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(54) **SUPPLY REGULATED VOLTAGE CONTROLLED OSCILLATOR INCLUDING ACTIVE LOOP FILTER AND PHASE LOCKED LOOP USING THE SAME**

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CPC . **H03L 7/099** (2013.01); **H03L 7/18** (2013.01); **H03L 7/093** (2013.01); **H03L 7/0995** (2013.01)

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See application file for complete search history.

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(57) **ABSTRACT**

The inventive concept relates to a supply regulated voltage controlled oscillator having a function of an active loop filter by sharing one operational amplifier without additional use of active elements in a supply regulated voltage controlled oscillator using an operational amplifier as a supply regulator, and a phase locked loop using the same.

**9 Claims, 10 Drawing Sheets**

