



## Product Brief

# PrimePACK™ with TRENCHSTOP™ IGBT5 .XT

## The dawning of a new era

The tremendous success of PrimePACK™ since its introduction back in 2006 confirms that it's the optimal choice for the majority of high-power inverters. The series production of PrimePACK™ with the latest IGBT and joining technologies – TRENCHSTOP™ IGBT5 .XT – was recently started.

### Increased power density

The new PrimePACK™ modules feature IGBT5 – our latest chip generation with a continuous operating temperature that is 25 K higher ( $T_{vjop} = 175^{\circ}\text{C}$ ). This allows higher power densities in 1200 V and 1700 V applications. The output power of the application can therefore be increased by 25% within the standard PrimePACK™ footprint.

### Longer lifetime

PrimePACK™ has been developed with .XT joining technology to fulfill current and future lifetime requirements. This has been realized by sintering IGBT chips and diodes along with improved system soldering and replacing the aluminum bonds with copper bonds. Applications benefit from increased system availability due to a ten times longer lifetime of the PrimePACK™ module.

### Design flexibility

System designers enjoy greater flexibility thanks to the integration of IGBT5 and .XT into PrimePACK™. By using the new PrimePACK™ with IGBT5, the output power in the application can either be increased by 25% or the lifetime can be increased tenfold with the same output current. Various tradeoffs between output power and lifetime are feasible. This new design flexibility means that the optimum fit for the majority of systems can be realized.

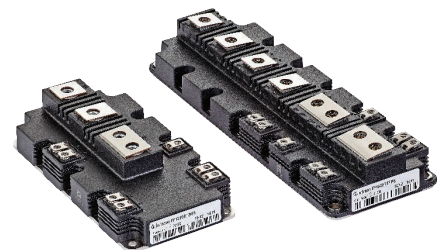
With years of experience under our belt, a steady stream of innovations and the latest optimized chip generations, we always provide the optimal solution for demanding applications such as wind and solar power, industrial drives traction and commercial vehicles.

### Key features

- > Static and dynamic losses reduced by up to 20%
- > Power cycling capabilities increased by a factor of 10
- > Continuous operating temperature of  $T_{vjop} = 175^{\circ}\text{C}$

### Benefits

- > Power density increase of 25% or a 10 times longer lifetime
- > Reduced cooling effort for same output power
- > Reduction of overall system costs



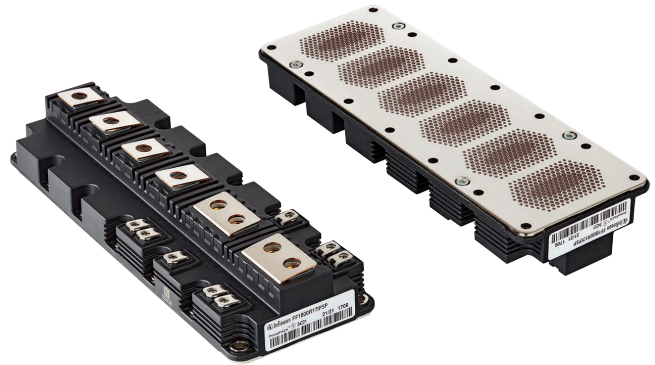
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### Pre-applied Thermal Interface Material (TIM)

TIM is Infineon's thermal interface material, developed for and pre-applied to Infineon's power modules. It outperforms general purpose materials by significantly improving the thermal transfer, thereby allowing the junction temperature to be reduced by around 5%. In addition to improving performance, both the process time and manufacturing outlay can be reduced when modules with pre-applied TIM are used.

To ensure optimal operation with PrimePACK™ TRENCHSTOP™ IGBT5 .XT, TIM has now been successfully qualified for higher temperatures - up to 150°C at the baseplate.



### Packages and portfolio

PrimePACK™ with IGBT5 and .XT comes in the familiar PrimePACK™ 2 package as well as in the PrimePACK™ 3+ package.

PrimePACK™ 3+ offers the same footprint as PrimePACK™ 3 but features two AC bus bars and AC terminals to convey the increased current. Furthermore, it also contains an additional control terminal that provides low-inductive connectivity to the collector of the bottom IGBT.

Module type	Nominal current $I_{Cnom}$ [A]	Blocking voltage $V_{CES}$ [V]	Package type	Joining technology	Pre-applied Thermal Interface Material (TIM)
FF1800R17IP5	1800	1700	PrimePACK™ 3+	.XT	No
FF1800R17IP5P	1800	1700	PrimePACK™ 3+	.XT	Yes
FF1500R17IP5	1500	1700	PrimePACK™ 3+	.XT	No
FF1500R17IP5P	1500	1700	PrimePACK™ 3+	.XT	Yes
FF1200R17IP5	1200	1700	PrimePACK™ 2	.XT	No
FF1200R17IP5P	1200	1700	PrimePACK™ 2	.XT	Yes
FF1800R12IE5	1800	1200	PrimePACK™ 3+	.XT	No
FF1800R12IE5P	1800	1200	PrimePACK™ 3+	.XT	Yes
FF1500R12IE5	1500	1200	PrimePACK™ 3+	.XT	No
FF1500R12IE5P	1500	1200	PrimePACK™ 3+	.XT	Yes
FF1200R12IE5	1200	1200	PrimePACK™ 2	.XT	No
FF1200R12IE5P	1200	1200	PrimePACK™ 2	.XT	Yes

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