

MC33889

System Basis Chip Lite with Low Speed Fault Tolerant CAN Interface

Applications

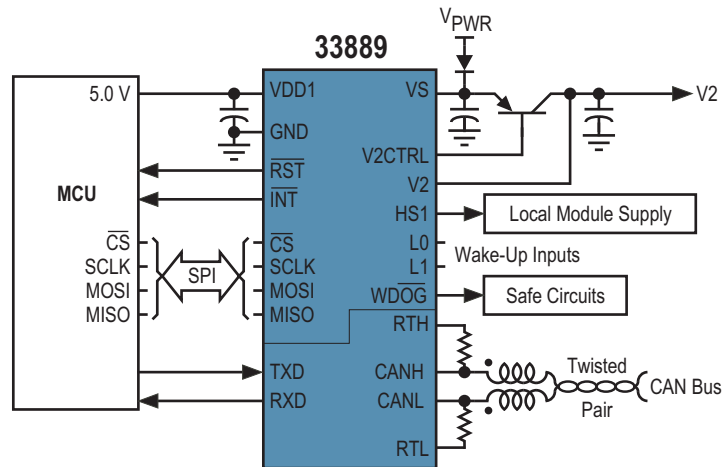
- Aircraft Systems
- Automotive Systems
- Robotic Systems
- Farm Equipment
- Industrial Controls
- Marine Applications

Overview

An SBC device is a monolithic IC combining many functions repeatedly found in standard microcontroller-based systems, e.g., protection, diagnostics, communication, power, etc. The 33889 is an SBC having a fully protected, fixed 5.0 V low drop-out regulator, with current limit, overtemperature pre-warning and reset.

An output drive with sense input is also provided to implement a second 5.0 V regulator using an external PNP. The 33889 has Normal, Standby, Stop, and Sleep modes; an internally switched high side power supply output with two wake-up inputs; programmable timeout or window watchdog, Interrupt, Reset, serial peripheral interface (SPI) input control, and a low-speed fault tolerant CAN transceiver, compatible with CAN 2.0 A and B protocols for module-to-module communications. The combination is an economical solution for power management, high-speed communication, and control in MCU-based systems.

MC33889 Simplified Application Diagram



Performance	Typical Values
Operating Voltage	5.5 V to 27 V
Data Rate	125 kbps
Internal 5.0 V Regulator	200 mA
External 5.0 V Series Regulator	User Defined
Sleep/Stop Current	50/120 μ A
Ambient Operating Temperature	-40 $^{\circ}$ C \leq T _A \leq 125 $^{\circ}$ C

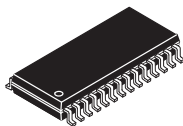
Features

- VDD1: 5.0 V low drop voltage regulator, current limitation, overtemperature detection, monitoring and reset function with total current capability 200 mA
- V₂: tracking function of VDD1 regulator; control circuitry for external bipolar ballast transistor for high flexibility in choice of peripheral voltage and current supply
- Four operational modes
- Low standby current consumption in Stop and Sleep modes
- Built-in low speed 125 kbps fault tolerant CAN physical interface.
- External high voltage wake-up input, associated with HS1 VBAT switch
- 150 mA output current capability for HS1 VBAT switch allowing drive of external switches pull-up resistors or relays
- 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

28 SOICW



98ASB42345B
28-PIN SOICW

Ordering Information

Device (add R2 suffix for tape and reel)	Temperature Range	Package
MC33889BPEG	-40 to 125 °C	28 SOICW
MC33889DPEG		
Documentation	Description	
MC33889	System Basis Chip with LIN Transceiver	
SG1002	Analog Product Selector Guide	
SG187	Automotive Product Selector Guide	

PROTECTION	DETECT	LIMITING	SHUT DOWN	AUTO RETRY	STATUS REPORTING
V _{DD1} : • Undervoltage • Overcurrent/Short-circuit • Overtemperature	● ● ●	●	●	●	●
VS2: • Undervoltage	●				●
HS1: • Overcurrent • Overtemperature	● ●	●	●	●	●
CAN Bus Failure: • H-Wire Disconnect • L-Wire Disconnect • H Short-to-Battery • L Short-to-Battery • H Short-to-Ground • L Short-to-Ground • H-to-L Short • H Short-to-V _{DD}	● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●		● ● ● ● ● ● ● ●	● ● ● ● ● ● ● ●
Supply Line • Overtemperature • Bus Short	● ●				● ●

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-out 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?

Learn More: For current information about Freescale products, please visit www.freescale.com

