

RDFC topology – benefits for 12 W Modem/Router applications



An RDFC power controller for a modem router application

- Low cost design, not requiring Y Caps, Opto couplers and using low cost E16 transformer.
- Low EMI benefits
- Design meets new requirements for efficiency and no-load power

Overview

The C2470 series of power controllers offers a novel approach to offline AC:DC power conversion. Both the topology and the controller offer some unique advantages in a modem router application due to a low emi, low cost design that offers high efficiency and low no-load power.

- Low cost
- Low EMI
- High efficiency & low no-load power.

Applications



Figure 1: Modem Router

Low Cost

CamSemi's RDFC solution requires no feedback circuit, reducing the BoM by 1 optocoupler, 1 programmable zener and 10 passive components. The smoother switching behaviour also removes the need for a Y capacitor, reducing the BoM by around 13 components. A low cost E16 transformer is also used.

Size



Figure 2: Size (and cost) reduction moving from a linear PSU to an RDFC SMPS solution

Circuit Diagram

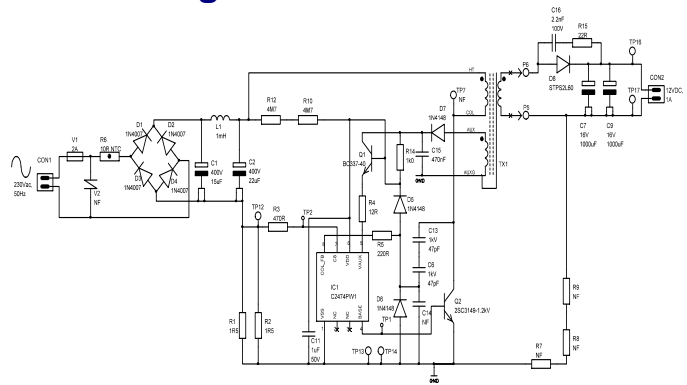


Figure 3: 220V 12 W schematic

Low EMI

The resulting low EMI is achieved due to the soft switching resonant waveform.

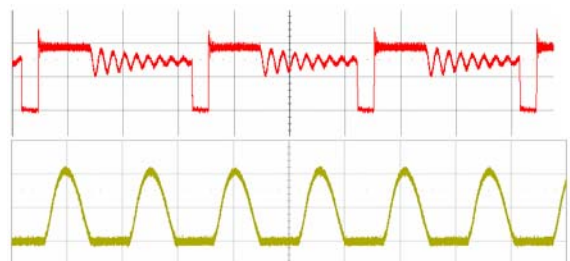


Figure 4: Top waveform showing the hard switching flyback waveform that generates significant EMI; the lower smooth resonant waveform minimises EMI.

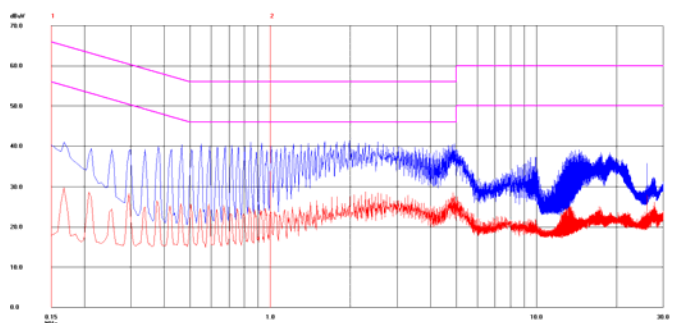


Figure 5: The blue trace above represents the Quasi-Peak emissions and the red trace Average emissions.

Easier Telcom compliance

Another advantage of the low EMI topology is that it is easier to meet the requirements of telecommunications standards, where noise conducted onto the wired telecom network is a concern.

Efficiency & Low No Load Power

Power supplies based on CamSemi's new controller and RDFC topology can easily meet today's demanding efficiency and no load power regulations.

Measurement	Linear PSU	RDFC PSU	Energy Star 2.0 Requirement
Average Efficiency	63%	87%	78%
No Load	1.5 W	214mW	500mW

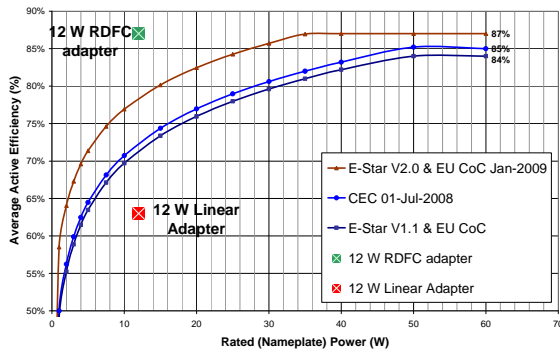


Figure 6: 12 W Linear and 12 W RDFC Modem/Router PSU compared against new standards

Controller Series

The following controller options are available:

Part Number	Package
C2472PX2	SOT23-6

For more Information

For details of our channel partners and information on future product, technology or corporate announcements, visit www.camsemi.com

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