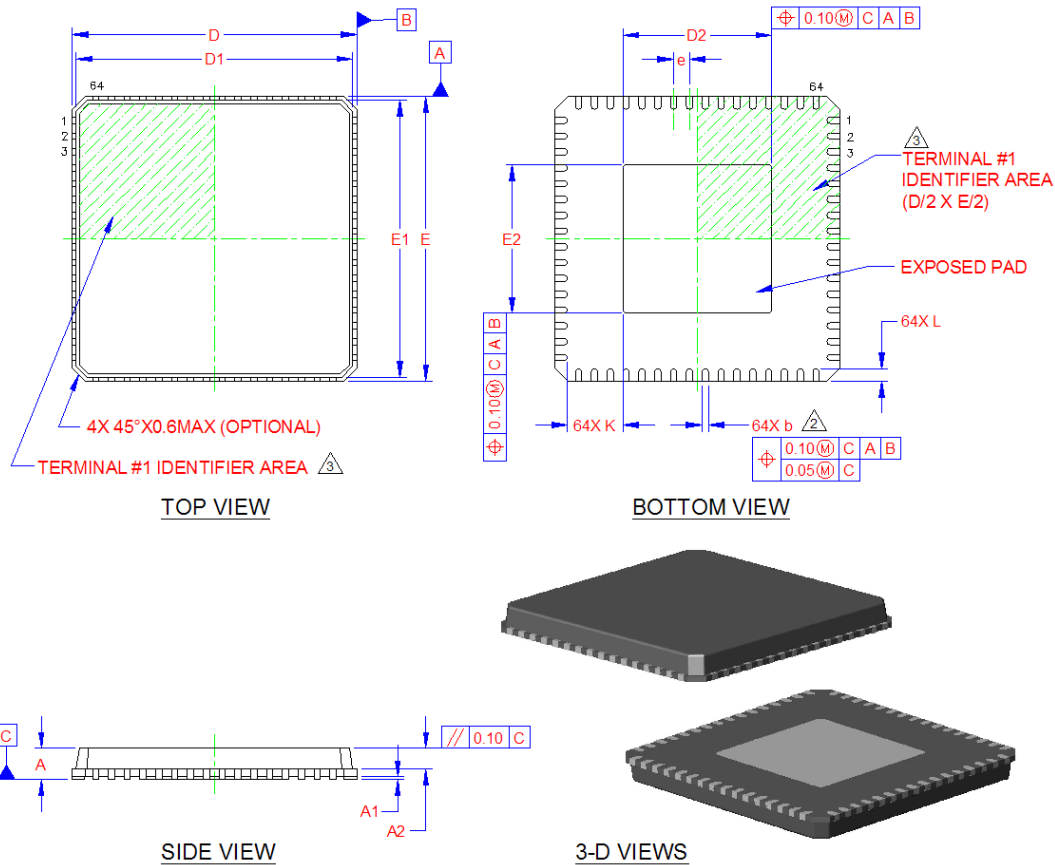


Figure 2 SEC4410 Block Diagram

Package Outlines

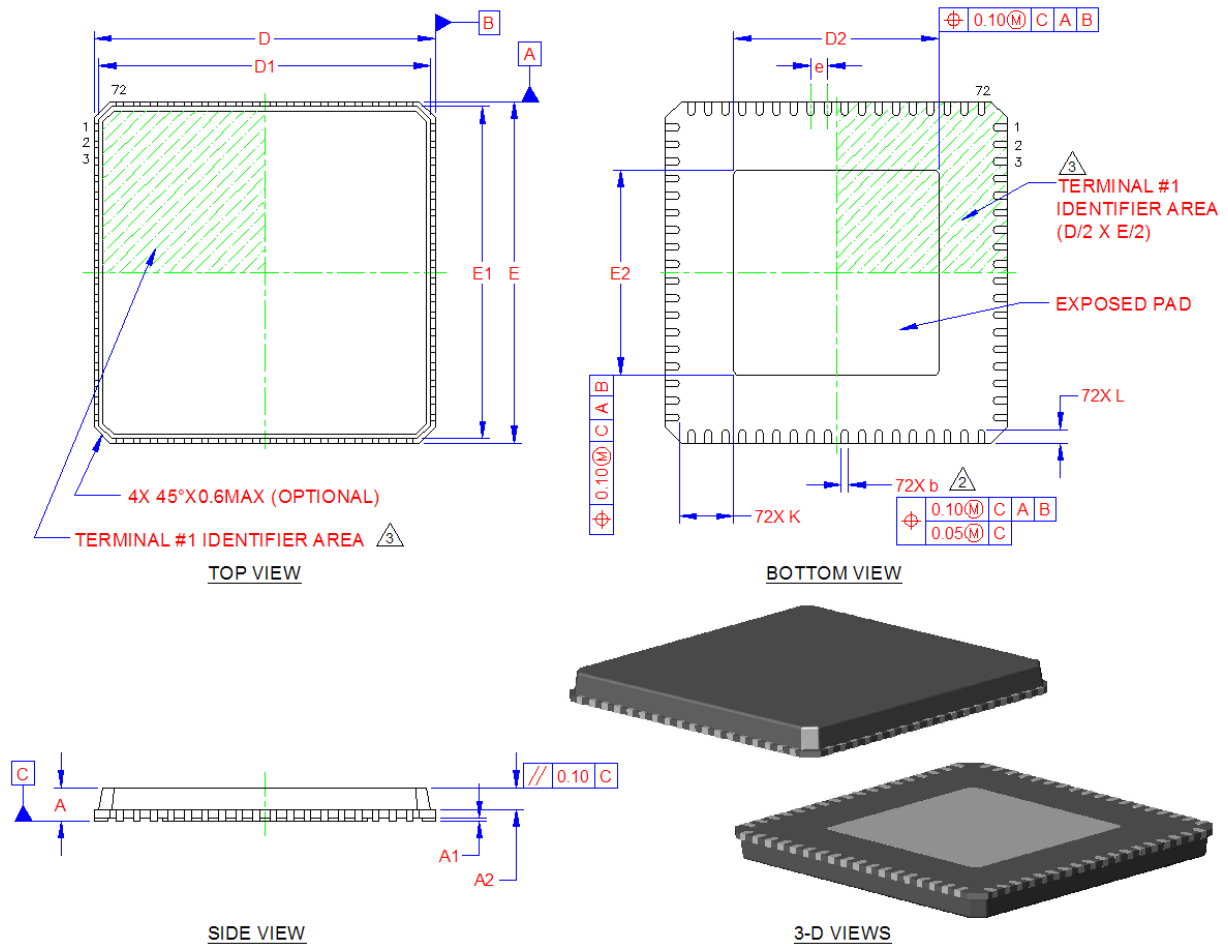


COMMON DIMENSIONS					
SYMBOL	MIN	NOM	MAX	NOTE	REMARK
A	0.80	0.85	1.00	-	OVERALL PACKAGE HEIGHT
A1	0	0.02	0.05	-	STANDOFF
A2	-	0.65	0.80	-	MOLD CAP THICKNESS
D/E	8.90	9.00	9.10	-	X/Y BODY SIZE
D1/E1	8.65	8.75	8.85	-	X/Y MOLD CAP SIZE
D2/E2	4.60	4.70	4.80	-	X/Y EXPOSED PAD SIZE
L	0.30	0.40	0.50	-	TERMINAL LENGTH
b	0.18	0.25	0.30	2	TERMINAL WIDTH
K	1.55	-	-	-	CENTER PAD TO PIN CLEARANCE
e		0.50 BSC		-	TERMINAL PITCH

NOTES:

- ALL DIMENSIONS ARE IN MILLIMETER.
- DIMENSIONS "b" APPLIES TO PLATED TERMINALS AND IT IS MEASURED BETWEEN 0.15 AND 0.30 mm FROM THE TERMINAL TIP.
- DETAILS OF TERMINAL #1 IDENTIFIER ARE OPTIONAL BUT MUST BE LOCATED WITHIN THE AREA INDICATED. THE TERMINAL #1 IDENTIFIER MAY BE EITHER A MOLD OR MARKED FEATURE.

Figure 3 SEC2410/SEC4410 64-Pin QFN Package Outline



COMMON DIMENSIONS					
SYMBOL	MIN	NOM	MAX	NOTE	REMARK
A	0.80	0.85	1.00	-	OVERALL PACKAGE HEIGHT
A1	0	0.02	0.05	-	STANDOFF
A2	-	0.65	0.80	-	MOLD CAP THICKNESS
D/E	9.90	10.00	10.10	-	X/Y BODY SIZE
D1/E1	9.65	9.75	9.85	-	X/Y MOLD CAP SIZE
D2/E2	5.90	6.00	6.10	-	X/Y EXPOSED PAD SIZE
L	0.30	0.40	0.50	-	TERMINAL LENGTH
b	0.18	0.25	0.30	2	TERMINAL WIDTH
K	1.50	-	-	-	CENTER PAD TO PIN CLEARANCE
e	0.50 BSC		-	-	TERMINAL PITCH

- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETER.
 2. DIMENSIONS "b" APPLIES TO PLATED TERMINALS AND IT IS MEASURED BETWEEN 0.15 AND 0.30 mm FROM THE TERMINAL TIP.
 3. DETAILS OF TERMINAL #1 IDENTIFIER ARE OPTIONAL BUT MUST BE LOCATED WITHIN THE AREA INDICATED. THE TERMINAL #1 IDENTIFIER MAY BE EITHER A MOLD OR MARKED FEATURE.

Figure 4 SEC2410/SEC4410 72-Pin QFN Package Outline