Laboratory Report Cover Sheet   
DeVry University  
College of Engineering and Information Sciences

**Course Number:** REET 420

**Professor:**

**Laboratory Number:** 1

**Laboratory Title:**  Power Electronics Waveforms

**Submittal Date:** Click here to enter a date.

***Objectives:***

***Results:***

***Conclusions:***

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| --- | --- | --- | --- | --- | --- |
| ***Team:*** |  |  |  |  |  |
|  | Name |  | Program |  | Signature |
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|  | Name |  | Program |  | Signature |
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|  | Name |  | Program |  | Signature |

***Observations/Measurements:***

# The half-wave rectified sine wave:

### Average value of a half-wave rectified sine-wave with *f* = 60 Hz and *Vp* = 170 *Vp*. =

1. Average Value = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Simulated Value = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Does the calculated value equal the simulation value? Why or why not?

### Calculate the rms value of a half-wave rectified sine-wave with *f* = 60 Hz and *Vp* = 170 *Vp*.

1. Calculated rms value =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### rms value from simulation = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

### Does the calculated value equal the simulation value? Why or why not?

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

# Average value of a rectangular wave

### rms value of a rectangular wave with the following parameters: frequency = 100 kHz, duty cycle = 35%, and *Vp* = 15 V.

1. rms value =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### rms value using Multisim and the simple circuit = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Is the Multisim ac value the same as the one you calculated? Why or why not?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

# Power delivered to the transistor

### Average power delivered from a 240 *Vrms* half sine wave voltage to a 51 Ω resistor.

1. Average power = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Value using Multisim and the simple circuit =\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

### Is the power value the same as the one you calculated? Why or why not?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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## Questions/Discussion

### Discuss the difference between the average and rms values and how they are each calculated.

### Discuss the difference between the instantaneous power and average power and how they are each calculated.

***Grade:***

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| **Deliverable** | **Points Available** | **Points Achieved** |
| Laboratory Cover Sheet | 6 |  |
| Calculations/Measurements | 12 |  |
| Questions | 6 |  |
| **Total Points** | 24 |  |
|  | | |
| Comments: | | |