

# 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](http://www.smSC.com/rohs)**



80 ARKAY DRIVE, HAUPPAUGE, NY 11788 (631) 435-6000 or 1 (800) 443-SEMI

Copyright © 2011 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.smSC.com>. SMSC is a registered trademark of Standard Microsystems Corporation ("SMSC"). Product names and company names are the trademarks of their respective holders.

**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.**

## 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

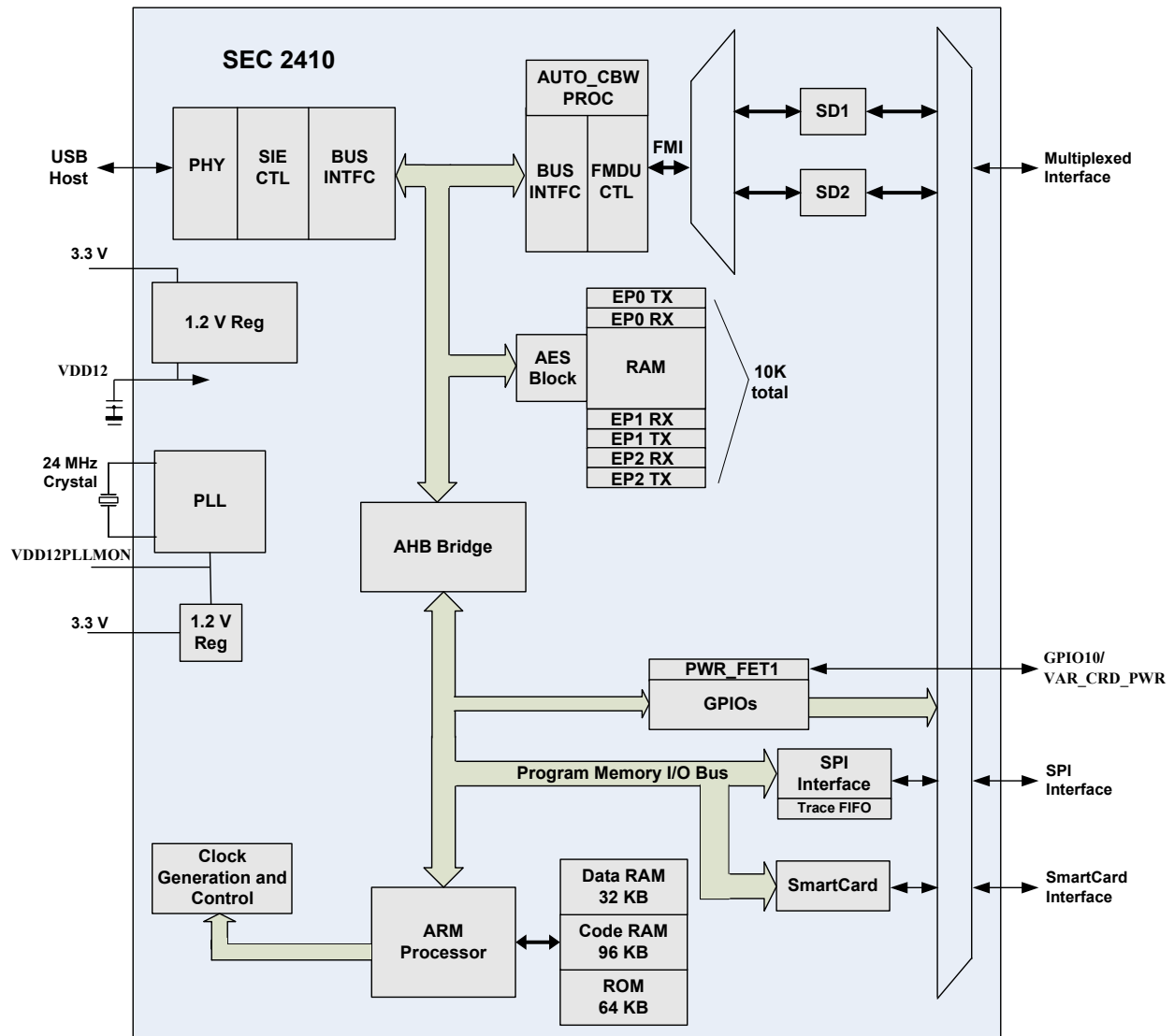


Figure 1 SEC2410 Block Diagram

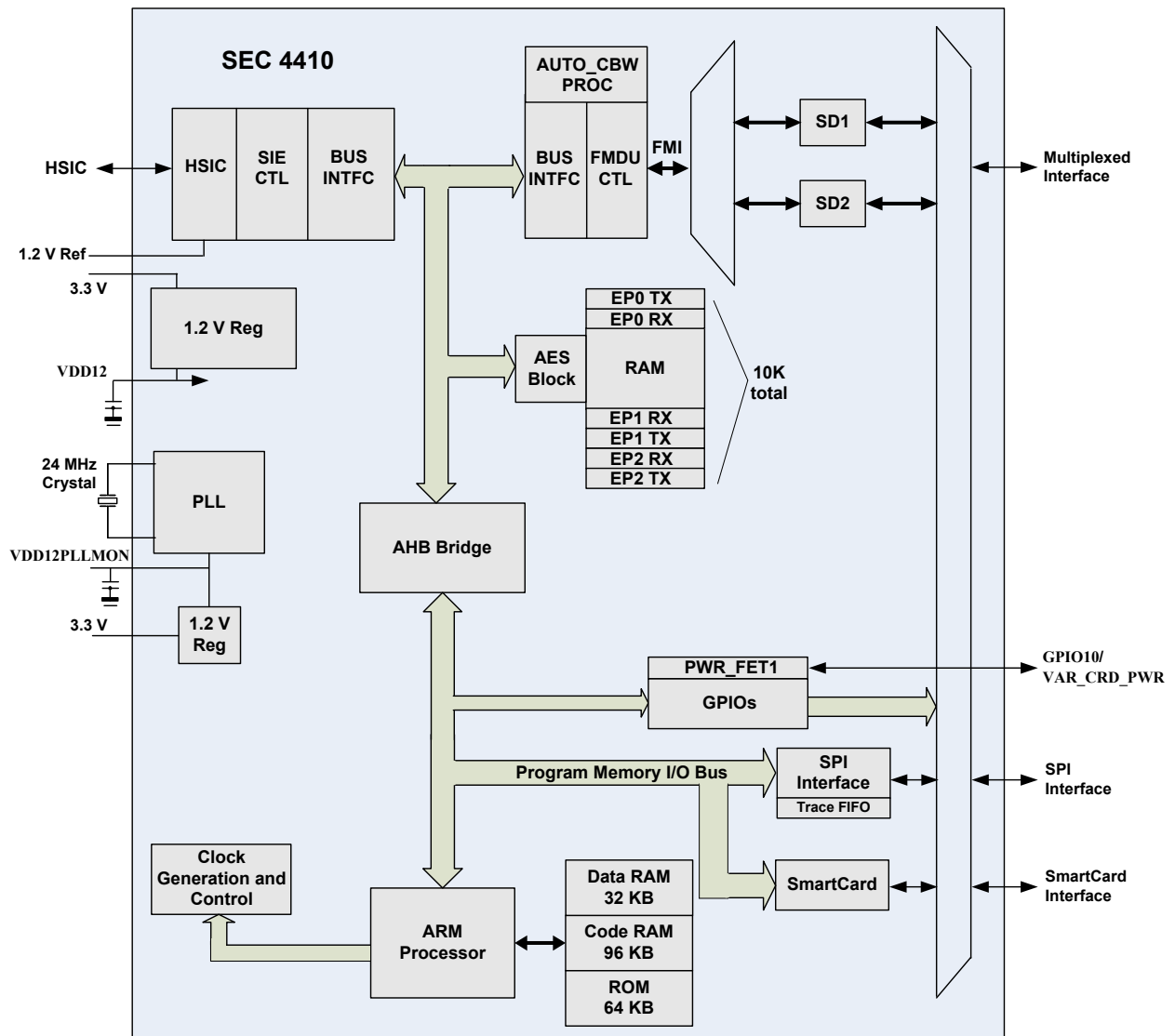
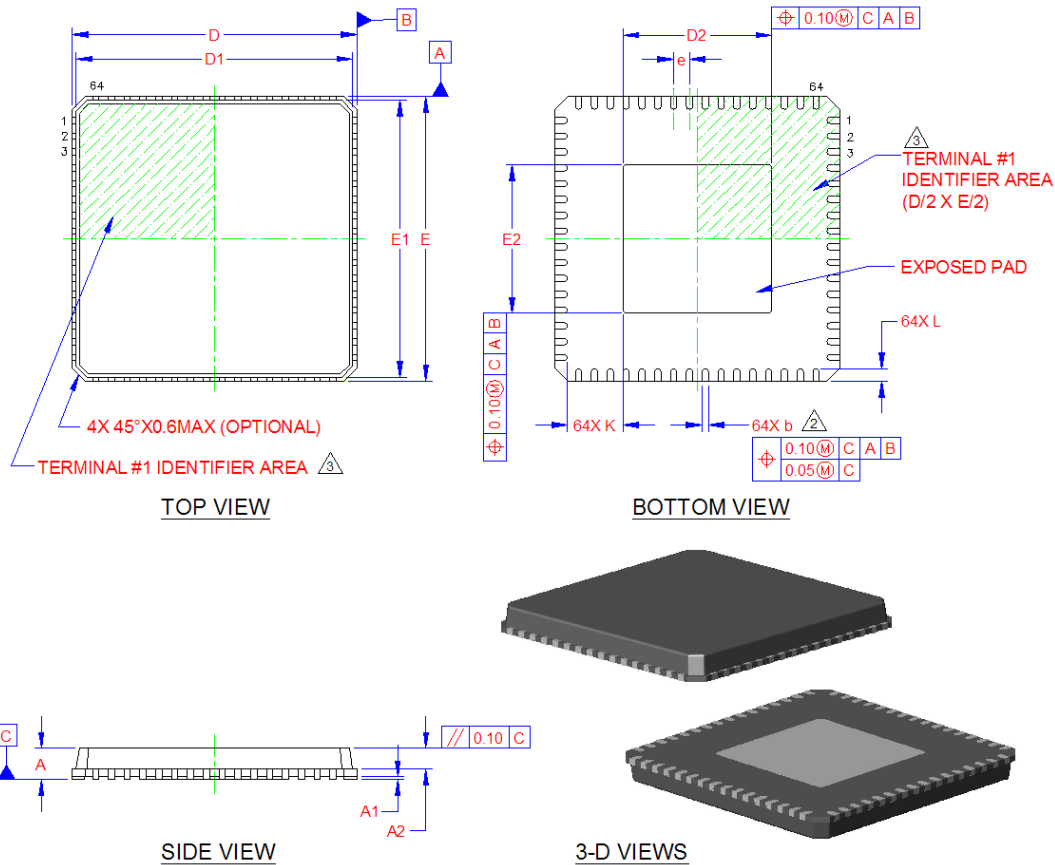


Figure 2 SEC4410 Block Diagram

## Package Outlines

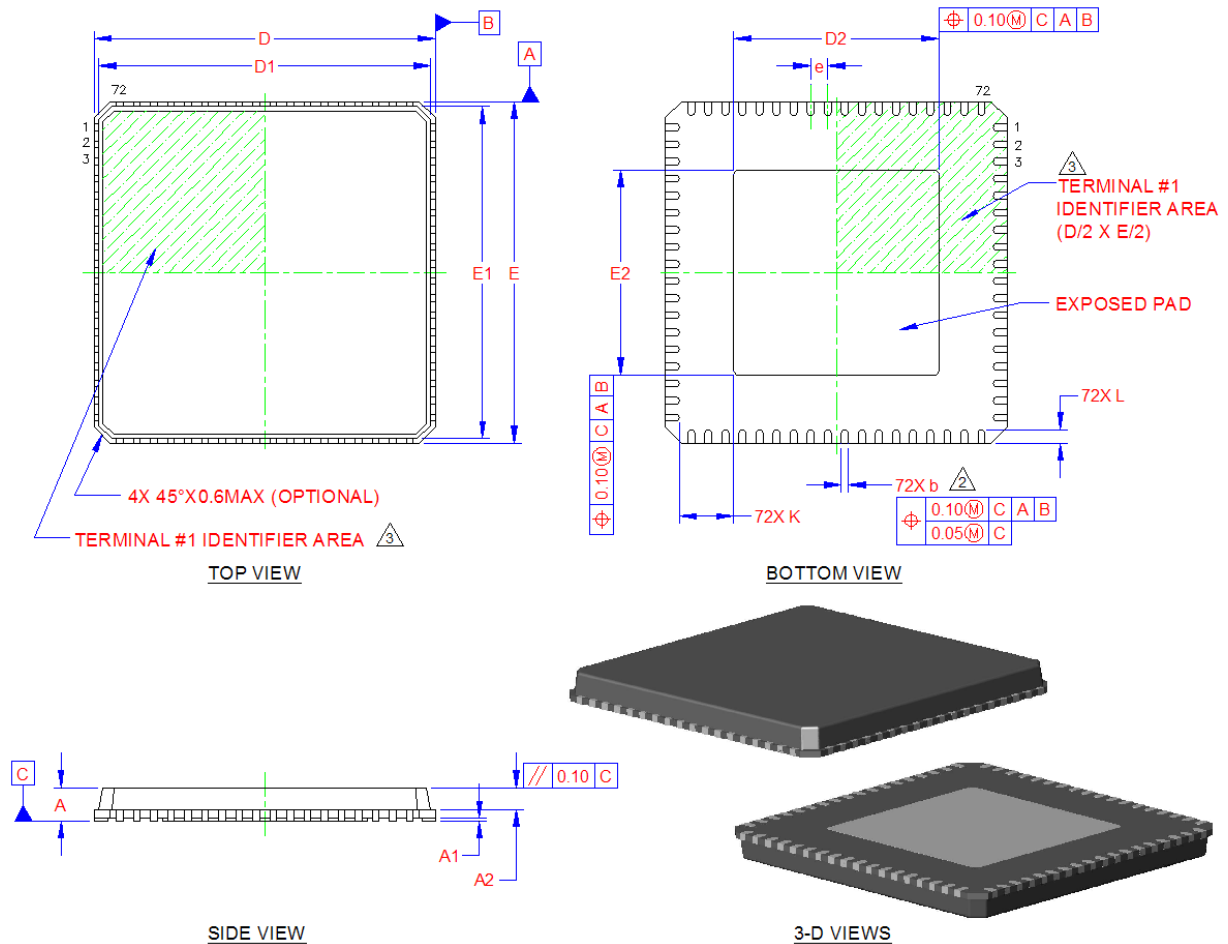


COMMON DIMENSIONS					
SYMBOL	MIN	NOM	MAX	NOTE	REMARK
A	0.80	0.85	1.00	-	OVERALL PACKAGE HEIGHT
A1	0	0.02	0.05	-	STANDOFF
A2	-	0.65	0.80	-	MOLD CAP THICKNESS
D/E	8.90	9.00	9.10	-	X/Y BODY SIZE
D1/E1	8.65	8.75	8.85	-	X/Y MOLD CAP SIZE
D2/E2	4.60	4.70	4.80	-	X/Y EXPOSED PAD SIZE
L	0.30	0.40	0.50	-	TERMINAL 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**

## Данный компонент на территории Российской Федерации

### Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

### Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: [info@moschip.ru](mailto:info@moschip.ru)

Skype отдела продаж:

moschip.ru

moschip.ru\_4

moschip.ru\_6

moschip.ru\_9