

MC33879

Configurable Octal Serial Switch with Open Load Detect Current Disable

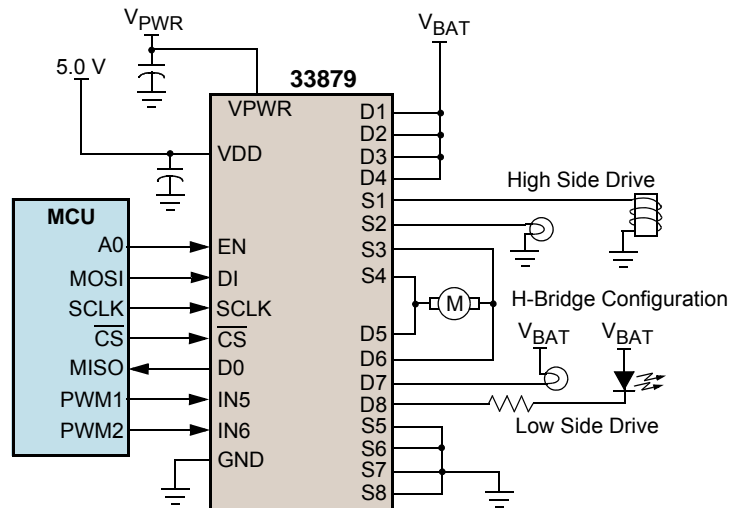
Applications

- Automotive systems
- Multiple relay, solenoid, lamp, and small motor driver for industrial and robotic systems
- Load control in boats, RVs, and marine systems
- Industrial actuator controls
- Appliance and white goods electrical actuators
- Electronic gaming machines (casino and arcade)

Overview

The 33879 device is an eight output hardware configurable, high side/low side switch with 16-bit serial input control. Two of the outputs may be controlled directly via a microprocessor for PWM applications. The 33879 incorporates SMARTMOS technology, with CMOS logic, bipolar/MOS analog circuitry, and DMOS power MOSFETs. The 33879 controls various inductive, incandescent, or LED loads by directly interfacing with a microcontroller. The circuit's innovative monitoring and protection features include very low standby currents, cascade fault reporting, internal +45 V clamp voltage for low side configuration, -20 V high side configuration, output specific diagnostics, and independent over-temperature protection.

MC33879 Simplified Application Drawing



Performance	Typical Values
Outputs	8
RDS _{ON} at 25 °C	0.75 Ω
Operating Voltage	5.5 to 26.5 V
Peak Current	0.8 A Each Output
Control	SPI
RMS Current	
One Output ON	0.6 A
All Outputs ON	0.35 A
ESD, HBM	±500 V
Operating Temperature	-40 °C ≤ T _A ≤ 125 °C
Junction Operating Temperature	-40 °C ≤ T _J ≤ 150 °C

Features

- 16-bit SPI for control and fault reporting, 3.3 V/5.0 V compatible
- Outputs are current limited (0.6 to 1.2 A) to drive incandescent lamps
- Output voltage clamp, +45 V (low side) and -20 V (high side) during inductive switching
- On/off control of open-load detect current (LED application)
- Internal reverse battery protection on V_{PWR}
- Loss of ground or supply will not energize loads or damage IC
- Maximum 5.0 mA I_{PWR} standby current at 13 V V_{PWR}
- $R_{DS(ON)}$ of 0.75 Ω at 25 °C typical
- Short-circuit detect and current limit with automatic retry
- Independent over-temperature protection

Customer Benefits

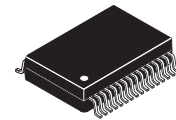
- Easiest way to interface a microcontroller to DC loads
- Versatile output control (each output can be used for either high or low side switching)
- Expandable control via daisy-chaining
- Expandable control via paralleling
- Simplified system design
- Reduced board space
- Enhanced reliability

Questions

- Q: Are there multiple DC loads to control via microprocessor?
- Q: Does the MCU have SPI I/O?
- Q: Is expandability required in future designs?
- Q: Is there a requirement for PWM control of current?
- Q: Is space limited?

Protection	Detect	Limiting	Shut Down	Auto Retry	Status Reporting
Over-voltage	•		•	•	
Over-current/SC	•	•		•	•
Over-temperature	•		•	•	•
Open-load	•				•

32 SOICW-EP



98ARL10543D
32-PIN SOICW

Device (for Tape and Reel, add an R2 suffix)	Temperature Range	Package
MC33879TEK	-40 to 125 °C	32 SOICW-EP
MC33879APEK		
KIT33879AEKEVBE	Evaluation Board	
MC33879	Data sheet order number	
SG1002	Analog Product Selector Guide	
SG 187	Automotive Product Selector Guide	

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