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XEAST MOIP200P

XEAST SigOFIT Optical-Fiber Isolated Oscilloscope Probe MOIP200P Instruction Manual

Model: MOIP200P

1. Introduction

The XEAST SigOFIT Optical-Fiber Isolated Oscilloscope Probe MOIP200P is designed for high-frequency signal testing with exceptional common mode rejection ratio (CMRR) and isolation voltage. Utilizing exclusive SigOFIT technology, this probe ensures accurate signal fidelity by minimizing interference and providing true electrical isolation. It is particularly suitable for testing advanced semiconductor devices like GaN (Gallium Nitride) and SiC (Silicon Carbide) which operate at high frequencies and voltages.

Key features include a 200MHz bandwidth, 85kVpk common mode voltage, and a CMRR up to 180dB. The probe's design incorporates short test leads with coaxial cable transmission, resulting in a low input capacitance of 1pF minimum, making it safe for GaN testing. It offers a wide measurement range from ±0.01V to ±6250V with various attenuator tips, ensuring high signal-to-noise ratio and accuracy. The real optical isolation technology, powered by lasers over fiber, eliminates the need for batteries and allows for continuous operation.

2. What's in the Box

- SigOFIT Optical-Fiber Isolated Probe MOIP200P
- Power Adapter + Plug Leg
- Probe Mount
- Probe Tip (customizable)
- Replaceable Tip Set
- MMCX & MCX Adapter Coaxial Assembly

Technical Specifications

Model & Ordering Name	MOIP100P	MOIP200P	MOIP350P	MOIP500P	MOIP800P	MOIP1000P
Bandwidth	100MHz	200 MHz	350 MHz	500 MHz	800 MHz	1 GHz
Rise time	≤3.5ns	≤1.75n	≤1ns	≤700ps	≤438ps	≤350ps
CMRR	DC: 180dB 100MHz: 128dB	DC: 180dB 200MHz: 122dB	DC: 180dB 350MHz: 118dB	DC: 180dB 500MHz: 114dB	DC: 180dB 800MHz: 110dB	DC: 180dB 1GHz: 108dB
Output Voltage Range	±1.25V	±1.25V	±1.25V	±500mV	±500mV	±500mV
max. Differential voltage range	±6250V			±5000V		
Noise	<450μVrms			<450μVrms		
Propagation delay	15.42ns (2m fiber length)			16ns (2m fiber length)		
Power supply	DC: 12V 3A					
DC Gain accuracy	1%					
Common mode voltage range	85kVpk					
Fiber cable length	2m (Customizable)					
Temperature	0°C to 40°C (operating), -20°C to +70°C (non-operating)					
Humidity	5% to 85% RH (non-condensing), 75% RH above 30°C, 45% RH above 40°C					
Altitude	3000 m (operating), 12,000 m (non-operating)					
Usage	Indoor Use Only					
Package size	37*11*32.5 cm					
Package GW	2.2KG					

Image: The complete kit for the SigOFIT Optical-Fiber Isolated Probe MOIP200P, including the probe, power adapter, various tips, and adapters, neatly arranged on a white surface.

3. Setup and Basic Operation

Follow these steps for proper setup and basic operation of your MOIP200P probe:

1. **Connect the Optical-to-Electrical Reducer:** Connect the optical-to-electrical reducer of the MOIP200P probe to your oscilloscope.
2. **Set Input Impedance:** On your oscilloscope, set the input impedance to 50Ω.
3. **Connect Attenuating Tip:** Connect the desired attenuating tip to the Electrical-to-Optical converter.
4. **Power the Reducer:** Use the standard Type-C cable to power the Optical-to-Electrical reducer. Ensure you use the provided standard Type-C cable for guaranteed probe performance.
5. **Check Power Status:** Short press the Power button on the probe to check its battery status. LED flashes indicate remaining power (4 flashes: Full, 3 flashes: 75%, 2 flashes: 50%).
6. **Solder MCX Connector (if applicable):** Solder the MCX connector to the Device Under Test (DUT) board.

7. **Plug MCX Head:** Plug the MCX head into the MCX socket on the DUT board.
8. **Power Up DUT Board:** Power up the DUT board.
9. **Adjust Oscilloscope Settings:** Adjust the oscilloscope settings as needed and proceed with your test.
10. **Perform Calibration:** For more accurate results, press the 'Cali.' button on the probe to perform a calibration. This does not require disconnecting the test connection.

Your browser does not support the video tag.

Video: Demonstrates the basic setup and operation of the SigOFIT Optical-Fiber Isolated Probe, including connecting to an oscilloscope, setting impedance, attaching attenuator tips, powering the device, and performing calibration. It also highlights important precautions.

4. Precautions and Safety

- **Charging Safety:** DO NOT charge the probe while it is powered on or connected to the circuit under test. This can damage the probe and endanger personal safety.
- **Fiber Cable Bending:** DO NOT bend the fiber cable to a radius less than 8cm. Bending it too sharply may break the cable.
- **Disassembly/Movement:** When disassembling or moving the probe, always hold the main body of the probe. DO NOT pull the optical cable directly.
- **Heat Dissipation:** Ensure the heat dissipation port of the opto-electric converter is not blocked to prevent overheating, which can damage the probe.
- **Input Voltage Range:** If the input voltage exceeds the probe's range, the buzzer will emit a rapid "dididid..." sound. In this case, use a suitable attenuator for testing.
- **Overheating Warning:** If the buzzer emits a "beep" every 2 seconds, it signals that the opto-electric converter is overheating. Check if the heat dissipation port is blocked.
- **Adapter Priority:** MMCX-adapter & MCX-adapter have higher priority than coaxial cables for connections. It is highly recommended to use the adapter connection as the choice of connectors directly affects measurement results.
- **Probe Tip Replacement:** The head of the attenuating tip is replaceable. Use needle-nose pliers to grasp the tail end of the head for replacement.

Your browser does not support the video tag.

Video: Provides essential precautions for handling the SigOFIT Optical-Fiber Isolated Probe, including proper cable bending, safe disconnection, ensuring clear heat dissipation, and understanding buzzer warnings for overheating or over-range input.

5. Operating Considerations for GaN Testing

Gallium Nitride (GaN) devices offer excellent switching capabilities, reducing power consumption and increasing power supply efficiency. However, testing GaN circuits presents unique challenges, particularly regarding MOSFET blow-up, which can occur right after power-on or during testing due to serious parameter problems or simultaneous conduction of high and low sides in a half-bridge circuit.

Traditional high-voltage differential probes are often unreliable for GaN half-bridge tests. They can cause device blow-up and produce distorted waveform signals with no reference value for analysis. This is primarily due to their poor common mode rejection ability, which fails to suppress high-frequency common mode interference, leading to false oscillations and potential mis-conduction.

The SigOFIT Optical-Fiber Isolated Probe, with its superior CMRR (up to 180dB) and true electrical isolation, effectively suppresses these oscillations and provides clean, accurate signals. This makes it a safer and more reliable choice for testing GaN devices, preventing damage and ensuring precise measurements even at high frequencies and voltages.

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Video: Explains the phenomenon of Gallium Nitride (GaN) blow-up during testing and demonstrates why traditional differential probes are unreliable. It highlights the superior performance of the SigOFIT Optical-Fiber Isolated Probe in accurately measuring GaN circuits without

interference.

6. Maintenance

To ensure the longevity and optimal performance of your SigOFIT Optical-Fiber Isolated Oscilloscope Probe, follow these maintenance guidelines:

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the probe. Avoid using harsh chemicals or abrasive materials.
- **Fiber Optic Care:** Handle the fiber optic cable with extreme care. Avoid sharp bends, kinks, or excessive pulling, as this can damage the internal optical fibers.
- **Storage:** Store the probe and its accessories in the provided protective case when not in use to prevent physical damage and exposure to dust or moisture.
- **Tip Inspection:** Regularly inspect the attenuator tips for any signs of wear or damage. Replace worn tips to maintain measurement accuracy.
- **Calibration:** Perform calibration as needed, especially when precise measurements are critical, by pressing the 'Cali.' button on the probe.

7. Troubleshooting

- **Buzzer Rapid "didididi..." Sound:** This indicates that the input voltage exceeds the probe's measurement range. Adjust the attenuator tip or the oscilloscope's settings to bring the signal within the appropriate range.
- **Buzzer "beep" Every 2 Seconds:** This signals that the opto-electric converter is overheating. Check if the heat dissipation port is blocked and ensure adequate ventilation. Disconnect the probe if overheating persists.
- **No Signal or Distorted Waveform:**
  - Verify all connections are secure and correctly made.
  - Ensure the probe is properly powered and charged.
  - Check the fiber optic cable for any visible damage or sharp bends.
  - Confirm the oscilloscope's input impedance is set to 50Ω.
  - Perform a calibration using the 'Cali.' button.
- **Inaccurate Readings:**
  - Ensure the correct attenuator tip is selected for the voltage being measured.
  - Perform a calibration.
  - Check for any external electromagnetic interference in the testing environment.

8. Specifications

Feature	Specification
Brand	XEAST
Model	MOIP200P
Bandwidth	200 MHz
Common Mode Voltage	85 kVpk
CMRR	Up to 180 dB

Input Capacitance	1 pF minimum
DC Gain Accuracy	≤1%
Noise	≤ 0.45 mVrms
Zero Drift	<0.1% (works 5 mins later)
Gain Drift	<1%
Cable Type	Optical fiber
Connector Type	BNC
Compatible Devices	Oscilloscope
Item Weight	2.2 Pounds
Product Dimensions	11.02 x 9.45 x 3.15 inches

9. Warranty and Support

This XEAST product is covered by a standard manufacturer's warranty against defects in materials and workmanship. For specific warranty details, duration, and terms, please refer to the documentation included with your purchase or contact XEAST customer support.

For technical support, troubleshooting assistance, or to inquire about replacement parts and accessories, please visit the official XEAST store or contact their customer service department. You can find more information and contact details at the XEAST Store on Amazon.

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