

80C51 microcontroller family features guide

Part Number (ROMless)	Memory			Counter Timers	I/O Port	Serial Interfaces	External Interrupt	Comments/ Special Features
	ROM	EPRM	RAM					
P 83C750	1K		64	1 (16-bit)	2-3/8	-	2	40 MHz, Lowest cost, SSOP
P 87C750		1K	64	1 (16-bit)	2-3/8	-	2	40 MHz, Lowest cost, SSOP
P 83C748	2K		64	1 (16-bit)	2-3/8	-	2	8XC751 w/o I ² C, SSOP
P 87C748		2K	64	1 (16-bit)	2-3/8	-	2	8XC751 w/o I ² C, SSOP
S 83C751	2K		64	1 (16-bit)	2-3/8	I ² C (bit)	2	24-pin Skinny DIP, SSOP
S 87C751		2K	64	1 (16-bit)	2-3/8	I ² C (bit)	2	24-pin Skinny DIP, SSOP
P 83C749	2K		64	1 (16-bit)	2-5/8	-	2	8XC752 w/o I ² C, SSOP
P 87C749		2K	64	1 (16-bit)	2-5/8	-	2	8XC752 w/o I ² C, SSOP
S 83C752	2K		64	1 (16-bit)	2-5/8	I ² C (bit)	2	5 Channel 8-bit A/D, PWM Output, SSOP
S 87C752		2K	64	1 (16-bit)	2-5/8	I ² C (bit)	2	5 Channel 8-bit A/D, PWM Output, SSOP
SC 80C51 (80C31)	4K		128	2	4	UART	2	CMOS (Sunnyvale)
PCx 80C51 (80C31)	4K		128	2	4	UART	2	CMOS (Hamburg)
SC 87C51		4K	128	2	4	UART	2	CMOS
P 80CL51 (80CL31)	4K		128	2	4	UART	10	Low Voltage (1.8V to 6V), Low Power
P 83CL410 (80CL410)	4K		128	2	4	I ² C	10	Low Voltage (1.8V to 6V), Low Power
SC 83C451 (80C451)	4K		128	2	7	UART	2	Extended I/O, Processor Bus Interface
SC 87C451		4K	128	2	7	UART	2	Extended I/O, Processor Bus Interface
P 83C550 (80C550)	4K		128	2 + Watchdog	4	UART	2	8 Channel 8-bit A/D
P 87C550		4K	128	2 + Watchdog	4	UART	2	8 Channel 8-bit A/D
P 83C851 (80C851)	4K		128	2	4	UART	2	256B EEPROM, 80C51 Pin compatible
P 83C852	6K		256	2 (16-bit)	2/8	-	1	Smartcard Controller with 2K EEPROM (Data, Code) Cryptographic Calc Unit
P 83CL580 (80CL580)	6K		256	3 + Watchdog	5	UART, I ² C	9	4 Channel 8-bit A/D, PWM Output, Low Voltage (2.5V to 6V), Low Power
P 80C52 (80C32)	8K		256	3	4	UART	2	80C51 Pin Compatible
P 87C52		8K	256	3	4	UART	2	(see above)
P 83C652 (80C652)	8K		256	2	4	UART, I ² C	2	80C51 Pin Compatible
S 87C652		8K	256	2	4	UART, I ² C	2	(see above)
P 83C453 (80C453)	8K		256	2	7	UART	2	Extended I/O, Processor Bus Interface
P 87C453		8K	256	2	7	UART	2	Extended I/O, Processor Bus Interface
S 83C51FA (80C51FA)	8K		256	3 + PCA	4	UART	2	Enhanced UART, 3 timers + PCA
S 87C51FA		8K	256	3 + PCA	4	UART	2	Enhanced UART, 3 timers + PCA
S 83L51FA	8K		256	3 + PCA	4	UART	2	Low Voltage 83C51FA (3V @ 20MHz)
S 87L51FA		8K	256	3 + PCA	4	UART	2	Low Voltage OTP 87C51FA (3V @ 20MHz)
P 83C575 (80C575)	8K		256	3 + PCA+ Watchdog	4	UART	2	High Reliability, with Low Voltage Detect, OSC Fail Detect, Analog Comparators, PCA
P 87C575		8K	256	(see above)	4	UART	2	(see above)
P 83C576 (80C576)	8K		256	3 + PCA+ Watchdog	4	UART	2	Same as 8XC575 plus UPI and 10-bit A/D
P 87C576		8K	256	(see above)	4	UART	2	(see above)
PC 83C562 (80C562)	8K		256	3 + Watchdog	6	UART	2	8 Channel 8-bit A/D, 2 PWM Outputs, Capture/Compare Timer
PCx 83C552 (80C552)	8K		256	3 + Watchdog	6	UART, I ² C	2	8 Channel 10-bit A/D, 2 PWM Outputs, Capture/Compare Timer
S 87C552		8K	256	3 + Watchdog	6	UART, I ² C	2	(see above)

Notes: Part number prefixes are noted in the first column.
All combinations of part type, speed, temperature and package may not be available.

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Part Number (ROMless)	Program Security?	Clock Freq (MHz)	Temperature Ranges (°C)			Package					
			0 to 70	-40 to +85	-55 to +125	PDIP	CDIP	PLCC	CLCC	PQFP/SSOP	
83C750	S	N	3.5 to 40	X	X		N24	F24	A28		DB24 (0-70F)
87C750	S	Y	3.5 to 40	X	X		N24	F24	A28		DB24 (0-70F)
83C748	S	N	3.5 to 16	X	X		N24		A28		DB24 (0-70F)
87C748	S	Y	3.5 to 16	X	X		N24	F24	A28		DB24 (0-70F)
83C751	S	N	3.5 to 16	X	X		N24		A28		DB24 (0-70F)
87C751	S	Y	3.5 to 16	X	X		N24	F24	A28		DB24 (0-70F)
83C749	S	N	3.5 to 16	X	X		N28		A28		DB28 (0-70F)
87C749	S	Y	3.5 to 16	X	X		N28	F28	A28		DB28 (0-70F)
83C752	S	N	3.5 to 16	X	X	X	N28		A28		DB28 (0-70F)
87C752	S	Y	3.5 to 16	X	X	X	N28	F28	A28		DB28 (0-70F)
SC80C51 (80C31)	S	Y	3.5 to 33	X	X	X	N40		A44		B44 (5)
PCx80C51 (80C31)	H	N	1.2 to 30	X	X	X	P (40)		WP (44)		H (44)
87C51	S	Y	3.5 to 33	X	X	X	N40	F40	A44	K44	B44 (5)
80CL51 (80CL31)	Z	N	0 to 16 (1)		X		N40 (2)				B44
83CL410(80CL410)	Z	N	0 to 12 (1)		X		N40 (2)				B44
83C451 (80C451)	S	N	3.5 to 16	X	X	X	N64 (4)		A68		
87C451	S	Y	3.5 to 16	X	X	X	N64 (4)		A68		
83C550 (80C550)	S	Y	3.5 to 16	X	X		N40		A44		
87C550	S	Y	3.5 to 16	X	X	-40 to +125	N40	F40	A44	K44	
83C851 (80C851)	H	Y	1.2 to 16	X	X		N40		A44		B44
83C852	H	Y	1 to 12	X			SO28 or die				
83CL580 (80CL580)	Z	N	0 to 12 (1)		X		(3)				B64
80C52 (80C32)	S	Y	3.5 to 24	X	X		N40		A44		B44 (5)
87C52	S	Y	3.5 to 24	X	X	X	N40	F40	A44	K44	B44 (5)
83C652 (80C652)	H	Y	1.2 to 24	X	X	-40 to +125	N40		A44		B44
87C652	S	Y	1.2 to 20	X	X	X	N40	F40	A44	K44	
83C453 (80C453)	S	N	3.5 to 16	X	X				A68		
87C453	S	Y	3.5 to 16	X	X				A68		
83C51FA (80C51FA)	S	Y	3.5 to 24	X	X		N40		A44		B44
87C51FA	S	Y	3.5 to 24	X	X		N40	F40	A44	K44	B44
83L51FA	S	Y	3.5 to 20	X	X		N40		A44		B44
87L51FA	S	Y	3.5 to 20	X	X		N40	F40	A44	K44	B44
83C575 (80C575)	S	Y	4 to 16	X		X	N40		A44		B44
87C575	S	Y	4 to 16	X		X	N40	F40	A44	K44	B44
83C576 (80C576)	S	Y	4 to 16	X		X	N40		A44		B44
87C576	S	Y	4 to 16	X		X	N40	F40	A44	K44	B44
83C562 (80C562)	H	N	1.2 to 16	X	X	-40 to +125			A68		B80
83C552 (80C552)	H	N	1.2 to 30	X	X	-40 to +125			A68		B80
87C552	S	Y	1.2 to 16	X					A68	K68	

Notes: Production Centers are indicated in the second column: H – Hamburg, S – Sunnyvale, Z – Zurich.

All combinations of part type, speed, temperature and package may not be available.

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 16 MHz only.

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Part Number (ROMless)	Memory			Counter Timers	I/O Port	Serial Interfaces	External Interrupt	Comments/ Special Features
	ROM	EPRM	RAM					
P 83C055	16K		256	2 (16-bit)	3 1/2	–	2	On-Screen Display, 9 PWM Outputs, 3 Software A/D Inputs
P 87C055		16K	256	2 (16-bit)	3 1/2	–	2	(see above)
P 80C54	16K		256	3	4	UART	2	Standard; 80C51 compatible
P 87C54		16K	256	3	4	UART	2	Standard; 87C51 compatible
P 83C654	16K		256	2	4	UART, I ² C	2	80C51 Pin Compatible
S 87C654		16K	256	2	4	UART, I ² C	2	(see above)
P 83CE654	16K		256	2	4	UART, I ² C	2	83C654 with Reduced EMI
P 83CL781	16K		256	3	4	UART, I ² C	10	Low Voltage (1.8V to 6V), Low Power
P 83CL782	16K		256	3	4	UART, I ² C	10	83CL781 Optimized 12MHz @ 3.1V
S 83C51FB	16K		256	3 + PCA	4	UART	2	Enhanced UART, 3 timers + PCA
S 87C51FB		16K	256	3 + PCA	4	UART	2	Enhanced UART, 3 timers + PCA
S 83L51FB	16K		256	3 + PCA	4	UART	2	Low Voltage 83C51FB (3V @ 20MHz)
S 87L51FB		16K	256	3 + PCA	4	UART	2	Low Voltage OTP 87C51FB (3V @ 20MHz)
P 83C524	16K		512	3 + Watchdog	4	UART, I ² C-bit	2	512 RAM
P 87C524		16K	512	3 + Watchdog	4	UART, I ² C-bit	2	512 RAM
P 83C592 (80C592)	16K		512	3 + Watchdog	6	UART, CAN	6	CAN Bus Controller with 8 x 10-bit A/D, 2 PWM outputs, Capture/Compare Timer
P 87C592		16K	512	3 + Watchdog	6	UART, CAN	6	(see above)
P 80C58	32K		256	3	4	UART	2	Standard; 80C51 compatible
P 87C58		32K	256	3	4	UART	2	Standard; 87C51 compatible
S 83C51FC	32K		256	3 + PCA	4	UART	2	Enhanced UART, 3 timers + PCA
S 87C51FC		32K	256	3 + PCA	4	UART	2	Enhanced UART, 3 timers + PCA
P 83C528 (80C528)	32K		512	3 + Watchdog	4	UART, I ² C-bit	2	Large Memory for High Level Languages
P 87C528		32K	512	3 + Watchdog	4	UART, I ² C-bit	2	Large Memory for High Level Languages
P 83CE528 (80CE528)	32K		512	3 + Watchdog	4	UART, I ² C-bit	2	8XC528 with Reduced EMI
P 83CE598 (80CE598)	32K		512	3 + Watchdog	6	UART, CAN	6	CAN Bus Controller, 8 x 10-bit A/D, 2 PWM outputs, WD, T2, Reduced EMI
P 87CE598		32K	512	3 + Watchdog	6	UART, CAN	6	(see above)
P 83CE558(80CE558)	32K		1024	3 + Watchdog	6	UART, I ² C	2	Low EMI, 8 Channel 10-bit A/D, 2 PWM Outputs, Capture/Compare Timer
P 89CE558		32K	1024	3 + Watchdog	6	UART, I ² C	2	32K FLash EEPROM plus above

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			0 to 70	-40 to +85	-55 to +125	PDIP	CDIP	PLCC	CLCC	PQFP/SSOP	
83C055	S	N	3.5 to 20	X			NB42				
87C055	S	N	3.5 to 20	X			NB42				
80C54	S	Y	3.5 to 24	X	X		N40		A44		B44
87C54	S	Y	3.5 to 24	X	X		N40	F40	A44	K44	B44
83C654 (80C654)	H	Y	1.2 to 24	X	X	-40 to +125	R42, N40		A44		B44
87C654	S	Y	1.2 to 20	X	X	X	N40	F40	A44	K44	B44
83CE654	H	Y	1.2 to 16	X	X						B44
83CL781	Z	N	0 to 12 (1)		X		N40				B44
83CL782	Z	N	0 to 12 (1)			-25 to +55	N40				B44
83C51FB	S	Y	3.5 to 24	X	X		N40		A44		B44
87C51FB	S	Y	3.5 to 24	X	X		N40	F40	A44	K44	B44
83L51FB	S	Y	3.5 to 20	X			N40		A44		B44
87L51FB	S	Y	3.5 to 20	X			N40	F40	A44	K44	B44
83C524	H	Y	1.2 to 16	X	X		N40		A44		B44
87C524	S	Y	3.5 to 20	X	X		N40	F40	A44	K44	B44
83C592 (80C592)	H	Y	1.2 to 16		X	-40 to +125			A68	K68	
87C592	H	Y	1.2 to 16	X			R42		A68	K68	
80C58	S	Y	3.5 to 16	X	X		N40		A44		B44
87C58	S	Y	3.5 to 16	X	X		N40	F40	A44	K44	B44
83C51FC	S	Y	3.5 to 24	X	X		N40		A44		B44
87C51FC	S	Y	3.5 to 24	X	X		N40	F40	A44	K44	B44
83C528 (80C528)	H	Y	1.2 to 16	X	X	-40 to +125	N40		A44		B44
87C528	S	Y	3.5 to 20	X	X		N40	F40	A44	K44	B44
83CE528 (80CE528)	H	Y	1.2 to 16	X	X	-40 to +125			A44		B44
83CE598 (80CE598)	H	Y	1.2 to 16		X	-40 to +125					B80
87CE598	H	Y	3.5 to 16	X	X						B80
83CE558 80CE558	H	Y	1.2 to 16	X	X	-40 to +125					B80
89CE558	H	Y	1.2 to 16	X	X					Q80	B80

Notes: Production Centers are indicated in the second column: H – Hamburg, S – Sunnyvale, Z – Zurich.

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2) Also available in VSO40 package.

3) Also available in VSO56 Package.

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