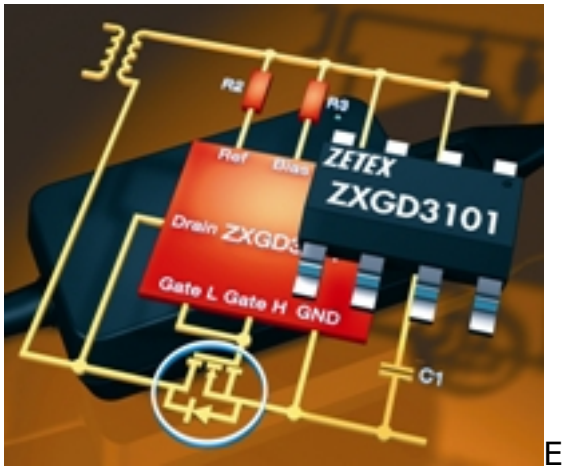
Rectifier Controller Optimizes Flyback Converters



Enabling designers to replace lossy Schottky diodes with MOSFETs, the ZXGD3101 ZPDD dedicated rectifier controller can reduce size, weight and heat generation in synchronous flyback converters ranging from 50 to 150 W. Incorporating a high-voltage differential amplifier stage and a high-current driver, the SM8-packaged device ensures that the MOSFET performs the same function as the diode it replaces, sensing the point at which the secondary current reaches zero. Monitoring MOSFET drain-source reverse voltage, it produces a positive gate voltage to turn the MOSFET on when body diode conduction occurs. Being proportional to the MOSFET drain-source reverse voltage, the drive voltage to the gate is progressively backed off, thereby ensuring rapid MOSFET turn-off at the zero voltage switching point, and that reverse conduction does not occur. Requiring no timing information to be transferred from the primary side and no timing components needed on the secondary side, the rectifier controller needs only three external passive components to produce source and sink currents of up to 2.5 A.

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