8-bit Development Tools



Demonstration Boards (DEMO): Demonstration boards are cost-effective development tools that allow users to program and debug application code with basic I/O functions and peripherals. Designers save on design time and costs with these demo boards targeted at specific HC(S)08/RS08 MCUs. CodeWarrior™ Development Studio for HC(S)08/RS08, Special Edition is included along with the board.



MON08 Multilink (USBMULTILINK08E): The MON08 Multilink is a cost-effective development tool for all HC08 MCUs, and provides in-circuit debugging and programming through the standard MON08 serial debug/breakpoint interface. CodeWarrior Development Studio for HC(S)08/RS08, Special Edition is included along with the MON08 Multilink.



BDM Multilink (USBMULTILINKBDME): The BDM Multilink is a cost-effective development tool for RS08, HCS08 and HCS12 MCUs, and provides real-time, in-circuit flash programming, emulation and debugging through the BDM interface. CodeWarrior Development Studio for RS08, HC(S)08 and HC(S)12, Special Edition is included along with the BDM Multilink.



Evaluation Boards (EVB): Evaluation boards allow users to program and debug advanced application code with expanded I/O functions and peripherals. HC(S)08 EVBs may include advanced features including zero insertion force (ZIF) sockets, LCDs and large prototype areas. CodeWarrior Development Studio for RS08, HC(S)08 and HC(S)12, Special Edition is included along with the board.



Freescale Semiconductor's In-Circuit Emulator (FSICE): The Freescale Semiconductor In-Circuit Emulator (FSICE) is a high-performance emulator system for HC08 MCUs. In addition to incorporating the debug features of traditional emulators, the FSICE system adds advanced features such as the USBMULTILINK08E cable for in-circuit flash programming, Ethernet interface for remote debugging and a real-time bus analyzer. The kit consists of the FSICE base station, the corresponding MCU emulator module (EM), all the cables and adapters needed and CodeWarrior Development Studio for HC(S)08/RS08, Special Edition.



Cyclone Pro (CYCLONEPROE): Cyclone Pro provides all the capabilities of the USBMULITLINKBDME and USBMULTILINK08E plus USB/Ethernet serial interfaces. In addition, the Cyclone Pro has the ability to function as a stand-alone programmer with push buttons and LEDs to control operations. Cyclone Pro is the universal debugging and real-time emulation tool for all RS08, HC(S)08 and HC(S)12 MCUs. CodeWarrior Development Studio for HC(S)08/RS08 and HC(S)12, Special Edition is included along with Cyclone Pro.



CodeWarrior Development Studio for HC(S)08/RS08 Special Edition: CodeWarrior Development Studio is a comprehensive special edition tool set for fast and easy MCU development. This tool suite provides the capabilities required by every engineer in the development cycle to exploit the capabilities of the RS08 and HC(S)08 architectures. Some of the features include full-chip simulation, flash programming and ProcessorExpert™ technology, which provides automatic C-code generation for most HC(S)08 on-chip peripherals.



USB Mini Board for Freescale's Low-End 8-bit Microcontrollers (USBSPYDER08): To aid fast and easy development for embedded systems engineers working on our low-end microcontrollers, Freescale has developed the cost-effective, high-performance USB debug tool—the USBSPYDER08. With the USBSPYDER08 you can spy into your application software, debug 8 leg 8-bit microcontrollers before you have your application board and kill bugs in your application software. This complete package delivers a cost-effective, yet powerful way to develop your products and speed time to market.

Learn More: For more information about 8-bit family products, please visit **www.freescale.com/8bit**.

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The Entry Point on the Controller Continuum—Only from Freescale

The Perfect 8-bit Compilation

Product summary

www.freescale.com/8bit
www.freescale.com/microselector

General Purpose Products

HCS08 and RS08 Families

Device	Flash	RAM	USB	ADC Channels 10-bit	ADC Channels 12-bit	SCI (UART)	SPI	I²C	COMP	Timer	Clock Type	Package DFN/QFN	Package QFP/LQFP	Package TSSOP	Package SOIC	Package DIP	Dev Tools DEMO	Dev Tools EVB	Dev Tools BDM	Applications/Additional Features *All RS08, S08 and HC08 products include COP, LVI, POR and KBI	Price
MC9S08AW60	60 KB	2 KB		16		2	√	√		6 + 2-ch.	ICG w/FLL	48	64, 44				√		√	High integration, flash programmable to 5V	$2.62
MC9S08AW48	48 KB	2 KB		16		2	√	√		6 + 2-ch.		48	64, 44				√		√		$2.41
MC9S08AW32	32 KB	2 KB		16		2	√	√		6 + 2-ch.		48	64, 44				√		√		$1.99
MC9S08AW16	16 KB	1 KB		16		2	√	√		4 + 2-ch.		48	64, 44				√		√		$1.85
MC9S08AC128	128 KB	8 KB		16		2	2	√		6 + 6 + 2-ch.	ICG w/FLL	48	80, 64				√		√	High integration, flash programmable to 5V	$2.67
MC9S08AC96	96 KB	6 KB		16		2	2	√		6 + 6 + 2-ch.		48	80, 64				√		√		$2.48
MC9S08AC60	60 KB	2 KB		16		2	1	√		6 + 2 + 2-ch.		48	64, 44, 32				√		√		$1.98
MC9S08AC48	48 KB	2 KB		16		2	1	√		6 + 2 + 2-ch.		48	64, 44, 32				√		√		$1.91
MC9S08AC32	32 KB	2 KB		16		2	1	√		6 + 2 + 2-ch.		48	64, 44, 32				√		√		$1.84
MC9S08AC16	16 KB	1 KB		8		2	√	√		6 + 2-ch.		48	44, 32			42	√		√		$1.56
MC9S08AC8	8 KB	1 KB		8		2	√	√		6 + 2-ch.		48	44, 32			42	√		√		$1.45
MC9S08GB60A	60 KB	4 KB		8		√	√	√		3 + 5-ch.	ICG		64				√	√	√	High performance, flash programmable down to 1.8V	$3.55
MC9S08GB32A	32 KB	2 KB		8		√	√	√		3 + 5-ch.			64				√	√	√		$2.65
MC9S08GT60A	60 KB	4 KB		8		√	√	√		2 + 2-ch.	ICG	48	44			42	√	√	√	High performance, flash programmable down to 1.8V	$3.28
MC9S08GT32A	32 KB	2 KB		8		√	√	√		2 + 2-ch.		48	44			42	√	√	√		$2.61
MC9S08GT16A	16 KB	2 KB		8		√	√	√		3 + 2-ch.		48, 32	44			42	√	√	√		$1.65
MC9S08GT8A	8 KB	1 KB		8		√	√	√		3 + 2-ch.		48, 32	44			42	√		√	Flash programming down to 1.8V, small package	$1.36
MC9S08EL32	32 KB	1 KB		16/12		√	√	√	√	1 x 4-ch., 1 x 2-ch.	ICS			28, 20			√			Embedded SLIC and on-chip EEPROM	$1.87
MC9S08EL16	16 KB	1 KB		16/12		√	√	√	√	1 x 4-ch., 1 x 2-ch.				28, 20			√				$1.60
MC9S08SL16	16 KB	512B		16/12		√	√	√	√	2 x 2-ch.	ICS			28, 20			√			Embedded SLIC and on-chip EEPROM	$1.55
MC9S08SL8	8 KB	512B		16/12		√	√	√	√	2 x 2-ch.				28, 20			√				$1.51
MC9S08JM60	60 KB	4 KB	2.0		12	2	2	√	√	1 x 2-ch., 1 x 6-ch.	MCG with PLL and FLL	48	64, 44				√		√	USB S08 device with high performance and integration	$2.79
MC9S08JM32	32 KB	2 KB	2.0		12	2	2	√	√	1 x 2-ch., 1 x 6-ch.		48	64, 44				√		√		$2.18
MC9S08JM16	16 KB	1 KB	2.0		12	2	2	√	√	1 x 4-ch., 1 x 2-ch.		48	44, 32				√		√		$1.89
MC9S08JM8	8 KB	1 KB	2.0		12	2	2	√	√	1 x 4-ch., 1 x 2-ch.		48	44, 32				√		√		$1.73
MC9S08QG8	8 KB	512B		8		√	√	√	√	2-ch., MTIM	ICS	8, 16, 24		16	8	16	√		√	High performance, low voltage, small package	$0.75
MC9S08QG4	4 KB	256B		8		√	√	√	√	2-ch., MTIM		8, 16, 24		16	8	16, 8	√		√		$0.73
MC9S08QA4	4 KB	256B		4					√	1-ch., MTIM	ICS	8			8	8	√		√	Low-end S08 device with 1.8V to 3.6V op range	$0.63
MC9S08QA2	2 KB	160B		4					√	1-ch., MTIM		8			8	8	√		√		$0.63
MC9RS08KA8	8 KB	254B		12				√	√	1 x 2-ch., MTIM	ICS				8	8	√		√	More integration, new RS08 core with small MCUs	$0.60
MC9RS08KA4	4 KB	126B		12				√	√	1 x 2-ch., MTIM					8	8	√		√		$0.55
MC9RS08KA2	2 KB	62B							√	MTIM		6			8	8	√		√	Ultra-low end, new RS08 core for small MCUs	$0.35
MC9RS08KA1	1 KB	62B							√	MTIM		6			8	8	√		√		$0.32
MC9S08QD4	4 KB	256B		4						2 + 3-ch.	ICS				8	8	√		√	Low-end, flash programmable to 5V	$0.64
MC9S08QD2	2 KB	128B		4						2 + 3-ch.					8	8	√		√		$0.60
MC9S08LC60	60 KB	4 KB			8	√	2	√	√	2 + 2-ch.	ICG w/FLL		80, 64				√		√	Integrated Liquid Crystal Display (LCD) driver with high segment count	$3.52
MC9S08LC36	36 KB	2.5 KB			8	√	2	√	√	2 + 2-ch.			80, 64				√		√		$2.99
MC9S08LL16	16 KB	2 KB			8	√	1	√	√	2 + 2-ch.	ICS w/FLL	48	64, 48				√		√	Integrated Liquid Crystal Display (LCD) driver with high segment count	$1.59
MC9S08LL8	8 KB	2 KB			8	√	1	√	√	1 + 2-ch.		48	48				√		√		$1.50
MC9RS08LA8	8 KB	256B		6		√	1		√	1 + 2-ch.	ICS w/FLL	48	48				√		√	Integrated Liquid Crystal Display (LCD) driver with high segment count	$0.99
MC9RS08LE4	4 KB	256B		8		√				2 + 2-ch.	ICS w/FLL				28		√		√	Integrated Liquid Crystal Display (LCD) driver with high segment count	$0.90
MC9S08SH32	32 KB	1 KB		16		√	1	1	√	2 x 2-ch., MTIM	ICS			28, 20, 16	28		√		√	Low-end S08 device with 2.7V to 5.5V op range	$1.47
MC9S08SH16	16 KB	1 KB		16		√	1	1	√	2 x 2-ch., MTIM				28, 20, 16	28		√		√		$1.31
MC9S08SH8	8 KB	512B		12		√	√	√	√	2 + 2-ch.							√		√		$0.96
MC9S08SH4	4 KB	256B		12		√	√	√	√	2 + 2-ch.		24		20, 16	8	20	√		√		$0.86
MC9S08QE128	128 KB	8 KB			24	2	2	2	2	1 + 6-ch., 2 + 3-ch.	ICS	48	80, 64, 44				√	√	√	Ultra-low-power S08 device with 1.8V to 3.6V op range	$2.99
MC9S08QE96	96 KB	6 KB			24	2	2	2	2	1 + 6-ch., 2 + 3-ch.		48	64, 44				√	√	√		$2.77
MC9S08QE64	64 KB	4 KB			24	2	2	2	2	1 + 6-ch., 2 + 3-ch.		48	80, 64, 44, 32				√	√	√		$2.45
MC9S08QE8	8 KB	512B			10	1	1	1	2	2 + 3-ch.,	ICS w/FLL		32	16	20, 28	16	√		√		$1.08
MC9S08QE4	4 KB	256B			10	1	1	1	2	2 + 3-ch.,			32	16	20, 28	16	√		√		$0.94
MC9S08QE32	32 KB	2 KB			10	2	1	1	2	1 + 6-ch., 2 + 3-ch.	ICS	48	44, 32		28		√		√		$1.68
MC9S08QE16	16 KB	1 KB			10	2	1	1	2	1 + 6-ch., 2 + 3-ch.		48	44, 32		28		√		√		$1.48

Application Specific Products

HCS08 Family

Device	Flash	RAM	USB	ADC Channels 10-bit	ADC Channels 12-bit	SCI (UART)	SPI	I²C	COMP	Timer	Clock Type	Package DFN/QFN	Package QFP/LQFP	Package TSSOP	Package SOIC	Package DIP	Dev Tools DEMO	Dev Tools EVB	Dev Tools BDM	Applications/Additional Features *All RS08, S08 and HC08 products include COP, LVI, POR and KBI	Price
MC9S08DZ128	128 KB	8 KB			24	2	√	√	√	8-ch.	OSC		100, 64, 48				√	√	√	S08 5V device with CAN and EEPROM	$3.62
MC9S08DZ96	96 KB	6 KB			24	2	√	√	√	8-ch.			100, 64, 48				√	√	√		$3.32
MC9S08DZ60	60 KB	4 KB			24	2	√	√	√	8-ch.			64, 48, 32				√	√	√		$3.07
MC9S08DZ48	48 KB	2 KB			24	2	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.88
MC9S08DZ32	32 KB	2 KB			24	2	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.70
MC9S08DZ16	16 KB	1 KB			24	2	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.52
MC9S08DN60	60 KB	4 KB		16		√	√	√	√	8-ch.	OSC		64, 48, 32				√	√	√	S08 5V device with EEPROM	$2.84
MC9S08DN48	48 KB	2 KB		16		√	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.65
MC9S08DN32	32 KB	2 KB		16		√	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.47
MC9S08DN16	16 KB	1 KB		16		√	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.28
MC9S08DV128	128 KB	8 KB		16		√	√	√	√	8-ch.	OSC		64, 48, 32				√	√	√	S08 5V device with CAN	$3.45
MC9S08DV96	96 KB	6 KB		16		√	√	√	√	8-ch.			64, 48, 32				√	√	√		$3.16
MC9S08DV60	60 KB	4 KB		16		√	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.93
MC9S08DV48	48 KB	2 KB		16		√	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.74
MC9S08DV32	32 KB	2 KB		16		√	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.56
MC9S08DV16	16 KB	1 KB		16		√	√	√	√	8-ch.			64, 48, 32				√	√	√		$2.37
MC9S08RD60	60 KB	2 KB				√				2-ch.	OSC				28	28	√		√	Remote control, carrier modulator timer	$3.68
MC9S08RD32	32 KB	2 KB				√				2-ch.					28	28	√		√		$3.53
MC9S08RD16	16 KB	1 KB				√				2-ch.					28	28	√		√		$2.79
MC9S08RD8	8 KB	1 KB				√				2-ch.					28	28	√		√		$1.97
MC9S08RG60	60 KB	2 KB				√	√		√	2-ch.	OSC		44, 32				√		√	Remote control, carrier modulator timer	$4.57
MC9S08RG32	32 KB	2 KB				√	√		√	2-ch.			44, 32				√		√		$3.68
MC9S08RE16	16 KB	1 KB				√			√	2-ch.	OSC	48	44, 32				√		√	Remote control, carrier modulator timer	$2.90
MC9S08RE8	8 KB	1 KB				√			√	2-ch.			44, 32				√		√		$2.04