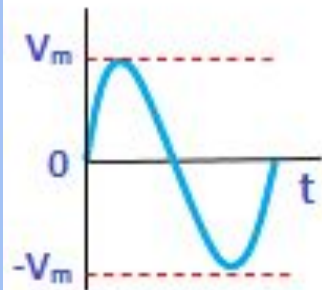


# **Negative Clamper**

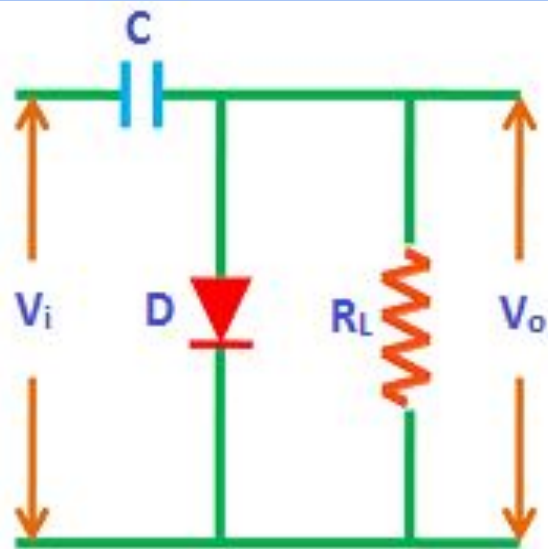
**Elementrix Classes**

# Negative Clamper

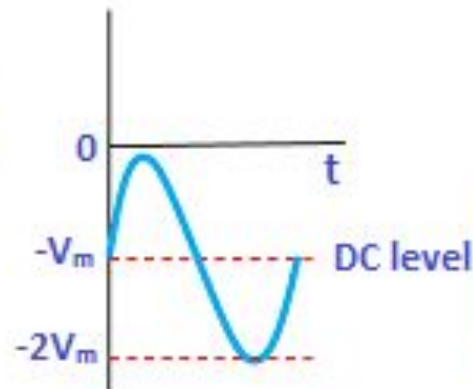
- ❑ A negative clamper is an electronic circuit that shifts the entire AC waveform of an input signal in the negative direction by adding a fixed negative DC level. The purpose of a negative clamper is to lower the baseline of the signal, ensuring that it oscillates around the newly established negative DC level.



Input waveform



Negative clamper



Output waveform



## ❖ **During positive half cycle:**

During the positive half cycle of the input AC signal, the diode is forward biased and hence no signal appears at the output. In forward biased condition, the diode allows electric current through it. This current will flow to the capacitor and charges it to the peak value of input voltage in inverse polarity  $-V_m$ . As input current or voltage decreases after attaining its maximum value  $V_m$ , the capacitor holds the charge until the diode remains forward biased.

## ❖ **During negative half cycle:**

During the negative half cycle of the input AC signal, the diode is reverse biased and hence the signal appears at the output. In reverse biased condition, the diode does not allow electric current through it. So the input current directly flows towards the output.

When the negative half cycle begins, the diode is in the non-conducting state and the charge stored in the capacitor is discharged (released). Therefore, the voltage appeared at the output is equal to the sum of the voltage stored in the capacitor ( $-V_m$ ) and the input voltage ( $-V_m$ ) {i.e.  $V_o = -V_m - V_m = -2V_m$ } which have the same polarity with each other. As a result, the signal shifted downwards.

पढ़िए और पढ़ाइये

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