a first variant of the ~~second~~third embodiment of the present invention.

FIG. 26 is a block diagram illustrating the configuration of a liquid crystal display device according to a second variant of the ~~second~~third embodiment of the present invention.

FIG. 27 is a block diagram illustrating the configuration of another liquid crystal display device according to ~~the second~~a third variant of the ~~second~~third embodiment of the present invention.

FIG. 28 is a block diagram illustrating the configuration of a liquid crystal display device according to a fourth embodiment of the present invention.

FIG. 29 is a diagram describing pause drive by the liquid crystal display device shown in FIG. 28.

FIG. 30 is a diagram describing a conventional method for performing pause drive in an alternating-voltage drive mode.

FIG. 31 is a diagram schematically illustrating changes in luminance where pause drive is performed as shown in FIG. 30.

MODES FOR CARRYING OUT THE INVENTION

[0044] <1. First Embodiment>

<1.1 Configuration of the Liquid Crystal Display Device>

FIG. 1 is a block diagram illustrating the configuration of a liquid crystal display device 100 according to a first embodiment of the present invention. The liquid crystal display device 100 shown in FIG. 1 includes a liquid

As a result, an image desired to be displayed during the first pause drive period is displayed on the liquid crystal panel 10.

[0064] In this manner, during the first drive frame, overshoot drive is performed using a correction value provided by the LUT 70, and during the immediately succeeding second drive frame, normal drive is performed so that signal voltages of the positive polarity are written to the data signal lines SL. Thereafter, a pause period in which an image written by normal drive is displayed continues until the start of a drive period in the second pause drive period.

[0065] The first and second drive frames are set consecutively also within each drive period of the second pause drive period. In this case, as in the first pause drive period, overshoot drive is performed during the first drive frame using a correction value provided by the LUT 70, and normal drive is performed during the second drive frame. However, unlike in the first ~~embodiment~~pause drive period, the polarities of both the overshoot voltage and the signal voltage are negative during the first and second drive frames. Thereafter, a pause period in which an image written by normal drive is displayed continues until the start of a drive period in the third pause drive period.

[0066] Thereafter, in each odd pause drive period, overshoot drive is similarly performed by writing overshoot voltages of the positive polarity. Then, normal drive is performed by writing signal voltages of the positive polarity, and followed by a pause period. Moreover, during an even pause drive period, overshoot drive is performed by writing overshoot voltages of the negative polarity. Then, normal drive is performed by writing signal voltages of the negative polarity, and followed by a pause period.

polycrystalline silicon will be referred to as a "p-TFT". When compared to the IGZO-TFT, the a-TFT and the p-TFT offer very high off-leakage current. Therefore, the signal voltage written ~~to the data signal line SL~~in the liquid crystal capacitance Ccl falls in a short period of time.

[0075] Therefore, a second variant of the present embodiment will be described with respect to a liquid crystal display device in which the a-TFTs or the p-TFTs are used as the switching elements of the pixel forming portions 15. The configuration of the liquid crystal display device is the same as that of the liquid crystal display device 100 shown in FIG. 1, except that the a-TFTs or the p-TFTs are used in place of InGaZnOx, and therefore, any description and block diagram thereof will be omitted.

[0076] FIG. 9 is a diagram showing temporal changes in the signal voltage written in the liquid crystal capacitance where the a-TFTs are used as the switching elements of the pixel forming portions 15 in the present variant. As shown in FIG. 9, a signal voltage of the positive polarity (e.g., +7V) is written, and the a-TFT is turned off to maintain the written voltage for a predetermined period of time. Next, a signal voltage of the negative polarity (e.g., -7V) is written, and the a-TFT is turned off to maintain the written voltage for a predetermined period of time. These operations will be repeated. Since the a-TFT offers high off-leakage current, the value for the signal voltage falls to +5V during the pause period when the signal voltage of +7V is written as above or rises to -5V during the pause period when the signal voltage of -7V is written as above.

[0077] However, in the liquid crystal display device using

start of a drive period in the third pause drive period.

[0100] Thereafter, similarly, in each odd pause drive period, overshoot drive is performed by writing overshoot voltages of the positive polarity. Then, normal drive is performed by writing signal voltages of the positive polarity, and followed by a pause period. Moreover, in each even pause drive period, overshoot drive is performed by writing overshoot voltages of the negative polarity. Then, normal drive is performed by writing signal voltages of the negative polarity, and followed by a pause period.

[0101] In this manner, in the present variant, regardless of whether the grayscale values for the previous and current frames are equal, overshoot drive is performed only on the basis of the grayscale value for the current frame. Accordingly, in the present variant, unlike in the second embodiment, it is necessary to always perform normal drive in the second drive frame, and the second drive frame ~~drive~~ cannot be omitted.

[0102] <2.4.2 Effects>

The present variant achieves the same effects as those achieved by the second embodiment, and further, eliminates the need to provide any comparator circuit because there is no need to determine whether the grayscale values for the previous and current frames are the same. Thus, the production cost for the liquid crystal display device 300 can be further reduced.

[0103] <2.5 Second Variant>

In the first variant, the amount of correction stored in the LUT 370 is the same between the case where the polarity of the input image signal changes from positive to negative and the case where the polarity changes from negative to positive.