



Product Brief

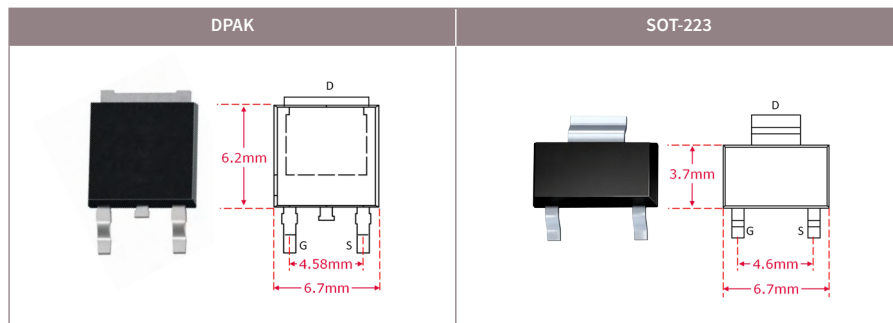
CoolMOS™ CE in SOT-223 package

Cost-effective drop-in replacement for DPAK

Infineon is growing the portfolio of CoolMOS™ CE with the SOT-223 package as a cost effective alternative to DPAK that also enables footprint reduction in some designs. The package can be placed on a typical DPAK footprint and comes with only a small compromise in thermal behavior. The SOT-223 from Infineon targets LED lighting and mobile charger applications.



Drop-in replacement for DPAK at lower cost

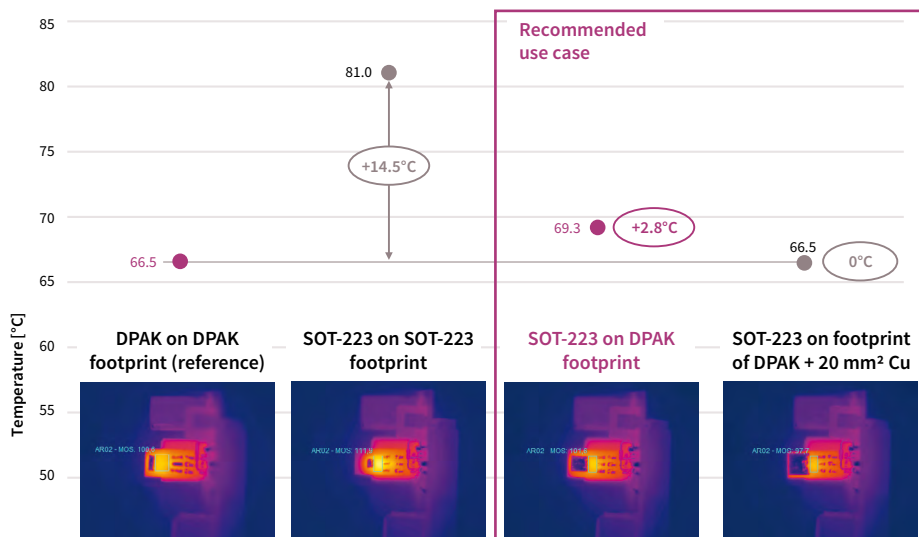


Key features and benefits

- > Drop-in replacement for DPAK at lower cost
- > Space savings in designs with low power dissipation
- > Comparable thermal behavior to DPAK

The SOT-223 package without middle pin is fully compatible to the footprint of a DPAK and therefore allows one-on-one drop-in replacements and second sourcing.

Thermal behavior similar to DPAK



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Cost-effective drop-in replacement for DPAK

The thermal behavior of the SOT-223 depends on layout of the board and on the power consumed. We have measured the thermals in a test environment and compared with a simulation :

- › **~2°C – 3°C temperature increase on DPAK footprint as DPAK** – placed on a standard DPAK footprint, the SOT-223 package shows a temperature elevated by 2°C – 3°C. This behavior makes the SOT-223 suitable as a drop-in replacement for DPAK in designs with some margin on thermals.
- › **Same temperature on footprint of DPAK + 20 mm² additional copper area** – in many designs the MOSFET is mounted on a larger Cu area which serves as a heatsink embedded in the PCB. As soon as 20 mm² Cu or more is offered in addition to DPAK footprint, no temperature increase can be observed.
- › **>10°C temperature increase on SOT-223 footprint** – placed the SOT-223 footprint without additional Cu area around, the package leads to ≥ 10°C temperature increase compared to a DPAK. This renders the option of space savings via the SOT-223 only useful for very low power applications.

The thermal measurements in several applications were confirmed by simulation with $T_{\text{ambient}} = 70^{\circ}\text{C}$ and $P_{\text{loss}} = 250 \text{ mW}$. The simulations confirm that on a DPAK footprint a 2°C – 3°C temperature increase versus DPAK is expected, while for the copper areas of ≥ 20 mm² additional copper the temperature is equal to the DPAK temperature.

Product portfolio

$R_{\text{DS(on)}} [\text{m}\Omega]$	500 V	600 V	650 V	700 V
3400		IPN60R3K4CE		
3000	IPN50R3K0CE			
2000/2100	IPN50R2K0CE	IPN60R2K1CE		IPN70R2K1CE
1400/1500	IPN50R1K4CE	IPN60R1K5CE	IPN65R1K5CE	IPN70R1K5CE
950/1000	IPN50R950CE	IPN60R1K0CE		IPN70R1K0CE
800	IPN50R800CE			
650	IPN50R650CE			

Published by
Infineon Technologies Austria AG
9500 Villach, Austria

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