RF PULSE CURRENT MONITORING PROBE

1 Introduction

The TBPCP4-100H60 is an RF pulse current monitoring probe, expanding the Tekbox product range of affordable test equipment.
The probe has a 3 dB bandwidth from 120 Hz to 60 MHz and is characterized over the frequency range from 1 Hz to 100 MHz. The TBPCP4-100H60 is typically used for surge or RF pulse current monitoring applications in the time domain, in contrary to RF current monitoring probes designed for EMC applications, which are typically used for measurements in the frequency domain.

Picture 1: TBPCP4-100H60 current monitoring probe

The aperture of the RF current monitoring probe is 46 mm.
The transfer-impedance is -6 dBΩ / 0.5 V/A when terminated with 50 Ohm and 1 V/A with a high impedance load. The typical 3dB bandwidth is 120 Hz to 60 MHz.

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2 Specification

Characterized frequency range: 1 Hz to 100 MHz
3 dB bandwidth: 130 Hz to 60 MHz (measured in a 50 + 50 Ohm loop)
Transfer impedance into 50 Ω load: -6 dBΩ; 0.5 V/A
Transfer impedance into high Z: 1 V/A
Probe port impedance: 50 Ω
Droop rate: 0.06 %/µs
Rise time: < 10 ns
Max. RMS AC current: 10A
Max. pulse current: 1000A
Current time product: 0.02 Ampere seconds
Max. core temperature: 80 °C
Aperture diameter: 46 mm
Outside diameter: 124 mm
Height: 37 mm
Weight: 1050 g
Connector type: N female; comes supplied with a coaxial adapter to BNC-female

3 Transfer impedance

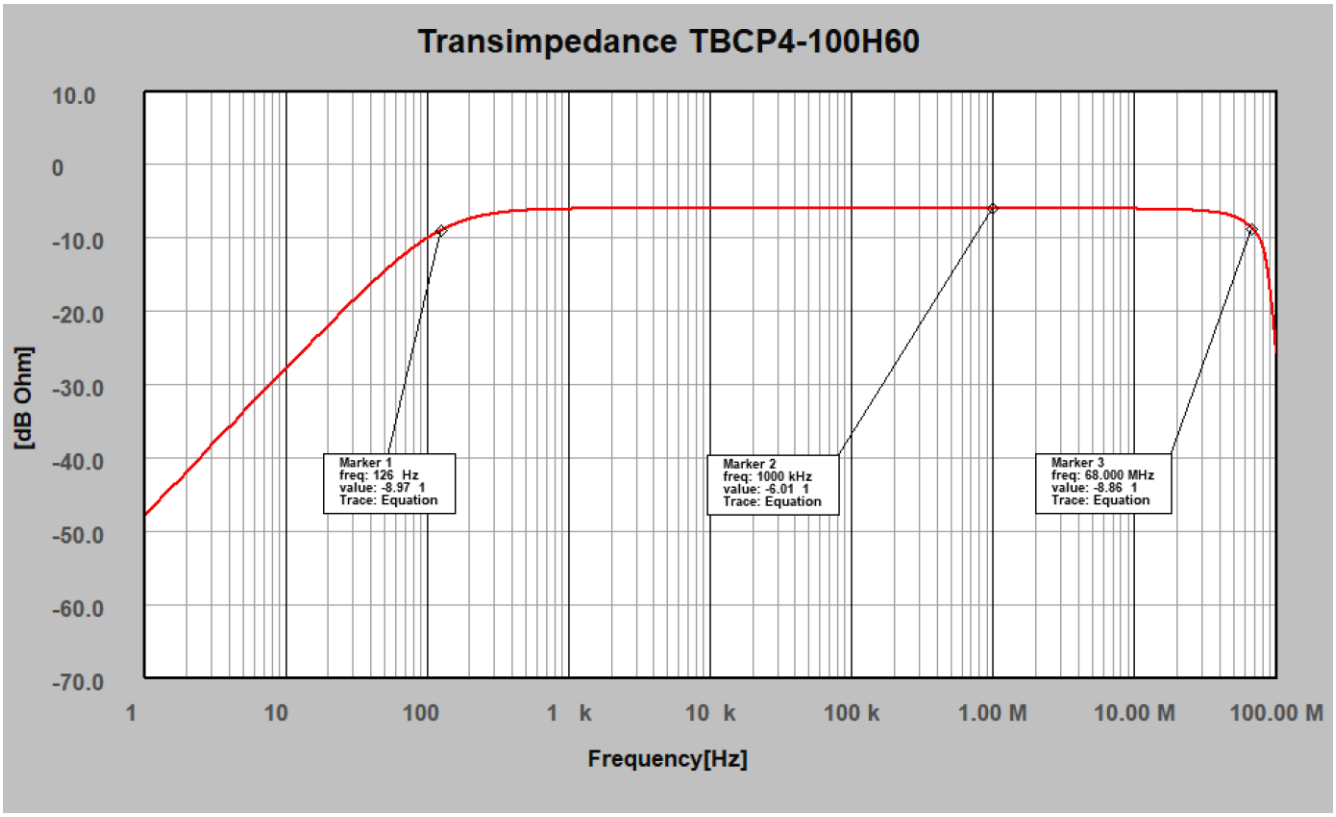


Figure1: typical transfer impedance, 1 Hz – 100 MHz

4 Transfer impedance table

The table below shows typical transfer impedance data of a TBPCP4-100H60 pulse current probe. Each current probe is delivered with its corresponding measurement protocol. The transimpedance in dBΩ is measured with a 50 Ohm load.
Transimpedance [V/A] = 10^(dBOhm/20) @ 50 Ohm
Transimpedance [V/A] = 2*10^(dBOhm/20) @ High Z

Frequency	transfer impedance [dBΩ] 50 Ohm load	transfer impedance [V/A] 50 Ohm load	transfer impedance [V/A] high Z load
1 Hz	-48,03	0,004	0,008
2,5 Hz	-40,01	0,010	0,020
5 Hz	-33,82	0,020	0,041
7,5 Hz	-30,38	0,030	0,061
10 Hz	-27,91	0,040	0,080
25 Hz	-20,10	0,099	0,198
50 Hz	-14,60	0,186	0,372
75 Hz	-11,77	0,26	0,52
100 Hz	-10,08	0,31	0,63
125 Hz	-9,01	0,35	0,71
150 Hz	-8,30	0,38	0,77
175 Hz	-7,80	0,41	0,81
200 Hz	-7,44	0,42	0,85
500 Hz	-6,28	0,49	0,97
750 Hz	-6,13	0,49	0,99
1 kHz	-6,08	0,50	0,99
5 kHz	-6,01	0,50	1,00
10 kHz	-6,01	0,50	1,00
50 kHz	-6,01	0,50	1,00
100 kHz	-6,01	0,50	1,00
500 kHz	-6,01	0,50	1,00
1 MHz	-6,01	0,50	1,00
5 MHz	-6,03	0,50	1,00
10 MHz	-6,07	0,50	0,99
15 MHz	-6,10	0,50	0,99
20 MHz	-6,14	0,49	0,99
25 MHz	-6,25	0,49	0,97
30 MHz	-6,38	0,48	0,96
40 MHz	-6,65	0,47	0,93
50 MHz	-7,13	0,44	0,88
60 MHz	-7,94	0,40	0,80
65 MHz	-8,50	0,38	0,75
70 MHz	-9,10	0,35	0,70
80 MHz	-11,09	0,28	0,56
90 MHz	-16,81	0,14	0,29
100 MHz	-25,66	0,05	0,10

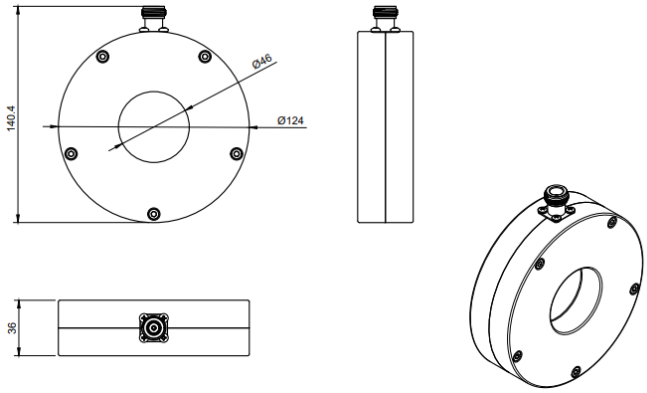
Table1: Transfer impedance: 1 Hz to 100 MHz, typical data

5 Calibration fixture

Tekbox supplies a calibrator suitable for the TBPCP4-100H60 current probe:

Picture 1: TBCP4-CAL RF current probe calibration fixture

6 Dimensions



7 Ordering Information

Part Number	Description
TBPCP4-100H60	Pulse Current Probe 130Hz – 60 MHz, N-male to BNC-Female adapter
TBCP4-CAL	Calibration fixture for TBPCP3 series pulse current probes

8 History

Version	Date	Author	Changes
V 1.0	4.7.2025	Mayerhofer	Creation

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