80C51 microcontroller family features guide

Memory from 1K to 8K

Prefix	Part Number ROM/ROMless/ OTP/Flash	Memory			New and Improved (Note 6)	Counter				I/O Pins	Serial Interfaces	Comments/ Special Features
		ROM	EPROM	RAM		#	PWM	PCA	WD			
P	83C750	1K		64		1	N	N	N	19	–	Lowest cost, 1 (16-bit) Timer, SSOP
P	87C750		1K	64		1	N	N	N	19	–	Lowest cost, 1 (16-bit) Timer, SSOP
P	83C748	2K		64		2	N	N	N	19	–	'751 w/o I²C, 1 (16-bit) Timer, SSOP
P	87C748		2K	64		2	N	N	N	19	–	'751 w/o I²C, 1 (16-bit) Timer, SSOP
S	83C751	2K		64		1	N	N	N	19	I²C (bit)	1 (16-bit) Timer, SSOP
S	87C751		2K	64		1	N	N	N	19	I²C (bit)	1 (16-bit) Timer, SSOP
P	83C749	2K		64		2	Y	N	N	21	–	'752 w/o I²C, 1 (16-bit) Timer, SSOP
P	87C749		2K	64		2	Y	N	N	21	–	'752 w/o I²C, 1 (16-bit) Timer, SSOP
S	83C752	2K		64		1	Y	N	N	21	I²C (bit)	1 (16-bit) Timer, SSOP
S	87C752		2K	64		1	Y	N	N	21	I²C (bit)	1 (16-bit) Timer, SSOP
P	***80C51/80C31***	***4K***		***128***	***Y***	***2***	***N***	***N***	***N***	***32***	***UART***	***CMOS***
P	***87C51***		***4K***	***128***	***Y***	***2***	***N***	***N***	***N***	***32***	***UART***	***CMOS***
P	80CL51/80CL31	4K		128		2	N	N	N	32	UART	Low voltage (1.8V–6V), Low power
P	83C434	4K		128								LCD driver
P	83CL410/80CL410	4K		128		2	N	N	N	32	I²C	Low voltage (1.8V–6V), Low power
SC	83C451/80C451	4K		128		2	N	N	N	56	UART	Extended I/O, Processor bus interface
SC	87C451		4K	128		2	N	N	N	56	UART	Extended I/O, Processor bus interface
P	*83C550/80C550*	4K		128		2	N	N	Y	32	UART	*8 channel 8-bit A/D w/Hdw WD*
P	87C550		4K	128		2	N	N	Y	32	UART	8 channel 8-bit A/D w/Hdw WD
P	83C851/80C851	4K		128		2	N	N	N	32	UART	256B EEPROM. 80C51 pin-compatible
P	83C754	4K		256		3	Y	Y	N	11	UART	8-bit DAC, 3-input mux comparator Ref V Out
P	87C754		4K	256		3	Y	Y	N	11	UART	(see above)
P	83C852	6K		256		2	N	N	N	16	–	Smartcard controller with 2K EEPROM (Data, Code) Cryptographic Calc Unit
P	83CL580/80CL580	6K		256		3	Y	Y	Y	40	UART, I²C	4 channel 8-bit A/D, w/Hdw WD, low voltage (2.5V–6V), low power
P	***80C52/80C32***	***8K***		***256***	***Y***	***3***	***N***	***N***	***N***	***32***	***UART***	***80C51 pin-compatible***
P	***87C52***		***8K***	***256***	***Y***	***3***	***N***	***N***	***N***	***32***	***UART***	***80C51 pin-compatible***
P	***83C51RA+/80C51RA+***	***8K***		***512***	***Y***	***4***	***Y***	***Y***	***Y***	***32***	***UART***	***w/Hdw WD, 2.7–5.5V versions***
P	***89C51RA+/87C51RA+***		***8K***	***512***	***Y***	***4***	***Y***	***Y***	***Y***	***32***		***(see above) (FLASH–5V only)***
P	83C652/80C652	8K		256		2	N	N	N	32	UART, I²C	80C51 pin-compatible
S	87C652		8K	256		2	N	N	N	32	UART, I²C	80C51 pin-compatible
P	83C453/80C453	8K		256		2	N	N	N	56	UART	Extended I/O, processor bus interface
P	87C453		8K	256		2	N	N	N	56	UART	Extended I/O, processor bus interface
P	***83C51FA/80C51FA***	***8K***		***256***	***Y***	***4***	***Y***	***Y***	***Y***	***32***	***UART***	***Enhanced UART, 3 timers + PCA***
P	***87C51FA***		***8K***	***256***	***Y***	***4***	***Y***	***Y***	***Y***	***32***	***UART***	***Enhanced UART, 3 timers + PCA***
P	83C575 80C575	8K		256		4	Y	Y	Y	32	UART	w/Hdw WD, low voltage detect, osc fail detect, analog comparators, PCA
P	87C575		8K	256		4	Y	Y	Y	32	UART	(see above)
P	83C576	8K		256		4	Y	Y	Y	32	UART	Same as 8xC575 plus UPI and 10-bit A/D
P	87C576	8K		256		4	Y	Y	Y	32	UART	(see above)
P	83C845	8K		256		2	Y	N	N	28	–	On-screen display, 9 PWM outputs, 3 software A/D inputs
P	83C880	8K		512								DDC interface for monitors, auto sync detection and sync processor
PCx	83C562/80C562	8K		256		3	Y	N	Y	48	UART	8 channel 8-bit A/D, 2 PWM outputs Capture/Compare timer, w/Hdw WD
PCx	83C552/80C552	8K		256		3	Y	N	Y	48	UART, I²C	8 channel 10-bit A/D, 2 PWM outputs, Capture/Compare timer, w/Hdw WD
S	87C552		8K	256		3	Y	N	Y	48	UART, I²C	(see above)
P	83C834	8K		256								LCD driver
P	83CL883	8K	8K	256		3	N	N	Y	19	UART	1.8–3.6V operation, low voltage detection
P	83CL884	8K	8K	256		3	N	N	Y	18	UART	1.8–3.6V operation, low voltage detection

NOTES:
Part number prefixes are noted in the first column.
All combinations of part type, speed, temperature and package may not be available.
Parts in Italics bold are 51plus microcontrollers.

Memory from 1K to 8K (continued)

Part Number ROM/ROMless/ OTP/Flash		A/D		External Interrupt	Program Security ?	Clock Freq. (MHz)	Temperature Range (°C)			Package		
		Bits	Channels				0 to +70	–40 to +85	–55 to +125	PDIP	PLCC	PQFP/SSOP
83C750	S			2	N	3.5 to 40	X	X		N24	A28	DB24 (0–70F)
87C750	S			2	Y	3.5 to 40	X	X		N24	A28	DB24 (0–70F)
83C748	S			2	N	3.5 to 16	X	X		N24	A28	DB24 (0–70F)
87C748	S			2	Y	3.5 to 16	X	X		N24	A28	DB24 (0–70F)
83C751	S			2	N	3.5 to 16	X	X		N24	A28	DB24 (0–70F)
87C751	S			2	Y	3.5 to 16	X	X		N24	A28	DB24 (0–70F)
83C749	S	8	5	2	N	3.5 to 16	X	X		N28	A28	DB28 (0–70F)
87C749	S	8	5	2	Y	3.5 to 16	X	X		N28	A28	DB28 (0–70F)
83C752	S	8	5	2	N	3.5 to 16	X	X	X	N28	A28	DB28 (0–70F)
87C752	S	8	5	2	Y	3.5 to 16	X	X	X	N28	A28	DB28 (0–70F)
80C51/80C31	***S***			***2***	***Y***	***0 to 33***	***X***	***X***		***N40***	***A44***	***B44 (5)***
87C51	***S***			***2***	***Y***	***0 to 33***	***X***	***X***		***N40***	***A44***	***B44 (5)***
80CL51/80CL31	Z			10	N	0 to 16 (1)		X		N40 (2)		B44
83C434	T					12MHz		X		NB42		B44
83CL410/80CL410	Z			10	N	0 to 12 (1)		X		N40 (2)		B44
83C451/80C451	S			2	N	3.5 to 16	X	X		N64 (4)	A68	
87C451	S			2	Y	3.5 to 16	X	X		N64 (4)	A68	
83C550/80C550	S	8	8	2	Y	3.5 to 16	X	X		N40	A44	
87C550	S	8	8	2	Y	3.5 to 16	X	X		N40	A44	
83C851/80C851	H			2	Y	1.2 to 16	X	X		N40	A44	B44
83C754	S			2	Y	3.5 to 16	X					
87C754	S			2	Y	3.5 to 16	X					DB28
83C852	H			1	Y	1 to 12	X			SO28 or die		
83CL580/ 80CL580	Z	8	4	9	N	0 to 12 (1)		X		(3)		B64
80C52/80C32	***S***			***2***	***Y***	***0 to 33***	***X***	***X***		***N40***	***A44***	***B44 (5)***
87C52	***S***			***2***	***Y***	***0 to 33***	***X***	***X***	***X***	***N40***	***A44***	***B44 (5)***
83C51RA+/80C51RA+	***S***			***2***	***Y***	***0 to 33***	***X***	***X***		***N40***	***A44***	***B44***
89C51RA+/87C51RA+	***S***			***2***	***Y***	***0 to 33***	***X***	***X***		***N40***	***A44***	***B44***
83C652/80C652	H			2	Y	3.5 to 24	X	X	–40 to +125	N40	A44	B44
87C652	S			2	Y	3.5 to 16	X	X	X	N40	A44	
83C453/80C453	S			2	N	3.5 to 16	X	X			A68	
87C453	S			2	Y	3.5 to 16	X	X			A68	
83C51FA/80C51FA	***S***			***2***	***Y***	***0 to 33***	***X***	***X***		***N40***	***A44***	***B44***
87C51FA	***S***			***2***	***Y***	***0 to 33***	***X***	***X***		***N40***	***A44***	***B44***
83C575/80C575	S			2	Y	4 to 16	X	X	X	N40	A44	B44
87C575	S			2	Y	4 to 16	X	X	X	N40	A44	B44
83C576	S	10	6	2	Y	6 to 16	X	X	X	N40	A44	B44
87C576	S	10	6	2	Y	6 to 16	X	X	X	N40	A44	B44
83C845	T			2	N	3.5 to 20	X			NB42		
83C880												
83C562/80C562	H	8	8	2	N	3.5 to 16	X	X	–40 to +125		A68	B80
83C552/80C552	H	10	8	2	N	3.5 to 30	X	X	–40 to +125		A68	B80
87C552	S	10	8	2	Y	3.5 to 16	X				A68	
83C834	T					16		X		NB42		B44
83CL883	Z			8		3.58	–25 to +70					SO28
83CL884	Z			8		3.58	–25 to +70					SO28

NOTES:
Production Centers are indicated in the second column:
H = Hamburg; S = Sunnyvale, T = Taiwan, Z = Zurich
All combinations of part type, speed, temperature and package may not be available
Parts in italics bold are 51plus microcontrollers.

1. Oscillator options start from 32kHz.
2. Also available in VSO40 package.
3. Also available in VSO56 package.
4. Not recommended for new design.
5. Package available up to 16MHz only
6. New and Improved devices operate from 2.7V–5.5V @ 16MHz Static Core, 33MHz operation, Dual Data Pointers and more.