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(54) **WIRELESS POWER TRANSMISSION DEVICE FOR INDUCTIVE ELECTRIC POWER TRANSMISSION AND METHOD FOR OPERATING THE POWER TRANSMISSION DEVICE FOR SUPPORTING ZERO VOLTAGE SWITCHING**

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(57) **ABSTRACT**

A method of operating an inverter circuit in a wireless power transmission device that may include at least one half-bridge with two switching units that each have a parasitic capacitance. In a respective half-bridge, the first switching unit links a plus potential (V+) of a DC source to a half-bridge node and the second switching unit links the half-bridge node to a minus potential (V−) of the DC source. A resonant circuit for the wireless power transmission is connected as a load to the respective half-bridge node, wherein the resonant circuit may include a transmission coil and at least one capacitive element. A support circuit is connected in parallel to the load, wherein the support circuit may include at least one energy storing element that is charged with energy by a charging current during a respective half-cycle of the switching cycles of the inverter circuit and in a respective transient phase between the half-cycles the support circuit drives a support current using the stored energy from its at least one energy storing element , wherein the support current adds to the load current in the inverter circuit and by this supports zero-volt switching (ZVS).