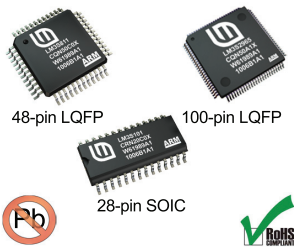




Stellaris® Family of Microcontrollers

LUMINARY MICRO™



Luminary Micro, Inc. designs, markets, and sells ARM® Cortex™-M3-based microcontrollers (MCUs). As ARM's lead partner for Cortex-M3 technology, Luminary Micro delivers the world's first silicon implementation of the Cortex-M3 processor, providing 32-bit performance at 8-/16-bit cost. Luminary Micro's award-winning Stellaris family of microcontrollers incorporates the Cortex-M3 MCU core running up to 50 MHz, embedded flash and SRAM, a low drop-out voltage regulator, battery-backed low-power hibernation capability, integrated brown-out reset and power-on reset functions, analog comparators, 10-bit ADC, GPIOs, and watchdog and general purpose timers. The family also integrates several serial interfaces, including 10/100 Ethernet MAC+PHY, CAN, SSI/SPI, UARTs, and I²C. Finally, the Stellaris family features peripherals designed specifically for intense industrial motor control, including motion control PWMs and quadrature encoder inputs. With every

peripheral provided directly to the pins without feature multiplexing, the Stellaris family is favorably positioned for cost-conscious applications requiring significant control processing and connectivity capabilities, including motion control, monitoring (remote, fire/security, etc.), HVAC and building controls, power and energy monitoring and conversion, network appliances and switches, factory automation, electronic point-of-sale machines, test and measurement equipment, medical instrumentation, and gaming equipment.

Why Choose the ARM Architecture?

For the first time ever, embedded microcontroller system designers can utilize 32-bit performance for the same price as their current 8- and 16-bit microcontroller designs!

- With entry-level pricing at \$1.00 for an ARM technology-based MCU, Luminary Micro's Stellaris product line allows for standardization that eliminates future architectural upgrades or software tools changes.
- With an ARM-based embedded market that is currently shipping at a rate of greater than 2.5 billion processors per year, the ARM ecosystem of third-party tools and solutions providers is the largest in the world.
- With the ARM Cortex architecture, designers have access to an instruction-set-compatible family that ranges from \$1 to 1 GHz. No other architecture in the world can offer this breadth of performance with instruction set compatibility!

Why Choose Cortex-M3 from Luminary Micro?

Cortex-M3 is the MCU version of ARM's V7 instruction set architecture family of cores:

- Optimized for single-cycle flash usage
- Deterministic, fast interrupt processing: always 12 cycles, or just 6 cycles with tail-chaining
- Three sleep modes with clock gating for low power
- Single-cycle multiply instruction and hardware divide
- Atomic operations
- ARM Thumb2 mixed 16-/32-bit instruction set
- 1.25 DMIPS/MHz—better than ARM7 and ARM9
- Extra debug support including data watchpoints and flash patching

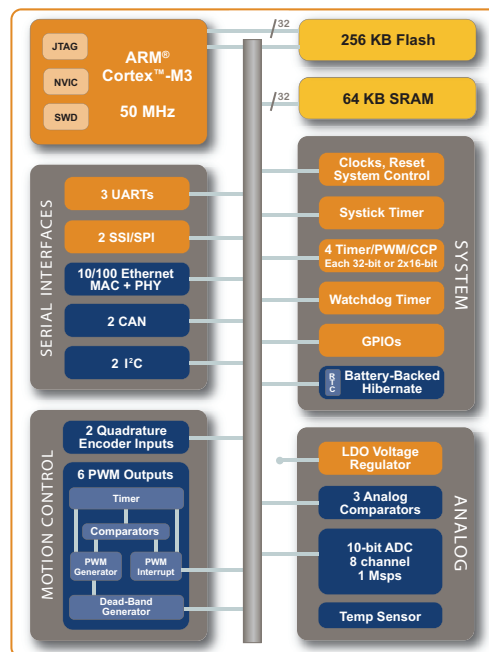
Capabilities beyond ARM7 for the microcontroller market:

- Requires ½ the flash (code space) of ARM7 applications
- 2–4 times faster on MCU control applications
- No assembly code required—ever!

Why Choose the Stellaris Family?

Designed for serious microcontroller applications, the Stellaris family provides the entry into the industry's strongest ecosystem, with code compatibility ranging from \$1 to 1 GHz.

- Superior integration saves up to \$3.28 in system cost
- Over 50 Stellaris family members to choose from
- Real MCU GPIOs—all can generate interrupts, are 5V-tolerant, and have programmable drive strength and slew rate control
- No functional pin muxing—choose your part by the functions you need
- Advanced communication capabilities, including 10/100 Ethernet MAC/PHY and CAN controllers
- Sophisticated motion control support in hardware and software
- Both analog comparators and ADC functionality provide on-chip system options to balance hardware and software performance



Stellaris Family Block Diagram

Stellaris® Fury-Class Evaluation Kits



The Stellaris LM3S6965 and LM3S2965 Evaluation Kits provide a compact and versatile evaluation platform for Ethernet-enabled and CAN-enabled Stellaris ARM® Cortex™-M3-based microcontrollers, respectively. Each board has an In-Circuit Debug Interface (ICDI) that provides hardware debugging functionality not only for the on-board Stellaris devices, but also for any Stellaris microcontroller-based target board. The evaluation kits contain all cables, software, and documentation needed to develop and run applications for Stellaris microcontrollers easily and quickly.

Stellaris LM3S6965 Ethernet Evaluation Kit Features

- LM3S6965 Evaluation Board
 - Stellaris LM3S6965 microcontroller with fully integrated 10/100 (MAC+PHY) Ethernet controller
 - Simple setup: USB cable provides serial communication, debugging, and power
 - OLED graphics display with 128 x 64 pixel resolution and 16 shades of gray
 - User LED, navigation switches, and select pushbuttons
 - Magnetic speaker
 - All LM3S6965 I/O available on labeled break-out pads
 - Standard ARM® 20-pin JTAG debug connector with input and output modes
 - MicroSD card slot
 - Retracting Ethernet cable, USB cable, and JTAG cable
- Quickstart sample application runs with or without Ethernet (direct connection to your PC), right out of the box
- CD containing:
 - Evaluation version of the software tools
 - Complete documentation
 - Quickstart guide and source code
 - Stellaris Peripheral Driver Library and example source code



Stellaris LM3S2965 CAN Evaluation Kit Features

- Fully operational CAN Network-in-a-box, with a quickstart sample application that includes a CAN network and CAN traffic
- LM3S2965 CAN Evaluation Board and separate LM3S2110 CAN Device Board
 - Stellaris LM3S2965 and LM3S2110 microcontrollers, each with fully integrated CAN MAC
 - Simple setup: USB cable provides serial communication, debugging, and power
 - OLED graphics display with 128 x 64 pixel resolution and 16 shades of gray
 - User LED, navigation switches, and select pushbuttons
 - Magnetic speaker
 - All LM3S2965 and LM3S2110 I/O available on labeled break-out pads
 - Standard ARM® 20-pin JTAG debug connector with input and output modes
- CAN ribbon cable, USB cable, and JTAG cable
- CD containing:
 - Evaluation version of the software tools
 - Complete documentation
 - Quickstart guide and source code
 - Stellaris Peripheral Driver Library and example source code



Evaluation Kit Ordering Information

Part Number	Description
EKK-LM3S6965	Stellaris LM3S6965 Ethernet Evaluation Kit for Keil™ RealView® MDK-ARM (16 KB code-size limited)
EKI-LM3S6965	Stellaris LM3S6965 Ethernet Evaluation Kit for IAR Systems Embedded Workbench® (32 KB code-size limited)
EKC-LM3S6965	Stellaris LM3S6965 Ethernet Evaluation Kit for CodeSourcery G++ GNU (30-day limited)
EKK-LM3S2965	Stellaris LM3S2965 CAN Evaluation Kit for Keil™ RealView® MDK-ARM (16 KB code-size limited)
EKI-LM3S2965	Stellaris LM3S2965 CAN Evaluation Kit for IAR Systems Embedded Workbench® (32 KB code-size limited)
EKC-LM3S2965	Stellaris LM3S2965 CAN Evaluation Kit for CodeSourcery Sourcery G++ GNU (30-day limited)

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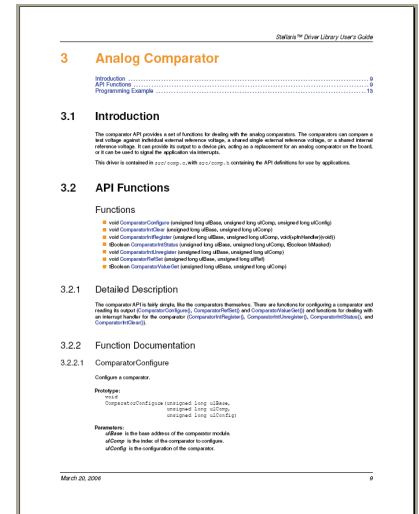
Technical Support: www.luminarymicro.com/support or support@luminarymicro.com



Stellaris Peripheral Driver Library

The Stellaris Peripheral Driver Library is a set of drivers for controlling the peripherals found on the Stellaris family of ARM® Cortex™-M3 microcontrollers. Providing a mechanism that makes it easy to use the on-chip peripherals, they are written in C, efficient in terms of memory and processor usage, and can be built with popular tool chains. Linkable object files, source code, and complete documentation are included.

- High-level API interface to complete peripheral set.
- Enables easy, rapid use of all Stellaris peripherals, including flash programming, GPIOs, ADCs, comparators, and PWMs.
- Can be used for application development or as programming example.
- Simplifies and speeds development of applications.
- Allows the creation of full-function, easy-to-maintain code.
- Available as both object library and source code, so that the library can be used as-is or adapted as desired.
- Complete source-code examples for every peripheral included on all Stellaris development and evaluation kits.
- Compiles on ARM/Keil, IAR, and GNU development tools.



Software Product Information

Product Number	Description
PDL-LM3S	Stellaris Peripheral Driver Library

Stellaris LM3S811 Evaluation Kit

The Stellaris LM3S811 Evaluation Kit is both a compact and versatile evaluation platform for the Stellaris LM3S811 ARM® Cortex™-M3-based microcontroller, and an In-Circuit Debug Interface (ICDI) for any Stellaris microcontroller-based target board. The LM3S811 Evaluation Kit allows users to evaluate, prototype, and create application-specific designs. The evaluation kit contains everything needed to develop and run applications for Stellaris microcontrollers, and is powered over USB (cable included).

- Evaluation board with 50 MHz LM3S811 microcontroller
- USB cable
- 20-pin JTAG/SWD target cable
- 96 x 16 pixel OLED display
- User-programmable push button and LED
- Convenient reset push button and power indicator LED
- Thumbwheel potentiometer input to the on-chip ADC
- Serial in-circuit debug interface over USB
- CD containing:
 - Evaluation version of the software tools
 - Complete documentation
 - Quickstart guide and source code
 - Stellaris Peripheral Driver Library and example source code



Evaluation Kit Ordering Information

Part Number	Description
EKK-LM3S811	Stellaris LM3S811 Evaluation Kit for Keil™ RealView® MDK-ARM (16 KB code-size limited)
EKI-LM3S811	Stellaris LM3S811 Evaluation Kit for IAR Systems Embedded Workbench® (32 KB code-size limited)
EKC-LM3S811	Stellaris LM3S811 Evaluation Kit for CodeSourcery G++ GNU (30-day limited)

Stellaris® Family Product Selector Guide

Part Number	Memory			Core				Timers						Serial Interfaces					Analog				Package							
	Flash (KB)	SRAM (KB)	Max Speed (MHz)	ARM® Cortex™-M3 Core	MPU	JTAG	SWO/SWD	System Tick Timer (24-bit)	Watchdog	General-Purpose	External 32 KHz Clock	PWM ^b			Ethernet (10/100 MAC+PHY)	CAN MAC	UART	I ² C	SSI/SPI	QEI	ADC (10-bit)			Analog Comparators	GPIOs ^a (5-V tolerant)					
												PWM	Dead-Band Generator	CCP							ADC Channels	ADC Speed (samples per second)				Internal Temp Sensor				
LM3S101	8	2	20	√	-	√	√	√	√	2	√	-	-	1	-	-	1	-	1	-	-	-	2	2-18	-	√	√	√	28-pin SOIC	
LM3S102	8	2	20	√	-	√	√	√	√	2	√	-	-	2	-	-	1	1	1	-	-	-	1	0-18	-	√	√	√	28-pin SOIC	
LM3S301	16	2	20	√	√	√	√	√	√	2	√	2	√	2	-	-	1	-	1	-	3	250K	√	2	12-33	-	√	√	√	48-pin LQFP
LM3S310	16	4	25	√	√	√	√	√	√	3	√	6	√	6	-	-	2	-	1	-	-	-	3	3-36	-	√	√	√	48-pin LQFP	
LM3S315	16	4	25	√	√	√	√	√	√	3	√	2	√	6	-	-	2	-	1	-	4	250K	√	1	7-32	-	√	√	√	48-pin LQFP
LM3S316	16	4	25	√	√	√	√	√	√	3	√	4	√	6	-	-	2	1	1	-	4	250K	√	1	3-32	-	√	√	√	48-pin LQFP
LM3S317	16	4	25	√	√	√	√	√	√	3	√	6	√	6	-	-	1	-	1	-	6	250K	√	1	3-30	-	√	√	√	48-pin LQFP
LM3S328	16	4	25	√	√	√	√	√	√	3	√	-	-	6	-	-	2	1	1	-	8	500K	√	-	7-28	-	√	√	√	48-pin LQFP
LM3S601	32	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	1	1	1	-	-	3	0-36	-	√	√	√	48-pin LQFP	
LM3S610	32	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	1	1	-	2	500K	√	-	6-34	-	√	√	√	48-pin LQFP
LM3S611	32	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	1	1	-	4	500K	√	-	4-32	-	√	√	√	48-pin LQFP
LM3S612	32	8	50	√	√	√	√	√	√	3	√	2	√	6	-	-	2	1	1	-	2	500K	√	1	7-34	-	√	√	√	48-pin LQFP
LM3S613	32	8	50	√	√	√	√	√	√	3	√	4	√	6	-	-	2	1	1	-	4	500K	√	1	3-32	-	√	√	√	48-pin LQFP
LM3S615	32	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	1	1	-	2	500K	√	3	0-34	-	√	√	√	48-pin LQFP
LM3S617	32	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	-	1	-	6	500K	√	1	1-30	-	√	√	√	48-pin LQFP
LM3S618	32	8	50	√	√	√	√	√	√	3	√	6	√	4	-	-	2	-	1	1	6	500K	√	1	0-30	-	√	√	√	48-pin LQFP
LM3S628	32	8	50	√	√	√	√	√	√	3	√	-	-	4	-	-	2	1	1	-	8	1M	√	-	9-28	-	√	√	√	48-pin LQFP
LM3S801	64	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	1	1	1	-	-	3	0-36	-	√	√	√	48-pin LQFP	

Stellaris® Family Product Selector Guide

Part Number	Memory			Core				Timers						Serial Interfaces						Analog				Package						
	Flash (KB)	SRAM (KB)	Max Speed (MHz)	ARM® Cortex™-M3 Core	MPU	JTAG	SWO/SWD	System Tick Timer (24-bit)	Watchdog	General-Purpose External 32 KHz Clock	PWM ^b			Ethernet (10/100 MAC+PHY)	CAN MAC	UART	I ² C	SSI/SPI	QEI	ADC (10-bit)		Internal Temp Sensor	Analog Comparators		GPIOs ^a (5-V tolerant)	Battery-Backed Hibernation Module	Brown-Out Reset	LDO Voltage Regulator	Operating Temperature Range (-40 to +85 °C)	
											PWM	Dead-Band Generator	CCP							ADC Channels	ADC Speed (samples per second)									
LM3S811	64	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	1	1	-	4	500K	√	1	1-32	-	√	√	√	48-pin LQFP
LM3S812	64	8	50	√	√	√	√	√	√	3	√	2	√	6	-	-	2	1	1	-	2	250K	√	1	7-34	-	√	√	√	48-pin LQFP
LM3S815	64	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	1	1	-	2	500K	√	3	0-34	-	√	√	√	48-pin LQFP
LM3S817	64	8	50	√	√	√	√	√	√	3	√	6	√	6	-	-	2	-	1	-	6	1M	√	1	1-30	-	√	√	√	48-pin LQFP
LM3S818	64	8	50	√	√	√	√	√	√	3	√	6	√	4	-	-	2	-	1	1	6	1M	√	1	0-30	-	√	√	√	48-pin LQFP
LM3S828	64	8	50	√	√	√	√	√	√	3	√	-	-	6	-	-	2	1	1	-	8	1M	√	-	7-28	-	√	√	√	48-pin LQFP
LM3S2110	64	16	25	√	√	√	√	√	√	3	√	2	√	4	-	1	1	1	1	-	-	-	3	11-40	-	√	√	√	100-pin LQFP	
LM3S2139	64	16	25	√	√	√	√	√	√	3	√	-	-	6	-	1	2	1	1	-	4	250K	√	3	24-56	-	√	√	√	100-pin LQFP
LM3S2410	96	32	25	√	√	√	√	√	√	3	√	-	-	4	-	1	1	-	1	-	-	2	37-60	-	√	√	√	100-pin LQFP		
LM3S2412	96	32	25	√	√	√	√	√	√	3	√	2	√	4	-	1	2	1	1	-	3	250K	√	2	19-49	-	√	√	√	100-pin LQFP
LM3S2432	96	32	50	√	√	√	√	√	√	3	√	2	√	4	-	1	2	1	1	-	3	250K	√	2	4-34	-	√	√	√	100-pin LQFP
LM3S2533	96	64	50	√	√	√	√	√	√	4	√	6	√	6	-	1	2	1	1	-	3	250K	√	3	10-48	√	√	√	√	100-pin LQFP
LM3S2620	128	32	25	√	√	√	√	√	√	4	√	4	√	6	-	2	1	1	1	1	-	-	3	12-52	√	√	√	√	100-pin LQFP	
LM3S2637	128	32	50	√	√	√	√	√	√	4	√	-	-	6	-	1	2	1	1	-	4	500K	√	3	15-46	√	√	√	√	100-pin LQFP
LM3S2651	128	32	50	√	√	√	√	√	√	4	√	4	√	6	-	1	3	1	2	-	4	500K	√	1	16-53	√	√	√	√	100-pin LQFP
LM3S2730	128	64	50	√	√	√	√	√	√	3	√	-	-	4	-	1	1	-	1	-	-	2	37-60	-	√	√	√	√	100-pin LQFP	
LM3S2739	128	64	50	√	√	√	√	√	√	3	√	6	√	6	-	1	2	1	1	1	4	500K	√	1	18-56	√	√	√	√	100-pin LQFP
LM3S2939	256	64	50	√	√	√	√	√	√	3	√	4	√	4	-	1	3	1	1	1	3	500K	√	3	17-57	√	√	√	√	100-pin LQFP

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Part Number	Memory			Core				Timers						Serial Interfaces						Analog				Package							
	Flash (KB)	SRAM (KB)	Max Speed (MHz)	ARM® Cortex™-M3 Core	MPU	JTAG	SWO/SWD	System Tick Timer (24-bit)	Watchdog	General-Purpose	External 32 KHz Clock	PWM ^b			Ethernet (10/100 MAC+PHY)	CAN MAC	UART	I ² C	SSI/SPI	QEI	ADC (10-bit)		Internal Temp Sensor		Analog Comparators	GPIOs ^a (5-V tolerant)	Battery-Backed Hibernation Module	Brown-Out Reset	LDO Voltage Regulator	Operating Temperature Range (-40 to +85 °C)	
												PWM	Dead-Band Generator	CCP							ADC Channels	ADC Speed (samples per second)									
LM3S2948	256	64	50	√	√	√	√	√	√	4	√	-	-	8	-	2	3	1	2	-	8	1M	√	3	12-52	√	√	√	√	100-pin LQFP	
LM3S2950	256	64	50	√	√	√	√	√	√	4	√	6	√	6	-	2	3	1	2	1	-	-	-	3	10-60	√	√	√	√	100-pin LQFP	
LM3S2965	256	64	50	√	√	√	√	√	√	4	√	6	√	6	-	2	3	2	2	2	4	1M	√	3	3-56	√	√	√	√	100-pin LQFP	
LM3S6100	64	16	25	√	√	√	√	√	√	3	√	-	-	4	√	-	1	-	1	-	-	-	1	10-30	-	√	√	√	√	100-pin LQFP	
LM3S6110	64	16	25	√	√	√	√	√	√	3	√	2	√	4	√	-	1	-	1	-	-	-	3	8-35	-	√	√	√	√	100-pin LQFP	
LM3S6420	96	32	25	√	√	√	√	√	√	3	√	-	-	4	√	-	1	-	1	-	-	-	2	23-46	-	√	√	√	√	100-pin LQFP	
LM3S6422	96	32	25	√	√	√	√	√	√	3	√	-	-	4	√	-	1	-	1	-	2	250K	√	2	12-34	-	√	√	√	√	100-pin LQFP
LM3S6432	96	32	50	√	√	√	√	√	√	3	√	2	√	4	√	-	2	1	1	-	3	250K	√	2	13-43	-	√	√	√	√	100-pin LQFP
LM3S6610	128	32	25	√	√	√	√	√	√	4	√	4	√	6	√	-	3	1	1	1	-	-	3	5-46	√	√	√	√	√	100-pin LQFP	
LM3S6633	128	32	50	√	√	√	√	√	√	3	√	-	-	6	√	-	2	1	1	-	3	500K	√	1	14-41	√	√	√	√	√	100-pin LQFP
LM3S6637	128	32	50	√	√	√	√	√	√	4	√	-	-	6	√	-	2	1	1	-	4	1M	√	3	9-41	√	√	√	√	√	100-pin LQFP
LM3S6730	128	64	50	√	√	√	√	√	√	3	√	-	-	4	√	-	1	-	1	-	-	-	2	23-46	-	√	√	√	√	√	100-pin LQFP
LM3S6938	256	64	50	√	√	√	√	√	√	4	√	-	-	6	√	-	3	1	1	-	8	1M	√	3	5-38	√	√	√	√	√	100-pin LQFP
LM3S6952	256	64	50	√	√	√	√	√	√	3	√	4	√	4	√	-	3	1	1	1	3	500K	√	3	5-43	√	√	√	√	√	100-pin LQFP
LM3S6965	256	64	50	√	√	√	√	√	√	4	√	6	√	4	√	-	3	2	1	2	4	1M	√	2	0-42	√	√	√	√	√	100-pin LQFP

a. Minimum is number of pins dedicated to GPIO; additional pins are available if certain peripherals are not used. See data sheet for details.

b. PWM motion-control functionality can be achieved through dedicated motion control hardware (the PWM pins) or through the motion control features of the general-purpose timers (the CCP pins). See data sheet for details.