

15 V/200 mA buck converter based on VIPER122



Features

- Universal input mains range: 85–265 V_{AC}
- Frequency: 50-60 Hz
- Output voltage: 15 V
- Output current: 200 mA
- Very compact size
- Stand-by mains consumption: < 30mW at 230 V_{AC}
- Average efficiency: > 77%
- Tight line and load regulation over the entire input and output range
- Meets IEC55022 Class B conducted EMI even with reduced EMI filter, thanks to the frequency jittering feature
- WEEE compliant
- RoHS compliant

Description

The **STEVAL-VP12201B** evaluation board implements a 15 V-3 W buck converter mains designed for general purpose applications, operating from 85 to 265 V_{AC}.

It is built around the **VIPER122** offline high-voltage converter of the **VIPerPlus** family with a 730 V Power MOSFET and PWM current mode control.

The **STEVAL-VP12201B** features include its small size and minimal BOM, high efficiency, low standby consumption, and tight line and load regulation over the entire input and output range.

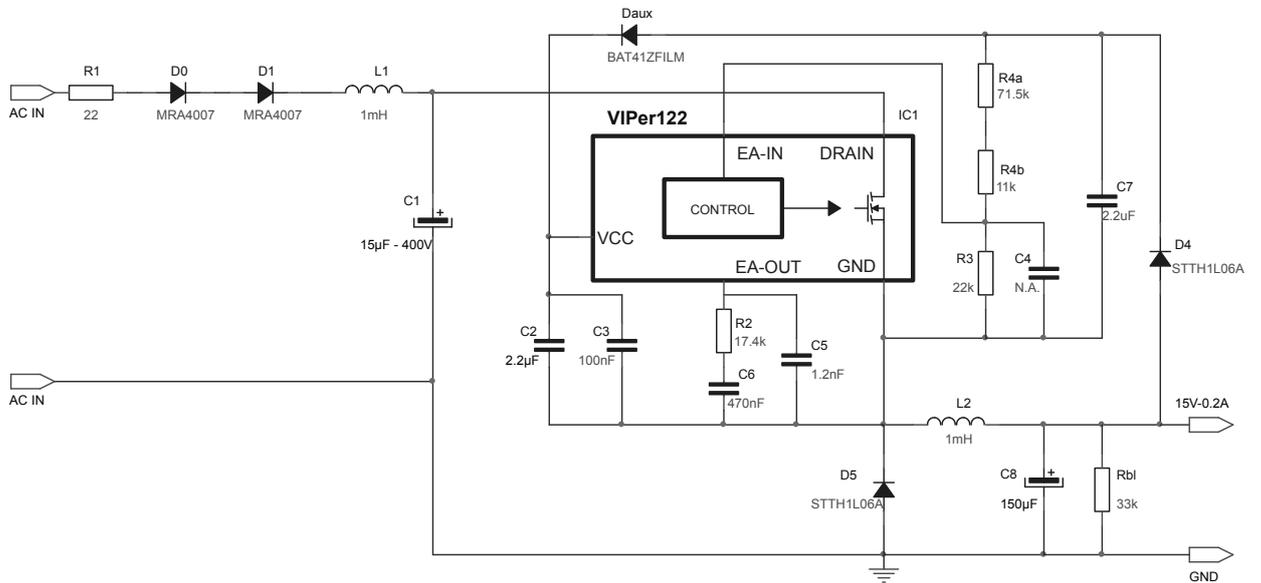
Burst mode operation allows extremely low consumption under no load and reduces the average switching frequency to minimize all frequency related losses.

VIPER122 operates at a fixed frequency of 60 kHz with frequency jittering to meet electromagnetic disturbance standards.

| Product summary | |
|--|------------------------|
| 15 V/200 mA buck converter based on VIPER122 | STEVAL-VP12201B |
| High voltage converter | VIPER122 |

1 Schematic diagram

Figure 1. STEVAL-VP12201B circuit schematic



2 Line and load regulation, standby consumption and efficiency

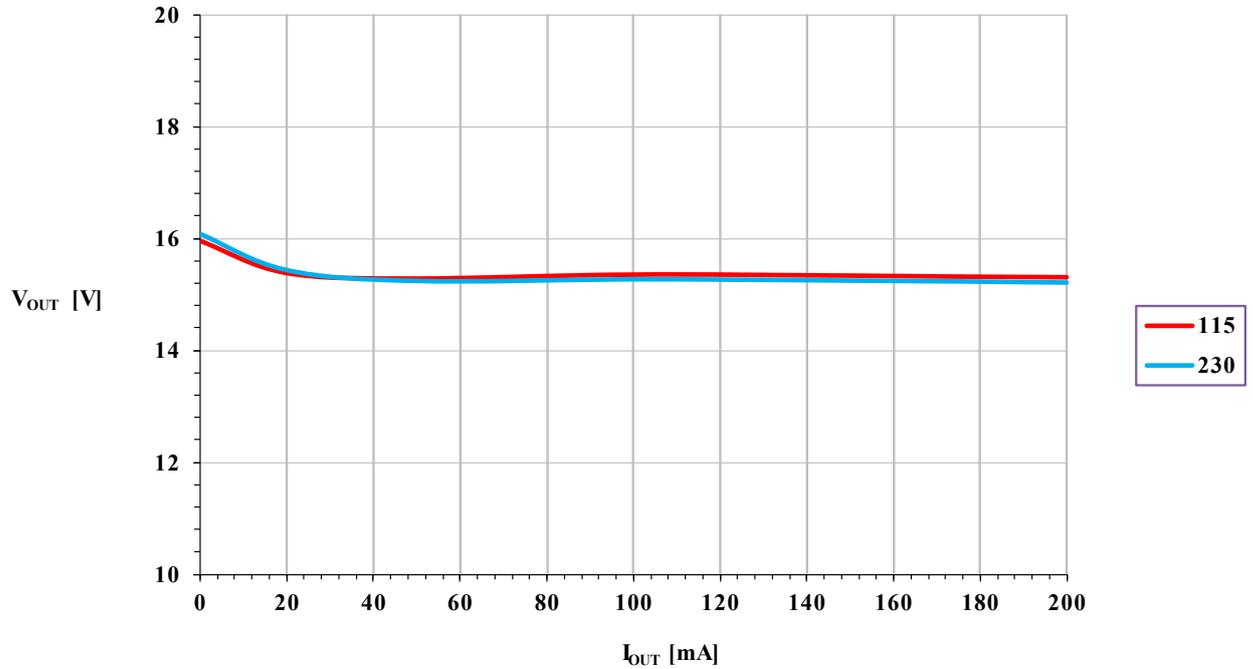
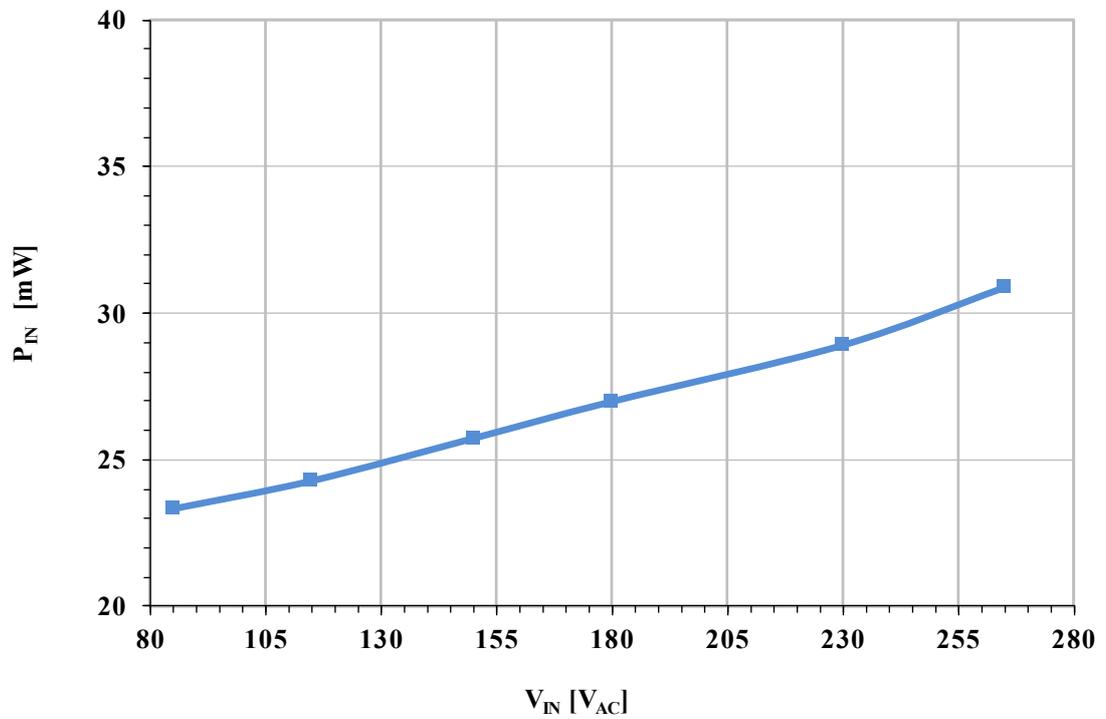
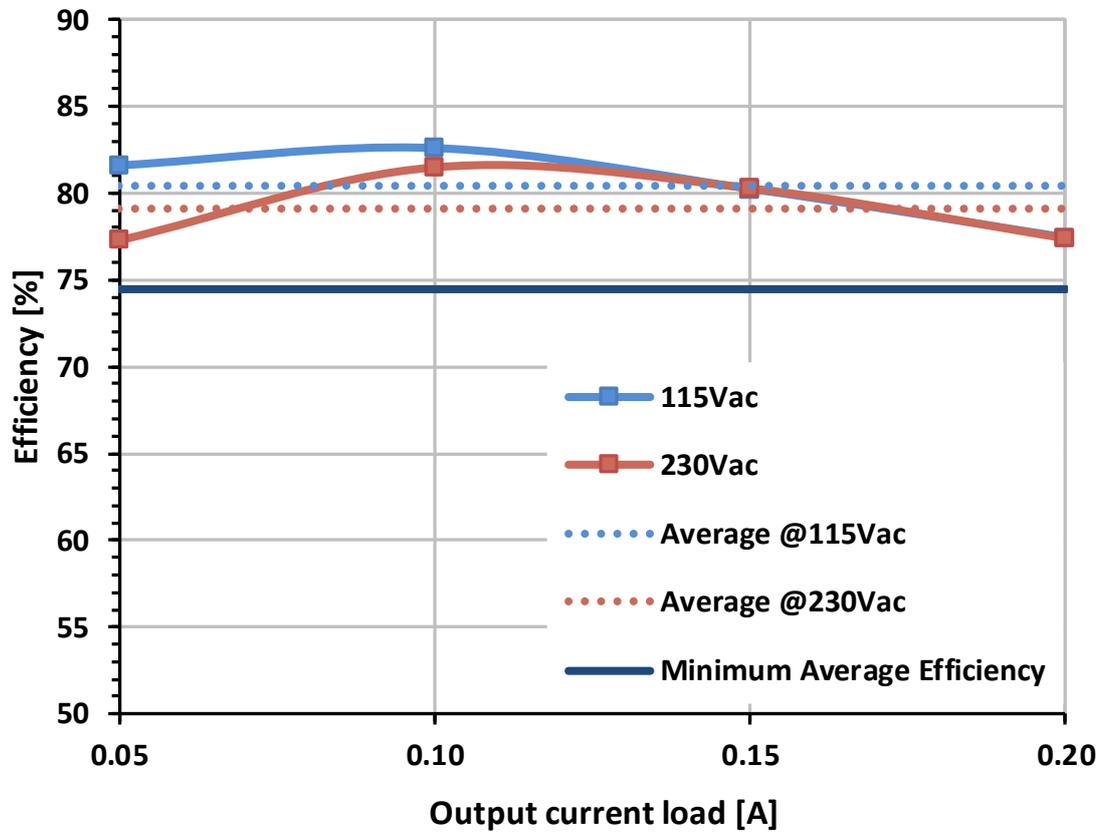
Figure 2. STEVAL-VP12201B line-load regulation

Figure 3. STEVAL-VP12201B standby consumption


Figure 4. STEVAL-VP12201B efficiency


3 Conducted noise measurements

Figure 5. STEVAL-VP12201B CE average measurement at 115 V_{AC} full load

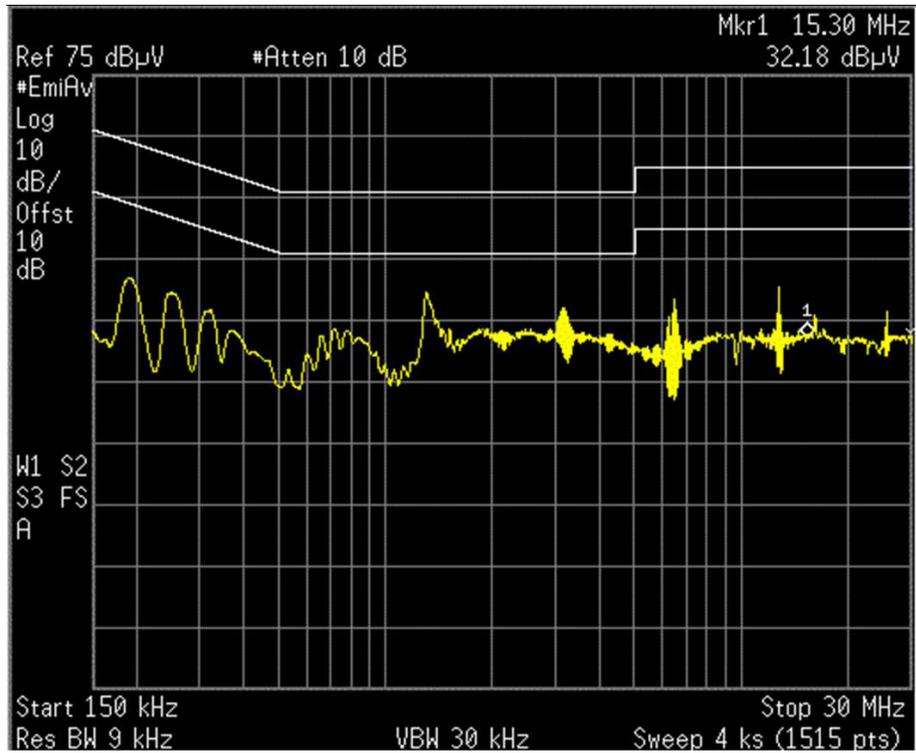
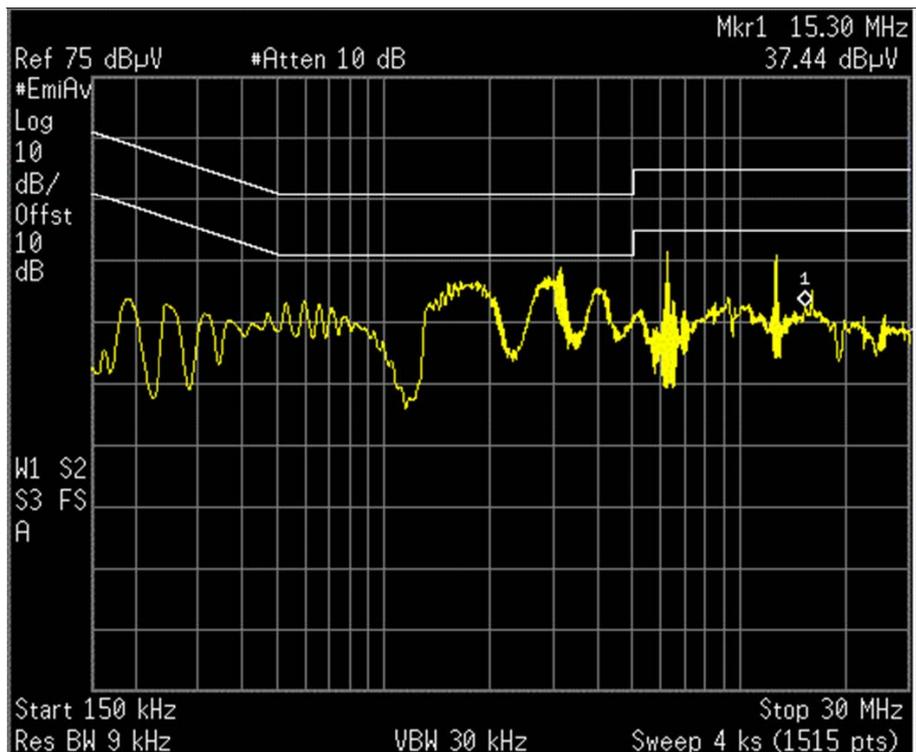


Figure 6. STEVAL-VP12201B CE average measurement at 230 V_{AC} full load



Revision history

Table 1. Document revision history

| Date | Version | Changes |
|-------------|---------|------------------|
| 05-Sep-2019 | 1 | Initial release. |

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