Product Brief

Breaking the switching-speed-limits in various topologies

The new 1200V and 600V IGBT HighSpeed 3 family, optimized in every respect

The new 1200V and 600V 3rd Generation HighSpeed IGBT family is optimized for hard- and soft-switching topologies. The family sets a new benchmark for switching losses and is recommended for use in topologies switching at more than 20kHz.

The very short tail-current, and low turn off losses (25% less then the closest competitor) are the key features of this new family and up to 15% efficiency can be attained by implementing this family in your design.

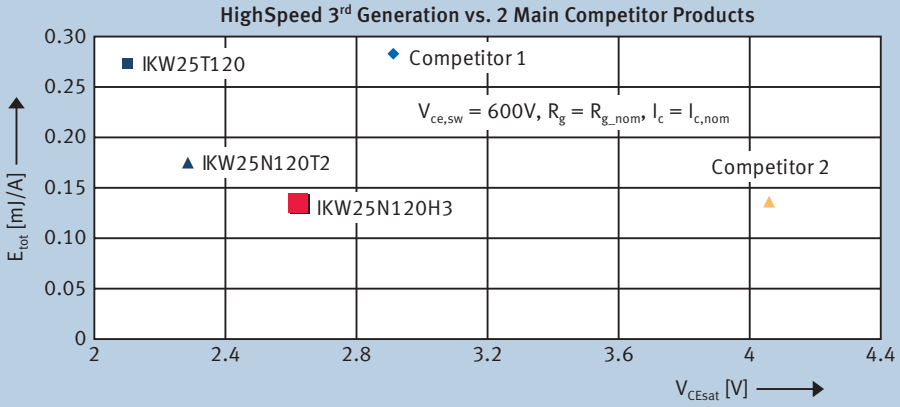
Not only does the family offer very low switching losses, the conduction losses are also very low. This is thanks to the world famous TRENCHSTOP™ technology from Infineon that has an intrinsically very low $V_{ce(sat)}$ behavior.

Meanwhile the free wheeling diode in the duo packs is a 4th generation emitter controlled diode and is optimized for fast recovery whilst maintaining a high level of softness. This provides excellent complementary high speed switching performance, ruggedness and EMI behavior.

Paired with the HighSpeed 3 IGBT you have the best device on the market.

Infineon introduces a new family of 1200V and 600V IGBTs optimized for high-frequencyapplications which provide benchmark performance in terms of switching losses and efficiency.

Trade-off Diagram @ 150°C
HighSpeed 3rd Generation vs. 2 Main Competitor Products



Infineon's new HighSpeed 3 IGBT is perfectly balanced between switching and conduction losses.

www.infineon.com/igbt

Applications

- UPS
- Welding
- Solar inverters

Main Features and Benefits

- Lowest switching losses for switching frequencies above 20kHz giving high efficiency
- Soft switching waveforms for excellent EMI behavior
- Low $V_{ce(sat)}$ giving low conduction losses
- Optimized diode for target applications meaning low diode losses and fast recovery time
- RoHS compliant
- Positive $V_{ce(sat)}$ temperature coefficient meaning thermal runaway not an issue and paralleling is easy
- 10µs short circuit rating

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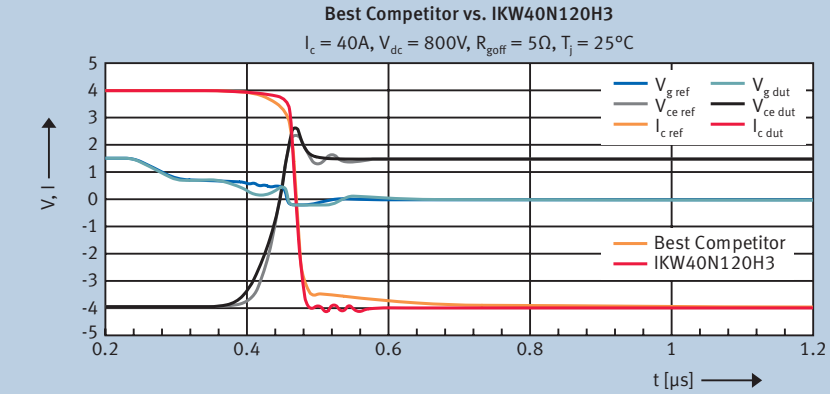
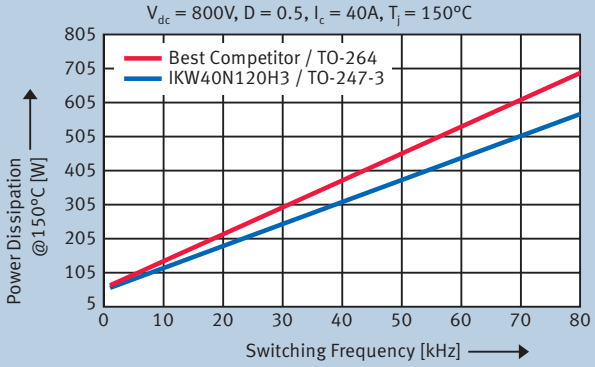
Turn Off waveforms of Infineon's new HighSpeed 3 IGBT



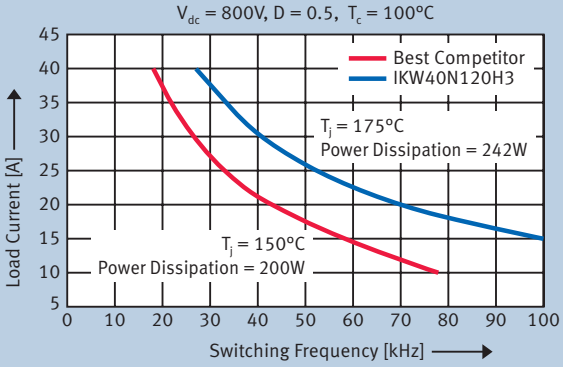
- The new HighSpeed 3 IGBT eliminates the tail-current at turn-off
- Drastically reducing the E_{off} losses

Power Dissipation



$P = V_{ce} \times I_c \times D + f_{sw} \times E_{sw,tot}$
At 40A, T_j = 150°C, the IFX device provides 15% lower losses.

Load Current vs Frequency



Thanks to the higher T_{jmax} and lower losses, for a fixed T_c = 100°C the KW device can run up to 50% higher Load Current than best competitor's device.

Product Portfolio

$I_{C\ nom}$ [A]	$I_{C\ puls}$ [A]	P_{tot} (T_c = 25°C) [W]	P_{tot} (T_c = 100°C) [W]	$V_{CE(sat)\ (typ.)}$ (25°C) [V]	$V_{CE(sat)\ (typ.)}$ (175°C) [V]	TO-247 Single	TO-247 DuoPack	Single IGBT	IGBT + Diode	Availability
600V										
20	80	170	85	1.95	2.5			IGP20N60H3		Now
30	120	187	94	1.95	2.5			IGP30N60H3		Now
50	200	333	167	1.85	2.25			IGW50N60H3		Now
20	80	170	85	1.95	2.5				IKW20N60H3	Now
30	120	187	94	1.95	2.5				IKW30N60H3	Now
1200V										
15	60	217	105	2.05	2.7	IGW15N120H3				Now
25	75	326	156	2.05	2.7	IGW25N120H3				Now
40	160	483	220	2.05	2.7	IGW40N120H3				Now
15	60	217	105	2.05	2.7		IKW15N120H3			Now
25	75	326	156	2.05	2.7		IKW25N120H3			Now
40	160	483	220	2.05	2.7		IKW40N120H3			Now

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