

# BCM54220SE

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## Dual Port RGMII SGMII Copper/Fiber Gigabit Ethernet Transceiver w Integrated Jitter Attenuator

[Overview](#) | [Specifications](#)

The Broadcom® BCM54220SE is a fully integrated dual-copper/fiber Gigabit Ethernet transceiver with support for Energy Efficient Ethernet (EEE), Synchronous Ethernet (SyncE), and IEEE 1588v2 standards. The PHY performs all of the physical layer functions for 10BASE-T, 100BASE-TX, 1000BASE-T, on standard Category 5e UTP cable. The PHY performs all of the physical layer functions for 100BASE-FX, 1000BASE-X, and SGMII-Slave. The BCM54220SE supports both the SGMII and RGMII industry standards. The BCM54220SE is based on the proven digital signal processor technology of Broadcom, combining digital adaptive equalizers, ADCs, phase locked loops, line drivers, encoders, decoders, echo cancelers, crosstalk cancelers, and all other required support circuitry integrated into a single, monolithic CMOS chip. Designed for reliable operation over worst-case Category 5e cable plants, the BCM54220SE automatically negotiates with any transceiver on the opposite end of the wire to agree on an operating speed. The PHY can also evaluate the condition of the twisted-pair wiring to ensure that the wiring can support operation at Gigabit speeds, and detect and correct most common wiring problems. The device continually monitors both the wiring and the opposing transceiver and alerts the system if it detects potential problems with reliable operation.



### Lifecycle Status

Active

### Features

- SGMII or RGMII interfaces
- RGMII: 1.8V HSTL, 2.5V CMOS, or 3.3V CMOS
- Support for two power supplies (3.3V and 1.0V) or one 3.3V power supply using internal voltage regulator.
- Support for IEEE 802.3-compliant copper line interfaces: – 1000BASE-T – 100BASE-TX – 10BASE-T
- Support for the following fiber line interfaces: – 1000BASE-X – 100BASE-FX – SGMII-Slave
- IEEE 802.3az Compliant (Energy Efficient Ethernet) – Support for native EEE MACs – Support for legacy non-EEE MACs using AutogrEEE® mode
- IEEE 1588v2-compliant – One-step or Two-step clock – On-chip time-stamping
- ITU-T Y.1731 delay measurement support – On-chip time-stamping – One-way and Two-way in both directions
- SyncE support – Recovered clock and clock lock outputs
- IEEE 802.3bf latency data
- Support for jumbo packets up to 18 KB
- On-chip jitter attenuator
- Low-cost 25 MHz crystal option
- Ethernet@Wirespeed™
- Cable plant diagnostics that detect cable plant impairments
- Wake-on-LAN
- Voltage and Temperature Monitors
- Programmable LEDs
- Robust Cable ESD (CESD) tolerance
- Low EMI emissions
- IEEE 1149.1 and IEEE 1149.6 (ACJTAG) boundary scan
- Packages: 128-pin eLQFP and 144-pin FBGA

### Applications

- Ethernet switches and routers for
- Enterprise
  - Carrier
  - Small and medium business (SMB)
  - Industrial automation
  - Smart grid markets

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