AN4627
Application note

Getting started with EVAL-L9958

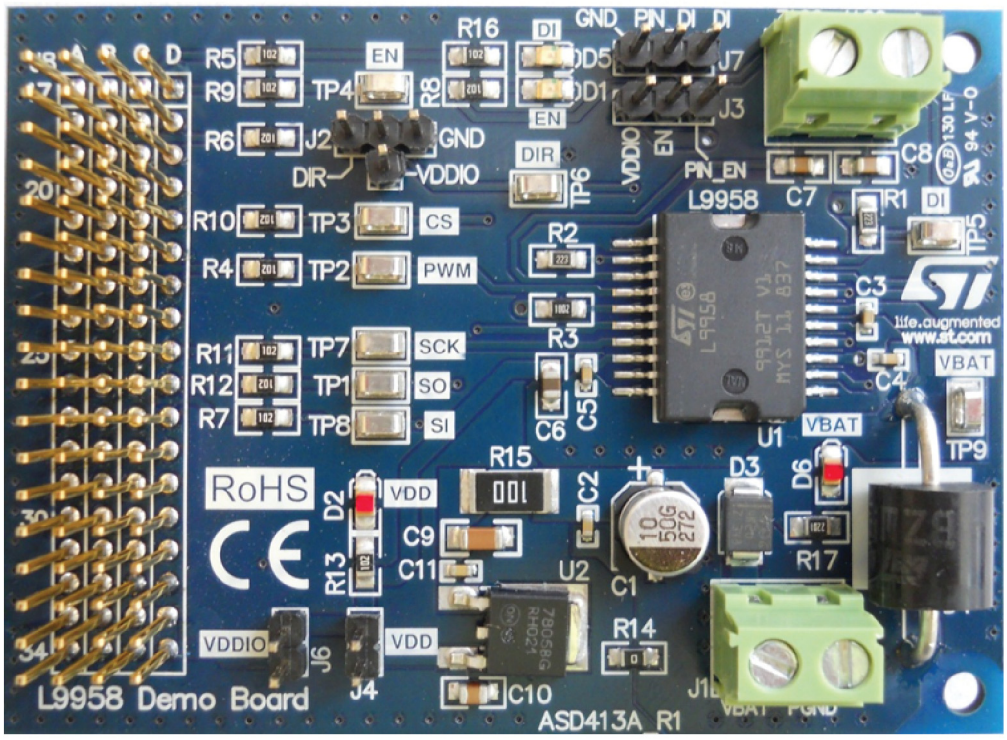
Introduction

The EVAL-L9958 is the evaluation board designed to provide the user with a platform to evaluate L9958, the motor driver for DC motors.

The board offers all the inputs and outputs capabilities necessary to configure the device and to monitor diagnostic functionalities. A lot of test points allow to evaluate and monitor the signals and the HW status of the device.

The selected solution is the quickest way to discover the L9958 device, to develop the code to program and control the device and to debug the application.

Figure 1. EVAL-L9958 evaluation board



Contents

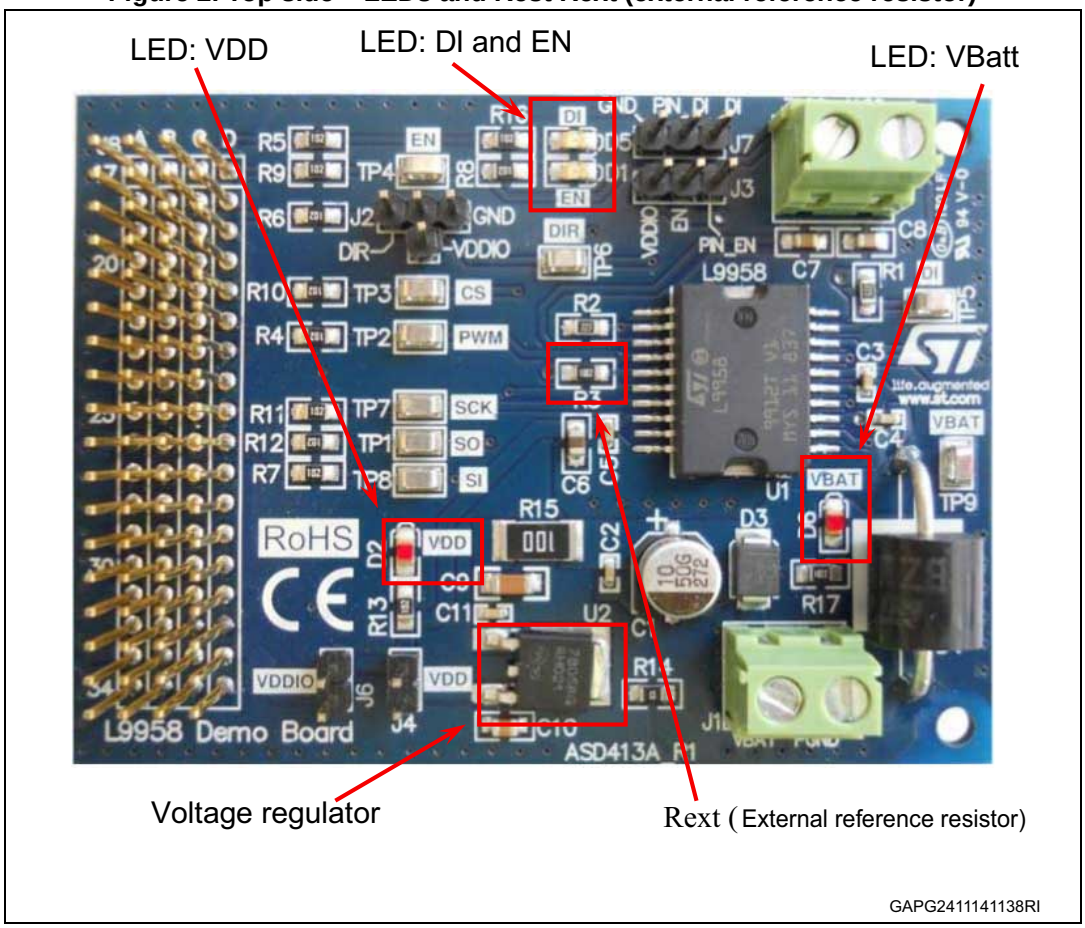
List of tables

List of figures

1 Getting started with EVAL-L9958

1.1 Board description and connections

Figure 2. Top side – LEDs and Rest Rext (external reference resistor)



The EVAL-L9958 evaluation board size is 78 mm x 57 mm, the PCB is FR4 glass epoxy support with 2 copper layers.

The device L9958 is soldered on the top side; the copper area on top and bottom side of the PCB is used as heatsink.

A dedicated pin array connector (J8) allows plugging the board in the SPC56 Discovery+ board.

The input signals EN, DI, DIR, PWM as well as the SPI all signals are connected to J8. If the EVAL-L9958 board is connected to a SPC56 Discovery board, all input signals are properly connected to the microcontroller.

Table 1 shows the J8 pin connection.

Table 1. Microcontroller connector (J8) – Pin description

Pin name	Description
A22	PWM input signal
C17	DI input signal
C18	DIR input signal
C26	SI input signal
D17	EN input signal
D18	CS - SPI
D25	SCK - SPI
D18	SO - SPI
C33	VDDIO
A34	GND

The board comes already configured and the it works properly if plugged in a SPC56x Discovery+ board. Adding some wires, the board can be driven using SPCDiscovery board (SPC560B-DIS or SPC560B-DIS) or a different microcontroller evaluation board

Table 2 shows jumper name, the function and the default configuration.

Table 2. Jumpers: description and default configuration

Jumper name	Description	Default config
J2	DIR setting (from uC, VDDIO, GND or external source)	2-3 (µController)
J3	EN Setting (from uC, GND or external source)	1-2 (µController)
J4	VDD setting (from internal regulator or VDDIO)	ON (+5V)
J6	VDD setting: (from VDDIO or external source)	OFF

The external PSU must be connected to the VBatt terminal blocks following the polarity indication on top of the board (check the silkscreen).

VBatt level must be selected in accordance with the motor connected to the outputs as well as the PSU current capability. The VBAT voltage level must be lower than the maximum operative voltage of the L9958. The LED D6 is turned on when the board is supplied and VBAT is ON; the LED D2 highlights the VDD status.

The load (motor) must be connected to J5.

The load connections as well as all the wires must be connected to the board when the board is not supplied.

1.2 Device configuration

L9958 is a configurable device via SPI. The SPI communication allows the user to read information from the device and diagnostic function.

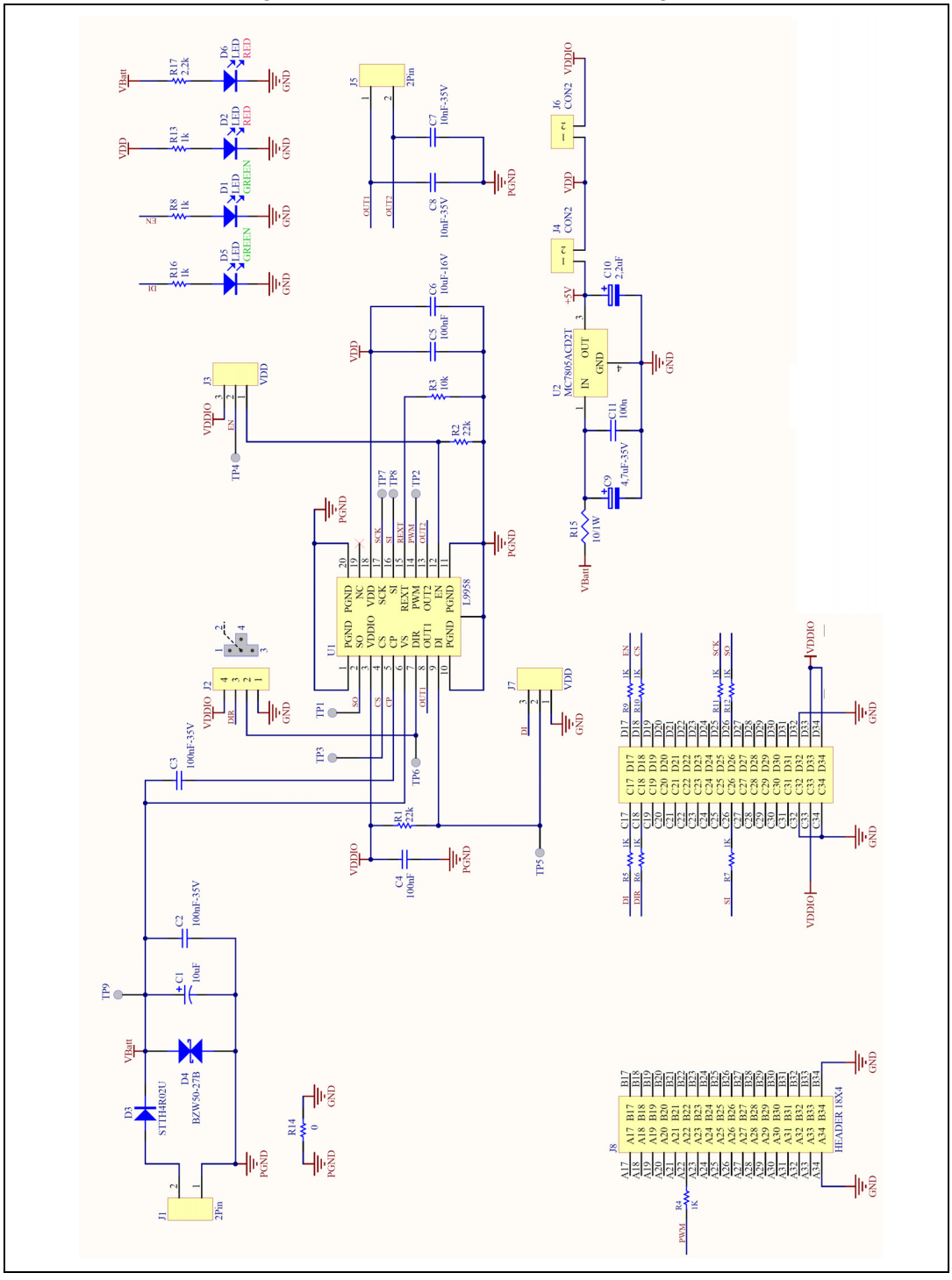
Appendix A General handling precautions

The following precautions are recommended when using the EVAL-L9958 board:

- Do not modify or manipulate the board when the DC supply is connected to the board.
- Any equipment or tool used for any manipulation of the semiconductor devices or board modification should be connected to ground to avoid or limit the ESD.
- The connectors and cables must be plugged and removed when the board is not powered.
- Do not supply the board with a DC source higher than the maximum operative range or with reverse polarity.
- It is recommended to use antistatic tools.

Appendix B Schematic diagram

Figure 3. EVAL-L9958 - Schematic diagram



Revision history

Table 3. Document revision history

Date	Revision	Changes
25-Nov-2014	1	Initial release.