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**Huynh**(10) **Pub. No.: US 2022/0393692 A1**(43) **Pub. Date: Dec. 8, 2022**(54) **POWER SENSING CIRCUIT**(71) Applicant: **SIGMASENSE, LLC.**, Wilmington,  
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(57) **ABSTRACT**

A high resolution analog to digital converter (ADC) with improved bandwidth senses an analog signal (e.g., a load current) to generate a digital signal. The ADC operates based on a load voltage produced based on charging of an element (e.g., a capacitor) by a load current and a digital to analog converter (DAC) output current (e.g., from a N-bit DAC). The ADC generates a digital output signal representative of a difference between the load voltage and a reference voltage. This digital output signal is used directly, or after digital signal processing, to operate an N-bit DAC to generate a DAC output current that tracks the load current. In addition, quantization noise is subtracted from the digital output signal thereby extending the operational bandwidth of the ADC. In certain examples, the operational bandwidth of the ADC extends up to 100s of kHz (e.g., 200-300 kHz), or even higher.

