iW6401
Digital Smart Lighting LED Driver IC

At the forefront of smart lighting applications, the iW6401 is a versatile, programmable LED driver designed specifically for digitally controlled lighting systems and provides a flexible platform that can be scaled across a wide range of digital power levels and applications.

The versatility of the iW6401 pairs with Dialog's *Bluetooth*® Smart technology to put it at the heart of the Dialog Smart Lighting Platform, enabling complete, turn-key system solutions for multi-room wireless lighting control via a smartphone or tablet.

With multiple dimming interfaces for home and building automation systems, the iW6401 serves as a powerful backend for wireless communication modules, intelligent sensors or generic microcontrollers. It can also be used with a peripheral controller to provide a built in, stable, controlled power-management unit for external peripherals, including *Bluetooth* Smart, Wi-Fi® and ZigBee® modules.

Stunning Dimming Performance

The highly sophisticated iW6401 dimming engine supports a wide dimming range with configurable parameters. AC supply synchronized PWM avoids potential artefacts in the light output. The PWM frequencies are programmable over a wide range to optimize dimming performance. Fine-tuning of LED currents at maximum and minimum light can be performed by scaling parameters or by programming the dimming curves interactively, with Dialog's design and programming Control Center software.

For easy-to-install, low-cost retrofit solutions,the iW6401 features a revolutionary digital power line dimming interface which, according to IEC 62756-1, delivers a "never seen before" dimming quality. No additional software is needed as all protocols are built-in. Digital signal processing techniques provide robust digital communication over long cables. Simple replacement of the existing light switch or phase-cut dimmers turns every installation into a smart lighting network with group addressing capability and multi-channel control of tuneable-white engines or full RGBW light sources.

Simple and Programmable Dimming

Light switch dimming is fully integrated into the control logic. With no extra cost, every lamp operated via a standard toggle light switch is now dimmable. Dimming can be programmed in stages with both programmable stage count and light level. Ramp dimming can be coded with programmable ramp and up/down characteristics. With a simple I²C interface, functionality can be programmed in the manufacturing line of the driver PCB giving manufacturers the ability to tailor the light characteristics to their exact requirements.

Easy Configuration

The iW6401 can be configured to support universal AC supply input and high power factor for both wireless lighting and light switch controlled applications. Optimizing the LED driver is easy using Dialog's Control Center Software. The USB-connected programmer hardware gives full control over functions and register configurations. Many settings inside the iW6401 can be altered while operating the LED driver off line, for significantly faster design and optimization time and a better end-product design.

Features

- High performance wide-range dimming engine
- Quasi-resonant (soft) switching
- Patented *PrimAccurate*™ LED current control
- IEC62756 data receiver and bypass load
- I²C programming and dimming interface
- Programmable dimming curves
- OTP configuration memory
- Software controlled standby/wakeup
- Toggle-switch event-driven state machine

- Regulated power for external master
- Programmable soft-start
- End-of-line diagnostics and calibration
- Active PFC control with high power factor
- Open/short protection with auto-restart
- State machine based temperature de-rating
- Internal/external temperature sensor
- Input overvoltage protection
- Small leadless 4x4mm DFN12 package

Smart Lighting Application Schematics Examples

Dialog Smart Lighting Platform Solution

The iW6401 powers an external *Bluetooth* Smart device,such as Dialog's DA14580, from the integrated LDO. This enables the LED driver to be controlled remotely with a wireless interface.
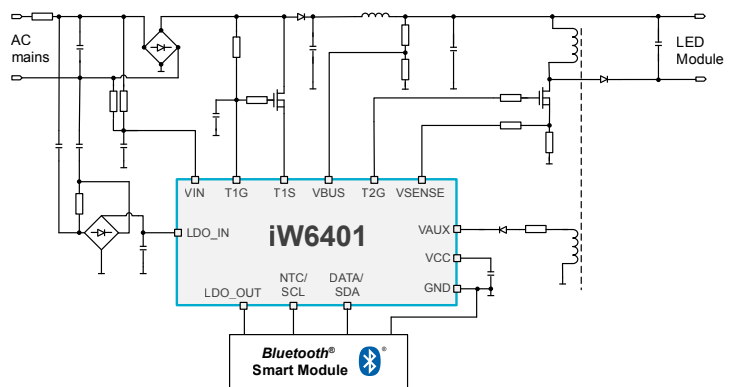
Digital Powerline

The iW6401 enables IEC62756-compliant digital dimming and lamp group addressing. The I²C interface allows an external microprocessor to control multiple iW6401 drivers for tuneable-white or full RGBW lights.
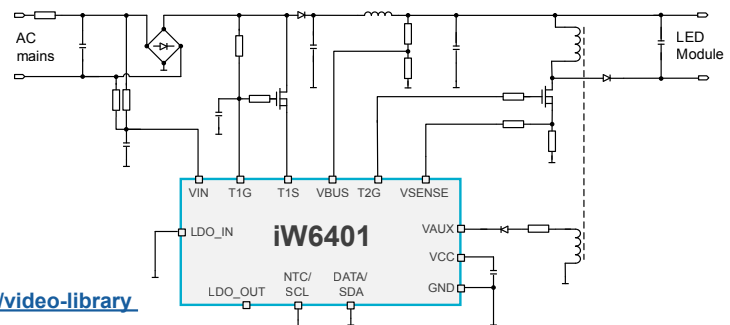
See the iW6401 video at:
www.dialog-semiconductor.com/news/multimedia-library/video-library

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