



Microcontrollers – 8 and 16 Bit (Cont.)

HC912 Family — 16-Bit

The 68HC12 CPU is upwardly compatible with the 68HC11 core and supports all registers, instructions, addressing modes and operating modes of the 68HC11. **Features:** • Fully static design allowing operation down to DC • 16-bit Accumulator • 20-bit ALU • 16-bit Timer with built-in prescaler • BDM (Background Debug Module) for faster debugging and non-

intrusive, real time read/write capability to the memory and registers • SAE J1850 BDL-C (Byte Data Link Control Module) for single wire communication with other BDL MCUs • COP Watchdog Timer • Low power STOP and WAIT modes • SPI, SCI, I<sup>2</sup>C and CAN 2.0 • High-level language optimization • 32/16 Divide • 16 x 16 Multiply



Flash (Bytes)	RAM (Bytes)	EEPROM (Bytes)	Timer	PWM	I/O	A/D	Features	Operating Voltage (V)	Max. Bus Freq. (MHz)	Temp. (°C)	Package	Digi-Key Part No.	Price Each	1	25	100	Freescale Part No.	
32K	1K	768	8-Ch., 16-Bit	2-Ch., 8-Bit	63	8-Ch., 10-Bit	SCI, SPI	5.0	8.0	-40 - 85	80-OPF	MCHC912B32CFUE8-ND	18.69	17.15	15.65		MCHC912B32CFUE8	
		768	8-Ch., 16-Bit	2-Ch., 8-Bit	63	8-Ch., 10-Bit	SCI, SPI	5.0	8.0	-40 - 105	80-OPF	MCHC912B32VFUE8-ND	19.59	17.98	16.40		MCHC912B32VFUE8	
		3.5K	8-Ch., 16-Bit	See Timer	75	—	USB 2.0	5.0	30.0	0 - 70	100-LOFP	MC9S12UF32PUE-ND	8.41	6.96	5.46		MC9S12UF32PUE	
60K	2K	1K	8-Ch., 16-Bit	4-Ch., 8-Bit	48	8-Ch., 10-Bit	CAN 2.0	5.0	8.0	-40 - 85	80-OPF	MC912D60ACFUE8-ND	17.31	15.89	14.50		MC912D60ACFUE8	
		1K	8-Ch., 16-Bit	6-Ch., 8-Bit	60	8-Ch., 10-Bit	SCI, SPI	5.0	25.0	-40 - 85	80-OPF	MC912G64CFUE-ND	6.60	5.47	4.72		MC912G64CFUE	
		1K	8-Ch., 16-Bit	6-Ch., 8-Bit	60	8-Ch., 10-Bit	SCI, SPI	5.0	25.0	-40 - 125	80-OPF	MC912G64MFUE-ND	7.43	5.95	5.25		MC912G64MFUE	
128K	8K	2K	8-Ch., 16-Bit	4-Ch., 16-Bit	69	8-Ch., 10-Bit	CAN 2.0	5.0	8.0	-40 - 85	112-LOFP	MC912DG128ACFUE-ND	30.31	27.82	25.38		MC912DG128ACFUE	
		2K	8-Ch., 16-Bit	4-Ch., 16-Bit	69	8-Ch., 10-Bit	SCI, SPI	5.0	8.0	-40 - 125	112-LOFP	MC912DG128AMPVE-ND	33.03	30.31	27.66		MC912DG128AMPVE	
		2K	8-Ch., 16-Bit	4-Ch., 16-Bit	69	8-Ch., 10-Bit	SCI, SPI	5.0	8.0	-40 - 85	112-LOFP	MC912DG128ACPVFTR-ND	28.15	22.08	20.80		MC912DG128ACPVFTR	
<b>HC9S12</b>																		
6K	2K	1K	8-Ch., 16-Bit	4-Ch., 16-Bit	16	8-Ch., 10-Bit	CAN 2.0	5.0	8.0	-40 - 85	112-LOFP	MC912D60ACPVFTR-ND	17.31	15.89	14.50		MC912D60ACPVFTR	
16K	1K	—	8-Ch., 16-Bit	6-Ch., 8-Bit	60	8-Ch., 10-Bit	SCI, SPI	3.3 - 5.5	25.0	-40 - 125	80-OPF	MC9S12G16MFUE-ND	7.71	6.38	5.01		MC9S12G16MFUE	
		—	8-Ch., 16-Bit	6-Ch., 8-Bit	35	8-Ch., 10-Bit	SCI, SPI	3.3 - 5.5	25.0	-40 - 125	52-LOFP	MC9S12G16MPBE-ND	7.41	6.14	5.60		MC9S12G16MPBE	
		—	8-Ch., 16-Bit	See Timer	60	8-Ch., 10-Bit	CAN 2.0	3.15 - 5.55	25.0	-40 - 125	80-OPF	MC9S12G32MFUE25-ND	11.16	8.45	7.79		MC9S12G32MFUE25	
32K	2K	—	8-Ch., 16-Bit	See Timer	60	8-Ch., 10-Bit	CAN 2.0	3.15 - 5.55	25.0	-40 - 125	80-OPF	MC9S12G32MFUE25-ND	9.38	7.77	7.09		MC9S12G32MFUE25	
		—	8-Ch., 16-Bit	See Timer	60	8-Ch., 10-Bit	CAN 2.0	3.15 - 5.55	25.0	-40 - 125	52-LOFP	MC9S12G32MPBE25-ND	10.65	8.06	7.43		MC9S12G32MPBE25	
		—	8-Ch., 16-Bit	See Timer	60	8-Ch., 10-Bit	CAN 2.0	3.15 - 5.55	25.0	-40 - 125	80-OPF	MC9S12G32MPBE25-ND	8.77	7.26	6.63		MC9S12G32MPBE25	
		—	8-Ch., 16-Bit	6-Ch., 8-Bit	60	8-Ch., 10-Bit	SCI, SPI	3.3 - 5.5	25.0	-40 - 125	80-OPF	MC9S12G32MFUE-ND	9.30	7.70	7.03		MC9S12G32MFUE	
		—	8-Ch., 16-Bit	6-Ch., 8-Bit	35	8-Ch., 10-Bit	SCI, SPI	3.3 - 5.5	25.0	-40 - 125	52-LOFP	MC9S12G32MPBE-ND	7.69	6.37	5.45		MC9S12G32MPBE	
		—	8-Ch., 16-Bit	6-Ch., 8-Bit	31	8-Ch., 10-Bit	SCI, SPI	3.3 - 5.5	25.0	-40 - 105	48-LOFP	MC9S12G32VFUE-ND	6.61	6.07	5.24		MC9S12G32VFUE	
64K	2K	1K	8-Ch., 16-Bit	8-Ch., 8-Bit	59	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 125	80-OPF	MC9S12B64MFUE-ND	9.92	9.07	8.29		MC9S12B64MFUE	
		1K	8-Ch., 16-Bit	8-Ch., 8-Bit	59	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 85	112-LOFP	MC9S12B64CFUE-ND	10.36	8.58	7.83		MC9S12B64CFUE	
		—	8-Ch., 16-Bit	6-Ch., 8-Bit	35	8-Ch., 10-Bit	CAN 2.0, SCI, SPI	3.3 - 5.5	25.0	-40 - 125	52-LOFP	MC9S12G64MPBE-ND	10.51	8.70	7.94		MC9S12G64MPBE	
	4K	1K	8-Ch., 16-Bit	4-Ch., 16-Bit	59	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 125	80-OPF	MC9S12D64MFUE-ND	11.66	10.70	9.77		MC9S12D64MFUE	
		1K	8-Ch., 16-Bit	4-Ch., 16-Bit	59	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 125	112-LOFP	MC9S12D64MPVE-ND	12.12	11.13	10.15		MC9S12D64MPVE	
		1K	8-Ch., 16-Bit	4-Ch., 16-Bit	59	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 85	80-OPF	MC9S12D64CFUE-ND	10.61	9.74	8.89		MC9S12D64CFUE	
		1K	8-Ch., 16-Bit	4-Ch., 16-Bit	59	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 105	80-OPF	MC9S12D64VFUE-ND	11.13	10.21	9.32		MC9S12D64VFUE	
		—	(3) 4-Ch., 16-Bit	See Timer	90	16-Ch., 10-Bit	—	3.3 - 5.0	25.0	-40 - 85	80-OPF	MC9S12E64CFU-ND	12.26	9.27	8.55		MC9S12E64CFU	
		—	(3) 4-Ch., 16-Bit	See Timer	90	16-Ch., 10-Bit	—	3.3 - 5.0	25.0	-40 - 85	80-OPF	MC9S12E64CFUE-ND	8.96	7.42	6.77		MC9S12E64CFUE	
	8K	—	12-Ch., 16-Bit	6-Ch., 8-Bit	92	16-Ch., 10-Bit	(3) SCI, SPI, I <sup>2</sup> C	5.0	25.0	-40 - 125	112-LOFP	MC9S12E64MPVE-ND	10.93	9.16	8.23		MC9S12E64MPVE	
		1K	4-Ch., 16-Bit	See Timer	58	16-Ch., 10-Bit	CAN 2.0, SCI	5.0	25.0	-40 - 85	80-OPF	MC9S12HZ64CAA-ND	13.41	12.30	10.62		MC9S12HZ64CAA	
		—	4-Ch., 16-Bit	See Timer	36	8-Ch., 10-Bit	Ethernet	3.3 - 5.0	25.0	-40 - 105	80-TOFP	MC9S12NE64VTU-ND	17.24	13.04	12.02		MC9S12NE64VTU	
—		4-Ch., 16-Bit	See Timer	38	8-Ch., 10-Bit	Ethernet	3.3 - 5.0	25.0	-40 - 105	80-TOFP	MC9S12NE64VTE-ND	9.84	9.04	8.24		MC9S12NE64VTE		
—		4-Ch., 16-Bit	See Timer	70	8-Ch., 10-Bit	Ethernet	3.3 - 5.0	25.0	-40 - 85	112-LOFP	MC9S12NE64CPV-ND	15.74	11.91	10.98		MC9S12NE64CPV		
—		4-Ch., 16-Bit	See Timer	70	8-Ch., 10-Bit	Ethernet	3.3 - 5.0	25.0	-40 - 85	112-LOFP	MC9S12NE64CPVE-ND	10.38	9.53	8.69		MC9S12NE64CPVE		
12K	—	(3) 4-Ch., 16-Bit	See Timer	90	16-Ch., 10-Bit	—	3.3 - 5.0	25.0	-40 - 125	80-OPF	MC9S12E64MFUE-ND	9.85	8.16	7.44		MC9S12E64MFUE		
96K	4K	—	8-Ch., 16-Bit	6-Ch., 8-Bit	60	8-Ch., 10-Bit	CAN 2.0	3.3 - 5.0	25.0	-40 - 85	80-OPF	MC9S12C96CFUERCT-ND	10.72	8.98	8.40		MC9S12C96CFUERCT	
		—	8-Ch., 16-Bit	6-Ch., 8-Bit	60	8-Ch., 10-Bit	CAN 2.0	3.3 - 5.0	25.0	-40 - 85	80-OPF	MC9S12C96CFUERTR-ND	6048.00/750				MC9S12C96CFUERTR	
		1K	8-Ch., 16-Bit	8-Ch., 8-Bit	91	16-Ch., 10-Bit	CAN 2.0	5.5	25.0	-40 - 125	80-OPF	MC9S12B128MFUE-ND	13.08	12.01	10.95		MC9S12B128MFUE	
	4K	1K	8-Ch., 16-Bit	8-Ch., 8-Bit	91	16-Ch., 10-Bit	CAN 2.0	5.5	25.0	-40 - 105	80-OPF	MC9S12B128VFUE-ND	12.47	11.07	9.77		MC9S12B128VFUE	
		1K	8-Ch., 16-Bit	8-Ch., 8-Bit	91	16-Ch., 10-Bit	CAN 2.0	5.5	25.0	-40 - 85	112-LOFP	MC9S12B128CFUE-ND	12.16	11.16	10.18		MC9S12B128CFUE	
		1K	8-Ch., 16-Bit	8-Ch., 8-Bit	91	16-Ch., 10-Bit	CAN 2.0	5.5	25.0	-40 - 125	112-LOFP	MC9S12B128MPVE-ND	13.42	12.32	10.63		MC9S12B128MPVE	
		1K	8-Ch., 16-Bit	8-Ch., 8-Bit	91	16-Ch., 10-Bit	CAN 2.0	5.5	25.0	-40 - 105	112-LOFP	MC9S12B128VPVE-ND	12.83	11.78	10.75		MC9S12B128VPVE	
		2K	8-Ch., 16-Bit	8-Ch., 8-Bit	91	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 85	48-LOFP	MC9S12C128CFUE-ND	10.78	9.03	8.11		MC9S12C128CFUE	
		2K	8-Ch., 16-Bit	6-Ch., 8-Bit	37	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 125	48-POFP	MC9S12G128MFUE-ND	10.03	8.40	7.55		MC9S12G128MFUE	
	128K	6K	2K	8-Ch., 16-Bit	6-Ch., 8-Bit	85	16-Ch., 10-Bit	(2) CAN 2.0, (2) SCI, SPI, I <sup>2</sup> C	5.0	25.0	-40 - 85	112-LOFP	MC9S12HZ128CAL-ND	15.03	13.80	12.59		MC9S12HZ128CAL
			2K	8-Ch., 16-Bit	6-Ch., 8-Bit	85	16-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 105	112-LOFP	MC9S12HZ128VAL-ND	15.78	13.21	11.87		MC9S12HZ128VAL
			2K	8-Ch., 16-Bit	4-Ch., 16-Bit	91	(2) 8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 85	112-LOFP	MC9S12D128CPVE-ND	18.45	14.47	13.63		MC9S12D128CPVE
8K		2K	8-Ch., 16-Bit	8-Ch., 8-Bit	91	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 85	112-LOFP	MC9S12D128CFUE-ND	13.86	12.73	10.98		MC9S12D128CFUE	
		2K	8-Ch., 16-Bit	4-Ch., 16-Bit	91	(2) 8-Ch., 10-Bit	(2) CAN 2.0	5.0	25.0	-40 - 125	112-LOFP	MC9S12D128MPV-ND	19.13	15.01	14.14		MC9S12D128MPV	
		2K	8-Ch., 16-Bit	4-Ch., 16-Bit	91	(2) 8-Ch., 10-Bit	(2) CAN 2.0	5.0	25.0	-40 - 105	112-LOFP	MC9S12D128VPV-ND	18.27	14.34	13.50		MC9S12D128VPV	
		2K	8-Ch., 16-Bit	See Timer	59	8-Ch., 10-Bit	CAN 2.0	5.0	25.0	-40 - 85	80-OPF	MC9S12D128CFUE-ND	14.65	13.45	12.27		MC9S12D128CFUE	
		2K	8-Ch., 16-Bit	See Timer	59	8-Ch., 10-Bit	(2) CAN 2.0	5.0	25.0	-40 - 85	80-OPF	MC9S12D128CFUE-ND	13.62	12.50	10.78		MC9S12D128CFUE	
		2K	8-Ch., 16-Bit	See Timer	59	8-Ch., 10-Bit	(2) CAN 2.0	5.0	25.0	-40 - 85	80-OPF	MC9S12D128CFUERTR-ND	7938.00/750				MC9S12D128CFUERTR	
		2K	8-Ch., 16-Bit	See Timer	59	8-Ch., 10-Bit	(2) CAN 2.0	5.0	25.0	-40 - 85	80-OPF	MC9S12D128CFUE-ND	13.88	12.74	11.00		MC9S12D128CFUE	
		2K	8-Ch., 16-Bit	See Timer	59	(2) 8-Ch., 10-Bit	(2) CAN 2.0	5.0	25.0	-40 - 85	112-LOFP	MC9S12D128CPVE-ND	14.29	13.11	11.31		MC9S12D128CPVE	
		2K	8-Ch., 16-Bit	See Timer	91	(2) 8-Ch., 10-Bit	(2) CAN 2.0	5.0	25.0	-40 - 85	112-LOFP	MC9S12D128CPVE-ND	14.06	12.90	11.13		MC9S12D128CPVE	
256K	12K	2K	8-Ch., 16-Bit	See Timer	91	(2) 8-Ch., 10-Bit	(2) CAN 2.0	5.0	25.0	-40 - 85	112-LOFP	MC9S12D128CPVE-ND	14.31	13.13	11.33		MC9S12D128CPVE	
		—	(3) 4-Ch., 16-Bit	See Timer	59	16-Ch., 10-Bit	—	3.3 - 5.0	25.0	-40 - 85	80-OPF	MC9S12E128CFUE-ND	10.04	8.32	7.59		MC9S12E128CFUE	
		—	(3) 4-Ch., 16-Bit	See Timer	59	16-Ch., 10-Bit	—	5.0	25.0	-40 - 125	80-OPF	MC9S12E128MFUE-ND	9.96	9.14	8.34		MC9S12E128MFUE	
	16K	4K	8-Ch., 16-Bit	6-Ch., 8-Bit	60	—	CAN 2.0	5.0	25.0	-40 - 85	112-LOFP	MC9S12E128CPVE-ND	10.38	8.69	7.24		MC9S12E128CPVE	
		4K																