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(54) **VOLTAGE REGULATOR USING DEPLETION MODE PASS DRIVER AND BOOT-STRAPPED, INPUT ISOLATED FLOATING REFERENCE**

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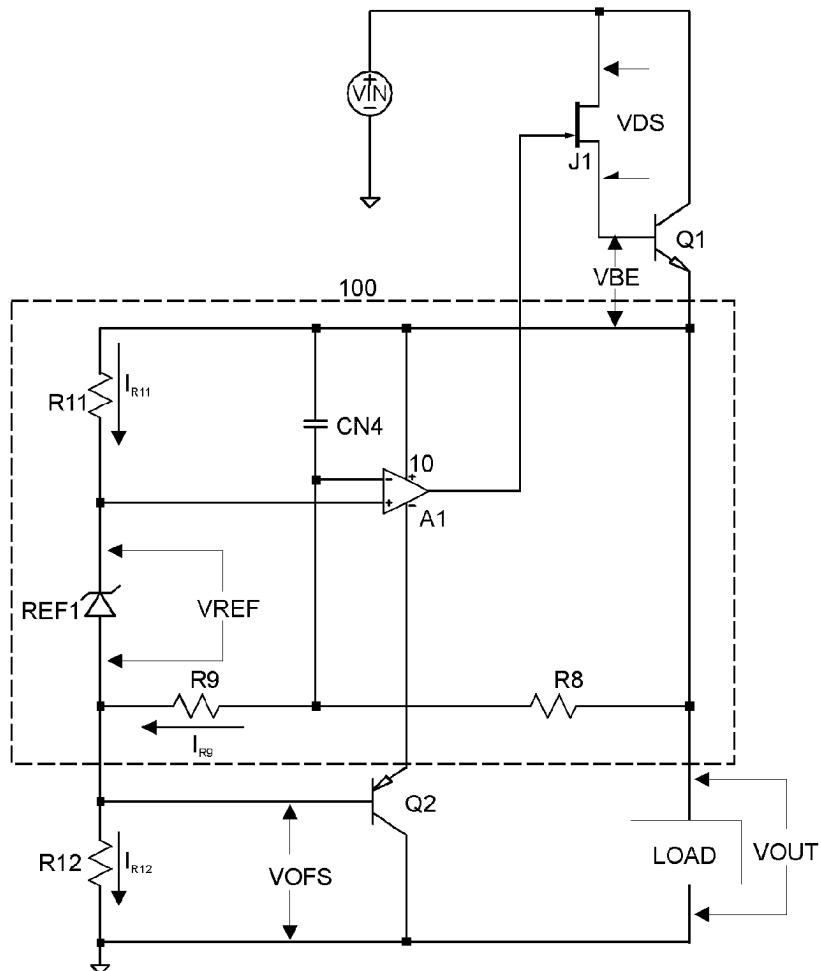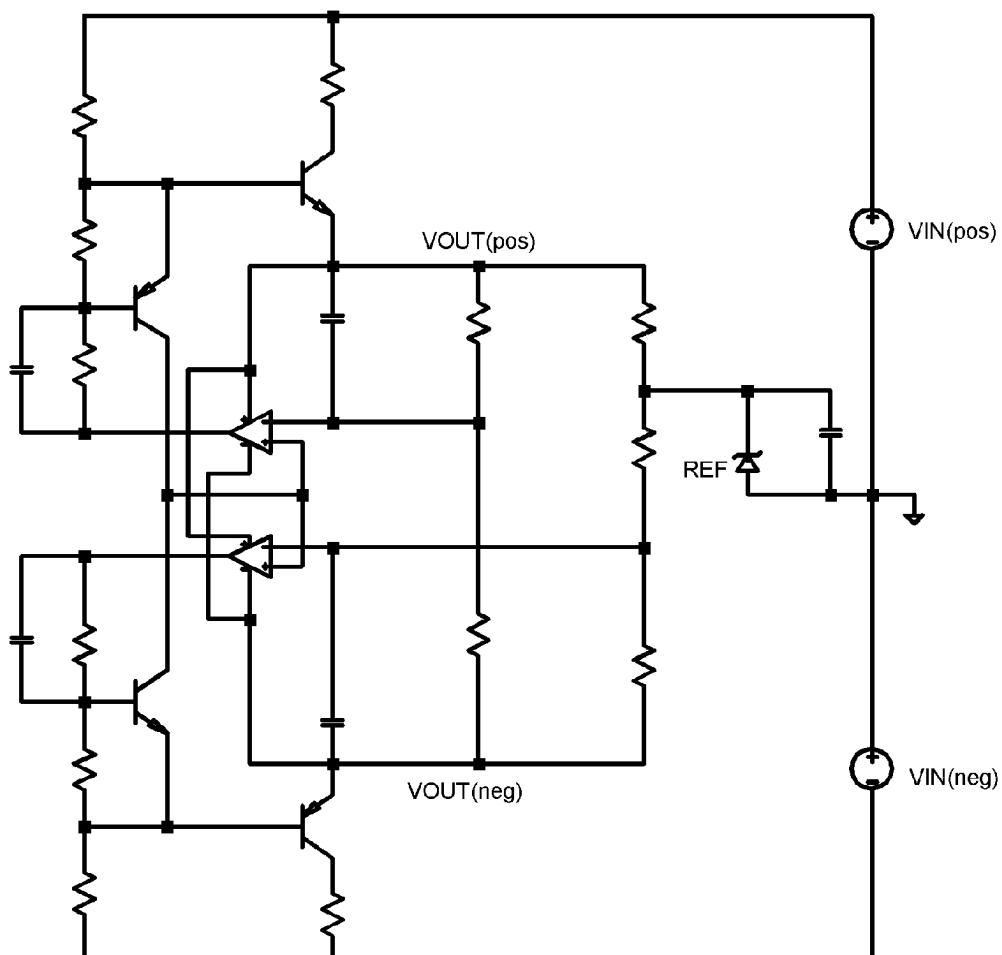
(52) **U.S. Cl.** **323/282**
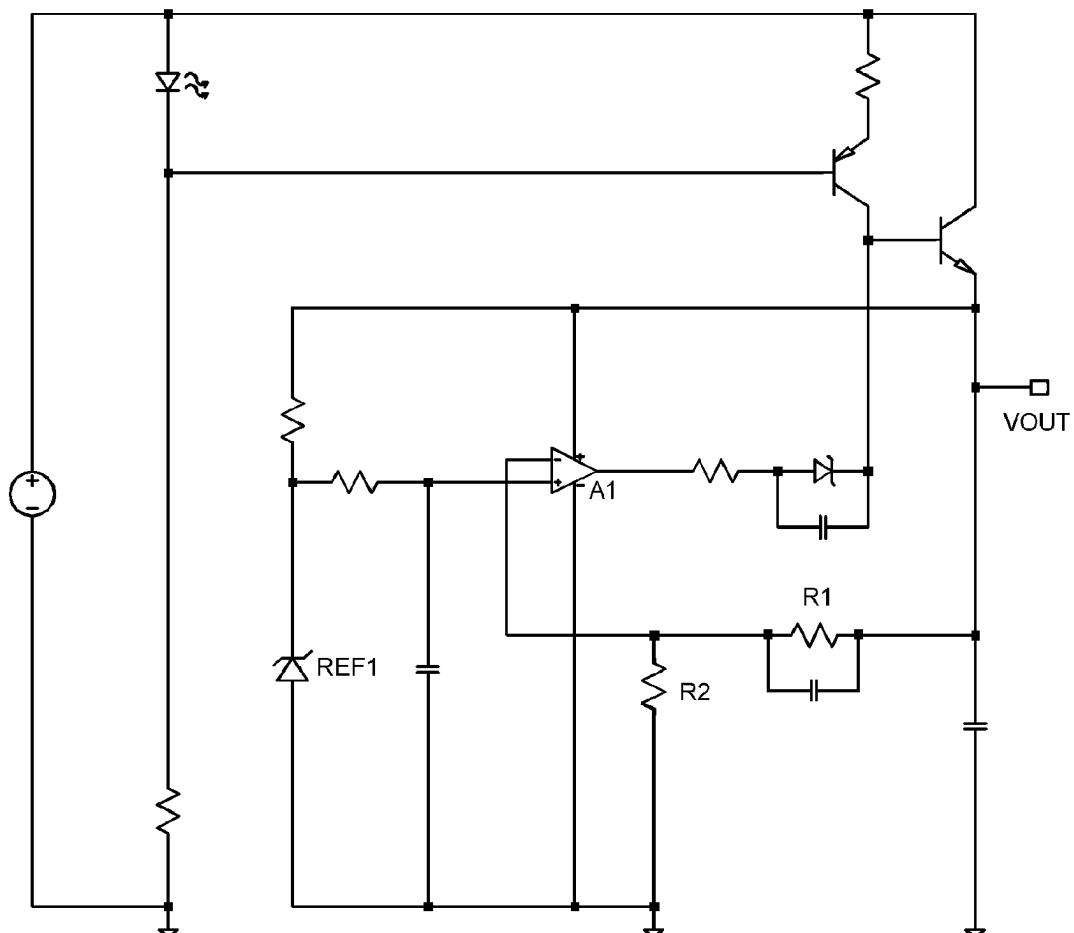
(57) **ABSTRACT**

Multiple embodiments of a linear voltage regulator are described that use a bipolar output transistor to deliver current and a regulated voltage to a load. The bipolar output transistor assures low output impedance providing isolation from load induced noise. A first depletion mode field effect transistor FET drives the output transistor dependent on a correction signal from an error amplifier. The error amplifier compares a fixed voltage reference to a portion of the output voltage to set a control voltage for the FET gate. Output voltage is set with an offset voltage referenced to circuit ground and can be generated with a single resistor to circuit ground by a current through the resistor which is set from VREF and the regulated output voltage. Output current is limited with a second depletion mode FET that senses the difference in regulator output voltage and voltage at said first FET transistor drain. All circuitry except the output transistor and 2 FET drivers are bootstrap powered from the regulated output voltage to isolate almost all circuit elements from noise present on the input power source.

VOUT(pos)

VIN(pos)

REF

VOUT(neg)

VIN(neg)

(PRIOR ART)
FIGURE 1

(PRIOR ART)
FIGURE2
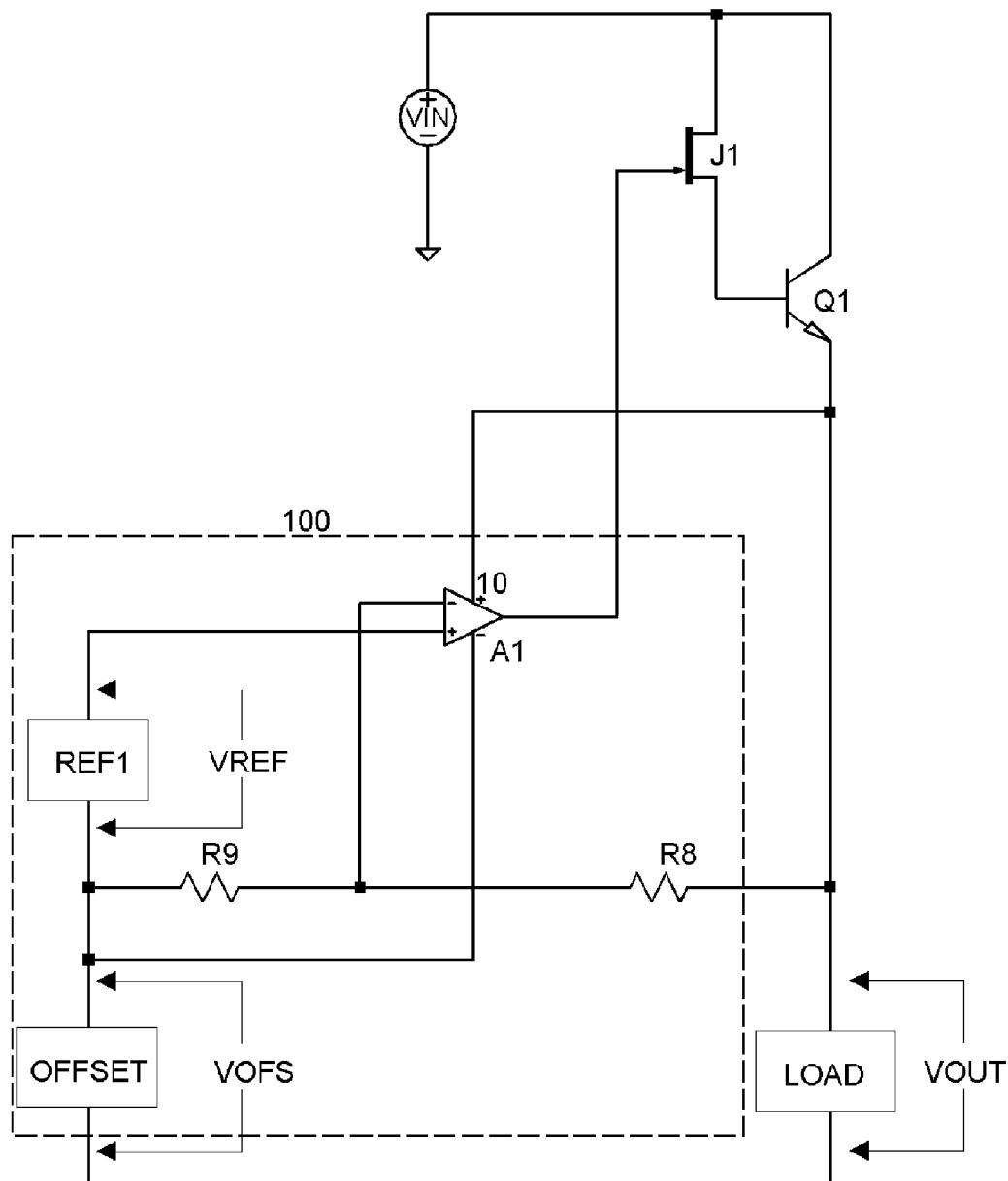
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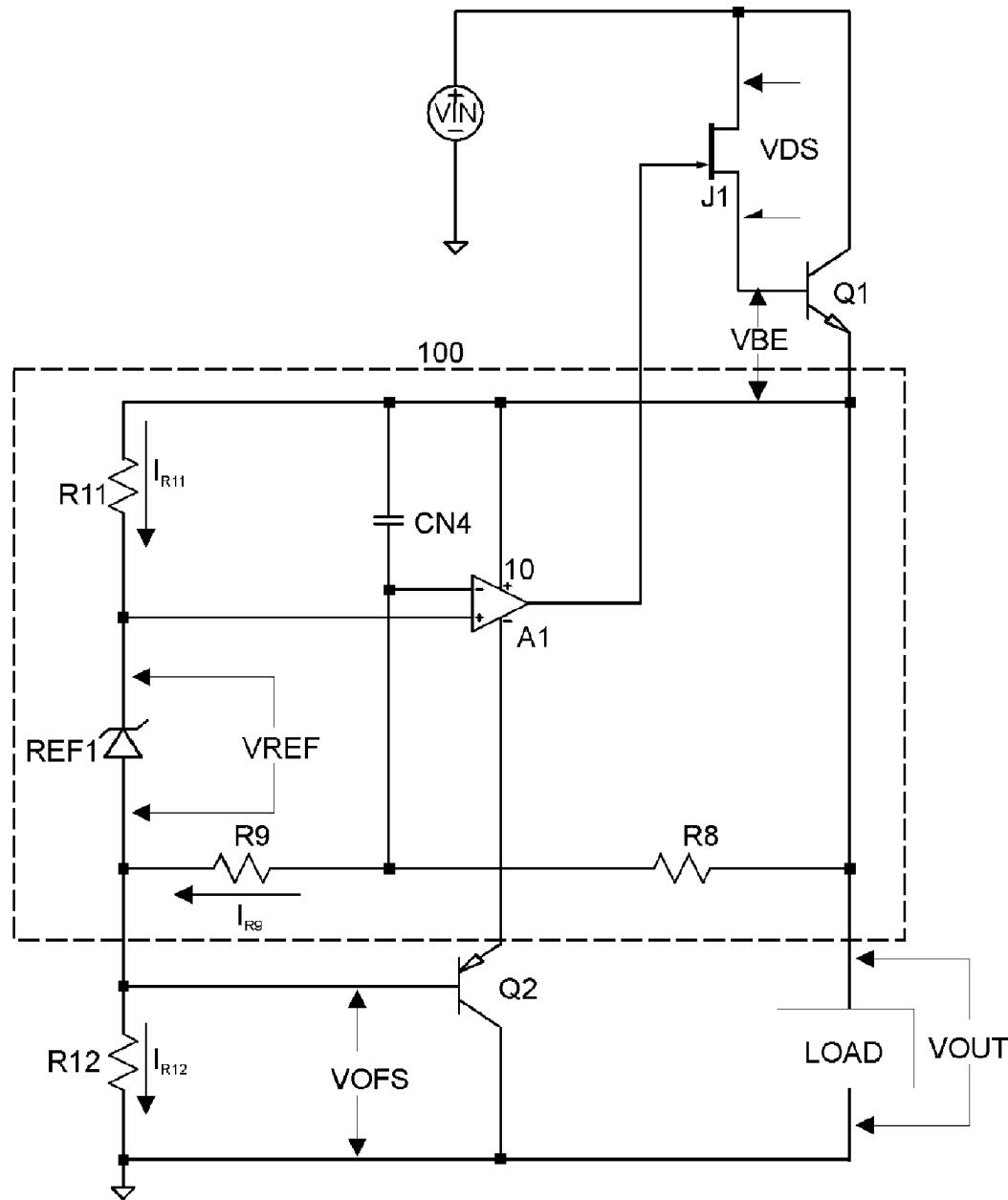
FIGURE 4
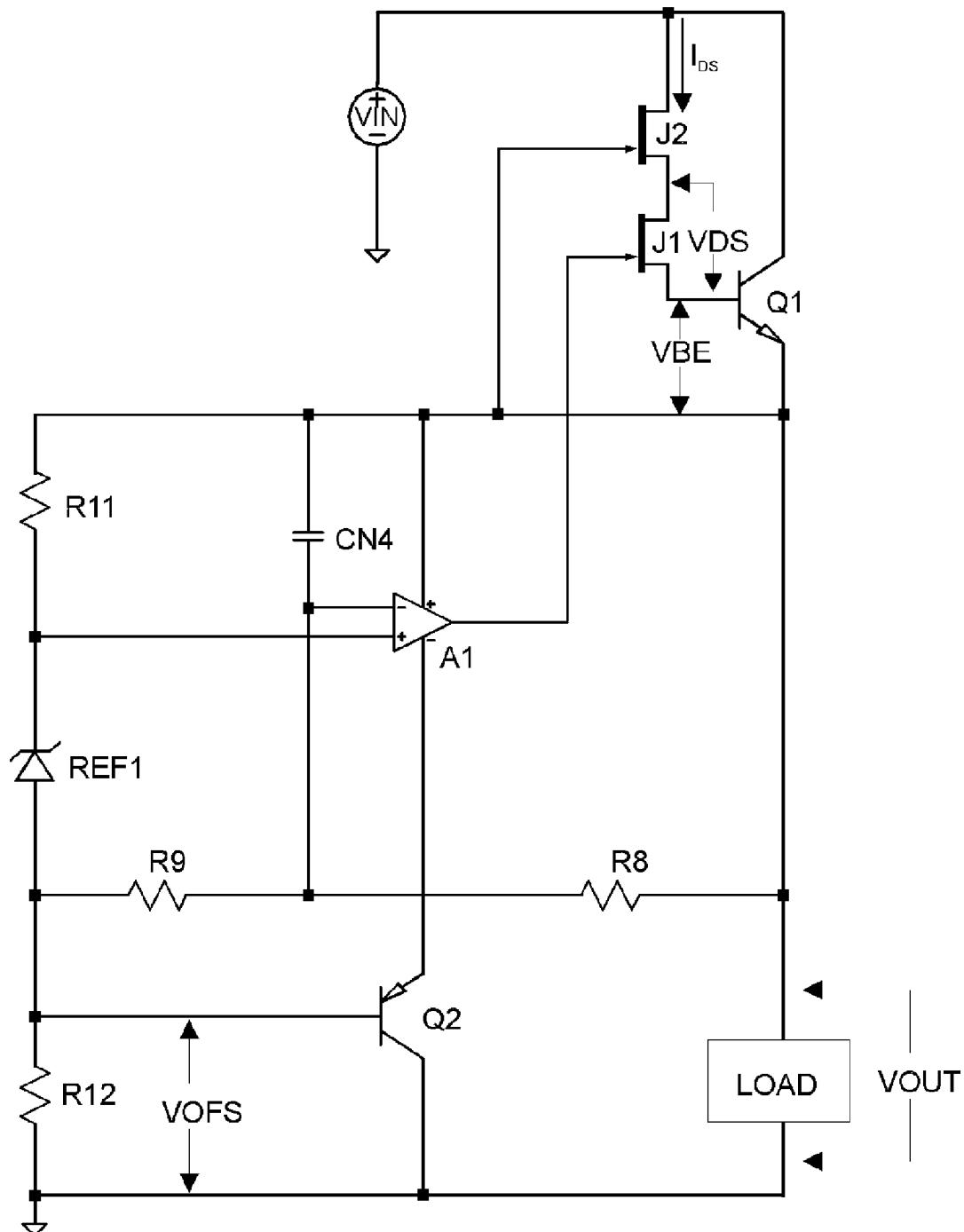
FIGURE 5
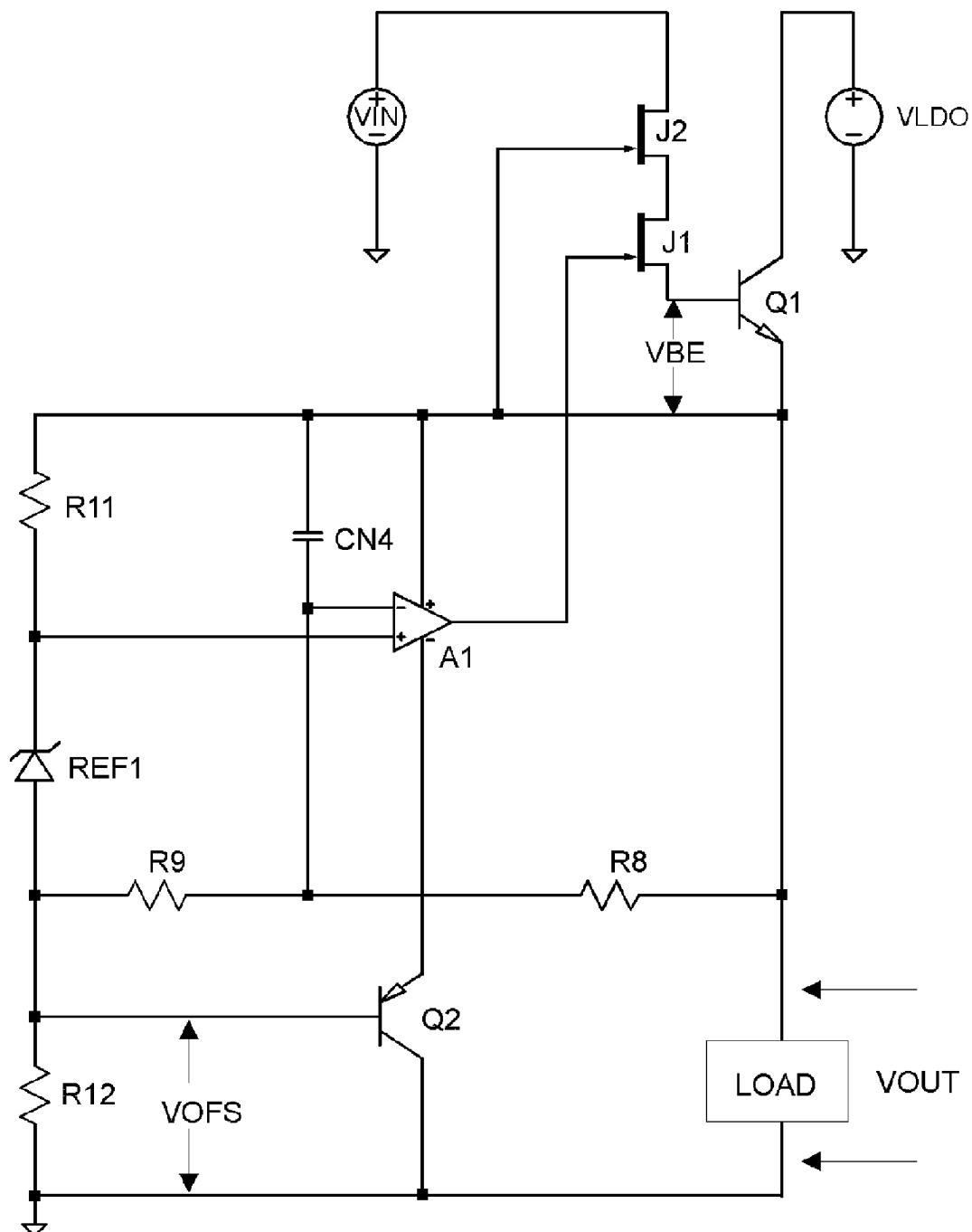
FIGURE 6
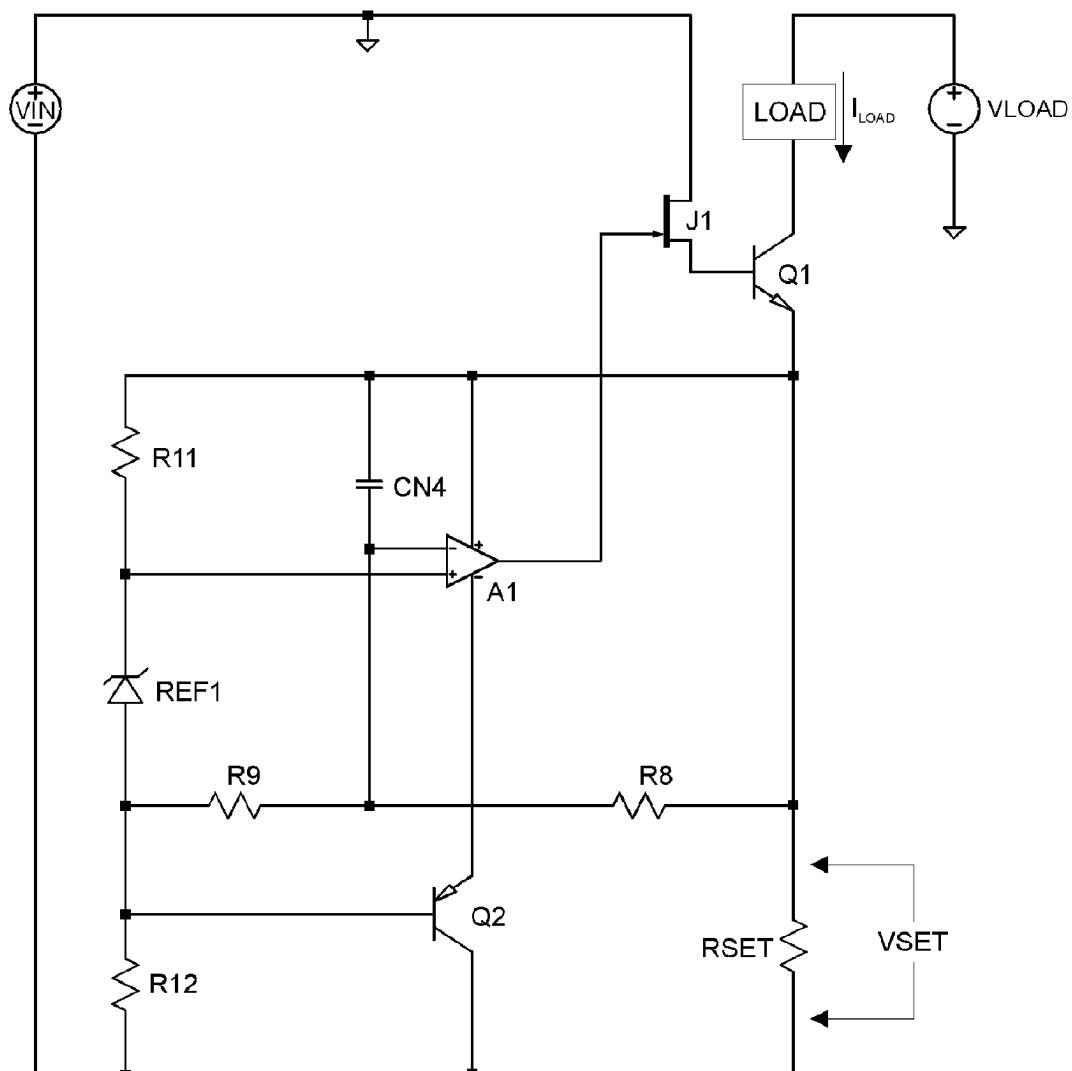
FIGURE 7

FIGURE 8

FIGURE 9