

OPT for EL84 tubes PP for Baby Huey V_2

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	0,301	mm	Ukupna debljina žice
Pdia (Cu)	0,250	mm	Debljina čistug bakra
Primary layers	16		
Number of sections	4		
Number of primary turns, Np :	2.368		
Number of turns per layer :	148		
Primary loss %	2,15	%	
Primary current (calculated):	123,3	mA	
Maximum primary current:	147,2	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	50 turns
SecTurns for 5,0 Ohm	59 turns
SecTurns for 7,0 Ohm	70 turns
Calculated wire diameter (theoretical):	0,885 mm
chosen no. of turns per layer :	52

Chosen standard wire:	oaPdia	Pdia (Cu)	oaPdia	je ukupna debljina	Pdia (Cu)	debljina čistog bakra
	0,885	0,800	mm			

Nominal speaker impedance:	Ohm	4	Ohm	
No. of turns in combination:	turns	52	turns	
wire diameter (from table):	mm	0,8	mm	
Length of one turn:	mm	204	mm	
No. of parallel sections:		3		
ZR:		2.073,8		
Swr:	Ohm	0,1257	Ohm	
SRL:	Ohm	3,9	Ohm	
Secondary loss S :	%	3,2	%	
Max. needed secondary current:	A	1,94		
Max. secondary current :	A	4,52		

Total winding losses :				
Primary winding loss:	2,15	%		
Secondary winding loss:	1,56	%		
Total winding losses:	3,71	%		
For max. power of: 15 W loss is:	W	0,56	W	

Checking the final fitting in to the core window :

Chosen bobbin :	46	mm
Chosen wire occupies :	46,02	mm
Primary layers :	4,82	mm
Insulation p - p :	0,60	mm
Secondary layers :	2,40	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:	11,22	mm
Window height:	16	mm
Remaining clearance:	4,78	mm

Leakaingg inductance on primary side:

LL in Henrys	LL = :	0,003927	Henrys
	LL = :	3,93	mH

Reactance of LL at frequency of:	100	kHz
ZLL = :	2.466	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 = :	1,64	Tesla
B at 16 Hz = :	1,46	Tesla

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