L6741

High current MOSFET driver

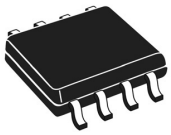
Data Brief

Features

- Dual MOSFET driver for synchronous rectified converters
- High driving current for fast external MOSFET switching
- High frequency operation
- Integrated bootstrap diode
- Adaptive dead-time management
- Flexible gate-drive: 5V to 12V compatible
- High-impedance (HiZ) management for output stage shutdown
- Preliminary OV protection
- SO8 package

Applications

- High current VRM / VRD for Desktop / Server / Workstation CPUs
- High current DC / DC converters



SO8

Description

L6741 is a flexible, high-frequency dual-driver specifically designed to drive N-Channel MOSFETs connected in Synchronous-Rectified Buck topology. Combined with ST PWM controllers, the driver allows implementing complete voltage regulator solutions for modern high-current CPUs. L6741 embeds high-current drivers for both high-side and low-side MOSFETS. The device accepts flexible power supply (5V to 12V) to optimize the gate-drive voltage for High-Side and Low-Side maximizing the System Efficiency.

The Bootstrap diode is embedded saving the use of external diodes. Anti shoot-through management avoids high-side and low-side mosfet to conduct simultaneously and, combined with Adaptive Dead-Time control, minimizes the LS body diode conduction time.

L6741 embeds preliminary OV Protection: after Vcc overcomes the UVLO and while the device is in HiZ, the Low-Side MOSFET is turned ON to protect the load in case the output voltage overcomes a warning threshold protecting the load from High-Side MOSFET failures.

The driver is available is SOP8 package.

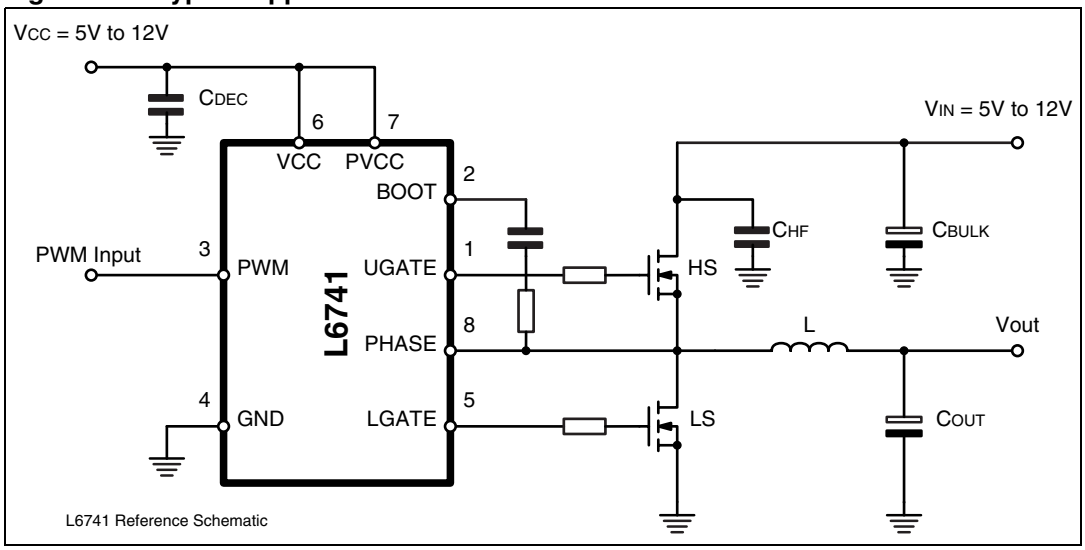
Table 1. Device summary

Part Number	Package	Packaging
L6741	SO8	Tube
L6741TR	SO8	Tape & Reel

1 Typical application circuit and block diagram

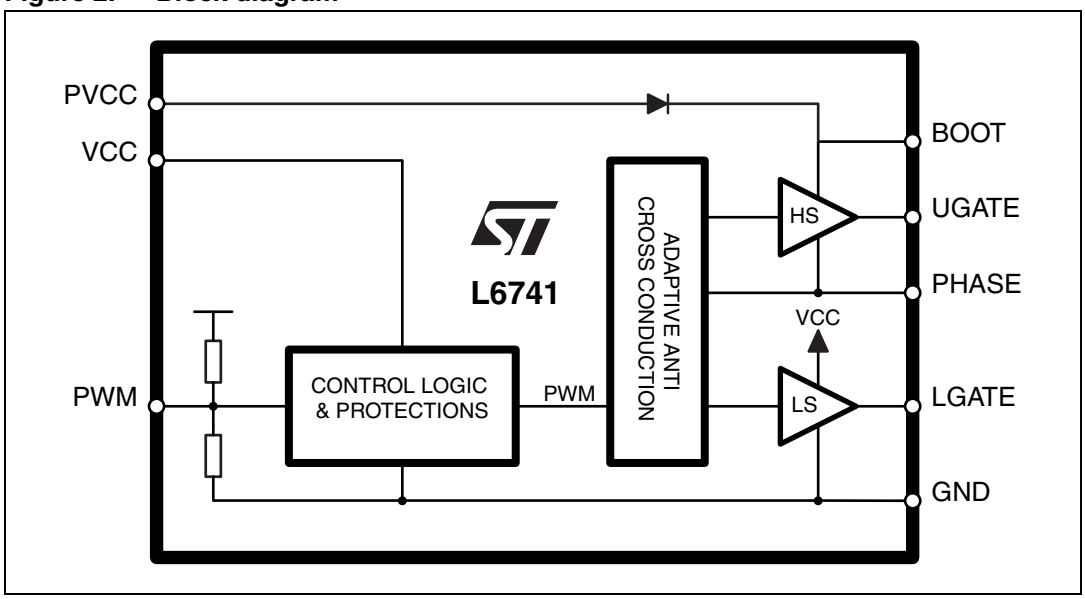
1.1 Application circuit

Figure 1. Typical application circuit



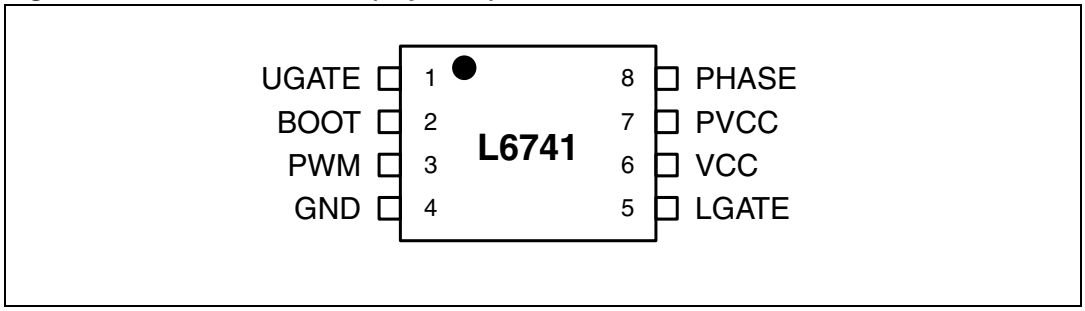
1.2 Block diagram

Figure 2. Block diagram



2 Pins description and connection diagrams

Figure 3. Pins connection (Top view)



2.1 Pin description

Table 2. Pins descriptions

Pin #	Name	Function
1	UGATE	High-side driver output. Connect to high-side MOSFET gate.
2	BOOT	High-side driver supply. This pin supplies the High-Side floating driver. Connect through a R_{BOOT} - C_{BOOT} capacitor to the PHASE pin. Internally connected to the cathode of the integrated Bootstrap diode.
3	PWM	Control input for the driver (5V compatible). This pin controls the state of the driver and which external MOSFET have to be turned-ON. If left floating, it causes the driver to enter the High-Impedance (HiZ) state which causes all MOSFETs to be OFF.
4	GND	All internal references, logic and drivers are referenced to this pin. Connect to the PCB ground plane.
5	LGATE	Low-side driver output. Connect directly to the Low-Side MOSFET gate. A small series resistor can be useful to reduce dissipated power especially in high frequency applications.
6	VCC	Device and LS Driver power supply. Connect to any voltage between 5V and 12V. Bypass with low-ESR MLCC capacitor to GND.
7	PVCC	Integrated Bootstrap diode Anode Supply. Connect to any voltage between 5V and 12V to supply the HS driver accordingly.
8	PHASE	High-Side Driver return Path. Connect to the High-Side MOSFET Source. This pin is also monitored for the adaptive dead-time management and Pre-OV Protection.

3 Package mechanical data

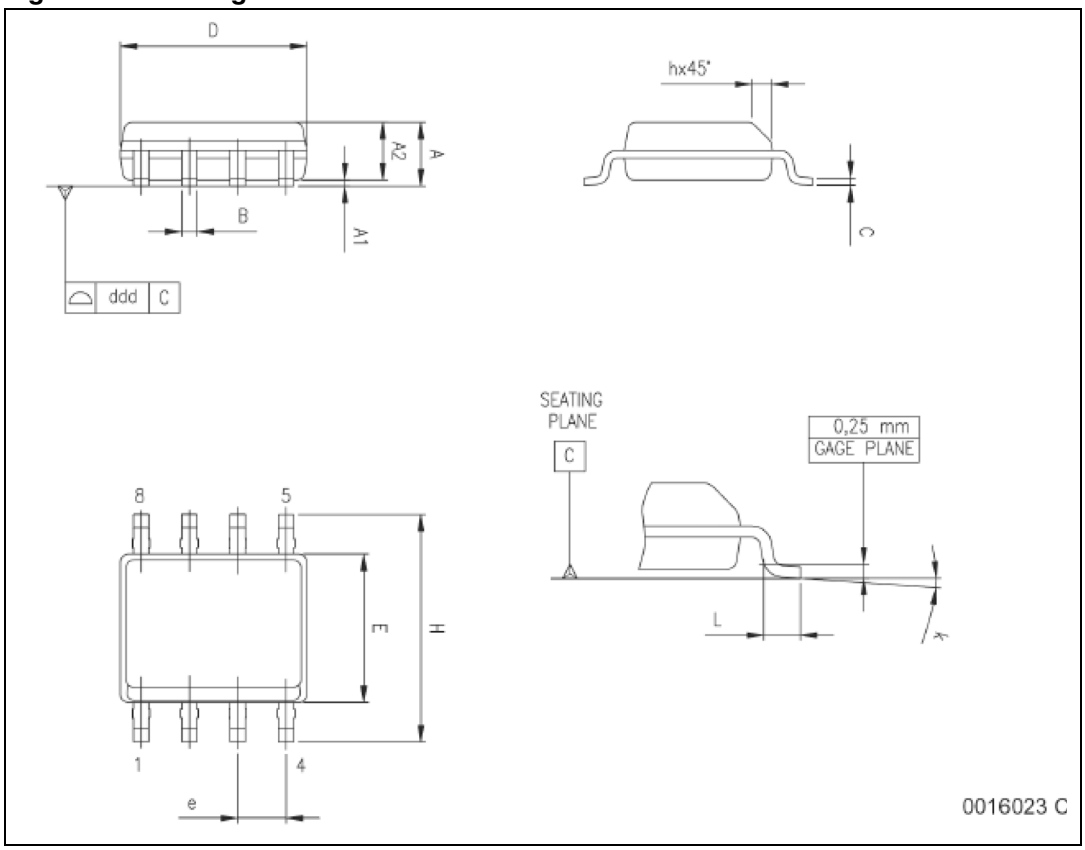
In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect . The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com

Table 3. SO8 Mechanical data

Dim.	mm.			inch		
	Min	Typ	Max	Min	Typ	Max
A	1.35		1.75	0.053		0.069
A1	0.10		0.25	0.004		0.010
A2	1.10		1.65	0.043		0.065
B	0.33		0.51	0.013		0.020
C	0.19		0.25	0.007		0.010
D (1)	4.80		5.00	0.189		0.197
E	3.80		4.00	0.15		0.157
e		1.27			0.050	
H	5.80		6.20	0.228		0.244
h	0.25		0.50	0.010		0.020
L	0.40		1.27	0.016		0.050
k	0° (min.), 8° (max.)					
ddd			0.10			0.004

1. Dimensions D does not include mold flash, protru-sions or gate burrs. Mold flash, potrusions or gate burrs shall not exceed 0.15mm (.006inch) in total (both side).

Figure 4. Package dimensions



4 Revision history

Table 4. Document revision history

Date	Revision	Changes
28-Mar-2007	1	First release

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