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Calcular la frecuencia de muestreo y la frecuencia de reloj, para un convertidor Analógico Digital del tipo rampa simple y para aprios 30C.

$$N=14 \text{ bits.}$$

$$a) f_{\text{max}} = 18,240 \text{ Hz}$$

Rampa simple

$$f_{\text{clk}} \geq 2^{n+1} f_{\text{analog}}$$

$$f_{\text{clk}} \geq 2^{15} (18,240 \text{ Hz})$$

$$f_{\text{clk}} \geq 597688320 \text{ Hz}$$

$$f_{\text{clk}} = 2^n f_m$$

$$f_m = \frac{f_{\text{clk}}}{2^n}$$

$$f_m = \frac{597688320}{2^{14}}$$

$$f_m = 36,480 \text{ Hz}$$

Δprox. sucesivos

$$f_{\text{clk}} \geq 2^n f_{\text{analog}}$$

$$f_{\text{clk}} \geq 2^{14} (18,240)$$

$$f_{\text{clk}} \geq 510720 \text{ Hz}$$

$$f_{\text{clk}} = n f_m$$

$$f_m = \frac{f_{\text{clk}}}{n}$$

$$f_m = \frac{510720}{14}$$

$$f_m = 36,480 \text{ Hz}$$

$$b) f_{max} = 12,860 \text{ Hz}$$

$$n = 14$$

Ramp up simple

$$f_{clk} \gg 2^{n+1} f_{max}$$

$$f_{clk} \gg 2^{15} (12,860 \text{ Hz})$$

$$f_{clk} \gg 421396480$$

$$f_{clk} = 2^n f_{max}$$

$$f_{max} = \frac{f_{clk}}{2^n}$$

$$f_{max} = \frac{421396480}{2^{14}}$$

$$f_{max} = 25,720 \text{ Hz}$$

Direct succession

$$f_{clk} \gg 2^n f_{max}$$

$$f_{clk} \gg 2^{14} (12,860)$$

$$f_{clk} \gg 360080$$

$$f_{clk} = n f_{max}$$

$$f_{max} = \frac{f_{clk}}{n}$$

$$f_{max} = \frac{360080}{14}$$

$$f_{max} = 25,720 \text{ Hz}$$