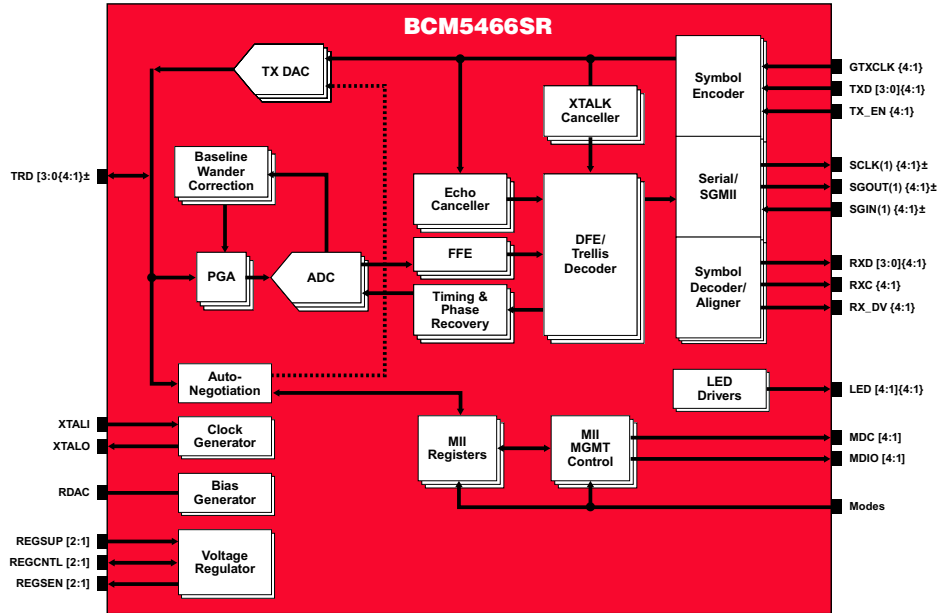


OVERVIEW



BCM5466SR Reference Design

The BCM5466SR is a member of Broadcom's QuadSquad™ family of quad Gigabit Ethernet PHYs. It consists of four complete 10/100/1000BASE-T Gigabit Ethernet transceivers integrated on a single monolithic CMOS chip. The BCM5466SR is optimized for low power and small footprint size to enable high-port-density applications. The BCM5466SR enables a new class of cost-effective Gigabit Ethernet equipment by lowering system cost and reducing power dissipation by nearly 25%, driving the delivery of Gigabit Ethernet bandwidth to the desktop.

The BCM5466SR DSP-based architecture and advanced power management techniques combine to achieve robust and low power operation over existing Category 5 twisted-pair wiring. The BCM5466SR architecture not only meets the requirements of IEEE 802.3, IEEE 802.3u, and IEEE 802.3ab, but maintains the industry's highest level of margin over IEEE requirements for echo, near-end crosstalk (NEXT), and far-end crosstalk (FEXT). Low power is key to implementing high-density Gigabit switches, and the BCM5466SR has the lowest power in the industry at less than 750 mW per port. In addition, the BCM5466SR has extremely low EMI emissions, which reduces the design constraints required to meet EMI radiation specifications.

The BCM5466SR supports RGMII, SGMII, and SerDes MAC interfaces. A unique feature of the BCM5466SR is its ability to support both copper and fiber networks, with an integrated SerDes PHY interface that can connect directly to a fiber-optic module. Switching between copper and fiber media can be accomplished either automatically or through software

control. The BCM5466SR monitors copper link and fiber signal detect status, and automatically swaps either copper traffic or fiber traffic to the MAC/switch based on priorities set at initialization.

This device is another member of Broadcom's 0.13-µm Gigabit Ethernet copper PHY family, joining more than a dozen other quad and single products. The 0.13-µm process is the optimal process that offers the best performance, lowest cost, and lowest power for Gigabit Ethernet copper solutions. Devices based on the 0.13-µm process offer an excellent long-term cost curve, enabling better cost reduction over time (compared to older technologies) without having to redesign or requalify a new part.

Each port of the BCM5466SR is fully independent and has individual interface, control, and status registers, and incorporates a number of advanced features. A link-quality indicator LED gives installers an instant visual indication if there are any problems with the wiring plant supporting operation at the preferred speed. This includes physical wiring defects that the BCM5466SR cannot automatically correct for, and channel conditions such as excessive cable length and return loss, crosstalk, echo, and noise. Broadcom's CableChecker software provides remote management of the cable and first level diagnostics and fault isolation.

The BCM5466SR also has ESD tolerance well above typical industry standards. This prevents ESD damage not only during manufacturing, but also during CESD events in the field. The CESD is an ESD event that occurs when an electrically charged network cable is plugged into a network port, which is an issue becoming more prevalent with recent cable installations. The BCM5466 can tolerate over 3 kV of CESD.

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