Dimmable, multi-topology DC/DC constant-current controller features low-side current sense

Texas Instruments introduced a high-power, multi-topology DC/DC LED driver with adjustable switching frequency and current sense threshold that provides design flexibility and low electro-magnetic interference (EMI) for automotive headlamps, fog lights and general-purpose area lighting. The TPS92690 is an N-channel MOSFET controller with low-side current sense designed to support step-up (boost) or step-up/step-down (SEPIC, Cuk, flyback) LED driver topologies. Adjustable switching frequency (up to 2 MHz) and current sense threshold allow designers to optimize LED drive electronics for small size, high efficiency, or a balance of both. Separate pulse-width modulation (PWM) and analog inputs interface with common dimming control methods to adjust LED current or implement thermal foldback. An internal oscillator sets the switching frequency of the converter, but can be overdriven by an external clock for synchronizing switching frequencies with other converters in a design. Low-side current sensing enables design of low-EMI topologies, such as the Cuk converter, while still maintaining a single wire connection to the LED load. Offered in AEC-Q100-qualified automotive or commercial grades, additional features of the LED driver include a 4.5-V to 75.0-V input voltage range, low-side adjustable current sense (50 mV to 500 mV) to minimize power loss and provide analog dimming control, and under-voltage lockout (UVLO), LED over-voltage, cycle-by-cycle current limit and thermal shutdown protect against faults and abnormal operating conditions. The TPS92690 is offered in a 16-pin PowerPad™ TSSOP and priced at US$1.55 each in 1,000-unit quantities.

Texas Instruments, www.ti.com [1]

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