

FxLED Driver Advantages in IoT and Digital Gaming Applications



In the present day, IoT and digital gaming applications have become increasingly popular. Due to the COVID-19 pandemic, people are forced to work and study from home, and as such, the demand for IoT products to connect people and personal digital gaming products has skyrocketed. In such a competitive market, customers are no longer excited by traditional products design with just mono color LED lighting but are looking for fancy, colorful lighting designs, which have become a key feature to consider in the initial development for a new product.

Thanks to the technological improvement of RGB LED, the luminous efficiency of LED has gotten much higher, producing the same luminosity with less current. FxLED drivers offer constant current and high resolution PWM to create new products with wireless, portable, ultra-low power and fancy, true color look among other advantages compared to conventional products. (Refer to Fig. 1)



FIGURE 1

Lumissil's FxLED driver family offers a broad array of products which include RGB multi-channel and matrix LED drivers with advanced features to help customers reduce system cost, simplify design and reduce time to market.

THESE FEATURES INCLUDE:

- **Constant current:**
A constant current LED driver avoids violating the maximum current specified for the LEDs, therefore preventing burnout/thermal runaway. Then it is easier for designers to control applications to manage light with more consistent brightness.
- **True color effects:**
8 /12/16 bits PWM control offer very fine and true color effects which can't be achieved through MCU or discrete solution. It gives colorful vision and adds product value to the end user.
- **Ultra-low power:**
Power consumption is extremely important for wireless and portable IoT/digital gaming products, which require an extended battery life. Lumissil's latest IS31FL3242, IS31FL3751/56 family offers uA level ultra-low quiet current to support battery power products for longer battery life.
- **Simple design and reduced system cost:**
When a customer uses the LED array to display messages or graphics, using a discrete or MCU solution requires lots of external components and PCB space. Matrix LED drivers utilize a very simple design with few external components, reducing PCB size and system cost.
- **Low noise, reduce EMI:**
Noise and EMI interference are always the biggest challenge to a RD engineer in the development stage. Trouble shooting causes project delay, which delays time to market. Lumissil's FxLED drivers offer low noise with noise cancellation IP and spread spectrum to reduce EMI, which helps the RD engineer reduce the development time.

APPLICATIONS:

- **Gaming keyboard** (Refer to Fig. 2)

The FxLED driver is widely used to create fancy lighting effects to reinforce user experience. High resolution (>8 bits) PWM offers true color display and the high integration matrix LED driver (IS31FL37XX family) helps customers reduce PCB size to drive large number of LEDs (>300pcs) under the keypad.

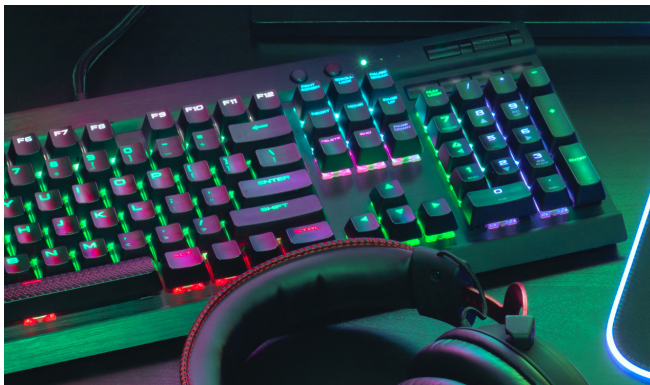


FIGURE 2

- **Gaming mouse:** (Refer to Fig. 3)

The customer uses the FxLED driver for the company logo indicator and color effects of the mouse. It adds value to the product and the RGB LED driver (IS31FL319X family) is a right fit for the application.



FIGURE 3

- **AI/BT speaker:** (Refer to Fig. 4)

AI/BT speaker is not just a speaker. Customers can also use different LED colors to deliver different messages such as function of product or to reinforce sight effects. High resolution (>=8 bits) PWM true color is important. The multi-channels LED (IS31FL3236/46 family) is the most popular for this application.



FIGURE 4

- **Door Lock:** (Refer to Fig. 5)

Customers can use the MCU IO pin to control the LED for the application, but more IO pins means different packages and a higher cost. More discrete components are needed for the RGB LED. It is hard to get colorful true colors without the added cost. In the end, the FxLED driver is still the best choice considering the system cost, performance and time to market. The IS31FL320X, IS31FL32XX family is the best fit for the application.



FIGURE 5

CONTACT:

Questions or feedback may be sent to:
Kevin Kung
Lumissil Microsystems
Marketing Director
kkung@lumissil.com