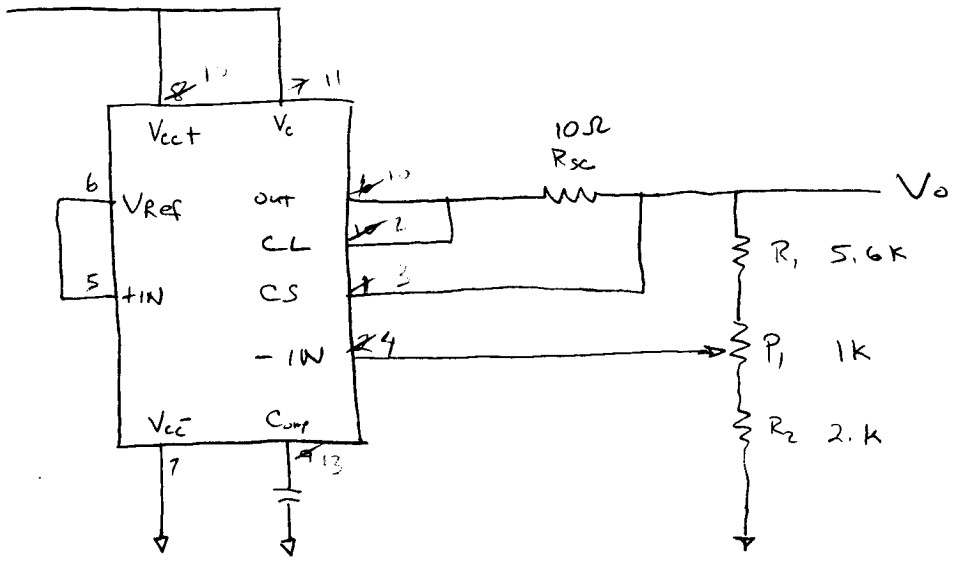
Power Supply

9-10-82

25 v



For current limit = 65 ma (2708 sinks 20ma max)

$$I_{limit} = \frac{.65v}{R_{sc}}$$

$$R_{sc} = \frac{.65v}{65\,ma} = 10\Omega$$

10 / .5 / 05

$$I_{max\atop min} = \frac{.65}{10 \pm 5\%} \Rightarrow \quad I_{min} = \frac{.65}{10.5} = 61.9\,ma$$

$$I_{max} = \frac{.65}{9.5} = 68.4\,ma$$

For $V_o = 27v \pm 1v$ $V_{ref} = 7.15$

$$V_o = V_{ref} \times \frac{R_1 + R_2}{R_2}$$

$$V_{o_1} = V_{Ref} \times \frac{R_1 + R_2 + P_1}{R_2 + P_1} = 27 - 1$$

$$\frac{R_1 + R_2 + P_1}{R_2 + P_1} = 3.64$$

$$V_{o_2} = V_{ref} \times \frac{R_1 + R_2 + P_1}{R_2} = 27 + 1$$

$$R_1 + R_2 + P_1 = 3.64\,(R_2 + P_1)$$

$$R_1 + R_2 + P_1 = 3.92\,R_2$$

$$R_1 = 2.64\,(R_2 + P_1)$$

$$R_1 + P_1 = 2.92\,R_2$$

let $P_1 = 1k$

$$R_1 = 2.64\,R_2 + 2.64k$$

$$R_1 + 1k = 2.92\,R_2$$

$$2.64\,R_2 + 2.64k + 1k = 2.92\,R_2$$

$3.64K = 2.92 R_2 - 2.64 R_2$

$3.64K = .28 R_2$

$R_2 = 13k$

$R_1 = 2.64 (13k + 1k) \simeq 36.96 k$

let $R_2 = 13k$ $P_1 = 1k$ $R_1 = 36k$

Now $R_1 = 39k$

$V_{o1} = 7.15 \times \frac{36k + 13k + 1k}{13k + 1k} = 25.5$ 27

$V_{o2} = 7.15 \times \frac{36k + 13k + 1k}{13k} = 27.5$ 29

Table Recommends for +28 volts

$R_1 = 5.6k$
$P_1 = 1k$
$R_2 = 2k$

$V_o = 7.15 \left(\frac{6.6k + 2k}{2k} \right) = 30.75V$

$V_o = 7.15 \left(\frac{5.6 + 3k}{3k} \right) = 20.50V$

9-13-82 measured 29.0

20.3