DIGITAL FREQUENCY METER

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Here is a circuit of low cost digital frequency meter. It can measure frequency ranging from 1HZ to 1MHZ. The circuit is shown in Figure 1. The IC6 schmitt trigger regulates the input signal and changes it to reasonable level suitable for the IC7-8-9. With the tenth pulse at the entry of IC7 pin no. 1, a pulse "carry" is produced at pin no. 5 which is input to the pin no. 1 of the IC8. The same moment the IC7 causes the depiction in the DIS1, show "0", the IC8 causes the DIS2, to show "1". When the tenth pulse appears at the input of IC8, the DIS2 show "0" and the DIS3 show "1", (with total depiction 100, having the reading from right to left. The Cout from IC9 pin no. 5, can be used in order to turn on the decimal point of the DIS1, in order to show a situation when the input exceeds the limit of measurement. The timer begins with the one of two timers (IC3). Switch SW1 select the interruption time in 1sec or in 1ms. At the duration of this interruption, second timer (IC4) produces a interruption of depiction 2 or 3sec., at the duration which counter cut off by the entry and the displays remain OFF. In the end of depiction, a pulse RESET, begins the interruption of time/depiction. The critical point is the position of T1 and IC6, which should be placed as near as possible to the input jack, to reject parasitic signals of high frequency. For the adjustment, we

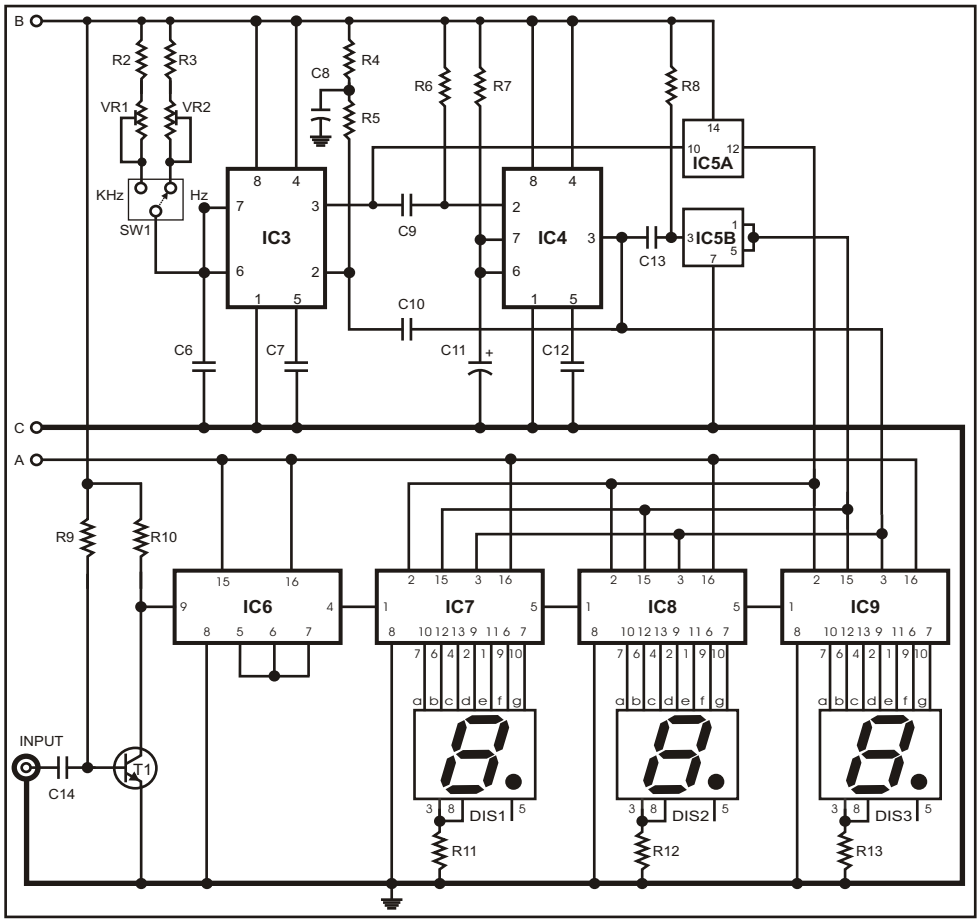

Fig 1: Circuit diagram of Digital Frequency Meter

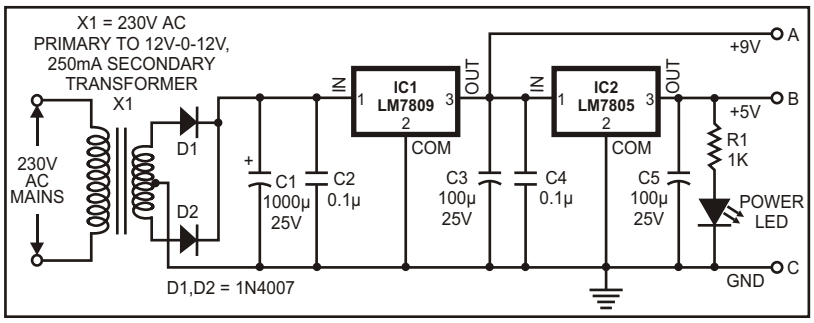

Fig 2: Circuit diagram of Power Supply.

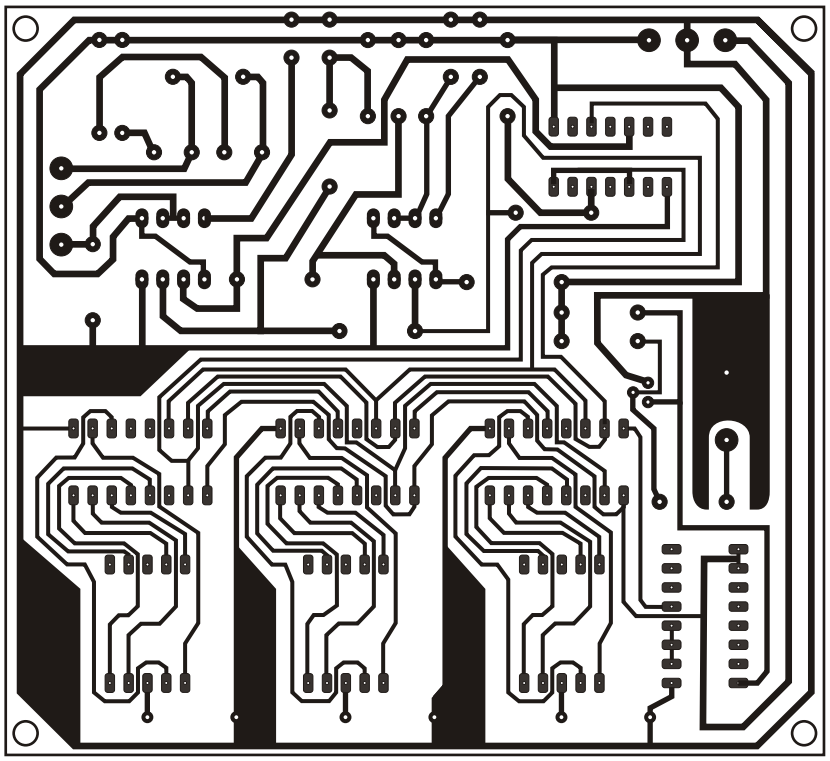

Fig. 3: Actual - size, solder-side PCB layout.

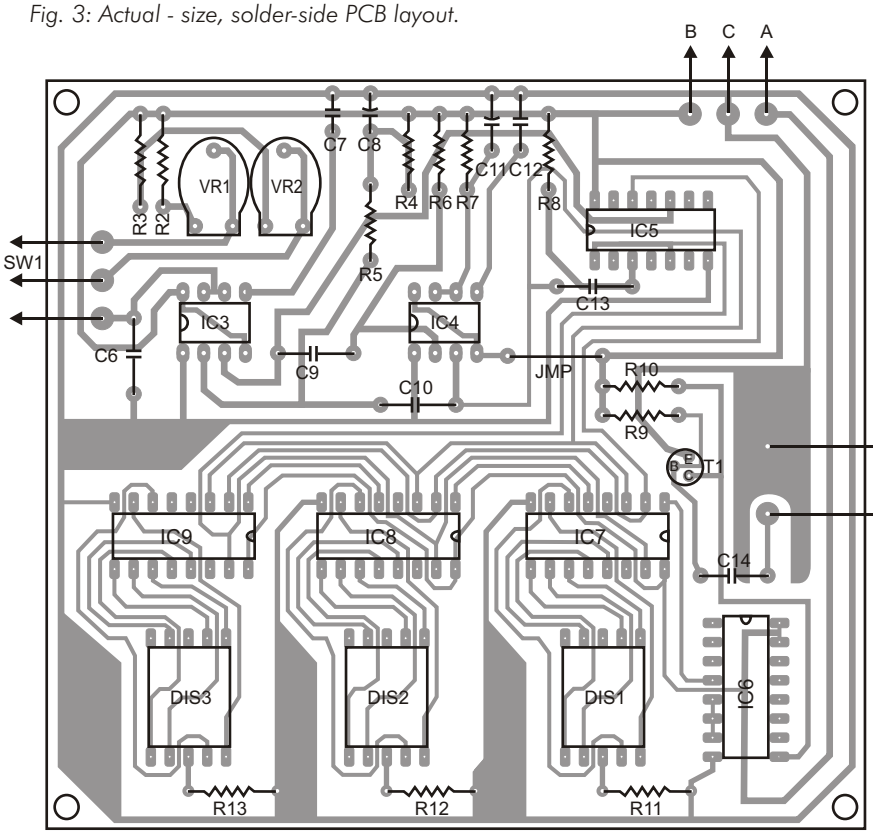

Fig. 4: Component layout for the PCB.

SEMICONDUCTORS

IC1	7809 9V Regular
IC2	7805 5V Regular
IC3-IC4	NE555 Timer
IC5	CD4007 Dual complementary pair plus inverter
IC6	4583 Schmitt Trigger
IC7-IC9	CD4026 Decade counter / 7-segment decoder
T1	2N930 NPN Transistor
D1-D2	1N4007
LED	Red LED

RESISTORS

R1	1k
R2	470k
R3, R11-R13	470
R4-R6	10k
R7	3.3M
R8, R10	100k
R9	8.2M
VR1	1M
VR2	1k

CAPACITORS

C1	1000µF, 25V electrolytic
C2,C4	0.1µF ceramic disc
C3, C5	100µF, 25V electrolytic
C6, C14	1µF, 63V Mylar
C7,C12	0.01µF ceramic disc
C8	10µF, 16V electrolytic
C9	10nF, 63V Mylar
C10,C13	1nF, 63V Mylar
C11	1µF, 16V electrolytic

MISCELLANEOUS

X1 230V AC Primary to 12-0-12V, 250mA Secondary Transformer

SW1 1pole two way switch

can use a frequency meter and a signal generator. Put switch SW1 in "Hz" position, Input a low frequency and adjust the VR2, so that the reading match with the standard frequency meter. Then put the switch SW1 in KHz position, input higher frequency and adjust the VR1. The circuit of the power supply for the circuit is shown in Figure 2.

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