NXP Sets New Benchmarks for LED Drivers

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NXP Semiconductors today announced three major developments in its portfolio of mains connected LED driver solutions: the success of its SSL2101 LED driver IC in matching LED lifetimes in an accelerated lifetime test; the introduction of the SSL 2102 integrated dimmable mains LED driver IC for SSL retrofit lamps and modules; and the launch of its online design tool for SSL applications, which makes it easy for engineers to test the behavior of LED lighting applications based on four NXP products.

"LED lighting has the potential to be ten times more efficient than incandescents, with manufacturers reporting lifetime figures exceeding 50,000 hours. The reliability of the electronic components - particularly the LED driver - is critical to the overall reliability of most LED systems," said Jacques le Berre, director of marketing and business development for lighting solutions, NXP Semiconductors. "Through our ongoing lifetime test, which has now surpassed 7,000 hours, we've set a new benchmark and proven that NXP's mains LED controller and driver ICs are up to the challenge of supporting extreme long-life lamps. Further, the addition of the SSL2102 and the launch of our new online design tool are making it even easier for innovative lighting companies to accelerate product development and speed the adoption of LEDs in the general lighting market."

Lifetime testing for LED driver ICs

NXP has been conducting the industry's longest-running test of LED driver ICs, running continuously since December 2008, with zero

failures. As of today, the test has reached 7,000 hours and continues to run, demonstrating that NXP mains LED controller and driver ICs are capable of matching LED lifetimes. The test goes well beyond traditional lifetime testing procedures in the semiconductor industry, which are typically based on 1,000 hours' testing time.

NXP's ongoing lifetime test is focused on the SSL2101, the industry's first integrated dimmable mains LED driver IC announced earlier this year. NXP tested a random lot of SSL2101 IC drivers from standard production in high-stress conditions, all of which remain fully functional after running for over 7,000 hours with an IC junction temperature of 150°C. Multiple tests and set-ups were used to detect all possible failure modes in several use cases: continuous-on, on/off switching cycle and various combinations. The extrapolated lifetime of the SSL2101 in real lighting applications, based on a lifetime acceleration model, is estimated as follows:

- Over 60,000 hours lifetime at 105°C
- Over 35,000 hours lifetime at 115°C
- Over 20,000 hours at 125°C
- Over 7,000 hours at 150°C

The test is part of an NXP project dedicated to assessing the actual lifetime of its latest LED drivers, running reliability tests until product end of life.

Newest LED integrated driver IC supports up to 25W

The SSL2102 is the latest addition to NXP's lighting portfolio, offering deep dimming down to one percent of full light intensity, as well as compatibility with a wide range of dimmers. The small, highly integrated and highly efficient driver is the next step in SSL retrofit LED lighting, and is ideal for small form-factor applications with closed casings.

The SSL2102 is suitable for high-efficiency and high-power factor SSL applications, including SSL retrofit lamps from 8W to 15W; LED modules such as LED spots and down-lights from 15W and 25W; and LED strings for retail display up to a maximum of 25W.
Key features of the SSL2102 include:

• Natural dimming via a built-in logarithmic curve
• Support for the majority of available dimmers (e.g. TRIAC, transistor)
• Limited external components required due to high integration level
• Switched SMPS controller with buck and flyback configurations
• Thermally enhanced SO20 wide body package
• Valley switching detection for optimized efficiency
• Built-in demagnetization detection
• Built-in Over Temperature Protection (OTP)
• Supports start-up from rectified mains voltage

A fully integrated LED driver that includes both the controller and the switches, the SSL2102 offers the same functions as the SSL2101 but with higher power, enabling design engineers to use one design on several different end products for a wider range of power ratings.

Online design tool for SSL applications

NXP‘s new online design tool for SSL applications makes it easy for engineers to evaluate and test the behavior of LED lighting applications based on four NXP products, including the new SSL2102 and SSL2101 for dimmable applications, as well as the SSL1522 and SSL1523 for non-dimmable applications.

The tool enables engineers to quickly select the IC they need and test designs for LED drivers from 2W up to 25W. Two different application types can be created: isolated (flyback) and non-isolated (buck) converters. The tool generates schematic, component and transformer

parameters, calculates the design's efficiency, and presents an overview of efficiency losses. Applications include SSL retro-fit lamps, LED modules and power supplies, LED strings, LED ballasts, contour lighting, channel letter lighting, and other LED lighting applications.

The NXP SSL2102 is available immediately. Further information is available through the new online SSL design tool: www.nxp.com/technical_support/ … ortal/ssl/index.html

Source: NXP