



## Synchronous Buck /Fly-Buck Converter (DC-DC)

### 1 Main features:

- ◆ 4.5V to 100V Wide input voltage range
- ◆ Integrated high side and low side switches
- ◆ No Schottky diode required
- ◆ 1A Maximum load current
- ◆ Constant on-time control
- ◆ No external loop compensation
- ◆ Fast transient response
- ◆ DCM step-down operation can be selected under light load conditions
- ◆ CCM option supports multi-output Fly-Buck
- ◆ No external ripple circuit (FPWM = 0)
- ◆ Approximately constant switching frequency
- ◆ The maximum frequency can be adjusted to 1MHz
- ◆ Programmable soft start time
- ◆ Pre-biased start
- ◆ Peak current limit protection
- ◆ Adjustable input undervoltage lock (UVLO) and lag
- ◆ ±1% feedback voltage reference
- ◆ Heat off protection

### 2 Typical application

- ◆ Industrial programmable logic controller
- ◆ IGBT door drive bias power supply
- ◆ Telecommunication DC-DC primary side and secondary side bias
- ◆ Electronic instrument power line communication

- ◆ Low power (<12W), isolated DC-DC (Fly-Buck)

### 3 Product description

The HL5161 is a 100V, 1A synchronous buck converter that integrates high-side and low-side metal-oxide-semiconductor field-effect transistors (MOSFETs). The constant on-time control scheme does not require loop compensation and supports high step-down ratios under fast transient responses. The internal feedback amplifier maintains an output voltage regulation of ±1% over the full operating temperature range. The on-time is inversely proportional to the input voltage, producing an approximately constant switching frequency. The peak-valley current limiting circuit prevents overload. The undervoltage lock (EN/UVLO) circuit independently provides adjustable input undervoltage thresholds and hysteresis. HL5161 passes through it

The FPWM input pin can optionally operate in forced continuous on-mode (CCM) at all load levels, or in discontinuous on-mode (DCM) under light or no-load conditions. When running under forced CCM, The HL5161 supports multi-output and isolated Fly-Buck applications where low power consumption is a key issue. When programmed for DCM operation, the HL5161 provides a rigorously regulated step-down output without the need for any external ripple feedback injection circuits.

### 4 Product highlights

- ◆ 4.5V-100V wide input voltage.
- ◆ Built-in compensation circuit.
- ◆ It has complete protection function of over-voltage, over-current and over-temperature.
- ◆ Can be used for Fly-Buck isolation output.

### 5 Compared with similar foreign products

	Input voltage range	Maximum output current	Static current	Turn-off current	Soft-start capacitance	Switching tube impedance	Encapsulation form
LM5161 (TI)	4.5V~100V	1A	2.3mA	50uA	No	580mΩ/240 mΩ	SSOP14
HL5161	4.5V~100V	1A	2.1mA	50uA	No	500mΩ/210 mΩ	SSOP14