

GAN GATE DRIVERS

With Power-thru Technology
Unlocking Ultimate Performance & Simplicity

Gate Driving : Simple & Powerful

Eliminate bootstrap components and isolated supplies



Gate Drive Challenges

There are several key challenges to driving FET's. This is true whether it is GaN, MOS or SiC.

- **Complexity:** A simple solution is often the best solution. Keeping gate drive simple was a key motivator and our biggest challenge. Cumbersome additional components, isolated supplies and managing all of these is difficult when designing a gate drive circuit. Reduce component count and you will reduce complexity.
- **CMTI:** It's important to note that all the switch types (MOS, GaN and SiC) are improving their switching transition speeds in recent years. So the common mode transient immunity of the gate driver needs to be up to the challenge. Failure to meet this requirement will mean unexpected transitions on the FET gate and potential destructive events in a system.
- **Propagation time:** Delivering reliable gate drive signal and energy to the gate of any device is the first job of any gate driver. Delivering it with low propagation time from system controller to FET gate is even better. Low propagation time makes for tighter and easier 'dead-time' management between the ON and OFF cycles of the power FET's. This will directly result in improved system efficiency. Which will result in happy system designers!
- **EMI:** Electro-magnetic interference considerations are often the last thing to be thought about in a system design. This can make finishing a design difficult and time consuming. The reduction of components and circuits in and around the gate drive design helps dramatically reduce the EMI challenge in a system design. The reason being lower common-mode capacitance (Ccm). Reducing Ccm reduces circulating currents, reducing EMI difficulties in the system.



Heyday Technology has addressed and solved all of these challenges. The Heyday team has turned this technology into a reality resulting in a product line of isolated gate drivers fit for the most challenging designs and applications.



The Solution

Power-thru[®] isolation technology

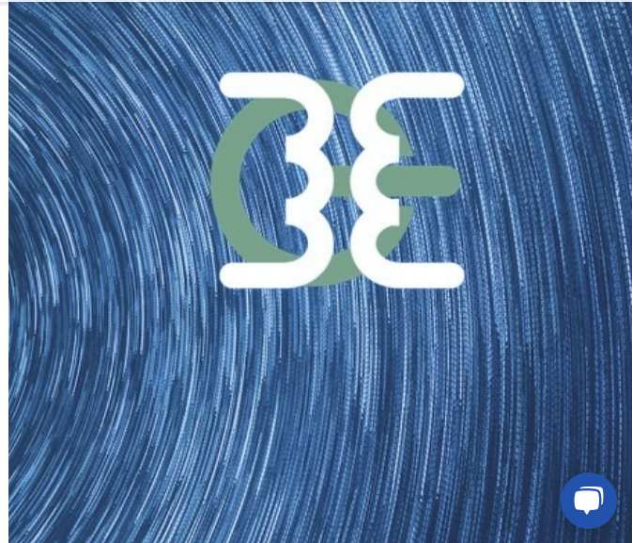
Heyday has leveraged years of experience to develop a unique technology enabling high performance gate drivers. In one single package and across one single internal isolation boundary *both the gate drive signal and the drive power are transferred.*

We have called it power-thru[®].

The simplicity of the isolation boundary makes it efficient by design. Efficient electrically and physically.

A tiny magnetic based isolation structure enables efficient power transfer across the boundary from low-voltage signal to high-voltage system. This boundary carries not only the gate drive signal information but also all the drive power required to drive the external FET switch. The system designer can now deliver isolated drive to a high-side FET as easily as a low-side FET.

Heyday's know-how, key intellectual property and patent portfolio enable the silicon smarts that deliver the capability to make this isolated technology. The Heyday product line is just starting but is growing fast!



Magnetic Isolation

Magnetic isolation has been known for years as an efficient way to transfer energy. But getting the required drive energy and information efficiently through a magnetic component small enough to fit in a semiconductor sized package - that's a new story.

A single isolation boundary is used to transfer both the drive information and the drive energy from a low voltage control circuit to the high-voltage system switch circuit. This single path approach makes for simpler and smaller product package.

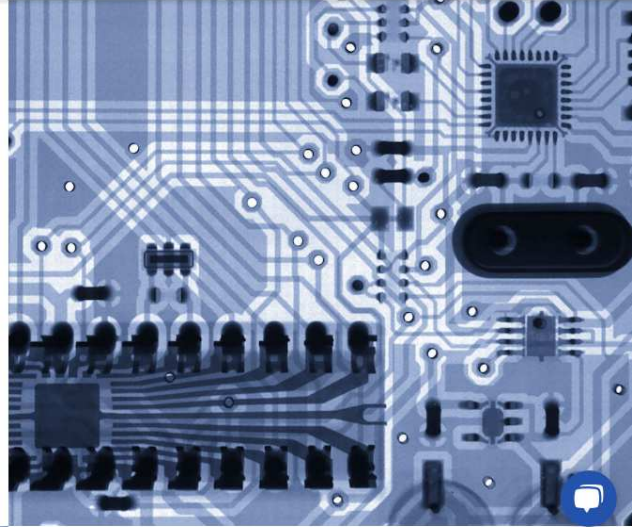


Silicon Does The Magic

Heyday silicon is the enabler which steers the energy and information across a tiny magnetic boundary with amazing efficiency and speed to make outstanding gate drive products. Through novel silicon techniques such as:

- efficient modulation and demodulation
- immunity to magnetic parasitics
- smart energy management
- efficient magnetic core reset

Heyday has delivered new isolated gate drivers which have long been sought by power system designers. Heyday's IP rich patent portfolio is growing quickly in this exciting fast growing market space of isolated gate drives.



Packaging - From Technology To Product

Heyday has always believed in simplicity regarding the package design. Leave the complexities to the silicon! Heyday's first products are based on the well-known Land Grid Array, LGA, design. Our small 10 x 7.7 x 2.6 mm LGA device is packed with features, performance and functionality that will enable the best and most efficient power module designs.

