

Power Supply Integrated Circuits

Overview

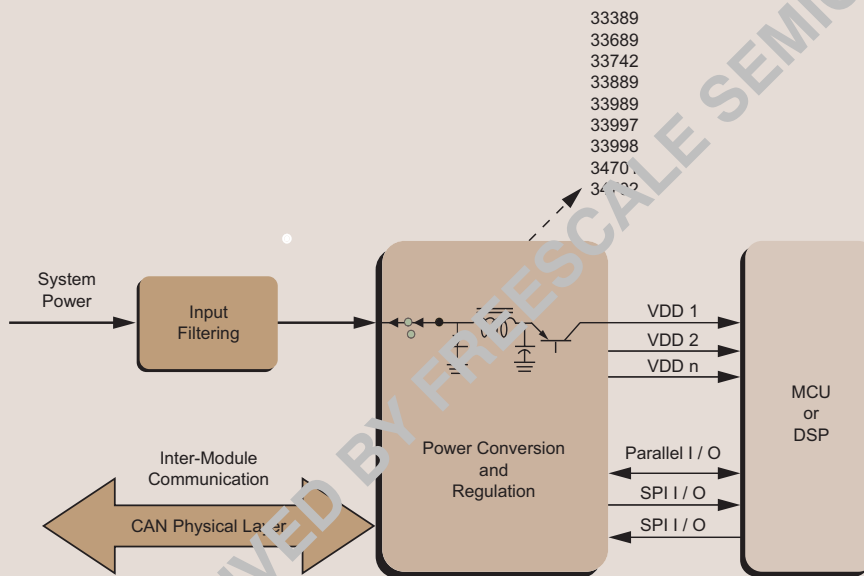
The ultimate goal of the power supply section of an electronic system is to distribute power safely and effectively to each section of the entire electronic system. Leveraging experience gained over decades of working closely with leading automotive, industrial, and consumer electronics systems, Freescale Semiconductor now

offers Analog products which provide power supply solutions for embedded systems. Freescale Semiconductor's SMARTMOS™ technology allows system designers to significantly reduce cost, improve energy efficiency, and add flexibility to virtually all electronic systems.

Key Benefits

- > Provides a wide range of compatibilities
- > Provides systems solutions for microcontrollers or DSPs
- > Provides rugged durability power supplies
- > Provides wide temperature operating range

POWER SUPPLY INTEGRATED CIRCUITS BLOCK DIAGRAM



Freescale Ordering Information^{Note}

Part Number	Product Highlights	Additional Information
DSP56F820 Family	80 MHz, 40 MIPS; Up to 68 K words Flash; 5 K words RAM and Off-Chip Memory; SCI, SPI, SSI, ADC, Quad Timer, GPIO, and TOD; MCU-Friendly Instruction Set; JTAG/OnCE for Debug	www.freescale.com
DSP56F850 Family	120 MHz, 120 MIPS; Up to 64 KB SRAM; 1 KB ROM and Off-Chip Memory; Chip Select Logic; Host interface; DMA; Interrupt Controller; SCI, SPI, ISSI or ESSSI; ADC; Quad Timer; GPIO; TOD; COP/Watchdog; MCU-Friendly Instruction Set; JTAG/OnCE for Debug	
MC33389	System Basis Chip with Low-Speed CAN	www.freescale.com/analog
MC33689	System Base Chip with Enhanced LIN Physical Interface	
MC33742	System Basis Chip with Enhanced High-Speed CAN	
MC33889	System Basis Chip with Low-Speed Fault Tolerant CAN	
MC33989	System Basis Chip with High-Speed CAN	
MC33997	3.3/5.0 V Switching Power Supply	
MC33998	2.6/5.0 V Switching Power Supply	
MC34701	Dual Output Power Supply Switching (1.5 A)	
MC34702	Dual Output Power Supply Switching (3.0 A)	
MC56F8100 Family	40 MHz, 40 MIPS; Up to 544 KB Flash, 32 KB RAM and Off-Chip Memory; SCI, SPI, ADC, PWM, Quadrature Decoder, and Quad Timer; <i>FlexCAN</i> [™] , GPIO, COP, Watchdog, and PLL; MCU-Style Software Stack Support; JTAG/OnCE for Debug	www.freescale.com
MC56F8300 Family	60 MHz, 60 MIPS; Up to 576 KB Flash, 36 KB RAM and Off-Chip Memory; SCI, SPI, ADC, PWM, Quadrature Decoder, and Quad Timer; <i>FlexCAN</i> [™] , GPIO, COP/Watchdog, and PLL; MCU-Style Software Stack Support; JTAG/OnCE for Debug; Temperature Sensor	

Note: Search on listed part number.

Design Challenges

To meet customers' expectations while being competitive in the marketplace, a manufacturer of embedded electronic systems must combine energy efficiency and safety enhancement features, with increased product reliability. The power supply has a unique role within a typical electronic system. It has to provide consistent and repeatable power to its circuits; it has to defend the system against the harsh environment; and it also has to protect the system by not allowing it to harm itself. If the power supply fails, it must happen gracefully and it must not allow the failure to reach the supplied system.

Freescale Semiconductor Solution

Freescale Semiconductor analog/mixed signal and power integrated circuits are designed to provide system solutions for the microcontroller or DSP based embedded systems. The automotive power train electronic system with all its requirements regarding wide span of battery voltages, operating temperature range, electromagnetic compatibility, over-voltage, over-current, over-temperature protections, supervisory and diagnostic functions, is one of the best Freescale Semiconductor power supply solution examples of durability and ruggedness.

In addition to being designed to provide the system with key protection functions, Freescale Semiconductor's *SMARTMOS*[™] technology allows an easy interface and communication with most microcontrollers and DSPs and can be built monolithically within the silicon of the power supply integrated circuit.

Development Tools^{Note}

Tool Type	Product Name	Vendor	Description	Additional Information
Evaluation Kit	KIT33289DWEVB	Metrowerks	Automotive Dual High-Side Switch	www.metrowerks.com
Evaluation Kit	KIT33388DEVB	Metrowerks	Fault Tolerant CAN Interface	
Evaluation Kit	KIT33389DWEVB	Metrowerks	System Basis Chip	
Evaluation Kit	KIT33399DEVB	Metrowerks	Local Interconnect Network (LIN) Physical Layer	
Evaluation Kit	KIT33689DWBEVB	Metrowerks	System Basis Chip with LIN Transceiver	
Evaluation Kit	KIT33742DWEVB	Metrowerks	System Basis Chip with Enhanced High-Speed CAN	
Evaluation Kit	KIT33793DEVB	Metrowerks	DSI Slave for Remote Sensing	
Evaluation Kit	KIT33880DWBEVB	Metrowerks	Configurable Eight Output Switch with SPI	
Evaluation Kit	KIT33883DWEVB	Metrowerks	H-Bridge Pre-Driver	
Evaluation Kit	KIT33886DHEVB	Metrowerks	H-Bridge Integrated Circuit	
Evaluation Kit	KIT33887DWBEVB	Metrowerks	225 mΩ 150°C and Sleep Mode and Current Sense	
Evaluation Kit	KIT33889DWEVB	Metrowerks	System Basis Chip with Low-Speed CAN	
Evaluation Kit	KIT33989DWEVB	Metrowerks	System Basis Chip with High-Speed CAN	
Evaluation Kit	KIT33993DWBEVB	Metrowerks	22 Input Multiple Switch Detection Interface	
Evaluation Kit	KIT33997DWEVB	Metrowerks	3.3/5.0 V Switching Power Supply	
Evaluation Kit	KIT33998DWEVB	Metrowerks	2.6/5.0 V Switching Power Supply	
Evaluation Kit	KIT34701EKEVB	Metrowerks	1.5 A Switch-Mode Power Supply with Linear Regulator	
Evaluation Kit	KIT34702EKEVB	Metrowerks	3.0 A Switch-Mode Power Supply with Linear Regulator	
Hardware	EVM and other development tools for respective DSCs	Metrowerks	Helps developers simplify and speed development for digital signal processors.	

Note: Search on listed product name.

Related Documentation^{Note}

Document Number	Description	Additional Information
APDPAK	Analog Pitch Pak	www.freescale.com
SG187	Automotive Selector Guide	
SG1002	Analog Selector Guide	
SG1004	DSP Selector Guide	
SG1006	Microcontrollers Product Selector Guide	

Note: Search on listed document number.

Notes

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