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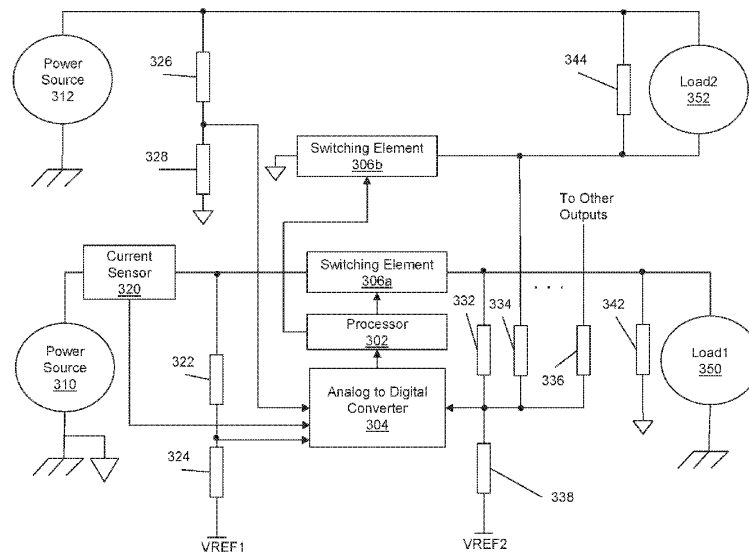


FIG. 3

(57) Abstract: Systems and methods for testing circuit operations are provided. Aspects include a circuit comprising a power source, a switching element, and a load. A sensing element is arranged between the switching element and the load and the sensing element is communicatively coupled to a microcontroller, wherein the microcontroller is configured to perform a diagnostic operation for the circuit comprising obtaining, from the sensing element, first sensor data associated with the load responsive to operating the switching element, wherein the first sensor data comprises electrical values associated with the load, obtaining, from the sensing element, second sensor data associated with an output of the switching element, wherein the second sensor data comprises electrical values associated with the output of the switching element, and analyzing the first sensor data and the second sensor data to determine a fault condition for the circuit.

[Continued on next page]

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Declarations under Rule 4.17:

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