

1 GHz, 50 Ω, 5 V/A, 30 A Pulse Current Sensor CS-5V0

Advanced TLP/HMM/HBM Solutions

1 Features

- Advanced current sensor for TLP/HMM measurements
- High magnetic Amp x Second rating 3 A μs
- 30 kHz to 1 GHz bandwidth
- Very low parasitic load impedance 680 mΩ (port 1-2)
- 5 V/A sensitivity at 50 Ω output (port 3)
- Three 50 Ω SMA ports
- Compact size: 41 mm x 34 mm x 16 mm
- High reliability

2 Description

The transformer-based CS-5V0 pulse current sensor is used to measure the current in a 50 Ω transmission line. The Amp x Second rating is typical 3 A μs which results in e.g. max. 30 A at max. 100 ns pulse width (Fig. 4). The sensitivity of the sensor is typ. 5 V/A at the current sensor output (Fig. 3, Fig. 2). The CS-5V0 can be used also as general purpose current sensor. The device has three 50 Ω SMA terminals. It can be used for replacement of the Tektronix™ CT-1 current sensor. Please note, that in contrast to port 1 and port 2, the port 3 (sensor output) must be terminated with 50 Ω. For example: at 30 A the sensor output results to 150 V. Therefore, in case of high currents up to 30 A a 30 dB attenuator is recommended to connect in front of the digital oscilloscope input in order to avoid overload.

3 Electrical Data

Nominal impedance	50 Ω
Maximum pulsed working voltage ¹⁾	4 kV
Nominal sensitivity ²⁾	5 V/A
Pulse response (rise time)	< 150 ps
Maximum pulse current ³⁾	±30 A
Amp x Second rating ⁴⁾	3 A μs
Parasitic load impedance (port 1 to port 2)	680 mΩ
Lower cut-off frequency ⁵⁾	30 kHz
Upper cut-off frequency ⁵⁾	1 GHz

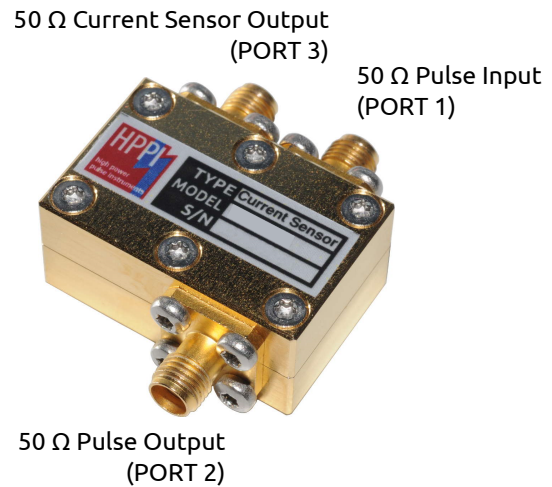
¹⁾ limited by the pulsed breakdown voltage of the SMA connector.

²⁾ ±3 %, port 3 terminated with 50 Ω.

³⁾ tested at 100 ns pulse width.

⁴⁾ when this value is exceeded, the sensor will not damage or degrade, but the output signal suddenly drops to zero or may represent wrong measurement results.

⁵⁾ ±3 dB



4 Electrical Characteristics

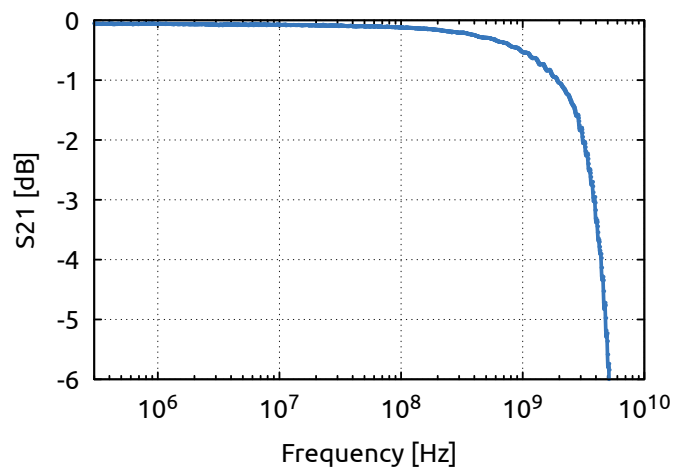


Figure 1: Typical frequency response (port 1 to port 2)

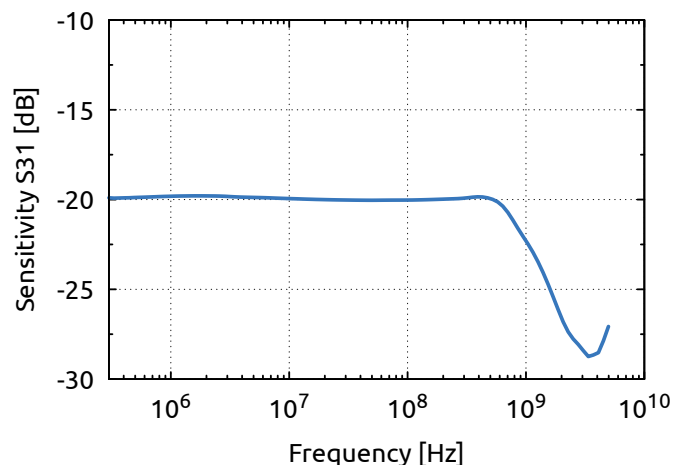


Figure 2: Typical transfer function (port 1 to port 3)

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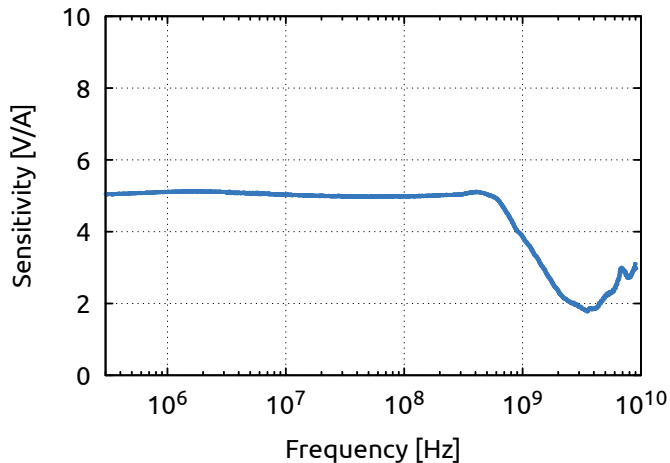


Figure 3: Typical sensitivity at port 3

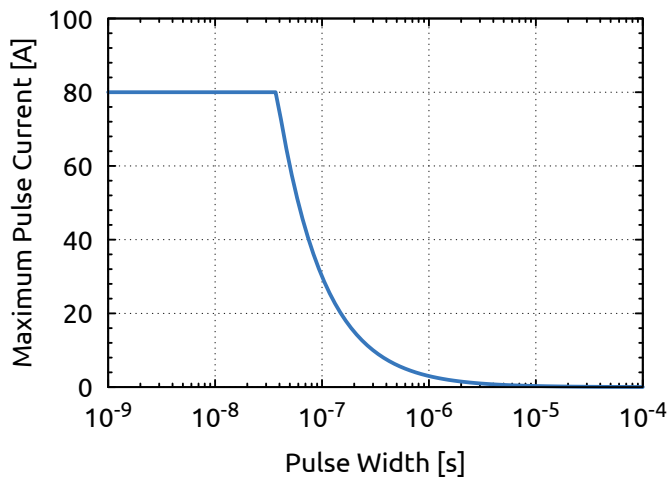


Figure 4: Maximum pulse current versus pulse width

5 Physical Dimensions

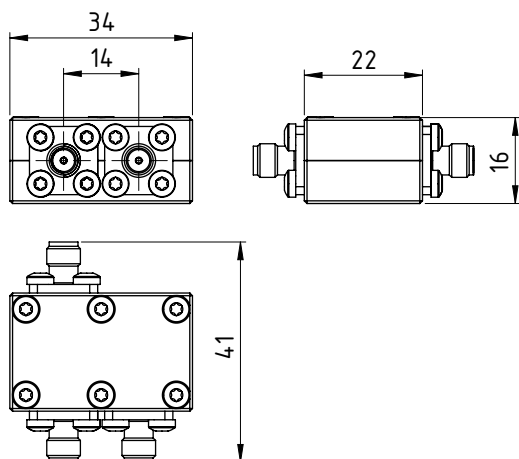


Figure 5: Dimensions in [mm]

6 Ordering Information

Pos.	Description	Part No.
01	1 GHz, 50 Ω, 5 V/A, 30 A Pulse Current Sensor	CS-5V0

General

The product data contained in this data-sheet is exclusively intended for technically trained staff. You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application. Our products are solely intended to be commercially used internally and should not be sold to consumers. This data-sheet is describing the specifications of our products for which a warranty is being granted by HPPI GmbH. Any such warranty is granted exclusively pursuant the terms and conditions of the respective supply agreement. There will be no guarantee of any kind for the product and its specifications. For further information on technology, specific applications of our product, delivery terms, conditions and prices please contact HPPI:

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