

### **Description:**

Noise source is the reverse biased BE diode of NPN transistor VT1. The following operational amplifier DA1B and DA1C amplifies the noise to 10Vpp. DA1D is the buffer for the white noise output. The high pass filter C17/R23 and R24/R25 in the feedback loop of DA1A provides a bass boost for the fixed colored noise output. DA2A is configured as a 12dB low pass. So you get a low frequency random voltage. The changing speed is set with R2A/R2B which sets the corner frequency of the low pass filter. DA2B / VD1 makes the fluctuation visible. R31 adjust the brightness of VD1. In the feedback loop of DA2C is an adjustable filter combination which gives you a wide range of adjustable colored noise with R1 and R3. The output is buffered with DA2D.

### **Calibration**

If the transistor is not "noisy" enough you can try changing R5. Useful are values between 30k and 150k.

Adjust R32 for your wanted white noise output level.

Adjust R17 so that the output level of the fixed colored noise output equals the white noise output.

Adjust R31 for best visibility of the fluctuation of random voltage.

You may want to change the C12 (8.2nF) to 1nF to obtain a more energetic blue noise amplitude.

### **Special parts**

None. But it might be useful to select the noisiest transistor you have at hand.