TOPXCDZ High Power LED Chip (IR 880-890nm, 10W)

TOPXCDZ Infrared LED Chip (IR 880-890nm, 10W) Instruction Manual

1. Introduction

This manual provides essential information for the safe and effective use of your TOPXCDZ Infrared LED Chip. Please read these instructions carefully before installation and operation. This product is designed for applications requiring infrared illumination, such as night vision systems and CCTV cameras.

The specific model covered by this manual is the 10W IR 880-890nm LED Chip. Information regarding other available wavelengths (680nm, 730nm, 760nm, 800nm, 850nm, 940nm, 980nm, 1000nm) and power ratings (3W, 5W, 20W, 30W, 50W, 100W) is also included for reference.

2. Safety Information

- **Heat Management:** High power LED chips generate significant heat. Always ensure the LED is mounted on an adequate heat sink system. The working temperature must remain below 60°C (140°F) to prevent damage and ensure longevity.
- **Electrical Connections:** Observe correct polarity when connecting the LED chip. Refer to the positive (anode +) and negative (cathode -) markings on the LED. Incorrect polarity can cause immediate damage.
- **Power Supply:** Use a constant current LED driver specifically designed for high power COB LEDs. Do not connect directly to a constant voltage supply without a current limiting device.
- **Eye Safety:** Although infrared light is not visible, direct exposure to high-intensity IR radiation can be harmful to the eyes. Avoid looking directly into the illuminated LED.
- **Handling:** Handle the LED chip by its edges to avoid touching the light-emitting surface or electrical contacts.

3. Product Overview

The TOPXCDZ Infrared LED Chip is a high-power COB (Chip-on-Board) diode designed for various infrared illumination needs. Key features include:

- Double Golden Wire and Copper Frame construction for enhanced reliability and heat dissipation.
- Available in a range of infrared wavelengths from 680nm to 1050nm.
- Power options from 3W to 100W.

- Suitable for night vision, CCTV, and other infrared applications.

Figure 1: General view of the TOPXCDZ Infrared LED Chip.

3.1 Wavelength Characteristics

Infrared LEDs are characterized by their wavelength, which determines their visibility and application. The table below highlights the differences between common IR wavelengths.

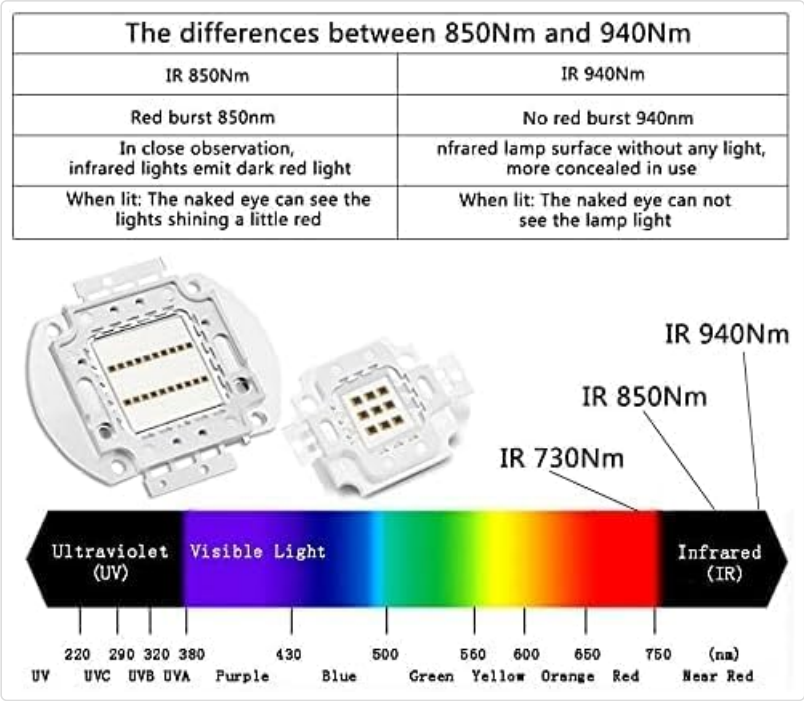

Figure 2: Comparison of 850nm and 940nm infrared light characteristics, and the full electromagnetic spectrum highlighting infrared.

3.2 Physical Dimensions

The physical dimensions of the LED chips vary depending on their power rating. Ensure the chosen heat sink and mounting solution are compatible with the chip's size.

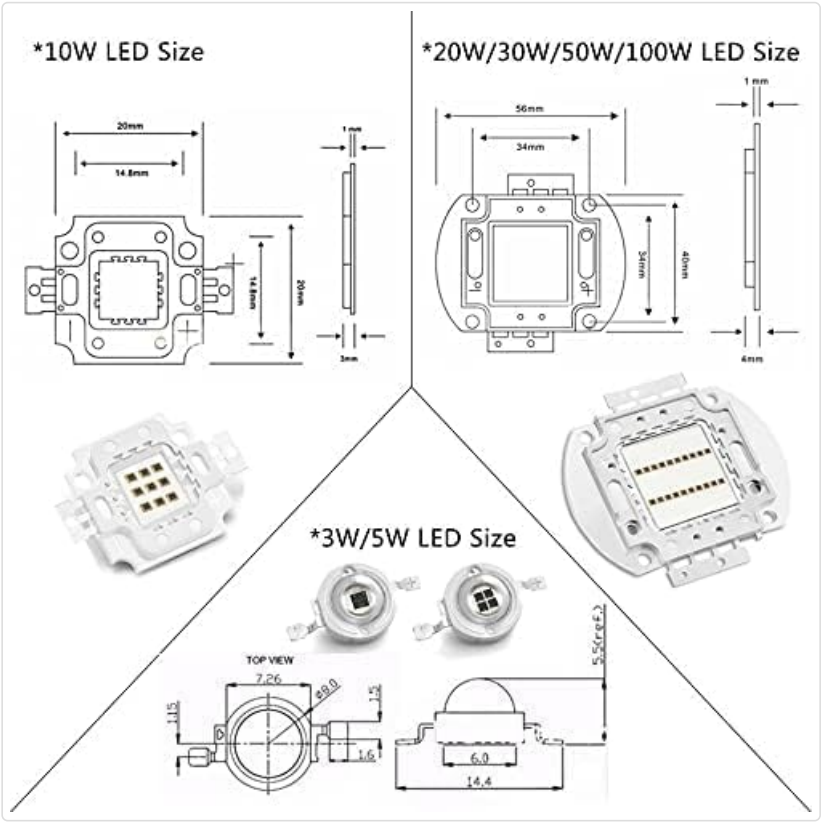

Figure 3: Detailed dimensions for 3W/5W, 10W, and 20W/30W/50W/100W LED chip sizes.

4. Setup

1. **Prepare Heat Sink:** Select an appropriate heat sink for your LED chip's power rating. The heat sink

material is typically aluminum. Ensure the heat sink surface is clean and flat.

2. **Apply Thermal Paste:** Apply a thin, even layer of thermal conductive paste or pad to the back of the LED chip or the heat sink surface to ensure efficient heat transfer.
3. **Mount LED Chip:** Securely mount the LED chip to the heat sink using screws or other appropriate fasteners. Ensure good contact between the LED and the heat sink.
4. **Connect Power:** Connect the positive (+) terminal of the LED chip to the positive output of a constant current LED driver. Connect the negative (-) terminal of the LED chip to the negative output of the LED driver. Double-check polarity before applying power.
5. **Verify Connections:** Ensure all connections are secure and insulated to prevent short circuits.

5. Operating Instructions

1. **Power On:** Once the LED chip is properly mounted and wired to a constant current driver, apply power to the driver.
2. **Monitor Temperature:** During initial operation, monitor the temperature of the LED chip and heat sink. The LED's operating temperature should not exceed 60°C (140°F). If the temperature is too high, improve heat dissipation or reduce the operating current.
3. **Observe Output:** For 850nm IR LEDs, a faint red glow may be visible. For 940nm IR LEDs, no visible light will be emitted. Use an IR-sensitive camera or device to verify output for invisible wavelengths.

6. Maintenance

- **Regular Cleaning:** Keep the surface of the LED chip and heat sink clean from dust and debris to ensure optimal performance and heat dissipation. Use a soft, dry cloth for cleaning.
- **Thermal Management Check:** Periodically check the thermal paste or pad for degradation. Reapply if necessary to maintain efficient heat transfer.
- **Connection Integrity:** Inspect electrical connections for any signs of corrosion or loosening. Tighten or clean as required.

7. Troubleshooting

- **LED Not Lighting Up:**
  - Check power supply: Ensure the constant current LED driver is receiving power and is functioning correctly.
  - Check polarity: Verify that the LED chip is connected with the correct positive (+) and negative (-) polarity.
  - Check connections: Ensure all wires are securely connected and there are no breaks in the circuit.
  - Verify wavelength: For 940nm and higher wavelengths, the light is invisible to the naked eye. Use an IR-sensitive camera to confirm operation.
- **LED Overheating:**
  - Improve heat sink: Ensure the heat sink is adequately sized for the LED's power output.
  - Reapply thermal paste: Check if the thermal paste or pad is properly applied and making good contact.
  - Reduce current: If possible, reduce the operating current from the LED driver, ensuring it remains within the LED's specifications.

- **Dim or Flickering Light:**
  - Check power supply: The constant current driver may be faulty or providing insufficient current.
  - Inspect connections: Loose or corroded connections can cause inconsistent performance.

8. Specifications

The following tables provide detailed electrical and optical characteristics for various TOPXCDZ Infrared LED Chip models.

8.1 General Product Specifications

- **Brand:** TOPXCDZ
- **Model Name:** IR Infrared
- **Item Model Number:** High Power LED Chip
- **Material:** Aluminum (base)
- **Finish Type:** Copper (frame)
- **Light Source Type:** LED
- **Item Weight:** Approximately 3.2 ounces
- **Package Dimensions:** Approximately 5 x 2 x 2 inches

8.2 Electrical and Optical Characteristics by Wavelength and Power

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 680NM	680-690NM	3W	2.0-2.2V	600mA	45x45mil
		5W	2.0-2.2V	1200mA	45x45mil
		10W	6-7V	900mA	45x45mil
		20W	20-22V	600mA	45x45mil
		30W	20-22V	900mA	45x45mil
		50W	20-22V	1500mA	45x45mil
		100W	20-22V	3000mA	45x45mil

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 730NM	730-740NM	3W	2.0-2.2V	600mA	45x45mil
		5W	2.0-2.2V	1200mA	45x45mil
		10W	6-7V	900mA	45x45mil
		20W	20-22V	600mA	45x45mil
		30W	20-22V	900mA	45x45mil
		50W	20-22V	1500mA	45x45mil
		100W	20-22V	3000mA	45x45mil

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 760NM	760-770NM	3W	1.8-2.0V	600mA	45x45mil
		5W	1.8-2.0V	1200mA	45x45mil
		10W	5-6V	900mA	45x45mil
		20W	18-20V	600mA	45x45mil
		30W	18-20V	900mA	45x45mil
		50W	18-20V	1500mA	45x45mil
		100W	18-20V	3000mA	45x45mil

Figure 4: Specifications for Infrared 680-690nm, 730-740nm, and 760-770nm LED Chips.

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 800NM	800-805NM	3W	1.6-1.8V	600mA	45x45mil
		5W	1.6-1.8V	1200mA	45x45mil
		10W	5-6V	900mA	45x45mil
		20W	16-18V	600mA	45x45mil
		30W	16-18V	900mA	45x45mil
		50W	16-18V	1500mA	45x45mil
		100W	16-18V	3000mA	45x45mil

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 850NM	850NM	3W	1.6-1.8V	600mA	45x45mil
		5W	1.6-1.8V	1200mA	45x45mil
		10W	5-6V	900mA	45x45mil
		20W	16-18V	600mA	45x45mil
		30W	16-18V	900mA	45x45mil
		50W	16-18V	1500mA	45x45mil
		100W	16-18V	3000mA	45x45mil

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 880NM	880-890NM	3W	1.6-1.8V	600mA	45x45mil
		5W	1.6-1.8V	1200mA	45x45mil
		10W	5-6V	900mA	45x45mil
		20W	16-18V	600mA	45x45mil
		30W	16-18V	900mA	45x45mil
		50W	16-18V	1500mA	45x45mil
		100W	16-18V	3000mA	45x45mil

Figure 5: Specifications for Infrared 800-805nm, 850nm, and 880-890nm LED Chips.

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 940NM	940NM	3W	1.4-1.6V	600mA	45x45mil
		5W	1.4-1.6V	1200mA	45x45mil
		10W	4-5V	900mA	45x45mil
		20W	14-16V	600mA	45x45mil
		30W	14-16V	900mA	45x45mil
		50W	14-16V	1500mA	45x45mil
		100W	14-16V	3000mA	45x45mil

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 970-980NM	970-980NM	3W	1.2-1.4V	600mA	45x45mil
		5W	1.2-1.4V	1200mA	45x45mil
		10W	4-5V	900mA	45x45mil
		20W	12-14V	600mA	45x45mil
		30W	12-14V	900mA	45x45mil
		50W	12-14V	1500mA	45x45mil
		100W	12-14V	3000mA	45x45mil

Color	Wavelength	Power	Vlotage	Current	Chip Size
Infrared 1000NM	1000-1050NM	3W	1.1-1.3V	600mA	45x45mil
		5W	1.1-1.3V	1200mA	45x45mil
		10W	4-5V	900mA	45x45mil
		20W	11-13V	600mA	45x45mil
		30W	11-13V	900mA	45x45mil
		50W	11-13V	1500mA	45x45mil
		100W	11-13V	3000mA	45x45mil

Figure 6: Specifications for Infrared 940nm, 970-980nm, and 1000-1050nm LED Chips.

9. Warranty and Support

For warranty information or technical support regarding your TOPXCDZ Infrared LED Chip, please contact the seller or manufacturer directly through the platform where the product was purchased. Ensure you have your purchase details and product model information available when contacting support.