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(54) **GROUND FAULT DETECTION IN AC SYSTEMS USING DIGITAL SIGNAL PROCESSING**

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(71) Applicant: **Amber Semiconductor, Inc.**, Dublin, CA (US)

(57) **ABSTRACT**

(72) Inventors: **Mark Telefus**, Orinda, CA (US); **Harry Rodriguez**, San Jose, CA (US); **Suhail Zain**, San Ramon, CA (US)

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A device comprises current sense circuitry, analog-to-digital converter circuitry, and digital signal processing circuitry. The current sense circuitry is configured to sense a first current flowing in a first wire and a second current flowing in a second wire, the first and second wires being configured to supply AC power to a load coupled to the device. The analog-to-digital converter circuitry is configured to generate first digital data corresponding to the first current, and second digital data corresponding to the second current. The digital signal processing circuitry is configured to process the first digital data and the second digital data to determine a difference between the first current and the second current, and to generate a control signal to interrupt current flow in the first and second wires, in response to determining that the difference between the first current and the second current meets or exceeds a difference threshold.

