

TLP EXTERNAL RISE TIME FILTER



10 ns Rise Time Filter ORTF-10

Advanced TLP/HMM/HBM Solutions

1 Features

- 50 Ω rise time filter for TLP measurements
- 10 ns rise time ($\pm 10\%$)
- better than 20 dB return loss up to 500 MHz
- 3.15 kV pulse peak voltage

2 Description

The rise time filter is used to generate a pulse rise time of 10 ns at the output of the filter. The filter can be connected directly at the pulse output of the high voltage pulse generator. The rise time of the pulse at the input of the filter should be set to 100 ps at least significantly less than 1 ns. The filter is fully symmetrical. Input and output can be exchanged.

3 Electrical Characteristics

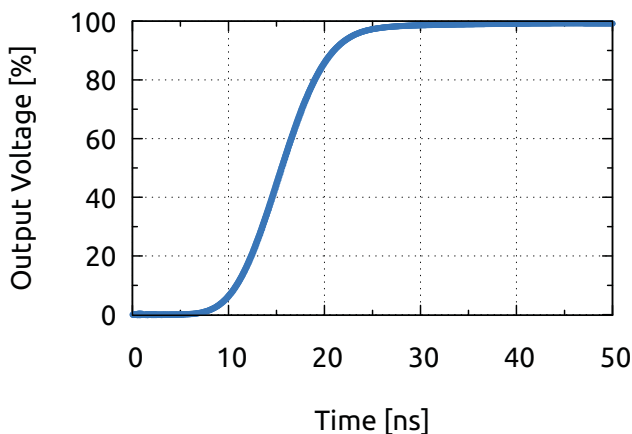


Figure 1: Typical step response

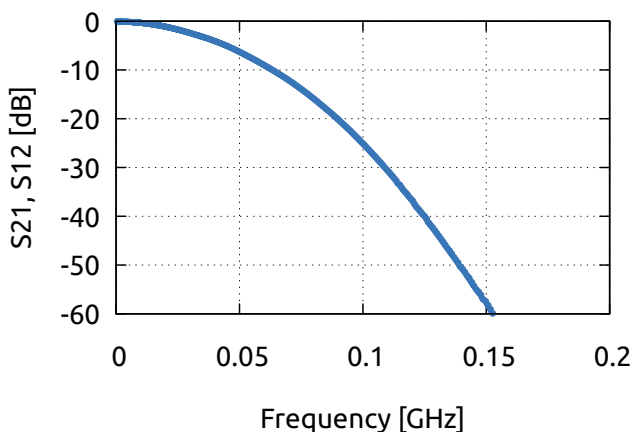


Figure 2: Typical frequency response

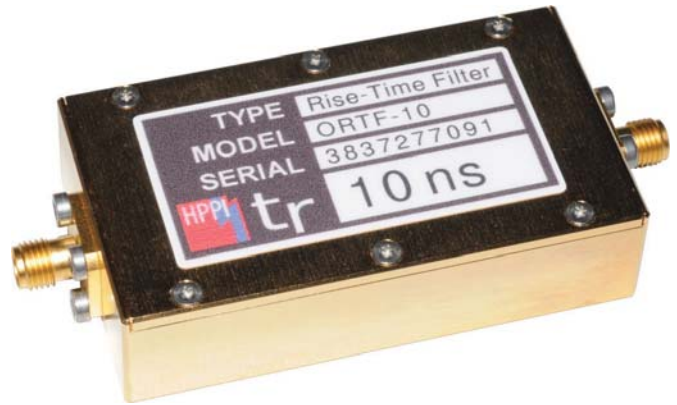


Figure 3: ORTF-10 (size: 67.2 mm x 37.2 mm x 16.8 mm)

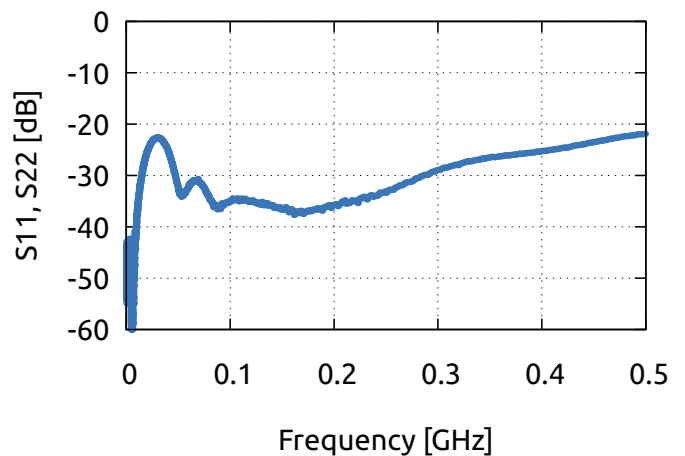


Figure 4: Typical return loss

4 Ordering Information

Pos.	Description	Part No.
01	10 ns Rise Time Filter	ORTF-10

General

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20 ns Rise Time Filter ORTF-20

Advanced TLP/HMM/HBM Solutions

1 Features

- 50 Ω rise time filter for TLP measurements
- 20 ns rise time ($\pm 10\%$)
- better than 23 dB return loss
- up to 3.2 kV pulse peak voltage

2 Description

The rise time filter is used to generate a pulse rise time of 20 ns at the output of the filter. The filter can be connected directly at the pulse output of the high voltage pulse generator. The rise time of the pulse at the input of the filter should be set to 100 ps, or at least less than 1 ns. The filter is fully symmetrical. Input and output can be exchanged.

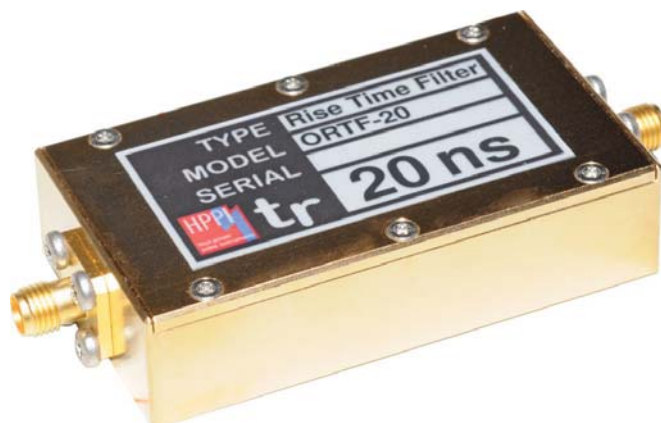


Figure 3: ORTF-20 (body size: 67.2 mm x 37.2 mm x 16.8 mm)

3 Electrical Characteristics

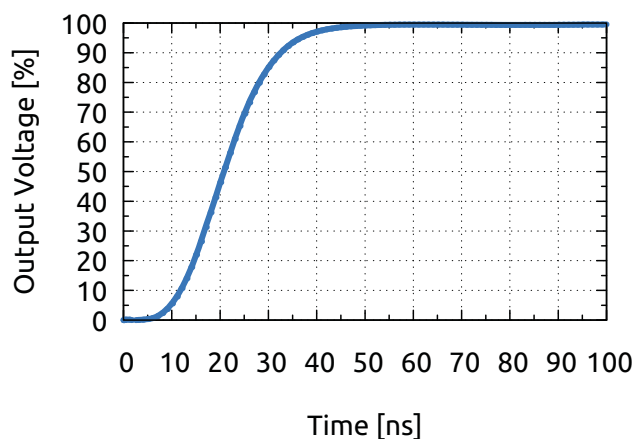


Figure 1: Typical step response

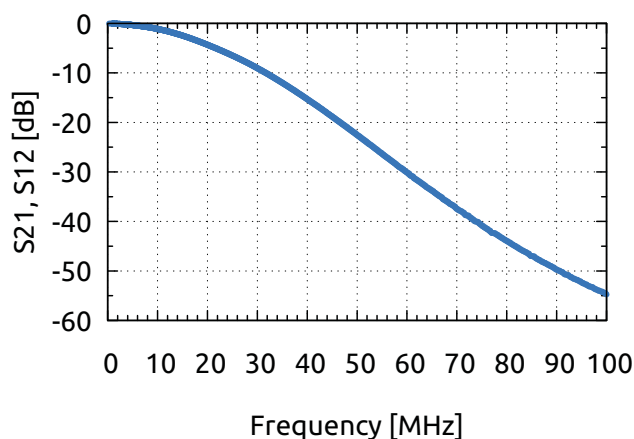


Figure 2: Typical frequency response

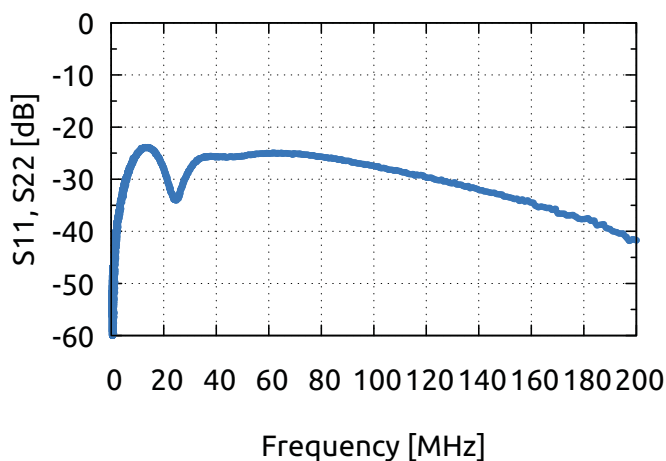


Figure 4: Typical reflection coefficient

4 Ordering Information

Pos.	Description	Part No.
01	Rise Time Filter 20 ns	ORTF-20

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25 ns Rise-Time Filter ORTF-25

Advanced TLP/HMM/HBM Solutions

1 Features

- 50 Ω rise-time filter for TLP measurements
- 25 ns ($\pm 10\%$) rise-time
- up to 100 A pulse peak current
- up to 3.5 kV pulse peak voltage
- SMA connectors



2 Description

The rise time filter is used to generate a pulse rise-time of 25 ns at the output of the filter. The filter can be connected directly at the pulse output of the high voltage pulse generator.

The rise-time of the pulse at the input of the filter should be ≤ 1 ns. The filter is fully symmetrical. Input and output can be exchanged.

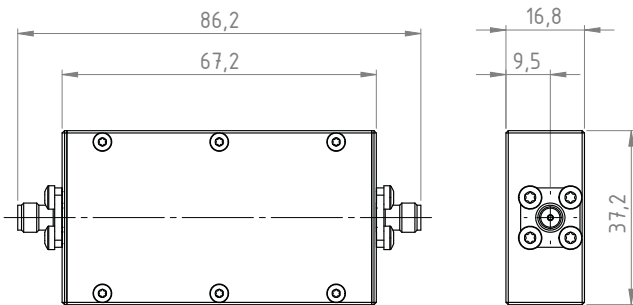


Figure 1: Physical dimensions in [mm]

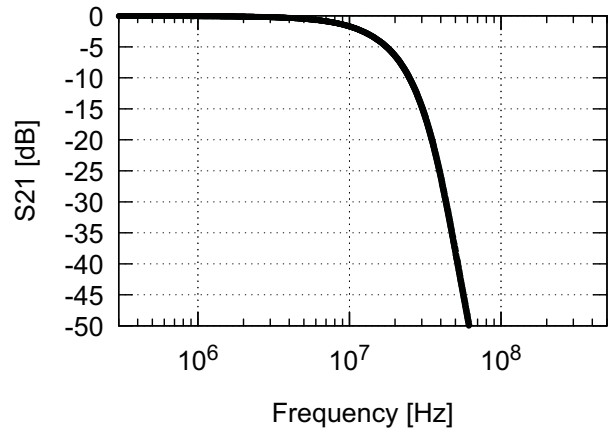


Figure 3: Typical frequency response

3 Electrical Characteristics

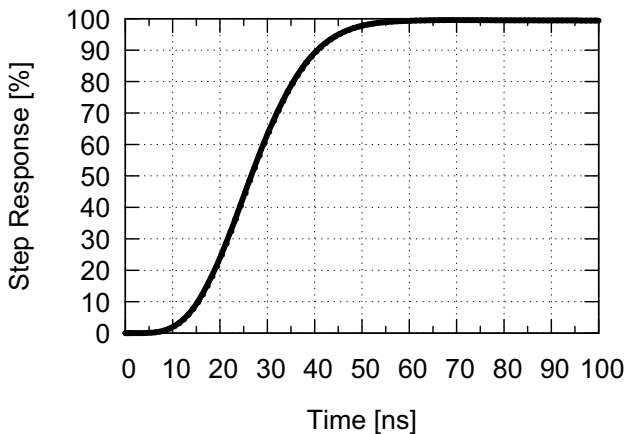


Figure 2: Typical step response

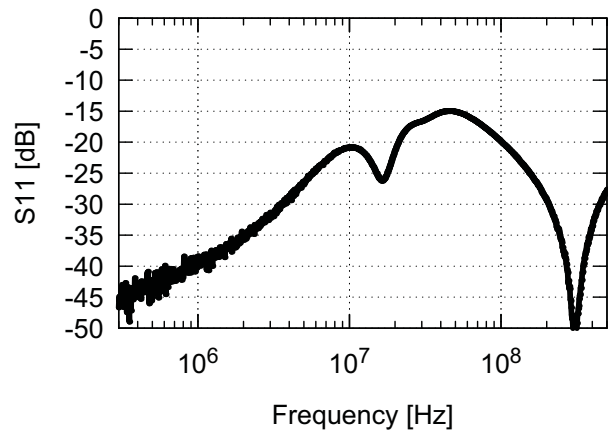


Figure 4: Typical return loss

25 ns Rise-Time Filter ORTF-25

Advanced TLP/HMM/HBM Solutions

4 Ordering Information

Pos.	Description	Part No.
01	25 ns Rise-Time Filter	ORTF-25

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Rise-Time Filter 50 ns

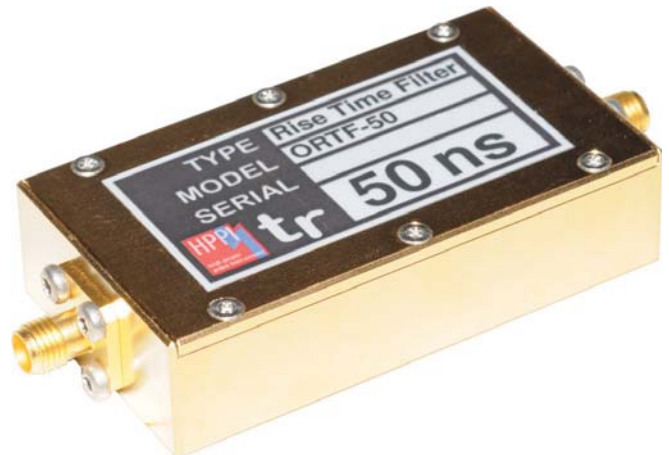
Advanced TLP/HMM/HBM Solutions

1 Features

- 50 Ω Rise-Time Filter for TLP Measurements
- Typ. 50 ns Rise-Time
- Return Loss <-18 dB
- Up to 3 kV Pulse Peak Voltage

2 Description

The rise time filter is used to generate a pulse rise-time of 50 ns at the output of the filter. The filter can be connected directly at the pulse output of the high voltage pulse generator. The rise-time of the pulse at the input of the filter should be set to 100 ps. The filter is fully symmetrical. Input and output can be exchanged.



3 Electrical Characteristics

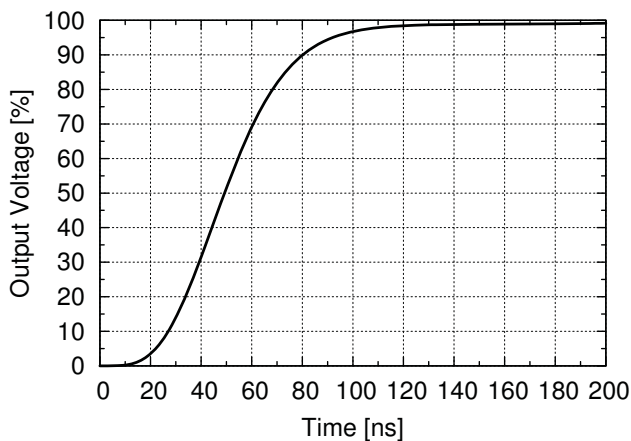


Figure 1: Typical step response.

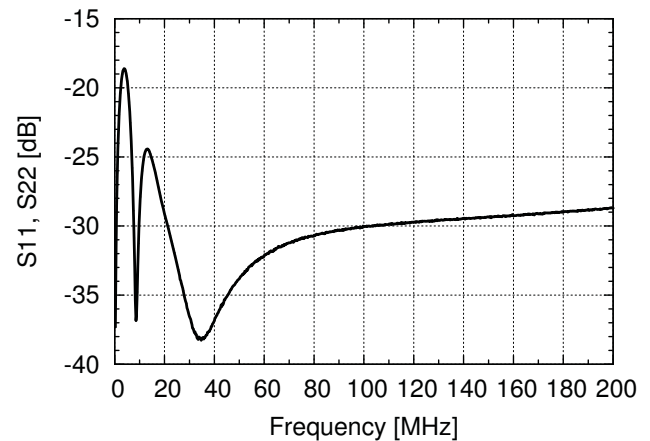


Figure 3: Typical return loss.

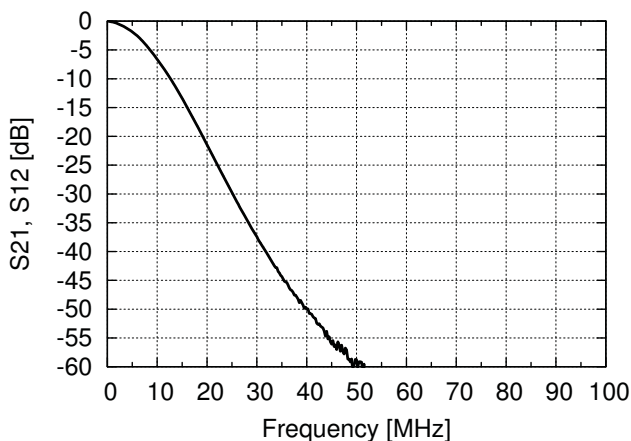


Figure 2: Typical frequency response.

4 Ordering Information

Pos.	Description	Part No.
01	Rise-Time Filter 50 ns	ORTF-50

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100 ns Rise-Time Filter ORTF-100

Advanced TLP/HMM/HBM Solutions

1 Features

- 50 Ω rise-time filter for TLP measurements
- 100 ns ($\pm 5\%$) rise-time
- up to 100 A pulse peak current
- up to 3.5 kV pulse peak voltage
- SMA connectors

2 Description

The rise time filter is used to generate a pulse rise-time of 100 ns at the output of the filter. The filter can be connected directly at the pulse output of the high voltage pulse generator.

The rise-time of the pulse at the input of the filter should be ≤ 1 ns. The filter is fully symmetrical. Input and output can be exchanged.

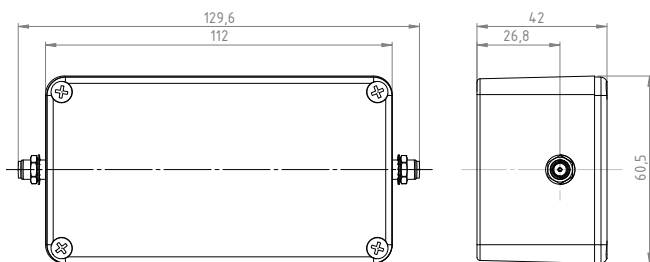


Figure 1: Physical dimensions in [mm]

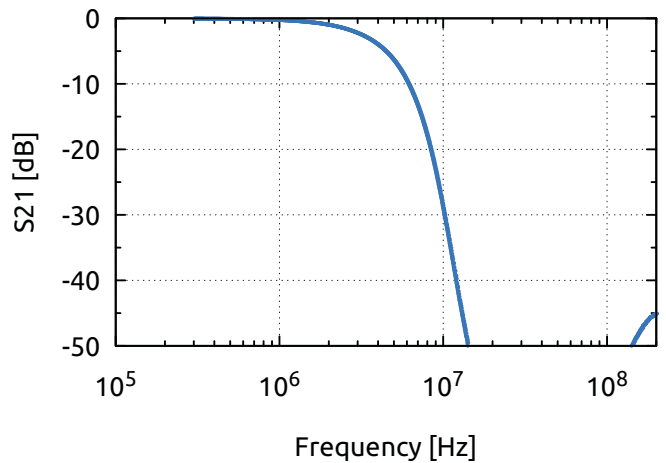


Figure 3: Typical frequency response

3 Electrical Characteristics

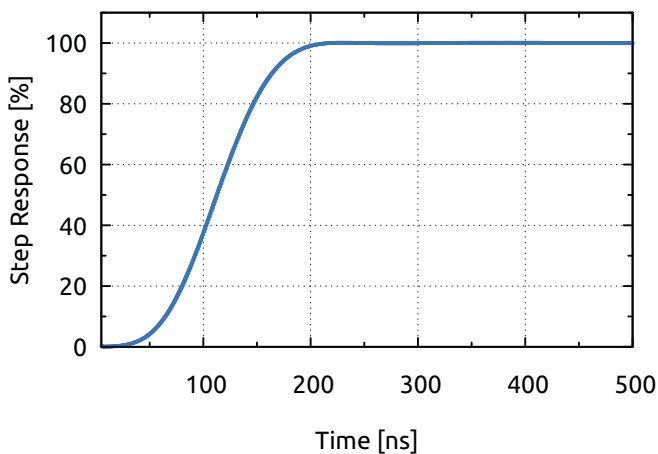


Figure 2: Typical step response

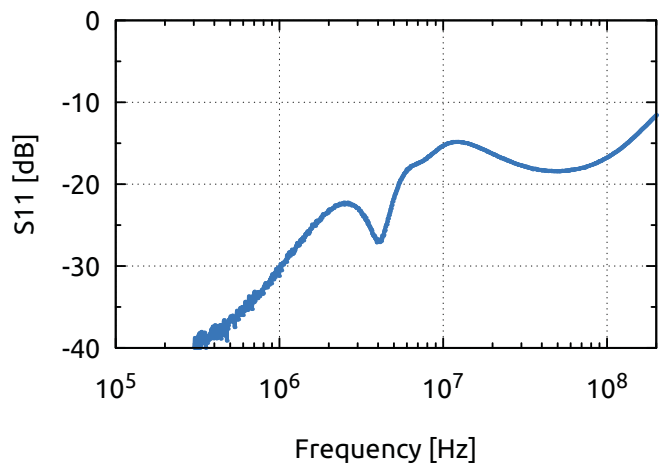


Figure 4: Typical return loss

100 ns Rise-Time Filter ORTF-100

Advanced TLP/HMM/HBM Solutions

4 Ordering Information

Pos.	Description	Part No.
01	100 ns Rise-Time Filter	ORTF-100

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200 ns Rise-Time Filter ORTF-200

Advanced TLP/HMM/HBM Solutions

1 Features

- 50 Ω rise-time filter for TLP measurements
- 200 ns ($\pm 10\%$) rise-time
- 60 A pulse peak current at 1.6 μ s pulse width
- 3.5 kV pulse peak voltage
- SMA connectors



2 Characteristics

The rise time filter is used to generate a pulse rise-time of 200 ns at the output of the filter. The filter can be connected directly at the pulse output of the high voltage pulse generator.

The rise-time of the pulse at the input of the filter should be ≤ 1 ns. The filter is fully symmetrical. Input and output can be exchanged.

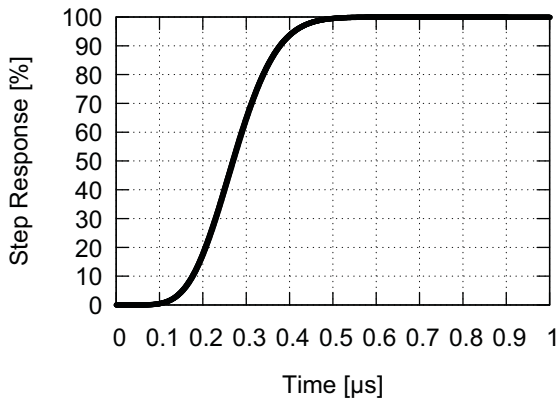


Figure 1: Step response

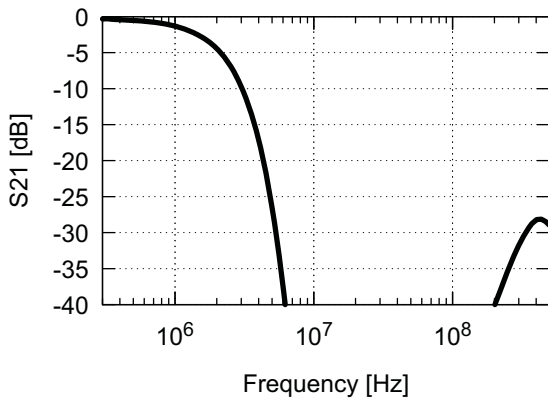


Figure 2: Frequency response

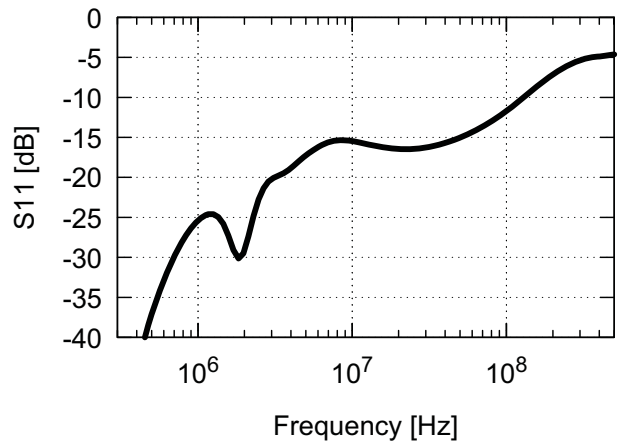


Figure 3: Return loss

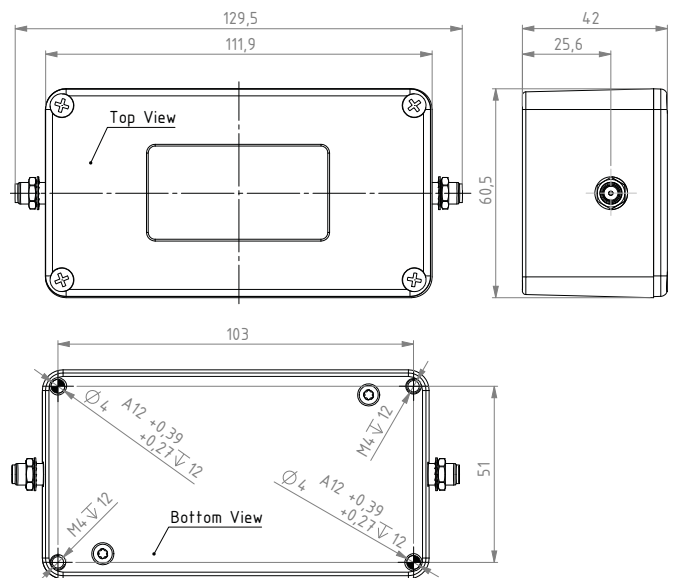


Figure 4: Dimensions in [mm]

200 ns Rise-Time Filter ORTF-200

Advanced TLP/HMM/HBM Solutions

3 Ordering Information

Pos.	Description	Part No.
01	200 ns Rise-Time Filter	ORTF-200

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250 ns Rise-Time Filter ORTF-250

Advanced TLP/HMM/HBM Solutions

1 Features

- 50 Ω rise-time filter for TLP measurements
- 250 ns ($\pm 10\%$) rise-time
- 60 A pulse current up to 1.6 μ s pulse width
- 2.5 kV
- SMA connectors

2 Description

The rise time filter is used to generate a pulse rise-time of 250 ns at the output of the filter. The filter can be connected directly at the pulse output of the high voltage pulse generator.

The rise-time of the pulse at the input of the filter should be ≤ 1 ns. The filter is fully symmetrical. Input and output can be exchanged.

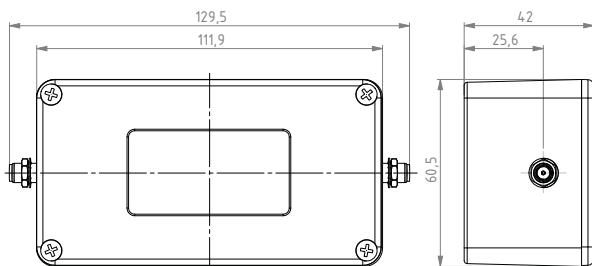


Figure 1: Physical dimensions in [mm]

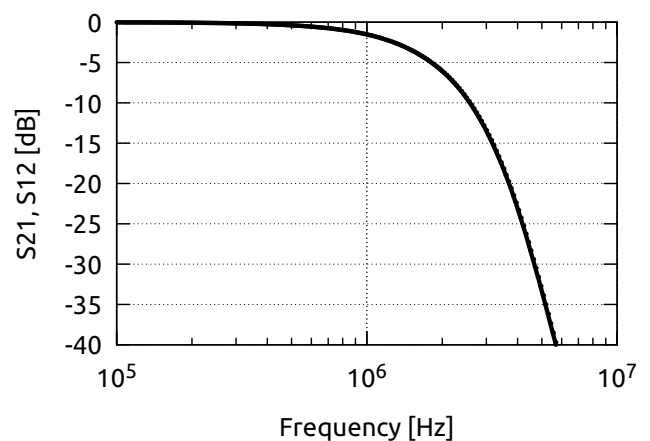


Figure 3: Typical frequency response

3 Electrical Characteristics

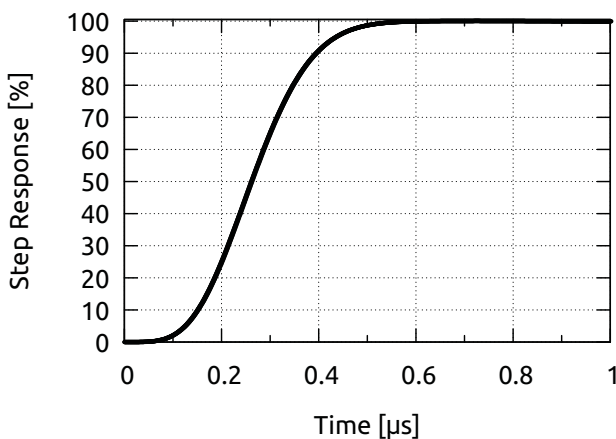


Figure 2: Typical step response

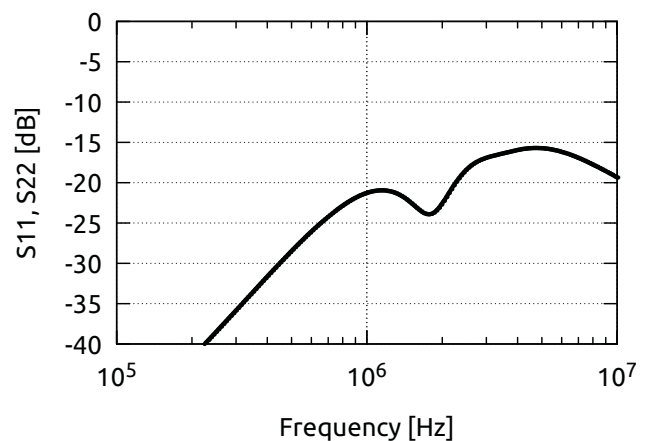


Figure 4: Typical return loss

250 ns Rise-Time Filter ORTF-250

Advanced TLP/HMM/HBM Solutions

4 Ordering Information

Pos.	Description	Part No.
01	250 ns Rise-Time Filter	ORTF-250

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1.2 μ s Rise-Time Filter ORTF-1200

Advanced TLP/HMM/HBM Solutions

1 Features

- 50 Ω rise-time filter for TLP measurements
- 1.2 μ s ($\pm 10\%$) rise-time
- 32 A pulse current
- 2.5 kV
- SMA connectors

2 Description

The rise time filter is used to generate a pulse rise-time of 1.2 μ s at the output of the filter. The filter can be connected directly at the pulse output of the high voltage pulse generator.

The rise-time of the pulse at the input of the filter should be set to ≤ 50 ns. The filter is fully symmetrical. Input and output can be exchanged.

3 Electrical Characteristics

Fig. 1 shows the step response of the ORTF-1200. The related frequency response and the return loss is presented in Fig. 2 and Fig. 3, respectively.

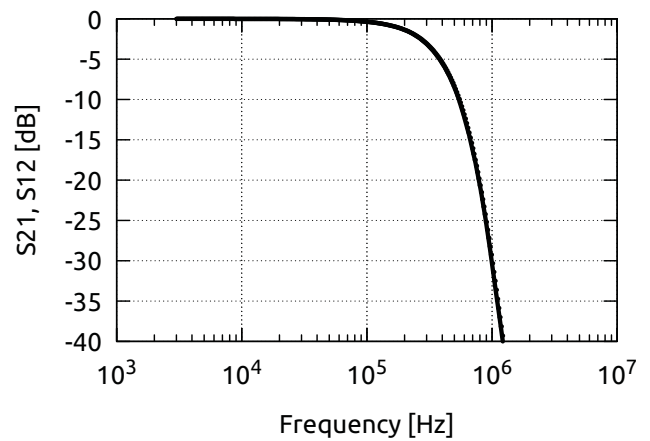


Figure 2: Typical frequency response

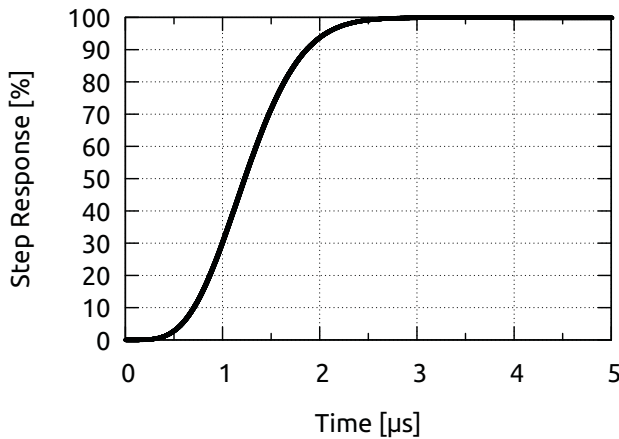


Figure 1: Typical step response

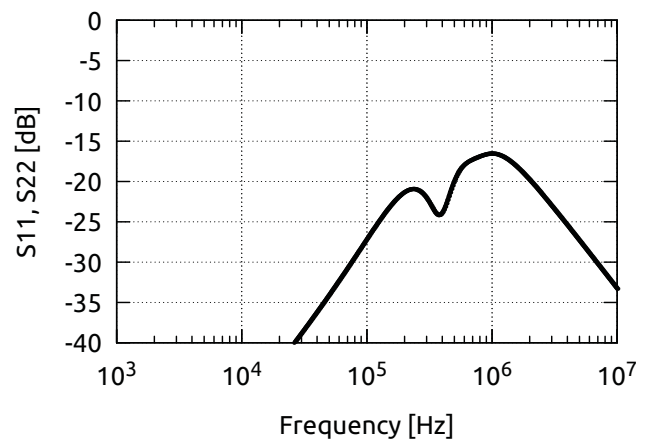


Figure 3: Typical return loss

4 Application Notes

Fig. 4 shows the output signal of the rise-time filter at 1.5 μ s input pulse width, e.g. using the TLP-3011C. Please note that the voltage peak reaches about 90 %

1.2 μs Rise-Time Filter ORTF-1200

Advanced TLP/HMM/HBM Solutions

at the rising edge and immediately turns to the falling edge afterwards. Using the TLP-8012A5 instead, including the 2.35 μs -option, results in an output signal close to 100 %, as presented in Fig. 5.

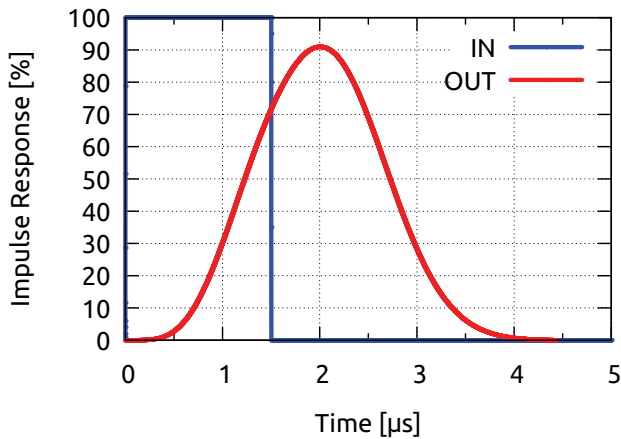


Figure 4: Output signal of the rise-time filter at 1.5 μs input pulse width using TLP-3011C

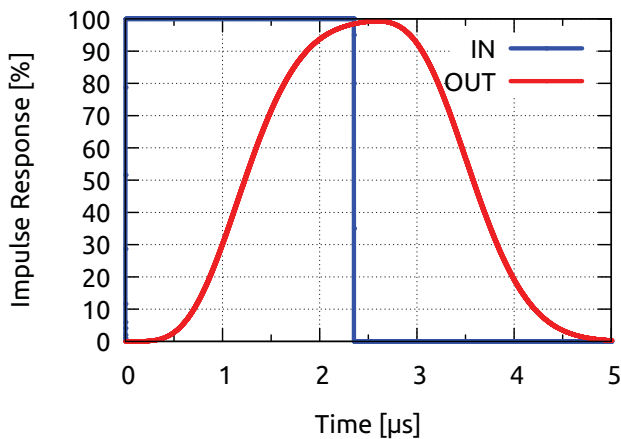


Figure 5: Output signal of the rise-time filter at 2.35 μs input pulse width using TLP-8012A5 (2.35 μs -option)

4.1 Laboratory Safety Requirement

Interlock operation at >500 ns pulse width using a TLP-8010C/TLP-8012A5 system is needed to avoid life-endangerment risks.

5 Physical Dimensions

On the bottom side the enclosure has two M4 threads and two dowel holes for fixation.

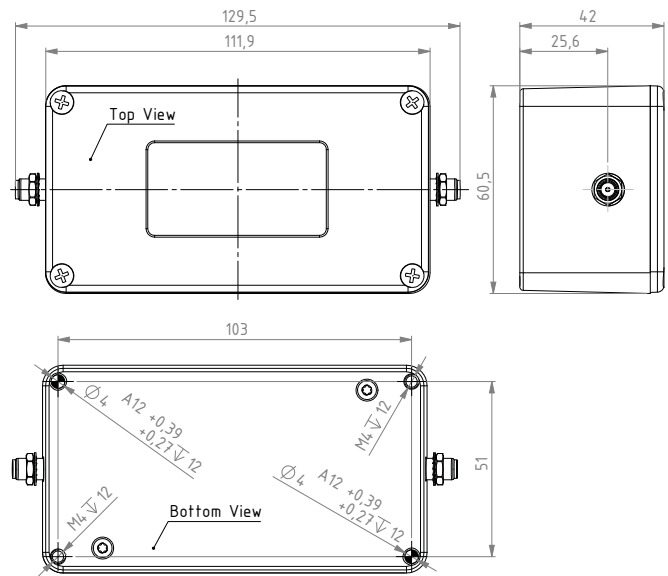


Figure 6: Physical dimensions in [mm]

6 Ordering Information

Pos.	Description	Part No.
01	1.2 μs Rise-Time Filter	ORTF-1200

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