Product Abstract

MLX81109
Mini LIN/LIN RGB Slave Controller

1. Features

Configurations

- 20 pin device in QFN20 5x5 package

Application Controller

- Internal RC-Oscillator (24 MHz default clock)
- 16-bit MULAN MCU with
  - 32kByte Flash
  - 1024 Byte RAM
  - 512 Byte NVRAM with ECC (380 Byte for customer purpose)
- Math Co-processor for 32 bit MUL/DIV Operations
- LIN Protocol Controller according to LIN 2.x and SAE J2602
- Baudrate up to 19.2 kBaud
- Frame processing
- Low interrupt load to the application

LIN Transceiver according to LIN 2.x and SAE J2602

- Support for Autoconfig according bus shunt method

IO configuration

- 4x high voltage I/Os with free configurable current sources (up to 48mA) for RGBW
- Diagnostic capability for connected LED
- 8x 5V open drain IO's
- 4x 16-bit PWM outputs, routable to HV and LV IOs
- Interrupt capability for all inputs (HV or LV)
- Configurable wake up sources (LIN and IOs)
- Serial interface (SPI)
- 10 bit ADC with DMA, conversion time <6us, multiple channels and 3 different reference voltages

Voltage Regulator

- Low standby current consumption of typ 25µA (max 50 µA) in sleep mode
- Integrated battery monitor including over- and under-voltage detection

Other Features

- Automotive Temperature Range of -40°C to 125°C
- 28V jump start
- Integrated temperature sensor

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2. Scope

This document is intended to give a brief introduction of the MLX81109 – Mini LIN/LIN RGB Slave Controller.

The detailed information regarding this product as well as all the required development tools are available via the Melexis softdist service (https://softdist.melexis.com).

3. Melexis Softdist Server

Melexis SoftDist (https://softdist.melexis.com) is a software distribution system which allows customers to download documents, development software and other stuff related to Melexis products. In case updates or new items are available a notification email will be send automatically to all subscribers.

It's required to register in order to access the Melexis Softdist server.

In case you are not registered yet, please contact our sales team and specify which Melexis product you are interested in, in order to create an account and grant access to the correct product specific information:

Europe, Africa	Email : sales_europe@melexis.com
Americas	Email : sales_usa@melexis.com
Asia	Email : sales_asia@melexis.com

4. Short Description

This IC is a fully integrated low end LIN Slave for ambient light applications in automotive environment to drive via LIN bus RGB LEDs. It is suitable for bus systems according to LIN 2.x as well as SAE J2602.
The combination of physical layer LIN transceiver and LIN protocol controller in combination with current controlled outputs make it possible to develop in a short timeframe simple, but powerful and cheap ambient light or other mcu modules connected to LIN Bus systems.

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5. General Overview

5.1. Memory Configuration

Part	Flash	User NVRAM	RAM	Package
MLX81109	32kByte	380Byte	1kByte	QFN20 5x5

5.2. Block Diagram

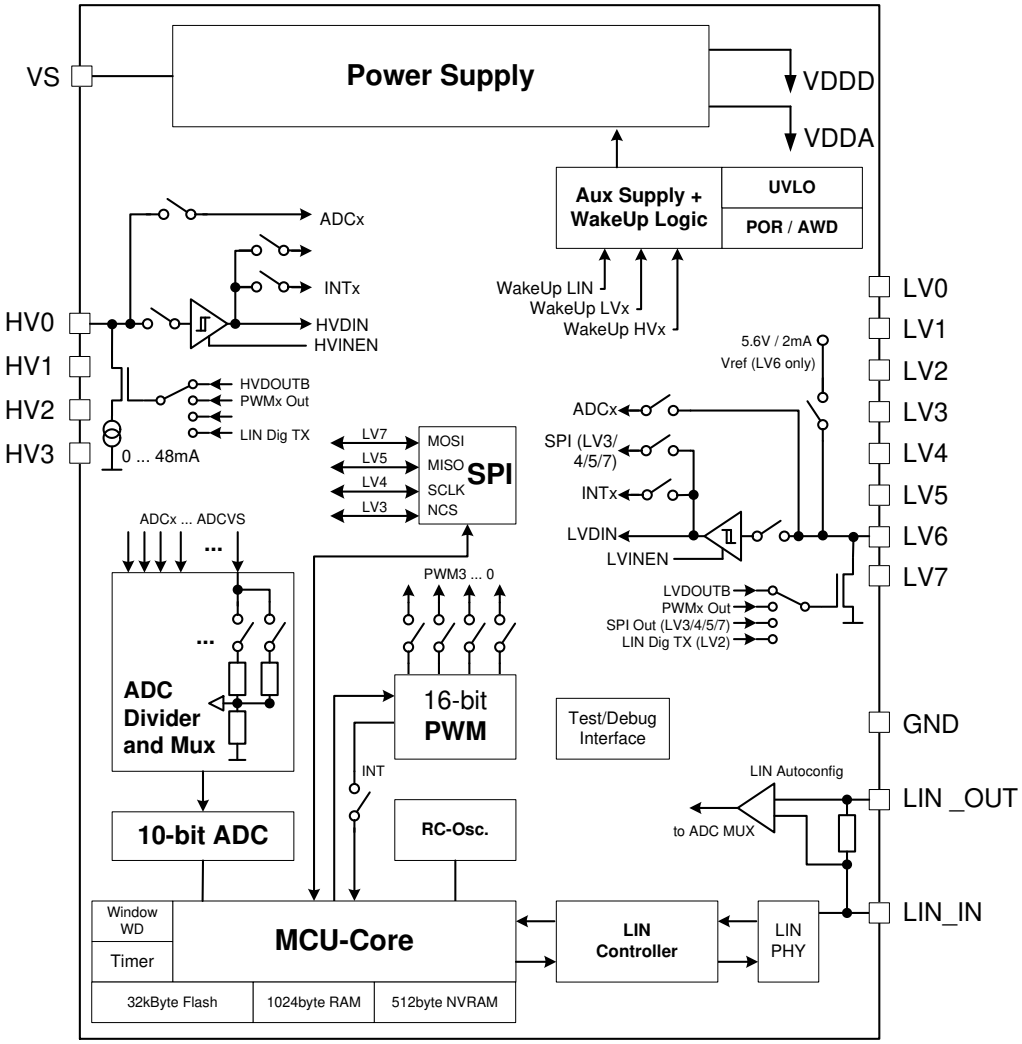


Figure 1 - Block Diagram

6. Electrical Characteristics

All voltages are referenced to ground (GND). Positive currents flow into the IC.

6.1. Operating Conditions

Parameter	Symbol	Min	Max	Unit
Battery supply voltage [1]	V_S	5.5	18	V
Operating ambient temperature	T_{amb}	-40	+125	°C

Table 1 - Operating Conditions

1) V_s is the IC supply voltage including voltage drop of reverse battery protection diode, V_{DROP} = 0.4...1V, V_{BAT_ECU} = 6...27V.

7. Application Hints

7.1. Application Example

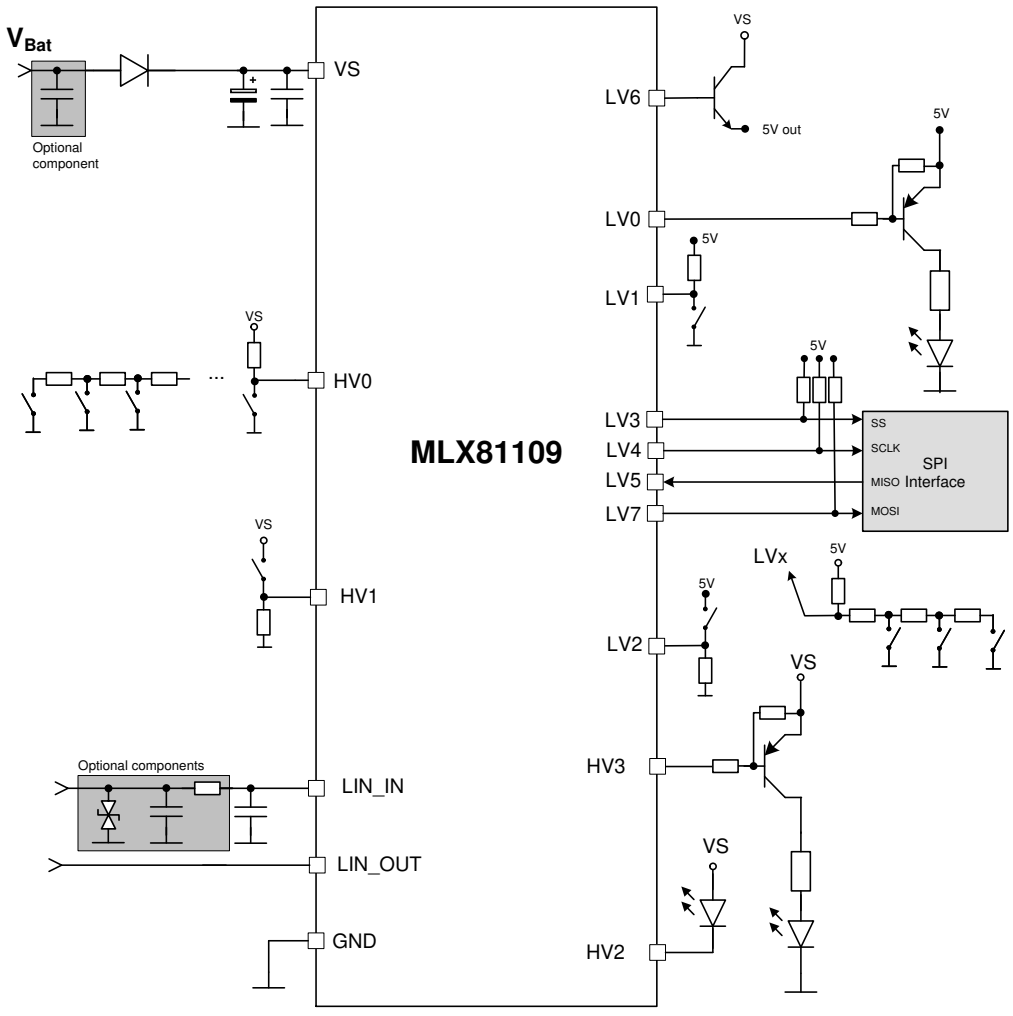


Figure 2 - LIN RGB Slave

8. Soldering information

Please see

http://www.melexis.com/Assets/Soldering-Application-Note-and-Recommendations-5446.aspx

9. Contact

For the latest version of this document, go to our website at www.melexis.com.

For additional information, please contact our Direct Sales team and get help for your specific needs:

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Americas	Email : sales_usa@melexis.com
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