



An isolated boost flyback power converter

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(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
CONVERTER**(52) **U.S. Cl.**CPC **H02M 3/335** (2013.01)USPC **363/17**(75) Inventors: **Kristian Lindberg-Poulsen**,
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(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).

