

High power PoE PD, forward active clamp 12 V up to 8 A evaluation board



Features

- **PM8804:**
 - PWM peak current mode controller
 - Input operating voltage up to 75 V
 - Internal high voltage start up regulator with 20 mA capability
 - Programmable fixed frequency up to 1 MHz
 - Soft start up with adjustable time
 - Soft turn off (optionally disabled)
 - Dual 1Apk, low side complementary gate drivers
 - GATE2 optionally turned off for reduced consumption
 - 80% maximum duty cycle with internal slope compensation
 - QFN 16 3x3mm package with exposed pad
- **PM8805:**
 - System in package integrating a double active bridge, a hot-swap MOSFET and a PoE-PD
 - Supports legacy high power, 4-pair applications
 - 100 V N-ch MOSFETs with 0.2 Ω total path resistance for each active bridge
 - Identifies which kind of PSE (standard or legacy) is connected to, and provides successful IEEE802.3 af /at /bt classification indication as combination of the T0, T1 and T2 signals (open drain)
 - Smart operational mode selection through the STBY, FAUX and RAUX control signals
 - QFN 56 8x8mm package with 43 pins and 6 exposed pads

Product summary	
High power PoE PD, 12 V up to 8 A active clamp forward evaluation board	STEVAL-POE005V1
PWM peak current mode controller for PoE and telecom systems	PM8804
IEEE802.3bt PoE-PD interface with integrated dual-active bridge	PM8805

Description

The [STEVAL-POE005V1](#) evaluation board allows an easy verification of a PD interface compliant with the new IEEE802.3bt standard based on [PM8805](#) and of a DC-DC active clamp forward converter based on [PM8804](#) controller.

The PM8805 is a highly integrated device embedding two active bridges and an IEEE802.3bt compliant powered device (PD) interface. It can be successfully used in all medium to high power, 2P and /or 4P high efficiency PoE/ PoE+ applications.

The PM8804 is a PWM controller that integrates all the circuitry required to design a smart and efficient 48 V converter.

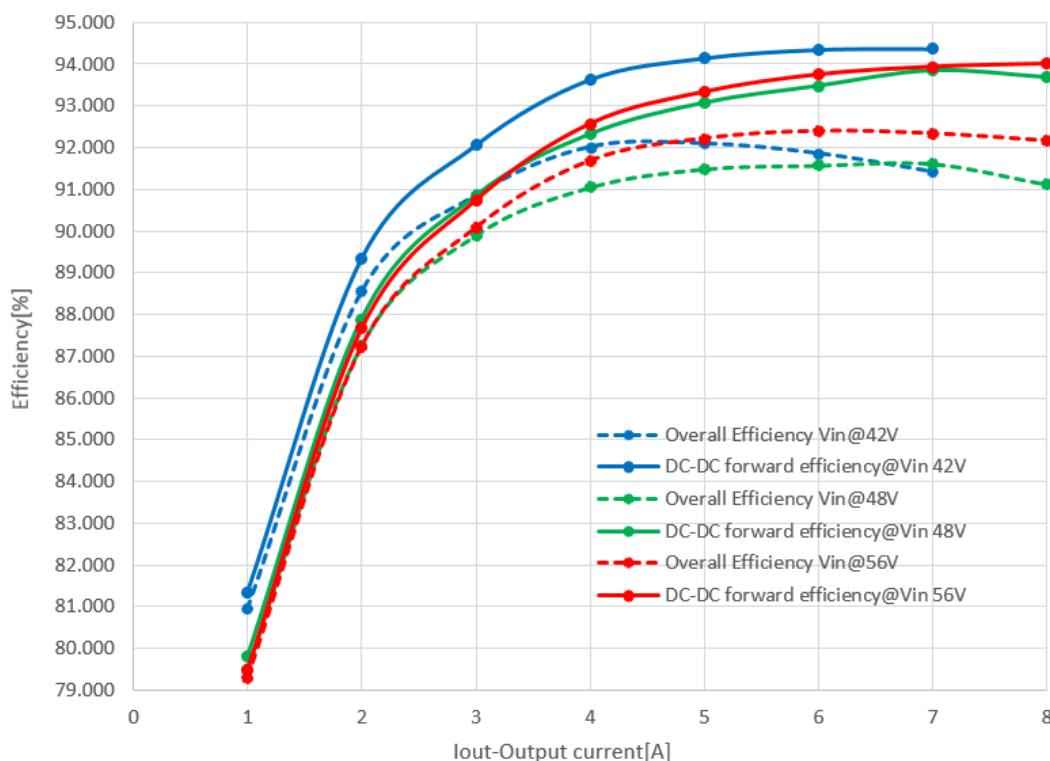
It features a programmable oscillator for the switching frequency, adjustable slope compensation, dual complementary low-side drivers with programmable dead time and soft start, soft turn off and a programmable current sense blanking time.

1 Efficiency

The [STEVAL-POE005V1](#) evaluation board is composed of a PoE interface compliant with the last standard IEEE802.3bt, with the [PM8805](#) interface and a forward active clamp DC-DC converter that receives DC voltage from the PoE interface.

The figure below shows the efficiency of a single forward converter and the overall efficiency which also includes the PoE interface power losses.

Figure 1. STEVAL-POE005V1 overall and DC-DC forward efficiency



The dotted lines indicate the STEVAL-POE005V1 efficiency at different DC input voltages applied to RJ45 connector J1. The continuous line indicates the DC-DC forward efficiency, that does not include the following losses of the associated PoE interface section:

- RJ45 connector J1
- PoE data transformer T1
- common chokes T7 and T8 placed on the two power supply pairs
- PM8805 interface that integrates the dual power MOS bridges and a hot swap MOSFET
- Forward converter input filter

This efficiency is measured between output test points TP8/TP9 and input test points TP5/TP6 of the forward converter.

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STEVAL-POE005V1 schematic diagrams

Figure 2. STEVAL-POE005V1 circuit schematic (1 of 3)

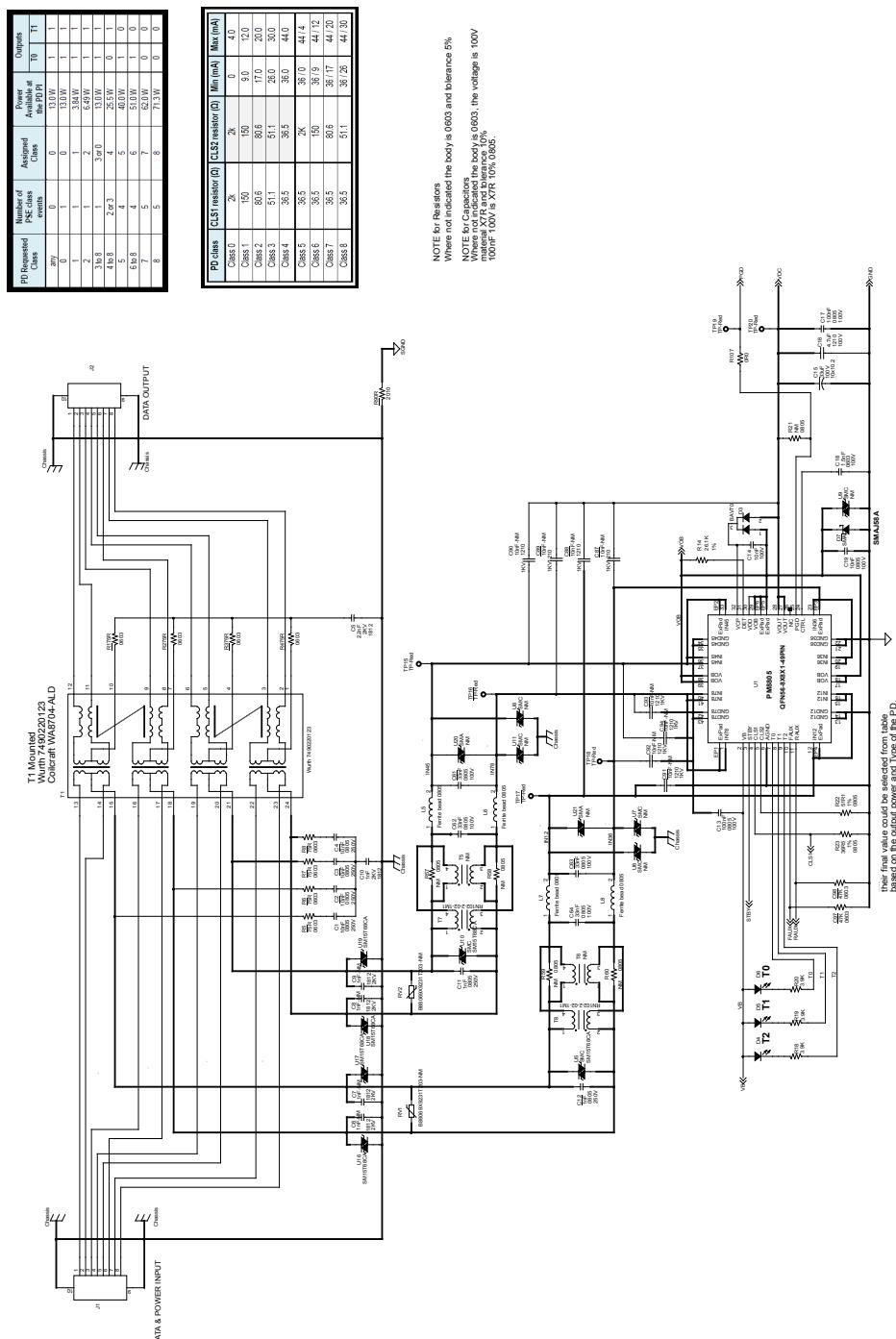


Figure 3. STEVAL-POE005V1 circuit schematic (2 of 3)

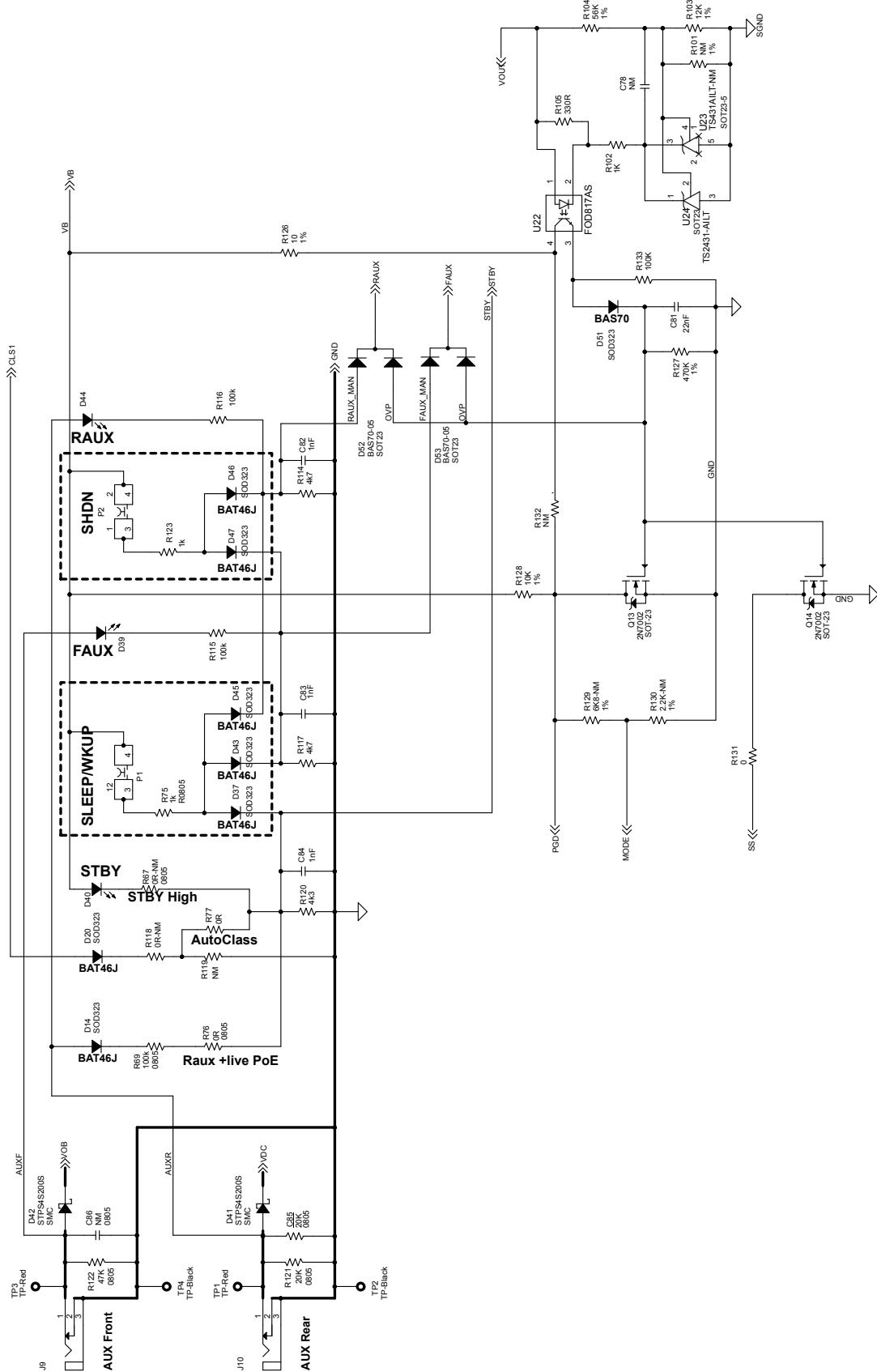
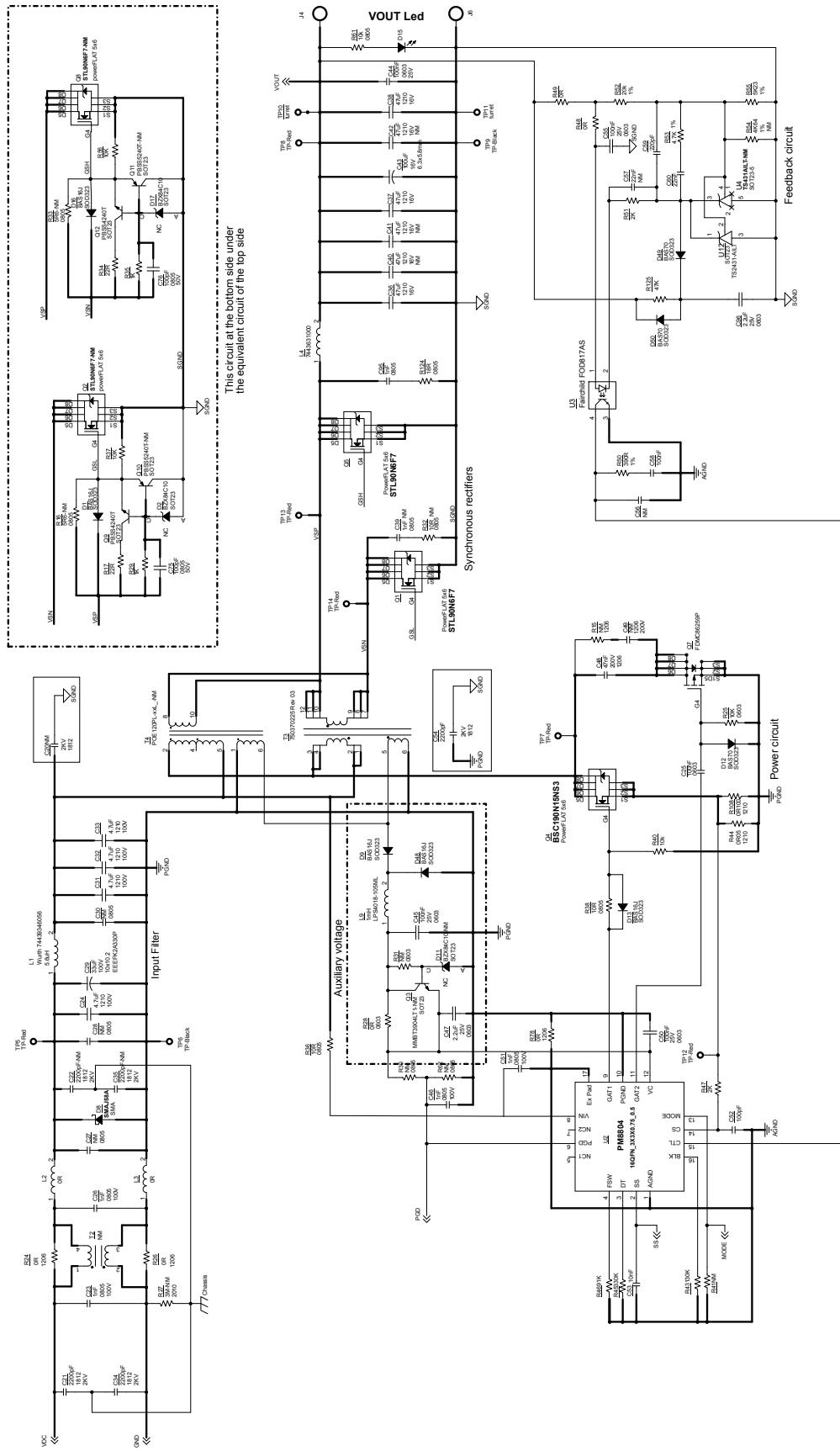


Figure 4. STEVAL-POE005V1 circuit schematic (3 of 3)



Revision history

Table 1. Document revision history

Date	Version	Changes
05-Oct-2018	1	Initial release.

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