

# OPT for EL84 tubes PP for Baby Huey V\_3

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 čistog bakra
Primary layers	16		
Number of sections	5		
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):	0,958	mm	
chosen no. of turns per layer :	48		

Chosen standard wire:	oaPdia	Pdia (Cu)	oaPdia	je ukupna debljina	Pdia (Cu)	debljina čistog bakra
	0,937	0,850	mm			
Nominal speaker impedance:	4	Ohm	8	Ohm	16	
No. of turns in combination:	48	turns	64	turns	96	
wire diameter (from table):	0,85	mm	0,85	mm	0,85	
Length of one turn:	204	mm	204	mm	204	
No. of parallel sections:	4		3		2	
ZR:	2.433,8		1.369,0		608,4	
Swr:	0,0771	Ohm	0,1371	Ohm	0,3084	
SRL:	3,3	Ohm	5,8	Ohm	13,1	
Secondary loss S :	2,3	%	2,3	%	2,3	
Max. needed secondary current:	1,94	A	1,37		0,97	
Max. secondary current :	6,81	A	5,10		3,40	

Total winding losses :					
Primary winding loss:	2,15	%			
Secondary winding loss:	2,29	%			
Total winding losses:	4,44	%			
For max. power of: 15 W loss is:	0,67	W	0,67	W	0,67

Checking the final fitting in to the core window :		
Chosen bobbin :	46	mm
Chosen wire occupies :	44,976	mm
Primary layers :	4,82	mm
Insulation p - p :	0,55	mm
Secondary layers :	3,40	mm
Insulation S - P :	1,60	mm
Insulation at the end :	0,20	mm
Bobbin bass thickness :	2,00	mm
Total winding height + bobbin bass:	12,57	mm
Window height:	16	mm
Remaining clearance:	3,43	mm

Leakaingg inductance on primary side:		
LL in Henrys		
LL = :	0,002558	Henrys
LL = :	2,56	mH

Reactance of LL at frequency of:	100	kHz
ZLL = :	1.606	Ohm

Is it acceptable ? = ZLL < PRL ? = **YES, reactance is less then PRL**

Magnetic field strength, B, at full power and at 14 Hz (recomended < 1,6 Tesla)		
At power of :	15	W
At Frequency :	14	Hz
B = :	1,64	Tesla

**! B at 14,4 Hz = : 1,59 Tesla !! Less than 1,6 T !**

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