



An isolated boost flyback power converter

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Publication date:
2013

Document Version
Publisher's PDF, also known as Version of record

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Citation (APA):
Lindberg-Poulsen, K., Ouyang, Z., & Sen, G. (2013). An isolated boost flyback power converter. (Patent No. US2014241012).

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US 20140241012A1

(19) **United States**(12) **Patent Application Publication**
Lindberg-Poulsen et al.(10) **Pub. No.: US 2014/0241012 A1**(43) **Pub. Date: Aug. 28, 2014**(54) **ISOLATED BOOST FLYBACK POWER
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Lyngby (DK)(21) Appl. No.: **14/131,034**(22) PCT Filed: **Jun. 11, 2012**(86) PCT No.: **PCT/EP2012/061020**§ 371 (c)(1),
(2), (4) Date: **Apr. 28, 2014****Related U.S. Application Data**(60) Provisional application No. 61/505,205, filed on Jul. 7,
2011.(30) **Foreign Application Priority Data**

Jul. 7, 2011 (EP) 11172997.6

Publication Classification(51) **Int. Cl.**
H02M 3/335 (2006.01)(52) **U.S. Cl.**CPC **H02M 3/335** (2013.01)USPC **363/17**(57) **ABSTRACT**

An isolated boost power converter comprises a magnetically permeable multi-legged core (102) comprising first and second outer legs (132; 136) and a center leg (134) having an air gap (138) arranged therein. A boost inductor (Lboost) is wound around the center leg (134) or the first and second outer legs (132; 136) of the magnetically permeable multi-legged core (102). The boost inductor (Lboost) is electrically coupled between an input terminal (104) of the boost converter and a transistor driver (106) to be alternately charged and discharged with magnetic energy. A first and second series connected secondary transformer windings (SW1; SW2) with a center-tap (116) arranged in-between are wound around the first and second outer legs (132; 136), respectively, of the magnetically permeable multi-legged core (102). In a first discharge state, the magnetic energy stored in the boost inductor (Lboost) is discharged by directing a discharge current from the boost inductor through a primary transformer winding (PW1; PW2) and in a second discharge state, the magnetic energy stored in the boost inductor (Lboost) is discharged by discharging a magnetic flux through the first and second secondary transformer windings (SW1; SW2).

