



## Product Brief

# 600 V CoolMOS™ C7 Gold in TOLL package

## A new SMD package using Kelvin source concept

Infineon Technologies introduces the new CoolMOS™ C7 Gold technology in latest SMD TO-Leadless (TOLL) package.

The C7 Gold series (G7) for the first time brings together the benefits of the improved 600 V CoolMOS™ C7 Gold technology, 4pin Kelvin source capability and the improved thermal properties of the TOLL package to enable a possible SMD solution for high current hard switching topologies such as power factor correction (PFC) up to 3 kW and for resonant circuits such as high-end LLC.

### Benefits to the customer are:

- > Higher efficiency due to the improved C7 Gold technology and faster switching due to the package low parasitic source inductance and the 4pin Kelvin source concept
- > Improved power density due to low  $R_{DS(on)}$  in small footprint, by either replacing TO packages (height restrictions) or paralleling SMD packages due to thermal or  $R_{DS(on)}$  requirements
- > Production cost reduction by moving to SMD through quicker assembly times

### Improved CoolMOS™ C7 Gold technology

Parameter	Package	$R_{DS(on)}$ (max) [mΩ]	$Q_G$ (typ) [nC]	$C_{oss}$ (typ) [pF]
Competitor A 600 V	D <sup>2</sup> PAK	99	100	156
600 V CoolMOS™ C7 Gold (G7)	TOLL	102	34	27
Comparison	30% footprint reduction	Similar $R_{DS(on)}$ for comparison	66% lower than competitor	83% lower than competitor

### TOLL package versus D<sup>2</sup>PAK

Parameter	Footprint [mm <sup>2</sup> ]	$R_{DS(on)}$ (max) [mΩ]	Source inductance [nH]	Kelvin source feature
D <sup>2</sup> PAK	150	87*	5	No
TOLL	115	28	1	Yes
Comparison	30% footprint reduction	68% lower $R_{DS(on)}$	80% lower inductance	Benefits in Kelvin source for efficiency and ease-of-use

\* Best competitor

### Key features

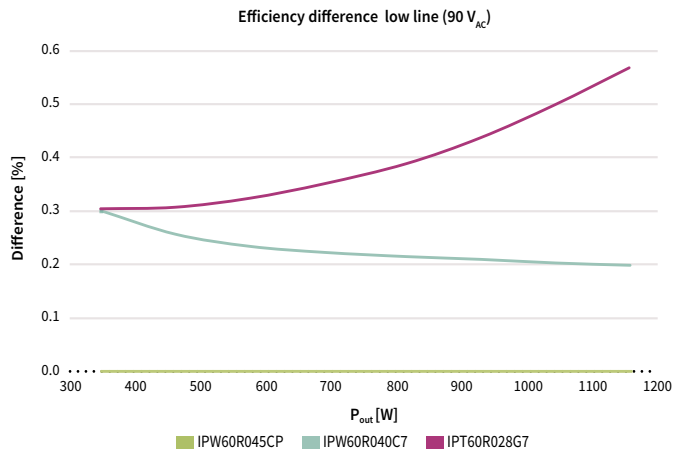
- > **CoolMOS™ C7 Gold**
  - Gives best-in-class FOM  $R_{DS(on)} \times E_{oss}$  and  $R_{DS(on)} \times Q_G$
  - Enables best-in-class  $R_{DS(on)}$  in smallest footprint
- > **TOLL package**
  - Inbuilt 4<sup>th</sup> pin Kelvin source configuration and low parasitic source inductance (~1 nH)
  - Is MSL1 compliant, total Pb-free, has easy visual inspection grooved leads
  - Enables improved thermal performance  $R_{th}$

### Key benefits

- > FOM  $R_{DS(on)} \times Q_G$  is 16 percent better than previous 600 V C7 enabling higher efficiency
- > Power density through best-in-class 28 mΩ in TOLL 115 mm<sup>2</sup> footprint
- > Reducing parasitic source inductance by Kelvin source improves efficiency and ease-of-use
- > TOLL package is easy to use and has the highest quality standards
- > Improved thermals enable SMD TOLL package to be used in higher current designs than has been previously possible

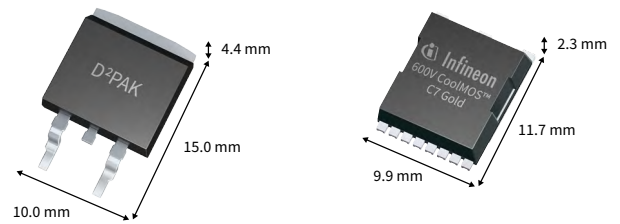


Benefits in efficiency in PFC circuit



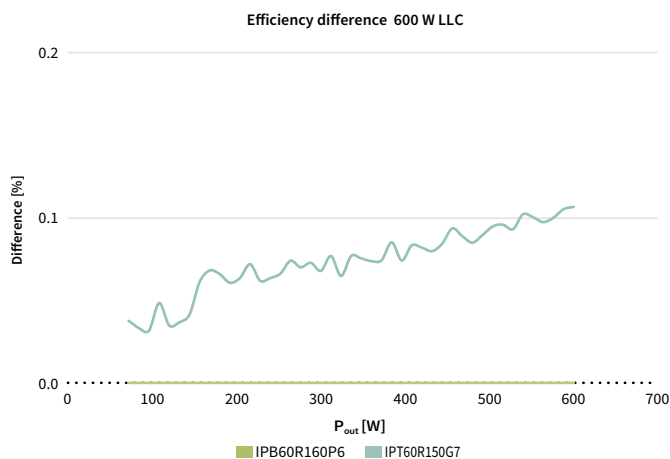
Performance gain of 0.6 percent full load efficiency gain TOLL versus TO-247 due to lower R<sub>DS(on)</sub> from TOLL and 4pin Kelvin source capability.

TO-Leadless package versus D<sup>2</sup>PAK



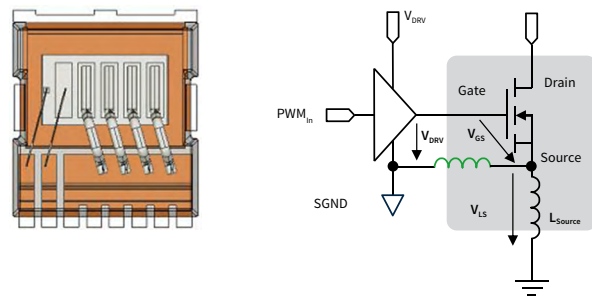
- > 30 percent footprint reduction
- > 50 percent height reduction
- > 60 percent space reduction

Benefits in efficiency in LLC circuit



Improved performance in LLC circuit.

Four pin Kelvin source capability



- > Separate pin “source-sense” delivers undisturbed signal to driver
- > Higher efficiency at full load

Product portfolio 600 V CoolMOS™ C7 Gold (G7)

R <sub>DS(on)</sub> (max) mΩ	28	50	80	102	125	150
Part number	IPT60R028G7	IPT60R050G7	IPT60R080G7	IPT60R102G7	IPT60R125G7	IPT60R150G7

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