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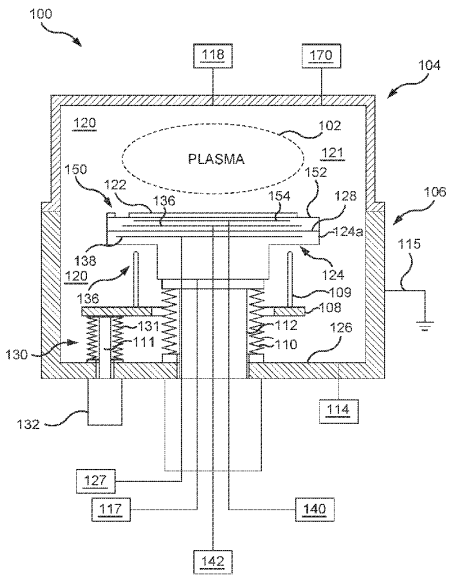


FIG. 1

(57) Abstract: Embodiments of the disclosure provided herein includes systems and methods for high power semiconductor manufacturing. The system includes a processing chamber, a substrate support assembly disposed within the processing chamber, and an advanced thermal management system coupled to the substrate support assembly. The advanced thermal management system includes one or more heating elements embedded within a body of the substrate support assembly and a cooling plate assembly embedded within the body disposed adjacent to the one or more heating elements. The cooling plate assembly includes a first cooling plate with a first cooling gas channel, a second cooling plate with a second cooling gas channel fluidly coupled to the first cooling plate by a connecting line, a supply line coupled to the first cooling gas channel, and a return line coupled to the second cooling gas channel.

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