	MAGNETICS ASSEMBY # PFC inductor and LLC transformer for EPSUX3V2	EPSUX3V2_magnetics.odt OnEAudioProjects contact@oneaudio.net www.oneaudio.net

Document Revision	Date	Modifications	Author
A	09/2015	Initial version	ON

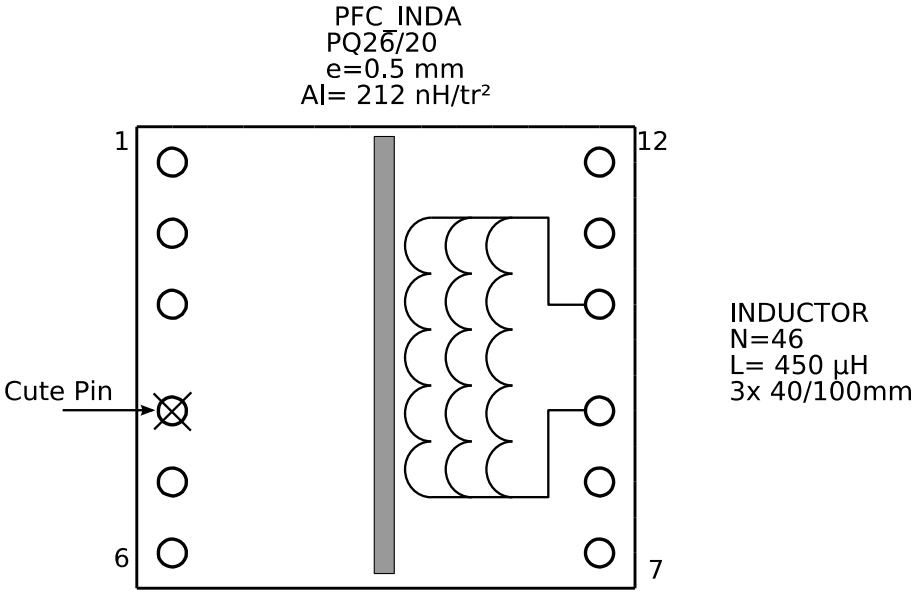
Contents

1) PFC Inductor

Note : The inductor will be marked as : *X3V2PFC_INDA*

Four digits will also indicate the date code as : “09/15” for september 2015 manufacturing date.

1) Schematic.



2) Bill of material

Qty	Description	Reference	Manufacturer
1	PQ26/20 Ferrite core pair in 3C95 material AL= 7020 nH/tr²	B65877B0000R095	TDK-Epcos
1	PQ26/20 coil former 12 pins	B65879E0012D001	TDK-Epcos

(Ferrite can be replaced by Fair-Rite 6695272021 (material 95)).

3) Winding table

The gap is **0,5mm** between center legs to give Al= 212 nH/tr².

Winding	N (turns)	N (wire)	Inductance	Tol(%)	Unit diameter	Total cross section	Wire type
Main	46	3	440 µH	5 %	0,4 mm	0,38 mm²	enamel

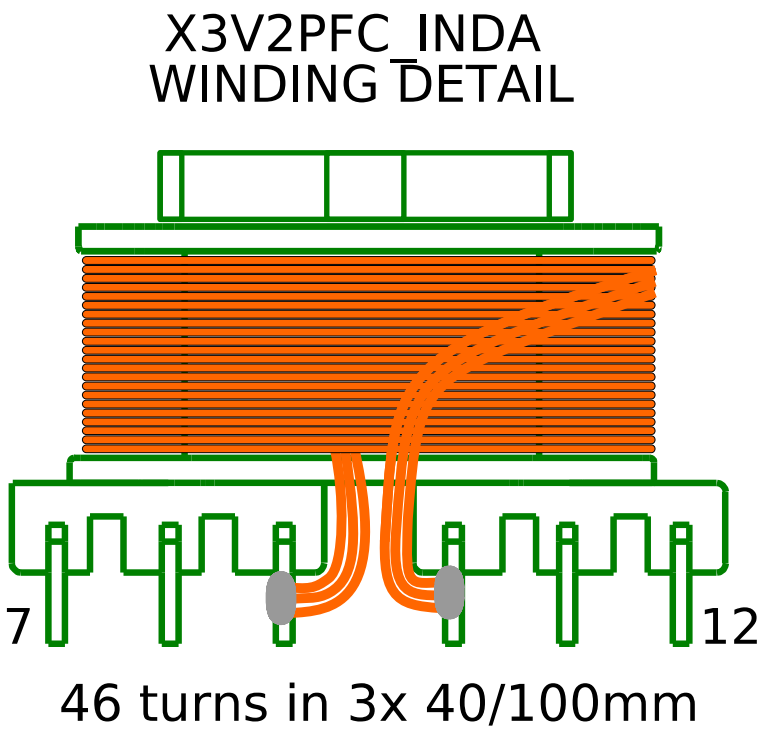
Note: Inductance values are given for 100mVrms / 100kHz test frequency.

Wire length is about 3 x ??? meters.

4) Electrical specifications.

	Value	Tolerance	Note
Inductance @ 100kHz	440 µH	+/- 5%	Adjusted with gap
DC resistance	< 0,05 Ω	–	Measured @ 1Adc
Parasitic capacitance	< 100 pF	–	Measured @ 100kHz
Insulation Pri/Sec	–	–	–

5) Winding detail



NOTE : The winding must be protected by two turns of isolating tape.

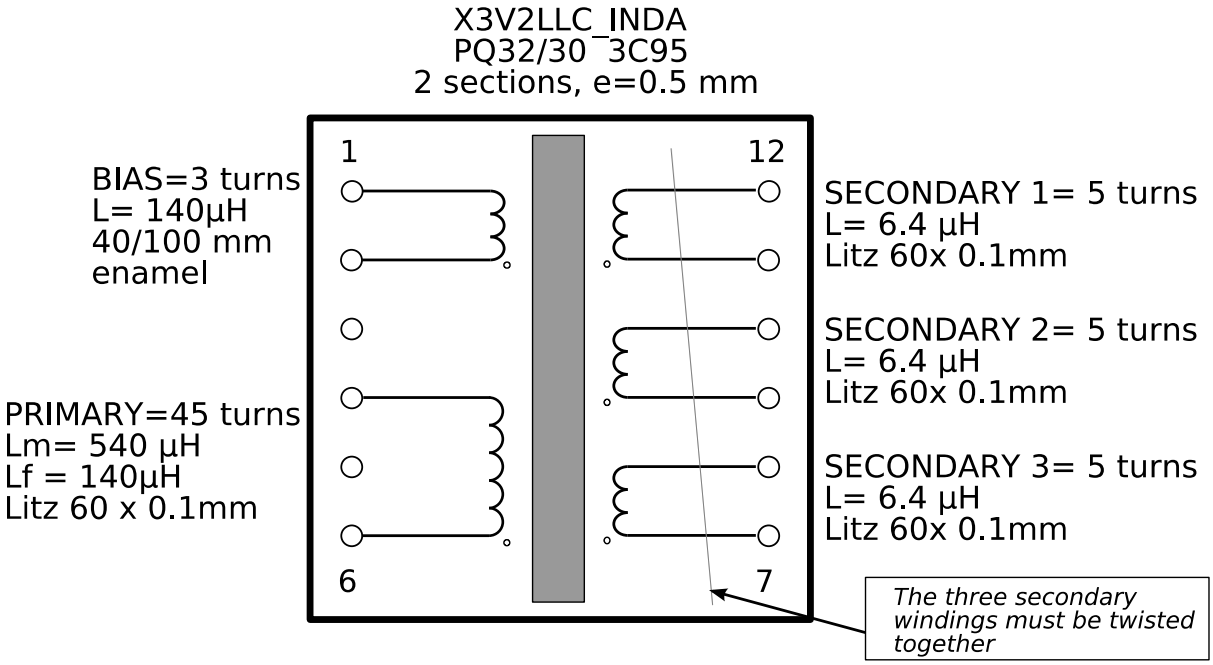
An external copper screen can be added aroud the finished inductor to reduce EMI .
See below :

2) LLC transformer

Note : The transformer will be marked as : *X3V2LLC_INDA*

Four digits will also indicate the date code as : “09/15” for september 2015 manufacturing date.

6) Schematic.



7) Bill of material

Qty	Description	Reference	Manufacturer
1	PQ32/30 Ferrite core pair in 3C95 material AL=6570 nH/tr²	B65879B0000R095	TDK -Epcos
1	PQ32/30 coil former	B65880E2012D1	TDK -Epcos

(Ferrite can be replaced by Fair-Rite 6695323121 (material 95)).

8) Winding table

The gap is **0,5mm** between center legs.

Winding	N (turns)	N (wire)	Inductance	Tol(%)	Unit diameter	Total cross section	Wire type
Primary	46	1	580 µH	5 %	32x0,10mm	0,25mm²	Litz
Bias	3	1	2,5 µH	5 %	0,4 mm	0,125 mm²	enamel
Secondary 1	5	1	6,5 µH	5 %	60x0,10mm	0,47 mm²	Litz
Secondary 2	5	1	6,5 µH	5 %	60x0,10mm	0,47 mm²	Litz
Secondary 3	5	1	6,5 µH	5 %	60x0,10mm	0,47 mm²	Litz

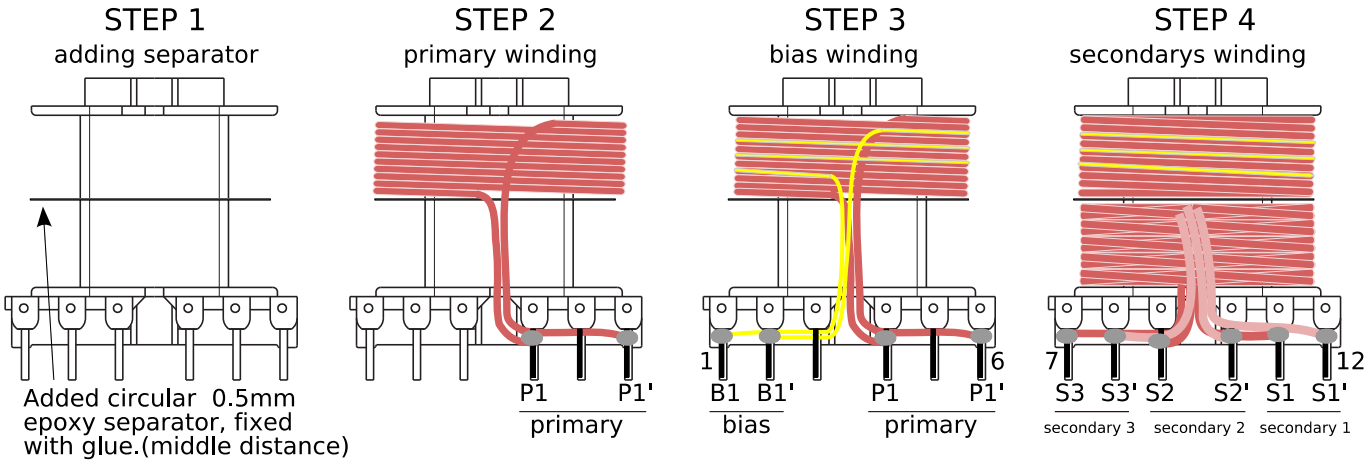
Note: Inductance values are given for 100mVrms / 100kHz test frequency with others windings open.

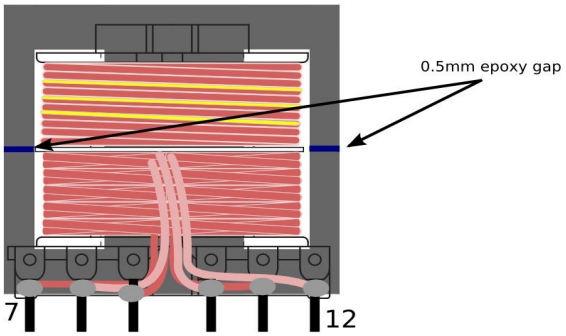
- ➔ Primary wire length is about 3,2 meters.
- ➔ Secondary”s wire length is about 3x 50 centimeters.
- ➔ Bias wire length is about 25 centimeters.

9) Electrical specifications.

	Value	Tolerance	Note
L prim_magnetizing	580 µH	+/- 5%	Secondarys open.
L prim_leakage	150 µH	+/- 7%	Secondary's short-circuited
Prim/Sec capacitance	< 5 pF	–	Measured @ 100kHz, to any secondary
Prim/bias capacitance	< 15 pF	–	Measured @ 100kHz
Insulation Pri/Sec	2 kVac	–	2 kVac 1min. To any output.

10) Windings detail.





NOTE : The finished windings must be protected by two turns of isolating tape (not show on drawings).

An external copper screen can be added aroud the finished transformer to reduce EMI .

See below :

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“Frex” member from DIYaudio.com forum.