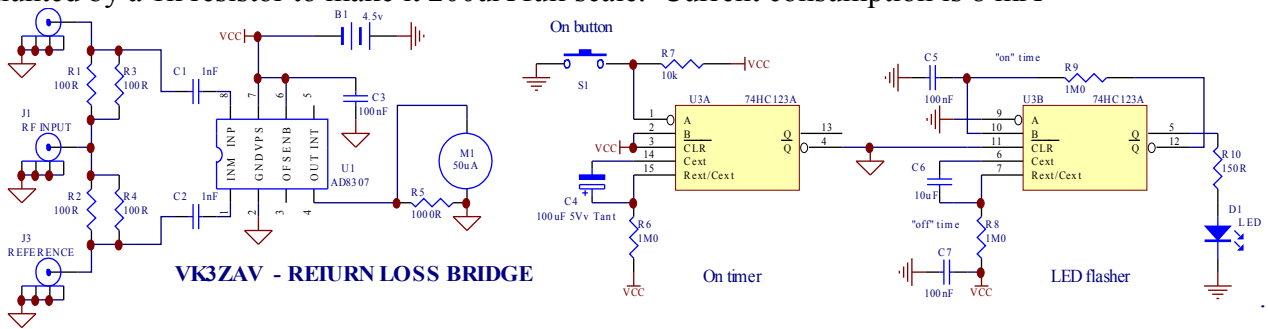


A Return Loss Bridge, that also works as a milli-voltmeter.

The bridge detector is an AD8307 log detector chip made by Analog Devices. The data sheets state that 3 volts is sufficient, but the one I have needs 4.5 volts to read correctly. The 50uA meter is shunted by a 1k resistor to make it 200uA full scale. Current consumption is 8 mA

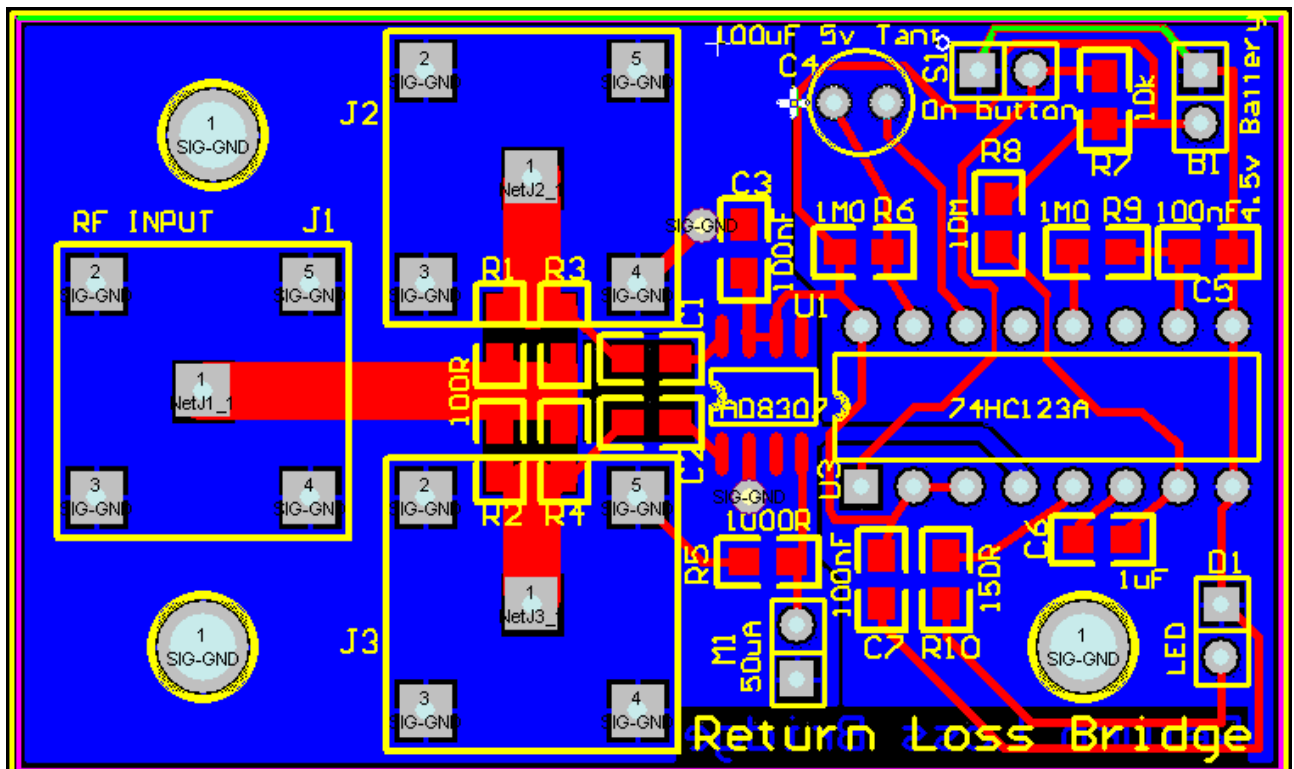


I find that flat batteries are a constant nuisance, because its too easy to leave it switched on, so I've included a timer that gives about 10 minutes operation after pressing the start button.

Full scale is +10dbm, and minimum reading is -80dbm. As the monostable (timer) chip 74HC123 is a dual unit, the second half is used to flash an LED to show its on. The timer, right hand half of the circuit, can be omitted to save about \$2. I have a 61 x 37 mm sample board from Olimex, cost about \$10.

Return loss relates to SWR by the following :

SWR	Return Loss
1.01	46
1.1	26.5db
1.2	21
1.3	18
1.5	14
2.0	9.5



To use as a milli-voltmeter, short-circuit J1 and feed the signal into J2 or J3. The input is terminated in 50 Ω .

To measure SWR by Return loss, a signal source of between -60dbm and +10 dbm is needed, you can make your own, say using a crystal test oscillator, or use a signal generator. Feed the signal into the centre BNC jack J1, and then plug a termination into one of J2 & J3 and the unknown into the other. To check bridge balance, plug in two terminations. You can use 50 or 75 ohms.

Frequencies up to 500Mhz are ok with the AD8307, but an alternate chip would work to 2,500Mhz.

To use only as a mV meter, then leave off J1, J3, R2, R4, and bridge J1 & J3.

The advantage of this is you can check small receiver modules, amplifiers, mixers, filters, and aerials of all sorts. The disadvantage is you can't feed a transmitter into it.

Some idea of the cost \$AUS, PCB \$10, AD8307 \$12, BNC connectors \$3ea, 74HC123 \$1.5, resistors & capacitors \$0.10 ea, also meter, battery carrier, case, batteries, push button.