

Product brief

600 V CoolMOS™ P7 SJ MOSFET

Perfect combination between high efficiency and ease of use

The 600 V CoolMOS™ P7 is the successor of the 600 V CoolMOS™ P6 series targeting a broad range of applications ranging from low power SMPS up to the highest power levels. The 600 V CoolMOS™ P7 is Infineon's most well-balanced CoolMOS™ technology in terms of combining ease of use (e.g. low ringing) with an excellent efficiency performance and a reasonable price.

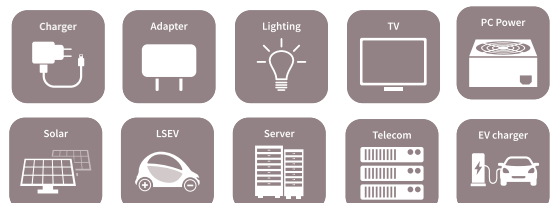
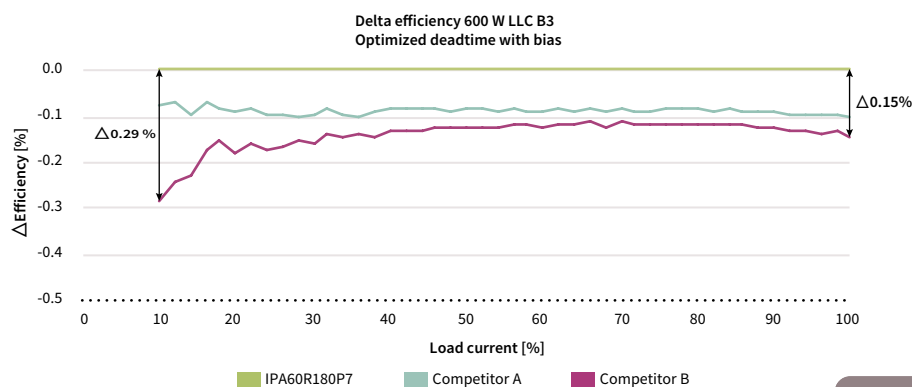
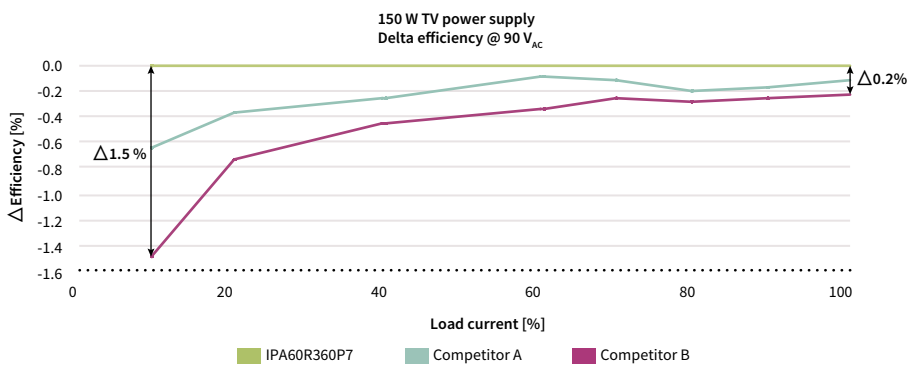
The 600 V CoolMOS™ P7 achieves up to 1.5 percent better efficiency and 4.2°C lower MOSFET temperature versus competitor offerings. Its gate charge Q_g and E_{oss} are 30 – 60 percent lower compared to previous CoolMOS™ families and competition, which leads to reduced driving and switching losses that allow high efficiency in various power classes. Furthermore, the optimized $R_{DS(on)}$ enables smaller footprints and higher power density.

Key features

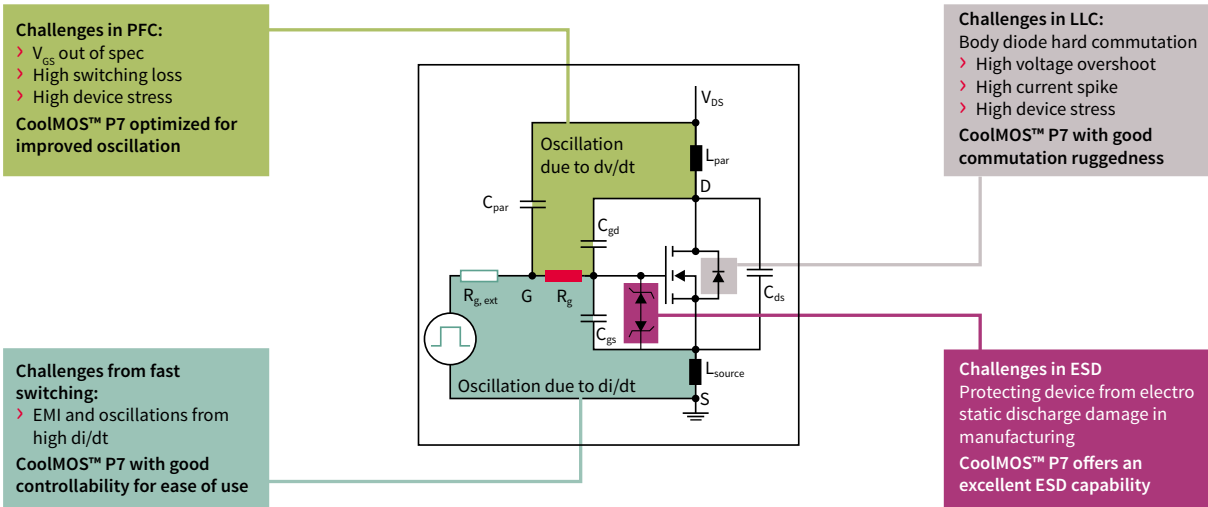
- > Outstanding commutation ruggedness
- > Optimized balance between efficiency and ease of use
- > Significant reduction of switching and conduction losses
- > Excellent ESD robustness > 2 kV (HBM) for all products
- > Better $R_{DS(on)}$ /package products compared to competition enabled by a low $R_{DS(on)} \times A$ (below $1 \Omega \times \text{mm}^2$)
- > Large portfolio with granular $R_{DS(on)}$ selection qualified for a variety of industrial and consumer applications

Key benefits

- > Suitable for hard and soft switching (PFC and LLC)
- > Ease of use and fast design-in through low ringing tendency and usage across PFC and PWM stages
- > Simplified thermal management due to low switching and conduction losses
- > Higher manufacturing quality due to > 2 kV ESD protection
- > Increased power density solutions enabled by using products with smaller footprint
- > Suitable for a wide variety of applications and power ranges



The excellent ease-of-use level of the 600 V CoolMOS™ P7 results from carefully selected integrated gate resistors. In addition, 600 V CoolMOS™ P7 comes along with an outstanding body diode ruggedness which makes it the perfect fit for hard and soft switching applications. Finally, the 600 V CoolMOS™ P7 offers an excellent ESD robustness of > 2 kV (HBM) over the whole portfolio in order to improve our customers' assembly yield. For products with $R_{DS(on)}$ values higher than 100 mΩ the high ESD level is guaranteed by an integrated Zener diode.



The wide variety of $R_{DS(on)}$ from 37 to 600 mΩ in both through-hole and surface mount (SMD) packages makes 600 V CoolMOS™ P7 suitable for applications such as lighting, TV sets, notebook adapters, PC power, solar inverters, servers, telecom rectifiers and for EV charging. For the first time products are qualified for standard and industrial grade allowing the customer to choose the correct type for the application requirements.

Product portfolio 600 V CoolMOS™ P7

$R_{DS(on)}$ [mΩ] max.	Industrial grade									
	DPAK	D ² PAK	ThinPAK 8x8	TO-220 FullPAK	TO-220	TO-220 FullPAK Narrow Lead	TO-220 FullPAK Wide Creepage	TO-247	TO-247 4pin	SOT-223
600	IPD60R600P7			IPA60R600P7	IPP60R600P7					
360/365	IPD60R360P7	IPB60R360P7	IPL60R365P7	IPA60R360P7	IPP60R360P7					
280/285	IPD60R280P7	IPB60R280P7	IPL60R285P7	IPA60R280P7	IPP60R280P7					
180/185	IPD60R180P7	IPB60R180P7	IPL60R185P7	IPA60R180P7	IPP60R180P7			IPW60R180P7	IPZA60R180P7	
160				IPA60R160P7	IPP60R160P7					
120/125		IPB60R120P7	IPL60R125P7	IPA60R120P7	IPP60R120P7			IPW60R120P7	IPZA60R120P7	
99/105		IPB60R099P7	IPL60R105P7	IPA60R099P7	IPP60R099P7			IPW60R099P7	IPZA60R099P7	
80		IPB60R080P7	IPL60R085P7	IPA60R080P7	IPP60R080P7			IPW60R080P7	IPZA60R080P7	
60/65		IPB60R060P7	IPL60R065P7	IPA60R060P7	IPP60R060P7			IPW60R060P7	IPZA60R060P7	
45		IPB60R045P7						IPW60R045P7	IPZA60R045P7	
37								IPW60R037P7	IPZA60R037P7	
24								IPW60R024P7	IPZA60R024P7	
	Standard grade									
600	IPD60R600P7S			IPA60R600P7S		IPAN60R600P7S	IPAW60R600P7S			IPN60R600P7S
360	IPD60R360P7S			IPA60R360P7S		IPAN60R360P7S	IPAW60R360P7S			IPN60R360P7S
280	IPD60R280P7S			IPA60R280P7S		IPAN60R280P7S	IPAW60R280P7S			
180	IPD60R180P7S			IPA60R180P7S		IPAN60R180P7S	IPAW60R180P7S			

Published by
Infineon Technologies Austria AG
9500 Villach, Austria

© 2019 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.