



**ANALOG
PRODUCTS**

**MC33291 / MC33291L
FACT SHEET**

POWER ICs
LOW-SIDE SWITCH

**33291 (0.6 Ω R_{DS(ON)}) / 33291L (1.2 Ω R_{DS(ON)}) SMART EIGHT OUTPUT
SWITCH WITH SPI INTERFACE**

The 33291 and 33291L are both versatile low-side smart switches incorporating an 8-bit serial shift register to control the 8-bit parallel output latch to provide control of the eight independent output power (ON/OFF) switches. These devices are very useful to drive solenoids, relays, lamps, DC-motors, and other moderate current load (0.5 A) applications.

The 33291 and 33291L interface directly with microcontrollers to control various inductive or incandescent loads. The circuit's innovative monitoring and protection features include very low standby current, SPI cascadable fault reporting, internal 53 V clamp on each output, output specific diagnostics, and independent shutdown of outputs.

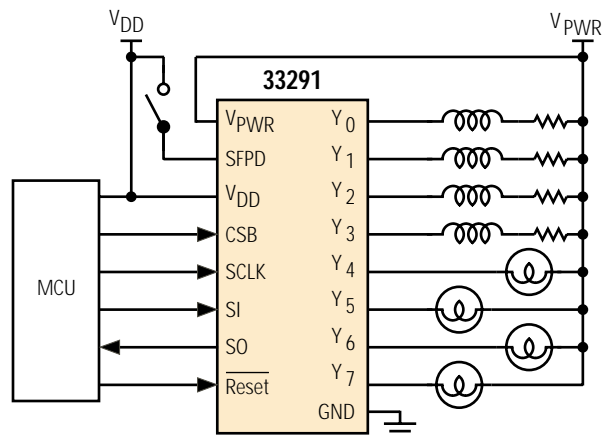
APPLICATIONS

- Aircraft Systems
- Automotive Systems
- Robotics
- Farm Equipment
- Industrial Actuator Controls
- Small DC-Motor Controls
- Marine Systems
- Incandescent Lamp Control
- Applications where low-side switch control with diagnostics is necessary

CUSTOMER BENEFITS

- Low system cost, minimal component count, simplified circuitry, and minimal boardspace
- Simplified system design with direct interfacing to microprocessor
- Simplified inductive load driving due to internally clamped outputs
- Capable of switching capacitive, incandescent, or inductive loads
- Versatile outputs capable of parallel operation accommodating increased output load current combinations or for the reduction of R_{DS(ON)}
- Capable of PWM-ing load

Simplified Application Diagram




Performance	Typical Values
Outputs	8
R _{DS(ON)} @ 25°C	0.6 Ω (1.2 Ω "L")
Operating Voltage	5.5 – 26.5 V
Peak Current	1.0 A each output
Control	SPI
Operating Temp	-40°C ≤ T _A ≤ 125°C
Junction Operating Temp	-40°C ≤ T _J ≤ 150°C

FEATURES

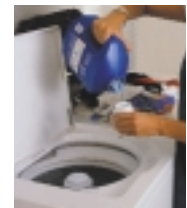
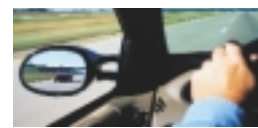
- Outputs clamped when switching inductive loads
- Very low operational bias currents < 2.0 mA
- Sleep mode current < 25 μ A
- CMOS input logic compatible with 5.0 V logic levels
- Load dump robust (60 V transient at V_{PWR})
- Daisy-chain operation of multiple devices possible
- Switch outputs can be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

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

Ordering Information	Package	Ship Method	Motorola Part Number
	24 SOICW	Rail	**33291DW **33291LDW
		T/R	**33291DWR2 **33291LDWR2
Data Sheet Order Numbers			MC33291/D MC33291L/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 for switching multiple loads using a microcontroller?
- Do you have very little PC board space available for load control?
- Do you require multiple high-efficiency switches to control capacitive, incandescent, or inductive loads over a wide temperature range?
- Are you looking for an easy-to-design-in solid state switch, capable of switching eight different loads?
- Do you need a "smart" switch with programmable internal protection features as well as fault reporting?
- Do you need multiple switches that can be controlled from a microcontroller via SPI protocol?



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MC33291LFS/D
Rev. 1

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