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(54) **THREE-PHASE AND SINGLE-PHASE
TWO-WAY CHARGER**

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(57) **ABSTRACT**

The present technology discloses a three-phase and single-phase two-way charger. According to a specific example of the present invention, a battery charger having a single-stage structure for a combined use of single-phase and three-phase is implemented without an electrolytic capacitor which lowers the reliability and charging efficiency, to enable a compatible use of single-phase and three-phase external power sources, and to improve charging efficiency and the performance in a wide input/output voltage range by a reduced number of switching elements and a soft switching operation of the switching elements and thus improve the reliability and lifetime. A lightweight charger can be realized by integrating, into a core, at least two of an inductor for removing ripples of the battery charger, a primary side and a secondary side of a transformer, and an inductor for removing noise.

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