

EVAL_2kW_ZVS_FB_CFD7

2 kW ZVS phase-shift full-bridge
evaluation board

Francesco Di Domenico
Zechner Florian



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General description

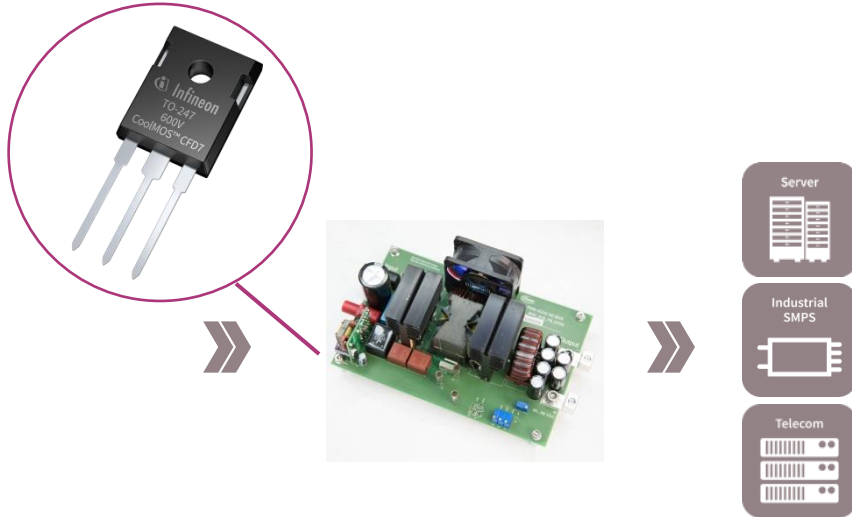
2

Test results

Evaluation board 600 V CoolMOS™ CFD7 SJ MOSFET



EVAL_2KW_ZVS_FB_CFD7



Technical and order details

| Parameter | Value |
|----------------------------|---|
| Input voltage | 350 V _{DC} - 420 V _{DC} |
| Output voltage | 45 V _{DC} - 56 V _{DC} |
| Output power | 2kW |
| Peak Efficiency @ 50% load | >96.6% |

| Learn more | |
|---------------------|-----------------------------|
| Sales name | <u>EVAL_2KW_ZVS_FB_CFD7</u> |
| SAP Mat number | SP001720550 |
| Infineon Order Code | |

Features

- > External resonant inductance and dead setting optimized for 70 mΩ 600 V CoolMOS™ CFD7 technology ([IPW60R070CFD7](#))
- > Secondary synchronous rectification 200 V
- > 11 mΩ OptiMOS™ 5 200 V technology with fast body diode ([IPP110N20N3 G](#))
- > Infineon [2EDN7524F](#) dual channel 5 A, high-speed, low-side gate driver with high negative input voltage capability

Benefits

- > Full ZVS achieved even in the leading leg of the bridge starting from 25 percent load onwards
- > Optimized primary and secondary delay times

Following additional expert kits are available

- > [KIT_6W_12V_BIAS_ICE3](#) ; DC-DC Bias board
- > [KIT_6W_12V_BIAS_ICE5](#) ; DC-DC Bias board

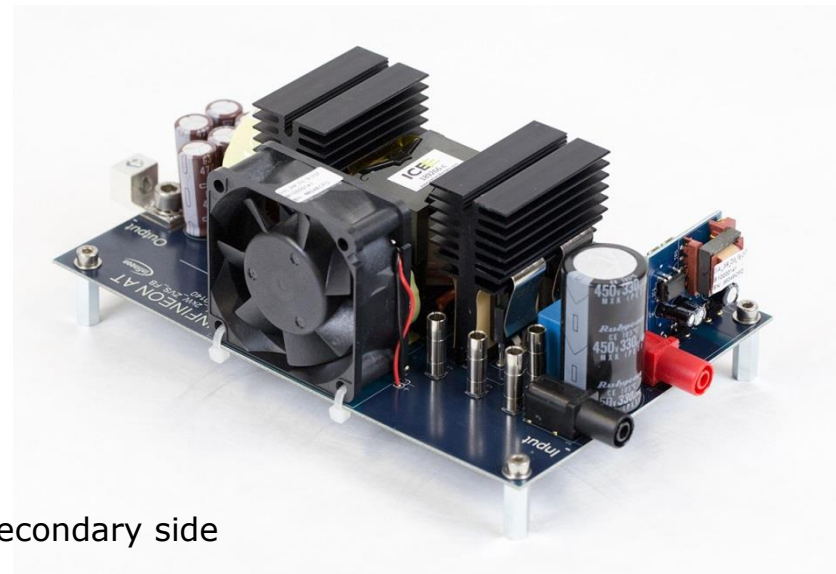
General

Description:

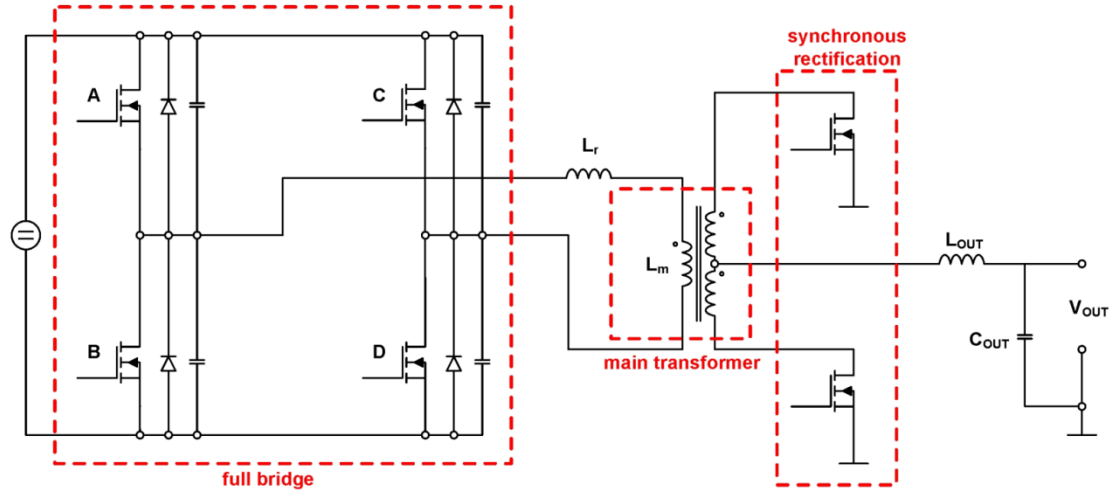
- › The ZVS phase-shift full-bridge evaluation board "[EVAL_2kW_ZVS_FB_CFD7](#)" represents the newly developed ZVS DC-DC converter for telecom rectifiers with an output voltage from 45 to 56 V_{DC} and an output power of 2 kW. This converter works with an input voltage between 350 and 420 V_{DC} (typical 400V V_{DC}) and a switching frequency of 100 kHz on the primary side. This board includes the following Infineon products: full-bridge 600 V CoolMOS™ CFD7 SJ MOSFET ([IPW60R070CFD7](#)), OptiMOS™ 200 V synchronous rectification MOSFET ([IPP110N20N3](#)), auxiliary converter CoolSET™ ([ICE3RBR4765JZ](#)) and EiceDRIVER™ [2EDN](#) non-isolated gate driver IC ([2EDN7524F](#)).

Summary of features:

- › DC-DC converter with 350 - 420 V_{DC} input
- › 45 – 56 V_{DC} output voltage
- › Up to 2000 W output power
- › 100 kHz switching frequency on primary and 200 kHz on secondary side



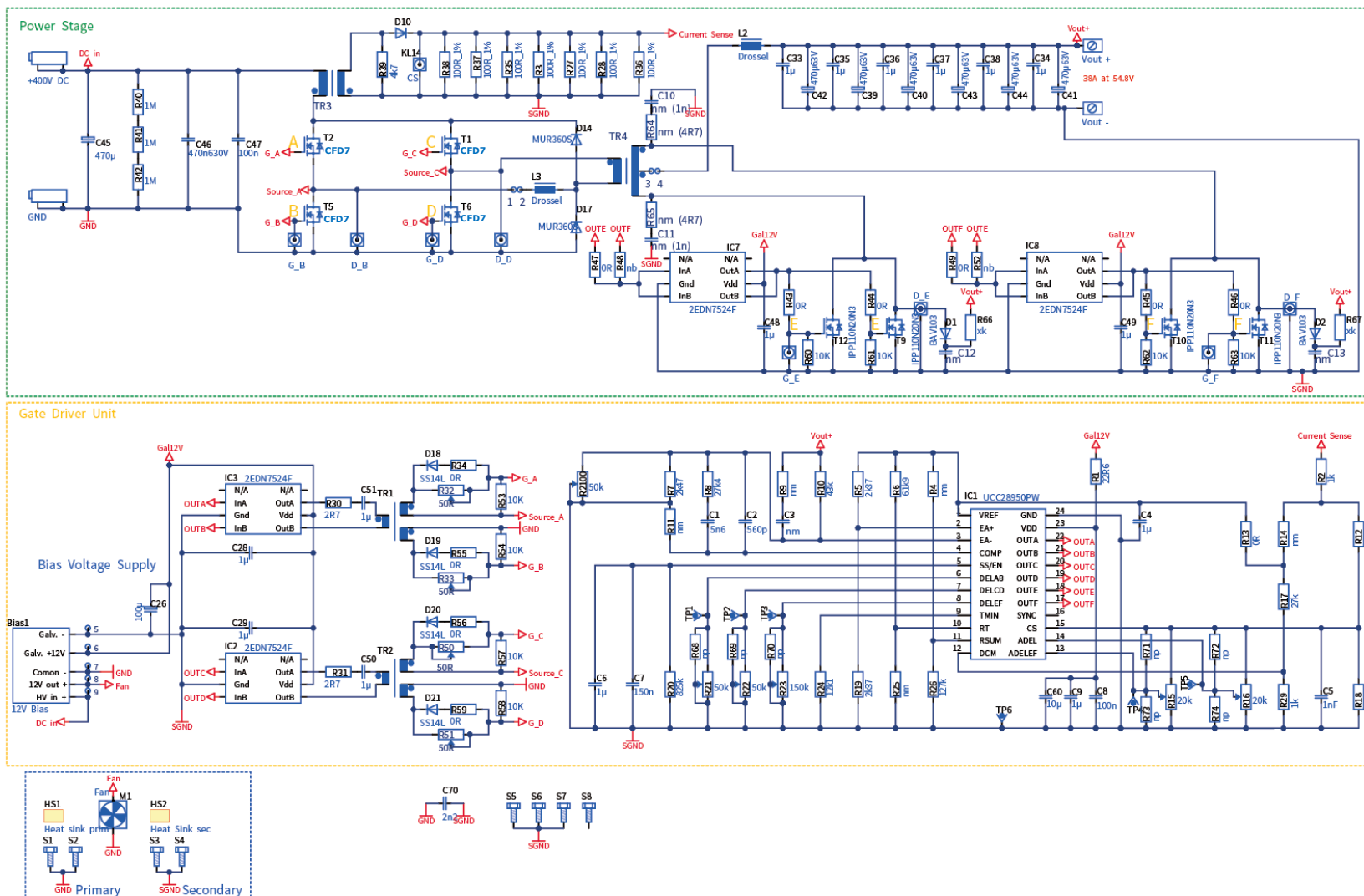
ZVS phase-shift full-bridge simplified schematic



Main components:

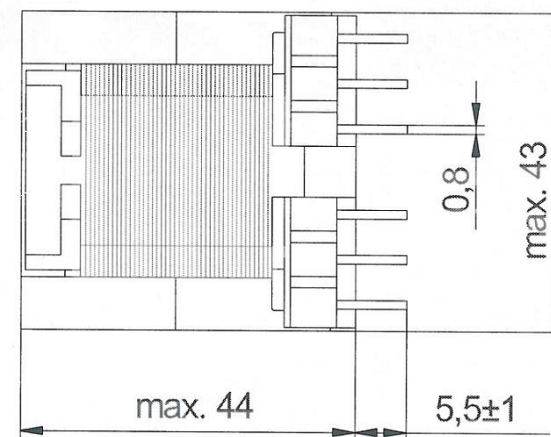
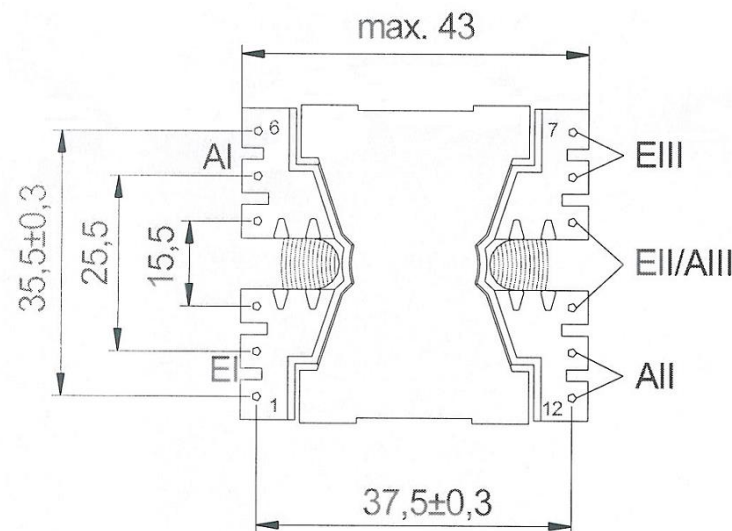
- > Full-bridge MOSFET: 600 V CoolMOS™ CFD7 (IPW60R070CFD7)
- > Synchronous rectification MOSFET: OptiMOS™ 200 V (IPP110N20N3)
- > Auxiliary converter: CoolSET™ (ICE3RBR4765JZ)
- > Controller: Texas instruments (UCC28950)
- > Gate driver: EiceDRIVER™ 2EDN (2EDN7524F)
- > Main transformer: kaschke components gmbh, SP-PQ 40/40 ferrite core (center tapped)
- > Resonant choke: kaschke components gmbh, SDR 9,0-0,03 kool-m μ
- > Output choke: kaschke components gmbh, SDR-37-0,012 molypermalloy

Schematic mainboard



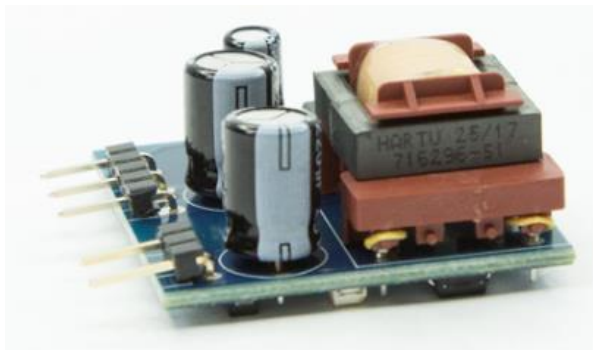
Main transformer

- > Core type: PQ40/40
- > Core material: 3C96
- > Nominal inductance: 1mh \pm 15%
- > Ratio of turns: 20 : 4 : 4
- > Dielectric strength (50 hz/1 s): 3 kV
- > Operating temperature: -25°C to +125°C
- > Storage temperature: -25°C to +85°C



dimensions in [mm]

BIAS KIT_6W_12V_BIAS_ICE3 (one bias board included)



Ordering code:

[KIT 6W 12V BIAS ICE3](#)

Board components

- › CoolSET™ (ICE3RBR4765JZ)

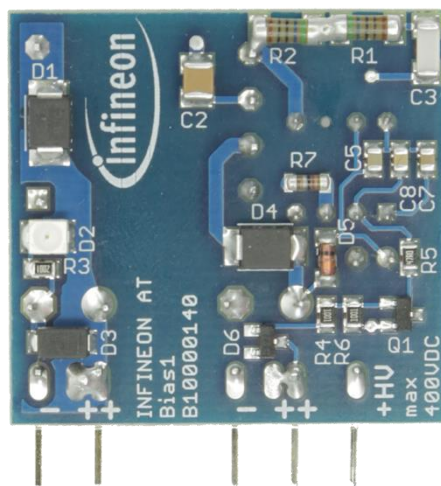
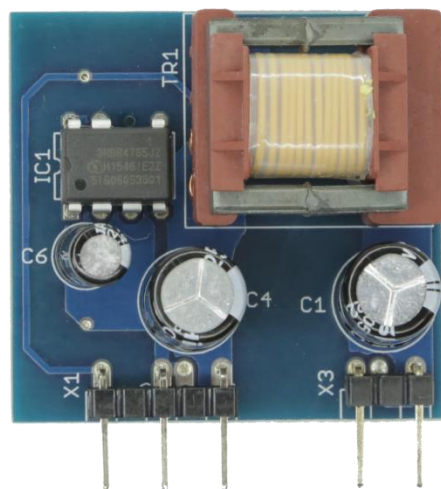
Board specifications

- › Input voltage: 90 V_{DC} - 400 V_{DC}
- › Output voltage: 12 V_{DC} (prim. and sec. side)
- › Output power max.: 6 W (prim. + sec. side)

To be used with the following boards

- › EVAL_800W_ZVS_FB_CFD7
- › EVAL_2KW_ZVS_FB_CFD2
- › EVAL_2KW_ZVS_FB_CFD7
- › EVAL_2.5KW_CCM_4PIN
- › EVAL_2K5W_CCM_4P

BIAS KIT_6W_12V_BIAS_ICE3 (one bias board included)



~35 mm

~37 mm

Ordering code:
KIT_6W_12V_BIAS_ICE3

Auxiliary supply solution featuring off-line SMPS current mode controller IC with integrated 650 V CoolMOS™ SJ MOSFET

BIAS KIT_6W_12V_BIAS_ICE3 schematic

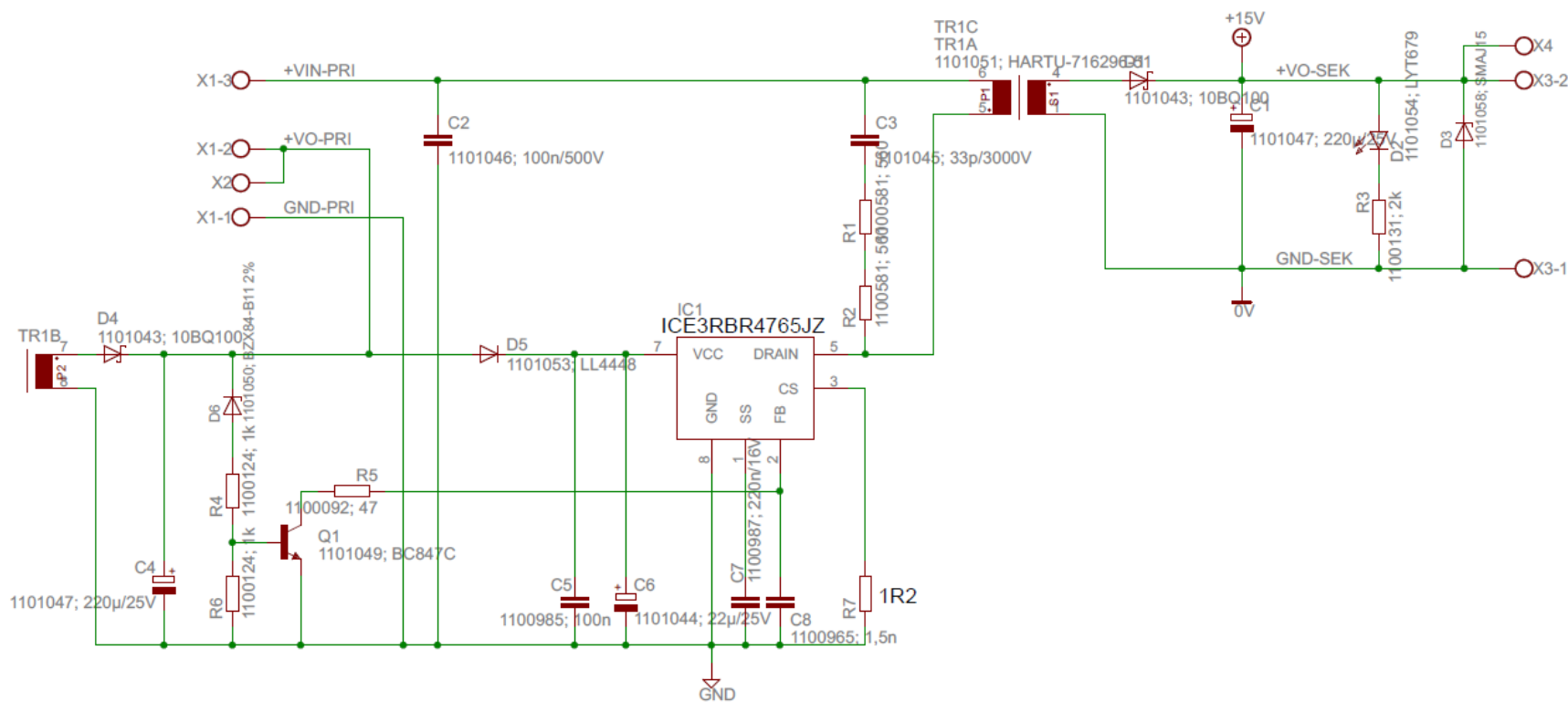


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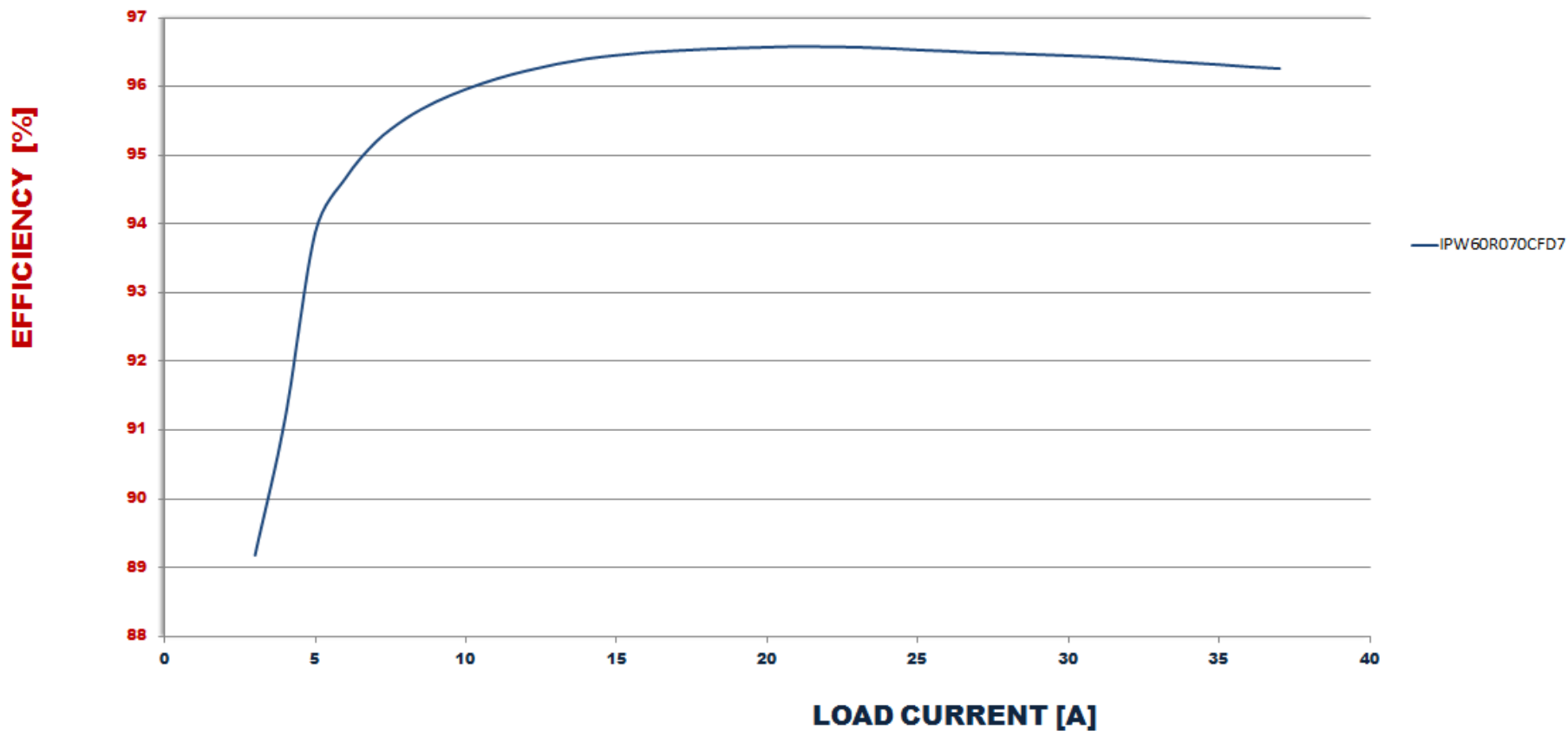
2

Test results

CoolMOS™ CFD2 in ZVS board - efficiency

Efficiency 2kW ZVS Board

Optimized Deadtime_ **with Bias without Fan**





Technical Material

- > Application Notes
- > Simulation Models
- > Datasheets
- > PCB Design Data

- > [EVAL_2kW_ZVS_FB_CFD7](#)
- > www.infineon.com/cfd7

Evaluation Boards

- > Evaluation Boards
- > Demoboards
- > Reference Designs

- > www.infineon.com/evaluationboards

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- > Technical Videos
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- Utility links: **Newsletter** (highlighted with a red box and '1'), Contact, **Where to Buy** (highlighted with a red box and '2'), English, Login
- Search bar with a magnifying glass icon
- Main content area: A large image of a city skyline at night. Overlaid on the right is a 'Lighting' section with the text: 'New LED controller enables low-wattage luminaire designs August 26th 17:00 CEST' and a 'Register Now!' button.
- Navigation arrows: Left and right arrows on the main content area.
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