

Product brief

800 V CoolMOS™ P7 series

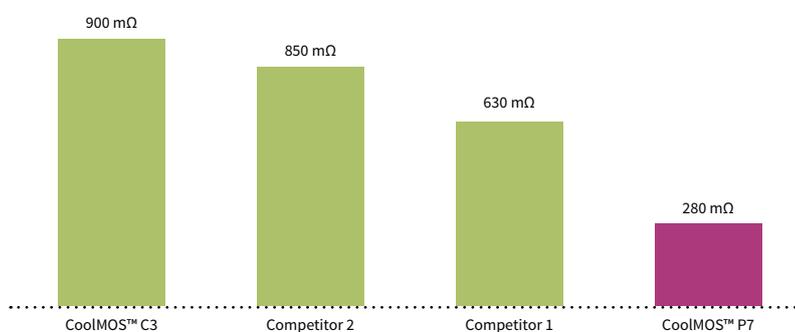
A new benchmark in efficiency and thermal performance

The latest 800 V CoolMOS™ P7 series sets a new benchmark in 800 V superjunction technologies and combines best-in-class performance with state-of-the-art ease-of-use, resulting from Infineon's more than 18 years pioneering superjunction technology innovation. This product family offers 0.1 percent to 0.6 percent efficiency gain and 2°C to 8°C lower MOSFET temperature as compared to 800 V CoolMOS™ C3 tested in flyback based applications. Such best-in-class performance comes from a combination of various optimized device parameters such as more than 50 percent reduction in E_{oss} and Q_g and reduced C_{iss} and C_{oss} .

Ease-of-use is an intrinsic feature designed into this product family. The integrated Zener Diode ESD protection significantly improves ESD robustness, thus reducing ESD related yield loss. With best-in-class $V_{GS(th)}$ of 3 V CoolMOS™ P7 is easy to drive and the smallest $V_{GS(th)}$ variation of only ± 0.5 V makes it easy to design-in. This product family continues to deliver well recognized best-in-class CoolMOS™ quality.

In addition, CoolMOS™ P7 offers a new best-in-class $R_{DS(on)}$; in DPAK a $R_{DS(on)}$ of 280 mΩ is available, more than 50 percent lower than the nearest 800 V MOSFET competitor. This new benchmark enables higher power density designs, BOM savings, as well as lower assembly cost.

Overview of lowest DPAK $R_{DS(on)}$ for 800 V superjunction MOSFETs



800 V CoolMOS™ P7 sets benchmark in best-in-class DPAK $R_{DS(on)}$

Key features

- > Best-in-class FOM $R_{DS(on)} \cdot E_{oss}$; reduced Q_g , C_{iss} and C_{oss}
- > Best-in-class DPAK $R_{DS(on)}$ of 280 mΩ
- > Best-in-class $V_{GS(th)}$ of 3 V and smallest $V_{GS(th)}$ variation of ± 0.5 V
- > Integrated Zener Diode ESD protection up to Class 2 (HBM)
- > Best-in-class quality and reliability
- > Fully optimized portfolio

Key benefits

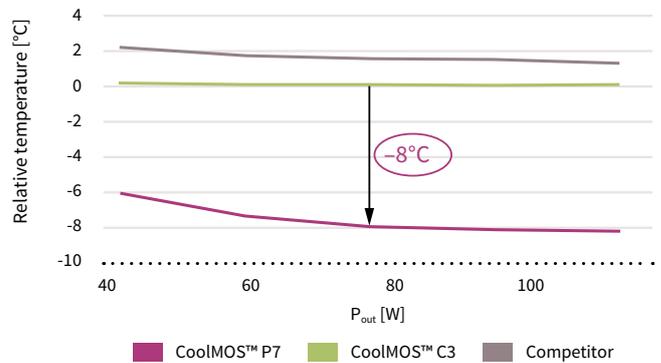
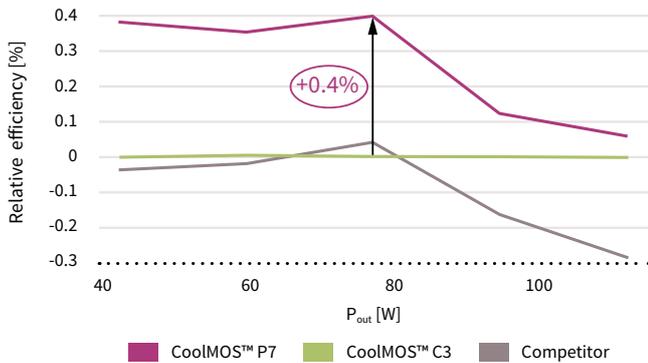
- > 0.1% to 0.6% efficiency gain and 2°C to 8°C lower MOSFET temperature as compared to CoolMOS™ C3
- > Enabling higher power density designs, BOM savings and lower assembly cost
- > Easy to drive and to design-in
- > Better production yield by reducing ESD related failures
- > Less production issues and reduced field returns
- > Easy to select right parts for fine tuning of designs

800 V CoolMOS™ P7 series

A new benchmark in efficiency and thermal performance

800 V CoolMOS™ P7 offers best-in-class efficiency and thermal performance

Plug-and-play at 240 V_{AC} in a 110 W LED driver: TO-220 FullPAK 280 mΩ equivalent



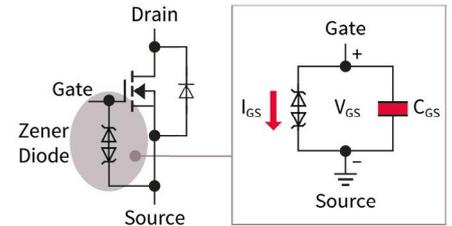
800 V CoolMOS™ P7 significantly reduces ESD related failures with integrated Zener Diode ESD protection

Zener Diode ESD protection mechanism under ESD

- > V_{GS} is clamped by Zener Diode
- > I_{GS} mainly flows through Zener Diode
- > Less stress on gate oxide between gate and source

Customer benefits

- > Better assembly yield thus less cost
- > Lower field failure rate
- > Higher quality and better reputation



R _{DS(on)} [mΩ]	TO-220 FullPAK	TO-220 FullPAK Narrow Lead	TO-252 DPAK	TO-220	TO-247	TO-251 IPAK	TO-251 IPAK SL	SOT-223	ESD class	
									HBM	CDM
4500			IPD80R4K5P7			IPU80R4K5P7		IPN80R4K5P7	Class 1C (1 kV-2 kV)	Class C3 (≥1 kV)
3300			IPD80R3K3P7			IPU80R3K3P7		IPN80R3K3P7		
2400			IPD80R2K4P7			IPU80R2K4P7	IPS80R2K4P7	IPN80R2K4P7		
2000			IPD80R2K0P7			IPU80R2K0P7	IPS80R2K0P7	IPN80R2K0P7		
1400	IPA80R1K4P7		IPD80R1K4P7	IPP80R1K4P7		IPU80R1K4P7	IPS80R1K4P7	IPN80R1K4P7		
1200	IPA80R1K2P7		IPD80R1K2P7	IPP80R1K2P7		IPU80R1K2P7	IPS80R1K2P7	IPN80R1K2P7		
900	IPA80R900P7		IPD80R900P7	IPP80R900P7		IPU80R900P7	IPS80R900P7	IPN80R900P7		
750	IPA80R750P7		IPD80R750P7	IPP80R750P7		IPU80R750P7	IPS80R750P7	IPN80R750P7		
600	IPA80R600P7		IPD80R600P7	IPP80R600P7		IPU80R600P7	IPS80R600P7	IPN80R600P7		
450	IPA80R450P7	IPAN80R450P7	IPD80R450P7	IPP80R450P7						
360	IPA80R360P7	IPAN80R360P7	IPD80R360P7	IPP80R360P7	IPW80R360P7					
280	IPA80R280P7	IPAN80R280P7	IPD80R280P7	IPP80R280P7	IPW80R280P7					

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