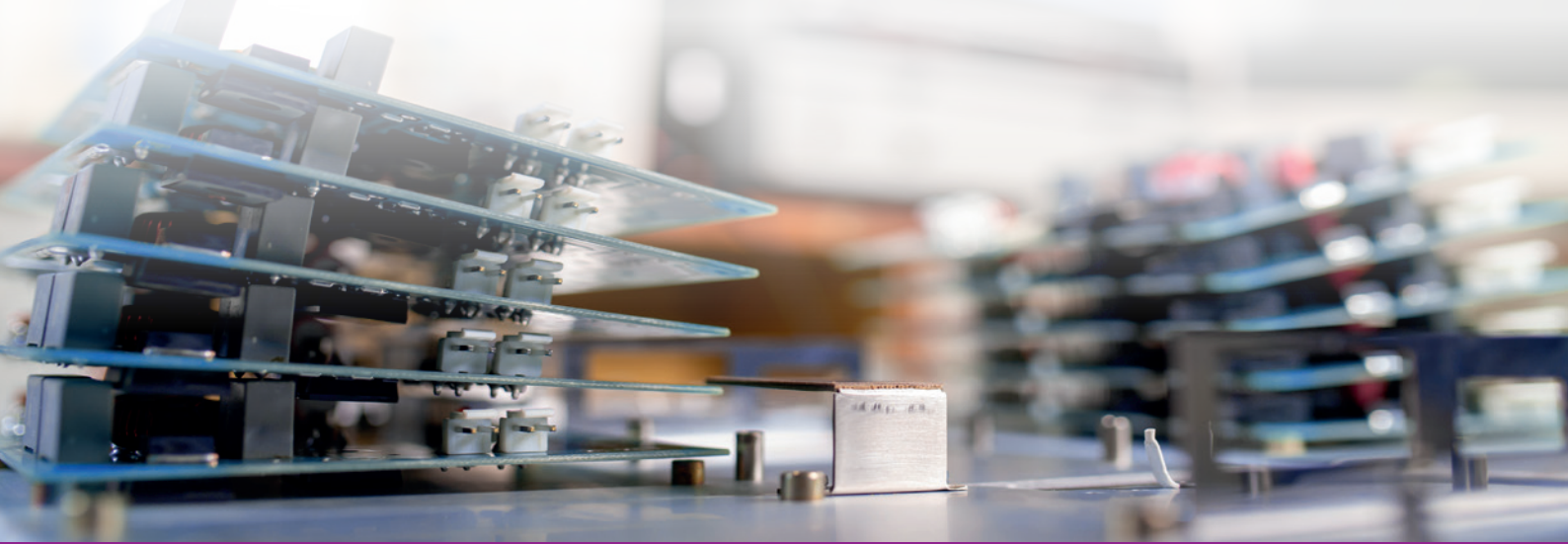




Compact, efficient,  
programmable and ready-made  
for use in industrial designs



# Introducing the *tobogGaN* 60W AC-DC power supply board

The 60W TobogGaN reference design board from Future Electronics is a complete AC-DC converter for industrial and telecoms auxiliary power supplies.

It is also ideal for any general-purpose application which requires high efficiency, small size, or the flexibility to use a single design across multiple end products.

## COMPACT

At just 58mm x 49mm x 32 mm, the TobogGaN board achieves high power density. At the heart of the board is the InnoSwitch™3-Pro from Power Integrations, a highly integrated flyback controller which reduces component count and saves board space. It incorporates a quasi-resonant flyback controller, FluxLink™ isolated feedback system for high regulation accuracy and rapid transient response, a secondary-side synchronous controller, and Power Integrations' own PowiGaN™ gallium nitride switch technology.

## EFFICIENT

Power Integrations' PowiGaN technology is widely used in the latest ultra-compact USB Type-C® chargers because of its high efficiency and low thermal dissipation. Gallium Nitride (GaN) switches produce lower switching and

conduction losses than silicon MOSFETs of an equivalent power rating.

Thanks to the high efficiency of the PowiGaN primary-side switches in the InnoSwitch3-Pro, the TobogGaN board achieves efficiency of 92% at peak load. This means it can often be used in a power supply with no heat-sinking, even when operating at the maximum ambient temperature rating of 60°C.

## PROGRAMMABLE

The TobogGaN board's InnoSwitch3-Pro controller provides for digital configuration via its I<sup>2</sup>C interface. Designers can select important power-system parameters such as output voltage and current limit. Designs based on the TobogGaN board can be easily modified to meet the requirements of multiple applications with a single hardware platform.





## TobogGaN 60W AC-DC power supply reference design board: key features and specifications

### TobogGaN: key specifications

**Input voltage:** 85V to 265V AC

**Output voltage:** Programmable from 5V to 20V

**Maximum output current:** 3A

**Maximum continuous output power:** 60W

**Efficiency at full load:** 92%

**Maximum ambient temperature:** 60°C

### TobogGaN: target applications

- Industrial and telecoms auxiliary power supplies for loads up to 60W
- General-purpose battery chargers
- Industrial USB Type-C chargers with a plug-in USB Type-C plug-in card

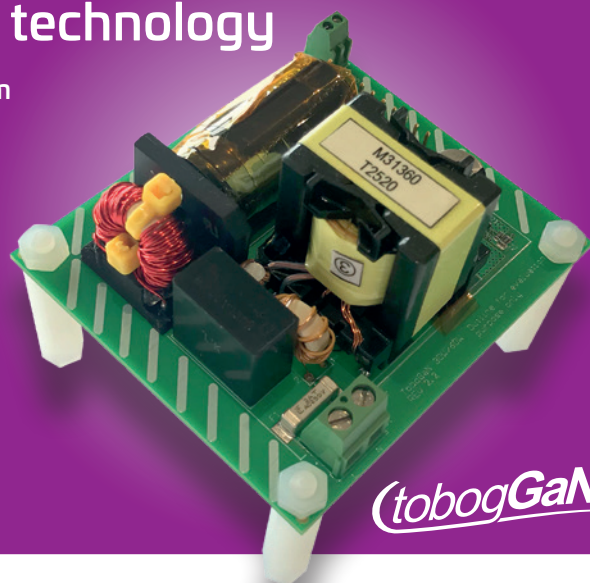
### TobogGaN: key components

- Power Integrations InnoSwitch3-Pro with PowiGaN technology AC-DC controller module
- Power Integrations CAP200DG for zero-loss automatic X-cap discharge
- Vishay SIR170DP 100V TrenchFET® Gen IV silicon power MOSFET supporting secondary-side synchronous switching for the power stage
- Panasonic EEHZZK1E561UP conductive polymer hybrid aluminium electrolytic capacitor, offering low ESR and long operating lifetime
- Surge Components 400V long-life aluminium electrolytic capacitors
- Myrra flyback transformer and common-mode choke

## The efficient, integrated heart of the TobogGaN board: InnoSwitch3-Pro with PowiGaN technology

In power supplies rated for <100W, the InnoSwitch3-Pro from Power Integrations offers many benefits:

- Low component count through integration of:
  - Quasi-resonant flyback controller
  - Primary-side GaN power switch
  - Secondary-side controller for synchronous rectification
  - FluxLink isolation technology, eliminating the need for an optocoupler
- Highest efficiency over the full power range
- High power density
- Programmable output voltage and current
- Fast transient response to changing load conditions



### Need a design optimised for 30W?

TobogGaN can be optimised for 30W operation by changing the flyback transformer and the input bulk capacitor. The PCB design between 30W and 60W is common. If you require 30W, TobogGaN can be adapted to suit. For 60W capability please request the part number **Toboggan60W** and likewise the part number **Toboggan30W** for 30W capability.

**To apply for a FREE TobogGaN power supply reference design board, go to [www.my-boardclub.com](http://www.my-boardclub.com) and search TobogGaN**

Free boards available to qualified customers of Future Electronics based in the EMEA region.  
TobogGaN board offer promoted by Future Electronics, The Glanty, Egham TW20 9AH, United Kingdom. [www.futureelectronics.com](http://www.futureelectronics.com)