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› DIYElectronic CBB Capacitor 475 100V 4.7uF (4700nF) CL21 Instruction Manual

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Model: CBB Capacitor 475 100V 4.7uF CL21

1. INTRODUCTION

This manual provides essential information for the proper use, installation, and maintenance of the DIYElectronic CBB Capacitor 475 100V 4.7uF (4700nF) CL21. These metallized polypropylene film capacitors are designed for various electronic applications requiring stable capacitance and high reliability.

2. PRODUCT OVERVIEW

The CBB CL21 series capacitors are non-polarized components widely used in DC, pulsating, and AC circuits. Their metallized polypropylene film construction offers excellent frequency characteristics, low dissipation factor, and high insulation resistance, making them suitable for filtering, bypassing, coupling, and timing applications in electronic devices.

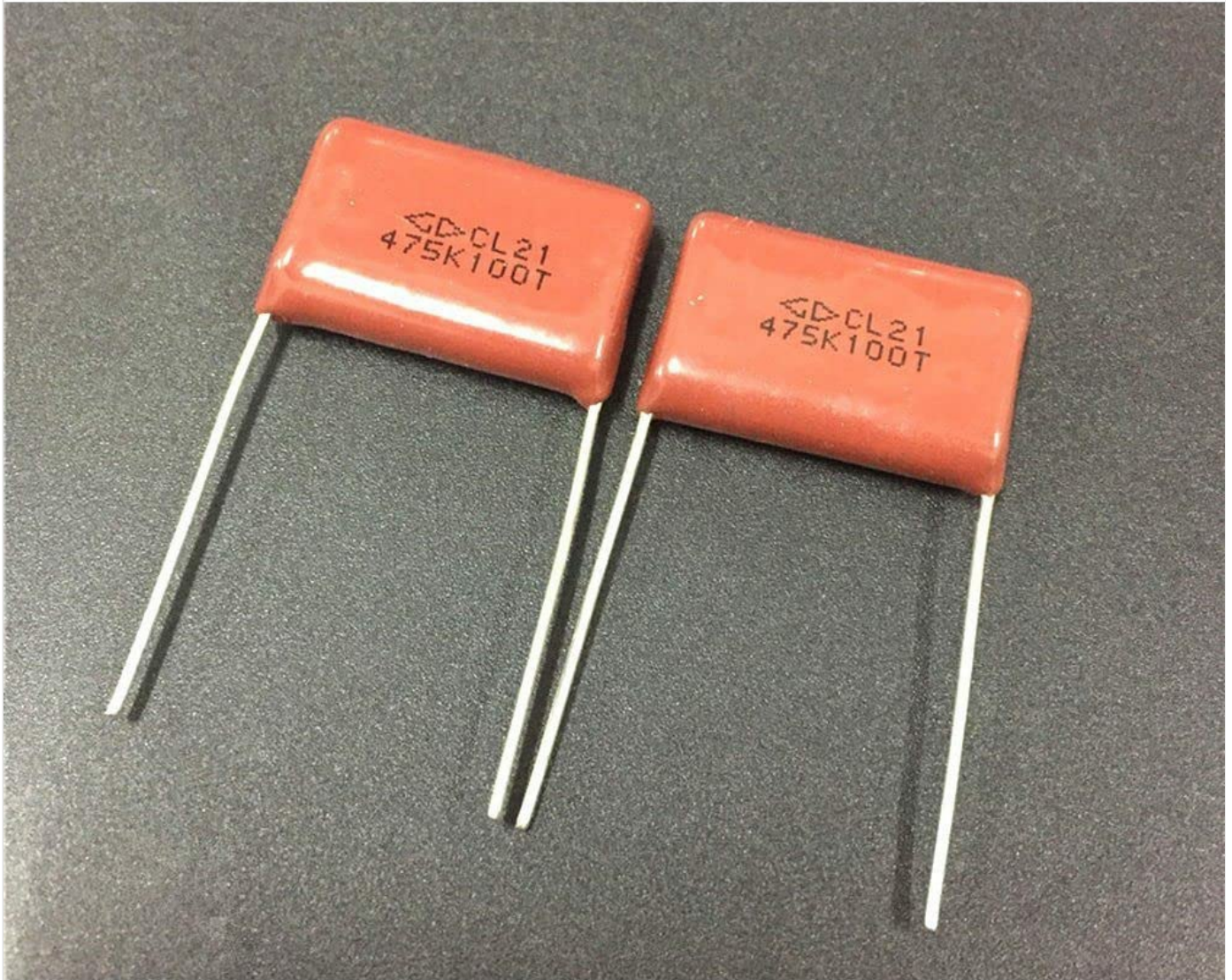


Figure 1: Two DIYElectronic CBB 475K 100V CL21 metallized polypropylene film capacitors. Each capacitor is rectangular, reddish-brown, with two silver-colored leads extending from one side. Markings on the capacitor body indicate 'CL21' and '475K100T', signifying its type, capacitance code, and voltage rating.

3. SPECIFICATIONS

Parameter	Value
Capacitance	4.7 μ F (4700nF, 475K)
Operating Voltage	100 Volts
Capacitor Type	CBB CL21 Metallized Polypropylene Film Capacitor
Material	Polypropylene Film

Parameter	Value
Tolerance	K ($\pm 10\%$)
Pin Pitch (P)	Typically 22mm (P22)
Shape	Rectangular

4. SETUP AND INSTALLATION

Proper installation is crucial for optimal performance and longevity of the capacitor. Always ensure power is disconnected before handling electronic components.

4.1 Safety Precautions

- Always disconnect power from the circuit before installing or removing components.
- Wear appropriate personal protective equipment, such as safety glasses.
- Ensure proper ventilation when soldering.

4.2 Installation Steps

- Identify Correct Placement:** Locate the designated position for the capacitor on your circuit board. Film capacitors are non-polarized, so orientation does not affect functionality.
- Lead Preparation:** Gently bend the leads to match the spacing of the holes on the PCB. Avoid sharp bends near the capacitor body to prevent damage.
- Insertion:** Insert the capacitor leads into the corresponding holes on the PCB.
- Soldering:** Solder the leads to the PCB pads using appropriate soldering techniques. Apply heat for a minimal duration to avoid overheating the component. Ensure strong, clean solder joints.
- Lead Trimming:** Trim any excess lead length after soldering.
- Inspection:** Visually inspect the solder joints for any bridges, cold joints, or other defects.

5. OPERATING PRINCIPLES

A capacitor stores electrical energy in an electric field between two conductive plates separated by a dielectric material. When a voltage is applied across its terminals, charge accumulates on the plates. The capacitance value ($4.7\mu\text{F}$ in this case) determines how much charge it can store for a given voltage.

In AC circuits, capacitors exhibit reactance, which is an opposition to changes in current. This property makes them useful for:

- Filtering:** Smoothing out voltage fluctuations in power supplies.
- Coupling:** Passing AC signals between stages of an amplifier while blocking DC.
- Bypassing:** Providing a low impedance path for AC signals around a component.
- Timing:** Used in conjunction with resistors to create time-delay circuits.

6. MAINTENANCE

CBB film capacitors are generally robust and require minimal maintenance. However, adhering to good practices can extend their lifespan and ensure reliable operation.

- **Environmental Conditions:** Operate the capacitor within its specified temperature and humidity ranges. Avoid exposure to direct sunlight, excessive heat, or corrosive environments.
- **Physical Inspection:** Periodically inspect the capacitor for any signs of physical damage, such as cracks, bulges, or discolored leads.
- **Cleaning:** If necessary, clean the capacitor and surrounding PCB area with a soft brush or compressed air to remove dust and debris. Avoid using harsh chemicals.
- **Storage:** Store unused capacitors in a cool, dry place, away from direct sunlight and extreme temperatures.

7. TROUBLESHOOTING

If your circuit is not functioning as expected, consider the following common issues related to capacitors:

- **Incorrect Capacitance Value:** Verify that the installed capacitor has the correct capacitance (4.7 μ F) and voltage rating (100V) for the circuit design.
- **Poor Solder Joints:** Inspect all solder connections for cold joints, bridges, or insufficient solder. Re-solder if necessary.
- **Overheating:** If the capacitor becomes excessively hot during operation, it may indicate an overvoltage condition, excessive ripple current, or an internal defect. Discontinue use and check circuit parameters.
- **Physical Damage:** Even minor physical damage can affect performance. Replace any capacitor that shows signs of damage.
- **Incorrect Circuit Design:** Ensure the capacitor is integrated into the circuit according to the design specifications.

8. WARRANTY AND SUPPORT

Specific warranty information for this DIYElectronic CBB Capacitor is not provided in this manual. For details regarding warranty coverage, returns, or technical support, please contact the seller or manufacturer directly through their official channels.

Manufacturer: DIYElectronic

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Question

Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

Submit question