

CAR DOME LIGHT EXTENDER — JAMECO PART NO. 2167200



Experience Level: Intermediate | Time Required: 1 Hour

This is a kit for smaller and older cars that don't have the fade action like BMW and other more expensive cars have on their internal dome light. The kit uses high brightness LEDs and an internal timing circuit. The kit will replace the current lamp in the dome light, and gives a five second extension and gradual dimming when the light goes out.

Required tools and parts:

Soldering iron and thin rosin-core solder
Wire cutter/stripper and basic hand tools
1.5mm to 2mm diameter copper wire, preferably uncoated

Kit Includes:

High-output white LEDs	1.5F Supercapacitors
LM1117T Voltage regulator	470Ω Carbon-film resistors
Custom printed circuit board	

Step 1 - Prepare the edge contact pins

Here you will bend and cut the 1.5mm diameter copper wire that is used to enable contact to the lamp socket in the car. Take two 10mm long pieces of 1.5mm solid, non-insulated copper wire and bend a 90 degree angle approximately 5mm from the one end of each wire. You will end up with two pieces of wire that look like small arrowheads.

Step 2 - Soldering the edge contact pins

Take the prepared wire pieces from Step 1 and place them on the ends of the PCB marked 12V+ and GND. These are the two pointy ends. Solder the wire to the exposed pad on the PCB, ensuring that the wire overlaps the edge of the PCB slightly. These will be the contact points when the LED lamp is inserted into the lamp holder in your car.

Step 3 - Placing the resistor and regulator

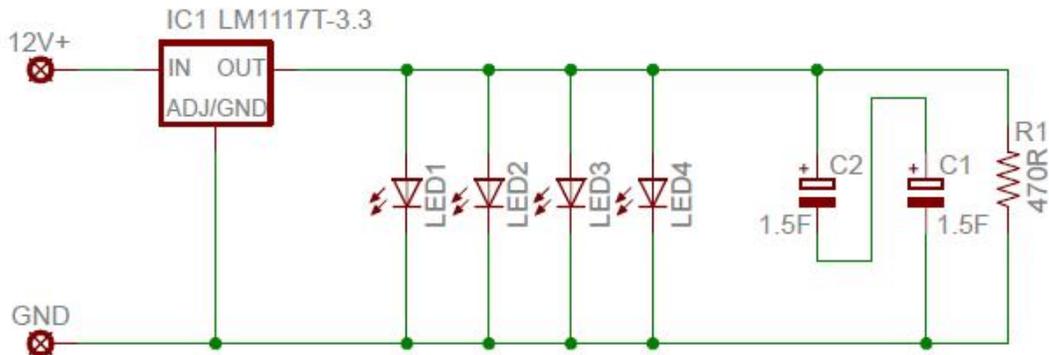
Turn the PCB over, and insert the resistor into its allocated holes from the **BOTTOM** of the PCB. Solder in place and trim the leads. Insert the regulator into its allocated holes, observing the correct polarity, also from the **BOTTOM** of the PCB. Press it in as far as it will go. Solder the three leads in place, and trim them.

Step 4 - Placing the LEDs

With the top side (the side with the least copper tracks) of the PCB facing you, insert the four LEDs in their allocated spots, observing correct polarity. Turn the board over and solder the leads in place, ensuring that the LEDs stay pushed firmly onto the PCB. Trim the leads as short as possible.

Step 5 - Placing the supercapacitors

Turn the PCB over so you are working from the **BOTTOM** again, and insert the two capacitors into their allocated holes, observing correct polarity. Solder the leads and trim them.



Step 6 - Final testing before installing in your car

Connect the PCB to a 12V DC power supply, or a battery, observing the correct polarity as indicated on the PCB.

IMPORTANT: This circuit is NOT reverse-polarity protected, so observe the polarity (those supercapacitors pack quite a punch when they get reverse polarized). When the circuit is powered up the first time, the LEDs will light up to full brightness after about 1/2 a second. If this happens, congrats, you did everything well! If not, go check the polarity of your connection, and the polarity of the LEDs, regulator and supercapacitors. Once the LEDs light up, remove the power. The LEDs will stay at full brightness for 5 to 8 seconds, and then start dimming slowly off.

Step 7 - Installation

Remove the lamp cover, usually this can be accomplished using your fingers or a small flat screwdriver. Remove the old lamp. To check the polarity of the socket, use a multimeter with polarity indication, and switch the lamp on while the probes are connected to the socket pins. Once you know which side positive is, switch the light off, close the car doors and insert your new LED lamp into the socket. When you open the car door and close it again, the lamp will now stay on for about 5 to 8 seconds, and then slowly start to dim.

