**MOTOROLA**
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GENERIC SYSTEM DIAGRAMS

- **MOTOR CONTROL** - Regulates the speed, rotation and torque of a motor

- **MOTION CONTROL** - Governs the physical displacement, movement, location or position of a mechanical assembly driven by an intermittent duty motor

- **STATIC LOAD CONTROL** - Fully or partially powers-up the elements of a relatively constant load

- **EMBEDDED POWER SUPPLY** - Converts system input power to the voltages and currents required by the MCU or DSP

- **WIRED COMMUNICATION** - Provides device-to-device communication within a system
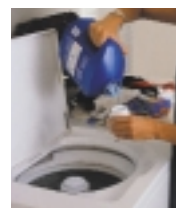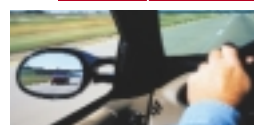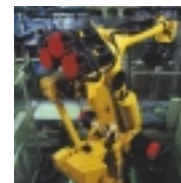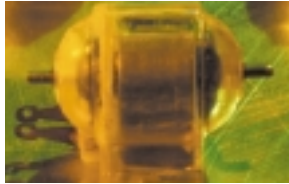
MOTOR CONTROL GENERIC SYSTEM DIAGRAM

Motor control is the function of regulating the speed, rotation and torque of a motor.

TYPICAL APPLICATIONS:

- Blowers
- Fans
- Vacuums
- Pumps
- Compressors
- Golf Carts
- Scooters
- Electric Wheelchairs
- Electric Boats
- Conveyors
- Shakers
- Vibrators
- Mixers
- Shredders
- Winches
- Elevators
- Treadmills
- Power Tools

LOOP CONTROL SCHEMA:

- Speed
- Torque/Current
- Voltage
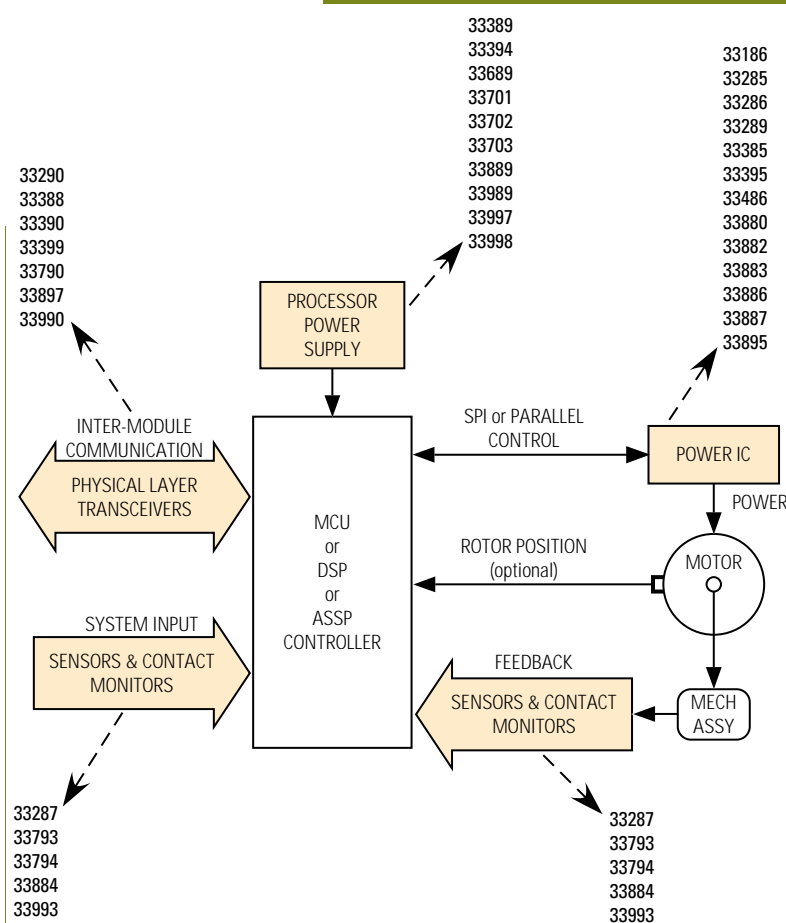- Rotation (CW/CCW)
- None (Open Loop)

POWER CONTROL SCHEMA:

- ON/OFF
- PWM
- Linear
- Volts/Hertz
- Rotating Vector
- Phase Angle

MOTOR TYPES:

- DC Brush Commutator
- DC 3-Phase Brushless
- Universal
- AC Induction
- Switched Reluctance

CONSIDER:

- MC68HC08
- MC68HC12
- DSP56800
- MPC555

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PROCESSOR POWER SUPPLY

INTER-MODULE COMMUNICATION

PHYSICAL LAYER TRANSCEIVERS

SPI or PARALLEL CONTROL

POWER IC

POWER

MCU or DSP or ASSP CONTROLLER

ROTOR POSITION (optional)

MOTOR

SYSTEM INPUT

SENSORS & CONTACT MONITORS

FEEDBACK

SENSORS & CONTACT MONITORS

MECH ASSY

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MOTOR CONTROL GENERIC SYSTEM DEVICES

Motorola Part Number	Description	Main Characteristic	Portfolio Category
33186	150 mΩ H-Bridge	150 mΩ High- and Low-Side Switches with Protection Features	POWER IC H-Bridge
33285	Dual High-Side TMOS Driver	Dual FET Pre-Driver with Single Input and Protection Features	POWER IC High-Side Switch
33286	Dual High-Side TMOS Driver (25 mΩ $R_{DS(ON)}$)	30 A Output Current Limit, Overtemperature and Undervoltage Shutdown, and Status Reporting	POWER IC High-Side Switch
33287	Contact Monitoring and Dual Low-Side Protected Switch	8x Voltage Sense Inputs with Thresholds Ratiometric to V_{BAT} for Ground or V_{BAT} Sensing	SAFETY/SENSORS Contact Monitor
33289	Dual High-Side Switch for Inductive Loads (30 mΩ $R_{DS(ON)}$)	Independent Overcurrent, Over- and Undervoltage Shutdown, Overtemperature Shutdown, and Diagnostics	POWER IC High-Side Switch
33290	Serial ISO-9141 K-Line Interface	Bi-Directional Half-Duplex Communication to 50 kB/s, Bus Shorts and Overtemperature Protection	COMMUNICATION ISO-9141
33385	Quad Low-Side Switch (250 mΩ $R_{DS(ON)}$)	Fully Protected Switches with Parallel Control, Independent SPI Diagnostics Reporting	POWER MANAGEMENT Switching Regulator
33388	Fault Tolerant CAN Interface	Low-Speed CAN with Automatic Single Wire Fault Mode, Bus Activity Wake-Up with Inhibit Output	COMMUNICATION CAN
33389	System Basis Chip with Low-Speed CAN	Protected Dual Regulator, Window Watchdog, Reset, Interrupt, Wake-Ups, SPI, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33390	Serial Link ISO-9141 Bus Transceiver	Single-Wire Communication using VPW Modulation to 20 kB/s, Waveshaping, and Current Limited Bus Driver	COMMUNICATION ISO-9141
33394	Multiple Output Power Supply	Step-Up/Down Pre-Regulator, 8x Voltage Outputs, SPI, High-Speed CAN Transceiver with Wake-Up Function	POWER MANAGEMENT Switching Regulator
33395	Three-Phase Bridge Pre-Driver	3-Channel High-Side / Low-Side External MOSFET Driver with Fault Reporting and Mode Select	POWER IC H-Bridge
33399	Local Interconnect Network LIN - Physical Layer	LIN Transceiver with Wake and Enable Inputs, Inhibit Output	COMMUNICATION LIN
33486	Dual High-Side Switch for H-Bridge	Protected, 40 mΩ, Up to 10 A, Outputs to Control Two External FETs for H-Bridge, Load Current Feedback	POWER IC H-Bridge
33689	System Base Chip with LIN Transceiver	2x Voltage Outputs + 2x High-Side Switches, Fully Protected, Pre-Warning, Window Watchdog, SPI	POWER MANAGEMENT Linear Regulator
33701	Microprocessor Power Supply (1.5 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33702	Microprocessor Power Supply (3.0 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33703	Microprocessor Power Supply (10 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33790	2-Channel DSI Physical Interface for Bus Masters	Dual Current-Limited and Waveshaped Outputs, Current Sensing Inputs, 3.3 V and 5.0 V	COMMUNICATION Distributed System
33793	DSI Slave for Remote Sensing	4-Channel, 8-Bit A-to-D, 5.0 V Regulated Output, DSI Bus, Configurable I/O, Fault Tolerant, High-Drive Output	COMMUNICATION Distributed System
33794	Electric Field Imaging Device	Non-Contact, Low-Level Electric Field Sensing, Nine Electrodes, ISO-9141 Interface, Direct Interfacing to MCU	SAFETY/SENSORS Object Sensor
33880	(0.55 Ω $R_{DS(ON)}$) Configurable Eight Output Switch with SPI	Fully Protected, Low-Side / High-Side Configurable, Diagnostics, OFF Open Load Detect	POWER IC Configurable Switch
33882	Six Output Switch (0.3 Ω $R_{DS(ON)}$) with SPI and Parallel Input Control	Fully Protected, 6x 1.0 A (SPI and Parallel Control) + 2x 30 mA (Parallel Control) Switches, SPI Diagnostics	POWER IC Low-Side Switch
33883	H-Bridge Pre-Driver	Drives Four External N-Channel FETs, 4x Parallel Input Control, Fast PWM, "Global" Enable	POWER IC Pre-Driver (TMOS)
33884	Switch Monitor Interface	12 Sense Inputs (6x GND, 2x V_{BAT}, 4x Configurable), SPI Wetting Current, Status Change Interrupt/Wake-Up	SPECIAL FUNCTION
33886	5.2 A H-Bridge	Supports Forward, Reverse, Freewheeling, 10 kHz PWM, Status, Disable Inputs	POWER IC H-Bridge
33887	5.2 A H-Bridge	Supports Forward, Reverse, Freewheeling, 10 kHz PWM, Status, Disable Inputs, Load Current Feedback	POWER IC H-Bridge
33889	System Basis Chip with Low-Speed Fault Tolerant CAN	2x Regulator, High-Side Switched Power, LS CAN, SPI, Wake-Up Inputs, Window Watchdog, Reset, Interrupt	POWER MANAGEMENT Linear Regulator
33895	Quad H-Bridge with LIN Transceiver	4x 400 mΩ H-Bridges, Load Current Feedback, Diagnostics	POWER IC H-Bridge
33897	Single Wire CAN Transceiver	Carrier Sense Multiple Access/Collision Resolution (CSMA/CR) Data Link, Bus Activity Sleep/Wake-Up	COMMUNICATION SWCAN
33989	System Basis Chip with High-Speed CAN	2x Regulator, High-Side Switched Power, SPI, Wake-Up Inputs, Window Watchdog, Interrupt, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33990	Serial Link J-1850 Bus Transceiver	J-1850 Multiplexing Bus with Enhanced Ground Loss Protection	COMMUNICATION J-1850
33993	Switch Monitor Interface	Programmable Sensors: 4x V_{BAT} and GND, 6x GND, 2x V_{BAT}, Programmable Wetting Current, Reset, Interrupt	SPECIAL FUNCTION Contact Monitor
33997	3.3/5.0 V Switching Power Supply	5.0 V Sensorless Current Mode Buck + 3.3 V Linear Regulator, 3.3 V Standby, Reset and Power-ON Reset	POWER MANAGEMENT Switching Regulator
33998	2.6/5.0 V Switching Power Supply	5.0 V Sensorless Current Mode Buck + 2.6 V Linear Regulator, 2.6 V Standby, Reset and Power-ON Reset	POWER MANAGEMENT Switching Regulator

MOTION CONTROL GENERIC SYSTEM DIAGRAM

Motion control is the function of governing the physical displacement, movement, location or position of a mechanical assembly driven by an intermittent duty motor.

TYPICAL APPLICATIONS:

- CNC Machining
- Robotics
- HVAC Mix Louvres
- Hard Automation
- Power-Assisted Operator Controls
- Process Controls
- Autopilots
- Guidance/Steering Controls
- Servos and Radio Control
- Antenna Rotors
- Dish Positioners
- Power Adjustable Beds
- Remote Pan and Tilt Mounts
- Printer Paper Handlers
- Scanners
- Consumer Portable Products
- Digital Cameras
- Printers
- Office Equipment

LOOP CONTROL SCHEMA:

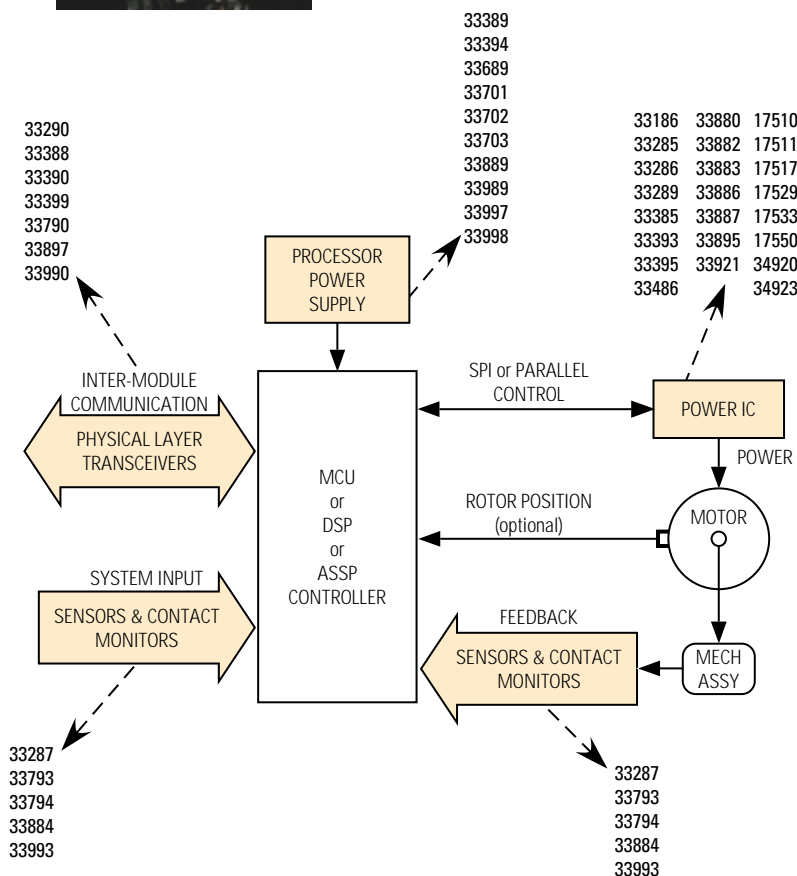- Rotation (CW/CCW)
- Position
- Step Count
- Operator (Open Loop)

POWER CONTROL SCHEMA:

- ON / OFF
- PWM
- Linear
- Stepper (Pulse & Hold)

MOTOR TYPES:

- DC Brush Commutator
- Brushless DC
- Stepper
- Linear
- Solenoid
- Servos

CONSIDER:

- MC68HC08
- MC68HC12
- DSP56800
- MPC5200

Diagram

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33285	33882	17511
33286	33883	17517
33289	33886	17529
33385	33887	17533
33393	33895	17550
33395	33921	34920
33486		34923

PROCESSOR POWER SUPPLY

INTER-MODULE COMMUNICATION

PHYSICAL LAYER TRANSCEIVERS

SPI or PARALLEL CONTROL

POWER IC

POWER

MCU or DSP or ASSP CONTROLLER

ROTOR POSITION (optional)

MOTOR

SYSTEM INPUT

SENSORS & CONTACT MONITORS

FEEDBACK

SENSORS & CONTACT MONITORS

MECH ASSY

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MOTION CONTROL GENERIC SYSTEM DEVICES

Motorola Part Number	Description	Main Characteristic	Portfolio Category
33186	150 mΩ H-Bridge	150 mΩ High- and Low-Side Switches with Protection Features	POWER IC H-Bridge
33285	Dual High-Side TMOS Driver	Dual FET Pre-Driver with Single Input and Protection Features	POWER IC High-Side Switch
33286	Dual High-Side TMOS Driver (25 mΩ $R_{DS(ON)}$)	30 A Output Current Limit, Overtemperature and Undervoltage Shutdown, and Status Reporting	POWER IC High-Side Switch
33287	Contact Monitoring and Dual Low-Side Protected Switch	8x Voltage Sense Inputs with Thresholds Ratiometric to V_{BAT} for Ground or V_{BAT} Sensing	SAFETY/SENSORS Contact Monitor
33289	Dual High-Side Switch for Inductive Loads (30 mΩ $R_{DS(ON)}$)	Independent Overcurrent, Over- and Undervoltage Shutdown, Overtemperature Shutdown, and Diagnostics	POWER IC High-Side Switch
33290	Serial ISO-9141 K-Line Interface	Bi-Directional Half-Duplex Communication to 50 kB/s, Bus Shorts and Overtemperature Protection	COMMUNICATION ISO-9141
33385	Quad Low-Side Switch (250 mΩ $R_{DS(ON)}$)	Fully Protected Switches with Parallel Control, Independent SPI Diagnostics Reporting	POWER MANAGEMENT Switching Regulator
33388	Fault Tolerant CAN Interface	Low-Speed CAN with Automatic Single Wire Fault Mode, Bus Activity Wake-Up with Inhibit Output	COMMUNICATION CAN
33389	System Basis Chip with Low-Speed CAN	Protected Dual Regulator, Window Watchdog, Reset, Interrupt, Wake-Ups, SPI, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33390	Serial Link ISO-9141 Bus Transceiver	Single-Wire Communication using VPW Modulation to 20 kB/s, Waveshaping, and Current Limited Bus Driver	COMMUNICATION ISO-9141
33393	MUX Stepper Motor Controller	68HC05 CPU Core, RAM, ROM, EEPROM, Oscillator, Regulator, POR, 2x H-Bridge, Stall Detect, Bus Interface	POWER MANAGEMENT Stepper Control
33394	Multiple Output Power Supply	Step-Up/Down Pre-Regulator, 8x Voltage Outputs, SPI, High-Speed CAN Transceiver with Wake-Up Function	POWER MANAGEMENT Switching Regulator
33395	Three-Phase Bridge Pre-Driver	3-Channel High-Side / Low-Side External MOSFET Driver with Fault Reporting and Mode Select	POWER IC H-Bridge
33399	Local Interconnect Network LIN - Physical Layer	LIN Transceiver with Wake and Enable Inputs, Inhibit Output	COMMUNICATION LIN
33486	Dual High-Side Switch for H-Bridge	Protected, 40 mΩ, Up to 10 A, Outputs to Control Two External FETs for H-Bridge, Load Current Feedback	POWER IC H-Bridge
33689	System Base Chip with LIN Transceiver	2x Voltage Outputs + 2x High-Side Switches, Fully Protected, Pre-Warning, Window Watchdog, SPI	POWER MANAGEMENT Linear Regulator
33701	Microprocessor Power Supply (1.5 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33702	Microprocessor Power Supply (3.0 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33703	Microprocessor Power Supply (10 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33790	2-Channel DSI Physical Interface for Bus Masters	Dual Current-Limited and Waveshaped Outputs, Current Sensing Inputs, 3.3 V and 5.0 V	COMMUNICATION Distributed System
33793	DSI Slave for Remote Sensing	4-Channel, 8-Bit A-to-D, 5.0 V Regulated Output, DSI Bus, Configurable I/O, Fault Tolerant, High-Drive Output	COMMUNICATION Distributed System
33794	Electric Field Imaging Device	Non-Contact, Low-Level Electric Field Sensing, Nine Electrodes, ISO-9141 Interface, Direct Interfacing to MCU	SAFETY/SENSORS Object Sensor
33880	(0.55 Ω $R_{DS(ON)}$) Configurable Eight Output Switch with SPI	Fully Protected, Low-Side / High-Side Configurable, Diagnostics, OFF Open Load Detect	POWER IC Configurable Switch
33882	Six Output Switch (0.3 Ω $R_{DS(ON)}$) with SPI and Parallel Input Control	Fully Protected, 6x 1.0 A (SPI and Parallel Control) + 2x 30 mA (Parallel Control) Switches, SPI Diagnostics	POWER IC Low-Side Switch
33883	H-Bridge Pre-Driver	Drives Four External N-Channel FETs, 4x Parallel Input Control, Fast PWM, "Global" Enable	POWER IC Pre-Driver (TMOS)
33884	Switch Monitor Interface	12 Sense Inputs (6x GND, 2x V_{BAT}, 4x Configurable), SPI Wetting Current, Status Change Interrupt/Wake-Up	SPECIAL FUNCTION
33886	5.2 A H-Bridge	Supports Forward, Reverse, Freewheeling, 10 kHz PWM, Status, Disable Inputs	POWER IC H-Bridge
33887	5.2 A H-Bridge	Supports Forward, Reverse, Freewheeling, 10 kHz PWM, Status, Disable Inputs, Load Current Feedback	POWER IC H-Bridge
33889	System Basis Chip with Low-Speed Fault Tolerant CAN	2x Regulator, High-Side Switched Power, LS CAN, SPI, Wake-Up Inputs, Window Watchdog, Reset, Interrupt	POWER MANAGEMENT Linear Regulator
33895	Quad H-Bridge with LIN Transceiver	4x 400 mΩ H-Bridges, Load Current Feedback, Diagnostics	POWER IC H-Bridge
33897	Single Wire CAN Transceiver	Carrier Sense Multiple Access/Collision Resolution (CSMA/CR) Data Link, Bus Activity Sleep/Wake-Up	COMMUNICATION SWCAN
33989	System Basis Chip with High-Speed CAN	2x Regulator, High-Side Switched Power, SPI, Wake-Up Inputs, Window Watchdog, Interrupt, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33990	Serial Link J-1850 Bus Transceiver	J-1850 Multiplexing Bus with Enhanced Ground Loss Protection	COMMUNICATION J-1850
33993	Switch Monitor Interface	Programmable Sensors: 4x V_{BAT} and GND, 6x GND, 2x V_{BAT}, Programmable Wetting Current, Reset, Interrupt	SPECIAL FUNCTION Contact Monitor
33997	3.3/5.0 V Switching Power Supply	5.0 V Sensorless Current Mode Buck + 3.3 V Linear Regulator, 3.3 V Standby, Reset and Power-ON Reset	POWER MANAGEMENT Switching Regulator
33998	2.6/5.0 V Switching Power Supply	5.0 V Sensorless Current Mode Buck + 2.6 V Linear Regulator, 2.6 V Standby, Reset and Power-ON Reset	POWER MANAGEMENT Switching Regulator

STATIC LOAD CONTROL GENERIC SYSTEM DIAGRAM

Static load control is the function of fully or partially powering-up the elements of a relatively constant load.

TYPICAL APPLICATIONS:

- Security Systems
- HVAC
- Water Heaters
- Charging Systems
- Lighting Displays
- Score Boards
- Irrigation Controls
- Programmable Thermostats
- Gaming Machines (Casino/Arcade)
- Industrial Controls
- Large Building Automation
- White Goods Appliances
- Automotive Body Electronics
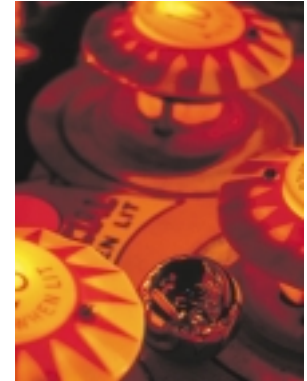- Automotive Safety Systems

LOOP CONTROL SCHEMA:

- Current
- Voltage
- Sensor Feedback
- Limit Switch ("Bang-Bang")
- None (Open Loop)

POWER CONTROL SCHEMA:
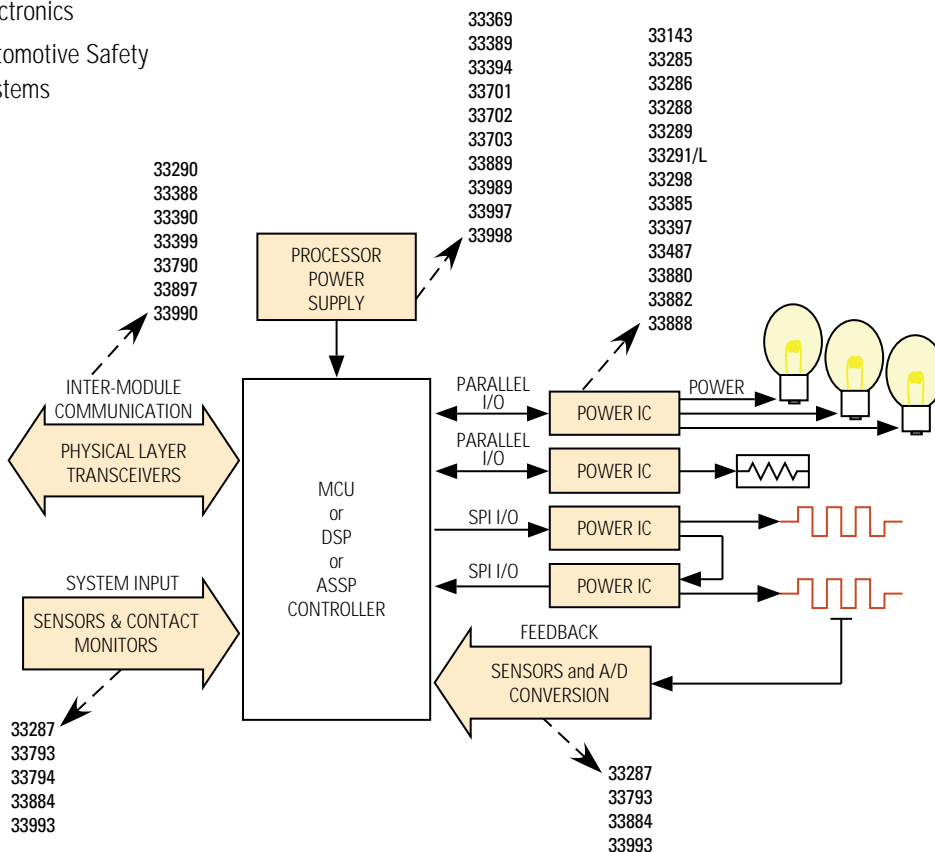
- ON/OFF
- PWM
- PFM
- Linear
- Phase Angle

STATIC LOAD TYPES:

- Incandescent Lamps
- Heating Elements
- Leds/Lasers
- Unltrasonic Transducers
- Piezo Transducers
- Induction Coils
- Sirens/Horns/Bells

CONSIDER:

- MC68HC08
- MC68HC12
- DSP56800
- MPC555

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PROCESSOR POWER SUPPLY

INTER-MODULE COMMUNICATION

PHYSICAL LAYER TRANSCEIVERS

SYSTEM INPUT

SENSORS & CONTACT MONITORS

MCU or DSP or ASSP CONTROLLER

PARALLEL I/O

POWER IC

POWER

PARALLEL I/O

POWER IC

SPI I/O

POWER IC

SPI I/O

POWER IC

FEEDBACK

SENSORS and A/D CONVERSION

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STATIC LOAD CONTROL GENERIC SYSTEM DEVICES

Motorola Part Number	Description	Main Characteristic	Portfolio Category
33143	Dual High-Side Switch (140 mΩ $R_{DS(ON)}$)	1.0 A Switch, Status Flag, Interrupt Out, Chip Enable, Independent Protection Features	POWER IC High-Side Switch
33285	Dual High-Side TMOS Driver	Dual FET Pre-Driver with Single Input and Protection Features	POWER IC High-Side Switch
33286	Dual High-Side Switch (25 mΩ $R_{DS(ON)}$)	30 A Output Current Limit, Overtemperature and Under-voltage Shutdown, and Status Reporting	POWER IC High-Side Switch
33287	Contact Monitoring and Dual Low-Side Protected Switch	8x Voltage Sense Inputs with Thresholds Ratiometric to V_{BAT} for Ground or V_{BAT} Sensing	SAFETY/SENSORS Contact Monitor
33288	Dual High-Side Switch (20 mΩ $R_{DS(ON)}$)	2x Fully Protected Switch, Independent Parallel Control, Load Current Feedback, Status Flag, Open Load Detect	POWER IC High-Side Switch
33289	Dual High-Side Switch for Inductive Loads (30 mΩ $R_{DS(ON)}$)	Independent Overcurrent, Over- and Undervoltage Shutdown, Overtemperature Shutdown, Diagnostics	POWER IC High-Side Switch
33290	Serial ISO-9141 K-Line Interface	Bidirectional Half-Duplex Communication to 50 kB/s, Bus Shorts and Overtemperature Protection	COMMUNICATION ISO-9141
33291/L	(0.6 Ω $R_{DS(ON)}$) / 33291L (1.2 Ω $R_{DS(ON)}$) Eight Output Switch with SPI	Fully Protected Independent Switches, SPI, Specific Diagnostics, OFF Open Load Detect, Outputs Clamped	POWER IC Low-Side Switch
33298	(0.4 Ω $R_{DS(ON)}$) Eight Output Switch with SPI	Fully Protected Independent Switches, SPI, Specific Diagnostics, OFF Open Load Detect, Outputs Clamped	POWER IC Low-Side Switch
33385	Quad Low-Side Switch (250 mΩ $R_{DS(ON)}$)	Fully Protected Independent Switches, SPI, Specific Diagnostics, OFF Open Load Detect, Outputs Clamped	POWER IC Low-Side Switch
33388	Fault Tolerant CAN Interface	Low-Speed CAN with Automatic Single Wire Fault Mode, Bus Activity Wake-Up with Inhibit Output	COMMUNICATION CAN
33389	System Basis Chip with LIN Transceiver	Protected Dual Regulator, Window Watchdog, Reset, Interrupt, Wake-Ups, SPI, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33390	Serial Transceiver J-1850 Bus Transceiver	Single-Wire Communication using VPW Modulation to 20 kB/s, Waveshaping, and Current Limited Bus Driver	COMMUNICATION J-1850
33394	Multi-Output Power Supply	Step-Up/Down Pre-Regulator, 8x Voltage Outputs, SPI, High-Speed CAN Transceiver with Wake-Up Function	POWER MANAGEMENT Switching Regulator
33397	Configurable Output Switch (0.7 Ω $R_{DS(ON)}$) with SPI and Parallel Input Control	Configurable as 2x 0.35 Ω or 6x 0.7 Ω Open Drains, Protected, Diagnostics, OFF/ON Open Load Detect	POWER IC Configurable Switch
33399	Local Interconnect Network LIN Physical Layer	LIN Transceiver with Wake and Enable Inputs, Inhibit Output	COMMUNICATION LIN
33487	Dual Channel High-Side Switch (17 mΩ $R_{DS(ON)}$)	2x Independent and Fully Protected, Parallel Control, Load Current Feedback, Status Flags, Open Load Detect	POWER IC High-Side Switch
33689	System Base Chip with LIN Transceiver	2x Voltage Outputs + 2x High-Side Switches, Fully Protected, Pre-Warning, Window Watchdog, SPI	POWER MANAGEMENT Linear Regulator
33701	Microprocessor Power Supply (1.5 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33702	Microprocessor Power Supply (3.0 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33703	Microprocessor Power Supply (10 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33790	2-Channel DSI Physical Interface for Bus Masters	Dual Current-Limited and Waveshaped Outputs, Current Sensing Inputs, 3.3 V and 5.0 V	COMMUNICATION Distributed System
33793	DSI Slave for Remote Sensing	4-Channel, 8-Bit A-to-D, 5.0 V Regulated Output, DSI Bus, Configurable I/O, Fault Tolerant, High Drive Output	COMMUNICATION Distributed System
33794	Electric Field Imaging Device	Non-Contact, Low Level Electric Field Sensing, Drives 9 Electrodes, ISO-9141 Interface, Direct Interfacing to MCU	SAFETY/SENSORS Object Sensor
33880	(0.55 Ω $R_{DS(ON)}$) Configurable Eight Output Switch with SPI	Fully Protected, Low-Side/High-Side Configurable, Diagnostics, OFF Open Load Detect	POWER IC Configurable Switch
33882	Six-Output Switch (0.3 mΩ $R_{DS(ON)}$) with Parallel Input Control	Fully Protect, 6x 1.0 A (SPI and Parallel Control) + 2x 30 mA (Parallel Control) Switches, SPI Diagnostics	POWER IC Low-Side Switch
33884	Switch Monitor Interface	Twelve Sense Inputs (6x GND, 2x V_{BAT}, 4x Configurable), SPI Wetting Current, Status Change Interrupt/Wake-Up	SPECIAL FUNCTION Contact Monitor
33888	Quad High-Side Switch and Octal Low-Side Switch	4x HS (Parallel Control) + 8x LS (SPI Control), HSS Load Current Feedback, Fully Protected Diagnostics	POWER IC Low- /High-Side Switch
33889	System Basis Chip (SBC) with Low-Speed Fault Tolerant CAN	2x Regulator, High-Side Switched Power, LS CAN, SPI, Wake-Up Inputs, Window Watchdog, Reset, Interrupt	POWER MANAGEMENT Linear Regulator
33897	Single-Wire CAN Transceiver	Carrier Sense Multiple Access/Collision Resolution (CSMA/CR) Data Link, Bus Activity Sleep/Wake-Up	COMMUNICATION SWCAN
33989	System Basis Chip with High-Speed CAN	2x Regulator, High-Side Switched Power, SPI, Wake-Up Inputs, Window Watchdog, Interrupt, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33990	Serial Link J-1850 Bus Transceiver	J-1850 Multiplexing Bus with Enhanced Ground Loss Protection	COMMUNICATION J-1850
33993	Switch Monitor Interface	Programmable Sensors: 4x V_{BAT} and GND, 6x GND, 2x V_{BAT}, Programmable Wetting Current, Reset Interrupt	SPECIAL FUNCTION Contact Monitor
33997	3.3/5.0 V Switching Power Supply	5.0 V Sensorless Current Mode Buck + 3.3 V Linear Regulator, 3.3 V Standby, Reset and Power-ON Reset	POWER MANAGEMENT Switching Regulator
33998	2.6/5.0 V Switching Power Supply	5.0 V Sensorless Current Mode Buck + 2.6 V Linear Regulator, 2.6 V Standby, Reset and Power-ON Reset	POWER MANAGEMENT Switching Regulator

EMBEDDED POWER GENERIC SYSTEM DIAGRAM

Embedded power regulation is the function of converting system input power to the voltages and currents required by the MCU or DSP.

TYPICAL APPLICATIONS:

- Industrial Controls
- Consumer Appliances
- Marine Electronics
- Engine/Generator Control
- Network Equipment
- Set-Top Box
- Embedded Control Modules

LOOP CONTROL SCHEMA:
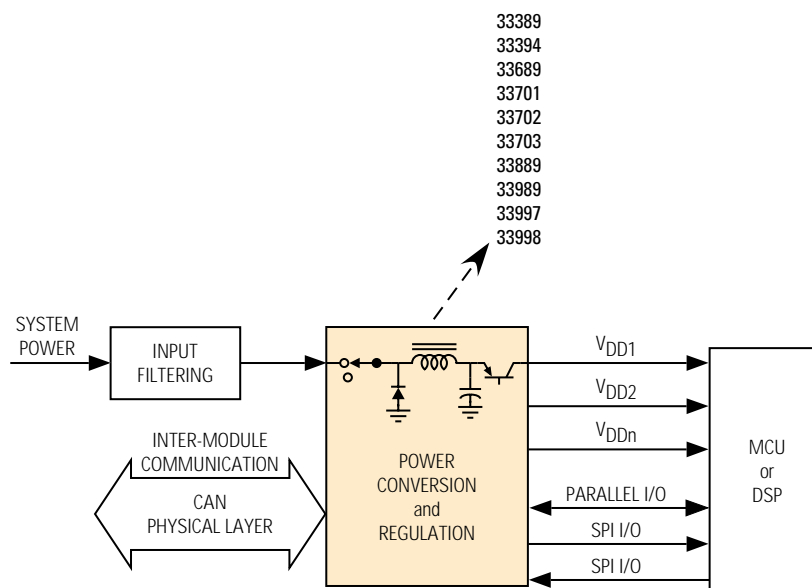
- Current Mode Feedback
- Voltage Mode Feedback

POWER CONTROL SCHEMA:

- Linear Regulators
- Switching Regulators

CONSIDER:

- MC68HC08
- MC68HC12
- DSP56800
- MPC8200
- MPC555

33389
33394
33689
33701
33702
33703
33889
33989
33997
33998

SYSTEM POWER → INPUT FILTERING → POWER CONVERSION and REGULATION → MCU or DSP

V_{DD1}
V_{DD2}
V_{DDn}
PARALLEL I/O
SPI I/O
SPI I/O

INTER-MODULE COMMUNICATION

CAN PHYSICAL LAYER

EMBEDDED POWER SUPPLY SYSTEM DEVICES

Motorola Part Number	Description	Main Characteristic	Portfolio Category
33389	System Basis Chip with Low-Speed CAN	Protected Dual Regulator, Window Watchdog, Reset, Interrupt, Wake-Ups, SPI, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33394	Multiple Output Power Supply	Step-Up/Down Pre-Regulator, 8x Voltage Outputs, SPI, High-Speed CAN Transceiver with Wake-Up Function	POWER MANAGEMENT Switching Regulator
33689	System Base Chip with LIN Transceiver	2x Voltage Outputs + 2x High-Side Switches, Fully Protected, Pre-Warning, Window Watchdog, SPI	POWER MANAGEMENT Linear Regulator
33701	Microprocessor Power Supply (1.5 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33702	Microprocessor Power Supply (3.0 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33703	Microprocessor Power Supply (10 A)	Adjustable Synchronous and Linear Regulators, Voltage Margining, Adjustable PWM Frequency, Resets	POWER MANAGEMENT Switching Regulator
33889	System Basis Chip with Low-Speed Fault Tolerant CAN	2x Regulator, High-Side Switched Power, LS CAN, SPI, Wake-Up Inputs, Window Watchdog, Reset, Interrupt	POWER MANAGEMENT Linear Regulator
33989	System Basis Chip with High-Speed CAN	2x Regulator, High-Side Switched Power, SPI, Wake-Up Inputs, Window Watchdog, Interrupt, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33997	3.3/5.0 V Switching Power Supply	5.0 V Sensorless Current Mode Buck + 3.3 V Linear Regulator, 3.3 V Standby, Reset and Power-ON Reset	POWER MANAGEMENT Switching Regulator
33998	2.6/5.0 V Switching Power Supply	5.0 V Sensorless Current Mode Buck + 2.6 V Linear Regulator, 2.6 V Standby, Reset and Power-ON Reset	POWER MANAGEMENT Switching Regulator
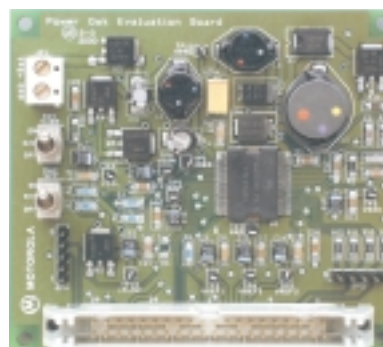
Controlling

Protecting

Communicating

WIRED COMMUNICATION GENERIC SYSTEM DIAGRAM

Wired communication provides information between two or more devices in a system.

TYPICAL APPLICATIONS:

- Aircraft Systems
- Antenna Controllers
- Appliances
- Automotive Body Electronics
- Automotive Safety Systems
- Conveyors
- Elevators
- Gaming Machines
- Heating & Cooling
- Irrigation Control
- Lighting
- Machinery / Robotics
- Score Boards
- Security Boards
- Security Systems
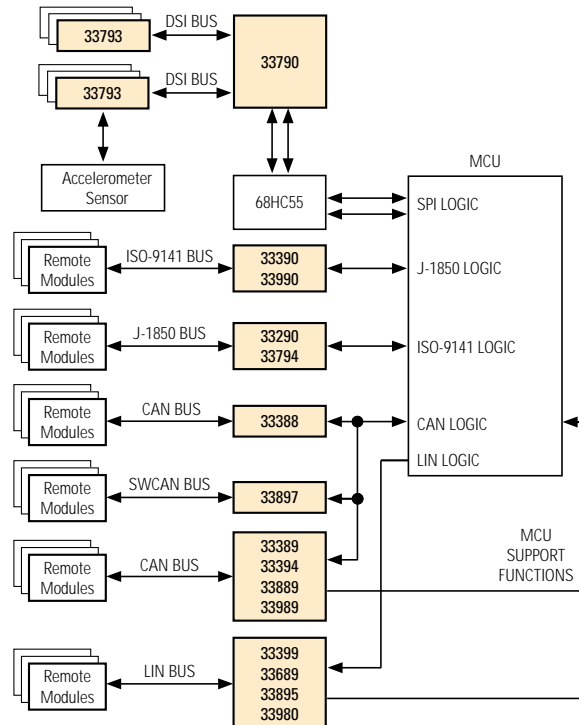- Vending Machines
- Watercraft Systems
- Water Heaters

COMMUNICATIONS SCHEMA:

- Bi-Directional
- Combined Power and Signaling
- Error Detection
- Fault Tolerant
- Full / Half Duplex
- Hi / Med / Low Speed
- Predictive
- Single Ended / Differential
- Single / Multi Master
- Single / Multi Slave
- Timing Critical
- Voltage / Current Signaling

CONSIDER:

- MC68HC08
- MC68HC12
- DSP56800E
- MCF5272
- MCF5407

33793 — DSI BUS
33793 — DSI BUS
33790

Accelerometer Sensor

68HC55

MCU
SPI LOGIC

Remote Modules — ISO-9141 BUS — 33390 / 33990 — J-1850 LOGIC

Remote Modules — J-1850 BUS — 33290 / 33794 — ISO-9141 LOGIC

Remote Modules — CAN BUS — 33388 — CAN LOGIC

Remote Modules — SWCAN BUS — 33897 — LIN LOGIC

Remote Modules — CAN BUS — 33389 / 33394 / 33889 / 33989

Remote Modules — LIN BUS — 33399 / 33689 / 33895 / 33980

MCU SUPPORT FUNCTIONS

WIRED COMMUNICATION SYSTEM DEVICES

Motorola Part Number	Description	Main Characteristic	Portfolio Category
33290	Serial ISO-9141 K-Line Interface	Bidirectional Half-Duplex Communication to 50 kB/s, Bus Shorts and Overtemperature Protection	COMMUNICATION ISO-9141
33388	Fault Tolerant CAN Interface	Low-Speed CAN with Automatic Single Wire Fault Mode Bus Activity Wake-Up with Inhibit Output	COMMUNICATION CAN
33389	System Basis Chip	Protected Dual Regulator, Window Watchdog, Reset, Interrupt, Wake-Ups, SPI, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33390	Serial Link J-1850 Bus Transceiver	Single-Wire Communication using VPW Modulation to 20 kB/s, Waveshaping, and Current Limited Bus Driver	COMMUNICATION J-1850
33394	Multi-Output Power Supply	Step-Up/Down Pre-Regulator, 8x Voltage Outputs, SPI, High-Speed CAN Transceiver with Wake-Up Function	POWER MANAGEMENT Switching Regulator
33399	Local Interconnect Network LIN - Physical Layer	LIN Transceiver with Wake and Enable Inputs, Inhibit Output	COMMUNICATION LIN
33689	System Base Chip with LIN Transceiver	2x Voltage Outputs = 2x High-Side Switches, Fully Protected, Pre-Warning, Window Watchdog, SPI	POWER MANAGEMENT Linear Regulator
33790	2-Channel DSI Physical Interface for Bus Masters	Dual Current-Limited and Waveshaped Outputs, Current Sensing Inputs, 3.3 V and 5.0 V	COMMUNICATION Distributed System
33793	DSI Slave for Remote Sensing	4-Channel, 8-Bit A-to-D, 5.0 V Regulated Output, DSI Bus, Configurable I/O, Fault Tolerant, High Drive Output	COMMUNICATION Distributed System
33794	Electric Field Imaging Device	Non-Contact, Low Level Electric Field Sensing, 9 Electrodes, ISO-9141 Interface, Direct Interfacing to MCU	SAFETY/SENSORS Object Sensor
33889	System Basis Chip (SBC) with Low-Speed Fault Tolerant CAN	2x Regulator, High-Side Switched Power, LS CAN, SPI, Wake-Up Inputs, Window Watchdog, Reset, Interrupt	POWER MANAGEMENT Linear Regulator
33895	Quad Half-Bridge with LIN Transceiver	4x 400 mΩ Half-Bridges, Load Current Feedback, Diagnostics	POWER IC H-Bridge
33897	Single-Wire CAN Transceiver	Carrier Sense Multiple Access/Collision Resolution (CSMA/CR) Data Link, Bus Activity Sleep/Wake-Up	COMMUNICATION SWCAN
33989	System Basis Chip with High-Speed CAN	2x Regulator, High-Side Switched Power, SPI, Wake-Up Inputs, Window Watchdog, Interrupt, CAN Transceiver	POWER MANAGEMENT Linear Regulator
33990	Serial Link J-1850 Bus Transceiver	J-1850 Multiplexing Bus with Enhanced Ground Loss Protection	COMMUNICATION J-1850

Controlling

Protecting

Communicating

ⓜ MOTOROLA

BR1569/D
Rev. 1