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ANALOG PRODUCTS

MC33397 FACT SHEET

POWER ICs
LOW-SIDE SWITCH

Freescale Semiconductor, Inc.

33397 CONFIGURABLE SMART OUTPUT SWITCH (0.7 Ω $R_{DS(ON)}$) WITH SPI AND PARALLEL INPUT CONTROL

The 33397 is a versatile dual mode low-side switch that can be output-configured as two 0.35 Ω open drain outputs in the dual mode or as six 0.7 Ω open drain outputs in the hex mode.

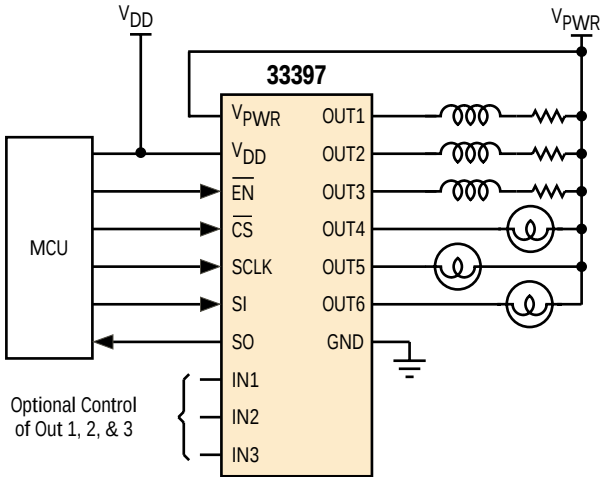
Each open drain output has internal current limit and short circuit protection. Current limit is typically 1.5 A with 2.0 A maximum. The outputs can be input-controlled via parallel inputs or the Serial Peripheral Interface (SPI). Three inputs provide parallel control while a serial 8-bit word provides SPI control of the outputs. Output fault detection capability includes "OFF-State" open loads and "ON-State" shorts-to-battery conditions. Individual output faults are latched into the fault register and serially shifted out during serial communication with the 33397. The 33397 has both over voltage and under voltage shutdown.

A low quiescent current sleep state feature can be enabled (or disabled) on command via the SPI port.

APPLICATIONS

- Farm Equipment
- Industrial Equipment
- Marine Systems
- Robotics
- Automotive Controls

Simplified Application Diagram



CUSTOMER BENEFITS

- Reduced part count, simplified circuitry, and minimal boardspace
- Input/output application versatility
- Bimodal operation (dual or hex mode); outputs can be operated in two parallel pairs of three for enhanced $R_{DS(ON)}$ or as six independent outputs
- Outputs are internally protected against transients and controlled by SPI and/or 3 parallel inputs
- Simplified system design (interfaces to a 5.0 V microprocessor)
- Capable of switching capacitive, incandescent, or inductive loads

Performance	Typical Values
Outputs	2 x 0.35 Ω or 6 x 0.7 Ω
$R_{DS(ON)}$ @ 25°C	0.7 Ω
Operating Voltage	9.0 – 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

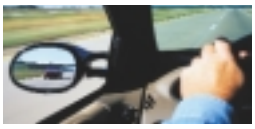
- Outputs clamped when switching inductive loads
- Very low operational bias currents < 2.0 mA
- CMOS input logic compatible with 5.0 V logic levels
- Load dump robust (60 V transient at V_{PWR})
- Daisy-chain operation of multiple devices possible
- Switch outputs can be paralleled for higher currents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

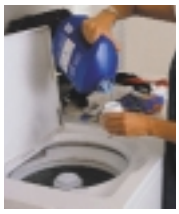
Protection	Detect	Limiting	Shut Down	Auto Retry	Status Reporting
Over Voltage	•		•		•
Under Voltage	•		•		
Over Current/SC	•	•	•	•	•
Over Temperature	•		•	•	
Open Load	•				•

Ordering Information	Package	Ship Method	Motorola Part Number
	24 SOICW	Rail T/R	**33397DW **33397DWR2
Data Sheet Order Number			MC33397/D

Contact Sales for Evaluation Kit Availability

**Prefix Index:
PC = Eng Samples; XC = In Qual; MC = Production





QUESTIONS

- Do you need to reduce the complexity of switching multiple loads?
- Do you have very little PC board space available for the control of multiple loads?
- Do you need multiple high-efficiency switches to control both inductive and incandescent loads over a wide temperature range?
- Do you need a low-side switch that can switch two high current (≤ 3.0 A) loads or six moderate current (≤ 1.0 A) loads?
- Do you need parallel and SPI redundant control?
- Do you need to implement a fault tolerant system?
- Do you need a "smart" switch with internal protection features?
- Do you need status reporting features for diagnostics purposes or for implementing system logic?
- Do you need over voltage and under voltage shutdown to assure switching performance?

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Rev. 1

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