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ABSTRACT

USING REFRACTORY METAL SILICIDATION PHASE TRANSITION TEMPERATURE POINTS TO CONTROL AND/OR CALIBRATE RTP LOW TEMPERATURE OPERATION

A method for controlling and/or calibrating rapid thermal process systems is described. One or more wafers comprising a silicon semiconductor substrate having a refractory metal layer thereon are silicided in a RTP system at different temperatures. Sheet resistance uniformity of the wafer is measured thereby detecting silicidation phase transition temperature points at the highest uniformity points. The temperature points are used to calibrate or to reset the RTP system. A plurality of wafers comprising a silicon semiconductor substrate having a refractory metal layer thereon can be silicided in each of a plurality of rapid thermal process systems. Sheet resistance uniformity of each of the wafers is measured thereby detecting silicidation phase transition temperature points by highest sheet resistance uniformity for each of the RTP systems. The temperature points are used to match temperatures for each of the RTP systems. The temperature point depend upon the type of refractory metal used and can range from about 200 to 800 °C.



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FIGURE 2