



## Product Brief

# LITIX™ Power TLD5190QV

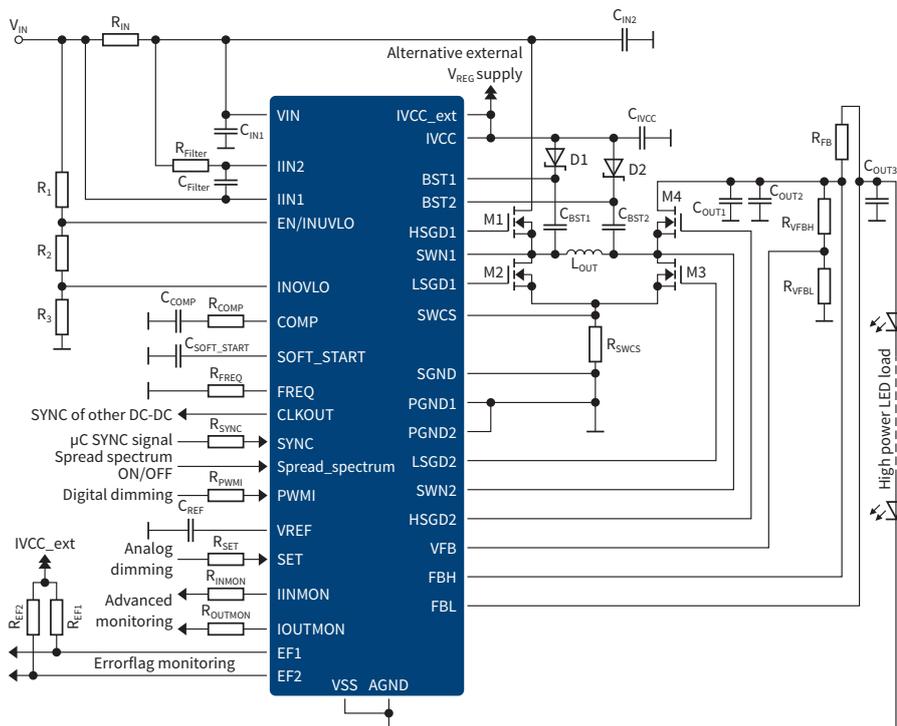
## Synchronous H-bridge DC-DC controller

The TLD5190QV is a synchronous MOSFET H-bridge DC-DC controller with built in protection features. This concept is beneficial for driving high power LEDs with maximum system efficiency (well above 90%) and minimum number of external components and when the load voltage is in the same range as the input voltage. Furthermore, reduced EMC emissions are achieved thanks to the optimized spread spectrum switching frequency.

### Key features and benefits

- > Auto spread spectrum
- > Switching frequency 200 to 700 kHz
- > Maximum efficiency in every condition (up to 96%)
- > LED current accuracy  $\pm 3\%$
- > Adjustable soft start
- > Limp home function (fail safe mode)
- > Protection and diagnostic feature set
- > Current and voltage mode

### Block diagram LITIX™ Power TLD5190QV



### Applications

#### Especially designed for automotive exterior LED applications

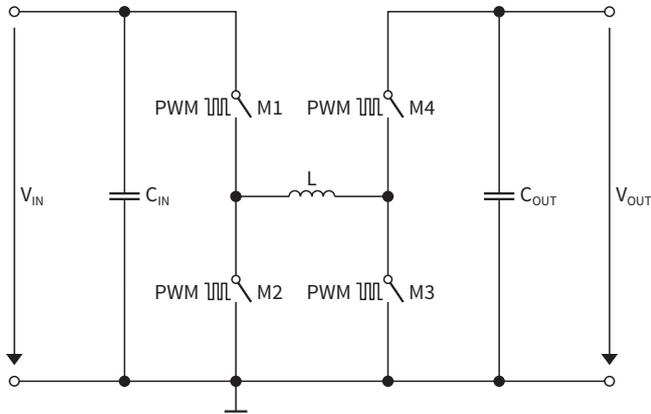
- > High-power and high-current applications like
  - High-power (e.g. 3 or 6 A) LED based front lighting
  - Laser headlamps
  - LED or laser based matrix and pixel headlamps
- > Combined low beam/high beam
- > High-efficient voltage supply for LED applications working on battery voltage level



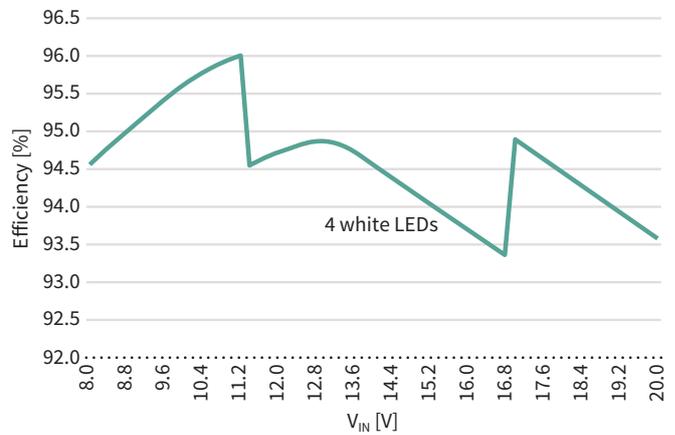
# LITIX™ Power TLD5190QV

## Synchronous H-bridge DC-DC controller

H-bridge principle



Energy efficiency measurement



	Boost mode	Buck-boost mode	Buck mode
	$V_{IN} < V_{OUT}$	$V_{IN} \sim V_{OUT}$	$V_{IN} > V_{OUT}$
M1	On	PWM	PWM
M2	Off	PWM	PWM
M3	PWM	PWM	Off
M4	PWM	PWM	On

The synchronous H-bridge is a combination of a synchronous buck stage followed by a synchronous boost stage with just a single coil. By this the H-bridge is a compact and efficient buck-boost topology.

The regulation modes transitions are chosen seamlessly by the TLD5541-1QV to produce best in class efficiency.

In this application example, a measurement on the TLD5190QV Demoboard, for the operation of four white LED with a total LED string voltage of and a LED current of 1A, the system efficiency stays well above 93% over the complete Input voltage range between 8 V and 20 V.

### Product summary

Product	OPN	Description	Package	Ordering code
TLD5190QV	TLD5190QVXUMA1	DC-DC synchronous H-bridge controller	VQFN-48	SP001120462

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