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(54) **ANALOG-TO-DIGITAL CONVERTER CAPABLE OF REDUCING NONLINEARITY AND METHOD OF OPERATING THE SAME**

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(57) **ABSTRACT**

An analog-to-digital converter includes a switch circuit, a first capacitor array, a second capacitor array and a comparator. A method of operating the analog-to-digital converter includes switching a swap signal to a first level in a first sampling period for the switch circuit to couple the first capacitor array to a first input terminal of the comparator and a first signal source, and couple the second capacitor array to a second input terminal of the comparator and a second signal source, and switching the swap signal to a second level in a second sampling period for the switch circuit to couple the first capacitor array to the second input terminal of the comparator and the second signal source, and couple the second capacitor array to the first input terminal of the comparator and the first signal source.