

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

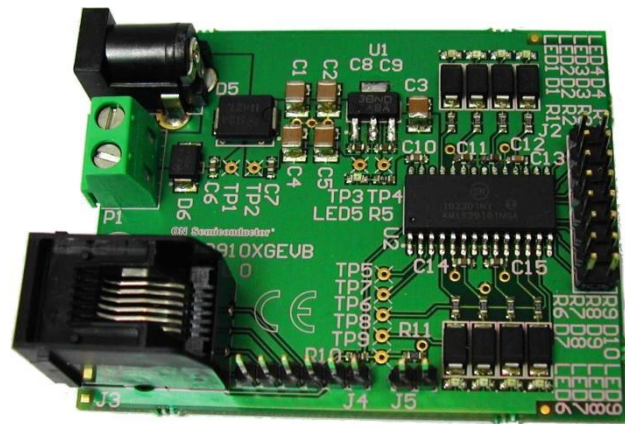


Figure 1. The AMIS-3910XGEVB Evaluation Board

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-3910XGEVB

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 μ F	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 k Ω	R0603	100 mW	Multicomp	MCMR06X1001FTL
9	R1, R2, R3, R4, R6, R7, R8, R9, R11	10 k Ω	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

AMIS-3910XGEVB

Schematic Diagram

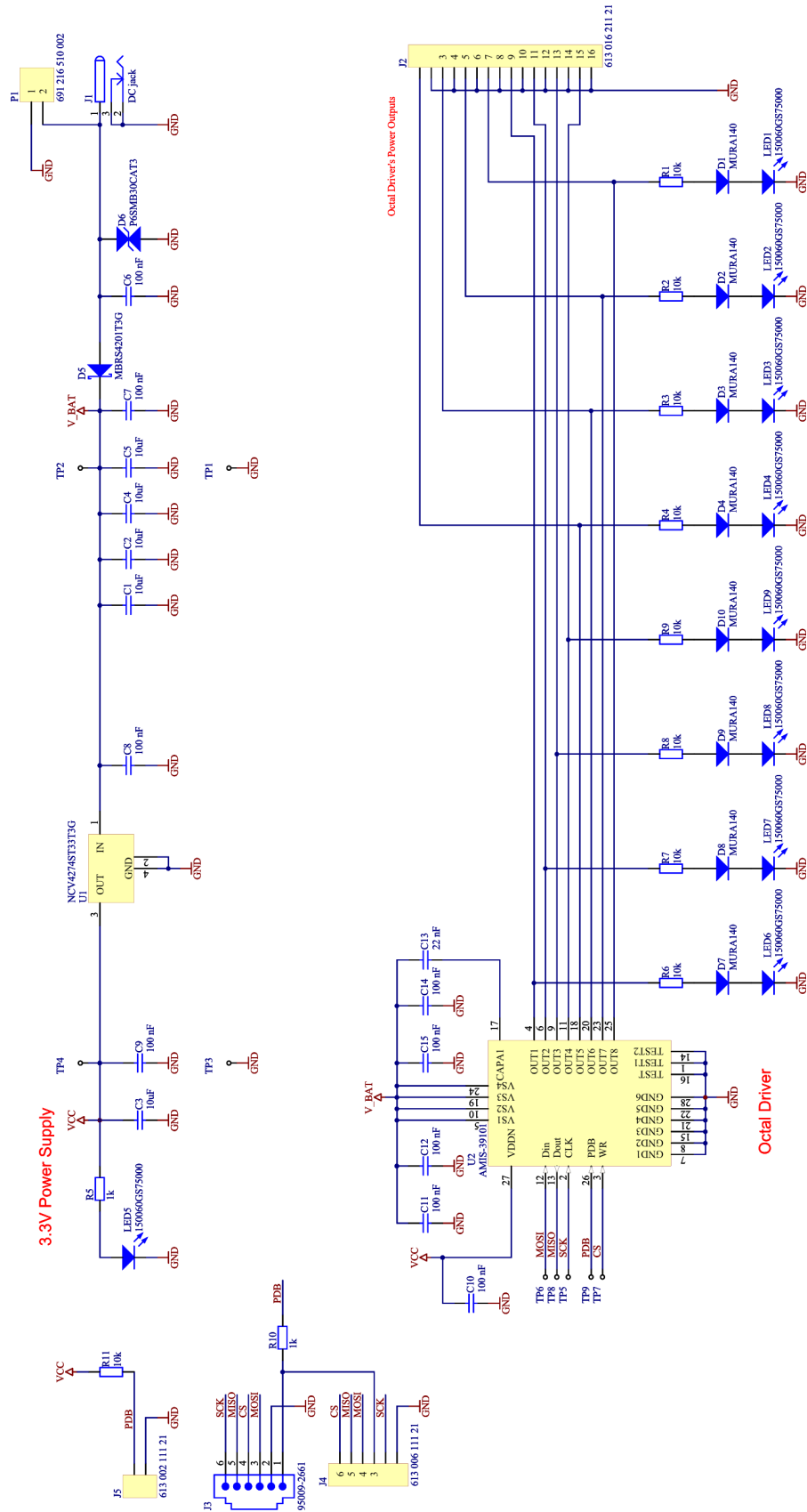


Figure 2. Schematic of AMIS-3910XGEVB

AMIS-3910XGEVB

APPENDIX

Evaluation Board Layout

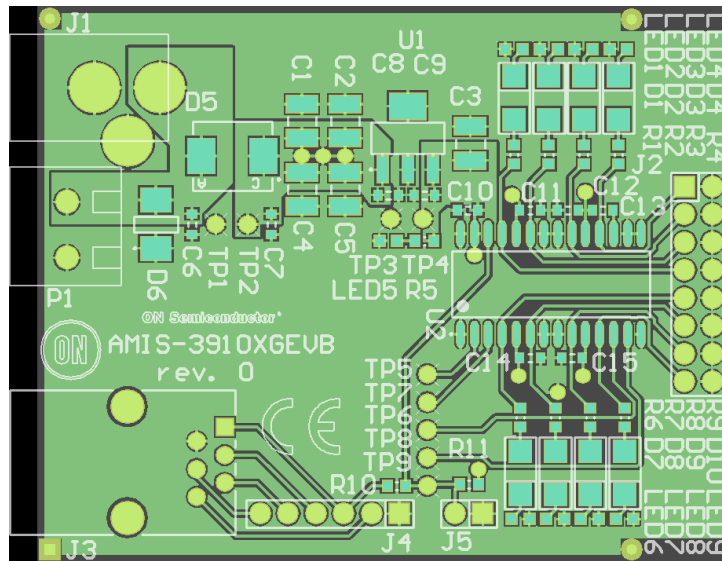


Figure 3. Top Layer Layout

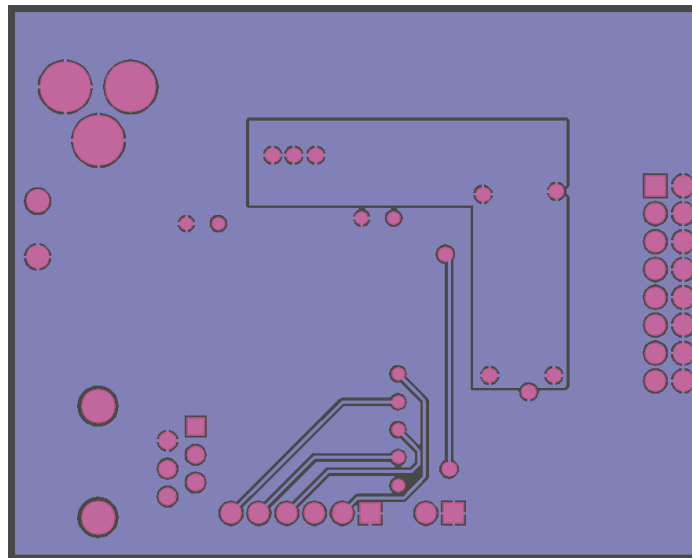



Figure 4. Bottom Layer Layout

ON Semiconductor and the  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC) or its subsidiaries in the United States and/or other countries. SCILLC owns the rights to a number of patents, trademarks, copyrights, trade secrets, and other intellectual property. A listing of SCILLC's product/patent coverage may be accessed at www.onsemi.com/site/pdf/Patent-Marking.pdf. SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

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

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А