
LPC IO with HWM, Dual UARTs, Power Button and Reset Support

Product Features

- General Features
 - 3.3 Volt Operation (SIO Block is 5 Volt Tolerant)
 - Programmable Wake-up Event (PME) Interface
 - PC99, PC2001 Compliant
 - ACPI 2.0 Compliant
 - Serial IRQ Interface Compatible with Serialized IRQ Support for PCI Systems
 - ISA Plug-and-Play Compatible Register Set
 - Four Address Options for Power On Configuration Port
 - System Management Interrupt (SMI)
 - 8 Dedicated General Purpose I/O pins
 - 2 GPIOs with VID compatible inputs
 - Security Key Register (32 byte) for Device Authentication
- Low Pin Count Bus (LPC) Interface
 - Supports Bus frequencies of 19MHz to 33MHz
- Watchdog Timer
- Resume and Main Power Good Generator
- 2 Full Function Serial Ports
 - High Speed NS16C550A Compatible UARTs with Send/Receive 16-Byte FIFOs
 - Supports 230k, 460k, 921k and 1.5M Baud
 - Programmable Baud Rate Generator
 - Modem Control Circuitry
 - 480 Address and 15 IRQ Options
 - Support IRQ Sharing among serial ports
 - RS485 Auto Direction Control Mode
- Hardware Monitor
 - Monitor Power supplies (+2.5V, +5V, +12V, V_{ccp} processor voltage), V_{CC}, V_{bat} and V_{tr}.
 - Remote Thermal Diode Sensing for One External Temperature Measurement accurate to 1.5°C
 - Internal Ambient Temperature Measurement
 - Limit Comparison of all Monitored Values
 - Programmable Automatic FAN control based on temperature
- IDE Reset Output and 3 PCI Reset Buffers with Software Control Capability
- Power Button Control and AC Power Failure Recovery
- Temperature Ranges Available
 - Industrial (+85°C to -40°C)
 - Commercial (+70°C to 0°C)
- 64-Ball WFBGA RoHS Compliant Package

TO OUR VALUED CUSTOMERS

It is our intention to provide our valued customers with the best documentation possible to ensure successful use of your Microchip products. To this end, we will continue to improve our publications to better suit your needs. Our publications will be refined and enhanced as new volumes and updates are introduced.

If you have any questions or comments regarding this publication, please contact the Marketing Communications Department via E-mail at docerrors@microchip.com. We welcome your feedback.

Most Current Data Sheet

To obtain the most up-to-date version of this data sheet, please register at our Worldwide Web site at:

<http://www.microchip.com>

You can determine the version of a data sheet by examining its literature number found on the bottom outside corner of any page. The last character of the literature number is the version number, (e.g., DS30000000A is version A of document DS30000000).

Errata

An errata sheet, describing minor operational differences from the data sheet and recommended workarounds, may exist for current devices. As device/documentation issues become known to us, we will publish an errata sheet. The errata will specify the revision of silicon and revision of document to which it applies.

To determine if an errata sheet exists for a particular device, please check with one of the following:

- Microchip's Worldwide Web site; <http://www.microchip.com>
- Your local Microchip sales office (see last page)

When contacting a sales office, please specify which device, revision of silicon and data sheet (include -literature number) you are using.

Customer Notification System

Register on our web site at www.microchip.com to receive the most current information on all of our products.

1.0 INTRODUCTION

1.1 General Description

The SCH3223 is a 3.3V (Super I/O Block is 5V tolerant) PC99/PC2001 compliant Super I/O controller with an LPC interface. The SCH3223 also includes Hardware Monitoring capabilities, enhanced Security features, Power Control logic and Motherboard Glue logic.

The SCH3223 is ACPI 1.0/2.0 compatible and therefore supports multiple low power-down modes. It incorporates sophisticated power control circuitry (PCC), which includes support for keyboard.

The SCH3223 supports the ISA Plug-and-Play Standard register set (Version 1.0a). The I/O Address and hardware IRQ of each Logical Device may be reprogrammed through the internal configuration registers. There are up to 480 I/O address location options, and a Serialized IRQ interface.

Super I/O functionality includes two serial ports. The serial ports are fully functional NS16550 compatible UARTs that support data rates up to 1.5 Mbps. They both have the full 8 pin interface. The Serial Ports contain programmable direction control, which will automatically drive nRTS when the Output Buffer is loaded, then drive nRTS when the Output Buffer is empty.

Hardware Monitoring (HWM) includes support for monitoring an external temperature via thermal diode inputs and an internal sensor for measuring local ambient temperature.

Hardware Monitoring also includes programmable, automatic fan control, consisting of a fan tachometer input and a pulse width modulator (PWM) fan control output, responding to temperature inputs and programmable via the LPC bus. It has the ability to alert the system to out-of-limit conditions and automatically control the speed of a fan in response.

Hardware Monitoring capability also includes voltage monitoring, and it has the ability to alert the system to out-of-limit conditions. There are four analog inputs for monitoring external voltages of +5V, +2.5V, +12V and V_{ccp} (core processor voltage), as well as internal monitoring of the device's internal VCC, VTR, and VBAT power supplies. SMI and PME Wake outputs are provided to indicate out-of-limit temperature, voltage, and fan speed conditions. Hardware Monitoring features are accessible via the LPC bus.

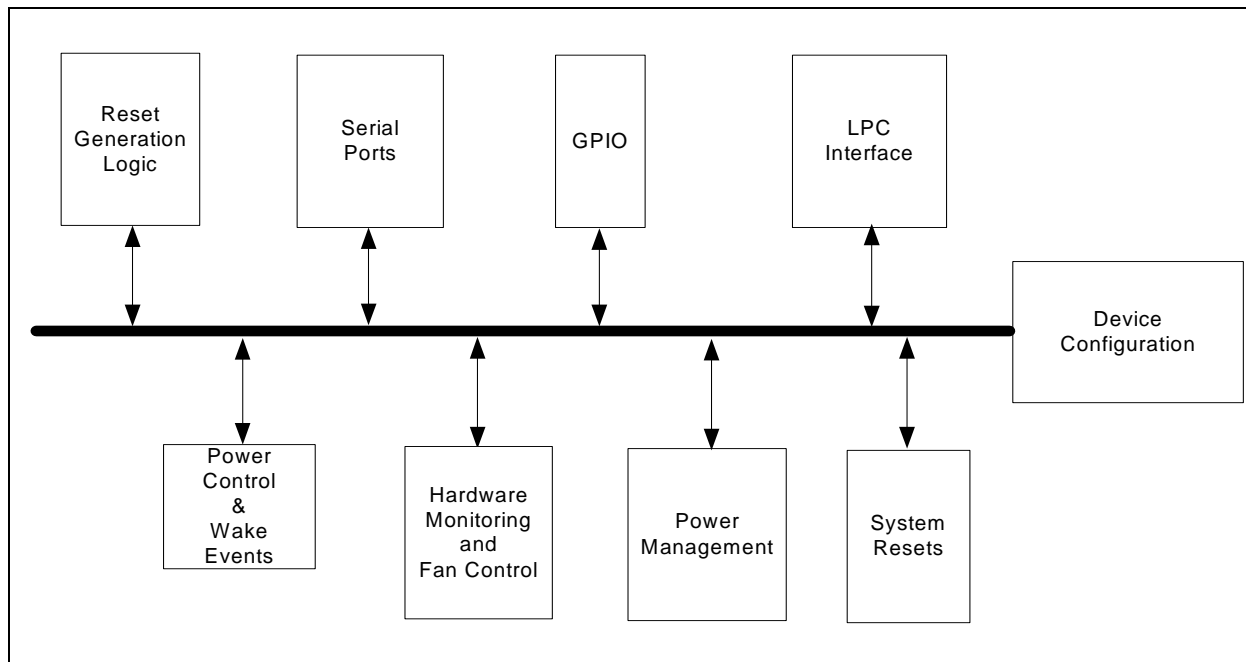
The Motherboard Glue logic includes various power management and system logic including generation of nRSMRST, and reset generation. The reset generation includes a watchdog timer which can be used to generate a reset pulse. The width of this pulse is selectable via an external strapping option.

System related functionality, which offers flexibility to the system designer, includes General Purpose I/O control functions, and control of two LED's.

1.2 Block Diagram

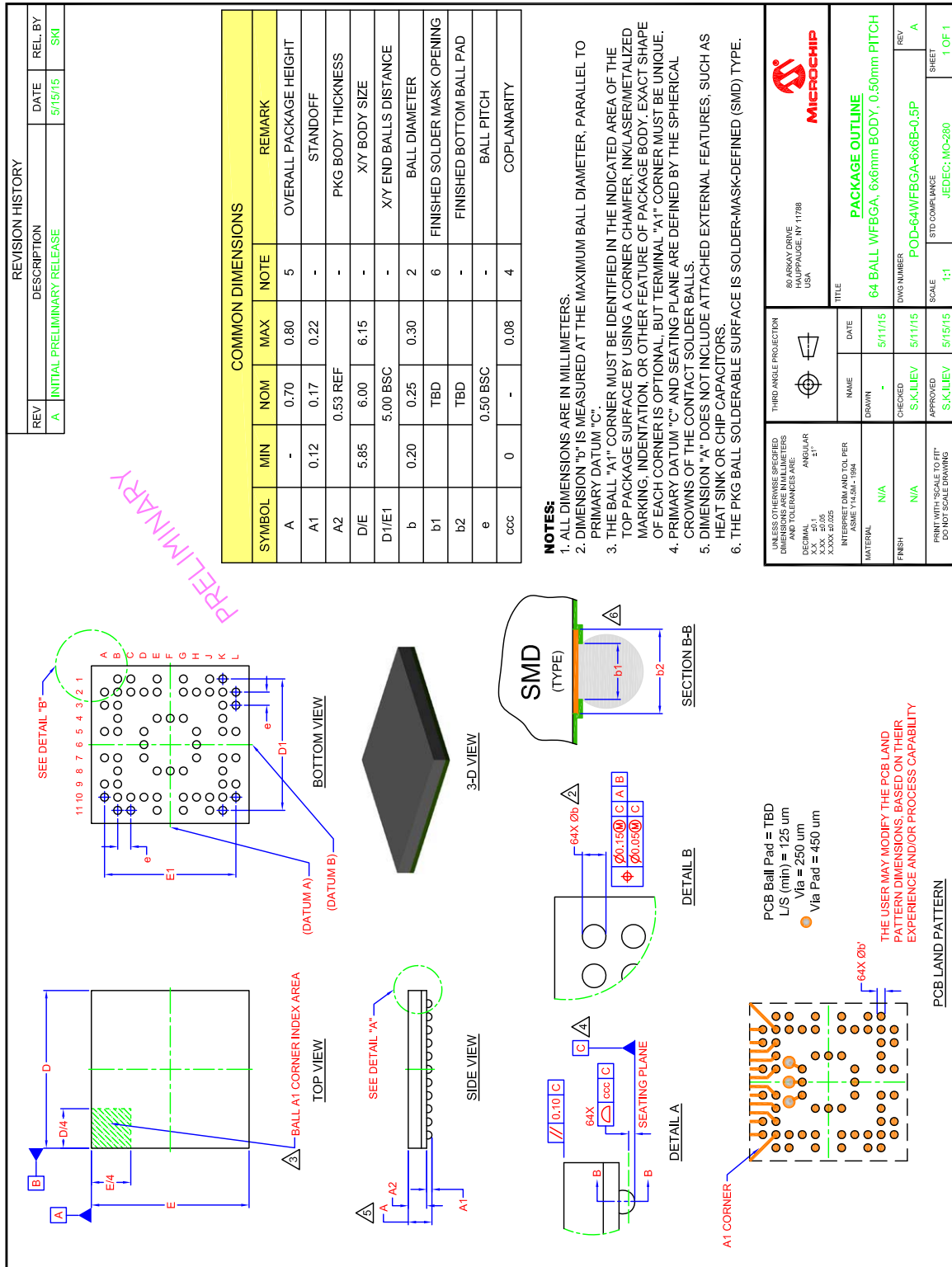
An internal block diagram of the SCH3223 is shown in [Figure 1-1](#).

FIGURE 1-1: ARCHITECTURAL OVERVIEW



2.0 PACKAGE OUTLINE

FIGURE 2-1: SCH3223 64 WFBGA Package



SCH3223

3.0 BALL LAYOUT

3.1 SCH3223 Ball Layout Summary

FIGURE 3-1: SCH3223 FOOTPRINT DIAGRAM, TOP VIEW

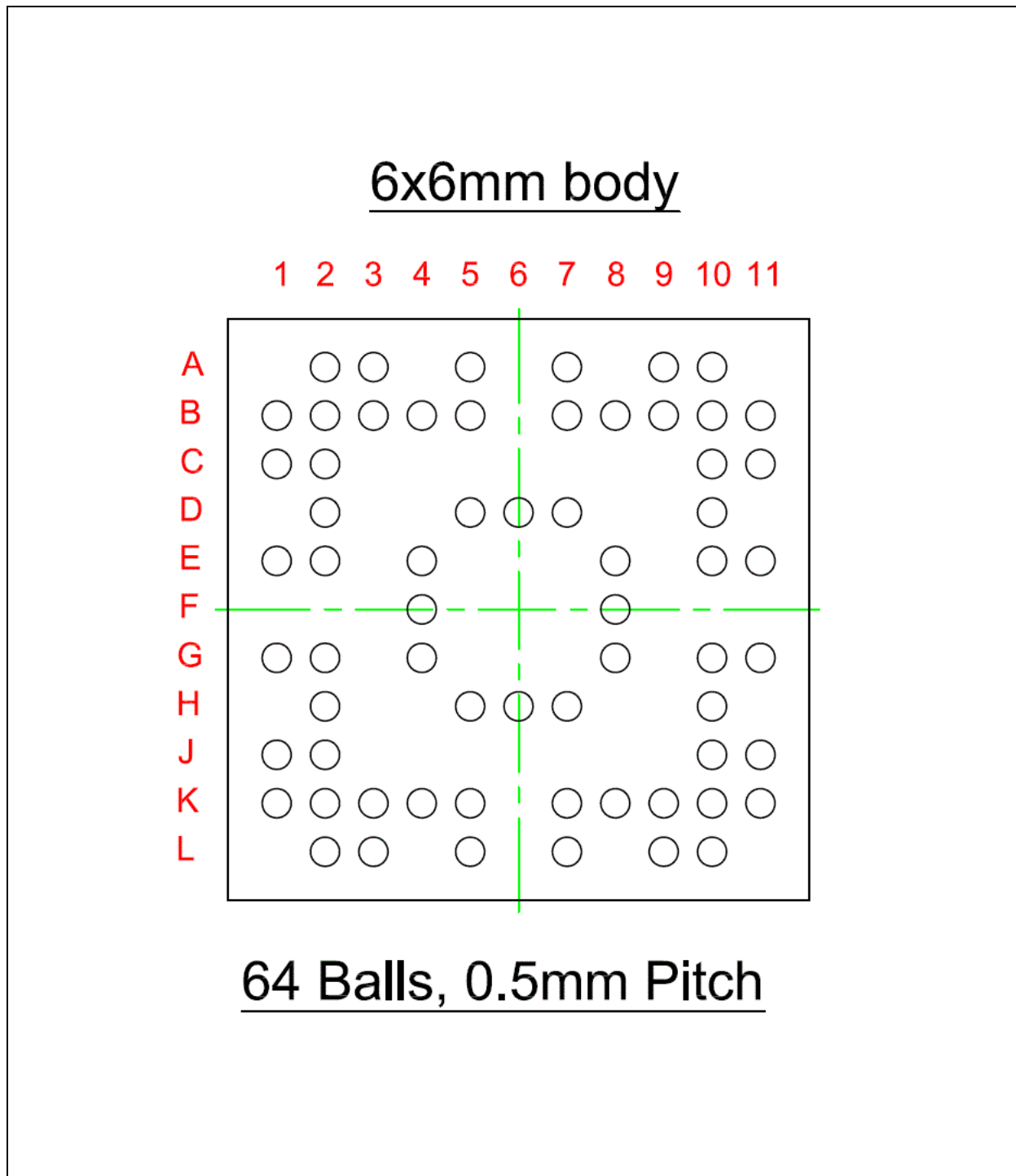


TABLE 3-1: SCH3223 SUMMARY

BALL#	FUNCTION ^a
B1	+12V_IN
C1	+5V_IN
C2	VTR
D2	TEST=VSS
E2	VSS
E1	CLOCKI
E4	LAD0
F4	LAD1
G4	LAD2
G2	LAD3
G1	LFRAME#
H6	PCI_RESET#
H5	PCI_CLK
H2	SER_IRQ
J2	VSS
K3	VCC
J1	nIDE_RSTDRV / GP44
K2	nPCIRST1 / GP45
K1	nPCIRST2 / GP46
L2	nPCIRST3 / GP47
L3	AVSS
K4	VBAT
K5	GP27 / nIO_SMI / P17
L5	VTR
L9	nRI1
L10	nDCD1
K11	RXD1
K7	TXD1 / SIOXNOROUT
K8	nDSR1
K9	nRTS1 / SYSOPT0
K10	nCTS1
J10	nDTR1 / SYSOPT1
J11	GP50 / nRI2
H10	VTR
L7	VSS
H7	GP51 / nDCD2
G11	GP52 / RXD2
G10	GP53 / TXD2
G8	GP54 / nDSR2
F8	GP55 / nRTS2 / RESGEN
E8	GP56 / nCTS2
D6	GP57 / nDTR2
D7	PB_OUT#
E10	PS_ON#

SCH3223

TABLE 3-1: SCH3223 SUMMARY (CONTINUED)

BALL#	FUNCTION ^a
E11	PB_IN#
D10	SLP_SX#
C11	GP42 / nIO_PME
C10	GP61 / nLED2 / CLKO
B11	GP60 / nLED1 / WDT
A10	GP63
B10	CLKI32
A9	nRSMRST
B9	GP62
B8	PWRGD_OUT
B7	PWRGD_PS
A7	nFPRST / GP30
A5	PWM1
B5	FANTACH1
D5	HVSS
B4	HVTR
B3	REMOTE1-
A3	REMOTE1+
B2	VCCP_IN
A2	+2.5V_IN

a. Device ID register at Plug&Play Index 0x20 holds 0x7D.

4.0 PRODUCT BRIEF REVISION HISTORY**TABLE 4-1: REVISION HISTORY**

Revision Level & Date	Section/Figure/Entry	Correction
DS00002107A (02-16-16)		Document Release

THE MICROCHIP WEB SITE

Microchip provides online support via our WWW site at www.microchip.com. This web site is used as a means to make files and information easily available to customers. Accessible by using your favorite Internet browser, the web site contains the following information:

- **Product Support** – Data sheets and errata, application notes and sample programs, design resources, user's guides and hardware support documents, latest software releases and archived software
- **General Technical Support** – Frequently Asked Questions (FAQ), technical support requests, online discussion groups, Microchip consultant program member listing
- **Business of Microchip** – Product selector and ordering guides, latest Microchip press releases, listing of seminars and events, listings of Microchip sales offices, distributors and factory representatives

CUSTOMER CHANGE NOTIFICATION SERVICE

Microchip's customer notification service helps keep customers current on Microchip products. Subscribers will receive e-mail notification whenever there are changes, updates, revisions or errata related to a specified product family or development tool of interest.

To register, access the Microchip web site at www.microchip.com. Under "Support", click on "Customer Change Notification" and follow the registration instructions.

CUSTOMER SUPPORT

Users of Microchip products can receive assistance through several channels:

- Distributor or Representative
- Local Sales Office
- Field Application Engineer (FAE)
- Technical Support

Customers should contact their distributor, representative or field application engineer (FAE) for support. Local sales offices are also available to help customers. A listing of sales offices and locations is included in the back of this document.

Technical support is available through the web site at: <http://microchip.com/support>

PRODUCT IDENTIFICATION SYSTEM

To order or obtain information, e.g., on pricing or delivery, refer to the factory or the listed sales office.

<u>PART NO.</u>	[X]	-	XX	-	[XX]
Device	Temperature Range		Package		Tape and Reel Option
<p>Device: SCH3223</p> <p>Temperature Range: Blank = 0°C to +70°C (Commercial) I = -40°C to +85°C (Industrial)</p> <p>Package: 7U = 64-pin WFBGA</p> <p>Tape and Reel Option: Blank = Standard packaging (tray) TR = Tape and Reel (Note 1)</p>	<p>Examples:</p> <p>a) SCH3223-7U Commercial temperature, 64-pin WFBGA, Tray</p> <p>b) SCH3223I-7U-TR Industrial temperature, 64-pin WFBGA, Tape & Reel</p> <p>Note 1: Tape and Reel identifier only appears in the catalog part number description. This identifier is used for ordering purposes and is not printed on the device package. Check with your Microchip Sales Office for package availability with the Tape and Reel option.</p>				

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as “unbreakable.”

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break Microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Information contained in this publication regarding device applications and the like is provided only for your convenience and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. MICROCHIP MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND WHETHER EXPRESS OR IMPLIED, WRITTEN OR ORAL, STATUTORY OR OTHERWISE, RELATED TO THE INFORMATION, INCLUDING BUT NOT LIMITED TO ITS CONDITION, QUALITY, PERFORMANCE, MERCHANTABILITY OR FITNESS FOR PURPOSE. Microchip disclaims all liability arising from this information and its use. Use of Microchip devices in life support and/or safety applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify and hold harmless Microchip from any and all damages, claims, suits, or expenses resulting from such use. No licenses are conveyed, implicitly or otherwise, under any Microchip intellectual property rights unless otherwise stated.

Trademarks

The Microchip name and logo, the Microchip logo, AnyRate, dsPIC, FlashFlex, flexPWR, Helder, JukeBlox, KeeLoq, KeeLoq logo, Klear, LANCheck, LINK MD, MediaLB, MOST, MOST logo, MPLAB, OptoLyzer, PIC, PICSTART, PIC32 logo, RightTouch, SpyNIC, SST, SST Logo, SuperFlash and UNI/O are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

ClockWorks, The Embedded Control Solutions Company, ETHERSYNCH, Hyper Speed Control, HyperLight Load, IntelliMOS, mTouch, Precision Edge, and QUIET-WIRE are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, Any Capacitor, AnyIn, AnyOut, BodyCom, chipKIT, chipKIT logo, CodeGuard, dsPICDEM, dsPICDEM.net, Dynamic Average Matching, DAM, ECAN, EtherGREEN, In-Circuit Serial Programming, ICSP, Inter-Chip Connectivity, JitterBlocker, KlearNet, KlearNet logo, MiWi, motorBench, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICkit, PICtail, PureSilicon, RightTouch logo, REAL ICE, Ripple Blocker, Serial Quad I/O, SQI, SuperSwitcher, SuperSwitcher II, Total Endurance, TSHARC, USBCheck, VariSense, ViewSpan, WiperLock, Wireless DNA, and ZENA are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

SQTP is a service mark of Microchip Technology Incorporated in the U.S.A.

Silicon Storage Technology is a registered trademark of Microchip Technology Inc. in other countries.

GestIC is a registered trademarks of Microchip Technology Germany II GmbH & Co. KG, a subsidiary of Microchip Technology Inc., in other countries.

All other trademarks mentioned herein are property of their respective companies.

© 2016, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

ISBN: 9781522403012

QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
== ISO/TS 16949 ==

Microchip received ISO/TS-16949:2009 certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona; Gresham, Oregon and design centers in California and India. The Company's quality system processes and procedures are for its PIC® MCUs and dsPIC® DSCs, KEELoq® code hopping devices, Serial EEPROMs, microperipherals, nonvolatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.



MICROCHIP

Worldwide Sales and Service

AMERICAS

Corporate Office

2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7200
Fax: 480-792-7277
Technical Support:
<http://www.microchip.com/support>

Web Address:
www.microchip.com

Atlanta

Duluth, GA
Tel: 678-957-9614
Fax: 678-957-1455

Austin, TX

Tel: 512-257-3370

Boston

Westborough, MA
Tel: 774-760-0087
Fax: 774-760-0088

Chicago

Itasca, IL
Tel: 630-285-0071
Fax: 630-285-0075

Cleveland

Independence, OH
Tel: 216-447-0464
Fax: 216-447-0643

Dallas

Addison, TX
Tel: 972-818-7423
Fax: 972-818-2924

Detroit

Novi, MI
Tel: 248-848-4000

Houston, TX

Tel: 281-894-5983

Indianapolis

Noblesville, IN
Tel: 317-773-8323
Fax: 317-773-5453

Los Angeles

Mission Viejo, CA
Tel: 949-462-9523
Fax: 949-462-9608

New York, NY

Tel: 631-435-6000

San Jose, CA

Tel: 408-735-9110

Canada - Toronto

Tel: 905-673-0699
Fax: 905-673-6509

ASIA/PACIFIC

Asia Pacific Office

Suites 3707-14, 37th Floor
Tower 6, The Gateway
Harbour City, Kowloon

Hong Kong

Tel: 852-2943-5100
Fax: 852-2401-3431

Australia - Sydney

Tel: 61-2-9868-6733
Fax: 61-2-9868-6755

China - Beijing

Tel: 86-10-8569-7000
Fax: 86-10-8528-2104

China - Chengdu

Tel: 86-28-8665-5511
Fax: 86-28-8665-7889

China - Chongqing

Tel: 86-23-8980-9588
Fax: 86-23-8980-9500

China - Dongguan

Tel: 86-769-8702-9880

China - Hangzhou

Tel: 86-571-8792-8115
Fax: 86-571-8792-8116

China - Hong Kong SAR

Tel: 852-2943-5100
Fax: 852-2401-3431

China - Nanjing

Tel: 86-25-8473-2460
Fax: 86-25-8473-2470

China - Qingdao

Tel: 86-532-8502-7355
Fax: 86-532-8502-7205

China - Shanghai

Tel: 86-21-5407-5533
Fax: 86-21-5407-5066

China - Shenyang

Tel: 86-24-2334-2829
Fax: 86-24-2334-2393

China - Shenzhen

Tel: 86-755-8864-2200
Fax: 86-755-8203-1760

China - Wuhan

Tel: 86-27-5980-5300
Fax: 86-27-5980-5118

China - Xian

Tel: 86-29-8833-7252
Fax: 86-29-8833-7256

ASIA/PACIFIC

China - Xiamen

Tel: 86-592-2388138
Fax: 86-592-2388130

China - Zhuhai

Tel: 86-756-3210040
Fax: 86-756-3210049

India - Bangalore

Tel: 91-80-3090-4444
Fax: 91-80-3090-4123

India - New Delhi

Tel: 91-11-4160-8631
Fax: 91-11-4160-8632

India - Pune

Tel: 91-20-3019-1500

Japan - Osaka

Tel: 81-6-6152-7160
Fax: 81-6-6152-9310

Japan - Tokyo

Tel: 81-3-6880-3770
Fax: 81-3-6880-3771

Korea - Daegu

Tel: 82-53-744-4301
Fax: 82-53-744-4302

Korea - Seoul

Tel: 82-2-554-7200
Fax: 82-2-558-5932 or
82-2-558-5934

Malaysia - Kuala Lumpur

Tel: 60-3-6201-9857
Fax: 60-3-6201-9859

Malaysia - Penang

Tel: 60-4-227-8870
Fax: 60-4-227-4068

Philippines - Manila

Tel: 63-2-634-9065
Fax: 63-2-634-9069

Singapore

Tel: 65-6334-8870
Fax: 65-6334-8850

Taiwan - Hsin Chu

Tel: 886-3-5778-366
Fax: 886-3-5770-955

Taiwan - Kaohsiung

Tel: 886-7-213-7828

Taiwan - Taipei

Tel: 886-2-2508-8600
Fax: 886-2-2508-0102

Thailand - Bangkok

Tel: 66-2-694-1351
Fax: 66-2-694-1350

EUROPE

Austria - Wels

Tel: 43-7242-2244-39
Fax: 43-7242-2244-393

Denmark - Copenhagen

Tel: 45-4450-2828
Fax: 45-4485-2829

France - Paris

Tel: 33-1-69-53-63-20
Fax: 33-1-69-30-90-79

Germany - Dusseldorf

Tel: 49-2129-3766400

Germany - Karlsruhe

Tel: 49-721-625370

Germany - Munich

Tel: 49-89-627-144-0
Fax: 49-89-627-144-44

Italy - Milan

Tel: 39-0331-742611
Fax: 39-0331-466781

Italy - Venice

Tel: 39-049-7625286

Netherlands - Drunen

Tel: 31-416-690399
Fax: 31-416-690340

Poland - Warsaw

Tel: 48-22-3325737

Spain - Madrid

Tel: 34-91-708-08-90
Fax: 34-91-708-08-91

Sweden - Stockholm

Tel: 46-8-5090-4654

UK - Wokingham

Tel: 44-118-921-5800
Fax: 44-118-921-5820

07/14/15

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

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9