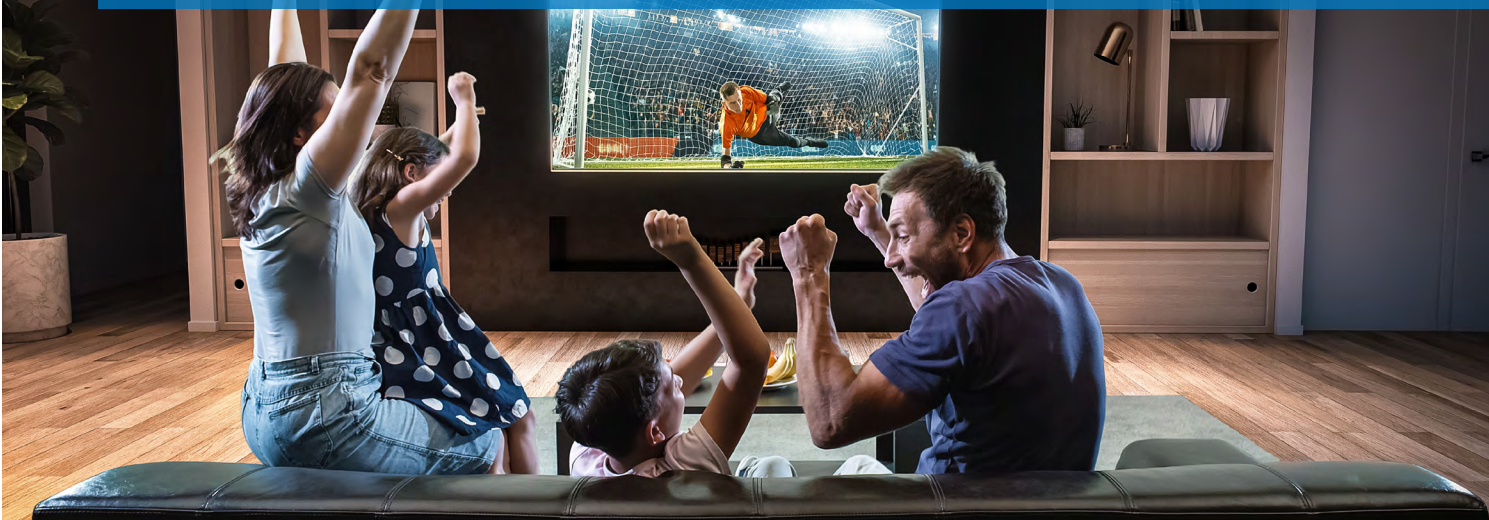


Use case

Eaton CLCC series (chip LAN auto transformer and common mode choke integration)



Eaton CLCC series (chip LAN auto transformer and common mode choke integration) for Ethernet applications

Ethernet LAN (Local Area Network) is an essential piece of modern networking. Ethernet forms the backbone of most data networks around the globe due to its robust performance and scalability. The 1000BASE-T (Gigabit Ethernet) is widely regarded as a robust standard in many applications, providing high-speed and reliable communication over twisted pair cables. This standard, however, presents unique challenges concerning noise reduction, signal isolation, and electromagnetic interference (EMI) control.

As digital networks evolve, energy efficiency has become an increasingly important design factor. High-speed data transmission often suffers signal degradation due to EMI, leading to potential data loss

and downtime. Noise reduction is critical in high-speed data transmission, as it minimizes error rates and improves data reliability.

Chip LAN auto transformers, designed for high-speed signal conditioning, ensure optimal signal integrity by providing the required impedance matching and voltage isolation. When paired with a common mode choke (CMC), which filters common mode noise while allowing differential signals to pass, the system can maintain the integrity of high-speed data signals even in EMI-prone environments. Chip LAN auto transformer and CMC combinations help to improve network performance by reducing packet loss and enhancing throughput.

As the technological world increasingly demands

miniaturization, designers are also looking for components that save board space. The Chip LAN auto transformer and common mode choke integration addresses this need. These can be combined into a single compact package, resulting in a significant space-saving solution such as high-speed 1000BASE-T applications, where board space is at a premium.

Implementing a Chip LAN auto transformer and CMC in high-speed applications can lower total system costs. By mitigating voltage spikes and suppressing noise, these components protect the network device's Ethernet PHY (physical layer) and other sensitive electronics. This protection can extend the lifespan of the device, lowering the total cost of ownership.

Eaton's CLCC is a complete Chip LAN auto transformer and common mode choke combination solution offering flexible and reliable network PHY. The CLCC comprises precision coil winding to offer superior filtering with low interwinding capacitance characteristics for diverse high-speed commercial network applications.

When used together, the CLCC1V and CLCC2V offer high-speed filtering for IEEE 802.3 up to 2.5 G for 1000BASE-T Ethernet systems. Applications for Eaton CLCC include gaming, 4K HD video streaming, set-top boxes and routers. Eaton's CLCC1V and CLCC2V are magnetically shielded for EMI immunity over a broad operating temperature range (-40 °C to +85 °C).

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