

800V MDmesh™ K6 STPOWER MOSFET



ST's latest very high voltage
super-junction technology



**MDmesh* K6 technology featuring industry's best on-resistance per area
enables higher power density and more compact solutions**

The STPOWER 800V MDmesh K6 series sets a benchmark for the 800V super-junction technology combining best-in-class performance with remarkable ease of use.

Thanks to its excellent $R_{DS(on)} \times \text{area}$, the new series enables higher power density for more compact system solutions. Furthermore, the lower threshold voltage $V_{GS(th)}$ allows to reduce the driving voltage for even lower power losses. This new very high voltage family is suitable for lighting applications as LED drivers as well as for SMPS like adapters and chargers, based on the flyback topology.

KEY FEATURES & BENEFITS

- Industry's best $R_{DS(on)}$ for 800V voltage range
- High switching speed
- Lowest Q_g
- Increased power density and compactness
- High efficiency and easier design
- Lower power losses

KEY APPLICATIONS

- LED drivers
- HID lamps
- Adapters
- Chargers

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MDmesh K6 analysis

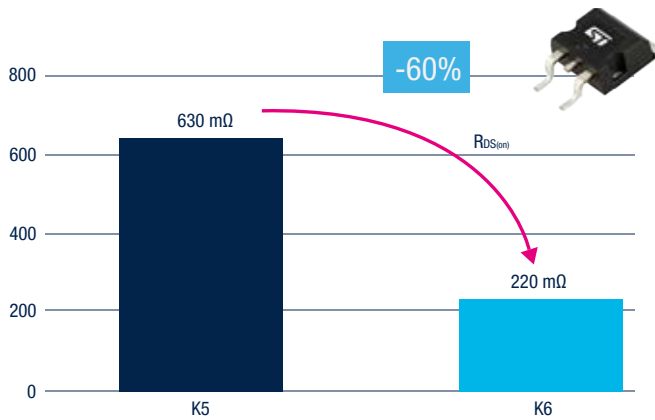


Fig 1: $R_{DS(on)}$ comparison between MDmesh K6 and MDmesh K5

One of the most significant features of the MDmesh K6 is the best-in-class $R_{DS(on)}$ in the DPAK package. This allows to switch from a through-hole package solution to an SMD one obtaining a more compact design and reducing the board height. As shown in Figure 1, with this new series we have obtained a lower $R_{DS(on)}$ of about 60% with the respect to the previous technology in the same package solution.

The efficiency comparison between MDmesh K6, the previous technology K5 and the best competitor has been performed on an 100W LED driver based on flyback topology. Figure 2 shows how MDmesh K6 presents a better efficiency compared to the two other evaluated devices.

This result is consistent with the energy during switching off (E_{off}) and the case temperature (T_c) values reported in Table 1, referring to maximum load level of 100W.

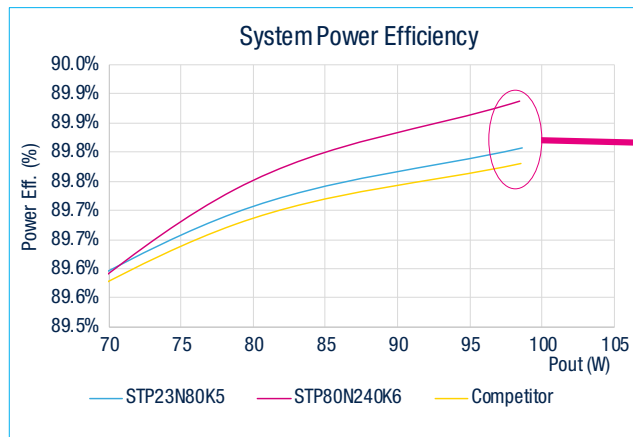


Fig 2: Efficiency comparison

DEVICE	E_{off} [μJ]	T_c [°C]
STP80N240K6	10.18	91
Competitor	11.32	97.6
STP23N80K5	10.42	97

Table 1: Results at maximum load

800V MDmesh K6 Product Plan

BV_{DSS} [V]	$R_{DS(on)}$ [Ω]	I_d max [A]	Q_g [nC]	Part Numbers	Package
800	0.6	7	TBD	STP80N600K6	T0-220*
	0.45	10	TBD	STP80N450K6	T0-220*
	0.22	16	25.9	STx80N240K6	DPAK*, IPAK*, T0-220, T0-220FP*

Note* Under development



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