

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Company name	Device name or family	Instruction set architecture	CPU frequency (MHz)	Bus interface (address/data) (bits)	Instruction width (bits)	Core / I/O operating voltages (V)	Typical power at maximum frequency	Powerdown modes and minimum power	DSP/multiplication hardware support (bits)	FPU	Caching
Cambridge Consultants www.CambridgeConsultants.com/ASIC	XAP4a	XAP	120	16/16	16, 32	1.08 (0.13)	12k gates 0.016 mW/MHz	Sleep or halt	16x16		External
Cambridge Consultants www.CambridgeConsultants.com/ASIC	XAP5a	XAP	120	24/16	16, 32, 48	1.08 (0.13)	18k gates 0.026 mW/MHz	Sleep or halt	16x16		External
Cyan Technology Ltd www.cyanttechnology.com	eCOG1	eCOG1	25	16	16	3.3	36 mW	Stop 0.4uA, sleep, 10.1uA at 16Khz running code	16x16		2-kbyte
Freescale www.freescale.com	56F8000 Series	56F800E DSC	32	24/16	16	3.3	50 mA	Wait 17 mA; STOP 5 mA; Powerdown 0.16 mA	16x16=>36 MAC, four 36-bit accumulators		
Freescale www.freescale.com	56F8100 Series	56F800E DSC	40	24/16	16	3.3	150 mA	Wait 70 mA; STOP 6.2 mA; Powerdown 0.3 mA	16x16=>36 MAC, four 36-bit accumulators		
Freescale www.freescale.com	56F8300 Series	56F800E DSC	60	24/16	16	3.3	210 mA	Wait 94 mA; STOP 6.2 mA; Powerdown 0.3 mA	16x16=>36 MAC, four 36-bit accumulators		
Freescale www.freescale.com	9S12NE64	HCS12	25	16	16	3.3	325 mW	Wait, stop, pseudo stop, low-voltage inhibit, auto-wakeup			
Freescale www.freescale.com	S12P	S12	32	16	16	5		Wait, stop, pseudo stop, low-voltage inhibit, auto-wakeup, Asynchronous Periodic Interrupt			
Freescale www.freescale.com	S12XD	S12X	40	16	16	5		Wait, stop, pseudo stop, low-voltage inhibit, auto-wakeup			
Freescale www.freescale.com	S12XE	S12X	50	16	16	5		Wait, stop, pseudo stop, low-voltage inhibit, auto-wakeup, Asynchronous Periodic Interrupt			
Freescale www.freescale.com	S12XF	S12X	50	16	16	5		Wait, stop, pseudo stop, low-voltage inhibit, auto-wakeup, Asynchronous Periodic Interrupt			
Freescale www.freescale.com	S12XS	S12X	40	16	16	5		Wait, stop, pseudo stop, low-voltage inhibit, auto-wakeup, Asynchronous Periodic Interrupt			
Fujitsu Microelectronics America us.fujitsu.com/micro	F2MC16FX	F2MC-16	8 to 56, or second clock 32.768 kHz	24/16, external: 8 or 16	16	3 to 5.5	120 mW	Stop, sleep, subclock, hardware standby, watch, timer			

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64-kbyte	External	Yes	IP core	External	External	16		+125	0.62 DMIPS/MHz High code density	Licence
16-Mbyte	External	Yes	IP core	External	External	32		+125	0.63 DMIPS/MHz High code density	Licence
64-kbyte Flash, 4-kbyte SRAM	32-Mbyte external memory, DMA	Logical to physical address translations	128 TQFP	Seven 16-bit, 24-bit	Two UART, two USART, I ² C, IrDA, SPI, smart-card interface	29 GPIO level or edge sensitive	Four-channel, 12-bit	-40 to +85	Vdd sensor, temperature sensor, eICE real time debug port	\$8.36
12- to 64-kbyte Flash, 2- to 8-kbyte RAM, EEPROM Emulation			32/48/64 LQFP, 44 QFP	Up to four 4-channel 16-bit; 6-channel PWM	Up to 2 QSPI, 2 QSPI, I ² C, up to 1 CAN	5 priority levels (1 software)	Up to two, eight-channel 12-bit; up to two 12-bit DACs	-40 to +105 -40 to +125	Up to three interval timers, analog comparators, on chip relaxation, PWM fault input	\$2.29 to \$3.99
40- to 528-kbyte Flash, 8- to 32-kbyte RAM, EEPROM Emulation			128/144/160 LQFP, 160 MAPBGA	Up to two 4-channel 16-bit; 6-channel PWM	2 SCI, 2 SPI	5 priority levels (1 software)	Up to four, 4-channel 12-bit	-40 to +105	4-channel Quadrature decoder; on chip relaxation osc.; temp sensor, PWM fault input and current sense	\$4.34 to \$13.58
48- to 560-kbyte Flash, 12- to 36-kbyte RAM, EEPROM Emulation			128/144/160 LQFP, 160 MAPBGA	Up to four 4-channel 16-bit, up to two 6-channel PWM	2 SCI, 2 SPI, up to 2 CAN	5 priority levels (1 software)	Up to four, 4-channel 12-bit	-40 to +105 -40 to +125	Up to two 4-channel Quadrature decoder; on chip relaxation osc.; temp sensor, PWM fault input and current sense	\$5.42 to \$19.63
64-kbyte Flash, 8-kbyte RAM			112 LQFP, 80 QFP	Four-channel, 16-bit	10 input, up to 70 GPIO	IRQ, XIRQ, 21 sources with wakeup	Eight-channel, 10-bit	-40 to +85 -40 to +105	Background debug, single pin interface, hardware breakpoints	\$8 to 50 to \$8.80
32- to 128-kbyte Flash; 2- to 6-kbyte RAM; 4-kbyte DataFlash			48 QFN, 64 LQFP, 80 QFP	8-channel 16-bit Timer; 6-channel 8-bit PWM	1 SCI/LIN, 1 SPI, 1 CAN, up to 91 I/O,		10-channel 12-bit, 3 us conversion time	-40 to +85 -40 to +105 -40 to +125	Non-multiplexed External Bus Interface, Background debug, single pin interface, hardware breakpoints	
64- to 512-kbyte Flash; 4- to 32-kbyte RAM; 2- to 4-kbyte EEE	XGate enable programmable DMA functions		80 QFP, 112/144 LQFP	8-channel 16-bit Enhanced Capture, 4-channel Periodic Interrupt, 4-channel 16-bit PWM	Up to 6 SCI/LIN, up to 3 SPI, up to 2 IIC, up to 5 CAN, up to 152 I/O,	IRQ, XIRQ, more than 50 sources	Up to 24-channel 10-bit, 7 us conversion time	-40 to +85 -40 to +105 -40 to +125	Background debug, single pin interface, hardware breakpoints	
128- to 1024-kbyte Flash; 12- to 64-kbyte RAM; 2- to 4-kbyte EEE	XGATE enable programmable DMA functions	MPU	80 QFP, 112/144 LQFP, 208 MAPBGA	8-channel 16-bit Enhanced Capture, 8-channel 16-bit Timer; 8-channel Periodic Interrupt, 8-channel 8-bit PWM	Up to 8 SCI/LIN, up to 3 SPI, up to 2 IIC, up to 5 CAN, up to 152 I/O,	IRQ, XIRQ, more than 50 sources	Up to 32-channel 12-bit, 3 us conversion time	-40 to +85 -40 to +105 -40 to +125	XGATE, Memory Protection Unit, Error Correction Code, Non-multiplexed External Bus Interface, Background debug, single-pin interface, hardware breakpoints	
128- to 1024-kbyte Flash; 12- to 64-kbyte RAM; 2- to 4-kbyte EEE	XGATE enable programmable DMA functions	MPU	80 QFP, 112/144 LQFP, 208 MAPBGA	8-channel 16-bit Enhanced Capture, 8-channel 16-bit Timer; 8-channel Periodic Interrupt, 8-channel 8-bit PWM	Up to 8 SCI/LIN, up to 3 SPI, up to 2 IIC, up to 5 CAN, up to 152 I/O,	IRQ, XIRQ, more than 50 sources	Up to 32-channel 12-bit, 3 us conversion time	-40 to +85 -40 to +105 -40 to +125	Dual Channel FlexRay Controller, XGATE, Memory Protection Unit, Error Correction Code, Non-multiplexed External Bus Interface, Background debug, single pin interface, hardware breakpoints	
64- to 256-kbyte Flash; 4- to 12-kbyte RAM; 4- to 8-kbyte DataFlash			64 LQFP, 80 QFP, 112 QFP	8-channel 16-bit Enhanced Capture, 4-channel Periodic Interrupt, 8-channel 8-bit PWM	2 SCI/LIN, 1 SPI, 1 CAN, up to 91 I/O,	IRQ, XIRQ, more than 50 sources	Up to 16-channel 12-bit, 3 us conversion time	-40 to +85 -40 to +105 -40 to +125	Error Correction Code, Non-multiplexed External Bus Interface, Background debug, single pin interface, hardware breakpoints	
32- to 544-kbyte masked ROM, 64-kbyte to 544-kbyte Flash, 6-kbyte to 92-kbyte RAM	Satellite Flash		48/64/100/120/144 QFP/LQFP/SQFP/SDIP (plastic)	16-bit, reload, PPG, PWM, 18-bit watchdog, PWC, timebase, Freerun timer, I/O timer	SIO, CAN, I ² C, LIN, UART	Up to 24 external	Up to 24-channel	-40 to +85 -40 to +105	LCD controller, Low voltage detect, RC oscillator, PLL, Clock modulator, input capture, output compare, Stepper motor controller	

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Fujitsu Microelectronics America us.fujitsu.com/micro	F2MC16LX	F2MC-16	8 to 24, or second clock 32.768 kHz	24/16, external: 8 or 16	16	1.8 to 5.5	200 mW	Stop, sleep, subclock, hardware standby, watch, timer			
Infineon Technologies www.infineon.com/microcontrollers	C161CS/JC/JI	C166 V1	25	24/32 or 16, external: 24/16 or 8	16	5	300 mW	Idle, sleep, powerdown	16x16		
Infineon Technologies www.infineon.com/microcontrollers	C161K/O	C166 V1	25 (20 at 3.3V)	24/16, external: 19/16 or 8	16	3.3 or 5.5	250 mW	Idle, powerdown	16x16		
Infineon Technologies www.infineon.com/microcontrollers	C161PI	C166 V1	25 (20 at 3.3V)	24/16, external: 23/16 or 8	16	3.3 or 5.5	187 mW	Idle, powerdown	16x16		
Infineon Technologies www.infineon.com/microcontrollers	C161S	C166 V1	25 (20 at 3.3V)	16/8	16	5 or 3.3	300 mW	0.25 mW, idle, slowdown, powerdown	16x16		
Infineon Technologies www.infineon.com/microcontrollers	C164CI/CM	C166 V1	25	24/16 or 32, external: 21/16 or 8	16	5	250 mW (ROM)	Idle, sleep, powerdown	16x16		
Infineon Technologies www.infineon.com/microcontrollers	C164SV	C166 V1	25	16/8	16	5	488 mW	0.25 mW, idle, slowdown, powerdown	16x16		
Infineon Technologies www.infineon.com/microcontrollers	C165	C166 V1	25 (20 at 3.3V)	24/16, external: 24/16 or 8	16	3.3 or 5.5	250 mW	Idle, powerdown	16x16		
Infineon Technologies www.infineon.com/microcontrollers	C167CR/CS	C166 V1	25, 33, 40	24/16, external: 24/16 or 8	16	5 or 3.3	600 mW	Idle, sleep, powerdown	16x16		
Infineon Technologies www.infineon.com/microcontrollers	XC161CJ	C166 V2	40	24/16, external: 24/16 or 8	16	2.5/5	245 mW	Idle, sleep, powerdown	Single-cycle MAC		
Infineon Technologies www.infineon.com/microcontrollers	XC164CM	C166 V2	40	16/8	16	2.5/5	250 mW	Idle, sleep, powerdown	Single-cycle MAC		
Infineon Technologies www.infineon.com/microcontrollers	XC164CS	C166 V2	40	24/16, external: 24/16 or 8	16	2.5/5	250 mW	Idle, sleep, powerdown	Single-cycle MAC		
Infineon Technologies www.infineon.com/microcontrollers	XC167CI	C166 V2	40	24/16 or 64, external: 24/16 or 8	16	2.5/5	250 mW	Idle, sleep, powerdown	Single-cycle MAC		
Infineon Technologies www.infineon.com/microcontrollers	XC2200	C166V2	66 or 80	32/16	16	1.5/3.0 to 5.0	40 mW	Idle, sleep, deep sleep	Single-cycle MAC		
Infineon Technologies www.infineon.com/microcontrollers	XC2700	C166V2	66	32/16	16	1.5/3.0 to 5.0	40 mW	Idle, sleep, deep sleep	Single-cycle MAC		
Infineon Technologies www.infineon.com/microcontrollers	XE166	C166V2	66 to 80	32/16	16	1.5/3.0 to 5.0	40 mW	Idle, sleep, deep sleep	Single-cycle MAC		
Innovasic Semiconductor www.innovasic.com	IA188/186 EM	x86	40	20/16	16	5.0	1.1W	Reduced clock in power-down mode	Integer Multiply, Divide		
Innovasic Semiconductor www.innovasic.com	IA188/186 ES	x86	40	20/16	16	5.0	1.1W	Reduced clock in power-down mode	Integer Multiply, Divide		
Innovasic Semiconductor www.innovasic.com	IA188/186EB	x86	66.67 (55.5 at 3.3V)	20/16	16	5.0/3.3	1.5W/400 mA (5V/3.3V)	Idle and Power-Down	Integer Multiply, Divide		
Innovasic Semiconductor www.innovasic.com	IA188/186XL	x86	25	20/16	16	5.0	625 mW	Power-Save mode	Integer Multiply, Divide		

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32- to 384-kbyte masked ROM, 24- to 512-kbyte Flash, 1-kbyte to 30-kbyte RAM	Dual operation Flash		48/64/100/120/144 QFP/LQFP/SQFP/SDIP (plastic)	16-bit, reload, PPG, PWM, 18-bit watchdog, PWC, timebase	SIO, triple CAN, I ² C, LIN, UART, IE Bus, up to 102 GPIO	Up to 24 external	Four-, eight-, 16-, or 24-channel, 8/10-bit; two-channel 8-bit DAC	-40 to +85 -40 to +105	92 segment LCD controller, PLL, AC/DC and stepper-motor control, ac inverter control, sound and wave generator, level comparator, input capture, output compare	From \$2.50
10-kbyte RAM, 256 kbyte ROM, or ROMless	8-bit, 16-bit, up to 16-Mbyte		128 PTQFP	Nine 16-bit, real-time, watchdog, 16-channel PWM	Up to two CAN, two UART, SPI, I ² C, up to one J1850, 93 PIO	Up to 59, up to 19 external	12-channel, 10-bit	-40 to +85 -40 to +125	PLL	\$12 (ROMless)
1- to 2-kbyte RAM	8-bit, 16-bit, up to 16-Mbyte		80 PMQFP	Three to five 16-bit, watchdog	UART, SPI, 63 PIO	10 to 13, four to seven external		0 to +70 -40 to +85		\$4.50
3-kbyte RAM	8-bit, 16-bit, up to 16-Mbyte		100 PTQFP, 100 PMQFP	Five 16-bit, real-time, watchdog	UART, SPI, I ² C, 76 PIO	19, eight external	Four-channel, 10-bit	0 to +70 -40 to +85	PLL	\$5
2-kbyte SRAM	8-bit, 16-bit, up to 16-Mbyte		80 PMQFP	Five 16-bit, real-time, watchdog	UART, SPI, 63 PIO	30		0 to +85	Motor control peripheral, PLL	\$2.94
2- to 4-kbyte RAM, 32- to 64-kbyte ROM or OTP	8-bit, 16-bit, up to 4-Mbyte		80 PMQFP, 64 PTQFP	Seven 16-bit, real-time, watchdog, 19-channel PWM	CAN, UART, SPI, up to 59 PIO	Up to 28, up to 11 external	Up to eight-channel, 12-bit	-40 to +85 -40 to +125	Motor control peripheral, PLL	\$5 to \$10
2-kbyte SRAM	8-bit, 16-bit, up to 64-kbyte		64 PTQFP	Six 16-bit, 10-bit, real-time, watchdog	UART, SPI, 50 PIO	32	Eight-channel, 10-bit	-40 to +125	Motor control peripheral, PLL	\$5.37
2-kbyte RAM	8-bit, 16-bit, up to 16-Mbyte		100 PTQFP, 100 PMQFP	Five 16-bit, watchdog	UART, SPI, 77 PIO	13, eight external		0 to +70 -40 to +85		\$7.50
Up to 11-kbyte RAM, up to 128-kbyte ROM, or ROMless	8-bit, 16-bit, up to 16-Mbyte		144 PMQFP	13 16-bit, real-time, watchdog, 36-channel (maximum) PWM	Up to two CAN, UART, SPI, up to two CAN 2.0B, 111 PIO	Up to 55, up to 33 external	16 to 24-channel, 10-bit	0 to +70 -40 to +85 (R only) -40 to +125	PLL	\$10 to \$14 (ROMless)
8-kbyte RAM, 128-kbyte Flash	8-bit, 16-bit, up to 12-Mbyte		144 PTQFP	Nine 16-bit, real-time, watchdog, 32-channel PWM	TwinCAN, two UART, two SPI, I ² C, J1850, two CAN 2.0B, 103 PIO	Up to 74, up to 32 external	16-channel, 10-bit	-40 to +85 -40 to +125	PLL	\$8.50
6-kbyte SRAM			64 PTQFP	Seven 16-bit, real-time, watchdog	Two CAN, two UART, two SPI, 47 PIO	75	14-channel, 10-bit	-40 to +125	Motor control peripheral, PLL	\$4.50
8- or 12-kbyte RAM, 128- or 256-kbyte Flash	8-bit, 16-bit, up to 12-Mbyte		100 PTQFP	11 16-bit, real-time, watchdog, 19-channel PWM	TwinCAN, two UART, two SPI, two CAN 2.0B, 79 PIO	Up to 75, up to 11 external	14-channel, 10-bit	-40 to +85 -40 to +125	PLL	\$7.50
8-kbyte RAM, 128-kbyte Flash	8-bit, 16-bit, up to 12-Mbyte		144 PTQFP	11 16-bit, real-time, watchdog, 19-channel PWM	TwinCAN, two UART, two SPI, two CAN 2.0B, 103 PIO	Up to 77	16-channel, 10-bit	-40 to +85 -40 to +125	PLL	\$12
56- to 82-kbyte RAM, 448- to 768-kbyte Flash	16-bit, up to 16 Mbyte		100, 144 TQFP	5, 16-bit GPT, 16 PWMs	USIC, Configurable supporting I ² C, RS232, UART, SPI		Dual 16-channel, 10-bit	-40 to 85 -40 to 125	Motor control peripheral, PLL	\$5 to \$9
48-kbyte RAM, 768 or 832kbyte Flash	16-bit, up to 16 Mbyte		100, 144 TQFP	5, 16-bit GPT, 16 PWMs	USIC, Configurable supporting I ² C, RS232, UART, SPI		Dual 16-channel, 10-bit	-40 to 85 -40 to 125	Motor control peripheral, PLL	\$5 to \$9
56- to 82-kbyte RAM, 192- to 768-kbyte Flash	16-bit, up to 16 Mbyte		100, 144 TQFP	5, 16-bit GPT, 16 PWMs	USIC, Configurable supporting I ² C, RS232, UART, SPI		Dual 16-channel, 10-bit	-40 to 85	Motor control peripheral, PLL	\$5 to \$9
1-Mbyte external	Dual DMA controller, DRAM Controller		100PQFP, 100TQFP, RHOS	Three 16-bit programmable timers, watchdog	One UART, One synchronous serial port, 32 PIO	6 external, 6 internal		-40 to +85	Pin-for-Pin compatible with AMD AM186/188EM	Under \$11.00
1-Mbyte external	Dual DMA controller		100PQFP, 100TQFP, RHOS	Three 16-bit programmable timers, watchdog, Pulse Width Demodulation	Two UARTs, 32 PIO	6 external, 6 internal		-40 to +85	Pin-for-Pin compatible with AMD AM186/188ES	Under \$11.00
1-Mbyte external	DRAM refresh control		84PLCC, 80PQFP, 80LQFP	Three 16-bit programmable timers, watchdog	Two UARTs, 32 PIO	6 external, 6 internal		-40 to +85	Pin-for-Pin compatible with Intel 186/188EB	Under \$12.50
1-Mbyte external	DRAM refresh control		68PLCC, 80PQFP, 80LQFP	Three 16-bit programmable timers		5 external, 2 internal		-40 to +85	Pin-for-Pin compatible with Intel 186/188XL	Under \$11.00

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IntellaSys www.intellaSys.net	SEAForth 40C18 Preliminary Data	18-bit dual stack architecture	~700 (no central clock)	18/18 with 4 control lines	5 bit opcode up to 4 per word	1.8, 1.8	150 mW	Static design; Idle cores use only leakage, <6 microwatts each	18x18=> 36 bits		independent memory for each core
Maxim Integrated Products www.maxim-ic.com	MAXQ1103	MAXQ-RISC	25	20/32	16	1.8 / 3.3	20 mA	Stop < 220 uA	MAA (RSA/DSA/ECDSA support), SHA engine, DES engine, CRC engine		4-kbyte
Maxim Integrated Products www.maxim-ic.com	MAXQ2000	MAXQ-RISC	14,20		16	1.8/1.8 to 3.6	6 mA	PMM1: 0.6 mA Stop: <1 uA	16x16 MAC 48-bit accumulate		
Maxim Integrated Products www.maxim-ic.com	MAXQ2010	MAXQ-RISC	10		16	2.7 to 3.6	3.1 mA	Stop: 0.37uA typ.	16x16 MAC 48-bit accumulate		
Maxim Integrated Products www.maxim-ic.com	MAXQ610	MAXQ-RISC	12		16	1.7 to 3.6	3.75 mA	Stop < 4 uA			
Maxim Integrated Products www.maxim-ic.com	MAXQ7665B	MAXQ-RISC	8	16	16	2.7 to 3.6/ 4.75 to 5.25	20 mA (500kbps CAN, analog features off)	Stop: 3uA Low Speed: 1.5mA Medium speed: 3.5mA	16x16 MAC 48-bit accumulate		
Maxim Integrated Products www.maxim-ic.com	MAXQ7666	MAXQ-RISC	8	16	16	2.7 to 3.6/ 4.75 to 5.25	20 mA (500kbps CAN, analog features off)	Stop: 160uA	16x16 MAC 48-bit accumulate		
Microchip Technology www.microchip.com	dsPIC30F	Modified Harvard / RISC	120	24/16 Parallel Master Port	24	2.5 to 5.5	450 mW	Low-power sleep, individual peripheral enable	Single-cycle 16x16 MAC, barrel shifter, two 40-bit accumulators, 32/16 and 16/16 divide		
Microchip Technology www.microchip.com	dsPIC33F	Modified Harvard / RISC	160	24/16 Parallel Master Port	24	3 to 3.6	237 mW	Low-power sleep, individual peripheral enable	Single-cycle 16x16 MAC, barrel shifter, two 40-bit accumulators, 32/16 and 16/16 divide		
Microchip Technology www.microchip.com	PIC24F	Modified Harvard	32	24/16 Parallel Master Port	24	2.0 to 3.6	50 mW	Low-power sleep, individual peripheral enable, low power RTCC	Single-cycle 16x16 Multiply, 32/16 and 16/16 divide		
Microchip Technology www.microchip.com	PIC24H	Modified Harvard / RISC	160	24/16 Parallel Master Port	24	3 to 3.6	237 mW	Low-power sleep, individual peripheral enable	Single-cycle 16x16 Multiply, 32/16 and 16/16 divide		
NEC Electronics America www.am.necel.com	78K0R/Kx3	NEC 78K0R	20	16	16	1.8 to 5.5	8.5 mA	1.1uA	16x16->32 multiply		

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64 18-bit words RAM, 64 ROM, per (40) core	3 cores for static RAM. 5 cores for DDR SDRAM.		88-pin QFN		4 SERDES pins and 56 programmable I/O pins for Sync, Async, SPI, and parallel or memory.	8 I/O pins can awaken cores.	Three 17-bit A/D; three 9-bit DAC.	0 to +70	Scalable and asynchronous	< \$20.00
512-kB Flash/ 3KB SRAM Program Memory, 32-kB Data SRAM include 1KB Battery-Backed NVSRAM		MMU	144 TQFP	16-bit	USB, ISO 7816 UART	8 + 8 user definable data self destruct inputs		0 to +70	Integral physical/temperature/physical tamper sensors erase encryption keys, RTC	
64-kbyte Flash, 2-kbyte SRAM, custom mask ROM			68 QFN, 56 TQFN	Three 16-bit with PWM, real-time, watchdog	Two USART, SPI	16 external		-40 to +85	134 Segment LCD, In-system-programmable, JTAG debug	\$2.78
64-kbyte Flash, 2-kbyte SRAM, custom mask ROM			100 LQFP	16-bit	Two USART, I2C master/slave, SPI master/slave	8	12-Bit SAR ADC (w/ Int. Ref) - 8 Single-Ended or 4 Differential Inputs	-40 to +85	160-segment LCD driver, RTC	\$2.95
64-kbyte Flash, 2-kbyte SRAM, custom mask ROM			32 TQFN, 40 TQFN	16-bit	Two USART, SPI, USB			-40 to +85	IR carrier frequency and modulation, In-system-programmable, JTAG debug	\$1.22
64-kbyte Flash, 512 bytes SRAM, 8-kbytes utility ROM		Can swap program and data memory	48 TQFN	Three 16-bit or (six 8-bit) w PWM, watchdog	CAN2.0, LIN UART, JTAG, 8 GPIO	1 Vector 20 Sources	12-Bit DAC 12-Bit SAR ADC w PGA & 16 Single-Ended or 8 Differential Inputs	-40 to 125	Single cycle instructions, ADC has differential PGA, Internal reference, Power supply supervisor	\$7.83
64-kbyte Flash, 512 bytes SRAM, 512 bytes data Flash, 8-kbytes utility ROM		Can swap program and data memory	48 TQFN	Three 16-bit or (six 8-bit) w PWM, watchdog	CAN2.0, LIN UART, JTAG, 8 GPIO	1 Vector 20 Sources	12-Bit DAC 12-Bit SAR ADC w PGA & 16 Single-Ended or 8 Differential Inputs	-40 to 125	Single cycle instructions, ADC has differential PGA, Internal reference, Power supply supervisor	\$7.49
6- to 144-kbyte Flash, 0- to 4-kbyte EEPROM, 512- to 8192-byte RAM		Advanced Memory Segmentations and Code Protection	18 to 80 PDIP/SPDIP/QFN/SOIC/TQFP	Up to five 16-bit, can pair for 32-bit, PWM, watchdog, Power-Supply PWM on SMPS family	Up to two UART, CAN 2.0B, SPI, up to one I ² C, up to 54 GPIO, codec interface (AC97 I2S)	Up to 45 sources, 7 priority levels, 5 traps	Eight to 16 channel 12-bit 200-KSPS, 16 deep result buffer, Power-Supply ADC and Comparator with DAC	-40 to +125	Software stack, 16 general purpose registers, brown out/low voltage detect, Buffered peripherals, watchdog, Motor Control/Power PWM quadrature encoder interface	\$2.50 to \$7.26
12- to 256-kbyte Flash, 1 to 30-Kbyte RAM	8-channel DMA with 2-kbyte dual-port RAM	Advanced Memory Segmentations and Code Protection	18 to 100 PDIP/TQFP/SOIC/SPDIP/QFN	Up to nine 16-bit Timers, can pairs for 32-bit, Up to 16 channels PWM, watchdog	Up to two UART, SPI, ECAN 2.0B, I ² C, Parallel Master Port, Up to 85 GPIO, codec interface (AC97 I2S)	Up to 67 sources, 7 priority levels, 5 traps	Up to two configurable 32-channel, 1.1 MSPS/500 KSPS, 10/12-bit, user electable	-40 to +125	Software stack, Analog Comparators, quadrature encoder interface, Motor Control / Power PWM, PPS pin mapping function, RTCC, CRC, low brown out/low voltage detect.	\$1.86 to \$5.64
16- to 256-kbyte Flash, 4 to 16-Kbyte RAM			28 SOIC/SDIP/SSOP/QFN, 44 TQFP/QFN, 64/80/100 TQFP	Up to 5 16-bit Timers, can pair for 2 32-bit, Up to 9 channels PWM, watchdog, realtime	USB with OTG, up to four UARTs, and 3 SPIs and 3 I ² Cs plus PMP, PPS pin mapping function, up to 86 GPIO	Up to 67 sources, 7 priority levels, 5 traps	Up to 16-channel, 500-KSPS, 10-bit	-40 to +125	Software stack, 16 general purpose registers, brown out/low voltage detect, Buffered peripherals, Parallel Master Port	\$1.69 to \$4.31
12- to 256-kbyte Flash, 1 to 30-Kbyte RAM	8-channel DMA with 2-kbyte dual-port RAM	Advanced Memory Segmentations and Code Protection	18- to 100 PDIP/ SPDIP/ QFN/ SOIC/ TQFP	Up to nine 16-bit Timers, can pairs for 32-bit, Up to 16 channels PWM, watchdog, motor control PWM on motor control family	Up to two UART, SPI, ECAN 2.0B, I ² C, Up to 85 GPIO	Up to 67 sources, 7 priority levels, 5 traps	Up to two configurable 32-channel, 1.1 MSPS/500 KSPS, 10/12-bit, user selectable	-40 to +125	Software stack, Analog Comparators, PPS pin mapping function, RTCC, CRC, Parallel Master Port, brown out/low voltage detect	\$1.99 to \$5.10
64-to 512-kbyte Flash	2-channel DMA		64/80/100/128/144 pin LQFP	16-bit, watchdog, PWM	UART/LIN, CSI, I ² C	up to 41	16-channel, 10-bit; 2-channel, 8-bit DAC	-40 to +85	Calendar RTC, POC, LVI, Upwardly compatible to 78K0 microcontroller	

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Company name	Device name or family	Instruction set architecture	CPU frequency (MHz)	Bus interface (address/data) (bits)	Instruction width (bits)	Core / I/O operating voltages (V)	Typical power at maximum frequency	Powerdown modes and minimum power	DSP/multiplication hardware support (bits)	FPU	Caching
NEC Electronics America www.am.necel.com	78K0R/Kx3-L	NEC 78K0R	20		16	1.8 to 5.5	6.8 mA	0.33 uA	16x16->32 multiply, 32/32->32 divide		
Renesas Technology www.renesas.com	H8/ 3670 (H8/Tiny)	H8	16	16/8	16, 32	3 to 5.5		Four modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/ 3672 (H8/Tiny)	H8	16	16/16	8, 16, 32	3 to 5.5		Four modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/ 3684 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/ 3687 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/ 3694 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/2110B (H8S/2100)	H8	10	24/16	8, 16, 32	3 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2111B (H8S/2100)	H8	10	24/16	8, 16, 32	3 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2114R (H8S/2100)	H8	20	24/16	8, 16, 32	3 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2116 (H8S/2100)	H8	20	24/16	8, 16, 32	3 to 3.6		Six modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2117 (H8S/2100)	H8	20	24/16	8, 16, 32	3 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide, 16x16+32->32 or 16x16+42->42 MAC		
Renesas Technology www.renesas.com	H8/2134 (H8S/2100)	H8	10	24/16	8, 16, 32	2.7 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2138 (H8S/2100)	H8	10	24/16	8, 16, 32	2.7 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2140B (H8S/2100)	H8	20	24/16	8, 16, 32	4 to 5.5		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2144B (H8S/2100)	H8	20	24/16	8, 16, 32	4 to 5.5		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2168 (H8S/2100)	H8	33	24/16	8, 16, 32	3 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2172 (H8S/2100)	H8	33	24/16	8, 16, 32	3 to 3.6		Four modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2212 (H8S/2200)	H8	24	24/16	8, 16, 32	2.7 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2214 (H8S/2200)	H8	16	24/16	8, 16, 32	2.7 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2215 (H8S/2200)	H8	16	24/16	8, 16, 32	2.7 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Memory	DMA / memory controller	MMU	Package selection	Timers / PWM	Serial, Parallel I/O	Interrupts	ADC; DAC	Temperature ranges (degrees Celsius)	Additional features	Price (\$/10,000)
16-to 64-kbyte Flash	2-channel DMA		44/52/64 LQFP, 48/64 TQFP, 64 FBGA	16-bit, watchdog, PWM	UART/LIN, CSI, I ² C	9 external, 24 25 internal	up to 12-channel, 10-bit ADC	-40 to +85	On-chip comparators/ programmable gain amplifier, Calendar RTC, POC, LVI, Upwardly compatible to 78K0 microcontroller	
8-kbyte Flash, 2-kbyte RAM			48LQFP, 64LQFP	One 8-bit, One 16-bit, watchdog	1 Serial, 30 GPIO	11	4-channel 10-bit	-40 to 85		\$2.26
16-kbyte Flash, 2-kbyte RAM			48LQFP, 64LQFP	One 8-bit, One 16-bit, watchdog	1 Serial, 30 GPIO	11	4-channel 10-bit	-40 to 85		\$2.38
32-kbyte Flash, 4-kbyte RAM			32LQFP, 32QFP	Two 8-bit, Two 16-bit, watchdog, One 14-bit PWM	2 Serial, I ² C, 53 GPIO	11	8-channel 10-bit	-40 to 85	RTC, WDTO	\$4.64
56-kbyte Flash, 4-kbyte RAM and .5-kbyte Data Flash			64 LQFP, 64 QFP	Two 8-bit, Two 16-bit, watchdog, One 14-bit PWM	2Serial, I ² C, 53 GPIO	11	8-channel 10-bit	-40 to 85	RTC, WDTO	\$5.00
32-kbyte Flash, 2-kbyte RAM and .5-kbyte Data Flash			64LQFP, 64QFP, 48VQFN, 48LQFP	Two 8-bit, One 16-bit, watchdog	1 Serial, I ² C, 37 GPIO	11	8-channel 10-bit	-40 to 85	WDTO	\$4.64
64-kbyte Flash, 2-kbyte RAM			100 TQFP	Two 8-bit, One 16-bit, Two watchdog, Two 14-bit PWM	1 Serial, 2 I ² C, 82 GPIO	31		-20 to 75	KBD, LPC, 3-channel PS2, 5v IO	\$8.21
64-kbyte Flash, 2-kbyte, 3-kbyte RAM			144TQFP	Six 8-bit, One 16-bit, Two watchdog, Eight 8-bit PWM	1 Serial, 2 I ² C, 122 GPIO	31	6-channel 10-bit	-20 to 75	KBD, LPC, 3-channel PS2, 5v IO	\$8.79
1024-kbyte Flash, 8-kbyte RAM			144TQFP	Four 8-bit, Four 16-bit, Two watchdog, Eight 8-bit PWM, Two 14-bit PWM	2 Serial, SSU, Smart Card, 2 I ² C, DTC, 119 GPIO	49	8-channel 10-bit	-20 to 75	KBD, LPC, 3-channel PS2, Boundary scan, 5v IO	\$13.10
128-kbyte Flash, 8-kbyte RAM			144 TQFP, 176LFBGA	Four 8-bit, Three 16-bit, Two watchdog, Eight 8-bit PWM, Two 14-bit PWM	1 Serial, Smart card, 3 I ² C, 125 GPIO	41	16-channel 10-bit	-20 to 75	LPC, 4-channel PS2	\$10.48
160-kbyte Flash, 8-kbyte RAM			144 TQFP, 145TFLGA	Four 8-bit, Ten 16-bit, Two watchdog, Two 8-bit PWM, Two 14-bit PWM	3 Serial, Smart card, 3 I ² C, 141 GPIO	41	16-channel 10-bit	-20 to 75	4-channel TCM, 3-channel TDP, LPC	\$7.74
64-kbyte, 128-kbyte Flash, 2-kbyte, 4-kbyte RAM			80QFP, 80TQFP	Three 8-bit, One 16-bit, Two watchdog, Two 14-bit PWM	3 Serial, IrDA, 66 GPIO	15	8-channel 10-bit, 2-channel 8-bit DAC	-20 to 75		\$9.40
128-kbyte Flash, 4-kbyte RAM			80 QFP, 80TQFP	Four 8-bit, One 16bit, Two watchdog, Sixteen 8-bit PWM, Two 14-bit PWM	3 Serial, IrDA, 2 I ² C, DTC, 66 GPIO	15	8-channel 10-bit, 2-channel 8-bit DAC	-20 to 75	X-Bus, KBD, TMC	\$9.75
64-kbyte, 128-kbyte, 256-kbyte Flash 4-kbyte, 8-kbyte RAM			100QFP, 100 TQFP, 144TQFP	Four 8-bit, One 16bit, Two watchdog, Sixteen 8-bit PWM, Two 14-bit PWM	3 Serial, IrDA, 2 I ² C, DTC, 82 GPIO	31	8-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	X-Bus, KBD, 3-channel PS2, TMC, 5v IO	\$9.28
128-kbyte Flash, 4-kbyte RAM			80QFP	Three 8-bit, One 16-bit, Two watchdog, Two 14-bit PWM	3 Serial, IrDA, 66 GPIO	23	8-channel 10-bit, 2-channel 8-bit DAC	-20 to 75		\$6.55
256-kbyte, 384-kbyte, 512-kbyte Flash, 40-kbyte RAM			144TQFP	Four 8-bit, One 16bit, Two watchdog, Sixteen 8-bit PWM, Four 14-bit PWM	3 Serial, IrDA, Smart cards, 6 I ² C, DTC, 115 GPIO	41	8-channel 10-bit, 2-channel 8-bit DAC	-20 to 75	LPC, CRC, HSS, Boundary scan, 5v IO	\$16.88
256-kbyte Flash, 32-kbyte RAM	4		100TQFP	Two 8-bit, watchdog	1 Serial, 76 GPIO	9		-20 to 75	USB 2.0 High Speed, DRAMC	\$10.11
64-kbyte, 128 Flash, 8-kbyte, 12-kbyte RAM	4		64 LQFP, 64VQFN	Three 16-bit, watchdog	2 Serial, Smarty Cards, 37 GPIO	7	6-channel 10-bit	-20 to 75	USB, Boot from USB, RTC, HSS	\$6.79
128-kbyte Flash, 12-kbyte RAM	4		112TFBGA	Three 16-bit, watchdog	3 Serial, DTC, 81 GPIO	9	1-channel 8-bit DAC	-20 to 75	HSS	\$9.56
256-kbyte Flash, 16-kbyte RAM	4		112 LFBGA, 120TQFP	Two 8-bit, Three 16-bit, watchdog	3 Serial, Smart Card, DTC, 75 GPIO	8	6-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	USB, Boundary scan, HSS	\$13.07

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

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Renesas Technology www.renesas.com	H8/2215R (H8S/2200)	H8	24	24/16	8, 16, 32	2.7 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2215T (H8S/2200)	H8	24	24/16	8, 16, 32	2.7 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2218 (H8S/2200)	H8	24	24/16	8, 16, 32	2.7 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2238B (H8S/2200)	H8	13.5	24/16	8, 16, 32	2.7 to 5.5		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2238R (H8S/2200)	H8	13.5	24/16	8, 16, 32	2.7 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2239 (H8S/2200)	H8	20	24/16	8, 16, 32	3 to 3.6		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2265 (H8S/2200)	H8	13.5	24/16	8, 16, 32	3 to 5.5		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2266 (H8S/2200)	H8	20.5	24/16	8, 16, 32	4 to 5.5		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2268 (H8S/2200)	H8	20.5	24/16	8, 16, 32	4 to 5.5		Eight modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2319 (H8S/2300)	H8	25	24/16	8, 16, 32	3 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2329 (H8S/2300)	H8	25	24/16	8, 16, 32	3 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2339 (H8S/2300)	H8	25	24/16	8, 16, 32	3 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2357 (H8S/2300)	H8	20	24/16	8, 16, 32	4.5 to 5.5		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2368 (H8S/2300)	H8	33	24/16	8, 16, 32	3 to 3.6		Six modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2378 (H8S/2300)	H8	33	24/16	8, 16, 32	3 to 3.6		Six modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2378R (H8S/2300)	H8	33	24/16	8, 16, 32	3 to 3.6		Six modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2398 (H8S/2300)	H8	20	24/16	8, 16, 32	4.5 to 5.5		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2472 (H8S/2400)	H8	34	24/16	8, 16, 32	3 to 3.6		Five modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2506 (H8S/2500)	H8	26	24/16	8, 16, 32	3 to 5.5		Six modes	8x8, 16x16 multiply, 16/8, 32/16 divide		

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Memory	DMA / memory controller	MMU	Package selection	Timers / PWM	Serial, Parallel I/O	Interrupts	ADC; DAC	Temperature ranges (degrees Celsius)	Additional features	Price (\$/10,000)
256-kbyte Flash, 20-kbyte RAM	4		112 LFBGA, 120TQFP	Two 8-bit, Three 16-bit, watchdog	3 Serial, Smart Card, DTC, 75 GPIO	8	6-channel 10-bit, 2-channel 8-bit DAC	-20 to 75	USB, Boot from USB, Boundary scan, HSS	\$8.10
256-kbyte Flash, 20-kbyte RAM	4		112LFBGA, 120TQFP	Two 8-bit, Three 16-bit, watchdog	3 Serial, Smart Card, 75 GPIO	8	6-channel 10-bit, 2-channel 8-bit DAC	-20 to 75	USB, Boot from USB, Boundary scan, HSS	\$8.21
128-kbyte Flash, 12-kbyte RAM	4		100 TQFP, 112LFBGA	Three 16-bit, watchdog	2 Serial, Smart Card, 69 GPIO	7	6-channel 10-bit	-20 to 75	USB, Boot from USB, Boundary scan, RTC, HSS	\$8.69
256-kbyte Flash, 16-kbyte RAM			100QFP, 100 TQFP	Four 8-bit, Six 16-bit, Two watchdog	4 Serial, Smart Card, 2 I2C, DTC, 82 GPIO	9	8-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	PC Break	\$12.44
256-kbyte Flash, 16-kbyte RAM			100 QFP, 100TQFP, 112TFBGA, 112 LFBGA	Four 8-bit, Six 16-bit, Two watchdog	4 Serial, Smart Card, 2 I2C, DTC, 82 GPIO	9	8-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	PC Break	\$11.76
384-kbyte Flash, 32-kbyte RAM	4		100QFP, 100TQFP, 112TFBGA	Four 8-bit, Six 16-bit, Two watchdog	4 Serial, Smart Card, 2 I2C, DTC, 82 GPIO	9	8-channel 10-bit, 2-channel 8-bit DAC	-20 to 75	PC Break, HSS	\$12.38
128-kbyte Flash, 4-kbyte RAM			100 QFP, 100TQFP	Four 8-bit, Three 16bit, watchdog	3 Serial, Smart Card, 2 I2C, DTC, 78 GPIO	14	10-channel 10-bit, 2-channel 8-bit DAC	-20 to 75	PC Break, 40x4 LCDC, DTMF, HSS	\$9.38
128-kbyte Flash, 8-kbyte RAM			100QFP, 100TQFP	Four 8-bit, Three 16bit, watchdog	3 Serial, Smart Card, 2 I2C, DTC, 78 GPIO	14	10-channel 10-bit ADC, 2-channel 8-bit DAC	-20 to 75	PC Break, 40x4 LCDC, DTMF, HSS	\$9.75
256-kbyte Flash, 16-kbyte RAM			100QFP, 100TQFP	Four 8-bit, Three 16bit, watchdog	3 Serial, Smart Card, 2 I2C, DTC, 78 GPIO	14	10-channel 10-bit, 2-channel 8-bit DAC	-20 to 75	PC Break, 40x4 LCDC, DTMF, HSS	\$11.00
ROMless, 256, 384 kbyte 512-kbyte Flash, 4-kbyte, 8-kbyte and 16-kbyte RAM			100 QFP, 100 TQFP, 113TFLGA	Two 8-bit, Six 16-bit, watchdog	2 Serial, Smart Card, DTC, 79 GPIO	9	8-channel 10-bit, 2-channel 8-bit DAC	-20 to 75		\$18.48
ROMless, 256-kbyte, 384-kbyte, 512-kbyte Flash, 4-kbyte, 8-kbyte and 32-kbyte RAM	4		120TQFP, 128QFP	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	3 Serial, Smart Card, DTC, 95 GPIO	9	8-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	DRAMC	\$12.99
ROMless, 256-kbyte, 384-kbyte Flash, 8-kbyte and 32-kbyte RAM	4		144QFP	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	3 Serial, Smart Card, DTC, 118 GPIO	9	12-channel 10-bit, 4-channel 8-bit DAC	-40 to 85	DRAMC	\$12.86
ROMless, 128-kbyte Flash, 8-kbyte RAM	4		128QFP, 120TQFP	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	3 Serial, Smart Card, DTC, 95 GPIO	9	8-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	DRAMC	\$18.21
ROMless, 256-kbyte, 384-kbyte, 512-kbyte Flash, 16-kbyte, 24-kbyte and 32-kbyte RAM	4		120TQFP, 128QFP	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	5 Serial, IrDA, Smart card, 2 I2C, DTC, 94 GPIO	9	10-channel 10-bit, 2-channel 8-bit DAC	-20 to 75	DRAMC, HSS	\$8.81
ROMless, 256-kbyte, 384-kbyte, 512-kbyte Flash, 16-kbyte, 24-kbyte, 32-kbyte RAM	6		144LQFP, 145TFLGA	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	5 Serial, IrDA, Smart card, 2 I2C, DTC, 113 GPIO	17	16-channel 10-bit, 6-channel 8-bit DAC	-20 to 75	DRAMC, 2-ch EXDMAC	\$11.43
ROMless, 256-kbyte, 384-kbyte, 512 Flash, 24-kbyte and 32-kbyte RAM	6		144LQFP, 145 TFLGA	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	5 Serial, IrDA, Smart card, 2 I2C, DTC, 113 GPIO	17	16-channel 10-bit, 6-channel 8-bit DAC	-40 to 85	SDRAM, 2-ch EXDMAC, HSS	\$11.14
ROMless, 256-kbyte Flash, 4-kbyte, 8-kbyte, and 32-kbyte RAM	4		120 TQFP, 128QFP	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	3 Serial, Smart card, DTC, 95 GPIO	9	8-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	DRAMC	\$5.57
512-kbyte Flash, 40-kbyte RAM			144 LQFP, 176LFBGA	Two 8-bit, One 16-bit, watchdog, Four 14-bit PWM	2 Serial, 3 SSU, Smart card, 6 I2C, DTC, 119 GPIO	33	8-channel 10-bit	-20 to 75	14-bit PWM, LPC, Ethernet Ctrl, USB, Boundary scan, CRC, SCI with FIFO, PECl	\$8.13
384-kbyte, 512-kbyte Flash, 32-kbyte RAM			176LFBGA	Four 8-bit, Six 16-bit, Two watchdog	5 Serial, Smart card, 2 I2C, DTC, 120 GPIO	9	16-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	PC Break, Dual VccIO	\$16.88

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

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Renesas Technology www.renesas.com	H8/2552 (H8S/2500)	H8	26	24/16	8, 16, 32	3 to 5.5		Six modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2556 (H8S/2500)	H8	20	24/16	8, 16, 32	3 to 5.5		Six modes	8x8, 16x16 multiply, 16/8, 32/16 divide		
Renesas Technology www.renesas.com	H8/2612 (H8S/2600)	H8	20	24/16	8, 16, 32	4.5 to 5.5		Five modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2628 (H8S/2600)	H8	24	24/16	8, 16, 32	4.5 to 5.5		Five modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2633 (H8S/2600)	H8	28	24/16	8, 16, 32	3 to 3.6		Eight modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2639 (H8S/2600)	H8	20	24/16	8, 16, 32	4.5 to 5.5		Eight modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2643 (H8S/2600)	H8	25	24/16	8, 16, 32	3 to 3.6		Eight modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2648 (H8S/2600)	H8	20	24/16	8, 16, 32	4.5 to 5.5		Eight modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2667 (H8S/2600)	H8	33	24/16	8, 16, 32	3 to 3.6		Six modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2670 (H8S/2600)	H8	33	24/16	8, 16, 32	3 to 3.6		Six modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2674R (H8S/2600)	H8	33	24/16	8, 16, 32	3 to 3.6		Six modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/2676 (H8S/2600)	H8	33	24/16	8, 16, 32	3 to 3.6		Six modes	8x8, 16x16 multiply, 16x16+32, 16x16+42		
Renesas Technology www.renesas.com	H8/36014 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Four modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36024 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Four modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36037 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36049 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36057 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36064 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Four modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36077 (H8/Tiny)	H8	16	16/16	8, 16, 32	3 to 3.6		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36079 (H8/Tiny)	H8	20	16/16	8, 16, 32	4.5 to 5.5		Five modes	8x8, 16x16		

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Memory	DMA / memory controller	MMU	Package selection	Timers / PWM	Serial, Parallel I/O	Interrupts	ADC; DAC	Temperature ranges (degrees Celsius)	Additional features	Price (\$/10,000)
384-kbyte, 512-kbyte Flash, 24-kbyte, 32-kbyte RAM			144 QFP, 176LFBGA	Four 8-bit, Six 16-bit, Two watchdog	5 Serial, Smart card, 2 I2C, DTC, 120 GPIO	9	16-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	PC Break, Dual VccIO, IEBus	Call
512-kbyte Flash, 32-kbyte RAM			QFP	Four 8-bit, Six 16-bit, Two watchdog	5 Serial, Smart card, 2 I2C, CAN, DTC, 120 GPIO	9	16-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	PC Break, Dual VccIO	\$16.25
128-kbyte Flash, 4-kbyte RAM			80QFP	Six 16-bit, watchdog, 8-bit waveform generator, MMT	3 Serial, Smart card, CAN, DTC, 56 GPIO	7	12-channel 10-bit	-20 to 75	PC Break, MMT	\$10.00
128-kbyte Flash, 8-kbyte RAM			100QFP	Four 8-bit, Six 16-bit, watchdog, 8-bit Waveform generator	2 Serial, 2 SSU, Smart Card, CAN, DTC, 76 GPIO	7	16-channel 10-bit	-20 to 75	PC Break	\$10.00
256-kbyte Flash, 16-kbyte RAM	4		120 TQFP, 128QFP	Four 8-bit, Six 16-bit, Two watchdog, 8-bit waveform generator, Four 14-bit PWM	5 Serial, IrDA, Smart Card, 2 I2C, DTC, 89 GPIO	9	16-channel 10-bit, 4-channel 8-bit DAC	-40 to 85	PC Break, DRAMC	\$15.00
128-kbyte Flash, 256-kbyte, 4 and 16-kbyte RAM			128 QFP	Six 16-bit, watchdog, 8-bit waveform generator, One Motor Control PWM	3 Serial, Smart Card, 2 CAN, DTC, 84 GPIO	7	12-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	15 mA IO, PC Break	\$16.24
256-kbyte Flash, 16-kbyte RAM	4		144 QFP	Four 8-bit, Six 16-bit, Two watchdog, 16-bit Waveform generator	5 Serial, IrDA, Smart Card, 2 I2C, DTC, 111 GPIO	9	16-channel 10-bit, 4-channel 8-bit DAC	-20 to 75	PC Break, DRAMC	\$14.40
128-kbyte Flash, 4-kbyte RAM			144 QFP	Six 16-bit, watchdog, 8-bit waveform generator, One Motor Control PWM	3 Serial, Smart Card, CAN, DTC, 108 GPIO	7	12-channel 10-bit	-20 to 75	15 mA IO, PC Break, 24x4 LCDC	\$26.28
384-kbyte Flash, 16-kbyte RAM			144 LQFP	Two 8-bit, Six 16-bit, watchdog, 8-bit waveform generator	3 Serial, IrDA, Smart Card, DTC, 115 GPIO	9	12-channel 10-bit, 4-channel 8-bit DAC	-20 to 75	HSS	\$11.66
ROMless, 8-kbyte RAM	8		144 QFP	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	3 Serial, IrDA, Smart Card, DTC, 115 GPIO	17	12-channel 10-bit, 4-channel 8-bit DAC	-20 to 75	4-ch EXDMAC, DRAMC	\$6.25
ROMless, 32-kbyte RAM	8		144 LQFP	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	3 Serial, IrDA, Smart Card, DTC, 115 GPIO	17	12-channel 10-bit, 4-channel 8-bit DAC	-40 to 85	SDRAM, 4-ch EXDMAC, HSS	\$8.25
256-kbyte Flash, 8-kbyte RAM	8		144 QFP	Two 8-bit, Six 16-bit, watchdog, 16-bit waveform generator	3 Serial, IrDA, Smart Card, DTC, 115 GPIO	17	12-channel 10-bit, 4-channel 8-bit DAC	-20 to 75	4-ch EXDMAC, DRAMC	\$12.50
32-kbyte Flash, 16-kbyte Flash, 2-kbyte RAM			64LQFP, 48LQFP, 48VQFN	One 8-bit, One 16-bit, watchdog	2 Serial, 34 GPIO	11	4-channel 10-bit	-40 to 85	WDTO	\$4.16
16-kbyte Flash, 32-kbyte Flash, 2-kbyte RAM			48LQFP, 64LQFP, 48VQFN	One 8-bit, One 16-bit, watchdog	3 Serial, 34 GPIO	11	4-channel 10-bit	-20 to 75	WDTO	\$4.29
32-kbyte Flash, 56-kbyte Flash and 3-kbyte, 2-kbyte RAM			64QFP, 64LQFP	Two 8-bit, Two 16-bit, watchdog	1 Serial, SSU, CAN, 53 GPIO	11	8-channel 10-bit	-20 to 75	1-channel 8-bit sub-system timer with on-chip oscillator	\$5.60
96-kbyte Flash, 4-kbyte RAM			80QFP	Two 8-bit, Three 16-bit, watchdog, One 14-bit PWM	3 Serial, I2C, 67 GPIO	11	8-channel 10-bit	-20 to 75	RTC, WDTO	\$5.36
32-kbyte Flash, 56-kbyte Flash, 2-kbyte, 3-kbyte RAM			64QFP, 64LQFP	Two 8-bit, Two 16-bit, watchdog	2 Serial, SSU, CAN, 53 GPIO	11	8-channel 10-bit	-20 to 75	1-channel 8-bit sub-system timer with on-chip oscillator	\$5.71
32-kbyte Flash, 2-kbyte RAM			64QFP, 64LQFP	Two 8-bit, Two 16-bit, watchdog, One 14-bit PWM	2 Serial, I2C, 53 GPIO	11	8-channel 10-bit	-20 to 75	WDTO	\$2.98
32-kbyte Flash, 56-kbyte Flash, 4-kbyte RAM			64QFP, 64LQFP	Two 8-bit, Two 16-bit, watchdog, One 14-bit PWM	2 Serial, I2C, 55 GPIO	11	8-channel 10-bit	-40 to 85	RTC, WDTO	\$3.75
96-kbyte Flash, 128-kbyte Flash, 6-kbyte RAM			64QFP, 64LQFP	Two 8-bit, Two 16-bit, watchdog, One 14-bit PWM	2 Serial, I2C, 55 GPIO	11	8-channel 10-bit	-40 to 85	RTC, WDTO	\$4.88

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Company name	Device name or family	Instruction set architecture	CPU frequency (MHz)	Bus interface (address/data) (bits)	Instruction width (bits)	Core / I/O operating voltages (V)	Typical power at maximum frequency	Powerdown modes and minimum power	DSP/multiplication hardware support (bits)	FPU	Caching
Renesas Technology www.renesas.com	H8/36087 (H8/Tiny)	H8	18	16/16	8, 16, 32	3 to 3.6		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36094 (H8/Tiny)	H8	20	16/16	8, 16, 32	4.5 to 5.5		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36109 (H8/Tiny)	H8	20	16/16	8, 16, 32	3 to 5.5		Five modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36902 (H8/Tiny)	H8	12	16/16	8, 16, 32	3 to 5.5		Four modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/36912 (H8/Tiny)	H8	12	16/16	8, 16, 32	3 to 5.5		Four modes	8x8, 16x16		
Renesas Technology www.renesas.com	H8/38076R (H8/SLP)	H8	10	16/8	16, 32	2.7 to 3.6		Seven modes	8x8		
Renesas Technology www.renesas.com	H8/38086R (H8/SLP)	H8	10	16/8	16, 32	2.7 to 3.6		Seven modes	8x8		
Renesas Technology www.renesas.com	H8/38099 (H8/SLP)	H8	10	16/8	16, 32	2.7 to 3.6		Seven modes	8x8		
Renesas Technology www.renesas.com	H8/38524 (H8/SLP)	H8	10	16/8	16, 32	2.7 to 5.5		Eight modes	8x8		
Renesas Technology www.renesas.com	H8/38602R (H8/SLP)	H8	10	16/8	16, 32	1.8 to 3.6		Seven modes	8x8		
Renesas Technology www.renesas.com	H8/38776 (H8/SLP)	H8	10	16/8	16, 32	2.7 to 3.6		Seven modes	8x8		
Renesas Technology www.renesas.com	H8/38799 (H8/SLP)	H8	4.2	16/8	16, 32	1.8 to 3.6		Eight modes	8x8		
Renesas Technology www.renesas.com	M16C/245 (M16C)	M16C	16	20/16	16	3 to 3.6		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/26A (M16C/Tiny)	M16C	20	20/16	16	2.7 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/28 (M16C/Tiny)	M16C	20	20/16	16	2.7 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/28B (M16C/Tiny)	M16C	24	20/16	16	2.7 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/29 (M16C/Tiny)	M16C	20	20/16	16	2.7 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/30P (M16C)	M16C	16	20/16	16	2.7 to 5.5		Two modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/62P (M16C)	M16C	24	20/16	16	2.7 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/64	M16C	25	20/16	16	2.7 to 5.5	20 mA	Three modes; 3.0 uA	16x16+32		
Renesas Technology www.renesas.com	M16C/64 (M16C)	M16C	25	20/16	16	2.7 to 5.5		Two modes	16x16 multiply		

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Memory	DMA / memory controller	MMU	Package selection	Timers / PWM	Serial, Parallel I/O	Interrupts	ADC; DAC	Temperature ranges (degrees Celsius)	Additional features	Price (\$/10,000)
56-kbyte Flash, 4-kbyte RAM			64LQFP	Two 8-bit, Two 16-bit, watchdog, One 14-bit PWM	2 Serial,I2C, 53 GPIO	11	8-channel 10-bit	-20 to 75	RTC, WDTO	\$4.88
16-kbyte Flash, 32-kbyte Flash, 2-kbyte RAM			64QFP, 64LQFP, 48LQFP	Two 8-bit, One 16-bit, watchdog	1 Serial,I2C, 39 GPIO	11	8-channel 10-bit	-20 to 75	WDTO	\$4.50
128-kbyte Flash, 5-kbyte RAM			100LQFP,100QFP	Two 8-bit, Three 16-bit, watchdog, One 14-bit PWM	3 Serial,I2C, 87 GPIO	11	16-channel 10-bit	-20 to 75	RTC, Band Gap regulator, WDTO	\$6.08
8-kbyte Flash, 1.5kb			32LQFP	One 8-bit, One 16-bit, watchdog	1 Serial, 22 GPIO	4	4-channel 10-bit	-20 to 75	WDTO	\$2.26
8-kbyte Flash, 1.5-kbyte RAM			32LQFP	Two 8-bit, One 16-bit, watchdog	1 Serial,I2C, 22 GPIO	4	4-channel 10-bit	-20 to 75	WDTO	\$2.38
52-kbyte Flash, 2-kbyte RAM			80QFP, 80TQFP, 85TFLGA	Three 16-bit, watchdog, Two 14-bit PWM	3 Serial, IrDA, I2C, 63 GPIO	14	8-channel 10-bit	-40 to 85	RTC, 16-bit AEC, 32x4 LCDC	\$4.16
52-kbyte Flash, 2-kbyte RAM			80QFP, 80TQFP, 85TFLGA	Three 16-bit, watchdog, Two 14-bit PWM	3 Serial, IrDA, I2C, 63 GPIO	14	3-channel 10-bit	-40 to 85	RTC, 16-bit AEC, 32x4 LCDC, 2-ch 14-bit Sigma-Delta ADC	\$4.16
128-kbyte Flash, 2-kbyte RAM			100 LQFP	Two 8-bit, Three 16-bit, watchdog, Four 14-bit PWM	4 Serial, IrDA, I2C, 83 GPIO	14	8-channel 10-bit	-40 to 85	16-bit AEC, RTC, 40x4 LCDC	
32-kbyte Flash, 1-kbyte RAM			80 QFP, 80 TQFP	Three 8-bit, One 16-bit, watchdog	1 Serial, 65 GPIO	13	8-channel 10-bit	-40 to 85	16-bit AEC, 32x4 LCDC, Internal power supply step down circuit, 2-ch 10-bit PWM	\$3.58
16-kbyte Flash, 1-kbyte RAM			32 LQFP, 32VQFN	One 8-bit, One 16-bit, watchdog	1 Serial, SSU, IrDA, I2C, 19 GPIO	4	6-channel 10-bit	-40 to 85	RTC, 16-bit AEC, 2-ch comparator	\$2.26
52-kbyte Flash, 2-kbyte RAM			80 TQFP, 80QFP	Three 16-bit, watchdog, Two 14-bit PWM	3 Serial, IrDA, I2C, 63 GPIO	14	8-channel 10-bit	-40 to 85	RTC, 16-bit AEC	\$4.16
128-kbyte Flash, 4-kbyte, 10-kbyte RAM			100 LQFP	Two 8-bit, 3 16-bit, watchdog, Four 14-bit PWM	4 Serial, SSU, Smart Card, 83 GPIO	14	8-channel 10-bit	-40 to 85	4-ch 14-bit PWM, 2-ch 16-bit TPU, 16-bit AEC, RTC	\$5.95
128-kbyte Flash, 10-kbyte RAM	4		100 LQFP	Five 16-bit, watchdog	4 Serial,I2C, 85 GPIO	4	8-channel 10-bit	-20 to 85	IEBus, SSI, USB, CRC, AND Flash Control Circuit	\$10.00
24-kbyte, 48-kbyte, 64-kbyte Flash, 1-kbyte, 2-kbyte RAM	2		42 SSOP, 48LQFP	Eight 16-bit, watchdog	3 Serial, I2C,39 GPIO	8	12-channel 10-bit	-20 to 85	CRC, 1-channel IEBus, 3-phase PWM	\$4.86
96-kbyte, 128-kbyte Flash, 8-kbyte RAM and 12-kbyte RAM	2		20 LSSOP, 64 LQFP, 85TFLGA 80LQFP	Nine 16-bit, watchdog	5 Serial,2 I2C, 71 GPIO	8	24-channel 10-bit	-20 to 85	1-channel IEBus, 3-phase PWM, 1-channel 16-bit IC/OC	
120-kbyte Flash, 12-kbyte RAM	2		80 LQFP	Nine 16-bit, watchdog	5 Serial,2 I2C 71 GPIO	8	24-channel 10-bit	-40 to 85	1-channel IEBus, 3-phase PWM, 1-channel 16-bit IC/OC	
96-kbyte, 128-kbyte Flash, 8-kbyte, 12-kbyte RAM	2		64LQFP, 80 LQFP	Nine 16-bit, watchdog	5 Serial,2 I2C, CAN, 71 GPIO	8	27-channel 10-bit	-20 to 85	1-channel IEBus, 3-phase PWM, CRC, 1-channel 16 bit IC/OC	\$7.60
ROMless, 96-kbyte, 128-kbyte, 192-kbyte Flash, 5-kbyte, 6-kbyte RAM	2		100 QFP, 100 LQFP	Six 16-bit, watchdog	3 Serial,3 I2C, 88 GPIO	7	18-channel 10-bit	-20 to 85	CRC, IEBus	\$3.88
ROMless, 64-kbyte, 128,256-kbyte, 384-kbyte, 512-kbyte Flash, 4-kbyte, 10-kbyte, 20-kbyte, 31-kbyte RAM	2		80/100 QFP, 128/100 LQFP	Eleven 16-bit, watchdog	5 Serial,3 I2C, 114 GPIO	8	26-channel 10-bit, 2-channel 8-bit DAC	-20 to 85	3-channel IEBus, 3-phase PWM, CRC	\$12.00
128- to 512-kbyte Flash, 12- to 31-kbyte RAM, 8-kbyte data Flash	four-channel DMAC		100 QFP, 100 LQFP	Eleven 16-bit, watchdog	I ² C, IEBus, Six (a)synchronous, up to 88 GPIO	13 external	26-channel, 10-bit; two-channel, 8-bit DAC	-40 to +85	External Bus Expansion, three-phase motor controller, clock stop detect, power-on reset, low voltage detect, CRC block, X-Y converter, low-speed on-chip OSC	\$3.95 to \$5.10
256-kbyte, 512-kbyte Flash, 16-kbyte and 31-kbyte RAM	4		100QFP, 100LQFP	Eleven 16-bit, watchdog	8 Serial, Smart Card,6 I2C, 88 GPIO	13	26-channel 10-bit, 2-channel 8-bit DAC	-20 to 85	6-channel IEBus, 3-phase PWM, CRC	\$6.14

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Company name	Device name or family	Instruction set architecture	CPU frequency (MHz)	Bus interface (address/data) (bits)	Instruction width (bits)	Core / I/O operating voltages (V)	Typical power at maximum frequency	Powerdown modes and minimum power	DSP/multiplication hardware support (bits)	FPU	Caching
Renesas Technology www.renesas.com	M16C/65	M16C	32	20/16	16	2.7 to 5.5	24 mA	Three modes; 3.0 uA	16x16+32		
Renesas Technology www.renesas.com	M16C/6N4 (M16C)	M16C	24	20/16	16	3 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/6N5 (M16C)	M16C	24	20/16	16	3 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/6NK (M16C)	M16C	24	20/16	16	3 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/6NL (M16C)	M16C	24	20/16	16	3 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/6NM (M16C)	M16C	24	20/16	16	3 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/6NN (M16C)	M16C	24	20/16	16	3 to 5.5		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	M16C/6S (M16C)	M16C	15.36	20/16	16	3 to 3.6		Four modes	16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/10	M16C	16	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/11	M16C	20	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/12	M16C	16	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/13	M16C	20	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/18	M16C	20	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/19	M16C	20	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/1A	M16C	20	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/1B)	M16C	20	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Memory	DMA / memory controller	MMU	Package selection	Timers / PWM	Serial, Parallel I/O	Interrupts	ADC; DAC	Temperature ranges (degrees Celsius)	Additional features	Price (\$/10,000)
128- to 768-kbyte Flash, 12- to 47-kbyte RAM, 8-kbyte data Flash	four-channel DMAC		80 QFP, 100, 128 LQFP	Eleven 16-bit, watchdog, Week RTC	Multi-master I ² C, IEBus, Six (a)synchronous, up to 114 GPIO	10, 13 external	26-channel, 10-bit; two-channel, 8-bit DAC	-40 to +85	External Bus Expansion, three-phase motor controller, clock stop detect, power-on reset, low voltage detect, CRC block, X-Y convertor, low-and high-speed on-chip OSC, remote control receiver, CEC block	\$4.35 to \$6.50
128-kbyte, 256-kbyte Flash, 5-kbyte, 10-kbyte RAM	2		100 LQFP	Eleven 16-bit, watchdog	4 Serial, 3 I ² C, 2 CAN, 88 GPIO	9	26-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	3-channel IEBus, 3-phase PWM, CRC	\$13.10
128-kbyte Flash, 5-kbyte RAM	2		100 LQFP	Eleven 16-bit, watchdog	4 Serial, 3 I ² C, CAN, 88 GPIO	9	26-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	3-channel IEBus, 3-phase PWM, CRC	\$11.00
384-kbyte, 512-kbyte Flash, 31-kbyte RAM	2		100 LQFP	Eleven 16-bit, watchdog	5 Serial, 3 I ² C, 2 CAN, 88 GPIO	9	26-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	3-channel IEBus, 3-phase PWM, CRC	\$15.00
384-kbyte, 512-kbyte Flash, 31-kbyte RAM	2		100 LQFP	Eleven 16-bit, watchdog	5 Serial, 3 I ² C, CAN, 88 GPIO	9	26-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	3-channel IEBus, 3-phase PWM, CRC	
384-kbyte, 512-kbyte Flash, 31-kbyte RAM	2		128 LQFP	Eleven 16-bit, watchdog	7 Serial, 3 I ² C, 2 CAN, 114 GPIO	12	26-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	3-channel IEBus, 3-phase PWM, CRC	\$15.63
384-kbyte, 512-kbyte Flash, 31-kbyte RAM	2		128 LQFP	Eleven 16-bit, watchdog	7 Serial, 3 I ² C, CAN, 114 GPIO	12	26-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	3-channel IEBus, 3-phase PWM, CRC	\$15.00
96-kbyte Flash, 24-kbyte RAM	2		64 LQFP	Five 16-bit, watchdog	5 Serial, 3 I ² C, 22 GPIO	3		-20 to 85	AFE (Analog Front End using 3-ch 1-bit ADC & 1-ch 10-bit DAC), IT800 Modem core	\$8.93
8-kbyte, 12-kbyte, 16-kbyte Flash, 0.5 kbyte, 0.75-kbyte, 1-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	2 Serial, 24 GPIO	5	8-channel 10-bit	-40 to 85		\$2.25
8-kbyte, 12-kbyte, 16-kbyte Flash, 0.5 kbyte, 0.75-kbyte, 1-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	2 Serial, 24 GPIO	5	12-channel 10-bit	-40 to 85		\$2.31
8-kbyte, 12-kbyte, 16-kbyte Flash and 0.5-kbyte, 0.75-kbyte, 1-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	2 Serial, 24 GPIO	5	8-channel 10-bit	-40 to 85		\$2.44
8-kbyte Flash, 12-kbyte Flash, 16-kbyte Flash, 0.5-kbyte, 0.75-kbyte, 1-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	2 Serial, 24 GPIO	5	12-channel 10-bit	-40 to 85		\$2.50
4-kbyte, 8-kbyte, 12-kbyte, 16-kbyte Flash, 0.375kb0.5-kbyte, 0.75-kbyte, 1-kbyte RAM			20SDIP, 28 HWQF, 20 LSSOP	Two 8-bit, One 16-bit, watchdog	2 Serial, 16 GPIO	4		-40 to 85	4-channel comparator, WDTO	\$1.81
4-kbyte, 8-kbyte, 12-kbyte, 16-kbyte Flash, 0.75-kbyte, 1-kbyte, 0.375-kbyte 0.5kb			20 SDIP, 28 HWQFN, 20 LSSOP	Two 8-bit, One 16-bit, watchdog	2 Serial, 16 GPIO	4		-40 to 85	4-channel comparator, WDTO	\$2.00
4-kbyte, 8-kbyte, 12-kbyte, 16-kbyte Flash, 0.75-kbyte, 1-kbyte, 0.375-kbyte 0.5kb			20SDIP, 28HWQFN, 20LSSOP	Two 8-bit, One 16-bit, watchdog	2 Serial, SSU, I ² C, 16 GPIO	4	4-channel 10-bit	-40 to 85	WDTO	\$1.88
4-kbyte, 8-kbyte, 12-kbyte, 16-kbyte Flash, 0.75-kbyte, 1-kbyte, 0.375-kbyte 0.5kb			20SDIP, 28HWQFN, 20LSSOP	Two 8-bit, One 16-bit, watchdog	2 Serial, SSU, I ² C, 16 GPIO	4	4-channel 10-bit	-40 to 85	WDTO	\$2.06

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Company name	Device name or family	Instruction set architecture	CPU frequency (MHz)	Bus interface (address/data) (bits)	Instruction width (bits)	Core / I/O operating voltages (V)	Typical power at maximum frequency	Powerdown modes and minimum power	DSP/multiplication hardware support (bits)	FPU	Caching
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/21	M16C	16	16/8	16	3 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/22	M16C	16	16/8	16	3 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/23	M16C	16	16/8	16	3 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/24	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/25	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/26	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/27	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2A	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2B	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2C	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2D	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2E	M16C	20	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2F	M16C	20	16/8	16	2.7 to 5.5		Four modes	8x8, 16x16 multiply		

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Memory	DMA / memory controller	MMU	Package selection	Timers / PWM	Serial, Parallel I/O	Interrupts	ADC; DAC	Temperature ranges (degrees Celsius)	Additional features	Price (\$/10,000)
32-kbyte Flash, 2-kbyte RAM			48 LQFP	Three 8-bit, Two 16-bit, watchdog	2 Serial, SSU,I2C, LIN, 44 GPIO	5	12-channel 10-bit	-40 to 125	WDTO	\$3.39
32-kbyte, 48-kbyte, 64-kbyte, 96-kbyte, 128-kbyte Flash, 2-kbyte, 2.5-kbyte, 3-kbyte, 5-kbyte, 6-kbyte RAM			48 LQFP	Three 8-bit, Two 16-bit, watchdog	2 Serial, SSU,I2C,CAN,LIN,44 GPIO	6	12-channel 10-bit	-40 to 125	WDTO	\$4.11
32-kbyte, 48-kbyte, 64-kbyte, 96-kbyte, 128-kbyte Flash, 2-kbyte, 2.5-kbyte, 3-kbyte, 5-kbyte, and 6-kbyte RAM			48 LQFP	Three 8-bit, Two 16-bit, watchdog	2 Serial, SSU,I2C,CAN,LIN,44 GPIO	6	12-channel 10-bit	-40 to 125	WDTO	\$3.93
16-kbyte, 24-kbyte, 32-kbyte, 48-kbyte, 64-kbyte Flash, 1-kbyte, 2-kbyte, 2.5-kbyte, 3-kbyte RAM			52 LQFP	Three 8-bit, Two 16-bit, watchdog	2 Serial, SSU,I2C,LIN,44 GPIO	5	12-channel 10-bit	-40 to 85	WDTO, RTC	\$2.75
16-kbyte, 24-kbyte, 32-kbyte, 48-kbyte, 64-kbyte Flash, 1-kbyte, 2-kbyte, 2.5-kbyte, 3-kbyte RAM			52 LQFP	Three 8-bit, Two 16-bit, watchdog	2 Serial, SSU,I2C,LIN,44 GPIO	5	12-channel 10-bit	-40 to 85	WDTO, RTC	\$2.94
8-kbyte Flash, 16-kbyte Flash, 24-kbyte Flash, 32-kbyte Flash and 0.5-kbyte, 1-kbyte, 1.5-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	2 Serial, SSU,I2C,LIN,28 GPIO	4	12-channel 10-bit	-40 to 85	WDTO, RTC	\$2.38
8-kbyte, 16-kbyte, 24-kbyte, 32-kbyte Flash and 0.5-kbyte, 1-kbyte, 1.5-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	2 Serial, SSU,I2C,LIN,28 GPIO	4	12-channel 10-bit	-40 to 85	WDTO, RTC	\$2.56
48-kbyte, 64-kbyte, 96-kbyte, 128-kbyte Flash and 2.5-kbyte, 3-kbyte, 7-kbyte, 7.5-kbyte RAM			64 LQFP, 64 TFLGA	Three 8-bit, Four 16-bit, watchdog	3 Serial, SSU,I2C,LIN,57 GPIO	5	12-channel 10-bit	-40 to 125	WDTO, RTC	\$3.50
48-kbyte Flash, 64-kbyte Flash, 96-kbyte Flash and 128-kbyte Flash and 2.5-kbyte, 3-kbyte, 7-kbyte and 7.50-kbyte RAM			64 TFLGA, 64LQFP	Three 8-bit, Four 16-bit, watchdog	3 Serial, SSU,I2C,LIN,57 GPIO	5	12-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	WDTO, RTC	\$3.69
48-kbyte, 64-kbyte, 96-kbyte, 128-kbyte Flash, 2.5-kbyte, 3-kbyte, 7-kbyte, 7.5-kbyte RAM			80 LQFP	Three 8-bit, Four 16-bit, watchdog	3 Serial, SSU,I2C,LIN,73 GPIO	5	20-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	WDTO, RTC	\$3.75
48-kbyte, 64-kbyte, 96-kbyte, 128-kbyte Flash, 2.5-kbyte, 3-kbyte, 7-kbyte, 7.5-kbyte RAM			80 LQFP	Three 8-bit, Four 16-bit, watchdog	3 Serial, SSU,I2C,LIN,73 GPIO	5	20-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	WDTO, RTC	\$3.94
8-kbyte Flash, 16-kbyte Flash, 0.5-kbyte and 1-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	1 Serial, LIN, 28 GPIO	4	12-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	WDTO, 2 Comparators	\$2.38
8-kbyte, 16-kbyte Flash and 0.5-kbyte and 1-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	1 Serial, LIN, 28 GPIO	4	12-channel 10-bit, 2-channel 8-bit DAC	-40 to 85	WDTO, 2 Comparators	\$2.56

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Company name	Device name or family	Instruction set architecture	CPU frequency (MHz)	Bus interface (address/data) (bits)	Instruction width (bits)	Core / I/O operating voltages (V)	Typical power at maximum frequency	Powerdown modes and minimum power	DSP/multiplication hardware support (bits)	FPU	Caching
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2G	M16C	8	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2H	M16C	8	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2J	M16C	8	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2K	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/2L	M16C	20	16/8	16	2.2 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/33A	M16C	20	16/8	16	1.8 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/34E	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/34F	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/34G	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/34H	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/35A	M16C	20	16/8	16	1.8 to 5.5		Four modes	8x8, 16x16 multiply		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/36E	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/36F	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/36G	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/36H	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/38E	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/38F	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/38G	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		
Renesas Technology www.renesas.com	R8C/Tiny Series R8C/38H	M16C	20	16/8	16	2.2 to 5.5		Six modes; 0.7 uA	8x8, 16x16		

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Memory	DMA / memory controller	MMU	Package selection	Timers / PWM	Serial, Parallel I/O	Interrupts	ADC; DAC	Temperature ranges (degrees Celsius)	Additional features	Price (\$/10,000)
16-kbyte, 24-kbyte, 32-kbyte Flash, 0.5 kbyte, 1-kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	2 Serial, LIN, 28 GPIO	5		-40 to 85	WDTO, 2 Comparators, RTC	\$2.25
4-kbyte, 8-kbyte Flash, and 0.25-kbyte, 0.375-kbyte RAM			20 LSSOP	Three 8-bit, One 16-bit, watchdog	2 Serial, LIN, 16 GPIO	3		-40 to 85	WDTO, 2 Comparators, RTC	\$1.63
2-kbyte, 4-kbyte Flash, 0.25-kbyte, and 0.375-kbyte RAM			20 LSSOP	Two 8-bit, One 16-bit, watchdog	1 Serial, LIN, 12 GPIO	3		-40 to 85	WDTO, 2 Comparators	\$1.38
8-kbyte, 16-kbyte Flash, 1-kbyte and 1.5-kbyte RAM			32 LQFP	2 8-bit, Three 16-bit, watchdog	2 Serial, LIN, 28 GPIO	4	9-channel 10-bit	-40 to 85	WDTO	\$2.25
8-kbyte, 16-kbyte Flash and 1.5-kbyte and 1-kbyte RAM			32 LQFP	2 8-bit, Three 16-bit, watchdog	2 Serial, LIN, 28 GPIO	4	9-channel 10-bit	-40 to 85	WDTO	\$2.44
32-kbyte Flash, 2.5 kbyte RAM			32 LQFP	Three 8-bit, One 16-bit, watchdog	3 Serial, SSU, Smart card, I2C, LIN, DTC, 28 GPIO	7	12-channel 10-bit, 2-channel 8-bit DAC	-20 to 85	WDTO, Comparator A & B, IEBus, Data Flash with BGO, Internal ADC Voltage Reference	
32 to 64 kbyte Flash, 6 to 10 kbyte RAM, 4 kbyte data Flash			48 LQFP	Three 16 bit, three 8 bit, watchdog	43 GPIO, two (a)synchronous, CAN	4 external, each peripheral	12 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
32 to 64 kbyte Flash, 6 to 10 kbyte RAM			48 LQFP	Three 16 bit, three 8 bit, watchdog	43 GPIO, two (a)synchronous, CAN	4 external, each peripheral	12 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
32 to 64 kbyte Flash, 6 to 10 kbyte RAM, 4 kbyte data Flash			48 LQFP	Three 16 bit, three 8 bit, watchdog	43 GPIO, two (a)synchronous	4 external, each peripheral	12 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
32 to 64 kbyte Flash, 6 to 10 kbyte RAM			48 LQFP	Three 16 bit, three 8 bit, watchdog	43 GPIO, two (a)synchronous	4 external, each peripheral	12 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
32-kbyte Flash, and 2.5-kbyte RAM			52 LQFP	Three 8-bit, Three 16-bit, watchdog	3 Serial, SSU, Smart card, I2C, LIN, DTC, 48 GPIO	9	12-channel 10-bit, 2-channel 8-bit DAC	-20 to 85	WDTO, Comparator A & B, IEBus, Data Flash with BGO, Internal ADC Voltage Reference	
64 to 128kbyte Flash, 6 to 10 kbyte RAM, 4 kbyte data Flash			64 LQFP	Five 16 bit, four 8 bit, watchdog	59 GPIO, two (a)synchronous, CAN	4 external, each peripheral	16 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
64 to 128kbyte Flash, 6 to 10 kbyte RAM			64 LQFP	Five 16 bit, four 8 bit, watchdog	59 GPIO, two (a)synchronous, CAN	4 external, each peripheral	16 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
64 to 128kbyte Flash, 6 to 10 kbyte RAM, 4 kbyte data Flash			64 LQFP	Five 16 bit, four 8 bit, watchdog	59 GPIO, two (a)synchronous	4 external, each peripheral	16 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
64 to 128kbyte Flash, 6 to 10 kbyte RAM			64 LQFP	Five 16 bit, four 8 bit, watchdog	59 GPIO, two (a)synchronous	4 external, each peripheral	16 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
64 to 128kbyte Flash, 6 to 10 kbyte RAM, 4 kbyte data Flash			80 LQFP	Five 16 bit, four 8 bit, watchdog	75 GPIO, two (a)synchronous, CAN	4 external, each peripheral	20 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
64 to 128kbyte Flash, 6 to 10 kbyte RAM			80 LQFP	Five 16 bit, four 8 bit, watchdog	75 GPIO, two (a)synchronous, CAN	4 external, each peripheral	20 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
64 to 128kbyte Flash, 6 to 10 kbyte RAM, 4 kbyte data Flash			80 LQFP	Five 16 bit, four 8 bit, watchdog	75 GPIO, two (a)synchronous	4 external, each peripheral	20 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	
64 to 128kbyte Flash, 6 to 10 kbyte RAM			80 LQFP	Five 16 bit, four 8 bit, watchdog	75 GPIO, two (a)synchronous	4 external, each peripheral	20 channel 10-bit	-40 to +85	Ring oscillator, clock stop detect, power-on reset, low voltage detect, LIN	

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Company name	Device name or family	Instruction set architecture	CPU frequency (MHz)	Bus interface (address/data) (bits)	Instruction width (bits)	Core / I/O operating voltages (V)	Typical power at maximum frequency	Powerdown modes and minimum power	DSP/multiplication hardware support (bits)	FPU	Caching
STMicroelectronics www.st.com	ST10F27x	80C166	40	Up to 24/16 (custom)	16	5	120 mA	Idle: (20+Fcpu) mA, powerdown: 15 mA	One-cycle MAC		
Texas Instruments www.ti.com/msp430	MSP430 F1xx	MSP430	Up to 8	16	16	1.8 to 3.6	500µA/MHz; 0.9 to 1.5mW/MHz	Standby: 1.6 uA Off: 0.1 uA	multiplier (16x16)		
Texas Instruments www.ti.com/msp430	MSP430 F2xx	MSP430	Up to 16	16	16	1.8 to 3.6	515µA/MHz; 0.9 to 1.6mW/MHz	Standby: 500 nA Off: 0.1 uA	multiplier (16x16)		
Texas Instruments www.ti.com/msp430	MSP430 F4xx	MSP430	Up to 16	16	16	1.8 to 3.6	600µA/MHz; 0.9 to 1.8mW/MHz	Standby: 1.1 uA Off: 0.1 uA	multiplier (16x16) or (32x32)		
Texas Instruments www.ti.com/msp430	MSP430 F5xx	MSP430	Up to 25	16	16	1.8 to 3.6	230µA/MHz; 0.47 to 0.5mW/MHz	Standby: 1.5 uA Off: 0.1 uA	multiplier (32x32)		
Toshiba America Electronic Components www.toshiba.com/taec	770	TLCS	20			3.0 to 3.6/ 4.5 to 5.5			16-bit fixed-point DSP		
Toshiba America Electronic Components www.toshiba.com/taec	900/L1	TLCS	36	24/16	8, 16, 32	1.8 to 2.2, 2.7 to 3.3, 4.5 to 5.5	23 mA	Idle2: 16 mA, idle1: 1.6 mA, stop: 0.2 uA	Yes		
ZiLOG www.zilog.com	ZNEO Z16F2810	ZENO Single-Cycle CISC	20		8,16,32	2.7 to 3.6					
ZiLOG www.zilog.com	ZNEO Z16F2811	ZENO Single-Cycle CISC	20		8,16,32	2.7 to 3.6					
ZiLOG www.zilog.com	ZNEO Z16F3211	ZENO Single-Cycle CISC	20		8,16,32	2.7 to 3.6					
ZiLOG www.zilog.com	ZNEO Z16F6411	ZENO Single-Cycle CISC	20		8,16,32	2.7 to 3.6					

2008 EDN Microcontroller/Microprocessor Directory

16-bit microprocessors sorted by company

Memory	DMA / memory controller	MMU	Package selection	Timers / PWM	Serial, Parallel I/O	Interrupts	ADC; DAC	Temperature ranges (degrees Celsius)	Additional features	Price (\$/10,000)
256-kbyte Flash, 12-kbyte SRAM	Up to 16-Mbyte, 8- or 16-bit data, (de)multiplexed	Yes	144 TQFP/PQFP	Up to 5	Two CAN, (a)synchronous, high-speed	Eight, 56 sources, 16 levels	16-channel, 10-bit	0 to +70 -40 to +85 -40 to +105 -40 to +125	On-chip bootstrap loader and PLL	From \$5.88
Up to 60-kbyte Flash / up to 19-kbyte RAM	Up to 3-channel		20/24/28 TSSOP 32/64 QFN, QFP	16-bit watchdog, two 16-bit PWM, up to 10 independent 16-bit	Up to 48 GPIO USART, I2C/SPI	All peripherals and I/O	8 channel, 10/12 bit SAR ADC 2 channel 12-bit $\Sigma\Delta$ DAC	-40 to +85	Comparator, internal temperature sensor Internal ultra-Low Power LF oscillator Op-amp, DMA, system voltage supervisor, watchdog, brownout reset	\$0.95 to \$7.95
Up to 120-kbyte Flash / up to 8K RAM	Up to 3-channel		4x4 to 7x7 QFN, 14/20/28/38 pin TSSOP 14 pin DIP 64/80 pin TQFP	up to 10 independent 16-bit, 16-bit watchdog, 16-bit PWM,	Up to 64 GPIO Spy-Bi-Wire Interface UART/LIN/IrDA/SPI and I2C/SPI	All peripherals and I/O	16 channel, 10/12 bit SAR ADC 4 channel 16 bit $\Sigma\Delta$ ADC 2 channel 12-bit $\Sigma\Delta$ DAC	-40 to +105	Comparator, internal temperature sensor Internal ultra-Low Power LF oscillator Op-amp, DMA, system voltage supervisor, watchdog, brownout reset	\$0.80 to \$9.50
Up to 120-kbyte Flash / up to 8-kbyte RAM	Up to 3-channel		48-SSOP 48-QFN 64/80/100 QFP 113-BGA	16-bit watchdog, up to 16-bit PWM, up to 6 independent 16-bit	Up to 80 GPIO, UART/LIN/IrDA/SPI and I2C/SPI	All peripherals and I/O	12 channel, 10/12 bit SAR ADC 5 channel 16 bit $\Sigma\Delta$ ADC 2 channel 12-bit $\Sigma\Delta$ DAC	-40 to +85	Comparators Internal ultra-Low Power LF oscillator, RTC, Op-amps, DMA, system voltage supervisor, watchdog, brownout reset Up to 160 segment LCD controller	\$2.50 to \$9.25
Up to 256-kbyte Flash / up to 16-kbyte RAM	Up to 3-channel		64 QFN 80/100 TQFP 113 BGA	Up to 12 independent 16-bit, realtime, 16-bit watchdog, 16-bit PWM	Up to 87 GPIO UART/LIN/IrDA/SPI and I2C/SPI	All peripherals and I/O	16 channel, 12 bit SAR ADC	-40 to +85	Programmable core voltage with PMM, flexible clock system Comparator Internal ultra-Low Power LF oscillator Op-amp, DMA, system voltage supervisor, watchdog, brownout reset	\$2.70 to \$4.70
32-kbyte Flash/ROM, 1kbyte SRAM			LQFP64	Two 16-bit , watchdog	Two UART/SIO, 18 PIO		Four 10-bit	-40 to +125	PMD for EPS(Electric Power Steering)	
Up to 256-kbyte Flash/OTP/ROM, up to 16-kbyte SRAM	Four micro DMA, DRAM	Yes	64/80/100/128/ QFP/LQFP	Up to eight 8-bit, up to five 16-bit, watchdog, real-time, up to two 8-bit PWM	Up to four UART, synchronous SIO, IrDA, I ² C, up to 83 PIO	43, nine CPU, 6 external, 28 internal, six levels	Up to 16-channel, 10-bit	-40 to +85	Four 32-bit register banks, LCD controller,	\$3 to \$10
128-kbyte Flash, 4-kbyte SRAM	4 Channels		64 LQFP, 68 PLCC, 80 QFP	(3) 16-bit	Up to 76 GPIO		12 channel 10-bit	0 to +70 -40 to +105	6-channel 12-bit Motor Control PWMs, Op Amp, Fault Shutdown, I2S I/F	\$3.70 to \$4.88
128-kbyte Flash, 4-kbyte SRAM, 16-Mbyte external	4 Channels		100 LQFP, 80 QFP	(3) 16-bit	Up to 76 GPIO		12 channel 10-bit	0 to +70 -40 to +105	6-channel 12-bit Motor Control PWMs, Op Amp, Fault Shutdown, I2S I/F	\$3.70 to \$4.88
32-kbyte Flash, 2-kbyte SRAM, 16-Mbyte external	4 Channels		100 LQFP, 80 QFP	(3) 16-bit	Up to 76 GPIO		12 channel 10-bit	0 to +70 -40 to +105	6-channel 12-bit Motor Control PWMs, Op Amp, Fault Shutdown, I2S I/F	\$3.70 to \$4.88
64-kbyte Flash, 4-kbyte SRAM, 16-Mbyte external	4 Channels		100 LQFP, 80 QFP	(3) 16-bit	Up to 76 GPIO		12 channel 10-bit	0 to +70 -40 to +105	6-channel 12-bit Motor Control PWMs, Op Amp, Fault Shutdown, I2S I/F	\$3.70 to \$4.88