POWERLINE SIGNAL COUPLER

0557-7700-42 for 500Mbps Modules

Bel 0557-7700-42 is a member of the coupling signal transformers family developed for a wide range of applications based on the QCA HomePlug AV powerline chipsets and is compatible with the Bel 500Mbps modules. The transformer provide a low cost and high quality solution to simplify the implementation HomePlug AV products.

This signal transformer provides complete isolation, coupling solution and is designed to complement Bel's 0804-5000A50, 0804-5000E50, 0804-5000A51, 0804-5000E51 and 0804-5000V51 HomePlug AV Powerline modules.

RoHS Compliant

Key Features & Benefits

- Designed for use with the Bel HPAV modules range
- Provides reinforced isolation for worldwide application
- Minimum footprint design
- Wide operating temperature range -40°C – +85°C

Model

Part Number	Temp Range	Description	Package
0557-7700-42	-40°C – +85°C	Signal coupler for powerline 500Mbps modules	Boxed

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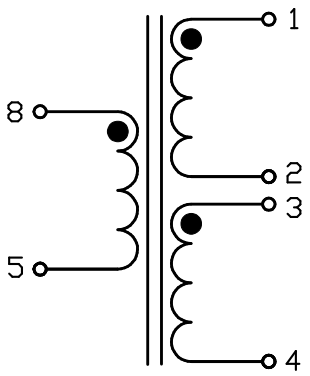
Electrical Specifications @ 25˚ C

Part Number	Parameter	Pin Number	Value
	Inductance @ 500KHz, 0.1V	1 - 2	7.7uH min
	Turns Ratio	1 - 2 : 3 - 4	1 : 1
0557-7700-42	Turns Ratio	1 - 2 : 5 - 8	1 : 1
	DCR	1 - 2, 3 - 4, 5 - 8	40mΩ max
	Hi-Pot @ 3mA	1 + 3 : 5	4KVDC for 60 sec

Schematics



0557-7700-42

Application Notes

The following schematic show typical application for the Bel HomePlug AV Powerline modules, with the appropriate couples and associated circuitry. The following notes should be observed.

[1] Inductors L1, L2 and L3, L4 provide high frequency isolation which is particularly important with switching power supplies where a capacitor is present across the input terminals. The inductors should have a good performance in the Powerline band between 2 and 68 MHz

[2] DC blocking capacitor C1 should be an X2 class device (AC Mains applications).

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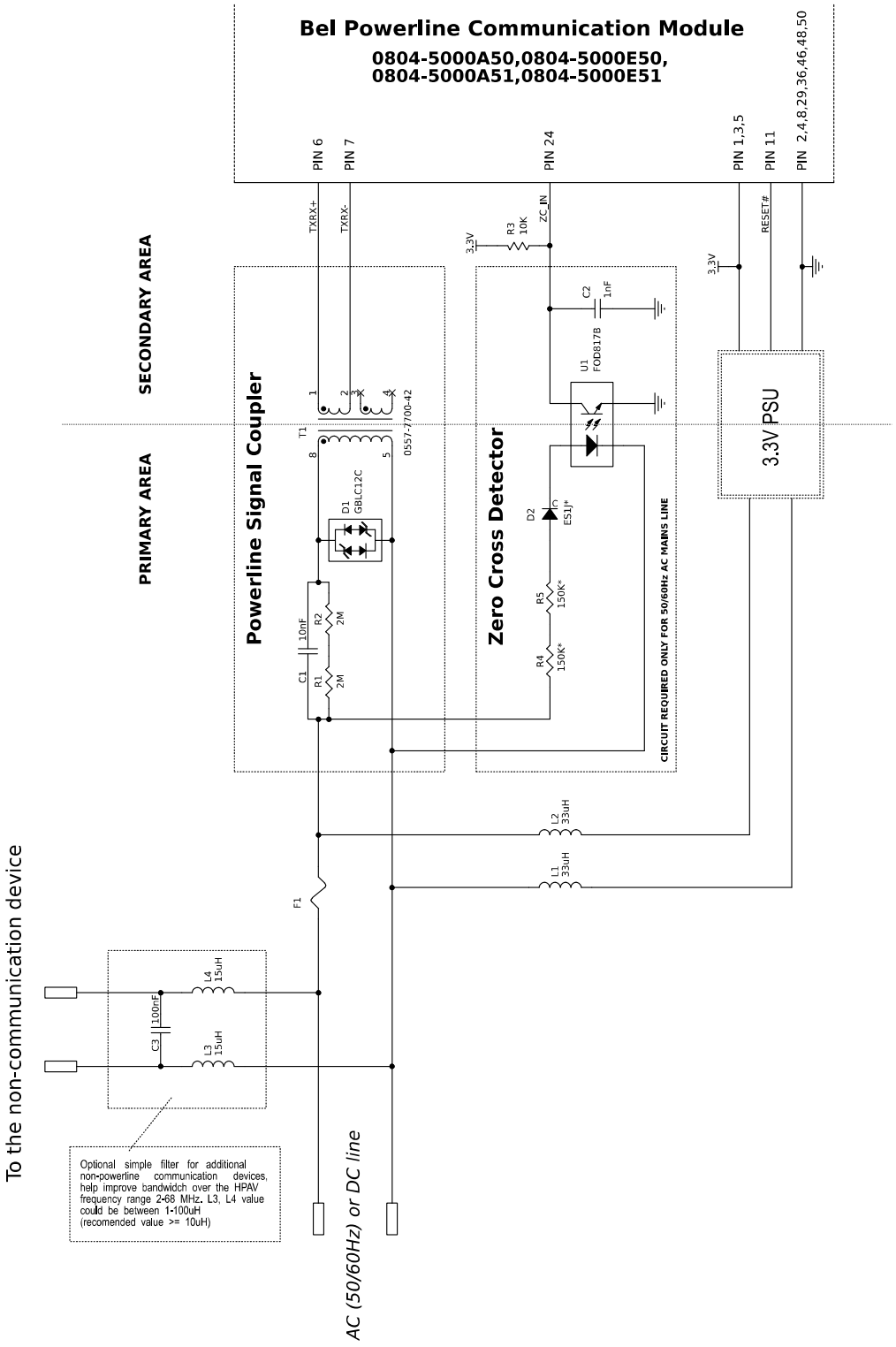

Typical Powerline Application

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PCB Layout Considerations

[1] Trace widths for the TX and RX signals to the coupling transformer should be between 0.020" (0.5mm) and 0.030" (0.75mm) in order to accommodate the low impedances involved and the high current densities.

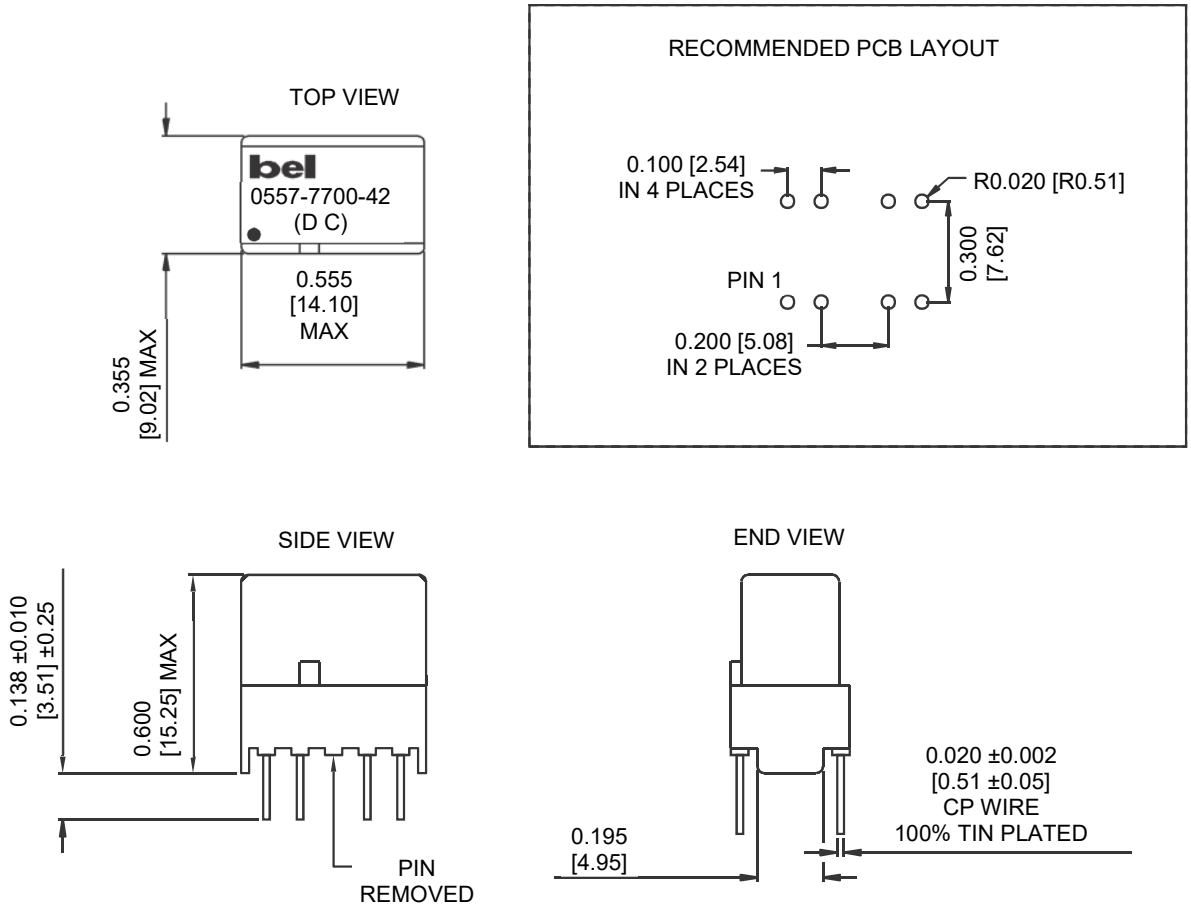
[2] Trace width between the powerline side of the coupling transformer and the actual powerline should be no less than 0.025" to 0.050" (1.25mm).

[3] These trace lengths should be kept as short as possible for a good high frequency performance.

[4] Parallelism (differential transmission line layout technique) should be used throughout for these threes signal pairs.

[5] Do not place these tracks between layers in a multilayer PCB as this degrades performance.

Mechanical



Dimensions shown are in inches [mm]

Mouser Electronics

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0557-7700-42