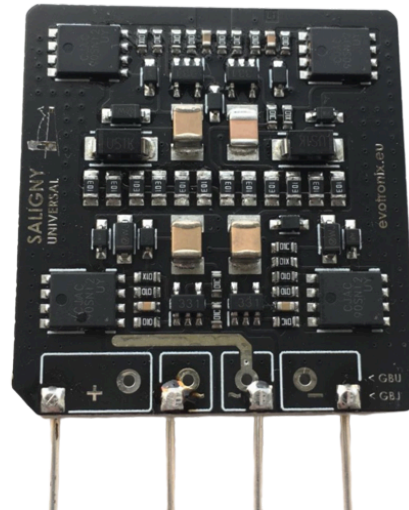


# Saligny® Universal



**May 14th, 2022**

Design by: eng. Tiberiu Vicol  
PCB by: Catalin Nica

## DESCRIPTION

Saligny Universal is a diode-less bridge rectifier employing modern MOSFETs. The result is an active bridge that replaces the four diodes in a full-wave bridge rectifier with a mili-ohm  $R_{ds(on)}$  MOSFET, to drastically reduce power dissipation, heat generation, voltage loss and diode on/off switching noise. In contrast with a diode, there is no P-N junction involved, only a low mili-ohm conductive channel is inserted in the power path. This allows big current capability, better power management, less power loss, less dynamic impedance change versus load current and better circuit performance than any available rectifier solution.

While a normal diode has at least 600mV drop at 1A, a low  $R_{ds(on)}$  MOSFET will have as little as 3mV, or less, at the same 1A. This is 200 times better than a PN diode and at least 100 times better than a Schottky diode.

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## APPLICATIONS

- Ultra-low noise power supply
- Top performance high-end audio
- Power-over-ethernet devices
- Polarity-agnostic input devices
- Diode bridge replacement

## FEATURES

- Smaller solution size – Saligny Universal offer small footprint/watt
- Maximizes power efficiency
- Maximizes available voltage and current
- Eliminate power thermal design problems
- No need for a heatsink
- Zero switching noise
- No secondary ringing in the transformer like PN or Schottky diodes
- If power source fails or is shorted a fast turn-off minimizes reverse current transients

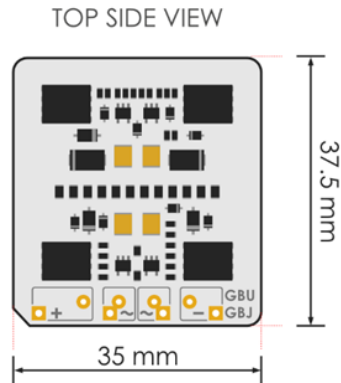
## SPECIFICATIONS

- Operates from DC to 1000Hz
- AC operating voltage: from 6 Vac to 80 Vac
- DC operating voltage: from 12 Vdc to 110 Vdc
- Low quiescent current = 9 mA
- Continuous load current up to 20A
- Over 200A pulsed current at  $T_a = 25$  Celsius (Max  $R_{\theta jc} = 1.0C/W$ , pulse duration  $\leq 100 \mu s$ , duty cycle  $\leq 1\%$ )
- No output capacitor required, but recommended
- Support center tapped transformer

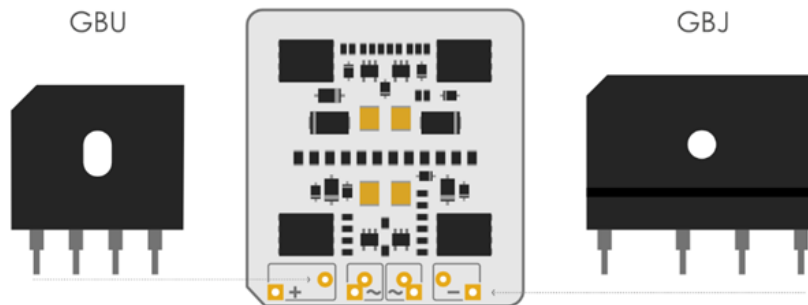
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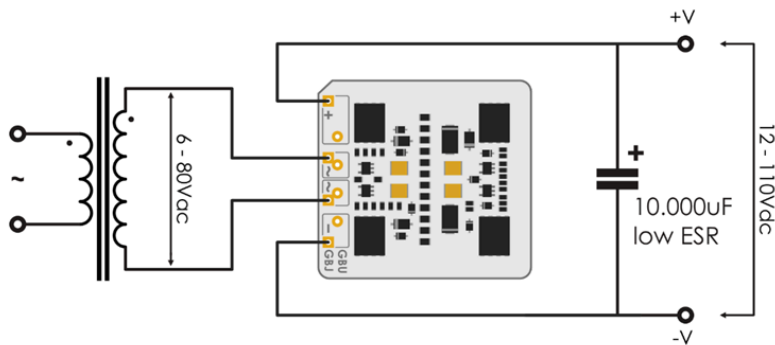
## DIMENSIONS & PINOUT



Saligny Universal is pin and mechanical compatible with GBU and GBJ packages.



## CONNECTIONS



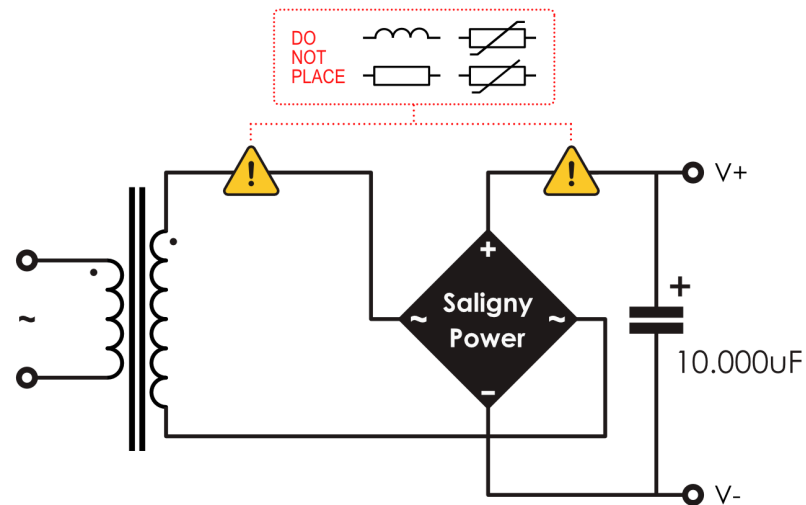
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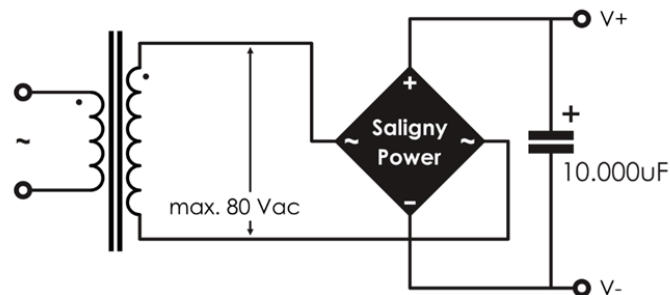
# IMPLEMENTATION



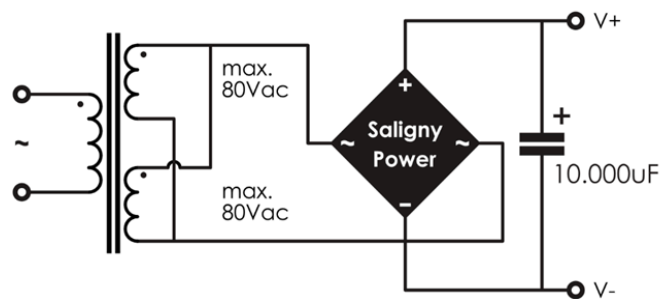
**Important notice:** Do not place any inductor, resistor, varistor or thermistor before or after Saligny Bridge! This will affect the performance of Saligny Bridge.



**Variant A** - full wave single secondary rectification.



**Variant B** - full wave dual identical secondaries in parallel.

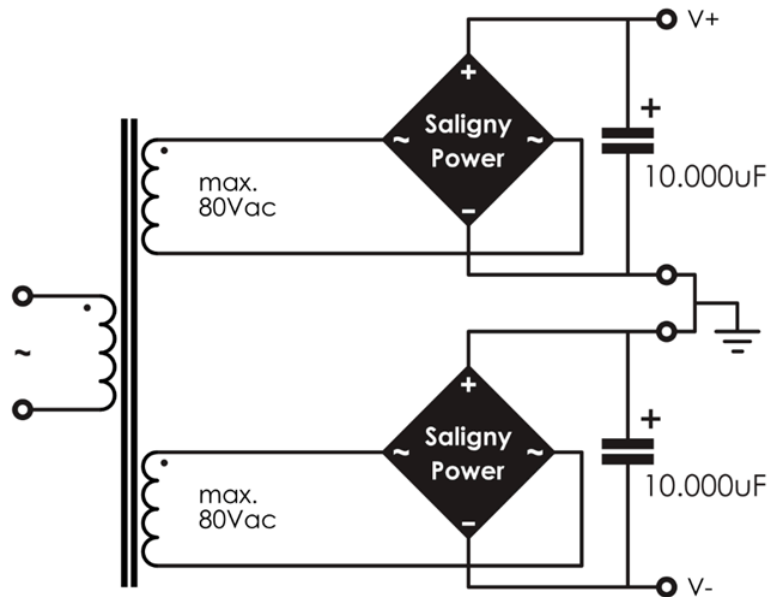


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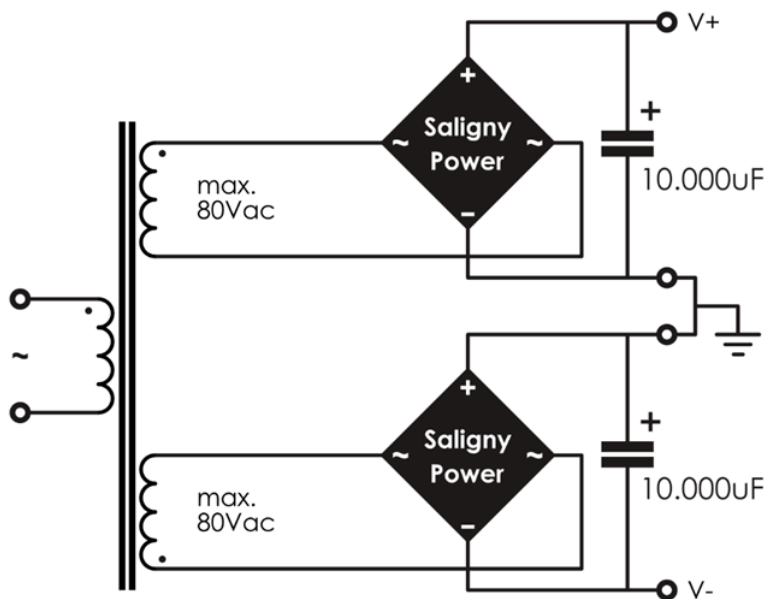
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**Variante C** - Full wave rectification, for differential power supply, with two secondaries.

1. secondaries are in phase

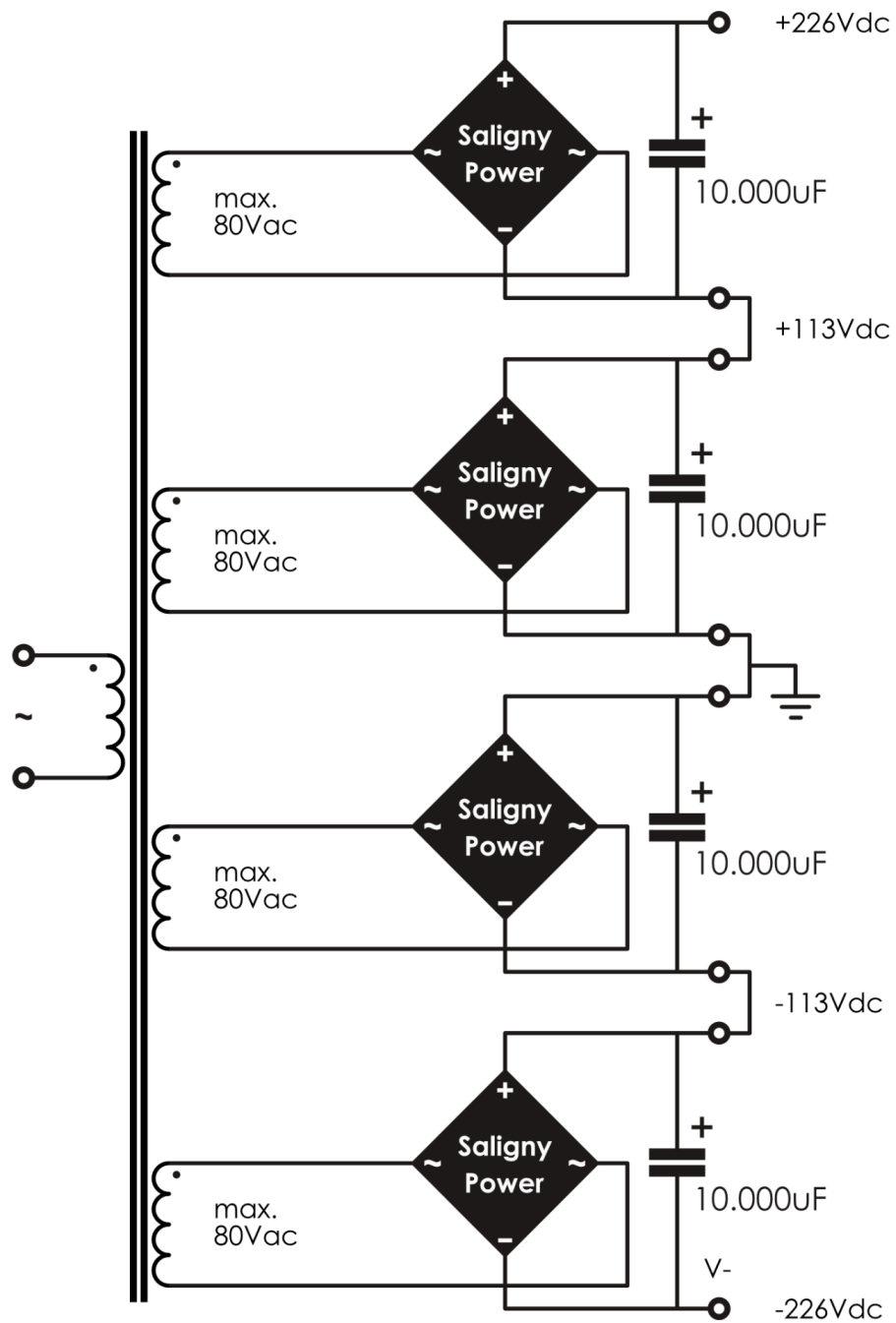


2. secondaries are in anti-phase



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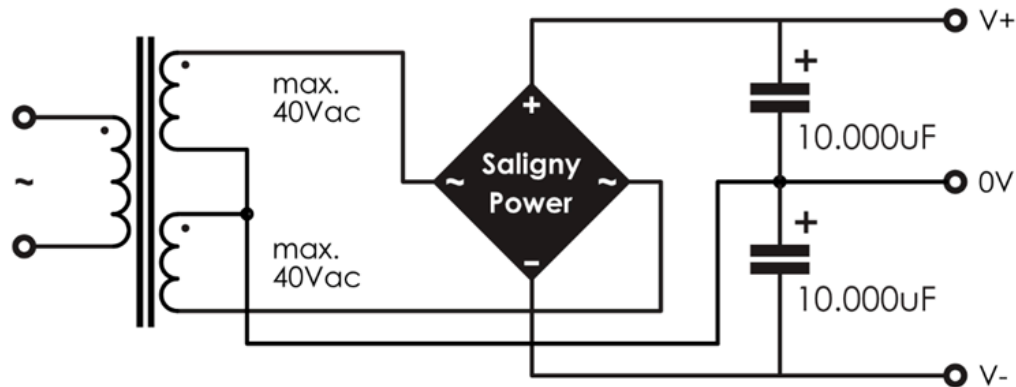
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**Variant D** - Symmetric power supply with 4 secondaries for high voltage differential

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**Variant E** - center tapped full wave rectification, for differential power supply.



## EXTERNAL RESOURCES

- [Active rectification on Wikipedia](#)
- [Synchronous rectification in high-power converter design by TI](#)

## SALES INFORMATION

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## DOCUMENT HISTORY

Document version	Date	Description
1.0	2023-05-14	Initial release
1.1	2023-09-07	Add notice in the "Implementation" section

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