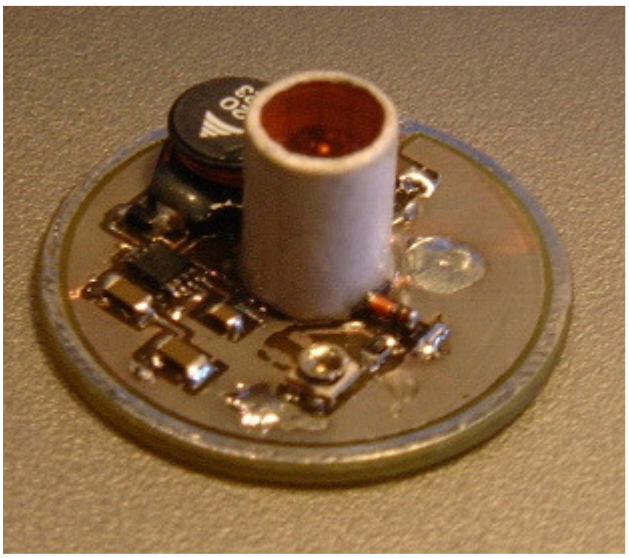
Home

The SEI LED replacement light source.



Yer bog standard SEI LED

vanity version with extra LED

I had a think.....
One white led filtered to about 3000K and for the deluxe version an extra (adjustable) led just to illuminate the photocell for the vain who want a working meter, there is only one of these in the whole world and it is owned by Roger Hicks.

For the filtering Lee filters had the solution and gave me a swatch of some 250 lighting filters, one turned out to be perfect. The LED comes from Marl, a bit pricey at 2UKP each but guaranteed colour temp. and quite bright, so bright the datasheet warns of eye damage!, distributed by Farnell.

Temperature compensation
The LED has a negative (i.e. dimmer when hotter) temperature coefficient, so when it's sunny and hot you would overexpose (perfect!) a bit, the silicon diode (circuit D2) also has a negative coefficient and is put in series with current detecting resistor chain (circuit R1, 2 and P1) so the current rises with temperature. Tests using my freezer and oven at about -10C, 20C and +40C (that was quite hot to hold) revealed no measurable change at all. Certainly within the useable accuracy of the SEI (about 1/4 of a division of error when setting the match) thats about 1/12th stop (6%).
Interestingly my L-308 moved from f8.0 at 20C to f8.2 at -10C.

The electronics.....
A MAX1674 converts the 1.5V cell to 4-5V for the LED, the current through the LED controls the output and is temperature compensated by the silicon diode.

The MAX1674 circuit takes 40mA, this will give 450 hours using a 'D' cell. The fun bit is soldering the MAX1674, it's in a uMAX pack, the legs are on a 20thou (mils for the Americans, 0.5mm for the Europeans) pitch, thats a 10thou gap. I have three 1674s as samples from Maxim, they have survived de-re-soldering twice so far. The choke is a bit big for the current required but the 1674 has a 1A limit internaly, I will use the 1675 with a 500mA limit and a smaller choke for the next lot.
Assuming anybody wants one (or more).

To buy one of these hand built pieces of engineering joy, fully calibrated, mail me
huw@huws.homelinux.org

Circuit diagram for MKII