Expander Gate

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This circuit is a simple expander gate and can be used to reduce the surface noise of records and tapes. It is based around an NE571 compander chip, used as an expander below the threshold set by the red LED. The LM381 amplifies the input signal by 40 dB; this is rectified in the 571 by a current mirror circuit and is smoothed by C4. When the voltage reaches the forward voltage of LED1 it draws current and hence limits the current to the gain cell. This causes linear operation above the threshold.

For stereo operation the LEDs should be matched for forward voltage. The circuit as shown is designed for 15 V; if other supplies are to be used R2 will have to be changed. Better DC biasing around the op-amp in the 571 will improve the DC offset.