

# MESTRADO EM ENGENHARIA ELETROTÉCNICA E DE COMPUTADORES

CADEIRA

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Titulo

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2024/2025 – 2<sup>nd</sup> Semester, DEEC

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# 1 Template

**Table 1:** Comparison of Key Parameters for MCP6001, TL084, and LM324

Characteristic	MCP6001	TL084	LM324
Max Output (V)	$(V+) - 25mV$	$(V+)$	$(V+) - 1.5V$
Min Output (V)	$(V-) + 25mV$	$(V-) + 1.5V$	$(V-) + 150mV$
Supply Range (V)	1.8V to 6.0V	4.5V to 40V	3V to 36V
Offset (mV)	$\pm 4.5mV$	1mV	$\pm 3mV$
Max Output (mA)	$\pm 23mA$ (5.5V)	10mA	$\pm 30mA$
Idle Consumption	100 $\mu A$	1.4 mA	240 $\mu A$



**Figure 1:** Logo da Nova FCT

$$\begin{cases} R(283, 15) = 1,998 \cdot 10^4 \Omega \\ R(298, 15) = 10^4 \Omega \\ R(313, 15) = 0,5282 \cdot 10^4 \Omega \end{cases} \Leftrightarrow \begin{cases} A = 1,3092 \cdot 10^{-3} \\ B = 2,1439 \cdot 10^{-4} \\ C = 9,6600 \cdot 10^{-8} \end{cases} \quad (1)$$

```
Fdz
printf('Polos: \u');
PlFdz
%figure(3);
pzmap(Fdz);
%figure(4);
step(Fdz);
```

**Listing 1:** Matlab code example

- item 1
  - ...
  - item n
1. Butterworth
  2. Chebyshev
  3. Elliptic

#### 4. Bessel

In the application in study, the group delay is a critical factor because the ECG signal is a time-domain signal, and the phase distortion can lead to a misinterpretation of the signal. So it is safe to say that the Bessel filter is the best choice for this application.



**Figure 2:** NTC's block diagram

Referece like this <sup>[1]</sup>

## References

- [1] E. Systems, “Esp32 series datasheet,” [https://www.espressif.com/sites/default/files/documentation/esp32\\_datasheet\\_en.pdf](https://www.espressif.com/sites/default/files/documentation/esp32_datasheet_en.pdf), 2024.