

Product Brief

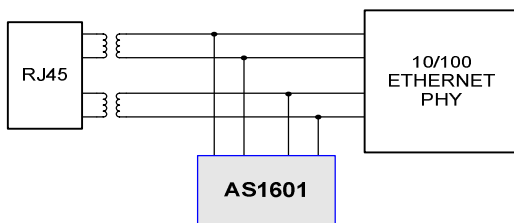
General Description

The AS1601 is a single-chip, highly integrated CMOS solution for EMI (Electro-Magnetic Interference) Suppression in Ethernet applications. EMI Compliance is one of the most challenging aspects of system design that very often results in product release delays. The AS1601 is designed to address EMI Compliance issues in the early phase of the system design, and enables the “Design for EMC (Electro-Magnetic Compatibility)” concept.

The AS1601 can be used in any type of 10Base-T/100Base-TX/1000Base-T systems, in both Power-over-Ethernet (POE) and non-POE ports. Applications include compliance to EMI Emissions (CISPR22 and FCC Part 15, Class B requirements for Radiated and Conducted Emissions) and EMI Immunity standards (IEC61000-4-3/6 requirements for Radiated and Conducted Immunity, Level 3 or higher). The AS1601 utilizes Akros Silicon's patented “**Active Choke Technology**” that offers superior Common Mode (CM) noise reduction and CM immunity compared to passive filtering techniques common in Ethernet applications. At the system level, the AS1601 provides additional CM noise suppression of more than 10dB over the entire Ethernet signal bandwidth.

The AS1601 works with standard Ethernet Physical Layer Transceivers (PHY) and Ethernet transformers. System designers can use the AS1601 to design systems for EMI compliance while maintaining full Ethernet electrical compliance per the IEEE 802.3 specification.

Example Application Diagrams



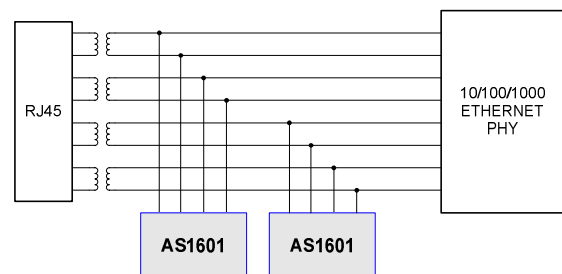
Features

The AS1601 is fully integrated and architected at a system level to provide the following features:

- Enables system designers to comply with:
 - CISPR22 and FCC Part 15, Class B requirements for Radiated and Conducted Emissions.
 - IEC61000-4-3/6 requirements for Radiated and Conducted Immunity, Level 3 or higher.
- Provides up to 10dB of additional common mode noise suppression over the frequency of 1MHz to 125MHz when used with Ethernet magnetics.
- Interfaces to standard Ethernet transformers and 10/100/ 1000Base-T Ethernet PHYs.
- Uses a single standard power rail (3.3V or 2.5V).
- Flow-through routing for ease of board layout.
- Industry Standard 16 pin QSOP RoHS Package
- Industrial temperature range (-40°C to 85°C).

Typical Applications

- Voice over IP (VoIP) phones
- IP Video security cameras
- Wireless access points (WAP)
- Set top boxes
- Networked printers and appliances
- Desktop and laptop computers
- PoE and Non-PoE Ethernet systems



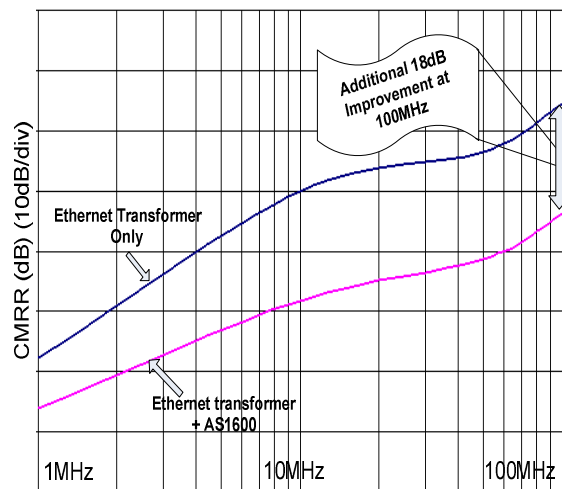
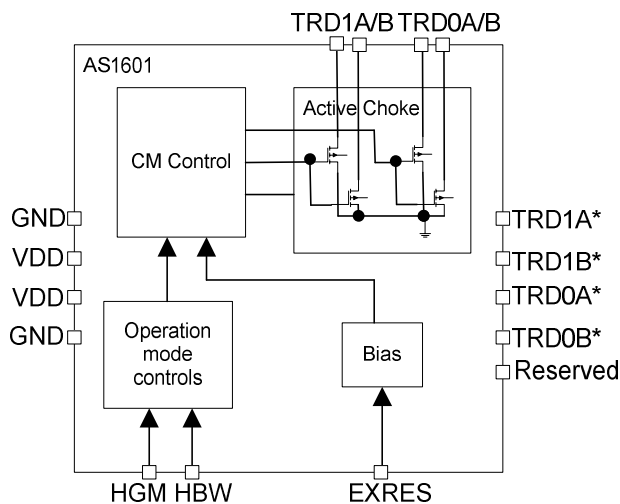
Functional Description

The AS1601's adaptive CM noise suppression circuit provides very low common mode shunt impedance that effectively absorbs the CM noise in both ingress and egress directions, increasing the system's immunity to CM noise coming from the UTP, and reducing emissions to the UTP. The level of CM suppression is hardware programmable and it compensates for many variables that are the source of CM noise in Ethernet systems. Integrity of the Ethernet signal is preserved by maintaining high differential impedance and low differential capacitive loading.

Each AS1601 supports two twisted pair interfaces. 10/100Base-T applications require one AS1601 device while 10/100/1000Base-T applications use two AS1601 devices.

The AS1601 is available in a small footprint 16-pin QSOP, Reduction of Hazardous Substance (RoHS) compliant package.

Device Block Diagram



For More Information

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