



# THE DATASHEET OF IPW50R280CE





# 500V CoolMOS™ CE Power MOSFET

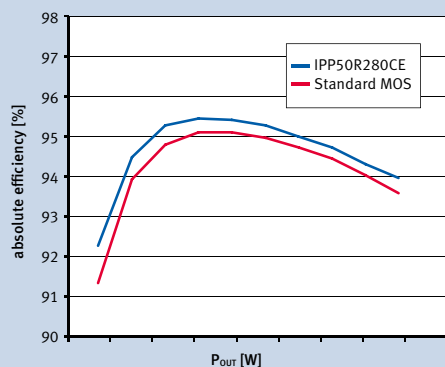
The CoolMOS™ CE is a new technology platform of Infineon's market leading high voltage power MOSFETs designed according to the revolutionary superjunction (SJ) principle.

500V CE portfolio provides all benefits of a fast switching SJ MOSFET while not sacrificing ease of use. As the complete CE series, devices achieve extremely low conduction and switching losses and can make switching applications more efficient, more compact, lighter and cooler.

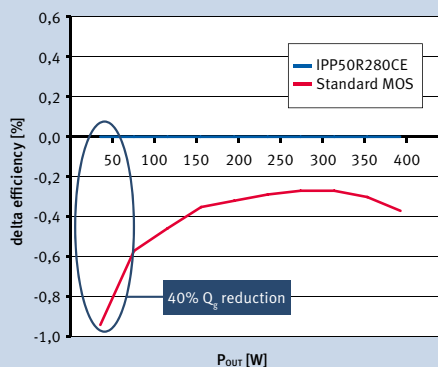
## Efficiency comparison 500V CoolMOS™ CE vs competitor standard MOSFET

CCM PFC stage, 90VAC up to 400W

**IPP50R280CE vs. Standard MOS**  
 efficiency @  $V_{IN}=90VAC$ ; plug&play scenario;  
 $R_{g,ext}=5\Omega$ ;  $f=100kHz$ ;  $V_{out}=400VDC$



**IPP50R280CE vs. Standard MOS**  
 delta efficiency @  $V_{IN}=90VAC$ ; plug&play scenario;  
 $R_{g,ext}=5\Omega$ ;  $f=100kHz$ ;  $V_{out}=400VDC$



## Features

- Reduced energy stored in output capacitance ( $E_{oss}$ )
- High body diode ruggedness
- Reduced reverse recovery charge ( $Q_{rr}$ )
- Reduced gate charge ( $Q_g$ )

## Benefits

- Easy control of switching behavior
- Improved light load efficiency compared to previous CoolMOS™ generations
- Cost attractive alternative compared to standard MOSFETs
- Outstanding reliability with proven CoolMOS™ quality combined with high body diode ruggedness

## Applications

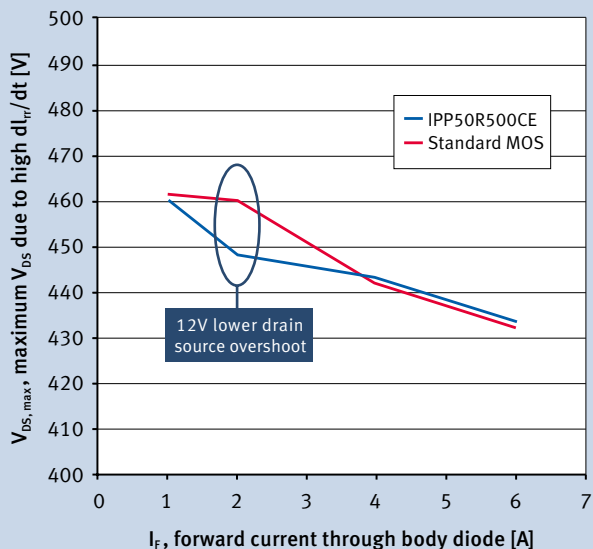
- Consumer
- Lighting
- PC Silverbox



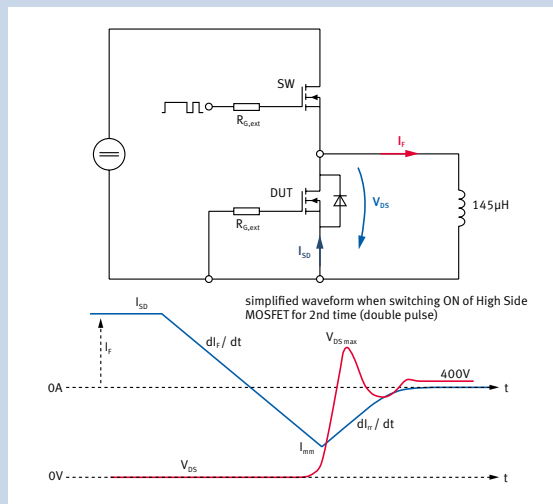
# 500V CoolMOS™ CE Power MOSFET

## IPP50R500CE vs. Standard MOS

hard commutation on conducting body diode; half bridge configuration  
High Side MOS = Low Side MOS, same  $R_{\Sigma, sum} = 5\Omega$



## Simplified test circuit



- From  $I_F=1$  to  $I_F=4A$  better behaviour observed of 500V CE
- $I_F > 4A$  same behaviour
- Body diode conduction  $< 2\mu s$  before turn-off

## Product Portfolio CoolMOS™ CE



| $R_{DS(on)}$ | TO-220 FullPAK | TO-252 DPAK        | TO-220       | TO-247       | IPAK                      |
|--------------|----------------|--------------------|--------------|--------------|---------------------------|
| 3000 mΩ      |                | IPD50R3k0CE        |              |              | IPU50R3k0CE               |
| 2000 mΩ      |                | IPD50R2k0CE        |              |              | IPU50R2k0CE               |
| 1400 mΩ      |                | IPD50R1k4CE        |              |              | IPU50R1k4CE               |
| 950 mΩ       | IPA50R950CE    | IPD50R950CE        |              |              | IPU50R950CE               |
| 800 mΩ       | IPA50R800CE    | IPD50R800CE        |              |              |                           |
| 650 mΩ       | IPA50R650CE    | IPD50R650CE        |              |              |                           |
| 500 mΩ       | IPA50R500CE    | IPD50R500CE        | IPP50R500CE  |              |                           |
| 380 mΩ       | IPA50R380CE    | IPD50R380CE        | IPP50R380CE  |              |                           |
| 280 mΩ       | IPA50R280CE    | IPD50R280CE        | IPP50R280CE  | IPW50R280CE  |                           |
| 190 mΩ       | IPA50R190CE    |                    | IPP50R190CE  | IPW50R190CE  |                           |
| Applications | Consumer       | Consumer, Lighting | PC Silverbox | PC Silverbox | SSL: Solid State Lighting |

Published by  
Infineon Technologies Austria AG  
9500 Villach, Austria

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Order Number: B152-H9688-G1-X-7600-DB2012-0003  
Date: 05 / 2013

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