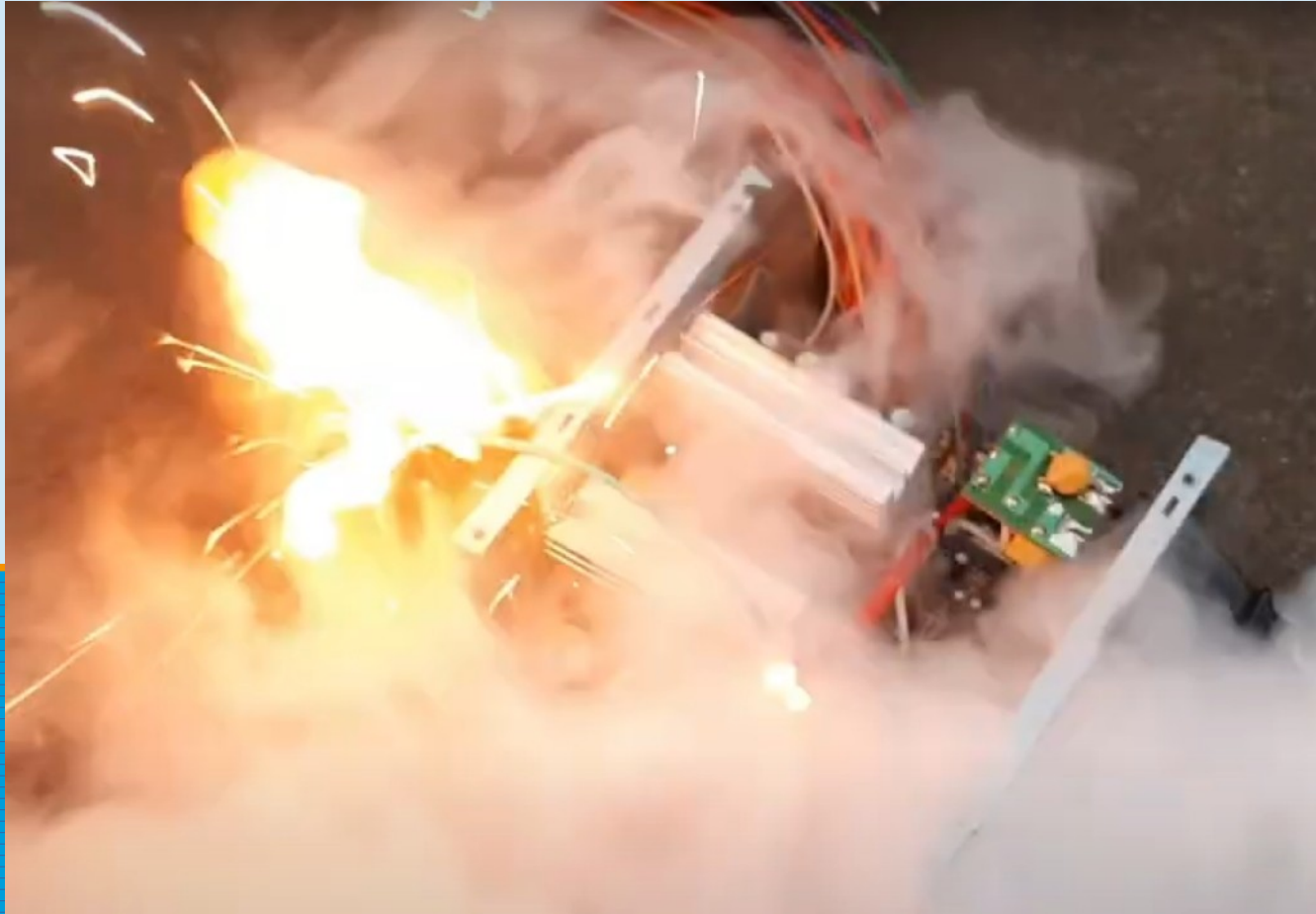


Power Supplies 101

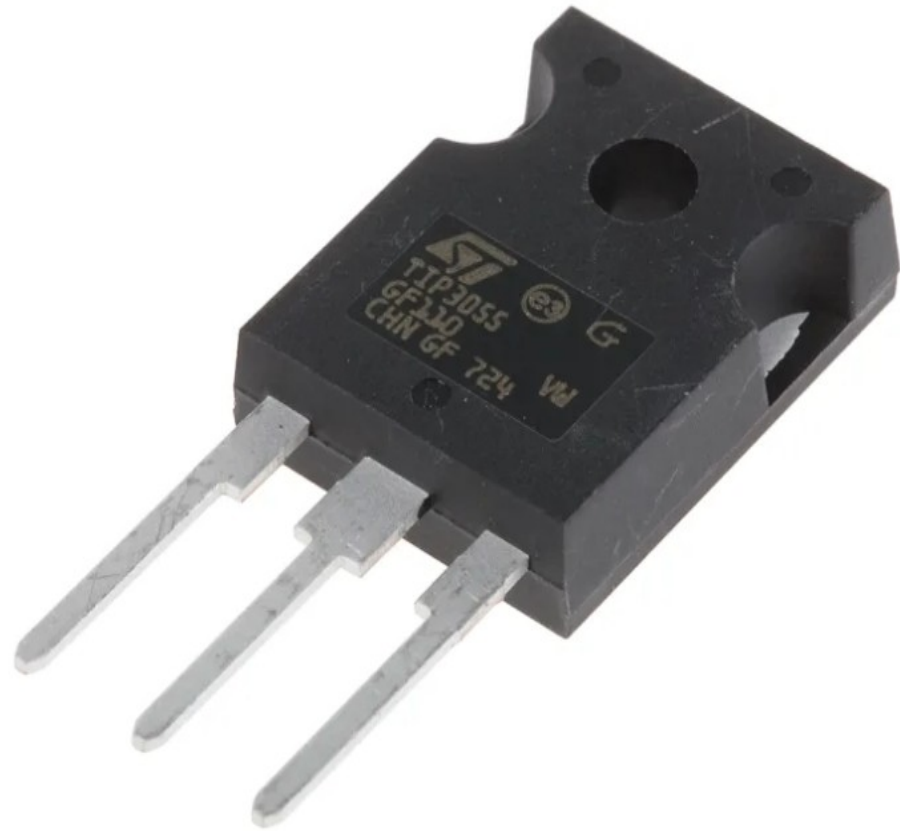
Part 2



Re Cap

- We had some examples of PSU circuits
- None of them were capable of more than 1 Amp
- All of them would get hot when nearing current limit
- I forgot some of the series pass transistor circuits....

2n3055

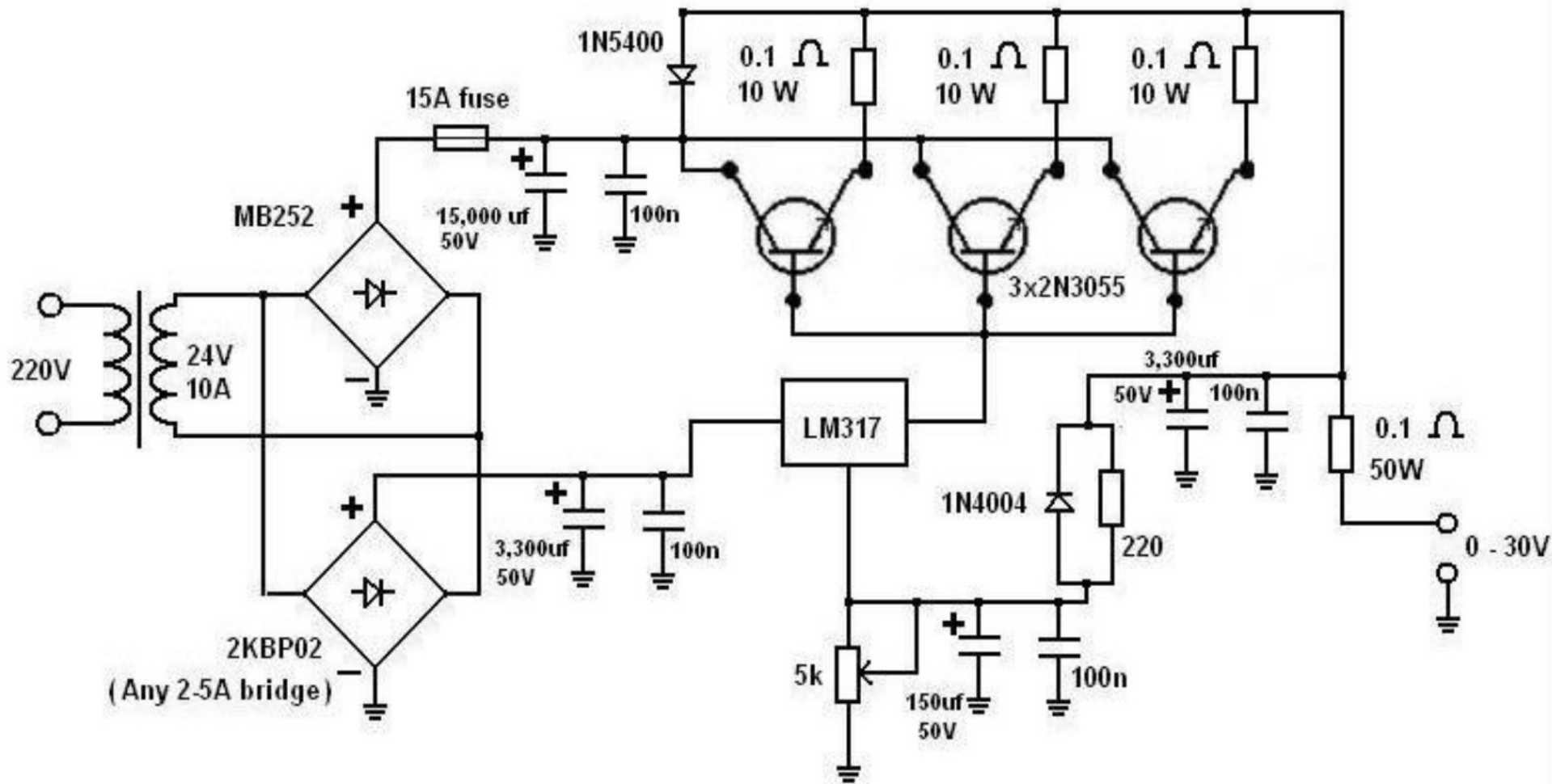


How do we use it?

- First check the datasheet specifications
- We need to work out what it can do!

Absolute Maximum Ratings ($T_A = 25\text{ }^\circ\text{C}$)

Description	Symbol	Value	Units
Collector Base Voltage	V_{CBO}	100	V
Collector Emitter Voltage	V_{CEO}	60	
Collector Emitter Voltage($R_{BE}=100\Omega$)	V_{CER}	70	
Emitter Base Voltage	V_{EBO}	7	
Collector Current Continuous	I_C	15	A
Base Current	I_B	7	
Power Dissipation @ $T_c=25^\circ\text{C}$ Derate Above 25°C	P_{TOT}	115 0.657	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	- 65 to +200	$^\circ\text{C}$



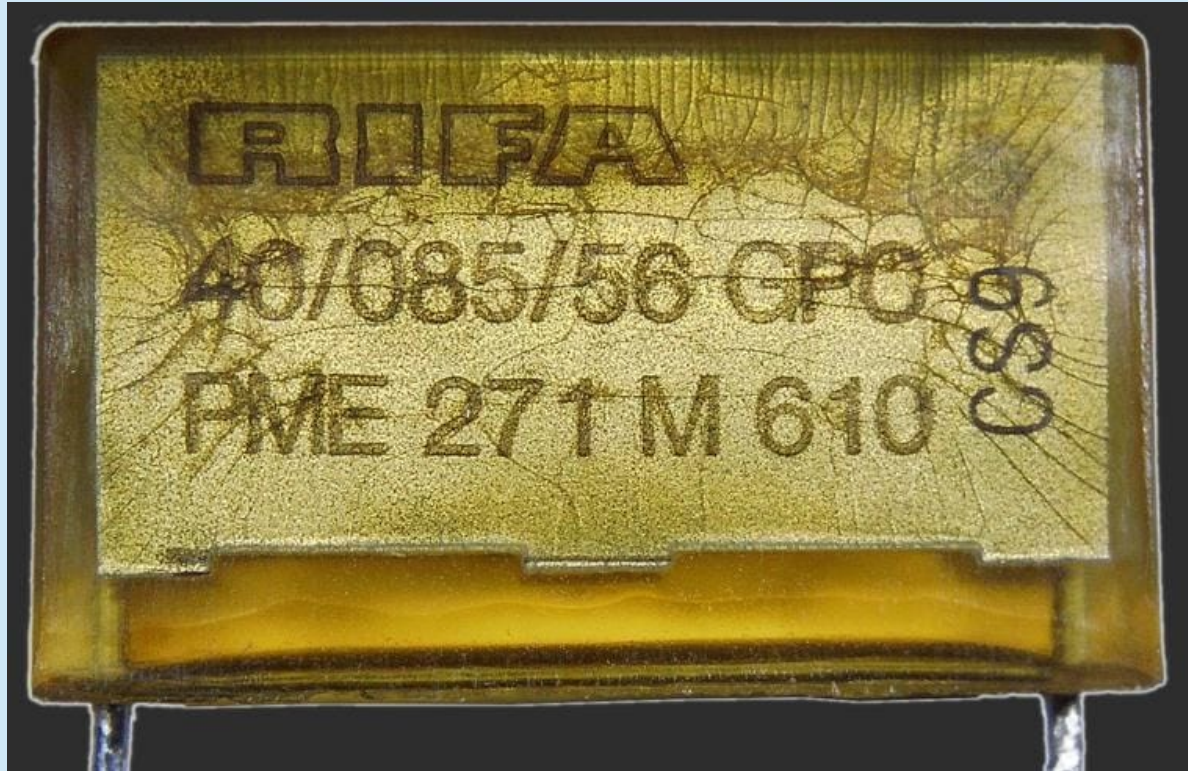
How about protection?

- Most Voltage Regulators will have:
- Over Voltage shutdown
- Brown Out Protection
- Thermal Protection
- Current Overload Shutdown
- Some have feedback watchdogs!

Rifa Madness



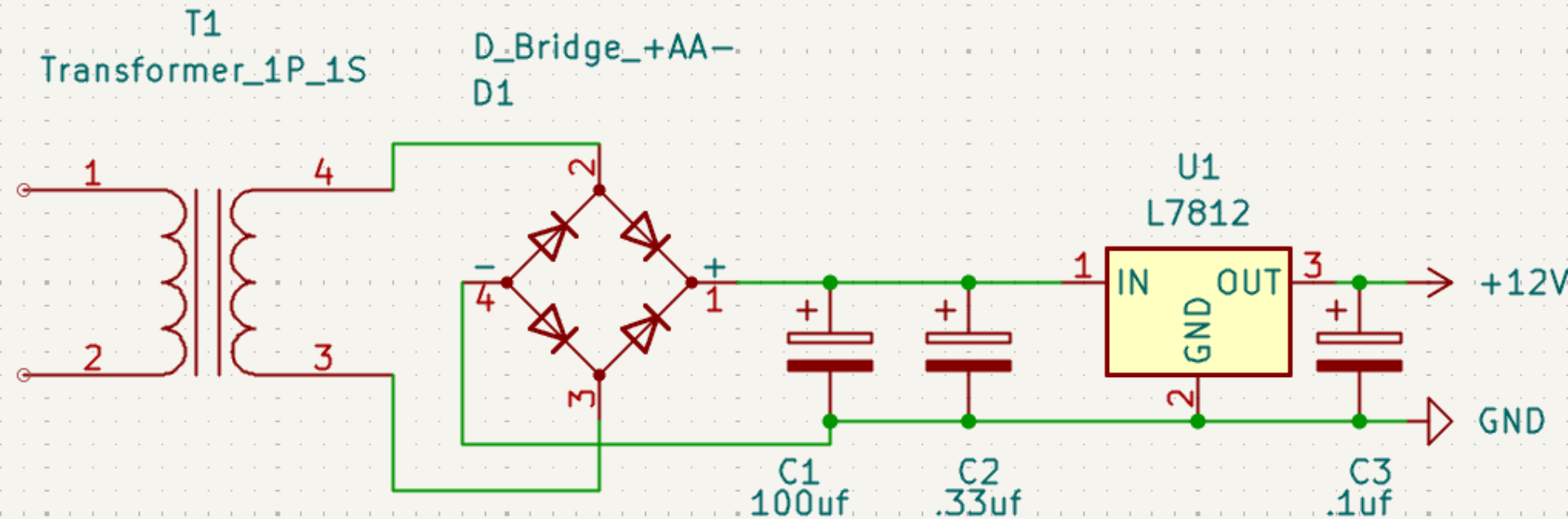
RIFA

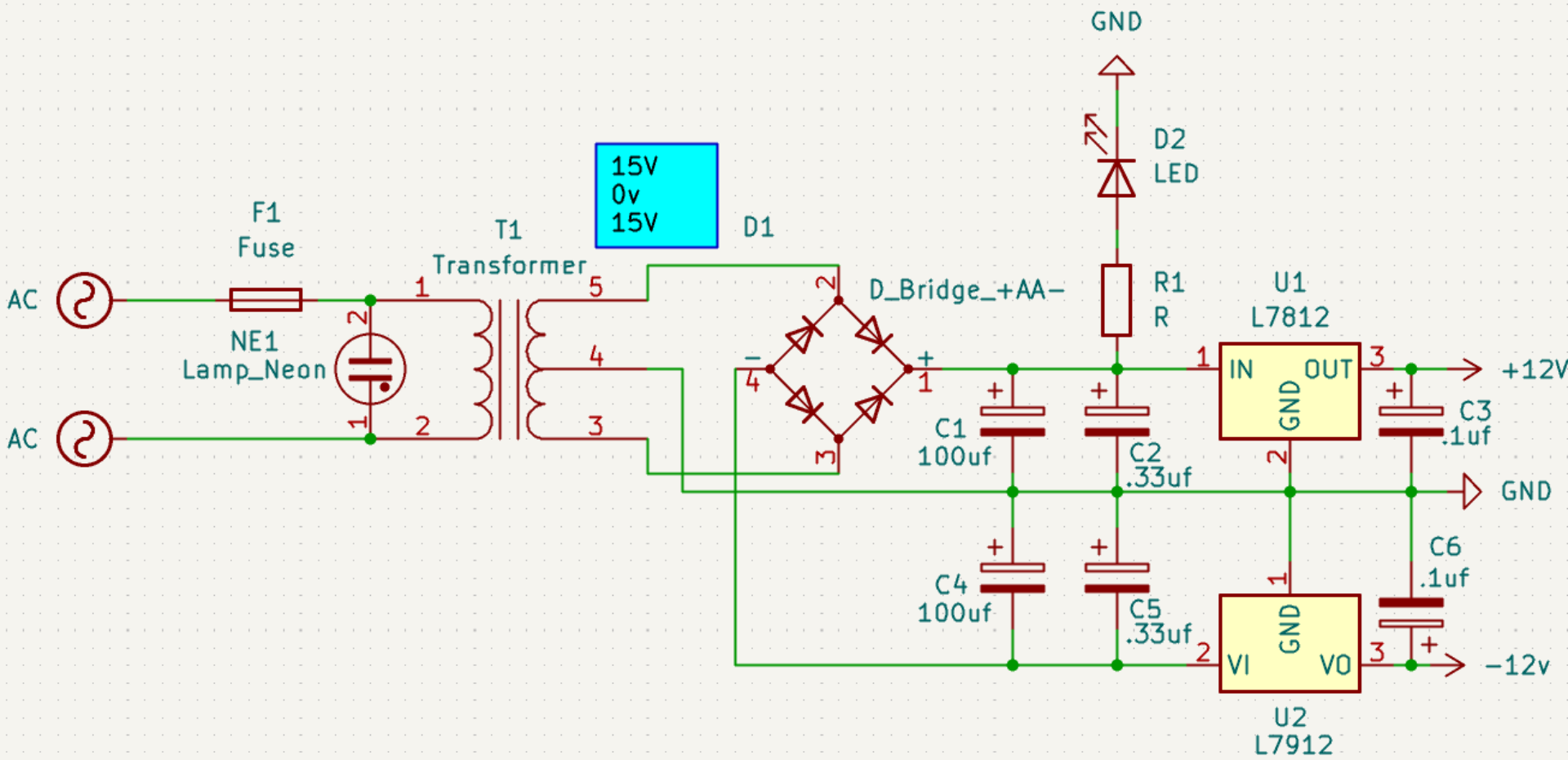


Class X and Y Capacitors

- Class X (X1 X2 X3) Line to Line
- Class Y (Y1 Y2 Y3) Line to Earth
- Class X can fail SHORT!
- Class Y are designed to Fail OPEN
- Required for consumer grade electronics to meet RFI or EMC regulations.
- A hobbyist can choose to ignore at your peril.
- Class 2 is desired over the others

The simple 12v 1A supply





Mains Earth Referencing

- What the hell is that I hear you say

Mains Earth Referencing

- Earth leads on your device may be connected to NEUTRAL
- Mains earth referenced designs can blow your oscilloscope
- Your supply is no longer “Floating”
- Be careful, I speak from experience.