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(54) **BATTERY CHARGER INTEGRATED CIRCUIT FOR ADAPTIVELY LIMITING OVER-CURRENT, MOBILE DEVICE COMPRISING THE SAME AND OPERATION METHOD THEREOF**

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(57) **ABSTRACT**

A circuit includes: an overcurrent limiting (OCL) detector configured to detect whether a level of an inductor current reaches an OCL level and to generate an OCL detection voltage; a control loop circuit configured to generate a reset voltage by comparing a ramp voltage reflecting the level of the inductor current with an error voltage generated based on an operating condition that is out of a preset operating condition; an adaptive OCL controller configured to generate an OCL control current by counting a number of pulses of the OCL detection voltage and a number of pulses of the reset voltage; an oscillator configured to generate an oscillation voltage wherein a frequency of the oscillation voltage varies based on a magnitude of the overcurrent limit control current; and a switching transistor for switching the inductor current based on the oscillation voltage.

