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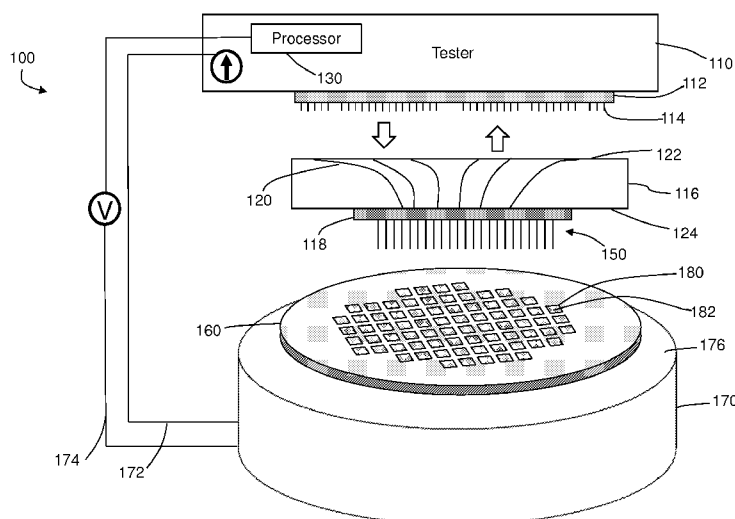
(54) Title: CURRENT REGULATION FOR ACCURATE AND LOW-COST VOLTAGE MEASUREMENTS AT THE WAFER
LEVEL

FIG. 1

(57) Abstract: A test system and test techniques for
accurate high current parametric testing of semicon-
ductor devices. In operation, the test system supplies
a current to the semiconductor device and measures a
voltage on the device. The testing system may use
the measured voltage to compute an ON resistance
for the high-current semiconductor device. In one
technique, multiple force needles contact a pad in
positions that provide equi-resistant paths to one or
more sense needles contacting the same pad. In an-
other technique, current flow through the force
needles is regulated such that voltage at the pad of
the device under test is representative of the ON re-
sistance of the device and independent of contact re-
sistance of the force needle. Another technique entails
generating an alarm indication when the contact re-
sistance of a force needle exceeds a threshold.