

Product brief

CoolGaN™ 600 V e-mode GaN HEMTs

The highest efficiency and power density with the highest quality

The enhancement mode concept offers fast turn-on and turn-off speed as well as a better path towards integration either on a chip or package level. CoolGaN™ enables simpler half-bridge topologies.

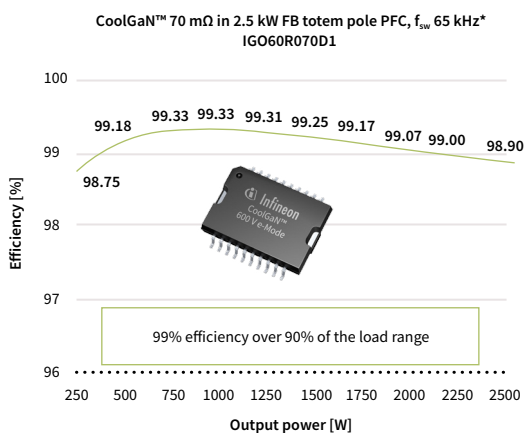
E-mode is more suitable for multi-chip integration. As enhancement mode-based solutions reach maturity, ease of use and solution costs will make them the more prominent solution.

The CoolGaN™ 600 V series is realized according to a specific, GaN-tailored qualification process which goes further beyond other GaN products in the market.

CoolGaN™ 600 V addresses telecom, datacom and server SMPS as well as wireless charging, charger and adapter, among others. It is the most rugged and reliable solution in the market. The CoolGaN™ portfolio is built around high performing SMD packages to fully exploit the benefits of GaN.

CoolGaN™ for PFC

CoolGaN™ enables the adoption of simpler half-bridge topologies for PFC (including elimination of the lossy input bridge rectifier). The result is a record efficiency (>99%) with a potential for BOM savings.



*No external power supplies – everything included.
 $V_{in} = 230 V_{AC}$, $V_{out} = 390 V_{DC}$, $t_{ambient} = 25^\circ C$

Key features

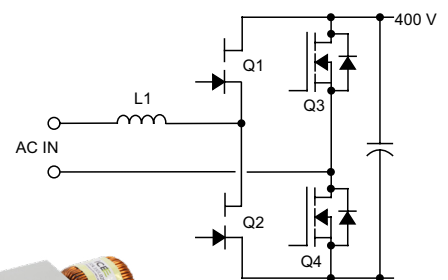
- > Best FOM of 600 V power devices
- > Excellent for hard and soft switching topologies
- > Optimized for turn-on and turn-off
- > The cutting-edge technology for innovative solutions and high volumes

Key benefits

- > Highest efficiency for SMPS
- > Highest power density, small and light design
- > Surface mount packaging ensures that switching capabilities of GaN are fully accessed
- > Easy to use thanks to a compelling driver IC portfolio

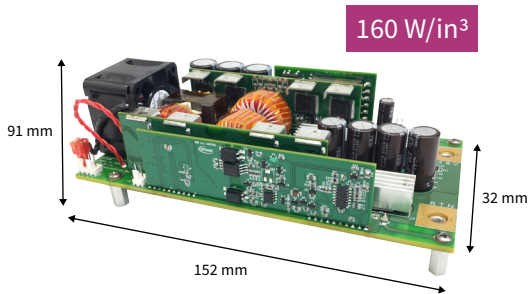
FB totem pole

- > 2 x 70 mΩ CoolGaN™ in DSO-20-85
- > 2 x 33 mΩ CoolMOS™

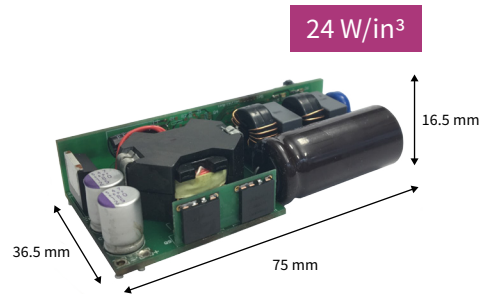


The highest power density

CoolGa™ enables higher power density at the same efficiency



3.6 kW LLC, f_{sw} 350 kHz, 380 V-54 V, using IGT60R070D1



65 W hybrid flyback, f_{sw} 72 to 196 kHz, V_{in} 90 to 264 V_{rms}, V_{out} 3 to 20 V, using IGLD60R190D1

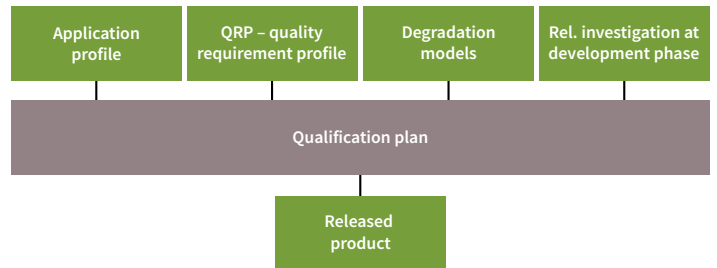
CoolGa™ for resonant topologies

- > In resonant applications, 10 times lower Q_{oss} and Q_g enables high frequency operations at the highest efficiency levels
- > Linear output capacitance leads to 8 to 10 times lower dead time
- > Devices can be paralleled
- > Power density can be pushed even further by optimizing the thermal management
- > CoolGa™ technology pushes the efficiency forward thus enabling further gain in power density, e.g. in low-power chargers/adapters

The highest quality

The qualification of GaN switches requires a dedicated approach, well beyond other GaN products in the market

- > Infineon qualifies GaN devices well beyond the standards
- > Application profiles are an integral part of the qualification
- > Failure models, based on accelerated test conditions, ensure target lifetime
- > Infineon sets the next level of wide-bandgap quality



CoolGa™ 600 V e-mode GaN HEMTs product portfolio

$R_{DS(on)}$ max.	DSO-20-85 Bottom-side cooling	DSO-20-87 Top-side cooling	HSOF-8-3 (TO-leadless)	LSON-8-1 DFN 8x8
35 mΩ	IGO60R035D1**	IGOT60R035D1**	IGT60R035D1**	
70 mΩ	IGO60R070D1	IGOT60R070D1	IGT60R070D1	IGLD60R070D1
190 mΩ			IGT60R190D1S*	IGLD60R190D1

*Standard grade

**Coming soon

Published by
Infineon Technologies Austria AG
9500 Villach, Austria

© 2019 Infineon Technologies AG.
All Rights Reserved.

Please note!

THIS DOCUMENT IS FOR INFORMATION PURPOSES ONLY AND ANY INFORMATION GIVEN HEREIN SHALL IN NO EVENT BE REGARDED AS A WARRANTY, GUARANTEE OR DESCRIPTION OF ANY FUNCTIONALITY, CONDITIONS AND/OR QUALITY OF OUR PRODUCTS OR ANY SUITABILITY FOR A PARTICULAR PURPOSE. WITH REGARD TO THE TECHNICAL SPECIFICATIONS OF OUR PRODUCTS, WE KINDLY ASK YOU TO REFER TO THE RELEVANT PRODUCT DATA SHEETS PROVIDED BY US. OUR CUSTOMERS AND THEIR TECHNICAL DEPARTMENTS ARE REQUIRED TO EVALUATE THE SUITABILITY OF OUR PRODUCTS FOR THE INTENDED APPLICATION.

WE RESERVE THE RIGHT TO CHANGE THIS DOCUMENT AND/OR THE INFORMATION GIVEN HEREIN AT ANY TIME.

Additional information

For further information on technologies, our products, the application of our products, delivery terms and conditions and/or prices, please contact your nearest Infineon Technologies office (www.infineon.com).

Warnings

Due to technical requirements, our products may contain dangerous substances. For information on the types in question, please contact your nearest Infineon Technologies office.

Except as otherwise explicitly approved by us in a written document signed by authorized representatives of Infineon Technologies, our products may not be used in any life-endangering applications, including but not limited to medical, nuclear, military, life-critical or any other applications where a failure of the product or any consequences of the use thereof can result in personal injury.