Analog and Interface Products

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Analog and Interface Product Selector Guide

Thermal Management • Motor Driver • Interface Peripherals
Power Management • Linear and Mixed Signal • Safety and Security

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Are You Looking for Complete Analog and Interface Design Solutions?

Microchip's integrated analog technology, peripherals and features are engineered to meet today's demanding design requirements. Our broad spectrum of analog products addresses thermal management, power management, battery management, mixed-signal, linear, interface and safety and security solutions. Combined with Microchip's Intelligent Analog microcontrollers, our extensive analog portfolio can be used in thousands of high-performance design applications in the automotive, communications (wireless), consumer, computing and industrial control markets.

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Thermal Management
- Temperature Sensors
- Fan Speed Controllers/ Fan Fault Detectors

Motor Drive
- Stepper and DC
- 3Φ Brushless DC Motor Driver

Power Management
- Voltage Regulators
- Charge Pump DC/DC Converters
- Power MOSFET Drivers
- Digitally Enhanced and PWM Controllers
- System Supervisors
- Voltage Detectors
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Want a Business Partner, Not Just a Vendor?

Successful companies recognize the value of a strategic supplier relationship to help them deliver innovative products to their markets in a timely manner. They trust their suppliers to furnish quality components for current design opportunities as well as provide technology road maps and innovative solutions to stay ahead of tomorrow's design trends.

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The result is a worldwide organization dedicated to delivering whole product solutions which include high-performance silicon devices, easy-to-use development tools, outstanding technical support and sophisticated technical documentation.

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Have you ever encountered a technical dilemma at a critical point in your design development and your supplier was not available to answer your questions? Microchip's 24/7 global technical support line offers you technical support resources any time help is needed. Because some technical problems require hands-on assistance in order to be resolved quickly, Microchip has also developed a global team of field applications engineers and field sales engineers who provide local assistance.

LINEAR: Op Amps (Continued)										
Part #	# per Package	GBWP	I_Q Typical (µA)	V_{OS} Max (mV)	Typical Input Bias Current (pA)	Input Voltage Noise Density (nV/rtHz)	Operating Voltage (V)	Temperature Range (°C)	Features	Packages
MCP6293	1	10 MHz	1000	3	1	8.7(2)	2.4 to 6.0	–40 to +125	Rail-to-Rail Input/Output, Chip select	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 6-pin SOT-23(S)
MCP6294	4	10 MHz	1000	3	1	8.7(2)	2.4 to 6.0	–40 to +125	Rail-to-Rail Input/Output	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP6295	2	10 MHz	1100	3	1	8.7(2)	2.4 to 6.0	–40 to +125	Rail-to-Rail Input/Output, Dual connected, Chip select	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6H91	1	10 MHz	2000	4	10	23(1)	Single Supply: 3.5 to 12 Dual Supply: ±1.75 to ±6	–40 to +125	Rail-to-Rail Output	8-pin SOIC, 8-pin 2 × 3 TDFN
MCP6H92	2	10 MHz	2000	4	10	23(1)	Single Supply: 3.5 to 12 Dual Supply: ±1.75 to ±6	–40 to +125	Rail-to-Rail Output	8-pin SOIC, 8-pin 2 × 3 TDFN
MCP6H94	4	10 MHz	2000	4	10	23(1)	Single Supply: 3.5 to 12 Dual Supply: ±1.75 to ±6	–40 to +125	Rail-to-Rail Output	14-pin SOIC, 14-pin TSSOP
MCP6L91	1	10 MHz	850	4	1	9.4(2)	2.4 to 6.0	–40 to +125	Rail-to-Rail Input/Output	8-pin SOIC(S), 8-pin MSOP(S), 5-pin SOT-23(S, R)
MCP6L92	2	10 MHz	850	4	1	9.4(2)	2.4 to 6.0	–40 to +125	Rail-to-Rail Input/Output	8-pin SOIC, 8-pin MSOP
MCP6L94	4	10 MHz	850	4	1	9.4(2)	2.4 to 6.0	–40 to +125	Rail-to-Rail Input/Output	14-pin SOIC, 14-pin TSSOP
MCP621	1	20 MHz	2500	0.2	5	13(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip select, mCal Technology	8-pin SOIC, 8-pin 2 × 3 TDFN
MCP621S	1	20 MHz	2500	0.2	5	13(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, mCal Technology	5-pin SOT-23(S)
MCP622	2	20 MHz	2500	0.2	5	13(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, mCal Technology	8-pin SOIC, 8-pin 3 × 3 DFN
MCP623	1	20 MHz	2500	0.2	5	13(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip select, mCal Technology	6-pin SOT-23(S)
MCP624	4	20 MHz	2500	0.2	5	13(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, mCal Technology	14-pin SOIC, 14-pin TSSOP
MCP625	2	20 MHz	2500	0.2	5	13(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip selects, mCal Technology	10-pin MSOP, 10-pin 3 × 3 DFN
MCP629	4	20 MHz	2500	0.2	5	13(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output,Chip selects, mCal Technology	16-pin 4 × 4 QFN
MCP631	1	24 MHz	2500	8	4	10(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output	8-pin SOIC, 8-pin 2 × 3 TDFN, 5-pin SOT-23(S)
MCP632	2	24 MHz	2500	8	4	10(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output	8-pin SOIC, 8-pin 3 × 3 DFN
MCP633	1	24 MHz	2500	8	4	10(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip select	8-pin SOIC, 6-pin SOT-23
MCP634	4	24 MHz	2500	8	4	10(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output	14-pin SOIC, 14-pin TSSOP
MCP635	2	24 MHz	2500	8	4	10(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip selects	10-pin MSOP, 10-pin 3 × 3 DFN
MCP639	4	24 MHz	2500	8	4	10(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip selects	16-pin 4 × 4 QFN
MCP651	1	50 MHz	6000	0.2	6	7.5(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip select, mCal Technology	8-pin SOIC, 8-pin 2 × 3 TDFN
MCP651S	1	50 MHz	6000	0.2	6	7.5(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, mCal Technology	5-pin SOT-23(S)
MCP652	2	50 MHz	6000	0.2	6	7.5(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, mCal Technology	8-pin SOIC, 8-pin 3 × 3 DFN
MCP653	1	50 MHz	6000	0.2	6	7.5(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip select, mCal Technology	6-pin SOT-23(S)
MCP654	4	50 MHz	6000	0.2	6	7.5(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, mCal Technology	14-pin SOIC, 14-pin TSSOP
MCP655	2	50 MHz	6000	0.2	6	7.5(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip selects, mCal Technology	10-pin MSOP, 10-pin 3 × 3 DFN
MCP659	4	50 MHz	6000	0.2	6	7.5(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output,Chip selects, mCal Technology	16-pin 4 × 4 QFN
MCP660	3	60 MHz	6000	8	6	6.8(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output	14-pin SOIC, 14-pin TSSOP
MCP661	1	60 MHz	6000	8	6	6.8(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output	8-pin SOIC, 8-pin 2 × 3 TDFN, 5-pin SOT-23(S)
MCP662	2	60 MHz	6000	8	6	6.8(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output	8-pin SOIC, 8-pin 3 × 3 DFN
MCP663	1	60 MHz	6000	8	6	6.8(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip select	8-pin SOIC, 6-pin SOT-23
MCP664	4	60 MHz	6000	8	6	6.8(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output	14-pin SOIC, 14-pin TSSOP
MCP665	2	60 MHz	6000	8	6	6.8(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip selects	10-pin MSOP, 10-pin 3 × 3 DFN
MCP669	4	60 MHz	6000	8	6	6.8(3)	2.5 to 5.5	–40 to +125	Rail-to-Rail Output, Chip selects	16-pin 4 × 4 QFN

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

Note 1: Values are typical at 1 kHz

2: Values are typical at 10 kHz

3: Values are typical at 1 MHz

LINEAR: Zero-Drift Operational Amplifiers

Part #	# per Package	GBWP	I_Q Max (mA)	V_{OS} Max (µV)	V_{OS} Drift Max (µV/°C)	Operating Voltage (V)	Temperature Range (°C)	Features	Packages
MCP6V11	1	80 kHz	0.011	8	0.05	1.6 to 5.5	–40 to +125	Rail-to-Rail Input/Output	5-pin SOT-23(S, U), 5-pin SC-70(U)
MCP6V12	2	80 kHz	0.011	8	0.05	1.6 to 5.5	–40 to +125	Rail-to-Rail Input/Output	8-pin 2 × 3 TDFN, 8-pin MSOP
MCP6V14	4	80 kHz	0.011	8	0.05	1.6 to 5.5	–40 to +125	Rail-to-Rail Input/Output	14-pin TSSOP
MCP6V31	1	300 kHz	0.034	8	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output	5-pin SOT-23(S, U), 5-pin SC-70(U)
MCP6V32	2	300 kHz	0.034	8	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output	8-pin 2 × 3 TDFN, 8-pin MSOP
MCP6V34	4	300 kHz	0.034	8	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output	14-pin TSSOP
TC7652	1	0.4 MHz	3	5	0.05	5 to 16	0 to +70	Single and Split Supply, Low Noise	8-pin PDIP, 14-pin PDIP
MCP6V61	1	1 MHz	0.13	8	0.015	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output, Enhanced EMI Rejection	5-pin SOT-23(S, U), 5-pin SC-70(U)
MCP6V62	**2**	**1 MHz**	**0.13**	**8**	**0.015**	**1.8 to 5.5**	**–40 to +125**	**Rail-to-Rail Input/Output, Enhanced EMI Rejection**	**8-pin 2 × 3 TDFN, 8-pin MSOP**
MCP6V64	**4**	**1 MHz**	**0.13**	**8**	**0.015**	**1.8 to 5.5**	**–40 to +125**	**Rail-to-Rail Input/Output, Enhanced EMI Rejection**	**14-pin TSSOP**
MCP6V01	1	1.3 MHz	0.4	2	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output	8-pin SOIC, 8-pin 2 × 3 TDFN
MCP6V02	2	1.3 MHz	0.4	2	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output	8-pin SOIC, 8-pin 4 × 4 DFN
MCP6V03	1	1.3 MHz	0.4	2	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output, Chip select	8-pin SOIC, 8-pin 2 × 3 TDFN
MCP6V06	1	1.3 MHz	0.4	3	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output	8-pin SOIC, 8-pin 2 × 3 TDFN
MCP6V07	2	1.3 MHz	0.4	3	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output	8-pin SOIC, 8-pin 4 × 4 DFN
MCP6V08	1	1.3 MHz	0.4	3	0.05	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output, Chip select	8-pin SOIC, 8-pin 2 × 3 TDFN
TC913A/B	2	1.5 MHz	1.1	15	0.15/0.30	7 to 16	0 to +70	Single and Split Supply	8-pin PDIP, 8-pin SOIC
TC7650	1	2 MHz	3.5	5	0.05	4.5 to 16	0 to +70	Single and Split Supply	8-pin PDIP, 14-pin PDIP
MCP6V26	1	2 MHz	0.8	2	0.05	2.3 to 5.5	–40 to +125	Rail-to-Rail Input/Output	8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN
MCP6V27	2	2 MHz	0.8	2	0.05	2.3 to 5.5	–40 to +125	Rail-to-Rail Input/Output	8-pin SOIC, 8-pin MSOP, 8-pin 4 × 4 DFN
MCP6V28	1	2 MHz	0.8	2	0.05	2.3 to 5.5	–40 to +125	Rail-to-Rail Input/Output, Chip select	8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 TDFN
MCP6V71	1	2 MHz	0.26	8	0.015	2.0 to 5.5	–40 to +125	Rail-to-Rail Input/Output, Enhanced EMI Rejection	5-pin SOT-23(S, U), 5-pin SC-70(U)
MCP6V72	**2**	**2 MHz**	**0.26**	**8**	**0.015**	**2.0 to 5.5**	**–40 to +125**	**Rail-to-Rail Input/Output, Enhanced EMI Rejection**	**8-pin 2 × 3 TDFN, 8-pin MSOP**
MCP6V74	**4**	**2 MHz**	**0.26**	**8**	**0.015**	**2.0 to 5.5**	**–40 to +125**	**Rail-to-Rail Input/Output, Enhanced EMI Rejection**	**14-pin TSSOP**
MCP6V81	**1**	**5 MHz**	**0.77**	**9**	**0.02**	**2.2 to 5.5**	**–40 to +125**	**Rail-to-Rail Input/Output, Enhanced EMI Rejection**	**5-pin SOT-23(S, U), 5-pin SC-70(U)**
MCP6V91	**1**	**10 MHz**	**1.6**	**9**	**0.017**	**2.4 to 5.5**	**–40 to +125**	**Rail-to-Rail Input/Output, Enhanced EMI Rejection**	**5-pin SOT-23(S, U), 5-pin SC-70(U)**

LINEAR: Programmable Gain Amplifiers (PGA)

Part #	Channels	–3dB BW (MHz)	I_Q Typ. (mA)	V_{OS} (µV)	Operating Voltage (V)	Temperature Range (°C)	Features	Packages
MCP6S21	1	2 to 12	1.1	275	2.5 to 5.5	–40 to +85	SPI, Eight Gain steps, Software shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6S22	2	2 to 12	1.1	275	2.5 to 5.5	–40 to +85	SPI, Eight Gain steps, Software shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6S26	6	2 to 12	1.1	275	2.5 to 5.5	–40 to +85	SPI, Eight Gain steps, Software shutdown	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP6S28	8	2 to 12	1.1	275	2.5 to 5.5	–40 to +85	SPI, Eight Gain steps, Software shutdown	16-pin PDIP, 16-pin SOIC
MCP6S91	1	1 to 18	1.0	4000	2.5 to 5.5	–40 to +125	SPI, Eight Gain steps, Software shutdown, V_{REF}	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6S92	2	1 to 18	1.0	4000	2.5 to 5.5	–40 to +125	SPI, Eight Gain steps, Software shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6S93	2	1 to 18	1.0	4000	2.5 to 5.5	–40 to +125	SPI, Eight Gain steps, Software shutdown, V_{REF}, SO	10-pin MSOP

LINEAR: Selectable Gain Amplifiers (SGA)

Part #	Channels	–3dB BW (kHz)	I_Q (µA)	V_{OS} (mV)	Operating Voltage (V)	Temperature Range (°C)	Gain Steps (V/V)	Features	Packages
MCP6G01	1	900	110	4.5	1.8 to 5.5	–40 to +125	1, 10, 50	Tri-State control pin	8-pin SOIC, 8-pin MSOP, 5-pin SOT-23(S, R, U)
MCP6G02	2	900	110	4.5	1.8 to 5.5	–40 to +125	1, 10, 50	Tri-State control pin	8-pin SOIC, 8-pin MSOP
MCP6G03	1	900	110	4.5	1.8 to 5.5	–40 to +125	1, 10, 50	Tri-State control pin, chip select	8-pin SOIC, 8-pin MSOP
MCP6G04	4	900	110	4.5	1.8 to 5.5	–40 to +125	1, 10, 50	Tri-State control pin	14-pin SOIC, 14-pin TSSOP

LINEAR: Instrumentation Amplifiers

Part #	# Per Package	Bandwidth (kHz)	I_Q Max (mA)	Max V_{OS} (µV)	V_{OS} Drift Max (µV/°C)	Operating Voltage (V)	Temperature Range (°C)	Features	Packages
MCP6N11	1	500	1.1	350	2.7	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output, mCal Technology	8-pin SOIC, 8-pin 2 × 3 TDFN
MCP6N16	1	500	1.6	17	0.06	1.8 to 5.5	–40 to +125	Rail-to-Rail Input/Output, Enable Pin, Enhanced EMI Rejection	8-pin MSOP, 8-pin 3 × 3 DFN

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

LINEAR: Comparators									
Part #	# Per Package	VREF (V)	Typical Propagation Delay (µs)	IQ Typical (µA)	VOS Max (mV)	Operating Voltage (V)	Temperature Range (°C)	Features	Packages
MCP6541	1	–	4	1	5	1.6 to 5.5	–40 to +125	Push-Pull, Rail-to-Rail Input/Output	5-pin SOT-23(S, R, U), 5-pin SC-70(S, U), 8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6542	2	–	4	1	5	1.6 to 5.5	–40 to +125	Push-Pull, Rail-to-Rail Input/Output	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6543	1	–	4	1	5	1.6 to 5.5	–40 to +125	Push-Pull, Rail-to-Rail Input/Output, Chip select	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6544	4	–	4	1	5	1.6 to 5.5	–40 to +125	Push-Pull, Rail-to-Rail Input/Output	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP6546	1	–	4	1	5	1.6 to 5.5	–40 to +125	Open-drain, 9V, Rail-to-Rail Input/Output	5-pin SOT-23(S, R, U), 5-pin SC-70(S, U), 8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6547	2	–	4	1	5	1.6 to 5.5	–40 to +125	Open-drain, 9V, Rail-to-Rail Input/Output	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6548	1	–	4	1	5	1.6 to 5.5	–40 to +125	Open-drain, 9V, Rail-to-Rail Input/Output, Chip select	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP6549	4	–	4	1	5	1.6 to 5.5	–40 to +125	Open-drain, 9V, Rail-to-Rail Input/Output	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP65R41	1	1.21/2.4	4	2.5	10	1.8 to 5.5	–40 to +125	Push-Pull, Rail-to-Rail Input/Output, VREF	6-pin SOT-23
MCP65R46	1	1.21/2.4	4	2.5	10	1.8 to 5.5	–40 to +125	Open Drain, Rail-to-Rail Input/Output, VREF	6-pin SOT-23
MCP6561	1	–	0.047	100	10	1.8 to 5.5	–40 to +125	Push-Pull, Rail-to-Rail Input/Output	5-pin SOT-23(S, R, U), 5-pin SC-70(S)
MCP6562	2	–	0.047	100	10	1.8 to 5.5	–40 to +125	Push-Pull, Rail-to-Rail Input/Output	8-pin SOIC, 8-pin MSOP
MCP6564	4	–	0.047	100	10	1.8 to 5.5	–40 to +125	Push-Pull, Rail-to-Rail Input/Output	14-pin SOIC, 14-pin TSSOP
MCP6566	1	–	0.047	100	10	1.8 to 5.5	-40 to +125	Open-Drain, Rail-to-Rail Input/Output	5-pin SOT-23(S, R, U), 5-pin SC-70(S)
MCP6567	2	–	0.047	100	10	1.8 to 5.5	-40 to +125	Open-Drain, Rail-to-Rail Input/Output	8-pin SOIC, 8-pin MSOP
MCP6569	4	–	0.047	100	10	1.8 to 5.5	-40 to +125	Open-Drain, Rail-to-Rail Input/Output	14-pin SOIC, 14-pin TSSOP

Legend: S = Standard Pinout; R = Reverse Pinout; U = Alternative Pinout

MIXED SIGNAL

MIXED SIGNAL: Successive Approximation Register (SAR) A/D Converters										
Part #	Resolution (bits)	Maximum Sampling Rate (ksamples/sec)	# of Input Channels	Input Type	Interface	Input Voltage Range (V)	Max. Supply Current (µA)	Max. INL	Temperature Range (°C)	Packages
MCP3021	10	22	1	Single-ended	I²C	2.7 to 5.5	250	±1 LSB	–40 to +125	5-pin SOT-23A
MCP3001	10	200	1	Single-ended	SPI	2.7 to 5.5	500	±1 LSB	–40 to +85	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP
MCP3002	10	200	2	Single-ended	SPI	2.7 to 5.5	650	±1 LSB	–40 to +85	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP
MCP3004	10	200	4	Single-ended	SPI	2.7 to 5.5	550	±1 LSB	–40 to +85	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP3008	10	200	8	Single-ended	SPI	2.7 to 5.5	550	±1 LSB	–40 to +85	16-pin PDIP, 16-pin SOIC
MCP3221	12	22	1	Single-ended	I²C	2.7 to 5.5	250	±2 LSB	–40 to +125	5-pin SOT-23A
MCP3201	12	100	1	Single-ended	SPI	2.7 to 5.5	400	±1 LSB	–40 to +85	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP
MCP3202	12	100	2	Single-ended	SPI	2.7 to 5.5	550	±1 LSB	–40 to +85	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP
MCP3204	12	100	4	Single-ended	SPI	2.7 to 5.5	400	±1 LSB	–40 to +85	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP3208	12	100	8	Single-ended	SPI	2.7 to 5.5	400	±1 LSB	–40 to +85	16-pin PDIP, 16-pin SOIC
MCP3301	13	100	1	Differential	SPI	2.7 to 5.5	450	±1 LSB	–40 to +85	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin TSSOP
MCP3302	13	100	2	Differential	SPI	2.7 to 5.5	450	±1 LSB	–40 to +85	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP3304	13	100	4	Differential	SPI	2.7 to 5.5	450	±1 LSB	–40 to +85	16-pin PDIP, 16-pin SOIC

MIXED SIGNAL: Delta-Sigma A/D Converters										
Part #	Resolution (bits)	Maximum Sampling Rate (samples/sec)	# of Input Channels	Interface	Supply Voltage Range (V)	Typical Supply Current (µA)	Typical INL (ppm)	Temperature Range (°C)	Features	Packages
MCP3421	18 to 12	4 to 240	1 Diff	I²C	2.7 to 5.5	155	10	–40 to +125	PGA, VREF	6-pin SOT-23A
MCP3422	18 to 12	4 to 240	2 Diff	I²C	2.7 to 5.5	145	10	–40 to +125	PGA, VREF	8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN
MCP3423	18 to 12	4 to 240	2 Diff	I²C	2.7 to 5.5	145	10	–40 to +125	PGA, VREF, Selectable I²C addressing	10-pin MSOP, 10-pin 3 × 3 DFN
MCP3424	18 to 12	4 to 240	4 Diff	I²C	2.7 to 5.5	145	10	–40 to +125	PGA, VREF, Selectable I²C addressing	14-pin SOIC, 14-pin TSSOP
MCP3425	16 to 12	15 to 240	1 Diff	I²C	2.7 to 5.5	155	10	–40 to +125	PGA, VREF	6-pin SOT-23A
MCP3426	16 to 12	15 to 240	2 Diff	I²C	2.7 to 5.5	145	10	–40 to +125	PGA, VREF	8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN
MCP3427	16 to 12	15 to 240	2 Diff	I²C	2.7 to 5.5	145	10	–40 to +125	PGA, VREF, Selectable I²C addressing	10-pin MSOP, 10-pin 3 × 3 DFN
MCP3428	16 to 12	15 to 240	4 Diff	I²C	2.7 to 5.5	145	10	–40 to +125	PGA, VREF, Selectable I²C addressing	14-pin SOIC, 14-pin TSSOP
MCP3550-50	22	13	1 Diff	SPI	2.7 to 5.5	120	2	–40 to +125	50 Hz rejection	8-pin SOIC, 8-pin MSOP
MCP3550-60	22	15	1 Diff	SPI	2.7 to 5.5	140	2	–40 to +125	60 Hz rejection	8-pin SOIC, 8-pin MSOP

MIXED SIGNAL: Delta-Sigma A/D Converters (Continued)

Part #	Resolution (bits)	Maximum Sampling Rate (samples/sec)	# of Input Channels	Interface	Supply Voltage Range (V)	Typical Supply Current (µA)	Typical INL (ppm)	Temperature Range (°C)	Features	Packages
MCP3551	22	14	1 Diff	SPI	2.7 to 5.5	120	2	–40 to +125	Simultaneous 50/60 Hz rejection	8-pin SOIC, 8-pin MSOP
MCP3553	20	60	1 Diff	SPI	2.7 to 5.5	140	2	–40 to +125		8-pin SOIC, 8-pin MSOP

MIXED SIGNAL: Pipelined A/D Coverters

Part #	Resolution	Max Sample Rate (Msamples/sec)	# of Input Channels	Input Type	Interface	Supply Voltage (V)	Power Dissipation (mW)	Input Channel BW (MHz)	SNR (dB)	SFDR (dB)	Input Range (Vp-p)	Feature	Temperature Range (°C)	Packages
MCP37D31-200	16	200	1, 2, 4, 8	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	490	500	74.7	90	2.98	Decimation filters, digital down-converter	–40 to +85	124-pin VTLA
MCP37231-200	16	200	1, 2, 4, 8	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	490	500	74.7	90	2.98	Decimation filters	–40 to +85	124-pin VTLA
MCP37D20-200	14	200	1	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	348	650	67.8	96	1.8	Decimation filters, digital down-converter	–40 to +85	124-pin VTLA
MCP37220-200	14	200	1	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	348	650	67.8	96	1.8	Decimation filters	–40 to +85	124-pin VTLA
MCP37D21-200	14	200	1, 2, 4, 8	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	490	500	74.2	90	2.98	Decimation filters, digital down-converter	–40 to +85	124-pin VTLA
MCP37221-200	14	200	1, 2, 4, 8	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	490	500	74.2	90	2.98	Decimation filters	–40 to +85	124-pin VTLA
MCP37D10-200	12	200	1	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	338	650	67	96	1.8	Decimation filters, digital down-converter, noise-shaping requantizer	–40 to +85	124-pin VTLA
MCP37210-200	12	200	1	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	338	650	67	96	1.8	Decimation filters, noise-shaping requantizer	–40 to +85	124-pin VTLA
MCP37D11-200	12	200	1, 2, 4, 8	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	468	500	71.3	90	2.98	Decimation filters, digital down-converter	–40 to +85	124-pin VTLA
MCP37211-200	12	200	1, 2, 4, 8	Differential	Serial DDR LVDS or Parallel CMOS	1.2, 1.8	468	500	71.3	90	2.98	Decimation filters, noise shaping requantizer	–40 to +85	124-pin VTLA

MIXED SIGNAL: Energy Measurement ICs

Part #	ADC Channels	ADC SINAD	Dynamic Range	Gain Selection	Output Type	Typical Voltage Reference Drift (ppm/°C)	Analog Voltage Range (V)	Digital Voltage Range (V)	Typical Accuracy	Temperature Range (°C)	Features	Packages
MCP3918	1	93.5 dB	10000:1	up to 32	SPI/2-wire serial	9	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock, 2-wire interface	20-pin SSOP, 20-pin 4 × 4 QFN
MCP3910	2	–	10000:1	up to 32	SPI/2-wire serial	9	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	Phase correction, Programmable data rate, 16-bit CRC, Register map lock, 2-wire interface	20-pin SSOP, 20-pin 4 × 4 QFN
MCP3911	2	94.5 dB	10000:1(1)	up to 32	SPI	7	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	AFE with phase correction, Programmable data rate	20-pin SSOP, 20-pin 4 × 4 QFN
MCP3901	2	91 dB	–(1)	up to 32	SPI	12	4.5 to 5.5	2.7 to 5.5	0.1%	–40 to +125	AFE with phase correction, Programmable data rate	20-pin SSOP, 20-pin 4 × 4 QFN
MCP3913	6	94.5 dB	10000:1	up to 32	SPI	9	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock	28-pin SSOP, 40-pin 5 × 5 µQFN
MCP3903	6	91 dB	–(1)	up to 32	SPI	5	4.5 to 5.5	2.7 to 3.6	0.1%	–40 to +125	AFE with phase correction, Programmable data rate	28-pin SSOP
MCP3914	8	94.5 dB	10000:1	up to 32	SPI	9	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock	40-pin 5 × 5 µQFN
MCP3912	4	93.5 dB	10000:1	up to 32	SPI	9	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock	28-pin SSOP, 28-pin 5 × 5 QFN
MCP3919	3	93.5 dB	10000:1	up to 32	SPI/2-wire serial	9	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	AFE with phase correction, Programmable data rate, 16-bit CRC, Register map lock, 2-wire interface	28-pin SSOP, 28-pin 5 × 5 QFN
MCP3905A	2	–	500:1	up to 16	Active power pulse	15	4.5 to 5.5	4.5 to 5.5	0.1%	–40 to +125	Active power calculation	24-pin SSOP
MCP3909	2	–	1000:1	up to 16	Active power pulse/SPI	15	4.5 to 5.5	4.5 to 5.5	0.1%	–40 to +125	Active power calculation	24-pin SSOP
MCP39F501	3	–	4000:1	up to 32	UART	10	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	Power monitoring IC with active, reactive and apparent power, PF, RMS current/voltage, Frequency, event notifications, EEPROM	28-pin 5 × 5 QFN
MCP39F511	3	–	4000:1	up to 32	UART	10	2.7 to 3.6	2.7 to 3.6	0.1%	–40 to +125	Power monitoring IC with active, reactive and apparent power, active and reactive energy, PF, RMS current/voltage, frequency, event notifications, EEPROM, zero crossing detection, PWM output	28-pin 5 × 5 QFN
MCP39F521	**3**	**–**	**4000:1**	**up to 32**	**I²C**	**10**	**2.7 to 3.6**	**2.7 to 3.6**	**0.1%**	**–40 to +125**	**Power monitoring IC with active, reactive and apparent power, active and reactive energy, PF, RMS current/voltage, frequency, event notifications, EEPROM, zero crossing detection**	**28-pin 5 × 5 QFN**

Note 1: Not tested for this device

MIXED SIGNAL: Current/DC Power Measurement ICs

Part #	# of Current Sensors	Description	Full Scale Range (mV)	Current Measurement Max Accr (%)	Effective Sampling Interval Min to Max (msec)	Bus Voltage Range (V)	# of Temp. Monitors (Ambient, Remote)	Temp. Accuracy Typ/Max (°C)	Alert/ THERM	Peak Detection	Address Select	Package
PAC1710	1	SMBus/I²C Current/DC Power Sensor	10, 20, 40, 80	±1	2.5 to 2,600	0 to + 40	–	–	1	–	Yes	10-pin DFN
PAC1720	2	Dual SMBus/I²C Current/DC Power Sensor	10, 20, 40, 80	±1	2.5 to 2,600	0 to + 40	–	–	1	–	Yes	10-pin DFN
PAC1921	**2**	**SMBus/I²C Current/Power Sensor with Analog Output**	**100**	**±1**	**2.5 to 2,900**	**0 to + 32**	**–**	**–**	**–**	**–**	**Yes**	**10-pin DFN**
EMC1701-1	1	SMBus/I²C Current/DC Power Sensor with Temperature Monitoring	10, 20, 40, 80	±1	2.5 to 2,600	+3 to +24	1, 0	±0.25/±1	2	Hardware	Yes	12-pin 4 × 4 QFN
EMC1701-2	1	SMBus/I²C Current/DC Power Sensor with Temperature Monitoring	10, 20, 40, 80	±1	2.5 to 2,600	+3 to +24	1, 0	±0.25/±1	2	Software	Yes	10-pin MSOP
EMC1702-1	1	SMBus/I²C Current/DC Power Sensor with Two Temperature Monitors	10, 20, 40, 80	±1	2.5 to 2,600	+3 to +24	1, 1	±0.25/±1	2	Hardware	Yes	12-pin 4 × 4 QFN
EMC1704-1	1	SMBus/I²C Current/DC Power Sensor with Four Temperature Monitors	10, 20, 40, 80	±1	2.5 to 2,600	+3 to +24	1, 3	±0.25/±1	2	Software	Yes	14-pin SOIC
EMC1704-2	1	SMBus/I²C Current/DC Power Sensor with Four Temperature Monitors	10, 20, 40, 80	±1	2.5 to 2,600	+3 to +24	1, 3	±0.25/±1	2	Hardware	Yes	16-pin 4 × 4 QFN

MIXED SIGNAL: Dual Slope A/D Converters

Part #	Supply Voltage (V)	Input Voltage Range	Resolution	Sampling Rate (Conv/s)	Input Channels	Data Interface	Temperature Range (°C)	Features	Packages
TC500	±4.5 to ±7.5	V_{SS} + 1.5V to V_{DD} – 1.5V	Up to 16 bits	4 to 10	1	3-Wire	0 to +70	Differential input range, Programmable resolution/ conversion time	16-pin PDIP, 16-pin SOIC
TC500A	±4.5 to ±7.5	V_{SS} + 1.5V to V_{DD} – 1.5V	Up to 17 bits	4 to 10	1	3-Wire	0 to +70	Differential input range, Programmable resolution/ conversion time	16-pin PDIP, 16-pin SOIC
TC510	+4.5 to +5.5	V_{SS} + 1.5V to V_{DD} – 1.5V	Up to 17 bits	4 to 10	1	3-Wire	0 to +70	Differential input range, Programmable resolution/ conversion time, Charge pump (–V) output pin	24-pin PDIP, 24-pin SOIC
TC514	+4.5 to +5.5	V_{SS} + 1.5V to V_{DD} – 1.5V	Up to 17 bits	4 to 10	4	3-Wire	0 to +70	Differential input range, Programmable resolution/ conversion time, Charge pump (–V) output pin	28-pin PDIP, 28-pin SOIC
TC520A	+4.5 to +5.5	–	–	–	–	Serial port	0 to +70	Optional serial interface adapter for TC500/500A/510/514	14-pin PDIP, 16-pin SOIC
TC7109	±4.5 to ±5.5	V_{SS} + 1.5V to V_{DD} – 1.0V	12 bits plus sign bit	2 to 10	1	Parallel or Serial port	–25 to +85	Differential input range	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7109A	±4.5 to ±5.5	V_{SS} + 1.5V to V_{DD} – 1.0V	12 bits plus sign bit	2 to 10	1	Parallel or Serial port	–25 to +85	Differential input range	40-pin PDIP, 44-pin PLCC, 44-pin MQFP

MIXED SIGNAL: Binary and BCD A/D Converters

Part #	Description	Supply Voltage (V)	Input Voltage Range	Resolution (Digits)	Resolution (Counts)	Max Power (mW)	Data Interface	Temperature Range (°C)	Features	Packages
TC850	Binary A/D	±5	V_{SS} + 1.5V to V_{DD} – 1.5V	15-bit	±32,768	35	8-bit parallel	–25 to +70	Highest conversion speed (40 conv/sec)	44-pin PLCC, 40-pin PDIP
TC14433	BCD A/D	±4.5 to ±8	±199.9 mV to 1.999V	3½	±2,000	20	MUXed BCD	–40 to +85	For DMM, DPM, Data loggers	24-pin SOIC, 24-pin PDIP, 28-pin PLCC
TC14433A	BCD A/D	±4.5 to ±8	±199.9 mV to 1.999V	3½	±2,000	20	MUXed BCD	–40 to +85	For DMM, DPM, Data loggers	24-pin PDIP, 28-pin PLCC

MIXED SIGNAL: Display A/D Converters

Part #	Display Type	Supply Voltage (V)	Resolution (Digits)	Resolution (Counts)	Power (mW)	Temperature Range (°C)	Features	Packages
TC7106	LCD	9	3½	±2,000	10	–25 to +85	For DMM, DPM, Data logger applications	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7106A	LCD	9	3½	±2,000	10	–25 to +85	For DMM, DPM, Data logger applications	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7107	LED	±5	3½	±2,000	10	–25 to +85	For DMM, DPM, Data logger applications	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7107A	LED	±5	3½	±2,000	10	–25 to +85	For DMM, DPM, Data logger applications	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7116	LCD	9	3½	±2,000	10	–25 to +85	Hold function	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7116A	LCD	9	3½	±2,000	10	–25 to +85	Hold function	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7117	LED	±5	3½	±2,000	10	–25 to +85	Hold function	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7117A	LED	±5	3½	±2,000	10	–25 to +85	Hold function	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7126	LCD	9	3½	±2,000	0.5	–25 to +85	Low-power TC7106	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7126A	LCD	9	3½	±2,000	0.5	–25 to +85	Low-power TC7106	40-pin PDIP, 44-pin PLCC, 44-pin MQFP
TC7129	LCD	9	4½	±20,000	4.5	0 to +70	Lowest noise ±3 mV sensitivity	40-pin PDIP, 44-pin PLCC, 44-pin MQFP

MIXED SIGNAL: Digital Potentiometers

Part #	# of Taps	Memory	# Per Package	Interface	Resistance (kOhms)	INL (Max)	DNL (Max)	Temperature Range (°C)	Comments	Packages
MCP4011	64	Volatile	1	Up/Down	2.1, 5, 10, 50	0.5	0.5	–40 to +125	Potentiometer mode	8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN
MCP4012	64	Volatile	1	Up/Down	2.1, 5, 10, 50	0.5	0.5	–40 to +125	Rheostat mode	6-pin SOT-23
MCP4013	64	Volatile	1	Up/Down	2.1, 5, 10, 50	0.5	0.5	–40 to +125	Potentiometer to Vss	6-pin SOT-23
MCP4014	64	Volatile	1	Up/Down	2.1, 5, 10, 50	0.5	0.5	–40 to +125	Rheostat to Vss	5-pin SOT-23
MCP4017	128	Volatile	1	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	7-bit, Volatile, I²C digital potentiometer	6-pin SC-70
MCP4018	128	Volatile	1	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	7-bit, Volatile, I²C digital potentiometer	6-pin SC-70
MCP4019	128	Volatile	1	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	7-bit, Volatile, I²C digital potentiometer	5-pin SC-70
MCP40D17	128	Volatile	1	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	7-bit, Volatile, I²C digital potentiometer	6-pin SC-70
MCP40D18	128	Volatile	1	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	7-bit, Volatile, I²C digital potentiometer	6-pin SC-70
MCP40D19	128	Volatile	1	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	7-bit, Volatile, I²C digital potentiometer	5-pin SC-70
MCP4021	64	Nonvolatile	1	Up/Down	2.1, 5, 10, 50	0.5	0.5	–40 to +125	Potentiometer mode, Shutdown, WiperLock™ Technology	8-pin SOIC, 8-pin MSOP, 8-pin 2 × 3 DFN
MCP4022	64	Nonvolatile	1	Up/Down	2.1, 5, 10, 50	0.5	0.5	–40 to +125	Rheostat mode, Shutdown, WiperLock Technology	6-pin SOT-23
MCP4023	64	Nonvolatile	1	Up/Down	2.1, 5, 10, 50	0.5	0.5	–40 to +125	Potentiometer to Vss, WiperLock Technology	6-pin SOT-23
MCP4024	64	Nonvolatile	1	Up/Down	2.1, 5, 10, 50	0.5	0.5	–40 to +125	Rheostat to Vss, Shutdown, WiperLock Technology	5-pin SOT-23
MCP4141	128	Nonvolatile	1	SPI	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode, Shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN
MCP4142	128	Nonvolatile	1	SPI	5, 10, 50, 100	0.8	0.25	–40 to +125	Rheostat mode, Shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN
MCP4241	128	Nonvolatile	2	SPI	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode, Shutdown, WiperLock Technology	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4 × 4 QFN
MCP4242	128	Nonvolatile	2	SPI	5, 10, 50, 100	0.8	0.25	–40 to +125	Rheostat mode, Shutdown	10-pin MSOP, 10-pin 3 × 3 DFN
MCP4131	129	Volatile	1	SPI	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode, Shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN
MCP41HV31	128	Volatile	1	SPI	5, 10, 50, 100	0.5	0.125	–40 to +125	7-bit Volatile digital potentiometer with specified operation from 10V to 36V and SPI interface	14-pin TSSOP, 5 × 5 QFN
MCP4132	129	Volatile	1	SPI	5, 10, 50, 100	0.8	0.25	–40 to +125	Rheostat mode, Shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN
MCP4231	128	Volatile	2	SPI	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode, Shutdown, WiperLock Technology	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4 × 4 QFN
MCP4232	128	Volatile	2	SPI	5, 10, 50, 100	0.8	0.25	–40 to +125	Rheostat mode, Shutdown	10-pin MSOP, 10-pin 3 × 3 DFN
MCP41010	256	Volatile	1	SPI	10	1	1	–40 to +85	Potentiometer mode, Shutdown	8-pin PDIP, 8-pin SOIC
MCP41050	256	Volatile	1	SPI	50	1	1	–40 to +85	Potentiometer mode, Shutdown	8-pin PDIP, 8-pin SOIC
MCP41100	256	Volatile	1	SPI	100	1	1	–40 to +85	Potentiometer mode, Shutdown	8-pin PDIP, 8-pin SOIC
MCP4151	256	Volatile	1	SPI	5, 10, 50, 100	1	0.5	–40 to +125	Potentiometer mode, Shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN
MCP41HV51	256	Volatile	1	SPI	5, 10, 50, 100	1	0.25	–40 to +125	8-bit Volatile digital potentiomer with specified operation from 10V to 36V and SPI interface.	14-pin TSSOP, 5 × 5 QFN
MCP4152	256	Volatile	1	SPI	5, 10, 50, 100	1	0.5	–40 to +125	Rheostat mode, Shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN
MCP4161	256	Nonvolatile	1	SPI	5, 10, 50, 100	1	0.5	–40 to +125	Potentiometer mode, Shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN
MCP4162	256	Nonvolatile	1	SPI	5, 10, 50, 100	1	0.5	–40 to +125	Rheostat mode, Shutdown	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin 3 × 3 DFN
MCP42010	256	Volatile	2	SPI	10	1	1	–40 to +85	Potentiometer mode, Shutdown	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP42100	256	Volatile	2	SPI	100	1	1	–40 to +85	Potentiometer mode, Shutdown	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP4251	256	Volatile	2	SPI	5, 10, 50, 100	1	0.5	–40 to +125	Potentiometer mode, Shutdown, WiperLock Technology	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4 × 4 QFN
MCP4252	256	Volatile	2	SPI	5, 10, 50, 100	1	0.5	–40 to +125	Rheostat mode, Shutdown	10-pin MSOP, 10-pin 3 × 3 DFN
MCP4261	256	Nonvolatile	2	SPI	5, 10, 50, 100	1	0.5	–40 to +125	Potentiometer mode, Shutdown, WiperLock Technology	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin 4 × 4 QFN
MCP4262	256	Nonvolatile	2	SPI	5, 10, 50, 100	1	0.5	–40 to +125	Rheostat mode, Shutdown	10-pin MSOP, 10-pin 3 × 3 DFN
MCP4341	129	Nonvolatile	4	SPI	5, 10, 50, 100	0.8	0.375	–40 to +125	7-bit, Volatile potentiometer with an SPI interface	20-pin TSSOP, 20-pin 4 × 4 QFN
MCP4342	129	Nonvolatile	4	SPI	5, 10, 50, 100	0.8	0.375	–40 to +125	7-bit, Volatile rheostat with an SPI interface	14-pin TSSOP
MCP4361	257	Nonvolatile	4	SPI	5, 10, 50, 100	1	0.5	–40 to +125	8-bit, Non-volatile potentiometer with an SPI interface	20-pin TSSOP, 20-pin 4 × 4 QFN
MCP4362	257	Nonvolatile	4	SPI	5, 10, 50, 100	1	0.5	–40 to +125	8-bit, Non-volatile rheostat with an SPI interface	14-pin TSSOP
MCP4331	129	Volatile	4	SPI	5, 10, 50, 100	0.8	0.375	–40 to +125	7-bit, Volatile potentiometer with an SPI interface	20-pin TSSOP, 20-pin 4 × 4 QFN
MCP4332	129	Volatile	4	SPI	5, 10, 50, 100	0.8	0.375	–40 to +125	7-bit, Volatile rheostat with an SPI interface	14-pin TSSOP
MCP4351	257	Volatile	4	SPI	5, 10, 50, 100	1	0.5	–40 to +125	8-bit, Non-volatile potentiometer with an SPI interface	20-pin TSSOP, 20-pin 4 × 4 QFN
MCP4352	257	Volatile	4	SPI	5, 10, 50, 100	1	0.5	–40 to +125	8-bit, Non-volatile rheostat with an SPI interface	14-pin TSSOP
MCP4441	129	Nonvolatile	4	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode, WiperLock Technology	20-pin TSSOP, 20-pin 4 × 4 QFN
MCP4442	129	Nonvolatile	4	I²C	5, 10, 50, 101	0.8	0.375	–40 to +125	Rheostat mode, WiperLock Technology	14-pin TSSOP
MCP4461	257	Nonvolatile	4	I²C	5, 10, 50, 102	1	0.5	–40 to +125	Potentiometer mode, WiperLock Technology	20-pin TSSOP, 20-pin 4 × 4 QFN
MCP4462	257	Nonvolatile	4	I²C	5, 10, 50, 103	1	0.5	–40 to +125	Rheostat mode, WiperLock Technology	14-pin TSSOP
MCP4531	128	Volatile	1	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode	8-pin MSOP

MIXED SIGNAL: Digital Potentiometers (Continued)

Part #	# of Taps	Memory	# Per Package	Interface	Resistance (kOhms)	INL (Max)	DNL (Max)	Temperature Range (°C)	Comments	Packages
MCP45HV31	128	Volatile	1	I²C	5, 10, 50, 100	0.5	0.125	–40 to +125	7-bit Volatile digital potentiometer with specified operation from 10V to 36V and I²C interface	14-pin TSSOP, 5 × 5 DFN
MCP45HV51	256	Volatile	1	I²C	5, 10, 50, 100	1	0.25	–40 to +125	8-bit Volatile digital potentiometer with specified operation from 10V to 36V and I²C interface	14-pin TSSOP, 5 × 5 DFN
MCP4631	128	Volatile	2	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode	14-pin TSSOP, 16-pin 4 × 4 QFN
MCP4541	128	Nonvolatile	1	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode, WiperLock™ Technology	8-pin MSOP
MCP4641	128	Nonvolatile	2	I²C	5, 10, 50, 100	0.5	0.25	–40 to +125	Potentiometer mode, WiperLock Technology	14-pin TSSOP, 16-pin 4x4 QFN
MCP4651	256	Volatile	2	I²C	5, 10, 50, 100	1	0.5	–40 to +125	Potentiometer mode	14-pin TSSOP, 16-pin 4 × 4 QFN
MCP4561	256	Nonvolatile	1	I²C	5, 10, 50, 100	1	0.5	–40 to +125	Potentiometer mode, WiperLock Technology	8-pin MSOP
MCP4661	256	Nonvolatile	2	I²C	5, 10, 50, 100	1	0.5	–40 to +125	Potentiometer mode, WiperLock Technology	14-pin TSSOP, 16-pin 4 × 4 QFN
MCP4532	128	Nonvolatile	1	I²C	5, 10, 50, 100	0.8	0.375	–40 to +125	Rheostat mode	8-pin MSOP, 8-pin 3 × 3 DFN
MCP4632	128	Volatile	2	I²C	5, 10, 50, 100	0.8	0.375	–40 to +125	Rheostat mode	10-pin MSOP, 10-pin 3 × 3 DFN
MCP4542	128	Nonvolatile	1	I²C	5, 10, 50, 100	0.8	0.375	–40 to +125	Rheostat mode, WiperLock Technology	8-pin MSOP, 8-pin 3 × 3 DFN
MCP4552	256	Volatile	1	I²C	5, 10, 50, 100	1	0.5	–40 to +125	Rheostat mode	8-pin MSOP, 8-pin 3 × 3 DFN
MCP4652	256	Nonvolatile	2	I²C	5, 10, 50, 100	1	0.5	–40 to +125	Rheostat mode	10-pin MSOP, 10-pin 3 × 3 DFN
MCP4562	256	Nonvolatile	1	I²C	5, 10, 50, 100	1	0.5	–40 to +125	Rheostat mode, WiperLock Technology	8-pin MSOP, 8-pin 3 × 3 DFN
MCP4662	256	Nonvolatile	2	I²C	5, 10, 50, 100	1	0.5	–40 to +125	Rheostat mode, WiperLock Technology	10-pin MSOP, 10-pin 3 × 3 DFN

MIXED SIGNAL: Frequency-to-Voltage/Voltage-to-Frequency Converters

Part #	Frequency Range (kHz)	Full Scale (ppm FS/°C)	Non-linearity (%FS)	Temperature Range (°C)	Packages
TC9400	100	±40	±0.05	–40 to +85	14-pin PDIP, 14-pin SOIC
TC9401	100	±40	±0.02	–40 to +85	14-pin PDIP, 14-pin SOIC
TC9402	100	±100	±0.25	–40 to +85	14-pin PDIP, 14-pin SOIC

MIXED SIGNAL: D/A Converters

Part #	Resolution (Bits)	DACs Per Package	Interface	V_{REF}	Output Settling Time (µs)	DNL (LSB)	Typical Standby Current (µA)	Typical Operating Current (µA)	Temperature Range (°C)	Packages
TC1320	8	1	SMbus	Ext	10	0.8	0.1	350	–40 to +85	8-pin MSOP, 8-pin SOIC
TC1321	10	1	SMbus	Ext	10	2	0.1	350	–40 to +85	8-pin MSOP, 8-pin SOIC
MCP47A1	6	1	I²C/SMBus	Ext	15	0.5	90	130	–40 to +125	6-pin SC-70
MCP4706	8	1	I²C	Ext	6	0.05	0.06	210	–40 to +125	6-pin SOT-23
MCP4716	10	1	I²C	Ext	6	0.188	0.06	210	–40 to +125	6-pin SOT-23
MCP4725	12	1	I²C	V_{DD}	6	0.75	1	210	–40 to +125	6-pin SOT-23
MCP4726	12	1	I²C	Ext	6	0.75	0.06	210	–40 to +125	6-pin SOT-23
MCP4728	12	4	I²C	Int/V_{DD}	6	0.75	0.04	800	–40 to +125	10-pin MSOP
MCP47FEB01	8	1	I2C	Int/Vdd/Ext	6	0.25	0.65	130	–40 to +125	8-pin TSSOP
MCP47FEB02	8	2	I2C	Int/Vdd/Ext	6	0.25	0.65	260	–40 to +125	8-pin TSSOP
MCP47FEB11	10	1	I2C	Int/Vdd/Ext	6	0.5	0.65	130	–40 to +125	8-pin TSSOP
MCP47FEB12	10	2	I2C	Int/Vdd/Ext	6	0.5	0.65	260	–40 to +125	8-pin TSSOP
MCP47FEB21	12	1	I2C	Int/Vdd/Ext	6	1	0.65	130	–40 to +125	8-pin TSSOP
MCP47FEB22	12	2	I2C	Int/Vdd/Ext	6	1	0.65	260	–40 to +125	8-pin TSSOP
MCP4801	8	1	SPI	Int	4.5	0.5	0.3	330	–40 to +125	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN
MCP4802	8	2	SPI	Int	4.5	0.5	3.3	415	–40 to +125	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP4811	10	1	SPI	Int	4.5	0.5	0.3	330	–40 to +125	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN
MCP4812	10	2	SPI	Int	4.5	0.5	3.3	415	–40 to +125	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP4821	12	1	SPI	Int	4.5	1	0.3	330	–40 to +125	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN
MCP4822	12	2	SPI	Int	4.5	1	3.3	415	–40 to +125	8-pin PDIP, 8-pin SOIC, 8-pin MSOP
MCP4901	8	1	SPI	Ext	4.5	0.5	3.3	175	–40 to +125	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN
MCP4902	8	2	SPI	Ext	4.5	0.5	0.3	350	–40 to +125	14-pin PDIP, 14-pin SOIC, 14-pinTSSOP
MCP4911	10	1	SPI	Ext	4.5	0.5	3.3	175	–40 to +125	8-pin DFN, 8-pin MSOP, 8-pin PDIP, 8-pin SOIC
MCP4912	10	2	SPI	Ext	4.5	0.5	0.3	350	–40 to +125	14-pin PDIP, 14-pin SOIC, 14-pinTSSOP
MCP4921	12	1	SPI	Ext	4.5	0.75	3.3	175	–40 to +125	8-pin PDIP, 8-pin SOIC, 8-pin MSOP, 8-pin DFN
MCP4922	12	2	SPI	Ext	4.5	0.75	0.3	350	–40 to +125	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP

Note: The analog output is voltage.

INTERFACE

INTERFACE: Controller Area Network (CAN) Products

Part #	Description and Features	Operating Voltage (V)	Temperature Range (°C)	Tx Buffers	Rx Buffers	Filters	Masks	Interrupt Output	Packages
MCP2510[1]	CAN 2.0B Active controller with SPI interface to MCU, three transmit buffers, two receive buffers, HW and SW message triggers	2.7 to 5.5	–40 to +125	3	2	6	2	Yes	18-pin PDIP, 18-pin SOIC, 20-pin TSSOP
MCP2515	MCP2510 pin-compatible upgrade with enhanced features including higher throughput and data byte filtering	2.7 to 5.5	–40 to +125	3	2	6	2	Yes	18-pin PDIP, 18-pin SOIC, 20-pin TSSOP
MCP25020	CAN 2.0B Active I/O Expander, Configurable I/O, two PWM outputs	2.7 to 5.5	–40 to +125	3	2	2	1	N/A	14-pin PDIP, 14-pin SOIC
MCP25025	CAN 2.0B Active I/O Expander, Configurable I/O, two PWM outputs, One-wire CAN option	2.7 to 5.5	–40 to +85	3	2	2	1	N/A	14-pin PDIP, 14-pin SOIC
MCP25050	Mixed-Signal CAN 2.0B Active I/O Expander, Configurable I/O, four 10-bit ADCs, two PWM outputs	2.7 to 5.5	–40 to +125	3	2	2	1	N/A	14-pin PDIP, 14-pin SOIC
MCP25055	Mixed-Signal CAN 2.0B Active I/O Expander, Configurable I/O, four 10-bit ADCs, two PWM outputs, One-wire CAN option	2.7 to 5.5	–40 to +85	3	2	2	1	N/A	14-pin PDIP, 14-pin SOIC
MCP2551	High-speed CAN Transceiver (1 Mbps max. CAN bus speed), ISO11898 compatible, Industry-standard pinout	4.5 to 5.5	–40 to +125	N/A	N/A	N/A	N/A	N/A	8-pin PDIP, 8-pin SOIC
MCP2561	HS CAN Transceiver; 1 Mbps, ISO11898-5, meets automotive EMC and CAN conformance requirements, MCP2561 = SPLIT Option for common mode stabilization	4.5 to 5.5	–40 to +150	N/A	N/A	N/A	N/A	N/A	8-pin PDIP, 8-pin SOIC, 8-pin 3 × 3 DFN
MCP2562	HS CAN Transceiver; 1 Mbps, ISO11898-5, meets automotive EMC and CAN conformance requirements, MCP2562 = VIO Option for digital I/O level shifting from 1.8V to 5.5V	4.5 to 5.5	–40 to +150	N/A	N/A	N/A	N/A	N/A	8-pin PDIP, 8-pin SOIC, 8-pin 3 × 3 DFN
MCP25625	Integrated High-Speed CAN Transceiver and CAN 2.0B Controller	2.7 to 5.5	–40 to +125	3	2	6	2	1	28-pin SSOP, 28-pin 6 × 6 QFN
MCP2561FD	CAN Flexible Data Rate Transceiver	4.5 to 5.5	–40 to +150	N/A	N/A	N/A	N/A	N/A	8-pin PDIP, 8-pin SOIC, 8-pin 3 × 3 DFN
MCP2562FD	CAN Flexible Data Rate Transceiver	4.5 to 5.5	–40 to +150	N/A	N/A	N/A	N/A	N/A	8-pin PDIP, 8-pin SOIC, 8-pin 3 × 3 DFN
MCP25612FD	**Dual CAN FD Transceiver capable of both Classic CAN and CAN FD applications, optimized for up to 8 Mbps operation, standby current of 5 µA, typ. per transceiver**	**4.5 to 5.5**	**–40 to +150**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**14-pin SOIC**

Note 1: Not recommended for new designs.

INTERFACE: LIN Transceiver Products

Part #	Description	VREG Output Voltage (V)	Operating Temp. Range (°C)	VREG Output Current (mA)	VCC Range (V)	Max Baud Rate	LIN Specification Supported	Packages
MCP2003A	Stand-alone LIN Transceiver (industry-standard pinout)	None	–40 to +125	None	6 to 27	20 Kbaud	Revision 1.3, 2.0, 2.1, SAE J2602	8-pin PDIP, 8-pin SOIC, 8-pin 4 × 4 DFN
MCP2004A	Stand-alone LIN Transceiver with TXE/Fault I/O	None	–40 to +125	None	6 to 27	20 Kbaud	Revision 1.3, 2.0, 2.1, SAE J2602	8-pin PDIP, 8-pin SOIC, 8-pin 4 × 4 DFN
MCP2021A	LIN Transceiver with integrated VREG	5.0 ± 3%, 3.3 ± 3%	–40 to +125	70	6 to 18	20 Kbaud	Revision 1.3, 2.0, 2.1, SAE J2602	8-pin PDIP, 8-pin SOIC, 8-pin 4 × 4 DFN
MCP2022A	LIN Transceiver with integrated VREG, RESET pin	5.0 ± 3%, 3.3 ± 3%	–40 to +125	70	6 to 18	20 Kbaud	Revision 1.3, 2.0, 2.1, SAE J2602	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP
MCP2025	LIN Transceiver with integrated VREG	5.0 ± 3%, 3.3 ± 3%	–40 to +125	70	6 to 18	20 Kbaud	Revision 2.0	8-pin PDIP, 8-pin SOIC, 8-pin 4 × 4 DFN
MCP2050	LIN Transceiver with integrated VREG, WWDT	5.0 ± 3%, 3.3 ± 3%	–40 to +125	70	6 to 18	20 Kbaud	Revision 1.3, 2.0, 2.1, SAE J2602	14-pin PDIP, 14-pin SOIC, 20-pin QFN

INTERFACE: Ethernet Products

Part #	Description	Interface (Upstream)	Wake-On-LAN	EEE	Industrial Version	Packages
Ethernet Controllers						
ENC28J60	10Base-T Ethernet Controller	SPI	–	–	✓	28-pin SPDIP, SSOP, SOIC, QFN
ENC624J600	10Base-T/100Base-TX Ethernet Controller with Security	SPI/Parallel	–	–	✓	24-pin TQFN, QFN, 64-pin TQFN
LAN9217	10Base-T/100Base-TX Ethernet Controller with 16-bit/MII interface	16-bit Host Bus/MII	–	–	–	100-pin TQFP
LAN9218	10Base-T/100Base-TX Ethernet Controller with 32-bit interface	32-bit Host Bus	–	–	✓	100-pin TQFP
LAN9220	10Base-T/100Base-TX Ethernet Controller with 16-bit interface	16-bit Host Bus	–	–	–	56-pin QFN
LAN9221	10Base-T/100Base-TX Ethernet Controller with 16-bit interface	16-bit Host Bus	–	–	✓	56-pin QFN
LAN9420	10Base-T/100Base-TX Ethernet Controller with 32-bit PCI interface	32-bit PCI 3.0	–	–	✓	128-pin VTQFP
LAN89218	TrueAuto, 10Base-T/100Base-TX Ethernet Controller with 32-bit interface	32-bit Host Bus	–	–	Automotive	100-pin TQFP

*Note: All products above are supported with 3.3V operating voltage

INTERFACE: Ethernet Products

Part #	Description	Interface (Upstream)	1588-2008	Cable Diagnostics	100 FX (Fiber Support)	Packages
EtherCAT® Controllers						
LAN9252	**2/3-Port 100 EtherCAT Slave Controller**	**SPI/SQI™/8/16/32 Host Bus**	**Clock Synchronization**	✓	✓	**64-pin QFN, 64-pin TQFP-EP**

INTERFACE: Ethernet Products						
Part #	Description	Interface (Upstream)	1588-2008	Cable Diagnostics	100 FX (Fiber Support)	Packages
Ethernet Switches						
LAN9303	3-Port 10/100 Managed Ethernet Switch	MII/RMII/Turbo MII	–	–	–	56-pin QFN
LAN9303M	3-Port 10/100 Managed Ethernet Switch	MII/RMII/Turbo MII	–	–	–	72-pin QFN
LAN9353	**3-Port 10/100 Managed Ethernet Switch with Single MII/RMII/Turbo MII or Dual RMII**	**MII/RMII/Turbo MII**	✓	✓	✓	**64-pin QFN, 64-pin TQFP-EP**
LAN9354	**3-Port 10/100 Managed Ethernet Switch with Single RMII**	**RMII**	✓	✓	✓	**56-pin QFN**
LAN9355	**3-Port 10/100 Managed Ethernet Switch with Dual MII/RMII/Turbo MII**	**MII/RMII/Turbo MII**	✓	✓	✓	**88-pin QFN, 80-pin TQFP-EP**

INTERFACE: Ethernet Products						
Part #	Description	Interface (Upstream)	Wake-On-LAN	EEE	Industrial Version	Packages
USB to Ethernet						
LAN9500A	USB 2.0 to 10/100 Ethernet Controllers	USB 2.0	–	–	✓	56-pin QFN
LAN9730	USB HSIC 2.0 to 10/100 Ethernet Controllers	USB 2.0 (HSIC), MII	–	–	✓	56-pin QFN
LAN7500	USB 2.0 to 10/100/1000 Ethernet Controllers	USB 2.0	–	–	✓	56-pin QFN
LAN9512	USB 2.0 to 10/100 Ethernet Controllers with 2-Port USB 2.0 Hub	USB 2.0	–	–	✓	64-pin QFN
LAN9513	USB 2.0 to 10/100 Ethernet Controllers with 3-Port USB 2.0 Hub	USB 2.0	–	–	✓	64-pin QFN
LAN9514	USB 2.0 to 10/100 Ethernet Controllers with 4-Port USB 2.0 Hub	USB 2.0	–	–	✓	64-pin QFN
LAN89530	TrueAuto, USB 2.0 to 10/100 Ethernet Controllers	USB 2.0	–	–	Automotive	56-pin QFN
Ethernet Transceivers						
LAN8710A	Small-Footprint, Low Power Consumption, Full-Featured 10/100 Ethernet Transceivers	MII/RMII	–	–	✓	32-pin QFN
LAN8720A	Small-Footprint, Low Power Consumption, Full-Featured 10/100 Ethernet Transceivers	RMII	–	–	✓	24-pin QFN
LAN8740A	Small-Footprint, 10/100 PHY Family Featuring Energy Efficient Ethernet and Wake-On-LAN	MII/RMII	✓	✓	✓	32-pin QFN
LAN8741A	Small-Footprint, 10/100 PHY Family Featuring Energy Efficient Ethernet	MII/RMII	–	✓	✓	32-pin QFN
LAN8742A	Small-Footprint, 10/100 PHY Family Featuring Wake-On-LAN	RMII	✓	–	✓	24-pin QFN
LAN8810	GMII 10/100/1000 Ethernet Transceiver with HP Auto-MDIX Support	GMII	–	–	✓	72-pin QFN
LAN8820	RGMII 10/100/1000 Ethernet Transciever with HP Auto-MDIX Support	RGMII	–	–	✓	56-pin QFN
LAN88730	TrueAuto, Small Footprint, Low Power Consumption, Full-Featured 10/100 Ethernet Transceivers	MII/RMII	–	–	Automotive	32-pin QFN

*Note: All products above are supported with 3.3V operating voltage

INTERFACE: Passive Access Products							
Part #	Operating Voltage (V)	Operating Temp.Range (°C)	Bus Type	RF Carrier Frequency	Data Format	Features	Packages
MCP2030	1.8 to 3.6	–40 to +85	SPI	125 kHz	NRZ	Three axis signal conditioning devices for passive access applications, high-sensitivity, configurable smart wake-up filter	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP

INTERFACE: Infrared Products					
Part #	Operating Voltage (V)	Operating Temp. Range (°C)	Max Baud Rate (Kbaud)	Unique Features	Packages
MCP2120	2.5 to 5.5	–40 to +85	325	UART to IR encoder/decoder with both hardware and software baud rate selection	14-pin PDIP, 14-pin SOIC
MCP2122	1.8 to 5.5	–40 to +85	16× less than clock input	UART to IR encoder/decoder	8-pin PDIP, 8-pin SOIC
MCP2140A	2.0 to 5.5	–40 to +85	9.6	IrDA® Standard protocol handler plus bit encoder/decoder, fixed baud rate, low cost	18-pin PDIP, 18-pin SOIC, 20-pin SSOP
MCP2150	3.0 to 5.5	–40 to +85	115.2	IrDA Standard protocol handler plus bit encoder/decoder on one chip for DTE applications, programmable ID	18-pin PDIP, 18-pin SOIC, 20-pin SSOP
MCP2155	3.0 to 5.5	–40 to +85	115.2	IrDA Standard protocol handler plus bit encoder/decoder on one chip for DCE applications, programmable ID	18-pin PDIP, 18-pin SOIC, 20-pin SSOP

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INTERFACE: Serial Peripherals							
Part #	Description	Operating Voltage (V)	Operating Temp. Range (°C)	Bus Type	Max Bus Frequency (kHz)	Features	Packages
MCP23008	8-bit I/O Port Expander	1.8 to 5.5	–40 to +85	I²C	1700	Three HW address pins, HW interrupt, 25 mA source/sink capability per I/O	18-pin PDIP, 18-pin SOIC, 20-pin SSOP, 20-pin 4 × 4 QFN
MCP23S08	8-bit I/O Port Expander	1.8 to 5.5	–40 to +85	SPI	10000	Two HW address pins, HW interrupt, 25 mA source/sink capability per I/O	18-pin PDIP, 18-pin SOIC, 20-pin SSOP, 20-pin 4 × 4 QFN
MCP23009	8-bit I/O Port Expander	1.8 to 5.5	–40 to +125	I²C	3400	One HW address pin, HW interrupt, 25 mA source/sink per I/O, 100 kHz, 400 kHz and 3.4 MHz I²C supported	18-pin PDIP, 18-pin SOIC, 20-pin SSOP
MCP23S09	8-bit I/O Port Expander	1.8 to 5.5	–40 to +125	SPI	10000	HW interrupt, 25 mA source/sink per I/O	18-pin PDIP, 18-pin SOIC
MCP23016	16-bit I/O Port Expander	2.0 to 5.5	–40 to +85	I²C	400	Three HW address inputs, HW interrupt, 25 mA source/sink capability per I/O	28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin 6 × 6 QFN
MCP23017	16-bit I/O Expander	1.8 to 5.5	–40 to +125	I²C	1700	Three HW address pins, 25 mA sink/source per I/O, 100 kHz, 400 kHz and 3-4 MHz I²C supported, Interrupt output	28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin QFN

INTERFACE: Serial Peripherals (Continued)

Part #	Description	Operating Voltage (V)	Operating Temp. Range (°C)	Bus Type	Max Bus Frequency (kHz)	Features	Packages
MCP23S17	16-bit I/O Expander	1.8 to 5.5	–40 to +125	SPI	10000	Three HW address pins, 25 mA sink/source per I/O, Interrupt output	28-pin PDIP, 28-pin SOIC, 28-pin SSOP, 28-pin QFN
MCP23018	16-bit I/O Port Expander	1.8 to 5.5	–40 to +125	I²C	3400	One HW address pin, 2 HW interrupts, 25 mA source/sink per I/O, 100 kHz, 400 kHz and 3.4 MHz I²C supported	24-pin SSOP, 28-pin SOIC, 28-pin SDIP
MCP23S18	16-bit I/O Port Expander	1.8 to 5.5	–40 to +125	SPI	10000	Two HW interrupts, 25 mA source/sink per I/O	28-pin SOIC, 28-pin SDIP

INTERFACE: Wi-Fi® Modules

Part #	Radio	Pin Count	Antenna	Frequency Range (GHz)	Sensitivity (dBm)	Power Output (dBm)	Power Consumption (mA)		Sleep	MAC	MAC Features	Protocols	Encryption	Interface	Packages
							Tx	Rx							
RN1723	**802.11 b/g**	**49**	**RF PAD**	**2.412–2.484**	**–83**	**0 to +12**	**120 (0 dBm)**	**40**	**4 µA**	**Yes**	**802.11b/g, SoftAP, WPS, Webscan**	**DHCP, DNS, ARP, ICMP, FTP client, HTTP client, TCP, UDP**	**WEP, WPA, WPA2, EAP**	**UART**	**49/Module (26.7 × 17.8 mm)**
RN171	802.11 b/g	49	RF PAD	2.412–2.484	–83	0 to +12	190 (+12 dBm)	38	4 µA	Yes	802.11b/g, SoftAP, WPS, Webscan	DHCP, DNS, ARP, ICMP, FTP client, HTTP client, TCP, UDP	WEP, WPA, WPA2, EAP	UART	49/Module (26.7 × 17.8 mm)
RN131	802.11 b/g	44	Chip, U.FL	2.412–2.484	–85	+18	210 (+18 dBm)	40	4 µA	Yes	802.11b/g, SoftAP, WPS, Webscan	DHCP, DNS, ARP, ICMP, FTP client, HTTP client, TCP, UDP	WEP, WPA, WPA2, EAP	UART	44/Module (37.0 × 20.0 mm)
RN171XV	802.11 b/g	49	Wire, U.FL, SMA	2.412–2.484	–83	0 to +12	190 (+12 dBm)	38	4 µA	Yes	802.11b/g, SoftAP, WPS, Webscan	DHCP, DNS, ARP, ICMP, FTP client, HTTP client, TCP, UDP	WEP, WPA, WPA2, EAP	UART	2 × 10/Through hole module (24.4 × 34.3 mm)
MRF24WN0MA	**802.11 b/g/n**	**37**	**PCB**	**2.412–2.484**	**–94**	**+18**	**115 (0 dBm)**	**60**	**5 µA**	**Yes**	**802.11b/g/n, SoftAP, WPS, Wi-Fi® Direct**	**Wi-Fi Connection Manager, Announce, DNS, DDNS, DHCP, FTP, HTTP, NBNS, SNMP, SNTP, SSL, TCP, UDP, ZeroConf[2]**	**WPA2-PSK, WPA-PSK, WEP, WPA-2-ENTERPRISE**	**4-wire SPI**	**37/Module (26.7 × 17.8 mm)**
MRF24WN0MB	**802.11 b/g/n**	**37**	**W.FL**	**2.412–2.484**	**–94**	**+18**	**115 (0 dBm)**	**60**	**5 µA**	**Yes**	**802.11b/g/n, SoftAP, WPS, Wi-Fi Direct**	**Wi-Fi Connection Manager, Announce, DNS, DDNS, DHCP, FTP, HTTP, NBNS, SNMP, SNTP, SSL, TCP, UDP, ZeroConf[2]**	**WPA2-PSK, WPA-PSK, WEP, WPA-2-ENTERPRISE**	**4-wire SPI**	**37/Module (26.7 × 17.8 mm)**
MRF24WG0MA	802.11 b/g	36	PCB	2.412–2.484	–95	+18	240	156	0.1 mA[1]	Yes	802.11b/g, Wi-Fi Direct, SoftAP, WPS	Wi-Fi Connection Manager, Announce, DNS, DDNS, DHCP, FTP, HTTP, NBNS, SNMP, SNTP, SSL, TCP, UDP, ZeroConf[2]	WPA2-PSK, WPA-PSK, WEP, WPA-2-ENTERPRISE	4-wire SPI	36/Module (21.0 × 31.0 mm)
MRF24WG0MB	802.11 b/g	36	U.FL	2.412–2.484	–95	+18	240	156	0.1 mA[1]	Yes	802.11b/g, Wi-Fi Direct, SoftAP, WPS	Wi-Fi Connection Manager, Announce, DNS, DDNS, DHCP, FTP, HTTP, NBNS, SNMP, SNTP, SSL, TCP, UDP, ZeroConf[2]	WPA2-PSK, WPA-PSK, WEP, WPA-2-ENTERPRISE	4-wire SPI	36/Module (21.0 × 31.0 mm)

Note 1: Indicates "off" current **Note 2:** Supported in the provided stack

INTERFACE: Bluetooh® Modules

Product	Bluetooth Spec	Module Type	No Shield Option	Rx Sensitivity (dBm)	Power Output (dBm) (typ.)	Power Consumption	Sleep	Profiles	Interface	Pin Count	Packages (Dimensions)
BM20	**4.1**	**Audio**	**Yes**	**–91**	**4**	**Standby 0.8 mA, SCO Link 7.8 mA, A2DP Link 10.7 mA**	**System Off 2 µA**	**HFP, HSP, A2DP, AVRCP, SPP, PCAP**	**Analog audio out, mic in, line in, UART**	**40**	**29 × 15 × 2.5 mm**
BM23	**4.1**	**Audio**	**Yes**	**–91**	**4**	**Standby 0.4 mA, SCO Link 9.3 mA, A2DP Link 11.7 mA**	**System Off 2 µA**	**HFP, HSP, A2DP, AVRCP, SPP, PCAP**	**I²S Digital audio out, mic in, line in, UART**	**43**	**29 × 15 × 2.5 mm**
RN52	3.0	Audio	No	–85	4	Idle 12 mA, Connected A2DP 26 mA, HFP/HSP 23.5 mA	N/A	A2DP, AVRCP, SPP, HFP/HSP, iAP	(Audio) Analog speaker, microphone, I²S master mode, S/PDIF, (Data) UART, USB, GPIO	50	13.5 × 26.0 mm
BM70	**4.2**	**Data, Single-Mode BLE**	**Yes**	**–90**	**0**	**Standby 1.9 µA, Link Static 60 µA, Tx peak = 13 mA at 0 dBm**	**Power saving 1 µA**	**GAP, GATT, SM, L2CAP, Integrated public profiles**	**UART, I²C, SPI, ADC, PWM, GPIOs**	**33**	**22 × 12 × 2.4 mm 25 × 12 × 1.8 mm**
BM71	**4.2**	**Data, Single-Mode BLE**	**Yes**	**–90**	**0**	**Standby 1.9 µA, Link Static 60 µA, Tx peak = 13 mA at 0 dBm**	**Power saving 1 µA**	**GAP, GATT, SM, L2CAP, Integrated public profiles**	**UART, I²C, SPI, ADC, PWM, GPIOs**	**17**	**9 × 11.5 × 2.1 mm 6 × 8 × 1.6 mm**
RN4020	4.1	Data, Single-Mode BLE	No	–92.5	7	Idle < 1.5 mA, Tx/Rx active 16 mA at 0 dBm	Dormant < 700 nA, deep sleep < 5.0 µA	GAP, GATT, SM, L2CAP, integrated public profiles	UART, PIO, AIO, SPI	24	11.5 × 19.5 mm
BM77	4.0	Data, Dual-Mode	Yes	–80 Classic –92 LE	2	Idle 1.2 mA, Connected (transfer data) 18.6 mA (BTLE), Idle 2.5 mA, Connected (transfer data) 23 mA (Classic)	Deep Power Down 343 µA	GAP, SDP, SPP, GATT	UART	33	22 × 12 × 2.4 mm 25 × 12 × 1.8 mm
RN4677	**4.0**	**Data, Dual-Mode**	**Yes**	**–80 Classic –92 LE**	**2**	**Idle 1.2 mA, Connected (transfer data) 18.6 mA (BTLE), Idle 2.5 mA, Connected (transfer data) 23 mA (Classic)**	**Deep Power Down 343 µA**	**GAP, SDP, SPP, GATT**	**UART**	**33**	**22 × 12 × 2.4 mm 25 × 12 × 1.8 mm**
BM78	**4.2**	**Data, Dual-Mode**	**Yes**	**–90 (BR/EDR) –92 LE**	**2**	**LE Fast Advertising (int. 160 ms), Connected (transfer data) 7.0 mA (BTLE), Standby 2.5 mA, Connected (transfer data) 10.67 mA (Classic)**	**Deep Power Down 130 µA**	**BT3.0: GAP, SPP, SDP, RFCOMM, L2CAP BT4.2: GAP, GATT, ATT, SMP, L2CAP**	**UART, I²C, GPIOs**	**33**	**22 × 12 × 2.4 mm 25 × 12 × 1.8 mm**

INTERFACE: Bluetooh® Modules (Continued)

Product	Bluetooth Spec	Module Type	No Shield Option	Rx Sensitivity (dBm)	Power Output (dBm) (typ.)	Power Consumption	Sleep	Profiles	Interface	Pin Count	Packages (Dimensions)
RN41	2.1	Data	No	–80	15	Standby/Idle 25 mA, Connected (normal mode) 30 mA, Connected (low power sniff) 8 mA	Standby/Idle (deep sleep enabled) 250 µA	SPP, DUN, HID, iAP, HCI, RFCOMM, L2CAP, SDP	UART, USB	35	13.4 × 25.8 mm
RN41XV	2.1	Data	No	–80	15	Standby/Idle 25 mA, Connected (normal mode) 30 mA, Connected (low power sniff) 8 mA	Standby/Idle (deep sleep enabled) 250 µA	SPP, DUN, HID, iAP, HCI, RFCOMM, L2CAP, SDP	UART, USB,	35	24.4 × 29.2 mm
RN42	2.1	Data	No	–80	4	Standby/Idle 25 mA, Connected (normal mode) 3 mA, Connected (low power sniff) 8 mA	Standby/Idle (deep sleep enabled) 26 µA	SPP, DUN, HID, iAP, HCI, RFCOMM, L2CAP, SDP	UART, USB,	35	13.4 × 25.8 mm
RN42XV	2.1	Data	No	–80	4	Standby/Idle 25 mA, Connected (normal mode) 3 mA, Connected (low power sniff) 8 mA	Standby/Idle (deep sleep enabled) 26 µA	SPP, DUN, HID, iAP, HCI, RFCOMM, L2CAP, SDP	UART, USB,	35	24.4 × 29.2 mm

INTERFACE: IEEE 802.15.4 ZigBee® RF Transceiver Products

Part #	Pin Count	Antenna	Frequency Range (GHz)	Sensitivity (dBm)	Power Output (dBm)	RSSI	Tx Power Consumption (mA)	Rx Power Consumption (mA)	Clock (MHz)	Sleep	MAC	MAC Features	Encryption	Interface	Packages
MRF24J40	40	–	2.405 to 2.48	–95	0	Yes	23	19	20	2 µA	Yes	CSMA-CA	AES128	4-wire SPI	40-pin QFN
MRF24J40MA	12	PCB	2.405 to 2.48	–94	0	Yes	23	19	20	2 µA	Yes	CSMA-CA	AES128	4-wire SPI	12/Module
MRF24J40MD	12	PCB	2.405 to 2.48	–104	+19	Yes	140	32	20	10 µA	Yes	CSMA-CA	AES128	4-wire SPI	12/Module
MRF24J40ME	12	U.FL	2.405 to 2.48	–104	+19	Yes	140	32	20	10 µA	Yes	CSMA-CA	AES128	4-wire SPI	12/Module

INTERFACE: Sub-GHz Transceivers/Modules

Part #	Pin Count	Frequency Range (MHz)	Sensitivity (dBm)	Power Output (dBm)	RSSI	Tx Power Consumption (mA)	Rx Power Consumption (mA)	Clock (MHz)	Sleep	Interface	Packages
MRF49XA	16	433/868/915	–110	+7	Yes	15 mA @ 0 dBm	11	10 MHz	0.3 µA	4-wire SPI	16-pin TSSOP
MRF89XA	32	868/915/950	–113	+12.5	Yes	25 mA @ +10 dBm	3	12.8 MHz	0.1 µA	4-wire SPI	32-pin TQFN
MRF89XAM8A	12	868	–113	+12.5	Yes	25 mA @ +10 dBm	3	12.8 MHz	0.1 µA	4-wire SPI	12/Module
MRF89XAM9A	12	915	–113	+12.5	Yes	25 mA @ +10 dBm	3	12.8 MHz	0.1 µA	4-wire SPI	12/Module

INTERFACE: Sub-GHz Receivers

Part #	Pin Count	Frequency Range (MHz)	Sensitivity (dBm)	Power Output (dBm)	RSSI	Tx Power Consumption (mA)	Rx Power Consumption (mA)	Clock (MHz)	Sleep	Interface	Packages
MRF39RA	24	433/868/915	–120	+6	Yes	N/A	16	N/A	100	4-wire SPI	24-pin QFN

INTERFACE: Sub-GHz Transmitters

Part #	Pin Count	Frequency Range (MHz)	Program Memory (Bytes)	EEPROM (bytes)	RAM (bytes)	Digital Timer	Watch Dog Timer	Max Speed (MHz)	ICSP	Modulation	Data Rate (kbps)	Output Power (dBm)	Operating Voltage (V)	Packages
PIC12F529T39A	6	310–928	2.3K	64	201	1	1	8	Yes	OOK/FSK	100	10	2.0–3.7	14-pin TSSOP
PIC12LF1840T39A	6	310–928	7.1K	256	256	2	1	32	Yes	OOK/FSK	100	10	1.8–3.6	14-pin TSSOP
PIC16LF1824T39A	20	310–928	4K	256	256	1	1	32	Yes	OOK/FSK	100	10	1.8–3.6	20-pin TSSOP
rfPIC12F675F	6	380–450	1.7K	128	64	1	1	20	Yes	ASK/FSK	40	10	2.0–5.5	20-pin SSOP
rfPIC12F675H	6	850–930	1.7K	128	64	1	1	20	Yes	ASK/FSK	40	10	2.0–5.5	20-pin SSOP
rfPIC12F675K	6	290–350	1.7K	128	64	1	1	20	Yes	ASK/FSK	40	10	2.0–5.5	20-pin SSOP

INTERFACE: USB Bridge Devices

Part #	USB Speed	USB Compliant	PHY	MCU Interface	Tx/Rx Buffer Size (bytes)	Number of GPIO	Operating Voltage (V)	Packages
MCP2200	Full-Speed USB (12 Mb/s), Low-Speed USB (1.5 Mb/s)	Yes	Yes	UART	128/128	8	2.7 to 5.5	20-pin SOIC, 20-pin TSSOP, 20-pin QFN
MCP2210	Full-Speed USB (12 Mb/s), Low-Speed USB (1.5 Mb/s)	Yes	Yes	SPI	64	9	3.3 to 5.5	20-pin SOIC, 20-pin TSSOP, 20-pin QFN
MCP2221	Full-Speed USB (12 Mb/s), Low-Speed USB (1.5 Mb/s)	Yes	Yes	I²C	64	4	3.0 to 5.5	14-pin PDIP, 14-pin SOIC, 14-pin TSSOP, 16-pin QFN

INTERFACE: USB Products

Part #	Description	Processor Interface	# of Downstream Ports	Card Formats	Industrial Version	Packages
USB Hub Controllers						
USB2412	Hi-Speed USB 2.0 2-Port Hub	USB 2.0	2	–	–	28-pin QFN
USB2422	Small-footprint, 2-Port Value Hub, Commercial and Industrial Temperature with USB Battery Charging 1.1	USB 2.0	2	–	✓	24-pin QFN
USB251XB/ USB2517	**Hi-Speed USB 2.0 Hub with Battery Charger Detection**	**USB 2.0**	**2, 3, 4, 7 port options**	**–**	**✓, Automotive**	**36 or 64-pin QFN**
USB2524	4-Port Hi-Speed USB 2.0 Multi-Switch Hub	USB 2.0 × 2	4	–	–	56-pin QFN
USB3503	3-Port Hi-Speed USB 2.0 HSIC Hub for Mobile Applications	HSIC	3	–	✓	25-ball WLCSP
USB3803	3-Port Hi-Speed USB 2.0 Hub for Mobile Applications	USB 2.0	3	–	✓	25-ball WLCSP
USB3X13	3-Port Hi-Speed USB 2.0 Smart Hub for Mobile Applications	USB 2.0 or HSIC	3 (USB 2.0 ×2/HSIC ×1)	–	✓	30-ball WLCSP
USB253X	Hi-Speed USB 2.0 Controller Hub with Battery Charger Detection	USB 2.0	2, 3, 4 port options	–	✓	36-pin QFN
USB46X4	Hi-Speed USB 2.0 Controller Hub with USB and HSIC Interfaces	USB 2.0 or HSIC	4 (USB 2.0 ×4 or USB 2.0 ×2/HSIC ×2)	–	✓, Automotive	48-pin QFN

INTERFACE: USB Products

Part #	Description	Processor Interface	# of Downstream Ports	Card Formats	Industrial Version	Packages
USB Hub Controller (Continued)						
USB553XB	SuperSpeed USB 3.0 Hub with Battery Charger Detection	USB 3.0	2, 3, 4 or 7 port options	–	✓	64 or 72-pin QFN
USB5734	**SuperSpeed USB 3.1 Gen1 Smart Hub Controller with I/O Bridging and FlexConnect**	**USB 3.1 Gen1**	**4**	**–**	**✓, Automotive**	**64-pin QFN**
USB5744	**SuperSpeed USB 3.1 Gen1 Small Form Factor Hub Controller**	**USB 3.1 Gen1**	**4**	**–**	**✓**	**56-pin QFN**
USB-C™ Power and Charging						
UTC200X	**USB-C Controller**	**I/O**	**1 DFP or 1 UFP**	**–**	**✓, Automotive**	**16-pin QFN**
USB Transceivers/Switches						
USB333X	Mobile Hi-Speed USB 2.0 Transceiver with Multi-frequency Support	ULPI	–	–	✓	25-ball WLCSP
USB334X	Hi-Speed USB 2.0 Transceiver with Multi-frequency Support	ULPI	–	–	Automotive	24 or 32-pin QFN
USB3300	Hi-Speed USB 2.0 Transceiver (24 MHz reference clock support)	ULPI	–	–	✓	32-pin QFN
USB3740B	Hi-Speed USB 2.0 Switch with Extremely Low Power	USB 2.0	–	–	✓	10-pin QFN
USB375XA-X	Hi-Speed USB 2.0 Port Protection with Switch and Charger Detection	USB 2.0	–	–	✓	16-pin QFN
USB Flash Media Controllers						
USB224X	Hi-Speed USB 2.0 Multi-Format Flash Media Controller	USB 2.0	–	SD™/MMC/eMMC™/MS/xD	✓	36-pin QFN
USB225X	Hi-Speed USB 2.0 Multi-Format Flash Media Controller	USB 2.0	–	SD/MMC/eMMC/MS/xD/CF	✓	128-pin VTQFP
USB264X	Hi-Speed USB 2.0 Multi-Format Flash Media Hub Controller	USB 2.0	2	SD/MMC/eMMC/MS/xD	✓, Automotive	48-pin QFN
USB2660	Hi-Speed USB 2.0 Multi-Format Flash Media Hub Controller	USB 2.0	2	SD/MMC/eMMC/MS/xD (×2)	✓	64-pin QFN
USB4640	Hi-Speed USB 2.0 Multi-Format Flash Media HSIC Hub Controller	HSIC	2	SD/MMC/eMMC/MS/xD	✓	48-pin QFN
USB Security						
SEC1110	Smart Card Controller	USB 2.0	–	Smart Card	✓	16-pin QFN
SEC1210	Smart Card Controller with Multi-Interface Support	USB 2.0	–	Smart Card ×2	–	24-pin QFN

INTERFACE: USB Products

Part #	Description	USB Port Power Switch (55 mW)	Hi-Speed USB 2.0 Switch	Battery Charger Emulation Profiles	8 Resistor Set Current Limits	Charging Indicator Output	Attach Detection Output	Current Measurement	Power Allocation	Interface	Packages
USB Power and Charging											
UCS1001-1	USB Port Power Controller with Charger Emulation	1	1	9	Up to 2.4A	✓	–	–	–	Discrete I/O	20-pin 4 × 4 QFN
UCS1001-2	USB Port Power Controller with Charger Emulation	1	1	9	Up to 2.4A	–	✓	–	–	Discrete I/O	20-pin 4 × 4 QFN
UCS1001-3	USB Port Power Controller with Charger Emulation	1	1	9	Up to 2.4A	✓	–	–	–	Discrete I/O	20-pin 4 × 4 QFN
UCS1001-4	USB Port Power Controller with Charger Emulation	1	1	9	Up to 2.4A	–	✓	–	–	Discrete I/O	20-pin 4 × 4 QFN
UCS1002-1	Programmable USB Port Power Controller with Charger Emulation	1	1	9 + 1 programmable	Up to 2.4A	✓	–	✓	✓	I²C/SMBus	20-pin 4 × 4 QFN
UCS1002-2	Programmable USB Port Power Controller with Charger Emulation	1	1	9 + 1 programmable	Up to 2.4A	✓	–	✓	✓	I²C/SMBus	20-pin 4 × 4 QFN
UCS1003-1	Programmable USB Port Power Controller with Charger Emulation	1	1	9 + 1 programmable	Up to 3A	–	✓	✓	✓	I²C/SMBus	20-pin 4 × 4 QFN
UCS1003-2	Programmable USB Port Power Controller with Charger Emulation	1	1	9	Up to 3A	✓	–	–	–	Discrete I/O	20-pin 4 × 4 QFN
UCS1003-3	Programmable USB Port Power Controller with Charger Emulation	1	1	9	Up to 3A	–	✓	–	–	Discrete I/O	20-pin 4 × 4 QFN
UCS81003	Programmable USB Port Power Controller Automotive	1	1	9 + 1 programmable	Up to 3A	✓	✓	✓	✓	I²C/SMBus	28-pin 5 × 5 QFN

INTERFACE: Real-Time Clock/Calendar (RTCC)

Bus	Product	Pins	Timing Features				Memory[1]			Power		Unique Features[2]	5 ku Pricing†	Packages
			Digital Trimming (Adj./Range)	Alarm Settings	WDT	Outputs	SRAM (Bytes)	EERPOM (Kbits)	Protected EEPROM (bits)	Min Vcc	Min IBAT			
I²C	MCP7940M	8	±127 ppm	1 sec.	–	$\overline{IRQ}$/CLK	64	0	0	1.8	–	–	$0.46	SOIC (SN), TSSOP (ST), MSOP (MS), TDFN (MNY), PDIP (P)
	MCP7940N	8	±127 ppm	1 sec.	–	$\overline{IRQ}$/CLK	64	0	0	1.8	1.3	Power Fail Timestamp	$0.59	SOIC (SN), TSSOP (ST), MSOP (MS), TDFN (MNY), PDIP (P)
	MCP7940X	8	±127 ppm	1 sec.	–	$\overline{IRQ}$/CLK	64	0	64	1.8	1.3	Power Fail Timestamp	$0.66	SOIC (SN), TSSOP (ST), MSOP (MS), TDFN (MNY)
	MCP7941X	8	±127 ppm	1 sec.	–	$\overline{IRQ}$/CLK	64	1	64	1.8	1.3	Power Fail Timestamp	$0.72	SOIC (SN), TSSOP (ST), MSOP (MS), TDFN (MNY)
SPI	MCP7951X	10	±255 ppm	0.01 sec.	–	$\overline{IRQ}$/CLK	64	1	128	1.8	1.3	Power Fail Timestamp	$0.90	SOIC (SL), TSSOP (ST)
	MCP7952X	10	±255 ppm	0.01 sec.	–	$\overline{IRQ}$/CLK	64	2	128	1.8	1.3	Power Fail Timestamp	$0.96	MSOP (MS), TDFN (MN)
	MCP795W1X	14	±255 ppm	0.01 sec.	ü	1. CLK, 2. $\overline{IRQ}$, 3. WDT RST	64	1	128	1.8	1.3	Power Fail Timestamp, Event Detects (× 2)	$1.22	SOIC (SL), TSSOP (ST)
	MCP795W2X	14	±255 ppm	0.01 sec.	ü	1. CLK, 2. $\overline{IRQ}$, 3. WDT RST	64	2	128	1.8	1.3	Power Fail Timestamp, Event Detects (× 2)	$1.28	SOIC (SL), TSSOP (ST)

Note 1: All part numbers with an "X" have three protected EEPROM programming options: [0 = Blank ID], [1 = EUI-48™ MAC Address], [2 =EUI-64™ MAC Address]
2: The Power Fail Timestamp in all RTCCs occur at Battery Switchover.

SAFETY AND SECURITY

SAFETY AND SECURITY: Photoelectric Smoke Detector ICs

Part #	Horn Driver Alarm Pattern	Alarm Memory	Low Battery Detection	Chamber Test	Alarm Interconnect	Sensitivity Timer	Internal POR	Alternate Diagnostic Mode	Operating Temp. Range (°C)	Packages
RE46C140	NFPA Temporal	No	Yes	Yes	Yes	Yes	Yes	–	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C141	NFPA Temporal	No	Yes	Yes	Yes	–	Yes	–	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C143	Continuous Tone	No	Yes	Yes	Yes	–	Yes	–	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C144	Continuous Tone	No	Yes	Yes	Yes	Yes	Yes	–	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C145	NFPA Temporal	No	Yes	Yes	Yes	Yes	Yes	Yes	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C165	NFPA Temporal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C166	Continuous Tone	Yes	Yes	Yes	Yes	Yes	Yes	Yes	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C167	NFPA Temporal	Yes	Yes	Yes	Yes	Yes	Yes	Yes	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C168	Continuous Tone	Yes	Yes	Yes	Yes	Yes	Yes	Yes	–25 to +75	16-pin PDIP, 16-pin SOIC
RE46C190	NFPA Temporal or Continuous Tone	Yes	Yes	Yes	Yes	Yes	Yes	–	–10 to +60	16-pin SOIC

SAFETY AND SECURITY: Ionization Smoke Detector ICs

Part #	Horn Driver Alarm Pattern	Alarm Memory	Low Battery Detection	Reverse Battery Protection	Alarm Interconnect	Hush Timer	Power-up Low Battery Test	Operating Temp. Range (°C)	Packages
RE46C120	NFPA Temporal or Continuous Tone	No	Yes	Yes	–	–	–	–10 to +60	16-pin PDIP
RE46C121	NFPA Temporal	No	Yes	Yes	Yes	–	–	–10 to +60	16-pin PDIP
RE46C122	NFPA Temporal	No	Yes	Yes	Yes	Yes	Yes	–10 to +60	16-pin PDIP
RE46C126	Continuous Tone	No	Yes	Yes	Yes	–	–	–10 to +60	16-pin PDIP
RE46C127	Continuous Tone	No	Yes	Yes	Yes	Yes	Yes	–10 to +60	16-pin PDIP
RE46C128	NFPA Temporal	No	Yes	Yes	Yes	–	Yes	–10 to +60	16-pin PDIP
RE46C129	Continuous Tone	No	Yes	Yes	Yes	–	Yes	–10 to +60	16-pin PDIP
RE46C152	NFPA Temporal or Continuous Tone	No	Yes	Yes	Yes	Yes	Yes	–10 to +60	16-pin PDIP
RE46C162	NFPA Temporal or Continuous Tone	Yes	Yes	Yes	Yes	Yes	Yes	–10 to +60	16-pin PDIP
RE46C163	NFPA Temporal or Continuous Tone	Yes	Yes	Yes	Yes	Yes	Yes	–10 to +60	16-pin PDIP
RE46C180	NFPA Temporal or Continuous Tone	Yes	Yes	No	Yes	Yes	Yes	–10 to +60	16-pin PDIP, 16-pin SOIC

SAFETY AND SECURITY: Ionization Smoke Detector Front Ends

Part #	Microprocessor Compatible Output	Output Options	Typical Application	Operating Temperature Range (°C)	Packages
RE46C112	Yes	V_{OUT} 1/4 of V_{DD} or V_{OUT} 1/4 of Detect Input	3V or 3.3V Microprocessor	–10 to +60	8-pin PDIP
RE46C114	Yes	V_{OUT} 1/2 of V_{DD} or V_{OUT} 1/2 of Detect Input	5V Microprocessor	–10 to +60	8-pin PDIP
RE46C311	Yes	Op Amp	Ionization Smoke Detector Front End	–10 to +60	8-pin PDIP, 8-pin SOIC
RE46C312	Yes	Op Amp	Ionization Smoke Detector Front End	–10 to +60	8-pin PDIP, 8-pin SOIC

SAFETY AND SECURITY: CO Detectors

Part #	Operating Voltage (V_{DC})	Voltage Regulator (V_{DC})	LED Driver	Horn Driver	Interconnect	Low Battery Detection	Brown Out	Boost Regulator	Op Amp Vos Max (µV)	Op Amp Ib Max (pA)	Op Amp GBWP (kHz)	Op Amp Aol (dB)	Op Amp Slew Rate (V/µS)	Op Amp Unity Gain Stable	Op Amp CMRR Min (dB)	Op Amp Rail-to-Rail	Operating Temp. Range (°C)
RE46C800	2 to 12	3.3	Yes	Yes	Yes	Yes	Yes	Yes	1000	200	10	115	0.003	Yes	80	In/Out	–10 to +60

SAFETY AND SECURITY: Piezoelectric Horn Drivers

Part #	Operating Voltage (V)	LED Driver	Voltage Regulator (V)	Low Battery Detection	Interconnect	Power Good	Operating Temp. Range (°C)	Packages
RE46C100	6 to 16	–	–	–	–	–	–40 to +85	8-pin PDIP, 8-pin SOIC
RE46C101	6 to 16	Yes	–	–	–	–	–40 to +85	8-pin PDIP, 8-pin SOIC
RE46C104	4 to 8	–	–	–	–	–	0 to +50	14-pin PDIP, 14-pin SOIC
RE46C105	6 to 12	Yes	3.3 or 5	Yes	–	–	–40 to +85	14-pin PDIP, 14-pin SOIC
RE46C107	2 to 5	Yes	3 or 3.3	Yes	–	–	0 to +50	16-pin PDIP, 16-pin SOIC
RE46C108	6 to 12	–	3.3 or 5	–	–	–	–40 to +85	8-pin PDIP, 8-pin SOIC
RE46C109	6 to 12	–	3	Yes	Yes	Yes	–40 to +85	16-pin PDIP, 16-pin SOIC
RE46C117	2 to 5	–	–	–	–	–	0 to +50	8-pin PDIP, 8-pin SOIC
RE46C119	6 to 12	–	3	Yes	Yes	Yes	–40 to +85	16-pin PDIP, 16-pin SOIC
RE46C317	2 to 5	–	–	–	–	–	–10 to +60	8-pin PDIP, 8-pin SOIC
RE46C318	2 to 5	–	–	–	–	–	–10 to +60	8-pin PDIP, 8-pin SOIC

Featured Analog Development Tools

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Thermal Management Products

RTD Reference Design Board (TMPSNSRD-RTD2)

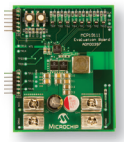
The RTD Reference Design demonstrates how to instrument Resistive Temperature Detector (RTD) and accurately measure temperature. This solution uses the MCP3551 22-bit Analog-to-Digital Converter (ADC) to measure voltage across the RTD. The ADC and the RTD are referenced using an on-board reference voltage and the ADC inputs are directly connected to the RTD terminals.

Thermocouple Reference Design (TMPSNSRD-TCPL1)

This reference design demonstrates how to instrument a thermocouple and accurately sense temperature over the entire thermocouple measurement range. This solution uses the MCP3421 18-bit Analog-to-Digital Converter (ADC) to measure voltage across the thermocouple.

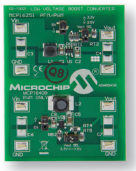
Power Management Products

MCP19111 Evaluation Board (ADM00397)



The MCP19111 is a digitally-enhanced PWM controller. It combines a pure-analog PWM controller with a supervisory microcontroller making it a fast, cost-effective and configurable power conversion solution. The MCP19111 is ideal for standard power conversion, LED drivers and battery charging applications. This board demonstrates how the MCP19111 device operates in a synchronous buck topology over a wide input voltage and load range.

MCP16251 and MCP1640B Synchronous Boost Converters Evaluation Board (ADM00458)



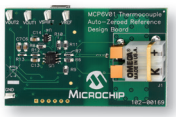
This board demonstrates the MCP16251/ MCP1640B in two boost-converter applications with multiple output voltages and was developed to help reduce product design cycle time. Three common output voltages can be selected: 2.0V, 3.3V and 5.0V.

MCP8025 TQFP BLDC Motor Driver Evaluation Board (ADM00600)

This demonstrates our MCP8025 3-phase BLDC motor gate driver with power module, used in a BLDC motor drive application. When used in conjunction with a microcontroller, the MCP8025 will provide the necessary drive signals for a 3-phase BLDC motor. The MCP8025 contains the high-side and low-side drivers for external N-channel MOSFETs. A dsPIC33EP256MC504 processor is used to supply the PWM inputs to the MCP8025 as well as handle the high-speed analog-to-digital conversion required for 50 kHz PWM operation. The MCP8025 UART interface is used to configure the MCP8025 device and to send fault information to the dsPIC® DSC.

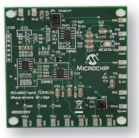
Linear Products

MCP6V01 Thermocouple Auto-Zeroed Reference Design Board (MCP6V01RD-TCPL)



The MCP6V01 design board demonstrates how to use a different amplifier system to measure Electromotive Force (EMF) voltage at the cold junction of thermocouple in order to accurately measure temperature of the thermocouple bead. This can be done by using the MCP6V01 auto-zeroed op amp because of its ultra low offset Voltage (Vos) and high Common Mode Rejection Ratio (CMRR).

MCP6N11 and MCP6V2X Wheatstone Bridge Reference Design (ARD00354)



This board demonstrates the performance of the MCP6N11 instrumentation amplifier (INA) and a traditional three op amp INA using the MCP6V26 and MCP6V27 auto-zeroed op amps. The input signal comes from an RTD temperature sensor in a Wheatstone bridge. Real-world interference is added to the bridge's output to provide realistic performance comparisons. Data is gathered and displayed on a PC for ease of use.

MCP6421 EMIRR Evaluation Board (ADM00443)

The MCP6421 EMIRR Evaluation Board is intended to support the electromagnetic interference rejection ratio (EMIRR) measurement and to show the electromagnetic interference (EMI) rejection capability of the MCP6421 operational amplifier.

Mixed Signal Products

MCP37X3X-200 16-bit 200 Msps ADC VTLA Evaluation Board (ADM00505)

This board provides the opportunity to evaluate the performance of the MCP37X3X-200 device family. With the on-board MCP37D31-200 16-bit 200 Msps pipelined ADC, it allows you to evaluate the functionality of the 16-bit 200 Msps ADCs and the digital signal processing features. With the help of a compatible data capture card, the evaluation board can provide you with performance analysis features through the PC GUI.

PAC1921 High-Side Power and Current Monitor Evaluation Board (ADM00592)

The PAC1921 is a dedicated power monitoring device with a configurable analog output. This device is unique in that all power related information is available on the 2-wire/I²C-compatible interface and power, current or voltage is available on the analog output. This evaluation board provides you with the means to exercise device functionality while connected either to target systems or while utilizing on-board sources.

Featured Analog Development Tools

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MCP39F511 Power Monitor Demonstration Board (ARM00667)

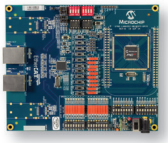
The MCP39F511 Power Monitor Demonstration Board is a fully functional single-phase power monitor and energy monitoring system. The system calculates and displays active power, reactice power, RMS current, RMS voltage, active energy (both import and export) and four quadrant reactive energy. The Power Monitor Utility Software that enables you to easily experiment with all system configuration settings such as zero-cross detection, PWM output frequencies, event configurations and calibration setup.

Interface Products

UCS81003 Evaluation Board (ADM00561)

This board provides the ability to evaluate the features of the UCS81003 Automotive USB Port Power Controller with Charger Emulation. It allows the UCS81003 to be tested in different configurations by populating jumpers on specific header locations. The Evaluation Board contains the MCP2221 USB to I²C bridge, which allows communication via USB between the UCS81003 and the GUI running on the PC.

LAN9252 EtherCAT® Slave Controller Evaluation Kit with HBI PDI Interface (EVB-LAN9252-HBI)

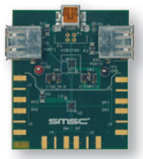


This kit is a standalone platform to development an EtherCAT slave device. It offers flexibility to explore different host bus interfaces such as 8-bit and 16-bit parallel bus, SPI and SQI™.

LAN874X 10/100 Ethernet Transceiver with EEE and Wake-On-LAN (EVB8740)

The EVB8740 is a PHY evaluation board for our LAN874X family, which integrates Energy Efficient Ethernet and Wake-on-LAN features. It interfaces to a MAC controller via a standard MII or RMII interface.

USB3740 Hi-Speed USB 2.0 2-Port Switch (EVB-USB3740)

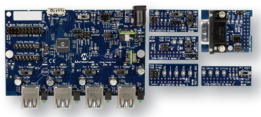


The EVB-USB3740 is used to evaluate our USB3740 USB 2.0 compliant 2-port switch. Some applications require a single USB port to be shared with other functions. The USB3740 is a small and simple 2-port switch providing system design flexibility.

UTC2000 Basic USB Type-C™ Controller Evaluation Kit (EVK-UTC2000)

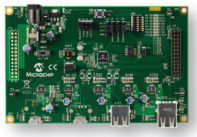
The EVK-UTC2000 is a complete kit to evaluate our UTC2000 basic USB-C controller. It includes a downstream -facing port dongle which can connect to any standard host, upstream-facing port board to mimic a USB-C device, as well as a USB-C cable.

USB5734 USB 3.1 Gen1 Controller Hub Evaluation Board (EVB-USB5734)



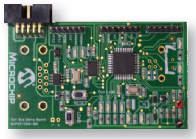
This board is a demonstration and evaluation platform that provides the necessary requirements and interface options for evaluating the USB5734 Smart Hub on a 4-layer RoHS-compliant Printed Circuit Board (PCB). This will allow you to gain an understanding of the product and accelerate integration into your design.

USB4604 USB 2.0 HSIC Hi-Speed 4-Port Hub Controller Evaluation Board (EVB-USB4604)



This board enables FlexConnect applications and allows access to digital pins used in I²C, GPIO and UART bridging. The EVB-USB4604 also contains an on-board SPI Flash allowing different revisions of the silicon to be evaluated on the same PCB.

MCP2515 CAN Bus Monitor Demo Board (MCP2515DM-BM)



The MCP2515 CAN Bus Monitor Demo board kit contains two identical boards that can be connected together to create a simple two-node Controller Area Network (CAN) bus, which can be controlled and/or monitored via the included PC interface. The board(s) can also be connected to an existing CAN bus.

USB to UART Converter Evaluation Board (MCP2200EV-VCP)

The MCP2200EV-VCP is a USB-to-RS232 development and evaluation board for the MCP2200 USB-to-UART device. The board allows for easy demonstration and evaluation of the MCP2200. The accompanying software allows the special device features to be configured and controlled. The board is powered from USB and has a test point associated with each GPIO pin. In addition, two of these pins are connected to LEDs which can be used to indicate USB-to-UART traffic when the associated pins are configured as TxLED and RxLED pins respectively.

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