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United States Patent [19] Rincon-Mora

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[54] **LOW VOLTAGE, CURRENT-MODE, PIECEWISE-LINEAR CURVATURE CORRECTED BANDGAP REFERENCE**

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[57] ABSTRACT

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A bandgap circuit (16) for supplying a reference voltage includes a first current source ($I_{V_{be}}$) supplying a current proportional to a base-emitter voltage, a second current source (I_{PTAT}) supplying a current proportional to absolute temperature, and a third current source (I_{NL}) supplying a non-linear current. First (R3), second (R2), and third (R1) resistors are coupled in series between a first node (c) and ground. The first current source is coupled to the first node. The second current source is coupled to a second node (a) between the first and second resistors. The third current source is coupled to a third node (b) between the second and third resistors. An output coupled to the first node supplies the reference voltage V_{ref} . The bandgap circuit provides a low voltage reference with temperature compensation flexibility.

[60] Related U.S. Application Data

[60] Provisional application No. 60/042,959, Apr. 7, 1997.
[51] Int. Cl.⁶ **G05F 1/10**
[52] U.S. Cl. **327/539; 327/513; 323/313; 323/315**
[58] Field of Search **327/512, 513, 327/378, 538, 539; 323/313, 314, 315**

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2 Claims, 3 Drawing Sheets



