

MC33981

Single High Side Switch (4.0 mOhm), PWM clock up to 60 kHz

Applications

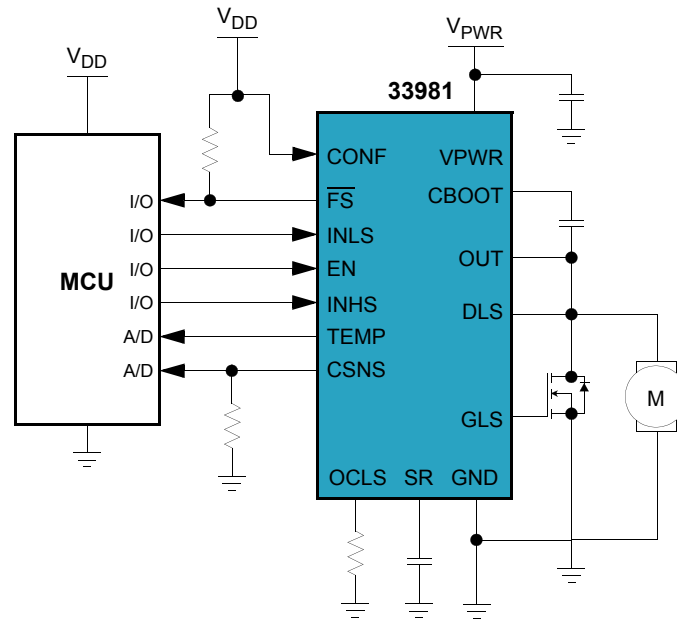
- Automotive and robotic systems
- Marine systems
- Farm equipment
- Actuator controls
- Fractional horsepower DC motor controls
- Applications where high side switch control is required

Overview

The MC33981 is a high frequency, self-protected 4.0 mΩ $R_{DS(ON)}$ high side switch used to replace electromechanical relays, fuses, and discrete devices in power management applications.

The MC33981 can be controlled by pulse-width modulation (PWM) with a frequency up to 60 kHz. It is designed for harsh environments, and it includes self-recovery features. The MC33981 is suitable for loads with high inrush current, as well as motors and all types of resistive and inductive loads. The MC33981 is packaged in a 12 x 12 mm non-leaded power-enhanced PQFN package with exposed tabs.

MC33981 Simplified Application Drawing



Performance	Typical Values
Outputs	1
$R_{DS(ON)}$ at 25 °C	3.7 mΩ
Operating Voltage	6.0 - 27 V
Peak Current	100 A
PWM Input Control	60 kHz
ESD	± 2000 V
Ambient Operating Temperature	-40 °C ≤ T _A ≤ 125 °C
Junction Operating Temperature	-40 °C ≤ T _J ≤ 150 °C

Features

- Single 4.0 mΩ R_{DS(ON)} maximum high side switch
- PWM capability up to 60 kHz with duty cycle from 5 % to 100 %
- Very low standby current
- Slew-rate control with external capacitor
- Over-current and over-temperature protection, under-voltage shutdown, and fault reporting
- Reverse battery protection
- Gate drive signal for external low side N-channel MOSFET with protection features
- Output current monitoring
- Temperature feedback

Benefits

- Economical high current switch requiring few external parts and simple hook-up
- Can be used by microprocessors in high-side applications
- High efficiency, low ON resistance switching
- Reduced PC board space resulting in enhanced application reliability and lower costs
- Numerous internal protections
- Current sense accuracy versus temperature
- Slew-rate control to optimize EMC behavior

Questions

- Do you need a high side switch capable of typically switching 30 A?
- Do you have limited PC board space available for load control?
- Do you need an easy-to-design high side switch capable of high-speed PWM switching?

Protection

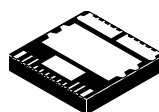
Protection	Detect	Shut Down	Auto Retry	Status Reporting
Under-voltage	•	•	•	•
Over-current / SC	•	•		•
Over-temperature	•	•	•	•
Short to Ground	•	•		•
Short to V _{PWR}	•	•		•

Ordering Information

Device (for Tape and Reel, add an R2 suffix)	Temperature range (T _A)	Package
MC33981BHFK	-40 °C ≤ T _A ≤ 125 °C	16 PQFN
MC33981ABHFK		

Documentation

Document Number	Title	Description
MC33981	Data Sheet	Single High Side Switch (4.0 mOhm), PWM clock up to 60 kHz
SG1002	Selector Guide	Analog Product Selector Guide
SG187	Selector Guide	Automotive Product Selector Guide
AN2467	Application Note	Power Quad Flat No-lead Package



(Bottom View)
16 PQFN
98ARL10521D

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