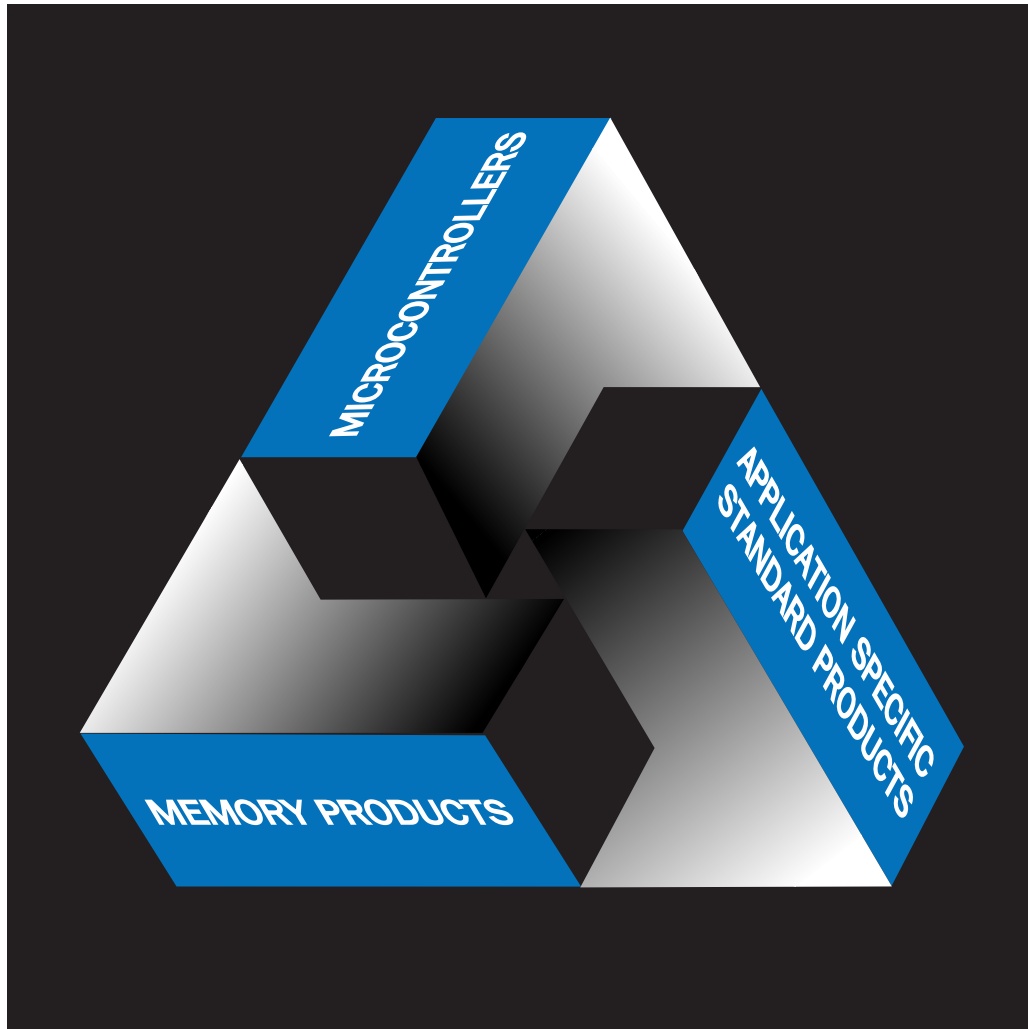


PRODUCT LINE CARD



SECOND QUARTER 1998



MICROCHIP
The Embedded Control Solutions Company®

PICmicro™ 8-BIT MICROCONTROLLER FAMILY

Product	Program Memory OTP		E ² PROM Data Memory	Data RAM Bytes	Max. Speed MHz	I/O Ports	ADC 8-Bits	Serial I/O	PWM	Brown-Out Detection	Comparators	Timers	ICSP™	Other Features	ROM Equivalent	Packages
	Bytes	Words														
PIC12CXXX — 400ns Instruction Execution, 33/35 Instructions																
PIC12C508	768	512x12	—	25	4	6	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8SM, 8JW
PIC12C508A*	768	512x12	—	25	4	6	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8SM, 8JW
PIC12C509	1536	1024x12	—	41	4	6	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8SM, 8JW
PIC12C509A*	1536	1024x12	—	41	4	6	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8SM, 8JW
PIC12CE518*	768	512x12	16	25	4	6	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8SM, 8JW
PIC12CE519*	1536	1024x12	16	41	4	6	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8SM, 8JW
PIC12C671*	1792	1024x14	—	128	10	6	4	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8SM, 8JW
PIC12C672*	3584	2048x14	—	128	10	6	4	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8SM, 8JW
PIC12CE673*	1792	1024x14	16	128	10	6	4	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8JW
PIC12CE674*	3584	2048x14	16	128	10	6	4	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator	—	8P, 8JW
PIC16C5X — 200ns Instruction Execution, 33 Instructions																
PIC16C52	576	384x12	—	25	4	12	—	—	—	—	—	1	—	10mA source/sink per I/O, 2.5V	—	18P, 18SO
PIC16C54	768	512x12	—	25	20	12	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O, 2.5V	PIC16CR54A	18P, 18JW, 18SO, 20SS
PIC16C54A	768	512x12	—	25	20	12	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O, 2.0V	—	18P, 18JW, 18SO, 20SS
PIC16C54B	768	512x12	—	25	20	12	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O	PIC16CR54B	18P, 18JW, 18SO, 20SS
PIC16C55	768	512x12	—	24	20	20	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O, 2.5V	—	28P, 28JW, 28SP, 28SO, 28SS
PIC16C56	1536	1024x12	—	25	20	12	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O, 2.5V	—	18P, 18JW, 18SO, 20SS
PIC16C56A	1536	1024x12	—	25	20	12	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O	PIC16CR56A	18P, 18JW, 18SO, 20SS
PIC16C57	3072	2048x12	—	72	20	20	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O, 2.5V	—	28P, 28JW, 28SP, 28SO, 28SS
—	3072 (ROM)	2048x12	—	72	20	20	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O, 2.5V	PIC16CR57B	28P, 28JW, 28SP, 28SO, 28SS
PIC16C58A	3072	2048x12	—	73	20	12	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O, 2.0V	PIC16CR58A	18P, 18JW, 18SO, 20SS
PIC16C58B	3072	2048x12	—	73	20	12	—	—	—	—	—	1+WDT	—	20mA source and 25mA sink per I/O	PIC16CR58B	18P, 18JW, 18SO, 20SS
PIC16CXXX — 4–12 Interrupts, 200ns Instruction Execution, 35 Instructions, Upwardly Compatible with PIC16C5X																
PIC14C000	7168	4096x14	—	192	20	20	8 SLAC	I ² C™/ SMB	—	—	2	2+WDT	Yes	25mA source/sink, temperature sensor, bandgap voltage reference, internal oscillator, 2 Digital-to-Analog Converters	—	28SP, 28SO, 28SS, 28JW
PIC16C554	896	512x14	—	80	20	13	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, 2.5V	—	18P, 18SO, 20SS, 18JW
PIC16C554A*	896	512x14	—	96	20	13	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O	—	18P, 18SO, 20SS, 18JW
PIC16C556A*	1792	1024x14	—	96	20	13	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O	—	18P, 18SO, 20SS, 18JW
PIC16C558	3584	2048x14	—	128	20	13	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, 2.5V	—	18P, 18SO, 20SS, 18JW
PIC16C558A*	3584	2048x14	—	128	20	13	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O	—	18P, 18SO, 20SS, 18JW
PIC16C61	1792	1024x14	—	36	20	13	—	—	—	—	—	1+WDT	Yes	20mA source and 25mA sink per I/O	—	18P, 18SO, 18JW
PIC16C62A	3584	2048x14	—	128	20	22	—	I ² C/SPI™	1	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	PIC16CR62	28SP, 28SO, 28SS, 28JW
PIC16C63	7168	4096x14	—	192	20	22	—	USART/I ² C/SPI	2	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	PIC16CR63	28SP, 28SO, 28JW
PIC16C64A	3584	2048x14	—	128	20	33	—	I ² C/SPI	1	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, Capture/Compare/PWM	PIC16CR64	40P, 40JW, 44L, 44PQ, 44PT
PIC16C65A	7168	4096x14	—	192	20	33	—	USART/I ² C/SPI	2	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, 2 Capture/Compare/PWM	PIC16CR65	40P, 40JW, 44L, 44PQ, 44PT
PIC16C66	14336	8192x14	—	368	20	22	—	USART/I ² C/SPI	2	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	—	28SP, 28SO, 28JW
PIC16C67	14336	8192x14	—	368	20	33	—	USART/I ² C/SPI	2	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM, Parallel Slave Port	—	40P, 40JW, 44L, 44PQ, 44PT
PIC16C620	896	512x14	—	80	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable V _{REF} , 2.5V	—	18P, 18SO, 20SS, 18JW
PIC16C620A*	896	512x14	—	96	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable V _{REF}	—	18P, 18SO, 20SS, 18JW
PIC16C621	1792	1024x14	—	80	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable V _{REF} , 2.5V	—	18P, 18SO, 20SS, 18JW
PIC16C621A*	1792	1024x14	—	96	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable V _{REF}	—	18P, 18SO, 20SS, 18JW

*Contact Microchip Technology for availability date.

PICmicro 8-BIT MICROCONTROLLER FAMILY

Product	Program Memory OTP		EEPROM Data Memory	Data RAM Bytes	Max. Speed MHz	I/O Ports	ADC 8-Bits	Serial I/O	PWM	Brown-Out Detection	Comparators	Timers	ICSP	Other Features	ROM Equivalent	Packages
	Bytes	Words														
PIC16CXXX — 4-12 Interrupts, 200ns Instruction Execution, 35 Instructions, Upwardly Compatible with PIC16C5X (Continued)																
PIC16C622	3584	2048x14	—	128	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF, 2.5V	—	18P, 18SO, 20SS, 18JW
PIC16C622A*	3584	2048x14	—	128	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF	—	18P, 18SO, 20SS, 18JW
PIC16CE623*	896	512x14	128	96	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF	—	18P, 18SO, 20SS, 18JW
PIC16CE624*	1792	1024x14	128	96	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF	—	18P, 18SO, 20SS, 18JW
PIC16CE625*	3584	2048x14	128	128	20	13	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF	—	18P, 18SO, 20SS, 18JW
PIC16C641*	3584	2048x14	—	128	20	22	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF	—	28SP, 28SO, 28JW
PIC16C642	7168	4096x14	—	176	20	22	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF	—	28SP, 28SO, 28JW
PIC16C661*	3584	2048x14	—	128	20	33	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF, Parallel Slave Port	—	40P, 40JW, 44L, 44PQ, 44PT
PIC16C662	7168	4096x14	—	176	20	33	—	—	—	Yes	2	1+WDT	Yes	25mA source/sink per I/O, programmable VREF, Parallel Slave Port	—	40P, 40JW, 44L, 44PQ, 44PT
PIC16C710	896	512x14	—	36	20	13	4	—	—	Yes	—	1+WDT	Yes	25mA source/sink per I/O	—	18P, 18SO, 20SS, 18JW
PIC16C71	1792	1024x14	—	36	20	13	4	—	—	—	—	1+WDT	Yes	20mA source/sink per I/O	—	18P, 18SO, 18JW
PIC16C711	1792	1024x14	—	68	20	13	4	—	—	Yes	—	1+WDT	Yes	25mA source/sink per I/O	—	18P, 18SO, 20SS, 18JW
PIC16C715	3584	2048x14	—	128	20	13	4	—	—	Yes	—	1+WDT	Yes	25mA source/sink per I/O	—	18P, 18SO, 20SS, 18JW
PIC16C72	3584	2048x14	—	128	20	22	5	I ² C/SPI	1	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	—	28SP, 28SO, 28JW, 28SS
PIC16C73A	7168	4096x14	—	192	20	22	5	USART/I ² C/SPI	2	Yes	—	3+WDT	Yes	25mA source/sink per I/O, 2 Capture/Compare/PWM	—	28SP, 28SO, 28JW
PIC16C74A	7168	4096x14	—	192	20	33	8	USART/I ² C/SPI	2	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, 2 Capture/Compare/PWM	—	40P, 40JW, 44L, 44PQ, 44PT
PIC16C76	14336	8192x14	—	368	20	22	5	USART/I ² C/SPI	2	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	—	28SP, 28SO, 28JW
PIC16C77	14336	8192x14	—	368	20	33	8	USART/I ² C/SPI	2	Yes	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM, Parallel Slave Port	—	40P, 40JW, 44L, 44PQ, 44PT
PIC16F83	896 (Flash)	512x14 (Flash)	64	36	10	13	—	—	—	—	—	1+WDT	Yes	20mA source and 25mA sink per I/O, 64 bytes data EEPROM, 2.0V Operation	PIC16CR83	18P, 18SO
PIC16F84	1792 (Flash)	1024x14 (Flash)	64	68	10	13	—	—	—	—	—	1+WDT	Yes	20mA source and 25mA sink per I/O, 64 bytes data EEPROM, 2.0V Operation	PIC16CR84	18P, 18SO
PIC16C923	7168	4096x14	—	176	8	52	—	I ² C/SPI	1	—	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM, LCD module, static, 1/2, 1/3, 1/4 multiplex	—	64SP, 68L, 64PT
PIC16C924	7168	4096x14	—	176	8	52	5	I ² C/SPI	1	—	—	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM, LCD module, static, 1/2, 1/3, 1/4 multiplex	—	64SP, 68CL, 68L, 64PT
PIC17CXXX — 120ns Instruction Execution Including Multiply, 58 Instructions, Upwardly Compatible with PIC16CXX/PIC16C5X																
PIC17C42A	4096	2048x16	—	232	33	33	—	USART	2	—	—	4+WDT	—	20mA source and 35mA sink per I/O, 2 I/O with 60mA sink, 2 Capture, externally expandable, 1 cycle 8x8 multiply	PIC17CR42	40P, 40JW, 44L, 44PQ, 44PT
PIC17C43	8192	4096x16	—	454	33	33	—	USART	2	—	—	4+WDT	—	20mA source and 35mA sink per I/O, 2 I/O with 60mA sink, 2 Capture, externally expandable, 1 cycle 8x8 multiply	PIC17CR43	40P, 40JW, 44L, 44PQ, 44PT
PIC17C44	16384	8192x16	—	454	33	33	—	USART	2	—	—	4+WDT	—	20mA source and 35mA sink per I/O, 2 I/O with 60mA sink, 2 Capture, externally expandable, 1 cycle 8x8 multiply	—	40P, 40JW, 44L, 44PQ, 44PT
PIC17C752*	16384	8192x16	—	678	33	50	12 (10 Bits)	USART (2), I ² C/SPI	3	Yes	—	4+WDT	—	20mA source and 35mA sink per I/O, 2 I/O with 60mA sink, 4 Capture, externally expandable, 1 cycle 8x8 multiply	—	64SP, 68CL, 68L, 64PT
PIC17C756	32768	16384x16	—	902	33	50	12 (10 Bits)	USART (2), I ² C/SPI	3	Yes	—	4+WDT	—	20mA source and 35mA sink per I/O, 2 I/O with 60mA sink, 4 Capture, externally expandable, 1 cycle 8x8 multiply	—	64SP, 68CL, 68L, 64PT
PIC17C762*	16384	8192x16	—	678	33	66	16 (10 Bits)	USART (2)/I ² C/SPI	3	Yes	—	4+WDT	Yes	20mA source and 35mA sink per I/O, 2 I/O with 60mA sink, 4 Capture, externally expandable, 1 cycle 8x8 multiply	—	84CL, 84L, 80PT
PIC17C766*	132768	16384x16	—	902	33	66	16 (10 Bits)	USART (2)/I ² C/SPI	3	Yes	—	4+WDT	Yes	20mA source and 35mA sink per I/O, 2 I/O with 60mA sink, 4 Capture, externally expandable, 1 cycle 8x8 multiply	—	84CL, 84L, 80PT

*Contact Microchip Technology for availability date.

Abbreviation:

ADC = Analog-to-Digital Converter
 CAP = Capture
 CCP = Capture/Compare/PWM

DAC = Digital-to-Analog Converter
 E² = EEPROM (Reprogrammable)
 I²C = Inter-integrated Circuit Bus

PWM = Pulse Width Modulator
 SPI = Serial Peripheral Interface
 USART = Universal Synchronous/Asynchronous Receiver/Transmitter

WDT = Watchdog Timer
 SLAC = Slope A/D Converter, up to 16 bits
 SMB = System Management Bus

SECURE DATA PRODUCTS

Product	Transmission Code Length Bits	Code Hopping Bits	Programmable Encryption Key Bits	Seed Length	Operating Voltage	Function	Other Features	Packages
KEELOQ® Encoder Devices								
HCS200	66	32	64	32	3.5V to 13.0V	7	Entry Level, Fixed Code Support, Battery Low Indicator	8P, 8S0
HCS300	66	32	64	32	2.0V to 6.3V	15	LED Drive, Overflow bits, Time-out, Battery Low Indicator	8P, 8S0
HCS301	66	32	64	32	3.5V to 13.0V	15	Same as HCS300	8P, 8S0
HCS360	67	32	64	48	2.0V to 6.6V	15	IR Mode, PWM and Manchester Coding, 2 independent counters, 2-Bit CRC	8P, 8S0
HCS361	67	32	64	48	2.0V to 6.6V	15	IR Mode, PWM and VPWM Coding, 2 independent counters, 2-Bit CRC	8P, 8S0
HCS410	69	32	64	60	2.0V to 6.6V	7	Self-powered transponder, superset of HCS360	8P, 8S0, 8ST
Product	Reception Length Bits	Encoders Supported		Transmitters Supported	Operating Voltage	Functions	Other Features	Packages
KEELOQ Decoder Devices								
HCS500	67	HCS200, HCS300, HCS301, HCS360, HCS361, HCS410		Up to 7	4.5V to 5.5V	15 Serial Functions	Full-featured decoder with serial interface to microcontrollers	8P, 8S0
HCS512	67	HCS200, HCS300, HCS301, HCS360, HCS361, HCS410		Up to 4	3.0V to 6.0V	15 (S0, S1, S2, S3); VLow, Serial	Single-chip decoder with secure learning	18P, 18S0
HCS515*	67	HCS200, HCS300, HCS301, HCS360, HCS361, HCS410		Up to 7	4.5V to 5.5V	15 Serial 3 (S1, S0) Parallel	Full-featured decoder with serial and parallel interface. On-chip 1K transmitter and 1K user EEPROM.	14P, 14S0
Product	Token Units	Cryptographic Key Length	Signature Challenge	Signature Response	User Programmable Area	Operating Voltage	Other Features	Packages
KEELOQ Smart Card Devices								
SCS152	33352	64-bit	32 bits	8 bits	40 bits	4.75V to 5.25V	ISO 7816-3:1989 compliant prepaid/disposable card	Die

*Contact Microchip Technology for availability date.

SERIAL ELECTRICALLY ERASABLE PROMs (EEPROM)

Product	E/W Cycles	Density (Organization)	Write Speed	Max. Clock Freq.	Operating Voltage	Unique Features	Packages
3-WIRE SERIAL EEPROM FAMILY							
93C46B	1M	1K bits (x16)	2 ms	2 MHz	4.5V to 5.5V	All devices listed in this group are recommended for extended temperature applications only. All other applications should use 93LCx6A/B devices.	P, SN, SM, ST
93C56A	1M	2K bits (x8)	2 ms	2 MHz	4.5V to 5.5V		P, SN
93C56B	1M	2K bits (x16)	2 ms	2 MHz	4.5V to 5.5V		P, SN
93C66A	1M	4K bits (x8)	2 ms	2 MHz	4.5V to 5.5V		P, SN
93C66B	1M	4K bits (x16)	2 ms	2 MHz	4.5V to 5.5V		P, SN
93C76	10M	8K bits (x8 or x16)	5 ms	2 MHz	4.5V to 5.5V		P, SN
93C86	10M	16K bits (x8 or x16)	5 ms	2 MHz	4.5V to 5.5V		P, SN
93LC56	10M	2K bits (x8 or x16)	10 ms	2 MHz	2.0V to 6.0V		Not recommended for new designs. Not recommended for new designs.
93LC66	10M	4K bits (x8 or x16)	10 ms	2 MHz	2.0V to 6.0V	P, SN, SM, SL	
93LC76	10M	8K bits (x8 or x16)	5 ms	2 MHz	2.0V to 6.0V	P, SN	
93LC86	10M	16K bits (x8 or x16)	5 ms	2 MHz	2.0V to 6.0V	P, SN	
93LC46A	1M	1K bits (x8)	5 ms	2 MHz	2.5V to 6.0V		P, SN, SM, ST
93LC56A	1M	2K bits (x8)	6 ms	2 MHz	2.5V to 6.0V		P, SN, SM, ST
93LC66A	1M	4K bits (x8)	6 ms	2 MHz	2.5V to 6.0V		P, SN, SM, ST
93LC46B	1M	1K bits (x16)	5 ms	2 MHz	2.5V to 6.0V		P, SN, SM, ST
93LC56B	1M	2K bits (x16)	6 ms	2 MHz	2.5V to 6.0V		P, SN, SM, ST
93LC66B	1M	4K bits (x16)	6 ms	2 MHz	2.5V to 6.0V		P, SN, SM, ST
93AA46	1M	1K bits (x8 or x16)	10 ms	2 MHz	1.8V to 5.5V		P, SN, SM
93AA56	10M	2K bits (x8 or x16)	10 ms	2 MHz	1.8V to 5.5V		P, SN, SM
93AA66	10M	4K bits (x8 or x16)	10 ms	2 MHz	1.8V to 5.5V		P, SN, SM
93AA76	10M	8K bits (x8 or x16)	5 ms	2 MHz	1.8V to 5.5V		P, SN
93AA86	10M	16K bits (x8 or x16)	5 ms	2 MHz	1.8V to 5.5V		P, SN
93LCS56	1M	2K (x16)	10 ms	2 MHz	2.5V to 6.0V	The "S" indicates software write protection of user defined memory space.	P, SN, SM, SL
93LCS66	1M	4K (x16)	10 ms	2 MHz	2.5V to 6.0V		P, SN, SM, SL

Special Features: Automatic ERAL before WRAL, self-timed erase and write cycle, power on/off data protection circuitry, sequential read function and industry standard 3-wire serial I/O

SERIAL ELECTRICALLY ERASABLE PROMs (EEPROM)

Product	E/W Cycles	Density (Organization)	Write Speed	Max. Clock Freq.	Operating Voltage	Unique Features	Packages
2-WIRE I²C SERIAL EEPROM FAMILY**							
24C00	1M	128 bits (x8)	4 ms	400 kHz	4.5V to 5.5V	5-pin SOT-23 package.	P, SN, ST, OT P, SN, ST, OT P, SN, ST, OT
24LC00	1M	128 bits (x8)	4 ms	400 kHz	2.5V to 6.0V		
24AA00	1M	128 bits (x8)	4 ms	400 kHz	1.8V to 6.0V		
24C01C	1M	1K bits (x8)	1 ms	400 kHz	4.5V to 5.5V	The 24C01C, 24C02C and 24C04A are for applications which require fast byte write and/or extended temperature. I ² C compatible. 3 address pins.	P, SN, ST P, SN, ST P, SN, SM, SL
24C02C	1M	2K bits (x8)	1 ms	400 kHz	4.5V to 5.5V		
24C04A	1M	4K bits (x8)	1 ms	400 kHz	4.5V to 5.5V		
24C08B	1M	8K bits (x8)	10 ms	100 kHz	4.5V to 5.5V	The 24C08B and 24C16B versions are for 5.0V only applications which require extended temperature (-40°C to +125°C). I ² C compatible.	P, SN, SM, SL P, SN, SL
24C16B	1M	16K bits (x8)	10 ms	100 kHz	4.5V to 5.5V		
24LC01B	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Hardware write protect. Schmitt trigger inputs. 400kHz operation is @ 5.0V ± 10% and commercial grade.	P, SN, SM P, SN, SM P, SN, SM, SL P, SN, SM, SL P, SN, SM, SL P, SN, SM, SL
24LC02B	1M	2K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC04B	1M	4K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC08B	1M	8K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC16B	1M	16K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24AA01	1M	1K bits (x8)	10 ms	400 kHz	1.8V to 5.5V		
24AA02	1M	2K bits (x8)	10 ms	400 kHz	1.8V to 5.5V	Hardware write protect. Schmitt trigger inputs. 400kHz operation is @ 5.0V ± 10% and commercial temperature range (-40°C to 85°C).	P, SN, SM P, SN, SM P, SN, SM, SL P, SN, SM, SL P, SN, SM, SL
24AA04	1M	4K bits (x8)	10 ms	400 kHz	1.8V to 5.5V		
24AA08	1M	8K bits (x8)	10 ms	400 kHz	1.8V to 5.5V		
24AA16	1M	16K bits (x8)	10 ms	400 kHz	1.8V to 5.5V		
24C32A	1M	32K bits (x8)	5 ms	400 kHz	4.5V to 5.5V		
24LC32A	1M	32K bits (x8)	5 ms	400 kHz	2.5V to 6.0V	JEDEC SOIC "SN" (150 mil wide) package and cascadable.	SN, P, SM SN, P, SM SN, P, SM
24AA32A	1M	32K bits (x8)	5 ms	100 kHz	1.8V to 6.0V		
24C32	10M/1M	32K bits (x8)	5 ms	400 kHz	4.5V to 5.5V		
24LC32	10M/1M	32K bits (x8)	5 ms	400 kHz	2.5V to 6.0V	Incorporates a 4K high endurance block (not relocatable) to ensure 10,000,000 Erase/Write cycles, a 1 page by 8 line input cache (64 bytes) for fast write loads and is cascadable up to 8 parts. 1 MHz Maximum Clock Rate.	P, SM P, SM P, SM P, SM
24AA32	10M/1M	32K bits (x8)	5 ms	100 kHz	1.8V to 6.0V		
24FC32	10M/1M	32K bits (x8)	5 ms	1 MHz	4.5V to 5.5V		
24LC64	1M	64K bits (x8)	5 ms	400 kHz	2.5V to 5.5V		
24AA64	1M	64K bits (x8)	10 ms	100 kHz	1.8V to 5.5V	32 byte page.	P, SN, SM, ST P, SN, SM, ST
24C65	10M/1M	64K bits (x8)	5 ms	400 kHz	4.5 to 5.5V	Relocatable 4K bit block of ultra high endurance memory to ensure 10,000,000 E/W cycles, 1 page by 8 line input cache (64 bytes) for fast write loads, cascadable up to 512K bits, Erase/Write protection in 4K blocks. 1 MHz Maximum Clock Rate.	P, SM P, SM P, SM P, SM
24LC65	10M/1M	64K bits (x8)	5 ms	400 kHz	2.5 to 6.0V		
24AA65	10M/1M	64K bits (x8)	5 ms	100 kHz	1.8 to 6.0V		
24FC65	10M/1M	64K bits (x8)	5 ms	1 MHz	4.5V to 5.5V		
24LC128	1M	128K bits (x8)	5 ms	400 kHz	2.5V to 5.5V	64 byte page.	P, SN, SM P, SN, SM
24AA128	1M	128K bits (x8)	10 ms	100 kHz	1.8V to 5.5V		
24LC256	100K	256K bits (x8)	5 ms	400 kHz	2.5V to 5.5V	64 byte page.	P, SM P, SM
24AA256	100K	256K bits (x8)	10 ms	100 kHz	1.8V to 5.5V		
24LC164	10M	16K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Cascadable 16K-bit Serial EEPROM.	P, SN P, SN
24AA164	10M	16K bits (x8)	10 ms	400 kHz	1.8V to 5.5V		
24LC174	10M	16K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Cascadable 16K-bit Serial EEPROM. Specially addressed one-time-programmable (OTP) 16 byte security block.	P, SN P, SN
24AA174	10M	16K bits (x8)	10 ms	400 kHz	1.8V to 5.5V		
24C01SC	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Smart card specific memory devices. All devices meet ISO7816 pinout requirements.	S, W, WF S, W, WF S, W, WF S, W, WF S, W, WF S, W, WF S, W, WF
24C02SC	1M	2K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC32SC	1M	4K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC64SC	1M	8K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC128SC	1M	16K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC256SC	1M	32K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC21	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LCS21	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC21A	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Same as 24LC21 with return to DDC1 feature. Same as 24LCS21 with return to DDC1 feature.	P, SN P, SN
24LCS21A	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC41A	1M	1K and 4K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Dual Mode, Dual-Port device. Completely implements DDC1/DDC2 interface for monitor identification (DDC port). Also includes 4K bit MCU port.	P
24LC024	10M	2K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Addressable. Addressable. Software write protect.	P, SN, ST P, SN, ST
24LCS52	10M	2K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC61	10M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Software addressable devices for both identification, software WP Software addressable devices for both identification, software WP	P, SN, ST P, SN, ST
24LCS62	10M	2K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		

**The B version on the 2-wire (I²C) devices designates: no functional address (A0, A1, A2) pins, 400 kHz operation, Schmitt trigger inputs for greater noise protection, longer byte write cycle time and larger input buffer.

Special Features: Self-timed write cycle and page write mode.

IDENTIFICATION PRODUCTS (Application-Specific Products for Monitors and Memory Modules)

24LC21	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Completely implements DDC1™/DDC2™ interface for monitor identification. Improved noise filter. Software enabled Hardware Write Protection pin.	P, SN P, SN
24LCS21	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC21A	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Same as 24LC21 with return to DDC1 feature. Same as 24LCS21 with return to DDC1 feature.	P, SN P, SN
24LCS21A	1M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC41A	1M	1K and 4K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Dual Mode, Dual-Port device. Completely implements DDC1/DDC2 interface for monitor identification (DDC port). Also includes 4K bit MCU port.	P
24LC024	10M	2K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Addressable. Addressable. Software write protect.	P, SN, ST P, SN, ST
24LCS52	10M	2K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		
24LC61	10M	1K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	Software addressable devices for both identification, software WP Software addressable devices for both identification, software WP	P, SN, ST P, SN, ST
24LCS62	10M	2K bits (x8)	10 ms	400 kHz	2.5V to 5.5V		

SERIAL ELECTRICALLY ERASABLE PROMs (EEPROM)

Product	E/W Cycles	Density (Organization)	Write Speed	Max. Clock Freq.	Operating Voltage	Unique Features	Packages
SPI™ SERIAL EEPROM FAMILY							
25C040	1M	4K bits (x8)	5 ms	3 MHz	4.5V to 5.5V	Supports SPI Modes 0, 3.	P, SN, ST
25C080	1M	8K bits (x8)	5 ms	3 MHz	4.5V to 5.5V		P, SN
25C160	1M	16K bits (x8)	5 ms	3 MHz	4.5V to 5.5V		P, SN
25C320	1M	32K bits (x8)	5 ms	3 MHz	4.5V to 5.5V		P, SN, ST
25C640*	1M	64K bits (x8)	5 ms	3 MHz	4.5V to 5.5V		P, SN, ST
25LC040	1M	4K bits (x8)	5 ms	2 MHz	2.5V to 5.5V	Supports SPI Modes 0, 3.	P, SN, ST
25LC080	1M	8K bits (x8)	5 ms	2 MHz	2.5V to 5.5V		P, SN
25LC160	1M	16K bits (x8)	5 ms	2 MHz	2.5V to 5.5V		P, SN
25LC320	1M	32K bits (x8)	5 ms	2 MHz	2.5V to 5.5V		P, SN, ST
25LC640*	1M	64K bits (x8)	5 ms	2 MHz	2.5V to 5.5V		P, SN, ST
25AA040	1M	4K bits (x8)	5 ms	1 MHz	1.8V to 5.5V	Supports SPI Modes 0, 3.	P, SN, ST
25AA080	1M	8K bits (x8)	5 ms	1 MHz	1.8V to 5.5V		P, SN
25AA160	1M	16K bits (x8)	5 ms	1 MHz	1.8V to 5.5V		P, SN
25AA640*	1M	64K bits (x8)	5 ms	1 MHz	1.8V to 5.5V		P, SN, ST

Special Features: Page write mode, HOLD pin, software enabled block write protection and hardware write protect pin.

* Contact Microchip Technology Inc. for availability date.

PARALLEL ELECTRICALLY ERASABLE PROMs (EEPROM)

Product	Density (Organization)	Byte Write Time	Number of Pins	Packages	Unique Features
STANDARD SERIES					
28C04A	4K bits (x8)	1 ms	24 32	P L	
28C16A	16K bits (x8)	1 ms	24 28 32	P TS, VS L	
28C17A	16K bits (x8)	1 ms	24 28 32	P, SO TS, VS L	Ready/Busy Pin
28C64A	64K bits (x8)	1 ms	28 32	P, SO, TS, VS L	
28LV64A	64K bits (x8)	1 ms	28 32	P, SO, TS, VS L	Low voltage capability down to 3.0V
FAST BYTE WRITE SERIES					
28C04AF	4K bits (x8)	200 μs	24 32	P L	
28C16AF	16K bits (x8)	200 μs	24 28 32	P TS, VS L	
28C17AF	16K bits (x8)	200 μs	24 28 32	P, SO TS, VS L	Ready/Busy Pin
28C64AF	64K bits (x8)	200 μs	28 32	P, SO, TS, VS L	

Special Features: Access times of 150, 200, 250 ns (Except 28LV64A; Access Time = 300ns) and Commercial and Industrial Temperature Ranges.

ELECTRICALLY PROGRAMMABLE READ ONLY MEMORY (EPROM)

Product	Size	Organization	Access Time (ns)	Operating Voltage	Packages	Temp. Range
STANDARD EPROM FAMILY						
27C64-25	64K bits	8Kx8	250	4.5V to 5.5V	P, SO, L	C, I
27C64-20	64K bits	8Kx8	200	4.5V to 5.5V	P, SO, L	C, I
27C64-17	64K bits	8Kx8	170	4.5V to 5.5V	P, SO, L	C, I
27C64-15	64K bits	8Kx8	150	4.5V to 5.5V	P, SO, L	C, I
27C64-12	64K bits	8Kx8	120	4.5V to 5.5V	P, SO, L	C, I
27C128-25	128K bits	16Kx8	250	4.5V to 5.5V	P, SO, L	C, I
27C128-20	128K bits	16Kx8	200	4.5V to 5.5V	P, SO, L	C, I
27C128-17	128K bits	16Kx8	170	4.5V to 5.5V	P, SO, L	C, I
27C128-15	128K bits	16Kx8	150	4.5V to 5.5V	P, SO, L	C, I
27C128-12	128K bits	16Kx8	120	4.5V to 5.5V	P, SO, L	C, I
27C256-20	256K bits	32Kx8	200	4.5V to 5.5V	P, SO, L, TS, VS	C, I, E
27C256-15	256K bits	32Kx8	150	4.5V to 5.5V	P, SO, L, TS, VS	C, I, E
27C256-12	256K bits	32Kx8	120	4.5V to 5.5V	P, SO, L, TS, VS	C, I
27C256-10	256K bits	32Kx8	100	4.5V to 5.5V	P, SO, L, TS, VS	C, I
27C256-90	256K bits	32Kx8	90	4.5V to 5.5V	P, SO, L, TS, VS	C, I
27C512A-20	512K bits	64Kx8	200	4.5V to 5.5V	P, SO, L, TS, VS	C, I, E
27C512A-15	512K bits	64Kx8	150	4.5V to 5.5V	P, SO, L, TS, VS	C, I, E
27C512A-12	512K bits	64Kx8	120	4.5V to 5.5V	P, SO, L, TS, VS	C, I
27C512A-10	512K bits	64Kx8	100	4.5V to 5.5V	P, SO, L, TS, VS	C, I
27C512A-90	512K bits	64Kx8	90	4.5V to 5.5V	P, SO, L, TS, VS	C, I
27LV64-30	64K bits	8Kx8	300	3.0V to 5.5V	P, SO, L, TS	C
27LV64-25	64K bits	8Kx8	250	3.0V to 5.5V	P, SO, L, TS	C
27LV64-20	64K bits	8Kx8	200	3.0V to 5.5V	P, SO, L, TS	C
27LV256-30	256K bits	32Kx8	300	3.0V to 5.5V	P, SO, L, TS, VS	C, I
27LV256-25	256K bits	32Kx8	250	3.0V to 5.5V	P, SO, L, TS, VS	C, I
27LV256-20	256K bits	32Kx8	200	3.0V to 5.5V	P, SO, L, TS, VS	C, I
SERIAL EPROM FAMILY						
37LV36	35K bits	1134x32	10 MHz clock	3.0V to 6.0V	P, SO, L	C, I
37LV65	64K bits	2048x32	10 MHz clock	3.0V to 6.0V	P, SO, L	C, I
37LV128	128K bits	4096x32	10 MHz clock	3.0V to 6.0V	P, SO, L	C, I

DEVELOPMENT SYSTEMS

EMULATORS

Model Name/Part Number	PICMASTER® with PRO MATE®	PICMASTER without PRO MATE	PICMASTER-CE with PRO MATE	PICMASTER-CE without PRO MATE	PICMASTER Probe Kit	PICMASTER-CE Probe Kit	ICEPIC System	ICEPIC Daughter Board
Production Software Version	3.20	3.20	3.20	3.20	3.20	3.20	1.63	1.63
Intermediate Software Version	3.20.01	3.20.01	3.20.01	3.20.01	3.20.01	3.20.01	N/A	N/A
PIC12C508 (*)	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC12C509 (*)	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC14C000	EM147001	EM147002	EM147101	EM147102	AC145001	AC145002	N/A	N/A
PIC16C52	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC16C54	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC16C54A	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC16C55	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC16C554	EM167033	EM167034	EM167113	EM167114	AC165030	AC165020	EM167208	AC165208
PIC16C558	EM167033	EM167034	EM167113	EM167114	AC165030	AC165020	EM167208	AC165208
PIC16C56	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC16C57	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC16C58A	EM167015	EM167016	EM167101	EM167102	AC165004	AC165015	EM167201	AC165201
PIC16C61	EM167021	EM167022	N/A	N/A	AC165007	AC165017	EM167211	AC165211
PIC16C620	EM167023	EM167024	EM167109	EM167110	AC165008	AC165018	EM167202	AC165202
PIC16C621	EM167023	EM167024	EM167109	EM167110	AC165008	AC165018	EM167202	AC165202
PIC16C622	EM167023	EM167024	EM167109	EM167110	AC165008	AC165018	EM167202	AC165202
PIC16C62A	EM167025	EM167026	EM167103	EM167104	AC165009	AC165016	EM167207	AC165207
PIC16C63	EM167025	EM167026	EM167103	EM167104	AC165009	AC165016	EM167207	AC165207
PIC16C642	EM167035	EM167036	EM167115	EM167116	AC165031	AC165021	EM167213	AC165213
PIC16C64A	EM167025	EM167026	EM167103	EM167104	AC165009	AC165016	EM167207	AC165207
PIC16C65A	EM167025	EM167026	EM167103	EM167104	AC165009	AC165016	EM167207	AC165207
PIC16C66	EM167041	EM167042	EM167121	EM167122	AC165034	AC165024	EM167214	AC165214
PIC16C662	EM167035	EM167036	EM167115	EM167116	AC165031	AC165021	EM167213	AC165213
PIC16C67	EM167041	EM167042	EM167121	EM167122	AC165034	AC165024	EM167214	AC165214
PIC16C71	EM167027	EM167028	EM167105	EM167106	AC165010	AC165013	EM167211	AC165211
PIC16C710	EM167027	EM167028	EM167105	EM167106	AC165010	AC165013	EM167211	AC165211
PIC16C711	EM167027	EM167028	EM167105	EM167106	AC165010	AC165013	EM167211	AC165211
PIC16C715	EM167037	EM167038	EM167117	EM167118	AC165032	AC165022	EM167215	AC165215
PIC16C72	EM167025	EM167026	EM167103	EM167104	AC165009	AC165016	EM167207	AC165207
PIC16C73A	EM167025	EM167026	EM167103	EM167104	AC165009	AC165016	EM167207	AC165207
PIC16C74A	EM167025	EM167026	EM167103	EM167104	AC165009	AC165016	EM167207	AC165207
PIC16C76	EM167041	EM167042	EM167121	EM167122	AC165034	AC165024	EM167214	AC165214
PIC16C77	EM167041	EM167042	EM167121	EM167122	AC165034	AC165024	EM167214	AC165214
PIC16C923	EM167031	EM167032	EM167111	EM167112	AC165012	AC165019	EM167210	AC165210
PIC16C924	EM167031	EM167032	EM167111	EM167112	AC165012	AC165019	EM167210	AC165210

* PICMASTER PIC12CXXX emulation support also requires the use of a probe kit daughter board AC122001.
 * ICEPIC PIC12CXXX emulation support also requires the use of a kit daughter board adapter AC122002.
 ** Contact Microchip Technology for availability date.

DEVELOPMENT SYSTEMS (CONTINUED)

EMULATORS (Continued)

Model Name/Part Number	PICMASTER® with PRO MATE®	PICMASTER without PRO MATE	PICMASTER-CE with PRO MATE	PICMASTER-CE without PRO MATE	PICMASTER Probe Kit	PICMASTER-CE Probe Kit	ICEPIC System	ICEPIC Daughter Board
PIC16F83	EM167029	EM167030	EM167107	EM167108	AC165011	AC165014	EM167212	AC165212
PIC16F84	EM167029	EM167030	EM167107	EM167108	AC165011	AC165014	EM167212	AC165212
PIC17C42A	EM177007	EM177008	EM177107	EM177108	AC175002	AC175003	N/A	N/A
PIC17C43	EM177007	EM177008	EM177107	EM177108	AC175002	AC175003	N/A	N/A
PIC17C44	EM177007	EM177008	EM177107	EM177108	AC175002	AC175003	N/A	N/A
PIC17C756	EM177009**	EM177010**	EM177109**	EM177110**	AC175004**	AC175005**	N/A	N/A

* PICMASTER PIC12CXXX emulation support also requires the use of a probe kit daughter board AC122001.

* ICEPIC PIC12CXXX emulation support also requires the use of a kit daughter board adapter AC122002.

** Contact Microchip Technology for availability date.

	PIC12CXXX	PIC14C000	PIC16C5X	PIC16C6X	PIC16CXXX	PIC16C7X	PIC16C7XX	PIC16C8X	PIC16C9XX	PIC17CXXX	24CXX/25CXX/ 93CXX	HCSXXX
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SOFTWARE TOOLS

MPLAB™ Integrated Development Environment	SW007002	SW007002	SW007002	SW007002	SW007002	SW007002	SW007002	SW007002	SW007002	SW007002	—	—
PIC C (C Compiler)	***	***	***	***	***	***	***	***	***	—	—	—
MPLAB-C17 Compiler	—	—	—	—	—	—	—	—	—	SW006010	—	—
fuzzyTECH®-MP Explorer Fuzzy Logic Development Tool	DV005001	DV005001	DV005001	DV005001	DV005001	DV005001	DV005001	DV005001	DV005001	DV005001	—	—
fuzzyTECH-MP Edition Fuzzy Logic Development Tool	DV005002	DV005002	DV005002	DV005002	DV005002	DV005002	DV005002	DV005002	DV005002	DV005002	—	—
MP-DriveWay™ Applications Code Generator	—	SW006006	SW006006	SW006006	SW006006**	SW006006	SW006006	SW006006	SW006006	SW006006**	—	—
Total Endurance™ Software Model	—	—	—	—	—	—	—	—	—	—	SW242001	—

PROGRAMMERS

PICSTART® Lite Ultra Low-Cost Development Kit	—	—	DV162003**	DV162002** DV162003**	—	DV162002** DV162003**	—	—	—	—	—	—
PICSTART Plus Low-Cost Development Kit	DV003001**	DV003001	DV003001	DV003001	DV003001	DV003001	DV003001	DV003001	DV003001	DV003001	—	—
PRO MATE® II Universal Programmer	DV007003	DV007003	DV007003	DV007003	DV007003	DV007003	DV007003	DV007003	DV007003	DV007003	DV007003**	DV007003**
KeeLoq® Programmer	—	—	—	—	—	—	—	—	—	—	—	PG306001

DEMONSTRATION BOARDS

Serial EEPROM Designer's Kit	—	—	—	—	—	—	—	—	—	—	DV243001	—
PICDEM-1	—	—	DM163001	DM163001 (PIC16C61 only)	DM163001**	—	—	—	—	DM163001**	—	—
PICDEM-2	—	—	—	DM163002**	—	DM163002**	—	—	—	—	—	—
PICDEM-3	—	—	—	—	—	—	—	—	DM163003	—	—	—
PICDEM-14	—	DM143001	—	—	—	—	—	—	—	—	—	—
KeeLoq Evaluation Kit	—	—	—	—	—	—	—	—	—	—	—	DM303002

* Contact Microchip Technology Inc. for availability date.

** Development tool is available on select devices. Please refer to the Microchip *Development Systems Ordering Guide* for device-specific ordering numbers and more information.

*** Microchip Technology Inc., Telephone (602) 786-7627; HI-TECH Software LLC Telephone 1-800-735-5715 U.S.A., Telephone 61 7 3354 2411 Australia or Web Site www.htsoft.com.

MICROCHIP TECHNOLOGY INC. FUTURE PRODUCTS GUIDE* (As of March 1998)

PICmicro CMOS OTP 8-BIT MICROCONTROLLERS*

Product*	Program Memory OTP		Data RAM Bytes	Max. Speed MHz	I/O Ports	ADC 8-Bits	Serial I/O	PWM	Brown-Out Detection	Comparators	Timers	In-Circuit Serial Programming†	Other Features	ROM Equivalent	Packages
	Bytes	Words													
PIC16C164	16384	8192x16	512	40	22	—	USART/ I ² C/SPI	2	Yes	2	3+WDT	Yes	Improved Clock Generation	—	28P, 28SO, 28JW
PIC16C165	16384	8192x16	512	40	33	—	USART/ I ² C/SPI	2	Yes	2	3+WDT	Yes	Parallel Slave Port, Improved Clock Generation	—	40P, 40JW, 44L, 44PT
PIC16C174	16384	8192x16	512	40	22	5	USART/ I ² C/SPI	2	Yes	—	3+WDT	Yes	Improved Clock Generation	—	28P, 28SO, 28JW
PIC16C175	16384	8192x16	512	40	33	8	USART/ I ² C/SPI	2	Yes	—	3+WDT	Yes	Parallel Slave Port, Improved Clock Generation	—	40P, 40JW, 44L, 44PT
PIC16C176	24576	12288x16	1024	40	22	5	USART/ I ² C/SPI	2	Yes	—	3+WDT	Yes	Improved Clock Generation	—	28P, 28SO, 28JW
PIC16C177	24576	12288x16	1024	40	33	8	USART/ I ² C/SPI	2	Yes	—	3+WDT	Yes	Parallel Slave Port, Improved Clock Generation	—	40P, 40JW, 44L, 44PT
PIC16C178	32768	16384x16	1536	40	22	5	USART/ I ² C/SPI	2	Yes	—	3+WDT	Yes	Improved Clock Generation	—	28P, 28SO, 28JW
PIC16C179	32768	16384x16	1536	40	33	8	USART/ I ² C/SPI	2	Yes	—	3+WDT	Yes	Parallel Slave Port, Improved Clock Generation	—	40P, 40JW, 44L, 44PT
PIC16C185	16384	8192x16	1024	33	50	5 (10-Bit)	USART/ I ² C/SPI	3	Yes	—	4+WDT	Yes	CAN 2.0B, Parallel Slave Port, Improved Clock Generation	—	64SP, 68CL, 68L, 64PT
PIC16C471	1792	1024x14	128	20	12	4 (10-bit)	—	1	Yes	—	3+WDT	Yes	25mA source/sink per I/O, internal clock oscillator, Capture/Compare/PWM	—	14P, 14SO, 14JW
PIC16C472	3584	2048x14	128	20	12	4 (10-bit)	—	1	Yes	—	3+WDT	Yes	25mA source/sink per I/O, internal clock oscillator, Capture/Compare/PWM	—	14P, 14SO, 14JW
PIC16C555	896	512x14	80	20	22	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O	—	28SP, 28SO, 28SS, 28JW
PIC16C557	3584	2048x14	128	20	22	—	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O	—	28SP, 28SO, 28SS, 28JW
PIC16C772	3584	2048x14	128	20	22	6 (10-Bit)	I ² C/SPI	1	Yes	—	3+WDT	Yes		—	28P, 28SO, 28SS, 28JW
PIC16C773	7168	4096x14	256	20	22	6 (10-Bit)	USART/ I ² C/SPI	2	Yes	—	3+WDT	Yes		—	28P, 28SO, 28SS, 28JW
PIC16C774	7168	4096x14	256	20	33	10 (10-Bit)	USART/ I ² C/SPI	2	Yes	—	3+WDT	Yes	Parallel Slave Port	—	40P, 40JW, 44L, 44PT

*Contact Microchip Technology for availability date.

MICROCHIP TECHNOLOGY INC. FUTURE PRODUCTS GUIDE* (As of March 1998)

PICmicro ENHANCED FLASH 8-BIT MICROCONTROLLERS*

Product*	Program Memory FLASH		E ² PROM Data Memory	Data RAM Bytes	Max. Speed MHz	I/O Ports	ADC 8-Bits	Serial I/O	PWM	Brown-Out Detection	Comparators	Timers	In-Circuit Serial Programming	Other Features	ROM Equivalent	Packages
	Bytes	Words														
PIC12F675	1792 (Flash)	1024 x 14 (Flash)	16	128	10	6	4 (10-bit)	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator, 2.5V	—	8P, 8SM
PIC12F676	3584 (Flash)	2048 x 14 (Flash)	16	128	10	6	4 (10-bit)	—	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator, 2.5V	—	8P, 8SM
PIC12F680	896 (Flash)	512 x 14 (Flash)	16	128	10	6	—	SSI	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator, 2.5V	—	8P, 8SM
PIC12F681	1792 (Flash)	1024 x 14 (Flash)	16	128	10	6	—	SSI	—	—	—	1+WDT	Yes	25mA source/sink per I/O, internal oscillator, 2.5V	—	8P, 8SM
PIC16F627	1792 (Flash)	1024 x 14 (Flash)	128	80	20	16	—	USART/SCI	1	Yes	2	3+WDT	Yes	25mA source/sink per I/O, internal clock oscillator, 2.5V, Capture/Compare/PWM	—	18P, 18SO, 20SS
PIC16F628	3584 (Flash)	2048 x 14 (Flash)	128	128	20	16	—	USART/SCI	1	Yes	2	3+WDT	Yes	25mA source/sink per I/O, internal clock oscillator, 2.5V, Capture/Compare/PWM	—	18P, 18SO, 20SS
PIC16F716	3584 (Flash)	2048 x 14 (Flash)	128	128	20	16	4 (10-bit)	—	1	Yes	—	3+WDT	Yes	25mA source/sink per I/O, internal clock oscillator, 2.5V, Capture/Compare/PWM	—	18P, 18SO, 20SS
PIC16F787	7168 (Flash)	4096 x 14 (Flash)	128	128	20	18	4 (10-bit)	USART/SCI	1	Yes	—	3+WDT	Yes	25mA source/sink per I/O, internal clock oscillator, 2.5V, Capture/Compare/PWM	—	20P, 20SO, 20SS
PIC16F825	3584 (Flash)	2048 x 14 (Flash)	64	128	20	22	—	USART	1	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	—	28P, 28SO, 28SS
PIC16F83A	896 (Flash)	512 x 14 (Flash)	64	36	20	13	—	—	—	—	—	1+WDT	Yes	20mA source and 25mA sink per I/O, 64 bytes data EEPROM, 2.0V Operation	—	18P, 18SO, 20SS
PIC16F84A	1792 (Flash)	1024 x 14 (Flash)	64	68	20	13	—	—	—	—	—	1+WDT	Yes	20mA source and 25mA sink per I/O, 64 bytes data EEPROM, 2.0V Operation	—	18P, 18SO, 20SS
PIC16F863	7168 (Flash)	4096 x 14 (Flash)	128	192	20	22	—	USART/I ² C/SPI	2	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	—	28P, 28SO, 28SS
PIC16F865	7168 (Flash)	4096 x 14 (Flash)	128	192	20	33	—	USART/I ² C/SPI	2	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, 2 Capture/Compare/PWM	—	40P, 44L, 44PT
PIC16F866	14336 (Flash)	8192 x 14 (Flash)	256	368	20	22	—	USART/I ² C/SPI	2	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	—	28P, 28SO, 28SS
PIC16F867	14336 (Flash)	8192 x 14 (Flash)	256	368	20	33	—	USART/I ² C/SPI	2	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM, Parallel Slave Port	—	40P, 44L, 44PT
PIC16F872	3584 (Flash)	2048 x 14 (Flash)	64	128	20	22	5 (10-Bit)	I ² C/SPI	1	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	—	28P, 28SO, 28SS
PIC16F873	7168 (Flash)	4096 x 14 (Flash)	128	192	20	22	5 (10-Bit)	USART/I ² C/SPI	2	Yes	2	3+WDT	Yes	25mA source/sink per I/O, 2 Capture/Compare/PWM	—	28P, 28SO, 28SS
PIC16F874	7168 (Flash)	4096 x 14 (Flash)	128	192	20	33	8 (10-Bit)	USART/I ² C/SPI	2	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Parallel Slave Port, 2 Capture/Compare/PWM	—	40P, 44L, 44PT
PIC16F876	14336 (Flash)	8192 x 14 (Flash)	256	368	20	22	5 (10-Bit)	USART/I ² C/SPI	2	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM	—	28P, 28SO, 28SS
PIC16F877	14336 (Flash)	8192 x 14 (Flash)	256	368	20	33	8 (10-Bit)	USART/I ² C/SPI	2	Yes	2	3+WDT	Yes	25mA source/sink per I/O, Capture/Compare/PWM, Parallel Slave Port	—	40P, 44L, 44PT

*Contact Microchip Technology for availability date.

Abbreviation:
 ADC = Analog-to-Digital Converter DAC = Digital-to-Analog Converter PWM = Pulse Width Modulator WDT = Watchdog Timer
 CAP = Capture E² = EEPROM (Reprogrammable) SPI = Serial Peripheral Interface SLAC = Slope A/D Converter, up to 16 bits
 CCP = Capture/Compare/PWM I²C = Inter-integrated Circuit Bus USART = Universal Synchronous/Asynchronous Receiver/Transmitter SMB = System Management Bus

MICROCHIP TECHNOLOGY INC. FUTURE PRODUCTS GUIDE* (As of March 1998)

KEELOQ® ENCODER DEVICES*

Product	Transmission Length Bits	Code Hopping Bits	Programmable Encryption Key Bits	Seed Length	Operating Voltage	Functions	Other Features	Packages
HCS365	69	32	64	60	2.0V to 6.6V	4 X 15	PWM, VPWM, PPM, Manchester encoding, external or internal tunable oscillator	8P, 8SO, 8ST

KEELOQ AUTHENTICATION AND TRANSPONDER DEVICES*

Product	Authentication Length Bits	Serial Number	Programmable Encryption Key Bits	User Memory EEPROM Bits	Operating Voltage	Functions	Other Features	Packages
HCS100	32 or 16	32	64	HCS100 - 102	2.0V to 6.6V	Read, Write, IFF	PWM, Manchester encoding, 1-wire interface	OT
HCS120	32 or 16	32	64	HCS120 - 192	2.0V to 6.6V	Read, Write, IFF	PWM, Manchester encoding, 1-wire interface	OT
HCS405	32 or 16	32	64	128	2.0V to 6.6V	Read, Write, IFF	PWM, PPM encoding, 1-wire interface	8P, 8SO, 8ST

KEELOQ SMART CARD DEVICES*

Product	Token Units	Cryptographic Key	Signature Challenge	Signature Response	User EEPROM Bits	Operating Voltage	Other Features	Packages
SCS156	33352	2 x 64	32	16	40 + 64	4.5V to 5.5V	Secure reloadable token/phone card device	8P, 8SO, 8ST

*Contact Microchip Technology for availability date.

SERIAL EEPROMs*

Product	E/W Cycles	Density (Organization)	Write Speed	Max. Clock Freq.	Operating Voltage	Unique Features	Packages
24LC16SC	1M	16K bits (x8)	10 ms	400 kHz	2.5V to 5.5V	ISO 7816 Die Layout.	Die, Wafers, Modules
25AA128 25LC128	1M 1M	128K bits (x8) 128K bits (x8)	5 ms 5 ms	1 MHz 2 MHz	1.8V to 5.5V 2.5V to 5.5V	SPI Protocol.	P, SN, ST P, SN, ST
25AA256 25LC256	1M 1M	256K bits (x8) 256K bits (x8)	5 ms 5 ms	1 MHz 2 MHz	1.8V to 5.5V 2.5V to 5.5V	SPI Protocol.	P, SN, ST P, SN, ST
24LCS16	1M	16K bits (x8)	10 ms	400 kHz	4.5V to 5.5V	Custom security regions.	Die, Wafers, Modules

*Contact Microchip Technology for availability date.

Special Features: Page write mode, HOLD pin, software enabled block write protection and hardware write protect pin.

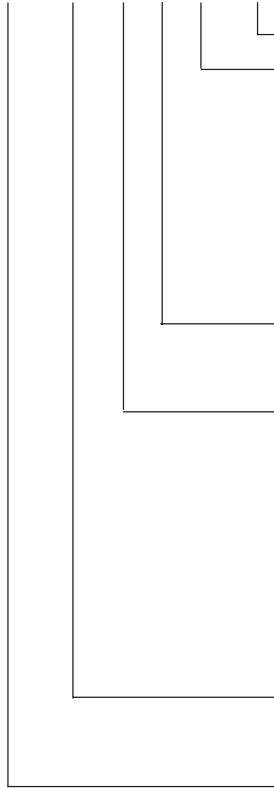
DEVELOPMENT TOOL SOFTWARE*

Model*	PIC12CXXX	PIC14C000	PIC16C5X	PIC16C6X	PIC16CXXX	PIC16C7X	PIC16C7XX	PIC16C8X	PIC16C9XX	PIC17CXXX	24CXX/25CXX/ 93CXX	HCSXXX
MPLAB™ C V2.XX Universal C Compiler for PICmicro MCUs	√	√	√	√	√	√	√	√	√	√	—	—
MPLAB ICE Full-Featured CE Compliant In-Circuit Emulator	√	√	√	√	√	√	√	√	√	√	—	—

*Contact Microchip Technology for availability date.

PART NUMBER SUFFIX DESIGNATIONS

XXXXXXXXXX - XX X/XX XXX



QTP, SQTP or ROM Code; Special Requirements

Package:

- L = Plastic Leaded Chip Carrier (PLCC)
- P = Plastic DIP
- S = Die in Waffle Pack
- W = Die in Wafer Form
- CB = Chip on Board (COB)
- CL = Windowed CERQUAD
- JW = Windowed CERDIP
- OT = SOT-23
- PQ = Plastic Quad Flatpack (PQFP)
- PT = Plastic Thin Quad Flatpack (TQFP)

- SL = 14-lead Small Outline (150 mil)
- SM = 8-lead Small Outline (207 mil)
- SN = 8-lead Small Outline (150 mil)
- SO = Plastic Small Outline (SOIC)
- SP = Plastic Skinny DIP
- SS = Plastic Shrink Small Outline (SSOP)
- ST = Thin Shrink Small Outline (4.4 mm)
- TS = Thin Small Outline (8mm x 20mm)
- TQ = Thin Quad Flatpack (TQFP)
- VS = Very Small Outline (8mm x 13.4mm)
- WF = Sawed Wafer on Frame

Process Temperature:

- Blank = 0°C to +70°C
- I (Industrial) = -40°C to +85°C

E (Extended) = -40°C to +125°C

Speed:

- 90 = 90 ns
- 10 = 100 ns
- 12 = 120 ns
- 15 = 150 ns
- 17 = 170 ns
- 20 = 200 ns
- 25 = 250 ns
- 30 = 300 ns

Crystal Frequency Designator for PICmicro MCUs

- LP = DC to 40 kHz, Low Power Crystal Oscillator
- RC = DC to 4 MHz, Resistor/Capacitor Oscillator
- XT = DC to 4 MHz, Standard Crystal Resonator Oscillator
- HS = DC to 20 MHz, High Speed Crystal Oscillator
- O2 = DC to 2 MHz, XT and RC Oscillator Support
- O4 = DC to 4 MHz Internal, XT and RC Oscillator Support
- O4 = DC to 200 kHz, LP Oscillator Support
- 10 = DC to 10 MHz, HS Oscillator Support
- 16 = DC to 16 MHz, XT Oscillator Support
- 20 = DC to 20 MHz, HS Oscillator Support
- 25 = DC to 25 MHz, XT Oscillator Support
- 33 = DC to 33 MHz, XT Oscillator Support

Option:

- T = Tape and Reel Shipments
- Blank = twc = 1ms

- F = twc = 200 μs
- X = Rotated pinout

Device Type: (Up to 10 digits)

- C = CMOS EPROM MCU
- CE = CMOS EPROM/EEPROM MCU
- LC = Low Power CMOS EPROM MCU
- CR = CMOS ROM MCU
- LCR = Low Power CMOS ROM MCU
- AA = 1.8V EEPROM Memory
- LV = Low Voltage
- F = Flash MCU

- HC = High Speed
- LCS = Low Power Security
- 24 = 2-Wire (I²C)
- 25 = SPI
- 93 = 3-Wire (Microwire®)
- PICXXCXXX = PICmicro CMOS Microcontroller
- PICXXLCXXX = PICmicro Low-Power CMOS Microcontroller
- PICXXLVXXX = PICmicro Low-Voltage CMOS Microcontroller

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