LOGARITHMIC AMPLIFIER THESIS

A CMOS Temperature Compensated. Log-Amp Detector. Master of Science Thesis. For the degree of Master of Science in Microelectronics at Delft. University of.

When this signal is applied to a log amp, the output is a pulse train which can be applied to a comparator to give a digital output. In this configuration a transistor is placed in the feedback path of an opamp wired in inverting mode. So, the voltage at its inverting input terminal will be zero volts. This is also achieved indirectly by using a matching network at the input. A device that calculates the instantaneous log of the input signal is quite different, especially for bipolar signals. Yes, that is correct. Now, as the signal progresses down the gain chain, it will at some stage get so big that it will begin to clip the term limit is also used as shown. Circuit diagram of an Opamp-transistor log amplifier is shown below. This is usually caused by the input picking up and measuring an external noise. Such devices, which calculate the instantaneous log of the input signal are called baseband logamps the term "true logamp" is also used. That means zero volts is applied at the non-inverting input terminal of the op-amp. As it stands in the figure, the unfiltered output of the summer is about 4 V peak from 3 stages that are limiting and a fourth that is just about to limit. Anti-Logarithmic Amplifier An anti-logarithmic amplifier, or an anti-log amplifier, is an electronic circuit that produces an output that is proportional to the anti-logarithm of the applied input. Because of the voltage lost from this stage, the summed output will drop to approximately 3 V. Opamp-diode log amplifier. However the RC time constant of the low pass filter determines the maximum rise time of the output. Think about what would happen when an ac input signal crosses zero and goes negative. In general, the principal application of log amps is to measure signal strength, as opposed to detecting signal content. Indeed, it is the log amp's ability to convert a signal which varies over a large dynamic range 10 mV to 1 V in this case into one that varies over a much smaller range 1 V to 3 V that makes the use of a log amp so appealing in this application. The core of the device is a cascaded chain of amplifiers. I come across this quite a bit. If the input signal is reduced by a factor of 10, the output of one stage at the input end of the chain will become negligible, and there will be one less stage in limiting. This happens quite a lot in laboratory environments, where multiple signal sources may be present. The log amp does not know the difference between the wanted signal and the noise.