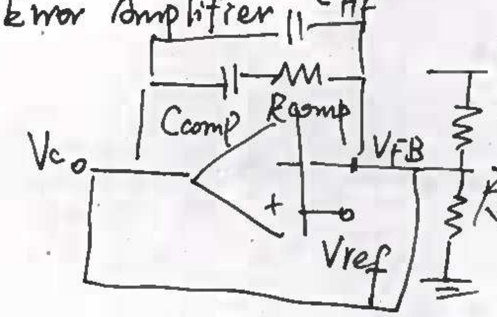
Error Amplifier

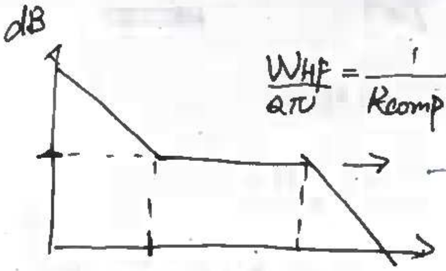


$$A_v = \frac{R_{comp}}{R_{FBB}}$$ Where is R_{FBB}.

~~the Vref from voltage follow~~

$+\infty$ input resistance R_{FBB} ↑

~~$A_v = \frac{R_{comp}}{R_{FBB}} = \frac{R_{comp}}{R_{in}}$~~



$$\frac{W_{HF}}{2\pi} = \frac{1}{R_{comp} \times C_{HF} \times 2\pi}$$ ↓ ↑

→ −20 dB

$C_{comp} >> C_{HF}$

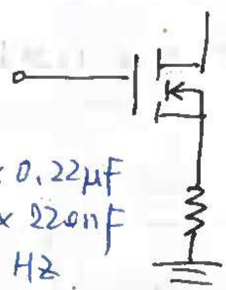
$$\frac{W_{ZEA}}{2\pi} = \frac{1}{R_{comp} \times C_{comp} \times 2\pi}$$ ↓ close to 0 Hz.

~~200nF~~ ~~VFB~~

~~220k~~ 240k × ~~100nF~~ Vout. =6.63

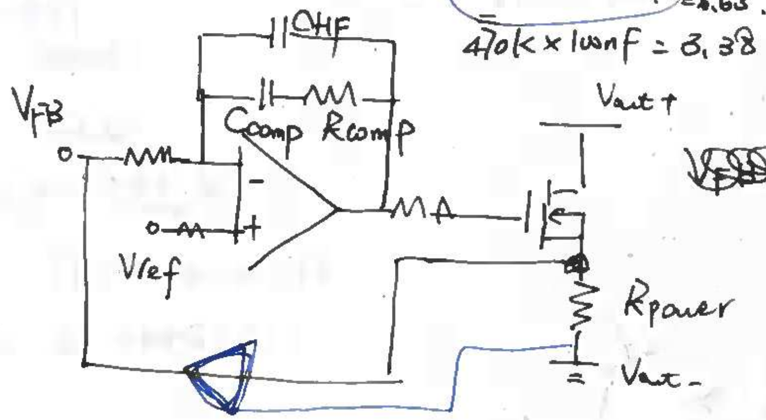
470k × 100nF = 3.38

240k × 0.22µF = 240k × 220nF = 3.01 Hz



MOSFET

0.5Ω / 0.47Ω / 0.68Ω



~~VFB~~

Gain → +ω $\frac{R_{comp}}{R_{power}}$ ↗ 220k, 0.5Ω

220k / 0.5Ω = 440k ✗

Enough to output voltage to turn on MOSFET to a certain level

No sense since we have In-Amp Inbetween

$$f_{HF} = \frac{1}{2\pi \times 220k \times 1nF}$$

m µ n p ↑ 12

$$= \frac{1}{2\pi \times 220k \times 1 \times 10^{-9}}$$

= 723.4 Hz. (too small) ? big ? ✓

Buck Converter operates at 320kHz ~ 2.25MHz

2250kHz

C_{HF} = 1nF

240k × 1nF = 662.5 Hz

0.22nF = 220pF

cannot filter 320kHz & ≥ 320kHz signal

(Electronic Load should act as a resistance, no filtering involved).

→ 220k × ~~100nF~~ 10nF → 73Hz. too small = 361 kHz.

~~220k × 1nF~~

220k × 2nF → 240k × 2nF = 331.57 Hz ✓

~~110k × 1nF or 220k × ... or 480k × 1nF~~

or 470k × 1nF = 338.627

$f_{LC} \Rightarrow L = 10\mu H. \quad C = 4.7\mu f \qquad m\ \mu\ n\ p$

$$f_{LC} = \frac{1}{2\pi\sqrt{LC}} = \frac{1}{2\pi\sqrt{10\times10^{-6}\times4.7\times10^{-6}}} = 23,215k$$

$0.75 \times 23,215k =$ ~~17.41k~~ $\underline{17.41kHz} = f_{z1}$

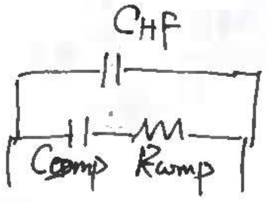
$F_{S(max)} = 2.25MHz = F_S/2 = 1.125MHz$

$= \underline{1125kHz}$

$$f_{z1} = 17.41kHz = \frac{1}{R_{comp} \times C_{comp} \times 2\pi} \Rightarrow 9.1k \text{ with } 1nF$$

$C_{comp} >> C_{HF}$

$$f_{p2} = 1125kHz = \frac{1}{R_{comp} \times C_{HF} \times 2\pi} \Rightarrow 9.1k \text{ with } \sout{1pF}\ \sout{10pF}$$



12pF $= \underline{1457kHz}$

9.1k with 14pF $= 1249kHz$ ✓

~~UDB with 1100nF~~

1.39k, 2.45k, 2.95k, 3.31k, 5.2k, 46k, 39.8k, X, X

9.1k

$\frac{1}{910k \times 1nF \times 2\pi}$ 2.13Hz

m μ n p

59.851, 362.75, 659.83, 958.24, 1.2577, 1.49, 1.746, 2.13

$910k \times 1nF \times 2\pi$

60, 380, 660, 960, 1260, 1560, 1860, 2160, 2460

910k with 100nF

$18A/60 = 30mV$ ref

$\rightarrow$ 60mV current

25×6 = 50×3

10, 60, 110, 160, 210, 260, 310, 360, 410

20, 120, 220, 320, 420, 520, 620, 720, 820

18.81mA, 117.12mA, 215.81mA, 315.31mA, 413.63mA, 496.06mA, 578.75mA, ~~705.5mA~~ 736.31mA, 41.44

310 → 360

566.84mA 620mA – 310 – 1860mV – 1.748 – 1.745 – 38.08k

599.88mA 640mA – 320 – 1920mV – 1.8V – 36.52k

620.5mA 660mA – 330 – 1980mV – 1.9V – 35.7k

646.31mA 680mA – 340 – 2040mV – 1.956V – 35.215k

677.84mA 700mA – 350 – 2100mV – 2.05V – 34.33k

711.84mA 720mA – 360 – 2160mV – 2.14V – DC

All DC output.

max – 46k

With Emer Amp – 1.71Hz Cut.

18.37mA – 10 – 60 – 50mV — 20

115.81mA – 60 – 360 – 335mV — 120

214mA – 110 – 660 – 639.642mV — 220

313.56mA – 160 – 960 – 934 — 320

413.13mA 210 – 1260 – 1.25V — 420

511.31mA – 260 – 1560 – 1.54V — 520

610.84mA – 310 – 1860 – 1.84V — 620

708.84mA – 360 – 2160 – 2.137V — 720

728.75mA – 410 – 2460 – 2.225 — 820

4.86 + 0.3 = 5.16V.