SG186/D
Rev. 9

MOTOROLA

Standard Embedded Controller Selector Guide

Quarter 4, 2001

http://motorola.com/mcu

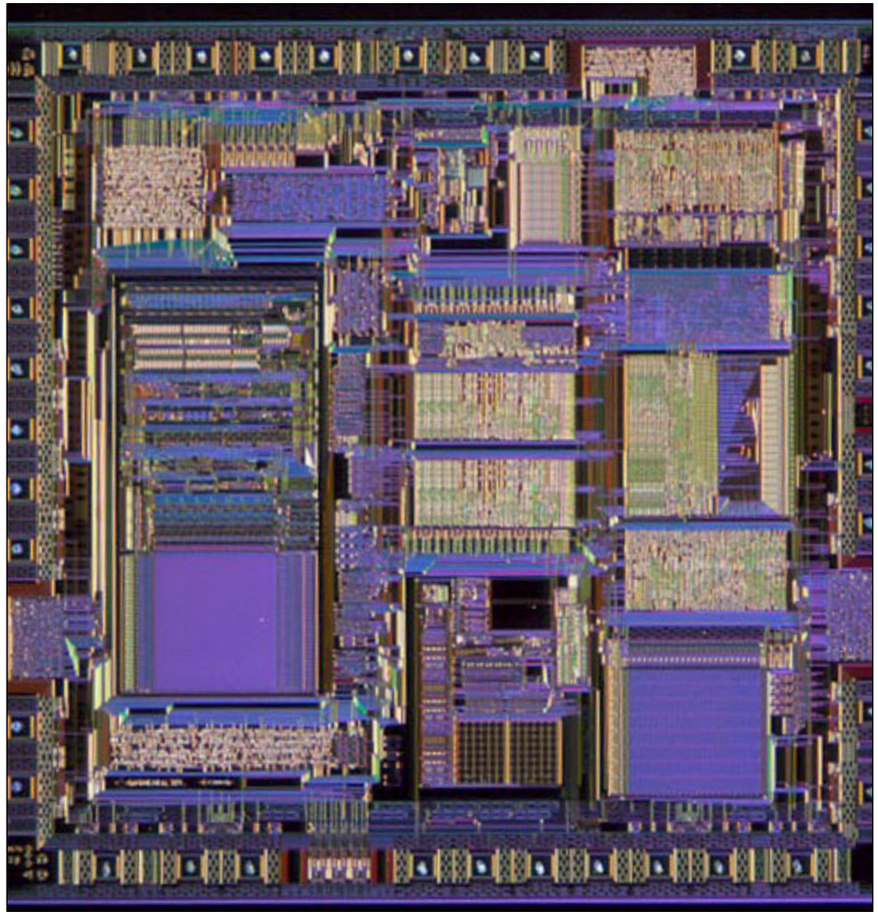
Product information for:

8-Bit	68HC05, 68HC08, and 68HC11
16-Bit	68HC12 and 68HC16
32-Bit	68XXX, MCF5XXX, MMC2XXX

Digital DNA™ from Motorola

68HC908GR Family

The 68HC908GR8 and the 68HC908GR4 utilize integrated second generation FLASH and are enhanced with embedded, on-chip functions that eliminate the need for external serial components. The 32-kHz phase-locked loop (PLL) provides cost savings by eliminating the need for expensive, high-speed crystals or noisy oscillators. The on-chip timebase module (TBM) further reduces costs by eliminating the need for external real-time clock and wakeup circuitry. Other features of the 68HC908GR8 and the 68HC908GR4 are an analog-to-digital converter (ADC), a serial communications interface (SCI), a serial peripheral interface (SPI), low-voltage inhibit (LVI), and a watchdog timer.



Features

- **High-Performance 68HC08 CPU Core**
  - 8-MHz bus operation at 5V operation for 125nsec minimum instruction cycle time
  - 4-MHz bus operation at 3V for 250nsec minimum instruction cycle time
  - Efficient instruction set including multiply and divide
  - 16 flexible addressing modes including stack relative with 16-bit stack pointer
  - Fully static low-voltage, low-power design with wait and stop modes
- **8-Bit Analog-to-Digital Converter**
  - 6 channels
  - Single conversion in 17µs
- **Serial Peripheral Interface**
  - Full-duplex 3-wire synchronous transfers
  - Maximum master bit rate of 4MHz for 8MHz system clock

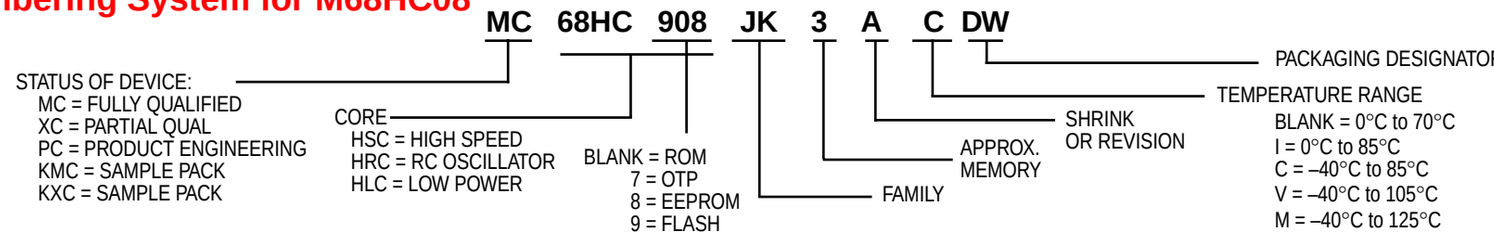
- **Clock Generation Module with PLL**
  - Programmable clock frequency in integer multiples of external crystal reference
  - Crystal reference of 32kHz to 100kHz
  - External clock option with or without PLL
- **Integrated Second Generation FLASH Memory**
  - In-application re-programmable
  - Extremely fast programming, encoding 64 bytes in as fast as 2msec
  - FLASH programming across the 68HC08's full operating supply voltage with no extra programming voltage
  - 10K write/erase cycles minimum over temperature
  - 100K write/erase cycles typical
  - Flexible block protection and security
  - Typical 50 year data retention @ 55°C (10 years minimum over temperature range)
- **Four Programmable 16-Bit Timer Channels**
  - 125 nsec resolution at 8-MHz bus
  - Free-running counter or modulo up-counter
- **Timebase Module**
  - 8 user-selectable periodic real-time interrupts
  - Optionally operate in low-power stop mode
- **Serial Communications Interface**
  - UART asynchronous communications system
  - Flexible baud rate generator
  - Double buffered transmit and receive
  - Optional hardware parity checking and generation
- **Up to 21 Bidirectional Input/Output (I/O) Lines**
  - 10mA sink/source capability on all I/O pins
  - 15mA sink capability on two I/O pins
  - Keyboard scan with selectable interrupts on four I/O pins
  - Software programmable pullups on 13 I/O pins
- **Computer Operating Properly Watchdog Timer**
- **Selectable Trip Point Low-Voltage Inhibit**

Motorola's New FLASH MCUs Diminish Need for EEPROMs in Embedded Systems

Motorola continues to expand the benefits and flexibility of its FLASH microcontrollers (MCUs) with the introduction of the 68HC908GR8 and the 68HC908GR4. The new chips, derivatives of the existing 68HC908GP32, offer enhanced performance by extending the reliability and data retention of the embedded FLASH memory to typically 100,000 write/erase cycles and 50-year data retention (running at 55°C). As a result, most embedded systems that require nonvolatile storage of temporary or changing data no longer need separate electrically erasable read only memory (EEPROM) chips.

68HC08 Family

Device Numbering System for M68HC08



68HC08 Family (Sheet 1 of 3)

Device	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.	Package Options	OTP or FLASH	Avail.	Comments	Documentation
MC68HC08AB16A	16K	512	—	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 QFP (FU)	908AB32	Now	Programmable interrupt timer module	MC68HC08AB16A/D
MC68HC908AB32	—	1K	32K FLASH	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, V, M	64 QFP (FU)	—	Now	Programmable interrupt timer module Sample pack part numbers: KMC908AB32CFU/MFU/VFU	MC68HC908AB32/D
MC68HC908AS60	MC908AS60A is a pin-compatible replacement.																	
MC908AS60A	—	2K	60K FLASH	1K	6-CH + 2-CH 16-Bit IC, OC, or PWM	40/ 50	SCI SPI	15-CH 8-Bit	See Timer	Y	5.0	8.4	C, V, M	64 QFP (FU) 52 PLCC (FN)	—	Now	J1850; MC908AS60A is pin-for-pin compatible replacement for MC68HC908AS60.	MC68HC908AZ60A/D
XC68HC08AZ32	32K	1K	—	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 QFP (FU) 52 PLCC (FN)	908AZ60A	Now	CAN 2.0A & 2.0B	MC68HC08AZ32/D
MC68HC908AZ60	MC908AZ60A is a pin-compatible replacement.																	
MC908AZ60A	—	2K	60K FLASH	1K	6-CH + 2-CH 16-Bit IC, OC, or PWM	50	SCI SPI CAN	15-CH 8-Bit	See Timer	Y	5.0	8.4	C, V, M	64 QFP (FU)	—	Now	MC908AZ60A is pin-for-pin compatible replacement for MC68HC908AZ60. CAN 2.0A & 2.0B	MC68HC908AZ60A/D
MC68HC08AZ60	60K	2K	—	1K	6-CH + 2-CH 16-Bit IC, OC, or PWM	48	SCI SPI CAN	15-CH, 8-Bit	See Timer	Y	5.0	8.4	C, V, M	64 QFP (FU)	908AZ60	Now	CAN 2.0A & 2.0B	MC68HC08AZ60/D
MC68HC08BD24	24K	512	—	—	2-CH 16-Bit IC, OC, or PWM	32	I^2C DDC12AB	6-CH, 8-Bit	16-CH, 8-Bit	Y	5.0	6.0	I	42 SDIP (B) 44 QFP (FB)	908BD48	Now	For use in digital monitor systems; sync signal processor	MC68HC08BD24/D
MC68HC908BD48	—	1024	48K FLASH	—	2-CH 16-Bit IC, OC, or PWM	32	USB, I^2C DDC12AB	6-CH, 8-Bit	16-CH, 8-Bit	Y	5.0	6.0	I	42 SDIP (B) 44 QFP (FB) 28 DIP (P)	—	Now	For use in digital monitor systems; sync signal processor	MC68HC908BD48/D
MC68HC08GP32	32K	512	—	—	Dual 2-CH 16-Bit IC, OC, or PWM	33	SCI SPI	8-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, V, M	44 QFP (FB) 42 SDIP (B)	908GP32	Now	32-kHz PLL, timebase module, low-voltage inhibit with selectable trip points.	MC68HC908GP32/H
MC68HC908GP32	—	512	32K FLASH	—	Dual 2-CH 16-Bit IC, OC, or PWM	33	SCI SPI	8-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C	40 DIP (P) 44 QFP (FB) 42 SDIP (B)	—	Now	32-kHz PLL, timebase module, low-voltage inhibit with selectable trip points. Sample pack part numbers: KMC908GP32CFB, KMC908GP32CP, KMC908GP32CB	MC68HC908GP32/H
MC68HC908GR4	—	384	4K FLASH	—	2-CH + 1-CH 16-Bit IC, OC, or PWM	21	SCI SPI	6-CH 8 Bit	See Timer	Y	3.0, 5.0	8.0	C	28 DIP (P) 32 QFP (FA) 28 SOIC (DW)	—	Now	28-/32-pin 4K FLASH version of the 908GP32. 32-kHz PLL, timebase module, all pins 10mA, programmable pullups on all I/O, extra 2-CH A/D in 32 QFP	MC68HC908GR8/D

68HC08 Family (Sheet 2 of 3)

Device	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.	Package Options	OTP or FLASH	Avail.	Comments	Documentation
MC68HC908GR8	—	384	7.5K FLASH	—	2-CH + 1-CH 16-Bit IC, OC, or PWM	21	SCI SPI	4-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C	28 SOIC (DW) 28 DIP (P) 32 QFP (FA)	—	Now	28-/32-pin 8K FLASH version of 908GP32, has timebase module	MC68HC908GR8/D
MC68HC08GR8	7.5K	384	—	—	2-CH + 1-CH 16-Bit IC, OC, or PWM	21	SCI SPI	6-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C	28 DIP (P) 32 QFP (FA)	908GR8	Now	28-/32-pin ROM version of GP32, timebase module, all pins 10mA, programmable pullups on all I/O	MC68HC908GR8/D
MC68HC08JB1	5.5K	128	—	—	2-CH 16-Bit IC, OC, or PWM	13	USB PS/2	—	See Timer	Y	5.0	3.0	0-70°C only	20 DIP (P) 20 SOIC (JDW)	908JB8	Now	Supports both USB and PS/2; 1.5Mbps USB with 2 endpoints, low voltage reset, keyboard interrupt, 3.3V bandgap reference	MC68HC08JB1/D
MC68HC908JB8	—	256	8K FLASH	—	2-CH 16-Bit IC, OC, or PWM	Up to 37	USB	—	See Timer	Y	5.0	3.0	0-70°C only	20 DIP (P) 28 SOIC (DW) 44 QFP (FB)	—	Now	Complies with USB 1.1 spec for low-speed USB (1.5Mbps) On-chip 3.3V regulator	MC68HC908JB8/D
MC68HC08JB8	8K	256	—	—	2-CH 16-Bit IC, OC, or PWM	Up to 37	USB	—	See Timer	Y	4.0–5.5	3.0	0–70°C only	20 PDIP (JP) 20 SOIC (JDW) 28 SOIC (ADW) 44 QFP (FB)	908JB8	Now	Complies with USB 1.1 spec for low-speed USB (1.5Mbps), LVI	MC68HC908JB8/D
MC68HC908JK1	—	128	1.5K FLASH	—	2-CH 16-Bit IC, OC, or PWM	15	—	12-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, M	20 DIP (P) 20 SOIC (DW)	—	Now	RC oscillator option, LVR with selectable trip points, 6-pin LED drive Sample pack part number: see MC68HC908JK3	MC68HC908JL3/H
MC68HC908JK3	—	128	4K FLASH	—	2-CH 16-Bit IC, OC, or PWM	15	—	12-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, M	20 DIP (P) 20 SOIC (DW)	—	Now	RC oscillator option, LVR with selectable trip points, 6-pin LED drive Sample pack part numbers: KMC908JK3CP, KMC908JK3CDW, KMCR908JK3CP, KMCR908JK3CDW	MC68HC908JL3/H
MC68HC08JK3	4K	128	—	—	2-CH 16-Bit IC, OC, or PWM	15	—	12-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, M	20 DIP (P) 20 SOIC (DW)	908JK3	Now	RC oscillator option: 68HRC08JK3, LVR with selectable trip points, 6-pin LED drive	MC68HC08JL3/H
MC68HC908JL3	—	128	4K FLASH	—	2-CH 16-Bit IC, OC, or PWM	23	—	12-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, M	28 DIP (P) 28 SOIC (DW) 48 LQFP (FA)	—	Now	RC oscillator option, LVR with selectable trip points, 6-pin LED drive Sample pack part numbers: KMC908JL3CP, KMC908JL3CDW, KMCR908JL3CP, KMCR908JL3CDW	MC68HC908JL3/H
MC68HC08JL3	4K	128	—	—	2-CH 16-Bit IC, OC, or PWM	23	—	12-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, M	28 DIP (P) 28 SOIC (DW) 48 LQFP (FA)	908JL3	Now	RC oscillator option: 68HRC08JL3, LVR with selectable trip points, 6-pin LED drive	MC68HC908JL3/H
MC68HC08JT8	8K	256	—	—	2-CH 16-Bit IC, OC, or PWM	Up to 37	—	—	See Timer	Y	2.0–3.6	3.0	0–70°C only	20 PDIP (JP) 20 SOIC (JDW) 28 SOIC (ADW) 44 QFP (FB)	—	Now		MC68HC908JB8/D
MC68HC08KH12	12K	384	—	—	2-CH 16-Bit IC, OC, or PWM	42	USB	—	See Timer	Y	3.3 V	6.0	0–70°C only	64 QFP (FU)	708KH12	Now	PC keyboard/hub 12mbs USB (1 up, 4 down) 5 LED direct drive port pins	MC68HC08KH12/H
MC68HC908KX2	—	192	2K FLASH	—	2-CH 16-Bit IC, OC, or PWM	13	SCI	4-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, V, M	16 DIP (P) 16 SOIC (DW)	—	Now	Internal clock generator (ICG) Sample pack part numbers: KMC908KX2CDW, KMC908KX2CP	MC68HC908KX8/D
MC68HC908KX8	—	192	8K FLASH	—	2-CH 16-Bit IC, OC, or PWM	13	SCI	4-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, V, M	16 DIP (P) 16 SOIC (DW)	—	Now	Internal clock generator (ICG) Sample pack part numbers: KMC908KX8CDW, KMC908KX8CP	MC68HC908KX8/D
MC68HC08KX8	8K	192	—	—	2-CH 16-Bit IC, OC, or PWM	11	SCI	4-CH 8-Bit	See Timer	Y	3.0, 5.0	8.0	C, V, M	16 DIP (P) 16 SOIC (DW)	908KX8	Now	Internal oscillator, 5 I/O w/ 15mA source/15mA sink	MC68HC908KX8/D
MC68HC908LD60	—	1K	60K FLASH	—	2-CH 16-Bit IC, OC, or PWM	39	I^2C, DDC12AB	6-CH 8-Bit	8-CH 8-Bit	Y	3.3	6.0	C	64 QFP (FU)	—	Now	For use in digital monitor systems.	MC68HC908LD60/D
MC68HC908LD64	—	2K	60K FLASH	—	2-CH 16-Bit IC, OC, or PWM	39	I^2C, DDC12AB, USB w/ hub	6-CH 8-Bit	8-CH 8-Bit	Y	3.3	6.0	C	64 QFP (FU)	—	Now	For use in digital monitor systems. USB 1.1, composite hub w/ embedded functions. Sync signal processor, on-screen display (OSD) module.	MC68HC908LD64/D

68HC08 Family

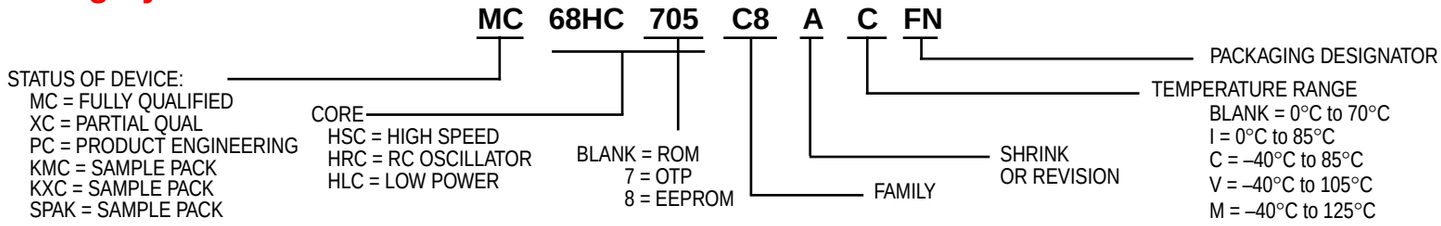
68HC08 Family (Sheet 3 of 3)

Device	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.	Package Options	OTP or FLASH	Avail.	Comments	Documentation
MC68HC08MR4	4K	192	—	—	2-CH + 2-CH 16-Bit IC, OC, or PWM	14	SCI	4- to 7-CH 10-Bit	6-CH 12-Bit	Y	5.0	8.0	C, V	32 LQFP (FA) 28 PDIP (DW) 28 SOIC (CP)	908MR8	Samples now		MC68HC908MR8/D
MC68HC908MR8	—	256	8K FLASH	—	2-CH + 2-CH 16-Bit IC, OC, or PWM	14	SCI	4- to 7-CH 10-Bit	6-CH 12-Bit	Y	5.0	8.0	C, V	32 LQFP (FA) 28 PDIP (DW) 28 SOIC (CP)	—	Samples now		MC68HC908MR8/D
MC68HC908MR16	—	768	16K FLASH	—	4-CH + 2-CH 16-Bit IC, OC, or PWM	44	SCI SPI	10-CH 10-Bit	See Timer + 6-CH 12-Bit	Y	5.0	8.0	C, V	64 QFP (FU) 56 SDIP (B)	—	Now	PWM for 3-phase motor control Sample pack part numbers: KMC908MR16VFU/VB	MC68HC908MR32/D
MC68HC908MR32	—	768	32K FLASH	—	4-CH + 2-CH 16-Bit IC, OC, or PWM	44	SCI SPI	10-CH 10-Bit	See Timer + 6-CH 12-Bit	Y	5.0	8.0	C, V	64 QFP (FU) 56 SDIP (B)	—	Now	PWM for 3-phase motor control Sample pack part numbers: KMC908MR32VFU/VB	MC68HC908MR32/D
MC68HC908RF2	—	128	2K FLASH	—	2-CH 16-Bit IC, OC, or PWM	12	—	—	See Timer	Y	1.8–3.6	4.0	C	32 QFP (FA)	—	Now	Integrated RF transmitter in package, internal clock generator (ICG), LVI	MC68HC908RF2/D
MC68HC908RK2	—	128	2K FLASH	—	2-CH 16-Bit IC, OC, or PWM	14	—	—	See Timer	Y	1.8–3.6	4.0	C	20 SSOP (SD)	—	Now	Internal clock generator (ICG), LVI	MC68HC908RK2/D
MC68HC908SR12	—	512	12K FLASH	—	Dual 2-CH 16-Bit, IC, OC, or PWM	Up to 31	I^2C, SCI	14-CH 10-Bit	See Timer + 3-CH, 8-Bit (125 kHz)	Y	3.0, 5.0	8.0	C, M	48 QFP (FA) 42 SDIP (B)	—	Now	RC oscillator, 32-kHz PLL, internal oscillator options, 8 keyboard interrupts, TBM, temperature sensor, current detect with amplifier, I^2C supports SMBus version 1.0/1.1.	MC68HC908SR12/D

68HC08 Reference Manuals

CPU08RM/AD	HC08 CPU Reference Manual
TIM08RM/AD	HC08 Timer Reference Manual

Device Numbering System for M68HC05



68HC05 Family (Sheet 1 of 3)

Device	ROM (Bytes)	RAM (Bytes)	EPROM/ OTP (Bytes)	EEPROM (Bytes)	Timer	I/O	Serial	A/D	PWM	COP	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp.	Package Options	OTP	Avail.	Comments	Documentation
MC68HC05B6	6K	176	—	256	16-Bit 2 IC, 2 OC	32	SCI See comment	8-CH 8-Bit	2-CH 8-Bit	Y	3.3, 5.0	4.0	C, V, M	56 SDIP (B) 52 PLCC (FN) 64 QFP (FU)	705B16 705B32	Now	SCI has synchronous master SPI-like capability	MC68HC05B6/D
MC68HC05B8	7K	176	—	256	16-Bit 2 IC, 2 OC	32	SCI See comment	8-CH 8-Bit	2-CH 8-Bit	Y	3.3, 5.0	4.0	C, V	56 SDIP (B) 52 PLCC (FN) 64 QFP (FU)	705B16 705B32	Now	SCI has synchronous master SPI-like capability	MC68HC05B6/D
MC68HC05B16	15K	352	—	256	16-Bit 2 IC, 2 OC	32	SCI See comment	8-CH 8-Bit	2-CH 8-Bit	Y	3.3, 5.0	4.0	C, V, M	56 SDIP (B) 52 PLCC (FN) 64 QFP (FU)	705B16 705B32	Now	SCI has synchronous master SPI-like capability	MC68HC05B6/D
MC68HC705B16	—	352	15K	256	16-Bit 2 IC, 2 OC	32	SCI See comment	8-CH 8-Bit	2-CH 8-Bit	Y	3.3, 5.0	2.1	C, V, M	52 PLCC (FN) 64 QFP (FU) 52 CLCC (FS)	—	Now	Use 705B32 as OTP for SDIP. SCI has synchronous master SPI-like capability	MC68HC05B6/D
MC68HC05B32	32K	528	—	256	16-Bit 2 IC, 2 OC	32	SCI See comment	8-CH 8-Bit	2-CH 8-Bit	Y	3.3, 5.0	2.1	PLCC/ QFP: C, V, M SOIC: 0-70°C	56 SDIP (B) 52 PLCC (FN) 64 QFP (FU)	705B32	Now	SCI has synchronous master SPI-like capability	MC68HC05B6/D
XC68HC705B32	—	528	32K	256	16-Bit 2 IC, 2 OC	32	SCI See comment	8-CH 8-Bit	2-CH 8-Bit	Y	3.3, 5.0	2.1	C	56 SDIP (B) 52 PLCC (FN) 64 QFP (FU) 52 CLCC (FS)	—	LTD	SCI has synchronous master SPI-like capability	MC68HC05B6/D
MC68HC05BD5	7.75K	256	—	—	MFT	24	I^2C	—	16-CH 8-Bit	Y	5.0	2.1	0-70°C only	40 DIP (P) 42 SDIP (B)	705BD3	Now	Horizontal & vertical sync signal processor	MC68HC05BD3D/H
MC68HC05C8A	8K	176	—	—	16-Bit 1 IC, 1 OC	31	SCI SPI	—	—	Y	3.3, 5.0	4.0	C, V	40 DIP (P) 42 SDIP (B) 44 PLCC (FN) 44 QFP (FB)	705C8A	Now	KBI (8 pins), 1 high-current pin (20mA) Automotive qual complete	MC68HC05C8A/D
MC68HC705C8A	—	304	8K	—	16-Bit 1 IC, 1 OC	31	SCI SPI	—	—	Y	3.3, 5.0	4.0	C, V, M	40 DIP (P) 40 CDIP (S) 42 SDIP (B) 44 PLCC (FN) 44 QFP (FB) 44 CLCC (FS) 64 QFP (FU)	—	Now	KBI (8 pins), 1 high-current pin (20mA), high-speed option (4-MHz bus) available as MC68HSC705C8A Sample pack part numbers: KMC705C8ACP/S/B KMC705C8ACFB/FN/FS/FU	MC68HC705C8A/D
MC68HC05C9A	16K	352	—	—	16-Bit IC, 1 OC	31	SCI SPI	—	—	Y	3.3, 5.0	4.0	C, V, M	40 DIP (P) 42 SDIP (B) 44 PLCC (FN) 44 QFP (FB)	705C9A	Now	KBI (8 pins), 1 high-current pin (20mA)	MC68HC05C9A/D
MC68HC705C9A	—	352	16K	—	16-Bit 1 IC, 1 OC	31	SCI SPI	—	—	Y	3.3, 5.0	2.1	C	40 DIP (P) 40 CDIP (S) 42 SDIP (B) 44 PLCC (FN) 44 CLCC (FS) 44 QFP (FB)	—	Now	KBI (8 pins), 1 high-current pin (20mA) Sample pack part numbers: KMC705C9ACP/S/B KMC705C9ACFN/FS/FB Automotive qual complete	MC68HC705C9A/D

68HC05 Family

68HC05 Family (Sheet 2 of 3)

Device	ROM (Bytes)	RAM (Bytes)	EPROM/ OTP (Bytes)	EEPROM (Bytes)	Timer	I/O	Serial	A/D	PWM	COP	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp.	Package Options	OTP	Avail.	Comments	Documentation
MC68HC705F32	—	920	32K	256	16-Bit 4 IC, 4 OC, MFT, RTI	Up to 80	SCI SPI	8-CH 8-Bit	3-CH 8-Bit	Y	3.0, 5.0	2.1	0-70°C only	100 LQFP (PU) 80 QFP (FU)	—	Now	DTMF, LCD (4 x 40), KBI (8 pins) Note: FU package is XC qualified only	MC68HC05F32/D
MC68HC05J1A	1.2K	64	—	—	MFT, RTI	14	—	—	—	Y	2.0, 3.3, 5.0	4.0	C, V	20 DIP (P) 20 SOIC (DW)	705J1A	Now	KBI (4 pins), mask selectable pulldowns, 4 high-current pins (8mA)	MC68HC05J1A/D
MC68HC705J1A	—	64	1.2K	—	MFT, RTI	14	—	—	—	Y	3.3, 5.0	4.0	C, V	20 DIP (P) 20 SOIC (DW)	—	Now	KBI (4 pins), programmable pulldowns, 4 high-current pins (8mA), RC option available as MC68HRC705J1A, high-speed option available as MC68HSC705J1A	MC68HC705J1A/D MC68HC705J1AAD/D
MC68HC05J5A	2.5K	128	—	—	16-Bit 1 IC, MFT, RTI	14	—	—	—	Y	2.2, 5.0	2.1	0-70°C only	20 DIP (P) 20 SOIC (DW) 16 DIP (JP) 16 SOIC (JDW)	705J5A	Now	2 high-current pins (25mA), LVR, RC option available	HC05J5AGRS/H
MC68HC705J5A	—	128	2.5K	—	16-Bit 1 IC, MFT, RTI	14	—	—	—	Y	5.0	2.1	0-70°C only	20 DIP (P) 20 SOIC (DW)	—	Now	2 high-current pins (25mA), LVR, RC option available	HC05J5AGRS/H
MC68HC05JB3	2.5K	144	—	—	16-Bit 1 IC, 1 OC, MFT, RTI	19	USB	—	—	Y	5.0	3.0	0-70°C only	20 DIP (JP) 20 SOIC (JDW) 28 DIP (P) 28 SOIC (DW)	705JB3	Now	1.5mbs USB with 3 end-points, low-voltage reset, KBI, 3.3V bandgap reference	HC05JB3GRS/H
XC68HC705JB3	—	144	2.5K	—	16-Bit 1 IC, 1 OC, MFT, RTI	19	USB	—	—	Y	5.0	3.0	0-40°C only	20 DIP (JP) 28 DIP (P) 28 SOIC (DW)	—	Now	1.5mbs USB with 3 end-points, low-voltage reset, KBI, 3.3V bandgap reference	HC05JB3GRS/H
MC68HC05JB4	3.5K	176	—	—	16-Bit 1 IC, 1 OC, MFT, RTI	19	USB	6-CH 8-Bit	—	Y	5.0	3.0	0-70°C only	28 DIP (P) 28 SOIC (DW)	705JB4	Now	1.5mbs USB with 3 end-points, low-voltage reset, KBI, 3.3V bandgap reference	HC05JB4GRS/H
MC68HC705JB4	—	176	3.5K	—	16-Bit 1 IC, 1 OC, MFT, RTI	19	USB	6-CH 8-Bit	—	Y	5.0	3.0	0-40°C only	28 DIP (P) 28 SOIC (DW) 28 CDIP (S)	—	Now	1.5mbs USB with 3 end-points, low-voltage reset, KBI, 3.3V bandgap reference	HC05JB4GRS/H
MC68HC05JJ6	6K	224	—	—	16-Bit 1 IC, 1 OC, MFT, RTI	14	SIOP	4-CH 12-Bit	—	Y	3.3, 5.0	2.1	C	20 DIP (P) 20 SOIC (DW)	705JJ7	Now	2 voltage comparators used as single slope A/D, KBI (8 pins), 6 high-current pins (10mA), mask selectable pulldowns, LVR	HC05JJ6GRS/D
XC68HC705JJ7	—	224	6K + 64-Bit PEP	—	16-Bit 1 IC, 1 OC, MFT, RT	14	SIOP	4-CH 12-Bit	—	Y	3.3, 5.0	2.1	C	20 DIP (P) 20 SOIC (DW) 20 CDIP (S)	—	Now	2 voltage comparators used as single slope A/D, KBI (8 pins), 6 high-current pins (10mA), programmable pull-downs, LVR	HC705JJ7GRS/D
MC68HC05JP6	6K	224	—	—	16-Bit 1 IC, 1 OC, MFT, RT	22	SIOP	4-CH 12-Bit	—	Y	3.3, 5.0	2.1	C	28 DIP (P) 28 SOIC (DW)	705JP7	Now	2 voltage comparators used as single slope A/D, KBI (8 pins), 6 high-current pins (10mA), mask selectable pulldowns, LVR	HC05JJ6GRS/D
XC68HC705JP7	—	224	6K + 64-Bit PEP	—	16-Bit 1 IC, 1 OC, MFT, RTI	22	SIOP	4-CH 12-Bit	—	Y	3.3, 5.0	2.1	C	28 DIP (P) 28 SOIC (DW) 28 CDIP (S)	—	Now	2 voltage comparators used as single slope A/D, KBI (8 pins), 6 high-current pins (10mA), programmable pull-downs, LVR	HC705JJ7GRS/D
MC68HC05K3	0.9K	64	—	16 PEEP	MFT, RTI	10	—	—	—	Y	3.3, 5.0	2.1	C	16 SOIC (DW) 20 SSOP (SD)	805K3	Now	Personality EEPROM, RTI, KBI	MC68HC05K3/D

68HC05 Family (Sheet 3 of 3)

Device	ROM (Bytes)	RAM (Bytes)	EPROM/ OTP (Bytes)	EEPROM (Bytes)	Timer	I/O	Serial	A/D	PWM	COP	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp.	Package Options	OTP	Avail.	Comments	Documentation
MC68HC705KJ1	—	64	1.2K	—	MFT, RTI	10	—	—	—	Y	3.3, 5.0	4.0	C	16 DIP (P) 16 SOIC (DW)	—	Now	KBI (4 pins), programmable pulldowns (10 pins), 4 high-current pins (10mA). RC option available as MC68HRC705KJ1. High-speed standard. 32kHz low-power version available as MC68HLC705KJ1.	MC68HC705KJ1/D
MC68HC05L16	16K	512	—	—	16-Bit 1 IC, 1 OC, 8-Bit 1 IC, 1 OC, RTI	39	SIOP	—	—	—	2.2, 3.3, 5.0	2.1	C	80 QFP (FU)	705L16	Now	LCD with 4x39 segments, KBI (8 pins), dual oscillators, 8 high-current pins, programmable pullups, open drain	HC05L16GRS/D
MC68HC705L16	—	512	16K	—	16-Bit 1 IC, 1 OC, 8-Bit 1 IC, 1 OC, RTI	39	SIOP	—	—	—	3.3, 5.0	2.1	C	80 QFP (FU)	—	Now	LCD with 4x39 segments, KBI (8 pins), dual oscillators, 8 high-current pins, programmable pullups, open drain	HC05L16GRS/D
MC68HC05L25	6K	176	—	—	16-Bit Event, Timebase	20	SPI	2-CH 8-Bit	—	Y	3.3, 5.0	2.1	C	52 LQFP (PB) 32 LQFP (FA)	705L26	Now	24x4 or 25x3 LCD	HC05L25GRS/D
MC68HC05LJ5	1.2K	64	—	—	MFT, RTI	14	—	—	—	Y	5.0	2.1	0-70°C only	16 DIP (P)	705J5A	Now	RC option available	HC05LJ5GRS/H
MC68HC05P4A	4K	176	—	—	16-Bit 1 IC, 1 OC	21	SIOP	—	—	Y	3.3, 5.0	2.1	C, V	28 DIP (P) 28 SOIC (DW)	705P6A	Now	KBI, 2 high-current pins. Not recommended for electrically noisy environments, EMC sensitive. Halt mode not available.	MC68HC05P4A/D
MC68HC05P6	4.5K	176	—	—	16-Bit 1 IC, 1 OC	21	SIOP	4-CH 8-Bit	—	Y	3.3, 5.0	2.1	C, V, M	28 DIP (P) 28 SOIC (DW) 32 LQFP (FB)	705P6A	Now		MC68HC05P6/D MC68HC05P6AD/D
MC68HC705P6A	—	176	4.5K	—	16-Bit 1 IC, 1 OC	21	SIOP	4-CH 8-Bit	—	Y	3.3, 5.0	2.1	C	28 DIP (P) 28 SOIC (DW) 28 CDIP (S) 28 SSOP (SD)	—	Now	KBI (8 pins), 2 high-current pins (15mA). Umbrella OTP for P1A, P4A, P6, and P9A Automotive qual complete	HC705P6AGRS/D
MC68HC05SR3	3.75K	192	—	—	8-Bit	32	—	4-CH 8-Bit	—	—	3.3, 5.0	2.1	C	40 DIP (P) 44 QFP (FB) 42 SDIP (B)	705SR3	Now	LED drive, LVR, KBI	MC68HC05SR3D/H
MC68HC705SR3	—	192	3.75K	—	8-Bit	32	—	4-CH 8-Bit	—	—	3.3, 5.0	2.1	C	40 DIP (P) 40 CDIP (S) 44 QFP (FB) 42 SDIP (B)	—	Now	LED drive, KBI, LVR. OTP for both HC05SU3A & HC05SR3	MC68HC05SR3D/H
MC68HC05SU3A	3.75K	192	—	—	8-Bit	32	—	—	—	—	5.0	2.1	0-70°C only	40 DIP (P)	705SR3	Now	KBI, LED drive	MC68HC05SU3A/H
MC68HC05X4	4K	176	—	—	16-Bit 1 IC, 1 OC, MFT, RTI	16	CAN	—	—	Y	5.0	2.1	C	28 SOIC (DW)	705X4 (limited)	Now	CAN 2.0A (not B)	MC68HC05X4/D
XC68HC705X4	—	176	4K	—	16-Bit 1 IC, 1 OC, MFT, RTI	16	CAN	—	—	Y	5.0	2.1	C	28 SOIC (DW)	—	Now	CAN 2.0A (not B)	MC68HC05X4/D

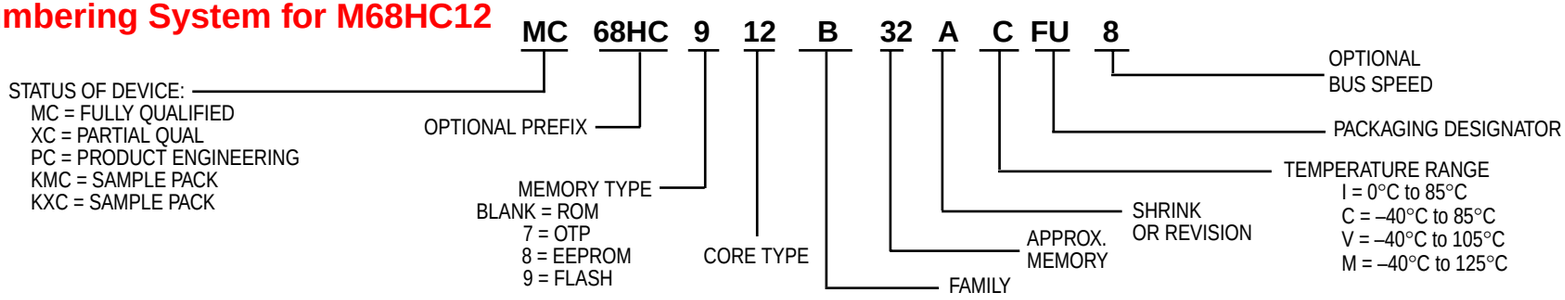
68HC05 Reference Manuals

M68HC05AG/AD	Applications Guide
M68HC05TB/D	Understanding Small Microcontrollers Text Book

68HC05 Family

68HC12 Family

Device Numbering System for M68HC12



68HC12 Family (Sheet 1 of 2)

Device	ROM (Bytes)	RAM (Bytes)	EEPROM (Bytes)	FLASH (Bytes)	Timer[1]	I/O	Serial	A/D	PWM	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp.	Package Options	Avail.	Comments	Documentation
XC68HC812A4	—	1K	4K	—	8-CH 16-Bit IC or OC RTI, pulse accumulator	Up to 91	Dual SCI SPI	8-CH 8-Bit	—	3.3, 5.0	8.0 5.0	C	112 LQFP (PV) 100 LQFP (PV)	Now	Non-muxed bus, 7 programmable chip selects, KBI (24 pins), PLL, BDM, 5Mbyte external memory, 3.0–3.6V 5MHz version (XC68C812A4) Sample pack part numbers: KXC68C812A4PV5, KXC812A4CPV8	MC68HC812A4/D
MC68HC912B32	—	1K	768	32K	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 QFP (FU)	Now	J1850, muxed bus, BDM Sample pack part numbers: KMC912B32CFU/VFU/MFU	MC68HC912B/D
XC912BC32	—	1K	768	32K	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	4.5–5.5	8.0	C, V, M	80 QFP (FU)	Now	MSCAN CAN 2.0B, BDM Sample pack part number: KXC912BC32CFU8	MC68HC912B/D
XC68HC12BC32	32K	1K	768	—	8-CH 16-Bit	Up to 63	SCI, SPI	8-CH 10-Bit	4-CH 8-Bit	5.0	8.0	C, V, M	80 QFP (FU)	Now	Part equipped with CAN 2.0A/B	MC68HC912B32TS/D
MC68HC12BE32	32K	1K	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	80 QFP (FU)	Now	BDM, enhanced timer Evaluation device with on-chip monitor: XC12BE32DCFU8 Sample pack part number: KXC12BE32DCFU8	MC68HC912B/D
XC68HC912D60	**MC912D60A is a pin-compatible replacement.**															
MC912D60A	—	2K	1K	60K	8-CH 16-Bit IC or OC RTI, pulse accumulator	Up to 66 i/o and 18 i	Dual SCI SPI, CAN	8-CH 10-Bit	4-CH 8-Bit or 2-CH 16-Bit	5.0	8.0	C, V, M	80 QFP (FU) 112 LQFP (PV)	Now	Replaces the XC68HC912D60 with 5-V FLASH voltage and a different programming algorithm.	MC68HC912D60/D
XC68HC12D60	60K	2K	1K	—	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 QFP (FU) 112 LQFP (PV)	Now	Part equipped with CAN 2.0A/B	MC68HC912D60/D

68HC12 Family (Sheet 2 of 2)

Device	ROM (Bytes)	RAM (Bytes)	EEPROM (Bytes)	FLASH (Bytes)	Timer[1]	I/O	Serial	A/D	PWM	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp.	Package Options	Avail.	Comments	Documentation
MC912DG128	MC912DG128A is a pin-compatible replacement.															
MC912DG128A	—	8K	2K	128K	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 LQFP (PV)	Now	Replaces the XC912DG128 with 5-V FLASH voltage and a different programming algorithm.	MC68HC912DG128/D
MC68HC912DT128A	—	8K	2K	128K	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 LQFP (PV)	Now	Part equipped with 3xCAN 2.0A/B	MC68HC912DT128/D

1. All 68HC12 MCUs incorporate a COP watchdog timer.

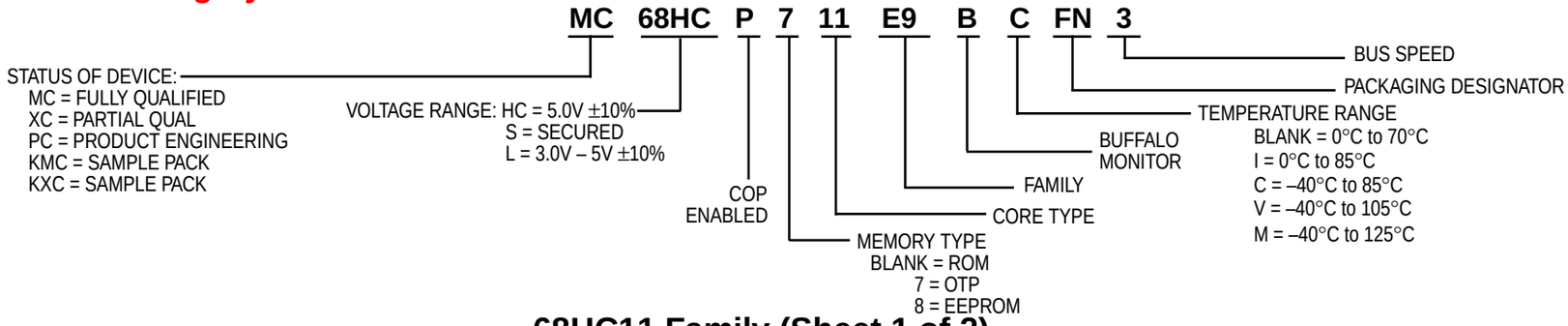
68HC12 Reference Manual

CPU12RM/AD	HC12 CPU Reference Manual

68HC12 Family

68HC11 Family

Device Numbering System for M68HC11



68HC11 Family (Sheet 1 of 2)

Device	ROM (Bytes)	RAM (Bytes)	EPROM/ OTP (Bytes)	EEPROM (Bytes)	Timer[1]	I/O S.C.	I/O EXP	Serial	A/D	PWM	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp.	Package Options	OTP	Avail.	Comments	Documentation
MC68HC11D0	—	192	—	—	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	—	16	SCI SPI	—	—	3.0, 5.0	3.0	C, V, M	40 PDIP (P) 44 QFP (FB) 44 PLCC (FN)	711D3	Now	64K external address bus, 3V 2MHz version (MC68L11D0) Sample pack part numbers: KMC11D0CFN3, KMC11D0CP3, KMC11D0CFB3	MC68HC11D3/D
MC68HC11D3	4K	192	—	—	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	32	16	SCI SPI	—	—	3.0, 5.0	3.0	C, V, M	40 PDIP (P) 44 QFP (FB) 44 PLCC (FN)	711D3	Now	64K external address bus, 3V 2MHz version (MC68L11D3)	MC68HC11D3/D
MC68HC711D3	—	192	4K	—	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	32	16	SCI SPI	—	—	5.0	3.0	C, V, M	40 PDIP (P) 44 QFP (FB) 44 PLCC (FN)	—	Now	64K external address bus, 3MHz available in C temperature range only Sample pack part numbers: KMC711D3CFB3, KMC711D3CFN3/MFN3, KMC711D3CP3/MP3	MC68HC711D3/D
MC68HC11E0	—	512	—	—	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	—	22	SCI SPI	8-CH 8-Bit	—	3.0, 5.0	3.0	C, V, M	52 PLCC (FN) 64 QFP (FU) 52 LQFP (PB)	711E9	Now	3V 2MHz version (MC68L11E0) Sample pack part numbers: KMC11E0CFN3/VFN3/MFN3, KMC11E0CFU3, KMC11D0CP3	MC68HC11E/D
MC68HC11E1	—	512	—	512	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	—	22	SCI SPI	8-CH 8-Bit	—	3.0, 5.0	3.0	C, V, M	52 PLCC (FN) 64 QFP (FU) 52 LQFP (PB)	711E9	Now	3V 2MHz version (MC68L11E1) Sample pack part numbers: KMC11E1CFN3/VFN3/MFN3, KMC11E1CFU3, KMC11E1CP3	MC68HC11E/D
MC68HC11E20	20K	768	—	512	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	38	22	SCI SPI	8-CH 8-Bit	—	5.0	3.0	C, V, M	52 PLCC (FN) 64 QFP (FU)	711E20	Now	Enhanced baud rate for 3MHz operation Automotive qual complete	MC68HC11E/D
MC68HC711E20	—	768	20K	512	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	38	22	SCI SPI	8-CH 8-Bit	—	5.0	4.0	C, V, M	52 PLCC (FN) 64 QFP (FU)	—	Now	Enhanced baud rate for 3MHz operation Sample pack part numbers: KMC711E20MFN3, KMC711E20CFN4, KMC711E20CFU4	MC68HC11E/D

1. All 68HC11 MCUs incorporate a COP watchdog timer.

68HC11 Family (Sheet 2 of 2)

Device	ROM (Bytes)	RAM (Bytes)	EPROM/ OTP (Bytes)	EEPROM (Bytes)	Timer[1]	I/O S.C.	I/O EXP	Serial	A/D	PWM	Operating Voltage (V)	Max Bus Frequency (MHz)	Temp.	Package Options	OTP	Avail.	Comments	Documentation
MC68HC11E9	12K	512	—	512	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	38	22	SCI SPI	8-CH 8-Bit	—	3.0, 5.0	3.0	C, V, M	52 PLCC (FN) 64 QFP (FU) 52 LQFP (FB) 48 DIP (P)	711E9	Now	3V 2MHz version (MC68L11E9)	MC68HC11E/D
MC68HC711E9	—	512	12K	512	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	38	22	SCI SPI	8-CH 8-Bit	—	5.0	3.0	C, V, M	52 PLCC (FN) 64 QFP (FU)	—	Now	EEPROM block protect Secure version (MC68S711E9) Sample pack part number: KMC711E9CFN4	MC68HC11E/D
MC68HC11F1	—	1K	—	512	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	—	30	SCI SPI	8-CH 8-Bit	—	3.0, 5.0	5.0	C, V, M	68 PLCC (FN) 80 LQFP (PU)	—	Now	64K ext. addr. bus, 4 prog. chip sel, non-mux address/data bus, 3V 3MHz version (MC68L11F1) Sample pack part numbers: KMC11F1CPU4, KMC11F1CPU5, KMC68L11F1CPU3, KMC11F1CFN3/4/5	MC68HC11F1/D
MC68HC11K0	—	768	—	—	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	—	37	SCI+ SPI	8-CH 8-Bit	4-CH 8-Bit or 2-CH 16-Bit	3.0, 5.0	2.0, 3.0, 4.0, 5.0	C, V, M	84 PLCC (FN) 80 QFP (FU)	—	Now	Non-mux bus, extended memory map, 4 chip selects, 3V 3MHz version (MC68L11K0) Sample pack part number: KMC11K0CFN3/4	MC68HC11K4/D
MC68HC11K1	—	768	—	640	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	—	37	SCI+ SPI	8-CH 8-Bit	4-CH 8-Bit or 2-CH 16-Bit	3.0, 5.0	5.0	C, V, M	84 PLCC (FN) 80 QFP (FU)	—	Now	Non-mux bus, extended memory map, 4 chip selects, 3V 3MHz version (MC68L11K1) Sample pack part numbers: KMC68L11K1FU2, KMC11K1CFN3/4	MC68HC11K4/D
MC68HC11K4	24K	768	—	640	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	62	37	SCI+ SPI	8-CH 8-Bit	4-CH 8-Bit or 2-CH 16-Bit	3.0, 5.0	5.0	C, V, M	84 PLCC (FN) 80 QFP (FU)	711K4 (limited)	Now	Non-mux bus, extended memory map, 4 chip selects, 3V 3MHz version (MC68L11K4) Automotive qual complete	MC68HC11K4/D
MC68HC11KW1	—	768	—	640	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	—	55	SCI+ SPI	10-CH 10-Bit	4-CH 8-Bit or 2-CH 16-Bit	5.0	4.0	C	100 LQFP (PU)	—	Now	4MHz non-mux bus, 2 extra timers, 4 chip selects extended, memory map up to 1Mbyte	MC68HC11KW1/D
MC68HC11P1	—	1K	—	640	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	62	37	Triple SCI SPI	8-CH 8-Bit	4-CH 8-Bit or 2-CH 16-Bit	5.0	4.0	C	84 PLCC (FN)	711P2 (limited)	Now	64K external address bus, MI-bus interface, PLL clock circuitry	MC68HC11P2/D
MC68HC11P2	32K	1K	—	640	16-Bit, 3/4IC, 4/5OC, RTI, pulse accumulator	62	37	Triple SCI SPI	8-CH 8-Bit	4-CH 8-Bit or 2-CH 16-Bit	5.0	4.0	C	84 PLCC (FN)	711P2 (limited)	Now	64K external address bus, MI-bus interface, PLL clock circuitry	MC68HC11P2/D

1. All 68HC11 MCUs incorporate a COP watchdog timer.

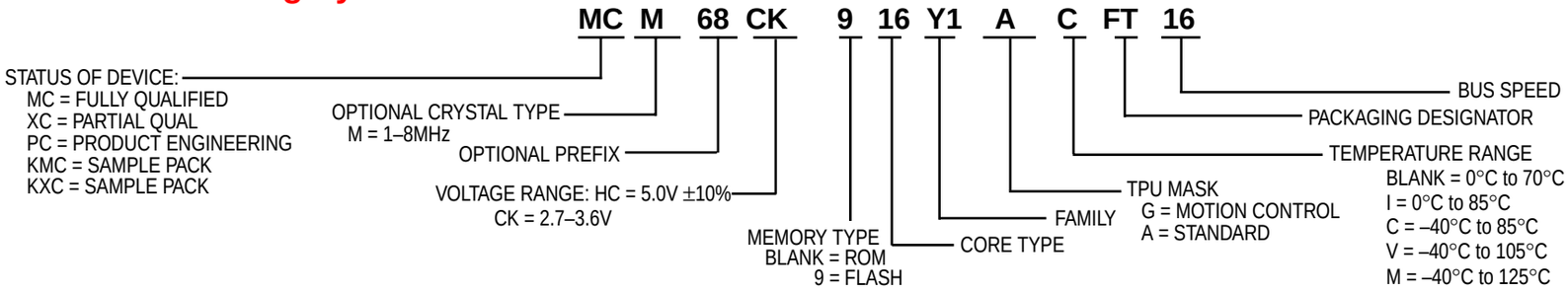
68HC11 Reference Manual

M68HC11RM/D	68HC11 Reference Manual

68HC11 Family

68HC16 Family

Device Numbering System for M68HC16



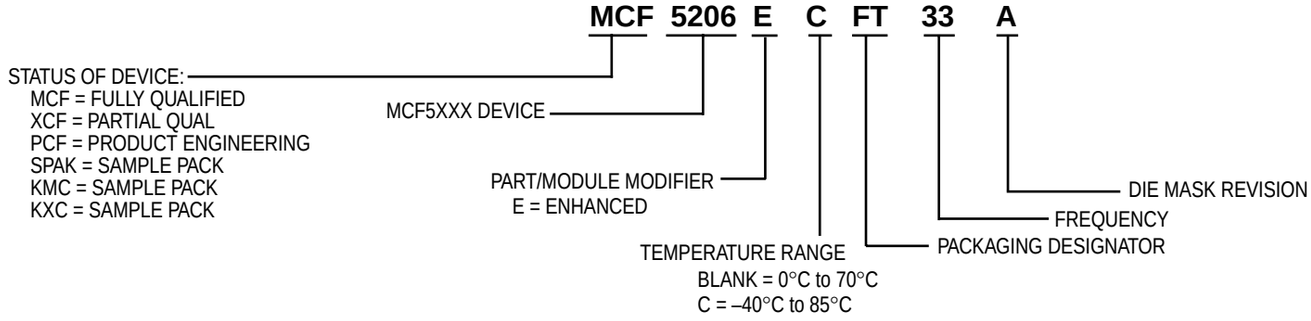
68HC16 Family

Device	ROM (Bytes)	RAM (Bytes)	FLASH (Bytes)	Device Integration	Timer	Serial	Analog	Operating Voltage (V)	Operating Frequency (MHz)	Temp.	Package Options	FLASH	Avail.	Comments	Documentation
MC68HC16R1	48K	2K	—	SCIM2	CTM7	Dual SCI, SPI	8-CH 10-Bit	5.0	16	C, V, M	132 PQFP(FC)	HC916R1	Now		MC68HC16R1PP/D (MC68HC16R1/916R1UM/AD on Web only)
68HC916X1 (XCM916X1)	—	2K	48K+2K	SCIM	GPT	SCI, queued SPI	6-CH 10-Bit	5.0	16	C	120 QFP(TH)	—	Now		MC68HC916X1TS/D
MC68HC16Y1 (MCM16Y1BA)	48K	2K	—	SCIM	GPT, TPU	Dual SCI, SPI	8-CH 10-Bit	5.0	16	C, V, M	160 QFP(FT)	HC916Y1	Now		MC68HC16Y1UM/AD
68HC916Y1 (MCM916Y1)	—	2K+2K	48K+2K	SCIM	GPT, TPU	Dual SCI, SPI	8-CH 10-Bit	5.0	16	C	160 QFP(FT)	—	Now	Sample pack part numbers: KMCM916Y1ACFT16 KMCM916Y1GCFT16	MC68HC16Y1UM/AD
MC68HC916Y3	—	4K	96K+4K	SCIM2	GPT, TPU2	Dual SCI, queued SPI	8-CH 10-Bit	5.0	16	C	160 QFP(FT)	—	Now		MC68HC916Y3PP/D (MC68HC16Y3/916Y3UM/AD on Web only)
MC68HC16Z1	—	1K	—	SIM	GPT	SCI, queued SPI	8-CH 10-Bit	5.0	16, 20, 25	C, V, M	132 PQFP(FC) 144 LQFP(PV)	—	Now	2.7V–3.6V 16MHz version (MC68CK16Z1 in PV package only)	MC68HC16ZUM/AD
MC68HC16Z4	—	1K	—	SIML	GPT	Dual SCI, SPI	8-CH 10-Bit	5.0	16	C	144 LQFP(PV)	—	Now	2.7V–3.6V 16MHz version (MC68CK16Z4) Sample pack part number: KMC16Z4CPV16	MC68HC16ZUM/AD

68HC16 Reference Manuals

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

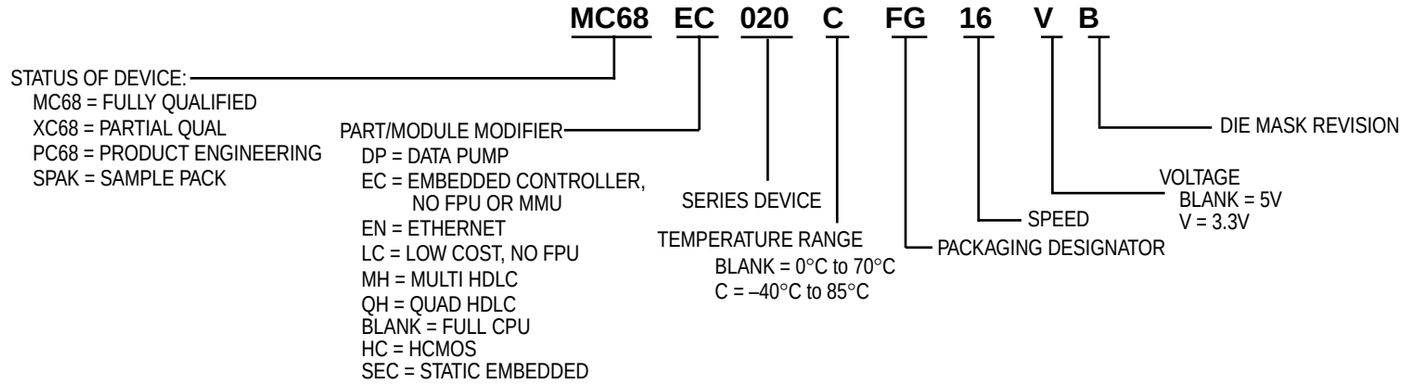
Device Numbering System for MCF5XXX Family



MCF5XXX Family

Device No.	Package	Pkg Description	Speeds (MHz)	Rev	Device Name	Temp. (–40 to +85°C)	Sample	Product Description
MCF5102	PV	LQFP 144	20, 25, 33, 40	B	Embedded 68K/ColdFire MPU	N/A	SPAK5102PVXXB	ColdFire microprocessor designed for cost-sensitive embedded control applications. In addition to executing ColdFire code, this first family member is designed with additional capabilities that allow it to execute existing M680x0 code. Processor includes on-chip instruction/data caches (2K/1K, respectively).
MCF5202	PU	TQFP 100	16, 25, 33	B	Embedded 68K/ColdFire MPU	CPU25	SPAK5202PUXXB	ColdFire Version 2 microprocessor designed for cost-sensitive embedded control applications with a 2K unified cache
MCF5204	PU	TQFP 100	16, 25, 33	B	Embedded Integrated 68K/ColdFire MPU	CPU25	SPAK5204PUXXB	ColdFire Version 2 microprocessor designed for cost-sensitive embedded control applications with UART, 2 timers
MCF5206	FT	QFP 160	16, 25, 33	A	Embedded Integrated 68K/ColdFire MPU	CFT16, 25	SPAK5206FTXXA	ColdFire Version 2 microprocessor designed for cost-sensitive embedded control applications with UART, 2 timers, DRAM controller
XCF5206E	FT	QFP 160	40, 54	—	Embedded Integrated 68K/ColdFire MPU	CFT40	SPAK5206EFT54 SPAK5206ECFT40	ColdFire Version 2 microprocessor with enhanced, pin-compatible version of 5206 with 50 Dhrystone 2.1MIPS @ 54MHz, 4K I-cache, 8K SRAM, MAC, HW divide, I^2C, 2 UARTs, 2 16-bit timers, 2-CH DMA, 3.3V operation, 5.0V tolerant I/O
XCF5272	VF	MAPBGA 196	66	—	Embedded Integrated 68K/ColdFire MPU	N/A	KXCF5272VF66	ColdFire Version 2 microprocessor with 63 Dhrystone 2.1MIPS @ 66MHz, MAC, HW divide, 1K I-cache, 4K SRAM, 10/100 fast Ethernet controller w/ dedicated DMA, USB 1.1 device module, 4 TDM GCI/IDL ports, software HDLC module, QSPI, SDRAM controller, 2 UARTs, 1-CH DMA, 16-bit GPIOs, 4 16-bit timers, 3 PWMs, world-class BDM, JTAG, 3.3V operation, 5.0V tolerant I/O
MCF5307	FT	FQFP 208	66, 90	B	Embedded Integrated 68K/ColdFire MPU	CFT66	KMCF5307FTXXB KMCF5307CFT66B	ColdFire Version 3 microprocessor with 75 Dhrystone 2.1MIPS @ 90MHz, 8K unified cache, 4K SRAM, MAC, HW divide, 2 UARTs, 16-bit GPIOs, 4-CH DMA, 2 16-bit timers, PLL, I^2C, 3.3V operation, 5.0V tolerant I/O
XCF5407	FT	FQFP 208	162	A	Embedded Integrated 68K/ColdFire MPU	N/A	KXCF5407FT162	ColdFire Version 4 microprocessor pin-compatible 5307 performance upgrade with 257 Dhrystone 2.1MIPS @ 162MHz, 16K I-cache, 8K D-cache, 4K SRAM, MAC, HW divide, 1 UART, 1 USART, 16-bit GPIOs, 4-CH DMA, 2 16-bit timers, PLL, I^2C, 1.8V and 3.3V operation, 3.3V tolerant I/O

Device Numbering System for the 68XXX Family



68XXX General-Purpose Processors (Sheet 1 of 2)

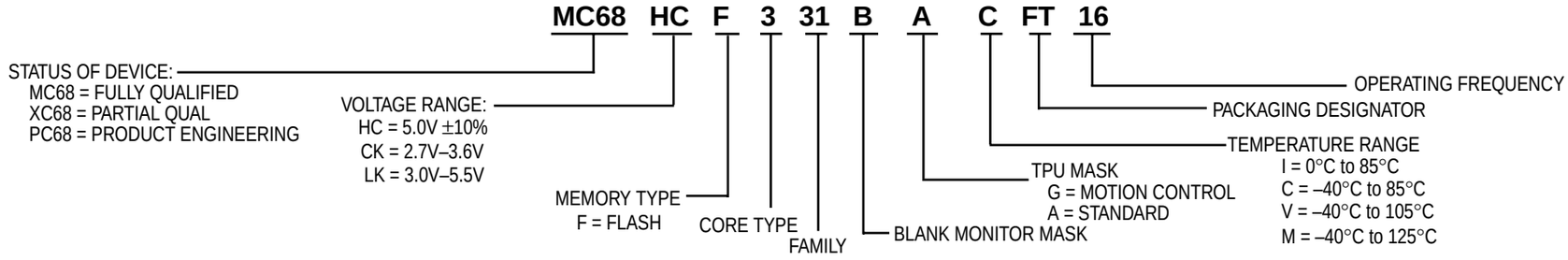
Device No.	Package	Device Name	Speeds (MHz)	Rev	Temp.** (–40 to +85°C)	SOQ	MPQ	POQ	Brick	Product Description
MC68EC000	68-Lead FN 64-Lead FU 64-Lead PB	8-/16-/32-Bit HCMOS Embedded MPU	8, 10, 12, 16, 20 8, 10, 12, 16, 20 10, 16, 20	—	CFU10, 12, 16, 20 NA	0 0	18 84	1008 420	420	Low-cost embedded control MPU with 8-/16-bit selectable data bus.
						For FN, FU sample order—SPAKEC000FNXX, SPAKEC000FUXX				
MC68HC000	68-Lead FN, 68-Lead RC	HCMOS 16-/32-Bit MPU	8, 10, 12, 16, 20 8, 10, 12, 16	—	CFN8, 10, 12, 16 CRC8, 10, 12, 16	5 0 0	18 78 21	1008 780 210	N/A	Complete pin and timing MC68000-compatibility with a tenth of the power dissipation.
						For FC, FN, P, RC sample order—SPAKHC000FCXX, SPAKHC000FNXX, SPAKHC000PXX, SPAKH000RCXX*				
MC68HC001	68-Lead FN, 68-Lead RC	Statically Switchable 8-/16-Bit Data Bus	8, 10, 12, 16 8, 10, 12, 16	—	CFN8, 10 CRC8	0 0	18 21	1008 210	N/A	Functionally compatible with MC68000 and MC68008.
						For FN, RC sample order—SPAKHC001FNXX, SPAKHC001RCXX*				
MC68SEC000	64-Lead FU, 64-Lead PB	8-/16-/32-Bit Static HCMOS Embedded MPU	10, 16, 20 10, 16, 20	—	CFU10, 16, 20 N/A	0 2	84 160	420 800	N/A	Static version of the MC68EC000.
						For FU sample order—SPAKSEC000FUXX, SPAKSEC000CFUXX				
MC68020	114-Lead RC 132-Lead FE 132-Lead FC	32-Bit MPU	16, 20, 25, 33 16, 20, 25, 33 16, 20, 25, 33	E E E	CRC16, 20, 25 N/A CFC16, 25	1 0 0	1 36 36	14 180 144	180	Complete 32-bit MPU. 5-Gbyte linear address space. Co-processor interface. Instruction cache. Dynamic bus sizing. Excellent MPU for graphics control. On-chip cache speeds drawing algorithms. Bit field support for pixel manipulation. (FE packages not recommended for new designs.)
						For FC, FE sample order—SPAK020FCXXE, SPAK020FEXXE, SPAK020RCXXE				
MC68EC020	100-Lead FG	32-Bit Embedded MPU	16, 25	—	CFG16	0	66	264	330	32-bit data bus MPU with 24-bit address bus. Instruction cache. Dynamic bus sizing. Coprocessor interface. Low-cost packaging.
						For FG sample order—SPAKEC020FGXX				
MC68030	128-Lead RC 132-Lead FE	Enhanced 32-Bit MPU	16, 20, 25, 33, 40, 50 16, 20, 25, 33	C C	CRC25, 33 N/A	1 0	14 36	70 180	N/A	Complete 32-bit MPU with on-chip instruction and data caches, internal parallel buses, enhanced bus controller, and on-chip MMU.
						For FE sample order—SPAK030FEXXC, SPAK030RCXXC				

68XXX General-Purpose Processors (Sheet 2 of 2)

Device No.	Package	Device Name	Speeds (MHz)	Rev	Temp.** (–40 to +85°C)	SOQ	MPQ	POQ	Brick	Product Description
MC68EC030	132-Lead FE	Embedded MPU	25, 40	C	CFE25	1	36	180	N/A	32-bit MPU for embedded applications. On-chip instruction and data caches provide high-speed access for control routines and data. Utilizes low-cost DRAM bus interface.
						For FE sample order—SPAKEC030FEXXC				
MC68040	179-Lead RC 184-Lead FE	32-Bit MPU MMU FPU	25, 33, 40 25, 33, 40	A A	N/A	1 0	10 24	50 96	N/A	Complete 32-bit MPU with on-chip instruction/data caches (4 Kbytes each). On-chip MMU. Full IEEE floating point, multiprocessing support with full M68000 Family compatibility.
						For FE sample order—SPAK040FEXX				
MC68EC040	179-Lead RC 184-Lead FE	Embedded 32-Bit High Performance Processor	20, 25, 33, 40 20, 25, 33, 40	A A	BRC33 N/A	1 0	10 24	50 96	100	High-performance 32-bit MPU with on-chip instruction and data cache provides high-speed access for control routines and data. Utilizes low-cost DRAM bus interface.
						For FE sample order—SPAKEC040FEXX				
MC68LC040	179-Lead RC 184-Lead FE	High Performance 32-Bit Processor	20, 25, 33, 40 20, 25, 33, 40	A A	BRC33 N/A	1 0	10 24	50 96	N/A	68040-compatible integer unit and MMU. Ideal solution for cost-sensitive computer or sophisticated embedded applications.
						For FE sample order—SPAKLC040FEXX				
MC68040V	182-Lead RC 184-Lead FE	32-Bit MPU MMU, Low-Voltage	25, 33, 40 @ 3.3 V 25, 33, 40 @ 3.3 V	—	N/A	1 0	10 24	50 96	N/A	Low-voltage complete 32-bit MPU with on-chip instruction/data caches (4 Kbytes each). On-chip MMU. Multiprocessing support.
						For FE sample order—SPAKEC040VFEXX				
MC68060	206-Lead RC	Superscalar 32-Bit Processor	50, 60	—	N/A	0	10	50	N/A	RISC hybrid superscalar MPU with full M68000 Family compatibility. Includes dual integer units, on-chip instruction/data caches (8 Kbytes each), on-chip MMU, and full IEEE compliant FPU.
						For RC sample order—SPAK060RCXX				
MC68EC060	206-Lead RC 304-Lead ZU	Superscalar 32-Bit Processor	50, 66, 75 50, 66, 75	—	N/A	0 1	10 27	50 135	N/A	RISC hybrid superscalar MPU with full M68000 Family compatibility. Includes dual integer units, on-chip instruction/data caches (8 Kbytes each). Ideal for high-performance embedded control applications.
						For sample order—SPAKEC060ZUXXE, SPAKEC060RCXXE				
MC68LC060	206-Lead RC 304-Lead ZU	Superscalar 32-Bit Processor	50, 66, 75 50, 66, 75	—	N/A	0 0	10 27	50 135	N/A	RISC hybrid superscalar MPU with full M68000 Family compatibility. Includes dual integer units, on-chip instruction/data caches (8 Kbytes each) and on-chip MMU.
						For RC sample order—SPAKLC060RCXX				
MC68882	68-Lead RC 68-Lead FN	Enhanced Floating-Point Coprocessor (EFPCP)	16, 20, 25, 33, 40, 50 16, 20, 25, 33, 40	A A	CRC16, 20, 25, 33 CFN16, 20, 25, 33	1 1	21 18	84 18	N/A	Pin-to-pin timing and software compatibility with MC68881. Dual ported registers and increased pipelining allows 2-4 × performance of MC68881. (Not recommended for new designs.)
						For sample order—SPAK68882RCXXA, SPAK68882CRCXXA, SPAK68882CFNXXA, SPAK68882FNXXA				
MC68306	132-Lead FC 144-Lead PV	Integrated EC000 Processor	16 16, 20	B B	CFC16 N/A	0 0	36 60	144 300	300	68000 CPU, 68681 DUART, DRAM control all in one chip.
						For FC, PV sample—SPAK306FCXXB, SPAK306PVXXB, SPAK306CFC16B				
MC68340	144-Lead FE 144-Lead PV 144-Lead FT 144-Lead PV 144-Lead FE	Integrated Processor with DMA	16, 25 @ 5V 16, 25 @ 5V 16, 25 @ 5V 16 @ 3.3V 16 @ 3.3V	E E E E E	CFE16, CFE25 CPV16, CPV25 CFT16, CFT25 N/A N/A	0 0 0	24 60 24	120 300 120	120 300 120	CPU32 core processor for data movement applications. Two channel DMA, two serial channels, two timers, chip selects, wait-state generation, and glue logic. (FE package not recommended for new designs.)
						For PV sample order—SPAK340PV16E, SPAK340PV16VE, SPAK340PV25E For FE sample order—SPAK340FE16E, SPAK340FE25E For FT sample order—SPAK340FT16E, SPAK340FT25E				

NOTE: **Extended temperature devices with minimum order requirements. All package/speed combinations may not be valid — consult factory to verify.

Device Numbering System for 683XX Family



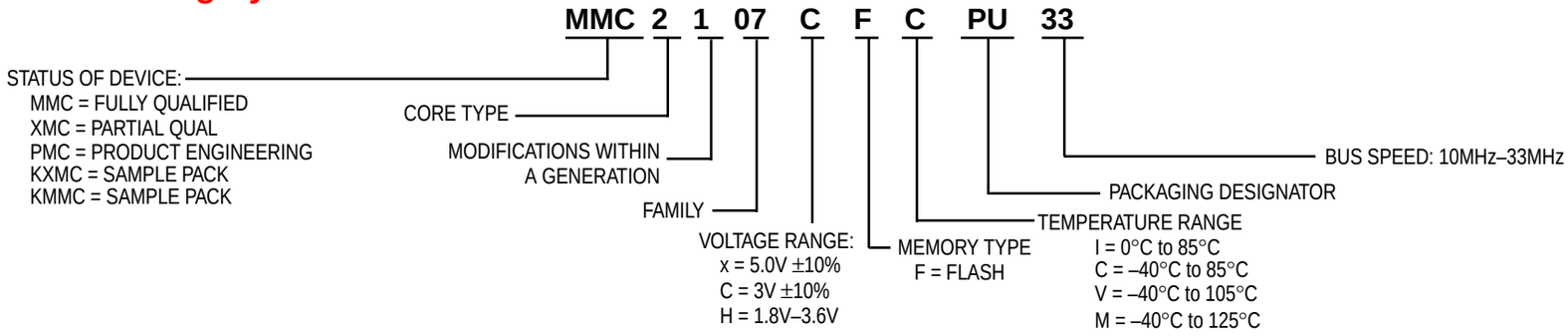
683XX Family

Device	ROM (Bytes)	RAM (Bytes)	FLASH (Bytes)	Device Integration	Timer	Serial	A/D	Operating Voltage (V)	Operating Frequency (MHz)	Temp.	Package Options	Avail.	Comments	Documentation
MC68331	—	—	—	SIM	GPT	SCI, queued SPI	—	5.0	16, 20, 25	C, V, M	132 PQFP 144 LQFP	Now	2.7V–3.6V 16MHz version (MC68CK331) Sample pack part numbers: KMC68331CPV25, KMC68331CFC20, KMC68331CFC2	MC68331UM/AD MC68CK331EC16/D
MC68332	—	2K	—	SIM	TPU	SCI, queued SPI	—	5.0	16, 20, 25	C, V, M	132 PQFP 144 LQFP	Now	3.0V–3.6V 16MHz version (MC68LK332) Sample pack part numbers: KMC68332ACFC20, KMC68332AMPV20	MC68332UM/AD MC68LK332EC16/D
MC68336	—	4K+3.5K	—	SIM	TPU CTM4	SCI, queued SPI	Queued 16-CH 10-Bit	5.0	20, 25	V, M	160 QFP	Now		MC68336/376PP/D MC68336/376UM/AD
MC68376	8K	4K+3.5K	—	SIM	TPU CTM4	TOUCAN, SCI, queued SPI	Queued 16-CH 10-Bit	5.0	20, 25	V, M	160 QFP	Now		MC68336/376PP/D MC68336/376UM/AD

683xx Reference Manuals

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

Device Numbering System for M•CORE



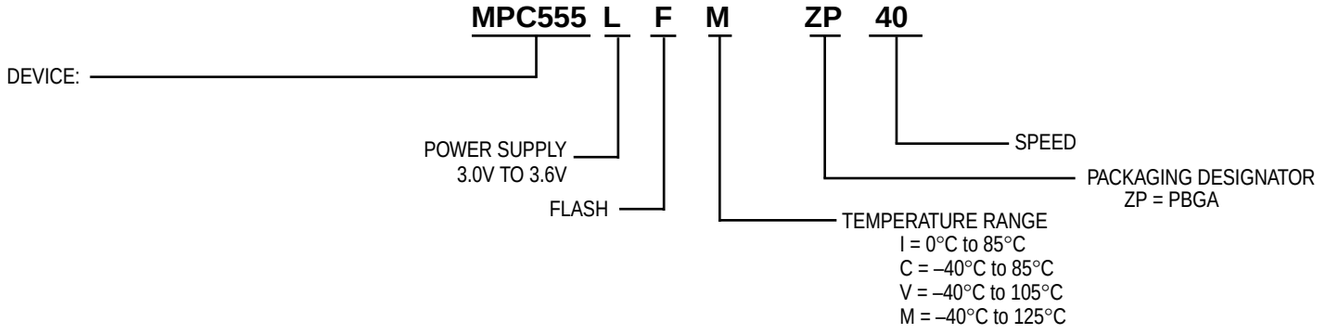
MMC2XXX Family

Device	ROM (Bytes)	RAM (Bytes)	FLASH (Bytes)	Timer	PWM	Serial	A/D	Operating Voltage (V)	Operating Frequency (MHz)	Temp.	Package Options	Avail.	Comments	Documentation
M•CORE MMC2001	256K	32K	—	Time-of-day, periodic interrupt timer, COP	6-CH 10-Bit	Dual UART Interval SPI	—	1.8–3.6	33	C	144 LQFP	Samples Now	ROM includes debugger, peripheral device 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/D M•CORERM/AD
M•CORE MMC2107	—	8K	128K	dual 4-channel 6-bit capture/ compare, PWM capability, watchdog	See Timer	Dual SCI, SPI	Queued 8-CH 10-Bit	2.7–3.6	33	C	100 LQFP 144 LQFP	Now	PLL clock, 32 source interrupt controller, periodic interrupt timer, external bus interface with 23 address,32 data and 4 chip select lines, OnCE debug module Sample part numbers: KMMC2107CFCPU33 (100 LQFP), KMMC2107CFCPV33 (144 LQFP)	MMC2107/D M•CORERM/AD

MMC2XXX/MPCXXX Families

MMC2XXX/MPCXXX Families

Device Numbering System for PowerPC Family



MPCXXX Family

Device	ROM (Bytes)	RAM (Bytes)	FLASH (Bytes)	Device Integration	Timer	Serial	MUX	A/D	PWM	Operating Voltage (V)	Operating Frequency (MHz)	Temp.	Package Options	Comments	Documentation
MPC555	0	26K + 6K for TPU	448K	USIU	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 on each)	8 x PWM	3.3Vdc for core, 5.0Vdc for FLASH	40	C, M	272 PBGA (ZP)	Volume production available Q1 2002.	MPC555UM/AD TPURM/AD RCPURM/AD

— Definitions —

ADC — Analog-to-Digital Converter
BDM — Background Debug Mode
Brick — 5 Full Trays and 1 Cover Tray
C — –40°C to +85°C Operating Temperature Range
CAN — Controller Area Network
COP — Computer Operating Properly (Watchdog Timer)
CTM — Configurable Timer Module (Various Hardware Options)
DTMF — Dual-Tone Multi-Frequency
EBI — External Bus Interface
FPU — Floating Point Unit
GPT — General-Purpose Timer Module (4 IC, 5 OC, 2 PWM)
IC — Input Capture
I^2C — Inter-Integrated Circuit
i/o — Bidirectional Input and Output Port Pins
i — Input-Only Port Pins
I — 0°C–80°C Operating Temperature Range
ICG — Internal Clock Generator
ISPI — Interval Serial Peripheral Interface
KBI — Keyboard Interrupt
LCD — Liquid Crystal Display
LED — Light-Emitting Diode
LTD — Limited Availability
LVI — Low-Voltage Inhibit
LVR — Low-Voltage Reset
M — –40°C to +125°C Operating Temperature Range
MC — Fully Qualified Production
MCCI — Multi-Channel Communication Interface (2 SCI, SPI)
MCU — Microcontroller Unit
MFT — Multi-Function Timer
MMU — Memory Management Unit
MPQ — Minimum Purchase Quantity
MPU — Microprocessor Unit
MUX — Multiplexed
o — Output-Only Port Pins
OC — Output Compare
PC — Pre-Qualification, Engineering Samples Only
PEEP — Personality EEPROM
PEP — Personality EPROM
PLL — Phase-Locked Loop
POQ — Purchase Order Quantity (Box)
PWM — Pulse-Width Modulation
QADC — Queued Analog-to-Digital Converter (10-Bit)
QSM — Queued Serial Module (SCI + QSPI)
QSPI — Queued SPI
RTI — Real-Time Interrupt
SCI — Serial Communication Interface
SCI+ — Enhanced SCI
SCIM — Single-Chip Integration Module
SIM — System Integration Module
SIML — Low-Power System Integration Module
SIOP — Simple Serial I/O Port
SOQ — Sample Order Quantity
SPI — Serial Peripheral Interface
SPI+ — Enhanced SPI
SRAM — Standby RAM Module
TBM — Timebase Module
TPU — Time Processor Unit (16 Programmable Channels)
TPURAM — Standby RAM Module with TPU Emulation Capability
UART — Universal Asynchronous Receiver/Transmitter
USB — Universal Serial Bus
V — –40°C to +105°C Operating Temperature Range
XC — Initial Production Qualification, Not Fully Characterized

— Package Acronymns —

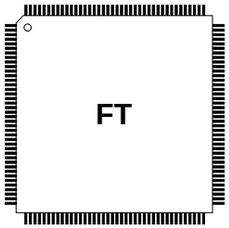
CDIP — Ceramic Dual In-Line Package
CLCC — Ceramic Leaded Chip Carrier
CQFP — Ceramic Quad Flat Pack
DIP — Dual In-line Package
LQFP — Low-Profile Quad Flat Pack
MAPBGA — Mold Array Process Ball Grid Array
PBGA — Plastic Ball Grid Array
PLCC — Plastic Leaded Chip Carrier
PQFP — Plastic Quad Flat Pack
QFP — Quad Flat Pack
SDIP — Shrink Dual In-line Package
SOIC — Small Outline Integrated Package
SSOP — Shrink Small Outline Package

Definitions

Package Options

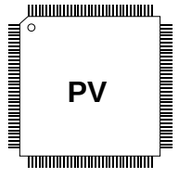
Package Options (Actual Size)
Sheet 1 of 2

208/160-Lead QFP



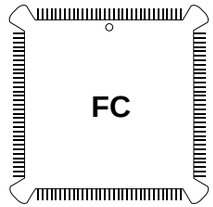
.65 mm Pitch
28 mm x 28 mm Body

144-Lead LQFP



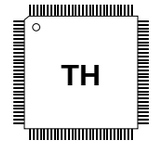
.5 mm Pitch
20 mm x 20 mm Body

132-Lead PQFP



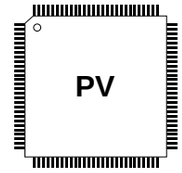
25 mil/06.35 mm Pitch
0.950 in x 0.950 in Body
(Nominal, w.o. Bumpers)

120-Lead QFP/LQFP



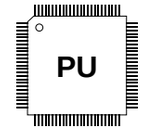
.5 mm Pitch
16 mm x 16 mm Body

112-Lead LQFP



.65 mm Pitch
20 mm x 20 mm Body

100-Lead LQFP



.5 mm Pitch
14 mm x 14 mm Body

80-Lead QFP/LQFP

.65 mm Pitch
14 mm x 14 mm Body

84-Lead PLCC/CLCC

50 mil/1.27 mm Pitch
1.15 in x 1.15 in Body

68-Lead PLCC/CLCC

50 mil/1.27 mm Pitch
0.950 in x 0.950 in Body

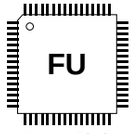
52-Lead PLCC/CLCC

50 mil/1.27 mm Pitch
0.750 in x 0.750 in Body

44-Lead PLCC/CLCC

50 mil/1.27 mm Pitch
0.650 in x 0.650 in Body

64-Lead QFP

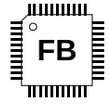


.8 mm Pitch
14 mm x 14 mm Body

52-Lead QFP

.65 mm Pitch
10 mm x 10 mm Body

44-Lead QFP



.8 mm Pitch
10 mm x 10 mm Body

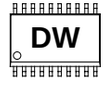
32-/48-Lead QFP

.8 mm/.5 mm Pitch
7 mm x 7 mm Body

28-Lead SOIC

50 mil/1.27 mm Pitch
18.0 mm x 7.5 mm Body

20-Lead SOIC



50 mil/1.27 mm Pitch
12.8 mm x 7.5 mm Body

16-Lead SOIC

50 mil/1.27 mm Pitch
10.35 mm x 7.5 mm Body

28-Lead SSOP

25.6 mil/.65 mm Pitch
5.28 mm x 10.19 mm Body

20-Lead SSOP

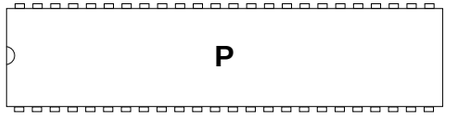
17 mil/.65 mm Pitch
5.3 mm x 7.2 mm Body

— Package Designators —

B — Shrink DIP (70 mil spacing)
DW — Small Outline (Wide-Body SOIC)
FA — 7 x 7 mm Quad Flat Pack (QFP)
FB — 10 x 10 mm Quad Flat Pack (QFP)
FC — Plastic Quad (Gull Wing)
FE — CQFP (windowed) — Samples Only
FG — 14 x 20 mm Plastic Quad Flat Pack (PQFP)
FN — Plastic Quad (PLCC)
FS — CLCC (windowed) — Samples Only
FT — 28 x 28 mm Quad Flat Pack (QFP)
FU — 14 x 14 mm Quad Flat Pack (QFP)
FZ — CQFP (windowed) — Samples Only
K — Cersdip (windowed) — Samples Only
L — Ceramic Sidebraze
P — Dual in-Line Plastic
PB — 10 x 10 mm Quad Flat Pack (QFP)
PU — 14 x 14 mm Low-Profile Quad Flat Pack (LQFP)
PV — 20 x 20 mm Low-Profile Quad Flat Pack (LQFP)
RC — Pin Grid Array, Gold Lead Finish
S — Cerdip (windowed) — Samples Only
SD — Shrink Small Outline Package (SSOP)
VF — 1.6 mm Thick MAPBGA
ZP — Plastic Ball Grid Array (PBGA)
ZU — Tape Ball Grid Array, 352 and 480 Lead

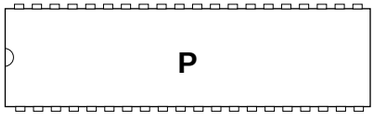
Package Options (Actual Size)
Sheet 2 of 2

48-Pin Plastic DIP



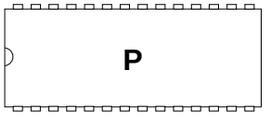
100 mil/2.54 mm Pitch
2.45 in x .55 in Body
(100 mil x 600 mil pin centers)

40-Pin Plastic DIP



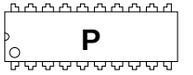
100 mil/2.54 mm Pitch
2.05 in x .55 in Body
(100 mil x 600 mil pin centers)

28-Pin DIP



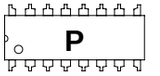
100 mil/2.54 mm Pitch
1.45 in x .55 in Body
(100 mil x 600 mil pin centers)

20-Pin Plastic DIP



100 mil/2.54 mm Pitch
.97 in x .29 in Body
(100 mil x 300 mil pin centers)

16-Pin Plastic DIP

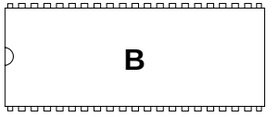


100 mil/2.54 mm Pitch
.75 in x .25 in Body
(100 mil x 300 mil pin centers)

56-Pin Plastic SDIP

70 mil/1.778 mm Pitch
2.05 in x .55 in Body
(70 mil x 600 mil pin centers)

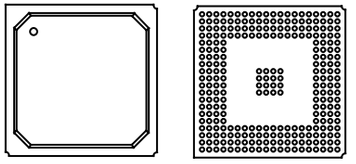
42-Pin Plastic SDIP



70 mil/1.778 mm Pitch
1.45 in x .55 in Body
(70 mil x 600 mil pin centers)

272-Ball PBGA

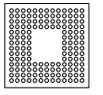
ZP



1.27 mm Pitch
27.0 mm x 27.0 mm Body

144-Ball Grid Array (BGA)

VF



.8 mm Ball Pitch
12 mm x 12 mm x 1.6 mm

Package Options

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