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(54) **TRANSISTOR-PTC CIRCUIT PROTECTION DEVICES**

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(*) Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

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(51) **Int. Cl.**⁷ **H02H 5/04**

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(58) **Field of Search** 361/106, 103, 361/93.8, 93.9, 93.1, 58, 100-101, 10, 98, 27; 338/20, 22 R

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(57) **ABSTRACT**

A circuit protection device for protecting an electrical load includes a three-terminal switch element such as a bipolar, or junction or metal-oxide-semiconductor field effect, transistor and a positive temperature compensation (PTC) resistor. In several embodiments the PTC resistor is in series with the current-carrying electrodes of the transistor. In other embodiments the PTC resistor, or a second PTC resistor, is connected to a control element of the transistor. Both DC and AC load-protection circuits are described.

34 Claims, 2 Drawing Sheets

