Serial Interface Dual 8-Channel Relay, LED, Stepper Driver

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TIDA-00117 Board for Serial Interface Dual 8-Channel Relay, LED, Stepper Driver

Description

This reference design includes dual DRV8860 and an MSP430 value line MCU to provide 16-channel low side driver for Relays, LEDs, and Unipolar steppers. The solution suports voltage range from 8V to 38V, 200mA current for each channel, parallel outputs, protection of short condition and open load detection. Serial interface and daisy chain connection of DRV8860 give the most benefits on minimum input IOs and extending the output channels easily. An innovative energizing time and internal automatic PWM duty control provide obvious energy saving function especially for relay and solenoid driving. The PWM duty control also can be used for LED brightness control. Full and half step unipolar stepper motor control logic is also included in this design. The drive stage has integrated protection from short-circuit, under voltage, and over-temperature.

Fully assembled board (shown above) developed for testing and performance validation only, not available for sale.

Features

- Serial interface control to minimize the inputs signal
- Daisy chain connection to extend output channels easily without increasing inputs IO
- Wide VM range from 8V to 38V and 200mA for each channel
- Parallel outputs capability to increase the output current
- Diagnosis function by reading back output states and OCP/OL faults through serial interface
- Integrated protection for short-circuit, over-current, under-voltage, and over-temperature

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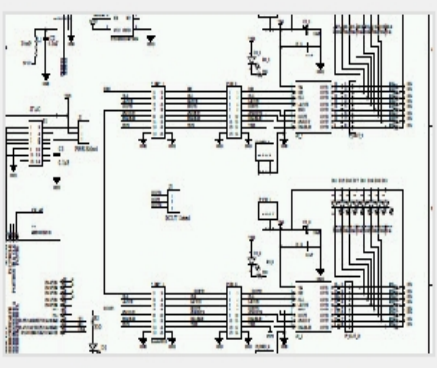
Schematic/Block Diagram

Quickly understand overall system functionality.



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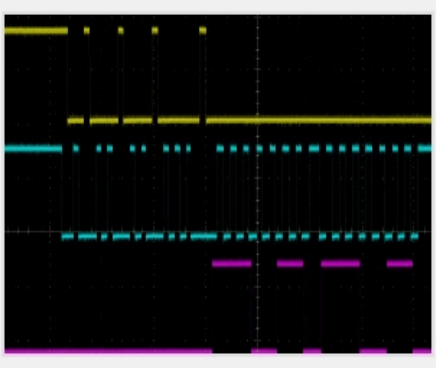

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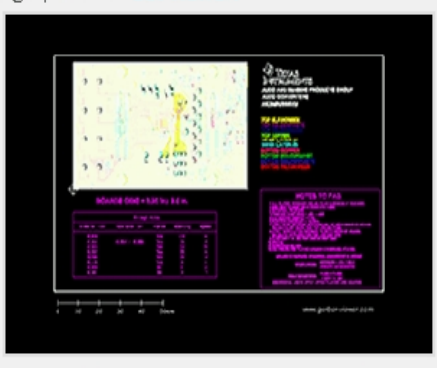

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Bill of Materials (BOM)

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TI Devices (3)

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Part Number	Name	Product Family	Sample & Buy	Design Kits & Evaluation Modules
DRV8860	Octal Low-Side Driver with Serial Interface	Integrated Motor Driver	Sample & Buy	View Design Kits & Evaluation Modules
MSP430F2350	16-bit Ultra-Low-Power Microcontroller, 16KB Flash, 2048B RAM, Comparator	Ultra-low Power	Sample & Buy	View Design Kits & Evaluation Modules
TPD2E001	Low-Capacitance 2-Channel +/-15 kV ESD-Protection Array for High-Speed Data Interfaces	ESD Protection Diodes	Sample & Buy	View Design Kits & Evaluation Modules

CAD/CAE symbols

Part #	Package | Pins	CAD File (.bxl)	STEP Model (.stp)
DRV8860	TSSOP (PW) | 16	Download	Download
MSP430F2350	VQFN (RHA) | 40	Download	-
	DSBGA (YFF) | 49	Download	-
TPD2E001	SOP (DZD) | 4	Download	-
	SOT (DRL) | 5	Download	-
	WSON (DRS) | 6	Download	-
	USON (DRY) | 6	Download	-

Texas Instruments and Accelerated Designs Inc. have collaborated together to provide TI customers with schematic symbols and PCB layout footprints for TI products.

Step 1: Download and install the Ultra Librarian software ZIP: 62MB

Step 2: Download the Symbol and Footprint .bxl file.

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Technical Documents

User Guides (1)

Title	Abstract	Type	Size (KB)	Date	Views
TIDA-00117 Test Results		PDF	622	15 Nov 2013	1,153

Design Files (2)

Title	Abstract	Type	Size (KB)	Date	Views
TIDA-00117 BOM		PDF	104	15 Nov 2013	99
TIDA-00117 Schematic		PDF	176	15 Nov 2013	1,068

Related Tools & Software

Software (1)

TIDA-00117 Design File
(ZIP, 385 KB) 111 views, 15 Nov 2013

Applications

- Stepper Motor

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