



## Product brief

# XDP™ digital power XDP52201

## Multi-mode, digital and configurable hybrid flyback controller

The XDP52201 is a highly integrated hybrid flyback controller from the XDP™ digital power family targeting high-density AC-to-DC power supplies, such as USB-C fast charger and adapter applications.

By using two high-voltage MOSFETs such as CoolMOS™ configured in a half-bridge configuration, the XDP52201 is able to drive both high- and low-side MOSFETs in an asymmetric half-bridge flyback topology.

### **Ease of design and system optimization with intelligent, self-adaptive multi-mode operation**

To achieve optimized performance under varying output voltage, load and line input conditions, the XDP52201 comes with an intelligent, self-adaptive digital algorithm. The so-called multi-mode feature ensures that for each operating condition, the best-fitting operation mode is selected to yield an unparalleled performance in its class. With its configurable parameters, the XDP52201 serves as a scalable platform over a range of power classes - swiftly, simply and precisely.

### **Low BOM count and cost with high integration**

Typical with a half-bridge configuration, a high-side driver is needed to drive the high-side MOSFET. Thanks to an integrated high-side driver, the XDP52201 enables a potential saving of up to 20 external components. This controller operates in an asymmetric half-bridge topology and allows for a snubber-less design as well as a single auxiliary transformer winding supporting wide output voltage application as typical with USB-PD charging.

### **Increased system robustness with a comprehensive suite of protection features**

The XDP™ XDP52201 integrates a robust set of protection features that include brown-in and -out, dual-level overcurrent, output over-voltage, output under-voltage and overtemperature via an external NTC.

### Key features

- > ZVS (zero voltage switching) and ZCS (zero current switching) across all AC line- and load-conditions
- > Multi-mode operation with burst mode, DCM (discontinuous conduction mode), ZV-RVS (zero voltage resonant valley switching) and CRM (continuous resonant mode)
- > Integrated high-side driver
- > Comprehensive suite of protection features
- > UART port for digital parameter configuration
- > DSO-14 SMD package

### Key benefits

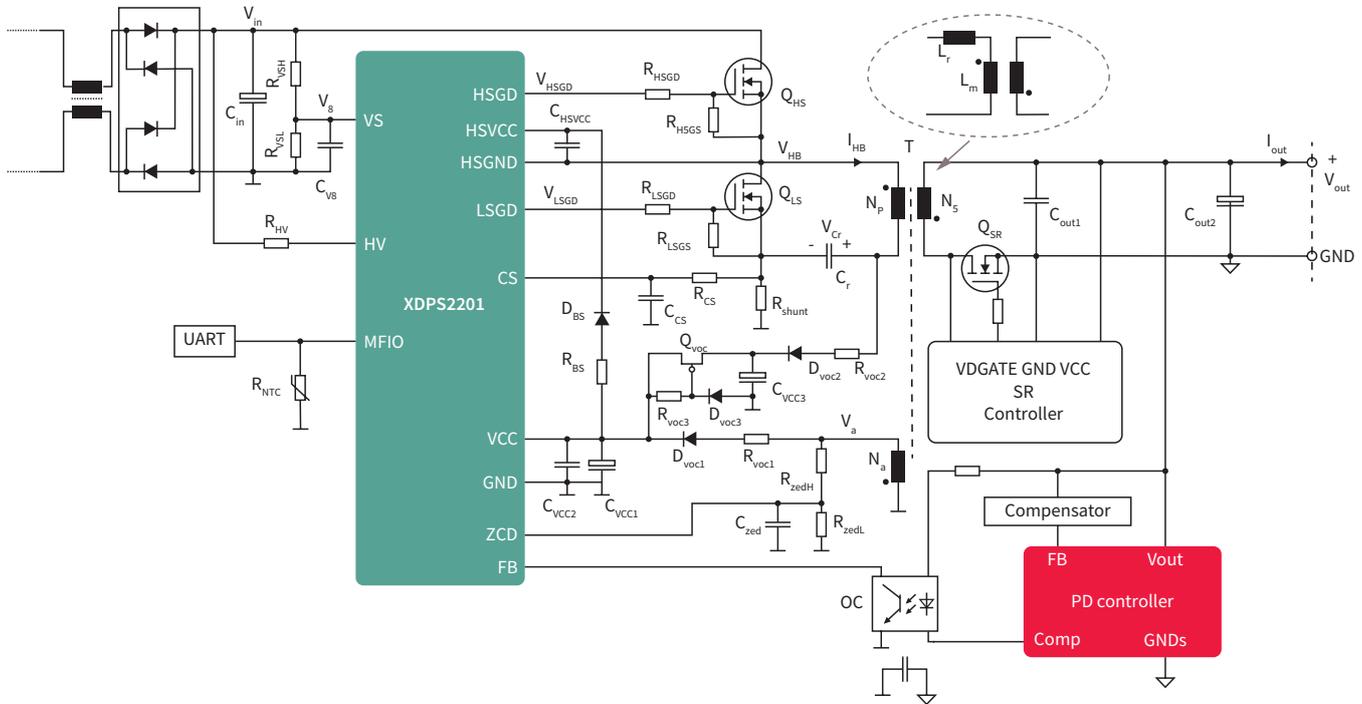
- > High power density design and high efficiency up to 93.8%
- > High average efficiency > 92% across different AC line and load conditions
- > BOM savings of up to 20 external components for high-side driving
- > Increased system robustness
- > Fast and precise system tuning with configurable digital parameters
- > Lead-free, RoHS compliant



# XDP™ digital power XDPS2201

Multi-mode, digital and configurable hybrid flyback controller

Typical application schematic of a 65 W USB-PD charger



## Product portfolio

Product	Description	Orderable part number (OPN)	Package
XDPS2201	Hybrid flyback PWM controller	XDPS2201XUMA1	DSO-14

## Design and support tools

Type	Description	Ordering code	Additional information
DEMO_XDPS2201_65W1	65 W USB-PD 3.0 PPS type C charger	DEMOXDPS220165W1TOBO1	-
IF-BOARD.DP-GEN2	Gen2 .dp interface board	IFBOARDDPGEN2TOBO1	http://www.hitex.com/dp
GUI .dp Vision	Graphical user interface software to configure parameters via a PC	Free download	

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