

Diode calibration. Figure 1 shows a plot of the diode voltage versus temperature for three diodes with a wide variation in their room temperature voltages. The difference in voltage between these units was discovered to be almost linear in temperature. (See figure 2.) This allows for a single point calibration of the diodes. The room temperature voltage of 'your' diode is compared to the standard diode, (diode C in the figures). The voltage at any other temperature is then calculated from the known voltage of the standard diode at that temperature and recorded in the table below. A linear extrapolation between the recorded temperatures will give the voltage at any temperature. For the best accuracy you should also record the DC offset of the monitor output (typically +/-1 mV)

NF212

Temperature (K)	Voltage (mV)
77.320	994.502
90.000	967.129
100.000	944.584
110.000	921.423
120.000	897.745
130.000	873.557
140.000	849.015
150.000	824.125
160.000	798.863
170.000	773.396
180.000	747.678
190.000	721.737
200.000	695.579
210.000	669.228
220.000	642.685
230.000	615.996
240.000	589.165
250.000	562.106
260.000	534.935
270.000	507.602
280.000	480.182
290.000	452.570
300.000	424.788
310.000	396.979
320.000	369.075
330.000	340.980
340.000	312.907
350.000	284.582
360.000	256.242
370.000	227.826
380.000	199.349
390.000	170.882
400.000	142.554

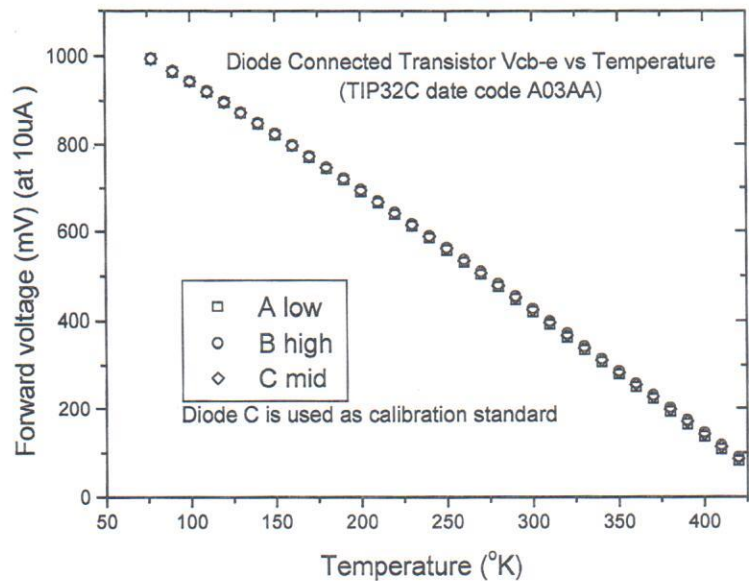


Figure 1. Diode voltage vs. Temperature

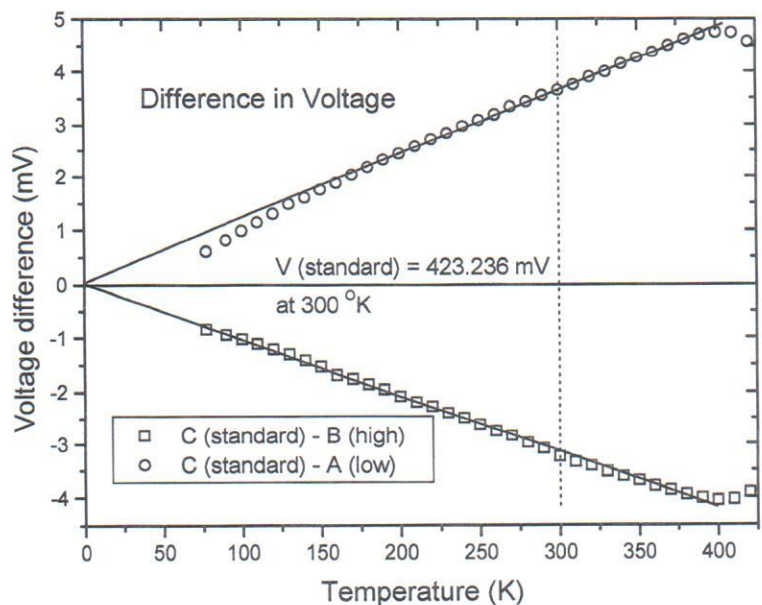
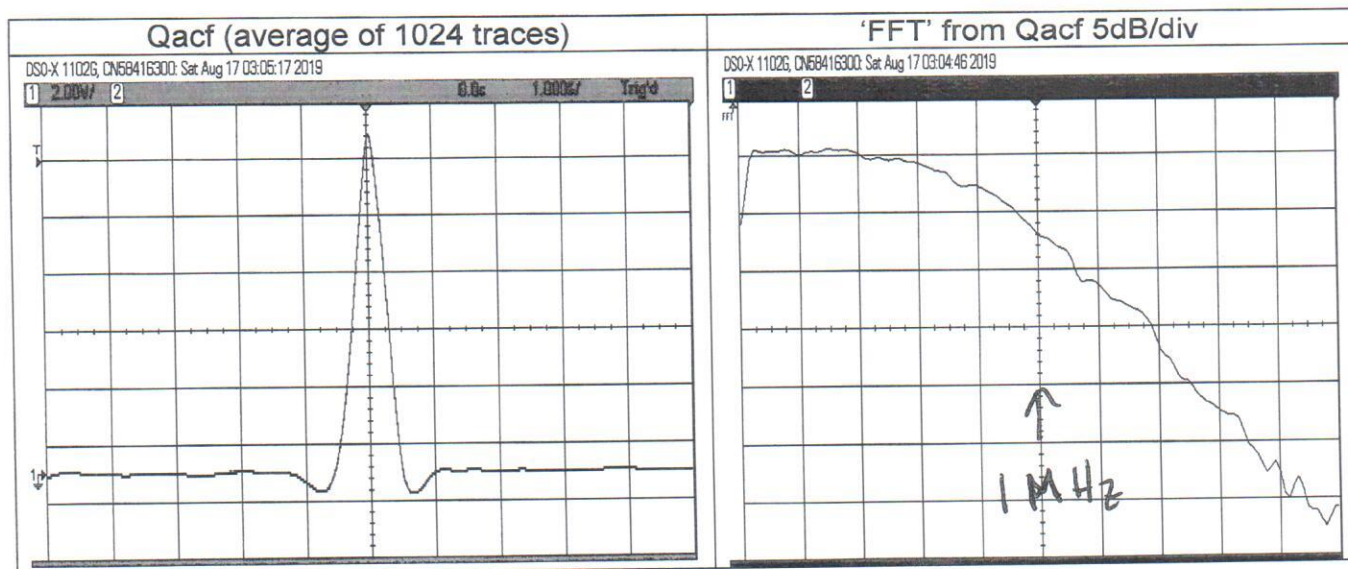
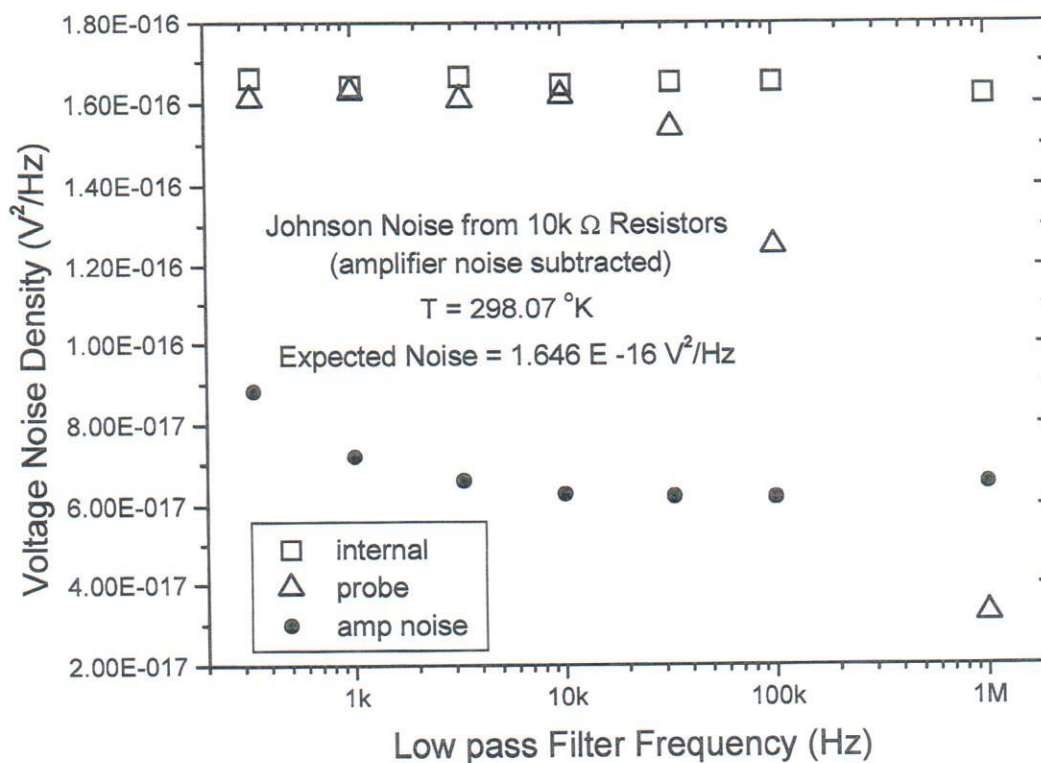


Figure 2. Difference in diode voltage

August 19, 2019



Full band width Q acf and FFT from 10k ohm internal resistor.
Low level gain = 600, High level gain = 300.

High frequency filter values				Low frequency filter values			
Nominal freq. (Hz)	Measured freq. (Hz)	Q	damping factor $\gamma=1/2Q$	Nominal freq. (Hz)	Measured freq. (Hz)	Q	damping factor $\gamma=1/2Q$
330	333.9	0.706	0.708	10	10.04	0.707	0.707
1 k	1.002k	0.706	0.708	30	30.12	0.707	0.707
3.3 k	3.338k	0.707	0.707	100	100.4	0.707	0.707
10 k	10.01k	0.7088	0.7055	300	301.2	0.707	0.707
33 k	33.29k	0.7158	0.6980	1k	1.004k	0.707	0.707
100 k	99.21k	0.7386	0.6757	3k	3.012k	0.708	0.706

High level electronics filter measurements

Diode voltage T =298.03K

Current	Voltage (mV)
10nA	250.06
100nA	310.43
1uA	370.12
10uA	429.34
100uA	488.68
1mA	548.22
Offset	-0.92

600

Temperature sensing diode installed in probe.