MPD8020-0014

High Current Sink/Source Driver

Design Concept

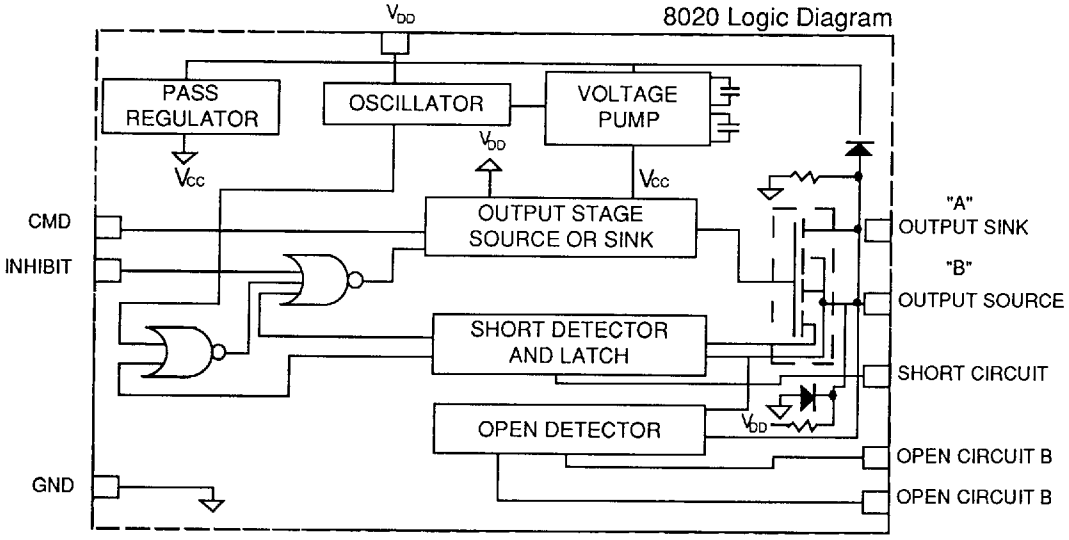
General Description:

The MPD8020-0014 High Current Driver is designed to drive a single N Channel Power MOSFET in either a Sink or Source load configuration. It is designed to operate from a Mil-STD-704D Avionics 28 volt bus, and includes transient voltage protection circuitry. An input logic high turns ON the Power MOSFET selected to meet the $RDS_{(ON)}$ and load current required for the application. A sense circuit determines if the load is in sink or source configuration. The FET sense lead generates current proportional to the load, and a reference voltage and comparator determines the current value for overcurrent protection. Flags are generated to indicate an open or short circuit load. The overcurrent detector turns off the driver, and periodically monitors the overcurrent condition, preventing damage to the MOSFET driver.

Features

- Smart Drive for Solenoid or Relays
- Input Logic Compatible with TTL or CMOS
- 16 Pin Side Braze Ceramic DIP package
- Operation Temperature of 55°C to +125°C
- Configurable to drive loads of 5 to 500 Amps
- High Side or Low Side Operation
- Short or Open Circuit Detection and Shutdown with Internal Reset
- Avionic Mil-STD-704D Voltage with Transient Protection
- Switch Load Current of 5 Amps
- Mil-STD-883 Qualification

Block Diagram



TECHNOLOGY

The process technology is CMOS/DMOS, combining analog, digital and power MOSFET driver macros on a monolithic microcircuit.

The technology is ideal for applications requiring interface between a microcontroller and electromechanical loads, and operating from an avionics 28 volt power bus.

The analog macros provide load current detection and control using op-amps, comparators, voltage regulator and precision voltage reference. A voltage doubler provides gate voltage enhancement for the MOSFET gate drive. Cross coupled pairs interface low level digital logic to high voltage drivers. Status output signals are accessed through digital buffers.

16 Pin Sidebraze (300mil width)