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(12) **United States Patent**
Rincon-Mora

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(54) **ADJUSTABLE TEMPERATURE-COMPENSATED THRESHOLD CIRCUIT WITH TRIP-POINTS EXCEEDING THE GIVEN SUPPLIES**

(58) **Field of Search** 327/50, 53, 58, 327/60, 62, 74, 77, 80, 81, 83, 512, 513

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(56) **References Cited**

U.S. PATENT DOCUMENTS

5,111,071 A * 5/1992 Kwan et al. 327/77

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* cited by examiner

(*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(57) **ABSTRACT**

(65) **Prior Publication Data**

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The temperature compensated threshold circuit includes: a positive trip point circuit 60 for providing a positive trip point when an input voltage PSM is higher than a positive supply voltage VCC; a negative trip point circuit 62 for providing a negative trip point when the input voltage PSM is below a negative supply voltage AGND; and a bias circuit 64 for providing to the positive and negative trip point circuits 60 and 62 a first current proportional to absolute temperature and a second current proportional to a base emitter voltage.

Related U.S. Application Data

(60) Provisional application No. 60/281,972, filed on Apr. 6, 2001.

(51) **Int. Cl.⁷** **H03K 5/22**

(52) **U.S. Cl.** **327/83; 327/513**

20 Claims, 1 Drawing Sheet



