

HIOKI

CLAMP SENSOR SERIES

CLAMP SENSOR



Wide-band Models from DC to 100 MHz

CLAMP ON PROBE 3276



ISO 9001
JMI-0216



ISO14001
JQA-E-90091



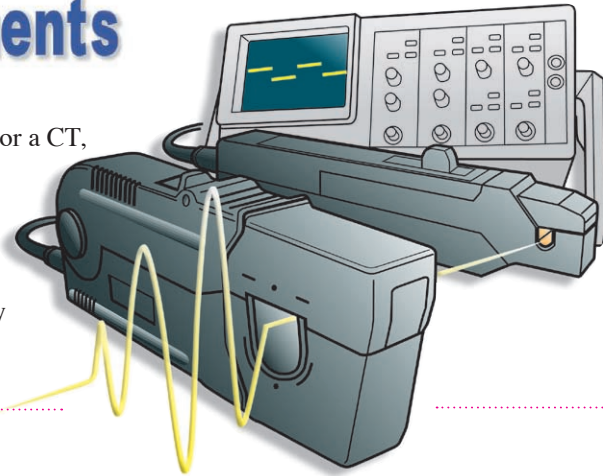
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CLAMP ON PROBE 3273-50 to 3276

From High Sensitivity (High S/N Ratio) to Large Current Measurements

Because current measurement requires the insertion of a shunt or a CT, the task often becomes difficult due to breaks in the electrical path. The 3273-50 - 3276 CLAMP ON PROBES only need to be connected directly into the BNC input on waveform observation equipment such as an oscilloscope or a recorder. Then simply clamp onto the conductor to be measured to easily observe current waveforms under a wide bandwidth and high sensitivity conditions.



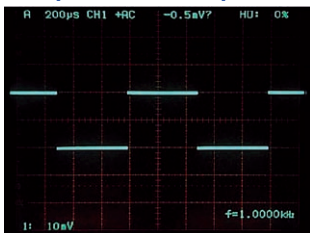
Important Characteristics

3273-50

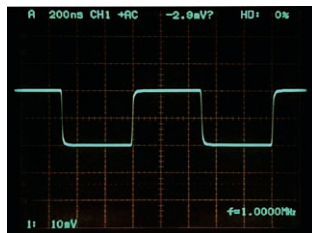
DC to 50 MHz

3273-50

■ Square wave response

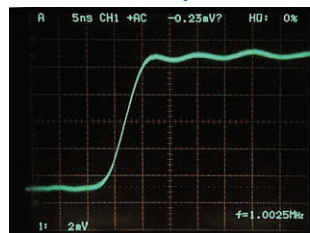


Input: 1 kHz square wave 200 mAp-p
(Oscilloscope bandwidth 400 MHz)



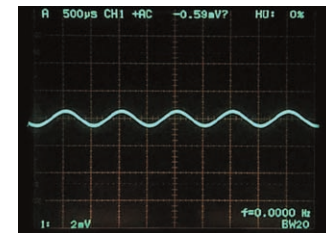
Input: 1 MHz square wave 200 mAp-p
(Oscilloscope bandwidth 400 MHz)

■ Transient response



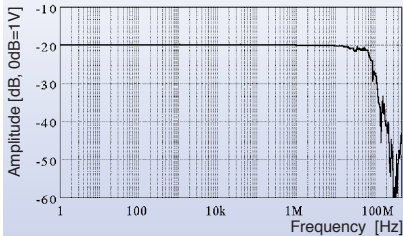
Input: 100 mA-p-p
(Oscilloscope bandwidth 400 MHz)

■ Low-current measurement

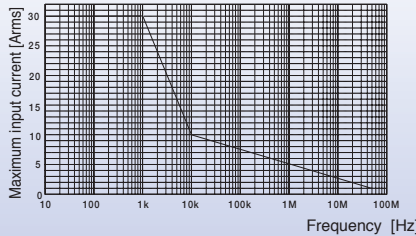


Input: 1 kHz sine wave 10 mAp-p
(Oscilloscope bandwidth 20 MHz)

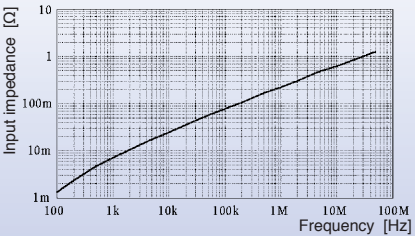
■ 1. Frequency response (Characteristics Example)



■ 2. Continuous maximum input rating (Frequency derating)



■ 3. Input impedance (Characteristics Example)

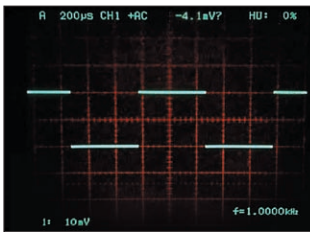


3276

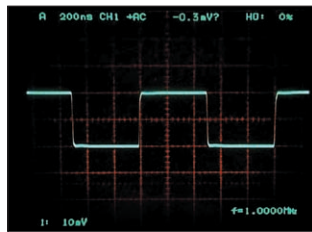
DC to 100 MHz

3276

■ Square wave response

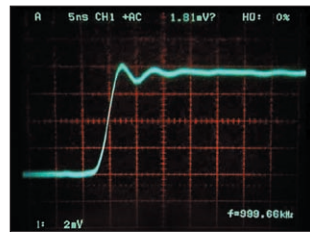


Input: 1 kHz square wave 200 mAp-p
(Oscilloscope bandwidth 400 MHz)



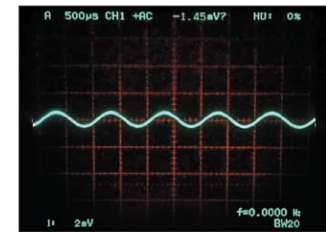
Input: 1 MHz square wave 200 mAp-p
(Oscilloscope bandwidth 400 MHz)

■ Transient response



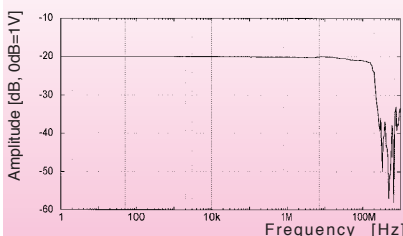
Input: 100 mA-p-p
(Oscilloscope bandwidth 400 MHz)

■ Low-current measurement

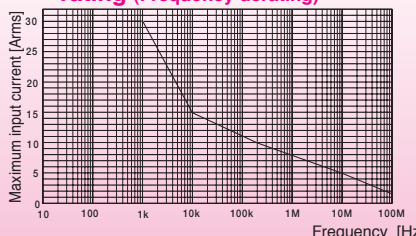


Input: 1 kHz sine wave 10 mAp-p
(Oscilloscope bandwidth 20 MHz)

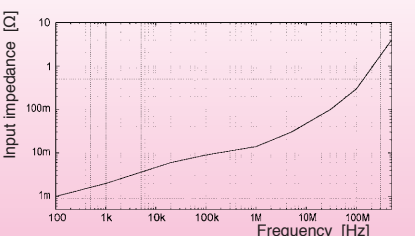
■ 1. Frequency response (Characteristics Example)



■ 2. Continuous maximum input rating (Frequency derating)



■ 3. Input impedance (Characteristics Example)



CLAMP ON PROBE 3273-50 to 3276



3273-50



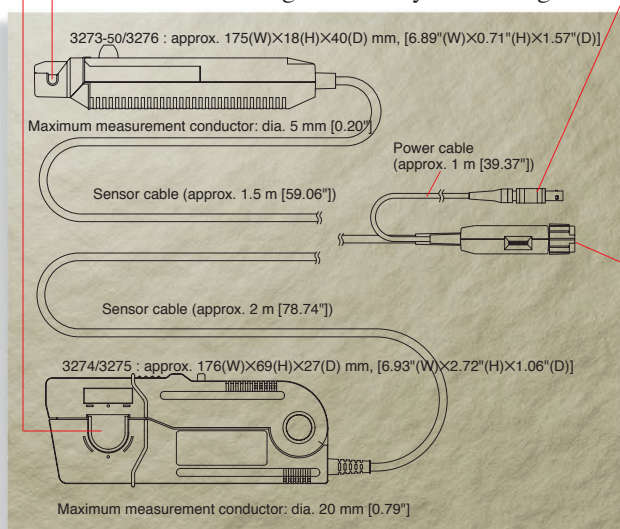
3276

3273-50 / 3276 Specifications (accuracy is guaranteed at 23±3°C [73±5°F] after the power has been on for 30 minutes)

		3273-50	3276
Frequency bandwidth		DC to 50 MHz (-3 dB) * See Fig. 1 on page 1.	DC to 100 MHz (-3 dB) * See Fig. 1 on page 1.
Rise time		7 ns or less	3.5 ns or less
Continuous maximum input range		30 Arms * Frequency derating see Fig. 2 on page 1.	30 Arms * Frequency derating see Fig. 2 on page 1.
Maximum peak current value		Non-continuous 50 Apeak	Non-continuous 50 Apeak
Output voltage rate		0.1 V/A	0.1 V/A
Amplitude accuracy		±1.0% rdg. ±1 mV (0 to 30 Arms / DC, 45 to 66 Hz) ±2.0% rdg. (30 Arms to 50 Apeak / DC, 45 to 66 Hz)	±1.0% rdg. ±1 mV (0 to 30 Arms / DC, 45 to 66 Hz) ±2.0% rdg. (30 Arms to 50 Apeak / DC, 45 to 66 Hz)
Noise		2.5 mArms or less (measured with 20 MHz bandwidth equipment)	2.5 mArms or less (measured with 20 MHz bandwidth equipment)
Input impedance		* See Fig. 3 on page 1.	* See Fig. 3 on page 1.
Sensitivity temperature characteristics		Within ±2% (At 50 Hz/30 Arms input, 0 to 40°C [32 to 104°F])	Within ±2% (from 0 to 40 °C [32 to 104 °F])
Maximum rated power		5.6 VA (Input within the maximum input range.)	5.3 VA (Input within the maximum input range.)
Power supply voltage		±12 V ±0.5 V	±12 V ±0.5 V
Operating temperature and humidity		0 to 40°C [32 to 104°F], 80% rh or less (no condensation)	0 to 40°C [32 to 104°F], 80% rh or less (no condensation)
Storage temperature and humidity		-10 to 50°C [14 to 122°F], 80% rh or less (no condensation)	-10 to 50°C [14 to 122°F], 80% rh or less (no condensation)
Effect of external magnetic fields		Max. 20 mA (equivalent) (DC and 60 Hz, Magnetic field of 400 A/m)	Max. 5 mA (equivalent) (DC and 60 Hz, Magnetic field of 400 A/m)
Max. rated voltage to earth		300 V, CAT-I (insulated conductor)	300 V, CAT-I (insulated conductor)
Measurement conductor		Diameter max. 5 mm [0.20"]	Diameter max. 5 mm [0.20"]
Dimensions and mass		Sensor: approx. 175(W)×18(H)×40(D) mm; 230 g [6.89"(W)×0.71"(H)×1.57"(D), 8.1 oz.] Termination unit: approx. 27(W)×55(H)×18(D) mm [1.06"(W)×2.17"(H)×0.71"(D)]	Sensor: approx. 175(W)×18(H)×40(D) mm; 240 g [6.89"(W)×0.71"(H)×1.57"(D), 8.5 oz.] Termination unit: approx. 27(W)×55(H)×18(D) mm [1.06"(W)×2.17"(H)×0.71"(D)]
Cable length		Sensor cable: approx. 1.5 m [59.06"] (BNC connector) Power cable: approx. 1 m [39.37"]	Sensor cable: approx. 1.5 m [59.06"] (BNC connector) Power cable: approx. 1 m [39.37"]
Supplied accessories		Soft case ×1	Hard case ×1
Applicable standards	Safety standards	EN 61010 Measurement category I (anticipated transient overvoltage 1500 V), Pollution Degree 2	EN 61010 Measurement category I (anticipated transient overvoltage 1500 V), Pollution Degree 2
	EMC	EN 61326 EN 61000-3-2 EN 61000-3-3	EN 61326 EN 61000-3-2 EN 61000-3-3

• Sensor head

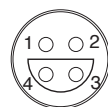
Composed of molded parts, ferrite and Hall elements. The thin-film of the Hall element especially improves detection sensitivity to realize wider bands and high sensitivity monitoring.



• Power supply plug

Connects to the FET probe power supply outlet of an oscilloscope or to the optional 3269 / 3272 power supply unit.
(Provided that connector type, pin assignment, voltage, and capacity rating match, the 3273-50 to 3276 can be powered also from another source. For operation safety, be sure to refer to the specifications to ensure an exact match.)

Power supply plug pin assignment (Plug as seen from the front)



- 1 : Not connected
- 2 : GND
- 3 : V- (-12V)
- 4 : V+ (+12V)

* Connector type: LEMO inc./ FFA.0S.304.CLAC42Z

• BNC output connector

Can be connected directly to the BNC input of an oscilloscope or level recorder or similar device.

Output voltage rate: 0.1 V/A (3273-50 / 3276)
0.01 V/A (3274 / 3275)

(Use only equipment with an input impedance of 1 MΩ or more.)