

## Three output isolated flyback converter for STCOMET smart meter and PLC system using VIPER267KDTR



### Features

- Triple output voltage: 15 V at 0.55 A<sub>rms</sub> (0.7 A peak), 3.3 V at 200 mA and 5 V at 100 mA
- Extended AC mains input voltage range: 90 to 440 V<sub>AC</sub>
- EMC with EN55022, EN61000, EN61000-4-4, EN61000-4-5, EN61000-4-6
- WEEE compliant
- RoHS compliant

### Description

The **STEVAL-VP26K01F** evaluation board implements a three output isolated flyback specifically designed to supply the **STCOMET** smart meter and powerline communication system.

The board has been developed using the **VIPER267KDTR** offline high-voltage converter.

The **VIPER267KDTR** features a 1050 V avalanche-rugged power section, PWM operation at 60 kHz with frequency jittering for lower EMI, current limiting with 700 mA fixed set point, on-board soft-start, safe auto-restart after fault and low standby power.

The power supply provides 15 V at 550 mA<sub>rms</sub> (700 mA peak) to the power line modem (PLM) and the analog circuitry, a post-regulated 5 V at 100 mA and a 3.3 V at 200 mA supply through a dedicated DC-DC converter connected to the 15 V rail for digital circuitry and other low voltage parts.

The power supply is designed to operate across an extended 90 to 440 V<sub>AC</sub> mains input voltage range to be used also with a phase-to-phase connection in a three-phase network.

The **STEVAL-VP26K01F** evaluation board can be used in a standalone configuration or with the dedicated **STCOMET** development kit.

| Product summary  |                        |
|--|------------------------|
| Three outputs isolated flyback converter for STCOMET smart meter and PLC system using VIPER267KDTR | <b>STEVAL-VP26K01F</b> |
| 1050 V high voltage converter  | <b>VIPER267KDTR</b>    |
| 200 V, 2 A, high voltage power Schottky diode  | <b>STPS2200U</b>       |
| 100 V, 1 A SMA (flat), SMB power Schottky rectifier  | <b>STPS1H100A</b>      |
| 150 V, 1 A power Schottky rectifier  | <b>STPS1150A</b>       |
| Smart meter and powerline communication system-on-chip   | <b>STCOMET</b>         |
| 600 W TVS in SMA   | <b>SMA6J100A-TR</b>    |

## 1 Features and specifications

**Table 1. STEVAL-VP26K01F electrical specifications**

| Parameter                       | Min.               | Typ.   | Max                 |
|---------------------------------|--------------------|--------|---------------------|
| Operative AC Main Input voltage | 90 V <sub>AC</sub> | -      | 264 V <sub>AC</sub> |
| Overvoltage AC main             | -                  | -      | 440 V <sub>AC</sub> |
| Mains frequency                 | 50 Hz              | -      | 60 Hz               |
| Output Voltage 1 – VOUT1        | 14 V               | 15 V   | 16 V                |
| Output Current 1 – IOUT1        | 10 mA              | -      | 550 mA (rms)        |
|                                 | -                  | -      | 700 mA (peak)       |
| Output Voltage 2 – VOUT2        | 4.75 V             | 5 V    | 5.25 V              |
| Output Current 2 – IOUT2        | 10 mA              | 60 mA  | 100 mA              |
| Output Voltage 3 – VOUT3        | 3.1 V              | 3.3 V  | 3.5 V               |
| Output Current 3 – IOUT3        | -                  | 100 mA | 200 mA              |
| Maximum peak power              | -                  | -      | 11.66 W             |
| Maximum rms power               | -                  | -      | 9.4 W               |
| Efficiency at full load         | -                  | 78.7%  | -                   |
| Ambient operating temperature   | -40 °C             | -      | 85 °C               |

## 2

## Schematic diagrams

Figure 1. STEVAL-VP26K01F schematic - main PSU

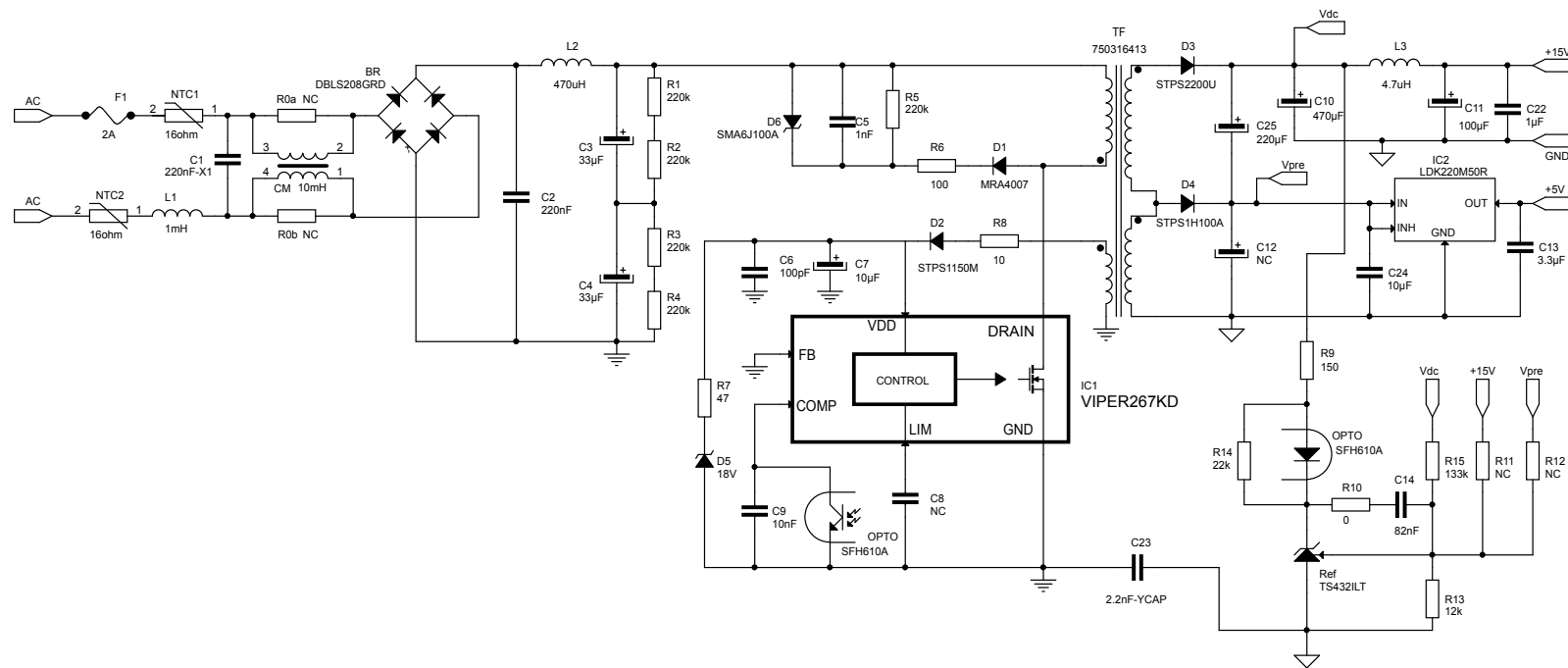
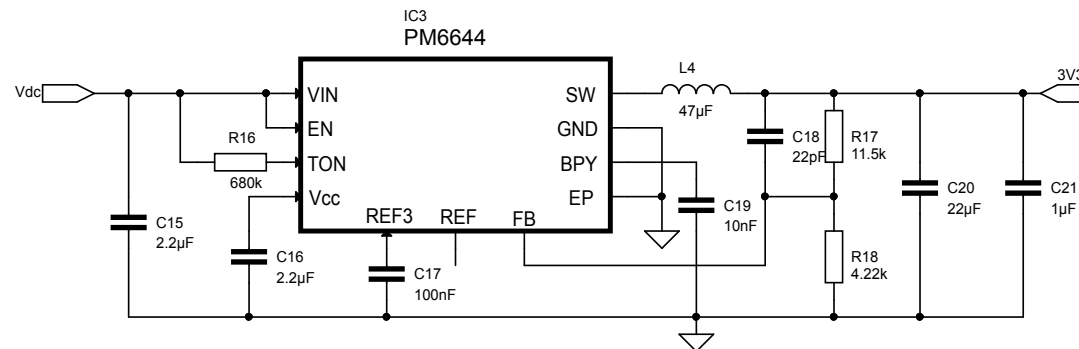


Figure 2. STEVAL-VP26K01F schematic - dedicated DC/DC for 3V3 rail



## Revision history

**Table 2. Document revision history**

| Date        | Version | Changes          |
|-------------|---------|------------------|
| 06-May-2019 | 1       | Initial release. |

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