

SIO10N268

Advanced Notebook I/O for ISA or LPC Designs with X-Bus Interface for I/O, Memory and FWH Emulation and Four Serial Ports

Product Features

- 3.3 Volt Operation (5 Volt Tolerant)
- PC99, PC01, ACPI 1.0 Compliant
- LPC or ISA Interface
 - SIO10N268 offers two modes of operation: LPC Mode or ISA Mode. These modes are jumper selectable.
- X-Bus Interface (LPC Mode Only)
 - Three chip selects (2 I/O and 1 Memory)
 - 8-bit data transfers
 - Support for up to 2MB Flash
 - Interfaces with 3V memory devices
 - Support for up to two external I/O components
 - Offers three modes of operation for I/O devices
 - Provides FWH Emulation
- Serial IRQ Compatible with Serialized IRQ Support for PCI Systems
- Programmable Wake-up Event (PME) Interface
- (33) General Purpose Input/Output Pins
- System Management Interrupt
- · 2.88MB Super I/O Floppy Disk Controller
 - Licensed CMOS 765B Floppy Disk Controller
 - Software and Register Compatible with Microchip's Proprietary 82077AA Compatible Core
 - Supports Two Floppy Drives Directly
 - Configurable Open Drain/Push-Pull Output Drivers
 - Supports Vertical Recording Format
 - 16-Byte Data FIFO
 - 100% IBM Compatibility
 - Detects All Overrun and Underrun Conditions
 - Sophisticated Power Control Circuitry (PCC) Including Multiple Power Down Modes for Reduced Power Consumption
 - DMA Enable Logic
 - Data Rate and Drive Control Registers
 - 480 Address, Up to 15 IRQ and Four DMA Options

- Floppy Disk Available on Parallel Port Pins (ACPI Compliant)
 - Enhanced Digital Data Separator
 - 2 Mbps, 1 Mbps, 500 Kbps, 300 Kbps, 250 Kbps Data Rates
 - Programmable Precompensation Modes
- · Serial Ports
 - Four Full Function Serial Ports
 - High Speed NS16C550 Compatible UARTs with Send/Receive 16-Byte FIFOs
 - Supports 230k and 460k Baud
 - Programmable Baud Rate Generator
 - Modem Control Circuitry
 - 480 Address and 15 IRQ Options
- · Infrared Communications Controller
 - IrDA v1.2 (4Mbps), HPSIR, ASKIR, Consumer IR Support
 - 2 IR Ports
 - 96 Base I/O Address, 15 IRQ, and 4 DMA Options
- Multi-Mode Parallel Port with ChiProtect
 - Standard Mode IBM PC/XT, PC/AT, and PS/2 Compatible Bi-directional Parallel Port
 - Enhanced Parallel Port (EPP) Compatible -EPP 1.7 and EPP 1.9 (IEEE 1284 Compliant)
 - EEE 1284 Compliant Enhanced Capabilities Port (ECP)
 - ChiProtect Circuitry for Protection
 - 480 Address, Up to 15 IRQ, and Four DMA Options
- · Two LED Drivers with blinking options
- Watch Dog Timer with optional output pin
- 128-Pin VTQN RoHS Compliant package

Description

The SIO10N268 is a single chip I/O device that can be used on the ISA or LPC bus. Bus selection is accomplished as a jumper option. Offering the same part with two system busses enables easy migration from an ISA architecture to the LPC generation enabling the preservation of design techniques and BIOS.

The SIO10N268 is a 3.3V operational (5.0V tolerant), PC 99/2001, and ACPI 1.0 compliant Super I/O Controller. This device includes Microchip's true CMOS 765B floppy disk controller with advanced digital data separator and Microchip's Multi-Mode parallel port with ChiProtect circuitry plus EPP and ECP support.

The part also includes 33 GPIO pins, support for two LED's with blinking option, and a WatchDog Timer (WDT) with optional output pin. The SIO10N268 includes (4) 16C550 compatible UARTs. One UART includes additional support for a Serial Infrared Interface that complies with IrDA v1.2 (Fast IR), HPSIR, and ASKIR formats, as well as Consumer IR.

SIO10N268, when LPC Mode is selected, implements the LPC bus interface. In this mode, the X-Bus Interface is enabled to interface to external I/O devices that have an 8-bit data bus and to standard ISA memory devices, up to 2MB, which can serve as BIOS flash.

SIO10N268, when ISA Mode is selected, supports the ISA Plug-and-Play Standard (Version 1.0a). The I/O Address, DMA Channel and Hardware IRQ of each device in the part may be reprogrammed through the internal configuration registers.

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)

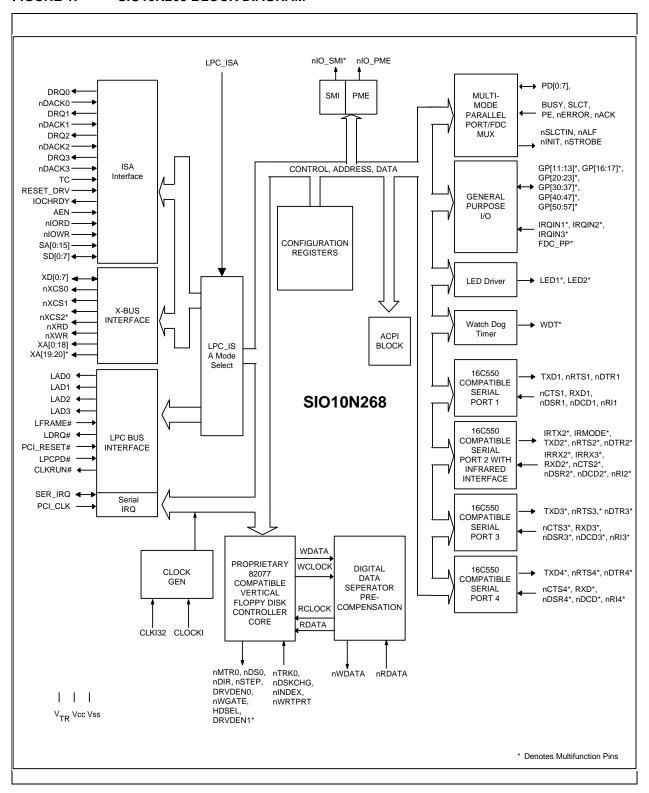
When contacting a sales office, please specify which device, revision of silicon and data sheet (include -literature number) you are using.

Customer Notification System

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

BLOCK DIAGRAM

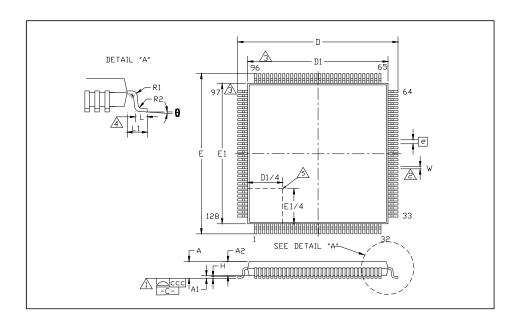
FIGURE 1: SIO10N268 BLOCK DIAGRAM



PACKAGE OUTLINE

Note: For the most current package drawings, see the Microchip Packaging Specification at http://www.microchip.com/packaging.

FIGURE 2: 128-PIN VTQN PACKAGE OUTLINE, 14 X 14 X 1.0 BODY, 2MM FOOTPRINT



	Min	Nominal	Max	Remarks		
Α	~	~	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		
Е	15.80	~	16.20	Y Span		
E1	13.80	~	14.20	Y body Size		
Н	0.09	~	0.20	Lead Frame Thickness		
L	0.45	0.60	0.75	Lead Foot Length		
L1	~	1.00	~	Lead Length		
е	0.40 Basic			Lead Pitch		
θ	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		

Note 1: Controlling Unit: millimeter.

- **2:** Tolerance on the true position of the leads is ± 0.035 mm maximum.
- **3:** Package body dimensions D1 and E1 do not include the mold protrusion. Maximum mold protrusion is 0.25mm.
- 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.

APPENDIX A: PRODUCT BRIEF REVISION HISTORY

TABLE A-1: REVISION HISTORY

Revision	Section/Figure/Entry	Correction		
DS00001819A (08-27-14)	Replaces previous SMSC version 0.5 (06-12-08)			

SIO10N268

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://www.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.

PART NO. ⁽¹⁾ Device	- <u>XXX⁽²⁾ - [X]⁽³⁾</u> Package Tape and Reel Option		mple: DN268-NU = 128-pin VTQN
Device:	SIO10N268 ⁽¹⁾	Note	These products meet the halogen maximum concentration values per IEC61249-2-21.
Package: Tape and Reel Option:	NU = 128-pin VTQN ⁽²⁾ Blank = Tray packaging TR = Tape and Reel ⁽³⁾	Note	2: All package options are RoHS compliant. For RoHS compliance and environmental information, please visit http://www.micro-chip.com/pagehandler/en-us/aboutus/ehs.html .
		Note	3: 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.

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.

Trademarks

The Microchip name and logo, the Microchip logo, dsPIC, FlashFlex, flexPWR, JukeBlox, KEELoQ, KEELoQ logo, Kleer, LANCheck, 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.

The Embedded Control Solutions Company and mTouch are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Analog-for-the-Digital Age, BodyCom, chipKIT, chipKIT logo, CodeGuard, dsPICDEM, dsPICDEM.net, ECAN, In-Circuit Serial Programming, ICSP, Inter-Chip Connectivity, KleerNet, KleerNet logo, MiWi, MPASM, MPF, MPLAB Certified logo, MPLIB, MPLINK, MultiTRAK, NetDetach, Omniscient Code Generation, PICDEM, PICDEM.net, PICkit, PICtail, RightTouch logo, REAL ICE, SQI, Serial Quad I/O, 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.

© 2004 - 2014, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

ISBN: 9781632765284

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.



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 - 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 **China - Xiamen** Tel: 86-592-2388138

Fax: 86-592-2388130 **China - Zhuhai** Tel: 86-756-3210040 Fax: 86-756-3210049

ASIA/PACIFIC

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

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: 886-7-213-7830

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 - Munich Tel: 49-89-627-144-0

Fax: 49-89-627-144-44

Germany - Pforzheim Tel: 49-7231-424750

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

03/25/14