Data Sheet

ADM6100

Half-Duplex Power-over-Data (PoD) Transceiver with RS-485 Backwards Compatibility

FEATURES

- Patented PD-Link® Encoding Method Featuring Physical Layer PoD Encoding
  - DC Balance Maintained at Physical Layer
  - Up to 2.5Mbps Data Rate in PoD Mode
  - Resistor Controlled Channel Bandwidth
  - Receiver Gain Control
- RS-485 Backwards Compatibility Mode
  - Up to 20Mbps Data Rate in RS-485 Mode
- Polarity Agnostic Operation
- High ESD Protection
  - ±25kV HBM ESD per JEDEC JS-001
  - ±15kV Air-Gap ESD per IEC 61000-4-2
  - ±10kV Contact ESD per IEC 61000-4-2
- ±25V Fault Protection on Transceiver Pins
- True Fail-Safe Receiver Prevents False Transition on Receiver Input Short or Open Events
- Hot-Swap Capability Eliminates False Transitions During Power-Up or Hot Insertion
- −40°C to +125°C Operating Temperature
- 28-Pin 4mm × 4mm TQFN

FUNCTIONAL BLOCK DIAGRAM

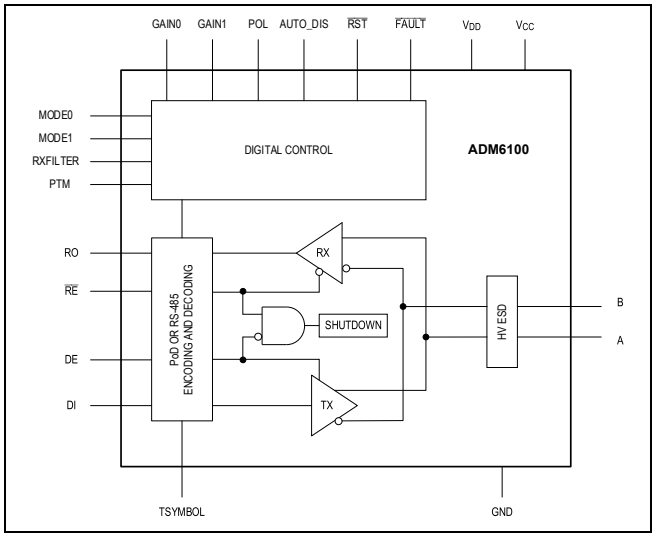

Figure 1. ADM6100 Functional Block Diagram

GENERAL DESCRIPTION

The ADM6100 half-duplex PoD transceiver features the PD-Link encoding, a physical layer (PHY) specific robust channel encoding method that allows for software-agnostic PoD communications, which utilizes only a single pair of wires while minimizing the size and cost of external components. The PD-Link channel bandwidth is configurable, which allows system designers to optimize trade-offs among data rate, cable length, and size of external magnetic components required for PoD implementation. The configurable channel bandwidth allows the use of smaller magnetics even with very low system data rate. The PD-Link encoding used by the ADM6100 enables PoD implementation without requiring any protocol changes or constraints in software layers beyond the physical layer.

The ADM6100 is used to replace standard RS-485 transceivers to provide PoD capability to point-to-point or multinode systems. In the case that RS-485 backwards compatibility is required, the PD-Link encoding feature can be bypassed to enable the device to communicate with standard RS-485 transceivers on the network.

The ADM6100 features PoD receiver gain control to support longer cable lengths across varying cable quality. High ESD protection and up to ±25V fault protection on the transceiver pins ensure robust communication in harsh industrial environments.

The ADM6100 is available in 4mm × 4mm 28-pin TQFN package and is rated to operate over −40°C to +125°C industrial temperature range.

APPLICATIONS

- Building Automation
- HVAC Systems
- Building Access Systems
- Building Intercom Systems
- Industrial Automation Applications

PD-Link® is a trademark of Analog Devices, Inc.

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