

## ANALOG PRODUCTS

### MC33888 FACT SHEET



POWER ICs  
HIGH-SIDE SWITCH

### 33888 QUAD HIGH-SIDE SWITCH AND OCTAL LOW-SIDE SWITCH

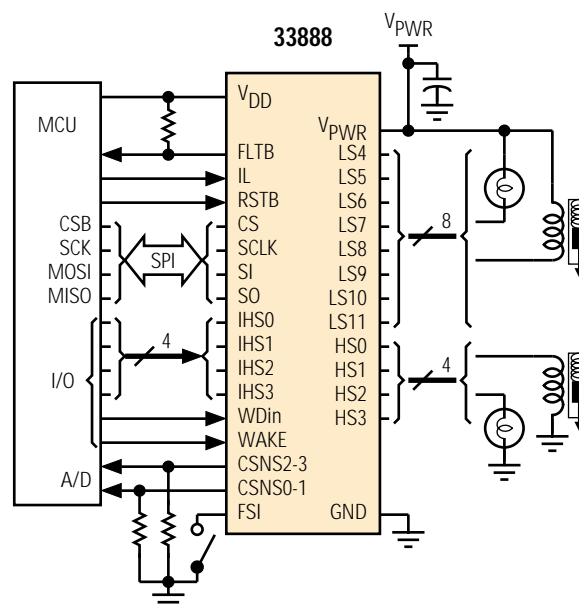
The 33888 is a multi-chip combination in a single package. The chip combination consists of four discrete high-side FETs and an integrated IC having eight low-side drivers with appropriate control, protection, and diagnostic features. The high-side drivers are useful for incandescent lamp control as well as driving inductive solenoid loads.

The low-side drivers are capable of controlling low current ON/OFF type inductive loads, such as relays and solenoids as well as LED indicators and small lamps. The device is very useful for instrumentation panels, and other high-power switching applications.

#### APPLICATIONS

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

Simplified Application Diagram



#### CUSTOMER BENEFITS

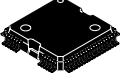
- Economical multi-function solution with few components
- Simple implementation using direct interfacing to a microprocessor
- Compact combination of 4 high-side and 8 low-side switches in a single package
- Increased switching efficiency with very low  $R_{DS(ON)}$  FETs
- Reduced PC board space resulting in enhanced application reliability
- Internal safety features with output status reporting and SPI

| Performance             | Typical Values                           |
|-------------------------|--|
| Outputs                 | 12                                       |
| $R_{DS(ON)}$ @ 25°C     |  |
| 4 High-Side             | 2 @ x 0.08 $\Omega$ , 2 @ 0.030 $\Omega$ |
| 8 Low-Side              | 0.5 $\Omega$                             |
| Operating Voltage       | 6.0 – 27 V                               |
| Peak Current            |  |
| 4 High-Side             | 2 @ 40 A, 2 @ 23 A                       |
| 8 Low-Side              | 4 @ 500 mA, 4 @ 800 mA                   |
| ESD                     | $\pm$ 2000 V                             |
| Operating Temp          | -40°C $\leq$ T <sub>A</sub> $\leq$ 125°C |
| Junction Operating Temp | -40°C $\leq$ T <sub>J</sub> $\leq$ 150°C |

## FEATURES

- Breakdown voltage greater than 41 V
- Protected against loss of ground, loss of  $V_{PWR}$
- Enhanced -16 V reverse battery protection (MOSFETs turned ON)
- Surface mount power package
- SPI and/or parallel control of four high-side switches
- SPI control of eight low-side switches (one switch also parallel controlled)
- SPI or direct-fed watchdog with diagnostics
- Very low quiescent current in standby mode
- 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          | •      |          | •         | •          | •                |
| Short to GND       | •      | •        |           |            | •                |
| Short to $V_{PWR}$ | •      | •        | •         |            | •                |

| Ordering Information  | Package | Ship Method | Motorola Part Number     |
|---|---------|-------------|--------------------------|
|  | MO 188  | Rail T/R    | **33888FB<br>**33888FBR2 |
| Data Sheet Order Number   |         |             | MC33888/D                |
| Contact Sales for Evaluation Kit Availability                                       |         |             |                          |
| **Prefix Index:<br>PC = Eng Samples; XC = In Qual; MC = Production                  |         |             |                          |

## QUESTIONS

- Need an economical solution to control of 4 high-side and 8 low-side switched loads using an MCU?
- Do you have limited PC board space available for load control?
- Do you need to control 12 incandescent or inductive loads over a wide temperature range?
- Are you looking for an easy-to-design "smart" switch, capable of switching many loads?
- Do you need a "smart" switch with internal protection and fault reporting features?

### How to reach us:

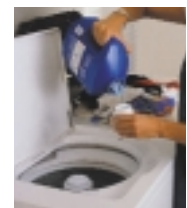
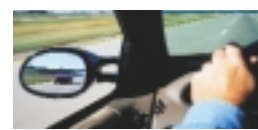
**USA/EUROPE/Locations Not Listed:** Motorola Literature Distribution;  
P.O. Box 5405, Denver, Colorado 80217  
1-303-675-2140 or 1-800-441-2447

**JAPAN:** Motorola Japan Ltd.; SPS, Technical Information Center,  
3-20-1, Minami-Azabu, Minato-ku, Tokyo 106-8573 Japan  
81-3-3440-3569

**ASIA/PACIFIC:** Motorola Semiconductors H.K. Ltd.; Silicon Harbour Centre,  
2 Dai King Street, Tai Po Industrial Estate, Tai Po, N.T., Hong Kong  
852-26668334

**Technical Information Center:** 1-800-521-6274

**HOME PAGE:** <http://www.motorola.com/semiconductors>



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MC33888FS/D  
Rev. 1