



# New Product Announcement

## ZXGD3105N8

# Synchronous MOSFET Controller increases Power Supply efficiency

Diodes Incorporated has extended its family of dedicated Synchronous MOSFET Controllers with the ZXGD3105N8 designed for Set Top Box power supplies.

The mandatory drive to increase power supply efficiencies, means that the secondary side Schottky diode begins to dominate the losses. Replacing this lossy diode with a low  $R_{ds(on)}$  MOSFET and controlling with ZXGD3105N8 increases overall PSU efficiency by  $\geq 3.5\%$ .

Intended for operating in Flyback Converters, ZXGD3105N8 is designed to control and switch the MOSFET at optimum performance, whilst minimising the switching and on-state losses. As a result, the Controller helps power supplies more easily attain the 87% Energy Star V2.0 rating.

For samples and quotations please contact your nearest Diodes sales office or representative.



### The Diodes' Advantage

ZXGD3105N8 is a Synchronous MOSFET Controller enabling the replacement of lossy Schottky diodes and thereby reducing rectification losses by 60~70%.

▪ **<1mA quiescent current**

ZXGD3105 can draw <1mA, which means that under standby conditions a power supply can consume <100mW, whilst also achieving >87% efficiencies at full-load.

▪ **Operation up to 500kHz**

Increased switching frequency allows for smaller coil design within the transformer which enables a slimmer form factor power supply.

▪ **4.5V Vcc supply**

Enables the PSU output rail as low as 4.5V to directly power the ZXGD3105N8 via the Vcc pin. This simplifies the design for lower voltage.

▪ **Proportional Gate Drive**

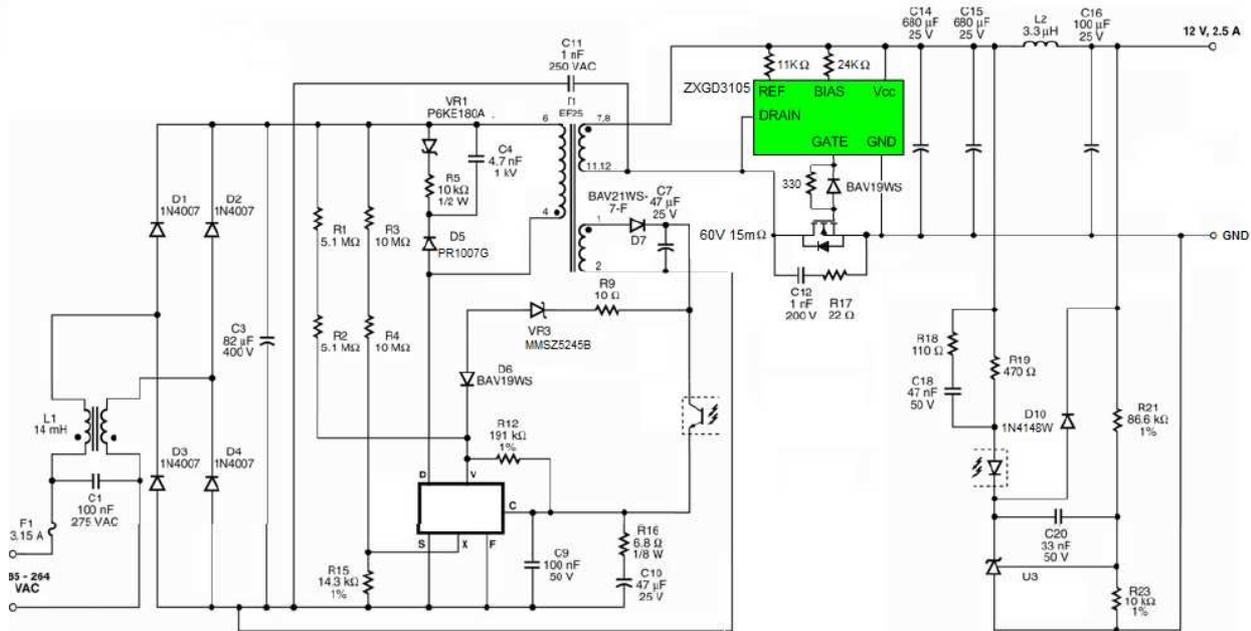
Prevents premature MOSFET turn-off as the drain current decays to zero, so maximising circuit efficiency by ensuring the body diode conduction losses are minimised.

▪ **Smaller Power Supply**

With increased efficiency, this eases thermal design and reduces heat sink size; this allows a smaller PSU design with higher power density. Moreover, it lowers the typical device operating temperature and increases overall the PSU reliability.

### Example of 12V 30W Set Top Box power supply

Synchronous rectification using ZXGD3105N8 plus 60V 15mΩ MOSFET



### Synchronous Controller Comparison

Parameter	ZXGD3105	TEA1791T	IR1167	NCP4303A
VCC voltage	4.5 to 15V	8.5 to 38V	11.3 to 20V	9.9V to 30V
Quiescent current	≤1mA adjustable	0.95mA	1.8mA	4.7mA
Switching frequency	≤500KHz	≤250KHz	≤500KHz	≤500KHz
Mode of operation	CCM, DCM, QR	DCM, QR	CCM, DCM, QR	CCM, DCM, QR
Proportional Gate Drive	Yes	Yes	No	No
Drain voltage	100V	120V	200V	200V
Turn-off threshold	-10mV	-12mV	-10.5mV	0mV
Turn-on delay time	70ns	125ns	60ns	60ns
Turn-off delay time	15ns	Not specified	40ns	40ns
Gate source current	2A	0.25A	2A	2.5A
Gate sink current	-7A	-2.7A	-7A	-5A
Package	SO8	SO8	SO8	SO8
External Components	2 resistors & 1 capacitor	1 resistor & 1 capacitor	1 resistor & 1 capacitor	2 resistors, 1 inductor & 1 capacitor