

## Product Brief

# ICL5102

## High performance PFC + resonant controller for LCC and LLC

The ICL5102 integrates a half-bridge controller with a PFC stage in a single DSO-16 package.

### Small form factor LED driver and low bill-of-material

The high level of integration assures a low component count of external components, enabling small form factor designs ideal for compact and slim line power supplies for lighting, such as LED driver for indoor and outdoor applications. All parameters are specified for an extended temperature range from -40°C up to +125°C. Configuration of the IC can be adjusted by simple resistors, cheap and reliable.

### High performance, digital PFC and advanced HB driver

The high performance digital PFC stage achieves power factor of 99% and a THD < 10%, through operation in CrCM and DCM mode, in a frequency range of 22 kHz to 500 kHz, over a very wide load range. This supports stable operation even at low load conditions down to 0.1% of the nominal power without audible noise. The half-bridge resonant stage comes with integrated high- and low-side gate driver for discrete MOSFETs rated up to 650 V. Its non-overlap dead time is self adaptive from 500 ns ... 1.0  $\mu$ s. A coreless transformer technology connects the high side stage.

### Fast time-to-light and low standby

With startup current of less than 100  $\mu$ A the controller provides very fast time-to-light within less than 300 ms. While standby the controller changes into active burst mode which reduces power consumption to less than 300 mW.

### Safety first

The controller has a comprehensive set of protection features built in to increase the system safety.

It monitors in the run mode the complete system regarding bus over- and undervoltage, open loop, overcurrent of PFC and/or inverter, output overvoltage, over temperature and capacitive load regulation.

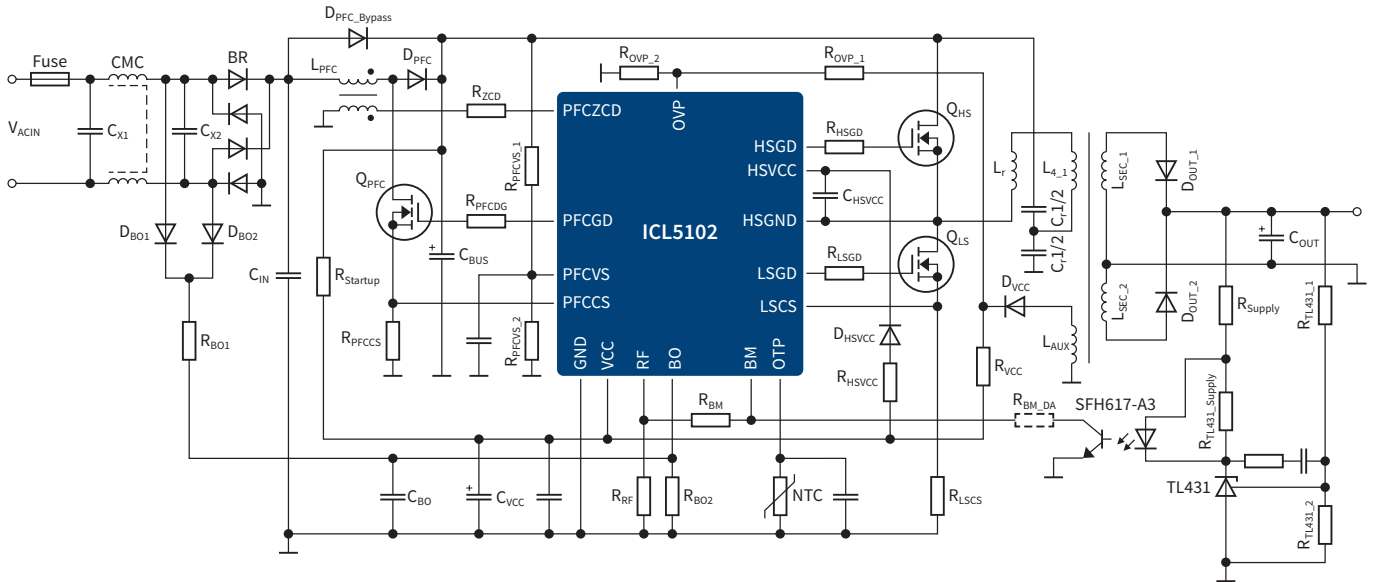
### Key features

- > PFC + LLC or LCC with Constant Voltage (CV) or Constant Current (CC) output
- > Up to 300 W
- > Universal AC and DC input
- > Coreless transformer technology
- > Input voltage range 85–305 V AC
- > Integrated high-voltage gate driver
- > Power factor > 99%
- > Outstanding THD < 10%
- > High efficiency up to 95%
- > Short startup time < 300 ms
- > 3 state self-adapting soft start
- > Cap load regulation
- > Start-up frequency up to 1.3 MHz
- > Active burst mode  
less than 300 mW standby
- > Stable low load operation mode
- > Comprehensive protection mode with auto restart:
  - Surge protection
  - Output overvoltage
  - Overcurrent
  - Brown-in/brown-out
  - Open loop
  - Overtemperature using NTC
- > -40° ... +125°C

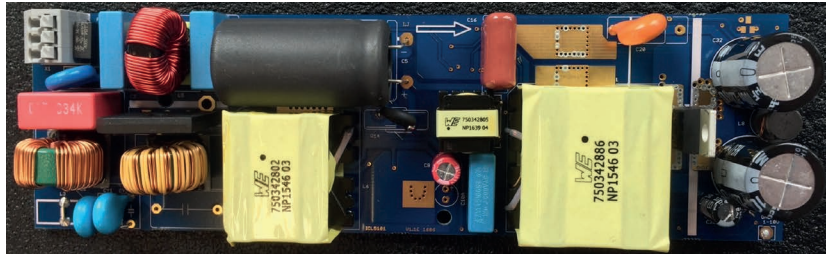


# High performance PFC + resonant controller for LCC and LLC

## Typical application schematic



## ICL5102 LLC constant current evaluation board 130 W



## Product summary

Type	Description <sup>1)</sup>	Ordering code
ICL5102	PFC and resonant controller for LCC and LLC	SP001609012
REF-ICL5102-U130W-CC	PFC/LLC-CC constant current evaluation board 130 W LED driver	SP001667160

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