

Product brief

ILD8150/ILD8150E

80 V DC-DC buck LED driver IC with hybrid dimming down to 0.5%

The ILD8150/E is a 80 V DC-DC converter IC, designed to drive high power LEDs. For applications operating close to safe extra-low voltage (SELV) limits, it provides a high safety voltage margin. The buck LED driver IC is tailored for LEDs in general lighting applications with average currents up to 1.5 A using a high-side integrated switch. Several performance and protection features provide ideal fit for professional LED lighting.

Performance and innovation

The hysteretic current control provides an extremely fast regulation and stable LED current combined with good electromagnetic interference (EMI) performance. The efficiency of the LED driver IC is remarkably high, reaching more than 95 percent efficiency over a wide range.

A PWM input signal between 250 Hz and 20 kHz controls dimming of the LEDs current using innovative hybrid dimming in the analog mode from 100 to 12.5 percent and 12.5 to 0.5 percent in the PWM mode, with flicker-free modulation frequency of 3.4 kHz.

The digital PWM dimming detection with high resolution, perfectly matches ILD8150/E LED driver IC to microcontrollers. Precise output current accuracy from one device to another under all load and input voltage conditions makes the ILD8150/E perfect for tunable white and flat panel designs where current must be identical, string to string.

Protection

Operating supply voltage ranges from 8 V_{DC} to 80 V_{DC}, which enables a versatile use in many applications, and provides a good voltage headroom margin when bus voltage exceeds shortly the SELV limits. The ILD8150/E incorporates a soft-start function that protects the primary stage from abrupt current request.

Overtemperature protection is triggered when the junction temperature exceeds the temperature threshold. When the junction temperature falls below the temperature threshold, the output stage turns on again.

Further protection features are provided such as undervoltage lockout for the bootstrap voltage and cycle-by-cycle current limitation ensured by hysteretic design.

Key features

- > Input voltage ranging from 8 V_{DC} to 80 V_{DC}
- > Up to 1.5 A average output current
- > Efficiency values of more than 95%
- > Maximum duty cycle up to 99%
- > Up to 2 MHz switching frequency
- > Soft-start
- > PWM dimming input with 250 Hz to 20 kHz PWM dimming frequency
- > Hybrid dimming
 - Analog dimming 100 to 12.5%
 - PWM dimming 12.5 to 0.5% with 3.4 kHz flicker-free modulation
- > Dim-to-off
- > Adjustable max. output current via shunt resistor
- > Typical 3% output current accuracy
- > Overtemperature protection
- > Pull-down transistor to avoid LED glowing in dim-to-off
- > DSO-8 package to enable wave soldering
- > DSO-8 with exposed pad for higher thermal performance

Typical applications

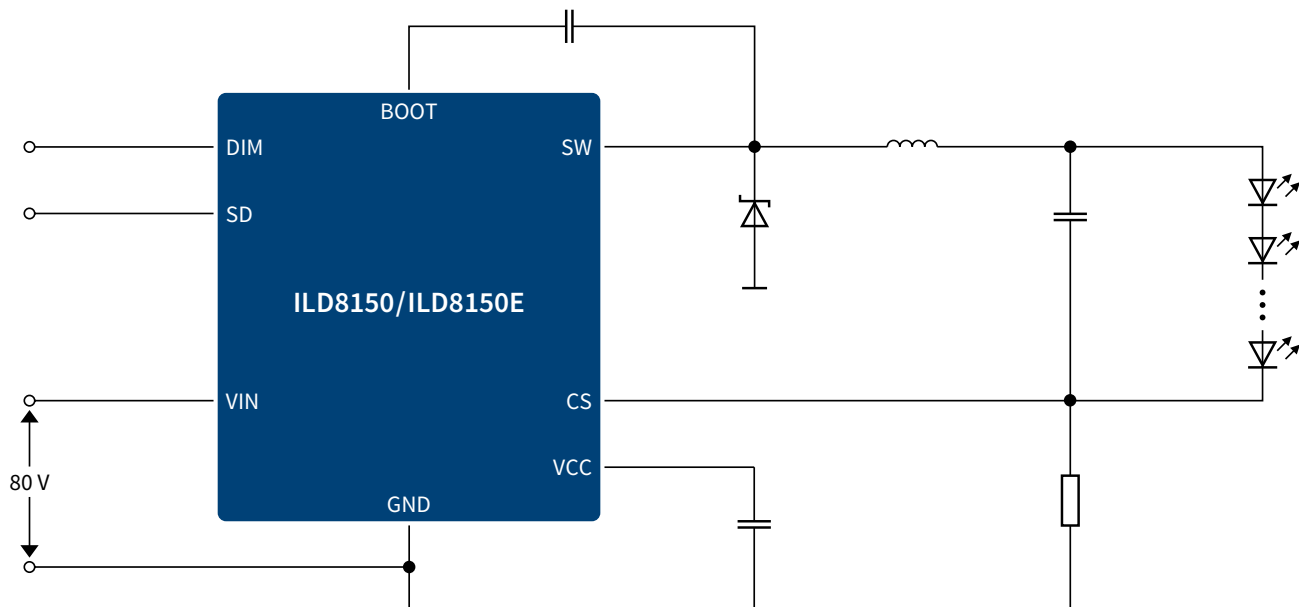
- > LED driver
- > Tunable white
- > Multichannel lighting



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Typical application diagram



Product summary

Type	Description	Ordering code	Package	Order information
ILD8150	80 V DC-DC buck LED driver IC	SP001805682	DSO-8	ILD8150XUMA1
ILD8150E	80 V DC-DC buck LED driver IC	SP001805686	DSO-8 exposed pad	ILD8150EXUMA1
REF_ILD8150_DC_1.5A	Reference design board 1.5 A	SP002798058	Board with ILD8150E	REFILD8150DC15ATOBO1

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