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(54) **APPARATUS AND METHOD FOR GENERATING LIGHT PULSES FROM LEDs IN OPTICAL ABSORPTION GAS SENSORS**

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See application file for complete search history.

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(57) **ABSTRACT**

An optical absorption gas sensor for detecting an analyte gas comprises a gas sample receiving chamber, at least one light emitting diode (LED) and a photodiode or other photosensor. A plurality of light pulses are generated by passing pulses of current through the at least one LED. The current through the at least one LED is measured a plurality of times during each pulse and taken into account when generating a compensated output signal. The transfer ratio between LED current and photodiode output signal is calculated a plurality of times during each pulse. An ADC measures the LED and photodiode currents alternately. The LED pulses are generated by inductor discharge flyback and the period of time for which current is supplied to the inductor prior to each pulse is selected so that the photodiode output current is at an optimal region within the input range of the ADC. At least the temperature of the at least one LED is measured and taken into account when generating the compensated output signal. Thus, rather than providing especially careful control of the LED pulses, the pulses are measured, enabling a simpler, lower power circuit which is tolerant of variations in temperature to be provided.

25 Claims, 3 Drawing Sheets

