

MC33797

Four Channel Squib Driver IC

Applications

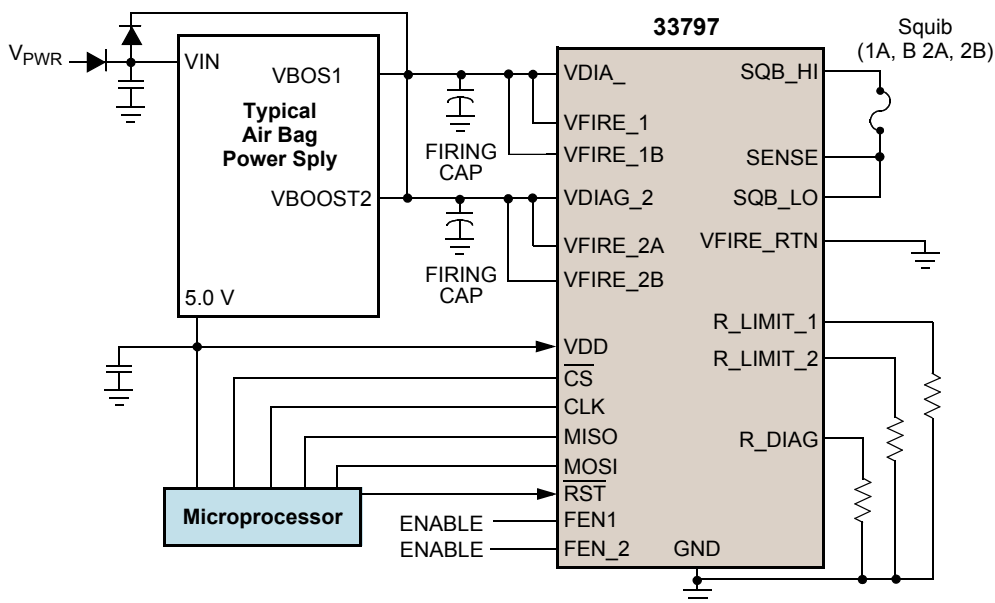
- Automotive Air Bag Deployment
- Automatic Seat Belt Retention
- Computer Controlled Model Rocketry Igniters
- Remote Firing of Pyrotechnic and Firework Displays
- Computer Controlled Firing of Blasting Caps for Mining and Construction
- Military or Police Weapon Systems
- Ballistic Recovery Systems

Overview

The Four Channel Squib Driver IC is a complete squib diagnostic and deployment interface for use in automotive air bag modules. Extensive diagnostics and system control features are incorporated to provide fail-safe operation. The device contains a serial peripheral interface (SPI) compatible 8-bit interface to allow microprocessor control.

The device has the capability to be used in a standard four channel squib driver IC or in a cross-coupled state with the high and low side squib drivers located on separate squib driver ICs. Both the high and low side output drivers are protected against temporary shorts to battery or ground. The current limit threshold is set by an external resistor.

MC33797 Simplified Application Diagram



| Performance | Typical Values |
|-----------------------|--|
| Output Voltage, VDD | 5.0 V |
| Firing Conditions | 7.0 V \leq V _{VFIRE_XX} \leq 35 V |
| Operating Voltage | 2.0 Amps, 2.0 ms @ 25 V 2.0 Amps, 0.8 ms @ 35 V |
| ESD (HBM) | \pm 2000 V |
| Control | SPI |
| Outputs | 4 |
| Operating Temperature | -40 °C \leq T _A \leq 85 °C |
| Junction Temperature | -40 °C \leq T _J \leq 100 °C |

Features

- Four channel high side and low side 2.0 A FET switches
- Externally adjustable FET current limiting
- Adjustable current limit range: 0.8 A to 2.0 A
- Individual channel current limit detection with timing duration measurement, communicated via the SPI
- 8-bit SPI for diagnostics and FET switch activation
- Diagnostics for high side safing sensor status
- Resistance and voltage diagnostics for squibs
- Squib driver IC capability to be used for cross-coupled driver firing application (allows high and low side FET switches to be located on separate squib driver ICs)
- Devices available for comparison are in the Analog Product Selector Guide - SG1002 and Automotive Product Selector Guide - SG187

Customer Benefits

- Simple and low-cost squib firing control
- Diagnostics insure reliable performance
- Easy interface to MCU
- Automotive temperature range

Questions

- Are you working with automotive air bag or seat belt retaining systems?
- Are you working with any type of controlled explosive devices?
- Do you need to control the firing of a squib, blasting cap, or other pyrotechnic devices?
- Do you need to control a firing device using an MCU?
- Are diagnostic features and near fail-safe operation required?

| Protection | Detect | Limiting | Shutdown | Status Reporting |
|-----------------|--------|----------|----------|------------------|
| Over-voltage | • | | | • |
| Under-voltage | • | | | • |
| Over-current/SC | • | | • | |
| Lamp | • | • | | • |

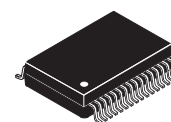
Ordering Information

| Device | Temperature Range | Package |
|----------------|-------------------|-------------|
| MC33797BPEW/R2 | -40 to 85°C | 32 SOICW-EP |

Documentation

| | |
|---------|-----------------------------------|
| MC33797 | Data sheet order number |
| SG1002 | Analog Product Selector Guide |
| SG 187 | Automotive Product Selector Guide |

32 SOICW/EP



0.65 mm Pitch
7.5 x 11.0 mm Body

Learn More: For current information about Freescale products, please visit www.freescale.com.