

# Pulse Module ISO 10605 – 330 pF, 2 kΩ

Advanced TLP/HMM/HBM Solutions



## 1 Features

- Pulse module compatible with HPPI TLP-xxx10A/C
- Pulse waveform ISO 10605 – 330 pF, 2 kΩ [1]
- 120 A first peak current with TLP-12010A/C
- High voltage BNC connector

## 2 Electrical Characteristics

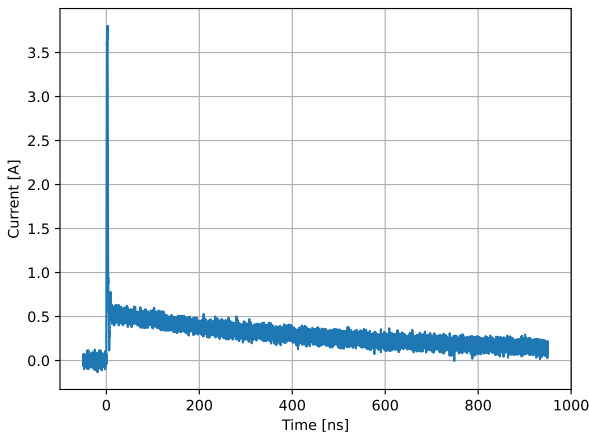


Figure 1: Normalized pulse current

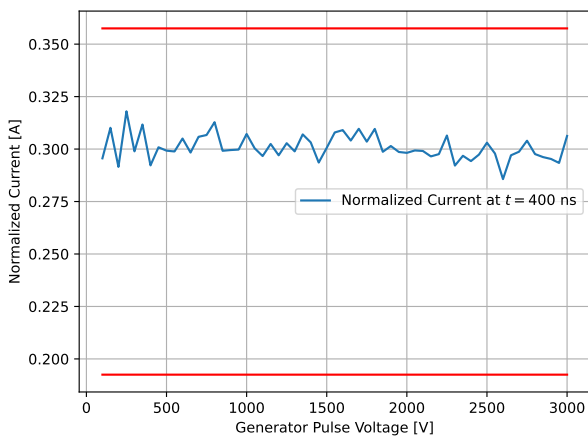


Figure 2: Normalized extracted current at  $t_1 = 400$  ns

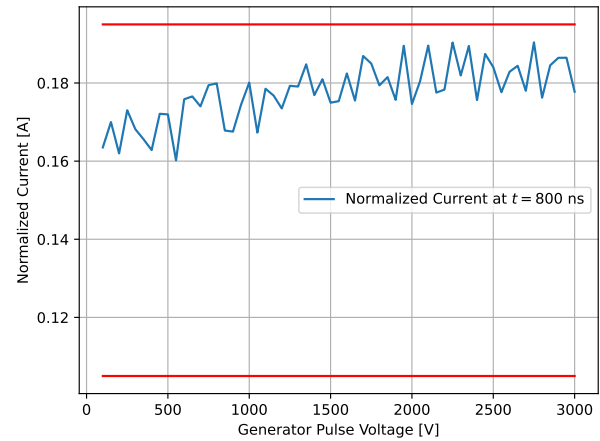


Figure 3: Normalized extracted current at  $t_2 = 800$  ns

## 3 Test Setup

Fig. 4 shows the test setup to verify the electrical characteristics of the ISO 10605 – 330 pF, 2 kΩ pulse module.

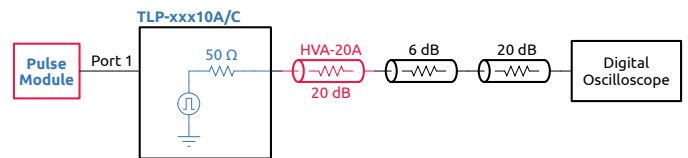


Figure 4: Test setup

## 4 SPICE Equivalent Model

Fig. 5 shows the SPICE equivalent model of the pulse generation circuit [2]. The 0.15 m transmission line must be simulated in the time domain as well.

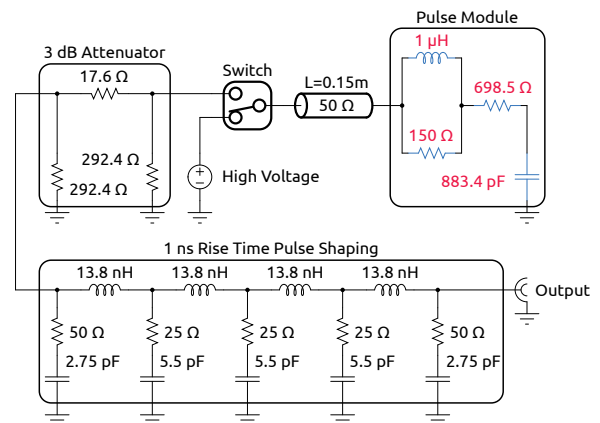


Figure 5: SPICE equivalent model

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### 5 Application Notes

The next 3 figures show a 50 Ω grounded DUT setup, 100 Ω grounded DUT setup and a 100 Ω floating DUT setup.

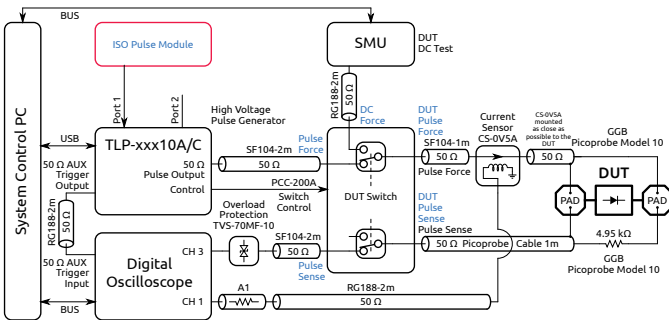


Figure 6: 50 Ω grounded DUT setup

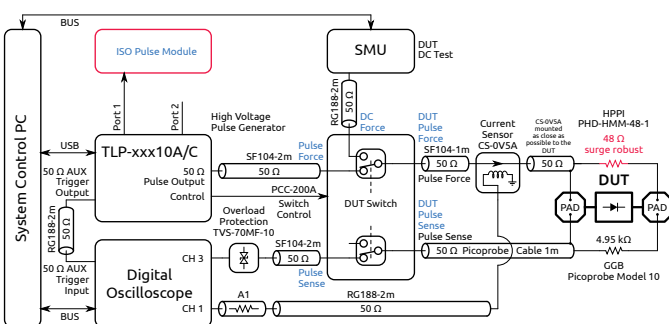


Figure 7: 100 Ω grounded DUT setup

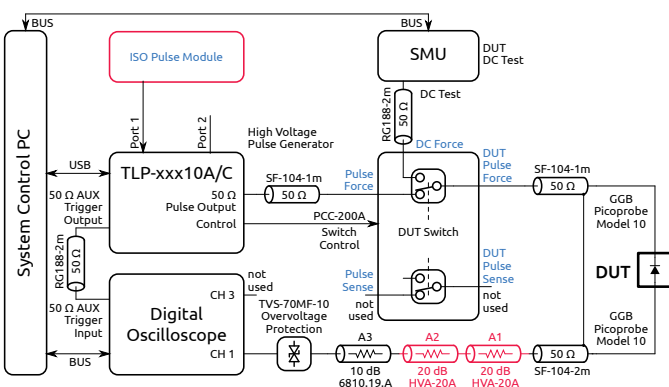


Figure 8: 100 Ω floating DUT setup

A 100 Ω setup (grounded or floating DUT) is preferred over a 50 Ω grounded DUT setup in order to achieve better pulse reflection suppression. This can be evaluated

by measurement comparison of a short circuit DUT for all 3 setups.

### 6 Ordering Information

| Pos. | Description                           | Part No.     |
|------|---------------------------------------|--------------|
| 01   | Pulse Module ISO 10605 – 330 pF, 2 kΩ | 330 pF, 2 kΩ |

### References

- [1] “ISO 10605:2023 Road Vehicles - Test Methods for Electrical Disturbances From Electrostatic Discharge.” (), [Online]. Available: <https://www.iso.org/standard/79094.html> (visited on 07/21/2023).
- [2] Y. Cao, D. Johnsson, B. Arndt, and M. Stecher, “A TLP-based Human Metal Model ESD-generator for device qualification according to IEC 61000-4-2,” in *2010 Asia-Pacific International Symposium on Electromagnetic Compatibility*, Apr. 2010, pp. 471–474. DOI: [10.1109/APEMC.2010.5475621](https://doi.org/10.1109/APEMC.2010.5475621).

### 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 to 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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