LED drivers serve automotive, industrial and general lighting applications

PHOENIX, Ariz., U.S. – China International Forum on Solid State Lighting in GUANGZHOU, China. – Nov. 8, 2011 – ON Semiconductor has introduced two new LED drivers to help designers optimize their solutions for automotive, industrial and general lighting applications.

ON Semiconductor's new NCL30051 stage, power factor correction (PFC) and Resonant Half Bridge, LED driver combined with the new NCL30160, a dimmable constant current step-down (buck) LED driver, provide an ideal solution for high-brightness LED driver applications where space is limited and high efficiency is important.

The NCL30051 is a dedicated LED power supply integrated circuit (IC) capable of delivering a constant voltage to a step-down DC-DC converter/LED driver (e.g. NCL30160). The device, which combines a critical conduction mode (CrM), PFC controller and a half-bridge resonant controller with a built-in 600 volt (V) driver, is optimized for off-line power supply applications - all the features needed to implement highly efficient, small form factor designs. The NCL30051's half-bridge stage operates at a fixed frequency. Regulation is achieved by adjusting the PFC stage output voltage. The device integrates open feedback loop protection, plus PFC overvoltage and undervoltage detection mechanisms, as well as an adjustable frequency oscillator which can be set at up to 75 kilohertz (kHz).

The NCL30160, a switching regulator for high power LEDs, takes the constant voltage delivered by the NCL30051-enabled power supply and steps down the voltage to provide a constant current across the LED string. Solutions with up to 98 percent efficiency are achieved by utilizing the low 55 milliohm (m?) internal

MOSFET and the ability to operate at 100 percent duty cycle. This constant current device operates with an input voltage range from 6.3 V to 40 V, which makes it ideal for industrial and automotive applications. High switching frequencies up to 1.4 megahertz (MHz) allow the use of smaller external components helping to minimize board size and cost. The hysteretic control of the NCL30160 provides fast response during load transients and eliminates the need for small signal control loop compensation components. Protection features include resistor-programmed LED current, shorted LED protection, undervoltage lockout and thermal shutdown.

“The NCL30051 and NCL30160 ICs work in tandem to simplify power circuit designs with the minimal number of external components needed,” said Bill Schromm, ON Semiconductor senior vice president and general manager of Computing and Consumer Products. “This architecture allows the chipset to be incorporated into more compact and cost-effective LED Lighting power supplies for general lighting applications such as outdoor lighting forstreet lights and parking lights, and automotive lighting.”

Both the NCL30051 and the NCL30160 have operating junction temperature ranges of -40 ?C to +125 ?C.

ON Semiconductor will be exhibiting at the China International Forum on Solid State Lighting (China SSL) from Nov. 8 – 10, at the Guangzhou Baiyun International Convention Center, Guangzhou, China, Booth 2B01.

The NCL30160 is offered in a SOIC?8 package and the NCL30051 is offered in SOIC?16 package.

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