The power analyser that connected with the output of the device — drop down some voltage since the funtion of measuring current. → resistance in the power andyser ~~[illegible]~~ consumes some current on its resistor ~~[illegible]~~ embeded.

⇒ remove the power analyser

⇒ get no significant voltage drop

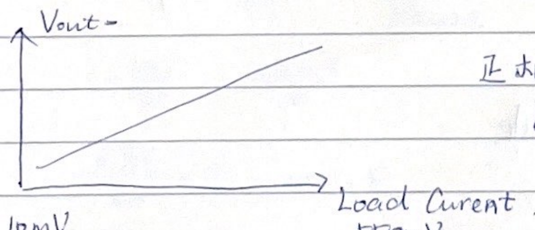
Compensation → get last time R drop
feed into next ~~[illegible]~~ turn
→ reach the desired current. level

① Vref : Required value vs Estimated value vs. Measured Value.

Mega - 10 bits ⇒ In Amp ⇒ IoT - 12 bits ⇒ IoT Buck

Make average for ten times
Buck Converter has ripple in Vout & ripple (big) in Current.

① Discover : Vout - ≠ GND ~~over current~~ average over 1~5V



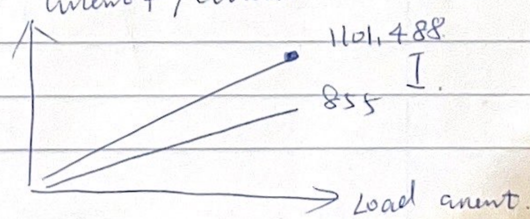
10mV
20mA

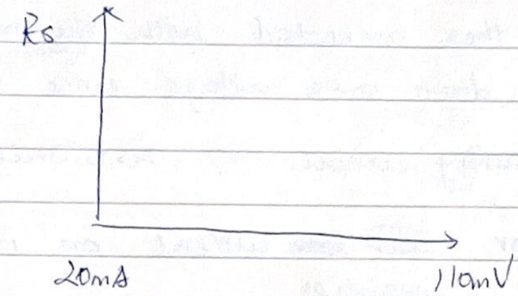
550mV
1010mA

正相关 ⇒ there is resistance between the Vout - & GND

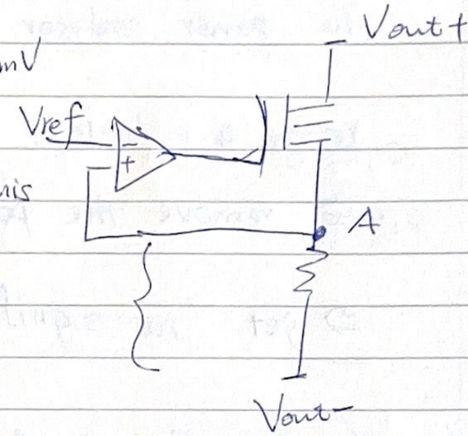
Actually ~~Rsense 1 = 0.15Ω~~
Rsense 1 = 0.015Ω

② Icurrent Pluse ⇔ Icurrent





for 1V 2V 3V 4V 5V.



⇓

How to ~~com~~ eliminate this

Positive termial always have
~~Vsense to~~

V_A to GND

rather them V_A to Vout-

⇑

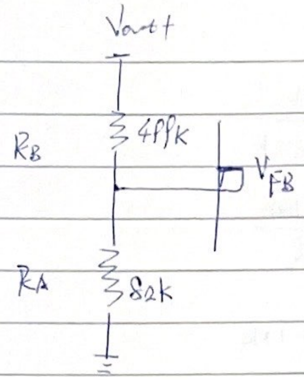
But we are monitoring Vout-

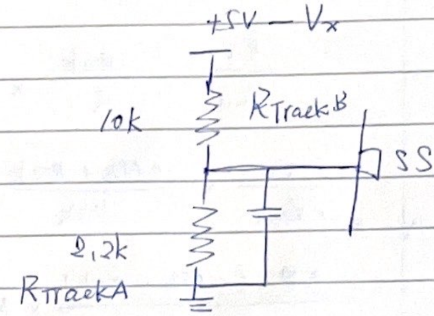
⇒ Add additiond ~~Vref~~ offset to Vref

compensate this.

⇒ Each loop affect next loop to adjust.

⇒ show rest





$$\frac{V_x}{V_{out}} = \frac{R_A}{R_{TrackA}} \times \frac{R_{TrackA} + R_{TrackB}}{R_A + R_B}$$

$$= \frac{82k}{R_{TrackA}} \times \frac{10k + R_{TrackA}}{499k + 82k}$$

(max. 2.2k)

$$= \frac{82k \times (10k + R_{TrackA})}{R_{TrackA} \times 581k}$$

$$= \frac{82}{581} \times \left(\frac{10k + R_{TrackA}}{R_{TrackA}} \right)$$

$$\text{min} = \frac{82}{581} \times \frac{10k+1}{1}$$

$$= \frac{82 \times 10001}{581}$$

$$V_{out} = 3.542 \times 10^{-3}\ V$$

max

$$\frac{82}{581} \times \frac{10k + 2.2k}{2.2k}$$

$$= \frac{V_x}{V_{out}} = 0.78266$$

$$V_{out} = 6.388\ V$$

$$\frac{V_x}{V_{out}} = \frac{82}{581} \times \frac{10k + R_{TrackA}}{R_{TrackA}}$$

$$\frac{V_x \to 5V}{V_{out}}\ \text{max} = \cancel{\frac{82}{581} \times \frac{10k + 1}{1}}$$

$$\frac{5}{1} = 5 = \frac{82}{581} \times \frac{10k + R_{TrackA}}{R_{TrackA}}$$

$$5 \times \frac{581}{82} = \frac{10k + R}{R}$$

$$\frac{2905}{82} \times R = 10k + R$$

$$\left(\frac{2905}{82} - 1\right) R = 10k$$

$$R = \frac{10k}{\frac{2905}{82} - 1} \approx 0.29\ k$$

$$\frac{V_x \nearrow 5V}{V_{out} \searrow 5V} = 1 = \frac{10k + R_{TrackA}}{R_{TrackA}}$$

$$= \frac{581}{82}$$

$$\frac{581}{82} \times R = 10 + R$$

$$\left(\frac{581}{82} - 1\right) R = 10k$$

$$R = \frac{10k}{\frac{581}{82} - 1}$$

$$R = 1.6433\ k\Omega$$

$$\frac{5V}{V_{out}} = \frac{82k}{R} \times \frac{R + 10k}{499k + 82k}$$

$$\frac{5V}{V_{out}} \times \frac{499k + 82k}{82k} = \frac{R + 10k}{R}$$

1V

$$\frac{5 \times (499k + 82k)}{82k} \times R = R + 10k$$

$$\left[\frac{5 \times (499k + 82k)}{82k} - 1\right] R = 10k$$

$$R = \frac{10k}{\frac{5 \times (499k + 82k)}{82k} - 1}$$

$$\frac{10k}{\frac{5}{x} \times \left(\frac{581}{82}\right) - 1} = \frac{10k}{\frac{5 \times 581}{82 \cdot x} - 1}$$

2905