



**WORKSHEET 2-13**  
*Use a Transistor in a Circuit*

**Worksheet Objectives**

In this worksheet you will do the following:

- Follow the wiring diagram to assemble a circuit with a transistor.
- Measure current through the base, collector, and emitter of the transistor.

**Tools and Equipment**

For this exercise you need the following:

- Technician’s Handbook
- Electrical simulator
- Digital multimeter (DMM)

**Section 1: Circuit Assembly**

1. Assemble the circuit shown below using components from your electrical simulator.

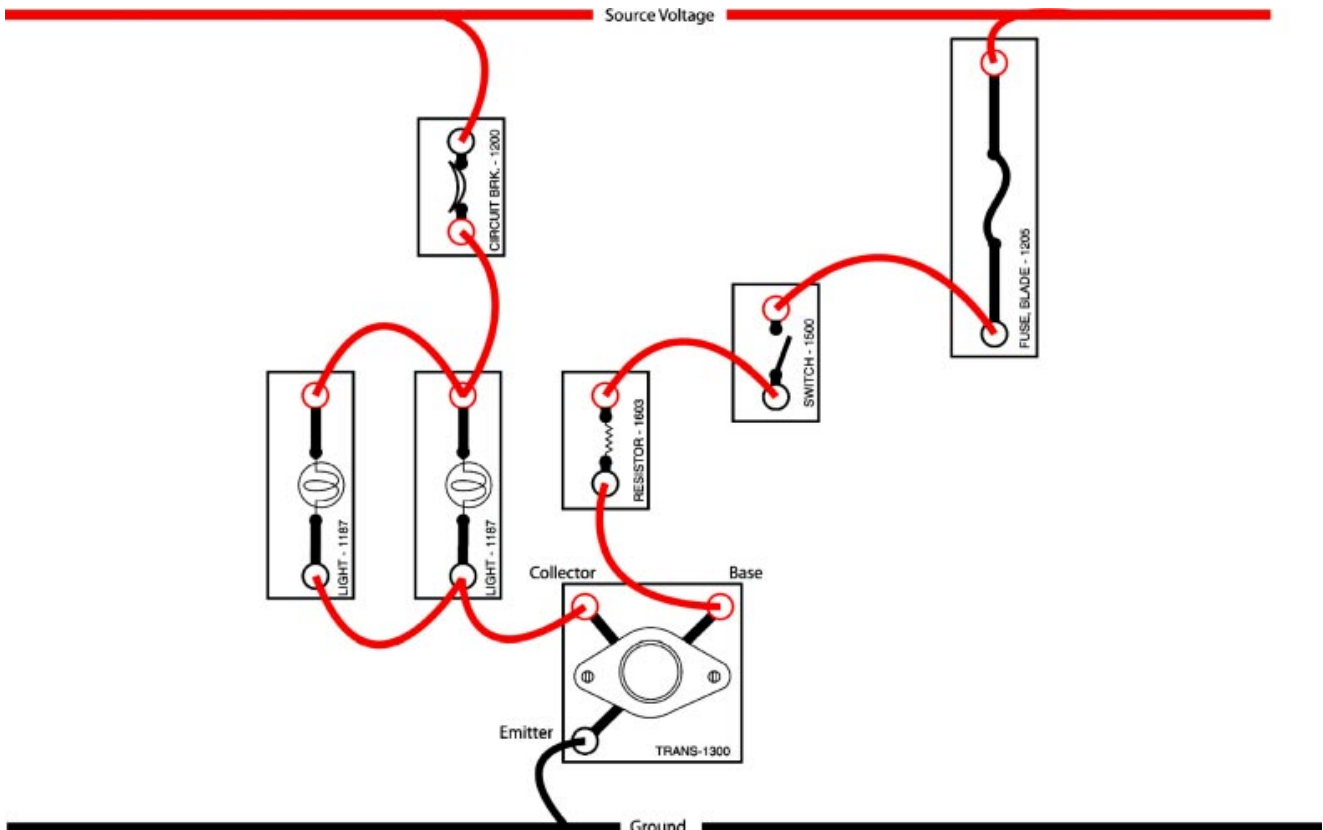


Fig. 2W13-1  
TL623f001c-2W13

### Section 2: Current Measurement

- Turn the switch on. Do the bulbs light? YES / NO (circle one).
- If No, check that the circuit is assembled properly. Use the DMM to verify you have voltage throughout the circuit. If you do, ask your instructor for assistance.
- Use the DMM and measure current at the following on the transistor:

Base \_\_\_\_\_

Collector \_\_\_\_\_

Emitter \_\_\_\_\_

- Add the base current value you measured with the collector current value.

Base \_\_\_\_\_

+

Collector \_\_\_\_\_

= \_\_\_\_\_

Does the total equal the current measured at the emitter of the transistor? YES / NO (circle one).

Did you know? The emitter current equals the base current plus the collector current in this type of transistor.

What applications do transistors have in automotive circuits (name at least two)?

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Stop here after completing all the related activities and answering the questions. Inform your instructor that you are ready to review this section.

# Use a Transistor in a Circuit

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Review this sheet as you are doing the Use a Transistor in a Circuit worksheet. Check each category after viewing the instructor’s presentation and completing the worksheet. Ask the instructor if you have questions regarding the topics provided below. Additional space is provided under topic for you to list any other concerns that you would like you instructor to address. The comments section is provided for your personal comments, information, questions, etc.

I have questions

I know I can

| Topic                |  |  | Comment |
|----------------------|--|--|---------|
| Measure Current      |  |  |         |
| Measure Voltage Drop |  |  |         |
|                      |  |  |         |
|                      |  |  |         |
|                      |  |  |         |
|                      |  |  |         |
|                      |  |  |         |
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**Notes**