Analog Products Fact Sheet

MC33298

Eight Output Switch with SPI Interface (0.4 Ω $R_{DS(ON)}$)

Power Actuation

Low-Side Switches

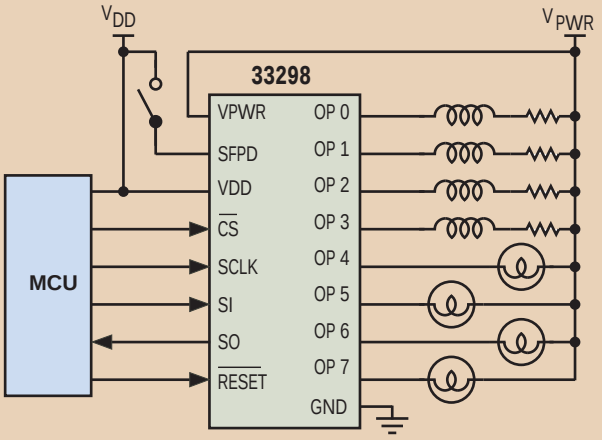
DESCRIPTION

The 33298 is a smart eight-output low-side power switch. It is a versatile device incorporating an 8-bit serial-in shift register to control an 8-bit parallel output latch providing control of eight independent "ON/OFF" output switches. Applications include the control of solenoids, relays, lamps, small DC-motors, and other moderate current loads (1.0 – 3.0 A).

The 33298 interfaces directly with a microcontroller to control various inductive or incandescent loads. Input control is fast. Data rates are guaranteed to 2.0 MHz but the device is capable of rates to 8.5 MHz @ 25°C.

Each output uses high-efficiency MOSFET power transistors configured with open drains. Each low "ON" resistance output (0.4 Ω $R_{DS(ON)}$ @ 25°C) is capable of sinking up to 3.0 A of transient current. On a continuous basis, each output can simultaneously (with all outputs "ON") handle 0.5 A of current when the device is soldered onto a typical PC board. Higher output currents are dependent on the number of outputs simultaneously "ON". The circuit's innovative monitoring and protection features include very low standby current.

33298 SIMPLIFIED APPLICATION DIAGRAM



APPLICATIONS

- Aircraft Systems
- Marine Systems
- Automotive Systems
- Robotic Systems
- Farm Equipment
- Industrial Actuator Controls
- Fractional Horsepower DC-Motor Controls
- Incandescent Lamp Control
- Applications where Low-Side Switch Control with Diagnostics is Necessary

PERFORMANCE	TYPICAL VALUES
Outputs	8
$R_{DS(ON)}$ @ 25°C	0.4 Ω
Operating Voltage	9.0 – 26.5 V
Peak Current	3.0 A each output
Control	SPI
Operating Temperature	-40°C ≤ T_A ≤ 125°C
Junction Operating Temp	-40°C ≤ T_J ≤ 150°C

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FEATURES

- Designed to operate over wide supply voltages of 5.5 to 26.5 V
- Interfaces to microprocessor using 8-bit SPI I/O protocol up to 3.0 MHz
- 1.0 A peak current outputs with maximum $R_{DS(ON)}$ of 1.6 Ω at T_J - 150°C
- Outputs current limited to accommodate in-rush currents associated with switching incandescent loads
- Output voltages clamped to 53 V during inductive switching
- Maximum sleep current (I_{PWR}) of 25 µA
- Maximum of 4.0 mA I_{DD} during operation
- Devices available for comparison are in the Analog Product Selector Guide - SG1002, and Automotive Product Selector Guide - SG187.

PROTECTION	DETECT	LIMITING	SHUT DOWN	AUTO RETRY	STATUS REPORTING
Overvoltage	●		●		●
Overcurrent/SC	●	●	●	●	●
Overtemperature	●		●	●	
Open Load	●				●

CUSTOMER BENEFITS

- Low system cost, reduced component count, simplified circuitry, and minimal boardspace
- Simplified system design with direct interfacing to microprocessor
- Directly drives output inductive loads via internally clamped outputs
- Capable of switching capacitive, incandescent, or inductive loads
- Outputs can be operated in parallel for increased output current
- Capable of PWM-ing loads

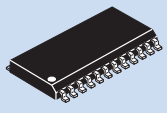
QUESTIONS

- Do you need to reduce system complexity when switching multiple loads using a microcontroller?
- Do you need high-efficiency switches to control multiple capacitive, incandescent, or inductive loads over a wide temperature range?
- Are you looking for an easy-to-design-in low-side switch, capable of switching eight different loads?
- Do you require a "smart" switch having internal protection features as well as fault reporting?
- Do you need multiple switches that can be controlled from a microcontroller using SPI protocol?

ORDERING INFORMATION

Device	Temperature Range (T_A)	Package
MC33298DW/R2	-40°C to 125°C	24 SOICW
MCZ33298EG/R2		24 SOICW (Pb-free)
Data Sheet Order Number		MC33298

Contact Sales for Evaluation Kit Availability



24 SOICW
1.27 mm Pitch
15.4 mm x 7.5 mm Body

ARCHIVE INFORMATION

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MC33298FS
Rev 2.0

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