



Product Brief

800 V CoolMOS™ P7 series

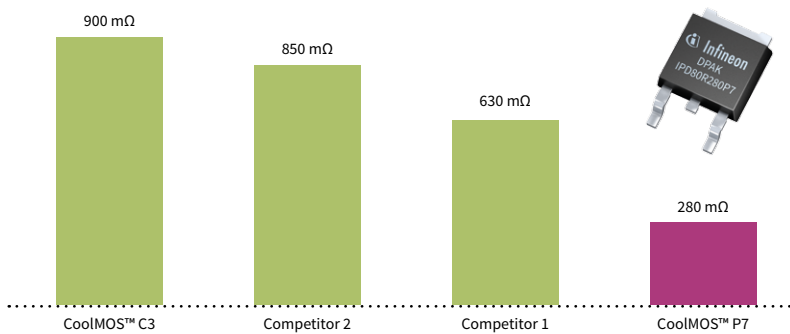
A new benchmark in efficiency and thermal performance

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 $R_{DS(on)} * E_{oss}$; 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

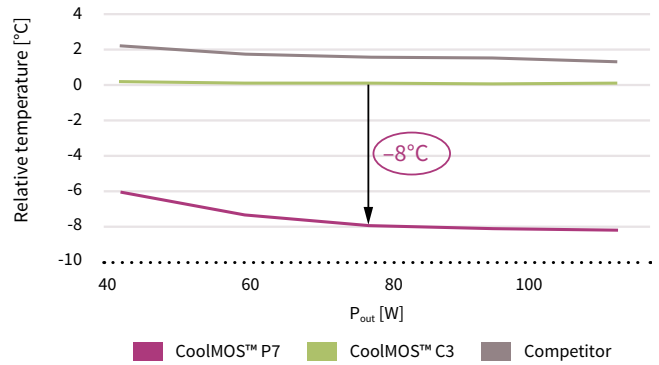
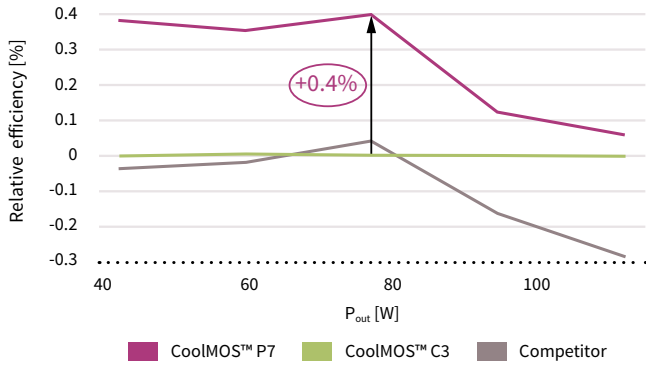


800 V CoolMOS™ P7 series

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



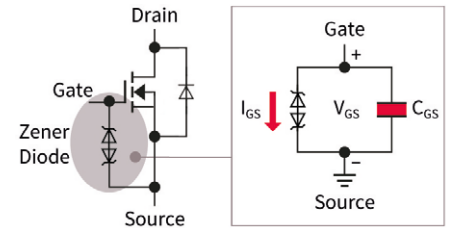
800 V CoolMOS™ P7 significantly reduces ESD related failures with integrated Zener Diode ESD protection

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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