Research on discrete IGBT7 H7 1200 V in inverter for Solar and UPS applications

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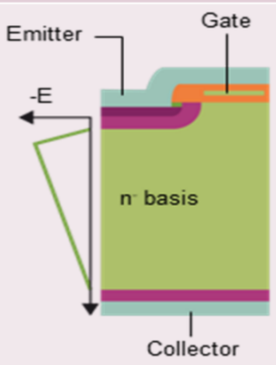
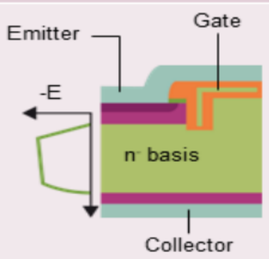
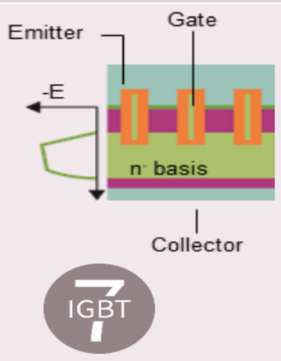
Infineon TRENCHSTOP™ IGBT7 H7 1200 V

Non Punch Through IFX: IGBT2	Trench Field Stop IFX: IGBT3 … 4	Micro Pattern Trenches IFX: IGBT7
(IFX: 1990 ROW: 1997)	(IFX: 2000 ROW: 2006)	(IFX: new generation)
		
Advantages › Implanted Back-Emitter › Better adjustable	**Advantages** › Implanted Back-Emitter › Thinner Base Region	**Advantages** › Highly adjustable Emitter › Carrier Profile Optimization
Performance › Low Switching losses › Robustness	**Performance** › Lower VCEsat › Lower Switching losses	**Performance** › Very low VCEsat › Very low switching losses › Humidity rugged

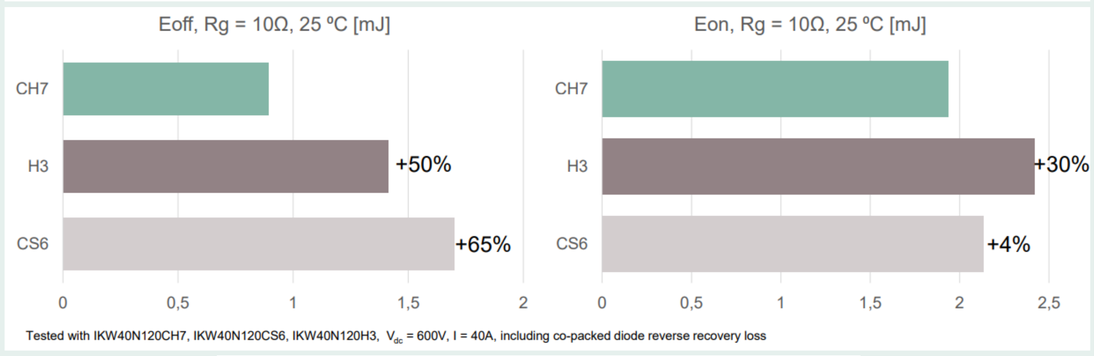
Current Inom (A)	TO247-3	TO247-4pin asymmetric	TO247PLUS-3pin	TO247PLUS-4pin
40	IKW40N120CH7	IKZA40N120CH7		
50	IKW50N120CH7	IKZA50N120CH7	IKQ50N120CH7	IKY50N120CH7
75	IKW75N120CH7	IKZA75N120CH7	IKQ75N120CH7	IKY75N120CH7
100			IKQ100N120CH7	IKY100N120CH7
120			IKQ120N120CH7	IKY120N120CH7
140			IKQ140N120CH7	IKY140N120CH7

› Designed with the latest Micro-Pattern Trench (MPT) technology offers significantly low static losses and switching losses.

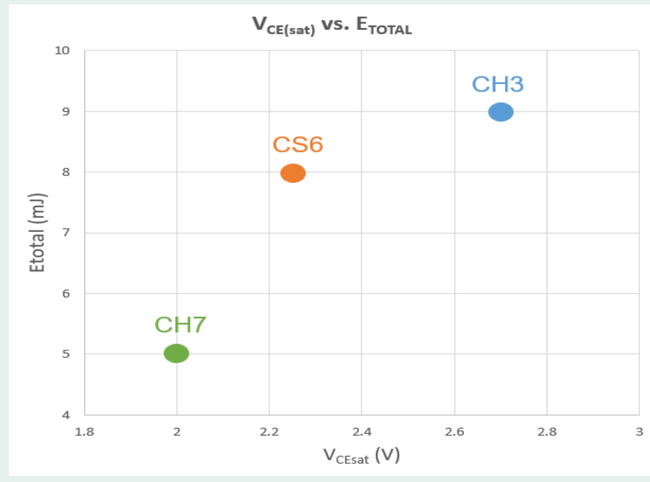
› Covering from 40 A to 140 A in TO247 and TO247PLUS packages with both 3-pin and 4-pin variants available.

Performance Comparison

with IKW40N120CH7, IKW40N120CS6, IKQ40N120CH3



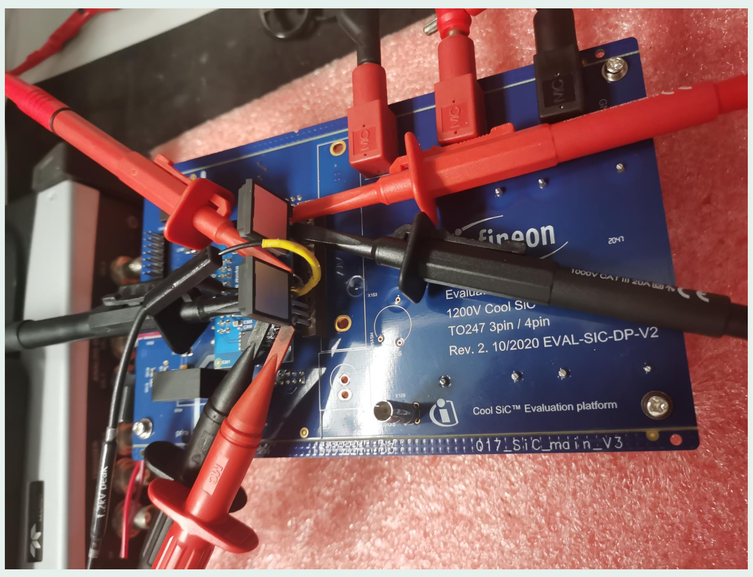
Tested with IKW40N120CH7, IKW40N120CS6, IKW40N120H3, V_{dc} = 600V, I = 40A, including co-packed diode reverse recovery loss



› IGBT7 H7 1200 V have the lowest Vcesat and switching losses compared with CH3 and CS6.

› The anti-paralleling diode of IGBT7 H7 1200 V, EC7 Rapid diode have the lowest Qrr value.

Double-pulse evaluation platform

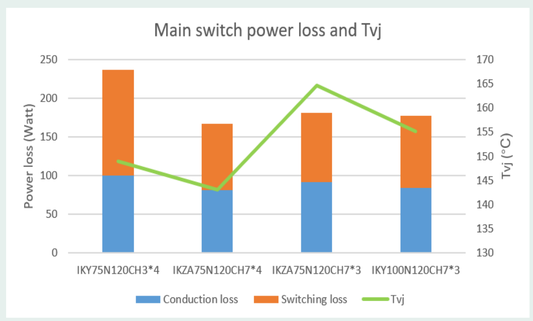


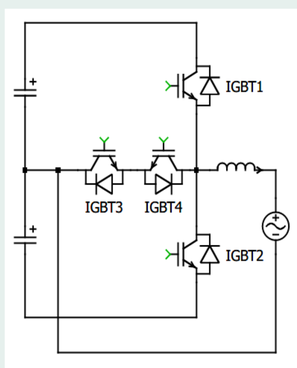
› Double pulse evaluation platform for Eon and Eoff testing

› This evaluation platform could be used for 3Pin or 4Pin devices, with changeable gate voltage.

Power loss simulation based on NPC2 inverter

Parameter	Value	Unit
Power rating	121	kW
Output voltage	400	VAC
DC bus voltage	800	V
Switching frequency	18000	Hz
Output frequency	50	Hz
Modulation	SVPWM	
Rthch	0.6	K/W
Heatsink temperature	95	°C





› Infineon TRENCHSTOP™ IGBT7 H7 1200 V represents the best-in-class technology available in the market for Solar and UPS applications. Thanks to the dramatic switching losses and conduction losses reduction, Infineon IGBT7 H7 1200 V is the most promising candidate to address the high switching applications like Solar and UPS converters. And with the unique higher current rating in one single package, it will help the system designers to ease their design with less devices or further increase the system power rating

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