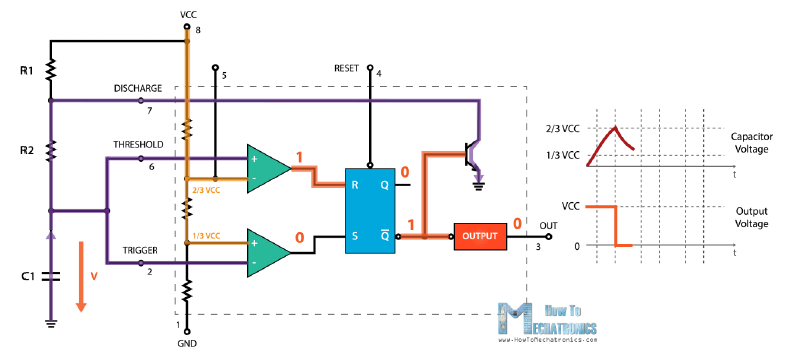
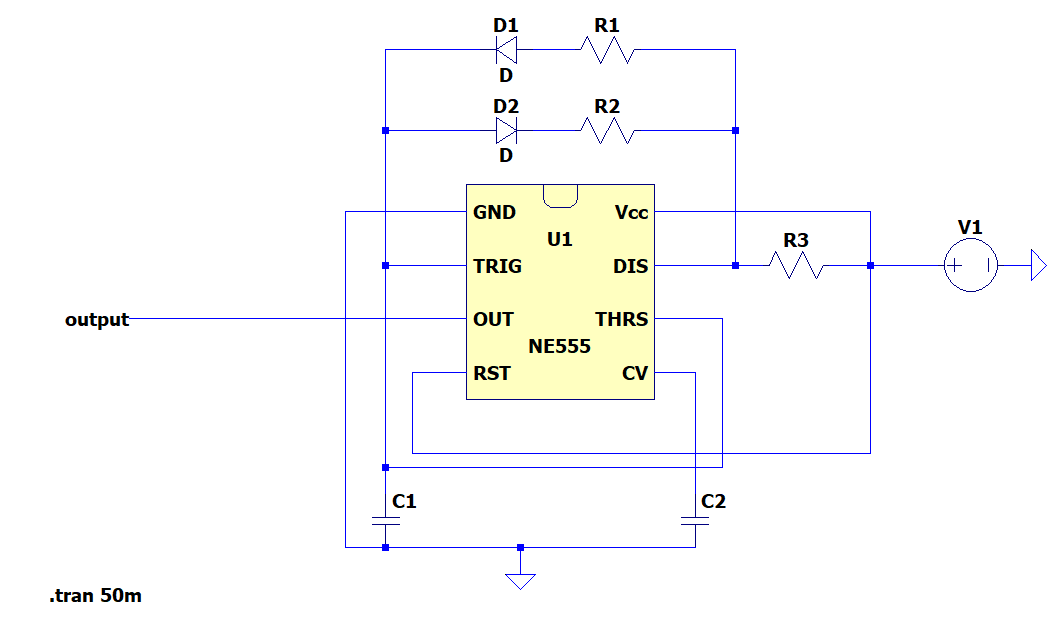
555 Timer.



We need a duty cycle between 0.2 and 0.8. Thus, by rearranging the design we get:



Adding two diodes to the system allows us to get wide range in duty cycle.

For D=0.2,

For D=0.8,

Hence,

Choosing , = 500Ω - 8kΩ variable resistor is needed to get Duty Cycle between 0.2 and 0.8. Since operating at higher frequencies cause higher switching losses, the pulse frequencies should be obtained around 1 kHz which will give us 0.22 µC capacitance value so that

, and . The simulation results for D = 0.2 and D = 0.8 are shown in figure 1 and 2.

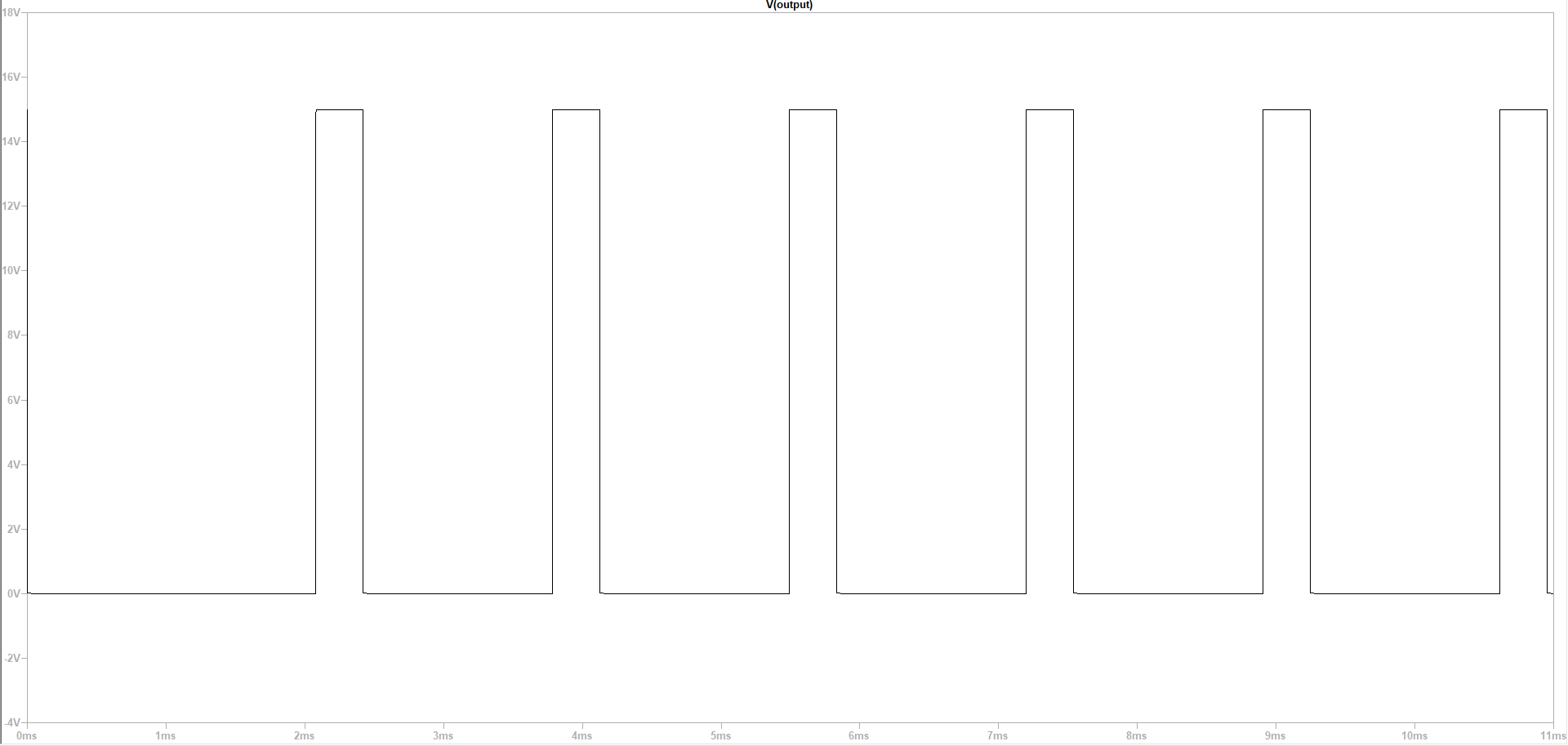


Figure Output of 555Timer for D=0.2

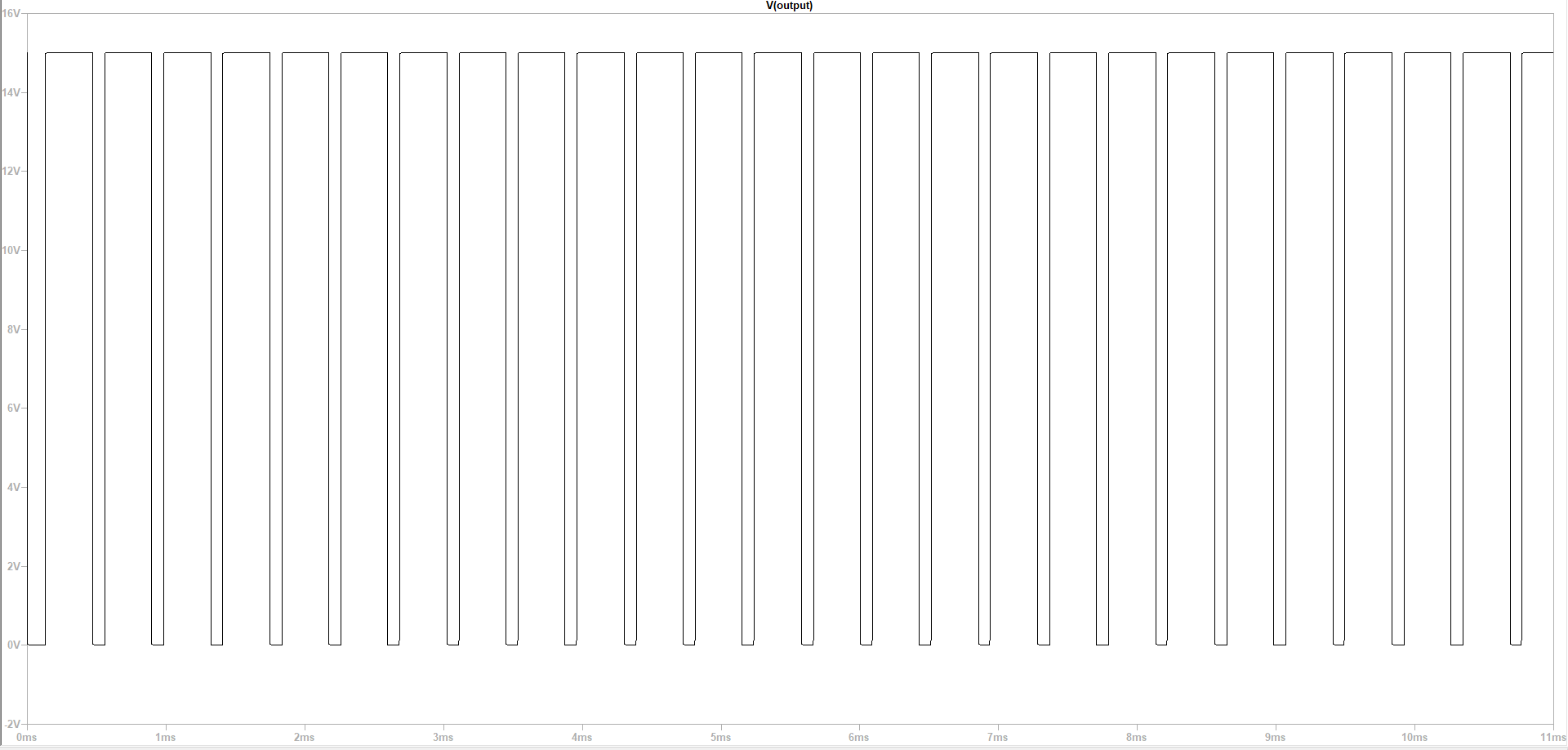


Figure Output of 555Timer for D=0.8