High Frequency Amplifier – User Manual

Design Requirements:

1. Bandwidth: 20 kHz - 100 kHz
2. Minimum number of transistors: 3
3. Operating voltage: < 12V
4. Input: 0.1Vp-p (MAX)
5. It should be able to drive 8 Ω (headphone) load without significant waveform distortion or amplitude reduction.

Design Stages:

1. Pre-Amplifier
   Common Emitter BJT amplifier
2. Power Amplifier
   Class AB push pull amplifier

Electrical specification:

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BW	Bandwidth	R_L=8Ω	0.05	50	700	kHz
A_{vo}	Open loop voltage gain	R_L=∞		21		
	Closed loop voltage gain	R_L=8Ω		16.393		
R_{in}	Input impedance	R_L=8Ω		8.0108		Ω
R_{out}	Output impedance	V_s=0		2.188		kΩ
P_{out}	Power Dissipation	R_L=8 Ω	2.232	2.24	2.56	W

Mechanical Specification: