



LFPAK MOSFETs for computing applications

Compact, high performance power for notebook and desktop PC, graphics cards and servers

Part of an ever expanding portfolio that combines innovative packaging and TrenchMOS technologies NXP's latest MOSFETs offer excellent power performance in the compact, thermally enhanced LFPAK package. Ideal for PC applications, these high-efficiency devices deliver improved power density and thermal performance along with low on-resistance.

Key features

- ▶ SO8 compatible footprint enables replacement of standard SO8 devices
- ▶ Very low thermal resistance, equivalent to DPAK
- ▶ Low profile and compact size optimises use of PCB space
- ▶ Conventional surface mount leads allow optical inspection of solder joints
- ▶ Low inductance

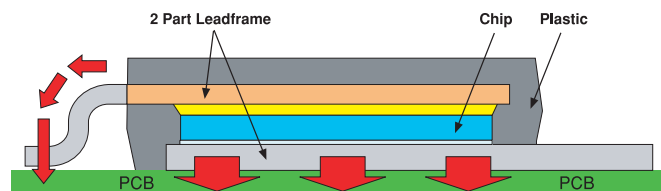
Key benefits

- ▶ DPAK performance in an SO8 size package
- ▶ Increased efficiency
- ▶ Enables higher power densities
- ▶ Faster switching
- ▶ Improved thermal performance means cooler running applications

Key applications

- ▶ Notebook and Desktop Motherboard VRM
- ▶ High efficiency system power supplies
- ▶ Graphic card DC-DC converters

The innovative SOT669 LFPAK (Loss Free PAcKage) enables a superior level of on-resistance and thermal performance in an extremely compact housing. When combined with NXP's advanced TrenchMOS technology, this innovative packaging solution delivers compact power to many applications previously limited to large discrete power packages. NXP's SOT669 LFPAK offers outstanding thermal performance from the compact footprint of the SO8. It allows heat to be dissipated more easily, maintaining the lowest possible operating temperatures. Furthermore, the LFPAK has an extremely low profile – at 1.1 mm thick it is 40% thinner than SO8. And its innovative internal construction enables an inductance considerably lower than comparable packages. In a traditional power package the main thermal pathway is vertically down through the mounting and into the PCB. However, the LFPAK also dissipates a significant amount of power upwards through the top of the package, giving it a thermal resistance significantly lower than SO8 and comparable with much larger packages such as DPAK.



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The LFPAK (SOT669) applications

In applications such as VRMs and power supplies for notebook and desktop PCs, NXP's LFPAK delivers the higher efficiencies and component densities essential for today's DC/DC converters. Typically these applications operate at switching frequencies of 200KHz - 500KHz and support input voltages up to 20 V with output currents of 10 to 30 A per phase. The LFPAK offers market-leading performance for the high-side (control FET) position and is capable of both 5 V and 12 V gate drive voltage (VGS) operation. In addition, it significantly reduces board space requirements. This is clearly highlighted in high current applications where LFPAK can reduce the number of required devices, due to its thermal characteristics and minimal switching losses.

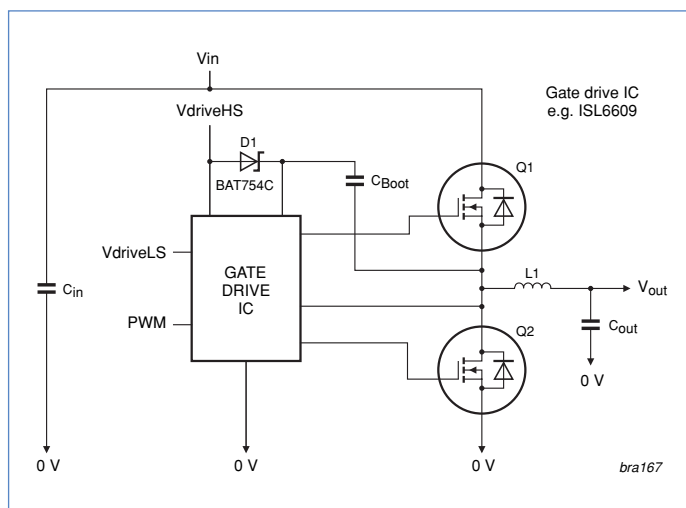
The LFPAK has been specially developed to handle the power demands of today's high performance graphics cards. With ever-increasing power requirements from the graphics processor unit and the memory, either an auxiliary power connector from the 'silver box' is used, or the 12 V power rail of the PCI Express interface. LFPAK can be used in both configurations and has been proven to be more efficient at all typical currents and supply voltages than rival SO8-housed devices with a similar on-state resistance.

Part Number	V _{DS}	MAX R _{DS(ON)} mΩ		Q _{GD} (nC)
	(V)	V _{gs} = 10V	V _{gs} =4.5V	
PH2525L	25	2.5	3.9	
PH4025L	25	4.0	6.2	
PH5525L	25	5.5	8.2	
PH9025L	25	9.0	13.0	
PH2030AL	30	2.0	3.3	9.0
PH2530L	30	2.5	4.5	17.8
PH3330L	30	3.3	4.5	6.9
PH4330L	30	4.3	6.8	5.4
PH4830L	30	4.8	7.0	5.4
PH8030L	30	5.9	9.7	3.1
PH6030L	30	6.0	9.7	3.1
PH6530AL	30	6.5	9.8	3.5
PH9030L	30	9.0	12.5	3.2
PH9930L	30	9.9	13.5	

Types in **black bold** represent new products

Types in **red** represent products in development

Single phase DC-DC converter



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Date of release: April 2008

Document order number: 9397 750 16506

Printed in the Netherlands

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