AMIS-3910XGEVB

AMIS-3910XGEVB Evaluation Board User's Manual

ON Semiconductor®

http://onsemi.com

EVAL BOARD USER'S MANUAL

Introduction

The AMIS−3910XGEVB evaluation board demonstrates the AMIS−39101 high side driver in SOIC package. The evaluation board includes all external components needed for operating AMIS−39101 and to demonstrate the small PCB surface area such an implementation requires.

Overview

The AMIS−39101 is a robust high side driver featuring eight independent high current output drive channels along with a number of integrated fault protection circuits. This highly integrated product is designed for controlled delivery of power to a large variety of loads in industrial applications including motors, relays and LED arrays, among others. With all driver output channels in the conducting state, each channel can source up to 350 mA of continuous current (resistive load). In cases where all output drivers are not active, higher output current per channel can be achieved provided that the thermal limits of the device are not exceeded.

The device can be interfaced to a variety of microcontrollers via the serial interface link, in turn allowing for monitoring and controlling the state of each of the output drivers individually. In this case, at the onset of a potential hazardous situation the drivers are switched off and the diagnostic state of the drivers can be extracted via the serial interface.

Features

- Eight High Side Output Drivers
- Up to 830 mA Continuous Current per Driver Pair (Resistive Load)
- Charge Pump with One External Capacitor
- Serial Interface
- Short−circuit Protection
- Diagnostic Features
- Power−down Mode
- Internal Thermal Shutdown
- 3.3 V and 5 V Microcontroller Compliant
- Excellent System ESD
- Automotive Compliant
- Temperature Range of −40°C to +150°C
- Available in 28−pin SOIC
- These are Pb−Free Devices

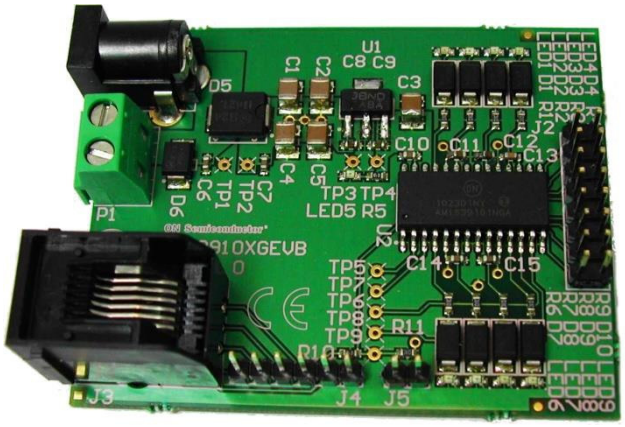

Figure 1. The AMIS−3910XGEVB Evaluation Board

ELECTRICAL CHARACTERISTICS

Table 1. ELECTRICAL CHARACTERISTICS OF THE AMIS−3910XGEVB BOARD

Symbol	Parameter / Condition	Value		
		Min	Typ	Max
V_BAT Voltage				
V_{BAT}	V_BAT Voltage	5.5 V	24 V	35 V
Current Drawn from V_BAT				
I_{BAT}	Total Current Consumption	4 mA		3.75 A

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

AMIS−39101 DESCRIPTION

The AMIS−39101 is a robust high side driver featuring eight independent high current output drive channels along with a number of integrated fault protection circuits. This highly integrated product is designed for controlled delivery of power to a large variety of loads in industrial applications including motors, relays and LED arrays, among others. With all driver output channels in the conducting state, each channel can source up to 350 mA of continuous current (resistive load). In cases where all output drivers are not active, higher output current per channel can be achieved provided that the thermal limits of the device are not exceeded.

Furthermore, in order to minimize system cost each output driver has built−in fly−back diodes. The device withstands short circuits to ground and supply, respectively. It is designed with an array of integrated protection features including overtemperature and overcurrent detection and shutdown. The integrated charge pump requires only one external capacitor and provides for operation of the critical fault protection circuitry even in case of low supply voltages. The device can be interfaced to a variety of microcontrollers via the serial interface link, in turn allowing for monitoring and controlling the state of each of the output drivers individually. In this case, at the onset of a potential hazardous situation the drivers are switched off and the diagnostic state of the drivers can be extracted via the serial interface. The device also features a power down mode for reduced power consumption and has high built−in electrostatic discharge (ESD) protection capability for robust operation.

AMIS−3910XGEVB DESCRIPTION

BOM List

Table 2. AMIS−3910XGEVB BILL OF MATERIALS

Quantity	Reference	Part	Footprint	Comments	Manufacturer	Product Code
5	C1, C2, C3, C4, C5	10 μF	C1210	50 V	Murata	GRM32DF51H106ZA01L
9	C6, C7, C8, C9, C10, C11, C12, C14, C15	100 nF	C0603	50 V	Murata	GRM188F51H104ZA01D
1	C13	22 nF	C0603	50 V	Murata	GRM188R71H223KA01D
8	D1, D2, D3, D4, D7, D8, D9, D10	MURA140T3G	SMA		ON Semiconductor	MURA140T3G
1	D5	MBRS4201T3G	SMC		ON Semiconductor	MBRS4201T3G
1	D6	P6SMB30CAT3G	SMB		ON Semiconductor	P6SMB30CAT3G
1	J1	NEB 21 R		DC Jack	Lumberg	NEB 21 R
1	J3			Terminal block	Molex	95009−2661
1	J2			Header, 16P	Wuerth Elektronik	613 016 211 21
1	J5			Header, 2P	Wuerth Elektronik	613 002 111 21
1	J4			Header, 6P	Wuerth Elektronik	613 006 111 21
1	P1				Wuerth Elektronik	691 216 510 002
9	LED1, LED2, LED3, LED4, LED5, LED6, LED7, LED8, LED9		LED0603	Green	Wuerth Elektronik	150060GS75000
2	R5, R10	1 kΩ	R0603	100 mW	Multicomp	MCMR06X1001FTL
9	R1, R2, R3, R4, R6, R7, R8, R9, R11	10 kΩ	R0603	100 mW	Multicomp	MCMR06X1002FTL
1	U1	NCV4274AST33T3G	SOT−223	LDO, 3.3 V	ON Semiconductor	NCV4274AST33T3G
1	U2	AMIS−39101	SOIC28		ON Semiconductor	AMIS39101PNPB4RG

Schematic Diagram

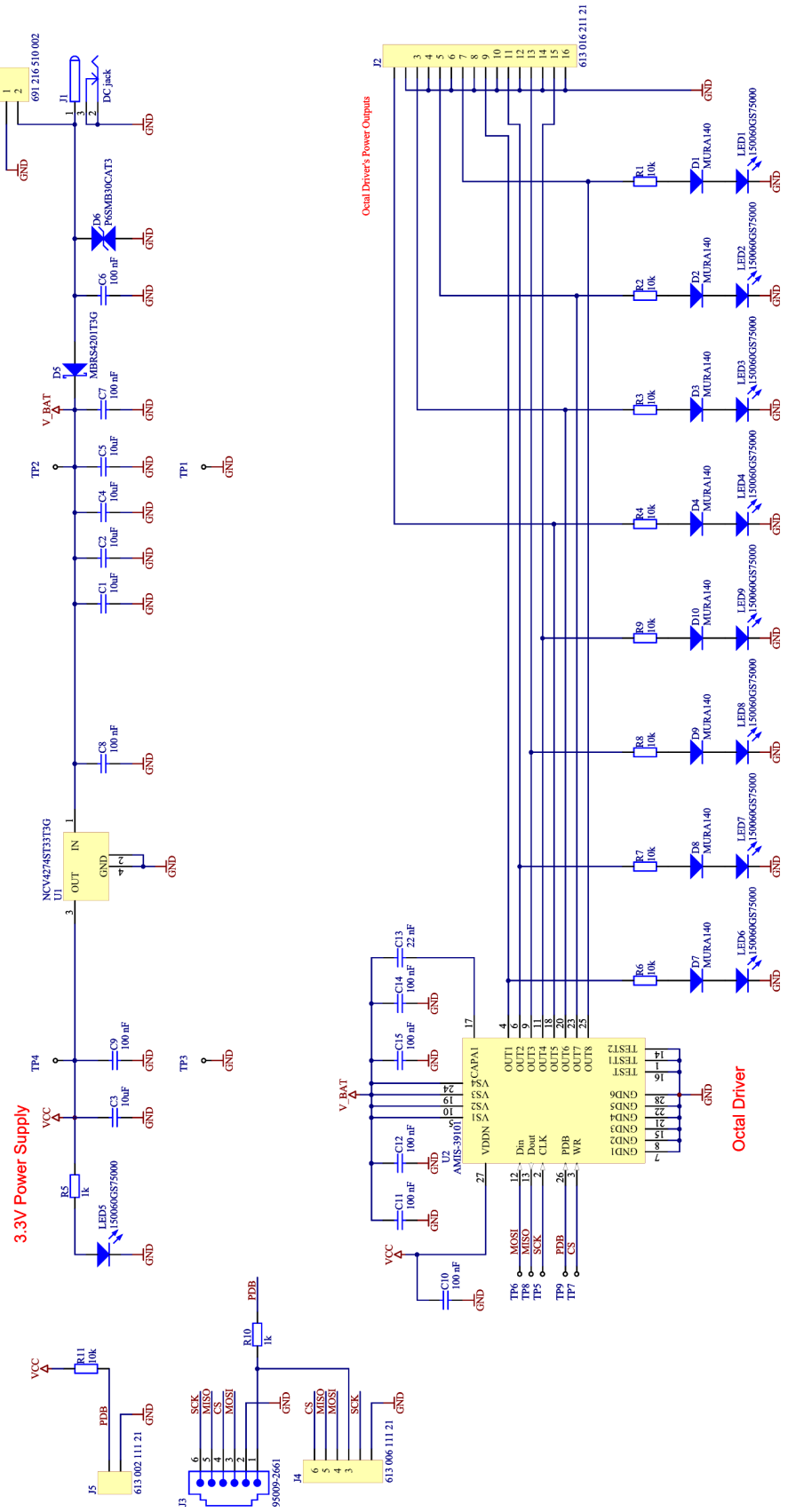

Figure 2. Schematic of AMIS−3910XGEVB

APPENDIX

Evaluation Board Layout

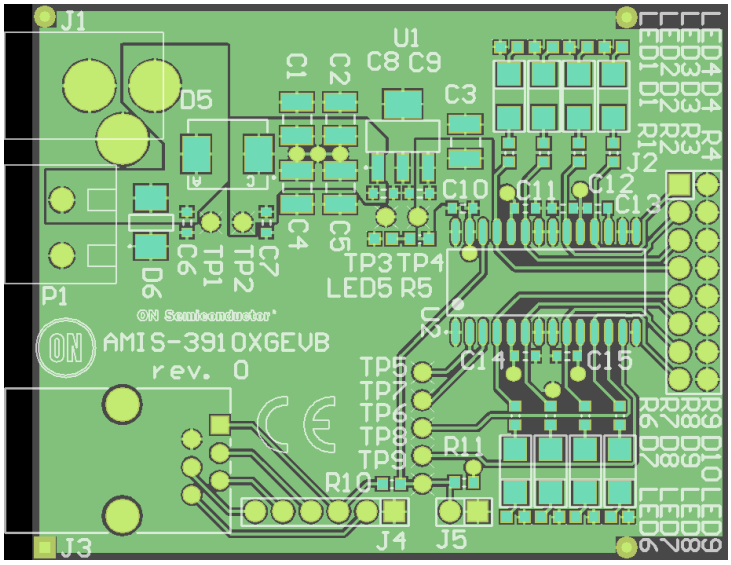

Figure 3. Top Layer Layout

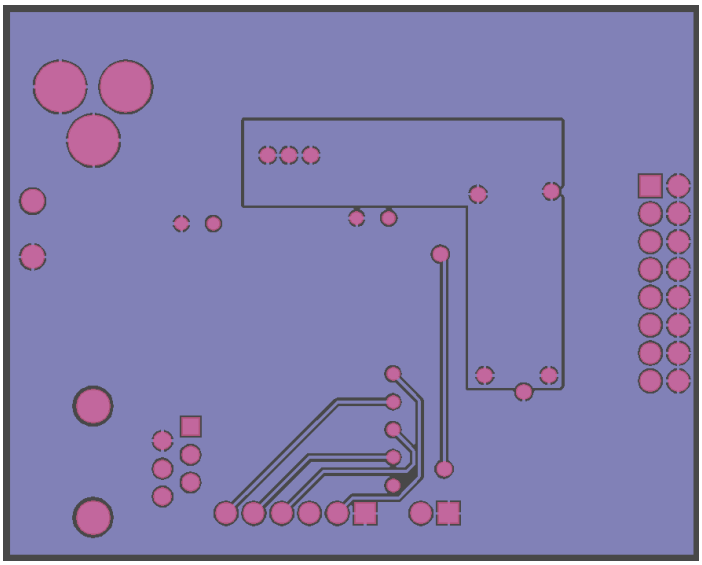

Figure 4. Bottom Layer Layout

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303−675−2175 or 800−344−3860 Toll Free USA/Canada
Fax: 303−675−2176 or 800−344−3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800−282−9855 Toll Free USA/Canada
Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910
Japan Customer Focus Center
Phone: 81−3−5817−1050

ON Semiconductor Website: **www.onsemi.com**

Order Literature: http://www.onsemi.com/orderlit

For additional information, please contact your local Sales Representative

EVBUM2242/D

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for Power Management IC Development Tools ***category:***

Click to view products by ON Semiconductor ***manufacturer:***

Other Similar products are found below :

EVAL-ADM1168LQEBZ EVB-EP5348UI MIC23451-AAAYFL EV MIC5281YMME EV DA9063-EVAL ADP122-3.3-EVALZ ADP130-0.8-EVALZ ADP130-1.2-EVALZ ADP130-1.5-EVALZ ADP130-1.8-EVALZ ADP1712-3.3-EVALZ ADP1714-3.3-EVALZ ADP1715-3.3-EVALZ ADP1716-2.5-EVALZ ADP1740-1.5-EVALZ ADP1752-1.5-EVALZ ADP1828LC-EVALZ ADP1870-0.3-EVALZ ADP1871-0.6-EVALZ ADP1873-0.6-EVALZ ADP1874-0.3-EVALZ ADP1882-1.0-EVALZ ADP199CB-EVALZ ADP2102-1.25-EVALZ ADP2102-1.875EVALZ ADP2102-1.8-EVALZ ADP2102-2-EVALZ ADP2102-3-EVALZ ADP2102-4-EVALZ ADP2106-1.8-EVALZ ADP2147CB-110EVALZ AS3606-DB BQ24010EVM BQ24075TEVM BQ24155EVM BQ24157EVM-697 BQ24160EVM-742 BQ24296MEVM-655 BQ25010EVM BQ3055EVM NCV891330PD50GEVB ISLUSBI2CKIT1Z LM2744EVAL LM2854EVAL LM3658SD-AEV/NOPB LM3658SDEV/NOPB LM3691TL-1.8EV/NOPB LM4510SDEV/NOPB LM5033SD-EVAL LP38512TS-1.8EV