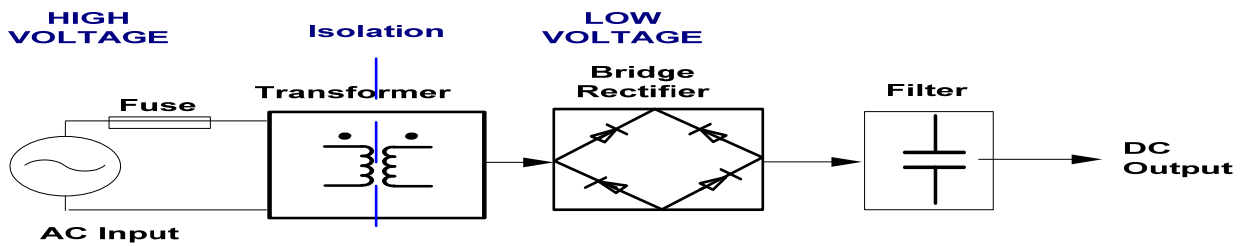


Overview

The C2470 series of controllers offers a novel approach for off-line power conversion. They replace linear-type power supplies with a low cost switch-mode solution based on a Resonant Discontinuous Forward Converter topology (RDFC). This new approach brings benefits over current linear, Ringing Choke Converter (RCC), or flyback approaches. This bulletin discusses the benefits and disadvantages of various topologies.

Linear Power Supply

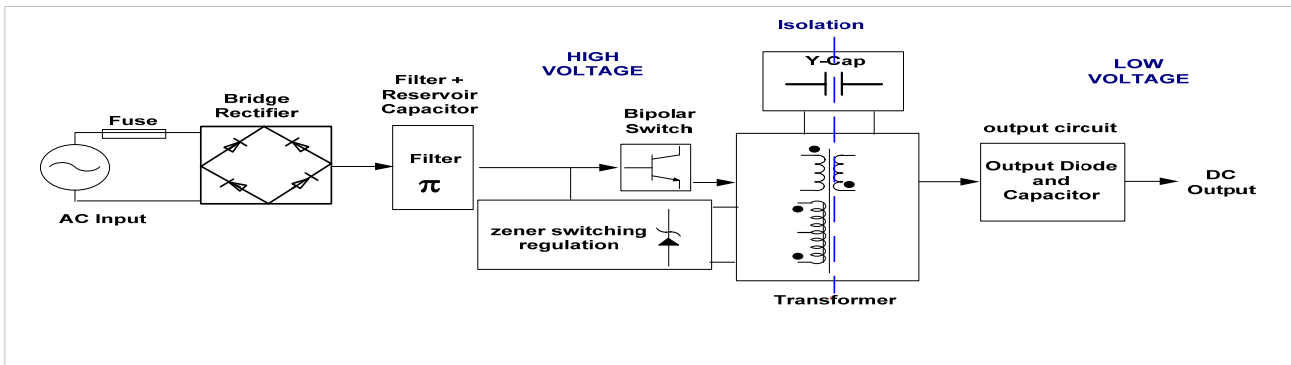
Simple block diagram



Positive	Negative
Simple design	Energy inefficient and no longer meets new standards i.e. due to transformer losses
Cheaper than SMPS	Transformer costs increasing due to commodity prices i.e. copper. Also large transformers required for higher powers.
Wide power rating	Unregulated DC output voltage
Low EMI	Single rail input

RCC (Ringing Choke Converter)

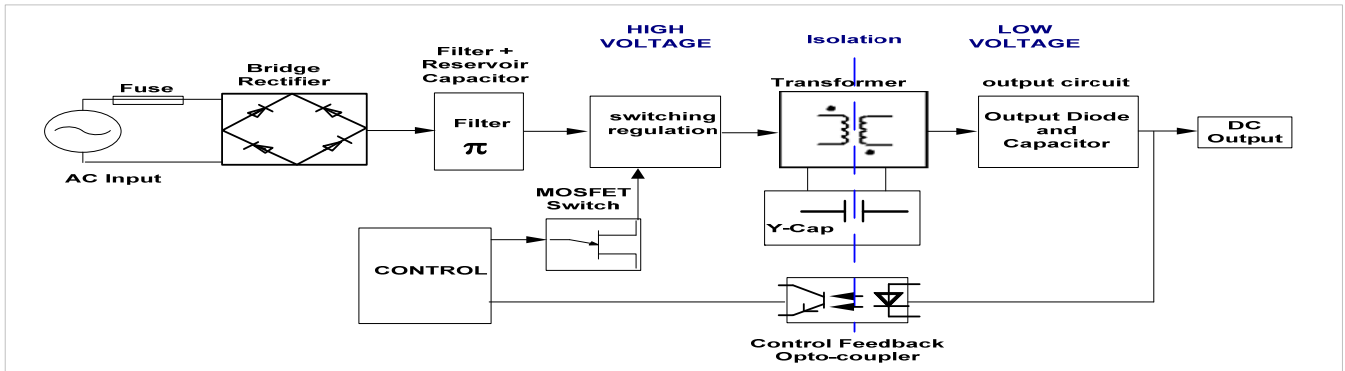
Simple block diagram



Positive	Negative
Cheap	Only suitable for low power i.e. <15 W
Universal input	Poor EMI
Smaller than linear	Poor safety, no controller, although discrete safety functions can be added at a cost.
Regulated voltage	Poor efficiency
	VI not as good as flyback
	May need additional, costly components to give improved control i.e. opto couplers etc.

Flyback Power supply

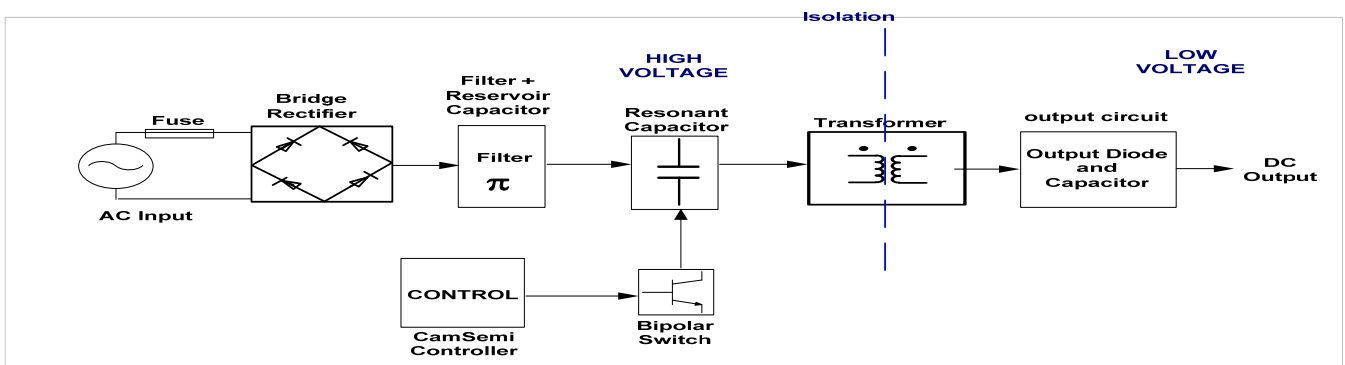
Simple block diagram



Positive	Negative
Efficient, can meet new regulation requirements	Expensive compared with linear.
Universal input	High EMI generated by fast switching, leading to extra cost for filters.
Smaller than linear	Y-capacitor needed across transformer for EMI, expensive
Regulated output voltage	Energy storage in transformer means normally feedback circuit is required
Safety – controller adds protection features	Cannot handle wide range of powers

Resonant Discontinuous Forward Converter

Simple block diagram



Positive	Negative
Efficient, will meet new regulation requirements in both active efficiency and no-load.	Single rail input only
Cheaper than linear and competitive with flyback	Not as tight voltage regulation as flyback
Very safe, controller protection features plus no opto or Y-capacitor required.	
Low EMI due to resonant switching of bipolar transistor	

For more Information

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Contact Information

European Design Centre

CamSemi
St Andrews House
St Andrews Road
Cambridge, CB4 1DL
United Kingdom

Tel: +44 1223 446450

Taiwan Design Centre

CamSemi
6F, No.58, Zhouzi St.,
Neihu District,
Taipei City 114,
Taiwan (R.O.C.)

Tel: +886 2 8178 1010

China Design Centre

Room 201, 2F
Shenzhen Academy of
Aerospace Technology,
Tower B, 10th Kejinan Rd.
Nanshan District,
Shenzhen, China 518057

Tel: +86 755 8611 7778

Korea Design Centre

No. 808 KOFOMO Tower,
16-2 Sunae-Dong, Bundang-GU,
Sungnam-Si, Kyunggi-Do,
463-825,
SOUTH KOREA

Tel: +82 31 711 1415