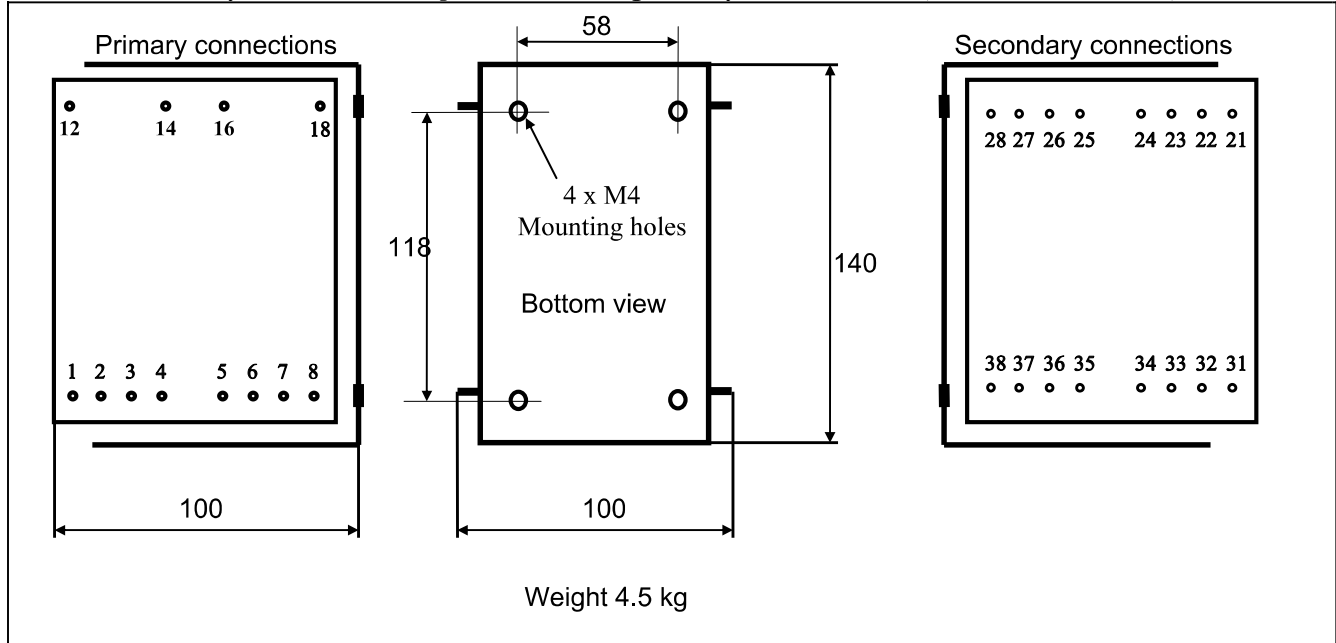


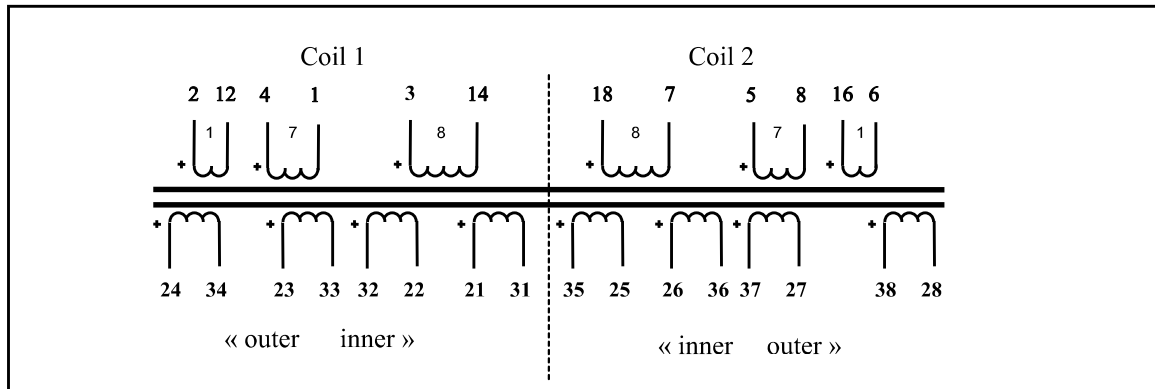
Tube Amplifier Output Transformer LL1693

The LL1693 is a high power tube output transformer primarily for low impedance high power tubes. The transformer is built up from two coils, each consisting of 5 sections. The core is a high quality grain oriented silicon steel C-core from our own production.

Physical dimensions, pin and mounting hole layout for LL1693 (all dimensions in mm)



Winding schematics:



| LL1693 | |
|--|---|
| Turns ratio (approx) | 8 + 7 + 1 + 8 + 7 + 1 : 1+1+1+1+1+1+1 |
| Static resistance of primary (all in series) | 60 Ω (2 x 15Ω + 2 x 12Ω + 2 x 3Ω) |
| Static resistance of inner/outer secondary winding | 0.4Ω / 0.5Ω |
| Primary leakage inductance (all in series) | To be measured |
| Max recommended primary DC current (heat dissipation 12W) | 450 mA |
| Max. primary <u>signal</u> voltage r.m.s. at 30 Hz (all in series) | Push-Pull 530V Single End 235V |

Electrical characteristics

Primary Load Impedance, Max power and power loss.

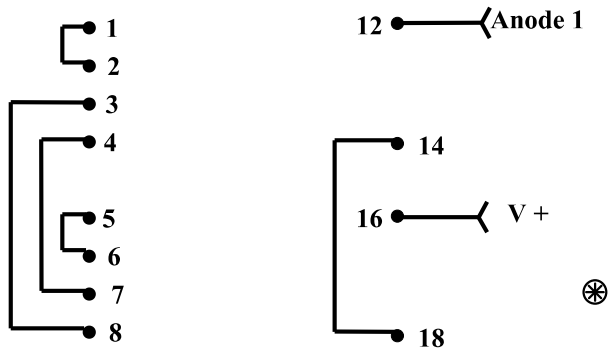
| | Sec. connection for 4/8/16 Ω (See next page) | | |
|----------------------------------|---|--------------|--------------|
| | -/B/C | B/C/D | C/D/E |
| | Primary Load Impedance (transformer copper resistance included) | | |
| LL1693 | 2.3 k Ω | 1 k Ω | 600 Ω |
| | Power and Loss | | |
| Max. Power, P-P at 30 Hz | 180W | 360W | 700W |
| Max. Power, S.E. at 30 Hz | 35W | 70W | 140W |

Primary DC Current Core Air-gap and Primary inductance

| | LL1693/PP | LL1693/230mA |
|--|-----------|--------------|
| Core Airgap (delta/2) | 25 μ | 450 μ |
| Single end standing current for 0.9 Tesla (recommended operating point) | | 230mA |
| Primary inductance | 150 H | 16H |

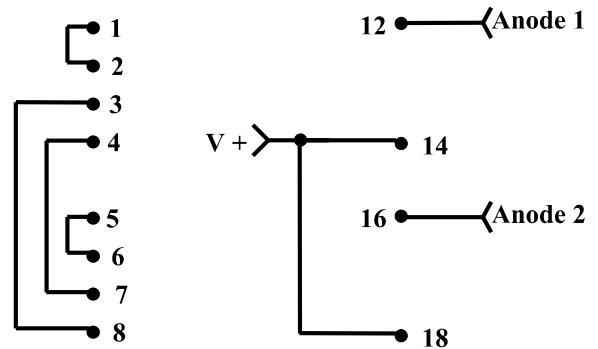
LL1693

Primary connection for Single-End output stage



LL1693

Primary connection for Push-Pull output stage



Secondary connections

⊗ Indicates phase

| | |
|-----------------------------------|--------------------|
| Max secondary Voltage RMS @ 30 Hz | |
| Push-Pull | Single Ended |
| Copper resistance | Windings in series |

