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(54) **DIGITAL-TO-TIME CONVERTER (DTC) HAVING A PRE-CHARGE CIRCUIT FOR REDUCING JITTER**

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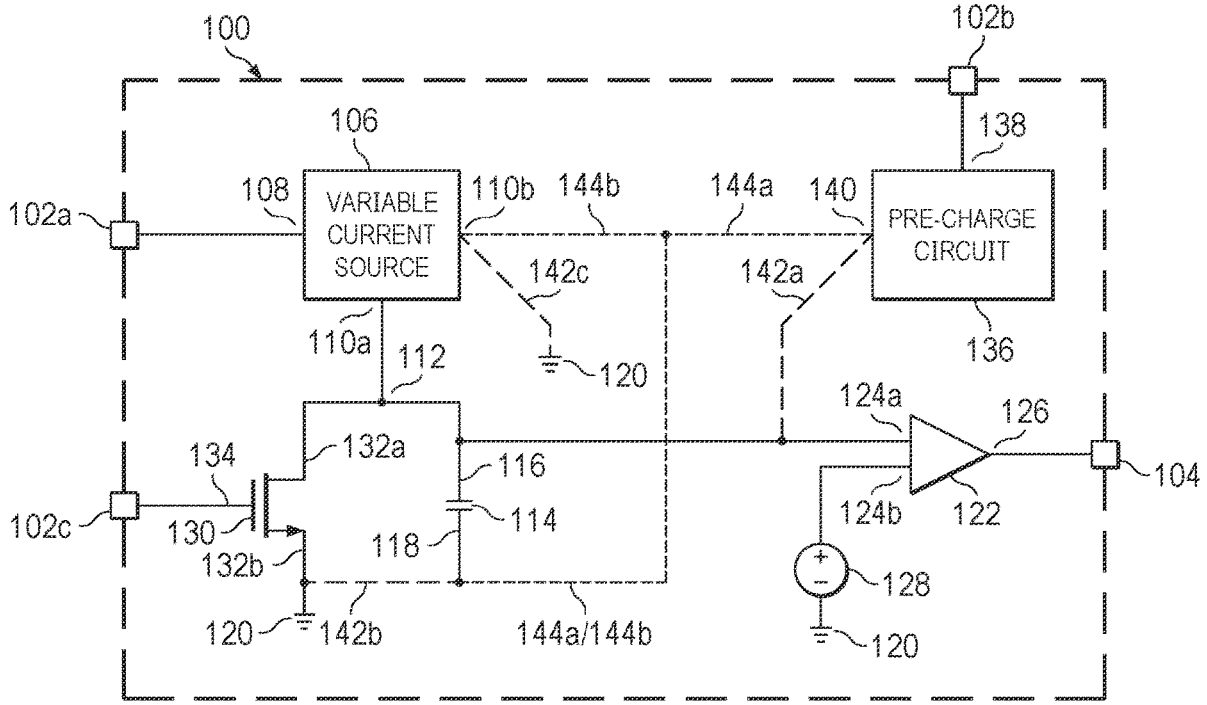
(57) **ABSTRACT**

A digital-to-time converter (DTC) circuit. The DTC circuit includes a charge node. A variable current source has a source input and a source output. The source input is coupled to a DTC digital input and the source output is coupled to the charge node. A capacitor has a first capacitor electrode and a second capacitor electrode. The first capacitor electrode is coupled to the charge node. A comparator has a first comparator input, a second comparator input, and a comparator output. The first comparator input is coupled to the charge node, the second comparator input is coupled to a reference voltage terminal, and the comparator output is coupled to a DTC output. A pre-charge circuit has a pre-charge control input and a pre-charge output. The pre-charge control input is coupled to a DTC pre-charge input and the pre-charge output is coupled to the capacitor.