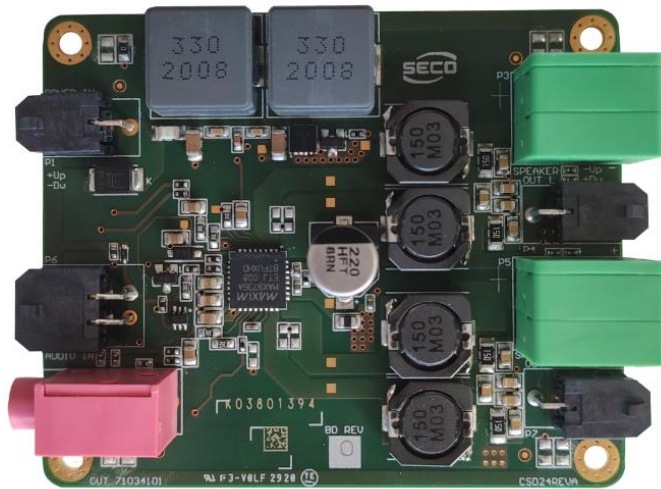


Accessories

User Manual



VD24

High-Power Class D Audio Amplifier with
factory configurable input voltage and
output power



www.seco.com

REVISION HISTORY

Revision	Date	Note	Rif
1.0	12 November 2020	First official Release	AR

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For further information on this module or other SECO products, but also to get the required assistance for any and possible issues, please contact us using the dedicated web form available at <http://www.seco.com> (registration required).

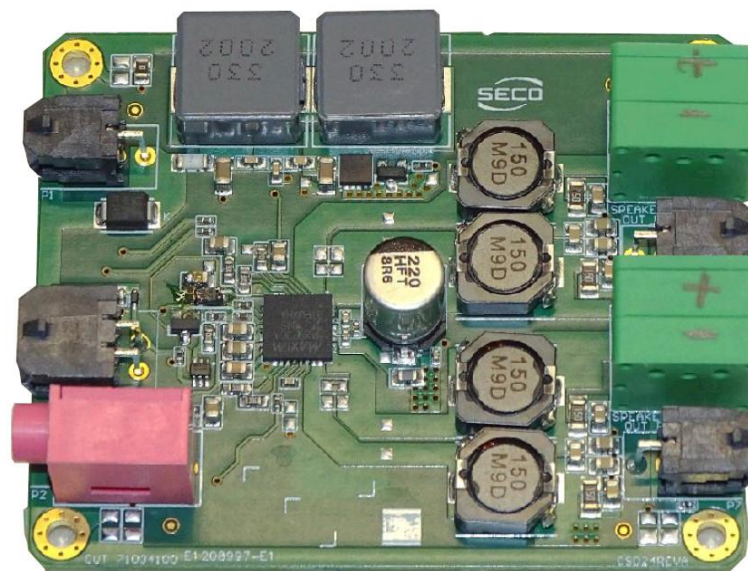
Our team is ready to assist.

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Chapter 1. INTRODUCTION

- Warranty
- Information and assistance
- RMA number request
- Safety
- Electrostatic discharges



1.1 Warranty

This product is subject to the Italian Law Decree 24/2002, acting European Directive 1999/44/CE on matters of sale and warranties to consumers.

The warranty on this product lasts for 1 year.

Under the warranty period, the Supplier guarantees the buyer assistance and service for repairing, replacing or credit of the item, at the Supplier's own discretion.

Shipping costs that apply to non-conforming items or items that need replacement are to be paid by the customer.

Items cannot be returned unless previously authorized by the supplier.

The authorization is released after completing the specific form available on the web-site <http://www.seco.com/en/prerma> (RMA Online). The RMA authorization number must be put both on the packaging and on the documents shipped with the items, which must include all the accessories in their original packaging, with no signs of damage to, or tampering with, any returned item.

The error analysis form identifying the fault type must be completed by the customer and has must accompany the returned item.

If any of the above mentioned requirements for the RMA is not satisfied, the item will be shipped back and the customer will have to pay any and all shipping costs.

Following a technical analysis, the supplier will verify if all the requirements, for which a warranty service applies, are met. If the warranty cannot be applied, the Supplier will calculate the minimum cost of this initial analysis on the item and the repair costs. Costs for replaced components will be calculated separately.



Warning!

All changes or modifications to the equipment not explicitly approved by SECO S.p.A. could impair the equipment's functionalities and could void the warranty

1.2 Information and assistance

What do I have to do if the product is faulty?

SECO S.p.A. offers the following services:

- SECO website: visit <http://www.seco.com> to receive the latest information on the product. In most cases it is possible to find useful information to solve the problem.
- SECO Sales Representative: the Sales Rep can help to determine the exact cause of the problem and search for the best solution.
- SECO Help-Desk: contact SECO Technical Assistance. A technician is at disposal to understand the exact origin of the problem and suggest the correct solution.

E-mail: technical.service@seco.com

Fax (+39) 0575 340434

- Repair centre: it is possible to send the faulty product to the SECO Repair Centre. In this case, follow this procedure:
 - Returned items must be accompanied by a RMA Number. Items sent without the RMA number will be not accepted.
 - Returned items must be shipped in an appropriate package. SECO is not responsible for damages caused by accidental drop, improper usage, or customer neglect.

Note: Please have the following information before asking for technical assistance:

- Name and serial number of the product;
- Description of Customer's peripheral connections;
- Description of Customer's software (operating system, version, application software, etc.);
- A complete description of the problem;
- The exact words of every kind of error message encountered.

1.3 RMA number request

To request a RMA number, please visit SECO's web-site. On the home page, please select "RMA Online" and follow the procedure described. A RMA Number will be sent within 1 working day (only for on-line RMA requests).

1.4 Safety

The VD24 board uses only extremely-low voltages.

While handling the board, please use extreme caution to avoid any kind of risk or damages to electronic components.



Always switch the power off, and unplug the power supply unit, before handling the board and/or connecting cables or other boards.

Avoid using metallic components - like paper clips, screws and similar - near the board when connected to a power supply, to avoid short circuits due to unwanted contacts with other board components.

If the board has become wet, never connect it to any external power supply unit or battery.

Check carefully that all cables are correctly connected and that they are not damaged.

1.5 Electrostatic discharges

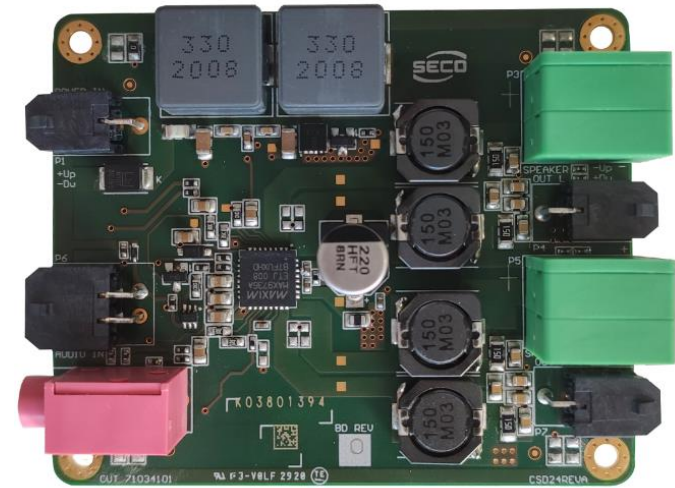
The VD24 board, like any other electronic product, is an electrostatic sensitive device: high voltages caused by static electricity could damage some or all the devices and/or components on-board.



Whenever handling a VD24 board, ground yourself through an anti-static wrist strap. Placement of the board on an anti-static surface is also highly recommended.

Chapter 2. OVERVIEW

- Introduction
- Technical specifications
- Electrical specifications
- Mechanical specifications
- Block diagram



2.1 Introduction

VD24 is a class D Audio Amplifier intended to deliver:

- 2x15W into 8ohm loads @24Vin
- 2x7W into 8ohm loads @12Vin.
- 2x11W into 4ohm loads @12Vin.

This is accomplished by the module with the use of a High-Power Class D Audio Amplifier with a high PSRR.

The I/O of the module is made of input connector for power input, 3.5mm audio jack or 4-poles microfit connector for audio signal input, and two 2-poles PCB terminal blocks or 2-poles microfit connectors for stereo output signals.

This module allows voltage input range of 8-28Vdc, allowed to deliver in stereo mode 2x15W @8ohm loads when powered with 24Vdc input voltage, 2x7W @8ohm loads when powered with 12Vdc input voltage, 2x11W @4ohm loads when powered with 12Vdc input voltage.

2.2 Technical specifications

Module:

Class D Audio Amplifier delivering:*

- 1) 2x15W @8ohm loads when powered at 24Vin
- 2) 2x7W @8ohm loads when powered at 12Vin
- 3) 2x11W @4ohm loads when powered at 12Vin

Power supply: +8VDC ÷ + 28VDC**

Operating temperature: -40°C ÷ +85°C***

Dimensions: 72 x 59 mm

Weight: 48g

*All configurations to achieve the desired output power level must be equipped with a proper heatsink having a thermal resistance of at least 0.34°C/W.

These configurations are factory alternatives, each one has optimal audio performance only for its selected configuration.

When ordering a VD24 board, please take care of specifying which is the desired configuration.

**Safety-compliant voltage range. Performances declared above are guaranteed with operating voltages of 12Vdc or 24Vdc.

***2x15W @8ohm / 24Vin is limited to -40°C ÷ +60°C for optimal audio performances.

2x11W @4ohm / 12Vin is limited to -40°C ÷ +80°C for optimal audio performances.

The board is safety compliant in the operating temperature of -40°C ÷ +85°C.

2.3 Electrical specifications

The VD24 board can be supplied with any voltage in the range $+8V_{DC} \div +28V_{DC}$ range (absolute voltage range).

This voltage can be supplied through a microfit 2-poles P1, type MOLEX p/n 43045-0200

Power IN Connector – P1	
Pin	Signal
1	GND
2	V_{IN}

The power input requirements for the different configurations are listed below:

Speaker impedance	Power Supply Voltage	Current Requirement
8 Ohm	24 Vdc	2A
8 Ohm	12 Vdc	2A
4 Ohm	12 Vdc	3A

2.4 Mechanical specifications

The board dimensions are 72 x 59 mm.

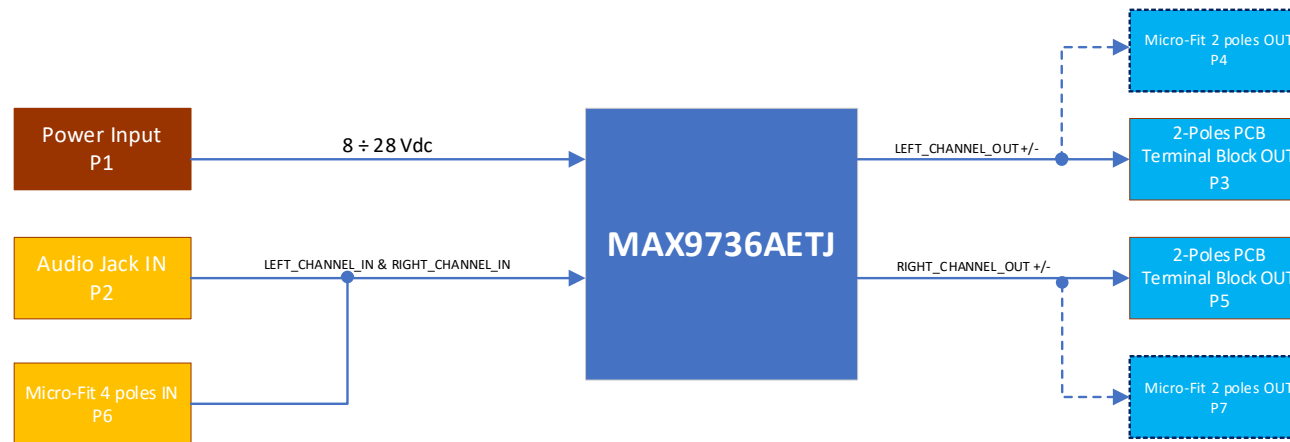
The printed circuit of the board is made of four layers.

Four M3 fixing holes are placed on board corners.

On bottom side of the board, the exposed pad *must be* connected to an heatspreader/heatsink to provide a proper thermal cooling solution.

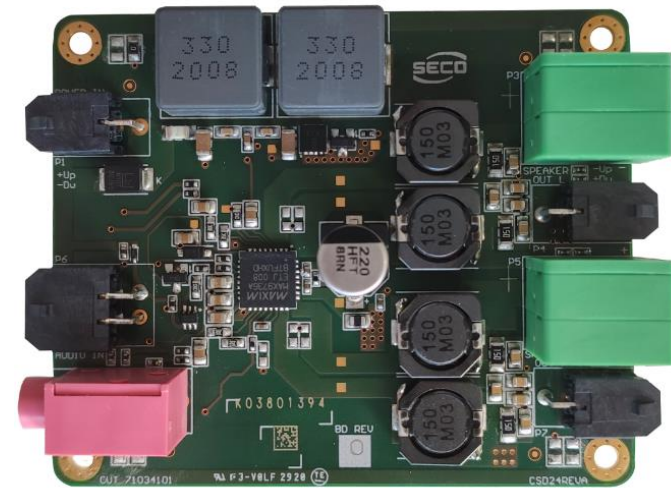
2.5 Block diagram

Block diagram is described below.



Chapter 3. CONNECTORS

- Introduction
- Connectors overview
- Connectors description

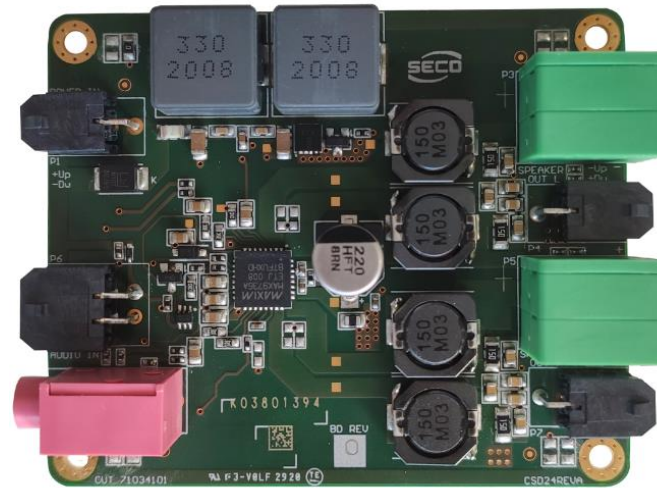


3.1 Introduction

On VD24 board, there are several connectors located on the upper plane.

On PCB Bottom side, an exposed pad must be used for thermal dissipation.

TOP VIEW



3.2 Connectors overview

Name	Description	Name	Description
P1	Power IN Connector	P4	Micro-Fit 2 poles OUT, Left Channel
P2	3.5 mm Audio Jack IN Connector	P7	Micro-Fit 2 poles OUT, Right Channel
P6	Micro-Fit 4 poles IN Connector		
P3	2-Poles PCB Terminal Block OUT, Left Channel		
P5	2-Poles PCB Terminal Block OUT, Right Channel		

3.3 Connectors description

3.3.1 Audio Input Signal

The VD24 does provide two Input Connectors for Audio Signals. The first P2 is a 3.5 mm audio jack, p/n PJ-2508P-5-LA. The second P6 is 4 poles microfit, type MOLEX p/n 43045-0400.

3.5 mm Audio Jack IN Connector -P2	
Pin	Signal
1	A_GND
2	Left channel Audio input
3	N.C.
4	Right channel Audio input
5	A_GND

Micro-Fit 4 poles IN Connector -P6	
Pin	Signal
1	Right channel Audio input
2	Left channel Audio input
3	A_GND
4	AUDIO_DISABLE

3.3.2 Output Audio Connectors

The VD24 does provide left and right speaker output respectively at PCB terminals blocks (type PHOENIX p/n 1990973) P3 and P5.

2-Poles PCB Terminal Block OUT, Left Channel – P3	
Pin	Signal
1	LEFT_CHANNEL_OUT-
2	LEFT_CHANNEL_OUT+

2-Poles PCB Terminal Block OUT, Right Channel – P5	
Pin	Signal
1	RIGHT_CHANNEL_OUT-
2	RIGHT_CHANNEL_OUT+

As a factory alternative, speaker outputs are available at 2x Microfit 2 poles , type MOLEX p/n 43045-0200, respectively P4 and P7.

Micro-Fit 2 poles OUT, Left Channel – P4	
Pin	Signal
1	LEFT_CHANNEL_OUT+
2	LEFT_CHANNEL_OUT-

Micro-Fit 2 poles OUT, Right Channel – P7	
Pin	Signal
1	RIGHT_CHANNEL_OUT+
2	RIGHT_CHANNEL_OUT-