8/16/32-Bit Microcontrollers

Quarter 3, 2006
SG1006Q32006 Rev 1

freescale semiconductor

FREESCALE'S 8-BIT PRODUCTS SUMMARY

For complete part number information and temperature definitions, refer to on page SG1006-6.

General Purpose Products

Product	Flash Program Memory (bytes)	RAM (bytes)	16-bit Timers	I/O	Communication	ADC	Operating Voltage (V)	Bus Frequency (max.)	Temperature Options	Packaging	Development Tools	Additional Information[Note]
HCS08 & RS08 Families												
MC9S08AW16	16K	1K	2-CH + 6-CH, IC/OC or PWM	Up to 50	SPI, 2 SCI, I^2C	16-CH, 10-bit	3.0, 5.0	20.0	M	44-pin LQFP (FG) 48-pin QFN (FD) 64-pin QFP (FU) 64-pin LQFP (PU)	DEMO9S08AW60E	Low voltage inhibit; Low voltage warming; Highly accurate internal oscillator
MC9S08AW32	32K											
MC9S08AW60	60K				SPI, 2 ESCI, I^2C							
MC9S08GB32A	32K	2K	3-CH + 5-CH, IC/OC or PWM	56	2 SCI, 1 SPI, I^2C	8-CH, 10-bit	1.8 to 3.6	20.0	C	64-pin LQFP (FU)	M68DEMO908GB60 M68EVB908GB60	www.freescale.com
MC9S08GT32A			Dual 2-CH, IC/OC or PWM	Up to 39						44-pin QFP (FB) 48-pin QFN (FD)		
MC9S08GB60A	60K	4K	3-CH + 5-CH, IC/OC or PWM	56						64-pin LQFP (FU)		
MC9S08GT60A			Dual 2-CH, IC/OC or PWM	Up to 39						44-pin QFP (FB) 48-pin QFN (FD)		
MC9S08GT16	16K	1K		Up to 36						42-pin DIP (B) 44-pin QFP (FB) 48-pin QFN (FD)		
MC9S08QG4	4K	256	2-CH, IC/OC or PWM + MTIM	Up to 12	SPI, SCI, I^2C	8-CH, 10-bit	1.8 to 3.6	10.0	C	16-pin DIP (PB) 16-pin QFN (FF) 16-pin TSSOP (DT) 8-pin DFN (FQ) 8-pin DIP (PA) 8-pin SOIC (DN)	DEMO9S08QG8	Temp. sensor, on-chip debug interface, internal clock source (ICS) containing a frequency-locked-loop (FLL), Analog Comparator (ACMP)
MC9S08QG8	8K	512										
MC9RS08KA1	1K	63	MTIM		ACMP					6-pin DFN 8-pin DIP 8-pin SOIC		Internal clock source (ICS); Ultra-low end, new RS08 core for small MCUs
MC9RS08KA2	2K											
HC08 Family												
MC908AB32	32K	1K	4+4-CH		SCI, SPI	8-CH, 8-bit				64-pin LQFP, 64-pin QFP		24 analog inputs and increased RAM
MC68HC908AP16	16K	1K	Dual 2-CH, IC/OC or PWM	Up to 32	2 SCI, 1SPI, I^2C	8-CH, 10-bit	3.0, 5.0	8.0	C, V, M	48-pin LQFP (FA), 44-pin QFP (FB), 42-pin SDIP (B)	DEMO908AP64 FSICEKITAP64	32 kHz PLL, RC oscillator, timebase module, low-voltage inhibit, up to 8 keyboard interrupts, 6 open-drain pins with 25 mA sink
MC68HC908AP32	32K	2K										
MC68HC908AP64	64K											
MC908GP32	32K	512B	2+2-CH		SCI, SPI	8-CH, 8-bit				64-pin LQFP, 64-pin QFP		Embedded EERPOM (512B) and add'l timer channels
MC68HC908GR4	4K	384	2-CH + 1-CH, IC/OC, or PWM	21	SCI, SPI	6-CH, 8-bit	3.0, 5.0	8.0	C	32-pin LQFP (FA) 28-pin SOIC (DW) 28-pin DIP (P)	FSICEKITGR8	32 kHz timebase module; two extra ADC channels on LQFP32
MC68HC908GR8	7.5K											
MC68HC908GR16	16K	1K	Dual 2-CH, IC/OC or PWM	Up to 37	ESCI, SPI	6-CH, 10-bit			C, V, M	32-pin LQFP (FJ) 48-pin LQFP (FA)	DEMO908GZ60 FSICEKITGRGZ	www.freescale.com
MC68HC908GR16A						8-CH, 10-bit						
MC68HC908GR32A	32K	1.5K	2-CH, 6-bit IC/OC or PWM	Up to 50		24-CH, 10-bit				32-pin LQFP (FJ) 48-pin LQFP (FA) 64-pin QFP (FU)		1-8 MHz high-frequency oscillator
MC68HC908GR48A	48K											
MC68HC908GR60A	60K	2K										
MC68HC908GT8	8K	512B	Dual 2-CH, IC/OC or PWM	36	SCI, SPI	8-CH, 8-bit	3.0, 5.0	8.0	C	44-pin QFP (FB), 42-pin DIP (B)	FSICEKITGPGT	Internal clock generator; low-voltage inhibit
MC68HC908GT16	16K									44-pin QFP (FB), 42-pin DIP (B), 40-pin DIP (P)	M68EVB908GP32 FSICEKITGPGT	www.freescale.com

Note: All RS08, S08, and HC08 products include COP, LVI, POR and KBI.

A change bar appears in the left margin to mark the location of new or revised information.

FREESCALE'S 8-BIT PRODUCTS SUMMARY (continued)

For complete part number information and temperature definitions, refer to on page SG1006-6.

General Purpose Products (continued)

Product	Flash Program Memory (bytes)	RAM (bytes)	16-bit Timers	I/O	Communication	ADC	Operating Voltage (V)	Bus Frequency (max.)	Temperature Options	Packaging	Development Tools	Additional Information[Note]
MC68HC908JK1E	1.5K	128	2-CH, IC/OC or PWM	15	—	12-CH, 8-bit	3.0, 5.0	8.0	C, M	20-pin DIP (P) 20-pin SOIC (DW)	FSICEKITJLJK	RC oscillator option available; LVR with selectable trip point; 6-pin LED drive
MC68HC908JK3E	4K											
MC68HC908JK8	8K	256	Dual 2-CH, IC/ OC or PWM		SCI	13-CH, 8-bit			C			
MC68HC908JL3E	4K	128	2-CH, IC/OC or PWM	Up to 23		12-CH, 8-bit			C, M	28-pin DIP (P) 28-pin SOIC (DW) 28-pin LQFP (FA)		
MC908QB4	4K	256	4-CH, IC/OC or PWM	Up to 13	ESCI, SPI	10-CH, 10-bit	3.0, 5.0	8.0	M	16-pin TSSOP (DT) 16-pin SOIC (DW) 16-pin PDIP (P)	DEMO908QB8 FSICEKITQBLTY	Auto wakeup module, KBI
MC908QB8	8K											
MC908QT1A	1.5K	128	2-CH Input Capture (IC) / Output Compare (OC) or PWM	6	—	—			C, V, M	8-pin SOIC (DW) 8-pin PDIP (P) 8-pin DFN (FQ)	DEMO908QB8 M68DEMO908QT4 FSICEKITQBLTY	www.freescale.com
MC908QT2A	2K					6-CH, 10-bit						
MC908QT4A	4K											
MC908QY1A	1.5K			13		—				16-pin SOIC (DW) 16-pin PDIP (P) 16-pin TSSOP (DT)	DEMO908QB8 FSICEKITQBLTY	
MC908QY2A	2K					6-CH, 10-bit						
MC908QY4A	4K											

Application-Specific Products

HCS08 Family

MC9S08RC8	8K	1K	2-CH, IC/OC or PWM	Up to 39	—	—	1.8 to 3.6	8.0	C	32-pin LQFP (FJ) 44-pin LQFP (FG)	DEMO9S08RG60	Analog Comparator, Low voltage warning
MC9S08RC16	16k											
MC9S08RC32	32K	2K										
MC9S08RC60	60K											
MC9S08RD8	8K	1K			SCI					28-pin DIP (P) 28-pin SOIC (DW) 32-pin LQFP (FJ) 44-pin LQFP (FG)		Low voltage warning
MC9S08RD16	16K											
MC9S08RD32	32K	2K										
MC9S08RD60	60K											
MC9S08RE8	8K	1K								32-pin LQFP (FJ) 44-pin LQFP (FG)		Analog Comparator, Low voltage warning
MC9S08RE16	16K											
MC9S08RE32	32K	2K										
MC9S08RE60	60K											
MC9S08RG32	32K	1K			SCI, SPI							
MC9S08RG60	60K	2K										

HC08 Family

MC908AZ32A	32K	512	6-CH, IC/OC or PWM	50	SCI, SPI	15-CH, 8-bit	5.0	8.4	C, V, M	64-pin QFP (FU)	FSICEKITASAZ	www.freescale.com
MC908AS32A				40						64-pin QFP (FU), 52-pin PLCC (FN)		
MC908AZ60A	60K	1K		52						64-pin QFP (FU)		
MC908AS60A				Up to 52								
MC68HC908EY8	8K	384	Dual 2-CH, IC/ OC or PWM	24	ESCI, SPI	8-CH, 10-bit	3.0, 5.0	8.0	C, V, M	32-pin LQFP (FA)	FSICEKITEY	ESCI is LIN ready
MC68HC908EY16	16K	512										
MC68HC908GZ8	7.5K	512	Dual 2-CH, IC/ OC or PWM	Up to 37	ESCI, SPI, CAN	8-CH, 10-bit	3.0, 5.0	8.0	C, V, M	32-pin LQFP (FJ) 48-pin LQFP (FA)	DEMO908GZ60 FSICEKITGRGZ	www.freescale.com
MC68HC908GZ16	16K	1K										
MC68HC908GZ32	32K	1.5K	2-CH, 6-bit IC/ OC or PWM	Up to 50		24-CH, 10-bit				32-pin LQFP (FJ) 48-pin LQFP (FA) 64-pin QFP (FU)		1-8 MHz high-frequency oscillator
MC68HC908GZ48	48K											
MC68HC908GZ60	60K	2K										

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FREESCALE'S 8-BIT PRODUCTS SUMMARY (continued)

For complete part number information and temperature definitions, refer to on page SG1006-6.

General Purpose Products (continued)

Product	Flash Program Memory (bytes)	RAM (bytes)	16-bit Timers	I/O	Communication	ADC	Operating Voltage (V)	Bus Frequency (max.)	Temperature Options	Packaging	Development Tools	Additional Information[Note]
MC68HC908JB8	8K	256	2-CH, IC/OC or PWM	Up to 37	USB 1.1	—	4.0-5.5	3.0	—	20-pin DIP (P) 28-pin SOIC (DW) 44-pin QFP (FB) 20-pin SOIC (JDW)	FSICEKITJB8	Low-speed USB 1.1 compliant; on-chip 3.3V regulator
MC68HC908JB12	12K	384	Dual 2-CH, IC/OC or PWM	Up to 21	SCI, USB 1.0/1.1			6.0		20-pin SOIC (JDW) 28-pin SOIC (DW)	FSICEKITJBJG	Supports USB and PS/2; low-voltage reset, dual 27 MHz PLL; 6 LED drive I/Os
MC68HC908JB16	16K									32-pin LQFP (FA) 28-pin SOIC (DW) 20-pin SOIC (JDW)		
MCHC908JW32	32K	1K	2-CH		SPI					48-pin QFP 48-pin LQFP		USB
MC68HC908LB8	8K	128	2-CH, IC/OC or PWM	Up to 18	—	7-CH, 8-bit	5.0	8.0	C, V, M	20-pin DIP (P) 20-pin SOIC (DW)	DEMO908LB8 FSICEKITLB8	High resolution PWM
MC68HC908LJ12	12K	512	Dual 2-CH, IC/OC or PWM	Up to 32	SCI, SPI	6-CH, 10-bit	3.3, 5.0	8.0	C	52-pin LQFP (FB) 64-pin QFP (FU) 64-pin LQFP (PB)	FSICEKITLJLK	LCD driver with 4/3 backplanes and maximum 26 front planes; real-time clock
MC68HC908LJ24	24K	768		Up to 48	SCI, SPI, I^2C					64-pin QFP (FU) 64-pin LQFP (PB) 80-pin LQFP (PK)		LCD driver with 4/3 backplanes and maximum 33 front planes; real-time clock; 32 kHz PLL
MC68HC908LK24					IrSCI, SPI, I^2C					64-pin QFP (FU) 80-pin QFP (FQ)		
MC908LV8	8K	512B	2-CH			6-CH, 10-bit				52-bit QFP 52-bit LQFP		LCD
MC68HC908MR8	8K	256	Dual 2-CH, IC/OC or PWM	14	SCI	7-CH, 10-bit	5.0	8.0	C, V, M	28-pin PDIP (P) 28-pin SOIC (DW) 32-pin LQFP (FA)	FSICEKITMR8	6-CH, 12-bit PWM
MC68HC908MR16	768	16K	2-CH + 4-CH, IC/OC or PWM	44	SCI, SPI	10-CH, 10-bit			C, V	56-pin SDIP (B) 64-pin QFP (FU)	FSICEKITMR32	See Timer + 6-CH, 12-bit
MC68HC908MR32		32K										
MC908QL2	2K	128	2-CH, IC/OC or PWM	13	SLIC (LIN)	6-CH, 10-bit	3.0 to 5.0	8.0	C, V, M	16-pin TSSOP (DT) 16-pin SOIC (DW)	M68EVB908QL4 FSICEKITQBLTY	SLIC (Slave-LIN Interface Controller) featuring autobauding/ auto synchronization
MC908QL3	4K					—						
MC908QL4						6-CH, 10-bit						
MM908E621	16K	512B	2+2-CH		SPI, IIO	8-CH, 10-bit				54-pinSOIC		Integrated Quad Half-Bridge and Triple High-Side, LIN
MM908E624										32-pin QFP 32-pin-LQFN		Motor Control, Integrated VReg and LIN PHY, KBI
MM908E626												Lighting, Integrated VReg and LIN PHY, KBI

Note: All RS08, S08, and HC08 products include COP, LVI, POR and KBI.

68HC08 Reference Manuals

CPU08RM, HC08 CPU Reference Manual

TIM08RM, HC08 Timer Reference ManualProduct Numbering System for 68HC08

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FREESCALE'S 8-BIT PRODUCTS SUMMARY

8-Bit Development Tools

Demonstration Boards (DEMO) (MSRP starting at $49):

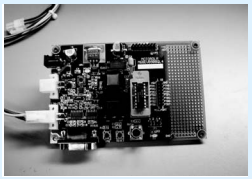
Demonstration boards are cost-effective development tools that allow users to program and debug application code with basic I/O functions and peripherals. Designers save on design time and costs with these demo boards targeted at specific HC(S)08/RS08 MCUs. CodeWarrior™ Development Studio for HC(S)08/RS08,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

MON08 Multilink (USBMULTILINK08E) (MSRP $99):

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) (MSRP $99):

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) (MSRP starting at $168.20):

Evaluation boards allow users to program and debug advance application code with expanded I/O functions and peripherals. HC(S)08 EVBs may include advance 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) Kits (MSRP starting at $1495):

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 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.

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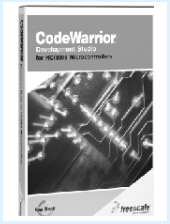
FREESCALE'S 8-BIT PRODUCTS SUMMARY (continued)

8-Bit Development Tools (continued)

Cyclone Pro (CYCLONEPROE) (MSRP $499):

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 (Free-of-Charge):

CodeWarrior Development Studio is a comprehensive special edition toolset 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 architecture. Some of the features include: project manager for up to 32 files, full-chip simulation, Flash programming and Processor Expert™ technology, which provides automatic C-code generation for most HC(S)08 on-chip peripherals.

Product Numbering System for HCS08 & RS08

MC 9 S08 GB 60 X XX E

- STATUS OF PRODUCT:
  - MC = FULLY QUALIFIED
  - XC = PARTIAL QUAL
  - PC = PRODUCT ENGINEERING
  - KMC = SAMPLE PACK
  - KXC = SAMPLE PACK
- MEMORY TYPE
  - 9 = FLASH
  - 3 = ROM
- CORE TYPE
- FAMILY
- APPROXIMATE MEMORY
- TEMPERATURE RANGE
  - C = -40°C TO 85°C
  - V = -40°C TO 105°C
  - M = -40°C TO 125°C
- PACKAGING DESIGNATOR
- LEAD FREE PACKAGING

M = -40°C TO 125°C

Product Numbering System for 68HC08

MC 68HC 908 JK 3 A C DW E

- STATUS OF PRODUCT:
  - MC = FULLY QUALIFIED
  - XC = PARTIAL QUAL
  - PC = PRODUCT ENGINEERING
  - KMC = SAMPLE PACK
  - KXC = SAMPLE PACK
- CORE
  - HSC = HIGH SPEED
  - HRC = RC OSCILLATOR
  - HLC = LOW POWER
- BLANK = ROM
  - 7 = OTP
  - 8 = EEPROM
  - 9 = FLASH
- FAMILY
- APPROXIMATE MEMORY
- SHRINK OR REVISION
- TEMPERATURE RANGE
  - BLANK = 0°C TO 70°C
  - I = 0°C TO 85°C
  - C = -40°C TO 85°C
  - V = -40°C TO 105°C
  - M = -40°C TO 125°C
- PACKAGING DESIGNATOR
- LEAD FREE PACKAGING

A change bar appears in the left margin to mark the location of new or revised information.

68HC12 Product Table Note

For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-8.

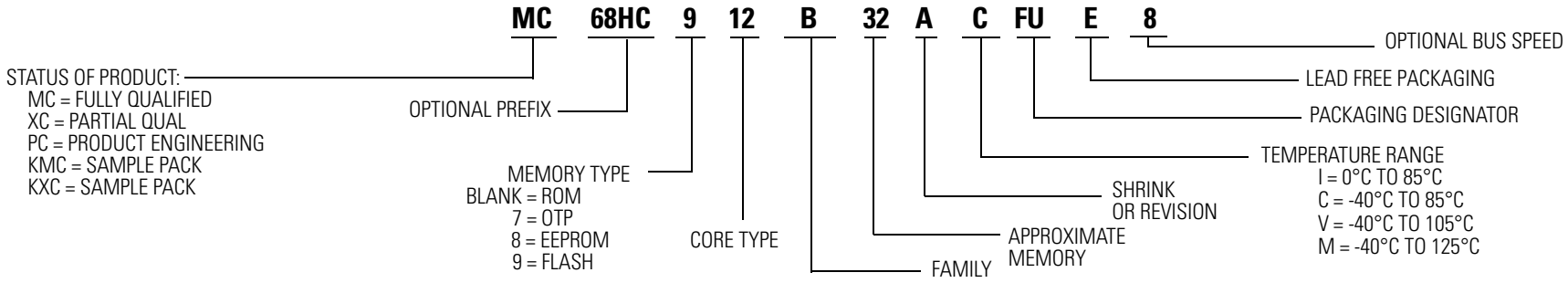
Product	ROM (KB)	RAM (KB)	EEPROM (Bytes)	Flash (KB)	Timer	I/O	Serial	A/D	PWM	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp Options	Packaging	Status	Additional Information	Documentation
HC12A Family																
MC68HC812A4	n/a	1	4K	n/a	8-CH, 16-bit IC or OC RTI, pulse accumulator	Up to 91	Dual SCI, SPI	8-CH, 8-bit	n/a	3.3, 5.0	8.0 5.0	C	112-pin LQFP (PV)	Available	Non-muxed bus, 7 programmable chip selects, KBI (24 pins), PLL, BDM, 5M-byte external memory, 3.0–3.6 V, 5 MHz version (XC68C812A4)	MC68HC812A4
HC12B Family																
MC68HC912B32	n/a	1	768	32	8-CH, 16-bit IC or OC RTI, pulse accumulator	Up to 63	SCI, SPI J1850	8-CH, 10-bit	4-CH, 8-bit or 2-CH, 16-bit	5.0	8.0	C, V, M	80-pin QFP (FU)	Available	J1850, muxed bus, BDM	MC68HC912B
MC68HC12BC32	32			n/a	8-CH, 16-bit		SCI, SPI		4-CH, 8-bit						Part equipped with CAN 2.0A/B	MC68HC912B32TS
XC912BC32	n/a			32	8-CH, 16-bit IC or OC RTI, pulse accumulator		SCI, SPI CAN		4-CH, 8-bit or 2-CH, 16-bit	4.5 to 5.5					MSCAN CAN 2.0B, BDM	MC68HC912B
MC68HC12BE32	32			n/a			SCI, SPI J1850			5.0		C			BDM, enhanced timer Evaluation product with on-chip monitor: XC12BE32DCFU8	
HC12DG Family																
XC68HC12D60	60	2	1K	n/a	8-CH, 16-bit	Up to 66 I/O and 18 i	Dual SCI SPI	Dual 8-CH, 10-bit	4-CH, 8-bit or 2-CH, 16-bit	5.0	8.0	C, V, M	80-pin QFP (FU) 112-pin LQFP (PV)	Available	Part equipped with CAN 2.0A/B	MC68HC912D60
MC912D60A	n/a			60	8-CH, 16-bit IC or OC RTI, pulse accumulator		Dual SCI SPI, CAN	8-CH, 10-bit							Replaces the XC68HC912D60 with 5 V Flash voltage and a different programming algorithm	
MC912DG128	MC912DG128A is a pin-compatible replacement.															
MC912DG128A	n/a	8	2K	128	8-CH, 16-bit IC or OC RTI, pulse accumulator	Up to 67 I/O and 18 i	Dual SCI SPI, CAN	8-CH or 16-CH, 10-bit	4-CH, 8-bit or 2-CH, 16-bit	5.0	8.0	C, V, M	112-pin LQFP (PV)	Available	Replaces the XC912DG128 with 5 V Flash voltage and a different programming algorithm	MC68HC912DG128
HC12DT Family																
MC68HC912DT128A	n/a	8	2K	128	8-CH, 16-bit	Up to 66 I/O and 18 i	Dual SCI, SPI	Dual 8-CH, 10-bit	4-CH, 8-bit or 2-CH, 16-bit	5.0	8.0	C, V, M	112-pin LQFP (PV)	Available	Part equipped with 3xCAN 2.0A/B	MC68HC912DT128

Note: All 68HC12 MCUs incorporate a COP watchdog timer.

68HC12 Reference Manual

CPU12RM, HC12 CPU Reference Manual

Product Numbering System for 68HC12



HCS12 FAMILY

HCS12 Product Table

HCS12 Dx and A Family devices offer pin-for-pin compatibility.
For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-10.

Product	ROM (Bytes)	RAM (KB)	Flash or OTP (KB)	EEPROM (KB)	Timer	I/O	Serial	MUX	A/D	PWM	Operating Voltage (V)	Operating Frequency (MHz)	Temp Options	Packaging	OTP or Flash Equiv.	Status	Additional Information	Documentation
S12A Family—General Purpose with I^2C																		
MC9S12A32	n/a	2	32 Flash	1	8-CH, 16-bit ECT	Up to 59	2 SCI 1 SPI	n/a	8-CH, 10-bit	7-CH, 8-bit or 3-CH, 16-bit	3.0, 5.0	25.0	C	80-pin QFP (FU)	n/a	Available	www.freescale.com	MC9S12DP256
MC9S12A64		4	64 Flash		8-CH, 16-bit IC, OC, PA	Up to 91	Up to 2 SCI 1 SPI IIC		Up to 2 x 8-CH, 10-bit	Up to 8-CH, 8-bit or 4-CH, 16-bit	5.0			80-pin QFP (FU) 112-pin LQFP (PV)			The 80 QFP differs from the 112 LQFP in that it offers only up to 59 I/O, has 1 x 8-CH A/D, and has 7-CH PWM	9S12A64DGV1
MC9S12A128		8	128 Flash	2			Up to 2 SCI 2 SPI IIC										www.freescale.com	9S12A128DGV1
MC9S12A256		12	256 Flash	4			Up to 2 SCI 3 SPI IIC											9S12A256DGV1
MC9S12A512		14	512 Flash		8-CH, 16-bit ECT		2 SCI 3 SPI I^2C			8-CH, 8-bit or 4-CH, 16-bit		25.0, 33.0		112-pin LQFP (PV)				MC9S12DP512
S12B Family—Automotive/Industrial with Intermediate Cost CAN																		
MC9S12B128	n/a	4	128 Flash	1	8-CH, 16-bit IC, OC, or PWM	Up to 91	SCI, SPI, I^2C	CAN	8-CH, 16-bit	See Timer	3.0 to 5.0	25	C, V, M	112-pin LQFP (PV) 80-pin QFP (FU)	n/a	Available	www.freescale.com	9S12B128DGV1
MC9S12B64		2	64 Flash															
S12C Family—Low Pin Count, Low Cost CAN																		
MC9S12C128	n/a	4	128 Flash	0	8-CH, 16-bit IC, OC, or PWM	Up to 60	SCI SPI	CAN	8-CH, 10-bit	See Timer	3.0 to 5.0	25	C, V, M	80-QFP, 52 LQFP, 48 LQFP	n/a	Available	www.freescale.com	9S12C128DGV1
MC9S12C96			96 Flash															
MC9S12C64			64 Flash															
MC9S12C32		2	32 Flash	n/a							3.15 to 5.5	16, 25	C, M	48-pin QFP (FA) 52-pin QFP (PB) 80-pin QFP (FU)				9S12C32D6V1

HCS12 FAMILY (continued)

HCS12 Product Table (continued)

HCS12 Dx and A Family devices offer pin-for-pin compatibility.
For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-10.

Product	ROM (Bytes)	RAM (KB)	Flash or OTP (KB)	EEPROM (KB)	Timer	I/O	Serial	MUX	A/D	PWM	Operating Voltage (V)	Operating Frequency (MHz)	Temp Options	Packaging	OTP or Flash Equiv.	Status	Additional Information	Documentation
S12D Family—Automotive/Industrial with CAN																		
MC9S12D32	n/a	2	32 Flash	1	8-CH, 16-bit ECT	Up to 59	2 SCI 1 SPI	CAN	8-CH, 10-bit	7-CH, 8-bit or 3-CH, 16-bit	5.0	25.0	C, V, M	80-pin QFP (FU)	n/a	Available	www.freescale.com	MC9S12DP256
MC9S12D64		4	64 Flash		8-CH, 16-bit IC, OC, PA	Up to 91	Up to 2 SCI 1 SPI IIC	1 CAN 2.0A/2.0B	Up to 2 x 8-CH, 10-bit	Up to 8-CH, 8-bit or 4-CH, 16-bit	5.0			80-pin QFP (FU) 112-pin LQFP (PV)			The 80 QFP differs from the 112 LQFP in that it offers only up to 59 I/O, has 1 x 8-CH A/D, and has 7-CH PWM	9S12D64DGV1
MC9S12DB128		8	128 Flash	2			Up to 2 SCI 2 SPI	1 CAN Byteflight									www.freescale.com	9S12DT128BDGV1
MC9S12DG128							Up to 2 SCI 2 SPI IIC	2 CAN									The 80 QFP differs from the 112 LQFP in that it offers only up to 59 I/O, has 1 x 8-CH A/D, and has 7-CH PWM	
MC9S12DG256		12	256 Flash	4			2 SCI 3 SPI IIC							112-pin LQFP (PV)			www.freescale.com	9S12DP256BDGV2
MC9S12DJ64		4	64K Flash	1			Up to 2 SCI 1 SPI IIC	1 CAN 2.0A/2.0B and 1 x J1850						80-pin QFP (FU) 112-pin LQFP (PV)			The 80 QFP differs from the 112 LQFP in that it offers only up to 59 I/O, has 1 x 8-CH A/D, and has 7-CH PWM	9S12DJ64DGV1
MC9S12DJ128		8	128 Flash	2	8-CH, 16-bit IC, OC, PA	Up to 91	Up to 2 SCI 2 SPI IIC	2 CAN and 1 x J1850	Up to 2 x 8-CH, 10-bit	Up to 8-CH, 8-bit or 4-CH, 16-bit	5.0						The 80 QFP differs from the 112 LQFP in that it offers only up to 59 I/O, has 1 x 8-CH A/D, and has 7-CH PWM	9S12DT128BDGV1
MC9S12DJ256		12	256 Flash	4			Up to 2 SCI 3 SPI IIC											9S12DP256BDGV2
MC9S12DP256								5 CAN						112-pin LQFP (PV)			www.freescale.com	
MC9S12DP512		14	512 Flash	4	8-CH, 16-bit ECT		2 SCI 3 SPI I^2C					25.0, 33.0						MC9S12DP512
MC9S12DT128		8	128 Flash	2	8-CH, 16-bit IC, OC, PA		2 SCI 2 SPI IIC	3 CAN				25.0						9S12DT128BDGV1
MC9S12DT256		12	256 Flash	4			2 SCI 3 SPI IIC											9S12DP256BDGV2
S12E Family—General Purpose, 3 Volts with D/A																		
MC9S12E64	n/a	4	64 Flash	n/a	Three 4-CH, 16-bit IC, OC or PWM	Up to 90	3 SCI SPI I^2C	n/a	16-CH, 10-bit	See Timer	3.3 to 5.0	16.0, 25.0	C, M	112-pin LQFP (PV) 80-pin QFP (FU)	n/a	Available	Two D/A Converters	9S12E128DGV1
MC9S12E128		8	128 Flash															
S12GC Family—Low Cost, Low Pin Count																		
MC9S12GC128	n/a	4	128 Flash	0	8-CH, 16-bit IC, OC, PWM	Up to 60	SCI SPI	n/a	8-CH, 10-bit	See Timer	3.0 to 5.0	25.0	C, V, M	52-pin LQFP (PB) 48-pin LQFP (FA)	n/a	Available	www.freescale.com	9S12C128DGV1
MC9S12GC96			96 Flash															
MC9S12GC64			64 Flash															
MC9S12GC32		2	32 Flash									16.0						
MC9S12GC16			16 Flash															

HCS12 FAMILY (continued)

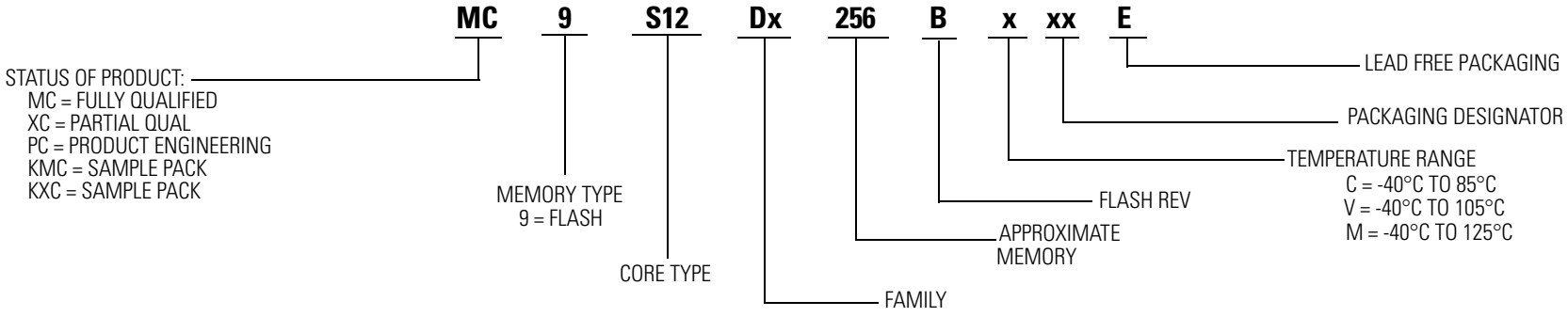
HCS12 Product Table (continued)

HCS12 Dx and A Family devices offer pin-for-pin compatibility.
For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-10.

Product	ROM (Bytes)	RAM (KB)	Flash or OTP (KB)	EEPROM (KB)	Timer	I/O	Serial	MUX	A/D	PWM	Operating Voltage (V)	Operating Frequency (MHz)	Temp Options	Packaging	OTP or Flash Equiv.	Status	Additional Information	Documentation
S12H Family—LCD/H-Bridge Drivers with CAN																		
MC9S12H128B	n/a	12	128 Flash	4	8-CH, 16-bit IC, OC, PA	99 plus 18 inputs	SCI SPI IIC	2 CAN 2.0A/2.0B	16-CH, 10-bit	6-CH, 8-bit or 3-CH, 16-bit	5.0	16.0	V	112-pin LQFP (PV)	n/a	Available	LCD driver module: up to 32 frontpanes and 4 backpanes.	9S12H256BDGV1
MC9S12H256B			256 Flash										C, V, M	112-pin LQFP (PV) 144-pin LQFP (FV)				
S12NE Family—Single Chip with 10/100 Base-T with Integrated MAC and PHY																		
MC9S12NE64	n/a	8	64 Flash	n/a	4-CH, 16-bit IC, OC or PWM	Up to 70	2 SCI SPI I^2C	n/a	8-CH, 10-bit	See Timer	3.0	16.0, 25.0	C (PV) V (TU)	112-pin LQFP (PV) 80-pin TQFP-EP (TU)	n/a	Available	Integrated Media Access Controller (EMAC), 10/100 Ethernet PHY (EPHY)	9S12NE64BDUG
S12T Family—CALRAM with Fast BDM																		
MC9S12T64	n/a	2 + 2 CALRAM	64 Flash	n/a	8-CH, 16-bit IC, OC, PA	25	2 SCI 1 SPI	n/a	8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	5.0	16.0	C, V, M[1]	80-pin QFP (PK)	n/a	Available	FBDM (Fast Background Debug Mode)	9S12T64BDGV1
S12UF Family—USB 2.0																		
MC9S12UF32	n/a	3.5	32 Flash	n/a	8-CH, 16-bit IC, OC, or PWM	Up to 75	SCI USB 2.0	n/a	n/a	See Timer	5.0	30.0	0°C to 70°C	100-pin LQFP (PU) 64-pin LQFP	n/a	Available	Built-in host controller modules for ATA-5 interface, CompactFlash, Secure Digital/ Multimedia Card, SmartMedia, and Memory Stick	9S12UF32DGV1

[1] M temperature range limited to single-chip mode

Product Numbering System for HCS12



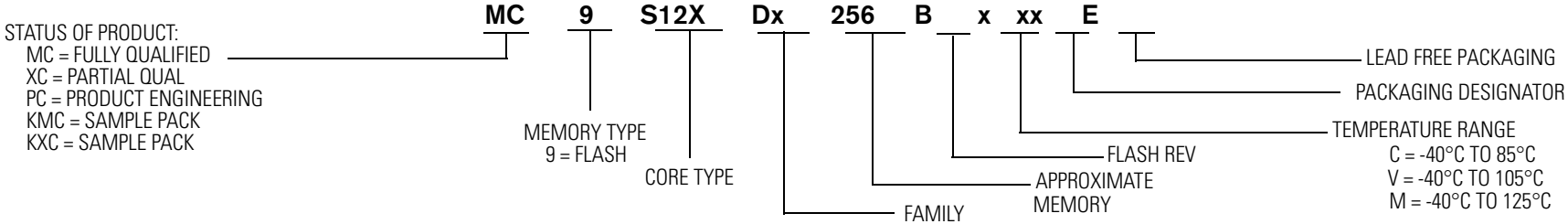
HCS12X FAMILY

HCS12X Product Table

HCS12 Dx and A Family devices offer pin-for-pin compatibility.
For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-11.

Product	ROM (KB)	RAM (KB)	Flash (KB) Serial	EEPROM (KB)	Timer	I/O	XGATE	Serial	MUX	A/D	PWM	Packaging	Oper Voltage (V)	Oper Freq (MHz)	Temp Options	Flash or OTP	Status	Additional Information	Documentation
MC9S12XDP512	n/a	32	512	4	8-CH, 16-bit ECT	91	Yes	4 SCI, 3 SPI, 1 I^2C	5 CAN	2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	112-pin LQFP	3.3 to 5.5	40.0	C, V, M	n/a	Production	—	9S12XDP512DVG1
MC9S12XDP512						119		6 SCI, 3 SPI, 2 I^2C		2 x 12-CH, 10-bit		144-pin LQFP							
MC9S12XDT512	n/a	20	512	4	8-CH, 16-bit ECT	59	Yes	2 SCI, 2 SPI, 1 I^2C	3 CAN	1 x 8-CH, 10-bit	7-CH, 8-bit or 3-CH, 16-bit	80-pin QFP	3.3 to 5.5	40.0	C, V, M	n/a	Production	—	9S12XDP512DVG1
MC9S12XDT512						91		4 SCI, 3 SPI, 1 I^2C		2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	112-pin LQFP							
MC9S12XDT512						119		6 SCI, 3 SPI, 1 I^2C		2 x 12-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	144-pin LQFP							
MC9S12XDT256	n/a	16	256	4	8-CH, 16-bit ECT	59	Yes	2 SCI, 2 SPI, 1 I^2C	3 CAN	1 x 8-CH, 10-bit	7-CH, 8-bit or 3-CH, 16-bit	80-pin QFP	3.3 to 5.5	40.0	C, V, M	n/a	Production	—	9S12XDP512DVG1
MC9S12XDT256						91		4 SCI, 3 SPI, 1 I^2C		2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	112-pin LQFP							
MC9S12XDT256						119		4 SCI, 3 SPI, 1 I^2C		2 x 12-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	144-pin LQFP							
MC9S12XD256	n/a	14	256	4	8-CH, 16-bit ECT	59	Yes	2 SCI, 2 SPI, 1 I^2C	1 CAN	1 x 8-CH, 10-bit	7-CH, 8-bit or 3-CH, 16-bit	80-pin QFP	3.3 to 5.5	40.0	C, V, M	n/a	Production	—	9S12XDP512DVG1
MC9S12XD256						91		4 SCI, 2 SPI, 1 I^2C		2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	112-pin LQFP							
MC9S12XD256						119		4 SCI, 2 SPI, 1 I^2C		2 x 12-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	144-pin LQFP							
MC9S12XA512	n/a	32	512	4	8-CH, 16-bit IC, OC, PWM	59	Yes	2 SCI, 2 SPI, 1 I^2C	n/a	1 x 8-CH, 10-bit	7-CH, 8-bit or 3-CH, 16-bit	80-pin QFP	3.3 to 5.5	40.0	C, V	n/a	Production	—	9S12XDP512DVG1
MC9S12XA512						91		4 SCI, 3 SPI, 1 I^2C		2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	112-pin LQFP							
MC9S12XA512						119		6 SCI, 3 SPI, 2 I^2C		2 x 12-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	144-pin LQFP							
MC9S12XA256	n/a	16	267	4	8-CH, 16-bit IC, OC, PWM	59	Yes	2 SCI, 2 SPI, 1 I^2C	n/a	1 x 8-CH, 10-bit	7-CH, 8-bit or 3-CH, 16-bit	80-pin QFP	3.3 to 5.5	40.0	C, V	n/a	Production	—	9S12XDP512DVG1
MC9S12XA256						91		4 SCI, 3 SPI, 1 I^2C		2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	112-pin LQFP							
MC9S12XA256						119		4 SCI, 3 SPI, 1 I^2C		2 x 12-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	144-pin LQFP						—	

Product Numbering System for HCS12X



MCF5xxx FAMILY

MCF5xxx Product Table [Note]

For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-13.

Product	Core	Dhrys 2.1 MIPS @ max MHz	Processor Cache (Bytes)	Processor Flash (Kbytes)	Processor SRAM (Bytes)	Serial Interface, UART	Timers/CS/ GPIO	DMA	DRAM Controller	10/100 Eth/USB1.1	Operating Voltage (V)	Operating Frequency (MHz)	Temp Options	Packaging	Rev	Additional Information
MCF5206	V2	17	512 I	n/a	512K	2 UARTs	2/8/8	n/a	FPM, EDO	n/a	5	16, 25, 33	C	160-pin QFP	A	www.freescale.com.
MCF5206E		50	4K I		8K			2-CH			3.3	40, 54			n/a	Enhanced pin-compatible version of 5206 with MAC, HW divide, BDM, I^2C, 5V tolerant I/O.
MCF5207		159	8K Config. I/D		16K	3 UARTs	8/8/up to 30	16-CH	DDR/SDR		1.5, 2.5, 3.3	166		144-pin LQFP 144-ball MAPBGA		32x32 EMAC, QSPI, I^2C.
MCF5208							8/8/up to 50			One 10/100				160-pin QFP 196-ball MAPBGA		
MCF5211		76	n/a	128	32K		16/0/up to 33	4-CH	None	n/a	3.3	66, 80		64-pin LQFP 81-ball MAPBGA		32x32 EMAC, QSPI, I^2C, 10-CH, 12-bit ADC.
MCP5212				256			16/0/up to 44									
MCF5213							16/0/up to 56							100-pin LQFP 81-ball MAPBGA		
MCF5214		66	2K I	n/a	64K	3 UARTs, 1 PC, 1 CAN	8 + 4 DAM/7/ up to 150	4-CH	SDRAM		3.3, 5			256-ball MAPBGA		256 KB Flash.
MCF5216																512 KB Flash.
MCF5232		142	8K Config.			3 UARTs	24/8/up to 102			1x CAN	1.5, 3.3	80, 100, 150		160-pin QFP 196-ball MAPBGA		16-CH eTPU.
MCF5233							40/8/up to 142			2x CAN		100, 150		256-ball MAPBGA		32-CH eTPU.
MCF5234							24/8/up to 142			1x 10/100, 1x CAN						16-CH eTPU.
MCF5235																16-CH eTPU, Crypto Enabled.
MCF5249		125	8K I		96K	2 UARTs, I^2C, QSPI	2/4/up to 47			n/a	1.8, 3.3	140		160-ball MAPBGA		EMAC, HW divide, BDM, 12-bit ADC, CDROM block. CD text, hard disk drive, Memory stick interfaces. Audio decoders.
MCF5249L		107					2/3/up to 34					120		144-pin LQFP		EMAC, HW divide, BDM, 12-bit ADC, CDROM block. hard disk drive interface. Audio decoders.
MCF5270		144	8K Config. I/D		64K	3 UARTs	8/8/up to 39			One 10/100	1.5, 3.3	100	B	160-pin QFP		32x32 EMAC, QSPI, I^2C.
MCF5270							8/8/up to 61							196-ball MAPBGA		
MCF5271	V2	144	8K Config I/D	n/a	64K	3 UARTs	8/8/up to 39	4-CH	SDRAM	One 10/100	1.5, 3.3	100	C	160-pin QFP	n/a	Hardware Encryption, 32x32 EMAC, QSPI, I^2C.
MCF5271	V3						8/8/up to 61						B	196-ball MAPBGA		
MCF5272		63	1K I		4K	10/100 FEC, 2 UARTs, USB, QSPI	4/8/up to 32	2-CH		MAC/ MAC+PHY	3.3	66	C			MAC, HW divide, BDM, 4 TDM GCI/IDL ports, software HDCL module, QSPI, 3 PWMs, 5 V tolerant I/O.
MCF5274L		159	16K Config I/D		64K	3 UARTs	8/8/up to 61	4-CH	DDR	One 10/100, USB 2.0 Full-Sp Device	1.5, 2.5, 3.3	166	B			32x32 EMAC, QSPI, I^2C.
MCF5274							8/8/up to 69			Two 10/100, USB 2.0 Full-Sp Device				256-ball MAPBGA		
MCF5275L							8/8/up to 61			One 10/100, USB 2.0 Full-Sp Device			C	196-ball MAPBGA		Hardware Encryption, 32x32 EMAC, QSPI, I^2C.
MCF5275							8/8/up to 69			Two 10/100, USB 2.0 Full-Sp Device				256-ball MAPBGA		
MCF5280		63	2K I			3 UARTs, I^2C, QSPI, FlexCAN	4 Timers, +4 DMA Timers, 7 Chip Sel., Up to 150 I/Os		SDRAM	MAC (FEC)/n/a	3.3, 5.0	66, 80				Enhanced CAN 2.0B controller. Flashless version of MCF5282.
MCF5281		54														Enhanced CAN 2.0B controller, 256 KB Flash. This product incorporates SuperFlash® technology licensed from SST.
MCF5282																Enhanced CAN 2.0B controller, 512 KB Flash. This product incorporates SuperFlash® technology licensed From SST.
MCF5307		75	8K I		4K	2 UARTs, I^2C	2/8/16		SDRAM, FPM, EDO	n/a	3.3	66, 90		208-pin FQFP	B	MAC, HW divide, BDM, PLL, I^2C, 5 V tolerant I/O.

Note: Extended temperature products with minimum order requirements. All temperature/speed combinations may not be valid. Consult the factory to verify.

MCF5xxx FAMILY (continued)

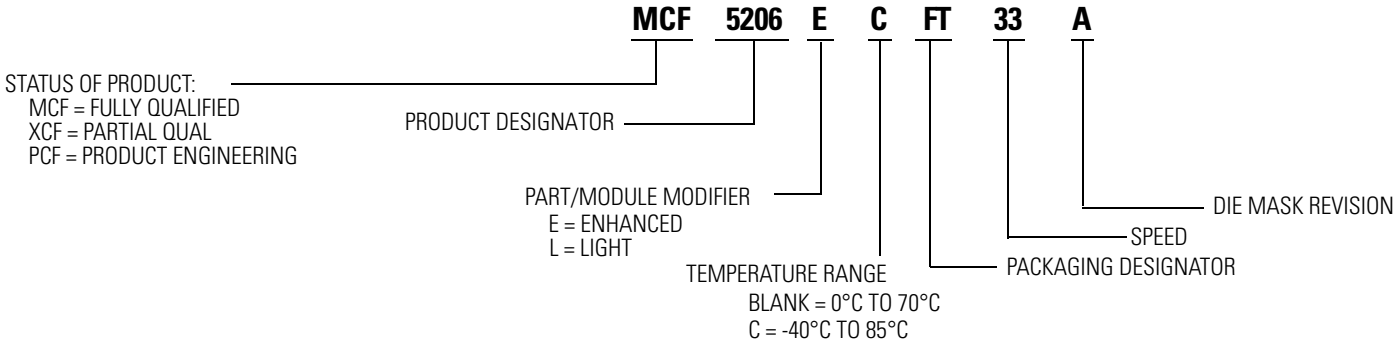
MCF5xxx Product Table [Note] (continued)

For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-13.

Product	Core	Dhrys 2.1 MIPS @ max MHz	Processor Cache (Bytes)	Processor Flash (Kbytes)	Processor SRAM (Bytes)	Serial Interface, UART	Timers/CS/ GPIO	DMA	DRAM Controller	10/100 Eth/USB1.1	Operating Voltage (V)	Operating Frequency (MHz)	Temp Options	Packaging	Rev	Additional Information
MCF5327	V3	200	16K Unified	n/a	32K	3 UARTs	8/6/up to 94	16-CH	DDR	One USB 2.0 Full-SP Host One USB 2.0 Full-SP Device	1.5, 3.3	240	-40 to +85 C	196-ball MAPBGA	n/a	32x32 EMAC, QSPI, I²C.
MCF5328										One 10/100 One USB 2.0 Full-SP Host One USB 2.0 Full-SP Device				256-ball MAPBGA		Hardware Encryption, 32x32 EMAC, QSPI, I²C.
MCF5329																
MCF5372L														196-ball MAPBGA		32x32 EMAC, QSPI, I²C.
MCF5373L																Hardware Encryption, 32x32 EMAC, QSPI, I²C.
MCF5372		150								One 10/100		180		160-ball QFP		32x32 EMAC, QSPI, I²C.
MCF5373																Hardware Encryption, 32x32 EMAC, QSPI, I²C.
MCF5407	V4	316	16K I, 8K D		4K	UART, USART, I²C	2/8/16	4-CH	SDRAM, FPM, EDO	n/a	1.8, 3.3	162, 220	C	208-pin FQFP	A	Pin-compatible 5307 performance upgrade with MAC, HW divide, BDM, PLL, I²C, 3.3 V tolerant I/O.
MCF5470	V4e	308	32K I, 32K D		32K	4 UARTs	6/6/up to 99	16-CH	DDR/SDR	Two 10/100, PCI	1.5, 2.5, 3.3	200	B	388-ball TEPBGA	n/a	www.freescale.com
MCF5471																Crypto Enabled.
MCF5472										One 10/100, USB 2.0D, PCI						www.freescale.com
MCF5473																Crypto Enabled.
MCF5474		410								Two 10/100, USB 2.0D, PCI		266				www.freescale.com
MCF5475																Crypto Enabled.
MCF5480		255								Two 10/100, Two CAN, PCI		166	C			www.freescale.com
MCF5481																Crypto Enabled.
MCF5482										One 10/100, USB 2.0D, Two CAN, PCI						www.freescale.com
MCF5483																Crypto Enabled.
MCF5484		308								Two 10/100, USB 2.0D, Two CAN, PCI		200				www.freescale.com
MCF5485																Crypto Enabled. Contact Freescale for product status.

Note: Extended temperature products with minimum order requirements. All temperature/speed combinations may not be valid. Consult the factory to verify.

Product Numbering System for MCF5xxx Family



56800 FAMILY

56F800 Series General Purpose 16-bit Fixed Point [Note]

Product	Performance	Program ROM/RAM/Flash	Data ROM/RAM/Flash	Peripherals	Packaging	Additional Information
DSP56F801FA80 DSP56F801FA80E	80 MHz 40 MIPS	n/a/1K/8K (words)	n/a/1K/2K (words)	SCI, SPI, ADC, PWM, Quad Timer	48-pin LQFP 48-pin LQFP*	MCU-friendly instruction set, OnCE for debug, on-chip relaxation oscillator, 2K Boot Flash, up to 11 GPIO.
DSP56F801FA60 DSP56F801FA60E	60 MHz 30 MIPS					MCU-friendly instruction set, OnCE for debug, on-chip relaxation oscillator, 2K Boot Flash, up to 11 GPIO.
DSP56F802TA80 DSP56F802TA80E	80 MHz 40 MIPS			SCI, ADC, PWM, Quad Timer	32-pin LQFP 32-pin LQFP*	MCU-friendly instruction set, OnCE for debug, on-chip relaxation oscillator, 2K Boot Flash, up to 4 GPIO.
DSP56F802TA60 DSP56F802TA60E	60 MHz 30 MIPS					MCU-friendly instruction set, OnCE for debug, on-chip relaxation oscillator, 2K Boot Flash, up to 4 GPIO.
DSP56F803BU80 DSP56F803BU80E	80 MHz 40 MIPS	n/a/512K/32K (words)	n/a/2K/4K (words)	CAN, SCI, SPI, ADC, PWM, Quadrature Decoder, Quad Timer	100-pin LQFP 100-pin LQFP*	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 16 GPIO.
DSP56F805FV80 DSP56F805FV80E					144-pin LQFP 144-pin LQFP*	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 32 GPIO.
DSP56F807PY80 (LQFP) DSP56F807PY80E (LQFP) DSP56F807VF80 (MAPBGA) DSP56F807VF80E (MAPBGA)		n/a/2K/60K (words)	n/a/4K/8K (words)		160-pin LQFP 160-pin LQFP* 160-ball MAPBGA 160-ball MAPBGA*	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 32 GPIO. M0Q of 40 for LQFP.
DSP56F826BU80 DSP56F826BU80E		n/a/512K/32K (words)	n/a/4K/2K (words)	SCI, SPI, SSI, TOD, Quad Timer	100-pin LQFP 100-pin LQFP*	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 48 GPIO.
DSP56F827FG80 DSP56F827FG80E		n/a/1K/64K (words)	n/a/4K/4K (words)	SCI, SPI, SSI, TOD, ADC, Quad Timer	128-pin LQFP 128-pin LQFP*	MCU-friendly instruction set, OnCE for debug, external memory expansion available, up to 52 GPIO.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

56800E FAMILY

56850 Series General Purpose 16-bit Fixed Point [Note]

Product	Performance	Boot ROM/ Program RAM Data RAM	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
DSP56852VF120 DSP56852VFE	120 MHz 120 MIPS	1K/6K/4K (words)	Up to 2M program and 6M of data	SCI, SPI, ISSI, EMI, COP, Quad Timer	81-ball MAPBGA 81-ball MAPBGA*	MCU-friendly instruction set, Enhanced OnCE for debug, up to four programmable chip select signals, and up to 11 GPIO.
DSP56853FG120 DSP56853FGE		1K/12K/4K (words)	Up to 2M program and 8M of data	2 SCI, SPI, ESSI, HI, EMI, COP, DMA, TOD, Quad Timer	128-pin LQFP 128-pin LQFP*	MCU-friendly instruction set, Enhanced OnCE for debug, six channels of DMA, up to four programmable chip select signals, and up to 41 GPIO.
DSP56854FG120 DSP56854FGE		1K/16K/16K (words)				MCU-friendly instruction set, Enhanced OnCE for debug, six channels of DMA, up to four programmable chip select signals, and up to 41 GPIO.
DSP56855BU120 DSP56855BUE		1K/24K/24K (words)		2 SCI, ESSI, EMI, COP, DMA, TOD, Quad Timer	100-pin LQFP 100-pin LQFP*	MCU-friendly instruction set, Enhanced OnCE for debug, six channels of DMA, on- chip relaxation oscillator, up to four programmable chip select signals, and up to 18 GPIO.
DSP56857BU120 DSP56857BUE		1K/40K/24K (words)	n/a	2 SCI, SPI, 2 ESSI, HI, COP, DMA, TOD, Quad Timer		MCU-friendly instruction set, Enhanced OnCE for debug, six channels of DMA, and up to 47 GPIO.
DSP56858FV120 (LQFP) DSP56858FVE (LQFP) DSP56858VF120 (MAPBGA)			Up to 2M program and 8M of data	2 SCI, SPI, 2 ESSI, HI, EMI, COP, DMA, TOD, Quad Timer	144-pin LQFP 144-pin LQFP* 144-ball MAPBGA	MCU-friendly instruction set, Enhanced OnCE for debug, six channels of DMA, up to four programmable chip select signals, and up to 47 GPIO.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

56800E FAMILY (continued)

56F8300 Series General Purpose 16-bit Fixed Point [Note]

Product	Performance	Flash/RAM (KB)	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
F832x Family						
MC56F8322MFA60 MC56F8322MFAE	60 MHz 60 MIPS	48/12	n/a	2 SPI, 2 SCI, 2 ADC, PWM, COP, PLL, Decoder, 2 Quad Timers, FlexCAN	48-pin LQFP 48-pin LQFP*	Extended (-40°C to 125°C) MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 21 GPIOs.
MC56F8322VFA60 MC56F8322VFAE					48-pin LQFP 48-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor and up to 21 GPIOs.
MC56F8323MFB60 MC56F8323MFBE					64-pin LQFP 64-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 27 GPIOs.
MC56F8323VFB60 MC56F8323VFBE					64-pin LQFP 64-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 27 GPIOs.
F833x Family						
MC56F8335VFG60	60 MHz 60 MIPS	80/12	n/a	2 SPI, 2 SCI, 4ADC, PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8335MFGE						Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
F834x Family						
MC56F8345MFG60 MC56F8345MFGE	60 MHz 60 MIPS	144/12	n/a	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP 128-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs,.
MC56F8345VFG60 MC56F8345VFGE					128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8346MFV60 MC56F8346MFVE			Yes		144-pin LQFP 144-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8346VFV60 MC56F8346VFVE					144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8347MPY60 MC56F8347MPYE					160-pin LQFP 160-pin LQFP* 160-pin MAPBGA*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8347VPY60 (LQFP) MC56F8347VPYE (LQFP) MC56F8347VVFE (MAPBGA)						Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
F835x Family						
MC56F8355MFG60 MC56F8355MFGE	60 MHz 60 MIPS	280/20	Yes	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP 128-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8355VFG60 MC56F8355VFGE			n/a		128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8356MFV60 MC56F8356MFVE			Yes		144-pin LQFP 144-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8356VFV60 MC56F8356VFVE					144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8357MPY60 MC56F8357MPYE			Yes		160-pin LQFP 160-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8357VPY60 (LQFP) MC56F8357VPYE (LQFP) MC56F8357VVFE (MAPBGA)					160-pin LQFP 160-pin LQFP* 160-pin MAPBGA*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

56800E FAMILY (continued)

56F8300 Series General Purpose 16-bit Fixed Point [Note] (continued)

Product	Performance	Flash/RAM (KB)	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
F836x Family						
MC56F8365VFG60 MC56F8365VFGE	60 MHz 60 MIPS	576/36	n/a	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, 2 FlexCAN	128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8365MFG60 MC56F8365MFGE						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8366VFV60 MC56F8366VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8366MFV60 MC56F8366MFVE						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8367VPY60 (LQFP) MC56F8367VPYE (LQFP) MC56F8367VVFE (MAPBGA)					160-pin LQFP 160-pin LQFP* 160-ball MAPBGA*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8367MPY60 MC56F8367MPYE (LQFP)						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

56F8000 Series General Purpose 16-bit Fixed Point [Note]

Product	Performance	Flash/RAM (KB)	Peripherals	Packaging	Additional Information
MC56F8013VFAE	32 MHz 32 MIPS	16/4	6-CH PWM, Quad Timer, SPI, SCI with LIN slave, PLL, dual 3-CH, 12-bit ADCs, COP, POR, I^2C, On-Chip oscillator	32-pin LQFP	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 26 GPIOs.
MC56F8014VFAE			5-CH PWM, Quad Timer, SPI, SCI with LIN slave, PLL, dual 4-CH, 12-bit ADCs, COP, POR, I^2C, On-Chip oscillator		Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 26 GPIOs.

Applications	Development Tools	Benefits
▪ Smart sensors ▪ Industrial motor control ▪ Dimming lamp ballast ▪ Switched-mode power supply ▪ Soft-switching PFC ▪ Appliance motor control ▪ DC-DC power supplies	Refer to Development Tools beginning on page SG1004-23.	Because of its low cost, configuration flexibility, and compact program code, the 56F8013 is well suited for many applications. The 56800E core is based on a Harvard architecture consisting of three execution units operating in parallel, allowing as many as six operations per instruction cycle. The microprocessor-style programming model and optimized instruction set allow straightforward generation of efficient, compact code for both DSP and MCU applications.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.

56800E FAMILY (continued)

56F8100 Series General Purpose 16-Bit Fixed Point [Note]

Product	Performance	Flash/RAM (KB)	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
MC56F8122VFA MC56F8122VFAE	40 MHz 40 MIPS	40/8	n/a	2 SPI, 2 SCI, 2 ADC, COP, PLL, Quad Timer	48-pin LQFP 48-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, and up to 21 GPIOs.
MC56F8123VFB MC56F8123VFBE					64-pin LQFP 64-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, and up to 27 GPIOs.
MC56F8135VFGE		72/8		2 SPI, 2 SCI, 4ADC, PWM, COP, PLL, Decoder, 2 Quad Timers	128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, and up to 49 GPIOs.
MC56F8145VFG MC56F8145VFGE		136/8			128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 49 GPIOs.
MC56F8146VFV MC56F8146VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 62 GPIOs.
MC56F8147VPY MC56F8147VPYE					160-pin LQFP 160-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 76 GPIOs.
MC56F8155VFG MC56F8155VFGE		272/16	n/a		128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 49 GPIOs.
MC56F8156VFV MC56F8156VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 62 GPIOs.
MC56F8157VPY MC56F8157VPYE					160-pin LQFP 160-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 76 GPIOs.
MC56F8165VFG MC56F8165VFGE		544/32	n/a		128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 49 GPIOs.
MC56F8166VFV MC56F8166VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 62 GPIOs.
MC56F8167VPY MC56F8167VPYE					160-pin LQFP 160-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 76 GPIOs.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

68HC16 FAMILY

68HC16 Product Table

Product	ROM (KB)	RAM (KB)	Flash (KB)	Product Integration	Timer	Serial	Analog	Operating Voltage (V)	Operating Frequency (MHz)	Temp Options	Packaging	Flash	Status	Additional Information	Documentation
MC68HC16Z1	0	1	0	SIM	GPT	SCI, queued SPI	8-CH 10-bit	5.0 2.7 to 3.6	16, 20, 25	C, V, M	132-pin PQFP 144-pin LQFP	n/a	Available	2.7 V to 3.6 V, 16 MHz version MC68CK16Z1 with 32kHz crystal in 144-pin LQFP package only; MC68CM16Z1 with 4MHz crystal in 144-pin LQFP package only	MC68HC16ZUM
MC68HC16Z3	8	4						5.0	16, 25	C, V				www.freescale.com	

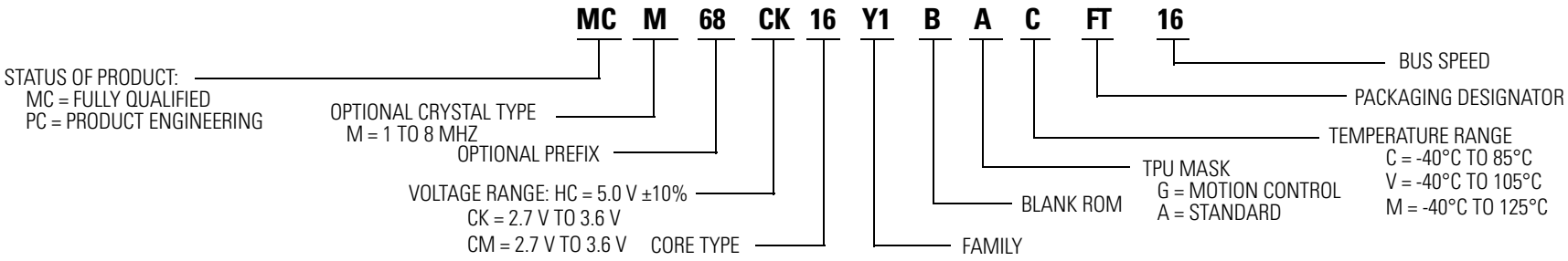
Note: All package, speed, and temperature combinations may not be valid. Consult factory to verify.

68HC16 Reference Manuals

CPU16RM, HC16 CPU Reference Manual
SIMRM, System Integration Module Reference Manual
TPURM, Timer Processor Unit Reference Manual
GPTRM, General-Purpose Timer Reference Manual
QSMRM, Queued Serial Module Reference Manual
ADCRM, Analog-to-Digital Converter Reference Manual
CTMRM, Configurable Timer Module Reference Manual
MCCIRM, Multi-Channel Communication Interface Reference Manual
SCIMRM, Single-Chip Integration Module Reference Manual

68HC16 FAMILY (continued)

Product Numbering System for 68HC16



683*xx* FAMILY

683xx Product Table

Product	ROM (KB)	RAM (KB)	Flash (KB)	Device Integration	Timer	Serial	A/D	Operating Voltage (V)	Operating Frequency (MHz)	Temp Options	Packaging	Status	Additional Information	Documentation
MC68331	0	0	0	SIM	GPT	SCI, queued SPI	n/a	5.0	16, 20, 25	C, V, M	132-pin PQFP 144-pin LQFP	Available	2.7 V to 3.6 V, 16 MHz version (MC68CK331). MC68CK331 is on end of life	MC68331UM MC68CK331EC16
MC68332		2			TPU								3.0 V to 3.6 V, 16 MHz version (MC68LK332)	MC68332UM MC68LK332EC16
MC68336		4 + 3.5			TPU CTM4		Queued 16-CH 10-bit		20, 25		160-pin QFP		www.freescale.com	MC68336/376PP MC68336/376UM
MC68376	8					CAN, SCI, queued SPI								

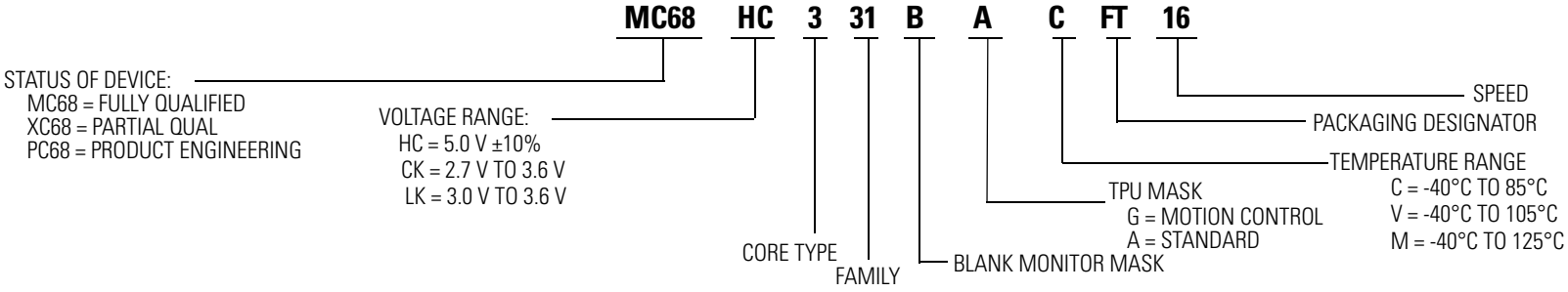
Note: All package, speed, and temperature combinations may not be valid. Consult factory to verify.

683xx Reference Manuals

CPU32RM, CPU32 Reference Manual
SIMRM, System Integration Module Reference Manual
TPURM, Timer Processor Unit Reference Manual
GPTRM, General-Purpose Timer Reference Manual
QSMRM, Queued Serial Module Reference Manual
ADCRM, Analog-to-Digital Converter Reference Manual
CTMRM, Configurable Timer Module Reference Manual

683*xx* FAMILY (continued)

Product Numbering System for 683xx Family

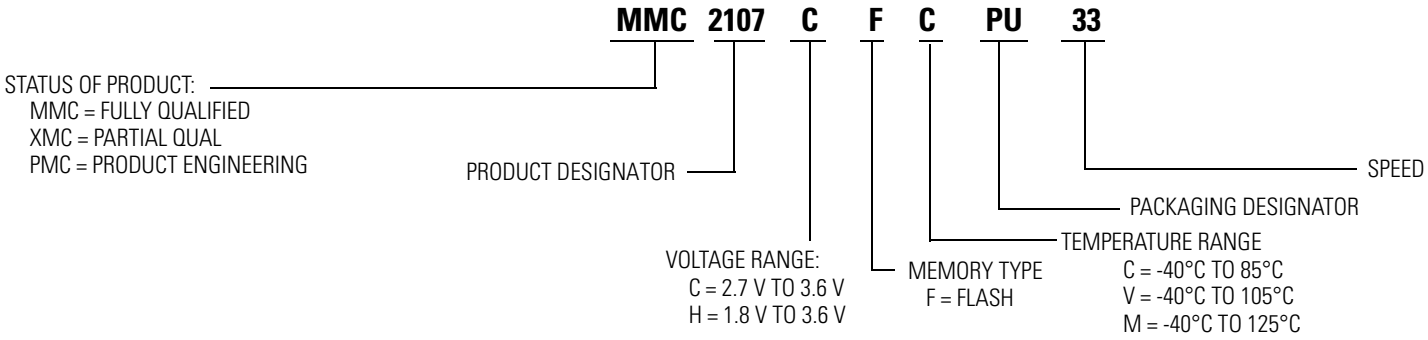


MMC2100 FAMILY

MMC2100 Product Table

Product	ROM (KB)	RAM (KB)	Flash (KB)	Timer	PWM	Serial	A/D	Operating Voltage (V)	Operating Frequency (MHz)	Temp Options	Packaging	Status	Additional Information	Documentation
MMC2001	256	32	0	Time-of-day, periodic interrupt timer, COP	6-CH 10-bit	Dual UART Interval SPI	n/a	1.8 to 3.6	33	C	144-pin LQFP	Samples Available	ROM includes debugger, peripheral product drivers, and a monitor; external bus interface with 22 address/16 data and 4 chip selects, OnCE debug module, KBI (16 pins). Sample part number: KMMC2001HCPV33B	MMC2001RM MCORERM
MMC2107	0	8	128	Dual 4-channel 16-bit capture/ compare, PWM capability, watchdog	See Timer	Dual SCI, SPI	Queued 8-CH 10-bit	2.7 to 3.6			100-pin LQFP 144-pin LQFP	Available	PLL clock, 32 source interrupt controller, periodic interrupt timer, external bus interface with 23 address, 16/32 data and 4 chip select lines, OnCE debug module.	MMC2107 MCORERM
MMC2113											100-pin LQFP 144-pin LQFP 196-ball MAPBGA		PLL clock, 32 source interrupt controller, periodic interrupt timer, external bus interface with 23 address, 16/32 data and 4 chip select lines, OnCE debug module, Offers Flash Security. This product incorporates SuperFlash® technology licensed From SST.	MMC2114
MMC2114		32	256											

Product Numbering System for MMC2100



MPC500 FAMILY

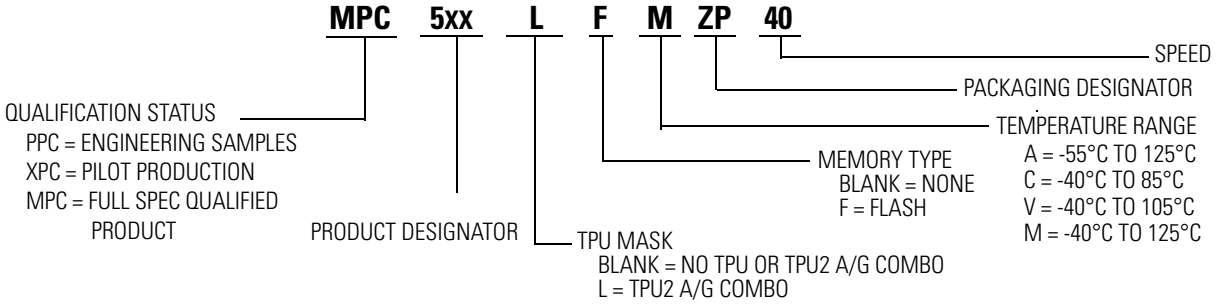
MPC500 Product Table[Note]

For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-20.

Product	ROM (KB)	RAM (KB)	Flash (KB)	Product Integration	Timer	Serial	MUX	A/D	PWM	Operating Voltage	Operating Frequency (MHz)	Temp Options	Packaging	Status	Additional Information	Documentation
MPC533	0	32	512	USIU	22-channel timer system; MIOS14	QSMCM (2 SCI + QSPI) +1 TouCAN	1 x TouCAN	1 QADC (10-bit A/D with 64 result registers) 32 channels on chip	12 x PWM	2.6, 5.0	40	C	388-ball PBGA	Available	www.freescale.com	MPC533UM MPC533PB
MPC534															Offers code compression	
MPC535		40	1M					1 QADC (10-bit A/D with 64 result registers) 40 channels on chip							www.freescale.com	MPC535UM MPC535PB
MPC536															Offers code compression	
MPC555		26 + 6 for TPU	448		50-channel timer system; 2 TPU3 + MIOS1	QSMCM (2 SCI + QSPI) + 2 TouCAN	2 x TouCAN	2 QADC (10-bit A/D with 64 result register) 32 channels on chip	8 x PWM	3.3 Vdc for core, 5.0 Vdc for Flash		A, C, M	272-ball PBGA		www.freescale.com	MPC555UM TPURM RCPURM
MPC561		32 + 8 for TPU + 2 for DECRAM	0		54-channel timer system; 2 TPU3 + MIOS14	QSMCM (2 SCI + 1 QSPI) + 3 TouCAN	3 x TouCAN		12 x PWM	2.6 Vdc for core, 5.0 Vdc for A/D and I/O	40, 56, 66	C, M	388-ball PBGA			MPC561RM TPURM RCPURM
MPC562															Offers code compression	
MPC563			512												www.freescale.com	MPC563RM TPURM RCPURM
MPC564															Offers code compression	
MPC565		36 + 10 for TPU + 4 for DECRAM	1M		70-channel timer system; 3 TPU3 + MIOS14	QSMCM x 2 (4 SCI + 2 QSPI) + 3 TouCAN	3 x TouCAN 1 x J1850	2 QADC (10-bit A/D with64 result registers) 40 channels on chip			40 or 56				www.freescale.com	MPC566UM TPURM RCPURM
MPC566												A, C, M			Offers code compression	

Note: Extended temperature products with minimum order requirements. All package/speed/temperature combinations may not be valid - consult factory to verify.

Product Numbering System for MPC500



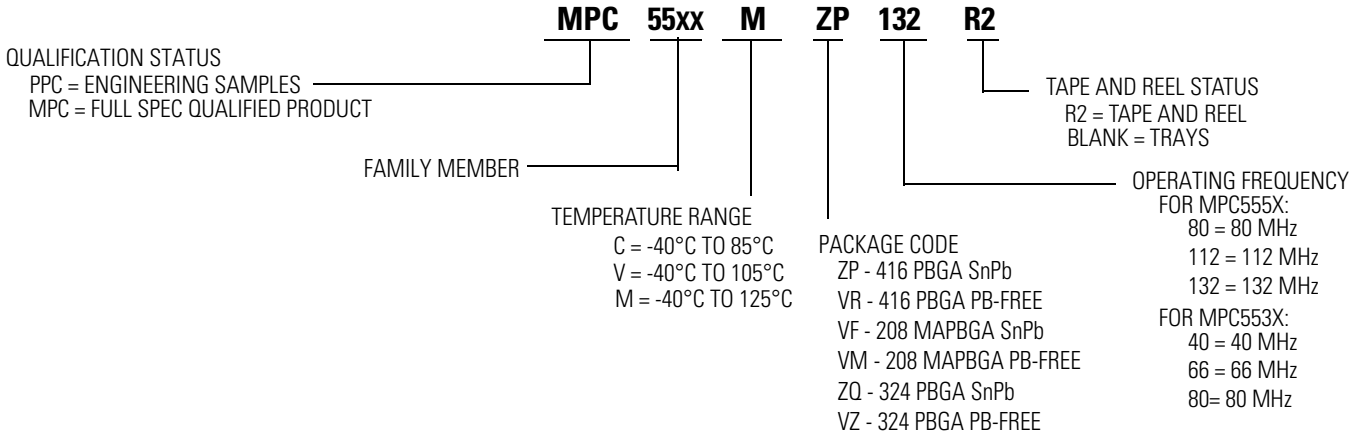
MPC5500 FAMILY

MPC5500 Family Comparison

Device	PowerPC Core	Variable Length Instruction Support	Cache	Memory Mngt Unit	Crossbar	Core Nexus	SRAM	FLASH Main Array	External Bus (EBI) Data Bus	External Bus (EBI) Address Bus	DMA	DMA Nexus	Serial	Controller Area Network (CAN)	SPI	eMIOS	eTPU	Code Memory	Parameter RAM	Nexus Class	Interrupt Controller	Analog to Digital Converter (eQADC)	Fast Ethernet Controller	PLL	VRC
MPC5534	e200z3	Yes	None	16 entry	4x5	Class 3 + (NZ3C3)	64k	1M[1]	16-bit	24	32-CH	None	2	2 (64 buf)	3	24-CH	32-CH	12K	2.5K	3	210-CH	40-CH	No	FM	Yes
MPC5553	e200z6	No	8K Unified	32 entry	4x4	Class 3 + (NZ3C3)	64k	1.5M[2]	16-bit	24	32-CH	Class 3	2	2 (64 buf)	2	24-CH	32-CH	12K	2.5K	3	210-CH	40-CH	Yes[3]	FM	Yes
MPC5554	e200z6	No	32K Unified	32 entry	4x5	Class 3 + (NZ3C3)	64k	2M[2]	32-bit	24	64-CH	Class 3	2	3 (64 buf)	3	24-CH	64-CH	16K	3K	3	300-CH	40-CH	No	FM	Yes

Notes:
1. 16-Byte flash page size for programming
2. 32-Byte flash page size for programming.
3. The FEC signals are shared with Data Bus pins DATA[16:31].

Product Numbering System for the MPC5500 Family



CONTROLLER AREA NETWORK MICROCONTROLLERS

68HC08 Family CAN MCUs

Product	ROM (KB)	RAM (KB)	Flash or OTP (KB)	EEPROM (Bytes)	Timer	I/O	Serial	A/D	PWM	COP	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp[1]	Packaging	OTP or Flash Equiv.	Status	Additional Information	Documentation
XC68HC08AZ32	32	1	n/a	512	4-CH + 2-CH, 16-bit IC, OC, or PWM	40/50	SCI SPI CAN	8-CH or 15-CH, 8-bit	See Timer	Y	5.0	8.4	C, V, M	64-pin QFP (FU) 52-pin PLCC (FN)	908AZ60A	Available	CAN 2.0A and 2.0B	MC68HC08AZ32/D
MC908AZ60A	n/a	2	60 Flash	1K	6-CH + 2-CH, 16-bit IC, OC, or PWM	50		15-CH, 8-bit						64-pin QFP (FU)	n/a		MC908AZ60A is pin-for-pin compatible replacement for MC68HC908AZ60. CAN 2.0A and 2.0B	MC68HC908AZ60A/D
MC68HC08AZ60	60		n/a			48									908AZ60		CAN 2.0A and 2.0B	MC68HC08AZ60/D
MC68HC908GZ8	n/a	1	8 Flash	n/a	Dual 2-CH, 16-bit IC, OC, or PWM	Up to 37	ESCI SPI	8-CH, 10-bit			3.0, 5.0	8.0	n/a	32-pin QFP (FJ) 48-pin LQFP (FA)	n/a		MSCAN 2.0	MC68HC908GZ16/D
MC68HC908GZ16			16 Flash															MC68HC908GZ16/D
MC68HC908GZ32		1.5	32 Flash		2-CH + 6-CH, 16-bit IC, OC, or PWM	Up to 50	1 SPI 1 ESCI	24-CH, 10-bit					C, V, M	32-pin LQFP (FJ) 48-pin LQFP (FA) 64-pin QFP (FU)			1 to 8 MHz high frequency oscillator	MC68HC908GZ32/D
MC68HC908GZ48			48 Flash															MC68HC908GZ48/D
MC68HC908GZ60		2	60 Flash		2-CH + 6-CH, 16-bit IC, OC, or PWM													MC68HC908GZ60/D

[1] C = -40°C to 85°C, M = -40°C to 125°C, and V = 85°C to 105°C.

CONTROLLER AREA NETWORK MICROCONTROLLERS (continued)

68HC12 Family CAN MCUs

Product	ROM (Bytes)	RAM (KB)	Flash (KB)	EEPROM (Bytes)	Timer[1]	I/O	Serial	A/D	PWM	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp[2]	Packaging	Status	Additional Information	Documentation
XC912BC32	n/a	1	32	768	8-CH, 16-bit IC or OC RTI, pulse accumulator	Up to 63	SCI, SPI CAN	8-CH, 10-bit	4-CH, 8-bit or 2-CH, 16-bit	4.5 to 5.5	8.0	C, V, M	80-pin QFP (FU)	Available	MSCAN CAN 2.0B, BDM Sample pack part number: KXC912BC32CFU8	MC68HC912B
MC912D60A		2	60	1K		Up to 66 I/O and 18 i	Dual SCI SPI, CAN			5.0			80-pin QFP (FU) 112-pin LQFP (PV)		Replaces the XC68HC912D60 with 5 V Flash voltage and a different programming algorithm	MC68HC912D60
MC912DG128A		8	128	2K				8-CH or16-CH, 10-bit					112-pin LQFP (PV)		Replaces the XC912DG128 with 5 V Flash voltage and a different programming algorithm	MC68HC912DG128

[1] All 68HC12 MCUs incorporate a COP watchdog timer.
[2] C = -40°C to 85°C, M = -40°C to 125°C, and V = -40°C to 105°C.

HCS12 Family CAN MCUs

HCS12 Dx and A Family devices offer pin-for-pin compatibility.
For complete part number information and temperature definitions, refer to 68HC12 Product Table Note on page SG1006-10.

Product	ROM (Bytes)	RAM (KB)	Flash or OTP (KB)	EEPROM (KB)	Timer	I/O	Serial	MUX	A/D	PWM	Operating Voltage (V)	Operating Frequency (MHz)	Temp[1]	Packaging	OTP or Flash Equiv.	Status	Additional Information	Documentation
MC9S12C128	n/a	4	128 Flash	0	8-CH, 16-Bit IC, OC or PWM	Up to 60	SCI SPI	CAN	8-CH, 10-Bit	See Timer	3.0-5.0	25	C, V, M	48-pin QFP (FA) 52-pin QFP (FB) 80-pin QFP (FU)	n/a	Available	www.freescale.com	9S12C128DGV1
MC9S12C96			96 Flash															
MC9S12C64			64 Flash															
MC9S12C32		2	32 Flash	n/a							3.15, 5.5	16, 25	C, M					9S12C32D6V1/D CPU12RM/AD
MC9S12D32				1	8-CH, 16-bit ECT	Up to 59	2 SCI 1 SPI			7-CH, 8-bit or 3-CH, 16-bit	5.0	25.0	C, V, M	80-pin QFP (FU)				MC9S12DP256/D CPU12RM/AD
MC9S12DB128B		8	128 Flash	2	8-CH, 16-bit IC, OC, PA	Up to 91	2 SCI 2 SPI	1 CAN Byteflight	2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit				80-pin QFP (FU) 112-pin LQFP (PV)				9S12DT128BDGV1/D CPU12RM/AD
MC9S12DG128B						Up to 91	2 SCI 2 SPI IIC	2 CAN							n/a	Samples Available	The 80 QFP differs from the 112 LQFP in that it offers only up to 59 I/O, has 1 x 8-CH A/D, and has 7-CH PWM	
MC9S12DJ128B								2 CAN and 1 x J1850									The 80 QFP differs from the 112 LQFP in that it offers only up to 59 I/O, has 1 x 8-CH A/D, and has 7-CH PWM	
MC9S12DP512		14	512 Flash	4	8-CH, 16-bit ECT	Up to 91	2 SCI 3 SPI I^2C	5 CAN	2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit		25, 33		112-pin LQFP (PV)		Available	www.freescale.com	MC9S12DP512/D CPU12RM/AD
MC9S12DT128B		8	128 Flash	2	8-CH, 16-bit IC, OC, PA	Up to 91	2 SCI 2 SPI IIC	3 CAN	2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit		25.0				Samples Available		9S12DT128BDGV1/D CPU12RM/AD
MC9S12DG256B	n/a	12	256 Flash	4	8-CH, 16-bit IC, OC, PA	Up to 91	2 SCI 3 SPI IIC	2 CAN	2 x 8-CH, 10-bit	8-CH, 8-bit or 4-CH, 16-bit	5.0	25.0	C, V, M	112-pin LQFP (PV)	n/a	Samples Available	www.freescale.com	9S12DP256BDGV2/D CPU12RM/AD
MC9S12DJ256B								2 CAN and 1 x J1850						80-pin QFP (FU) 112-pin LQFP (PV)			The 80 QFP differs from the 112 LQFP in that it offers only up to 59 I/O, has 1 x 8-CH A/D, and has 7-CH PWM	
MC9S12DP256B								5 CAN						112-pin LQFP (PV)			www.freescale.com	9S12DP256BDGV2/D CPU12RM/AD
MC9S12DT256B								3 CAN										
MC9S12H128B			128 Flash			99 plus 18 inputs	SCI SPI IIC	2 CAN 2.0A/2.0B	16-CH, 10-bit	6-CH, 8-bit or 3-CH, 16-bit		16.0	V					9S12H256BDGV1/D CPU12RM/AD
MC9S12H256B			256 Flash										C, V, M	112-pin LQFP (PV) 144-pin LQFP (FV)				

[1] M = -40°C to 125°C, C= -40°C to 85°C, V = -40°C to 105°C.

CONTROLLER AREA NETWORK MICROCONTROLLERS (continued)

683xxx Family CAN MCUs

Product	ROM (KB)	RAM (KB)	Flash (Bytes)	Product Integration	Timer	Serial	A/D	Operating Voltage (V)	Operating Frequency (MHz)	Temp[1]	Packaging	Status	Additional Information	Documentation
MC68376	8	4 + 3.5	0	SIM	TPU CTM4	TouCAN, SCI, queued SPI	Queued 16-CH 10-bit	5.0	20, 25	C, V, M	160-pin QFP	Available	www.freescale.com	MC68336/376PP MC68336/376UM

[1] M = -40°C to 125°C, C= -40°C to 85°C, V = -40°C to 105°C.

MPC500 Family CAN MCUs

Product	ROM (Bytes)	RAM (KB)	Flash (Bytes)	Product Integration	Timer	Serial	MUX	A/D	PWM	Operating Voltage (V)	Operating Frequency (MHz)	Temp[1]	Packaging	Status	Additional Information	Documentation
MPC533	0	32	512K	USIU	22-channel timer system; MIOS14	QSMCM (2SCI + QSPI) +1 TouCAN	1 x TouCAN	1 QADC (10-bit A/D with 64 result registers) 32 channels on chip	12 x PWM	2.6, 5.0	40	C	388-ball PBGA	Available	www.freescale.com	MPC533UM MPC533PB
MPC534															Offers code compression	
MPC535		40	1M					1 QADC (10-bit A/D with 64 result registers) 40 channels on chip							www.freescale.com	
MPC536															Offers code compression	
MPC555		26 + 6 for TPU	448K		50-channel timer system; 2 TPU3 + MIOS1	QSMCM (2 SCI + QSPI) + 2 TouCAN	2 x TouCAN	2 QADC (10-bit A/D with 64 result registers) 32 channels on chip	8 x PWM	3.3 Vdc for core, 5.0 Vdc for Flash		A, C, M	272-ball PBGA		www.freescale.com	MPC555UM TPURM RCPURM
MPC561		32 + 8 for TPU + 2 for DECRAM	0		54-channel timer system; 2 TPU3 + MIOS14	QSMCM (2 SCI + 1 QSPI) + 3 TouCAN	3 x TouCAN		12 x PWM	2.6 Vdc for core, 5.0 Vdc for A/D and I/O	40, 56, 66	C, M	388-ball PBGA			MPC561RM TPURM RCPURM
MPC562															Offers code compression	
MPC563			512K												www.freescale.com	MPC563RM TPURM RCPURM
MPC564															Offers code compression	
MPC565		36 + 10 for TPU + 4 for DECRAM	1M		70-channel timer system; 3 TPU3 + MIOS14	QSMCM x 2 (4 SCI + 2 QSPI) + 3 TouCAN	3 x TouCAN 1 x J1850	2 QADC (10-bit A/D with 64 result registers) 40 channels on chip			40 or 56	A, C, M			www.freescale.com	MPC566UM TPURM RCPURM
MPC566															Offers code compression	

[1] A = -55°C to 125°C, C = -40°C to 85°C, and M = -40°C to 125°C.

56800 Family CAN MCUs

Product	Performance	Program ROM/RAM/ Flash	Data ROM/ RAM/ Flash	Peripherals	Packaging	Additional Information
F80X Family						
DSP56F803BU80	80 MHz	n/a/512/32K	n/a/2K/4K	CAN, SCI, SPI, ADC, PWM, Quadrature Decoder, Quad Timer	100-pin LQFP	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 16 GPIO. Order two-unit sample pack as SPAK56F803BU80. S, MOQ of 90.
DSP56F805FV80					144-pin LQFP	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 32 GPIO. SPAK56F805FV80. S, MOQ of 60.
DSP56F807PY80 (LQFP) DSP56F807VF80 (MAPBGA)		n/a/2K/60K	n/a/2K/8K		160-pin LQFP 160-ball MAPBGA	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 32 GPIO. MOQ of 60 for LQFP. SPAK56F807PY80 or SPAK56F807VF80. MOQ of 24 for MAPBGA.

LOCAL AREA NETWORK MICROCONTROLLERS (continued)

56F8300 Family CAN MCUs [Note]

Product	Performance	Flash/RAM (KB)	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
F832x Family						
MC56F8322MFA60 MC56F8322MFAE	60 MHz 60 MIPS	48/12	n/a	2 SPI, 2 SCI, 2 ADC, PWM, COP, PLL, Decoder, 2 Quad Timers, FlexCAN	48-pin LQFP 48-pin LQFP*	Extended (-40°C to 125°C) MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 21 GPIOs.
MC56F8322VFA60 MC56F8322VFAE					48-pin LQFP 48-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor and up to 21 GPIOs.
MC56F8323MFB60 MC56F8323MFBE					64-pin LQFP 64-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 27 GPIOs.
MC56F8323VFB60 MC56F8323VFBE					64-pin LQFP 64-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 27 GPIOs.
F833x Family						
MC56F8335VFG60	60 MHz 60 MIPS	80/12	n/a	2 SPI, 2 SCI, 4ADC, PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8335MFGE						Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
F834x Family						
MC56F8345MFG60 MC56F8345MFGE	60 MHz 60 MIPS	144/12	n/a	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP 128-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8345VFG60 MC56F8345VFGE					128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8346MFV60 MC56F8346MFVE			Yes		144-pin LQFP 144-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8346VFV60 MC56F8346VFVE					144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8347MPY60 MC56F8347MPYE					160-pin LQFP 160-pin LQFP* 160-pin MAPBGA*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8347VPY60 (LQFP) MC56F8347VPYE (LQFP) MC56F8347VVFE (MAPBGA)						Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
F835x Family						
MC56F8355MFG60 MC56F8355MFGE	60 MHz 60 MIPS	280/20	Yes	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP 128-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8355VFG60 MC56F8355VFGE			n/a		128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8356MFV60 MC56F8356MFVE			Yes		144-pin LQFP 144-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8356VFV60 MC56F8356VFVE					144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8357MPY60 MC56F8357MPYE			Yes		160-pin LQFP 160-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8357VPY60 (LQFP) MC56F8357VPYE (LQFP) MC56F8357VVFE (MAPBGA)					160-pin LQFP 160-pin LQFP* 160-pin MAPBGA*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

LOCAL AREA NETWORK MICROCONTROLLERS (continued)

56F8300 Family CAN MCUs [Note] (continued)

Product	Performance	Flash/RAM (KB)	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
F836x Family						
MC56F8365VFG60 MC56F8365VFGE	60 MHz 60 MIPS	576/36	n/a	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, 2 FlexCAN	128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8365MFG60 MC56F8365MFGE						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8366VFV60 MC56F8366VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8366MFV60 MC56F8366MFVE						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8367VPY60 (LQFP) MC56F8367VPYE (LQFP) MC56F8367VVFE (MAPBGA)					160-pin LQFP 160-pin LQFP* 160-ball MAPBGA*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8367MPY60 MC56F8367MPYE (LQFP)						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

LIN Slave MCUs

Product	ROM (KB)	RAM (Bytes)	Flash or OTP (KB)	EEPROM (Bytes)	Timer	I/O	Serial	A/D	PWM	COP	Operating Voltage (V)	Max Bus Freq (MHz)	Temp[1]	Packaging	OTP or Flash Equiv.	Status	Additional Information	Documentation
MC68HC08AB16A	16	512	n/a	512	4-CH + 4-CH, 16-bit IC, OC, or PWM	51	SCI SPI	8-CH, 8-bit	See Timer	Y	5.0	8.0	C, M	64-pin QFP (FU)	908AB32	Available	Programmable interrupt timer module.	MC68HC08AB16A/D
MC68HC908AB32	n/a	1K	32 Flash										C, V, M		n/a		Programmable interrupt timer module. Sample pack part numbers: KMC908AB32CFU/MFU/VFU	MC68HC908AB32/D
MC68HC908EY16		512	16 Flash	n/a	2-CH + 2-CH, 16-bit I/C, O/C, or PWM	24	ESCI SPI	8-CH, 10-bit			3.0, 5.0	8.0 Max		32-pin QFP (FA)		Production	First product of the MC68HC908EYx Family for LIN and general market.	MC68HC908EY16/D
MC68HC908JL3		128	4 Flash		2-CH, 16-bit IC, OC, or PWM	23	n/a	12-CH, 8-bit				8.0	C, M	28-pin DIP (P) 28-pin SOIC (DW) 48-pin LQFP (FA)		Available	RC oscillator option, LVR with selectable trip points, 6-pin LED drive. Sample pack part numbers: KMC908JL3CP, KMC908JL3CDW, KMCR908JL3CP, KMCR908JL3CDW	MC68HC908JL3/H
MC68HC08JL3	4		n/a		2-CH, 16-Bit IC, OC or PWM										908JL3		RC oscillator option: 68HRC08JL3, LVR with selectable trip points, 6-pin LED drive.	
MC908QL4	n/a		4			13	SLIC (LIN)	6-CH, 10-Bit					C, V, M	16-pin TSSOP (DT) 16-pin SOIC (DW)	n/a		SLIC (Slave-LIN Interface Controller) featuring Autobauding/Auto Synchronization	MC68HC908QL4
MC908QL3																		
MC908QL2			2															

[1] C = -40°C to 85°C, M = -40°C to 125°C, and V = -40°C to 105°C.

56F8000 LIN Slave MCUs [Note]

Product	Performance	Flash/RAM (KB)	Peripherals	Packaging	Additional Information
MC56F8013VFAE	32 MHz 32 MIPS	16/4	6-CH PWM, Quad Timer, SPI, SCI with LIN slave, PLL, dual 3-CH, 12-bit ADCs, COP, POR, I^2C, On-Chip oscillator	32-pin LQFP	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 26 GPIOs.
MC56F8014VFAE			5-CH PWM, Quad Timer, SPI, SCI with LIN slave, PLL, dual 4-CH, 12-bit ADCs, COP, POR, I^2C, On-Chip oscillator		Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 26 GPIOs.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.

LOCAL AREA NETWORK MICROCONTROLLERS (continued)

68HC08 LIN Master MCUs

Product	ROM (KB)	RAM (KB)	Flash or OTP (KB)	EEPROM (Bytes)	Timer	I/O	Serial	A/D	PWM	COP	Operating Voltage (V)	Max Bus Freq (MHz)	Temp[1]	Packaging	OTP or Flash Equiv.	Status	Additional Information	Documentation
XC68HC08AZ32	32	1	n/a	512	4-CH + 2-CH, 16-bit IC, OC, or PWM	40/50	SCI SPI CAN	8-CH or 15-CH, 8-bit	See Timer	Y	5.0	8.4	C, V, M	64-pin QFP (FU) 52-pin PLCC (FN)	908AZ60A	Available	CAN 2.0A and 2.0B	MC68HC08AZ32
MC908AZ60A	n/a	2	60 Flash	1K	6-CH + 2-CH, 16-bit IC, OC, or PWM	50		15-CH, 8-bit						64-pin QFP (FU)	n/a		MC908AZ60A is pin-for-pin compatible replacement for MC68HC908AZ60. CAN 2.0A and 2.0B	MC68HC908AZ60A

[1] C = -40°C to 85°C, M = -40°C to 125°C, and V = -40°C to 105°C.

68HC12 LIN Master MCUs

Product	ROM (KB)	RAM (KB)	Flash (KB)	EEPROM (Bytes)	Timer	I/O	Serial	A/D	PWM	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp[1]	Packaging	Status	Additional Information	Documentation
MC68HC912B32	n/a	1	32	768	8-CH, 16-Bit IC or OC RTI, pulse accumulator	Up to 63	SCI, SPI J1850	8-CH, 10-bit	4-CH, 8-bit or 2-CH, 16-bit	5.0	8.0	C, V, M	80-pin QFP (FU)	Available	J1850, muxed bus, BDM. Sample pack part numbers: KMC912B32CFU/VFU/MFU	MC68HC912B/D
MC68HC12BE32	32		n/a									C			BDM, enhanced timer Evaluation Product with on-chip monitor: XC12BE32DCFU8. Sample pack part number: KXC12BE32DCFU8	
MC912D60A	n/a	2	60	1K		Up to 66 I/O and 18 i	Dual SCI SPI, CAN					C, V, M	80-pin QFP (FU) 112-pin LQFP (PV)		Replaces the XC68HC912D60 with 5 V Flash voltage and a different programming algorithm.	MC68HC912D60/D
XC68HC12D60	60		n/a		8-CH, 16-Bit		Dual SCI SPI	Dual 8-CH, 10-Bit							Part equipped with CAN 2.0A/B.	
MC912DG128A	n/a	8	128	2K	8-CH, 16-Bit IC or OC RTI, pulse accumulator	Up to 67 I/O and 18 i	Dual SCI SPI, CAN	8-CH or 16-CH, 10-Bit					112-pin LQFP (PV)		Replaces the XC912DG128 with 5 V Flash voltage and a different programming algorithm.	MC68HC912DG128/D
MC68HC912DT128A					8-CH, 16-Bit	Up to 66 I/O and 18 i	Dual SCI, SPI	Dual 8-CH, 10-Bit							Part equipped with 3xCAN 2.0A/B.	MC68HC912DT128/D

[1] C = -40°C to 85°C, M = -40°C to 125°C, and V = -40°C to 105°C.

UNIVERSAL SERIAL BUS MICROCONTROLLERS

68HC08 Family USB MCUs

Product	ROM (Bytes)	RAM (Bytes)	Flash or OTP (Bytes)	EEPROM (Bytes)	Timer	I/O	Serial	A/D	PWM	COP	Operating Voltage (V)	Max Bus Freq (MHz)	Temp	Packaging	OTP or Flash Equiv.	Status	Additional Information	Documentation
MC68HC08JB1	5.5K	128	n/a	n/a	2-CH, 16-bit IC, OC, or PWM	13	USB PS/2	n/a	See Timer	Y	5.0	3.0	0°C to 70°C only	20-pin DIP (P) 20-pin SOIC (JDW)	908JB8	Available	Supports both USB and PS/2; 1.5Mbps USB with 2 endpoints, low voltage reset, keyboard interrupt, 3.3 V bandgap reference	n/a
MC68HC908JB8	n/a	256	8K Flash	n/a	2-CH, 16-bit IC, OC, or PWM	Up to 37	USB	n/a	See Timer	Y	5.0	3.0	0°C to 70°C only	20-pin DIP (P) 28-pin SOIC (DW) 44-pin QFP (FB)	n/a	Available	Complies with USB 1.1 specification for low-speed USB (1.5Mbps) On-chip 3.3 V regulator	MC68HC908JB8/D
MC68HC908JB12	n/a	384	12K Flash	n/a	Dual 2-CH, 16-bit IC, OC, or PWM	Up to 21	SCI USB 2.0	n/a	See Timer	Y	5.0	6.0	0°C to 70°C only	20-pin SOIC (DW) 28-pin SOIC (DW)	n/a	Available	www.freescale.com	n/a
MC68HC08JB8	8K	256	n/a	n/a	2-CH, 16-bit IC, OC, or PWM	Up to 37	USB	n/a	See Timer	Y	4.0 to 5.5	3.0	0°C to 70°C only	20-pin PDIP (JP) 20-pin SOIC (JDW) 28-pin SOIC (ADW) 44-pin QFP (FB)	908JB8	Available	Complies with USB 1.1 specification for low-speed USB (1.5Mbps), LVI	MC68HC908JB8/D
MC68HC08KH12	12K	384	n/a	n/a	2-CH, 16-bit IC, OC, or PWM	42	USB	n/a	See Timer	Y	3.3 V	6.0	0°C to 70°C only	64-pin QFP (FU)	708KH12	Available	PC keyboard/hub 12mbs USB (1 up, 4 down) 5 LED direct drive port pins	MC68HC08KH12/H

MOTOR CONTROL MICROCONTROLLERS

Motor Control Unit Product Table

Product	COP	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp	Packaging	OTP	Status	Additional Information	Documentation
MC3PHAC	Y	5.0	4.0	V	32-pin LQFP (FA) 28-pin SOIC (DW) 28-pin PDIP (P)	n/a	Samples Available	A complete solution, contains all functions required to implement control of open loop 3-phase AC motor drive	MC3PHAC DRM006

56F800 MCUs [Note]

Product	Performance	Program ROM/RAM/ Flash	Data ROM/RAM/ Flash	Peripherals	Packaging	Additional Information
DSP56F801FA80 DSP56F801FA80E	80 MHz 40 MIPS	n/a/1K/8K (words)	n/a/1K/2K (words)	SCI, SPI, ADC, PWM, Quad Timer	48-pin LQFP 48-pin LQFP*	MCU-friendly instruction set, OnCE for debug, on-chip relaxation oscillator, 2K Boot Flash, up to 11 GPIO.
DSP56F801FA60 DSP56F801FA60E	60 MHz 30 MIPS					MCU-friendly instruction set, OnCE for debug, on-chip relaxation oscillator, 2K Boot Flash, up to 11 GPIO.
DSP56F802TA80 DSP56F802TA80E	80 MHz 40 MIPS			SCI, ADC, PWM, Quad Timer	32-pin LQFP 32-pin LQFP*	MCU-friendly instruction set, OnCE for debug, on-chip relaxation oscillator, 2K Boot Flash, up to 4 GPIO.
DSP56F802TA60 DSP56F802TA60E	60 MHz 30 MIPS					MCU-friendly instruction set, OnCE for debug, on-chip relaxation oscillator, 2K Boot Flash, up to 4 GPIO.
DSP56F803BU80 DSP56F803BU80E	80 MHz 40 MIPS	n/a/512K/32K (words)	n/a/2K/4K (words)	CAN, SCI, SPI, ADC, PWM, Quadrature Decoder, Quad Timer	100-pin LQFP 100-pin LQFP*	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 16 GPIO.
DSP56F805FV80 DSP56F805FV80E					144-pin LQFP 144-pin LQFP*	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 32 GPIO.
DSP56F807PY80 (LQFP) DSP56F807PY80E (LQFP) DSP56F807VF80 (MAPBGA) DSP56F807VF80E (MAPBGA)		n/a/2K/60K (words)	n/a/4K/8K (words)		160-pin LQFP 160-pin LQFP* 160-ball MAPBGA 160-ball MAPBGA*	MCU-friendly instruction set, OnCE for debug, 2K Boot Flash, external memory expansion available, up to 32 GPIO. M0Q of 40 for LQFP.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

MOTOR CONTROL MICROCONTROLLERS (continued)

56F8300 MCUs [Note]

Product	Performance	Flash/RAM (KB)	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
F832x Family						
MC56F8322MFA60 MC56F8322MFAE	60 MHz 60 MIPS	48/12	n/a	2 SPI, 2 SCI, 2 ADC, PWM, COP, PLL, Decoder, 2 Quad Timers, FlexCAN	48-pin LQFP 48-pin LQFP*	Extended (-40°C to 125°C) MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 21 GPIOs.
MC56F8322VFA60 MC56F8322VFAE					48-pin LQFP 48-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor and up to 21 GPIOs.
MC56F8323MFB60 MC56F8323MFBE					64-pin LQFP 64-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 27 GPIOs.
MC56F8323VFB60 MC56F8323VFBE					64-pin LQFP 64-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, temperature sensor, and up to 27 GPIOs.
F833x Family						
MC56F8335VFG60	60 MHz 60 MIPS	80/12	n/a	2 SPI, 2 SCI, 4ADC, PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8335MFGE						Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
F834x Family						
MC56F8345MFG60 MC56F8345MFGE	60 MHz 60 MIPS	144/12	n/a	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP 128-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs,.
MC56F8345VFG60 MC56F8345VFGE					128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8346MFV60 MC56F8346MFVE			Yes		144-pin LQFP 144-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8346VFV60 MC56F8346VFVE					144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8347MPY60 MC56F8347MPYE					160-pin LQFP 160-pin LQFP* 160-pin MAPBGA*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8347VPY60 (LQFP) MC56F8347VPYE (LQFP) MC56F8347VVFE (MAPBGA)						Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
F835x Family						
MC56F8355MFG60 MC56F8355MFGE	60 MHz 60 MIPS	280/20	Yes	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, FlexCAN	128-pin LQFP 128-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8355VFG60 MC56F8355VFGE			n/a		128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8356MFV60 MC56F8356MFVE			Yes		144-pin LQFP 144-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8356VFV60 MC56F8356VFVE					144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8357MPY60 MC56F8357MPYE			Yes		160-pin LQFP 160-pin LQFP*	Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8357VPY60 (LQFP) MC56F8357VPYE (LQFP) MC56F8357VVFE (MAPBGA)					160-pin LQFP 160-pin LQFP* 160-pin MAPBGA*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.
*This package is RoHS compliant.

MOTOR CONTROL MICROCONTROLLERS (continued)

56F8300 MCUs [Note] (continued)

Product	Performance	Flash/RAM (KB)	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
F836x Family						
MC56F8365VFG60 MC56F8365VFGE	60 MHz 60 MIPS	576/36	n/a	2 SPI, 2 SCI, 4 ADC, 2 PWM, COP, PLL, 2 Decoders, 4 Quad Timers, 2 FlexCAN	128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8365MFG60 MC56F8365MFGE						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 49 GPIOs.
MC56F8366VFV60 MC56F8366VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8366MFV60 MC56F8366MFVE						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 62 GPIOs.
MC56F8367VPY60 (LQFP) MC56F8367VPYE (LQFP) MC56F8367VVFE (MAPBGA)					160-pin LQFP 160-pin LQFP* 160-ball MAPBGA*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.
MC56F8367MPY60 MC56F8367MPYE (LQFP)						Extended (-40°C to 125°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 76 GPIOs.

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56F8000 MCUs[Note]

Product	Performance	Flash/RAM (KB)	Peripherals	Packaging	Additional Information
MC56F8013VFAE	32 MHz 32 MIPS	16/4	6-CH PWM, Quad Timer, SPI, SCI with LIN slave, PLL, dual 3-CH, 12-bit ADCs, COP, POR, I^2C, On-Chip oscillator	32-pin LQFP	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, temperature sensor, and up to 26 GPIOs.

Note: Contact your local Freescale Semiconductor Sales Office or authorized Freescale Semiconductor distributor for product availability.

56F8100 MCUs [Note]

Product	Performance	Flash/RAM (KB)	Off-Chip Memory Expansion (EMI)	Peripherals	Packaging	Additional Information
MC56F8122VFA MC56F8122VFAE	40 MHz 40 MIPS	40/8	n/a	2 SPI, 2 SCI, 2 ADC, COP, PLL, Quad Timer	48-pin LQFP 48-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, and up to 21 GPIOs.
MC56F8123VFB MC56F8123VFBE					64-pin LQFP 64-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, on-chip relaxation oscillator, and up to 27 GPIOs.
MC56F8135VFGE		72/8		2 SPI, 2 SCI, 4ADC, PWM, COP, PLL, Decoder, 2 Quad Timers	128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug, and up to 49 GPIOs.
MC56F8145VFG MC56F8145VFGE		136/8			128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 49 GPIOs.
MC56F8146VFV MC56F8146VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 62 GPIOs.
MC56F8147VPY MC56F8147VPYE					160-pin LQFP 160-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 76 GPIOs.
MC56F8155VFG MC56F8155VFGE		272/16	n/a		128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 49 GPIOs.
MC56F8156VFV MC56F8156VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 62 GPIOs.
MC56F8157VPY MC56F8157VPYE					160-pin LQFP 160-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 76 GPIOs.
MC56F8165VFG MC56F8165VFGE		544/32	n/a		128-pin LQFP 128-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 49 GPIOs.
MC56F8166VFV MC56F8166VFVE			Yes		144-pin LQFP 144-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 62 GPIOs.
MC56F8167VPY MC56F8167VPYE					160-pin LQFP 160-pin LQFP*	Industrial (-40°C to 105°C), MCU-friendly instruction set, Enhanced OnCE for debug and up to 76 GPIOs.

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*This package is RoHS compliant.

ZIGBEE™ -READY PLATFORM

ZigBee-Ready and Proprietary RF Transceivers

Product	Data Rate (kbps)	Operating Voltage (V)	Band (MHz)	MCU Interface	Packaging	Status	Additional Information
MC13191FCR2	250 max	2.4 to 3.4	2.4 GHz	SPI	32-pin QFN 5 x 5	Available	2.4 GHz Proprietary RF transceiver data modem for Point-to-Point and Star applications
MC13192FCR2							2.4 GHz RF transceiver data modem for ZigBee™ applications

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