Coaxial Shunt

◆ CSD***A/B Series (Wire Type)

CSD005A/B 0.005Ω /400MHz

CSD01A/B 0.01Ω/400MHz

CSD02A/B 0.02Ω/1.2GHz

CSD050A/B 0.05Ω/2GHz

CSD100A/B 0.1Ω/2GHz

◆ CSD***M Series (Bolt Type)

CSD005M 0.005Ω /400MHz

CSD01M 0.01Ω/400MHz

CSD02M 0.02Ω/1.2GHz

CSD050M 0.05Ω/2GHz

CSD100M 0.1Ω/2GHz

1. Summary

As the development of modern electronics, more and more people have applied SiC / GaN power component in different specific field. Engineers will always need to measure the power circuit with above hundreds kHz of frequency and tens ampere of current. The traditional high frequency current probe (such as our HCP8000 series) containing iron core and shielding layer will suffer large loss and heating under high frequency current (Please refer to the current frequency derating curve from the HCP8000 series instruction manual.) As a result,the expensive probe will be broken.

Coaxial Shunt is pure resistor structure and can remain low loss even under high frequency current , making it a very good choice for your high frequency current testing. Our coaxial shunt is divided into two types based on connection method:

1. Wire type: CSD***A/B series coaxial shunt is soldered onto the circuit board through two pins.
2. Bolt type: CSD***M series coaxial shunt is fixed on the circuit board with bolts and nuts.

Comparing with the wire type CSD***A/B series coaxial shunt, the bolt type CSD***M series can be assembled and disassembled easily. Users only need to plug it in the holes on a PCB and tighten a nut.

The bolt fixing mechanical structure of the CSD***M series adopts a new high reliability design, which can lower the possibility for the users to break the inner structure of the coaxial shunt by over tightening the bolt.

Product features:

- High Bandwidth of 2GHz maximum.
- No high frequency insertion loss.
- Multiple options of resistance from 0.005Ω to 0.1Ω.
- The first high reliable single nut fixing bolt type structure.
- Small contact area between the shunt and PCB.
- Designed for the current measurement of SiC and GaN semiconductor.

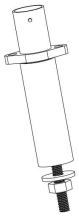
2. Product specifications

Model	CSD005A/B CSD005M	CSD01A/B CSD01M	CSD02A/B CSD02M	CSD050A/B CSD050M	CSD100A/B CSD100M
Resistance	0.005Ω	0.01Ω	0.02Ω	0.05Ω	0.1Ω
Bandwidth (-3dB)	400MHz	400MHz	1.2GHz	2GHz	2GHz
Rise time	≤875ps	≤875ps	≤291ps	≤175ps	≤175ps
Maximum continuous power	2W				
Temperature coefficient of resistance/℃	±40ppm				
weight	16g			26g	
Maximum pulse energy that can be sustained	5J	4J	3J	2J	1J
coaxial shunt diameter	10mm				
coaxial shunt length	48mm			78mm	
Wire type input pin size	Diameter 1.5mm/length 15mm				
Bolt type input bolt size	Bolt diameter M3/length 15mm				
PCB copper foil with bolt type contact	10mm diameter conductive ring				
Signal output connector	BNC				
Maximum torque of fixed nut	0.5 N* m				

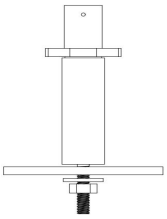
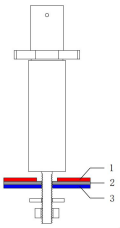
P. S. the actual resistance of the CSD*A series product have an error ≤5% from the theoretical**

value; the actual resistance of the CSD*B / CSD***M series product have an error ≤1% from the theoretical value; the actual resistance value will be marked on the product.**

CSD*A/B wire type appearance** **CSD***M bolt type appearance**

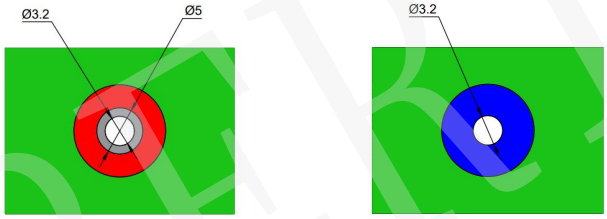



CSD*M bolt type single nut fixing method on PCB diagram**

1 is the top copper layer, 2 is the PCB insulation layer, and 3 is the bottom copper layer.

CSD ***M bolt type PCB wiring diagram



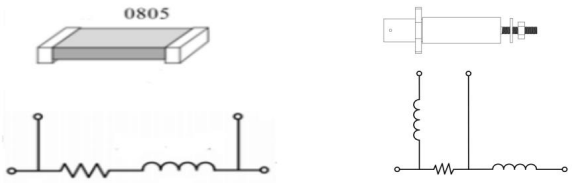
Unit：mm

The green part is the PCB board, and the through-hole is a circle with a hole diameter of 3.2mm.
The gray area is the insulation zone, which is a circle with a diameter of 5mm.
The red part is the exposed copper area on the top layer of the PCB, which is a circle with a diameter of ≥ 12mm.
The blue part is the exposed copper area on the bottom layer of the PCB, which is a circle with a diameter of ≥ 12mm.

P.S. The maximum torque used to fix nut cannot be over 0.5N·m

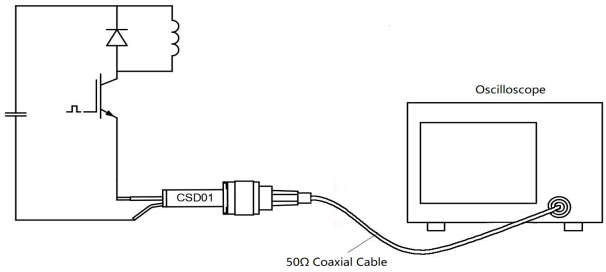
3. Basic theory about our product

Because of its unique coaxial resistance structure design, CSD coaxial shunt has high bandwidth, low distortion and very low parasitic inductance. The great parasitic inductance of a normal chip resistor will greatly influence the bandwidth of the signal, and the output signal will suffer significant distortion and oscillation.



Equivalent circuit diagram of normal chip resistor and coaxial shunt

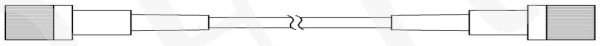
Typical application circuit is shown below:



This resistor series have no isolation function, thus the oscilloscope and the circuit under test must be common-grounded. Normally it can only be used for lower side current measurement, but if you need to measure the higher side current, please apply our OPL6000 or OPB6000 series optically isolated probe for your safety.

Attention **BNC connector is the signal output connector, and it need to be connected with the input end of the oscilloscope through 50Ω coaxial cable. The input impedance of the oscilloscope should be set to 50Ω or the frequency response of our coaxial shunt will be influenced, and if your oscilloscope doesn't have 50Ω setting, our CK50 can match the oscilloscope well.**

4. Product Accessories



CK-310: BNC coaxial cable, 1-meter length

5. Packing List

Packing List	
coaxial shunt	1
BNC cable	1
Instruction manual	1
Warranty card	1
Test report	1

CYBERTEK

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Published in China, Oct. 1, 2024