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Auto-plaza YX8018

Auto-plaza YX8018 Solar LED Driver Chip User Manual

Model: YX8018

1. Introduction

This manual provides detailed instructions and information for the Auto-plaza YX8018 Solar LED Driver Chip. The YX8018 is a specialized electronic component designed for controlling solar garden lights, solar string lights, and other LED driver applications. It operates at a low voltage of 1.2V and provides an output current of 30mA, making it ideal for energy-efficient solar lighting solutions.
Each package contains 50 pieces of the YX8018 chip, ensuring ample supply for multiple projects or replacements.

2. Specifications

Feature	Description
Model	YX8018
Working Voltage	1.2V
Output Current	30mA
Packaging Type	TO-94
Application	Solar garden lights, solar string lights, LED drivers, switch circuits, optical switch circuits, over-discharge protection circuits.
Integrated Features	Short circuit diodes
Quantity per Package	50 pieces

3. Pin Information

Understanding the pin configuration is crucial for correct integration of the YX8018 chip into your circuit. The TO-94 package features four pins, each with a specific function.

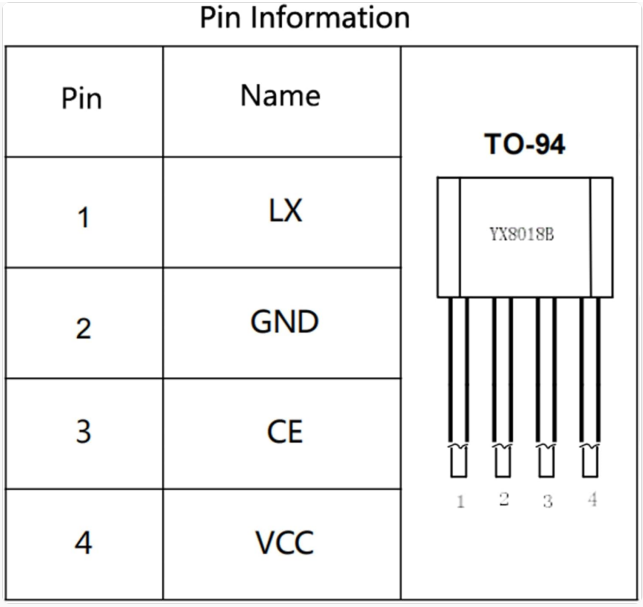


Image: YX8018 TO-94 Pin Information Diagram. This diagram illustrates the pinout for the YX8018 chip in a TO-94 package, showing pins 1 (LX), 2 (GND), 3 (CE), and 4 (VCC).

- **Pin 1 (LX):** Output pin for connecting to the LED.
- **Pin 2 (GND):** Ground connection.
- **Pin 3 (CE):** Control Enable pin, typically connected to the solar panel for light sensing.
- **Pin 4 (VCC):** Power supply input, usually from the battery.

4. Setup and Circuit Integration

The YX8018 chip is designed for straightforward integration into solar-powered LED circuits. Below are typical application circuit diagrams for different LED configurations.

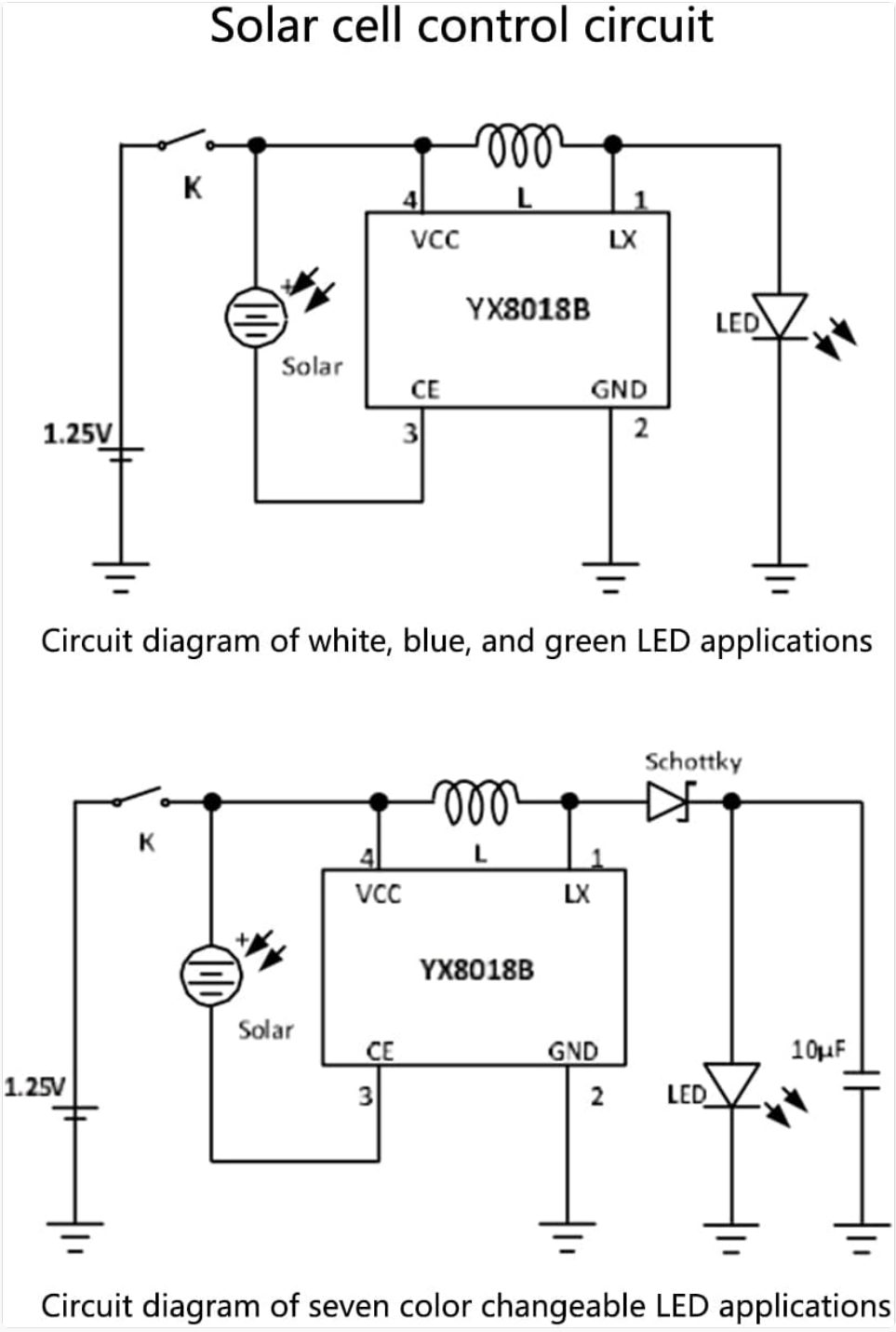


Image: YX8018 Solar Cell Control Circuit Diagrams. This image displays two circuit configurations: one for white, blue, and green LED applications, and another for seven-color changeable LED applications, both utilizing the YX8018 chip.

4.1. Circuit Diagram for White, Blue, and Green LED Applications

This circuit configuration is suitable for single-color LEDs such as white, blue, or green. It typically involves a solar panel, a 1.25V battery (e.g., Ni-MH), an inductor (L), and the LED connected to the LX output. The CE pin is connected to the solar panel for automatic light sensing, enabling the LED to turn on when it's dark and off when it's light.

4.2. Circuit Diagram for Seven-Color Changeable LED Applications

For multi-color or seven-color changeable LEDs, an additional Schottky diode and a capacitor (e.g., 10μF) are typically integrated into the circuit. This setup allows for more complex LED driving patterns and color transitions, while still leveraging the YX8018's core functionality for solar charging and light control.

Key Components:

- **Solar Panel:** For charging the battery.

- **Battery (1.25V):** Power source for the chip and LED.
- **Inductor (L):** Energy storage for boosting voltage to the LED.
- **LED:** The light source.
- **Schottky Diode (optional):** Used in multi-color applications for protection/efficiency.
- **Capacitor (optional):** Used in multi-color applications for smoothing power.

5. Operating Principles

The YX8018 chip functions as an intelligent controller for solar-powered lighting. Its primary operating principles include:

- **Automatic Light Sensing:** Through the CE pin connected to the solar panel, the chip detects ambient light levels. When sufficient light is present (daytime), it enters a charging state for the battery and keeps the LED off.
- **LED Driving:** When ambient light falls below a certain threshold (nighttime), the chip activates, drawing power from the battery to drive the connected LED(s) via the LX pin.
- **Voltage Boosting:** The chip incorporates internal circuitry to boost the 1.2V battery voltage to a level suitable for illuminating LEDs.
- **Over-Discharge Protection:** The YX8018 includes over-discharge protection to prevent damage to the battery, extending its lifespan.
- **Short Circuit Protection:** Internally integrated short circuit diodes provide protection against accidental short circuits.



Image: YX8018 Chips in Solar Garden Light Application. This image shows several YX8018 chips alongside examples of solar garden lights, illustrating their intended use in outdoor lighting products.

6. Maintenance

The YX8018 chip is a robust electronic component designed for long-term operation. Minimal maintenance is required for the chip itself, but proper care of the overall solar lighting system is essential.

- **Handling:** Always handle the chips with care, preferably using anti-static precautions, to prevent damage from electrostatic discharge.
- **Storage:** Store unused chips in their original packaging in a dry, cool environment away from direct sunlight and extreme temperatures.
- **Circuit Integrity:** Regularly inspect the solar light's wiring and connections for corrosion or damage. Ensure all solder joints are secure.
- **Solar Panel Cleaning:** Keep the solar panel clean from dust, dirt, and debris to ensure optimal charging efficiency.
- **Battery Health:** While the chip provides over-discharge protection, ensure the battery used is of good quality and suitable for solar applications. Replace aging batteries as needed.

7. Troubleshooting

If your solar light system using the YX8018 chip is not functioning as expected, consider the following troubleshooting steps:

- **LED Not Lighting Up at Night:**
  - **Check Battery:** Ensure the battery is fully charged. Test the battery voltage.
  - **Solar Panel:** Verify the solar panel is clean and receiving adequate sunlight during the day.
  - **Connections:** Inspect all wiring and solder joints for loose connections or corrosion, especially to the CE pin.
  - **LED Functionality:** Test the LED independently to ensure it is not faulty.
- **LED Stays On During the Day:**
  - **CE Pin Connection:** Ensure the CE pin is correctly connected to the solar panel and that the solar panel is generating voltage.
  - **Ambient Light:** Confirm the solar panel area is exposed to sufficient ambient light.
- **Dim LED Light:**
  - **Battery Charge:** The battery may not be fully charged or is nearing the end of its life.
  - **Inductor:** Ensure the inductor (L) is correctly sized and functioning.
  - **Connections:** Check for any high-resistance connections.
- **No Functionality:**
  - **Power Supply (VCC):** Verify that the VCC pin is receiving the correct voltage from the battery.
  - **Ground (GND):** Ensure a solid ground connection.
  - **Chip Damage:** In rare cases, the chip itself might be damaged.

8. Warranty and Support

Auto-plaza stands behind the quality of its products. For specific warranty information regarding the YX8018 Solar LED Driver Chips, please refer to the purchase documentation or contact Auto-plaza customer support directly.
For technical assistance, inquiries, or support, please visit the official Auto-plaza store or contact their customer service department. Contact information can typically be found on the product packaging or the seller's official website.

Manufacturer: Auto-plaza
Model: YX8018

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