PoE Signal Path Transformer 60W/120W

The ETH1-460L is developed to meet the IEEE 802.3at-2009 and IEEE 802.3.bt Type 4 standard for PoE+ and PoE++ applications. This module is designed for 4-pair cabling plants at 60 / 120 Watts. It exceeds the return loss requirements of Gbit Ethernet.

This single component solution may be used in place of two ETH1-230 parts, saving valuable board space.

It has a minimum open-circuit inductance of 350 µH at an offset current of 35 mA at 25°C ambient temperature, and can handle 22.5 mA minimum dc offset at 85°C. Typical temperature rise from 25°C ambient is 7°C with 800 mA and 10°C with 1000 mA dc current applied to one center tap of each isolation transformer. Winding to winding isolation is 1500 Vrms. Ambient temperature range: –40°C to +85°C with 1 A current.

1. When ordering, please specify packaging code:

**ETH1-460LD**

Packaging:  
**D** = 13” machine-ready reel. EIA-481 embossed plastic tape. Factory order only, not stocked (250 parts per full reel). Quantities less than full reel available: in tape (not machine ready) or with leader and trailer ($25 charge).  
**B** = Less than full reel. In an effort to simplify our part numbering system, Coilcraft is eliminating the need for multiple packaging codes. When ordering, simply change the last letter of your part number from B to D.

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**Dimensions are in inches mm**

- Core material: Ferrite
- Terminations: RoHS compliant tin-silver-copper over tin over nickel over phos bronze
- Weight: 3.6 g
- Ambient temperature: –40°C to +85°C
- Storage temperature: Component: –40°C to +85°C. Tape and reel packaging: –40°C to +80°C
- Resistance to soldering heat: Max three 40 second reflows at +260°C, parts cooled to room temperature between cycles
- Moisture Sensitivity Level (MSL): 1 (unlimited floor life at <30°C / 85% relative humidity)
- Packaging: 250/13” reel; Plastic tape: 32 mm wide, 0.5 mm thick, 24 mm pocket spacing, 10.6 mm pocket depth

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**Recommended Land Pattern**

**Marking indicates pin 1**
"PoE Plus" Magnetics – ETH1-460

Insertion Loss

Return Loss

Insertion Loss (dB) vs Frequency (MHz)

Return Loss (dB) vs Frequency (MHz)

802.3af specification:
1.0 min dB from 0.1 MHz to 100 MHz
1.2 min dB at 125 MHz

802.3af specification:
18 dB min from 1 MHz to 40 MHz
16 dB min at 50 MHz
12 dB min at 80 MHz
10 dB min at 100 MHz

L vs Offset Current

Inductance (µH) vs Current (mA)

L vs Offset Current

Current (mA) vs Inductance (µH)

Chipset or cable side

Cable or chipset side

TXCT

TX–

RXCT

RX–

Chipset or cable side

Cable or chipset side

TXCT

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