

Product Brief

650 V CoolMOS™ CFDA

On the fast lane in automotive applications

Introducing the new market leading 650 V automotive CoolMOS™ technology, addressing the need of the emerging eMobility market, with integrated fast body diode aimed at battery charging and on-board DC-DC converters.

With the new 650 V CoolMOS™ CFDA, Infineon launches its second generation of market leading automotive qualified high voltage CoolMOS™ MOSFETs. In addition to the well-known attributes of high quality and reliability required by the automotive industry, the new CoolMOS™ CFDA series provides also an integrated fast body diode.

This fast body diode is the key for addressing resonant switching topologies resulting in lower losses due to the low gate charge and minimized switching losses. The softer commutation behavior and consequent reduced EMI appearance, gives the CoolMOS™ CFDA series a clear advantage in comparison with competitor parts. Furthermore, limited voltage overshoot during hard commutation of the body diode enables easier implementation of layout and design.

The broad 650 V CoolMOS™ CFDA portfolio provides all benefits of a fast switching superjunction MOSFET, fulfilling the enhanced reliability requirements for automotive applications. These are realized with special screening measures in front-end and back-end, as well as the qualification compliant to AEC Q101.

Therefore, the new 650 V CoolMOS™ CFDA technology is the best choice for switching topologies in automotive applications and in addressing the emerging eMobility market segment.

Key features

- > First 650 V automotive qualified technology with integrated fast body diode on the market
- > Limited voltage overshoot during hard commutation – self limiting di/dt and dv/dt
- > Low gate charge value Q_g
- > Low Q_{rr} at repetitive commutation on body diode and low Q_{oss}
- > Reduced turn-on and turn-off delay times
- > Compliant to AEC Q101 standard

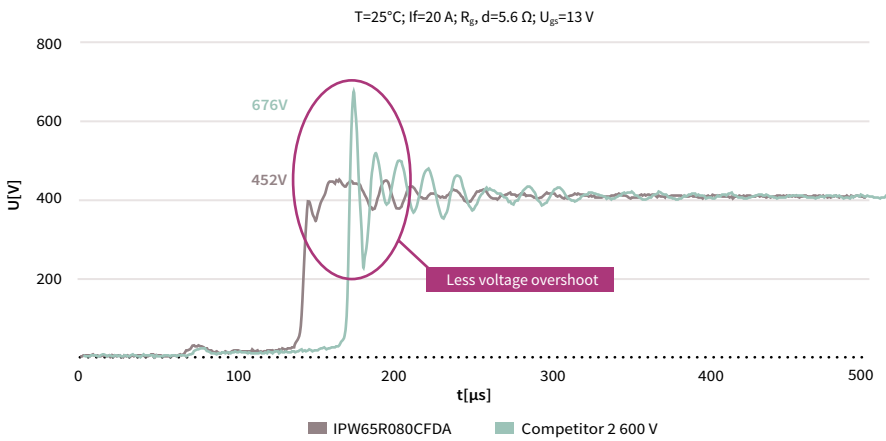
Key benefits

- > Increased safety margin due to higher breakdown voltage
- > Reduced EMI appearance and easy to design-in
- > Better light load efficiency
- > Lower switching losses
- > Higher switching frequency and/or higher duty cycle possible
- > High quality and reliability

Applications

- > Unidirectional and bidirectional DC-DC converter
- > Battery charger
- > HID lighting

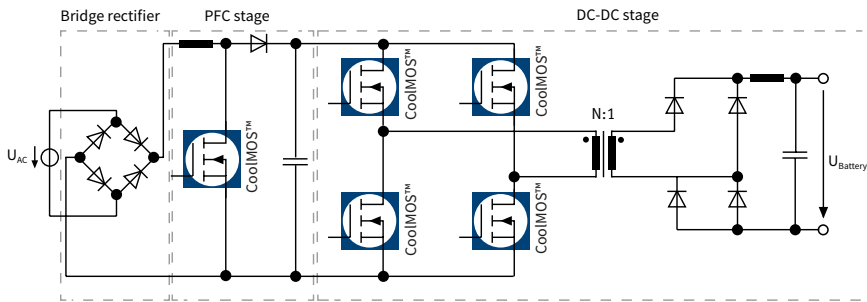
Limited voltage overshoot by CoolMOS™ CFDA during hard commutation of conducted body diode



- > Limited voltage overshoot due to soft commutation behavior of CFDA contributes to higher reliability
- > Significantly less voltage overshoot of CFDA compared to competition enables easier design-in

Example for automotive topology using CoolMOS™ CFDA

On-board battery charger with ZVS phase shifted topology



650 V CoolMOS™ CFDA product portfolio

$R_{DS(on)}$ [mΩ]	DPAK	D ² PAK	TO-220	TO-247
660	IPD65R660CFDA	IPB65R660CFDA	IPP65R660CFDA	
420	IPD65R420CFDA			
310		IPB65R310CFDA	IPP65R310CFDA	
190		IPB65R190CFDA	IPP65R190CFDA	IPW65R190CFDA
150		IPB65R150CFDA	IPP65R150CFDA	IPW65R150CFDA
110		IPB65R110CFDA	IPP65R110CFDA	IPW65R110CFDA
80				IPW65R080CFDA
48				IPW65R048CFDA

Published by
Infineon Technologies Austria AG
9500 Villach, Austria

© 2017 Infineon Technologies AG.
All Rights Reserved.

Please note!

THIS DOCUMENT IS FOR INFORMATION PURPOSES ONLY AND ANY INFORMATION GIVEN HEREIN SHALL IN NO EVENT BE REGARDED AS A WARRANTY, GUARANTEE OR DESCRIPTION OF ANY FUNCTIONALITY, CONDITIONS AND/OR QUALITY OF OUR PRODUCTS OR ANY SUITABILITY FOR A PARTICULAR PURPOSE. WITH REGARD TO THE TECHNICAL SPECIFICATIONS OF OUR PRODUCTS, WE KINDLY ASK YOU TO REFER TO THE RELEVANT PRODUCT DATA SHEETS PROVIDED BY US. OUR CUSTOMERS AND THEIR TECHNICAL DEPARTMENTS ARE REQUIRED TO EVALUATE THE SUITABILITY OF OUR PRODUCTS FOR THE INTENDED APPLICATION.

WE RESERVE THE RIGHT TO CHANGE THIS DOCUMENT AND/OR THE INFORMATION GIVEN HEREIN AT ANY TIME.

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.