

A Common UA723 PSU

By G8MNY

(New Apr 09)

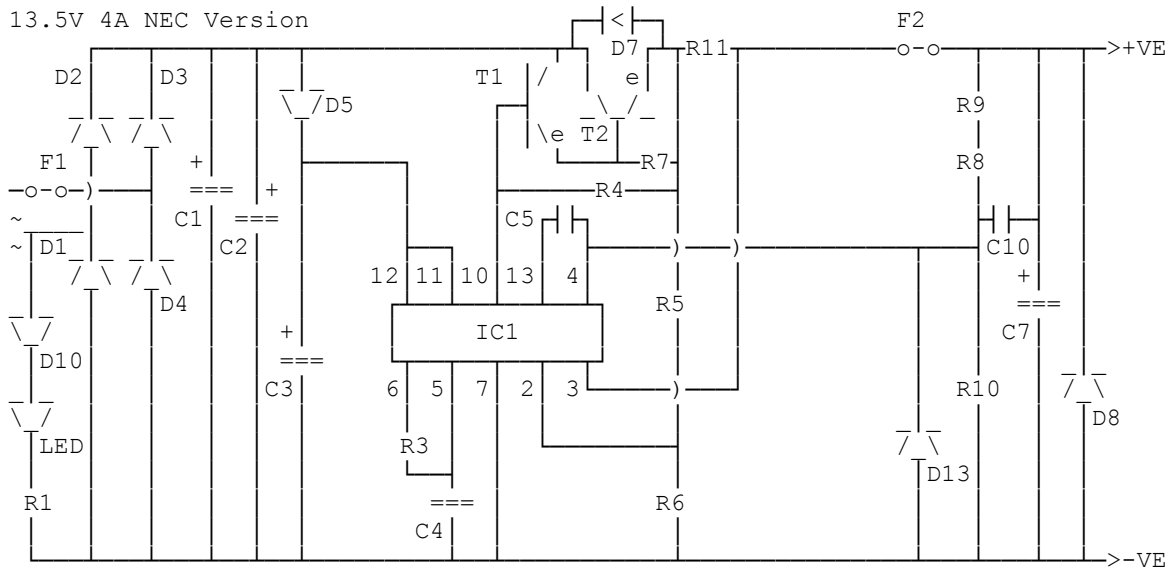
(8 Bit ASCII Graphics use code page 437 or 850)

This is a common design used by several makers both 13V & 27V models etc.

AC

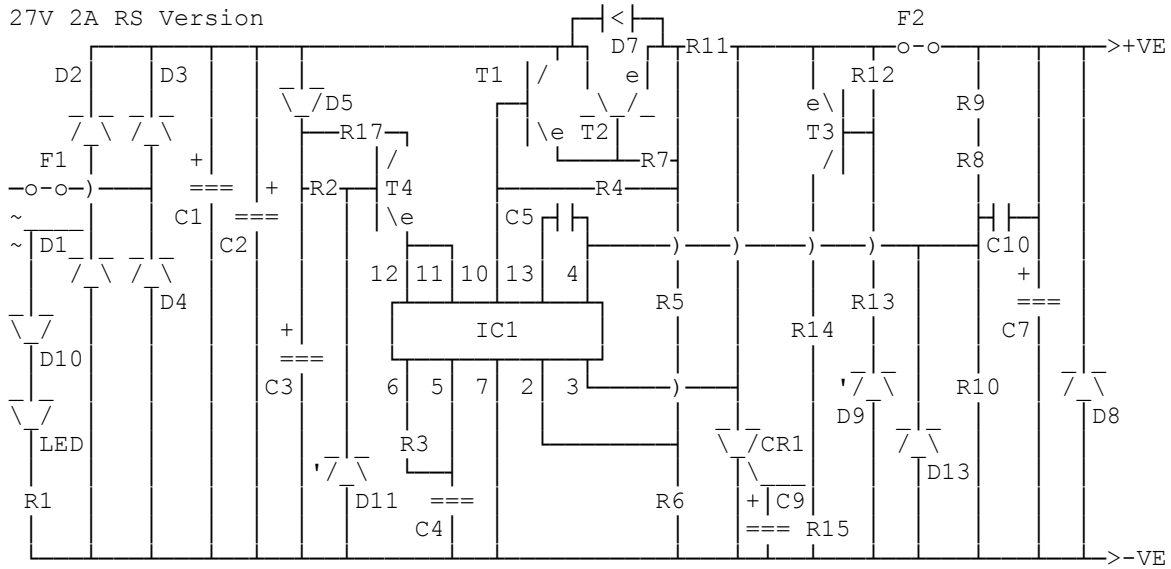
The mains is wired straight to the conventional transformer either 17V @ 6A or 30V 3A, for these 2 types.

13.5V 4A NEC Version



No	Resistor	Capacitor	Diode	Transistor	Fuse	ICs
1	1k	2200uF 40V	8A	TIP31	6A	uA723
2		2200uF 40V	8A	2N3055	6A	
3	4k7	100uF 40V	8A			
4	1k	0.1uF 16V	8A			
5	680	1nF	1N4001			
6	8k2					
7	100		1N4001			
8	33		8A			
9	4k7 Preset					
10	6k8		1N4001			
11	0.33					
13			1N4147			

27V 2A RS Version



No	Resistor	Capacitor	Diode	Transistor	Fuse	ICs	CR	
1	2k2	1000uF	63V	8A	TIP31	3A	uA723	TAB SCR
2	2k2	1000uF	63V	8A	2N3055	3A		
3	3k9	47uF	63V	8A	PNP			
4	1k	0.1uF	16V	8A	NPN			
5	680	1nF		1N4001				
6	15k							
7	100	47uF	40V					
8	6k2			8A				
9	4k7 Preset	47uF	30V Zener					
10	3k3		1N4001					
11	0.68		36V Zener					
12	1k							
13	1k		1N4147					
14	1k							
15	1k							
17	100							

HOW THEY WORKS

The 4 rectifiers D1-4 charge up C1/2. D5 puts voltage onto the IC (via 36V reg D11/T4 on 27V model). The attenuated R8/R9/R10 output voltage on pin 4 is compared to the internal 7V reference pin 6, fed back into pin 5, & drive on pin 10 turns on T1 & heatsinked T2. Output current is the voltage across R11 & the control loop goes into current limit mode when this is greater than the DC set up across R5 by R6.

Diode D7 ensures the output voltage is not higher than the input, Diode D8 protects the circuit from reverse current.

On the higher voltage model also has crowbar where if a 30V is exceeded T3 is turned on firing the SCR to short the PSU.

PSU FAILINGS

There is a high overhead needed in this design of about 3V! This is partly overcome by making the 2nd power rail D5/C3 for the IC that holds up from the peaks when the main high current one badly sags dew to small smoothing Cs. This results in quite a lot of heat at full output.

The Ua723 is prone to having the current input opamp damaged due to direct connection to the current sample resistor R11. Series R of 1k in pin 3 is recommended if you find this failure when there is no current limit working. Why Don't U send an interesting bul?

73 De John, G8MNY @ GB7CIP