

BEYOND THE ARC

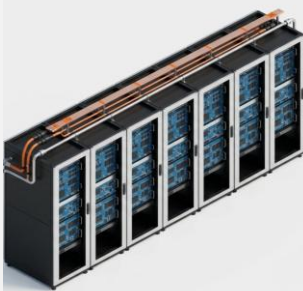
The Shift to Solid State Circuit Breakers

The shift to an 800V bus requires a new level of power protection. Solid-state circuit breakers (SSCBs) meet this need by interrupting faults in microseconds using wide bandgap semiconductors.

Solid-state circuit breakers rely on isolated gate drivers and magnetic field sensors to monitor high voltage buses, detect faults, and interrupt power without arcing. Self powered PowerThru™ isolated gate drivers integrate bias supply and an optional integrated transformer cutting PCB footprint by up to 50% enabling reliable SiC switching and superior EMI performance. Coreless field sensors provide precise busbar monitoring with available overcurrent and overtemperature detection.

What you can achieve with Allegro solutions

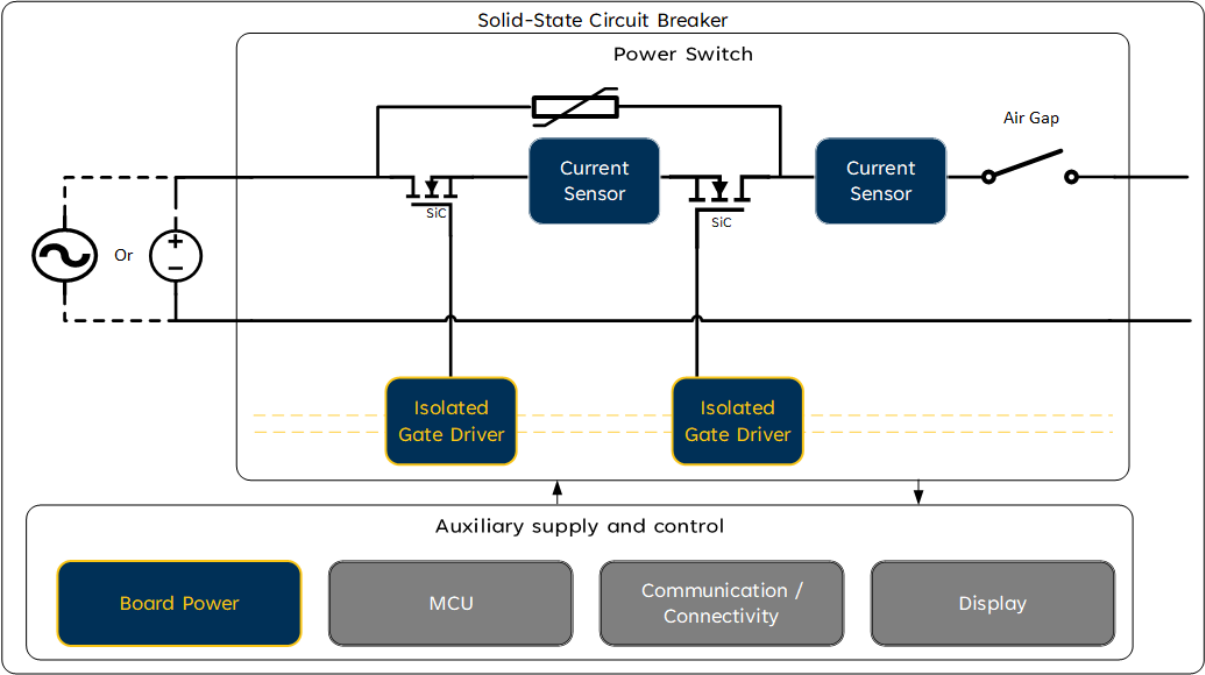
- **Maximized Uptime:** Enable arc free protection that eliminates mechanical wear and reduces maintenance downtime. Contactless field sensors detect faults, isolated gate drivers switch efficiently, and auxiliary DC-DC regulators keep control electronics running.
- **Precision Monitoring:** Track real time busbar currents with $\pm 1\%$ sensitivity over temperature. Coreless sensors eliminate the need for a bulky concentrator core, enabling telemetry in compact packages.
- **Flexible Power Switching:** Scale across diverse SSCB topologies with integrated transformer and dual chipset package options. Our isolated gate driver portfolio can eliminate 2 to 8 isolated DC-DC modules from the auxiliary supply architecture.



Solid-state circuit breakers are commercially available today and are being increasingly adopted in hyperscale facilities for faster and more efficient power protection.

Allegro Microsystems' portfolio of isolated gate drivers, magnetic field sensors, and regulators provides the critical building blocks for fast, arc free and compact protection across the data center power distribution architecture.

Block Diagram



Key Products and Solutions

Subsystem	Component	Allegro Parts	Key Differentiator
Power Switch	Isolated Gate Driver	AHV85003/43	PowerThru™ gate driver chipset optimized for SiC FETs transmits both PWM signal and bias power, delivers up to 130 nC gate charge at 21 V.
		AHV85311	PowerThru™ single channel isolated SiC driver with integrated bias supply and transformer with CMTI > 100 V/ns and active Miller clamp.
Power Switch	Current Sensor	ACS37610	Coreless field sensor for AC and DC current measurement across wide load ranges, delivering ±1% sensitivity over temperature for busbar monitoring with OCF and OTF fault detection.
		ACS37611	Coreless field sensor for AC and DC current measurement across wide load ranges, delivering ±1% sensitivity over temperature for busbar monitoring with a ratiometric output.
Auxiliary Supply and Control	Board Power	APM81803	40V highly integrated DC/DC regulator with 0.8 to 24V output range, ±1.5% output voltage accuracy, and low EMI.



To learn more about the Allegro family of products and to explore available design resources, visit [allegromicro.com](https://www.allegromicro.com)