

ANALOG PRODUCTS

MC33389 FACT SHEET

APPLICATIONS

- Aircraft Systems
- Automotive Systems
- Robotic Systems
- Farm Equipment
- Industrial Actuator Control
- Marine Applications

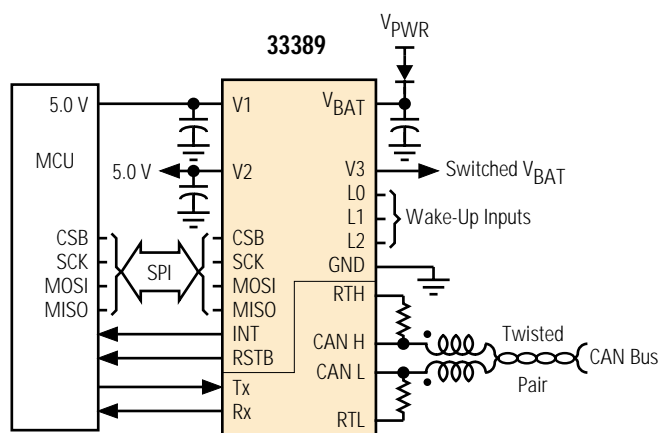
33389 SYSTEM BASIS CHIP

The 33389 is a monolithic integrated circuit combining functions frequently used in microcontroller based systems. The 33389 includes two internal low-drop 5.0 V regulators with current limit, over-temperature pre-warning, and reset to provide power for CAN and the MCU plus other peripherals.

The 33389 has normal, standby, and sleep modes, an internally switched high-side power supply voltage output with three wake-up inputs, programmable window watch-dog, interrupt, reset, fault-tolerant low-speed CAN transceiver for module-to-module communication, and SPI input control.

The combination is an economical solution for providing power, low-speed fault-tolerant communication, and control needed for MCU-based systems.

Simplified Application Diagram



FEATURES

- Two 5.0 V low-drop voltage regulators, with respective 110 mA and 200 mA current capabilities, current limiting, and over-temperature pre-warning
- Normal, standby, and sleep modes separate from CAN interface modes
- Low-speed 125 kB/s fault-tolerant CAN interface, compatible with MC33388 stand-alone physical interface
- Regulator output monitoring with reset
- 100 mA switched V_{BAT} output for control of external circuitry
- Three external wake-up inputs, associated with switched V_{BAT}
- Low standby and sleep current
- V_{BAT} monitoring and V_{BAT} failure detection
- 40 V maximum transient voltage
- Software-programmable watch-dog window, interrupt, and reset
- Multiple wake-up modes
- SPI interface to MCU
- Additional devices available for comparison in Analog Selector Guide SG1002/D

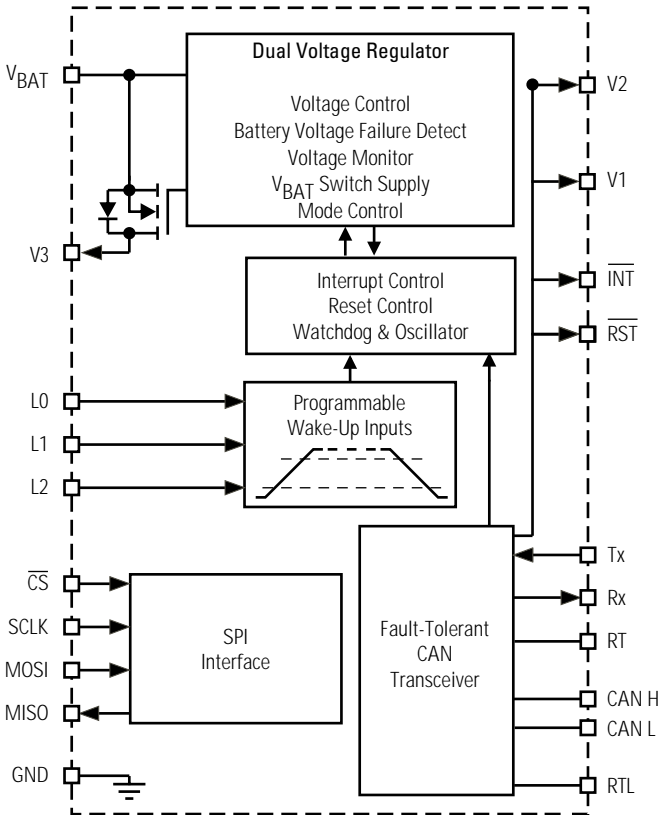
CUSTOMER BENEFITS

- Provides complete MCU power management solution with few components
- CAN and SPI interface
- Internal wake-up and watch-dog functions
- Motorola offers a complete line of compatible system-base chips with transceivers
- Simple system design with direct interfacing to a microprocessor
- Reduced PC board space resulting in enhanced application reliability
- Economical solution with an optimized performance/cost ratio
- Simplified MCU power supply design with internal safety features and output voltage supervisory circuits

Performance	Typical Values
Operating Voltage	5.5 – 27 V
Data Rate	125 kB/s
Two Internal 5.0 V Regs	1 @ 110 mA, 1 @ 200 mA
Sleep/Standby Current	120 μ A
Operating Temp	-40°C \leq T _A \leq 125°C

**For More Information On This Product,
Go to: www.freescale.com**

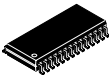
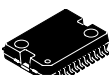
33389 Internal Block Diagram



Version A:
If device remains in reset greater than 100ms due to V1 undervoltage, device switches to sleep mode to minimize current consumption. Wake-up configuration active.

Version C:
In V1 undervoltage condition, device remains in permanent reset state until V1 returns to nominal conditions. V1 protected by overcurrent and overtemperature functions.

Protection	Detect	Limiting	Shut Down	Auto Retry	Status Reporting
V1/V2:					
Under Voltage	•	(V1)	•		•
Over Temperature	•		•		•
Over Current	•	•			
Short Circuit	•	•			
HS1:					
Over Temperature	•		•		•
Over Current		•			
CAN Bus fail Detection:					
CANH Wire Disconnect	•			•	•
CANL Wire Disconnect	•			•	•
CANH Short-to-Battery	•	•		•	•
CANL Short-to-Battery	•	•		•	•
CANH Short-to-Ground	•	•		•	•
CANL Short-to-Ground	•	•		•	•
CANH-to-L Short	•	•		•	•
CANH Short-to-V _{DD}	•			•	•
Supply Line:					
Disconnect	•				•

Ordering Information	Package	Ship Method	Motorola Part Number
	28 SOICW	Rail	**33389ADW
		T/R	**33389ADWR2
	20 HSOP	Rail	**33389CDW
		T/R	**33389CDWR2
		Rail	**33389ADH
		T/R	**33389ADHR2
		Rail	**33389CDH
		T/R	**33389CDHR2
Data Sheet Order Number			MC33389/D
Contact Sales for Evaluation Kit Availability			
**Prefix Index:			
PC = Eng Samples; XC = In Qual; MC = Production			

QUESTIONS

- What voltage (5.0 V or 3.3 V) does your microcontroller need?
- What type of CAN (high/low speed) do you need?
- Do you need several power supplies?
- Do you need a fully protected low-drop series pass regulator?
- How many wake-up inputs do you need?
- Do you need a watch-dog with independent reset/interrupt capability?
- Are you looking for a complete, easy-to-design power supply solution for your embedded system?
- Do you need an advanced microcontroller power supply with power sequencing and supervisory functions?

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MC33389FS/D
Rev. 1

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