



Product Brief

XHP™ 3

Flexible high-power platform

Power modules have proven to be the driving force behind the rapid development in the area of power electronic systems technology, particularly in terms of energy savings, control dynamics, noise reduction as well as weight and volume reduction. Power semiconductors are primarily used to control the energy flow between energy generation and consumption. This is done extraordinarily precisely and with exceptionally low losses. Continued progress in the performance of power semiconductors drives demand for corresponding improvements in packaging technology. Infineon has contributed to this evolution across more than two decades.

The scope

The new housing for high-power IGBT modules is designed to cover the full-voltage range of IGBT chips from 3.3 to 6.5 kV. Principle applications of the new package are expected in industrial drives, traction, renewable energy and power transmission applications. One key innovation is its scalability, which will greatly simplify system design and manufacturing. Additionally, due to its robust architecture, the new high-power platform will provide long-term reliability in applications with demanding environmental conditions.

A main focus in development of the new platform was to achieve the flexibility and reliability while assuring optimal integration into customer systems. Features defined to meet this goal include:

- > Modular approach, wide scalability with high-current density
- > Half bridge switch configuration, resulting in the first half bridge modules for 4.5 kV and 6.5 kV
- > 3.3 kV up to 6.5 kV in a high-voltage package, each one is optimized for the specific needs of this voltage range
- > Design for lowest stray inductance of internal connections, which enables low inductive external connections at the same time
- > Ultrasonic welding connections of highest reliability and quality



Key features

- > Modular approach
- > Half bridge configuration
- > 3.3 kV up to 6.5 kV
- > New package design
- > Highest reliability and quality

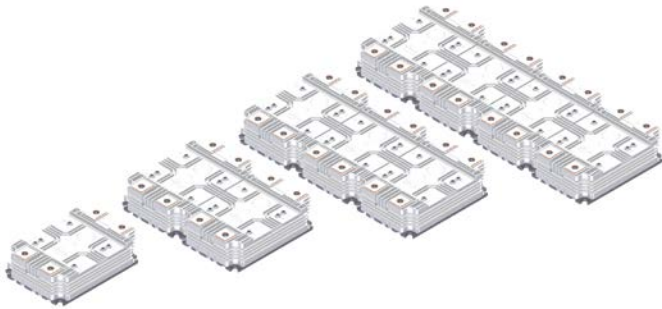
Benefits

- > One, high-power platform offering flexibility and scalability
- > High power density and optimized frame sizes
- > High reliability and long service life
- > Reduced system cost
- > Low inductance

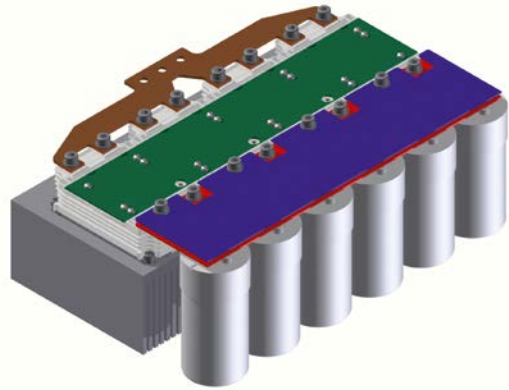


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Scalability by simple paralleling



Four XHP™ 3 modules in parallel with gate PCB, DC-link and phase output busbar

Infiniteon's announced roadmap to implement the technology

Voltage Class	3.3 kV	4.5 kV	6.5 kV
Current Rating	2 x 450 A	2 x 400 A	2 x 275 A



Package comparison of a phase leg built of two single IHV or four dual XHP™ 3 modules

Boost your system!

A phase leg built of two single IHV with 3.3 kV blocking voltage results in a current density of 5.49 A/cm².

Instead, the phase leg can be put together of four XHP™ 3 with IGBT blocking voltages of 3.3 kV.

The outcome will be an increase from 5.49 A/cm² with two IHV to 6.43 A/cm² with four XHP™ 3. As a consequence, the total current density will increase by up to 17%.

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