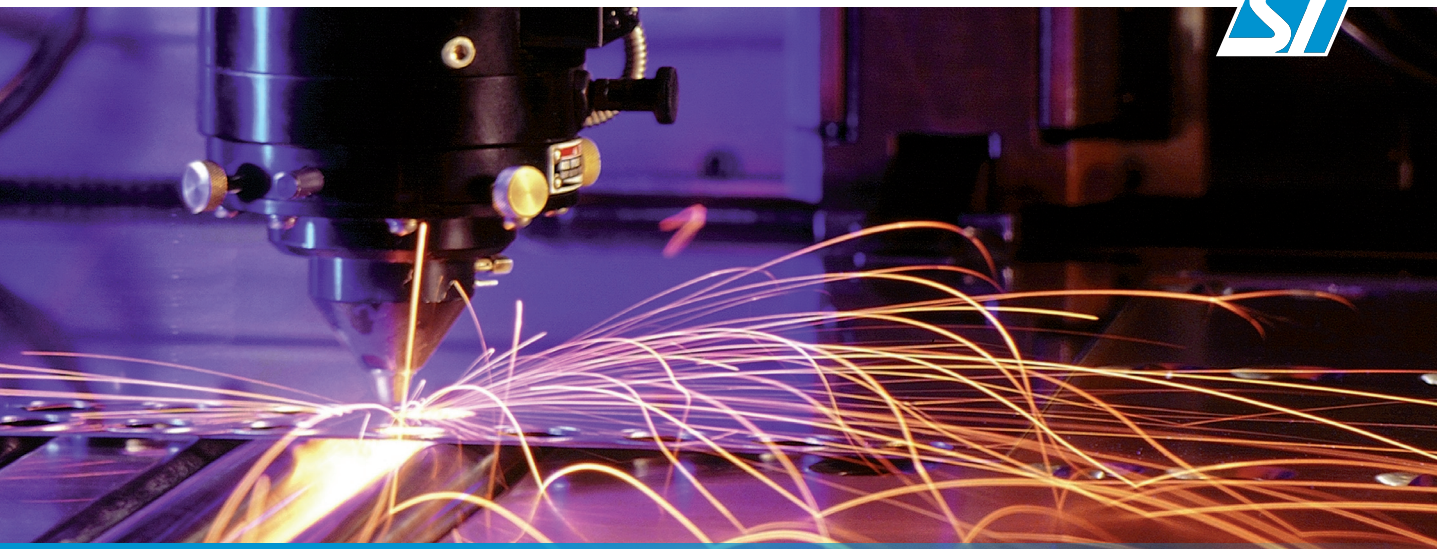
L6566BH – Versatile PWM controller with 800 V HV start-up



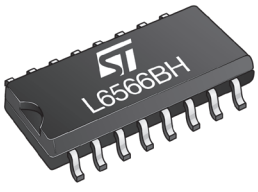
STMicroelectronics

Flexible energy-saving controller for high performance flyback converters running off rectified 3-phase input lines

L6566BH can operate in either the fixed frequency (FF) or the quasi-resonant (QR) mode, enabling manufacturers to stock and qualify a single component to meet the requirements of different applications, thus reducing costs.

With the first-in-the-market 800 V built-in non-dissipative high-voltage start-up circuit, this IC is the ideal solution for industrial applications where efficiency and standby consumption must meet the most demanding energy saving regulations.

A full set of embedded protection functions make the final application much more robust and reliable.



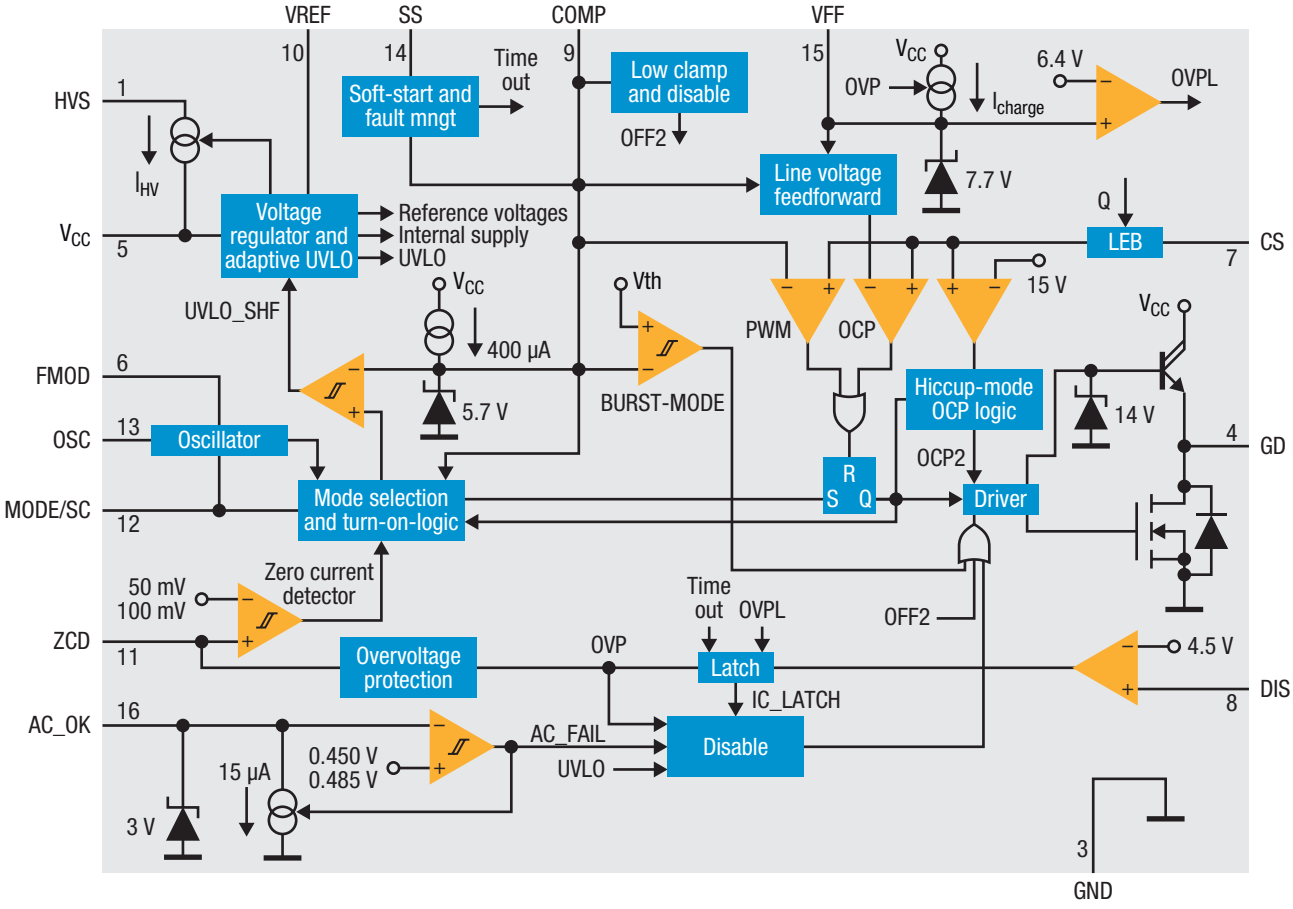
Key features

- Selectable multimode operation: fixed frequency or quasi-resonant
- On-board 800 V high-voltage start-up
- Advanced light load management
- Low quiescent current (2.5 mA typ)
- Adaptive UVLO
- Line feed-forward for constant power capability versus mains voltage
- Pulse-by-pulse OCP, shutdown on overload (latched or autorestart)
- Transformer saturation detection
- Programmable frequency modulation for EMI reduction
- Latched or autorestart OVP
- Brown-out protection
- -600/+800 mA totem pole gate driver with active pull-down during UVLO
- SO16N package
- RoHS and halogen free compliant

Targeted applications

- Ultra wide range SMPS
- SMPS for industrial automation
- Integrated industrial power supply modules

Block diagram



Built using ST's advanced BCD offline and BCD6 technologies, the L6566BH is an extremely versatile current-mode primary controller IC, specifically designed for high-performance offline flyback converters.

When fixed frequency operation is selected, the IC works as a standard current-mode controller with a maximum duty cycle of at least 70%. During FF operation the oscillator frequency can be modulated to mitigate EMI emissions through the Fmod pin.

QR operation, when selected, functions at heavy load and is achieved through a transformer demagnetization sensing input that triggers the MOSFET's turn-on. With QR operation, under some conditions, the system can reach ZVS (zero-voltage switching). At medium and light load, as the QR operating frequency equals the selected oscillator frequency, a function (valley skipping) is activated to prevent further frequency rise, keeping the operation as close as possible to ZVS.

With either FF or QR operation, under very light load or no load conditions, the IC enters a controlled burst-mode operation that, along with the built-in non-dissipative 800 V high-voltage start-up circuit and the low quiescent current, helps saving energy.

A full set of embedded protection functions, together with programmable soft-start, leading-edge blanking on the current sense input for greater noise immunity, slope compensation (in FF mode only), and a shutdown function for externally controlled burst-mode operation or remote on/off control, provides longer lifetime for the final application, improving system reliability.

Product table

Part number	Package	Packing	Topology	Mode	Vcc max	Fsw operating range	Drive capability - source/sink
L6566BH	SO16N	Tube	Flyback	Current mode	23 V	10 - 300 kHz	-600/+800 mA
L6566BHTR		Tape and reel					

Evaluation boards

Part number	Description
EVL6566B-40WSTB	40 W wide input range flyback converter
EVL6566B-65W-QR	65 W quasi resonant flyback converter

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