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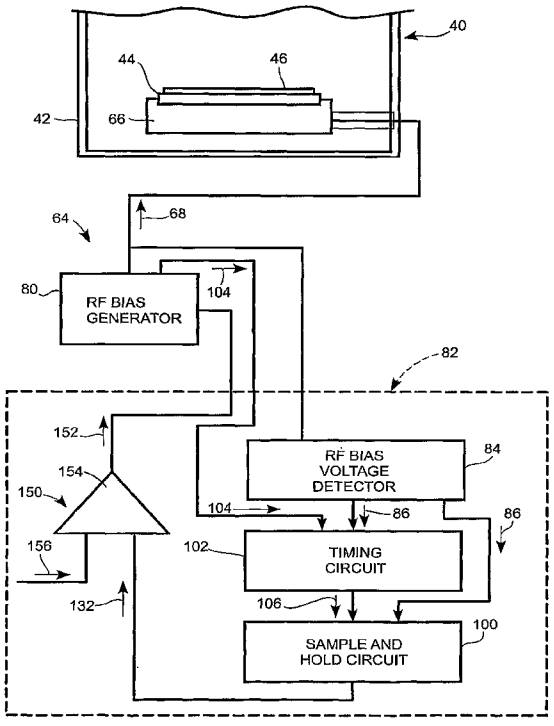
(54) Title: METHODS OF AND APPARATUS FOR MEASURING AND CONTROLLING WAFER POTENTIAL IN PULSED RF BIAS PROCESSING



(57) Abstract: Apparatus and methods are provided to detect and control a voltage potential applied in a plasma chamber for processing a semiconductor wafer. The plasma chamber includes circuitry for monitoring and adjusting a pulsed RF bias voltage signal to be applied to a chuck in the plasma chamber, where the chuck is configured to mount the wafer for processing. The circuitry includes an RF bias voltage detector for detecting individual pulses of the pulsed RF bias voltage signal applied to the chuck. A timing circuit is provided for determining a time for sampling each of the individual detected pulses and a sample and hold circuit. The sample and hold circuit is triggered at the sampling time for sampling each of the individual detected pulses to determine and hold a voltage value representing a peak peak-to-peak voltage value of each individual detected pulse, and the sample and hold circuit is configured to provide a feedback signal representing the peak peak-to-peak voltage value of at least one of the detected pulses. Further included is a feedback circuit for adjusting the voltage of the pulsed RF bias voltage signal applied to the chuck according to a difference between the feedback signal and a desired voltage value of the RF bias voltage signal.

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