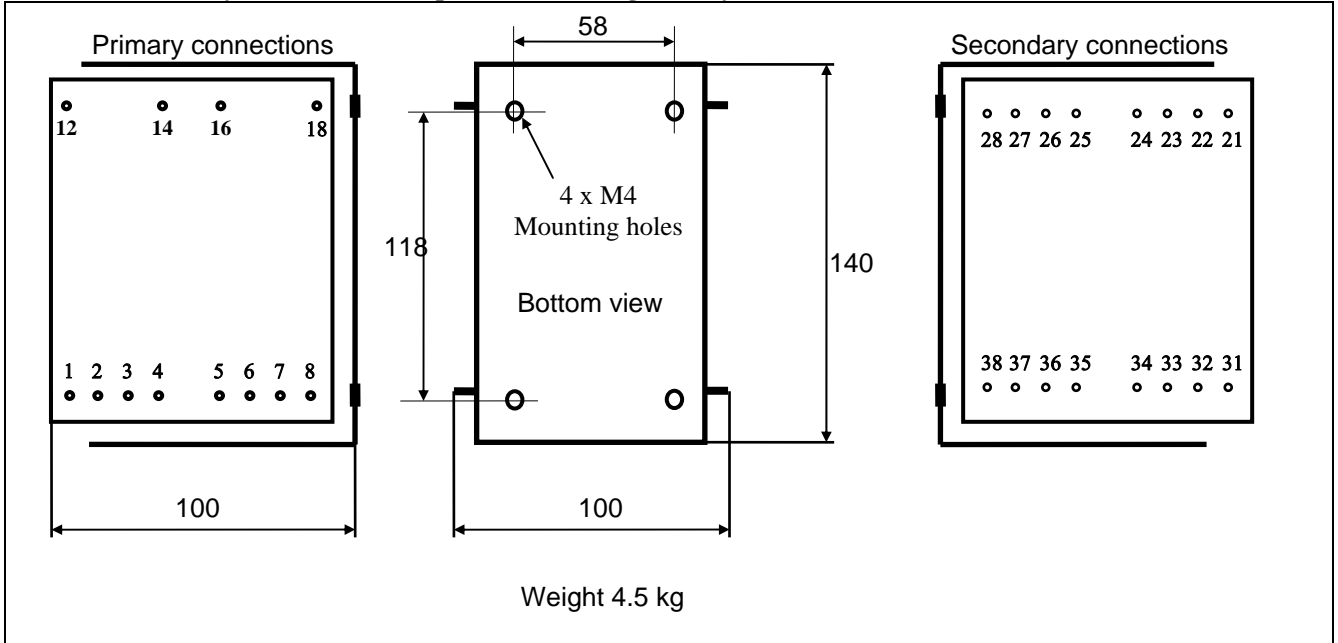


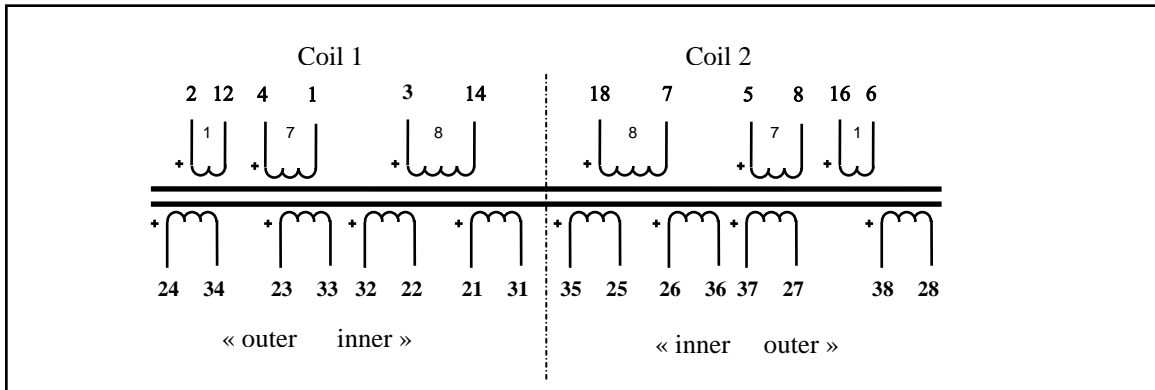
Tube Amplifier Output Transformer LL1693

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)	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;">Push-Pull 530V</td> <td style="width: 50%; text-align: center;">Single End 235V</td> </tr> </table>	Push-Pull 530V	Single End 235V
Push-Pull 530V	Single End 235V		

Electrical characteristics

Primary Load Impedance, Max power and power loss.

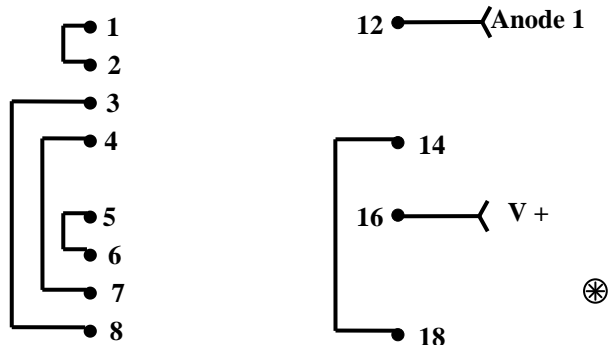
	Sec. connection for 4/8/16 Ω (See next page)		
	-/B/C	B/C/D	C/D/E
	Primary Load Impedance (transformer copper resistance included)		
LL1693	2.3 k Ω	1 k Ω	600 Ω
	Power and Loss		
Max. Power, P-P at 30 Hz	180W	360W	700W
Max. Power, S.E. at 30 Hz	35W	70W	140W

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

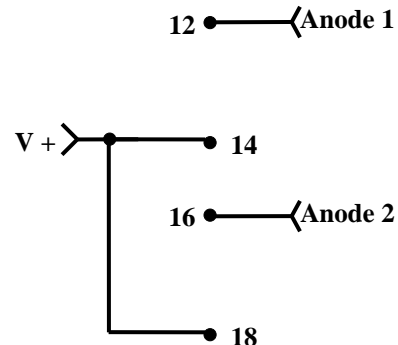
LL1693

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

