High-voltage resonant controller with PFC for LED drivers

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The new high-voltage resonant controller ICL5101 provides a high level of integration which translates to a reduction in system cost.

With the ICL5101, Infineon Technologies AG extends its portfolio of lighting control ICs, addressing lighting systems in the range of 40W to 300W. The new high-voltage resonant controller IC provides a high level of integration which translates to a reduction in system cost. Typical

applications which benefit from these features include indoor and outdoor LED lighting, high-bay and low-bay lighting, street lighting, parking garage and canopy lighting, office lighting, retail and shop lighting. Since the total cost of ownership is an important aspect for industrial lighting, customers prefer to use resonant topologies supported by the new ICL5101 due to its high efficiency up to 95%.

The highly integrated ICL5101 allows for advanced LED driver designs with approximately 25% less components compared to similar solutions which require separate PFC and resonant ICs. This leads to smaller form factors with more reliable designs, less complex PCB layouts and reduced costs. The ICL5101 integrates the half-bridge and the PFC gate drivers. All operation parameters of the IC are adjustable by simple resistors, enabling cost effective but reliable and stable parameter-settings.The chip supports outdoor use by an extended junction temperature ranging from -40°C to +125°C.

The LED controller ICL5101 is designed to control resonant converter topologies such as LLC. The integrated digital PFC stage operates both in critical conduction mode (CrCM) and discontinuous conduction mode (DCM), which allows an extremely stable regulation in low load conditions, occurring for e.g. when the device is dimmed. The LED lighting can be dimmed down over an extremely wide range from 100% to 0.1% of its nominal load. State of the art dimming today typically ranges from 100% to 5%. In addition, the ICL5101 enables an ultra-fast time to light – under any conditions – with less than 200ms.

The adjustable PFC stage of the ICL5101 delivers high power quality, providing a low total harmonic distortion (THD) of less than 10% and a high power factor of more than 0.99 over wide line input voltage range. This enables lighting manufacturers to comply with energy efficiency standards. Furthermore the output of the ICL5101 is extremely stable over line voltage variations. A comprehensive set of protection features

including external over temperature protection and capacitive load protection ensure the detection of fault conditions and increase system safety.

With the introduction of ICL5101 Infineon once again demonstrates its technology leadership for highly efficient driver solutions. Just recently, the ILD6150 step-down driver IC was nominated as finalists in the product category "ICs and electronic components" for the 2015 LEDs Magazine Sapphire Awards . Infineon will showcase the new ICL5101 at the tradeshow Strategies in Light (booth #1426) from February 24 to 26, 2015, in Las Vegas.

More information: Further information on Infineon's energy-efficient semiconductor solutions for lighting is available at www.infineon.com/lighting

Provided by Infineon