



University of Florence

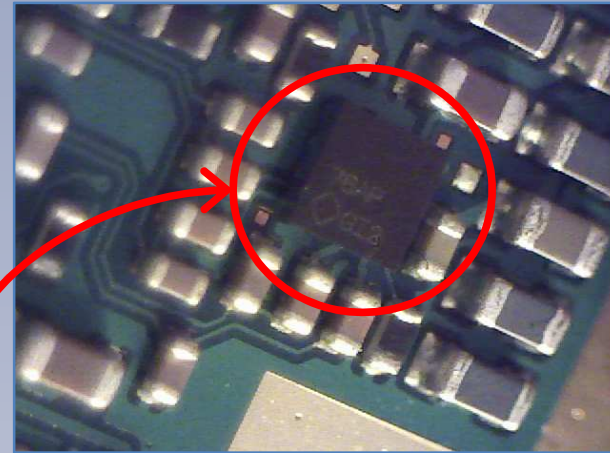
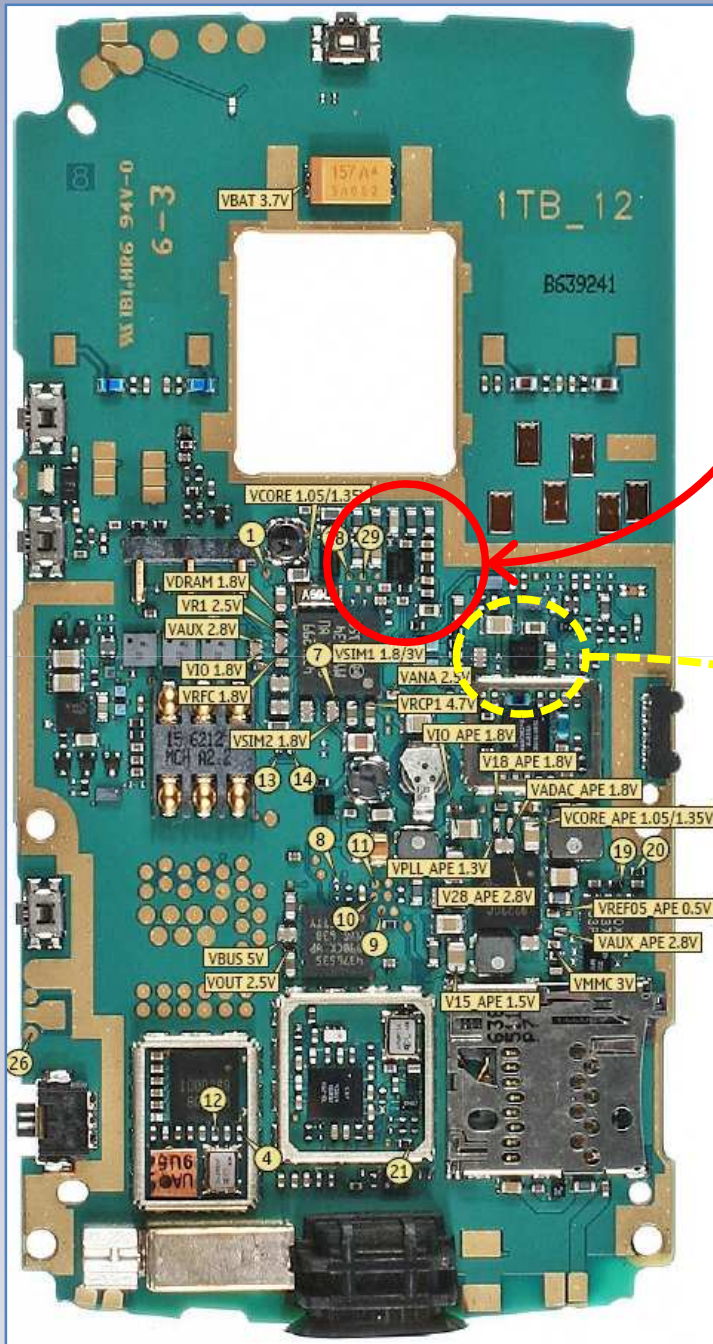
Industrial Electronics laboratory

“Class D power amplifier in Nokia N95”

Students: Elia Mazzuoli,
Marco Montagni,
Sabrina Martorana.



Pcb view



Implementation
on
circuit

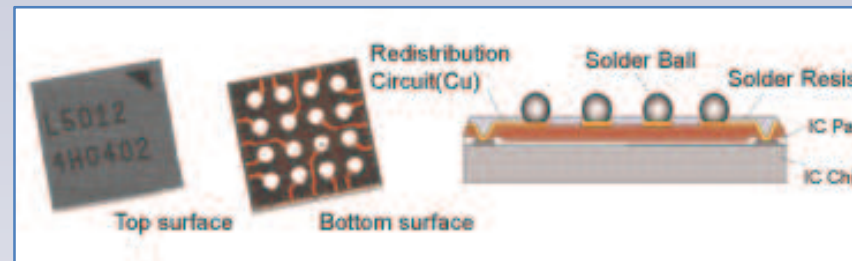
The Nokia N95 uses 3 separated ways sound amplification:

- Speakers → Amplifier class D TPA2012D2.
- Headphone → Stereo driver TPA4411YZHER.
- Earpiece → Directly connected to microcontroller.

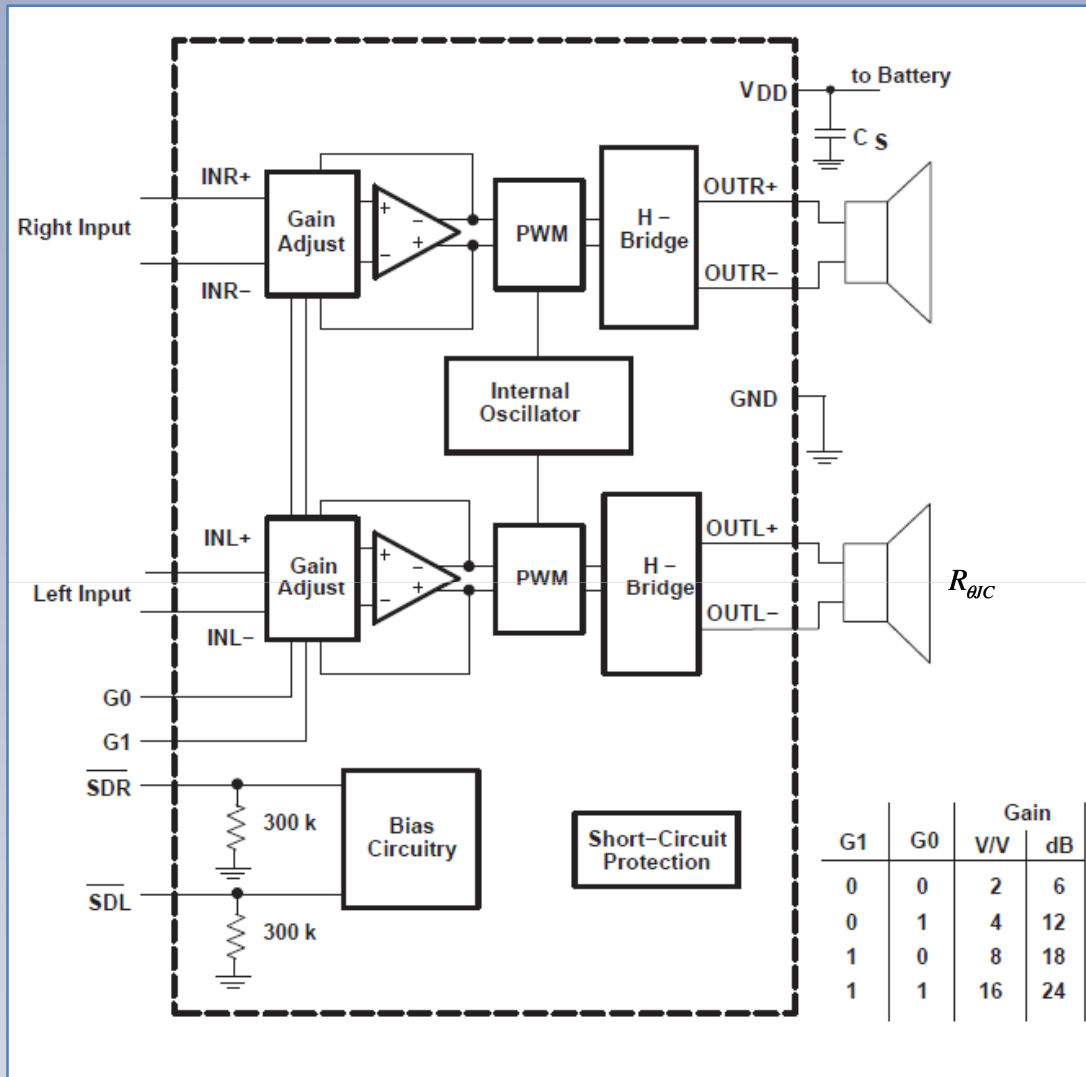
Package type WCSP:

width → 2.01mm

height → 2.01mm



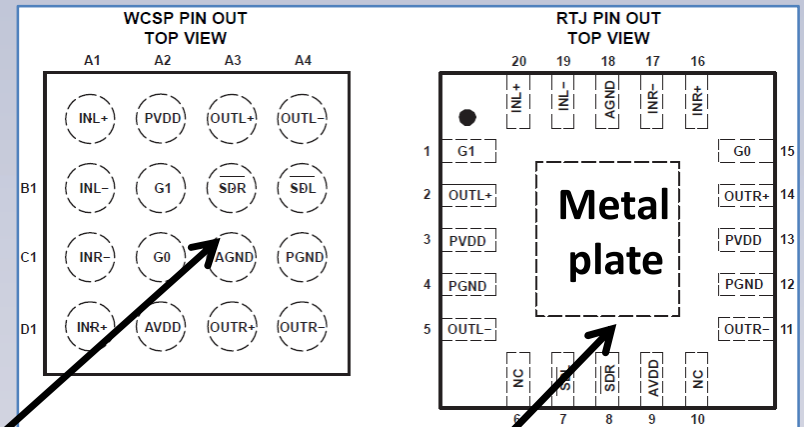
Block Diagram



Features:

- Low supply current ($\approx 5\text{mA}$)
- Low shutdown current ($\approx 1.5\mu\text{A}$)
- Output power on single channel, 0.72W ($R_L=8\Omega$)
- Total harmonic distortion (0.1%-0.5%)
- Efficiency ($\approx 85\%$)

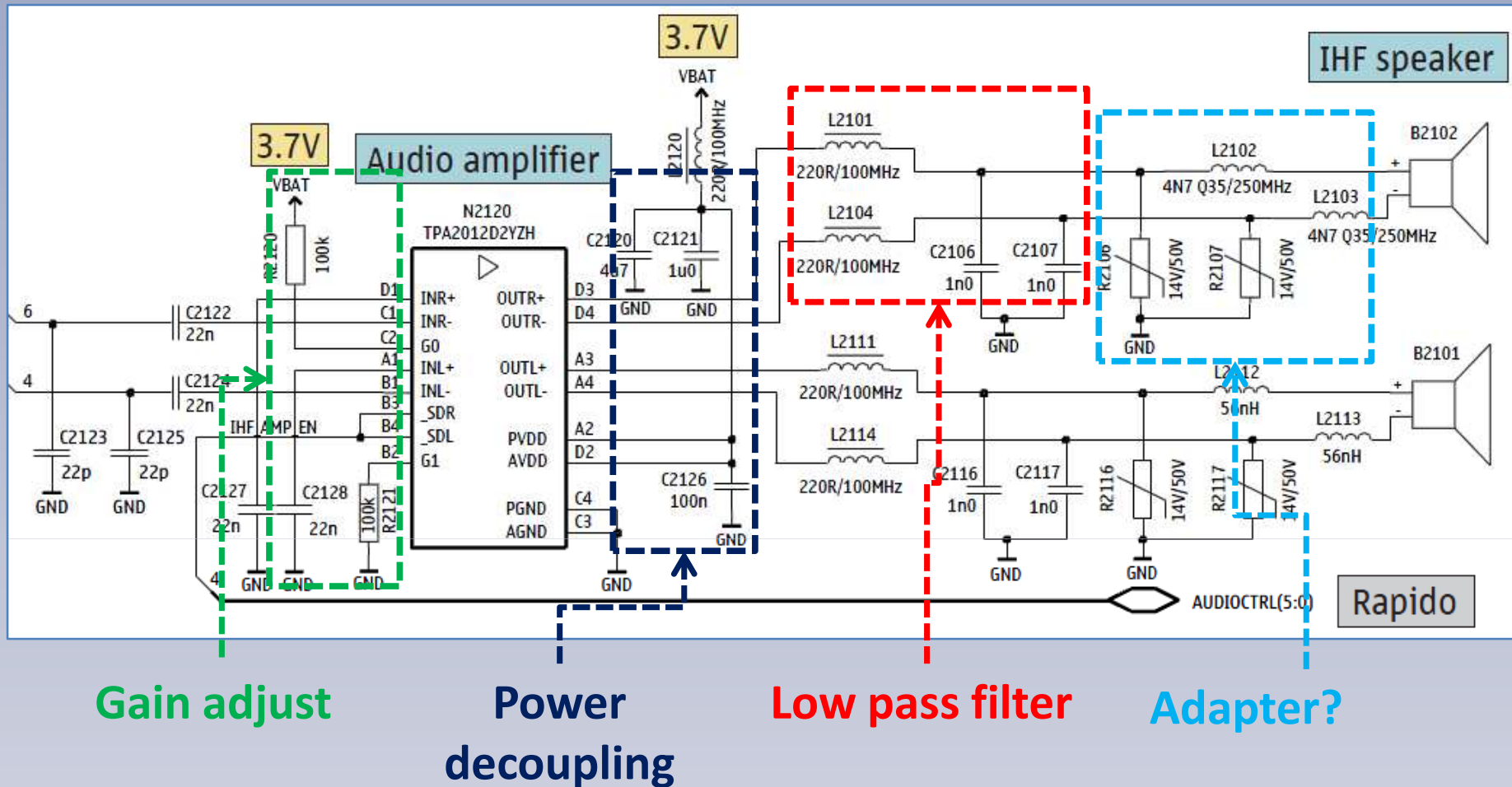
• Problem with power dissipation



Thermal-conductivity= $9.12\text{mW}/^\circ\text{C}$

Thermal-conductivity= $41.6\text{mW}/^\circ\text{C}$

Electric Schematics



Bibliografy:

- "TPA2012D2 Datasheet", Texas Instruments.
- "Service schematics Nokia N95" Nokia.