High Frequency Low Voltage Differential Probe

DP6021

（20V/ 200MHz）

Preface

First of all, thank you for purchasing our products, this instruction manual is the description about the function, usage, operation attention points, etc. Before use, please read the instructions carefully and use correctly.

Manual annotation will use the following symbols to distinguish.

This symbol means it is harmful to the machine and human body; you must strictly follow the instruction manual to operate.

Warning In the case of wrong operation, the user risk injury. The content under this mark records the relevant matters needing attention to avoid such dangers.

Notice The user may have suffered minor injuries and material damage while with the wrong operation, to avoid such situation, note the matters needing attention.

Note This symbolizes important note about how to use the machine.

To the safely use the machine, you must abide by the following safety precautions strictly. The violation against the manual is likely to damage the protective function of the machine. In addition, the company is not responsible for any safety problem caused by the violation of matters needing attention in operation.

- Please watch out for the maximum input voltage to avoid shock accident
- Do not use the device under humid or explosive environment
- Make sure the circuit under test is off before the probe is plugged in
- Turn off the circuit and then take off the probe after the testing
- Make sure the BNC port is well grounded when the probe BNC output cable is connected to the oscilloscope or other devices.
- Check the external surface of the probe before testing. If there's any damage upon the probe, please stop the usage.
- Power the probe with the standard adapter.

DP6021 Brief Description

Type	Maximum input differential voltage	Bandwidth	Attenuation ratio
DP6021	20V	200MHz	10X

1. Summary

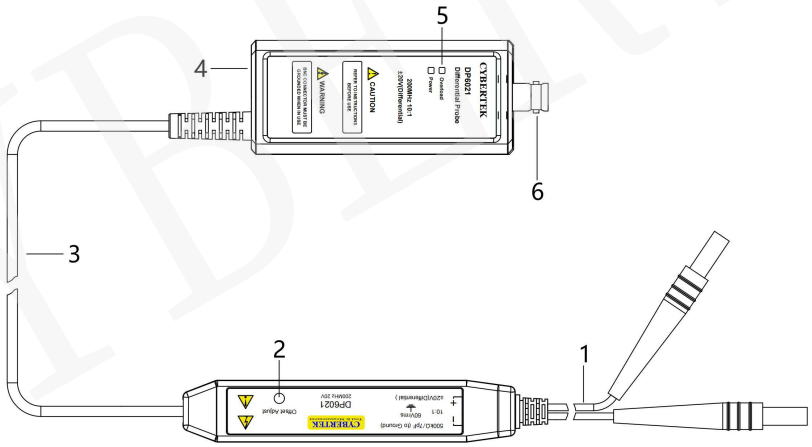
DP6021 probe is the high frequency low voltage differential probe with float ground testing function. Test voltage ±20V(DC+Pk), maximum bandwidth up to 200MHz, with 10:1 attenuation setting, can largely decrease the circuit load. With the overload alarm function, the DP6021 can adapt with any oscilloscope with 50Ω BNC input, and can be powered by the USB port on oscilloscope or other computers. Widely used in many applications, DP6021 can provide excellent general differential signal testing for high speed power measurement, vehicle bus testing and digital system design.

2. Application

- Floating voltage measurement
- High speed power testing
- Digital differential bus
- Vehicle serial bus（CAN、LIN、FlexRay）

3.Product and Accessories

■ Product



Detailed Instruction

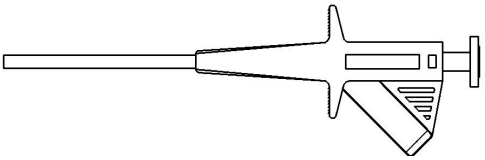
- **Input Cable**: length around 15cm, used to measure the voltage signal
- **Offset Adjust:** adjust the resistor to realize the adjusting of the output
- **Connecting Cable:** the connector of the front and back side of the probe, length around 70cm
- **Power Supply Port**: standard USB Type -C port, power up by standard USB adaptor. Can also be powered by oscilloscope, easy to use
- **Overload alarm indicator:** when the measuring range surpass the limit, the overload indicator will be lighted, and buzzer will be activated.

✧ **Output Port**: standard BNC output port can be connected to the oscilloscope of any brand. The input impedance of the oscilloscope is required to be 50Ω, or connect to thorough 50Ω load, with input impedance set to 1MΩ

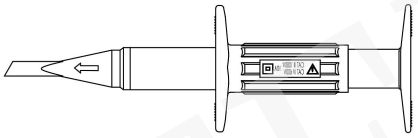
■ Accessories

Alligator Clips (CK-261 red one pair)

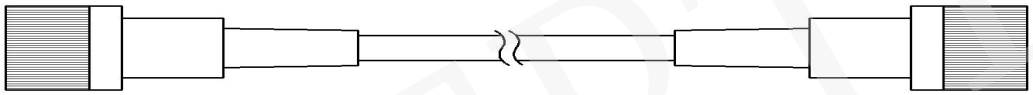
Thorough type 50Ω load(CK-50)



Piston Clips (CK-281 red one pair)

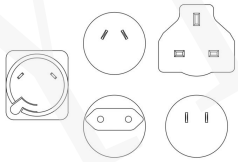


Test Hook (CK-284A red one pair)



Coaxial Output Cable (CK-310)

USB Cable（CK-314 ， 1.5m）



Power Supply Adaptor (CK-605A) USB 5V/1A

Banana jack（CK-293）

Power Accessories Instruction

Alligator clips(CK-261)	CATIII 1000V CATIV 600V
Piston clips(CK-281)	CATIII 1000V
Test hook(CK-284A)	CATIII 1000V
Thorough type 50Ω load(CK-50)	50Ω 1W
Banana jack（CK-293）	Φ4mm
Coaxial output cable (CK-310)	Double-ended BNC port coaxial line, 1m
USB cable（CK-314）	1.5m
Power supply adaptor(CK-605)	USB 5V/2A

4.Electronics Specification

Bandwidth(-3dB)		200MHz(see Fig 1)
Rise time		≤1.75ns
Accuracy		±1%
Attenuation ratio		10:1
(DC + Peak AC) Maximum differential voltage		±20V
Common mode voltage		±60V
Maximum rated input voltage (to earth)		±60V
Input impedance	Single to earth	500kΩ
	Double input	1MΩ
Input capacitance	Single to earth	＜7pF
	Double input	＜3.5pF
Output voltage fluctuation		±2V(50Ω Oscilloscope Input)
Offset (Typical value)		±2mV
Offset adjust range (Typical value)		±95mV
CMRR	50Hz/60Hz	＞80dB
	10MHz	＞50dB
Noise(Vrms)		6mV
Overload indicator voltage threshold		≥20V
Delay time	Probe main	11ns
	BNC(1m)	5ns
Overload indicator		Indicator will be lighted red when overload occurs
Terminal load requirement		50Ω
Power supply		USB 5V/2A Adaptor

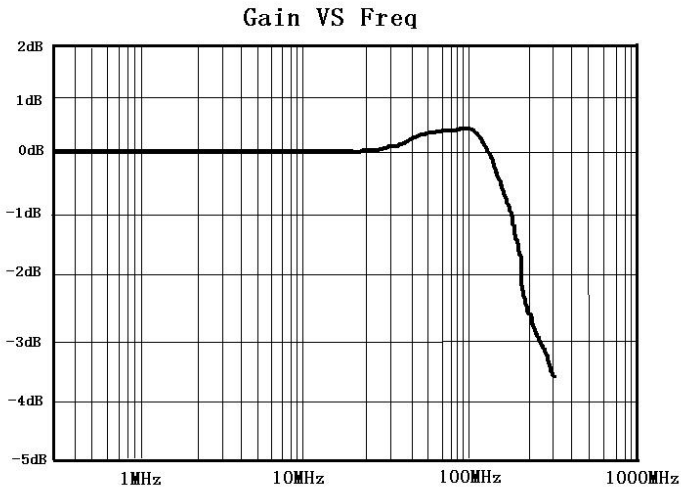
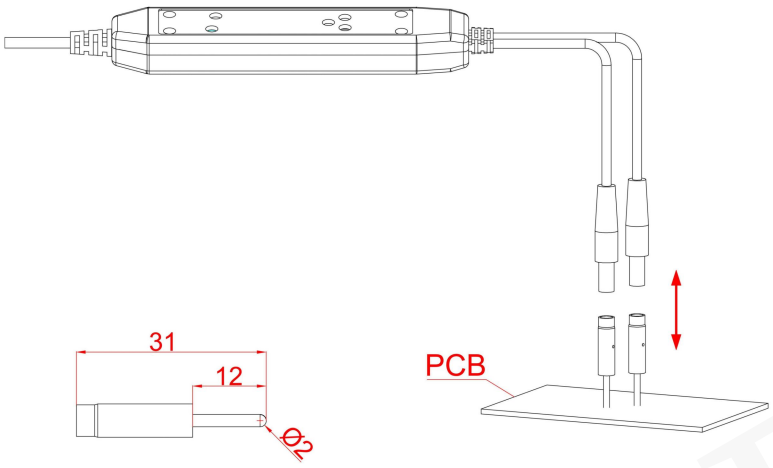


Fig 1: Frequency Response Curve

Note: in order to reduce waveform oscillation while reaching the maximum bandwidth, please apply banana jack. Users can solder the banana jack onto the PCB board or the pins of the MOSFET under test as shown below:



5. Machinery Specification

Type		Parameter
Differential input cable		15cm
BNC output cable (CK-310)		1m
Alligator clips (CK-261)		85*40*17mm
Piston clips (CK-281)		152*50*13mm
Test hook (CK-284A)		121*37*20mm
Banana jack（CK-293）		31*5.5mm(Φ4mm)
Probe dimension	Front	116*22*15mm
	Back	104*40*27mm
Probe weight		135g

6. Environmental Characteristics

Type	Parameter
Pollution level	2
Operating temperature	0℃～50℃
Storage temperature	-30℃～70℃
Operating humidity	≤85%RH
Storage humidity	≤90%RH
Operating altitude	3000m
Storage altitude	12000m

7. Operating Steps

- The range of the voltage under test should be estimated before the test. Voltage surpassing the measuring range could possibly damage the probe and the product.
- Connect the input and output cable to the probe and connect the probe with oscilloscope or other test devices.
- The green power indicator will be lighted when the power supply adaptor connects with the voltage probe. When the voltage under test surpass the range, the indicator will be lighted along with the buzzer.
- Set the attenuation ratio of the oscilloscope or other devices to 10:1, input impedance to 50Ω (If the probe output port is connected with 50Ω thorough type load, the input impedance should be 1MΩ) Adjust the sensitivity of the oscilloscope according to the voltage under test
- Connect the clips according to needs and start the test. The main body of the probe should be put away from the high voltage pulse circuit to minimize the interference.
- Turn off the power of the circuit under test after the test is over, then turn off the power of the probe and disconnect the two input ports from the point under test, and unplug the BNC connector from oscilloscope.

8. Maintenance

- Keep the probe dry and clean
- Clean the probe with dry cloth instead of chemical potion
- Put the probe back to its pack and store in shady, clean and dry places
- The pack of our company can provide quakeproof protection to the probe, please make sure the probe is packed during transportation
- Do not pull or draw the cable to avoid over twisting or knot

9. Warranty

Please refer to the instruction on warranty card

10. Packing List

Packing List	
Voltage probe	1
USB 5V/1A adaptor (CK-605A)	1
Alligator clips (CK-261)	1
Insulated piston clips (CK-281)	1
Test hook (CK-284A)	1
Banana jack（CK-293）	2
BNC output cable(CK-310)	1
50Ω thorough type load（CK-50）	1
USB connecting cable (CK-314)	1
Instruction manual	1
Warranty card	1
Test report	1

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