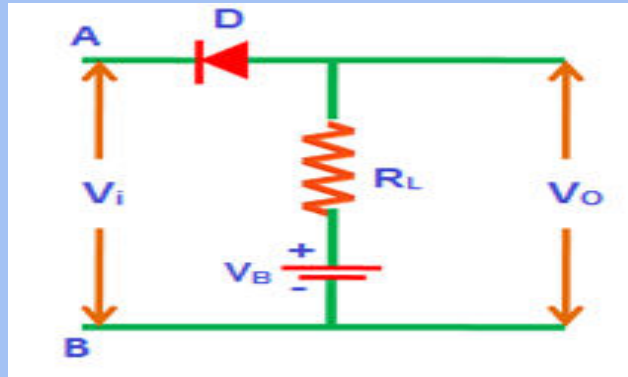


# Series Positive Clipper with Positive Bias

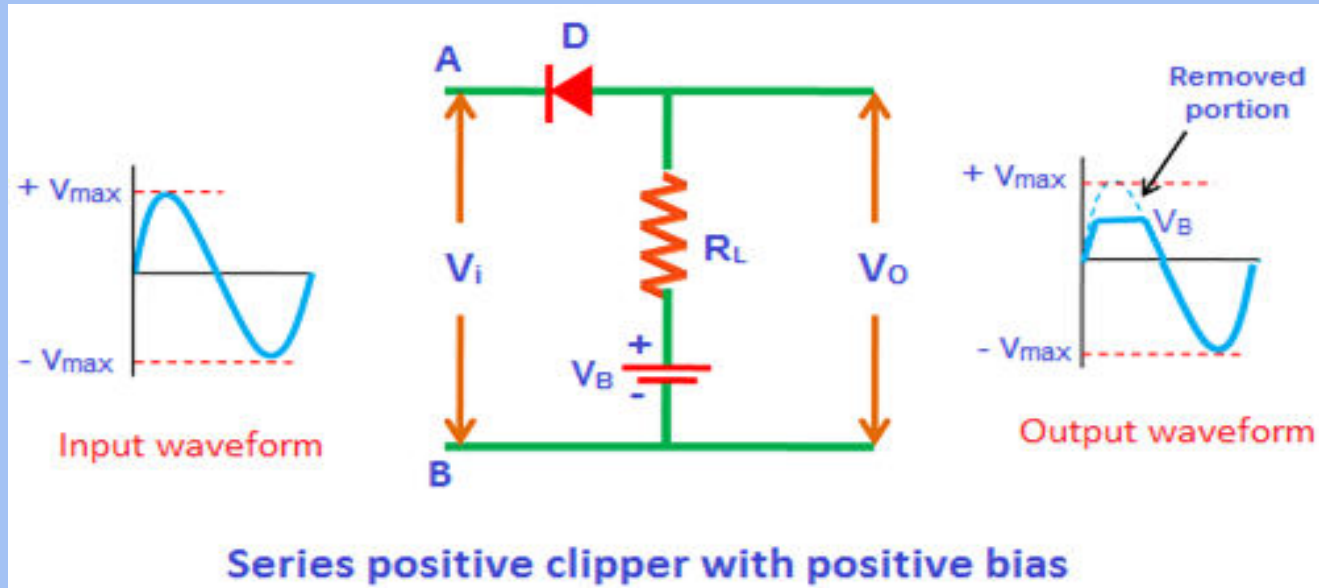
Elementrix Classes

# Series Positive Clipper with Positive Bias

- ❑ Sometimes it is desired to remove a small portion of positive or negative half cycles. In such cases, the biased clippers are used.
- ❑ The construction of the series positive clipper with bias is almost similar to the series positive clipper. The only difference is an extra element called battery is used in series positive clipper with bias.



❖ During positive half cycle:

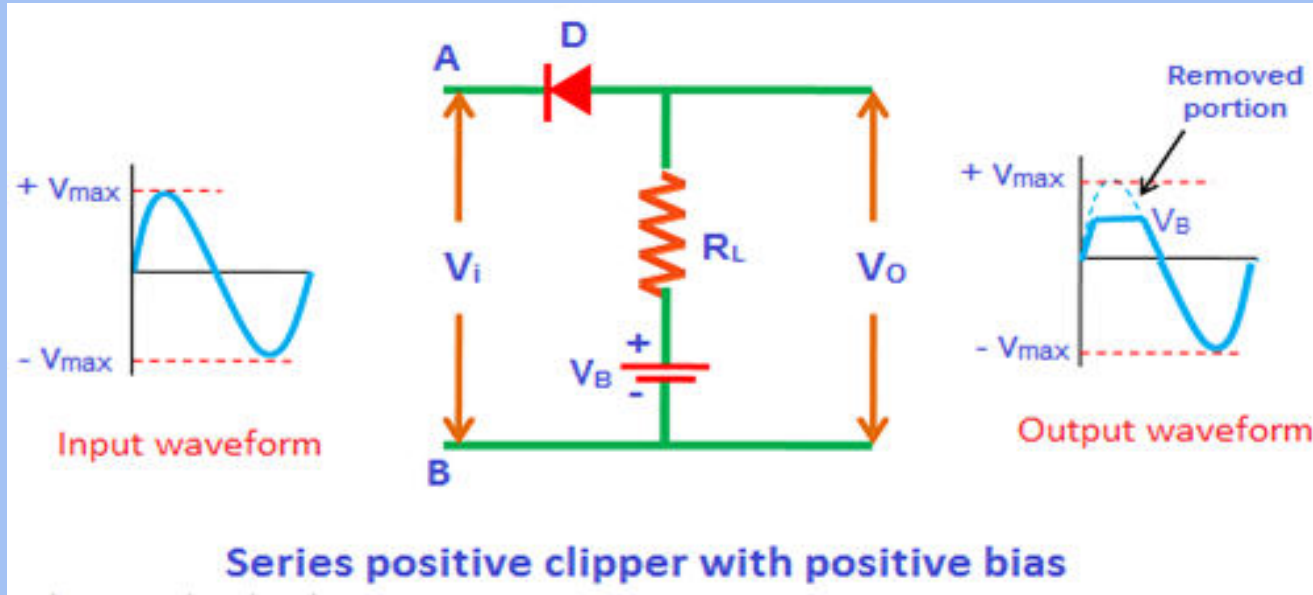


- During the positive half cycle, terminal A is positive and terminal B is negative. That means the positive terminal is connected to n-side and the negative terminal is connected to p-side.

- ❑ As we already know that if the positive terminal is connected to n-side and the negative terminal is connected to p-side then the diode is said to be reverse biased. Therefore, the diode is reverse biased by the input supply voltage  $V_i$ .
- ❑ However, we are supplying the voltage from another source called battery. As shown in the figure, the positive terminal of the battery is connected to p-side and the negative terminal of the battery is connected to n-side of the diode. Therefore, the diode is forward biased by the battery voltage  $V_B$ .
- ❑ That means the diode is reverse biased by the input supply voltage ( $V_i$ ) and forward biased by the battery voltage ( $V_B$ ).

- ❑ Initially, the input supply voltage  $V_i$  is less than the battery voltage  $V_B$  ( $V_i < V_B$ ). So the battery voltage dominates the input supply voltage. Hence, the diode is forward biased by the battery voltage and allows electric current through it. As a result, the signal appears at the output.
  
- ❑ When the input supply voltage  $V_i$  becomes greater than the battery voltage  $V_B$ , the diode  $D$  is reverse biased. So no current flows through the diode. As a result, input signal does not appear at the output.
  
- ❑ Thus, the clipping (removal of a signal) takes place during the positive half cycle only when the input supply voltage becomes greater than the battery voltage.

❖ During negative half cycle:



- During the negative half cycle, terminal A is negative and terminal B is positive. That means the diode D is forward biased due to the input supply voltage.

- ❑ Furthermore, the battery is also connected in such a way that the positive terminal is connected to p-side and the negative terminal is connected to n-side. So the diode is forward biased by both battery voltage  $V_B$  and input supply voltage  $V_i$ .
- ❑ That means, during the negative half cycle, it doesn't matter whether the input supply voltage is greater or less than the battery voltage, the diode always remains forward biased. So the complete negative half cycle appears at the output.
- ❑ Thus, the series positive clipper with positive bias removes a small portion of positive half cycles.

पढ़िए और पढ़ाइये

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