

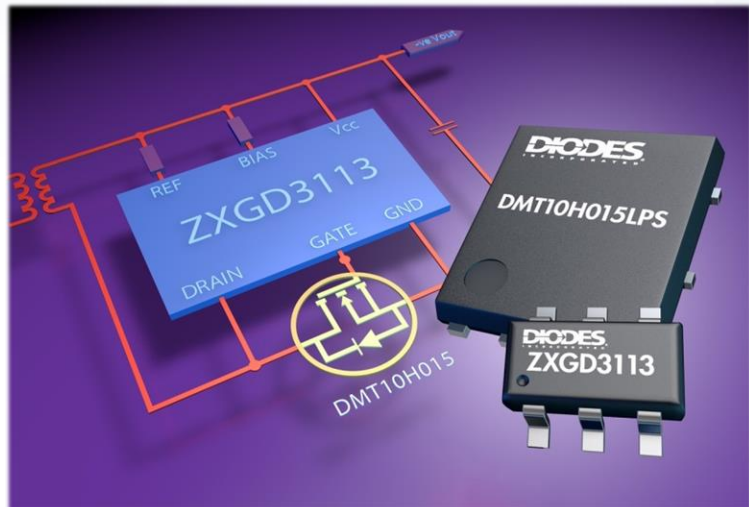


## Synchronous Rectifier Delivers Higher Efficiency and Saves Board Space

The ZXGD3113 is a synchronous rectifier controller designed to be coupled with a MOSFET to replace lossy Schottky rectifiers in power supplies based on a fly-back or resonant converter topology.

The ZXGD3113 controls an external MOSFET, such as the 100V 16mOhm N-channel DMT10H015LPS, configured to operate as an ideal diode. Replacing a Schottky rectifier with the ZXGD3113+MOSFET can significantly increase the efficiency of AC-DC power supplies targeting the industrial, consumer and telecommunications markets.

With improved efficiency, this negates the need for a heatsink to save space compared to a lossy Schottky rectifier. Furthermore, the smaller form-factor SOT26 reduces the solution size from the industry-standard SO8 and by operating up to 250kHz, the PSU designers can use smaller transformers, further saving space and BOM costs.



### The Diodes' Advantage

**The ZXGD3113 is a synchronous rectifier controller for driving MOSFETs configured as ideal diode replacements.**

- **Synchronous Rectification (ZXGD3113 + DMT10H015)**

By replacing a Schottky rectifier with the ZXGD3113+DMT10H015, PSU efficiency can be improved, lifetime can be increased and smaller form factor.

- **3.5V to 40V Vcc Supply**

Driven directly by PSU output as low as 3.5V whilst giving sufficient headroom to handle overvoltage spikes or operate at higher Vcc rails.

- **Proportional Gate Drive**

Rapid turn-off time of the synchronous MOSFET in Continuous Conduction Mode (CCM) to improve efficiency.

- **SOT26 Package**

Smaller package compared to the standard SO8.

### Applications

Targeted at >25W AC-DC power supplies (PSU) in industrial, consumer and telecoms markets for the secondary-side rectification in fly-back or resonant converters. Operating in Discontinuous Conduction Mode (DCM), Critical Conduction Mode (CrCM) and Continuous Conduction Mode (CCM).



## Synchronous Controller Family

Parameter	ZXGD3103	ZXGD3104	ZXGD3105	ZXGD3107	ZXGD3113
VCC voltage	5 to 15V	5 to 25V	4.5 to 25V	4.5 to 25V	3.5 to 40V
Quiescent current	5mA	5mA	1mA	1mA	6.2mA
Drain voltage	180V	180V	100V	200V	160V
Mode of operation	CCM, DCM, QR	CCM, DCM, QR	CCM, DCM, QR	CCM, DCM, QR	CCM, DCM, QR
Switching Frequency	Up to 250KHz	Up to 250KHz	Up to 500KHz	Up to 500KHz	Up to 250KHz
'Proportional' Gate Drive	Yes	Yes	Yes	Yes	Yes
Turn-on delay time	150ns	250ns	70ns	70ns	250ns
Turn-off threshold	-10mV	-10mV	-10mV	-10mV	-10mV
Turn-off delay time	15ns	15ns	15ns	15ns	27ns
Source current	0.25A	0.25A	2A	2A	0.5A
Sink current	-4A	-4A	-7A	-7A	-1.5A
Package	SO8	SO8	SO8	SO8	SOT23-6

## 100V Synchronous MOSFET Family

Part Number	Polarity	$BV_{DSS}$ (V)	$I_{DS}$ (A) @ $T_c=25degC$	$R_{DS(on)}$ max @ $V_{GS} = 10V$ (m $\Omega$ )	$R_{DS(on)}$ max @ $V_{GS} = 4.5V$ (m $\Omega$ )	Package
DMT10H015LPS	N	100	44	16	25	PowerDI5060-8
DMT10H015LFG	N	100	42	13.5	23.5	PowerDI3333-8
DMT10H015LK3	N	100	53	15	25	TO252 (DPAK)
DMT10H015LSS	N	100	8.3*	16	25	SO8
DMT10H010LK3	N	100	69	8.8	15	TO252 (DPAK)
DMT10H010LPS	N	100	98	8.3	20	PowerDI5060-8
DMT10H010LSS	N	100	29.5	9.5	14.5	SO8
DMT10H010LCT	N	100	98	9.5	20	TO220AB

\* Measured at ambient temperature ( $T_A$ )