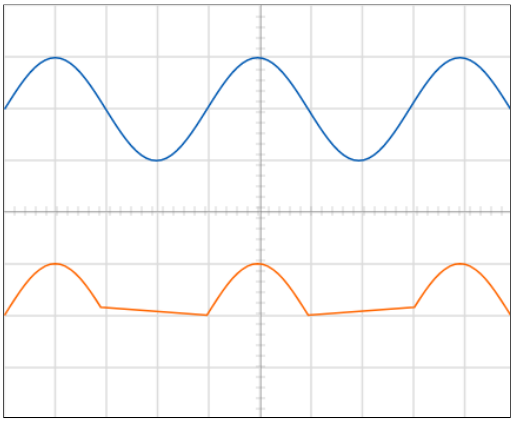
<
Virtual Labs
An MHRD Govt of India Initiative

# Half Wave Rectifier

INSTRUCTION

OSCILLOSCOPE



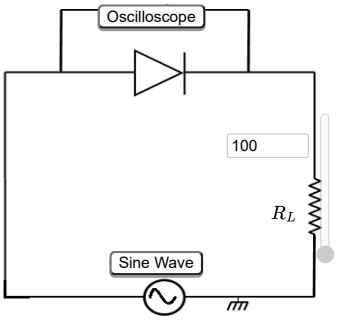
Channel 1 | Channel 2 | Ground | Dual

2500
*Frequency(Hz)*

1
*Amplitude(Volt)*

Off

CIRCUIT




CONTROLS

Position-Y

1
*Volt(V)/div*

Channel 1

Position-Y

1
*Volt(V)/div*

Channel 2

Position-X

0.1
*Time(ms)/div*

CALCULATION

$V_{rms} = \frac{V_m}{2}$, $V_m$ is the peak voltage

$V_{dc} = \frac{V_m}{\pi}$

Ripple Factor=$\frac{V_{ac}}{V_{dc}}$ Since, $V_{ac} = \sqrt{(V_{rms}^2 - V_{dc}^2)}$

Peak Current: 2.9999999892691407 mA

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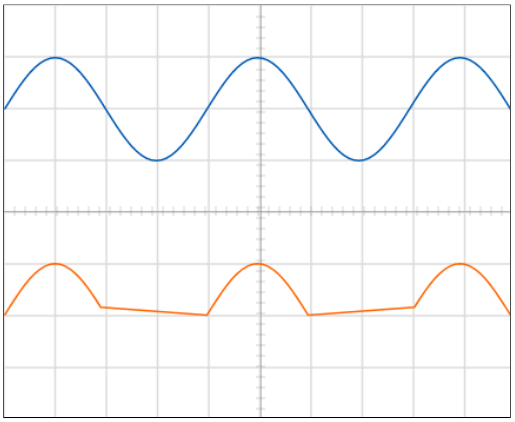

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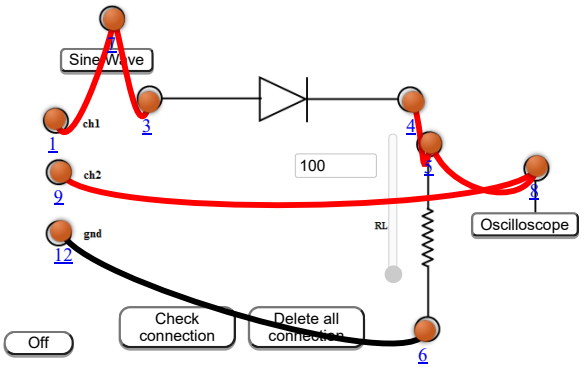
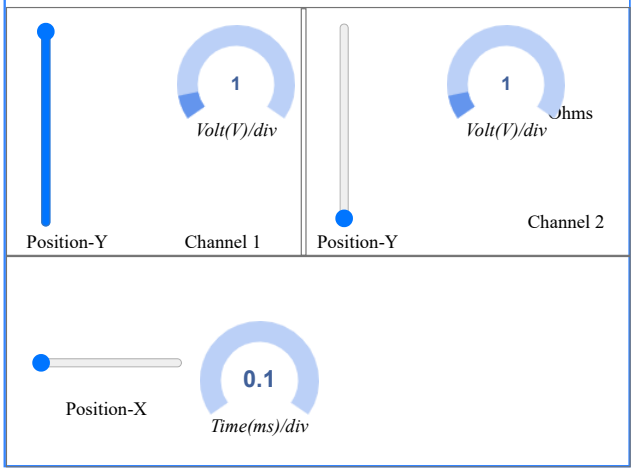



CONTROLS

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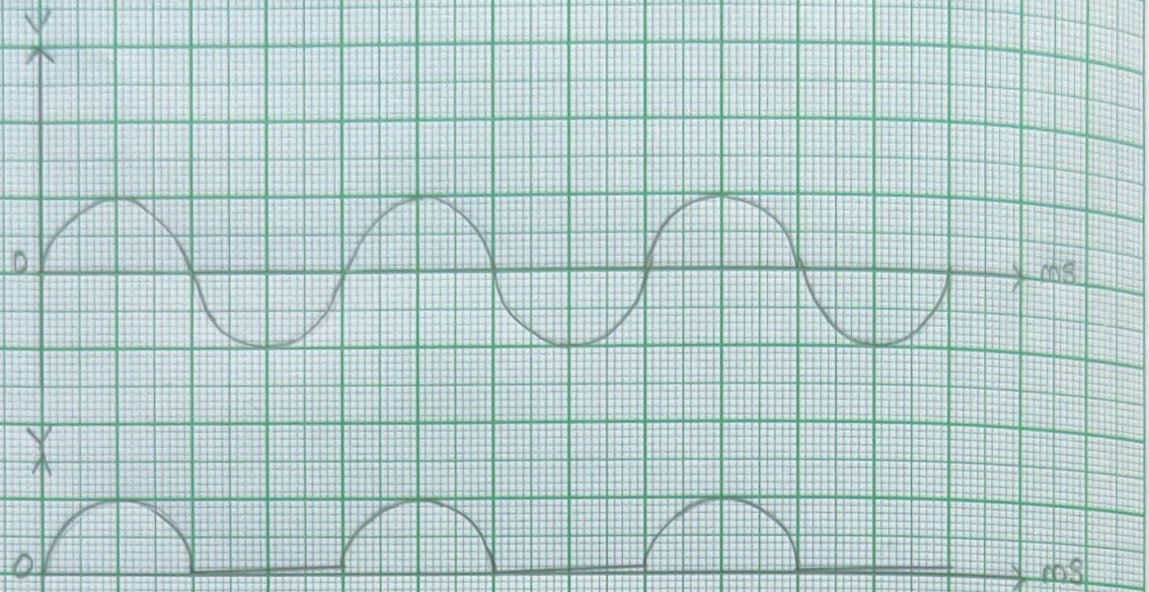
# Half wave Rectifier

Scale:-

X-axis = 1 unit = 0.1 ms/div

Y-axis = 1 unit = 1 volt/div



# Half wave Rectifier

## calculation

Peak voltage ($V_m$) = 1 V

$$V_{rms} = \frac{V_m}{2}$$

$$= \frac{1}{2}$$

$$= 0.5 \text{ V}$$

$$V_{dc} = \frac{V_m}{\pi}$$

$$= \frac{1}{\pi}$$

$$= 0.3183 \text{ V}$$

$$V_{ac} = \sqrt{(V_{rms})^2 - (V_{dc})^2}$$

$$= \sqrt{(0.5)^2 - (0.3183)^2}$$

$$= 0.3855 \text{ V}$$

$$\text{Ripple factor} = \frac{V_{ac}}{V_{dc}}$$

$$= \frac{0.3855}{0.3183}$$

$$= 1.21$$

Therefore, Ripple factor = 1.21