

HBM Verification Tester HBM-VT

Advanced TLP/HMM/HBM Solutions



1 Features

- HBM pulse generator verification tester according ANSI/ESDA/JEDEC JS-001 up to ± 10 kV
- To be used in HBM test and qualification labs for regular pulse generator specification compliance test in order to fulfill lab audit and certification requirements
- Fully automatic compliance test and verification of HBM pulse generators regarding ANSI/ESDA/JEDEC JS-001 normative standard at 3 different load conditions:
 1. Short Circuit
 2. $500\ \Omega$
 3. Low capacitance transient voltage suppressor (TVS) diode type AQ3530-01LTG (Littlefuse) at $V_{BR} = 8.5$ V reverse breakdown voltage, including DC test
- Electrically floating (no fixed system ground)
- Isolated industrial full-speed USB control interface
- Parameter evaluation and verification of the transient HBM current waveforms:
 1. Peak Current
 2. Rise Time
 3. Decay Time
 4. Maximum Ringing Current
- Fully automatic test report generation (PDF, see Fig. 4)
- Optionally available upgrade for all HPPI TLP-3010C, 4010C, 8010A, 8010C, HBM-TS10-A hardware systems in combination with HBM-S1-B (6 kV) pulse generators
- Built-in current sensor with 1 V/A sensitivity
- Compact size 126 mm x 82.5 mm x 44.5 mm

2 Description

The HBM-VT is a programmable load impedance for compliance verification of 2-pin human body model (HBM) pulse generators according ANSI/ESDA/JEDEC JS-001 standard with $C=100$ pF, $R=1.5$ k Ω discharge network up to ± 10 kV.

The HBM-VT can be used as an optional extension (upgrade on request) for all HPPI TLP-3010C, 4010C, 8010A/C, 12010A/C pulse generators and HBM-TS10-A test system in combination with HBM pulse generators in order to perform automatic specification compliance test regarding ANSI/ESDA/JEDEC JS-001 normative standard at 3 different load conditions: short circuit, $500\ \Omega$ and a reference diode with $V_{BR} = 8.5$ V reverse breakdown voltage, including DC test.

The HBM loads, current sensor output, USB control interface and the enclosure are electrically floating. There is no limiting system ground which may cause common-mode interference-induced errors of the HBM current measurement result.

2.1 Verification Procedure

Fig. 1 and Fig. 2 show a typical test setup. The HV-CU10-A (HBM-TS10-A) or TLP-3010C/4010C/8010A/8010C systems can be used to control the HBM-VT.

A fully automated verification procedure looks as follows:

1. Test short circuit load up to ± 10 kV
2. Test $500\ \Omega$ load up to ± 4 kV
3. Test reference diode up to ± 10 kV
4. DC test of reference diode
5. Generation of a HBM verification test report (Fig. 4)

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2.2 Setup and Interconnection

There are two options to control the HBM-VT:

1. using HBM stand-alone test system HBM-TS10-A including HV-CU10-A high voltage control unit, as shown in Fig. 1.
2. using TLP-3010C, TLP-4010C or TLP-8010A/C systems as controller, as shown in Fig. 2.

In both cases the HBM-VT is controlled directly by the industrial isolated USB interface.

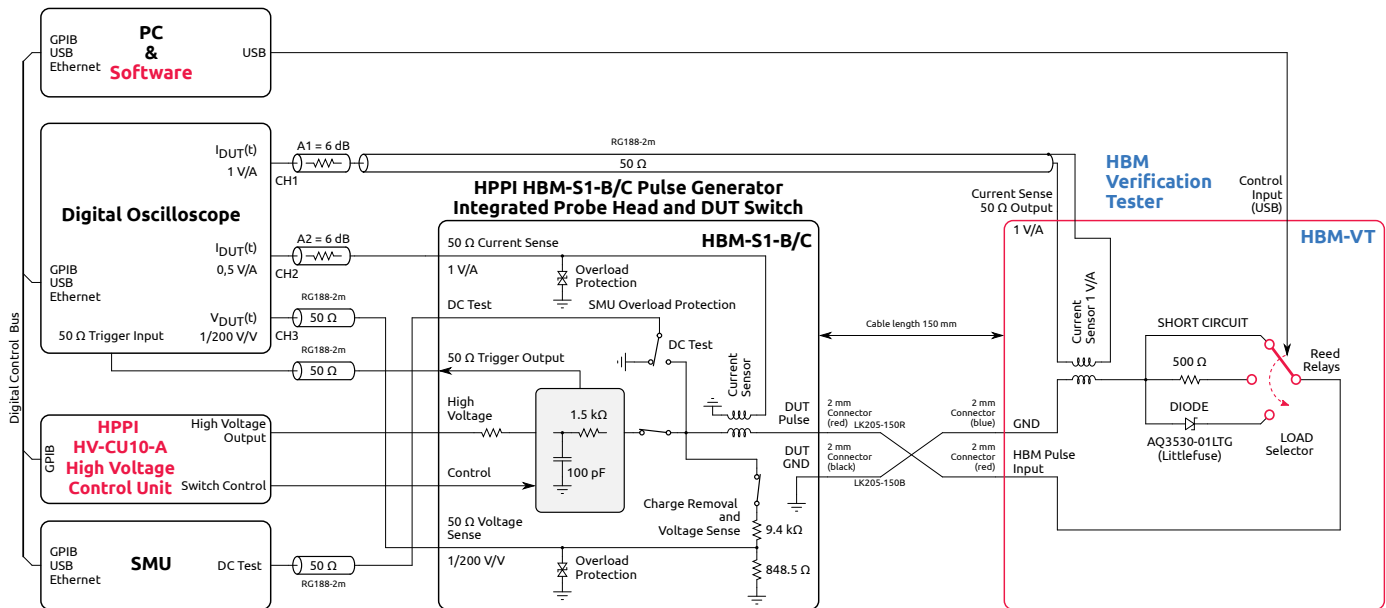


Figure 1: HBM verification test setup using HV-CU10-A (HBM-TS10-A) as controller

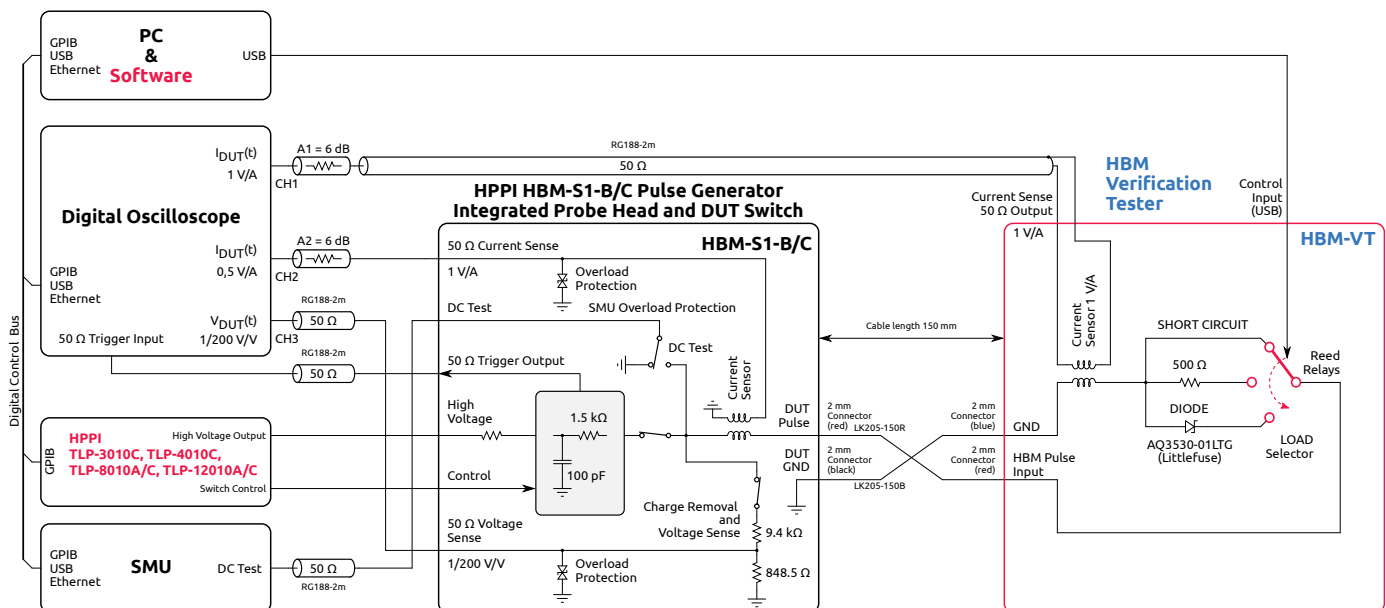


Figure 2: HBM verification test setup using TLP-3010C/4010C/8010A/8010C as controller

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3 Enclosure Dimensions

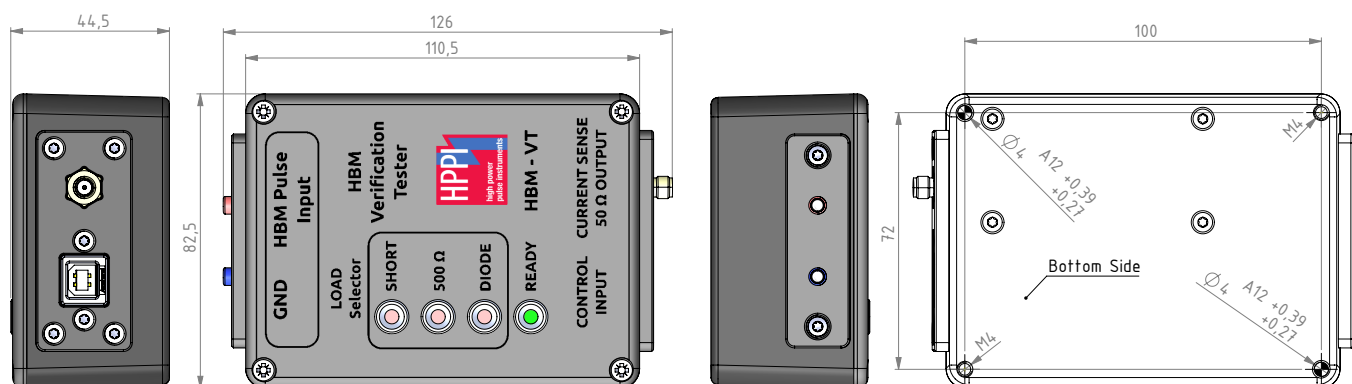
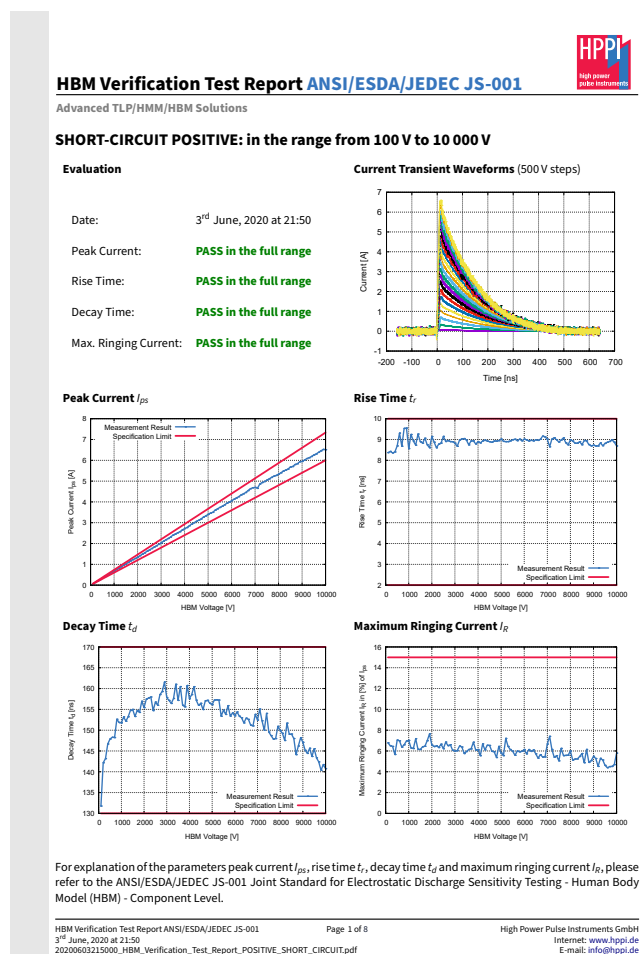


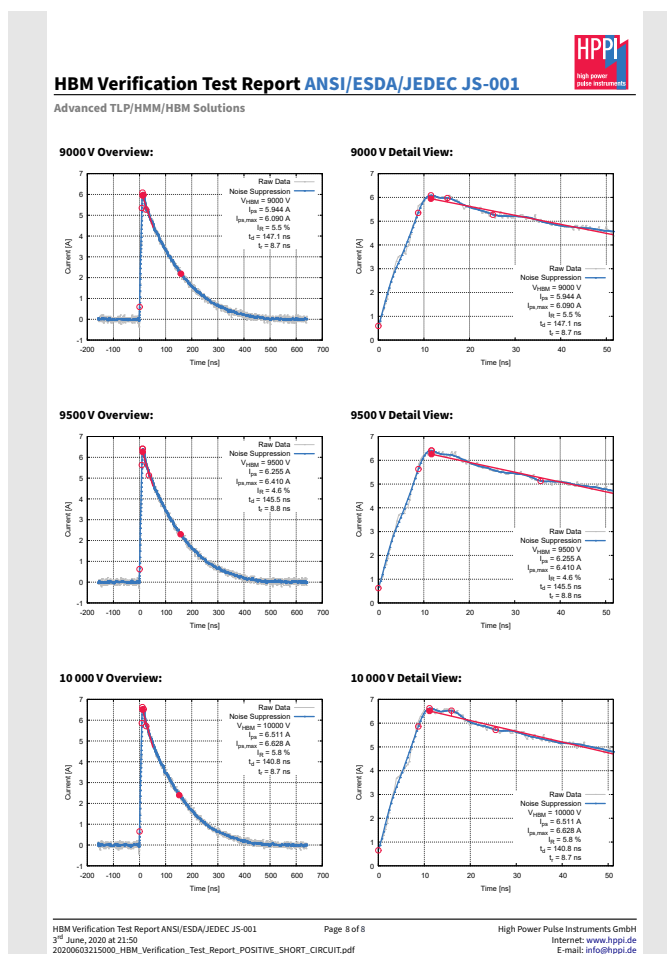
Figure 3: HBM-VT enclosure dimensions in [mm].

4 Verification Test Report Format (PDF)

Fig. 4 shows an example, how the automatic generated verification test report looks.



(a) Example: report page 1



(b) Example: report page 8

Figure 4: Example - verification test report format (PDF)

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5 Characteristics

Tab. 1 shows the characteristics of the HBM-VT.

Parameter	Limit Values			Unit	Remarks
	Min.	Typ.	Max.		
HBM Pulse Input					
Max. pulse peak input current into SHORT	−7		+7	A	peak current according JS-001
Max. pulse peak input current into 500 Ω	−4		+4	A	peak current according JS-001
Max. pulse peak input current into diode	−7		+7	A	peak current according JS-001
Max. DC input current	−10		+10	mA	into 500 Ω or diode. SHORT: ±500 mA
Max. pulse input voltage into 500 Ω	−2		+2	kV	into 500 Ω at 4 kV HBM
Current Sensor					
Nominal sensitivity		1		V/A	into 50 Ω
Accuracy		±3		%	into 50 Ω
Lower cut-off frequency		1.9		kHz	−3 dB
Upper cut-off frequency		290		MHz	−3 dB
Pulse response (rise time)		< 2		ns	
Insertion impedance		50		mΩ	at HBM pulse input
Magnetizing inductance		6.4		μH	
Max. peak pulse current		7		A	peak current according JS-001
USB Interface					
USB data rate		12		MBit/s	Full speed (fixed), isolated
Current consumption		< 0.5		A	5 V at the USB interface, isolated
Enclosure					
Dimensions HBM-VT (W x H x D)	126 x 82.5 x 44.5			mm ³	
Weight HBM-VT		500		g	

Table 1: HBM-VT characteristics

6 Ordering Information

Pos.	Description	Part No.
01	HBM Verification Tester • including HBM interconnection cables, control cables and software upgrade	HBM-VT

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:

High Power Pulse Instruments GmbH
Stadlerstrasse 6A
D-85540 Haar, Germany
Phone : +49 (0)89 8780698 - 440
Fax : +49 (0)89 8780698 - 444
E-Mail : info@hppi.de

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