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(54) **PROCESSOR WITH ADJUSTABLE OPERATING FREQUENCY**

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(57) **ABSTRACT**

The present invention provides a processor including a core circuit, a plurality of clock signal generation circuits, a multiplexer and a detection circuit is disclosed. The core circuit is supplied by a supply voltage. The plurality of clock signal generation circuits are configured to generate a plurality of clock signals with different frequencies, respectively, wherein a number of the plurality of clock signals is equal to or greater than three. The multiplexer is configured to receive the plurality of clock signals, and to select one of the plurality of clock signals to serve as an output clock signal according to a control signal, wherein the core circuit uses the output clock signal to serve as an operating clock. The detection circuit is configured to detect a level of the supply voltage received by the core circuit in a real-time manner, to generate the control signal.