$3.28 \times 0.21 = 688.8mV$

PWM → 3.3V → 21% $\underline{3.3 \times 0.21} = 0.693mV = 693mV$.

rms value from Oscillsope

690. mV

→ ~~filtered 688.7mV~~

voltage follower 688.5 mV

ADS1115 2.25 ~ 2.44 = + 2.3mV

→ 687.75 ~ 687.56 mV

→ 684 mV ~ 683.81 mV.

~~4.7mV~~ ~ ~~4.6mV~~

4.5 ~ 4.7 mV = +4.6mV

685.3mV ~ 685.5mV

3.2mV ~ 3mV. = 3.1mV

AD623 Instrumentation Amplifier.

AD623. $RG = 100k/(G-1)$

$$\frac{RG}{G-1} = 100k.$$

$$G-1 = \frac{RG}{100k}$$

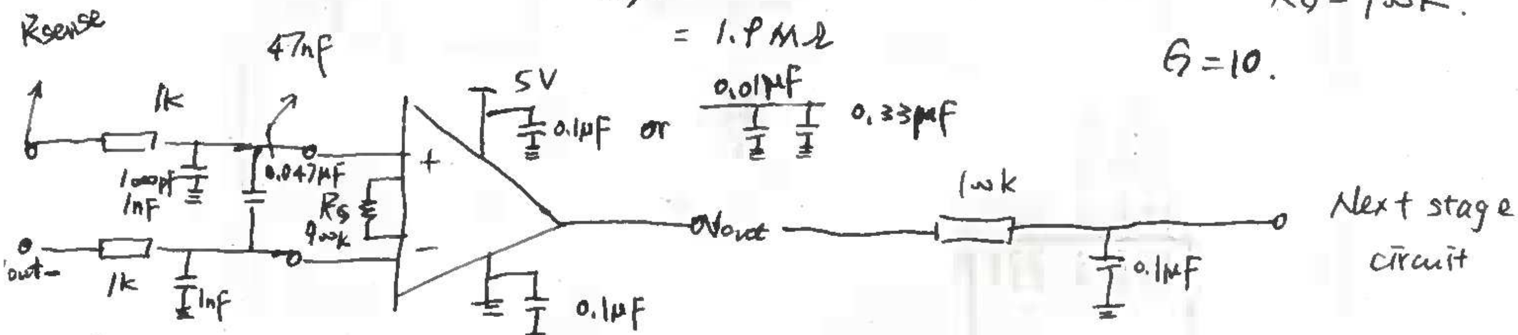
M μ n p.

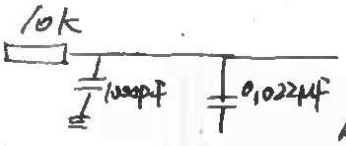
$$G = \frac{RG}{100k} + 1 = 20 \qquad G = \frac{RG}{100k} + 1 = 10$$

$$\frac{RG}{100k} = 19 \qquad \frac{RG}{100k} = 9$$

$$RG = 19 \times 100k \qquad RG = 900k.$$

$$= 1.9M\Omega \qquad G = 10.$$





→ BW(DIFF) = 358.68 Hz

AD623.

four stage → usually support max current supply 4A max

1A per branch (max) → 0.5V

$$BW(DIFF) = \frac{1}{2\pi R(2C_2 + C_1)} = \frac{1}{2\pi \times 1k \times (2 \times 0.047\mu F + 1nF)}$$

$$= \frac{1}{2\pi \times 10^3 \times (2 \times 47 \times 10^{-9} + 1 \times 10^{-9})} = 1675 Hz.$$

① 1V to 5V → Check measured Vref & Vsense (differences) / In Amp Effect

Comparator vs set current at 5 graphs

~~ss~~ difference better

voltage drive capability

noise

drift.

② In Amp Effect → Add / without

Vref vs Vref measured difference

Essentially 本质上, Increase Vref resolution by 6 (InAmp Gain)

verified

③ Error Amp - filtering → Plot with Value.

① (a) (Vref measured - Vsense) at range of (10mA to ~~4~~85 mA) x 2.

(b) Calculate the mean value of the difference.

(c) Plot 5 graph, 5 mean value of difference

Does Vsource ~~affact~~ voltage drive ability of the LM324

(d) Inamp & with out Inamp compare the difference and effect.

② (a) Without In-Amp Compare. ~~Vrefset =~~

Vref need - Vrefset - Vref measured. for 10mA ~ 485A

for 1V, 2V, 3V, 4V, 5V

$\underbrace{\text{Vref need - Vrefset}}_{\text{resolution}}$ $\underbrace{\text{- Vref measured}}_{\text{accuracy}}$

resolution → Improved

accuracy → cannot avoid - ~~Solution: offset.~~

Improved

because high ~~imp~~ inputs of Comparator → drive capability, response

One solution resistance

(b) With In-Amp

Compare the same thing

How much is improved by Introducing In-Amp.

→ resolution improved at which range / which ~~to~~ Vs

→ Accuracy improved at which range / Vs

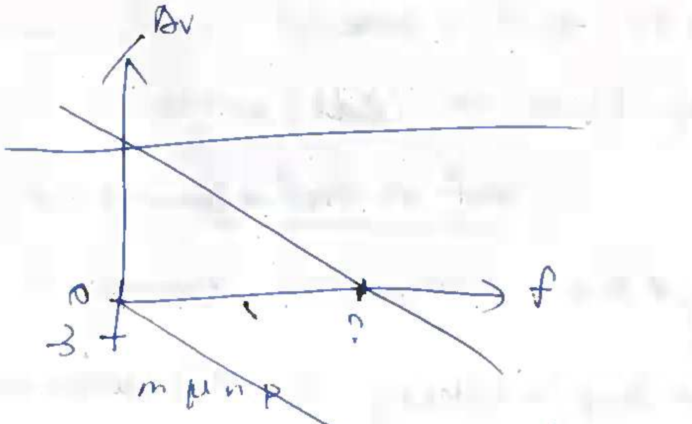
all range

all Vs values

③ Error - filtering. tables.

$$f = \frac{1}{\cancel{2\pi f}}$$

$$f = \frac{1}{2\pi RC}$$



$$\text{Trans Function} = -\frac{1}{RCS}$$

1k $10\mu = 10\times10^{-6}$

$1k\times10\times10^{-6} = 10\times10^{-3}$

$= 0.01$

$$F_{Trans} = -\frac{1}{0.01S}$$

$10k\times10\times10^{-6} = 10\times10^{-3}\times10$

$= 0.1$

$$\frac{1}{2\pi\times0.1} = 1.5f\ Hz$$

$$\frac{1}{2\pi RC} = \frac{1}{2\pi\times0.01f}$$

$= 15.f$

10k with 10 μF

$\Rightarrow 1.5f.$