Product Brief

650 V CoolMOS™ C7 Gold in TOLL package

A new SMD package using Kelvin source concept

Infineon Technologies introduces the new 650 V CoolMOS™ C7 Gold technology in latest surface mount device (SMD) TO-Leadless (TOLL) package.

The CoolMOS™ C7 Gold series (G7) for the first time brings together the benefits of the improved 650 V CoolMOS™ C7 Gold technology, 4pin Kelvin source capability and the improved thermal properties of the TOLL package to enable an SMD solution for high current hard switching topologies such as power factor correction (PFC) up to 3 kW.

Benefits to the customer:

- Higher efficiency due to the improved CoolMOS™ 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 650 V	D^2PAK	95	71	74
650 V CoolMOS™ C7 Gold (G7)	TOLL	105	35	26
Comparison	30% footprint reduction	Similar $R_{DS(on)}$ for comparison	51% lower than competitor	65% lower than competitor

TOLL package versus D^2PAK

Parameter	Footprint [mm^2]	$R_{DS(on)}$ (max) [mΩ]	Source inductance [nH]	Kelvin source feature
D^2PAK	150	63*	5	No
TOLL	115	33	1	Yes
Comparison	30% footprint reduction	48% lower $R_{DS(on)}$	80% lower inductance	Benefits in Kelvin source for efficiency and ease-of-use

* Best competitor

Key features

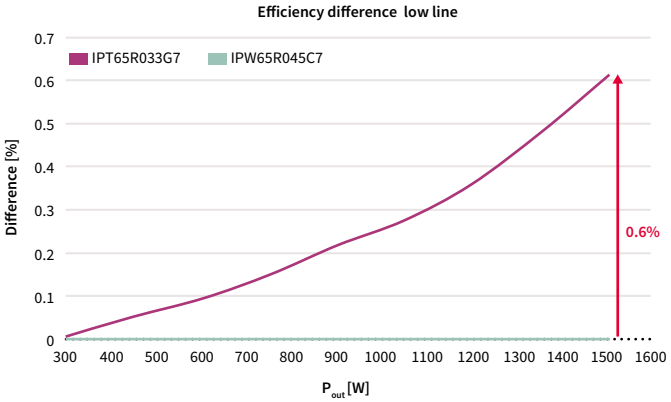
- **CoolMOS™ C7 Gold**
  - Gives best-in-class FOM $R_{DS(on)}$ x E_{oss} and $R_{DS(on)}$ x Q_G
  - Enables best-in-class $R_{DS(on)}$ in smallest footprint
- **TOLL package**
  - Inbuilt 4th pin Kelvin source configuration and low parasitic source inductance (~1 nH)
  - Is MSL1 compliant, total Pb-free,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

Key benefits

- FOM $R_{DS(on)}$ x Q_G is 14% better than previous 650 V CoolMOS™ C7 enabling faster switching leading to higher efficiency
- Power density through BIC 33 mΩ in 115 mm^2 TOLL footprint
- Reducing parasitic source inductance by Kelvin source improves efficiency switching 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

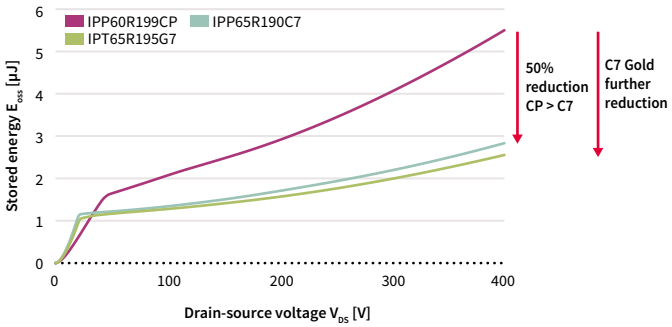
www.infineon.com/c7-gold-toll

Benefits in efficiency TOLL versus TO-247



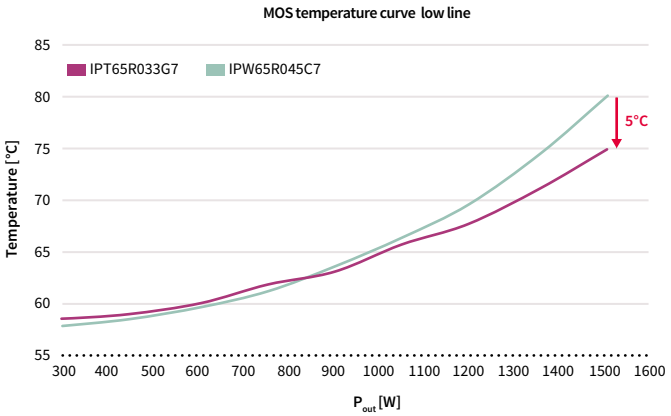
Performance gain of 0.6 percent full load efficiency gain TOLL versus TO-247 due to lower $R_{DS(on)}$ from TOLL and 4pin Kelvin source capability.

CoolMOS™ G7 - lowest E_{oss} for best hard switching performance



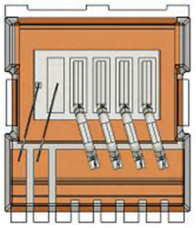
CoolMOS™ G7 technology improves again over previous best 650 V CoolMOS™ C7 performance in E_{oss}, a key value in hard switching topologies such as PFC.

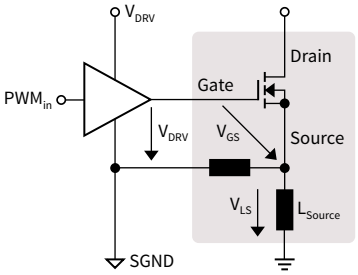
Benefits in temperature due to higher efficiency TOLL versus TO-247



5°C lower temperature seen for TOLL as higher efficiency means less thermal losses produced.

Four in Kelvin source capability



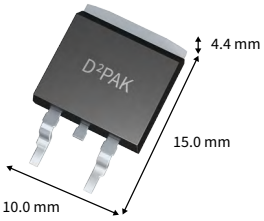


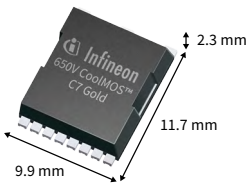
- Separate pin “source-sense” delivers undisturbed signal to driver
- Higher efficiency at full load

Product portfolio

$R_{DS(on)}$ (max) [mΩ]	TO-Leadless (TOLL)
195	IPT65R195G7
105	IPT65R105G7
33	IPT65R033G7

TO-Leadless package versus D²PAK





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

Published by
Infineon Technologies Austria AG
9500 Villach, Austria

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.

Order Number: B152-I0276-V2-7600-EU-EC-P
Date: 03 / 2017