

Seminarska naloga

Avdio ojačevalec

Predmet: Elektronska vezja

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Opis vezja:

TDA 2030 je monolitno integrirano vezje namenjeno za uporabo kot malofrekvenčni ojačevalnik. Tipično omogoča 14W izhodne moči. TDA2030 omogoča velik izhodni tok ter zelo majhno harmonično ter povprečno distorzijo. Čip vsebuje tudi thermal shut-down sistem.

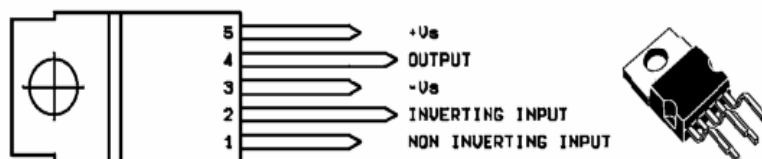
Diodi imata nalogo, da odvajata visoke napetosti, ki lahko nastanejo pri vklopu in izklopu zvočnika in bi lahko uničile čip.

Aplikacija čipa je zelo enostavna. Zaradi cene ter zmogljivosti je zelo razširjen. Za bolj kvaliteten zvok uporabimo dva ali tri ojačevalca in vsakega posebej optimiziramo za omejen razpon frekvence.

Tehnične specifikacije:

Elementi vezja

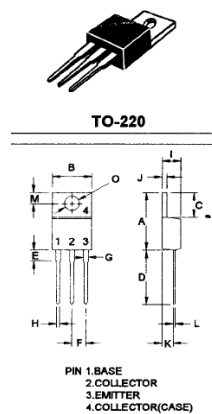
Ic: tda2030



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | Unit |
|----------------|--|---------------|------------------|
| V_s | Supply voltage | ± 18 (36) | V |
| V_i | Input voltage | V_s | |
| V_d | Differential input voltage | ± 15 | V |
| I_o | Output peak current (internally limited) | 3.5 | A |
| P_{tot} | Power dissipation at $T_{case} = 90^\circ\text{C}$ | 20 | W |
| T_{stg}, T_j | Storage and junction temperature | -40 to 150 | $^\circ\text{C}$ |

Tranzistorji: BD907, BD908



MAXIMUM RATINGS

| Characteristic | Symbol | BD905 BD906 | BD907 BD908 | BD909 BD910 | BD911 BD912 | Unit |
|--|----------------|----------------|----------------|----------------|----------------|--------------------------|
| Collector-Emitter Voltage | V_{CE0} | 45 | 60 | 80 | 100 | V |
| Collector-Base Voltage | V_{CBO} | 45 | 60 | 80 | 100 | V |
| Emitter-Base Voltage | V_{EBO} | 5.0 | | | | V |
| Collector Current - Continuous - Peak | I_C | 15 20 | | | | A |
| Base Current | I_B | 5.0 | | | | A |
| Total Power Dissipation@ $T_c = 25^\circ\text{C}$ Derate above 25°C | P_D | 90 0.72 | | | | W W/ $^\circ\text{C}$ |
| Operating and Storage Junction Temperature Range | T_J, T_{STG} | -65 to +150 | | | | $^\circ\text{C}$ |

Diodi: 2 X 1N4001

Upori:

R1= 2,2

R2= 2,2

R3= 30k

R4= 1

R5= 100k

R6= 60k

R7= 60k

R8= 3,3k

Kondenzatorji:

C1= 0,22 uF

C2= 47 uF

C3= 10 uF

C4= 0,22 uF

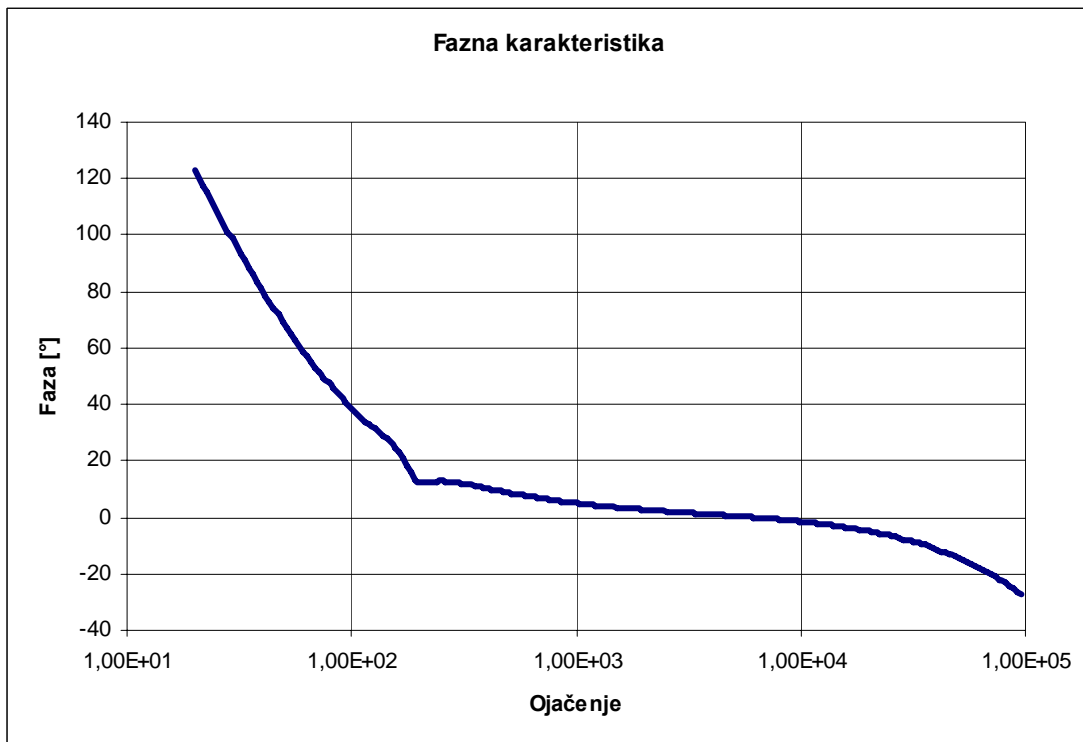
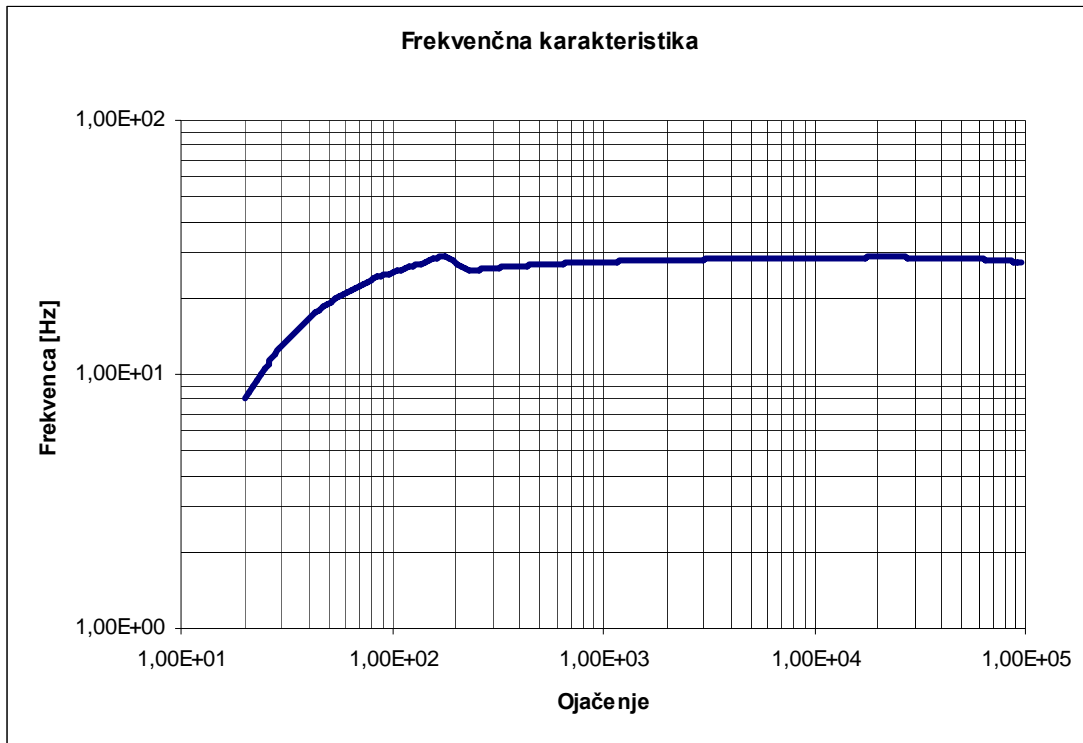
C5= 0,22 uF

C6= 0,22 uF

C7= 2200 uF0

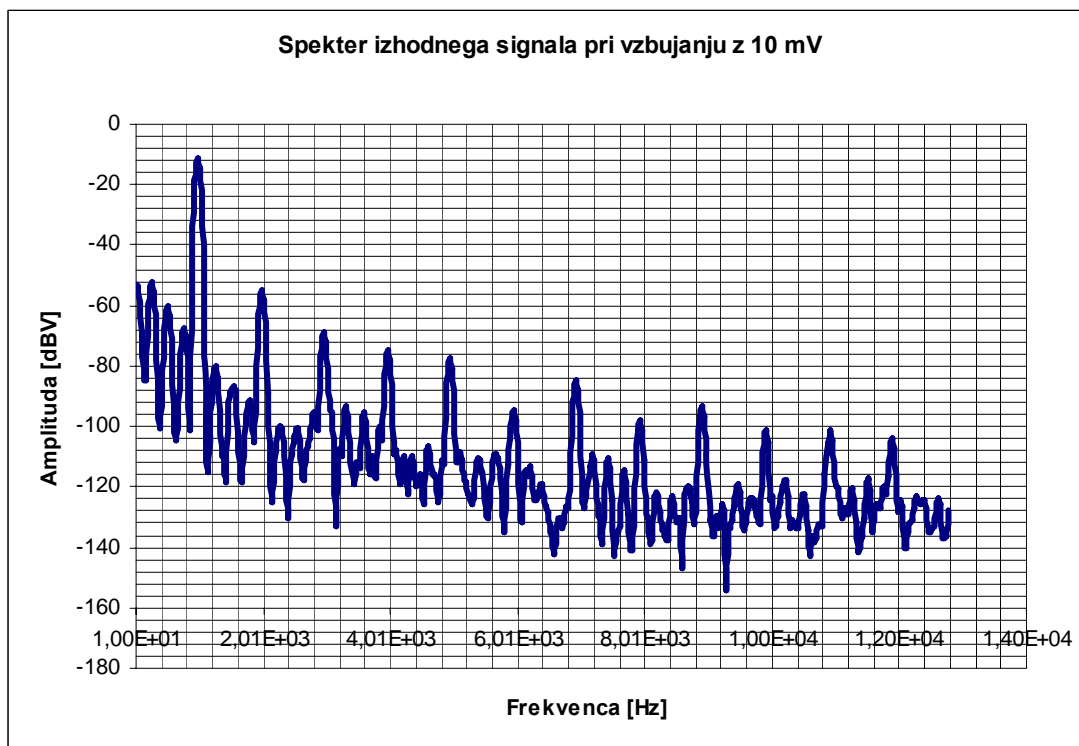
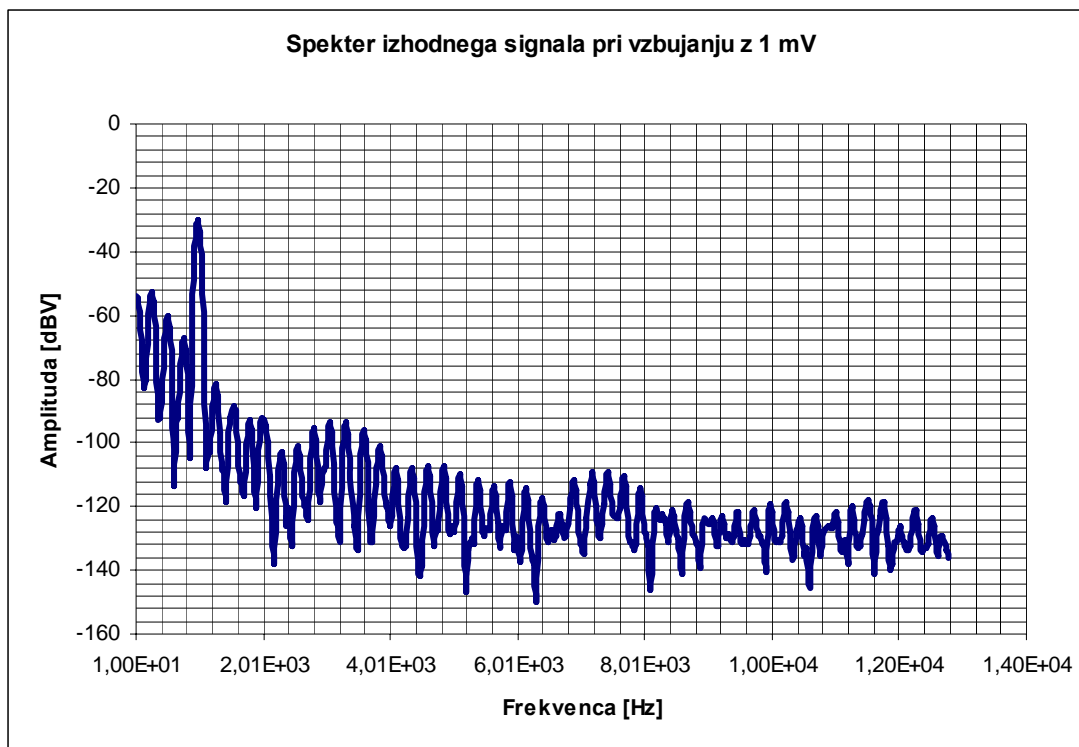
C8= 2200 uF

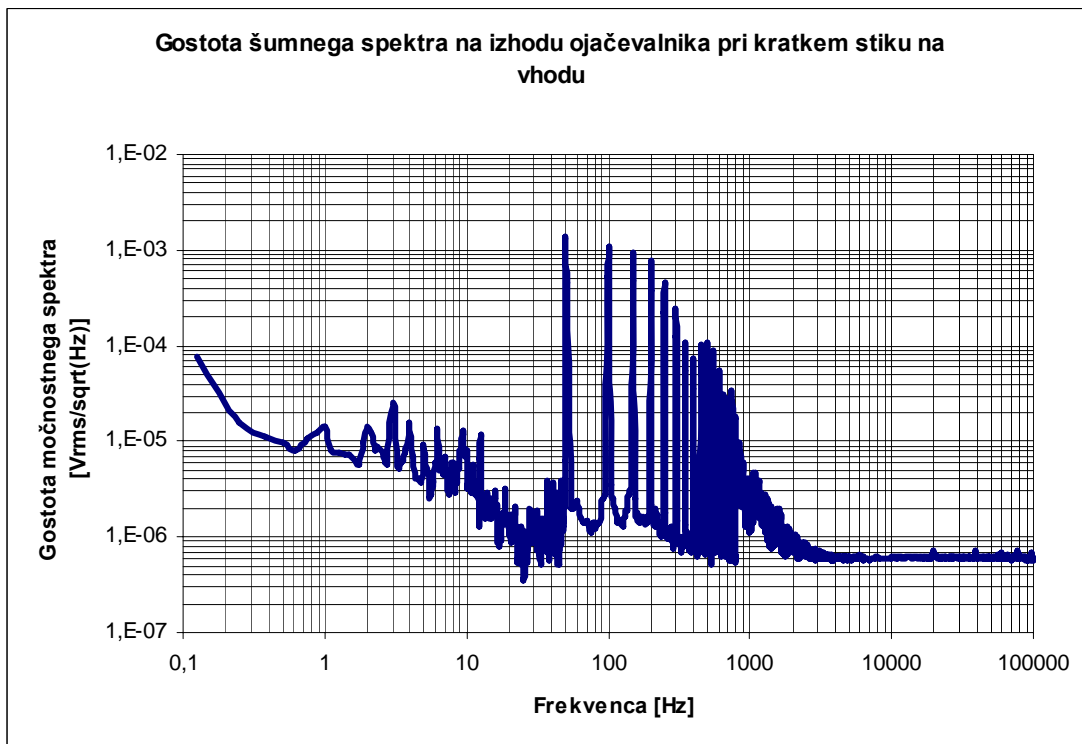
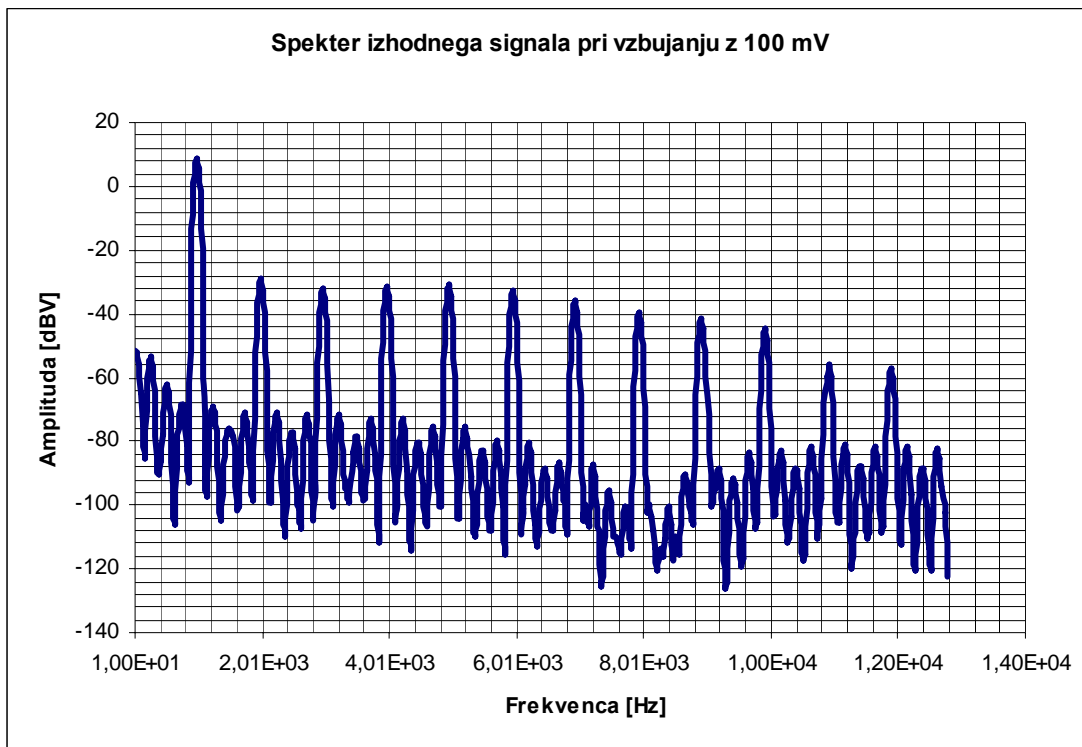
Meritve:



Popačenje pri vzbujanju s frekvenco 1 kHz z različnimi amplitudami

| Amplituda vhodnega signala | Popačenje [%] | Popačenje [dB] |
|----------------------------|---------------|----------------|
| 1 mV | 0.08 | -62 |
| 10 mV | 0.65 | -43 |
| 100 mV | 2.4 | -32 |





Električna shema:

