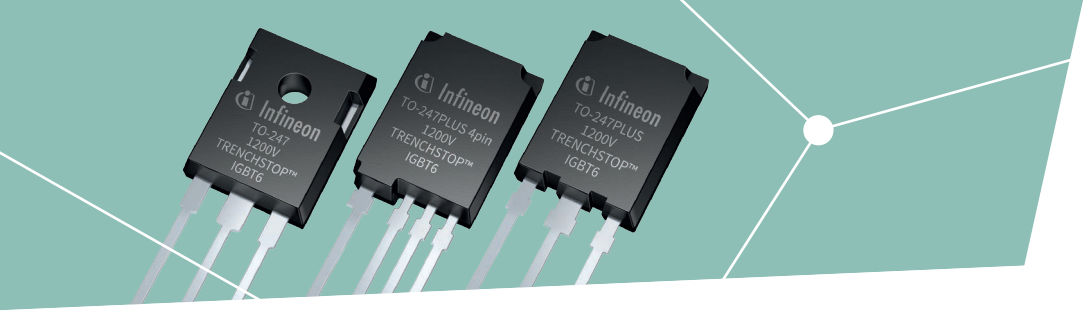


Product brief

1200 V TRENCHSTOP™ IGBT6

New 1200 V IGBT generation for the best efficiency in fast switching designs

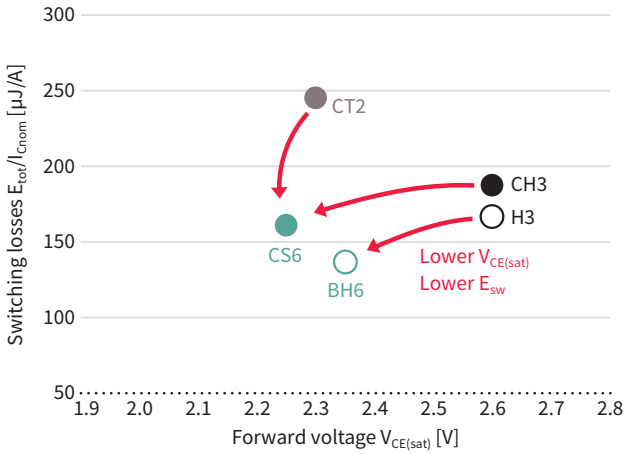
The new 1200 V IGBT generation TRENCHSTOP™ IGBT6 is designed to meet requirements of high efficiency, lowest conduction and switching losses in hard switching and resonant topologies operating at switching frequencies above 15 kHz.

The TRENCHSTOP™ IGBT 6 is released in 2 product families – low conduction losses optimized S6 series and improved switching losses H6 series. The TRENCHSTOP™ IGBT6 S6 series features low conduction losses of 1.85 V collector-emitter saturation voltage $V_{CE(sat)}$ combined with low switching losses of the HighSpeed 3 H3 series. TRENCHSTOP™ IGBT6 H6 series is optimized for low switching losses, provides ~15 percent lower total switching losses when compared to predecessor generation H3.

Very soft, fast recovery anti-parallel emitter controlled diode is optimized for fast recovery while still maintaining a high level of softness complementing to an excellent EMI behavior.

Positive temperature coefficient allows easy and reliable device paralleling. Very good R_G controllability allows adjustment of IGBT switching speed to the requirements of application.

IGBT6 features lower $V_{CE(sat)}$ and lower switching losses [1)]



TRENCHSTOP™ IGBT6

=

Conduction losses of TRENCHSTOP™ 2

+

Lower switching losses than HighSpeed 3

1) Based on datasheet values at T_{vj} = 175°C

Key features

Features

- Low conduction losses with 1.85 V $V_{CE(sat)}$ for S6 series
- Best combination of switching and conduction losses for switching frequency 15–40 kHz
- High R_G controllability
- Low EM
- Full rated, robust freewheeling diode

Benefits

- Easy, plug and play replacement of predecessor HighSpeed 3 H3 IGBT
- 0.15 percent system efficiency improvement when changing from H3 to S6 in TO-247-3 [2)]
- 0.2 percent system efficiency improvement when changing from H3 to S6 in TO-247PLUS 4pin [2)]

2) Defined by application test in 3-phase T-type converter

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1200 V TRENCHSTOP™ IGBT6

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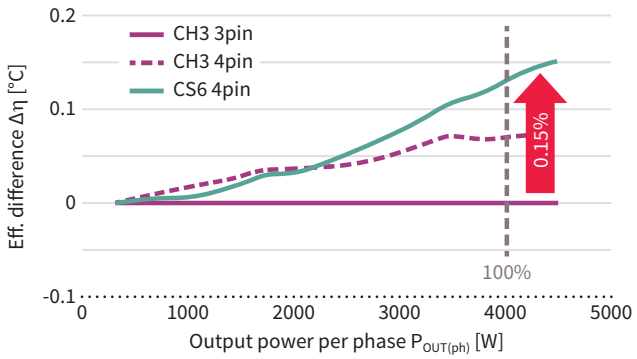
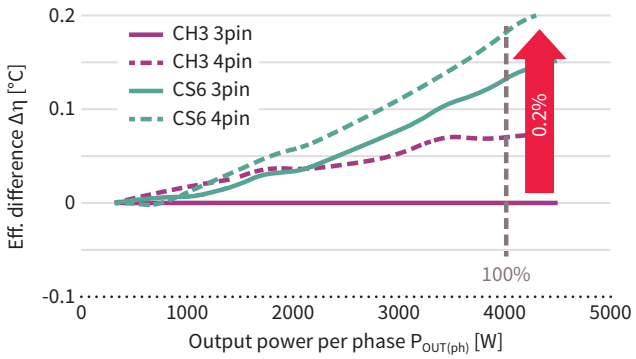
Application test at 3-level T-type inverter at 16 kHz [3)]





3) Test conditions: V_G = 15/-5 V, R_G = 5 Ω, V_{bus} = 750 V, I_{out} = 1.5–19.5 A (steps of 1.5 A every 5 minutes), cos(φ) = 1, f_{sw} = 16 kHz

The TRENCHSTOP™ IGBT6 is designed to be an easy direct replacement to the predecessor HighSpeed 3 IGBT series. Internal test at 3-phase T-type converter showed that plug and play replacement of H3 IGBT with new IGBT6 S6 in TO-247-3 package brings efficiency improvement of 0.15 percent. When replacing H3 in TO-247-3 with S6 device in TO-247PLUS 4pin package the efficiency can be improved by 0.20 percent.

Product portfolio of the new 1200 V TRENCHSTOP™ IGBT offers unique, the highest current 75 A 1200 V discrete IGBT copacked with 75 A diode in TO-247PLUS 3pin and low switching losses Kelvin Emitter TO-247PLUS 4pin package.

Product portfolio 1200 V TRENCHSTOP™ IGBT6

Product part number	V_{CE} at 25°C [V]	I_C at 100°C [A]	I_F at 100°C [A]	$V_{CE(sat)}$ at 25°C [V]	E_{on} at 25°C [mJ]	E_{off} at 25°C [mJ]
				V_{GE} = 15.0 V, I_C = 40.0 A	T_{VJ} = 25°C, V_{CC} = 600 V, I_C = 75.0 A, V_{GE} = 0.0/15.0 V, $R_{G(on)}$ = 4.0 W, $R_{G(off)}$ = 4.0 W, L_S = 70 nH, C_S = 67 pF	
Package: TO-247-3						
IKW15N120BH6	1200	15	15	1.90	0.70	0.55
IKW40N120CS6	1200	40	40	1.85	2.55	1.55
Package: TO-247PLUS 3pin						
IKQ75N120CS6	1200	75	75	1.85	5.15	2.95
Package: TO-247PLUS 4pin						
IKY40N120CS6	1200	40	40	1.85	1.45	1.55
IKY75N120CS6	1200	75	75	1.85	2.20	2.95

www.infineon.com/igbt6-1200v

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