HOME BREW
NSH26VA
THINGS TO LEARN, PROJECTS TO BUILD, AND GEAR TO USE

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SPECIFICATIONS & FEATURES

- 13V DC output
- 1.8 A Auto limit
- 'BUS' indication
- 'Vin low' indication
- 86dB Ripple rejection
- DC high voltage protection
- 130V- 240V AC input
- 100% RF immune

It is an economical power supply with standard protections meant for QRP or 2M/70cm TXVER users. The heart of this design is based on LM723IC. IC LM723 is very very popular since Y74 till now, 25 Yrs old!!; It is so because the IC is easily configured to different voltage levels and different current limits automatically with lot of features like low temperature drift, high ripple rejection, low stand by current etc.

In this circuit, IC is configured to get 13V output and 1.8A I Limit MAX. Additional features are added like 'BUS' indicator, low Vin indicator and simple high voltage DC output protection etc. All 2m (VHF) TXVER's max working voltage is 15 V-16V; and the ideal voltage is 13.8V. The MAX DC current consumption for 5 WRF output is 1.4A i.e., for 5WRF output, DC power conception in 13.8V x 1.4A= 19W. This circuit gives 13V and MAX current upto 1.8A. Many HAMS are using general eleminator or regulated power supply without high voltage DC output protection; They are producing 50HZ QRM while transmitting and some regulated PSU without high voltage DC output protection. Sometimes these regulated PSUs give very high DC voltage output (Equal to Vin) and TXVER becomes QRT. What's wrong? If you are using external regulate dPSU, due to high temperature, appropriate components, low AC input span, strong RF field etc.will make high DC output voltage or 50HZ QRM. In this design Z2 is used for high voltage protection. When the output DC voltage is more than 15V or above F2,it will blow off. The current limit is set by resistor Rsc. I limit is calculated by this formula ILmt=0.6/Rsc. The 'BUS' indicator LED1 (green) will glow normally. It is monitoring the proper output from the IC if 'bus' LD1 goes off. i.e., output voltage from IC is below 6V or nil. So the glow of LED1 is good sign of the proper condition of IC. LED2 is normal Vin indicator. If the Vin voltage is 15V or low. Then LED2 (red) turns off. In this condition, while TXVER on TX mode will give 50HZ QRM. Use 0-20V 2A (20V-40V A) transformer. Never change the specified component values. Use large heatsink for TIP 33; large heatsink allows heavy duty cycle. D5, D6 and C2 provides a separation (decoupling) from Vin to IC supply.

Capacitor C3 gives high ripple rejection upto 86 dB; using 20V/2A-240V input transformer, the AC voltage span is increased like 130V to 240V. PCB with Component Layout is available with the author.

SEMI CONDUCTORS	RESISTORS
IC-LM723	Rsc-0.33 2W 5%
T1-TIP33	R1- 1K5 1/4W 5%
D1 to D4- 1N5408	R2- 1K2 1/4W 5%
D5, D6- 1N4007	R3- 3K3 1% MFR
Z1 - 15V-400mW	R4- 5K6 1% MFR
Z2 - 1N5352B	R5- 4K7 1% MFR
LED1 - Green 5mm	
LED2 - Red 5mm	
CAPACITORS	**MISCELLANEOUS**
C1 - 3300uF50V	TX 0- 20V 2A - 240VPri
C2 - 100uF50V	Heatsink - SK104
C3 - 10uF25V	50mm
C4 - 1Kp	F1 - 2A QB
C5 - 100uF40V	PCB, Cabinet,
C6 - 0.1uF100V