



ANALOG PRODUCTS

MC33298 FACT SHEET

POWER ICs
LOW-SIDE SWITCH

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

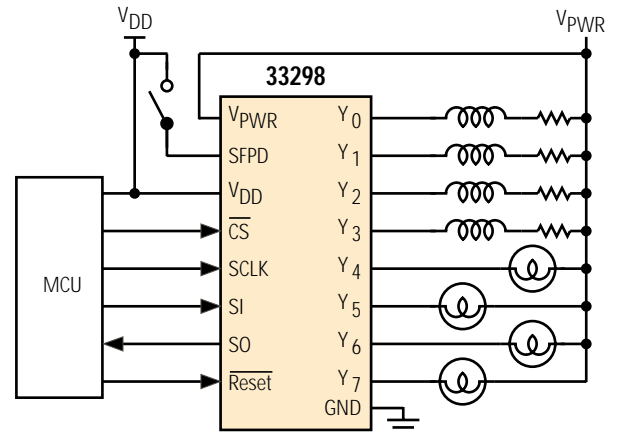
33298 (0.4 Ω R_{DS(ON)}) SMART EIGHT-OUTPUT SWITCH WITH SPI

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, "cas-cadable" fault reporting, independent internal 60 V clamping of outputs, output-specific diagnostics, and independent over temperature shutdown of outputs.

Simplified Application Diagram



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

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 Temp	-40°C ≤ T _A ≤ 125°C
Junction Operating Temp	-40°C ≤ T _J ≤ 150°C

FEATURES

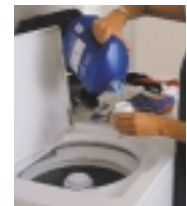
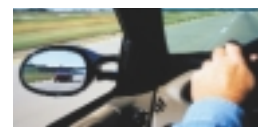
- Outputs clamped when switching inductive loads
- Very low operational bias currents < 2.0 mA
- Sleep mode current < 25 μ A
- CMOS input logic compatible with 5.0 V logic levels
- Load Dump robust (60 V transient at V_{PWR})
- Daisy chain operation of multiple devices possible
- Switch outputs can be paralleled for higher currents
- Additional devices available for comparison in Analog Selector Guide SG1002/D

Protection	Detect	Limiting	Shut Down	Auto Retry	Status Reporting
Over Voltage	•		•		•
Over Current/SC	•	•	•	•	•
Over Temperature	•		•	•	
Open Load	•				•

Ordering Information	Package	Ship Method	Motorola Part Number
	24 SOICW	Rail T/R	**33298DW **33298DWR2
Data Sheet Order Number			MC33298/D
Contact Sales for Evaluation Kit Availability			
**Prefix Index: PC = Eng Samples; XC = In Qual; MC = Production			

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?



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MC33298FS/D
Rev. 1

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