

650 V HB2 HIGH-SPEED IGBTs



With embedded protection diode



**Designed to maximize the efficiency in PFC applications,
especially for air conditioning systems and welding equipment**

Featuring a co-packed protection diode to avoid accidental negative overvoltage between collector and emitter, our new HP2 sub-series offers a current capability from 20 up to 50 A to deliver class-leading performance that optimizes the tradeoff relationship between conduction loss and switching speed.

Available in a TO-247 long leads package, this new sub-series of our HB2 series of 650 V high-speed IGBTs enables widespread power capability and high efficiency in PFC applications, especially in air conditioning systems and welding equipment.

KEY FEATURES & BENEFITS

- Co-packed protection diode
- Wide frequency ranges from 16 to 60 kHz
- Very low $V_{CE(sat)}$ (1.55 V typ.)
- Low thermal resistance
- Lower gate charge
- Maximum operating T_j of 175 °C

KEY APPLICATIONS

- Single-phase PFC
- Interleaved PFC
- Two-switch forward converters

Application benchmark

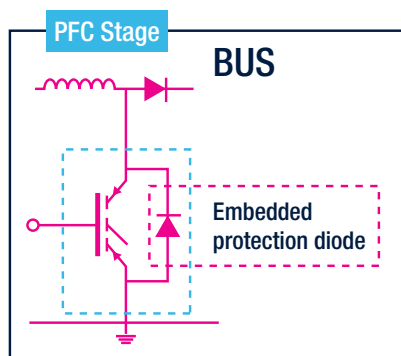
Representing an evolution of our advanced trench-gate field-stop proprietary technology, the STGWA30HP65FB2 was tested in a single-phase boost PFC CCM topology for a motor control application.

The benchmark shows that our IGBT solution is aligned in performance with the main competitor and even better below 1.1 kW.

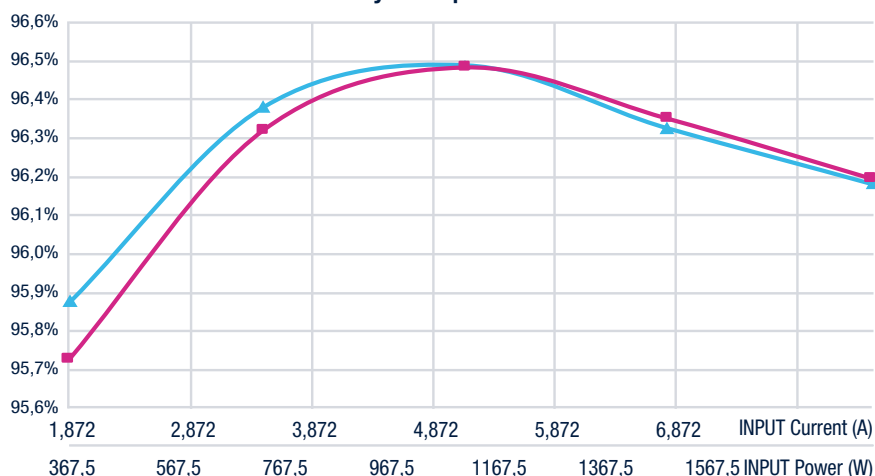
Application benchmark

Test condition

- $V_{IN}(AC)$: 220 V_{RMS}
- V_{BUS} : 350 V_{DC}
- Inductor: 350 μ H / 10A
- Diode: STTH30AC06CPF
- $R_{G(on)}$: 33 Ω , $R_{G(off)}$: 10 Ω ,
- Switching frequency: 40 kHz



Efficiency vs. Input Current/POWER



The test result data were taken at similar Tcase temperature

Competitor STGWA30HP65FB2

Product portfolio

IGBT P/N	V_{CES}	I_{CN}	$V_{CE(sat)}$ 1)	E_{off} 2)	R_{thj-c}	Diode Option	Packages
	[V]	[A]	[V]	[mJ]	$^{\circ}$ C/W		
STGWA20HP65FB2	650	20	1.65	0.21	1.02	Protection	TO-247 long leads
STGWA30HP65FB2		30	1.65	0.31	0.9		
STGWA40HP65FB2		40	1.55	0.41	0.65		
STGWA50HP65FB2		50	1.55	0.58	0.55		

1) $V_{CE(sat)}$ @ I_{CN} , $T_C = 25^{\circ}$ C

2) E_{off} @ I_{CN} , $T_C = 25^{\circ}$ C



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To explore the complete HB2 series IGBTs product portfolio, visit www.st.com or use our **ST-IGBT-Finder mobile app** for Android and iOS



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