

# Dual SSO8 5x6 in OptiMOS 7™ 40V

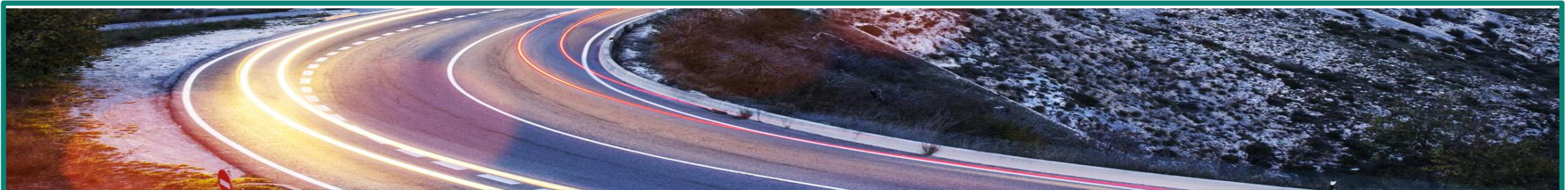
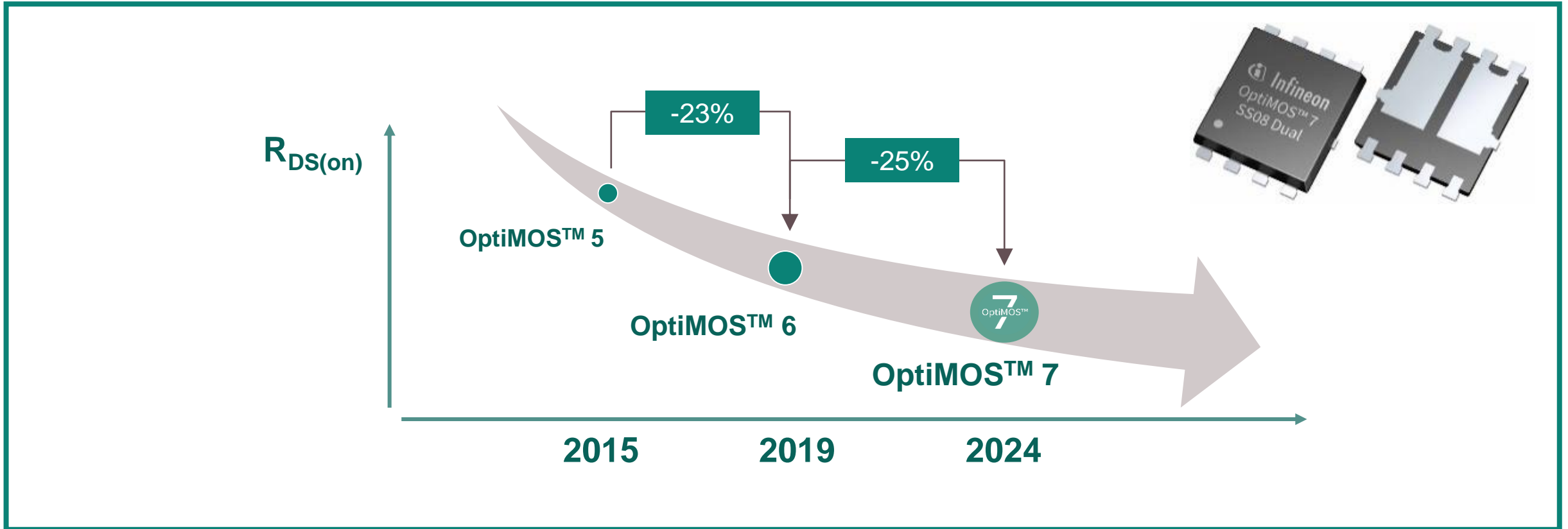
Benchmark Package for  
Highest Power Density & Cost Efficiency

April 2024



# OptiMOS™ 7 40V Overview

## IFX's leading MOSFET Technology with BIC Ron\*A



# OptiMOS™ 7 40V Overview

## IFX's leading edge Automotive MOSFET Technology



**5th Trench Technology**  
released by ATV MOSFET

**State of the art** dual poly  
trench technology

**Leading Edge**  
**300mm**  
**Technology & Production**



**25% RDS(on) reduction**  
vs. OptiMOS™ 6 40V

**Infineon's unique copper metallization**  
Outstanding electrical and thermal conductivity

**Ruggedness improvement**  
High avalanche current capability

**Reduction of Switching losses**

### Infineon Automotive Package Portfolio Innovative & Robust Quality

S308 Single (TSDSON-8) 3x3	SS08 Dual (TDSON-8) 5x6	SS08 Half-Bridge (TDSON-8) 5x6	SS08 Single (TDSON-8) 5x6	SS010T Single TSC (LHDSO-10) 5x7	sTOLL Single (HSOF-5) 7x8	mTOLG Single (HSOG-4) 8x8	TOLL Single (HSOF-8) 10x12

OptiMOS™ 7 40V

# OptiMOS™ 7 40V Overview

## IFX's leading edge Automotive MOSFET Products



### S308

10x products  
down to 1,2mΩ

### Dual SSO8

8x products  
down to 1,9mΩ

### HB SSO8

6x products  
down to 2,3mΩ

### Single SSO8

16x products  
down to 0,4mΩ

### Single SSO10-T

5x products  
down to 0,6mΩ

### sTOLL

5x products  
down to 0,3mΩ

### mTOLG with clip

4x products  
down to 0,5mΩ

### TOLL with clip

3x products  
down to 0,2mΩ

**OptiMOS™ 7 40V – IFX's leading edge Power MOSFET Technology**

*Setting industry benchmark in  $R_{dson}^*A$ , power-density, current capability, switching performance, chip ruggedness*

*Available in IFX's famous robust package portfolio of 3x3, 5x6 Dual , 5x6, 7x8, 8x8, 10x12 packages*

*and extended by top-side cooling 5x7 TSC packages for most efficient Automotive designs*

# OptiMOS™ 7 40V Overview

## Features, Benefits & Applications



### Key features

- Very low  $R_{DS(on)}$
- High Avalanche capability
- High SOA ruggedness
- Fast switching times (turn on/off)
- Leadless Packages w/ Cu-Clip
- Leading thin wafer Cu-technology
- Leading 300mm in-house production

### Key benefits

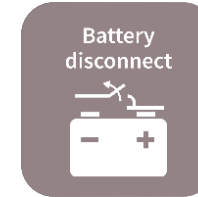
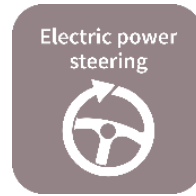
- High power density & efficiency
- Increased current capability
- Improved design ruggedness
- Superior switching performance
- Small footprint & efficient cooling
- Automotive quality product design
- High automotive quality production

### Key applications

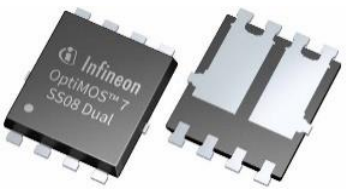
- Electric power steering
- Power disconnect switches
- Zone control units & E-fuse box
- DC/DC
- Braking
- BLDC drives in a wide variety
- All automotive applications

# OptiMOS™ 7 40V Overview

## Focus Applications & Packages



Application / Packages	Drives	Power Distribution Safety Switches	Power Conversion
S3O8 (3x3)	X		X
Dual SSO8 and HB (5x6)	X		X
SSO8 (5x6)	X	X	X
sTOLL (7x8)	X	X	X
mTOLG (8x8)	X		
TOLL (10x12)	X	X	X



[https://www.infineon.com/cms/en/product/promopages/OptiMOS7\\_40V/](https://www.infineon.com/cms/en/product/promopages/OptiMOS7_40V/)

# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## Leading Edge Portfolio for Small & Cost-efficient Loads



Group	Product	max R <sub>DS(on)</sub> [mΩ]	I <sub>D</sub> (DC current) [A]	I <sub>D</sub> (chip limitation) [A]	Q <sub>G</sub> typ. [nC]	V <sub>GS(th)</sub> [LL/NL]
2	IAUCN04S7L018D★	1.8	60	167	45	LL
1	IAUCN04S7N019D★	1.9	60	168	37	NL
2	IAUCN04S7L023D	2.3	60	128	29	LL
1	IAUCN04S7N024D	2.4	60	130	23	NL
2	IAUCN04S7L038D	3.8	60	84	17	LL
1	IAUCN04S7N040D	4.0	60	89	13	NL
1	IAUCN04S7L053D	5.3	60	66	11	LL
1	IAUCN04S7N056D	5.6	60	63	9	NL

Dual SSO8

**NEW**



L x W x H  
6.5 x 5.1 x 1.0 mm<sup>3</sup>

Cu-Clip soldered

- New Dual SSO8 5x6 mm with Cu clip for increased 60A current capability
- Latest OptiMOS™ 7 technology for lowest R<sub>DS(on)</sub> and optimized for switching
- Best cost efficiency for low & mid power BLDC motor drive applications
- Easy back-to-back configuration
- Package JEDEC listed



### Application examples:



Power lift gate



window lift



Water pump



Electric parking brake



Power seat



Body control module



BLDC motor

Project Schedule	Group 1	Group 2
SOP	available	Q3 2025



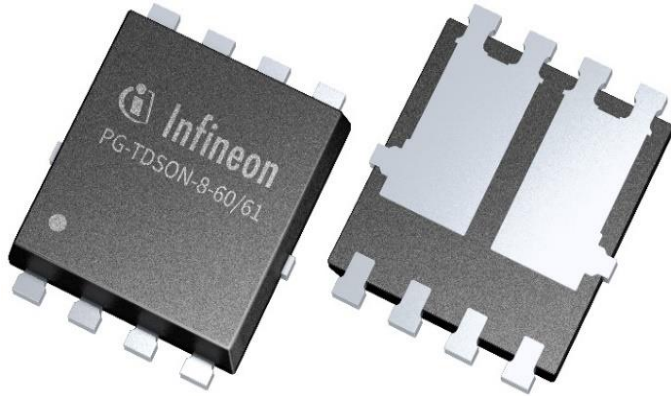
Reference Design:  
150W Coolant pump available



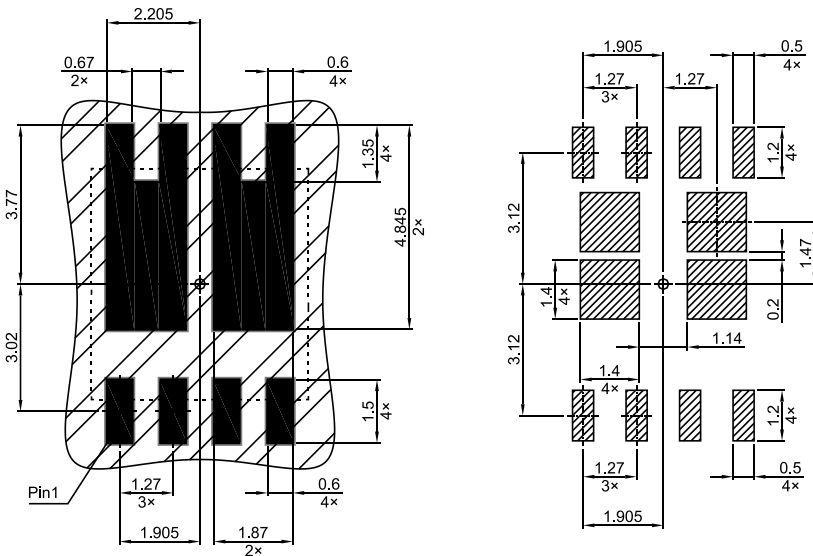
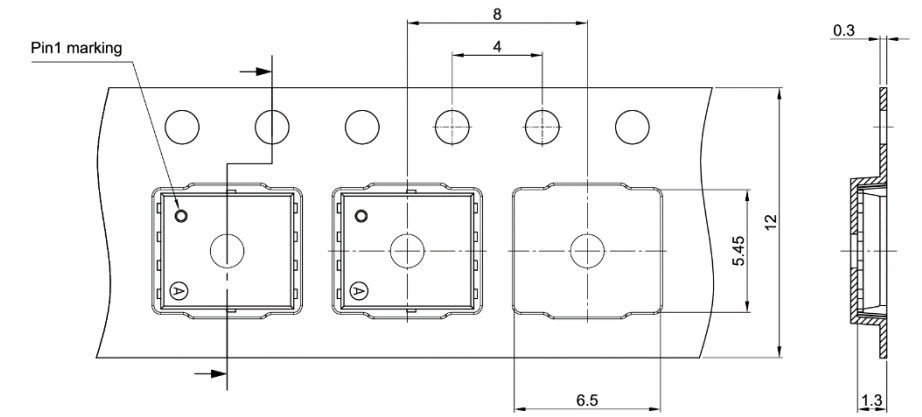
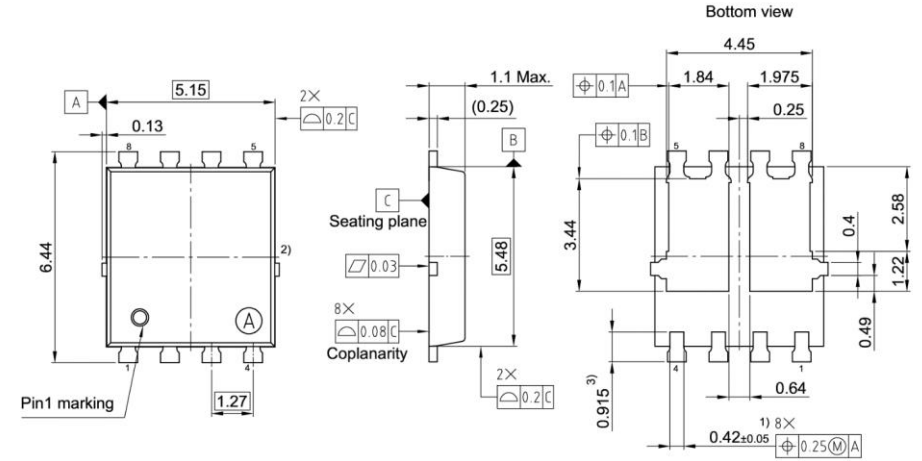


# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## Always use Infineon's recommended PCB footprint



Dual SSO8  
 PG-TDSON-8-60/61  
 JEDEC listed  
 6.5 x 5.1 x 1.0 mm<sup>3</sup>  
 Cu-Clip Soldered

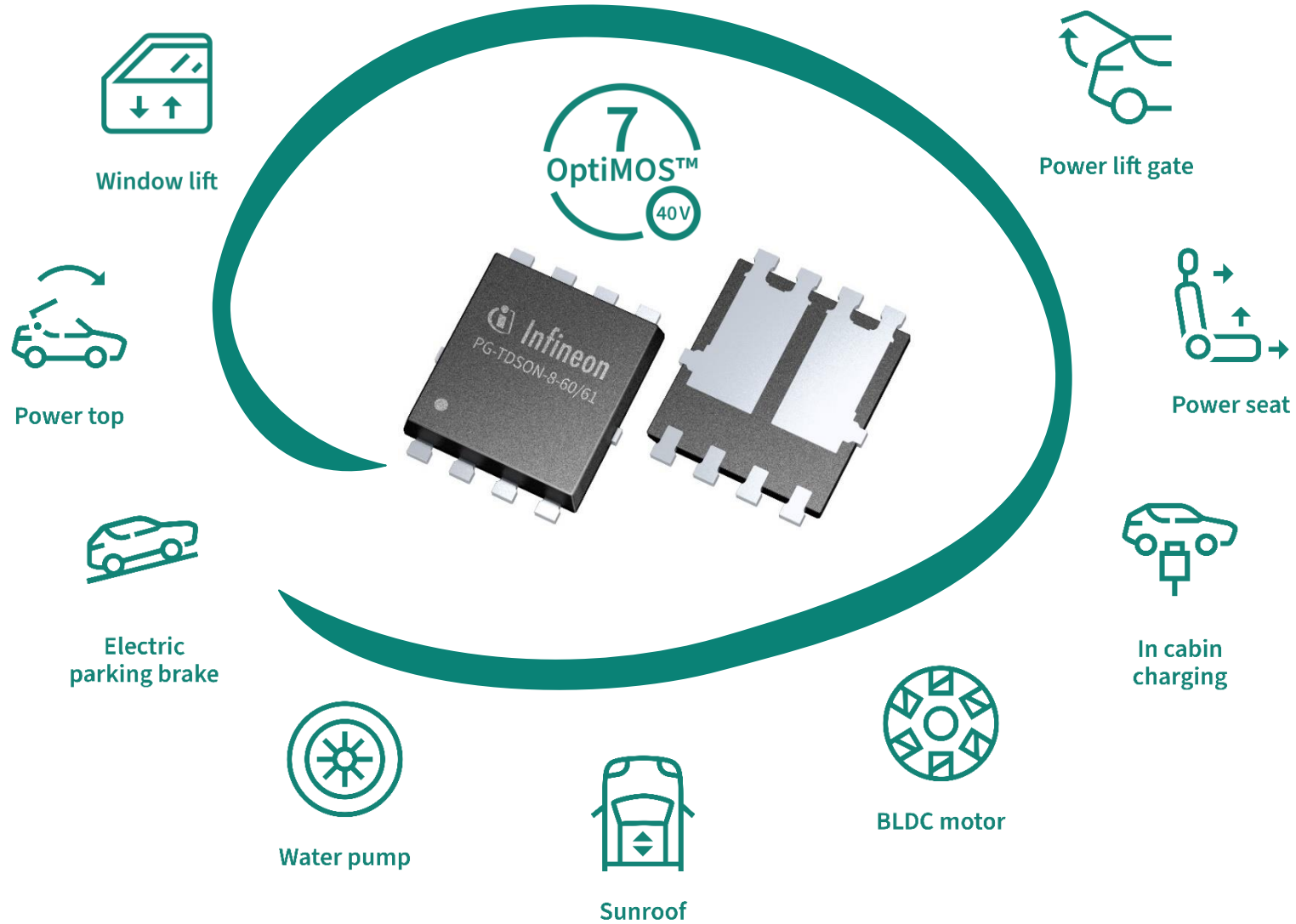


All dimensions are in units mm

All dimensions are in units mm  
 The drawing is in compliance with ISO 128-30, Projection Method 1 [1-1]

# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## Perfect Fit for Small & Cost-efficient Loads – especially in Body

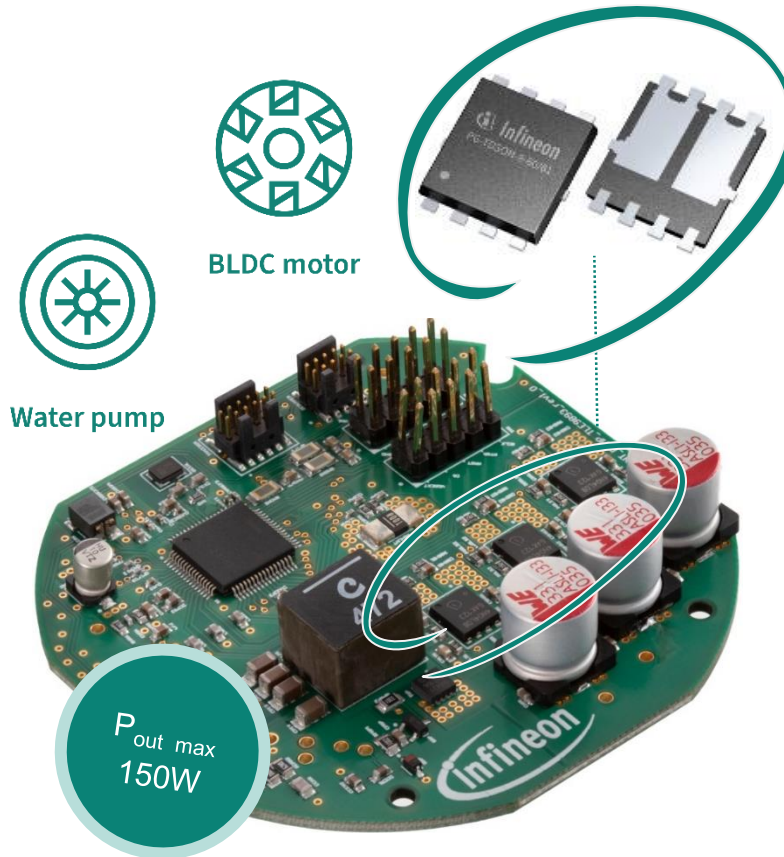


# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## Reference design available as complete solution for BLDC drives



complete solution for BLDC motor control applications



Minimising design effort for the customer

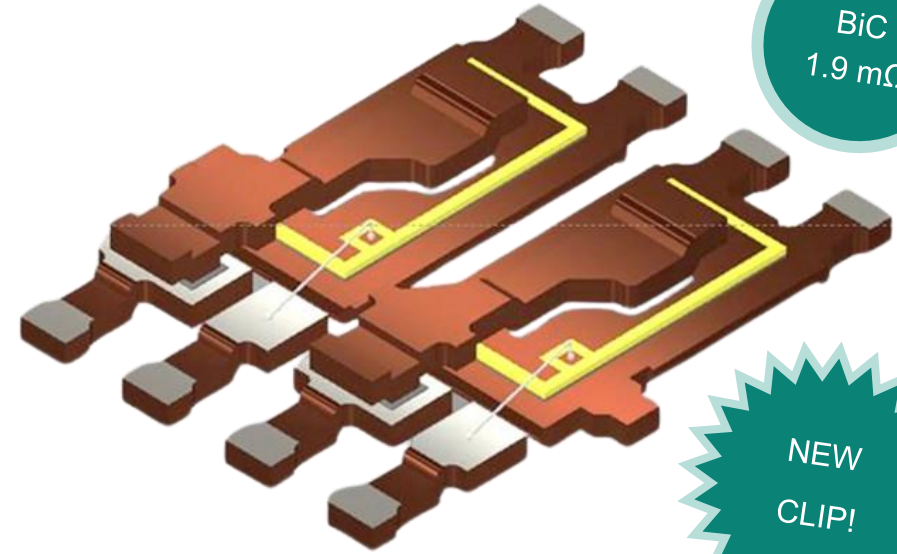
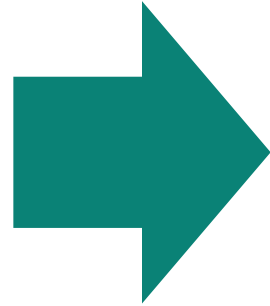
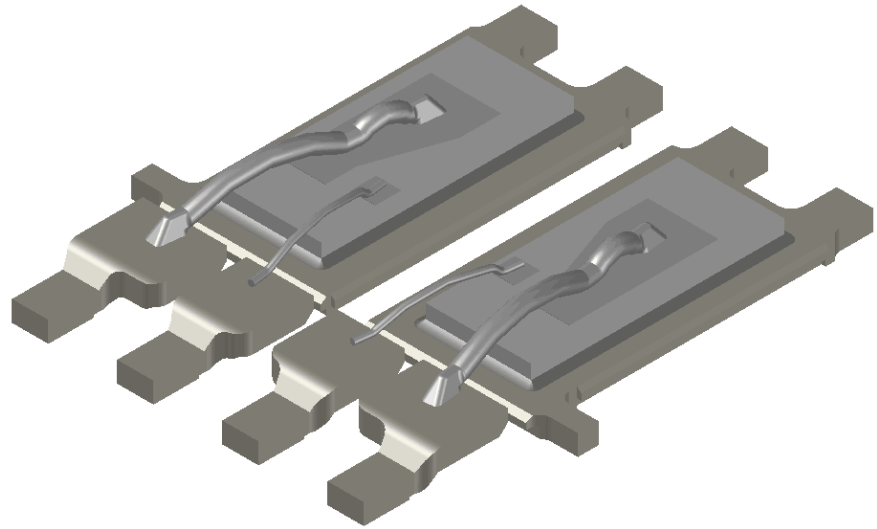
Ready to go!  
The PCB can be directly connected to the pump

Click [here](#) for further information  
Click [here](#) to download the user manual

Complete manual available with switching, EMC and thermal measurements

# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## For enhanced electrical and thermal performances



BiC  
1.9 mΩ

NEW  
CLIP!

Copper clip allows much higher current capability

higher current rating up to 60A!

higher avalanche capability up to 60A!



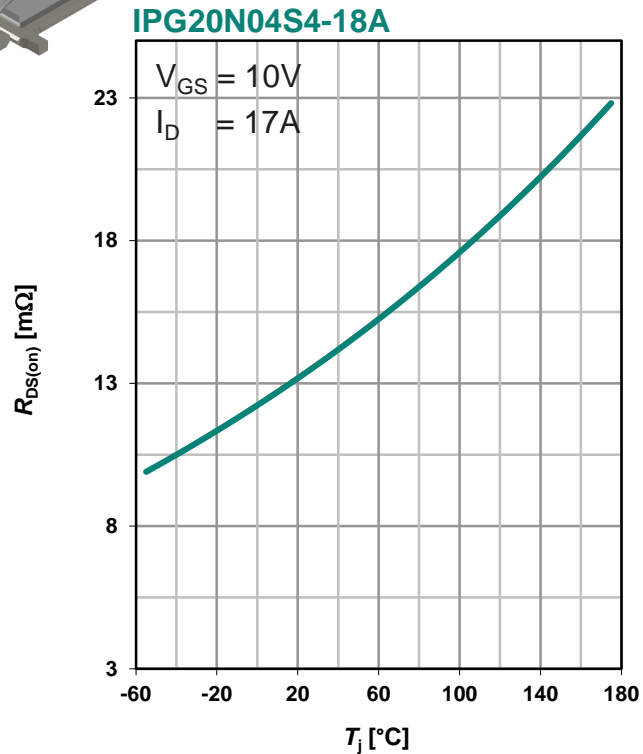
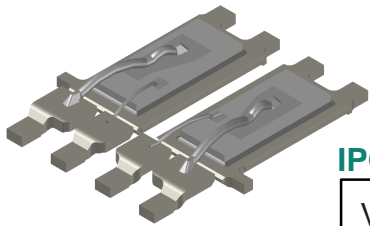
# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## For enhanced electrical and thermal performances

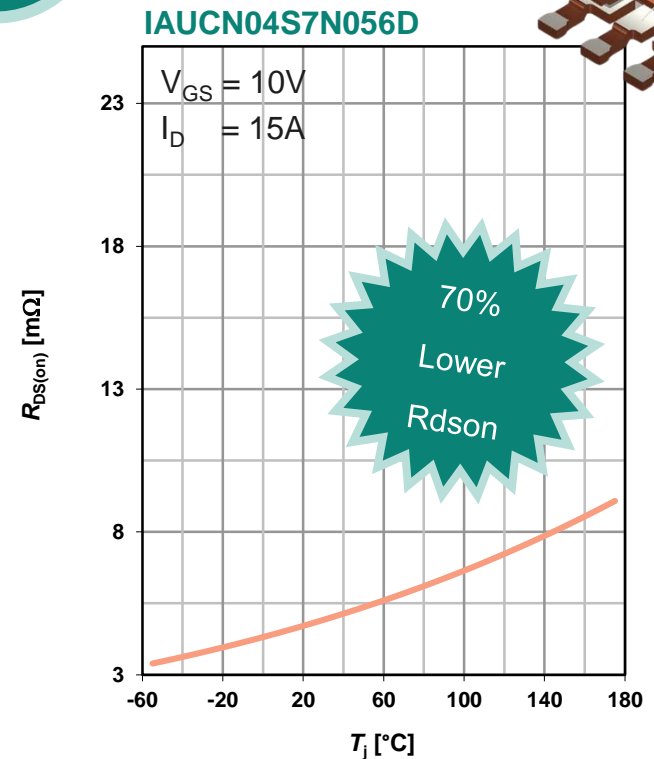
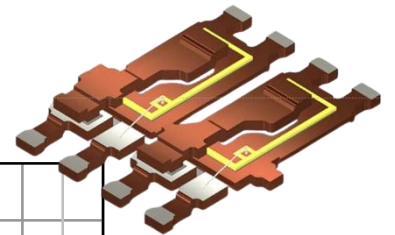


over 60% reduction in on-state resistance  
for the highest ohmic parts!

same die size



OptiMOS™ 7  
leading edge  
technology for  
very low  
on-state  
resistance!



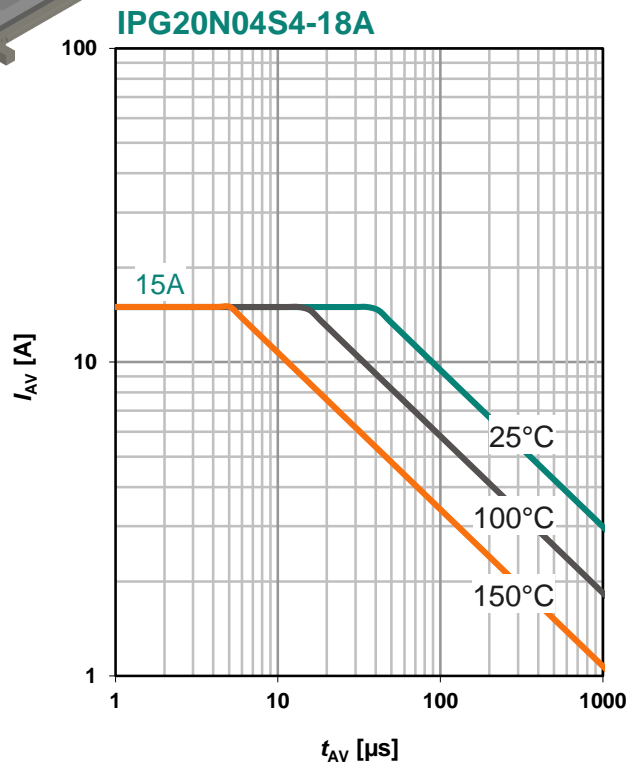
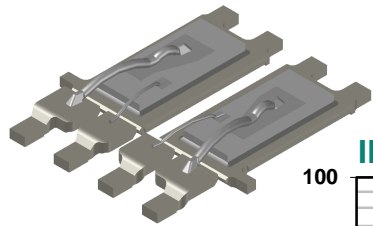
# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## For enhanced electrical and thermal performances

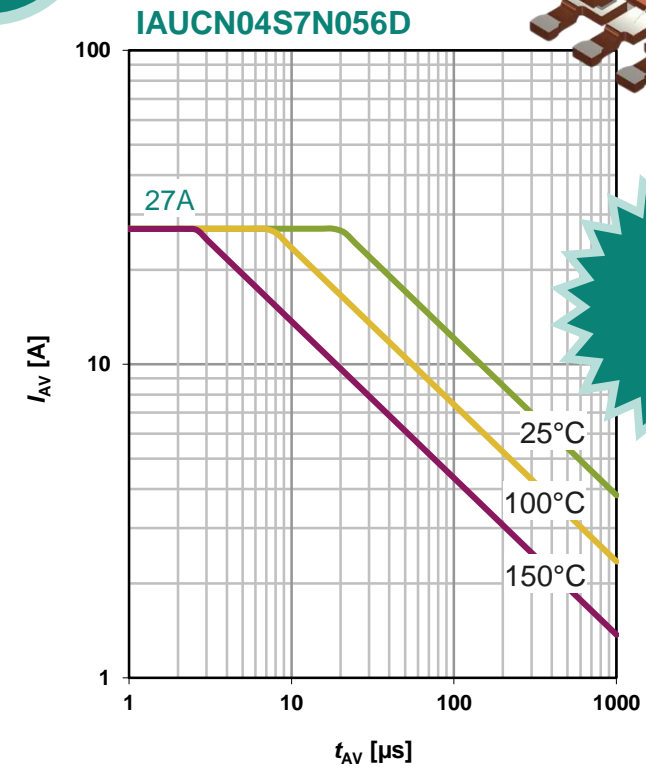
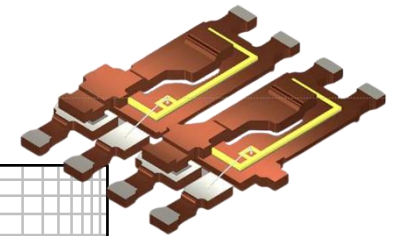


higher avalanche current capability  
for the highest ohmic parts!

same  
die size



Package  
Innovation!  
SSO8 5x6 mm  
with clip for  
increased  
current  
capability



80%  
Higher  
 $I_{AV}$

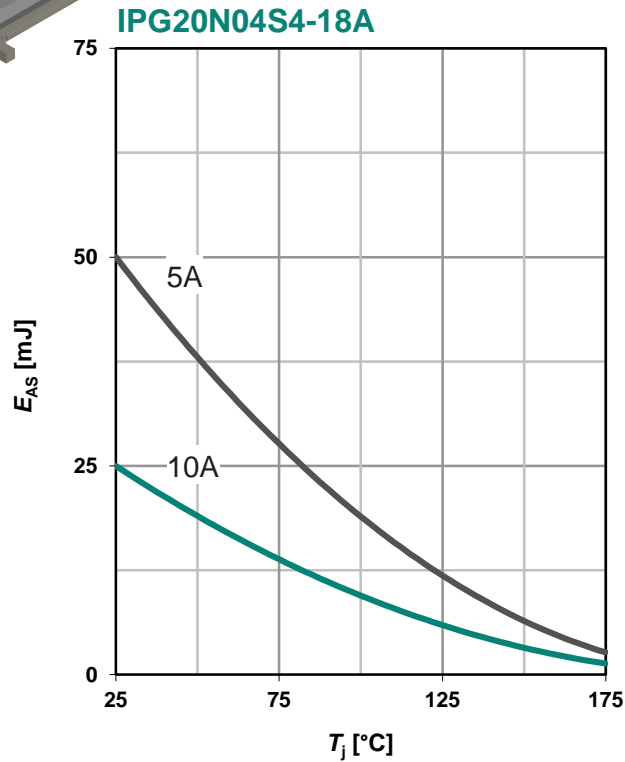
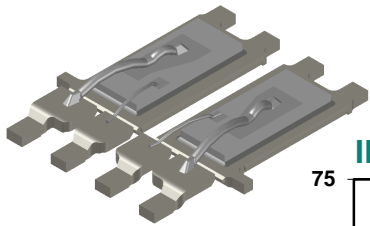
# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## For enhanced electrical and thermal performances

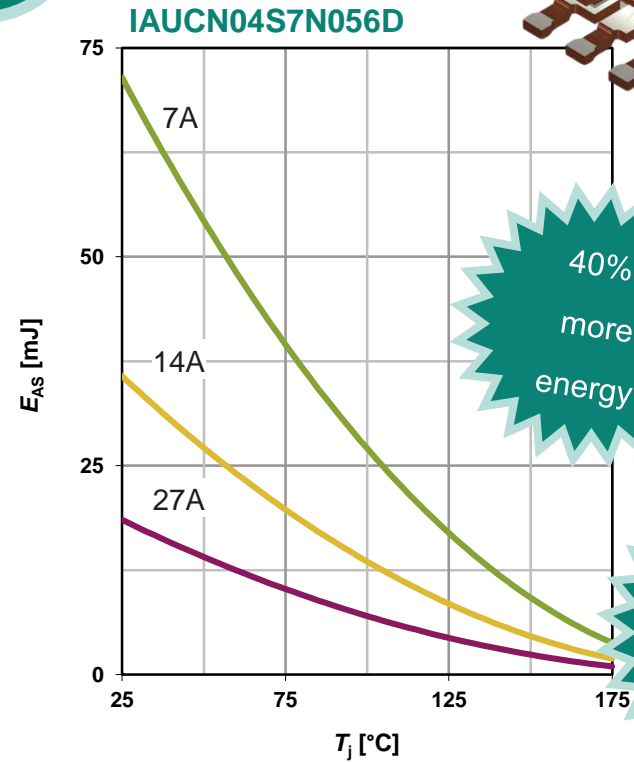
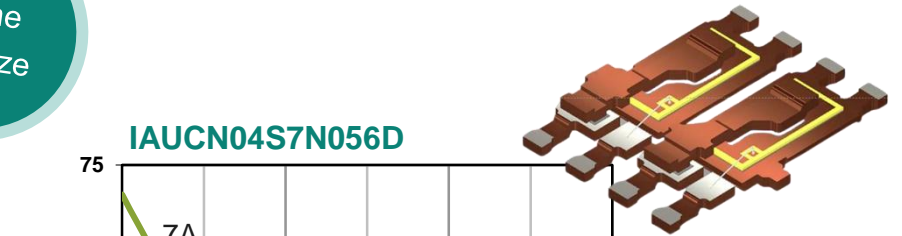


higher avalanche energy capability  
for the highest ohmic parts!

same die size



Package Innovation!  
SSO8 5x6 mm  
with clip for  
increased  
current  
capability

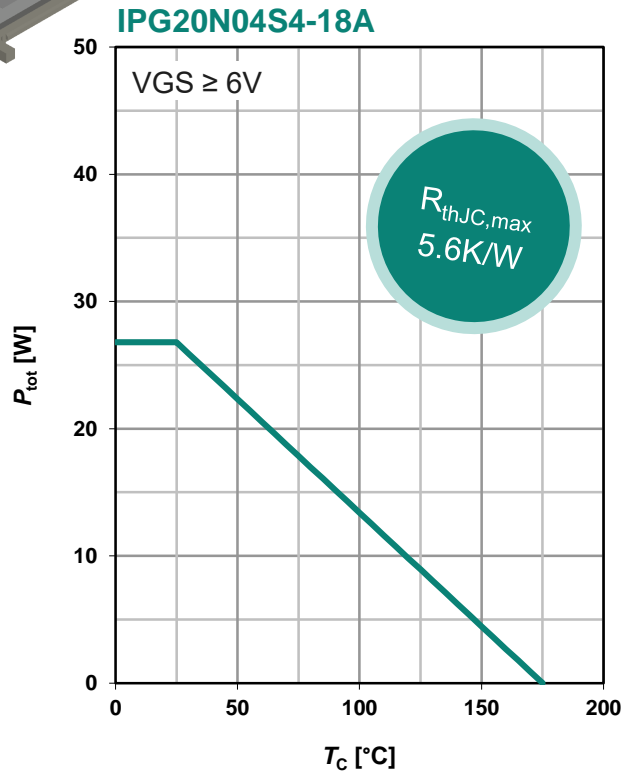
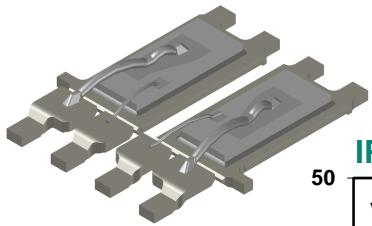


# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

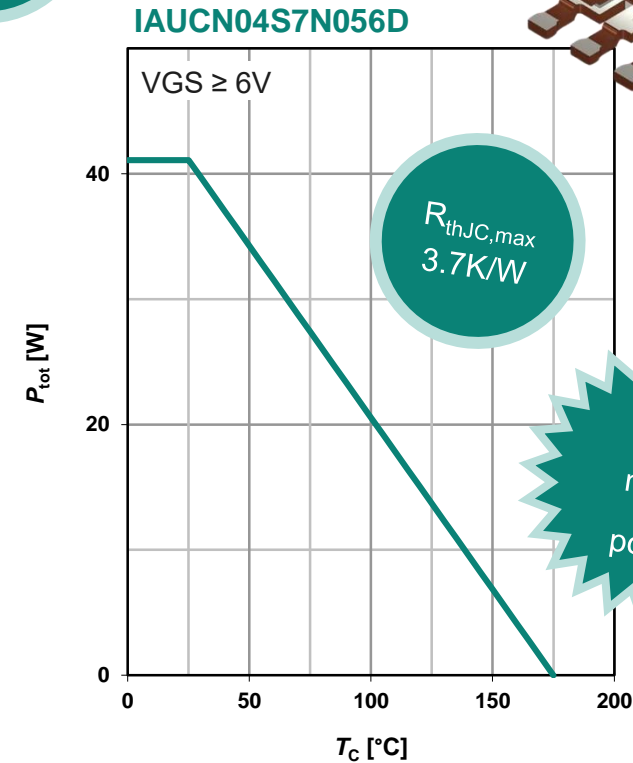
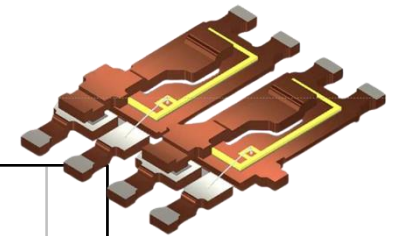
## For enhanced electrical and thermal performances

higher power dissipation allowed  
for the highest ohmic parts!

same die size



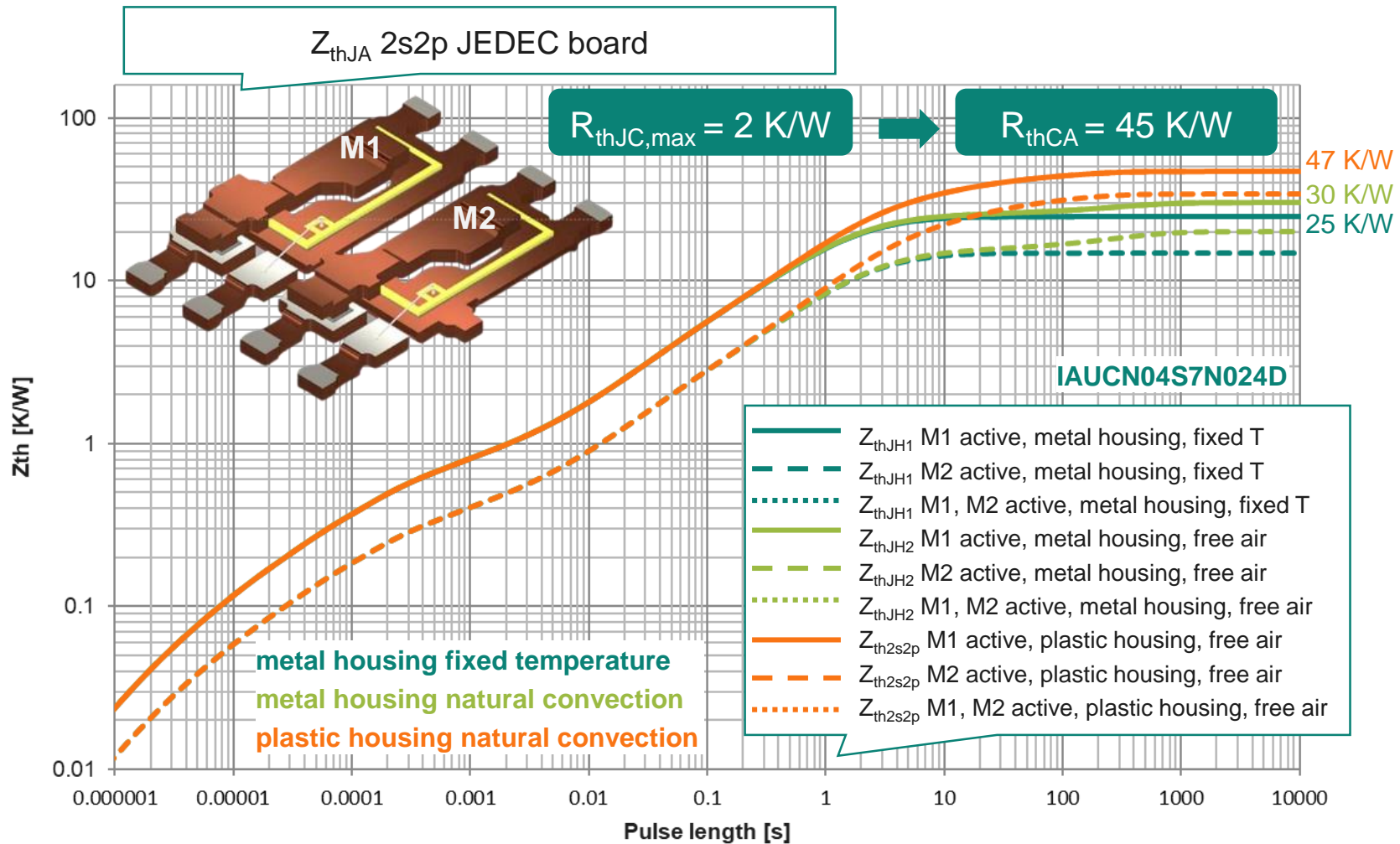
Package Innovation!  
Front-Side metallization  
for optimal thermal performance





# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

## Thermal Performance on JEDEC Standard 2s2p board



DUAL SSO8  
Package  
Thermal  
Datasheet  
COMING  
SOON!

# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip Learnings



Greatly enhanced performance compared to Dual SSO8 OptiMOS™-T2!

Product	max R <sub>DS(on)</sub> [mΩ]	I <sub>D</sub> (DC current) [A]	I <sub>D</sub> (chip limitation) [A]	Q <sub>G</sub> typ. [nC]	V <sub>GS(th)</sub> [LL/NL]
IAUCN04S7N019D	1.9	60	164	37	NL
IAUCN04S7N024D	2.4	60	126	23	NL
IAUCN04S7N040D	4.0	60	83	13	NL
IAUCN04S7L053D	5.3	60	64	11	LL
IAUCN04S7N056D	5.6	60	63	9	NL

Product	max R <sub>DS(on)</sub> [mΩ]	I <sub>D</sub> (DC current) [A]	I <sub>D</sub> (chip limitation) [A]	Q <sub>G</sub> typ. [nC]	V <sub>GS(th)</sub> [LL/NL]
IAUCN04S7L018D	1.8	60	169	45	LL
IAUCN04S7L023D	2.3	60	130	29	LL
IAUCN04S7L038D	3.8	60	86	17	LL

x3 higher current rating

70% reduction in Rdson

30% lower RthJC,max

80% higher avalanche current capability

Portfolio Extension Planned!

# OptiMOS™ 7 – 40V – Dual SSO8 5x6 with Cu-clip

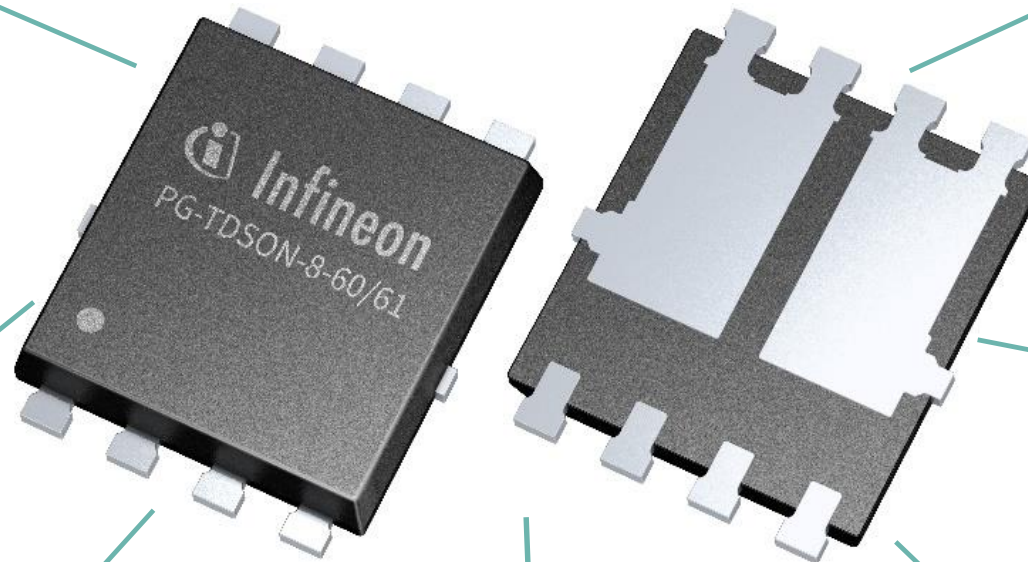
## Leading Edge Portfolio for Small & Cost-efficient Loads



Two high-performance MOSFETs in a single 5x6 package

Front side copper metallisation technology for optimal thermal performance

Available in OptiMOS™ 7 40V  $R_{DSon}$  down to 1.9mΩ!



Small footprint of 5x6mm<sup>2</sup> for low & mid power BLDC motor drive applications

Enables compact and cost-efficient power designs

Copper clip for increased 60A current capability JEDEC listed package

Easy back-to-back configuration

