

Motor drives evaluation board with 650 V IGBT TRENCHSTOP™ T7 in TO-247 package









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가상부스에 오신 걸 환영합니다!



650 V TRENCHSTOP™ IGBT7 T7

Key features and benefits

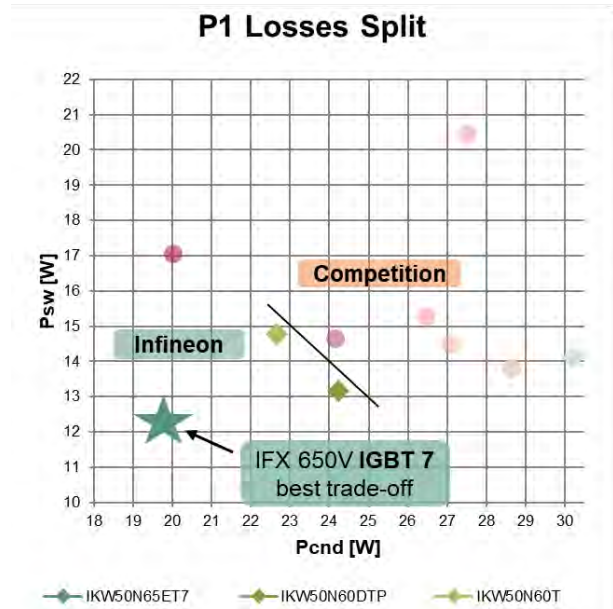
Introducing the new 650 V TRENCHSTOP™ IGBT7 discrete portfolio co-packed with soft EC7 diodes. This price-optimized portfolio has enhanced controllability for better EMI performance while switching losses have been reduced.

Key features	Key benefits	Value	Ideal for
Low Vce(sat) ≤1.35 V	<ul style="list-style-type: none">› 20% lower case temp. due to lowest losses› Best-in-class in price and performance› Superior controllability› Soft fully rated diode (EC7)› Available in TO-247› Ruggedness improvement› 100% dynamic tested	Higher power density enables lower cooling requirement	<div> UPS</div> <div> Solar</div>
Improved EMI performance		Reduced system costs	<div> Motor drivers</div> <div> EV charger</div>
Improved humidity robustness		Easy to design products – drop-in replacement	<div> PFC</div> <div> Energy saving</div>
High collector emitter voltage at 650 V and 3 uS SC rating		High system reliability	

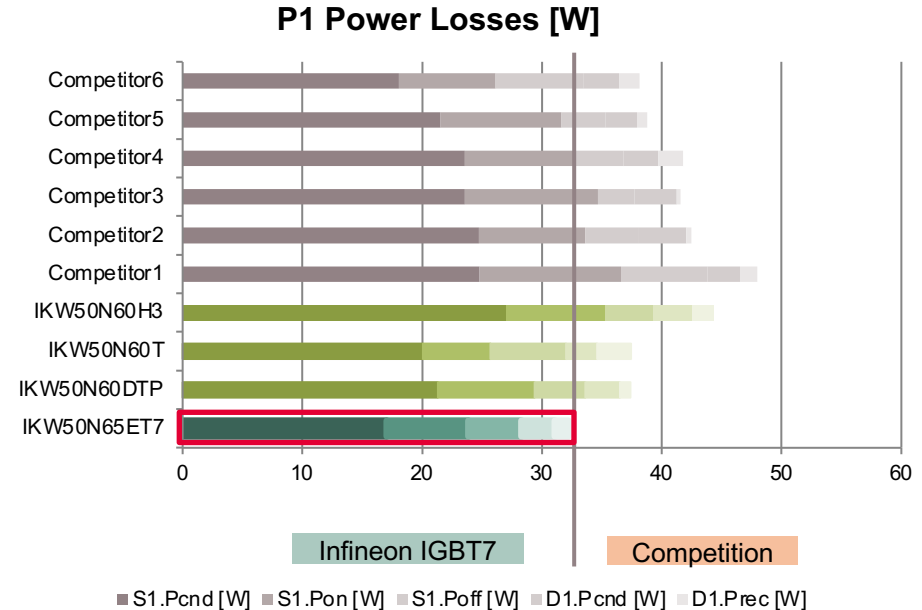
Motor drive inverter losses simulation

Fixed case temperature analysis

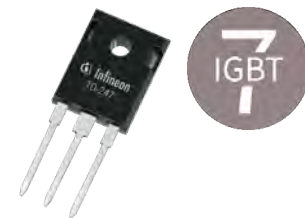
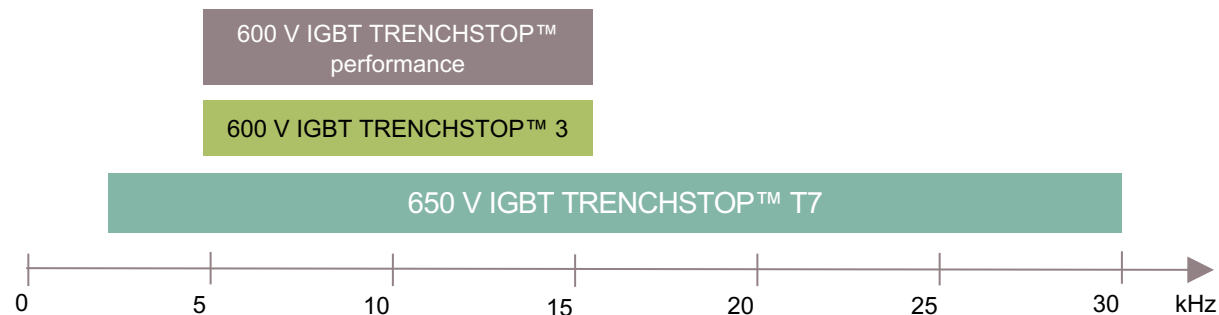
For the same dv/dt , the conduction and switching losses are lower than previous IFX technologies and competitors



The motor drive condition
 $I_{ph}=35$ Arms (14 kW), $V_{dc}=400$ V, $PF=0.9$, $M=0.9$ (147 Vrms), $F_{pwm}=15$ kHz, $V_{ph}=147$ Vrms



Product portfolio 650 V TRENCHSTOP™ IGBT7 T7



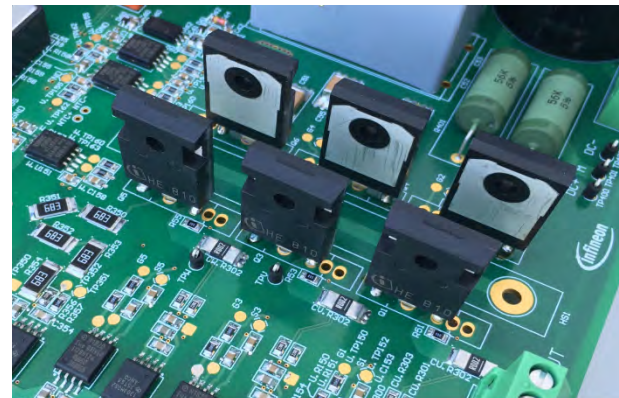
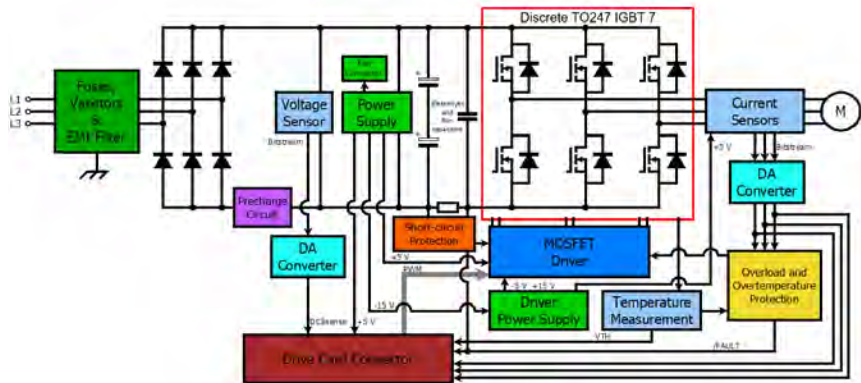
Nominal current 100°C	650 V IGBT TRENCHSTOP™ T7	600 V IGBT TRENCHSTOP™ 3	600 V IGBT TRENCHSTOP™ performance
20 A co-packed	IKW20N65ET7	IKW20N60T	
30 A co-packed	IKW30N65ET7	IKW30N60T	IKW30N60DTP
40 A co-packed	IKW40N65ET7		IKW40N60DTP
50 A co-packed	IKW50N65ET7	IKW50N60T	IKW50N60DTP
75 A co-packed	IKW75N65ET7	IKW75N60T	

Application measurements confirm the superiority of TRENCHSTOP™ IGBT7, which has 20% lower case temperature versus the IGBT 3 and competitors

Motor drives evaluation board

Introduction

- › Complete system evaluation board includes a **three-phase voltage source inverter (B6) topology** in combination with control boards equipped with an M5 32-pin interface connector such as the XMC4400 Drive Card. The evaluation board features and demonstrates **Infineon's 650 V TRENCHSTOP™ IGBT7 in motor drives**.
- › The evaluation board was developed **to support customers during their first steps designing applications with Infineon devices**.
- › **It is optimized for motor drive applications** with a very high-frequency switching operation.

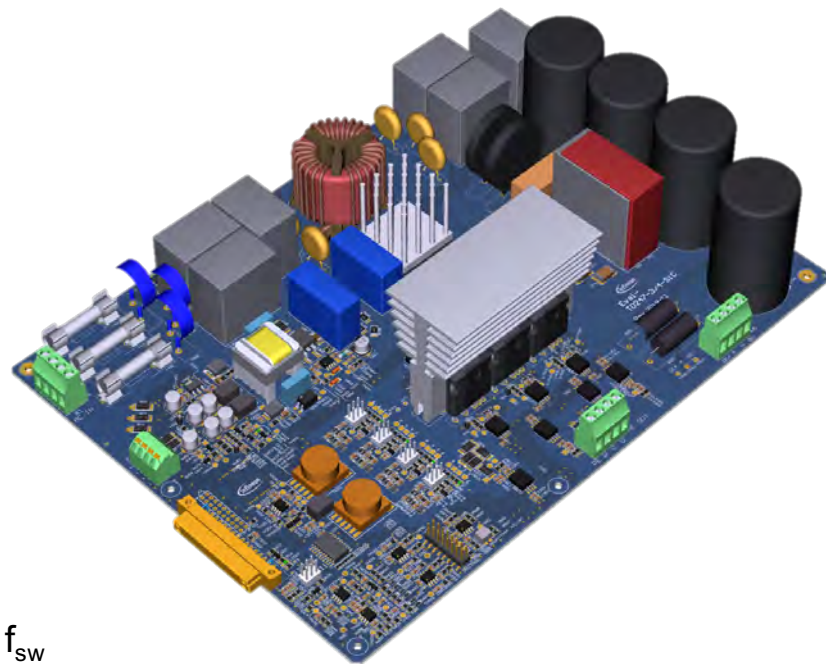


650 V TRENCHSTOP™ IGBT7

Motor drives evaluation board

Summary of features

- › Low-inductive design
- › Isolated sensing with $\Delta\Sigma$ -ADC
- › Overload and short-circuit hardware protection
- › Overtemperature hardware protection
- › Rugged gate driver technology with stability against transient and negative voltage
- › Measurement test points compatible with standard oscilloscope probes
- › 650 V TRENCHSTOP™ **IGBT7** in TO-247 package

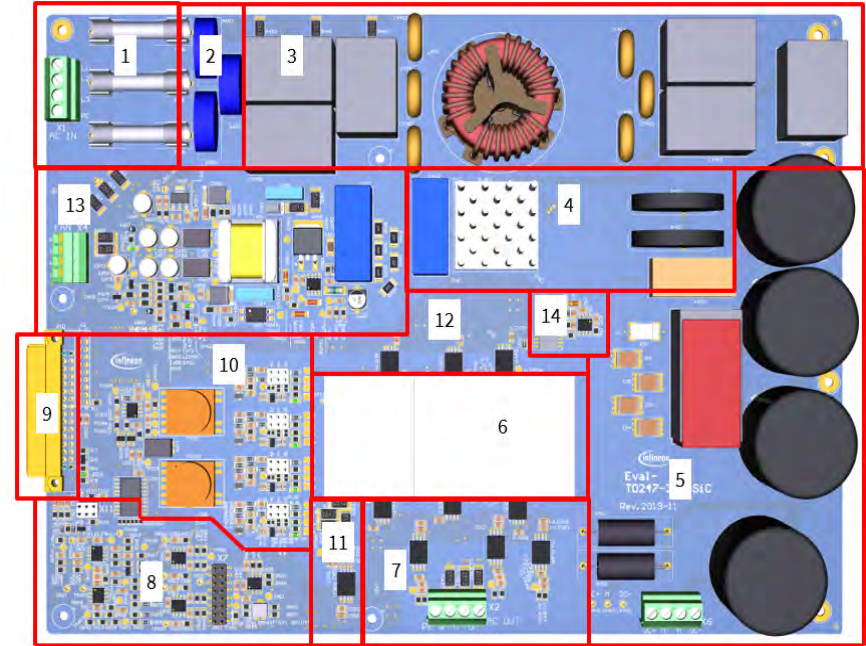


Benefits

- › MADK is optimized to GPD / servo drives with very high f_{sw}
- › Possibility to test the devices in TO-247 package
- › Equipped with all assembly groups for sensorless field-oriented control (FOC)

Functional groups of motor drives evaluation board

No.	Functional groups
1	AC input connector with fuses
2	Varistors for overvoltage protection
3	EMI filter
4	Rectifier with pre-charge relay and pre-charge NTC resistors
5	DC-bus capacitors, balancing resistors and DC-bus connector
6	Power stage: 6 IGBTs in TO-247 with heatsink and phase current shunts
7	High-side MOSFET drivers with $\Delta\Sigma$ -DACs for shunt sensors
8	Low-pass filter of $\Delta\Sigma$ -signals and overcurrent comparators
9	Connector for controller
10	Isolated power supply for MOSFET drivers
11	DC-bus voltage measurement with $\Delta\Sigma$ -DAC
12	Low-side MOSFET drivers
13	Flyback converter for auxiliary supply
14	Overcurrent detection and measuring shunt



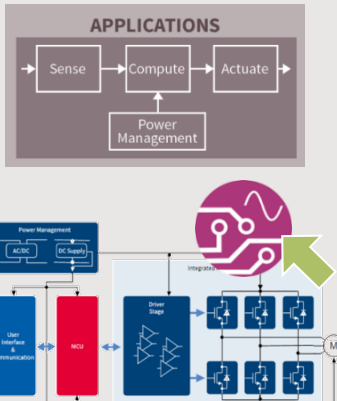
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More information about the motor drives evaluation board with 650 V TRENCHSTOP™ IGBT7 in TO-247 package will be available on the Infineon website:

<https://www.infineon.com/cms/en/product/evaluation-boards/>

Application learning



APPLICATIONS

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    graph LR
      Sense --> Compute
      Compute --> Actuate
      Compute --> PM[Power Management]
      PM --> Sense
  
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Integrated DC Motor Control

- Integrated Half-Bridge Driver
- Integrated Full-Bridge Driver
- Motor Driver
- SPI Power Controller SPOC
- Smart Low-Side & High-Side Switches
- CIPCS™
- MIPAC™ Modules

Block diagrams
Online information

System understanding



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