



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

Features

32-Bit RISC Performance

- 50-MHz operation with 32-bit ARM® Cortex™-M3 architecture
- Thumb®-compatible Thumb-2-only instruction set, with hardware-division and single-cycle-multiplication
- Integrated Nested Vectored Interrupt Controller (NVIC) provides deterministic interrupt handling
- 32 interrupt channels with eight priority levels
- Memory protection unit (MPU) provides a privileged mode for protected operating system functionality
- Unaligned data access enables data to be efficiently packed into memory
- Atomic bit manipulation (bit-banding) delivers maximum memory utilization and streamlined peripheral control

On-Chip Memory

- 256 KB single-cycle flash with two forms of flash protection on a 2-KB block basis
- 64 KB single-cycle SRAM

Flexible Timer Capability

- Four general-purpose timers, each configurable as one 32-bit or two 16-bit timers
- Real-Time Clock (RTC) capability
- 24-bit system (SysTick) timer

- 32-bit watchdog timer

Serial Interfaces

- Two synchronous serial interfaces (SSI) with master and slave modes for SPI, MICROWIRE, or TI synchronous serial
- Two I²C interfaces (master and slave)
- Two fully programmable 16C550-type UARTs with IrDA support

UART

- Two fully programmable 16C550-type UARTs with IrDA support
- Separate 16x8 transmit (TX) and 16x12 receive (RX) FIFOs to reduce CPU interrupt service loading
- Programmable baud-rate generator allowing speeds up to up to 3.125 Mbps

Analog-to-Digital Converter (ADC)

- Single- and differential-input configurations
- Eight 10-bit channels (inputs) when used as single-ended inputs
- Sample rate of 500 thousand samples/second
- On-chip temperature sensor

Analog Comparators

- Two independent integrated analog comparators
- Configurable for output to: drive an output pin, generate an interrupt, or initiate an ADC sample sequence
- Compare external pin input to external pin input or to internal programmable voltage reference

Inter-Integrated Circuit (I²C) Interface

- Two I²C modules
- Master and slave receive and transmit operation with transmission speed up to 100 Kbps in Standard mode and 400 Kbps in Fast mode
- Interrupt generation
- Master with arbitration and clock synchronization, multimaster support, and 7-bit addressing mode

GPIOs

- 17-52 GPIOs, depending on configuration
- 5-V-tolerant input/outputs
- Programmable interrupt generation
- Fast toggle capable of a change every two clock cycles
- Can initiate an ADC sample sequence

Power

- On-chip Low Drop-Out (LDO) voltage regulator, with programmable output user-adjustable from 2.25 V to 2.75 V
- Battery-backed hibernation module with real-time clock and 256-bytes of non-volatile memory
- 3.3-V supply brown-out detection
- Low-power options on controller: Sleep and Deep-sleep modes
- Low-power options for peripherals: software controls shutdown of individual peripherals
- User-enabled LDO unregulated voltage detection and automatic reset



- On-chip temperature sensor

Package and Temperature

- 100-pin RoHS-compliant LQFP package
 - Industrial temperature (-40°C to +85°C)
 - Extended temperature (-40°C to +105°C)
- 108-ball RoHS-compliant BGA package
 - Industrial-range temperature (-40°C to +85°C)
- 100-pin RoHS-compliant LQFP package
 - Industrial-range temperature (-40°C to +85°C)

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



High-performance ARM Cortex-M3 microcontroller for real-time embedded applications

Ordering Information

Orderable Part Number	Description
LM3S1918-IBZ50-A2	Stellaris® LM3S1918 Microcontroller Industrial Temperature 108-ball BGA
LM3S1918-IBZ50-A2T	Stellaris® LM3S1918 Microcontroller Industrial Temperature 108-ball BGA Tape-and-reel
LM3S1918-EQC50-A2	Stellaris® LM3S1918 Microcontroller Extended Temperature 100-pin LQFP
LM3S1918-EQC50-A2T	Stellaris® LM3S1918 Microcontroller Extended Temperature 100-pin LQFP Tape-and-reel
LM3S1918-IQC50-A2	Stellaris® LM3S1918 Microcontroller Industrial Temperature 100-pin LQFP
LM3S1918-IQC50-A2T	Stellaris® LM3S1918 Microcontroller Industrial Temperature 100-pin LQFP Tape-and-reel

Evaluation Kit

The Stellaris® LM3S1918 Evaluation Kit provides the hardware and software tools to speed development using the LM3S1918 microcontroller's peripherals and Hibernation module. Ask your distributor for part number EKK-LM3S1918 (ARM RealView® MDK tools), EKI-LM3S1918 (IAR Embedded Workbench® tools), EKC-LM3S1918 (CodeSourcery Sourcery G++ tools), or EKT-LM3S1918 (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 © 2006-2009 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	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
RF/IF and ZigBee® Solutions	www.ti.com/lprf

Applications

Audio	www.ti.com/audio
Automotive	www.ti.com/automotive
Broadband	www.ti.com/broadband
Digital Control	www.ti.com/digitalcontrol
Medical	www.ti.com/medical
Military	www.ti.com/military
Optical Networking	www.ti.com/opticalnetwork
Security	www.ti.com/security
Telephony	www.ti.com/telephony
Video & Imaging	www.ti.com/video
Wireless	www.ti.com/wireless

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