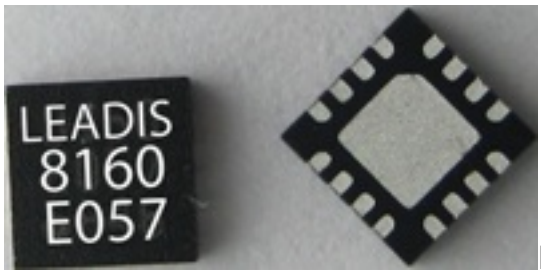
Temperature Compensation Engine Open for Licensing



Leadis Technology announced that its proprietary LED-Sense temperature sensing and compensation engine, implemented in the LDS8160, is now available for licensing to third parties as an embedded, stand-alone IP block. This IP engine, suitable for enhancing the performance of LED driver, light management unit, and power management unit ICs, directly measures the junction temperature of an LED in the system at its precise physical location. Based on the measurement, the LED drive current is then optimized according to a user-programmed profile. The engine continuously monitors the LED, with each measurement cycle taking <200 µs per LED.

Because the engine directly measures the junction temperature of the diode, it achieves accuracies up to ±1°C, which roughly doubles the accuracy obtainable with incumbent indirect solutions that measure the junction temperature of the silicon in the IC and then extrapolate the temperature at the LED. Alternatively, for solutions that rely on an external temperature sensor, the LED-Sense reduces system cost and complexity, according to the company.

In today's power-hungry environment,

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LEDs are growing as a green, higher-efficiency alternative used to light our world. Regardless of the application, a critical factor to the adoption of LEDs is its reliability, which degrades with self-heating. Preventing excessive heating on the device is one of the most significant challenges system designers face today. This is especially the case for High Brightness LEDs in automotive and general illumination. The first step in preventing excessive self-heating of LEDs is to accurately and continuously monitor their junction temperature and quickly react to changes. In this context, Leadis' LED-Sense Temperature Sensing and Compensation Engine is a unique tool that can be added to every system designer's tool box.

"We are pleased to bring to the market our patent pending LED-Sense Temperature Sensing and Compensation Engine IP," said Donato Montanari, Vice President at Leadis Technology. "The modular structure of this IP engine and its small gate count of approximately twenty thousand gates make it economical and flexible for system designers to adopt. Our IP can be used in systems where the LEDs are connected in either series or parallel."

The LED-Sense temperature sensing and compensation engine is comprised of three independent IP blocks. The Sensing and Acquisition block is a mixed-signal block that outputs 10-bit codes representing sequential readings of the Threshold Voltage of the different LEDs. The Digital Temperature Processing block is a hardwired digital signal processor that transforms the 10-bit voltage codes into 5-bit Temperature codes. The Temperature Compensation block is the last block of the pipe and consists of a Look-Up Table that takes the Temperature codes as address and produces an adjustment value that is

summed to the PWM signal controlling the current of the LED.

Leadis' LED-Sense temperature sensing and compensation engine has been proven on the LDS8160, a backlight driver for portable applications, and is now being made available as a stand-alone IP for embedded use. Both the LDS8160 and its evaluation board are available for sampling.

Links:
[1] http://www.ecnmag.com/product-LED-Driver-IC-Performs-Temperature-Management.aspx?menuid=334
[2] http://www.ecnmag.com/product-Controller-ICs-Target-Capacitive-Touch-Apps.aspx?menuid=
[3] http://www.ecnmag.com/Industry-Focus-Touchscreens-Press-Deep-Into-Consumer-Electronics.aspx
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