

The low-pass filtering characteristics of a common-emitter amplifier are demonstrated. As expected, the gain drops as the operating frequency is increased. Thus, a cutoff frequency f_c may be considered. The cutoff frequency is determined to be 150kHz. When applying the square wave input, the output waveforms differ depending on the duty cycle. At a 20% duty cycle, the output waveform slowly saturates to a maximum voltage until the input waveform experiences a rising edge. At this point, the output reverts back to ground. This process repeats itself at the input's falling edge. At a 50% duty cycle, the input is low for too short of a time period to experience this voltage saturation. Thus, the output waveform is merely a small, short pulse at the rising edge of the input.