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(54) **ANALOG-DIGITAL CONVERTER AND OPERATING METHOD THEREOF**

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(57) **ABSTRACT**

Provided are an analog-to-digital converter and/or an operating method thereof. The analog-to-digital converter includes a sample/hold circuit, a digital-to-analog converter, a comparing circuit, and a control logic circuit, wherein the digital-to-analog converter includes a first capacitor connected to a first comparison node and a first filtering node, a first reference voltage switch connected to the first filtering node and connected to a first delivery node or a first transmission node, a first pre-charge switch connected to the first filtering node or the first delivery node, and a first pre-charge capacitor connected to the first pre-charge switch and a ground voltage.