Objectives

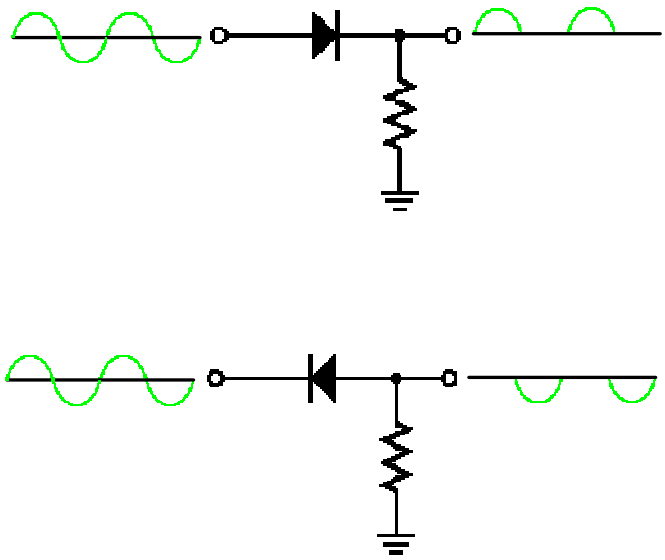
Describe the purpose of diode limiters.

Identify the two different types of diode limiter circuits.

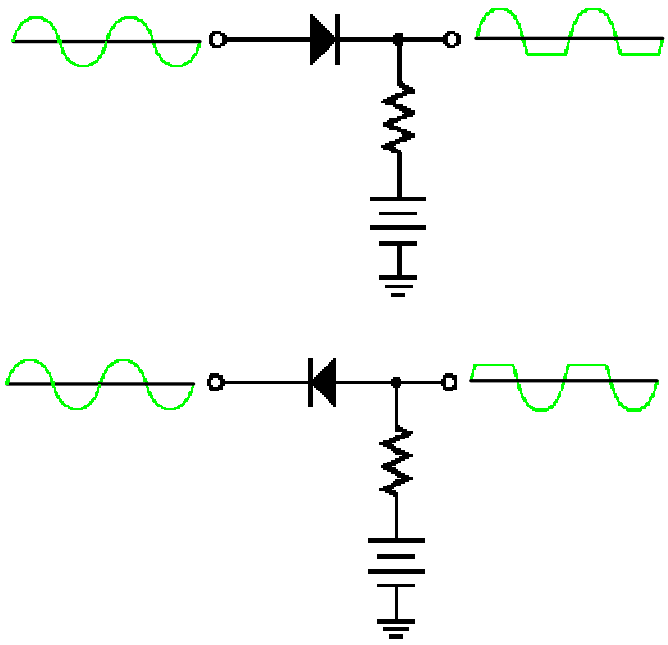
Describe diode limiter operation.

The purpose of a diode limiter is to limit the amplitude of an input signal.

As much as an entire alternation can be limited.

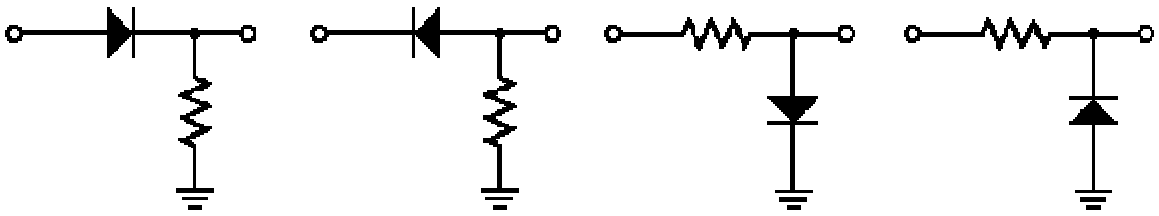


Or part of the alternation can be limited.

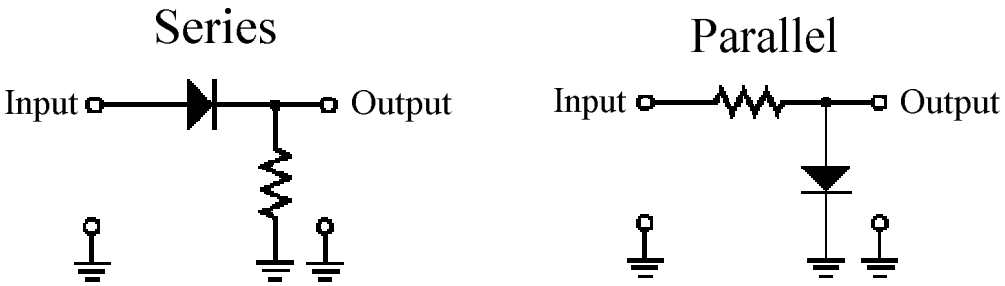


How the limiter effects the input signal depends on how the circuit's components are connected.

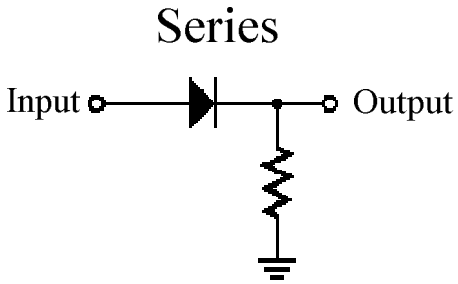
The placement of the diode determines if the circuit will limit the inputs positive or negative alternation.



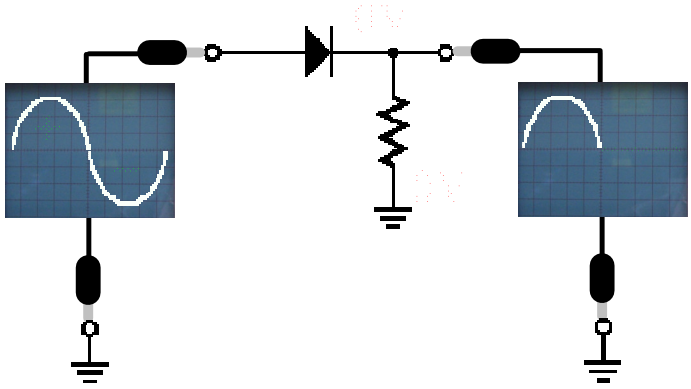
Diode limiters have two basic configurations.



A series limiter is when the diode is in series between the input and output.

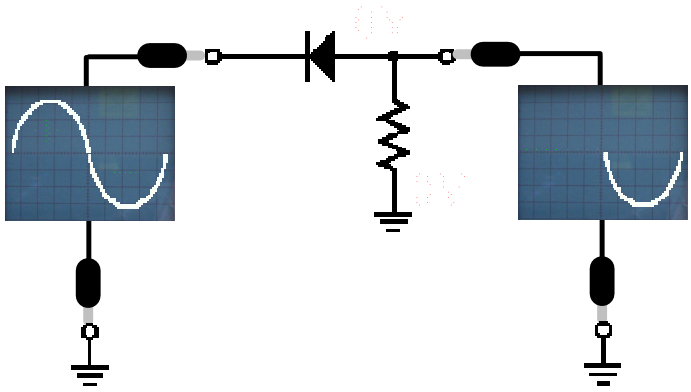


Whenever the diode is forward biased, current flows and the output signal is developed across the resistor.



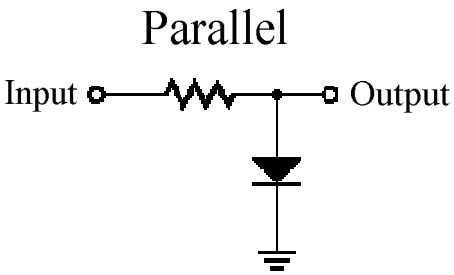
This series limiter is called a negative limiter because it eliminated the negative alternation of the input signal.

Whenever the diode is forward biased, current flows and the output signal is developed across the resistor.

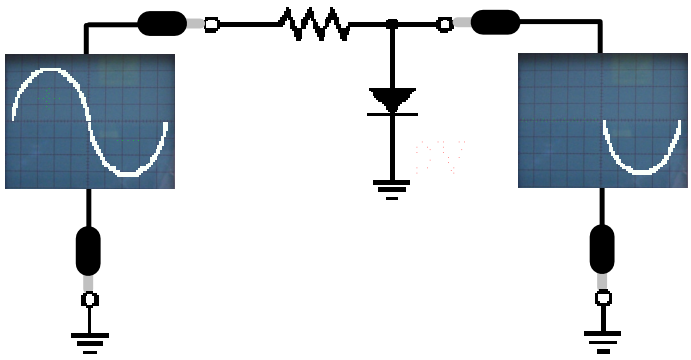


This series limiter is called a positive limiter because it eliminated the positive alternation of the input signal.

A parallel limiter is when the diode is between the output and ground. In this case the diode is in parallel with the output.

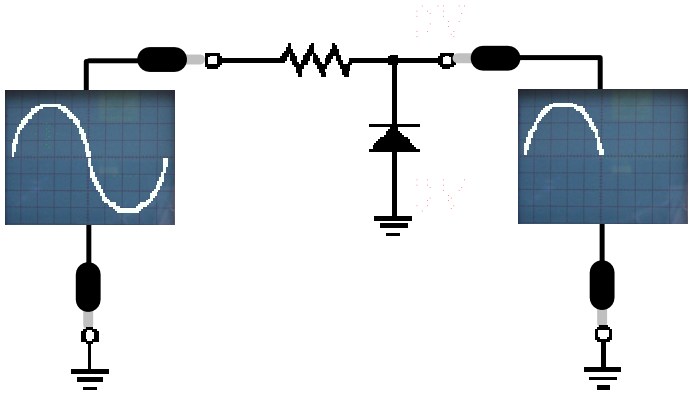


Whenever the diode is forward biased, it has a very low resistance and the input is signal is shorted to ground. The output is also shorted to ground.



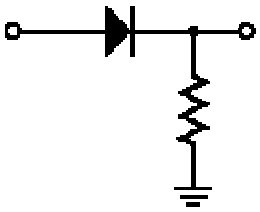
This parallel limiter is called a positive limiter because it eliminated the positive alternation of the input signal.

Whenever the diode is reversed biased, it acts like an open and the input is signal travels to the output.

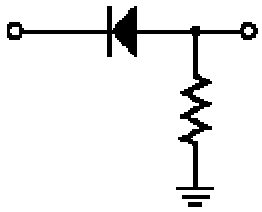


This parallel limiter is called a negative limiter because it eliminated the negative alternation of the input signal.

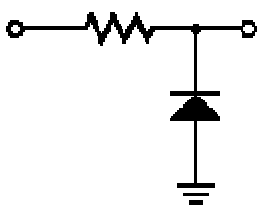
Identify this limiter.



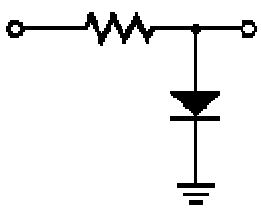
Identify this limiter.



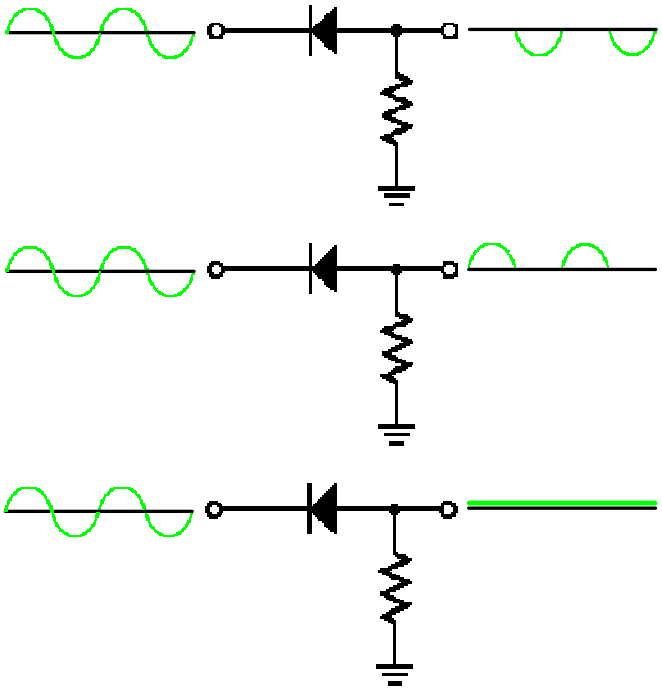
Identify this limiter.



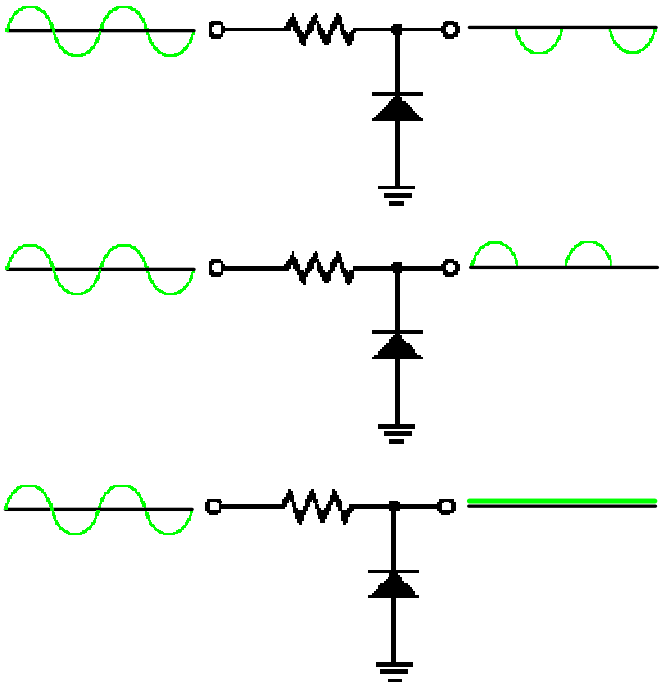
Identify this limiter.



Select the circuit with the correct output signal.

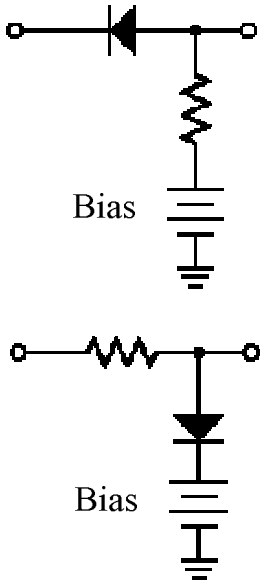


Select the circuit with the correct output signal.



By adding circuit bias, partial alternations can be eliminated.

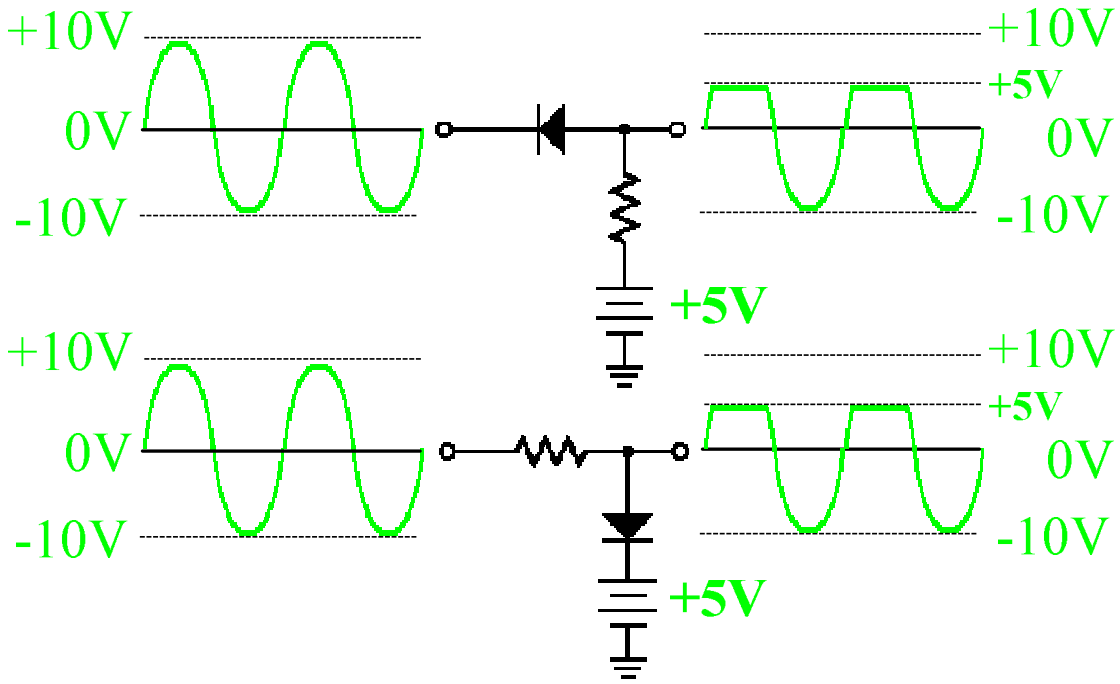
Positive Limiters



A positive series or parallel limiter with positive circuit bias raises the limit point from 0 volts to the bias level. In this case, the bias level is +5 volts.

The biase voltage changes the reverse bias point for the series limiter and the forward bias point for the parallel limiter.

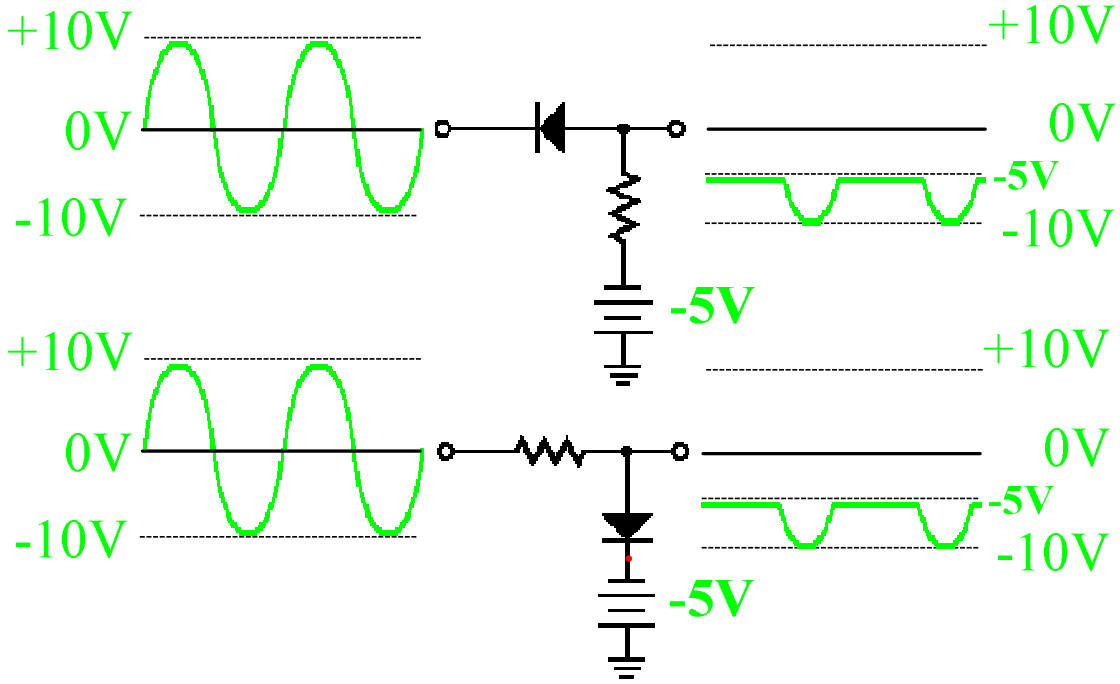
Positive Limiters



A positive series or parallel limiter with negative circuit bias lowers the limit point from 0 volts to the bias level. In this case, the bias level is -5 volts.

The biase voltage changes the reverse bias point for the series limiter and the forward bias point for the parallel limiter.

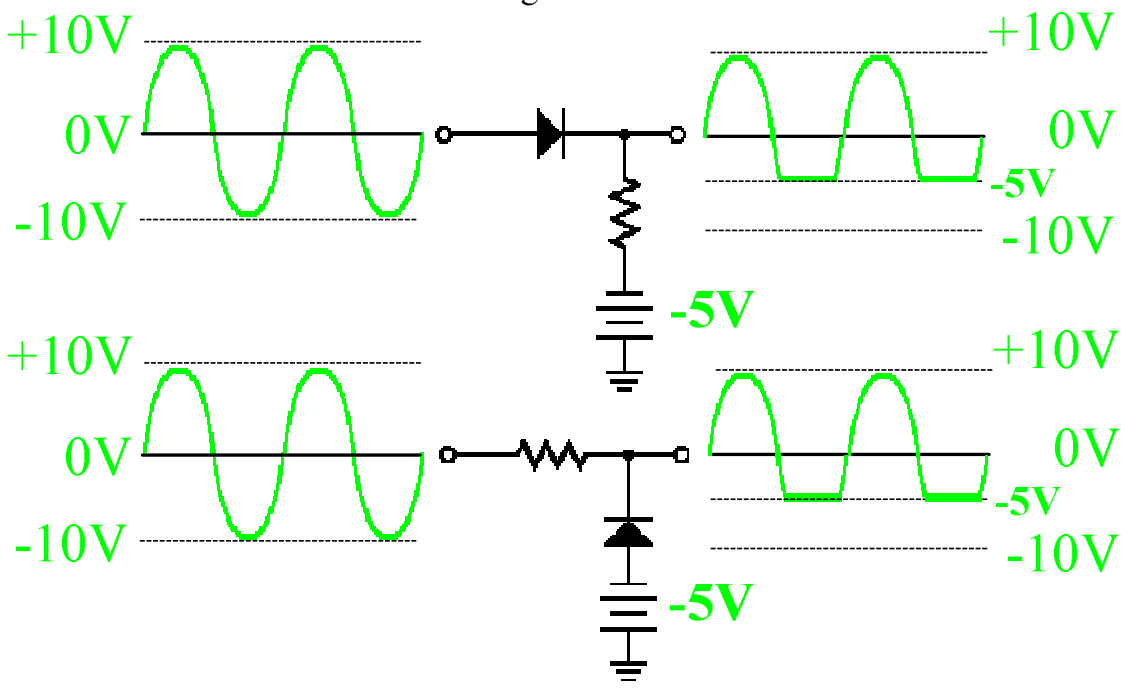
Positive Limiters



A negative series or parallel limiter with negative circuit bias lowers the limit point from 0 volts to the bias level. In this case, the bias level is -5 volts.

The biase voltage changes the reverse bias point for the series limiter and the forward bias point for the parallel limiter.

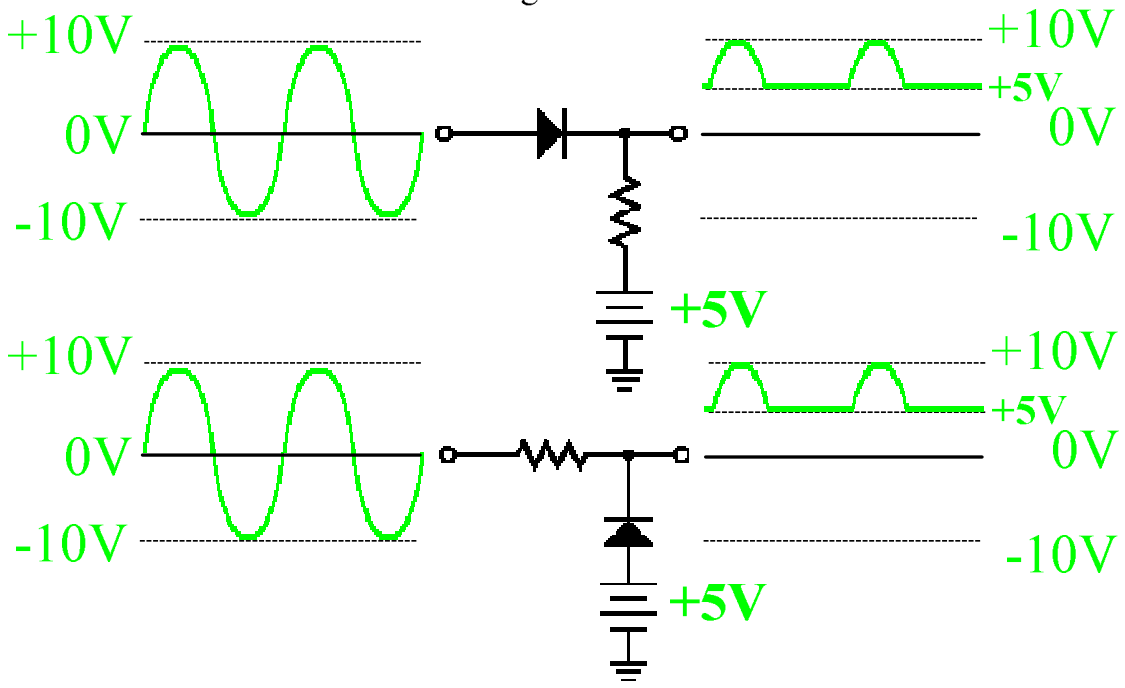
Negative Limiters



A negative series or parallel limiter with positive circuit bias raises the limit point from 0 volts to the bias level. In this case, the bias level is +5 volts.

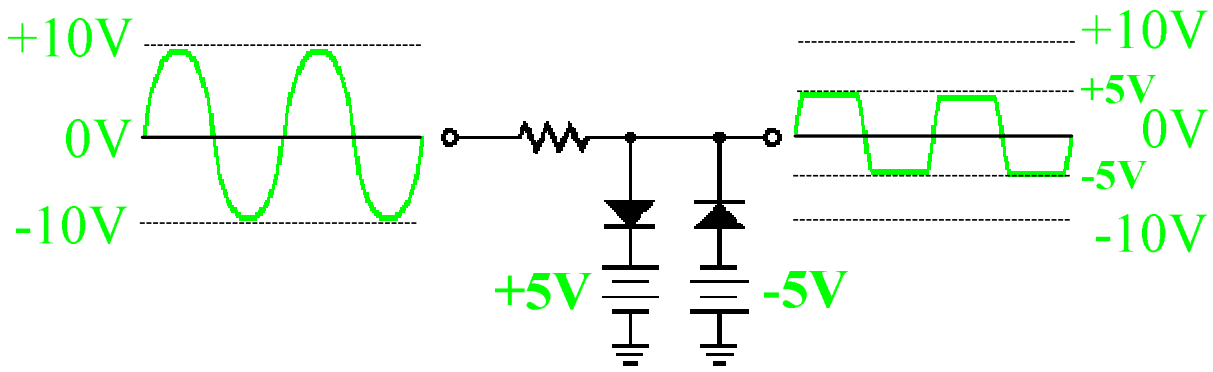
The biase voltage changes the reverse bias point for the series limiter and the forward bias point for the parallel limiter.

Negative Limiters

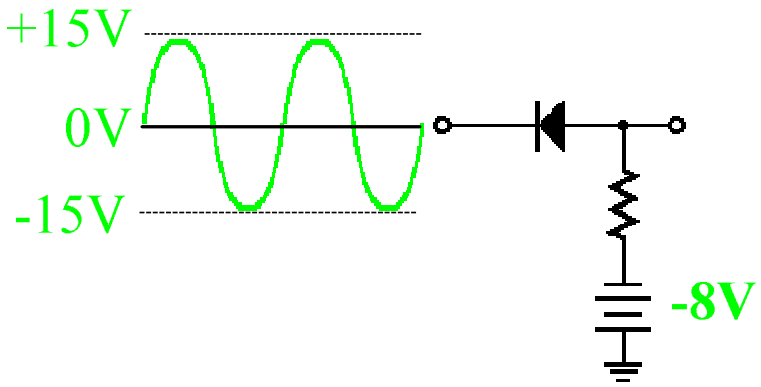


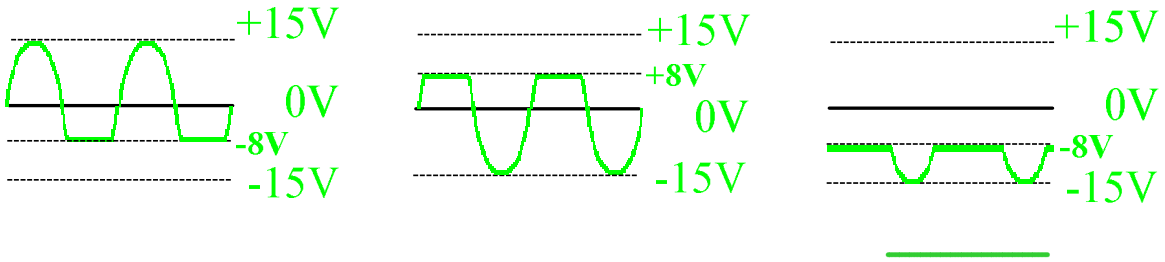
It is possible to combine more than one limiter at a time. This will limit the output signal to a specific range.

Combining a biased positive parallel limiter and a biased negative limiter changes both alternations.

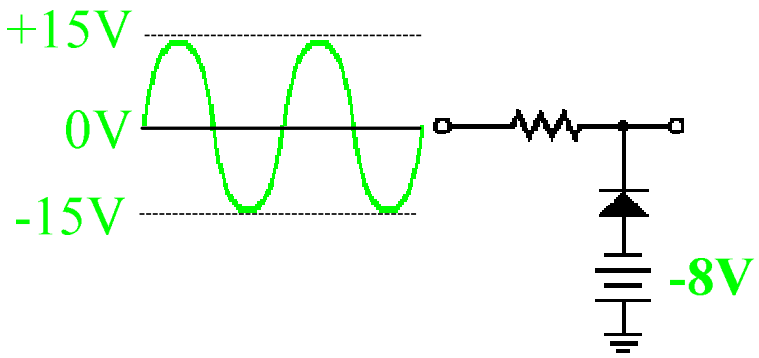


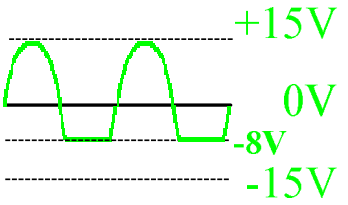
Select the correct output for this limiter.

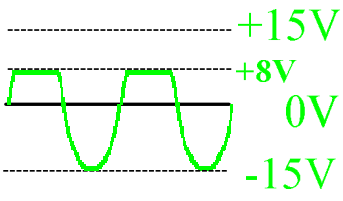


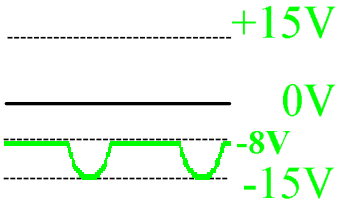


Select the correct output for this limiter.

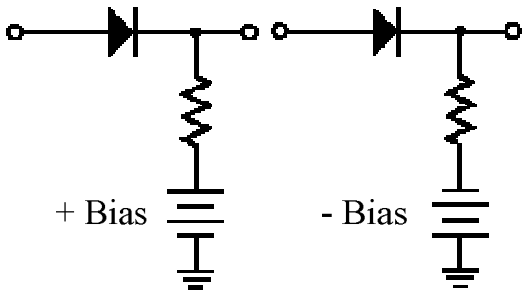




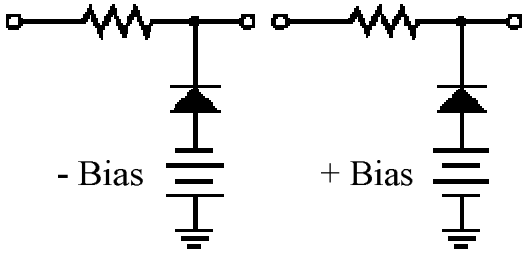




Remember, biased limiters operate just like unbiased limiters.



Series - Limits when the diode is reversed biased.



Parallel - Limits when the diode is forward biased.

Positive Bias - Raises the limiting point.

Negative Bias - Lowers the limiting point.