

LED Driver that Supports Luminance Correction for Individual LEDs

LED Driver for Full-Color Display

CXA2108Q

Full-color LED panels are becoming more popular due to the increasing luminance and lower cost of the latest blue LEDs.

Due to their thinness, light weight, and long operating life, LED panels are expected to become the mainstream in large-scale display panels.

The most important factor influencing the picture quality of LED panels is the deviation in luminance between individual LEDs.

The CXA2108Q can correct the deviation in luminance between the individual LEDs used in the panel. This was impossible with previous driver ICs.

Thus this driver IC can provide improved picture quality while at the same time making LED selection unnecessary, and thus can provide significant cost reductions.

This IC has already been adopted in the Sony Jumbotron LED panel.

The shift from CRT-based displays to the thinner, lighter, and longer-lasting LED panels is progressing rapidly due to the increasing luminance and falling price of LEDs. While LED panels are expected to become the mainstream in large panels, the narrow angle of view and the deviation in luminance of the LED devices are said to be the only remaining problems for these products. Although the angle of view can be improved with lenses and other techniques, a definitive solution to the problem of deviation in luminance between LEDs has not yet been found.

V O I C E

Nowadays, one sees LED panels everywhere. Although they certainly are bright, color bleeding and unevenness are still noticeable when the same color is displayed. We designed this IC to meet requirements for both improved image sharpness and lower cost. This IC achieves both higher picture quality and lower cost at the same time. You really should consider it carefully. We are committed to developing more products such as this that match market needs, so keep your eye on Sony!

- Achieves high picture quality by providing a 1024-gradation PWM current output
- 24 current output circuits integrated on a single chip
- Allows LED luminance correction with an 8-bit current precision
- Maximum output current: 60 mA
- Up to 6 LEDs can be driven by a single output
- On-chip RAM allows image data to be written during output

■ Correction of the Luminance Deviation for Each LED

This driver IC allows the current flowing in the LEDs, whose individual characteristics differ, to be corrected with an 8-bit precision over a range of 50 to 100% of the maximum current, and furthermore allows the maximum current to be adjusted with a 2-bit precision.

Thus this IC can not only control LEDs with the same color, but can also control all of the RGB LEDs with differing luminance characteristics with a single IC. Long-term variations in time in the LEDs can also be corrected simply by rewriting the correction data, thus significantly improving the maintainability of end products.

■ 10-bit PWM Current Output

The output current is a PWM output that drives each LED in a time-division manner. Since the gradations are expressed as a 10-bit value, it supports high-quality images with fine tonal gradations. It also allows the PWM drive output to be provided up to 15 times per frame to provide images with low flicker. It achieves a maximum output current of 60 mA.

■ High Picture Quality Achieved with a Small Number of ICs

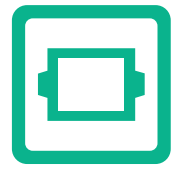
Since the CXA2108Q can drive up to 6 LEDs per output, a single IC can drive up to 48 pixels (144 LEDs). This allows a high-resolution display to be formed with a small number of ICs.

■ Two Image Data RAM Areas

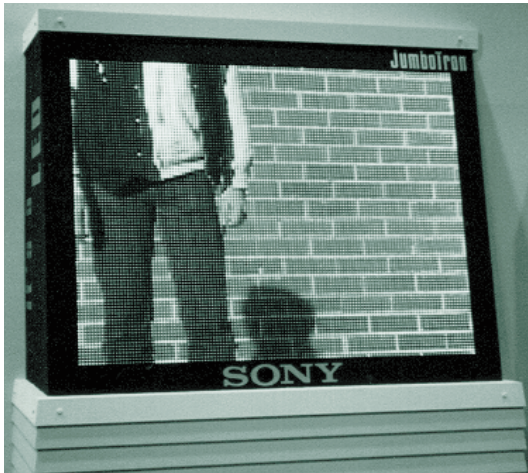
The CXA2108Q includes two on-chip image data RAM areas. This allows the next data to be written while the current frame is being displayed, and thus allows lower data transfer rates to be used.

■ On-Chip Thermal Detection Circuit

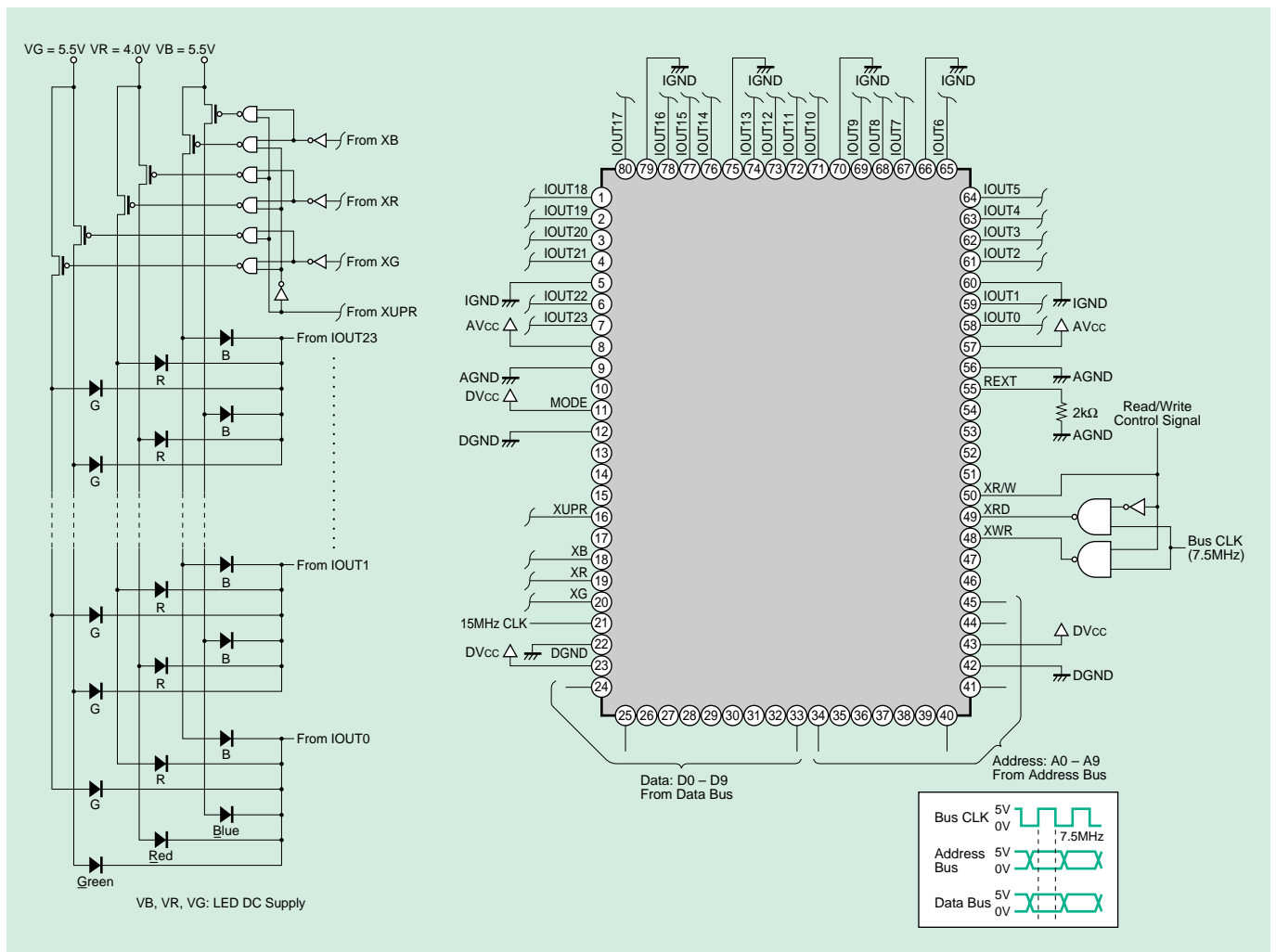
The CXA2108Q provides an alarm signal that is output when the IC reaches an abnormal temperature due to an increase in the ambient temperature or an excessive load. This can be used to prevent destruction of the IC or reduced useful lifetimes due to excessive temperatures.



*New
Products*



■ Photograph 1 Sony LED Jumbotron



■ Figure 1 Sample Application Circuit