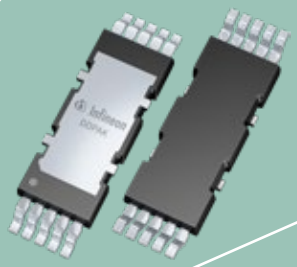


Product brief

Double DPAK (DDPAK) package

Innovative top-side cooled SMD solution for high power applications

Infineon Technologies introduces the first top-side cooled surface mount device (SMD) package addressing high power SMPS applications such as PC power, solar, server and telecom. The benefits of the already existing high voltage technologies 600 V CoolMOS™ G7 superjunction (SJ) MOSFET and CoolSiC™ Schottky diode 650 V G6 are combined with the innovative concept of top-side cooling, providing a system solution for high current hard switching topologies such as PFC and a high-end efficiency solution for LLC topologies.

Top-side cooling at a glance

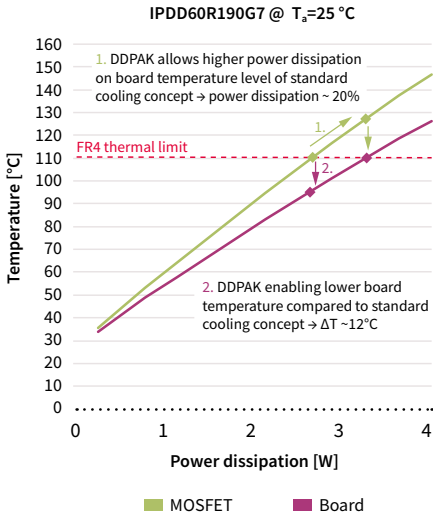
SMD based SMPS designs support fast switching and help to reduce the parasitic inductance associated with long leaded packages such as the common TO-220 package. In today's SMD based designs, the output power is restricted by the thermal limit of the PCB material because the heat must be dissipated through the board. Thanks to the top-side cooling concept of DDPAK, the thermal decoupling of board and semiconductor is possible, enabling higher power density or improved system lifetime.

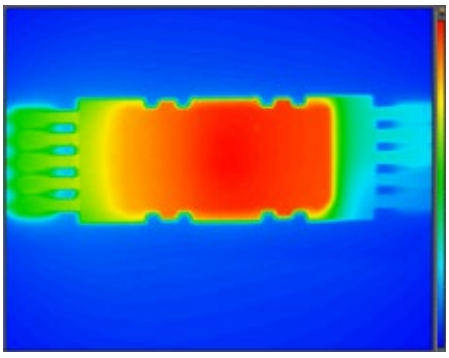
~ 20 percent higher power dissipation

DDPAK based SMD solutions allow to reach up to 20 percent higher output power on the board temperature level of a standard cooling concept enabling higher power density at a given form factor.

~ 12°C lower board temperature

DDPAK based SMD solutions allow to drive the application at around 12°C lower board temperature on the output power level of a standard cooling concept leading to increased system lifetime.





Key features

CoolMOS™ C7 Gold (G7) SJ MOSFET

- Gives best-in-class FOM $R_{DS(on)}$ x E_{oss} and $R_{DS(on)}$ x Q_g

CoolSiC™ Schottky diode G6

- Offers best-in-class V_F and FOM Q_c x V_F – Improved dv/dt ruggedness
- Easy and effective match with CoolMOS™ 7 SJ MOSFET families

DDPAK package

- Innovative top-side cooling concept
- Inbuilt 4th pin Kelvin source configuration and low parasitic source inductance
- TCOB capability of >> 2.000 cycles, MSL1 compliant and total Pb-free

Key benefits

CoolMOS™ C7 Gold (G7) SJ MOSFET and CoolSiC™ Schottky diode G6

- Enabling highest energy efficiency

DDPAK package

- Thermal decoupling of board and semiconductor allows to overcome thermal PCB limits
- Reduced parasitic source inductance improves efficiency and ease-of-use
- Enables higher power density solutions
- Exceeding the highest quality standards

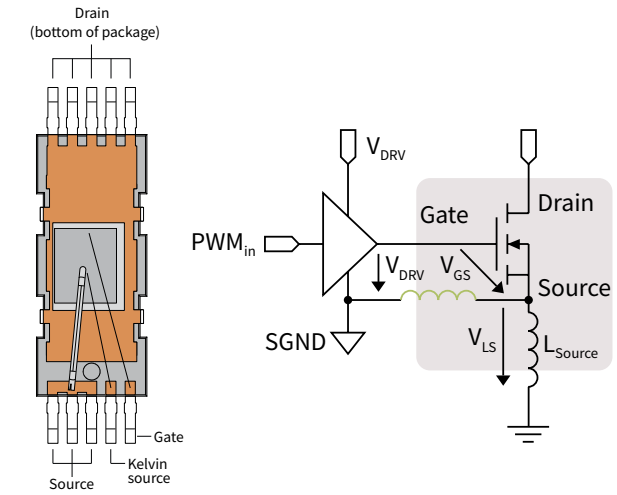
www.infineon.com/smd-topsidecooling

Double DPAK (DDPAK) package

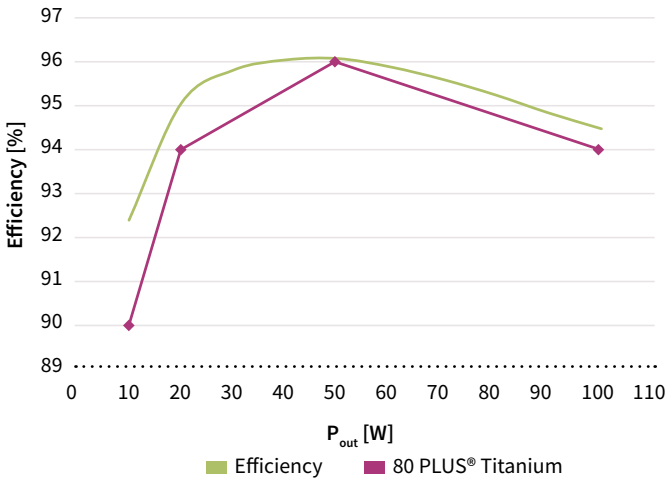
Innovative top-side cooled SMD solution for high power applications

DDPAK offers an inbuilt 4th pin Kelvin source configuration and very low parasitic source inductance. The seperate pin “source-sense” delivers undisturbed singals to the driver and therefore increases the ease-of–use level. The combination of this 4pin functionality together with Infineon’s latest SJ MOSFET and CoolSiC™ Schottky diode technologies ensures highest efficiency levels and allows customers to reach the 80 PLUS® Titanium standard.

4pin Kelvin source capability



Efficiency measurement at 230 V_{AC} in 1600 W server PSU board



In addition to efficiency, quality and total cost of ownership are important parameters in the higher power market. DDPAK survives much more than 2.000 TCOB cycles (thermal cycling on board) and exceeds the industry’s quality requirements ensuring robust and reliable SMPS designs. Furthermore, the DDPAK package enables a production cost reduction by moving to SMD through quicker assembly time.
Combining the 600 V CoolMOS™ G7 with Infineon’s 1-channel low-side gate driver family with truly differential inputs (1EDN TDI) optimized system solutions for high power designs are enabled. For more information visit www.infineon.com/TDI

$R_{DS(on)}$ max. [mΩ]	CoolMOS™ G7 SJ MOSFET		I_F [A]	CoolSiC™ Schottky diode G6	
	Sales product name	Orderable part number (OPN)		Sales product name	Orderable part number (OPN)
190	IPDD60R190G7	IPDD60R190G7XTMA1	4	IDDD04G65C6	IDDD04G65C6XTMA1
150	IPDD60R150G7	IPDD60R150G7XTMA1	6	IDDD06G65C6	IDDD06G65C6XTMA1
125	IPDD60R125G7	IPDD60R125G7XTMA1	8	IDDD08G65C6	IDDD08G65C6XTMA1
102	IPDD60R102G7	IPDD60R102G7XTMA1	10	IDDD10G65C6	IDDD10G65C6XTMA1
80	IPDD60R080G7	IPDD60R080G7XTMA1	12	IDDD12G65C6	IDDD12G65C6XTMA1
50	IPDD60R050G7	IPDD60R050G7XTMA1	16	IDDD16G65C6	IDDD16G65C6XTMA1
			20	IDDD20G65C6	IDDD20G65C6XTMA1

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