

LIGHTHOUSE ELECTRIC 3 WATT HIGH VOTAGE SMPS PROJECT

SMALL BUDGET POWER SUPPLY FOR PORTABLE APPLICATIONS POWERED BY A WALL WART

PARTS LIST: 3 WATT BUDGET SMPS 190V DC 20mA				
REFERENCE No:	QUANTITY	DESCRIPTION	SUPPLIER	PART NUMBER
R1	1	180K 0.25W 5%	MOUSER	271-180K
R2	1	3K 0.25W 5%	MOUSER	271-3K
R3	1	8.2K 0.25W 5%	MOUSER	271-8.2K
R4	1	22R 0.25W 5%	MOUSER	271-22
R5,R6	2	220K 0.25W 5%	MOUSER	271-220K
R7	1	1.5K 0.25W 5%	MOUSER	271-1.5K
C1	1	1000uF/25V Radial Cap	MOUSER	140-XRL25V1000
C2	1	0.1uF/50V Multilayer Ceramic Cap	MOUSER	21RZ310
C3	1	2200pF/50V Film Cap	MOUSER	140-PF2A222J
C4	1	10uF/250V Radial Cap	MOUSER	140-HTRL-250V10
C5,C6,C7	3	0.22F/250V Film Cap	MOUSER	146-250V.22K
C8	Optional	220uF/16V Radial Cap	MOUSER	140-XRL16V220
T1	1	N-MOSFET IRF644, IRF740	MOUSER	511-IRF644
D1	1	Diode Fast Recovery 1N4936, UF4004	MOUSER	512-1N4936
D2	Optional	Diode 1A 50V any	MOUSER	512-1N4001
D*		INTERNAL MOSFET DIODE	MOUSER	
U1	1	SMPS Control Chip UC3843	MOUSER	511-UC3843BN
U2	Optional	12 Volt 1.5A Voltage Reg. L7812	MOUSER	512-MC7812CT
L1	1	Inductor 470uH 1A DC min.	MOUSER	542-2120-H
LD1	1	Light Emitting Diode, any		

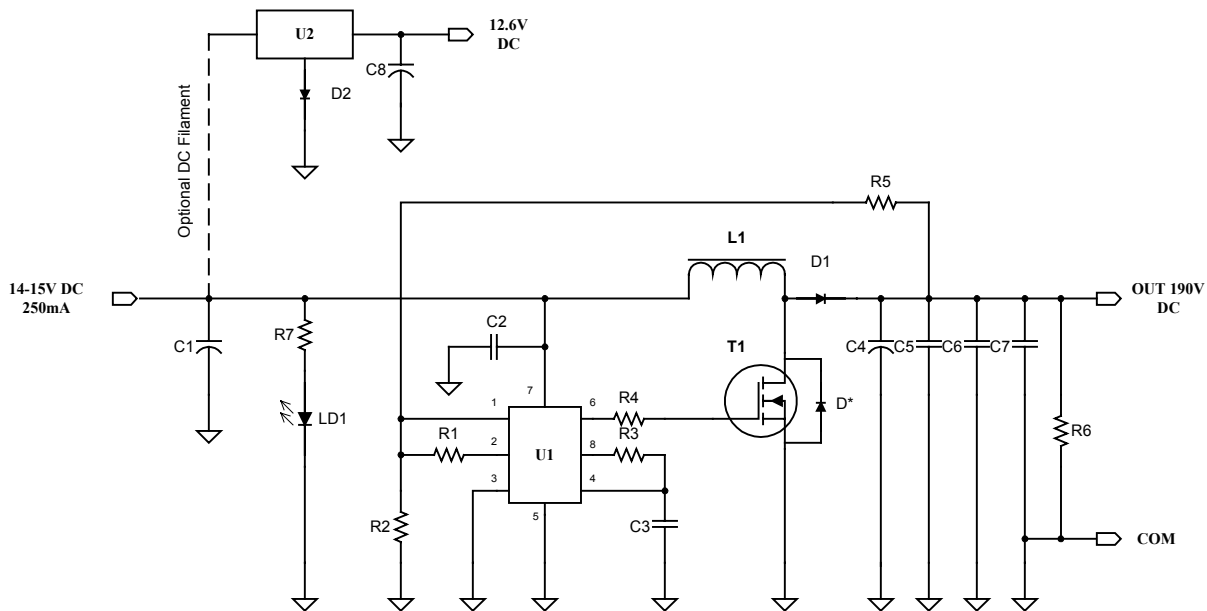


Fig.1 Schematic 3W SMPS

NOTES:

The SMPS will supply 190V DC at 20mA max.

T1 should be mounted on a small heat sink. If the heat sink is grounded, an insulating pad must be also used.

The optional DC filament supply circuit is for tubes that are heated with 12.6V. Miniature triodes like 12AX7, 12AU7, 12AT7, are some of these tubes, among others. If this feature is to be used, U2 must be also mounted on a heat sink. Could be one larger heat sink for both, T1 and U2. Current supply must be increased accordingly. Maximum current draw for U2 is 1A.

Fine plate-voltage adjustment can be made with R2. Increasing the resistance will lower the output voltage. A 5K trim-pot may be used instead of 3K resistor. However, with 200V the limits of this design are reached.

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DISCLAIMER OF LIABILITY:

WARNING! USE AT YOUR OWN RISK. Lighthouse Electric and the author of this project, expressly disclaim liability for injury, death or property damage resulting from information provided. This circuit carries potentially lethal voltages. Do not touch any part of it with bare hands while under power. Filter capacitors can carry high voltage charge long after power was turned off. After disconnecting power, wait until filter capacitors are discharged. Measure voltage with voltmeter to be sure. If you do not know how to handle high voltage devices, **DO NOT BUILD THIS DEVICE.** Get help from an experienced technician.