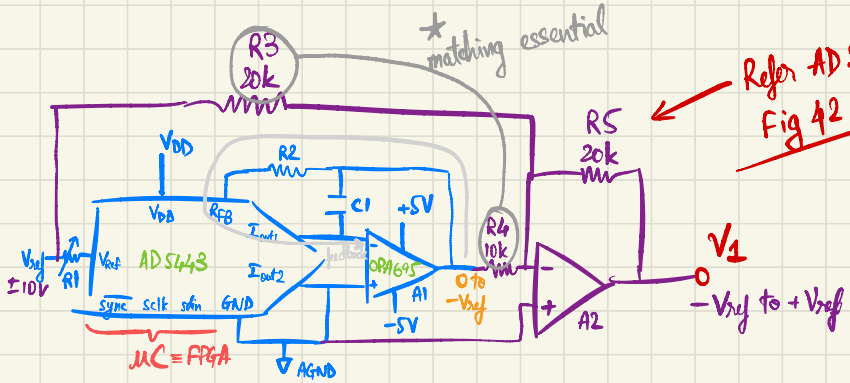
A



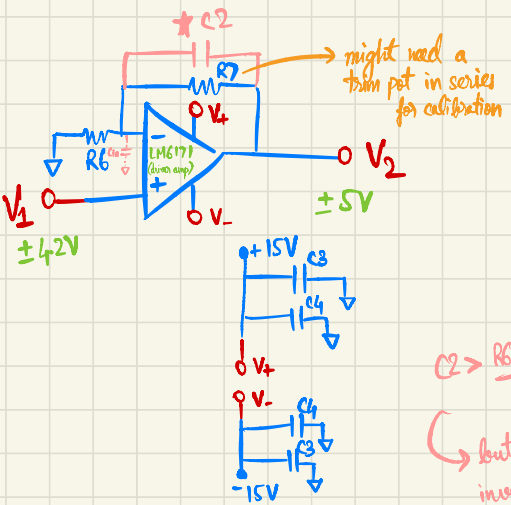
R1 = 0, R2 = 0 } no gain needed

C1 = 1-2pF phase compensation (as OPA695 is high speed amp)

OPA695 o/p min ±4V, typ ±4.2V @ 25°C

⇒ $V_{ref} = 4.2V$

B



$$\frac{V_2}{V_1} = 1 + \frac{R_7}{R_6} = \frac{5}{4.2}$$

$$\Rightarrow \frac{R_7}{R_6} = \frac{4}{21}$$

$\Rightarrow R_6 \approx 4k$, $R_7 \approx 21k$ } CHECK ★★ Check i/p bias of LM6171 and confirm

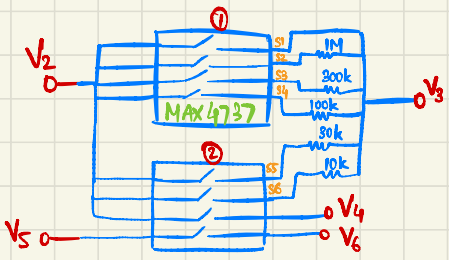
$C2 > \frac{R6 \times Cin}{R7}$ ← but for inverting config

C2 = 2pF (feedback capacitor)

C3 = 2.2µF (tantalum cap)

C4 = 0.01µF (ceramic cap)

C



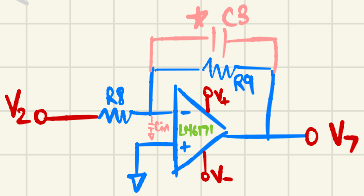
Continuous I_{max} = 100mA

Pulsed (1ms, 10% duty cycle) = 200mA

V_{max} = 6V (assume 5V)

(V3 — OPA 227 — V5 — V6 — ADC)

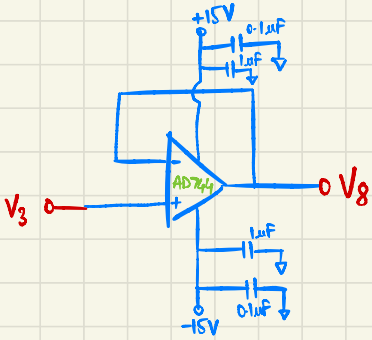
(D)



$\frac{R9}{R8} = \frac{1}{2} \Rightarrow$ $R9 \approx 10k$, $R8 \approx 20k$ ★★ Check i/p bias current

★ V+ & V- similar to (B)

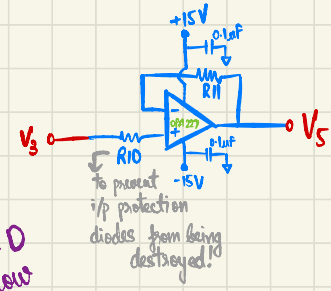
(E)



Pin5 – Pin8 → $C_{comp} \geq 5pF$

check datasheet:
- $C_{comp} = 0pF \Rightarrow$ slew rate $\approx 60 V/\mu s$
- $C_{comp} = 5pF \Rightarrow$ slew rate $= 37 V/\mu s$
- $C_{comp} = 10pF \Rightarrow$ slew rate $= 25 V/\mu s$

(F)



R10 & R11 = 0 for now

Input current needs to be limited to 20mA

$\Rightarrow R10 + R_{source(V_3)} = \frac{V_3}{20mA}$

$\Rightarrow R10 = 0$ (as $R_{source(V_3)} \geq 10k\Omega$) Except when S1 is on

★★ ENSURE S8 off when S1 on!

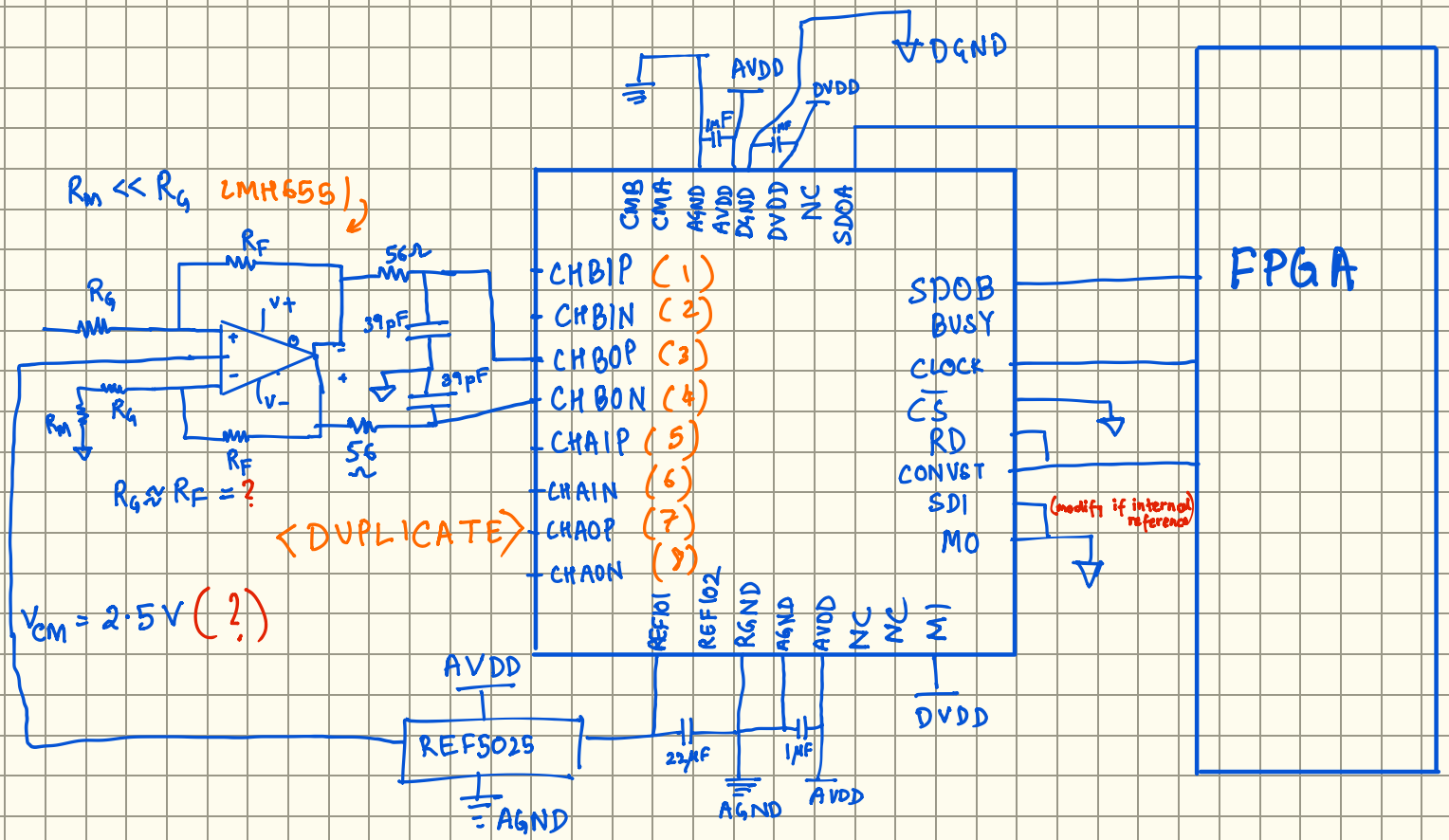
★★ $R11 = R_{source} \approx 10k\Omega$?

CHECK if input bias current (max) $\Rightarrow$ 0.1mV (max $1M\Omega \Rightarrow$ 10mV?)

ADC

→ AVDD → Analog Power Supply : 2.7V to 5.5V
↳ Decouple to AGND with a 1-μF ceramic capacitor

→ A bypass capacitor of 1μF must be placed between the DVDD pin and the digital ground plane
DVDD → Digital Supply, 2.3V to 5.5V. Decouple to DGND with a 1μF ceramic cap
→ REF101 and REF102: A ceramic capacitor of 22μF connected to RGND is reqd.



Check Common Mode Voltage Requirements

The input signal for the amplifiers must fulfill the common-mode voltage requirements of the device in this configuration — Ask about this

Bandwidth:

$$f_{FILTER} = \frac{\ln(2)(n+1)}{2\pi 2RC}, \quad n = 12$$

Capacitor value of at least 1nF is recommended.

$$R = \frac{t_{ACQ}}{\ln(2)(n+1)2C}$$

← Acquisition time

Doubts regarding V_{REF}

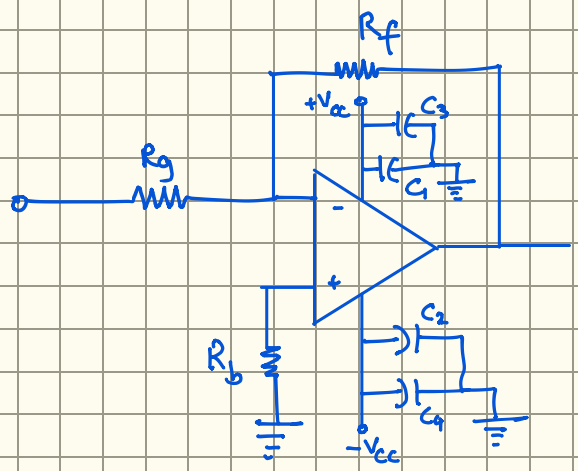
LMH6715

$V_{cc} = 5V$, $R_f = 500\Omega$, $R_g = 1K\Omega$
$A_v = 0.5$

} Provides very good gain accuracy upto 15 MHz.

C values = ?

this is for a gain of 2, though



"Generally, lowering R_f from its recommended value will peak the freq. response and extend the bandwidth, while increasing the value of R_f will cause the freq response to roll off faster."

$R_f \downarrow \Rightarrow$ Overshoot, ringing, oscillation.