QUASAR ELECTRONICS KIT 1092 IN-CAR AIR IONISER

General Description

Most of you, as car drivers, you know that safe driving needs clear mind. However, especially during the winter, the conditions that are being developed in the close room of your car, may be destroy the clarity of your mind.

The in-car ioniser is used to increase the concentration of negative ions in your car, refreshing the air in it and improving the mental clarity of the driver and his/her fellow passengers.

The negative ions that are being transmitted by the probe are used to clean the atmosphere of the car from the dust and the smoke. Since the voltage, that is delivering to the probe is very high, a small amount of ozone is possible to be produced. This can, on the one hand, have certain advantages as it oxidizes organic gases. On the other hand, if ozone breathed in large quantities, can cause irritation of the respiratory system. In this case, notice that for normal use the ventilation system of the car should be reasonably effective.

Remember to use an insulated box which will contain the circuit and position it within the car, so that is not a hazard to unsuspecting passengers.

Technical Specifications - Characteristics

Supply voltage: 12V - 15V DC Dissipation current: 80mA

How it Works

The circuit of the ioniser is shown in figure 1 and consists of two parts.

The first part is configured by the transistors Q1, Q2 in Darlington connection, the transformer T1, the resistors R2, R3 and the capacitor C2. The circuit is called blocking vibrator and operates in the frequency of 30KHz. A sharp pulse of 600V is appeared on the secondary winding of the transformer T1.

The above voltage is applied to the second part of the circuit. This part is configured by the capacitors $C3 \div C14$ and the diodes $D3 \div D14$. The circuit increases the value of the voltage to the negative value of 7.5KV. This voltage, through the resistor R4 is delivered to the probe.

The resistor R1, the diode D2 and the capacitor C1 configure the circuit that supplies the above two parts with the voltage of 12V.

Notice that the diode D1 is used for the protection of the circuit.

Construction

The construction of the circuit is very simple, but you must follow the basic instructions for the construction in order to avoid serious problems.

All the components must be attached on the PCB. Use a 25W soldering iron, together with good quality solder and avoid the use of soldering flux.

Special care should be taken in order to match the capacitors' polarity to that shown on the PCB layout diagram.

Begin, placing the small components and finally locate the transformer.

As this project operates at high voltages, the finished PCB must be placed in a box before operation in order to avoid injury or death.

Adjustments

This kit does not need any adjustments, if you follow the building instructions.

Warning

Quasar Electronics kits are sold as stand alone training kits. If they are used as part of a larger assembly and any damage is caused, our company bears no responsibility.

While using electrical parts, handle power supply and equipment with great care, following safety standards as described by international specs and regulations.

CAUTION

This circuit works generates high voltage which is dangerous

Voltages above 50 V are DANGEROUS and could even be LETHAL.

In order to avoid accidents that could be fatal to you or members of your family please observe the following rules:

- DO NOT work if you are tired or in a hurry, double check everything before connecting your circuit to the mains and be ready to disconnect it if something looks wrong.
- DO NOT touch any part of the circuit when it is under power.
- DO NOT leave mains leads exposed. All mains leads should be well insulated.
- DO NOT change the fuses with others of higher rating or replace them with wire or aluminium foil.
- DO NOT work with wet hands.
- BE CAREFUL if you are wearing a chain, necklace or anything that may be hanging and touch an exposed part of the circuit.

- ALWAYS USE a correct mains lead with the correct plug and earth your circuit correctly.
- If the case of your project is made of metal make sure it is properly earthed.
- If it is possible use a mains transformer with a 1:1 ratio to isolate your circuit from the mains.
- When you are testing a circuit that works off the mains wear shoes with rubber soles, stand on dry non conductive floor and keep one hand in your pocket or behind your back.

If you take all the above precautions you are reducing the risks you are taking to a minimum and this way you are protecting yourself and those around you.

A carefully built and well insulated device does not constitute any danger for its user.

BEWARE: ELECTRICITY CAN KILL IF YOU ARE NOT CAREFUL

If it does not work

Check your work for possible dry joints, bridges across adjacent tracks or soldering flux residues that usually cause problems.

Check again all the external connections to and from the circuit to see if there is a mistake there.

- See that there are no components missing or inserted in the wrong places.

- Make sure that all the polarised components have been soldered the right way round. - Make sure the supply has the correct voltage and is connected the right way round to your

circuit.

- Check your project for faulty or damaged components.

If everything checks out and your project still fails to work, please contact us for information on our Get-You-Going service.

Electronic Diagram



Parts List

All components including printed circuit board, assembly instructions including schematics and detailed parts list are supplied when you purchase the kit.

Ordering

For pricing info and online ordering please visit:

http://www.quasarelectronics.com/1096.htm

For further info please contact us by e-mail:

mailto: sales@QuasarElectronics.com

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