

650V HB SERIES IGBTs

Innovative 4-lead package



Boosts application efficiency with faster switching events and improved turn-on switching energy

ST's HB series of high-speed 650V IGBTs offers increased ruggedness and enhanced reliability for applications working at switching frequencies between 16 and 60 kHz.

In addition to maintaining a wide safe operating area (SOA), the maximum junction temperature of 175 °C and the extremely good $V_{CE(sat)}$ vs E_{off} trade-off, the new 4-lead package significantly decreases turn-on switching energy and ensures a very good impact on system efficiency.

KEY FEATURES

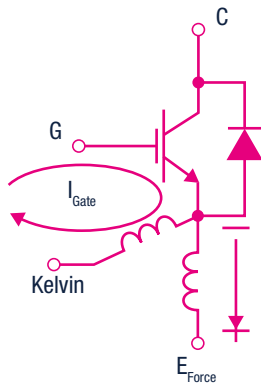
- Maximum junction temperature of 175 °C
- Very low and minimized tail current when switching off
- Very good thermal resistance
- $V_{CE(sat)} = 1.6 \text{ V @ ICN}$
- Very tight parameter distribution
- Positive derating of $V_{CE(sat)}$ with temperature for safer paralleling

ADVANTAGES OF 4-LEAD PACKAGE

- Co-packaged diode tailored for final application
- Switching frequency range 16 – 60 kHz
- Product portfolio comprehending 40A, 60A and 80A devices.

TARGET APPLICATIONS

- Telecom & cloud server
- High power SMPS
- Photovoltaic Inverters
- UPS
- Welding Machines

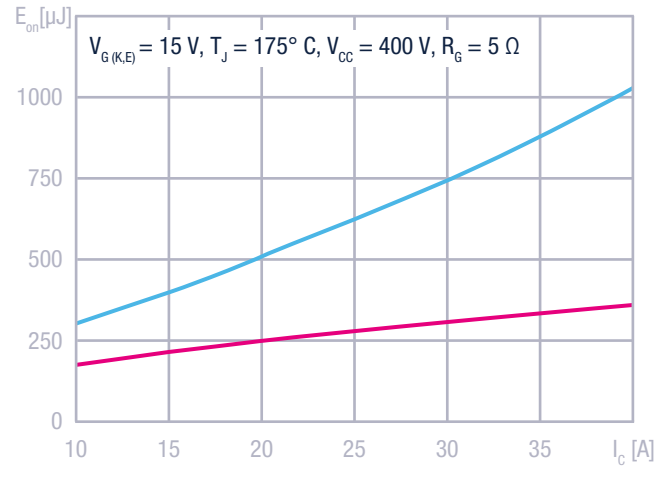
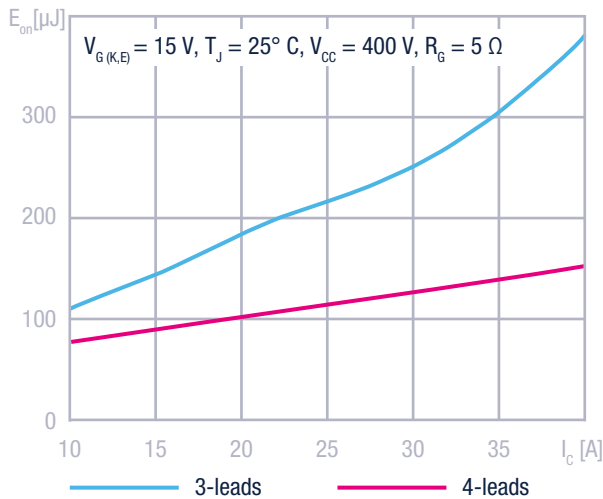


Reduced stray inductance splitting driving from current power path: faster switching event



Developed using an advanced proprietary trench gate field-stop structure, the new HB series of IGBTs represents an optimum compromise between conduction and switching loss to maximize the efficiency of any frequency converter. Reducing the turn-on switching energy by 50% at 25 °C with an increasing spread at higher temperatures (see graphs below), this innovative 4-lead package ensures the same results in 60 and 80 A devices as well. Thanks to the IGBT's positive temperature coefficient, this innovative ST package solution can cover all high-speed IGBT-based applications in an extremely wide power range.

Comparison of turn-on switching energy between 3- and 4-lead devices



650V “HB” Series IGBT Devices in TO247-4 package

IGBT P/N	BV_{CES}	$I_{CN}^{(1)}$	$V_{CE(sat)}^{(2)}$	$E_{on}^{(3)}$	$E_{off}^{(3)}$	Free-wheeling diode	Package
STGW40H65DFB-4	650	40	1.6	0.2	0.41	Very Fast	TO247-4
STGW60H65DFB-4		60		0.35	1.16	Very Fast	
STGW80H65DFB-4		80		1	1.7	Very Fast	
STGW80H65FB-4		80		-	1.7	-	

⁽¹⁾ Nominal collector current @ $T_c = 100^\circ \text{ C}$
⁽²⁾ $V_{CE(sat)}$ @ $I_{CN}, T_c = 25^\circ \text{ C}$
⁽³⁾ Refer to datasheet for characterization conditions



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

