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[54] **THREE-ZONE RAPID THERMAL PROCESSING SYSTEM UTILIZING WAFER EDGE HEATING MEANS**

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[58] **Field of Search** 392/416, 418, 422, 411; 219/390, 405, 411; 118/724, 725, 728-730; 437/247, 248; 427/557, 559

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[57] **ABSTRACT**

A three zone rapid thermal processing system includes three arrays of radiant heating lamps for heating a semiconductor wafer. The arrays are positioned along the axis of the wafer such that one array is adjacent one face of the wafer, the second array is adjacent the second face of the wafer and the third array is adjacent the edge of the wafer. A wafer holder holds the wafer face transverse to the common axis of the radiant heating lamps. Reflectors at each array reflect radiant heat onto the wafer. The arrays are independently connected to power sources and a controller to provide efficient coupling of the heat sources and a uniform temperature distribution across a wafer.

19 Claims, 13 Drawing Sheets