Features

• Universal input mains range: 85–265 V\textsubscript{AC}
• Frequency: 50-60 Hz
• Output voltage: 15 V
• Output current: 200 mA
• Very compact size
• Stand-by mains consumption: < 30mW at 230 V\textsubscript{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\textsubscript{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.

<table>
<thead>
<tr>
<th>Product summary</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>15 V/200 mA buck converter based on VIPER122</td>
<td>STEVAL-VP12201B</td>
</tr>
<tr>
<td>High voltage converter</td>
<td>VIPER122</td>
</tr>
</tbody>
</table>
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

Efficiency [%]

0.05 0.20

Output current load [A]

115Vac
230Vac
Average @115Vac
Average @230Vac
Minimum Average Efficiency
3 Conducted noise measurements

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

Figure 6. STEVAL-VP12201B CE average measurement at 230 V\textsubscript{AC} full load
## Revision history

### Table 1. Document revision history

<table>
<thead>
<tr>
<th>Date</th>
<th>Version</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>05-Sep-2019</td>
<td>1</td>
<td>Initial release.</td>
</tr>
</tbody>
</table>
IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST’s terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers’ products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2019 STMicroelectronics – All rights reserved