

**LM3S1000 Series Block Diagram.** This block diagram shows the superset of features for the LM3S1000 series of microcontrollers.

## Product Features

- ARM® Cortex™-M3 Processor Core
  - 50-MHz operation; 60 DMIPS performance
  - ARM Cortex SysTick Timer
  - Nested Vectored Interrupt Controller (NVIC)
- On-Chip Memory
  - 64 KB single-cycle Flash memory
  - 12 KB single-cycle SRAM
  - Internal ROM loaded with StellarisWare® software:
    - Stellaris® Peripheral Driver Library
    - Stellaris® Boot Loader
- Advanced Serial Integration
  - 10/100 Ethernet MAC with Media Independent Interface (MII)
  - Three UARTs with IrDA and ISO 7816 support
  - Two I<sup>2</sup>C modules
  - Two Synchronous Serial Interface modules (SSI)
- System Integration
  - Direct Memory Access Controller (DMA)
  - System control and clocks including on-chip precision 16-MHz oscillator
  - Three 32-bit timers (up to six 16-bit)
  - Six Capture Compare PWM pins (CCP)
  - Lower-power battery-backed hibernation module

- Real-Time Clock
- Two Watchdog Timers
  - One timer runs off the main oscillator
  - One timer runs off the precision internal oscillator
- Up to 33 GPIOs, depending on configuration
  - Highly flexible pin muxing allows use as GPIO or one of several peripheral functions
  - Independently configurable to 2, 4 or 8 mA drive capability
  - Up to 4 GPIOs can have 18 mA drive capability

- Analog
  - 10-bit Analog-to-Digital Converter (ADC) with eight analog input channels and sample rate of one million samples/second
  - Two analog comparators
  - Eight digital comparators
  - On-chip voltage regulator
- JTAG and ARM Serial Wire Debug (SWD)
- 64-pin LQFP package
- Industrial (-40°C to 85°C) Temperature Range

## Target Applications

- Motion control
- Factory automation
- Fire and security
- HVAC and building control
- Test and measurement equipment
- Remote monitoring
- Electronic point-of-sale (POS) machines
- Network appliances and switches
- Gaming equipment



## Ordering Information

Orderable Part Number	Description
LM3S1N16-IQR50-C0	Stellaris® LM3S1N16 Microcontroller Industrial Temperature 64-pin LQFP
LM3S1N16-IQR50-C0T	Stellaris® LM3S1N16 Microcontroller Industrial Temperature 64-pin LQFP Tape-and-reel

# LM3S1N16 Microcontroller

**STELLARIS®**  
microcontrollers

TEXAS INSTRUMENTS



## Development Kit

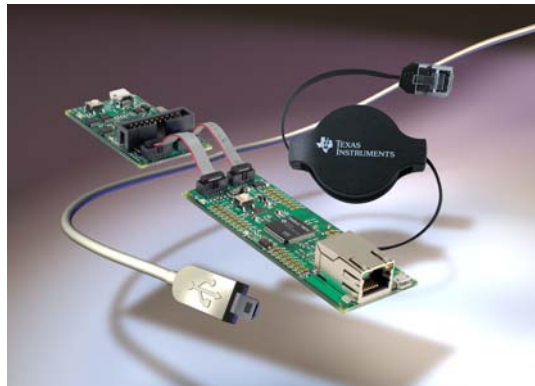
The Stellaris® LM3S9B96 Development Kit provides the hardware and software tools that engineers need to begin development quickly. Ask your distributor for part number DK-LM3S9B96. See the website for the latest tools available.



## Evaluation Kit

The Stellaris® LM3S9B90 and LM3S9B92 Ethernet and USB-OTG Evaluation Kits provide the hardware and

software tools to speed development using the LM3S9B90 and LM3S9B92 microcontrollers' integrated USB Full-Speed OTG port and 10/100 Ethernet controllers. Ask your distributor for part number EKK-LM3S9B90 or EKK-LM3S9B92 (ARM RealView® MDK tools), EKI-LM3S9B90 or EKI-LM3S9B92 (IAR Embedded Workbench® tools), EKC-LM3S9B90 or EKC-LM3S9B92 (CodeSourcery Sourcery G++ tools), or EKT-LM3S9B90 or EKT-LM3S9B92 (Code Red Technologies Red Suite tools). See the website for the latest tools available.



Texas Instruments, Inc. • 108 Wild Basin, Suite 350 • Austin, TX 78746  
Main: +1-512-279-8800 • Fax: +1-512-279-8879 • <http://www.luminarymicro.com>

Copyright © 2009 Texas Instruments, Inc. All rights reserved. Stellaris and StellarisWare are registered trademarks of Texas Instruments. ARM and Thumb are registered trademarks and Cortex is a trademark of ARM Limited. Other names and brands may be claimed as the property of others.



## IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

### Products

Amplifiers	<a href="http://amplifier.ti.com">amplifier.ti.com</a>
Data Converters	<a href="http://dataconverter.ti.com">dataconverter.ti.com</a>
DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>
Clocks and Timers	<a href="http://www.ti.com/clocks">www.ti.com/clocks</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>
RF/IF and ZigBee® Solutions	<a href="http://www.ti.com/lprf">www.ti.com/lprf</a>

### Applications

Audio	<a href="http://www.ti.com/audio">www.ti.com/audio</a>
Automotive	<a href="http://www.ti.com/automotive">www.ti.com/automotive</a>
Broadband	<a href="http://www.ti.com/broadband">www.ti.com/broadband</a>
Digital Control	<a href="http://www.ti.com/digitalcontrol">www.ti.com/digitalcontrol</a>
Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Military	<a href="http://www.ti.com/military">www.ti.com/military</a>
Optical Networking	<a href="http://www.ti.com/opticalnetwork">www.ti.com/opticalnetwork</a>
Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
Telephony	<a href="http://www.ti.com/telephony">www.ti.com/telephony</a>
Video & Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>
Wireless	<a href="http://www.ti.com/wireless">www.ti.com/wireless</a>

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265  
Copyright © 2009, Texas Instruments Incorporated