

Toshiba announces family of ultra-efficient, high-speed, low voltage MOSFETs

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Toshiba today announced a new family of ultra-high-efficiency, high-speed MOSFETs that deliver significant improvements in trade-off characteristics between low on resistance ($R_{DS(ON)}$) and low input capacitance (C_{iss}). The new trench MOSFET series will have voltage ratings from 60V to 120V and will allow designers to reduce the size and improve the efficiency and performance of secondary synchronous rectification in switch mode power supplies.

Use of [Toshiba](#)'s eighth generation N-channel U-MOSVIII-H process has allowed the company to reduce the $R_{DS(ON)} * C_{iss}$ 'figure of merit' compared to previous generations by up to 42 percent. This improves overall efficiency by driving down both conduction and drive losses at

the same time as significantly improving switching speeds. The new process technology also helps to minimize radiated noise.

Among the first devices to be launched in the new family are the TK100E08N1 and TK100E10N1 in TO-220 packages and the TK100A08N1 and TK100A10N1 in TO-220SIS smart isolation package formats. These best-in-class devices have VDSS voltage ratings of 80V (TK100E08N1 and TK100A08N1) and 100V (TK100E10N1 and TK100A10N1). Target applications range from AC/DC adapters and industrial equipment to servers and telecom power designs.

For the TK100*08 MOSFETs, typical $R_{DS(ON)}$ (@ $V_{GS} = 10V$) is rated at 2.6m Ω and typical C_{iss} is just 9100pF. In the case of the TK100*10 devices, $R_{DS(ON)}$ (@ $V_{GS} = 10V$) is 2.8m Ω for the TO-220 package and 3.2m Ω for the TO-220SIS package. For both MOSFETs, typical C_{iss} is only 8800pF.

Toshiba's full range of 80V and 100V MOSFETs based on the U-MOSVIII-H process features 18 devices offering a range of $R_{DS(ON)}$ * C_{iss} ratings to match the needs of a broad variety of synchronous rectification applications. In the coming months, Toshiba will launch a number of additional 60V and 120V devices based on the same technology.

Samples of these latest additions to the Toshiba MOSFETs lineup are available now, with mass production beginning to ramp.

Provided by Toshiba

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