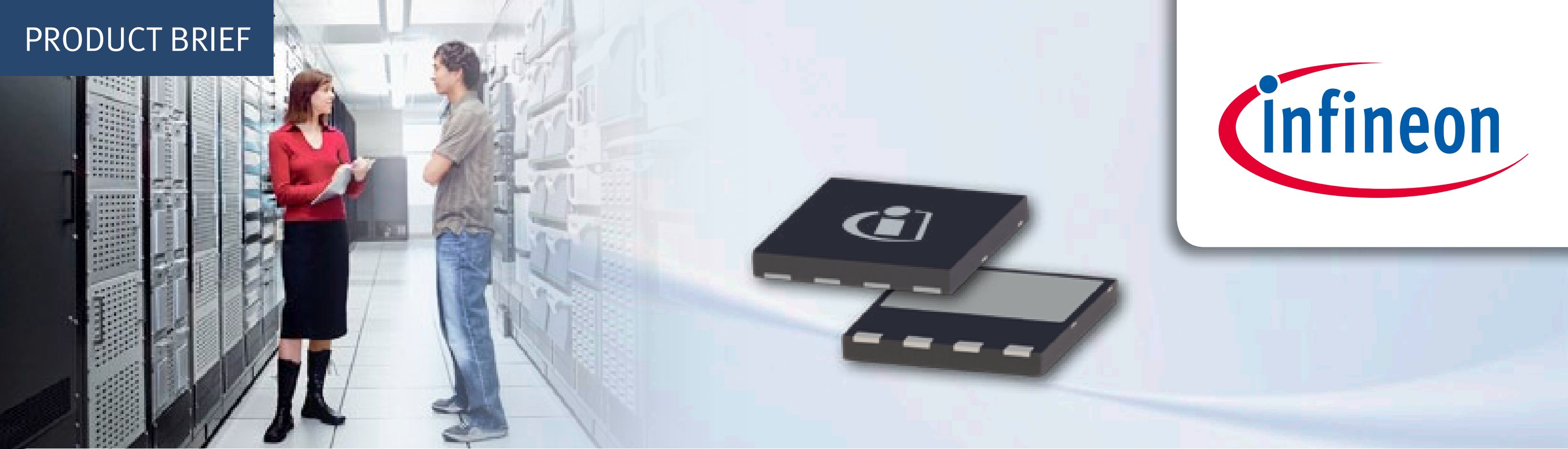


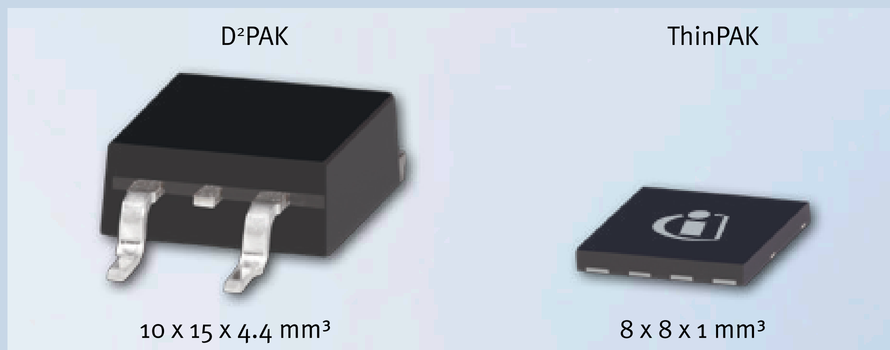
CoolMOS™ in ThinPAK 8x8

The new leadless SMD package for CoolMOS™

Infineon Technologies introduces the ThinPAK™ 8x8, a new leadless SMD package for HV MOSFETs. The new package has a very small footprint of only 64 mm² (vs. 150 mm² for the D²PAK) and a very low profile with only 1 mm height (vs. 4.4 mm for the D²PAK). This significantly smaller package size in combination with its benchmark low parasitic inductances can be used as a new and effective way to decrease system solution size in power-density driven designs.

The ThinPAK 8x8 package is characterized by a very low source inductance 2nH (vs. 6nH for D²PAK), separate driver source connection (clean gate signal) as well as a similar thermal performance as D²PAK. The package hence enables faster and thus more efficient switching of Power MOSFETs and is easier to handle in terms of switching behaviour and EMI.

Comparison between the standard SMD package D²PAK and the new leadless SMD package ThinPAK 8x8



60 % footprint reduction - 80 % height reduction

Applications

- Servers
- Adapters
- UPS
- HID Lighting

Features

- Small footprint (8x8 mm²)
- Low profile (1 mm)
- Low parasitic inductance
- Separate driver source pin
- RoHS compliant
- Halogen free mold compound

Benefits

- Reduced board space consumption
- Increased power density
- Short commutation loop
- Smooth switching waveform
- Easy to use products
- Environmentally friendly

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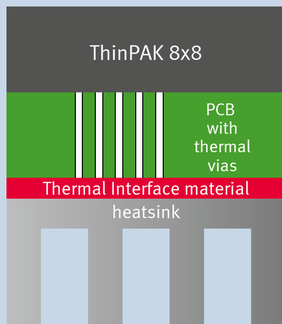
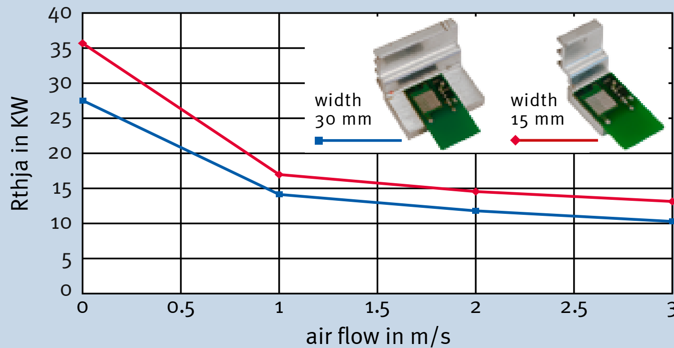
ThinPAK 8x8 and thermal design

To achieve high power capability it is of significant importance to have a well designed thermal system. The recommended design is a thin PCB with many vias and a heatsink attached to the backside of the PCB. A high number of vias is needed to reduce the thermal conduction resistance throught the board. To decrease the overall thermal resistance Rthja forced convection is beneficial. Thermal measurements show that with this system thermal resistances of 10 K/W and even lower can be achieved for typical applications. 10 K/W would allow for ~ 7 W for typical thermal boundary conditions ($T_{ambient}$ = 50°C, T_{max} = 120°C).



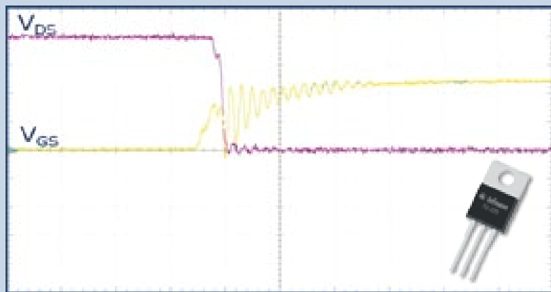
Thermal cooling system for ThinPAK 8x8

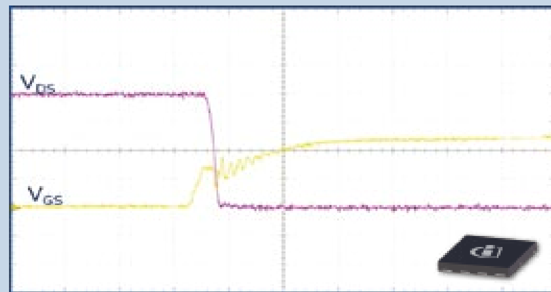


Measurement of the thermal resistance junction to ambient: Rthja

Electrical switching behaviour

A low inductive package shows lower ringing at the gate and results in a smooth switching waveform.





Switching waveform for TO-220 (left) and ThinPAK (right)

Product Portfolio for 600V CoolMOS™ CP in ThinPAK 8x8

	Maximum Ratings		$R_{DS(on)}$ (mOhm)		
Part Number	V_{DSS} (V)	I_D (A)	Typ	Max.	Qg (nC) typ.
IPL60R199CP	600	16	180	199	32
IPL60R299CP	600	11	270	299	22
IPL60R385CP	600	9	350	385	17

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