

## Product brief

# CoolGaN™ 600 V e-mode GaN HEMTs

The highest efficiency and power density with 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

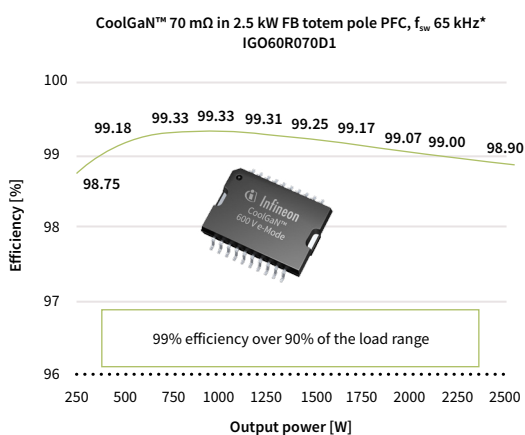
CoolGaN™ enables the adoption of simpler half-bridge topologies for PFC (including elimination of the lossy input bridge rectifier). The result is a record efficiency (>99%) with a potential for BOM savings.

### 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

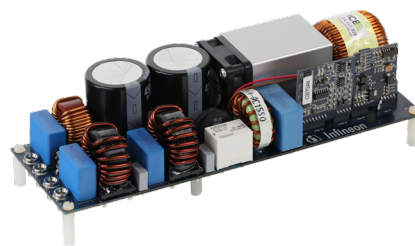
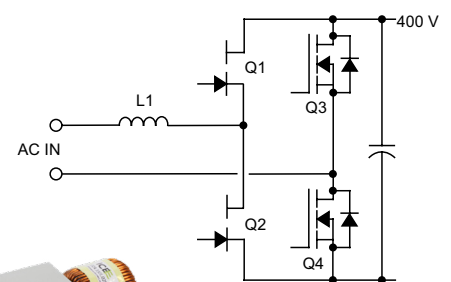


\*No external power supplies – everything included.

$V_{in} = 230 V_{AC}$ ,  $V_{out} = 390 V_{DC}$ ,  $t_{ambient} = 25 ^\circ C$

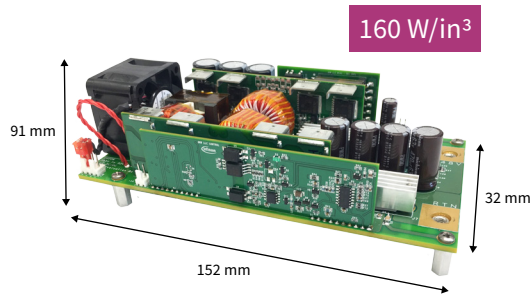
### FB totem pole

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

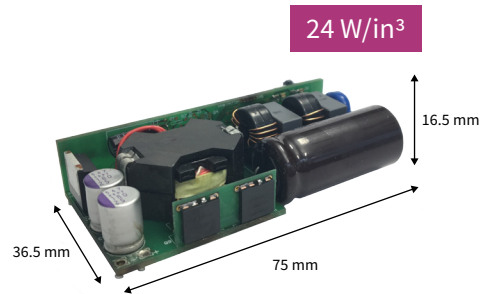


# The highest power density

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<sub>rms</sub>,  $V_{out}$  3 to 20 V, using IGLD60R190D1

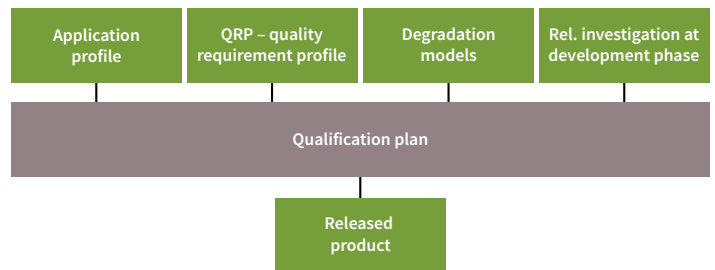
## CoolGa™ for resonant topologies

- > 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

# 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 and quality are met
- > 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)	DFN 8x8
35 mΩ	IGO60R035D1**	IGOT60R035D1**	IGT60R035D1**	
70 mΩ	IGO60R070D1	IGOT60R070D1	IGT60R070D1	IGLD60R070D1
190 mΩ			IGT60R190D1S*	IGLD60R190D1**
340 mΩ			IGT60R190D1**	
				IGLD60R340D1**

\*Standard grade

\*\*Coming soon

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