

THE POWER OF SIMPLICITY

Reduced Size. Increased Efficiency. Faster Design.

Fully integrated isolated gate driver with Power-Thru technology

Driving FETs in an isolated power conversion system has always posed design challenges. The need for an isolated power supply and/or bootstrap components reduces efficiency and increases component count, which adds complexity and cost.

The advance of new wide-bandgap FETs (GaN, SiC) and new converter topologies, such as multi-level, add new layers of complexity and challenges to gate driving (i.e., supplying power across isolation, managing multiple power rails, etc.).

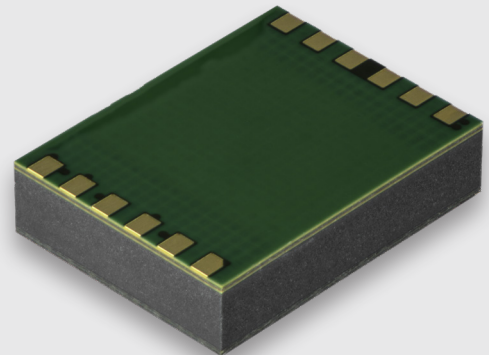
The basic, oft-utilized approach to driving these FETs limits the ability to fully leverage the capabilities of wide-bandgap FETs, which can potentially turn engineers away from exploring the use of multi-level topologies. This aversion prevents the deployment of more compact, more efficient and more reliable power conversion systems.

Times, however, have changed: the Power-Thru technology inside Allegro's isolated gate driver solution allows designers to use a single, small-footprint package that integrates an isolated gate driver and an isolated power supply, optimally matched.

The revolutionary single-package design significantly reduces system complexity and EMI challenges, which leads to faster design cycles. It also allows for higher efficiency and higher power density, with a smaller BOM and a reduced PCB footprint by 50%.

The AHV85110, Allegro's best-suited solution to drive e-mode GaN FETs, is the first fully integrated isolated gate driver with Power-Thru technology inside to be commercialized.

A comprehensive portfolio of isolated gate drivers with Power-Thru technology is under development and will mark a new era in gate driving for all mid-to-high power applications using GaN or SiC FETs.



Features


- Power-Thru technology inside
- Integrated bias supply
- Low common mode capacitance
- Integrated transformer

Benefits


- No external DC-DC or bootstrap needed
- Smaller footprint, more power density
- Lower EMI
- Higher system efficiency
- Simplified and faster design

Higher power density, greater efficiency, simple and reliable


Due to its clever design and integrated bias supply, the AHV85110 significantly reduces both BOM count and design time, and enables unmatched levels of power density. In addition to these benefits, the inherently low common mode capacitance simultaneously improves system efficiency and reduces EMI noise.




**50%
LESS COMPONENTS**




**2x
POWER DENSITY**



**20 dB
LESS EMI**



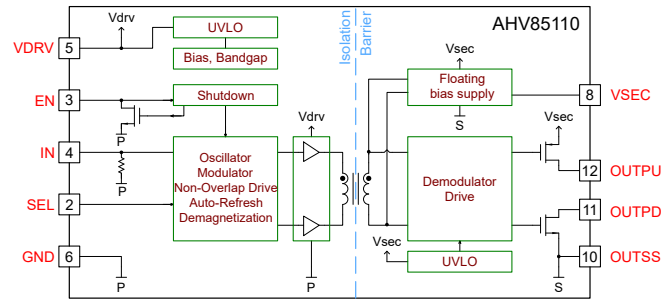
**3 W
LOWER POWER LOSS^[1]**



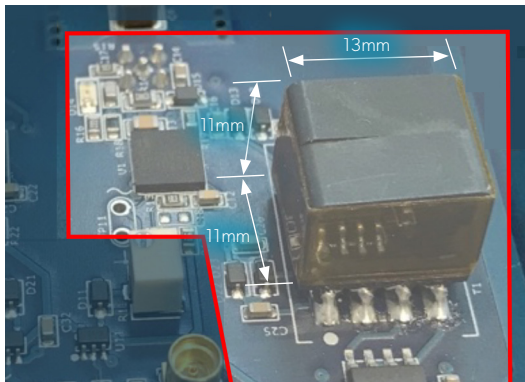
**1/2
DESIGN TIME^[2]**

[1] Per full-bridge in a typical 1 kW converter
[2] Based on feedback from customers

AHV85110 Block Diagram

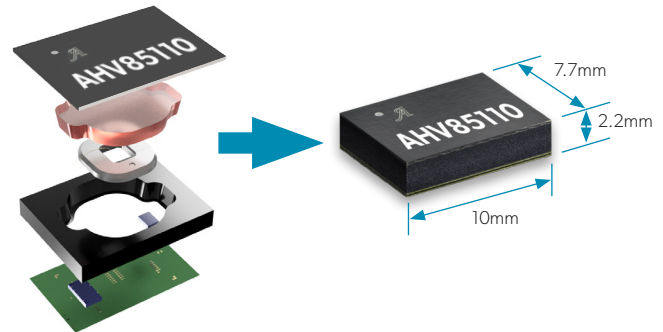


Conventional Design



- Isolated gate driver
- Isolated supply
- Capacitors
- Resistors

Allegro Power-Thru Technology



- Allegro's AHV85110 isolated gate driver

AHV85110 Selection Guide

Part Number	Switch	# of Channels	Output	Qualification	Package	Tape & Reel Detail
AHV85110-KNHBU	E-Mode GaN	1	Unipolar	AEC-Q100 Grade 2	10 mm × 7.66 mm × 2.53 mm	13-inch
AHV85110-KNHTR					12-pin low-profile surface mount	1500 pieces
					10 mm × 7.66 mm × 2.53 mm	13-inch
					12-pin low-profile surface mount	200 pieces

To learn more about the Allegro family of products and to explore available design resources, visit allegromicro.com.

ALLEGROMICRO.COM



AM053-07.23