A4916: Automotive Three-Phase MOSFET Driver

The A4911/13/16 product family provides six high current gate drives capable of driving a wide range of N-channel power MOSFETs. The gate drives are configured as three half bridges, each with a high-side drive and a low-side drive. The three half bridges can be operated independently or together as a three-phase bridge driver for BLDC or PMSM motors. For maximum flexibility, the 491x product family provides a serial interface (SPI) to alter programmable bridge settings and read back detailed diagnostic and verification information. In the addition, the A4911 and A4913 include three low-side current sense amplifiers with programmable gain and offset. The amplifiers are specifically designed for current sensing in the presence of high voltage and current transients. These amplifiers can be used independently to provide low-side current sensing in three phases or can be used together to provide redundant current sensing. Several package options are available including a Leaded Quad Flat Pack (LQFP) – 48 and a Leadless Quad Flat Pack (QFN – 48).

The A4911/13/16 devices are BLDC MOSFET drivers specifically designed for safety critical automotive systems, such as Electronic Power Steering (EPS) and Fans and Blowers. The extensive diagnostics and verification features coupled with ISO-26262 development standard enable end users to achieve ASIL-D certification. Several package options are possible, available now are a Leaded Quad Flat Pack (LQFP) – 48 and a Leadless Quad Flat Pack (QFN – 48). Exposed pad for improved thermal performance. Several package options are possible, available now are a Leaded Quad Flat Pack (LQFP) – 48 and a Leadless Quad Flat Pack (QFN – 48). Exposed pad for improved thermal performance.

Allegro recommended automotive qualified hall latches: APS122x5 and APS122x0

![A²-SIL logo]

FEATURES & BENEFITS   PACKAGING   TECHNICAL DOCS   NEWS

- ISO26262 Developed and Certified to ASIL-D
- 150°C Ambient operation
- 165°C minimum thermal shutdown
- Qualified to Q100 Grade 0
- Robust Gate Drive Design allowing up to -18V Negative Transients
- Extended diagnostics
  - Gate drive monitors
  - Overvoltage detectors
  - Logic level, phase-state output
  - Open load detect

- Programmable gate drive outputs
- Adjustable drive strength for slew rate limitation
  - Adjustable output voltage level for gate drive limitation

- Programmable sense amplifiers
  - Adjustable gain
  - Adjustable offset
  - No external components required
  - Low offset drift

- SPI read back & parity bit

![Automotive BLDC MOSFET Driver ICs - Developed in Compliance with the ISO 26262 Standard]
Click the image to view larger

Part Number Specifications and Availability

Part Number	Package Type	Temperature	RoHS Compliant	Part Composition / RoHS Data	Comments	Samples	Check Distributor Stock
A4916KEVSR-J-1	48-lead QFN/MLP	-40°C to 125°C	Yes	View Data		Contact your local sales rep	Check Stock

Part Number Specifications and Availability

Part Number	Package Type	Temperature	RoHS Compliant	Part Composition / RoHS Data	Comments	Samples	Check Distributor Stock
A4916KJPTR-T	48-lead LQFP	-40°C to 150°C	Yes	View Data		Contact your local sales rep	Check Stock

Allegro's products are not to be used in any devices or systems, including but not limited to life support devices or systems, in which a failure of Allegro's product can reasonably be expected to cause bodily harm.