



<https://qiro.com/epe2165/>

# Why study analog electronic?

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# Is analog electronics dead?

- Most electronic devices are digital nature.
- Traditional applications of analog electronics (e.g., filters) have been replaced by digital electronics
- Analog electronics is hard —as experience shows —why would anyone bother with it instead of using simpler digital electronics?
- Are the glory days of analog engineering over? How necessary is analog electronics in an increasingly digital world?<sup>1</sup>
- Short answer: analog electronics is here to stay <sup>2</sup>.
- “Analog circuits are needed to interface with reality. reality is analog” —Greg Taylor<sup>3</sup>

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<sup>1</sup> Believe it or not, this is an old argument going back to the 1960s. see for example Bill Schweber's 1969 [Bill Schweber's 1969 article](#) on the on the future of analog circuitry

<sup>2</sup> Read the article [“The Perennial role of Analog Electronics”](#) to understand the relevance of analog electronics in the modern world

<sup>3</sup> see [Greg Taylor's presentation](#) on future of analog design and the challenges in nanometer CMOS

# Why analog electronics

- Digital electronics is an abstraction of analog electronics —e.g.,building a NAND gate requires transistors
- The real world is analog<sup>4</sup> —thus, digital electronics need an analogy interface to the outside world
- Analog electronics is needed for signal acquisition, amplification, isolation, gain, and A/D and D/A functions
- Some tasks are still better handled through analog electronics
  - Switched-mode power supply<sup>5</sup>
  - Musical applications<sup>6</sup>
  - Radio frequencies (RF) and very high frequency signals
  - To transmit information over long distances, analog circuitry is needed to drive the communication channel <sup>7</sup>

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<sup>4</sup> see prof. Peter Kinget on why/how [thworld is analog](#) and why that matters

<sup>5</sup> [https://en.wikipedia.org/wiki/Switched-mode\\_power\\_supply](https://en.wikipedia.org/wiki/Switched-mode_power_supply)

<sup>6</sup> <https://blogs.scientificamerican.com/observations/which-sounds-better-analog-or-digital-music/>

<sup>7</sup> [https://www.ee.columbia.edu/~kinget/WhyAnalog/circuitcellar\\_The\\_World\\_Is\\_Analog\\_201410.pdf](https://www.ee.columbia.edu/~kinget/WhyAnalog/circuitcellar_The_World_Is_Analog_201410.pdf)

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