23 ideal diode

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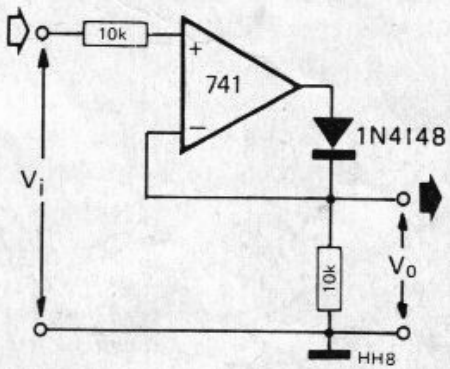

Every semiconductor diode has a threshold-voltage, below which there is no useful conduction, so that it cannot rectify small signals. This threshold voltage can however be made very small, with the aid of an op-amp.
The op-amp input signal is the difference between the available input voltage (V_i) and the output voltage (V_o). The diode will conduct whenever this differential voltage, multiplied by the amplifier's open-loop gain, more than equals the diode threshold voltage. The effect at the input of the circuit is a reduction in the apparent diode threshold voltage by a factor equal to the open loop gain of the op-amp.
In practice this apparent threshold will be far smaller than the offset voltage of the op-amp, so that it is this offset voltage that determines the apparent threshold. It will usually be a few millivolts. *(Lit. Sescosem application note)*