



# HybridPACK™ 2

## Power Module for Hybrid- and Electric Vehicles

Infineon®'s HybridPACK™ 2 is an automotive qualified power module designed for Hybrid- and Electric Vehicle applications from a power range up to 100kW continuous power. Designed for a 150°C junction operation temperature, the module accommodates a 3-phase Six-Pack configuration of Trench-Field-Stop IGBT3 and matching emitter controlled diodes. Maximum chip ratings are 800A/650V.

The HybridPACK™ 2 power module is based on Infineon's leading IGBT Trench-Field-Stop Technology, which offers lowest conduction and switching losses.

The HybridPACK™ 2 power module is built on Infineon's long time experience in the development of IGBT power modules, intense research efforts of new material combinations and assembly technologies.

Based on the usage of modern power semiconductor chips, Infineon has developed - dedicated for xEV - this HybridPACK™ 2 power module as a part of the HybridPACK™ family for automotive applications.

The HybridPACK™ 2 comes with a Pin-Fin baseplate for direct liquid cooling which significantly improves the thermal cycles capability and extends the lifetime of the power module. The Pin-Fin baseplate with its excellent cooling properties enables a very high power density of the HybridPACK™ 2 package.

The high-performance ceramic substrate (DCB) and Infineon's enhanced wire-bonding process provides unparalleled thermal and power cycling capability leading to highest reliability for xEV inverter applications. For a compact design the driver stage PCB can be connected on the top of the module.

All power connections are realized with screw terminals.

The HybridKIT 2 Evaluation Kit offers a complete inverter reference system with driver- and control-board, heatsink, DC-Link capacitor and software enabling a fast application design.

All modules from the HybridPACK™ family are dedicated for automotive applications with highest power density and efficiency. Built in accordance with Infineon's automotive excellence program, this fully automotive qualified HybridPACK™ 2 sets the quality and reliability standards for power modules in hybrid and electric vehicles.

Sales Name	$I_{CN}$ [A]	$V_{ces}$ [V]	Package	Product Status
FS800R07A2E3	800	650	HybridPACK™ 2	In Production
FS600R07A2E3	600	650	HybridPACK™ 2	In Production

1200V version in development

[ [www.infineon.com/hybrid](http://www.infineon.com/hybrid) ]

### Applications

- Motor and/or generator inverter for Hybrid- and Electric Vehicles and Range Extenders (up to 100kW continuous)
- Rugged ceramic substrate for automotive applications

### Key Features

- Complete 3-phase six pack with NTC
- 650V Trench-Field-Stop IGBT3 with matching emitter controlled diode
- Extended temperature range
  - $T_{jop} = 150^{\circ}\text{C}$
  - $T_{jmax} = 175^{\circ}\text{C}$
- Current rating up to 800A DC
- Rugged  $\text{Al}_2\text{O}_3$  ceramic for automotive applications
- Pin-Fin baseplate for direct cooling
- Fully automotive qualified

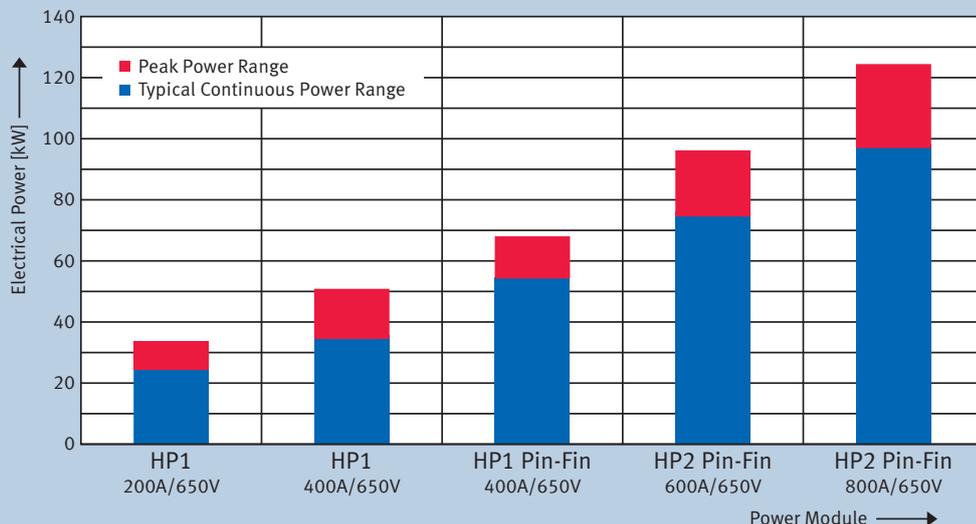
### Benefits

- Cost efficient system approach
- High efficiency due to low power losses
- High reliability
- Compact design
- HybridKIT 2 reference design available
- Very high power density

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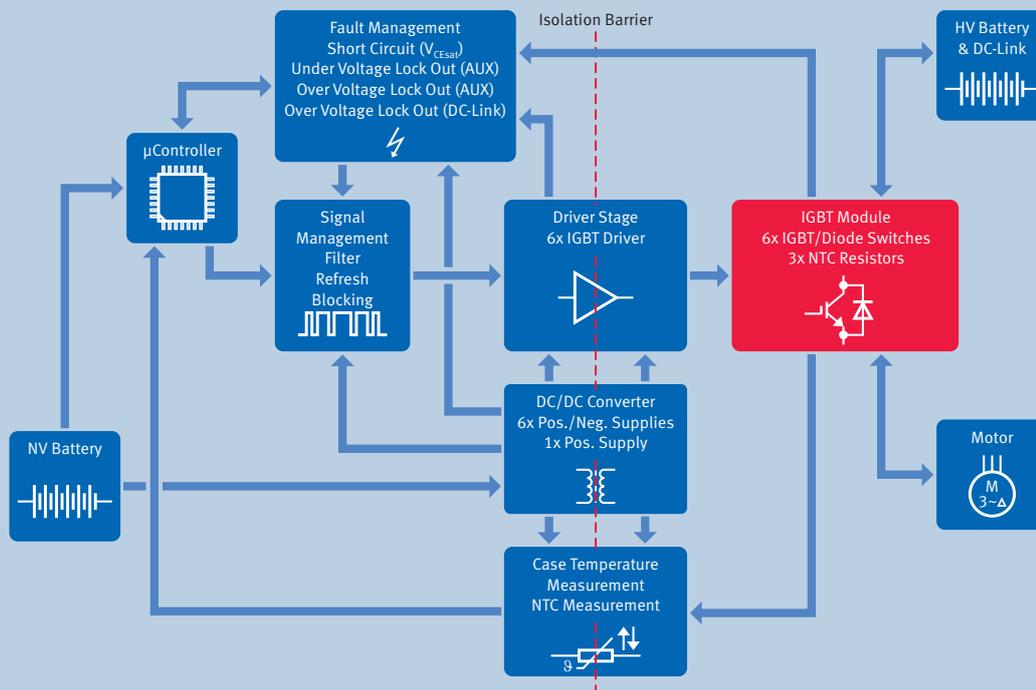
## Power Module for Hybrid- and Electric Vehicles

HybridPACK™ Family Power Range Comparison <sup>1)</sup>



1) Rotating electrical motor as a load

### Application Block Diagram



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