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(54) **POWER AMPLIFIER MODULES INCLUDING SEMICONDUCTOR RESISTOR AND TANTALUM NITRIDE TERMINATED THROUGH WAFER VIA**

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**ABSTRACT**

One aspect of this disclosure is a power amplifier module that includes a power amplifier, a semiconductor resistor, a tantalum nitride terminated through wafer via, and a conductive layer electrically connected to the power amplifier. The semiconductor resistor can include a resistive layer that includes a same material as a layer of a bipolar transistor of the power amplifier. A portion of the conductive layer can be in the tantalum nitride terminated through wafer via. The conductive layer and the power amplifier can be on opposing sides of a semiconductor substrate. Other embodiments of the module are provided along with related methods and components thereof.

