

OPT for EL84 tubes PP for Baby Huey

INITIAL DATA					
TUBE/VALVE	EL84	Paralel pairs:	1		
Ea, primary voltage:	346	V			
R a-a:	8.000	Ohm			
Ia:	80	mA			
I a total:	123,3	mA			
Calculated max power, PO:	16,20	W			
Chosen max. PO:	15	W			
Typ E&I laminates :	EI 96				
T	32	mm			
H	16	mm			
L	48	mm			
Stack height, S :	45	mm			
New Afe :	1.440	mm2			
PRIMARY WINDINGS					
oaPdia	0,285	mm			
Pdia (Cu)	0,236	mm			
Primary layers	14				
Number of sections	4				
Number of primary turns, Np :	2.184				
Number of turns per layer :	156				
Primary loss %	2,22	%			
Primary current (calculated):	123,3	mA			
Maximum primary current:	131,2	mA			
SECONDARY WINDINGS					
Calculate the nearest full S turns needed for loads of 3,5, 5,0 and 7,0 ohms.					
Theory:					
SecTurns for 3,5 Ohm	46	turns			
SecTurns for 5,0 Ohm	55	turns			
SecTurns for 7,0 Ohm	65	turns			
Calculated wire diameter (theoretical):	0,958	mm			
chosen no. of turns per layer :	48				
Chosen standard wire:	oaPdia	Pdia (Cu)			
	0,937	0,850			
Nominal speaker impedance:		Ohm	4	Ohm	
No. of turns in combination:		turns	48	turns	
wire diameter (from table):		mm	0,85	mm	
Length of one turn:		mm	204	mm	
No. of parallel sections:			3		
ZR:			2.070,3		
Swr:		Ohm	0,1028	Ohm	
SRL:		Ohm	3,9	Ohm	
Secondary loss S :		%	2,6	%	
Max. needed secondary current:		A	1,94		
Max. secondary current :		A	5,10		
Total winding losses :					
Primary winding loss:	2,22	%			
Secondary winding loss:	1,18	%			
Total winding losses:	3,41	%			
For max. power of: 15 W loss is:	0,51	W	0,51	W	0,61
Checking the final fitting in to the core window :					
Chosen bobbin :	46	mm			
Chosen wire occupies :	44,976	mm			
Primary layers :	3,99	mm			
Insulation p - p :	0,50	mm			
Secondary layers :	2,55	mm			
Insulation S - P :	1,20	mm			
Insulation at the end :	0,20	mm			
Bobbin bass thickness :	2,00	mm			
Total winding height + bobbin bass:	10,44	mm			
Window height:	16	mm			
Remaining clearance:	5,56	mm			
Leakaingg inductance on primary side:					
LL in Henrys					
LL = :	0,00315	Henrys			
LL = :	3,15	mH			
Reactance of LL at frequency of:					
	100	kHz			
ZLL = :	1.978	Ohm			
Is it acceptable ? = ZLL < PRL ? = YES, reactance is less then PRL					
Magnetic field strength, B, at full power and at 14 Hz					
At power of :	15	W			
Frequency :	14	Hz	B at 17 Hz = :	1,46	Tesla
B = :	1,78	Tesla			

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