

Saligny BG (Standard)

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DESCRIPTION

Saligny is a diode-less bridge rectifier employing modern MOSFET's. The result is an active bridge that replaces the four diodes in a full-wave bridge rectifier with a mili-ohm R_{dson} MOSFET, to drastically reduce power dissipation, heat generation, voltage loss and diode on/off switching noise. There is no P-N junction involved, only a low mili-ohm conductive channel get inserted in power path. This allow 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 have at least 600mV drop at 1A, a low R_{dson} MOSFET will have as little as 3mV, or less, at same 1A. This is 200 times better than a PN diode and at least 100 times better than a Schottky diode.

APPLICATIONS

- ultra low noise power supply
- high-end audio
- power-over-ethernet devices
- polarity-agnostic input devices
- diode bridge replacement

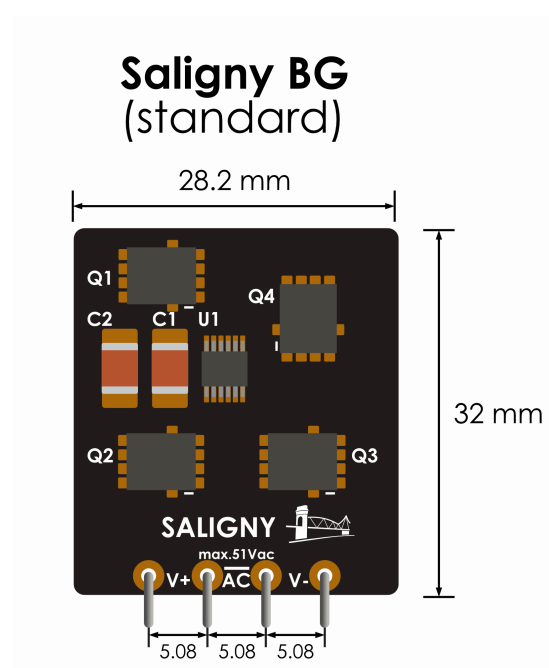
FEATURES

- Smaller solution size - Saligny BG is smaller in size than equivalent diode bridge
- Maximises power efficiency
- Maximises 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 minimises reverse current transients

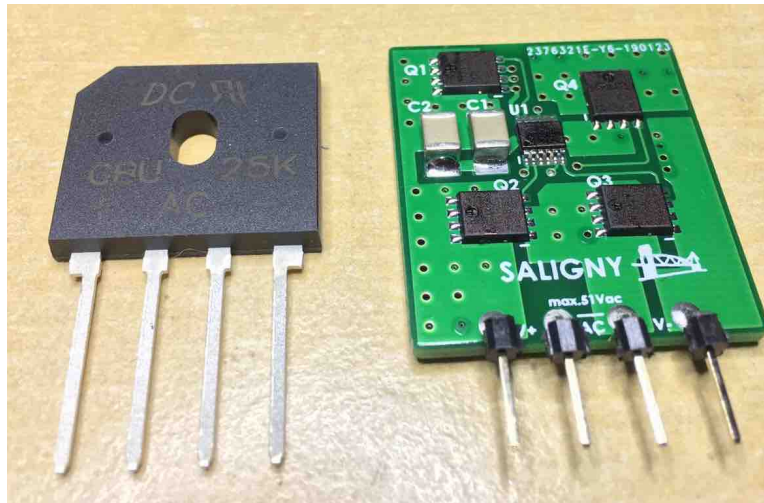
SPECIFICATIONS

- Operates from DC to 120Hz
- AC operating voltage: from 6Vac to 50Vac
- DC operating voltage: from 9Vdc to 70Vdc
- Low quiescent current = 1,5mA
- Continuous load current up to 20A
- Over 200A pulsed current at $T_a = 25^{\circ}\text{C}$ (Max $R_{\theta jc} = 1.0^{\circ}\text{C/W}$, pulse duration $\leq 100 \mu\text{s}$, duty cycle $\leq 1\%$)
- Require a minimum output capacitor of 1000uF
- **Do not support centre tapped transformer**

DIMENSIONS

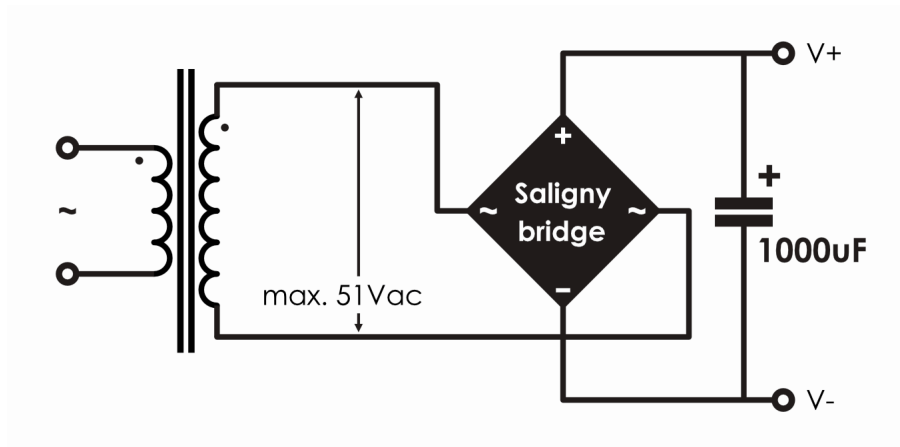


Saligny Standard can directly replace a standard diode bridge.

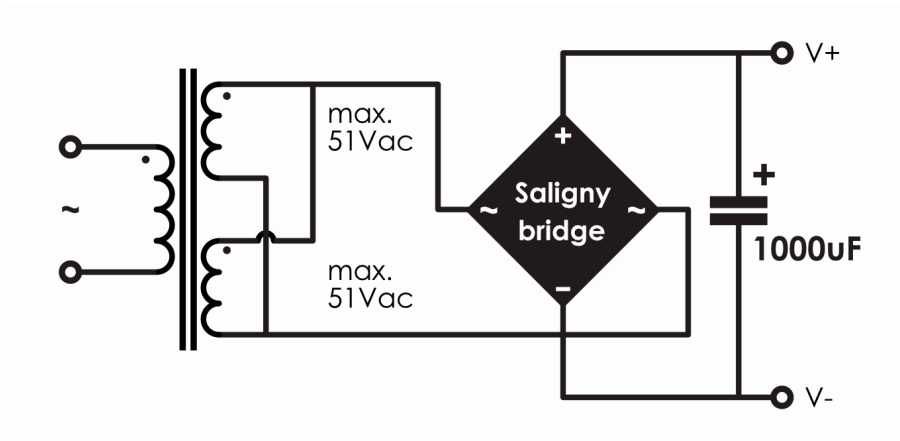


IMPLEMENTATION:

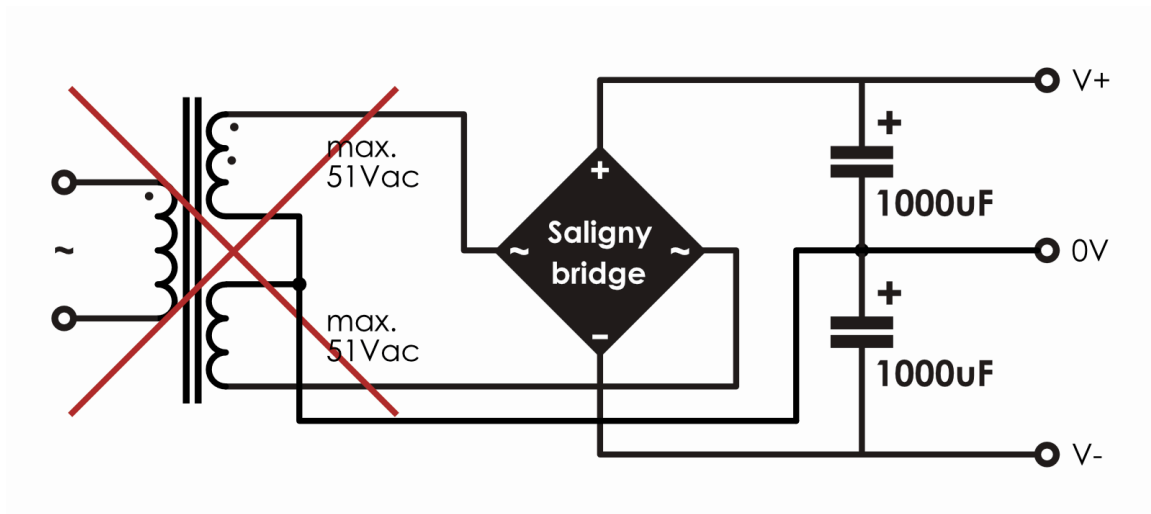
- Variant a) - Full wave single secondary rectification.



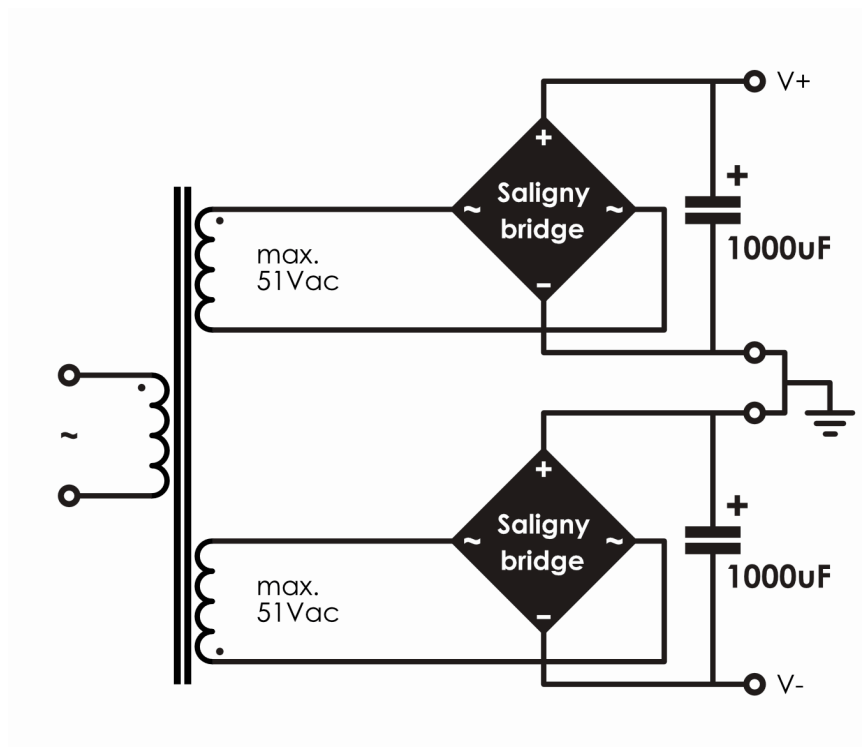
- Variant b) - Full wave dual identical secondaries in parallel.

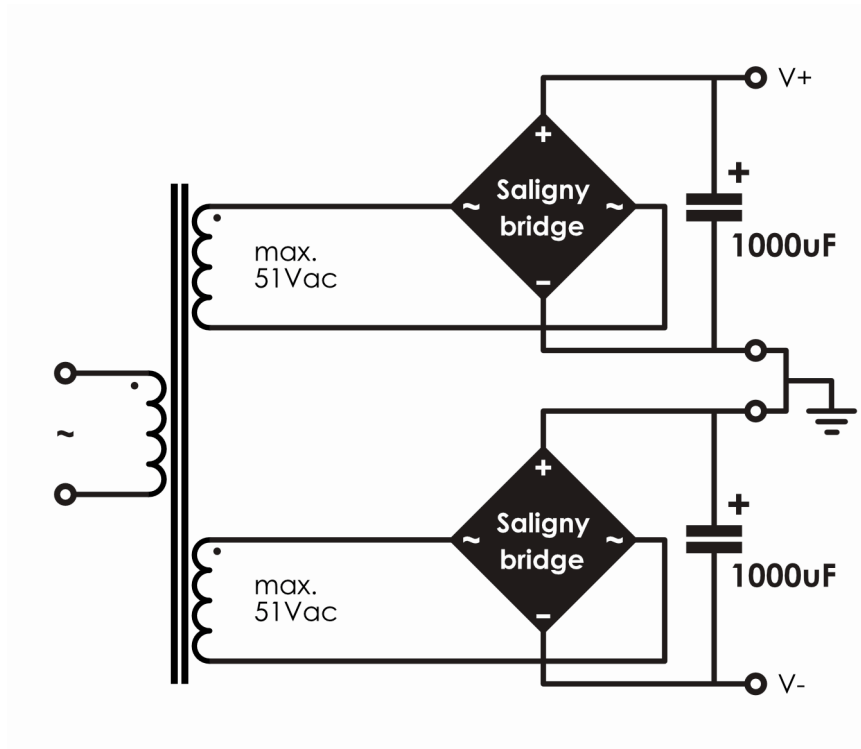


- Variant c) - Centre tapped full wave rectification, for differential power supply, is not supported. Please refer to Saligny HVHF for such implementation.



- Variant d) - Full wave rectification, for differential power supply, with two secondaries. Top image: secondaries are in phase, bottom image: secondaries are in anti-phase.





EXTERNAL LINKS:

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

Version

1.0 - document initial release

1.1 - bridge dimensions added

1.2 - Variant c) redrawn. Added applications. Text corrections.