freescale™
Analog

Analog Selector Guide

Making embedded systems better
with robust reliable performance

Contents

Freescale Semiconductor Analog Products

The product categories range from Power Actuation and Communication Transceivers to Signal Conditioning and Embedded MCU + Power. Power Actuation covers a broad range of load control and drivers, including motor control.

SMARTMOS™—Freescale Semiconductor SMARTMOS technology allows designers to interface high-precision components with the harsh automotive environment.

Cost-Effective—Ideally suited for rug automotive applications, SMARTMOS solutions offer a cost-effective blend of analog, digital, and robust power silicon that enables integrated, mixed signal, power control ICs.

Functionality—SMARTMOS solutions implement traditional analog functions with smaller die size, and a modular process produces components with the minimum number of process steps for each circuit, minimizing overhead.

Benefits—Freescale Semiconductor SMARTMOS technology brings a wide range of benefits to today's designs, including component reductions, power capability, durability, efficiency, precision, high-performance analog, and robustness.

Packaging - Freescale device may be offered in EPP and RoHS compliant packages; view the external web for specifics.

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Battery Management - Battery Sensors

Product	Description	Main Characteristics	Operating Voltage (V)	Output Voltages	Protection Features	Packaging	Status
MM912_637	Battery Sensor with LIN for 12 V Lead-acid Batteries	Simultaneous Battery voltage & current measurement with 16-bit sigma-delta ADC & IIR filter Voltage Regulators: 2.5 V/10 mA & 60 mA, 5.0 V/80 mA LIN 2.1 Physical Layer w/Selectable Slew rates and triggered wake-up	3.5 to 28	VDDA= 2.25 V to 2.75 V VDDH=2.25 V to 2.75 V VDDX=3.15 V to 5.9 V	VDDA Output Current limitation= 10 mA VDDH Output Current limitation= 65 mA VDDX Output Current Limitation=45 to 80 mA Overtemperature protect Tolerates input voltage up to 42 V DC	48-pin QFN Exposed Pad	Production EVB
MM9Z1_638	Battery Sensor with CAN and LIN	Multiple Battery voltage measurement I/Os synchronized with current measurement using two 16-bit sigma-delta ADCs & IIR filters respectively A dedicated 16-bit sigma-delta ADC for multiple Temperature measurements Voltage Regulator directly supplied from the battery with a operating range up to 28 V Embedded 16/32-bit MCU, Flash, EEPROM, RAM, SPI Integrated LIN 2.2 protocol and physical interface, and an MSCAN protocol controller	3.5 to 28	VDDA= 2.25 V to 2.75 V VDDH=2.25 V to 2.75 V VDDX=3.2 V to 5.25 V	VDDA Output Current limitation= 30 mA VDDH Output Current limitation= 65 mA VDDX Output Current Limitation= 150 to 300 mA Overtemperature protect Tolerates input voltage up to 42 V DC	48-pin QFN Exposed Pad	Production EVB, Ref. Design

Battery Management - Battery Chargers

Product	Description	Main Characteristics	Operating Voltage (V)	Output Voltages	Protection Features	Packaging	Status
MC34671	High-input Voltage Charger for Single-cell Li-Ion or Li-Polymer Batteries	Fixed output charge voltage with ±0.7% voltage accuracy and a maximum user programmable charge current of 600 mA with ±5% current accuracy, Supports trickle, CC and CV charge modes	2.6 to 10	4.2 V @ 600 mA	Undervoltage POR, Input overvoltage protection above 11 V, Overtemperature protect, Tolerates input voltage up to 28 V DC	8-pin UDFN Exposed Pad	Production EVB
MC34673	High-input Voltage Charger for Single-cell Li-Ion or Li-Polymer Batteries	Fixed output charge voltage with ±0.7% voltage accuracy and a maximum user programmable charge current of 1200 mA, with ±6% current accuracy, Supports trickle, CC, and CV charge modes	2.6 to 6.6	4.2 V @ 1200 mA	Undervoltage POR, Input overvoltage protection above 6.8 V, Overtemperature protect, Tolerates input voltage up to 28 V DC	8-pin UDFN Exposed Pad	Production EVB
MC34674	High-input Voltage Travel Charger for Single-cell Li-Ion or Li-Polymer Batteries	Fixed output charge voltage with ±0.4% voltage accuracy and a maximum factory selectable charge current of 1050 mA with ±8% current accuracy, Supports trickle, CC, and CV charge modes, Interface to NTC thermistor	4.3 to 10	4.2 V @ various currents - see Data Sheet	Undervoltage POR, Input Overvoltage protection above 11 V, Overtemperature protect, Tolerates input voltage up to 28 V DC	8-pin UDFN Exposed Pad	Production EVB
MC34675	High-input Voltage Charger for Single-cell Li-Ion or Li-Polymer Batteries	Fixed output charge voltage with ±0.7% voltage accuracy and a maximum factory selectable charge current of 1050 mA with ±6% current accuracy, Supports trickle, CC, and CV charge modes, Interface to NTC thermistor	2.6 to 6.6	4.2 V @ various currents - see Data Sheet	Undervoltage POR, Input overvoltage protection above 11 V, Overtemperature protect, Tolerates input voltage up to 28 V DC	8-pin UDFN Exposed Pad	Production EVB
BC3770	2.0 A Switch-Mode Charger with Intelligent Power-Path for 1-Cell Li-Ion Battery	Dual-path output to power-up system in dead battery, Single input for USB/TA, High-efficiency synchronous switching regulator, 20 V maximum withstanding input voltage, Charge reduction mode for maximizing charging efficiency	4.5 to 6.2	5.0 to 5.2 V	Adaptive input current, Overvoltage, overcurrent, Overtemperature, Short-circuit	25-Pin WLCSP	Production EVB

Battery Management - Battery Cell Controller

Product	Description	Main Characteristics	Operating Voltage (V)	Output Voltages	Protection Features	Packaging	Status
MC33771	Battery Cell Controller IC	4.0 Mbps SPI or 2.0 Mbps Isolated Differential Communication, 14 cell voltage input channels, One current channel with Auto PGA and Coulomb Counter, 7 GPIO configurable as Temperature Sensor Inputs,14 onboard 300 mA balancing switches, 5.0 V @ 5.0 mA Output Reference Supply, Low power mode with monitoring and cell balance capability, I2C interface for external EEPROM, Automatic cell over/under voltage and over/under temperature detection routable to Fault Output Pin, Hot plug capable, Fully compatible with the MC33772 for 6 cells	9.6 to 61.6	Cell balancing : 10 V Fault pin: 5.0 V GPIO: 5.0 V	Single chip ASIL C capable, Diagnostics of internal and external faults as open lines, shorted lines, and leakage currents, Diagnostic state routable to the Fault Output pin, Die overtemperature detection and protection	64-pin LQFP-EP	1Q 2016 EVB
MC33772	Battery Cell Controller IC	4.0 Mbps SPI or 2.0 Mbps Isolated Differential Communication, 6 cell voltage input channels, one current channel with Auto PGA and Coulomb Counter, 7 GPIO configurable as Temperature Sensor Inputs, 6 onboard 300 mA balancing switches, 5.0 V @ 5.0 mA Output Reference Supply, Low power mode with monitoring and cell balance capability, I2C interface for external EEPROM, Automatic cell over/under voltage and over/undertemperature detection routable to Fault Output Pin,Hot plug capable, Fully compatible with the MC33771 for 14 cells	5.0 to 30 (SPI type) 7.0 to 30 (TPL type)	Cell balancing : 10 V Fault pin: 5.0 V GPIO: 5.0 V	Single chip ASIL C capable, Diagnostics of internal and external faults as open lines, shorted lines, and leakage currents, Diagnostic state routable to the Fault Output pin, Die overtemperature detection and protection	48-PIN LQFP-EP	2Q 2016 EVB

Drivers and Switches — LED Drivers

Product	Description	Main Characteristics	Operating Input Voltage (V)	Output Voltages	Protection Features	Packaging	Status
MC34844	10 Channel LED Backlight Driver with Integrated Power Supply	High efficiency LED driver for use in backlighting LCD displays, Capable of driving more than 150 LEDs in 10 parallel strings, with 50/80 mA per string, Currents in the 10 strings are matched to within ±2%, Controlled through an I^2C bus, Contains a PWM generator for LED dimming	7.0 to 28	60 V, @ 3.0 A	Undervoltage Lockout, Overvoltage protection, Overtemperature protect, Overcurrent protection, Output Short protect	32-pin QFN Exposed Pad	Production EVB (1)

1.Supporting backlight EVB - KITLEDBKLT16EVBE

Drivers and Switches— Low-side Switches

Product	Description	No of Outputs	High-side or Low-side	Continuous Current Each Output (A)	$R_{DS(on)}$ (mΩ) of Each Output	Current Limitation (A)	Current Limitation Standby Max (µA)	Control (2)	Status/ Fault Reporting	Protection Features	Packaging	Status
MC33800	Engine Control IC, with Eight Low-side Switches, Two Constant Current Low-side Switches and Six MOSFET gate predrivers	8	L	8 @ 0.35	2 @ 700 6 @ 1000	2 @ 6.0 6 @ 2.0	30	Parallel, SPI	SPI	Open Load detect, Overcurrent protect, Overvoltage protect, Short load detect, Undervoltage protect, Thermal protect	54-pin SOICW Exposed Pad	Production EVB
MC33810	Engine Control Integrated Circuit capable of driving a combination of four Low-side loads and four MOSFETs or IGBT gates	4	L	1.0	100	6.0	30	Parallel, SPI	SPI Status Flags	Shorted Load detect, Thermal protect	32-pin SOICW Exposed Pad	Production EVB
MC33812	Engine control power IC, with three Low-side drivers, one pre-driver, +5.0 V pre-regulator, ISO-9141 physical interface and MCU watchdog circuit.	3	L	2L @ 4.0 1L @ 1.5	2 @ 200 1 @ 1000	2 @ 6.0 1 @ 2.0	2 @ 1000 1 @ 20	Parallel	Parallel	Overcurrent, Outputs Short to Battery, Overtemperature protect	32-pin SOICW Exposed Pad	Production EVB Ref. Design
MC33879	(1.0 Ω $R_{DS(on)}$) Configurable Eight Output SPI Controlled Switch	8	H/L	0.35	550	1.2	25	SPI w/ 2 PWM	SPI	Short-circuit, Current Limit, Temp Sense	32-pin SOICW Exposed Pad	Production EVB
MC33882	(0.8 Ω $R_{DS(on)}$) Smart Six Output Switch with SPI and Parallel Input Control	8	L	1.0	375	3.0	10	SPI	SPI	Short-circuit, Current Limit, Temp Sense	30-pin HSOP, 32-pin SOICW Exposed Pad, 32-pin QFN Exposed Pad	Production EVB
MC33996	16 Output Hardware Low-side Switch with 24-bit Serial Input Control	16	L	0.5	450	1.0 to 2.5	50	SPI	SPI	Short-circuit, Current Limit, Temp Sense, Open Load	32-pin SOICW	Production EVB
MC33999	16 Output Hardware Low-side Switch with 24-bit Serial Input Control and 8 Parallel Control	16	L	0.5	450	1.0 to 2.5	50	SPI and Parallel	SPI	Short-circuit, Current Limit, Temp Sense, Open Load	54-pin SOICW	Production EVB

2.Products available with SPI Control work with the KITUSBSPIEVME and the KITUSBSPIDGLEVME USB-SPI Interface Boards.

Drivers and Switches — High-side Switches

Product	Description	No of Outputs	High-side or Low-side	Maximum Current Each Output (A)	$R_{DS(on)}$ (mΩ) of Each Output	Current Limitation (A)	Current Limitation Standby Max (μA)	Control (3)	Status/Fault Reporting	Protection Features	Packaging	Status
MC12XS2	**12 V Multipurpose Low $R_{DS(on)}$ eXtreme Switches**											
MC33981	Single High-side Switch (4.0 mΩ), with PWM, Protection and Diagnostics	1	H	40	4	100	5.0	Parallel	Status Pin, Current Monitor, Temperature	Overcurrent, Overtemperature, Short-circuit, Undervoltage Lock Out	16-pin PQFN	Production
MC33982	Self Protected 2.0 mΩ Switch with Diagnostic and Protection	1	H	60	2	150	5.0	SPI and Parallel	SPI	Temp Sense, Over/ Undervoltage, Shutdown, Overcurrent, Reverse Polarity, Current Recopy	16-pin PQFN	Production EVB
MC33984	Self Protected 4.0 mΩ Switch with Diagnostic and Protection	2	H	30	4	100	5.0	SPI and Parallel	SPI	Temp Sense, Over/ Undervoltage, Shutdown, Overcurrent, Reverse Polarity, Current Recopy	16-pin PQFN	Production EVB
MC33988	Self Protected 8.0 mΩ Switch with Diagnostic and Protection	2	H	30	8	60	5.0	SPI and Parallel	SPI	Temp Sense, Over/ Undervoltage, Shutdown, Overcurrent, Reverse Polarity, Current Recopy	16-pin PQFN	Production EVB
MC12XS3	**12V Automotive Exterior Lighting Multichannel eXtreme Switches**											
MC06XS3517	Penta High-side Switch (3 x 6 mΩ, 2 x 17 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver.	5+1	H	2.8, 5.5	3 X 6, 2 X 17	48, 96	5.0	SPI and Parallel	SPI	Overcurrent, Overtemperature, Overvoltage, Undervoltage & Short-circuit protect	24-pin PQFN	Production EVB
MC07XS3200	Dual High-side Switch (2 x 7 mΩ), with PWM, Protection, Diagnostics and SPI Control	2	H	6.0	2 X 7	93	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed Pad	Production
MC09XS3400	Quad High-side Switch (4 x 9 mΩ), with PWM, Protection, Diagnostics and SPI Control	4	H	6.0	4 X 9	89	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	24-pin PQFN	Production EVB
MC10XS3412	Quad High-side Switch (2 x 10 mΩ, 2 x 12 mΩ), with PWM, Protection, Diagnostics and SPI Control	4	H	6.0	2 x 10, 2 x 12	78	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	24-pin PQFN	Production EVB
MC10XS3425	Quad High-side Switch (2 x 10 mΩ, 2 x 25mΩ), with PWM, Protection, Diagnostics and SPI Control	4	H	6.0	2 X 10, 2 X 25	39, 78	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed Pad	Production EVB
MC10XS3435	Quad High-side Switch (2 x 12 mΩ, 2 x 35 mΩ), with PWM, Protection, Diagnostics and SPI Control	4	H	6.0	2 x 10, 2 x 35	78	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	24-pin PQFN	Production EVB
MC10XS3535	Penta High-side Switch (3 x 10 mΩ, 2 x 35 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver.	5+1	H	2.8, 5.5	3 x10, 2 x 35	44, 88	2.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	24-pin PQFN	Production EVB

Drivers and Switches — High-side Switches (continued)

Product	Description	No of Outputs	High-side or Low-side	Maximum Current Each Output (A)	$R_{DS(on)}$ (mΩ) of Each Output	Current Limitation (A)	Current Limitation Standby Max (µA)	Control [3]	Status/Fault Reporting	Protection Features	Packaging	Status
MC15XS3400	Quad High-side Switch (4 x 15 mΩ), with PWM, Protection, Diagnostics and SPI Control	4	H	6.0	15	78	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	24-pin PQFN	Production EVB
MC35XS3400	Quad High-side Switch (4 x 35 mΩ), with PWM, Protection, Diagnostics and SPI Control	4	H	6.0	35	39	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	24-pin PQFN	Production EVB
MC35XS3500	Penta High-side Switch (5 x 35 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver.	5+1	H	2.8	35	39.5	2.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	24-pin PQFN	Production EVB
MC12XS6	**External Automotive Lighting Multichannel Scalable eXtreme Switches**											
MC07XS6517	Penta High-side Switch (3 x 7 mΩ, 2x 17 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver.	5+1	H	11, 5.5	3 x 17 2 x 7	100, 50	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	54-pin SOICW Exposed PAD	Production EVB
MC08XS6421	Quad High-side Switch (2 x 8 mΩ, 2x 21 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	4+1	H	11, 5.5	2 x 8.0 2 x 21.0	100, 50	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC17XS6400	Quad High-side Switch (4 x 17 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	4+1	H	5.5	4 x 17	50	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC17XS6500	Penta High-side Switch (5 x 17 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	5+1	H	5.5	5 x 17	50	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC40XS6500	Penta High-side Switch (5 x 40 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	5+1	H	3.9	5 x 40	35	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC10XS6200	Dual High-side Switch (2 x 10 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	2+1	H	9	2 x 10	85	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC10XS6225	Dual High-side Switch (1 x 10 mΩ, 1 x 25 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	2+1	H	9, 4.5	1 x 10 1 x 25	85, 40	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC10XS6325	Triple High-side Switch (2 x 10 mΩ, 1 x 25 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	3+1	H	9, 4.5	2 x 10 1 x 25	85, 40	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB

Drivers and Switches — High-side Switches (continued)

Product	Description	No of Outputs	High-side or Low-side	Maximum Current Each Output (A)	$R_{DS(on)}$ (mΩ) of Each Output	Current Limitation (A)	Current Limitation Standby Max (µA)	Control (3)	Status/Fault Reporting	Protection Features	Packaging	Status
MC25XS6300	Triple High-side Switch (3 x 25 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	3+1	H	4.5	3 x 25	40	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC24XS4	**24 V Multipurpose Low $R_{DS(on)}$ Intelligent eXtreme Switches**											
MC06XS4200	Dual High-side Switch (2 x 6 mΩ), with PWM, Protection, Diagnostics and SPI Control (24 V)	2	H	9.0	2 X 6	30, 90	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	23-pin PQFN	Production EVB
MC10XS4200	Dual High-side Switch (2 x 10 mΩ), with PWM, Protection, Diagnostics and SPI Control (24 V)	2	H	6.0	2 X 10	18, 55	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	23-pin PQFN	Production EVB
MC20XS4200	Dual High-side Switch (2 x 20 mΩ), with PWM, Protection, Diagnostics and SPI Control (24 V)	2	H	3.0	2 X 20	9.0, 27	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	23-pin PQFN	Production EVB
MC22XS4200	Dual High-side Switch (2 x 22 mΩ), with PWM, Protection, Diagnostics and SPI Control (24 V)	2	H	3.0	2 X 22	9.0, 27	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	32-pin SOIC Exposed PAD	Production EVB
MC50XS4200	Dual High-side Switch (2 x 50 mΩ), with PWM, Protection, Diagnostics and SPI Control (24 V)	2	H	1.2	2 X 50	3.5, 11	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	32-pin SOIC Exposed PAD	Production EVB
MC12XSB	**12 V Industrial Multipurpose Low $R_{DS(on)}$ eXtreme Switches**											
MC34981	Single High-side Switch (4.0 mΩ), with PWM, Protection and Diagnostics	1	H	40	4	100	5.0	Parallel	Status Pin, Current Monitor, Temperature	Overcurrent, Overtemperature, Short-circuit, Undervoltage lock out	16-pin PQFN	Production
MC34982	Single High-side Switch (2.0 mΩ), with Protection and Diagnostics	1	H	60	2	150	5.0	SPI and Parallel	SPI	Temp Sense, Over/ Undervoltage, Shutdown, Overcurrent, Reverse Polarity, Current Recopy	16-pin PQFN	Production EVB
MC34984	Self Protected (4.0 mΩ) Switch with Diagnostic and Protection	2	H	30	4	100	5.0	SPI and Parallel	SPI	Temp Sense, Over/ Undervoltage, Shutdown, Overcurrent, Reverse Polarity, Current Recopy	16-pin PQFN	Production EVB
MC34988	Self Protected (8.0 mΩ) Switch with Diagnostic and Protection	2	H	30	8	60	5.0	SPI and Parallel	SPI	Temp Sense, Over/ Undervoltage, Shutdown, Overcurrent, Reverse Polarity, Current Recopy	16-pin PQFN	Production EVB
MC12XSC	**12V External Industrial Lighting Multichannel eXtreme Switches**											
MC07XSC200	Dual High-side Switch (2 x 7 mΩ), with PWM, Protection, Diagnostics and SPI Control	2	H	6.0	2 x 7	93	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed Pad	Production

Drivers and Switches — High-side Switches (continued)

Product	Description	No of Outputs	High-side or Low-side	Maximum Current Each Output (A)	$R_{DS(on)}$ (mΩ) of Each Output	Current Limitation (A)	Current Limitation Standby Max (µA)	Control [3]	Status/Fault Reporting	Protection Features	Packaging	Status
MC10XSC425	Quad High-side Switch (2 x 10 mΩ, 2 x 25mΩ), with PWM, Protection, Diagnostics and SPI Control	4	H	6.0	2 x 0, 2 x 25	39, 78	5.0	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed Pad	Production EVB (3425)
MC12XSF	**External Industrial Lighting Multichannel Scalable eXtreme Switches**											
MC07XSF517	Penta High-side Switch (3 x 7 mΩ, 2 x 17 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver.	5+1	H	11, 5.5	3 x 17 2 x 7	100, 50	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	54-pin SOICW Exposed PAD	Production EVB (6517)
MC17XSF500	Penta High-side Switch (5 x 17 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, one logic level output driver.	5+1	H	5.5	5 x 17	50	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB (6500)
MC17XSF400	Quad High-side Switch (4 x 17 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	4+1	H	5.5	4 x 17	50	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC08XSF421	Quad High-side Switch (2 x 8 mΩ, 2 x 21 mΩ), with PWM, Protection, Diagnostics and SPI Control. Also, 1 logic level output driver	4+1	H	11, 5.5	2 x 8 2 x 21	100, 50	20	SPI Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit	32-pin SOICW Exposed PAD	Production EVB
MC36XSD	**36 V Multipurpose Industrial Low $R_{DS(on)}$ Intelligent eXtreme Switches**											
MC06XSD200	Dual High-side Switch (2 x 6 mΩ), with PWM, Protection, Diagnostics and SPI Control (36 V)	2	H	9.0	2 x 6	30, 90	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	23-pin PQFN	Production EVB (4200)
MC10XSD200	Dual High-side Switch (2 x 10 mΩ), with PWM, Protection, Diagnostics and SPI Control (36 V)	2	H	6.0	2 x 10	18, 55	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	23-pin PQFN	Production EVB (4200)
MC16XSD200	Dual High-side Switch (2 x 16 mΩ), with PWM, Protection, Diagnostics and SPI Control (36 V)	2	H	3.0	2 x 16	9.0, 27	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	23-pin PQFN	Production EVB (4200)
MC22XSD200	Dual High-side Switch (2 x 22 mΩ), with PWM, Protection, Diagnostics and SPI Control (36 V)	2	H	3.0	2 x 22	9.0, 27	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	32-pin SOICW Exposed PAD	Production EVB
MC50XSD200	Dual High-side Switch (2 x 50 mΩ), with PWM, Protection, Diagnostics and SPI Control (36 V)	2	H	1.2	2 x 50	3.5, 11	10	SPI and Parallel	SPI	Fail-safe mode, Overcurrent shutdown, Overtemperature, Short-circuit, Parallel operation	32-pin SOICW Exposed PAD	Production EVB

3.Products available with SPI Control work with the KITUSBSPIEVME and the KITUSBSPIDGLEVME USB-SPI Interface Boards.

Drivers and Switches — Predrivers

Product	Description	Main Characteristics	Operating Voltage (V)	Control [(4)]	Output Drives High/Low-side, Drive Current	Status Reporting[(4)]	Protection Features	Packaging	Status
MC33800	Engine Control Integrated Circuit	Engine control IC, with six MOSFET gate predrivers, eight Low-side Switches, and two constant current Low-side switches	5.0 to 36	Parallel, SPI	6 H, 2.0 mA (typ.)	SPI	Open Load Detect, Overcurrent Protect, Overvoltage Protect, Shorted Load Detect, Undervoltage Protect, Thermal Protect	54-pin SOICW Exposed Pad	Production EVB
MC33810	Automotive Engine Control IC	Engine control IC with four MOSFET/IGBT gate drivers and four Low-side switches.	4.5 to 36	Parallel, SPI	4 L, 780 μA (typ.)	SPI, Status Flags	Shorted Load Detect, Thermal Protect	32-pin SOICW Exposed Pad	Production EVB
MC33812	Single Cylinder Engine Control IC	Engine control power IC with three Low-side driver, one pre-driver, +5.0 V pre-regulator, IOS-9141 physical interface and MCU watchdog circuit.	4.5 to 36	Parallel	2L, 4.0 A (typ.) 1L, 1.5 A (typ..)	Parallel	Overcurrent Outputs Short to Battery, Overtemperature Protect	32-pin SOICW Exposed Pad	Production EVB Ref. Design
MC33883	Quad TMOS driver, for fuel injector	Quad TMOS driver, in H-Bridge configuration	5.5 to 28/55	4 non-invert CMOS, LSTTL logic	n/a	None	Overvoltage, Undervoltage	20-pin SOICW	Production EVB
MC33937	Three-Phase Field Effect Transistor Predriver	Triple High-side and Low-side FET predrivers, with parallel & SPI control and programmable shoot-through protect.	8.0 to 58	Parallel, SPI	3 H, 3 L, 1.0 A (typ.)	SPI	Programmable Deadtime, Reverse Charge Injection Protect	54-pin SOICW Exposed Pad	Production EVB
MC34937	Three-Phase Field Effect Transistor Predriver	Triple high-side and low-side FET predrivers with parallel and SPI control and programmable shoot-through protect	8.0 to 58	Parallel, SPI	3 H, 3 L, 1.0 A (typ.)	SPI	Programmable Deadtime, Reverse Charge Injection Protect	54-pin SOICW Exposed Pad	Production EVB
GD3000	Three Phase Field Effect Transistor Pre-driver	Triple High-side and Low-side FET predrivers, with parallel & SPI control and programmable deadtime (shoot-through protect)	8.0 to 58	Parallel, SPI	3 H, 3 L, 1.0 A (typ.)	SPI	Programmable Deadtime, Reverse Charge Injection Protect	54-pin QFN	Production EVB Planned

4.Products available with SPI Control work with the KITUSBSPIEVME and the KITUSBSPIDGLEVME USB-SPI Interface Boards.

Drivers and Switches — Squib Drivers

Product	Description	Main Characteristics	Regulation Voltage	Operating Voltage (V)	Packaging	Status
MC33797	Four Channel Squib Driver IC	Four-Channel High-side and Low-side 2.0 A FET Switches, Externally Adjustable FET Current Limiting, Adjustable Current Limit Range: 0.8 A to 2.0 A, 8-bit SPI for Diagnostics and FET Switch Activation, Diagnostics for High-side Safing Sensor Status	7.0 to 35	4.75 to 5.25	32-pin SOICW	Production Ref. Design

Drivers and Switches — Configurable I/O

Product	Description	Main Characteristics	Switch Monitor Voltage (V)	Operating Voltage (V)	Packaging	Status
MC33811	Solenoid Monitor Integrated Circuit	5 input solenoid monitoring to verify proper electrical and mechanical solenoid operation.	0 to 64	10.5 to 15.5	16-pin SOICW	Production EVB
MC33972	22 input Multiple Switch Detect Interface with 16 mA Wetting Current and Suppressed Wake-up	Multiple switch detection interface with suppressed wake-up designed to detect closing and opening of up to 22 switch contacts (14 GND, 8 configurable), wetting current of 2.0 mA or 16 mA.	-14 to 38 -14 to 40	5.5 to 26	32-pin SOICW, 32-pin SOICW Exposed Pad	Production EVB
MC33975	22 input Multiple Switch Detect Interface with 32 mA Wetting Current and Wake-up	22 inputs contact monitoring (14 GND, 8 configurable), 4.0 mA or 32 mA pulse wetting current, low-power mode interrupt capability, wake-up. Can supply current to external sensors.	-14 to 38/40	5.5 to 26.5	32-pin SOICW Exposed Pad	Production EVB
MC33978	22 input Multiple Switch Detect Interface with programmable Wetting Current	Multiple switch detection interface designed to detect closing and opening of up to 22 switch contacts (14 GND, 8 configurable), programmable wetting current from 2.0 to 20 mA, 24 to 1 Analog Multiplexer	-14 to 38 V	4.5 to 36	32-pin SOICW Exposed Pad	Production EVB
CD1030	33 Channel Multiple Switch Detection Interface with Programmable Wetting Current	Multiple switch detection interface designed to detect closing and opening of up to 33 switch contacts (21 GND, 11 configurable), programmable wetting current from 2.0 to 20 mA, 35 to 1 Analog Multiplexer	-14 to 38 V	4.5 to 36	48-pin LQFP-EP	1Q 2016 EVB Planned
MC34825	Micro-USB Interface IC	Supports the UCS/OMTP recommended charger function as well as provides USB interface signal levels and other audio interface functions	0 to 28 (VBus only)	2.7 to 5.5	20-pin QFN Exposed Pad	Production EVB
MC34827	Mini or Micro-USB Interface IC	This is a dedicated IC for managing charging and signal multiplexing between multifunctional devices and their accessories, via a 5 pin Mini or Micro-USB connector.	0 to 28 (VBus only)	2.7 to 5.5	20-pin 3x3 mm UTQFN Exposed Pad, 20-pin 3x4 mm UTQFN Exposed Pad	Production
MC34972	22 input Multiple Switch Detect Interface with 16 mA Wetting Current and Suppressed Wake-up	Multiple switch detection interface with suppressed wake-up designed to detect closing and opening of up to 22 switch contacts (14 GND, 8 configurable), wetting current of 2.0 mA or 16 mA.	-14 to 38 -14 to 40	5.5 to 26	32-pin SOICW, 32-pin SOICW Exposed Pad	Production EVB
MC34975	22 input Multiple Switch Detect Interface with 32 mA Wetting Current and Wake-up	22 inputs contact monitoring (14 GND, 8 configurable), 4.0 mA or 32 mA pulse wetting current, low-power mode interrupt capability, wake-up. Can supply current to external sensors.	-14 to 38/40	5.5 to 28	32-pin SOICW Exposed Pad	Production EVB
MC34978	22 input Multiple Switch Detect Interface with programmable Wetting Current	Multiple switch detection interface designed to detect closing and opening of up to 22 switch contacts (14 GND, 8 configurable), programmable wetting current from 2.0 to 20 mA. 24 to 1 Analog Multiplexer.	-14 to 38 V	4.5 to 36	32-pin SOICW Exposed Pad	Production EVB

Drivers and Switches — Valve Control

Product	Description	Main Characteristics	Load Supply Voltage (V) Min.	Max.	Other Features	Interface and Input Control	Protection Features	Packaging	Status
SB0400	Two Channels Motorcycle and Scooter ABS in the smallest ABS Package	Integrates Safe switch, Valve Drivers, Wheel Speed Sensor Interface, Motor Pump predriver, and a warning lamp driver inside a small package 7x7 size, Low $R_{DS(on)}$ (160 mOhms) allowing heatsink removal	5.3	30	Low $R_{DS(on)}$ (160 mOhms), PWM up to 5 KHz, Low-side Drivers up to 5.0 A, Vehicle Speed Output, Diagnostic line, Supervision	SPI	Overcurrent, Open Load, Overtemperature, VDS monitoring, Overvoltage, Undervoltage, Clock Failure, Watchdog	48-pin QFN-EP	4Q 2015
SB0401	One Channel Motorcycle and Scooter ABS in the smallest ABS Package	Integrates Safe switch, Valve Drivers, Wheel Speed Sensor Interface, Motor Pump predriver, and a warning lamp driver inside a small package 7x7 size, Low $R_{DS(on)}$ (160 mOhms) allowing heatsink removal	5.3	30	Low $R_{DS(on)}$ (160 mOhms), PWM up to 5 KHz, Low-side Drivers up to 5.0 A, Vehicle Speed Output, Diagnostic line, Supervision	SPI	Overcurrent, Open Load, Overtemperature, VDS monitoring, Overvoltage, Undervoltage, Clock Failure, Watchdog	48-pin QFN-EP	4Q 2015
SB0410	Fully Integrated Quad Valve Controller System on Chip 36 V	Integrates high precision, x4 valve drivers current regulated or x4 PWM valve drivers, DC motor pump predriver (16 KHz), x2 low- side drivers, ADC 10-bit safety state machine	6.0	36	Current regulated valve drivers up to 2.25 A, up to 5.0 KHz, PWM valve drivers up to 5.0 A, up to 5.0 KHz, Easy current control, x3 input A/D	SPI	Overcurrent, Open Load, Overtemperature, VDS monitoring, Overvoltage, Undervoltage, Clock Failure, Watchdog	48-pin LQFP-EP	Production EVB
SB0800	Fully Integrated Octal Valve Controller System on Chip 36 V	Integrates fail-safe switch, high precision, x4 valve drivers current regulated, x4 PWM valve drivers, DC motor pump predriver, low-side driver and high-side driver for general purpose, ADC 10-bit safety state machine	6.0	36	Current regulated valve drivers up to 2.25 A, up to 5.0 KHz, PWM valve drivers up to 5.0 A, up to 5 KHz, Easy current control, x3 input A/D	SPI	Overcurrent, Open Load, Overtemperature, VDS monitoring, Overvoltage, Undervoltage, Clock Failure, Watchdog	64-pin LQFP-EP	Production EVB

Engine and DC Motor Control — Powertrain and Engine Control

Product	Description	Main Characteristics	Peak Current Limit (A)	$R_{DS(on)}$ (mΩ)	Control [5]	Operating Voltage (V)	Packaging	Status
MC33800	Engine Control Integrated Circuit	Engine control IC, with six MOSFET gate predrivers, eight Low-side Switches, and two constant current Low-side switches	2 @ 6.0 6 @ 2.0 1 @ 2.8 1 @ 1.0	2 @ 700 6 @ 1000 1 @ 250 1 @ 1000	SPI, Parallel	5.0 to 36	54-pin SOICW Exposed Pad	Production EVB
MC33810	Automotive Engine Control IC	Engine control IC with four MOSFET/IGBT gate drivers and four Low-side switches.	6.0	100	SPI, Parallel	4.5 to 36	32-pin SOICW Exposed Pad	Production EVB
MC33811	Solenoid Monitor Integrated Circuit	5 input solenoid monitoring to verify proper electrical and mechanical solenoid operation.	-	-	SPI	10.5 to 15.5	16-pin SOICW	Production EVB
MC33812	Single Cylinder Engine Control Integrated Circuit	Engine control power IC, with three low-side drivers, one pre-driver, +5.0 V pre-regulator, IOS-9141 physical interface and MCU watchdog circuit.	2 @ 6.0 1 @ 2.0	2 @ 200 1 @ 1000	Parallel	4.5 to 36	32-pin SOICW Exposed Pad	Production EVB Ref. Design
MC33813	One Cylinder Small Engine Control IC	Engine control analog power IC intended for one cylinder motorcycle and other small engine control applications. Includes ISO9141 communication interface.	1 @ 3.0 1 @ 6.0 2 @ 2.4 1 @ .110	1 @ 400 1 @ 300 2 @ 1500 1 @ 20000	SPI, Parallel	6.0 to 18	48-pin LQFP, Exposed Pad	Production EVB
MC33814	Two Cylinder Small Engine Control IC	Engine control analog power IC intended for two cylinder motorcycle and other small engine control applications. Includes ISO9141 communication interface.	2 @ 3.0 1 @ 6.0 2 @ 2.4 1 @ .110	2 @ 400 1 @ 300 2 @ 1500 1 @ 20000	SPI, Parallel	6.0 to 18	48-pin LQFP, Exposed Pad	Production EVB
MC33816	Automotive Engine Control IC with Smart Gate Control	The 33816 is a 12-channel gate driver IC for automotive engine control applications. The IC consist of five external MOSFET high-side predrivers and seven external MOSFET low-side predrivers. Also contains four independent and concurrent digital microcores	-	-	SPI Parallel	9.0 to 16	64-pin LQFP Exposed Pad	Production FRDM EVB
MC33899	Programmable H-Bridge Power IC	Designed to drive a DC motor in both forward and reverse shaft rotation under Pulse Width Modulation (PWM) of speed and torque. Can be controlled by SPI or parallel control lines.	15.0	90	SPI, Parallel	6.0 to 26.5	30-pin HSOP	Production
MC33926	5.0A Throttle Control H-Bridge	H-Bridge power IC for DC servo motor control like engine throttle control. Load can be PWM'ed up to 20 kHz	8.0	120	Parallel	8.0 to 28	32-pin PQFN	Production EVB
PT2000	Programmable Solenoid Controller for Automotive/Truck Engine (Direct Injection) Control	The PT2000 is a programmable gate driver IC for precision solenoid control applications. The chip integrates six microcores used to control, seven external MOSFET high-side pre-drivers, eight external MOSFET low-side pre-drivers (two of them with higher switching frequency can be used for DC/DC converters), integrated end of injection detection, current measurement, and diagnostics and protection for both high-side and low-side.	-	-	SPI Parallel	5.0 to 36	80-pin LQFP	4Q 2015 FRDM EVB

5.Products available with SPI Control work with the KITUSBSPIEVME and the KITUSBSPIDGLEVME USB-SPI Interface Boards.

Engine and DC Motor Control - Automotive Alternator Voltage Regulators

Product	Description	Main Characteristics	Bus Type	Operating Voltage (V_{DC})	Regulation Voltage (V_{DC})	Other Features	Diagnostics	Protection Features	Packaging	Status
TC80310	An integrated circuit intended to regulate the output voltage of an automotive alternator. It supplies a current via a high-side MOSFET to the excitation coil of the alternator and provides an internal free-wheeling diode.	High-side field driver, Internal freewheeling diode, Up to 8.0 A rotor current (excitation coil), Load response control (LRC), LIN interface, Set point voltage selectable	LIN 1.3	8.0 to 27	150	Factory Selectable Features: LRC Rate, LRC disable RPM, Self start, Self start threshold, Alternator Pole pairs, Thermal Fault Threshold, Thermal Compensation Threshold, Phase Sensitivity, Phase Start Regulating RPM, Phase Stop Regulating RPM	LIN communication used for Electrical, Mechanical and Thermal fault reporting	Load Dump Protection, Thermal protection, Thermal compensation	Die	Production

Engine and DC Motor Control — H-Bridges

Product	Description	Main Characteristics	No of Outputs	$R_{DS(on)}$ (mΩ) of Each Output	Current Limit Threshold Max (A)	Sleep Current Max	Control (6)	Status/Fault Reporting	Protection Features	Packaging	Status
MC33186	H-Bridge Driver (5.0 A)	Monolithic H-Bridge ideal for fractional horsepower DC-motor and bi-directional thrust solenoid control. Load can be PWM'ed up to 10 kHz	2	150	7.8	—	Parallel	Status Flag	Short-circuit, Current Limit, Overtemperature, Undervoltage	20-pin HSOP	Production
MC33879	(1.0 Ω $R_{DS(on)}$) Configurable Eight Output SPI Controlled Switch	8-output hardware configurable, high-side/ low- side switch with 16-bit serial input control using SPI with up to 1.2 A current driving capability	8	750	1.2	5 µA	SPI w/2 PWM	SPI	Short-circuit, Current Limit, Overtemperature, Open load detection, Overvoltage	32-pin SOICW Exposed Pad	Production EVB
MC33880	Configurable Eight Output SPI Controlled Switch	8-output hardware configurable, high-side/ low- side switch with 16-bit serial input control using SPI with up to 2.0 A current driving capability	8	550	2.0	5 µA	SPI w/2 PWM	SPI	Short-circuit, Current Limit, Overtemperature, Open load detection, Overvoltage	32-pin SOICW	Production EVB
MC33886	H-Bridge Driver (5.2 A)	Monolithic H-Bridge ideal for fractional horsepower DC-motor and bi-directional thrust solenoid control. Load can be PWM'ed up to 10 kHz	2	120	7.8	—	Parallel	Status Flag	Short-circuit, Current Limit, Overtemperature, Undervoltage	20-pin HSOP	Production EVB
MC33887	H-Bridge Driver with Sleep Mode and current feedback (5.0 A)	Monolithic H-Bridge ideal for fractional horsepower DC-motor and bi-directional thrust solenoid control. Load can be PWM'ed up to 10 kHz	2	120	7.8	50 µA	Parallel	Status Flag	Short-circuit, Current Limit, Overtemperature, Undervoltage	20-pin HSOP, 36-pin PQFN, 54-pin SOICW Exposed Pad	Production EVB
MC33899	Programmable H-Bridge Power IC	H-Bridge with SPI based diagnostics and configurability designed to drive a DC motor in both forward and reverse shaft rotation under Pulse Width Modulation (PWM) of speed and torque	2	—	10.6	145 µA	SPI and Parallel	SPI	Open Circuit detect, Undervoltage, Overtemperature Shutdown, Output Short-circuit Current Limit	30-pin HSOP	Production
MC33926	5.0 A Throttle Control H-Bridge	H-Bridge power IC for DC servo motor control like engine throttle control. Load can be PWM'ed up to 20 kHz.	2	120	8.0	50 µA	Parallel	Status Flag	Output Short-circuit Protect, Overcurrent Limit, Overtemperature	32-pin PQFN	Production EVB

Engine and DC Motor Control — H-Bridges (continued)

Product	Description	Main Characteristics	No of Outputs	$R_{DS(on)}$ (mΩ) of Each Output	Current Limit Threshold Max (A)	Sleep Current Max	Control (6)	Status/Fault Reporting	Protection Features	Packaging	Status
MC33931	5.0 A Throttle Control H-Bridge	H-Bridge power IC for DC servo motor control like engine throttle control. Load can be PWM'ed up to 11 kHz	2	120	8.0	50 µA	Parallel	Status Flag	Output Short-circuit Protect, Overcurrent Limit, Overtemperature	44-pin HSOP, 32-pin SOICW with Exposed Pad	Production EVB
MC33932	5.0 A Throttle Control Dual H-Bridge	H-Bridge power IC for DC servo motor control like engine throttle control. Load can be PWM'ed up to 11 kHz	4	120	8.0	50 µA	Parallel	Status Flag	Output Short-circuit Protect, Overcurrent Limit, Overtemperature	44-pin HSOP, 54-pin SOICW with Exposed Pad	Production EVB
HB2000	10 A H-Bridge, Programmable Brushed DC Motor Driver	H-Bridge power IC for brushed DC motor control. Load can be controlled via parallel inputs as well as SPI with advanced diagnostic to meet ISO26262 functional safety standards	2	—	SPI selectable 5.1/6.7/8.4/ 10.3	50 µA	SPI, Parallel	SPI, Status Flag	Charge pump undervoltage, overvoltage, and undervoltage on VPWR, short to ground and short to VPWR for each output, open load, temperature warning, and overtemperature shutdown	32-pin PQFN	4Q 2015 FRDM EVB Planned
HB2001	10 A H-Bridge, Programmable Brushed DC Motor Driver	H-Bridge power IC for brushed DC motor control. Load can be controlled via parallel inputs as well as SPI with advanced diagnostic to meet ISO26262 functional safety standards	2	—	SPI selectable 5.1/6.7/8.4/ 10.3	50 µA	SPI, Parallel	SPI, Status Flag	Charge pump undervoltage, overvoltage, and undervoltage on VPWR, short to ground and short to VPWR for each output, open load, temperature warning, and overtemperature shutdown	32-pin PQFN	4Q 2015 FRDM EVB Planned
MC34931	5.0 A H-Bridge Brushed DC Motor Driver, Single, 5-36 V, 5.0 A	Automatic thermal back-off; Real-time current output Feedback; Low leakage current	2	120	6.5	20 µA	Parallel	Status Flag	Output Short-circuit Protect, Overcurrent Limit, Overtemperature	32-pin SOICW Exposed Pad	Production EVB
MC34932	5.0 A Dual H-Bridge Brushed DC/Stepper Motor Driver, 5.0-36 V, 5.0 A	Automatic thermal back-off; Real-time current output Feedback; Low leakage current	4	120	6.5	20 µA	Parallel	Status Flag	Output Short-circuit Protect, Overcurrent Limit, Overtemperature	54-pin SOICW Exposed Pad	Production EVB
MC34933	Dual H-Bridge Motor Driver, 7.0V, 1.4 A Peak, 200 kHZ PWM, for Stepper Motor or two H-Bridges	Monolithic dual H-Bridge driver IC in ultra-small 3X3 mm UQFN package, integrated charge pump and protection	2	400	1.4	1 µA	Parallel	Shutdown	Shoot Through Protect, Undervoltage Detect, Thermal detection	16-pin UQFN	Production FRDM EVB
MPC17C724	Dual H-Bridge Motor Driver, 5.5 V, 0.8 A Peak, 200 kHZ PWM, for Stepper Motor or two H-Bridges	Monolithic dual H-Bridge driver IC in ultra-small 3X3 mm QFN package and 1 uA sleep mode	2	1000	0.8	1.0 µA	Parallel	Shutdown	Shoot Through Protect, Undervoltage Detect	16-pin QFN	Production FRDM EVB
MPC17510	H-Bridge Motor Driver, 15 V, 3.8 A Peak, 200 kHZ PWM, with integrated MOSFET driver	Monolithic H-Bridge driver IC with integrated charge pump and protection. Includes unique MOSFET gate drive option.	1	450	3.8	1.0 mA	Parallel	Shutdown	Shoot Through Undervoltage Detect	24-pin TSSOP	Production FRDM EVB
MPC17511	H-Bridge Motor Driver, 6.8 V, 3.0 A Peak, 200 kHZ PWM, with integrated MOSFET driver	Monolithic H-Bridge driver IC with integrated charge pump and protection. Includes unique MOSFET gate drive option.	2	600	3.0	1.0 µA	Parallel	Shutdown	Shoot Through Undervoltage Detect	24 pin QFN, 16-pin VMFP	Production FRDM EVB
MPC17529	Dual H-Bridge Motor Driver, 6.8 V, 1.4 A Peak, 200 kHZ PWM, for Stepper Motor or two H-Bridges	Monolithic dual H-Bridge driver IC with integrated charge pump and protection	2	700	1.4	1.0 mA	Parallel	Shutdown	Shoot Through Undervoltage Detect	20-pin VMFP	Production FRDM EVB

Engine and DC Motor Control — H-Bridges (continued)

Product	Description	Main Characteristics	No of Outputs	$R_{DS(on)}$ (mΩ) of Each Output	Current Limit Threshold Max (A)	Sleep Current Max	Control (6)	Status/Fault Reporting	Protection Features	Packaging	Status
MPC17531	700 mA Dual H-Bridge Motor Driver with 3.0 V Compatible Logic I/O	Monolithic dual H-Bridge driver IC with integrated charge pump and protection	4	120	1.4	1.0 μA	Parallel	Shutdown	Shoot Through Undervoltage Detect	16-pin VMFP	Production FRDM EVB
MPC17533	Dual H-Bridge Motor Driver, 6.8 V, 1.4 A Peak, 200 kHZ PWM, for Stepper Motor or two H-Bridges	Monolithic dual H-Bridge driver IC with integrated charge pump and protection, 2 uA sleep mode	2	800	1.4	< 200 μA	Parallel	Shutdown	Shoot Through Undervoltage Detect	16-pin VMFP	Production FRDM EVB

6.Products available with SPI Control work with the KITUSBSPIEVME and the KITUSBSPIDGLEVME USB-SPI Interface Boards

Engine and DC Motor Control - High Current Motor Control

Product	Description	Main Characteristics	Power Features	MCU Reference	MCU Detail	Additional Information	Packaging	Status
MM908E621	DC Motor/Mirror Control and LIN Mirror Control, Integrated Quad Half-bridge and Triple High-side with Embedded MCU and LIN	Voltage Regulator 5.0 V/60 mA, LIN Physical Layer with Selectable Slew rates, Window Watchdog, “Normal/Stop/Sleep Mode “Control	2 x 275 mΩ Half-Bridges; 2 x 750 mΩ Half-Bridges; 1 x 185 mΩ High-side; 2 x 440 mΩ High-side; Switched 5.0 V Output (25 mA)	8-bit MCU HC908EY16	HC08 Core, 16 k Flash, 512 Bytes RAM, ESCI, 8-Channel 10-bit ADC, Two 16-bit 2 Channel Timers, Internal Clock Generator	2/3 Pin Hall Sensor Input, Analog Input with Current Source, 40 V Rated Wake-up Input, V_{SUP}, Chip Temp. and Current Sensing	54-pin SOICW Exposed Pad	Production
MM908E622	DC Motor/Mirror Control and LIN Mirror Control, Integrated Quad Half-bridge, Triple High-side and EC Glass Driver with Embedded MCU and LIN	Voltage Regulator 5.0 V/60 mA, LIN Physical Layer with Selectable Slew rates, Window Watchdog, “Normal/Stop/Sleep Mode “Control	2 x 275 mΩ Half-bridges; 2 x 750 mΩ Half-bridges; 1 x 185 mΩ High-side; 2 x 440 mΩ High-side; Switched 5.0 V Output (25 mA) EC Glass Driver			2/3 Pin Hall Sensor Input, Analog Input with Current Source, 40 V Rated Wake-up Input, V_{SUP}, Chip Temp. and Current Sensing	54-pin SOICW Exposed Pad	Production
MM908E624	DC Motor Control Using Relays (for example, Window Lift, Sun Roof, and Power Seats), Triple High-side Switch with Embedded MCU + Power + LIN	Voltage Regulator 5.0 V/50 mA, LIN Physical Layer with Selectable Slew rates, Window Watchdog with Selectable Timing, Normal/Stop/Sleep Mode Control	1 x 7 Ω High-side, 2 x 2.5 Ω High-side Switches for Relay Control			Operational Amplifier, 2 x 40 V Rated Wake-up Inputs	54-pin SOICW	Production EVB
MM908E625	Mirror Control, Stepper Motor Control, Door Lock Quad Half-bridge and Single High-side with Embedded MCU and LIN	Voltage Regulator 5.0 V/60 mA, LIN Physical Layer with Selectable Slew rates, Timeout Watchdog with Periodic Wake-up Feature, Normal/Stop Mode Control	4 x 400 mΩ Half-bridges with Current Control; 1 x 600 mΩ High-side; Switched 5.0 V Output (25 mA)			3 x 2 Pin Hall Sensor Inputs with Cyclic Wake-up Feature, Analog Input with Current Source, V_{SUP}, Chip Temp. and Current Sensing	54-pin SOICW Exposed Pad	Production EVB
MM908E626	Stepper Motor Control, Quad Half-bridge with Embedded MCU and LIN	Voltage Regulator 5.0 V/60 mA, LIN Physical Layer with Selectable Slew rates. High Temperature use, T_J = 135 °C	4 x 400 mΩ Half-bridges with Current Control; Switched 5.0 V Output (24 mA)			V_{SUP}, Chip Temperature and Current Sensing	54-pin SOICW Exposed Pad	Production EVB (‘625)

Engine and DC Motor Control - Microcontroller (MCU) and Injection Driver

Product	Description	Main Characteristics	MCU Reference	MCU Detail	Additional Features	Packaging	Status
MM912_P812	S12P MCU and Multifunctional Ignition and Injector Driver System In Package (SiP)	An engine control IC combining an MCU (S12P) and analog control die (MC33812) intended for motorcycle and other single/ dual cylinder small engine control applications.	16-bit MCU S12P	The MCU S12P has 6 KB RAM, and flash memory size of 96 KB or 128 KB. The S12P family uses many of the same features found on the S12XS family, including error correction code (ECC) on flash memory, a separate data-flash module for diagnostic or data storage, a fast analog-to-digital converter (ATD), and a frequency modulated phase locked loop (IPLL) that improves the electromagnetic compatibility (EMC) performance.	Analog functions consists of three integrated low-side drivers, one pre-driver, a +5.0 V, voltage pre-regulator, an MCU watchdog circuit, an ISO 9141 K-Line interface, and a parallel interface for MCU communication. The three low-side drivers are provided for driving a fuel injector, a lamp or LED, and a relay, another injector or fuel pump.	100 lead LQFP, Exposed Pad	Production Ref. Design
MM912_S812	S12XS MCU and Multifunctional Ignition and Injector Driver System In Package (SiP)	An engine control IC combining an MCU (S12XS) and analog control die (MC33812) intended for motorcycle and other single/dual cylinder small engine control applications.	16-bit MCU S12XS	The MCU S12XS has 8 KB or 12 KB RAM, and flash memory size of 128 KB or 256 KB. The S12XS family uses many of the same features found on the S12P family, including error correction code (ECC) on flash memory, a separate data-flash module for diagnostic or data storage, a fast analog-to-digital converter (ATD), and a frequency modulated phase locked loop (IPLL) that improves the electromagnetic compatibility (EMC) performance.	Analog functions consists of three integrated low-side drivers, one pre-driver, a +5.0 V, voltage pre-regulator, an MCU watchdog circuit, an ISO 9141 K-Line interface, and a parallel interface for MCU communication. The three low-side drivers are provided for driving a fuel injector, a lamp or LED, and a relay, another injector or fuel pump.	100 lead LQFP, Exposed Pad	Production Ref. Design

Interface - Audio Codec

Product	Description	Main Characteristics	Operating Voltage (V)	Power Dissipation (mW)	Frequency Band (KHz)	Additional Features	Packaging	Status
SGTL5000	Ultra Low-power Audio Codec	A low-power stereo codec that includes headphones amplifier and is designed to provide a comprehensive audio solution for portable products that require line-in, mic-in, line-out, headphone-out and digital I/O.	1.62 to 3.6	<10	.020 to 20	PLL clocking; I^2S, I^2C and SPI communications; 2 internal power supplies; stereo line in; ADC & DAC; Mic/line-in; Integrated Digital Processing	20-pin QFN, 32-pin QFN	Production EVB

Power Management — Regulators

Product	Description	Main Characteristics	Operating Voltage (V)	Output Voltages	Protection Features	Packaging	Status
MC33730	Switch Mode Power Supply with Multiple Linear Regulators and Power Sequencing	Step-down switching regulator (2.0 A), with 3 Programmable Linear Regulators (15 mA, 15 mA, 15 mA) and 2 x 5.0 V sensor supply (100 mA, 100 mA).	4.5 to 28	4.9 to 5.1 V, 2.0 to 3.3 V, 1.5 to 3.3 V, 1.0 to 5.0 V, 5.0 V	Reverse Battery Protect, Undervoltage and Overvoltage Lockout, Reset monitor signals for regulators (4)	32-pin SOICW Exposed Pad	Production EVB
MC34700	9.0 to 18 V, Quad Output, Integrated MOSFET Power Supply	High-efficiency power supply. It features three step-down switching regulators and one low dropout linear regulator. Voltage mode control with external compensation Internal soft-start, and internal power MOSFETs enable	9.10 to 18.0	2.0 to 5.25 V 0.7 to 3.6 V 0.7 to 3.6 V 0.7 to 3.6 V	Undervoltage, Overcurrent, and Overtemperature protection	32-pin QFN Exposed Pad	Production EVB

Power Management — Regulators (continued)

Product	Description	Main Characteristics	Operating Voltage (V)	Output Voltages	Protection Features	Packaging	Status
MC34704	Multiple Channel DC-DC Power Management IC	Features 8(A) or 5(B) buck & boost DC/DC switching regulators, with up to ±2% output voltage accuracy. It provides dynamic voltage scaling on all regulators. It is capable of operating at a switching frequency of up to 2.0 MHz. The 34704 utilizes I^2C programmability.	2.7 to 5.5	15.0 V (adj.) @ 30 mA 15.0 V (adj.) @ 60 mA (A only) 5.0 V @ 500 mA (A only) 3 - 3.6 V (adj.) @ 300/ 500 mA 1.8 V (adj.) @ 550 mA -9.0 V (adj.) @ 60 mA (A only)	Output Undervoltage & Overvoltage detect, Overcurrent limit detection and Short-circuit protect, Thermal limit detect	56-pin QFN Exposed Pad	Production EVB(A) EVB(B)
MC34712	Single Synchronous DDR Switch-Mode regulator (±3.0 A)	Synchronous buck switching regulator with adjustable output and an accuracy of ±2% and a programmable switch frequency of 200 kHz to 1.0 MHz	3.0 to 6.0	0.7 to 1.35 V	Overcurrent limit, Short-circuit protect, Thermal shutdown, Output Overvoltage & Undervoltage detect	24-pin QFN	Production EVB
MC34713	Single Synchronous Buck Switching regulator (5.0 A)	Synchronous buck switching regulator with adjustable output and an accuracy of ±2% and a programmable switch frequency of 200 kHz to 1.0 MHz	3.0 to 6.0	0.7 to 3.6 V	Overcurrent limit, Short-circuit protect, Thermal shutdown, Output Overvoltage & Undervoltage detect	24-pin QFN	Production EVB
MC34716	Dual Synchronous DDR Switch-Mode regulators (5.0 A, ±3.0 A)	Synchronous buck switching regulators with adjustable outputs and an accuracy of ±2% and a programmable switch frequency of 200 kHz to 1.0 MHz.	3.0 to 6.0	Chan. 1: 0.7 to 3.6 V, Chan. 2: 0.7 to 1.35 V	Overcurrent limit, Short-circuit protect, Thermal shutdown, Output overvoltage & Undervoltage detect	26-pin QFN	Production EVB
MC34717	Dual Synchronous Buck Switching regulators (5.0 A, 5.0 A)	Synchronous buck switching regulators with adjustable outputs and an accuracy of ±2% and a programmable switch frequency of 200 kHz to 1.0 MHz.	3.0 to 6.0	Chan. 1: 0.7 to 3.6 V, Chan. 2: 0.7 to 3.6 V	Overcurrent limit, Short-circuit protect, Thermal shutdown, Output Overvoltage & Undervoltage detect	26-pin QFN	Production EVB
VR500	Power Management Integrated Circuit for QorIQ LS1 networking communications processors	Quad buck regulator with up to 4.5 A output and five user-programmable LDOs	2.8 to 4.5	SW1, 0.625 to 1.875 V ; 4.5 A SW2, 0.625 to 1.975 V ; 1.0 A SW3, 0.625 to 1.975 V ; 2.5 A SW4, operates in VTT mode (50% of SW3) or 0.625 To 1.975 V ; 2.5 A LDO1, 0.80 to 1.55 V, 250 mA LDO2, 1.8 to 3.3 V, 100 mA LDO3, 1.8 to 3.3 V, 350 mA LDO4, 1.8 to 3.3 V, 100 mA LDO5, 1.8 to 3.3 V, 200 mA	Thermal protection, Undervoltage detection, V-Regs current limits	56-pin WF-QFN Exposed pad	Production EVB

Power Management - PMICs for i.MX Processors

Product	Description	Main Characteristics	MCU Support	Operating Voltage (V)	Protection Features	Light Management	Additional Features	Packaging	Status
MC13783	Highly Integrated, High Tier Power Management & Audio IC	18 LDOs, 4 buck and 1 boost switching regulators; Li-Ion battery charging; 2 handset mic & 1 headset mic transmitter amplifiers; Earpiece, loudspeaker and headset receiver amplifiers; 13-bit voice Codec; 16-bit stereo record; 16-bit stereo DAC; multiple charging modes; Dual SPI and Dual SSI interfaces.	Single and dual i.MX31 and i.MX27	2.9 to 4.65	Overtemperature, overvoltage, undervoltage	3 zone LED drivers, 3 zone RGB drivers	RTC, USB-OTG, CEA-936-A Car kit, Dynamic Voltage Scaling (DVS), Coincell, Touchscreen Interface	247-pin BGA, (10x10 mm)	Production
MC13892	Power Management Integrated Circuit (PMIC)	18 regulators: 12 LDOs, 4 buck switchers, 2 boost switchers; Li-Ion and Coin cell battery charging, single and serial path, SPI, I^2C, 10-bit ADC with 8 channels, 3 GPO ADCs, mux and scaling circuitry included.	i.MX27, i.MX35, i.MX37, i.MX51	2.55 to 4.65	Overtemperature, overvoltage, overcurrent, short-circuit	3 zone LED drivers, 3 zone RGB drivers	RTC, USB - OTG, Dynamic Voltage Scaling (DVS)	139-pin BGA (7x7 mm), 186 pin BGA (12x12 mm)	Production EVB (x2)

Power Management - PMICs for i.MX Processors *(continued)*

Product	Description	Main Characteristics	MCU Support	Operating Voltage (V)	Protection Features	Light Management	Additional Features	Packaging	Status
MC34709	Power Management Integrated Circuit (PMIC) for i.MX50/53 Families	5 programmable buck converters and 8 low drop out (LDO) regulators for primary use with Freescale i.MX series of microprocessors, graphics, peripheral and memory devices, as well as other system supplies.	i.MX50, i.MX53, i.MX35, i.MX37, i.MX51	3.0 to 4.5	Regulators are overvoltage & undercurrent protected, Thermal limit protect,	–	4 wire Touch Screen, PWM outputs, RTC, Coincell	130-pin MAPBGA (8x8 mm)	Production
MMPF0100	Power Management Integrated Circuit for i.MX6 Series	Highly integrated, fully programmable PMIC with 4/ 6 buck regulators, 5.0 V boost regulator, 6 general purpose LDOs, 1 VSNVS LDO/switch and DDR Reference	i.MX6 series	3.0 to 4.5	Thermal protection, undervoltage detection, V-Regs. current limits	–	Coincell charger, OTP memory, I2C bus, 6 Buck, 1 Boost and 6 LDO V-Regs.	56-pin QFN, (8x8x0.85 mm) Exposed pad (2 Types)	Production EVB PRGM
MMPF0200	12 Channel Configurable Power Management Integrated Circuit	Highly integrated, fully programmable PMIC with 3/ 4 buck regulators, 5.0 V boost regulator, 6 general purpose LDOs, 1 VSNVS LDO/switch and DDR Reference	i.MX6 series	2.8 to 4.5	Thermal protection, undervoltage detection, V-Regs. current limits	–	Coincell charger, OTP memory, I2C bus, 4 Buck, 1 Boost and 6 LDO V-Regs.	56-pin QFN, (8x8x0.85 mm) Exposed pad	Production EVB PRGM
PF3000	Power Management Integrated Circuit for i.MX6 and i.MX7 Families	Highly integrated, fully programmable PMIC with 3/4 buck regulators, 5.0 V boost regulator, 6 LDOs, 1 VSNVS LDO/ switch and DDR reference	i.MX6 series and i.MX7 series	2.8 to 4.5 or 3.7 to 5.5	Thermal protection, undervoltage detection, V-Regs. current limits	–	Coincell charger, OTP memory, I2C bus, 4 Buck, 1 Boost and 6 LDO V-Regs.	48-pin QFN, (7x7x0.85 mm) Exposed pad	Production FRDM EVB PRGM
PF3001	Power Management Integrated Circuit for i.MX6 and i.MX7 Families in “always ON” applications	Highly integrated, fully programmable PMIC with 3 buck regulators, 6 LDOs and 1 VSNVS LDO/switch	i.MX6 series and i.MX7 series	2.8 V to 4.5 V or 3.7 V to 5.5 V	Thermal protection, undervoltage detection, V-Regs. current limits	–	Coincell charger, I2C bus, 3 Buck, and 6 LDO V-Regs.	48-pin QFN, (7 x7 x 0.85 mm) Exposed pad	Production FRDM EVB PRGM

Power Management - System Basis Chip

Product	Description	Main Characteristics	Bus Type and Standard	Operating Voltage (V)	Current Limitation Standby (µA) Typ.	Current Limitation Standby (µA) Max.	Other Features	Control and Status Reporting (8)	Protection Features	Packaging	Status
MC33742	System Basis Chip with Enhanced High Speed CAN (250 k to 1.0 Mbps)	SBC, Dual V_{REG}, Enhance HS CAN with Bus failure diagnostic capability, 4 wake-up inputs	CAN high-speed, dual wires.	5.5 to 27	60	150	Low power modes, remote and local wake-up capabilities	SPI	Current and thermal protection for CAN and regulator	28-pin SOICW, 48-pin QFN Exposed Pad	Production EVB
MC33789	Airbag System Basis Chip (SBC) with Power Supply and PSI5 Sensor Interface	Air bag control module which monitors battery voltage, sensor status and supplies various voltages to the air bag system. Uses SPI for MCU communication. Uses PSI5 for satellite sensors communication.	PSI5	5.2 to 20	-	-	Safing state machine, 9 switch input monitors, 2 config. high/low-side drivers, Power-on-reset, watchdog timer, Squib energy reserve	SPI	Safing state machine, Scrap mode	64-pin LQFP Exposed Pad	Production EVB Ref. Design
MC33889	System Basis Chip with Low Speed Fault Tolerant CAN	Dual 5.0 V regulators LS CAN, 2 wake-up inputs	CAN low-speed, dual wires	5.5 to 27	60	100	Dual voltage regulator, watchdog, wake input, sleep and stop modes	SPI	Fault tolerant	28-pin SOICW	Production EVB
MC33903	System Basis Chip (SBC)-Gen 2-with High Speed CAN & LIN Interfaces	High speed CAN and 1 or 2 LIN physical interface. 5.0 or 3.3 V VDD regulator.	LIN single wire	5.5 to 27	15	35	Config. I/O, MUX - out, pin compatible with MC33905	“Secured” SPI	Overcurrent, Overtemperature, Short-circuit, Undervoltage detect	32-pin SOICW Exposed Pad	Production EVB
MC33904	System Basis Chip (SBC)-Gen 2-with High Speed CAN Interface	High-speed CAN physical interface. 5.0 or 3.3 VDD and VAUX regulators w/current sharing	CAN high-speed, dual wires	5.5 to 27	15	35	Config. I/O, MUX - out, pin compatible with MC33905	“Secured” SPI	Overcurrent, Overtemperature, Short-circuit, Undervoltage detect	32-pin SOICW Exposed Pad	Production EVB(‘905)

Power Management - System Basis Chip (continued)

Product	Description	Main Characteristics	Bus Type and Standard	Operating Voltage (V)	Current Limitation Standby (µA) Typ.	Max.	Other Features	Control and Status Reporting [8]	Protection Features	Packaging	Status
MC33905	System Basis Chip (SBC)-Gen 2-with High Speed CAN & LIN Interfaces	High speed CAN & 1 or 2 LIN physical interfaces. 5.0 or 3.3 VDD and VAux regulators w/current sharing.	CAN high-speed, dual wires. LIN single wire	5.5 to 27	15	35	Config. I/O, MUX - out, SAFE output, Low power modes w/INT and RST capability.	"Secured" SPI	Overcurrent, Overtemperature, Short-circuit, Undervoltage detect	32-pin SOICW Exposed Pad, 54-pin SOICW Exposed Pad	Production EVB
MC33907	Safe System Basis Chip with Buck and Boost DC/DC up to 800 mA	Multiple switching and linear voltage regulators, built-in enhanced high speed CAN interface fulfills the ISO11898-2 and -5 standards.	CAN high-speed, dual wires	5.6 to 40	32	60	Safe Assure product	"Secured" SPI	Overcurrent, Overtemperature, Over & Undervoltage detect	48-pin LQFP Exposed Pad	Production EVB
MC33908	Safe System Basis Chip with Buck and Boost DC/DC up to 1.5 A	Multiple switching and linear voltage regulators, built-in enhanced high speed CAN interface fulfills the ISO11898-2 and -5 standards.	CAN high-speed, dual wires.	5.6 to 40	32	60	Safe Assure product	"Secured" SPI	Overcurrent, Overtemperature, Over & Undervoltage detect	48-pin LQFP Exposed Pad	Production EVB
MC33909	System Basis Chip with CAN, LIN Multiple Switch-to-Ground Interface	Two high speed CAN interfaces plus four LINs, compatible with specification 2.1 and SAEJ2602-2. Also contains 17 switch to ground inputs for switch detection.	CAN high-speed, dual wires. LIN single wire	3.5 to 27	125	-	Watchdog timer, Switched inputs wake-up, Fail safe mode	SPI	Overvoltage	48-pin LQFP Exposed Pad	Production EVB
MC33910	System Basis Chip with High-side Drivers and LIN Physical Interface	LIN 2.0 compatible, 5.0 V 60 mA LDO, 2 High-side drivers w/PWM, 1 analog/digital input	LIN single wire	5.5 to 18	48	80	Hall Sensor supply, Configurable Window Watchdog	SPI	Multiple wake-up sources, LDO Fault Detect, Low Voltage Reset	32-pin LQFP	Production EVB ('912)
MC33911	System Basis Chip with DC Motor Pre-driver and LIN Physical Interface	LIN 2.0 compatible, 5.0 V 60 mA LDO, 1 High-side driver & 2 Low-side drivers w/PWM, 2 analog/digital inputs	LIN single wire	5.5 to 18	48	80	Configurable Window Watchdog	SPI	Multiple wake-up sources, LDO Fault Detect, Low Voltage Reset	32-pin LQFP	Production EVB ('912)
MC33912	System Basis Chip with DC Motor Pre-driver and Current Sense and LIN Physical Interface	LIN 2.0 compatible, 5.0 V 60 mA LDO, 2 High-side drivers & 2 Low-side drivers w/PWM, 4 analog/digital inputs	LIN single wire	5.5 to 18	48	80	Hall Sensor supply, Configurable Window Watchdog, Current Sense	SPI	Multiple wake-up sources, LDO Fault Detect, Low Voltage Reset	32-pin LQFP	Production EVB
MC33989	System Basis Chip with High Speed CAN	Dual 5.0 V regulators HS CAN, 4 wake-up inputs	CAN high speed, dual wires	5.5 to 27	80	150	Dual voltage regulator, watchdog, wake input, sleep and stop modes	SPI	Current limitation, Thermal protection	28-pin SOICW	Production EVB
MC34903	System Basis Chip (SBC)-Gen 2-with High Speed CAN & LIN Interfaces	High-speed CAN and one LIN physical interface. 5.0 or 3.3 V VDD regulator.	LIN single wire	5.5 to 27	15	35	Config. I/O, MUX-out, pin compatible with MC34905.	"Secured" SPI	Overcurrent, Overtemperature, Short-circuit, Undervoltage detect	32-pin SOICW Exposed Pad	Production EVB
MC34904	System Basis Chip (SBC)-Gen 2-with High Speed CAN Interface	High-speed CAN physical interface. 5.0 or 3.3 VDD and VAUX regulators with current sharing.	CAN high-speed, dual wires	5.5 to 27	15	35	Config. I/O, MUX - out, pin compatible with MC34905.	"Secured" SPI	Overcurrent, Overtemperature, Short-circuit, Undervoltage detect	32-pin SOICW Exposed Pad	Production EVB ('905)
MC34905	System Basis Chip (SBC)-Gen 2-with High Speed CAN & LIN Interfaces	High-speed CAN and one LIN physical interfaces. 5.0 or 3.3 VDD and VAUX regulators with current sharing.	CAN high-speed, dual wires. LIN single wire	5.5 to 27	15	35	Config. I/O, MUX-out, SAFE output, Low-power modes with INT and RST capability.	"Secured" SPI	Overcurrent, Overtemperature, Short-circuit, Undervoltage detect	32-pin SOICW Exposed Pad,	Production EVB

Power Management - System Basis Chip (continued)

Product	Description	Main Characteristics	Bus Type and Standard	Operating Voltage (V)	Current Limitation Standby (µA) Typ.	Max.	Other Features	Control and Status Reporting [8]	Protection Features	Packaging	Status
FS6407	Safe System Basis Chip with Buck and Boost DC/DC up to 800 mA	Multiple switching and linear voltage regulators, built-in enhanced high speed CAN interface fulfills the ISO11898-2 and -5 standards.	CAN high-speed, dual wires.	5.6 to 40	32	60	SafeAssure product	“Secured” SPI	Overcurrent, Overtemperature, Over & Undervoltage detect	48-pin LQFP Exposed Pad	4Q 2015 EVB Planned
FS6408	Safe System Basis Chip with Buck and Boost DC/DC up to 1.5 A	Multiple switching and linear voltage regulators, built-in enhanced high speed CAN interface fulfills the ISO11898-2 and -5 standards.	CAN high-speed, dual wires.	5.6 to 40	32	60	SafeAssure product	“Secured” SPI	Overcurrent, Overtemperature, Over & Undervoltage detect	48-pin LQFP Exposed Pad	4Q 2015 EVB Planned
FS4409	System Basis Chip with DC-DC and Multiple Switch-to-Ground Interface	Buck/Boost DC/DC and linear voltage regulators. Single enhanced high speed CAN interface fulfills the ISO11898-2 and -5 standards) plus four LIN's compatible with specification 2.1 and SAEJ2602-2. Also contains 6 switch to ground inputs.	CAN high-speed, dual wires. LIN single wire	2.5 to 35	100	200	Multiple source wake-up, 3.3 or 5.0V MCU supply, Watchdog timer, Switched inputs, MUX output SAFE output	“Secured” SPI	Overcurrent, Overtemperature, Short-circuit, Undervoltage detect	48-pin LQFP Exposed Pad	Production EVB (33909)

7.Products available with SPI Control work with the KITUSBSPIEVME and the KITUSBSPIDGLEVME USB-SPI Interface Boards.

Power Management - LED Drivers

Product	Description	Main Characteristics	Operating Voltage (V)	Output Voltages	Protection Features	Packaging	Status
MC34844	10 Channel LED Backlight Driver with Integrated Power Supply	High efficiency LED driver for use in backlighting LCD displays. Capable of driving more than 150 LEDs, in 10 parallel strings, with 50/80 mA per string. Currents in the 10 strings are matched to within ± 2%. Controlled through an I^2C bus. Contains an PWM generator for LED dimming.	7.0 to 28	60 V, @ 3.0 A	Undervoltage lockout, Overvoltage protection, Overtemperature protect, Overcurrent protection, Output short protect	32-pin QFN Exposed Pad	Production EVB (8)
MC34845	Low Cost Six Channel LED Backlight Driver with Integrated Power Supply	High efficiency LED driver for use in backlighting LCD displays. Capable of driving more up to 16 LEDs in series per channel, programmable LED current from 3mA to 30mA per string. Currents in the 6 strings are matched to within ± 2%. External PWM control.	5.0 to 21	8.0 to 60 V @ 2.1 A	Overtemperature shutdown, Overcurrent protection, Undervoltage lockout, Overvoltage protection	24-pin QFN Exposed Pad	Production EVB

8.Supporting backlight EVB - KITLEDBKLT16EVBE

Power Management - Power over Ethernet (PoE)

Product	Description	Main Characteristics	Operating Voltage (V)	Max Current LImit (A)	Number of Channels	Protection Features	Packaging	Status
MC34670	IEE 802.3af Powered Device with Current Mode Switching Regulator	Integrated IEEE 802.3af Compliant Interface, Signature Detection and Power Classification Functionality, High Performance Current Mode Switching Regulator	30 to 60	2.1	1	Fast Short-circuit Detect, Thermal Shutdown, Overvoltage Shutdown, Inrush Current Limit, Overvoltage Lock Out	20-pin SOICW	Production EVB

Radar — ADAS Transceiver

Product	Description	Main Characteristics	Operating Temp Range (°C) T_A= Ambient Temp T_B= Backside of Die Temp T_A	T_B	Packaging	Status
MR2001	Multi-channel 77 GHz Radar Transceiver Chipset	Scalable number of transmitter and receiver channels	-40 to +125	—	6x6 mm BGA	Production KITRADAR 2001EVM

Transceivers — CAN Physical Interface Components

Product	Description	Main Characteristics	Bus Type and Standard	Operating Voltage (V)	Current Limit Standby (µA) Typ.	Max.	Other Features	Control and Status Reporting (9)	Protection Features	Packaging	Status
CM0902	Dual High-Speed CAN Transceiver	The CM0902 is a dual high-speed CAN transceiver device, providing the physical interface between the CAN protocol controller of an MCU and the physical dual wire CAN bus. Both channels are completely independent, featuring CAN bus wake-up on each CAN interface, and TXD dominant timeout functionality	Dual CAN HS dual wire	4.5 to 5.5	-	15	CAN bus wake-up, 3.3 or 5.0 V MCU I/O, TXD dominant time-out	Parallel	High system ESD spec.	14-pin SOICN	Production EVB
MC33897	Single-Wire CAN	Low or high (33.3 kbps or 83.3 kbps) data rates, wake-up capability (GMW3089 v2.3 compatible)	Single-wire CAN	6.0 to 27	45	60	Regulator Control Output Waveshaping, Undervoltage lockout and loss of GND	2 Mode Control Pins	Thermal shutdown, Current limit	14-pin SOICN	Production

Transceivers — CAN Physical Interface Components (continued)

Product	Description	Main Characteristics	Bus Type and Standard	Operating Voltage (V)	Current Limit Standby (µA) Typ.	Current Limit Standby (µA) Max.	Other Features	Control and Status Reporting (9)	Protection Features	Packaging	Status
MC33901	High-Speed CAN Transceiver	Single CAN high-speed physical layer provides operation up to 2 Mbps and the physical interface between an MCU and the physical dual wires of the CAN bus.	CAN HS dual wire	4.5 to 5.5	-	15	CAN bus wake-up. TXD dominant timeout, 3.3 or 5.0 V MCU I/O	Parallel	High system ESD spec.	8-pin SOICN	Production EVB
MC34901	High-Speed CAN Transceiver	Single CAN high-speed physical layer provides the physical interface between an MCU and the physical dual wires of the CAN bus.The MC34901 supports long-length CAN node interconnects for industrial applications.	CAN HS dual wire	4.5 to 5.5	-	15	CAN bus wake-up, 3.3 or 5.0 V MCU I/O	Parallel	High system ESD spec.	8-pin SOICN	Production EVB

9.Products available with SPI Control work with the KITUSBSPIEVME and the KITUSBSPIDGLEVME USB-SPI Interface Boards.

Transceivers — LIN, ISO9141, J1850 Physical Interface Components

Product	Description	Main Characteristics	Bus Type and Standard	Operating Voltage (V)	Current Limitation Standby (µA) Typ.	Current Limitation Standby (µA) Max.	Other Features	Control and Status Reporting (10)	Protection Features	Packaging	Status
CM3010	IO-Link Device	CM3010 includes one fully-featured IO-Link channel and one switching output channel. It integrates an advanced power management block consisting of a DC-DC buck pre-regulator followed by an LDO.	IO-Link	9.0 to 30	-	500	Additional switching output, DC-DC buck converter, On-chip RC oscillator, integrated frame handler	SPI	Overvoltage protection, High-current protection, High-temperature detection	24 QFN	2Q 2016 EVB Planned
CM3120	IO-Link Master	CM3120 includes two fully-featured IO-Link channels which can work in three different operation modes. Circuit integrates an IO-Link frame handler fully compliant with the IO-Link v1.1 specification and which implements most of the IO-Link communication tasks.	IO-Link	8.0 to 32	-		Three different operation modes, Master/Device operation, integrated frame handler	SPI	Overcurrent protection for the IO link channels Over temperature monitoring and protection Overvoltage protection	48 QFN	4Q 2015 EVB Planned
MC33399	Local Interconnect Network (LIN) Physical Layer	Offers speed communication from 1.0 kbps to 20 kbps, and up to 60 kbps for Programming Mode. It supports LIN Protocol Specification 1.3.	LIN single wire	7.0 to 18	20	50	Wake-up input pin, control of external voltage regulator	Parallel	Current limitation, Thermal protection	8-pin SOICN	Production EVB
MC33660	ISO K Line Serial Link Interface	ISO9141 physical interface device	ISO9141	8.0 to 18	—	50	Data rates up to 50 kbps	Serial	Output short-circuit Thermal protection	8-pin SOICN	Production EVB
MC33661	eLIN – Enhanced LIN Physical Layer (Local Interconnect Network)	Selectable slew rate for operations at 10, 20, 100 kbps; bus short to ground fail safe; excellent EMC behavior.	LIN single wire	7.0 to 18	8.0	12	Compatibility with 5.0 V and 3.3 V micros, wake-up input control of external regulator	Parallel	Current limitation, Thermal protection	8-pin SOICN	Production EVB
MC33662	LIN 2.1/SAE J2602-2 LIN Physical Layer Transceiver	Single wire LIN supports normal baud rates of 10 kbps (J) or 20 kbps (L) and fast rate of 100 kbps	LIN single wire	7.0 to 18	6.0	11	Active bus waveshaping, EMI immunity, Local & Remote wake-up	Parallel	Current limitation, Thermal protection	8-pin SOICN	Production EVB
MC33663	LIN 2.1 / SAEJ2602-2 Dual LIN Physical Layer Transceivers	Integrates two physical layer LIN bus transceivers. The devices offer baud rates of 10 and 20 kbps as well as 100 kbps for test/programming modes.	LIN Single-wire, SAE J2602-2	7.0 to 18	12	36	Active bus waveshaping, EMI immunity, 2 wake-up input pins, Compatibility with 5.0 V and 3.3 V micros	Parallel	Overtemperature protection, Output short-circuit	14-pin SOICN	Production EVB

Transceivers — LIN, ISO9141, J1850 Physical Interface Components *(continued)*

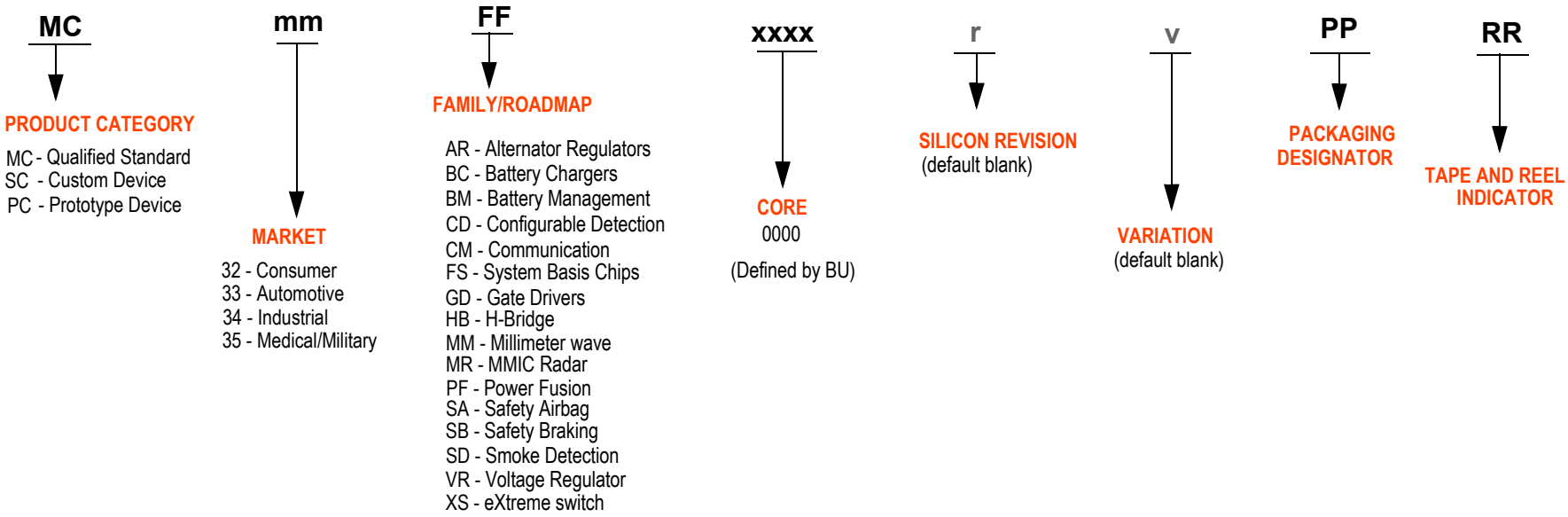
Product	Description	Main Characteristics	Bus Type and Standard	Operating Voltage (V)	Current Limitation Standby (µA) Typ.	Current Limitation Standby (µA) Max.	Other Features	Control and Status Reporting (10)	Protection Features	Packaging	Status
MC33664	Isolated Network High Speed Transceiver	2.0 Mbps isolated network communication rate, Dual SPI architecture for message confirmation, Robust conducted and radiated immunity with wake-up, 3.3 V and 5.0 V compatible logic thresholds, Engineered for 5.0 meter, 15 node system, Low sleep mode current with automatic bus wake-up, Ultra-low radiated emissions	Dual wires	4.75 to 5.5 (V_{CC5}) 3.1 to 5.5 (V_{IO})	30	50	3.0 V and 5.0 V compatible, low sleep mode current with automatic bus wake up, current limit protection	SPI	Current limitation on RDTX+ and RDTX- Termination and Termination verification of CSB_TX, SCLK_TX, DATA_TX, and CSB_RX, SCLK_RX, DATA_RX	16-pin SOICN	1Q 2016 EVB

10.Products available with SPI Control work with the KITUSBSPIEVME and the KITUSBSPIDGLEVME USB-SPI Interface Boards.

Transceivers — Distributed Systems Interface (DSI) Components

Product	Description	Main Characteristics	Max Data Rate	Operating Temp Range (°C)	Bus Sw. Resistance, typ/max (Ω)	Packaging	Status
MC33780	Dual DSI Master with Differential Drive	Bus controller for two differential DSI channels. SPI port for uC interface. Variable CRC generation and detection, thermal protection, frequency spreading.	150 kbps	-40 to +85	n/a	16-pin SOICW	Production
MC33781	Quad DSI Master with Differential Drive	Bus controller for four differential DSI channels. Dual SPI ports for microcontroller and safing interfaces. Variable CRC generation and detection, comprehensive fault detection, thermal protection, frequency spreading	200 kbps	-40 to +90	n/a	32-pin SOICW Exposed Pad	Production
MC33784	DSI Sensor Interface	DSI slave device optimized as a sensor interface. Differential bus capability & dual bus switches for improved EMC performance, 2-channel 10-bit ADC, 5.0 V regulated output, 3 configurable logic pins, CRC generation and checking.	n/a	-40 to +150	3.0/6.0	16-pin SOICN	Production
MC33789	Airbag System Basis Chip (SBC) with Power Supply and PSI5 Sensor Interface	Air bag control module which monitors battery voltage, sensor status and supplies various voltages to the air bag system. Uses SPI for MCU communication. Uses PSI5 for satellite sensors communication.	125 kbps	-40 to +125	n/a	64-pin LQFP Exposed Pad	Production EVB Ref. Design
MC33790	Distributed System Interface (DSI) Physical Interface (DSIP)	Dual current-limited waveshaped outputs, current sensing inputs, 3.3 V and 5.0 V	5 - 150 kbps	-40 to +85	6.0	16-pin SOICW	Production
MC33793	DSI Sensor Interface	DSI slave device. 5.0 V regulated output, 4 configurable I/O pins (logic I/O or 8-bit ADC), fault tolerant, logic output high current buffer	n/a	-40 to +125	4.0/8.0	16-pin SOICN	Production

Product Numbering — Analog Auto and Power Management Devices



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