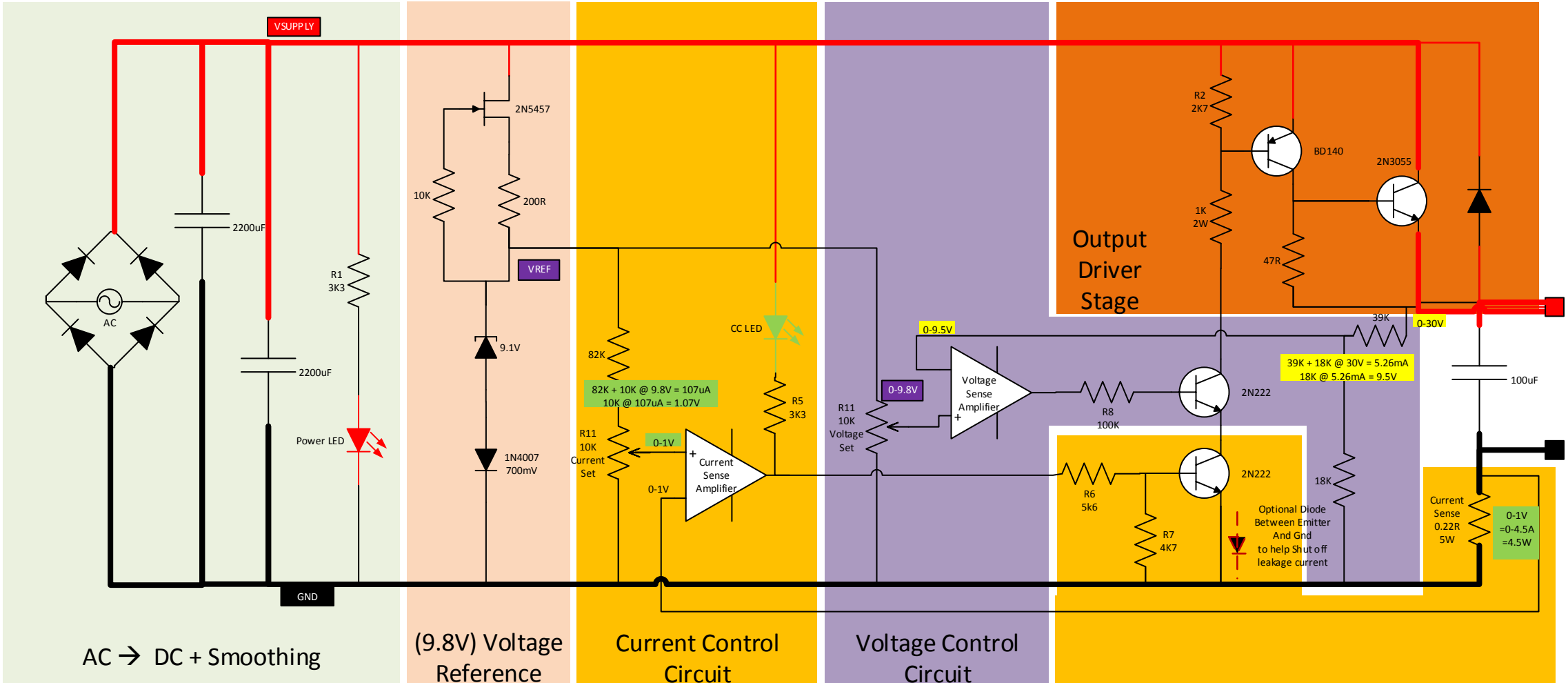
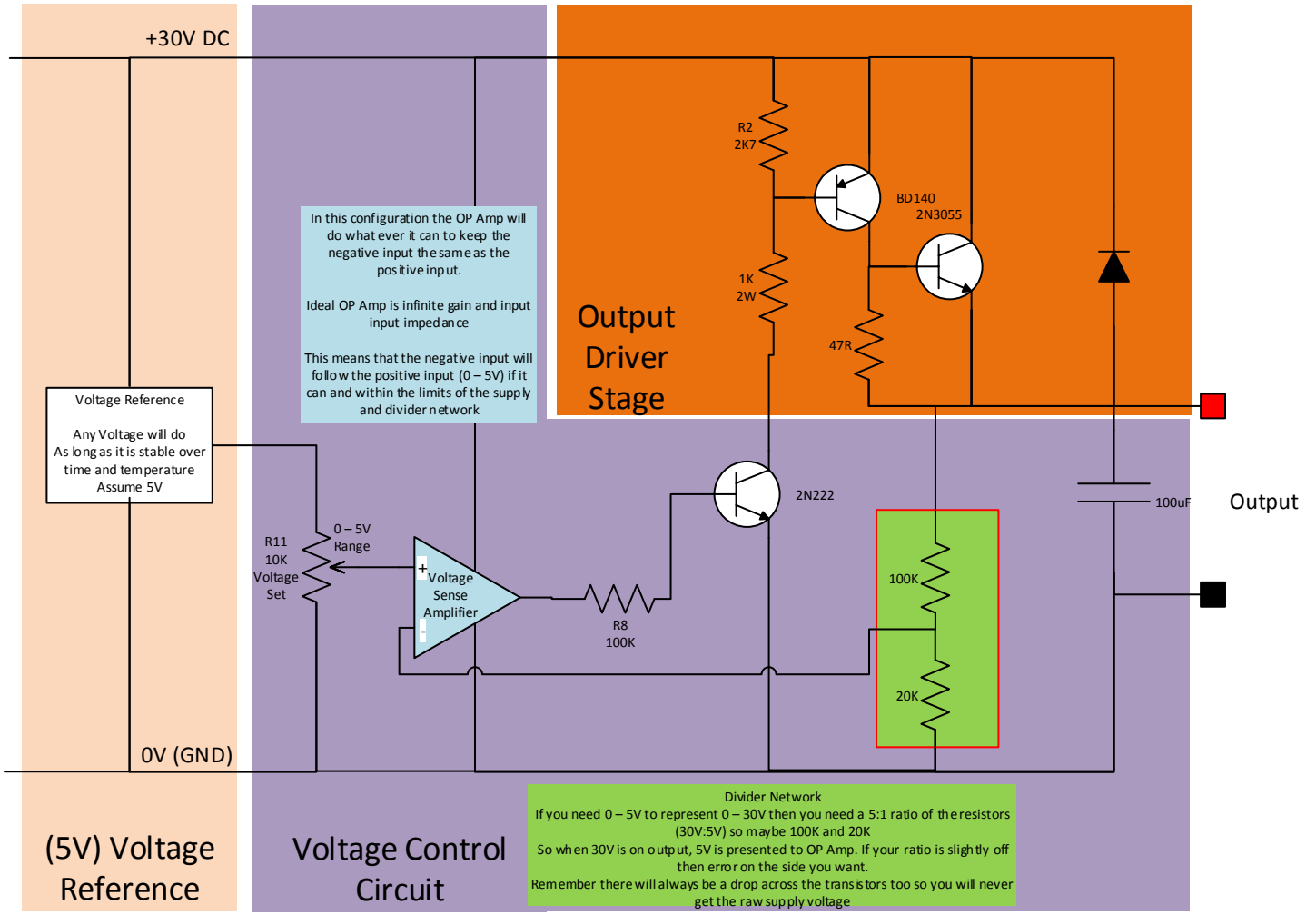
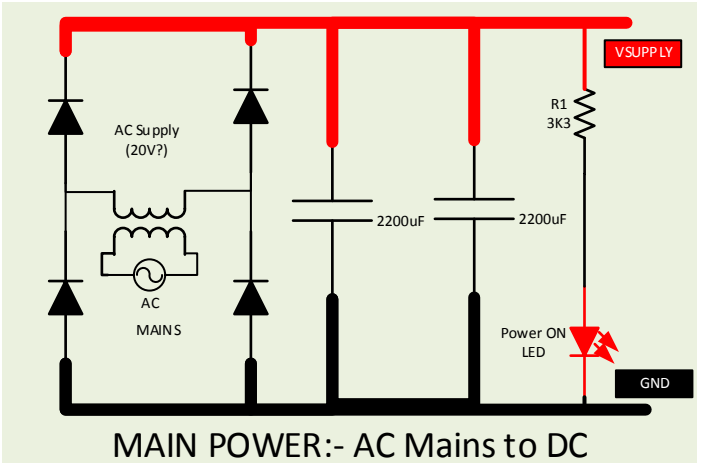
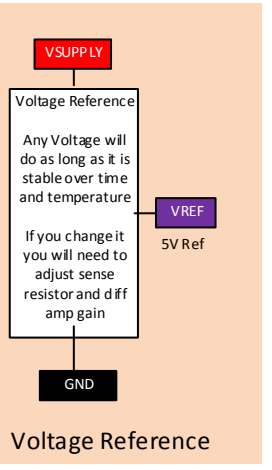

VSUPPLY
AC
2200uF
2200uF
R1
3K3
Power LED
GND
2N5457
10K
200R
VREF
9.1V
1N4007
700mV
82K
82K + 10K @ 9.8V = 107uA
10K @ 107uA = 1.07V
R11
10K
Current
Set
0-1V
0-1V
Current
Sense
Amplifier
CC LED
R5
3K3
0-9.8V
R11
10K
Voltage
Set
0-9.5V
Voltage
Sense
Amplifier
R8
100K
2N222
R2
2K7
BD140
2N3055
1K
2W
47R
Output
Driver
Stage
39K
0-30V
39K + 18K @ 30V = 5.26mA
18K @ 5.26mA = 9.5V
100uF
R6
5k6
2N222
R7
4K7
Optional Diode
Between Emitter
And Gnd
to help Shut off
leakage current
18K
Current
Sense
0.22R
5W
0-1V
=0-4.5A
=4.5W
AC → DC + Smoothing
(9.8V) Voltage
Reference
Current Control
Circuit
Voltage Control
Circuit

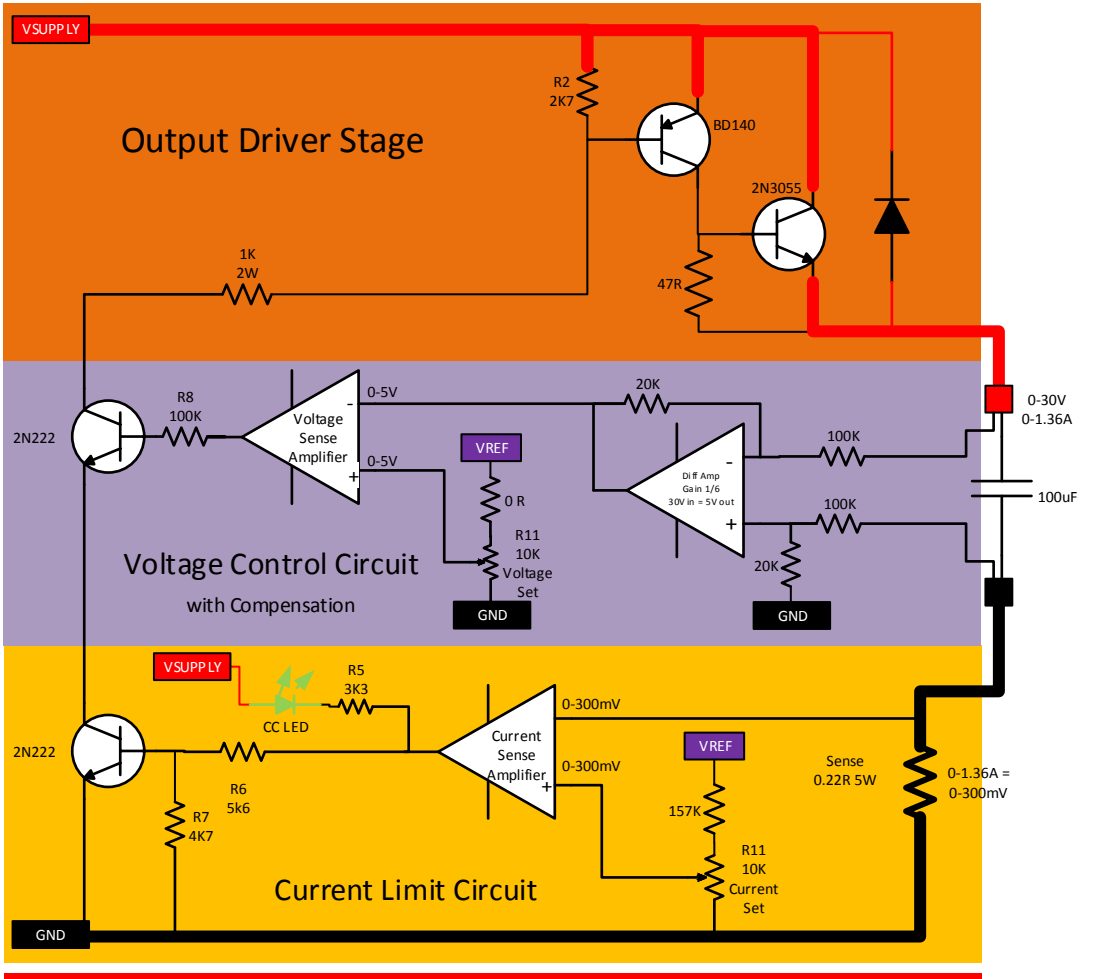

+30V DC
0V (GND)
(5V) Voltage Reference
Voltage Control Circuit
Output Driver Stage
Voltage Reference
Any Voltage will do
As long as it is stable over time and temperature
Assume 5V
In this configuration the OP Amp will do what ever it can to keep the negative input the same as the positive input.
Ideal OP Amp is infinite gain and input input impedance
This means that the negative input will follow the positive input (0 – 5V) if it can and within the limits of the supply and divider network
R2
2K7
1K
2W
47R
BD140
2N3055
2N222
R11
10K
Voltage
Set
0 – 5V
Range
Voltage
Sense
Amplifier
R8
100K
100K
20K
100uF
Output
Divider Network
If you need 0 – 5V to represent 0 – 30V then you need a 5:1 ratio of the resistors (30V:5V) so maybe 100K and 20K
So when 30V is on output, 5V is presented to OP Amp. If your ratio is slightly off then error on the side you want.
Remember there will always be a drop across the transistors too so you will never get the raw supply voltage



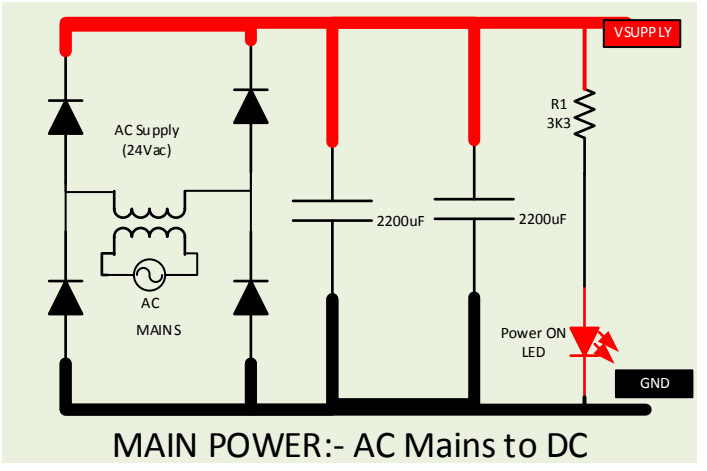
MAIN POWER:- AC Mains to DC



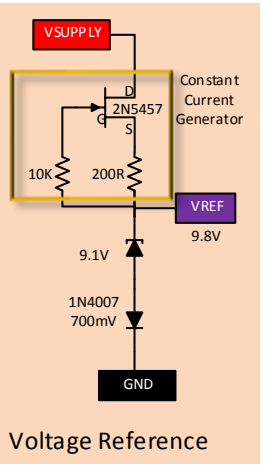
Voltage Reference



NOT UPDATED WITH NEW VALUES



MAIN POWER:- AC Mains to DC



Voltage Reference