



digital dna[™]

ANALOG

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What's New!

Motorola is a supplier of world class Analog products for power switching, networking, communications, and power management!

Analog has been part of Motorola Semiconductor for approximately 20 years.

Analog uses the proprietary *SMARTMOS* mixed signal silicon. It is a hybrid process that allows for the integration of digital, precision analog, and power products.

There are three main categories of products - monolithic *SMARTMOS* ICs, multi-die single package intelligent high power switch products, and intelligent

ANALOG PRODUCTS

SMARTMOS

Motorola's *SMARTMOS* allows designers to interface high-precision components with the harsh automotive environment.

Cost Effective

Ideally suited for rugged 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

Motorola's *SMARTMOS* technology brings a wide range of benefits to today's designs, including component reductions, power flexibility, durability, efficiency, precision, high performance analog, and robustness.

distributed control products. The common thread between these product families is the *SMARTMOS* silicon.

Our *SMARTMOS* integrated circuit products feature a rich set of mixed-signal building blocks including A/D and D/A converters, rail-to-rail op amps, comparators, charge pumps and gate drivers, voltage regulators, precision references, digital logic, and non-volatile memory. For driving loads we have power MOSFET products with inductive energy clamps, independent thermal management, short circuit protection, and diagnostic load sensing.

For additional information, please visit:

www.motorola.com/semiconductors
(then click documentation, tools, or products)

Automotive Home Page

www.motorola.com/semiconductors/automotive

Related Documents

APDPAK/D, *Analog ICs Integrated Solutions Sales Package*
BR1567/D, *Analog ICs Integrated Solutions Technology*
BR1569/D, *Analog ICs Integrated Solutions Applications*
BR1568/D, *Analog ICs Integrated Solutions Packaging*
Fact Sheets available on WEB by product MC33xxxFS/D

Product	Description
MC33389D	System Basis Chip
MC34920	0.77 ohm max Dual 45 V H-Bridge DC/stepper motors with charge pump and dual regulators
MC34923	Single 45 V H-Bridge with charge pump
MPC17510	0.45 Ohm H-Bridge
MPC17511	0.46 Ohm H-Bridge
MPC17517	0.46 Ohm, 3-Phase 6.8 V Bridge with charge pump
MPC17529	0.7 Ohm Dual 6.8 V with charge pump
MPC17533	0.7 Ohm Dual 6.8 V external charge pump
MPC17550	0.7 Ohm Quad 5 V H-Bridge Driver with DC-DC Converter
PC33897	Single Wire CAN
PC33899	Programmable Motor Driver
PC33982	SuperSmart 2mΩ Switch
PC33993	22 Input Multiple Switch detect interface (MSDI) SW TO GND
PC33996	16 Output hardware low-side switch with 24-bit serial input control

ANALOG PRODUCTS

Power ICs — Low-Side Switches (Solid State Intelligent Switches)

Product	Description	No of Outputs	High-Side or Low-Side	Continuous Current Each Output (A)	$R_{DS(on)}$ (m Ω) of Each Output	Current Limitation (A)	Current Limitation Standby Max (μ A)	Protection Features	Control	Status/Fault Reporting	Packaging	Status
MC33291	(1.2 Ω $R_{DS(on)}$) Smart Eight Output Switch with SPI Interface	8	L	0.5	1000	1 to 3.0	25	Short Circuit, Current Limit, Temp Sense	SPI	SPI	24-pin SOICW	Production EVB
MC33291L	(1.6 Ω $R_{DS(on)}$) Smart Eight Output Switch with SPI Interface	8	L	0.5	1400	1 to 3.0	25	Short Circuit, Current Limit, Temp Sense	SPI	SPI	24-pin SOICW	Production EVB
MC33298	(0.8 Ω $R_{DS(on)}$) Smart Eight Output Switch with SPI I/O Control	8	L	1.0	650	3 to 6.0	50	Short Circuit, Current Limit, Temp Sense	SPI	SPI	24-pin SOICW	Production EVB
MC33385	(0.25 Ω $R_{DS(on)}$) Quad Low-Side Injector Driver	4	L	2.0	500	3.0	6 mA	Short Circuit, Current Limit, Temp Sense	Parallel	SPI	20-pin HSOP	Production
MC33397	(0.9 Ω $R_{DS(on)}$) Smart Dual/Hex Output Switch with SPI and Parallel Input Control	2 or 6	L	0.35	2 x 223, 6 x 700	1.5	10	Short Circuit, Current Limit, Temp Sense	SPI	SPI	24-pin SOICW 32-pin QFN (7 x 7)	Production EVB
MC33880	(1.0 Ω $R_{DS(on)}$) Configurable Eight Output SPI Controlled Switch	8	H/L	0.25	1000	1.2	25	Short Circuit, Current Limit, Temp Sense	SPI w/2 PWM	SPI	28-pin SOICW	Samples Now; 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	Short Circuit, Current Limit, Temp Sense	SPI	SPI	30-pin HSOP 32-pin QFN (7 x 7)	Production
PC33996	16 Output Hardware Low-Side Switch with 24-Bit Serial Input Control	16	L	1.0	600	1–2.5	50	Short Circuit, Current Limit, Temp Sense, Open Load	SPI	SPI	32-pin SOICW	Samples Now; Production Q1/2004

ANALOG PRODUCTS

ANALOG PRODUCTS (continued)

Power ICs — High-Side Switches (Solid State Intelligent 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)	Protection Features	Control	Status/Fault Reporting	Packaging	Status
MC33143	Smart Dual High-Side Switch	2	H	3.0	380	3 to 6	300	Short Circuit, Current Limit, Temp Sense	Parallel	2 Status Pins	24-pin SOICW	Production
MC33286	Dual High-Side Switch	2	H	6.0	2 x 35	30	5	Short Circuit, Current Limit, Temp Sense	Parallel	1 Status Pin (Overtemp / Openload)	20-pin SOICW	Production
MC33288	Solid State Relay for High-Current Incandescent Lamps	2	H	8.0	2 x 20	30	5	Short Circuit, Current Limit, Temp Sense	Parallel	1 Status Pin (Overtemp / Openload)	20-pin HSOP	Production
MC33289	Dual High-Side Switch for Inductive Load	2	H	4.0	2 x 40	9	5	Short Circuit, Current Limit, Temp Sense, Current Recopy	Parallel	1 Status Pin (Overtemp / Openload)	20-pin SOICW	Production
MC33486	Dual High-Side Switch for H-Bridge	2	H	10	15	35	5	Short Circuit, Current Limit, Temp Sense, Current Recopy	Parallel	1 Status Pin (Overtemp / Overcurrent)	20-pin HSOP	Production
MC33880	Configurable Eight Output SPI Controlled Switch	8	H/L	0.5	1000	1.2	25	Short Circuit, Current Limit, Temp Sense	SPI w/2 PWM	SPI	28-pin SOICW 32-pin QFN (7 x 7)	Production
MC33888	Quad High-Side Switch and Octal Low-Side Switch	12	H	4 @ 10 A 8 @ 500 mA	2 x 10, 2 x 40, 8 x 600	45/20	5	Short Circuit, Current Limit, Temp Sense, Current Recopy	SPI	SPI	64-pin HQFP 35-pin PQFN	Production Q4/2003
PC33982	Self Protected 2 mΩ Switch with Diagnostic and Protection	1	H	60.0	2	100 or 150 Selectable	5	Current Limit, Temp Sense, Over/Undervoltage, Shutdown, Overcurrent, Reverse Polarity	SPI	SPI	16-pin PQFN	Limited Samples; Production Q4/2003

ANALOG PRODUCTS (continued)

Power ICs — H-Bridges and Configurable Switches (Totem-Pole Output Devices)

Product	Description	Main Characteristics	No of Outputs	R _{DS(on)} (mΩ) of Each Output	Current Limitation (A)	Current Limitation Standby Max	Protection Features	Control	Status Reporting	Packaging	Status
MC33186	H-Bridge Driver (5 A)	40 V/150 mΩ per FET	2	150	6	20 mA	Short Circuit, Current Limit, Temp Sense	Parallel	1 Status Pin (Overcurrent / Overtemp)	20-pin HSOP	Production
MC33395	Three-Phase Bridge Gate Driver IC	Three-channel high-side/three-channel low-side MOSFET driver with fault report pin, mode selectable	6	n/a	Internal comparator	60 mA	Current Limit, Temp Sense	Parallel	No Status	32-pin SOICW	Production
MC33486	Dual High-Side Switch for H-Bridge	40 mΩ, 10 A	2	2 x 15	35	5 μA	Short Circuit, Current Limit, Temp Sense, Current Recopy	Parallel	1 Status Pin (Overcurrent / Overtemp)	20-pin HSOP	Production
MC33886	H-Bridge Driver (5.2 A)	225 mΩ @150°C	2	120	6	20 mA	Short Circuit, Current Limit, Temp Sense	Parallel	1 Status Pin (Overcurrent / Overtemp)	20-pin HSOP	Production EVB
MC33887	H-Bridge Driver with Sleep Mode (5.2 A)	130 mΩ @ 25°C, sleep mode, current sense	2	130	6	25 μA	Short Circuit, Current Limit, Temp Sense	Parallel	1 Status Pin (Overcurrent / Overtemp)	20-pin HSOP 54-pin SOICW	Production EVB
MC33888	Quad High-Side Switch and Octal Low-Side Switch	Various 10 A to 500 mA	12	2 x 10, 2 x 40, 8 x 500	45/20	5 μA	Short Circuit, Current Limit, Temp Sense, Current Recopy	SPI	SPI	64-pin HQFP 35-pin PQFN	Production Production Q4/2003
MC33972	Dual H-Bridge Driver with Sleep Mode (5.2 A)	130 mΩ @ 25°C, sleep mode, current sense	2	130	6	25 μA	Short Circuit, Current Limit, Temp Sense	Parallel	1 Status Pin (Overcurrent / Overtemp)	29-pin PQFN (10 x 10)	Samples Now
MC34920	0.77 ohm max Dual 45 V H-Bridge DC/Stepper Motors with Charge Pump and Dual Regulators	Dual 45 V H-Bridge Driver for DC/stepper motor with charge pump and dual regulators	3	2.8	2,4 Note	14 ma (nom)	Overcurrent Undervoltage Overtemp Shutdown	Serial I/F	System Reset on Faults	44-pin PLCC	Production
MC34923	Single 45 V H-Bridge with Charge Pump	Single 45 V H-Bridge with charge pump	1	0.6	8,0 Note	n/a	Overcurrent Undervoltage Overtemp Reverse Battery	Serial I/F	Overcurrent Undervoltage Overtemp Reverse Battery	24-pin SOICW	Production
MPC17510	0.45 Ohm H-Bridge	Single 15 V H-Bridge with charge pump	1	0.45	3 Note	1 ma	Shoot Through Undervoltage Detect	Parallel	Shutdown Undervoltage	24-pin TSSOP	Production
MPC17511	0.46 Ohm H-Bridge	Single 6.8 V H-Bridge with charge pump	1	0.46	3 Note	1 ma	Shoot Through Undervoltage Detect	Parallel	Shutdown Undervoltage	16-pin VMFP	Production
MPC17517	0.46 Ohm, 3-Phase 6.8 V Bridge with Charge Pump	3-Phase 6.8 V Bridge with charge pump	1.5	0.46	3 Note	1 ma	Shoot Through Undervoltage Detect	Parallel	Shutdown Undervoltage	16-pin TSSOP	Production
MPC17529	0.7 Ohm Dual 6.8 V with Charge Pump	Dual 6.8 V with charge pump	2	0.7	1,4 Note	1 ma	Shoot Through Undervoltage Detect	Parallel	Shutdown Undervoltage	20-pin VMFP	Production

Note: Peak Current Limitation

ANALOG PRODUCTS

Power ICs — H-Bridges and Configurable Switches (Totem-Pole Output Devices) (continued)

Product	Description	Main Characteristics	No of Outputs	$R_{DS(on)}$ (m Ω) of Each Output	Current Limitation (A)	Current Limitation Standby Max	Protection Features	Control	Status Reporting	Packaging	Status
MPC17533	0.7 Ohm Dual 6.8 V External Charge Pump	Dual 6.8 V external charge pump	2	0.7	1.4 ^{Note}	< 200 μ A	Shoot Through Undervoltage Detect	Parallel	Shutdown Undervoltage	16-pin VMFP	Production
MPC17550	0.7 Ohm Quad 5 V H-Bridge Driver with DC-DC Converter	Quad 5 V H-Bridge Driver with DC-DC Converter	4	0.7	2 ^{Note}	5 μ A	Shoot Through Undervoltage Detect	Parallel	Shutdown Undervoltage	36-pin VMFP	Production

Note: Peak Current Limitation

Power ICs — Pre-Drivers (High-Side MOSFET Gate Drivers)

Product	Description	Main Characteristics	Operating Voltage (V)	Input Control	Output Drives High/Low-Side Drive Current	Protection Features	Status Reporting	Packaging	Status
MC33198	High-Side, N-Channel MOSFET Gate Driver for Driving Loads with High In-Rush Current — Lamp Driver	Single-channel high-side MOSFET gate driver with 1 kHz PWM capability and status report pin	7 to 20	1 CMOS logic	1H 110 μ A (typ)	Short Circuit, Overvoltage Load Dump	1 Status Pin	8-pin SOICN	Production
MC33285	Dual High-Side TMOS Driver	Dual channel high-side MOSFET gate driver with fault report pin	7 to 40	1 analog	2H 110 μ A (typ)	Short Circuit Overvoltage Load Dump Rev. Battery	None	8-pin SOICN	Production
MC33395	Three-Phase Bridge Gate Driver IC	Three-channel high-side/three-channel low-side MOSFET driver with fault report pin, mode selectable	5.5 to 26	1 CMOS logic	3H, 3L	Overvoltage Current Limit, Thermal Unit	None	32-pin SOICW	XC status
MC33883	H-Bridge Pre-Driver	Full bridge driver, fast PWM, global enable	5.5 to 55	4 non-invert CMOS, LSTTL logic	2H, 2L 1A pulse	Overvoltage, Undervoltage	None	20-pin SOICW	Production

ANALOG PRODUCTS (continued)

Power Management — Switching Regulators

Product	Description	Main Characteristics	Operating Input Voltage	Output Voltages	Protection Features	Packaging	Status
MC33394	Multi-Output Power Supply	Step-down/step-up switching pre-regulator, 8 voltage regulators (5 V, 3.3 V, 2.6 V adj.), 2.6 V adj. standby regulator, switched battery output, power sequencing, resets, SPI, high-speed CAN transceiver with wakeup function	4.0 V to 26.5 V (45 V transient)	5 V @ 400 mA 3 x 5 V @ 100 mA 5 V/3.3 V @ 150 mA 3.3 V @ 120 mA 2.6 V-adjustable @ 400 mA 2.6 V-adjustable @ 60 mA standby switched battery	Short circuit to GND, short circuit to battery, current limit, therm	44-pin HSOP 44-pin QFN 54-pin SOICW	Production
MC33701	Dual Output Power Supply Switching (1.5 A)	Step-down switching regulator with adjustable output voltage from 0.8 V to 5.0 V. Linear regulator with adjustable output voltage from 0.8 V to 5.0 V. Power sequencing, I ² C lens interface, watchdog, voltage margining, reset	2.8 V to 6.0 V	Adjustable @ 1.5 A Adjustable @ 1.0 A	Current limit, undervoltage shutdown, overvoltage detect, over temperature shutdown	32-pin SOICW	Samples May 2003; Production Q3/2003
MC33702	Dual Output Power Supply Switching (3A)	Step-down switching regulator with adjustable output voltage from 0.8 V to 5.0 V. Linear regulator with adjustable output voltage from 0.8 V to 5.0 V. Power sequencing, I ² C lens interface, watchdog, voltage margining, reset	2.8 V to 6.0 V	Adjustable @ 3.0 A Adjustable @ 1.0 A	Current limit, undervoltage shutdown, overvoltage detect, over temperature shutdown	32-pin SOICW	Samples May 2003; Production Q3/2003
MC33703	Dual Output Power Supply Switching (10 A)	Step-down switching regulator with adjustable output voltage from 0.8 V to 5.0 V. Linear regulator with adjustable output voltage from 0.8 V to 5.0 V. Power sequencing, I ² C lens interface, watchdog, voltage margining, reset	2.8 V to 13.5 V	Adjustable @ 10 A Adjustable @ 2.0 A	Current limit, undervoltage shutdown, overvoltage detect, over temperature shutdown	28-pin PQFN	Samples May 2003; Production Q3/2003
MC33997	3.3/5.0 Volt Switching Power Supply	Step-down switching pre-regulator, 5 voltage regulators (5 V, 3.3 V), 3.3 V standby regulator, switched battery output power sequencing, reset	6.0 V to 26.5 V (40 V transient)	5 V @ 1400 mA 2 x 5 V @ 200 mA 3.3 V @ 400 mA typ 3.3 V @ 10 mA	Undervoltage shutdown, V _{DDH} current limit, V _{KAM} current limit, short circuit to GND, short circuit to V _{PWR}	24-pin SOICW	Production
PC33998	2.6/5.0 Volt Switching Power Supply	Step-down switching pre-regulator, 5 voltage regulators (5 V, 2.6 V), 2.6 V standby regulator, switched battery output power sequencing, and reset	6.0 V to 26.5 V (40 V transient)	5 V @ 1400 mA 2 x 5 V @ 200 mA 2.6 V @ 400 mA 2.6 V @ 10 mA	Undervoltage shutdown, V _{DDH} current limit, V _{KAM} current limit, short circuit to GND, short circuit to V _{PWR}	24-pin SOICW	Samples Now; Production May 2003

ANALOG PRODUCTS

ANALOG PRODUCTS (continued)

Power Management — Linear Regulators

Product	Description	Main Characteristics	Bus Type and Standard	Protection Features	Operating Voltage (V)	Current Limitation Standby (μA)		Other Features	Diagnostics	Packaging	Status
						Typ	Max				
MC33389A MC33389C MC33389D	System Basis Chip	Dual 5.0 V regulators LS CAN, Watchdog, 3 wakeup inputs	CAN low-speed, dual wires	Fault tolerant	5.5 to 27	n/a	150	Dual voltage regulator, watchdog, wakeup input, sleep mode, cyclic sense	SPI 2 MHz	28-pin SOICW 20-pin HSOP	Production
MC33889	System Basis Chip with Low Speed Fault Tolerant CAN	Dual 5.0 V regulators LS CAN, 2 wakeup inputs	CAN low-speed, dual wires	Fault tolerant	5.5 to 27	60	100	Dual voltage regulator, watchdog, wake input, sleep and stop modes	SPI 4 MHz	28-pin SOICW	Production
MC33989	System Basis Chip with High Speed CAN	Dual 5.0 V regulators HS CAN, 4 wakeup inputs	CAN high speed, dual wires	Current limitation, thermal	5.5 to 27	80	150	Dual voltage regulator, watchdog, wake input, sleep and stop modes	SPI 4 MHz	28-pin SOICW	Production

ANALOG PRODUCTS (continued)

Communication Protocols — LIN, ISO-9141, J-1850 Physical Interfaces

Product	Description	Main Characteristics	Bus Type and Standard	Protection Features	Operating Voltage (V)	Current Limitation Standby (μA)		Other Features	Control and Status Reporting	Packaging	Status
						Typ	Max				
MC33199	ISO-9141 Serial Link Driver	K and L lines (at 200 kbps)	ISO-9141 K and L lines	Current limitation, thermal	4.5 to 20	—	n/a	Baud rate up to 200 kbps	n/a	14-pin SOICN	Production
MC33290	Serial ISO-9141 K-Line Interface	K line only — OBD II compatible	ISO-9141 K line	Current limitation, thermal	8.0 to 18	—	50	Sleep mode	Parallel Communication	8-pin SOICN	Production
MC33390	Serial Link J-1850 Bus Transceiver	J-1850 low-speed multiplexing bus	J-1850	Current limitation	9.0 to 16	—	65	Sleep mode	Parallel Communication	8-pin SOICN	Production
MC33399	Local Interconnect Network (LIN) Physical Layer	LIN: Local Interconnect Network Physical Interface	LIN single wire	Current limitation, thermal	7.0 to 27	—	50	Wakeup input pin, control of external voltage regulator	Parallel Communication	8-pin SOICN	Production
MC33990	Serial Link J-1850 Bus Transceiver	J-1850 multiplexing bus with loss of ground protection	J-1850	Current limitation	9.0 to 16	—	20	Internally reverse battery protected	Parallel Communication	8-pin SOICN	Production

ANALOG PRODUCTS

ANALOG PRODUCTS (continued)

Communication Protocols — CAN Physical Interface Components

Product	Description	Main Characteristics	Bus Type and Standard	Protection Features	Operating Voltage (V)	Current Limitation Standby (µA)		Other Features	Control and Status Reporting	Packaging	Status
						Typ	Max				
MC33388	Fault-Tolerant CAN Interface	CAN low-speed fault tolerant physical interface	CAN low-speed, dual wires	Fault tolerant	6.0 to 27	—	25	Wakeup input pin, fault tolerant physical interface	Parallel Communication	14-pin SOICN	Production
MC33389A MC33389C MC33389D	System Basis Chip	Dual Vreg, LS CAN, Watchdog, 3 wakeup inputs	CAN low-speed, dual wires	Fault tolerant	5.5 to 27	—	150	Dual voltage regulator, watchdog, wakeup input, sleep mode, cyclic sense	SPI 2 MHz	28-pin SOICW 20-pin HSOP	Production
MC33889	System Basis Chip Lite with Low-Speed CAN	Dual Vreg, LS CAN, 2 wakeup inputs	CAN low-speed, dual wires	Fault tolerant	5.5 to 27	—	100	Dual voltage regulator, watchdog, wake input, sleep and stop modes	SPI 2 MHz	28-pin SOICW	Production
MC33989	System Based Chip with High-Speed CAN	SBC dual Vreg, HS CAN, 2 wakeup inputs	CAN high-speed, dual wires	Fault tolerant	5.5 to 27	—	150	Dual voltage regulator, watchdog, wake input, sleep mode, and cyclic sense	SPI 2 MHz	20-pin HSOP 28-pin SOICW	Production
PC33897	Single-Wire CAN	33.3K Standard data rate, wakeup capability (GMW3089 v2.1 compatible)	SW CAN	Thermal Shutdown, Current Limit	6.0 to 27	—	80	Regulator Control Output	2 Mode Control Pins	8-pin SOICN	Samples Now, Production Q4/2003

Communication Protocols — Distributed Systems Interface Components

Product	Description	Main Characteristics	System Type	No of Channels	Current Limit (mA)	Max Voltage	Communications	Packaging	Status
MC33790	Distributed System Interface (DSI) Physical Interface (DSIP)	Dual current-limited waveshaped outputs, current sensing inputs, 3.3 V and 5 V	Distributed	2	150	26.5	DSI	16-pin SOICW	Production
MC33793	Distributed System Interface (DSI) Share Interface Sensor	4-channel, 8-bit A-to-D converter, 5 V regulated output from DSI bus, configurable I/O, fault tolerant, high drive output	Distributed	4	6	40	DSI	16-pin SOICN	Production
MC68HC55	2-Channel SPI and DSI Protocol Converter for Bus Masters	Allows any MCU with an SPI to use a DSI Bus	Distributed	2	n/a	n/a	SPI/DSI	16-pin SOICN	Production

ANALOG PRODUCTS (continued)

Safety, Security, and Sensors

Product	Description	Main Characteristics	No of Channels	Current Limit (mA)	Max Voltage	Communications	Packaging	Status
MC33790	2-Channel DSI Physical Interface for Bus Masters	Dual current-limited waveshaped outputs, current sensing inputs, 3.3 V and 5 V	2	150	26.5	DSI	16-pin SOICW	Production
MC33793	DSI Slave for Remote Sensing	4-channel 8-bit A-to-D converter, 5 V regulated output from DSI bus, configurable I/O, fault tolerant, high drive output	4	6	40	DSI	16-pin SOICN	Production
MC33794	Electric Field Imaging Devices	125 kHz generator, shield driver, 9 electrodes + 2 V _{ref} outputs, detector, 5 V regulator, MCU support	11	75	40	ISO-9141	44-pin HSOP 54-pin SOICW	Production
MC68HC55	2-Channel SPI to DSI Protocol Converter for Bus Masters	Allows any MCU with an SPI to use a DSI bus	2	n/a	n/a	SPI/DSI	16-pin SOICN	Production

Peripheral and Special Function — Alternator Voltage Regulators

Product	Description	Main Characteristics	Operating Voltage (V)	Packaging	Status
MC33099	Adaptive Alternator Voltage Regulator	Internal lamp driver. LRC response during initial start. Programmable LRC rates from 1.8 to 7.4 sec. Fault detection of undervoltage/overvoltage, phase loss and high remote sense resistance.	4.5 to 24	16-pin SOICW	Production

Peripheral and Special Function — Contact Monitor and Accessory Control

Product	Description	Main Characteristics	Operating Voltage (V)	Packaging	Status
MC33287	Contact Monitoring and Dual Low-Side Protected Driver	Contact monitor and dual 500 mA low-side	7 to 18	20-pin SOICW	Production
MC33884	Switch Monitor Interface	12 inputs contact monitoring (6 GND, 2 Vbat, 4 configurable), pulse wetting current Master, slave, and low-power mode interrupt capability	7 to 26	24-pin SOICW	Production
PC33993	22 input Multiple Switch Detect Interface SW TO GND	22 inputs contact monitoring (16 GND, 2 Vbat, 4 configurable), pulse wetting current Master, slave, and low-power mode interrupt capability	5.5 to 26	32-pin SOICW	Production
MC33991	Dual Gauge Driver Integrated Circuit	4 Dual Output H-Bridge coil drivers, MMT-licensed two phase stepper motor compatible, Analog microstepping (12 steps/deg of pointer movement)	6.2 to 26 (nominal)	24-pin SOICW	Production

COMMUNICATIONS APPLICATION-SPECIFIC STANDARD PRODUCTS
ISDN

Product	Description	Packaging	Status	Documentation
MC145572	ISDN U-Interface Transceiver II	44-pin PLCC, 44-pin TQFP	Not Recommended For New Design	MC145572/D
MC145572A	ISDN U-Interface Transceiver II with Micro Interruptions Feature	44-pin PLCC, 44-pin TQFP	Available	(Note)
MC145574A	ISDN S/T-Interface Transceiver II	28-pin SOG, 32-pin TQFP	Available	MC145423/D
MC145576	ISDN Single-Chip NT1	44-pin TQFP	Available	MC145576/D

Note: For details or preliminary document, contact your NCSG regional marketing representative.

Universal Digital Loop Transceivers

Product	Description	Packaging	Status	Documentation
XC145423	UDLT1 Mode: Provides synchronous full-duplex 80 kbps voice and data communication in a 1B + 1D format on a single twisted pair up to 2 km. Single 5 V power supply, protocol independent. UDLT2 Mode: Provides synchronous full-duplex 160 Kbps voice and data communication in a 2B + 2D format for ISDN compatibility on a single protocol independent.	28-pin SOIC, 28-pin TSSOP	Available	MC145423/D

Access and Remote Control – Transmitters and Receivers

Product	Description	Packaging	Band (MHz)	Data Rate (Kbps)	MCU Interface	Operating Voltage (V)	Status
Transmitter (TANG03)							
MC33493	PLL Tuned UHF Transmitter, OOK/FSK Modulation, -40°C to +125°C	14-pin TSSOP	315/434/868	1 to 11	2 Logic Lines	1.8 to 3.6	Available
Receiver (ROME02)							
MC33591	PLL Tuned UHF Receiver, OOK/FSK Modulation, IF BW = 500 kHz, -40°C to +85°C	24-pin LQFP	315/434	1 to 11	SPI	5	Available
MC33592	PLL Tuned UHF Receiver, OOK Modulation, IF BW = 300 kHz, -40°C to +85°C	24-pin LQFP	315/434	1 to 11	SPI	5	Available
MC33593	PLL Tuned UHF Receiver, OOK/FSK Modulation, IF BW = 500 kHz, -40°C to +85°C	24-pin LQFP	868	1 to 11	SPI	5	Production Q3/2003
MC33594	PLL Tuned UHF Receiver, OOK/FSK Modulation (Data Manager in FSK only), IF BW = 500 kHz, -40°C to +105°C Extended Temperature	24-pin LQFP	315/434	1 to 11	SPI	5	Available
TAG Reader (STARC) for Immobilizer Applications							
MC33690	Stand-alone TAG reader with Voltage Regulator	20-pin SOIC	125 kHz	0.5 to 8	ISO-9141 K line	12	Available

COMMUNICATIONS APPLICATION-SPECIFIC STANDARD PRODUCTS (continued)

68HC08 Family

Product	ROM (Kbytes)	RAM (Kbytes)	Flash or OTP (Kbytes)	EEPROM (Kbytes)	Timer	I/O	Serial	MUX	A/D	PWM	Packaging	Oper Voltage (V)	Oper Freq (MHz)	Temp	Flash or OTP	Status	Additional Information	Documentation
MC68HC908RF2	n/a	128	2K Flash	n/a	1-CH, 16-Bit	12	n/a	n/a	n/a	See Timer	32-pin LQFP(FA)	1.8 to 3.6	4.0 Max	C, M	Flash	Available	RF transmitter integrated	MC68HC908RF2/D
MC68HC908RK2	n/a	128	2K Flash	n/a	2-CH, 16-Bit	14	n/a	n/a	n/a	See Timer	20-pin SSOP(SD)	1.8 to 3.6	4.0 Max	C	Flash	Available	Low-power embedded Flash routine	MC68HC908RK2/D

Voice and Data Coding

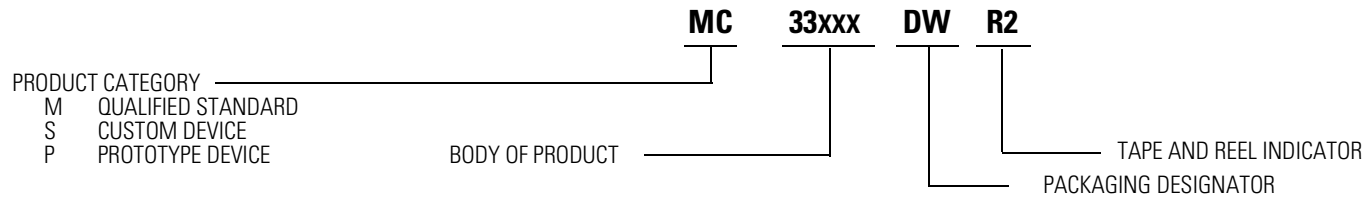
Product	Description	Packaging	Status	Documentation
MC14LC5480	5 V PCM Codec-Filter	20-pin SOG, 20-pin SSOP, 20-pin TSSOP	Available	MC14LC5480/D
MC145481	3 V PCM Codec-Filter	20-pin SSOP, 20-pin TSSOP	Available	MC145481/D
MC145482	5 V Linear Codec-Filter	20-pin SOG, 20-pin SSOP, 20-pin TSSOP	Available	MC145482/D
MC145483	3 V Linear Codec-Filter	20-pin SOG, 20-pin SSOP, 20-pin TSSOP, 32-pin QFN	Available	MC145483/D
MC145484	5 V PCM Codec-Filter	20-pin SOG, 20-pin SSOP, 20-pin TSSOP	Available	MC145484/D

Development Tools

Product	Description	Key Product	Status	Documentation
MC14LC5480EVK	PCM Codec-Filter Evaluation Kit	MC14LC5480, MC145481, MC145482, MC145483, MC145484	Available	MC14LC5480EVK/D
MC145572EVK	ISDN U-Interface Transceiver Evaluation Kit	MC145572	Available	Note
MC145574EVK	ISDN S/T-Interface Transceiver Evaluation Kit	MC145574	Available	Note
MC145576EVK	ISDN Single-Chip NT1 Evaluation Kit	MC145576	Available	Note
MC145576DRV	Driving Board for the MC145576EVK for Smart NT1 Evaluation	MC145576	Available	Note
Hipster™	Hipster Reference Design for SOHO Router	MC145572, MC145574, MPC850DH	Available	Note

Note: For documentation, go to www.motorola.com/semiconductors, and click on the Tools Library link.

PRODUCT NUMBERING - ANALOG



ANALOG PRODUCTS LOW POWER PACKAGES



8-Pin SOICN
1.27 mm Pitch
4.9 mm x 3.9 mm Body



14-Pin SOICN
1.27 mm Pitch
8.6 mm x 3.9 mm Body



16-Pin SOICN
1.27 mm Pitch
9.9 mm x 3.9 mm Body



16-Pin SOICW
1.27 mm Pitch
10.3 mm x 7.5 mm Body



20-Pin SOICW
1.27 mm Pitch
12.8 mm x 7.5 mm Body



24-Pin SOICW
1.27 mm Pitch
15.4 mm x 7.5 mm Body



28-Pin SOICW
1.27 mm Pitch
18.0 mm x 7.5 mm Body



32-Pin SOICW
0.65 mm Pitch
11.0 mm x 7.5 mm Body



54-Pin SOICW
0.65 mm Pitch
17.9 mm x 7.5 mm Body



24-Pin LQFP
0.50 mm Pitch
4.0 mm x 4.0 mm Body



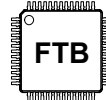
32-Pin LQFP
0.80 mm Pitch
7.0 mm x 7.0 mm Body



44-Pin LQFP
0.80 mm Pitch
10.0 mm x 10.0 mm Body



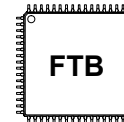
48-Pin LQFP
0.50 mm Pitch
7.0 mm x 7.0 mm Body



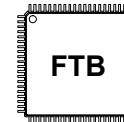
52-Pin LQFP
0.65 mm Pitch
10.0 mm x 10.0 mm Body



64-Pin LQFP
0.50 mm Pitch
10.0 mm x 10.0 mm Body



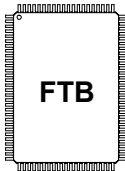
64-Pin LQFP
0.80 mm Pitch
14.0 mm x 14.0 mm Body



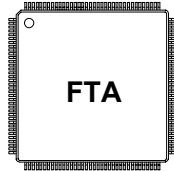
80-Pin LQFP
0.65 mm Pitch
14.0 mm x 14.0 mm Body



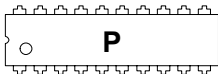
100-Pin LQFP
0.50 mm Pitch
14.0 mm x 14.0 mm Body



100-Pin LQFP
0.65 mm Pitch
20.0 mm x 14.0 mm Body



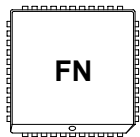
144-Pin LQFP
0.50 mm Pitch
20.0 mm x 20.0 mm Body



20-Pin PDIP
2.54 mm Pitch
26.4 mm x 6.4 mm Body

PACKAGING

ANALOG PRODUCTS LOW POWER PACKAGES (CONTINUED)



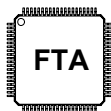
44-Pin PLCC
1.27 mm Pitch
17.5 mm x 17.5 mm Body



20-Pin SSOP
0.65 mm Pitch
7.2 mm x 5.2 mm Body



52-Pin TQFP
0.65 mm Pitch
10.0 mm x 10.0 mm Body



80-Pin TQFP
0.50 mm Pitch
12.0 mm x 12.0 mm Body

DTB/VM



14-Pin TSSOP
0.65 mm Pitch
5.0 mm x 4.4 mm Body

DTB/MTB



16-Pin TSSOP
0.65 mm Pitch
5.0 mm x 4.4 mm Body



20-Pin TSSOP
0.65 mm Pitch
6.5 mm x 4.4 mm Body



24-Pin TSSOP
0.65 mm Pitch
7.8 mm x 5.6 mm Body



28-Pin TSSOP
0.65 mm Pitch
9.7 mm x 4.4 mm Body



16-Pin MFP
1.27 mm Pitch
10.2 mm x 5.3 mm Body



20-Pin MFP
1.27 mm Pitch
12.6 mm x 5.3 mm Body

ANALOG PRODUCTS POWER PACKAGES



32-Pin SOICW-EP
0.65 mm Pitch
11.0 mm x 7.5 mm Body
6.1 mm x 5.0 mm Exposed Pad



32-Pin SOICW-EP
0.65 mm Pitch
11.0 mm x 7.5 mm Body
4.7 mm x 4.7 mm Exposed Pad



54-Pin SOICW-EP
0.65 mm Pitch
17.9 mm x 7.5 mm Body
6.3 mm x 4.6 mm Exposed Pad



54-Pin SOICW-EP
0.65 mm Pitch
17.9 mm x 7.5 mm Body
4.6 mm x 4.6 mm Exposed Pad



54-Pin SOICW-EP
0.65 mm Pitch
17.9 mm x 7.5 mm Body
10.3 mm x 5.1 mm Exposed Pad



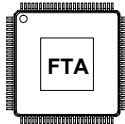
52-Pin LQFP-EP
0.65 mm Pitch
10.0 mm x 10.0 mm Body
7.0 mm x 7.0 mm Exposed Pad



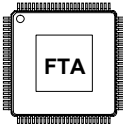
64-Pin LQFP-EP
0.50 mm Pitch
10.0 mm x 10.0 mm Body
6.5 mm x 6.5 mm Exposed Pad



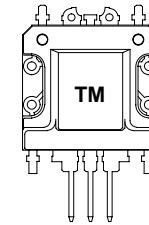
48-Pin TQFP-EP
0.50 mm Pitch
7.0 mm x 7.0 mm Body
3.4 mm x 3.4 mm Exposed Pad



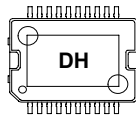
100-Pin TQFP-EP
0.50 mm Pitch
14.0 mm x 14.0 mm Body
9.0 mm x 9.0 mm Exposed Pad



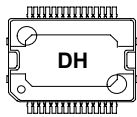
128-Pin TQFP-EP
0.40 mm Pitch
14.0 mm x 14.0 mm Body
8.9 mm x 8.9 mm Exposed Pad



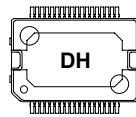
9-Pin MECH
3.16 mm Pitch
17.9 mm x 16.6 mm Body



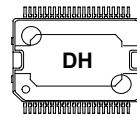
20-Pin HSOP
1.27 mm Pitch
16.0 mm x 11.0 mm Body
12.2 mm x 6.9 mm Exposed Pad



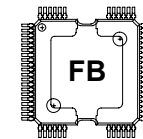
30-Pin HSOP
0.80 mm Pitch
16.0 mm x 11.0 mm Body
12.2 mm x 6.9 mm Exposed Pad



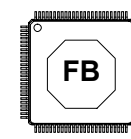
36-Pin HSOP
0.65 mm Pitch
16.0 mm x 11.0 mm Body
11.0 mm x 6.8 mm Exposed Pad



44-Pin HSOP
0.65 mm Pitch
16.0 mm x 11.0 mm Body
12.2 mm x 6.9 mm Exposed Pad



64-Pin HQFP
0.65 mm Pitch
14.0 mm x 14.0 mm Body
9.5 mm x 9.5 mm Exposed Pad



100-Pin HQFP
0.50 mm Pitch
14.0 mm x 14.0 mm Body
9.0 mm x 9.0 mm Exposed Pad



32-Pin QFN
0.65 mm Pitch
7.0 mm x 7.0 mm Body
4.7 mm x 4.7 mm Exposed Pad



44-Pin QFN
0.65 mm Pitch
9.0 mm x 9.0 mm Body
6.7 mm x 6.7 mm Exposed Pad



16-Pin PQFN
0.90 mm Pitch
12.0 mm x 12.0 mm Body



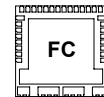
22-Pin PQFN
0.90 mm Pitch
12.0 mm x 12.0 mm Body



29-Pin PQFN
0.80 mm Pitch
10.0 mm x 10.0 mm Body



30-Pin PQFN
0.80 mm Pitch
10.0 mm x 10.0 mm Body



35-Pin PQFN
0.90 mm Pitch
12.0 mm x 12.0 mm Body

PACKAGING

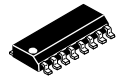
ANALOG PRODUCTS LOW POWER PACKAGES



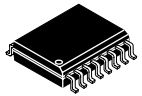
8-Pin SOICN
Case 751



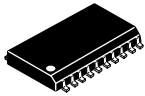
14-Pin SOICN
Case 751A



16-Pin SOICN
Case 751B



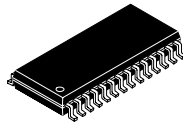
16-Pin SOICW
Case 751G



20-Pin SOICW
Case 751D



24-Pin SOICW
Case 751E



28-Pin SOICW
Case 751F



32-Pin SOICW
Case 1324



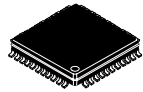
54-Pin SOICW
Case 1365



24-Pin LQFP
Case 977



32-Pin LQFP
Case 873A



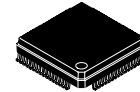
44-Pin LQFP
Case 824D



48-Pin LQFP
Case 932



52-Pin LQFP
Case 848D



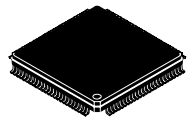
64-Pin LQFP
Case 840F



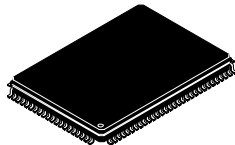
64-Pin LQFP
Case 840E



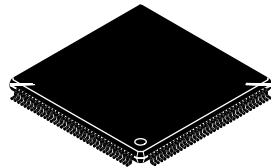
80-Pin LQFP
Case 841E



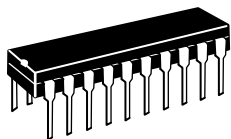
100-Pin LQFP
Case 842F



100-Pin LQFP
Case 983A

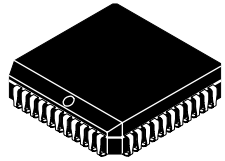


144-Pin LQFP
Case 918



20-Pin PDIP
Case 738

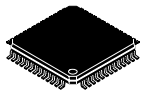
ANALOG PRODUCTS LOW POWER PACKAGES (CONTINUED)



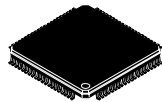
44-Pin PLCC
Case 777



20-Pin SSOP
Case 940C



52-Pin TQFP
Case 824D



80-Pin TQFP
Case 932



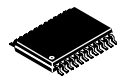
14-Pin TSSOP
Case 948G



16-Pin TSSOP
Case 948F



20-Pin TSSOP
Case 948E



24-Pin TSSOP
Case 948K



28-Pin TSSOP
Case 1168



16-Pin MFP
Case 966



20-Pin MFP
Case 967

PACKAGING

ANALOG PRODUCTS POWER PACKAGES



32-Pin SOICW-EP
Case 1437



32-Pin SOICW-EP
Case 1454



54-Pin SOICW-EP
Case 1377



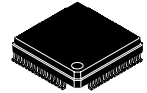
54-Pin SOICW-EP
Case 1390



54-Pin SOICW-EP
Case 1400



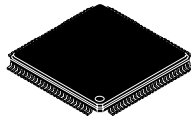
52-Pin LQFP-EP
Case 1336



64-Pin LQFP-EP
Case 840K



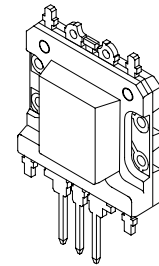
48-Pin TQFP
Case 932F



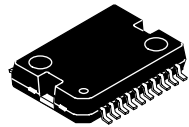
100-Pin TQFP-EP
Case 983E



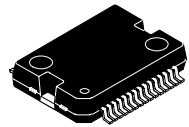
128-Pin TQFP-EP
Case 1356



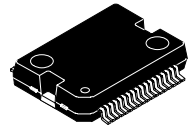
9-Pin MECH
Case 1211A



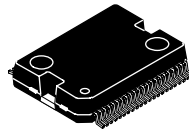
20-Pin HSOP
Case 979C



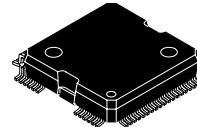
30-Pin HSOP
Case 979B



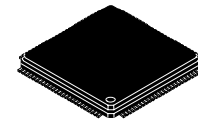
36-Pin HSOP
Case 1403



44-Pin HSOP
Case 1291



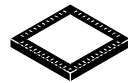
64-Pin HQFP
Case 1315



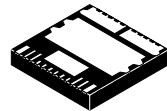
100-Pin HQFP
Case 983D



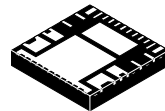
32-Pin QFN
Case 1306



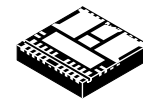
44-Pin QFN
Case 1310



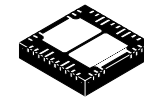
16-Pin PQFN
Case 1402



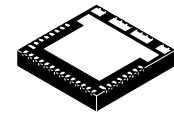
22-Pin PQFN
Case 1431



29-Pin PQFN
Case 1445



30-Pin PQFN
Case 1469



35-Pin PQFN
Case 1438

NOTES

NOTES

NOTES

HOW TO REACH US:

USA/EUROPE/LOCATIONS NOT LISTED:

Motorola Literature Distribution
P.O. Box 5405
Denver, Colorado 80217
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Minato-ku
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81-3-3440-3569

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