

MC33989

System Basis Chip with High Speed CAN Transceiver

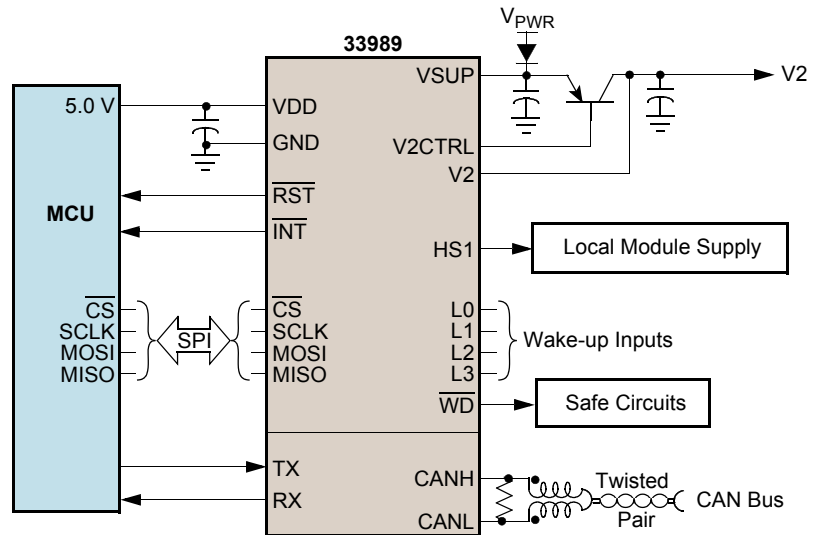
Applications

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

Overview

The 33989 is a monolithic integrated circuit combining many functions used by microcontrollers (MCU) found in automotive Engine Control Units (ECUs). The device incorporates functions such as: two voltage regulators, four high voltage (wake-up) inputs, a 1.0 Mbaud capable CAN physical interface, an SPI interface to the MCU and VSUP monitoring and fault detection circuitry. The 33989 also provides Reset control in conjunction with V_{SUP} monitoring and the watchdog timer features. Also, an Interrupt can be generated, for the MCU, based on CAN bus activity as well as mode changes.

MC33989 Simplified Application Diagram



Performance	Typical Values
Operating Voltage	5.5 - 27 V
Data Rate	1.0 MB/s
Internal 5.0 V Regulator	200 mA
External 5.0 V Series Regulator	User Defined
Sleep & Stop Current	60/120 μ A
Operating Temperature	-40 $^{\circ}$ C $\leq T_A \leq$ 125 $^{\circ}$ C

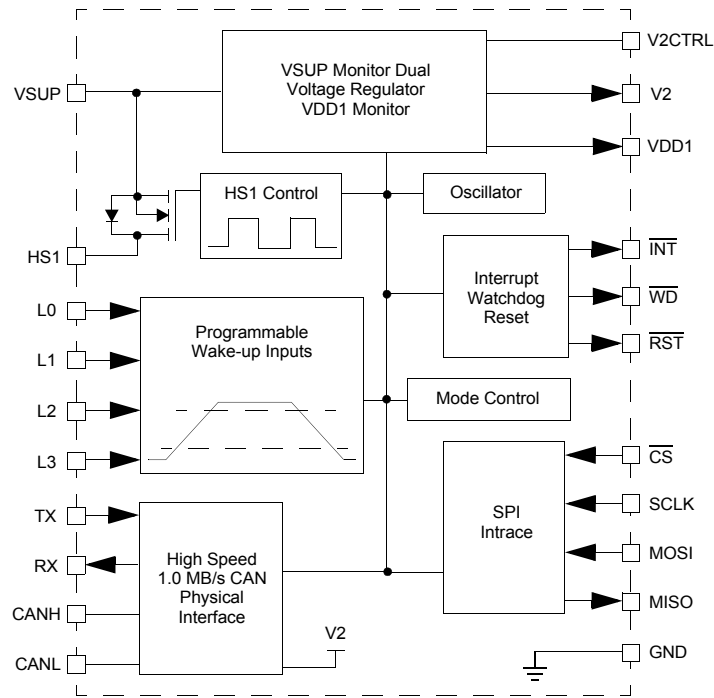
Features

- VDD1: Low Drop voltage regulator, current limitation, over-temperature detection, monitoring, and reset function
- VDD1: Total current capability 200 mA
- V2: Tracking Function of V_{DD1} regulator. control circuitry for external bipolar ballast transistor for high flexibility in choice of peripheral voltage and current supply
- Low stand-by current consumption in Stop and Sleep modes
- High speed 1.0 MBaud CAN physical interface
- Four external high voltage wake-up inputs associated with HS1 V_{BAT} switch
- 150 mA output current capability for HS1 V_{BAT} switch allowing drive of external switches pull-up resistors or relays
- VSUP failure detection
- 40 V maximum transient voltage
- Additional devices available for comparison in Analog Product Selector Guide, SG1002 and Automotive Product Selector Guide, SG187

CUSTOMER BENEFITS

- Provides complete MCU power management solution with few components
- CAN and SPI interface
- Internal wake-up and watchdog function
- Freescale offers a complete line of compatible system basis 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

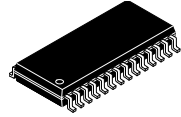
33989 INTERNAL BLOCK DIAGRAM



PROTECTION	DETECT	LIMITING	SHUT DOWN	STATUS REPORTING
V1:				
Under-voltage	●			●
Over-temperature	●		●	●
Over-current	●	●		
Short-circuit	●	●		
V2:				
Under-voltage	●			●
HS1:				
Over-temperature	●		●	●
Over-current		●		
CAN Bus Failure:				
H&L Over-current	●	●		●
H&L Over-temperature	●		●	●
Supply Line:				
Under-voltage	●			●
Disconnect	●			●

Questions

- What voltage (5.0 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 watchdog 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??

Ordering Information		28 SOICW
Device	Temperature Range	Package
MC33989PEG/R2	-40 to 125°C	28 SOICW
Evaluation Board		 <p>1.27 mm Pitch 7.5 x 18 mm Body</p>
KIT33989XXXX	Evaluation Board	
Documentation		
MC33989	Data sheet order number	
SG1002	Analog Product Selector Guide	
SG 187	Automotive Product Selector Guide	

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Document Number: MC33989FS REV 6.0

