

Product brief

700 V CoolMOS™ P7 series

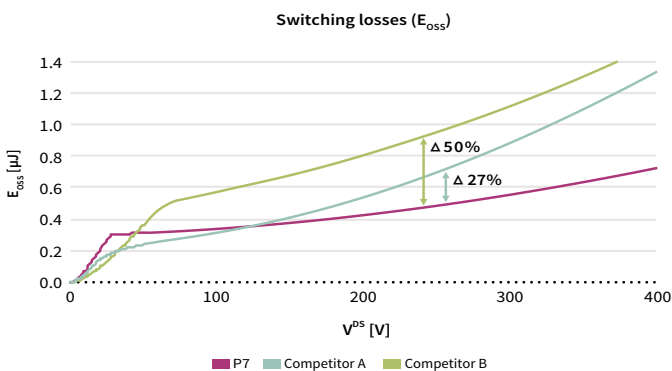
Infineon's answer for flyback topologies

Developed to serve today's and especially tomorrow's trends in flyback topologies – the new 700 V CoolMOS™ P7 series addresses the low power SMPS market, such as mobile phone chargers or notebook adapters by offering fundamental performance gains compared to superjunction technologies used today.

By combining customers' feedback with over 20 years of superjunction MOSFET experience, 700 V CoolMOS™ P7 enables best fit for target applications in terms of:

- > Efficiency and thermals
- > Ease-of-use
- > EMI behavior

The new CoolMOS™ P7 offers 27 percent to 50 percent lower switching losses (E_{OSS}), up to 3.9 percent higher efficiency and impressively up to 16 K lower device temperature against competition. Compared to previous 650 V CoolMOS™ C6 technology it offers 2.4 percent gain in efficiency and 12 K lower device temperature, measured at a flyback based charger application, operated at 140 kHz switching speed.



To increase the ESD ruggedness up to HBM Class 2 level, 700 V CoolMOS™ P7 comes with an integrated Zener diode. This helps to support increased assembly yield, leads to less production related failures and finally manufacturing cost savings on customer side.

Keeping the ease-of-use in mind, the technology has been developed with an excellent $V_{GS(th)}$ of 3 V and narrow tolerance of ± 0.5 V. This makes the P7 easy to design-in and enables the usage of lower gate source voltage, which makes it easier to drive and leads to less idle losses.

Key features

- > Extremely low FOM $R_{DS(on)} \times E_{OSS}$: lower Q_g , E_{on} and E_{off}
- > Highly performant technology
 - Low switching losses (E_{OSS})
 - Highly efficient
 - Excellent thermal behavior
- > Allowing high speed switching
- > Integrated protection Zener diode
- > Optimized $V_{GS(th)}$ of 3 V with very narrow tolerance of ± 0.5 V
- > Finely graduated portfolio

Key benefits

- > Cost competitive technology
- > Up to 2.4 percent efficiency gain and 12 K lower device temperature compared to C6 technology
- > Further efficiency gain at higher switching speed
- > Supporting less magnetic size with lower BOM costs
- > High ESD ruggedness up to HBM Class 2 level
- > Easy to drive and design-in
- > Enabler for smaller form factors and high power density designs
- > Excellent choice in selecting the best fitting product

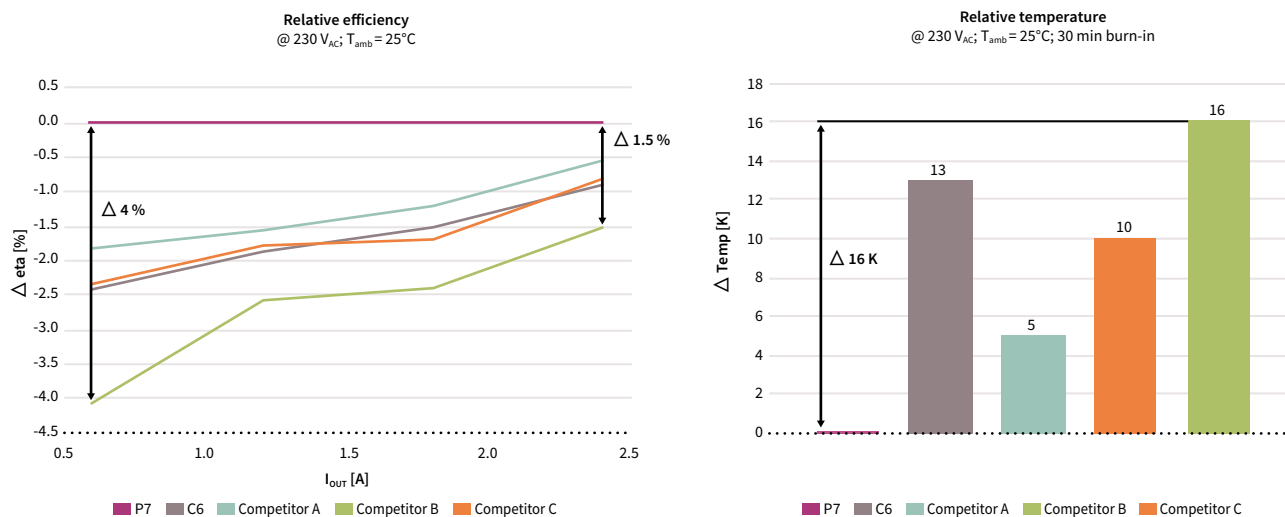


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Plug-and-play benchmarking at a high-end 12 W charger application

700 V CoolMOS™ P7 convinces with outstanding efficiency gains up to 4 percent and up to 16 K lower device temperature compared to similar competitor technologies.



These measurements underpin the new 700 V CoolMOS™ P7 technology is the right choice for high power density designs, very slim form factors. It results in best-in-class product performance especially when operating at high switching frequencies.

700 V CoolMOS™ P7 granular portfolio

| ESD class | | R _{DS(on)} [mΩ] | TO-220 FullPAK | TO-220 FullPAK Narrow Lead | TO-252 DPAK | TO-251 IPAK Short Lead | TO-251 IPAK Short Lead with ISO Standoff | SOT-223 |
|-------------------|--------------------|--------------------------|----------------|----------------------------|--------------|------------------------|--|--------------|
| CDM | HBM | | | | | | | |
| Class C3 ≥1 kV | Class 1C 1-2 kV | 2000 | | | | | IPSA70R2K0P7S | IPN70R2K0P7S |
| | | 1400 | | | IPD70R1K4P7S | IPS70R1K4P7S | IPSA70R1K4P7S | IPN70R1K4P7S |
| | | 1200 | | | | | IPSA70R1K2P7S | IPN70R1K2P7S |
| | | 900 | IPA70R900P7S | IPAN70R900P7S | IPD70R900P7S | IPS70R900P7S | IPSA70R900P7S | IPN70R900P7S |
| | Class 2 2-4 kV | 750 | IPA70R750P7S | IPAN70R750P7S | | | IPSA70R750P7S | IPN70R750P7S |
| | | 600 | IPA70R600P7S | IPAN70R600P7S | IPD70R600P7S | IPS70R600P7S | IPSA70R600P7S | IPN70R600P7S |
| | | 450 | IPA70R450P7S | IPAN70R450P7S | | | IPSA70R450P7S | IPN70R450P7S |
| | | 360 | IPA70R360P7S | IPAN70R360P7S | IPD70R360P7S | IPS70R360P7S | IPSA70R360P7S | IPN70R360P7S |

Published by
Infineon Technologies Austria AG
9500 Villach, Austria

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