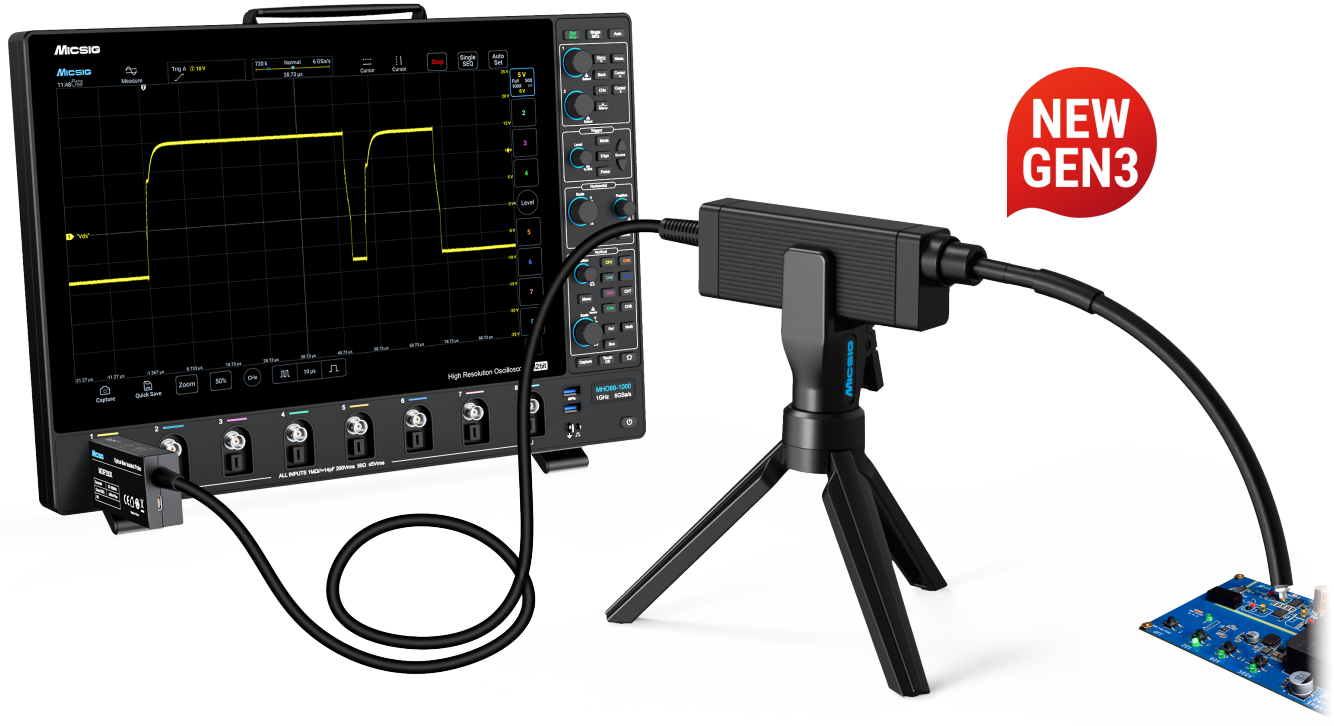
SigOFIT Optical Isolated Probe

MOIP Series



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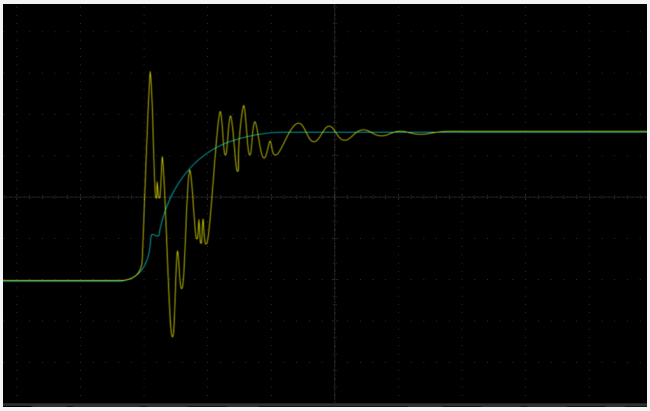
Product Overview

The Micsig SigOFIT™ optical isolated probe, MOIP Series, offers a bandwidth range from 200 MHz to 1GHz, enabling differential measurements from ±0.01 V up to ±20 kV. Built on Micsig's exclusive SigOFIT™ leading technology, MOIP Series delivers an exceptionally high CMRR, reaching up to 128 dB at 100 MHz, with an isolation voltage of up to 85 kV and an ultra-low noise floor of less than 0.3 mVrms. It reveals the complete truth of signals across its bandwidth range, serving as the ultimate referee for verifying the fidelity of signals measured by other voltage probes.

Product Features

- Automatic calibration: Ready for measurement upon power-on, no manual calibration required.
- Complete electrical isolation with isolation voltage up to 85 kV.
- Ultra-high common-mode rejection ratio (up to 180 dB).
- High-speed response for accurate and reliable high-frequency signal measurement.
- Low noise and strong immunity to electromagnetic interference.
- DC gain accuracy better than 1%.
- Fiber length: 2 m (customizable fiber length available).
- Compatible with various attenuators, supporting measurement from ±0.01 V to ±20 kV (differential-mode signals; measurement voltage range is customizable).



High Voltage Differential Probe SigOFIT Optical-fiber Isolated Probe

Present True Signal

SigOFIT probe delivers highest CMRR: over 128dB at 100MHz. It's the ultimate referee of signal fidelity measured by other voltage probes.

Best Probe for Third-Gen Semiconductor

Devices like SiC and GaN can switch high voltages in a few nanoseconds and generate very high-energy, high-frequency harmonics. Even at its highest bandwidth, the SigOFIT probe still maintains over 100dB CMRR and perfectly suppresses oscillations caused by high-frequency common-mode noise, making it the best choice for third-generation semiconductor test and measurement.

Highest Accuracy

SigOFIT probe has excellent amplitude-frequency characteristics. DC gain accuracy ≤ 1%, while noise ≤ 0.3mVrms. Zero drift <0.1% (works 5 mins later), gain drift also <1%.

Calibration-Free Throughout the Entire Test Process

Real-time optical power compensation ensures continuous high-fidelity waveform output in complex 24/7 measurement environments, with no manual calibration required.

Switching between 0dB and 20dB

SigOFIT optical isolation probe can be switched between 0dB and 20dB. Besides, different attenuators can be replaced to improve the signal-to-noise ratio, so that a single attenuator also has two range gears to improve the signal-to-noise ratio.

Key Solution for Wide Semiconductor Testing

The test leads of SigOFIT probe are short and with coaxial cable transmission, the input capacitance is as low as 1pF minimum, making it very safe for testing GaN devices.

Wide Measurement Range

Unlike traditional differential probes can only test high-voltage signals, the SigOFIT probe can be used with different attenuator tips to test differential mode signals from ±0.01V to ±20kV, achieving full-range output and very high signal-to-noise ratio.

Product Specifications

Model	MOIP1000P	MOIP500P	MOIP350P	MOIP200P
Bandwidth	1GHz	500MHz	350MHz	200MHz
Rise time	≤ 450ps	≤ 800ps	≤ 1ns	≤ 1.75ns
CMRR	DC: 180dB 1GHz: 108dB	DC: 180dB 500MHz: 114dB	DC: 180dB 350MHz: 118dB	DC: 180dB 200MHz: 122dB
Differential Voltage Range	Standard: OP50(MMCX), ±25V OP5000(MCX), ±2500V Other test ranges customizable.	Standard: OP50(MMCX), ±25V OP5000(MCX), ±2500V Other test ranges customizable.	Standard: OP50(MMCX), ±25V OP5000(MCX), ±2500V Other test ranges customizable.	Standard: OP50(MMCX), ±25V Other test ranges customizable.
Noise	<0.45mVrms	<0.3mVrms	<0.3mVrms	<0.3mVrms
DC Gain Accuracy	1%			
Common Mode Voltage Range	85kVpk			
Power Supply	DC 12V			
Fiber cable length	2m (Customizable)			
Interface	Universal BNC			

* **Fiber length and test voltage range are customizable.**

Mechanical Characteristics

Characteristic	Parameter
Optical-Electrical (O-E) converter size	9.8*4.5*2.3cm
Electrical–Optical (E-O) converter size	11*4*2.4cm
Optical cable length	2m (Customizable)

Applications

SigOFIT™ optical isolated probe reveals the complete truth of signals across its bandwidth range, serving as the ultimate referee for verifying the fidelity of signals measured by other voltage probes.

* Design of motor drive, power converter, electronic ballast
* Design of GaN, SiC, IGBT Half/Full bridge devices
* Design of inverter, UPS and switching power supply
* Safety test for high voltage, high bandwidth applications
* Power device evaluation
* Current shunt measurements
* EMI & ESD troubleshooting
* Floating measurements

Probe Connector

No.	Attenuator	Characteristics
1	Standard Model Attenuator	SigOFIT probe can be used with different attenuator tips to test differential mode signals from ±0.01V to ±20kV. test voltage range are customizable.
2	Ultra-High Voltage Attenuator	Supports 5–20 kVpk input for high-voltage signal measurement, equipment protection, and high-energy testing.
3	RF High-Voltage Attenuator	Maximum supported voltage: 5 kV, frequency range: 300 kHz – 50 MHz, accuracy: 1%, no heating or breakdown.
4	Long Type Attenuator (typical 1M)	1m attenuator for high-low temperature testing: keeps the optical isolation probe outside the chamber, with the extended attenuator inside.
5	SMA Adapter	Direct SMA connection to the optical isolation probe, designed for testing tiny signals that cannot be attenuated further.

1. Standard Model Attenuator

SigOFIT optical isolated probe, when paired with different attenuators, supports differential signal measurements from ±0.01 V to ±5000V.

Attenuator Model	Jack type	Attenuation ratio	Voltage range	Non-destructive voltage (Max.)	Input impedance
OP2-3	MMCX	2:1 @0dB	±1V	50Vpk	1MΩ ‖ ≤ 26pF
		0.2:1 @20dB	±0.1V		
OP20-3	MMCX	20:1 @0dB	±10V	1000Vpk	4.47MΩ ‖ ≤ 4pF
		2:1 @20dB	±1V		
OP50-3	MMCX	50:1 @0dB	±25V	1000Vpk	4.19MΩ ‖ ≤ 2pF
		5:1 @20dB	±2.5V		
OP100-3	MMCX	100:1 @0dB	±50V	1000Vpk	4.10MΩ ‖ ≤ 2pF
		10:1 @20dB	±5V		
OP1000-3	MCX	1000:1 @0dB	±500V	2500Vpk	20.94MΩ ‖ ≤ 1pF
		100:1 @20dB	±50V		
OP2000-3	MCX	2000:1 @0dB	±1000V	2500Vpk	20.52MΩ ‖ ≤ 1pF
		200:1 @20dB	±100V		
OP5000-3	MCX	5000:1 @0dB	±2500V	2500Vpk	40.82MΩ ‖ ≤1pF
		500:1 @20dB	±250V		
OP10000-3	LCX	10000:1 @0dB	±5000V	8000Vpk	40.82MΩ ‖ ≤ 1pF
		1000:1 @20dB	±500V		
OP2-5	MMCX	2:1 @0dB	±1V	50Vpk	1MΩ ‖ ≤ 26pF
		0.2:1 @20dB	±0.1V		
OP20-5	MMCX	20:1 @0dB	±10V	1000Vpk	4.47MΩ ‖ ≤ 4pF
		2:1 @20dB	±1V		
OP50-5	MMCX	50:1 @0dB	±25V	1000Vpk	4.19MΩ ‖ ≤ 2pF
		5:1 @20dB	±2.5V		
OP100-5	MMCX	100:1 @0dB	±50V	1000Vpk	4.10MΩ ‖ ≤ 2pF
		10:1 @20dB	±5V		
OP1000-5	MCX	1000:1 @0dB	±500V	2500Vpk	20.94MΩ ‖ ≤ 1pF
		100:1 @20dB	±50V		
OP2000-5	MCX	2000:1 @0dB	±1000V	2500Vpk	20.52MΩ ‖ ≤ 1pF
		200:1 @20dB	±100V		
OP5000-5	MCX	5000:1 @0dB	±2500V	2500Vpk	40.82MΩ ‖ ≤1pF
		500:1 @20dB	±250V		
OP10000-5	LCX	10000:1 @0dB	±5000V	8000Vpk	40.82MΩ ‖ ≤ 1pF
		1000:1 @20dB	±500V		

(Continued from the above table)

Attenuator Model	Jack type	Attenuation ratio	Voltage range	Non-destructive voltage (Max.)	Input impedance
OP2-1G	MMCX	2:1 @0dB	±1V	50Vpk	1MΩ ‖ ≤ 26pF
		0.2:1 @20dB	±0.1V		
OP20-1G	MMCX	20:1 @0dB	±10V	1000Vpk	4.47MΩ ‖ ≤ 4pF
		2:1 @20dB	±1V		
OP50-1G	MMCX	50:1 @0dB	±25V	1000Vpk	4.19MΩ ‖ ≤ 2pF
		5:1 @20dB	±2.5V		
OP100-1G	MMCX	100:1 @0dB	±50V	1000Vpk	4.10MΩ ‖ ≤ 2pF
		10:1 @20dB	±5V		
OP1000-1G	MCX	1000:1 @0dB	±500V	2500Vpk	20.94MΩ ‖ ≤ 1pF
		100:1 @20dB	±50V		
OP2000-1G	MCX	2000:1 @0dB	±1000V	2500Vpk	20.52MΩ ‖ ≤ 1pF
		200:1 @20dB	±100V		
OP5000-1G	MCX	5000:1 @0dB	±2500V	2500Vpk	40.82MΩ ‖ ≤1pF
		500:1 @20dB	±250V		
OP10000-1G	LCX	10000:1 @0dB	±5000V	8000Vpk	40.82MΩ ‖ ≤ 1pF
		1000:1 @20dB	±500V		

* OPXX-*, where XX indicates the attenuation ratio and * indicates the bandwidth.

* Attenuators for different measurement ranges can be customized.

2. Ultra-High Voltage Attenuator

Supports 5-20 kVpk input; ultra-wide range design enables stable coverage from low to ultra-high voltage, greatly extending the test scope. Delivers safe, stable and reliable measurements even in extreme high-voltage conditions.

Attenuator Model	Attenuation ratio	Voltage range	Non-destructive voltage (Max.)	Input impedance
OP20000	20000:1 @0dB	±10000V	15000Vpk	120MΩ ‖ ≤ 2pF
	2000:1 @20dB	±1000V		
OP40000	40000:1 @0dB	±20000V	30000Vpk	240MΩ ‖ ≤ 1pF
	4000:1 @20dB	±2000V		

3. RF High-Voltage Attenuator

RF connectors are mainly used to transmit radio frequency signals and are widely applied in various communication and radar equipment, aviation and satellite communications, medical electronics, and other fields.

Bandwidth: 300 kHz–50 MHz

Peak voltage: 5000Vpk

Accuracy: 1%

No heating

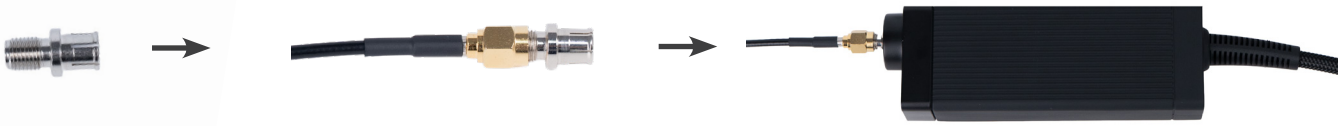
4. Long Type Attenuator (typical 1M)

1m attenuator for high-low temperature testing: keeps the optical isolation probe outside the chamber, with the extended attenuator inside.

- Attenuators of multiple models are available in a 1m length.
- Customization of different lengths is also supported.

5. SMA Adapter

SMA Adapter: It allows users to directly connect to the optical isolation probe via SMA, designed for testing tiny signals that cannot be attenuated further, with a maximum input voltage of 1V. A matching SMA connecting cable is included, which can be directly connected to the signal source.



Attenuator Accessories

Attenuator Connector

The MOIP Series supports multiple connector types for DUT connection. Different connector choices may influence measurement accuracy, so the standard connector is recommended whenever possible. Optional connector accessories are available upon request through customer service.

Accessory Type	Voltage range	Non-destructive voltage (Max.)
MCX jack	±2500V	≤ 2500Vpk
MMCX jack	±50V	≤ 1000Vpk
MCX coaxial lead	±2500V	≤ 2500Vpk
MMCX coaxial lead	±50V	≤ 1000Vpk
MCX IC clip	±2500V	≤ 2500Vpk
MMCX IC clip	±50V	≤ 1000Vpk
LCX coaxial lead	±5000V	≤ 8000Vpk

Attenuator Configuration

Accessories	MOIP1000P	MOIP500P	MOIP350P	MOIP200P
50X Attenuator OP50	Standard 1 pc	Standard 1 pc	Standard 1 pc	Standard 1 pc
5000X Attenuator OP5000	Standard 1 pc	Standard 1 pc	Standard 1 pc	X
MMCX jack	Standard 5 pcs	Standard 5 pcs	Standard 5 pcs	Standard 5 pcs
MMCX coaxial lead	Standard 1 pc	Standard 1 pc	Standard 1 pc	Standard 1 pc
MMCX five-hole connector	Standard 1 pc	Standard 1 pc	Standard 1 pc	Standard 1 pc
MCX jack	Standard 5 pcs	Standard 5 pcs	Standard 5 pcs	X
MCX jack	Standard 1 pc	Standard 1 pc	Standard 1 pc	X
LCX coaxial lead	X	X	X	X
Other Attenuator	Optional			

* For attenuators with MMCX: Includes 5 MMCX female sockets, 1 MMCX coaxial extension cable, and 1 five-port MMCX connector block.
* For attenuators with MCX: Includes 5 MCX female sockets and 1 MCX coaxial extension cable.
* For attenuators with LCX: Includes 1 LCX coaxial extension cable.

Optional Accessories for Attenuator Connectors

Set type	Set included
MCX set	5 x MCX jacks + 1 x MCX coaxial lead
MMCX set	5 x MMCX jacks + 1 x MMCX coaxial lead
LCX set	1 x LCX coaxial lead
MCX dupont line set	1 x MCX dupont line + pin header
MMCX dupont line set	1 x MMCX dupont line + pin header
MCX IC clip set	1 x MCX dupont line + 1 pair of IC clip
MMCX IC clip set	1 x MMCX dupont line + 1 pair of IC clip
MMCX five-hole connector set	1 x MMCX five-hole connector + pin header
RS-485 Data converter set	1 x RS-485 Data converter + power adapter

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