

GaNPower Double Pulse Test (DPT)

1.0 Evaluation Board

Technical Manual

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Double Pulse Test Evaluation Board Overview

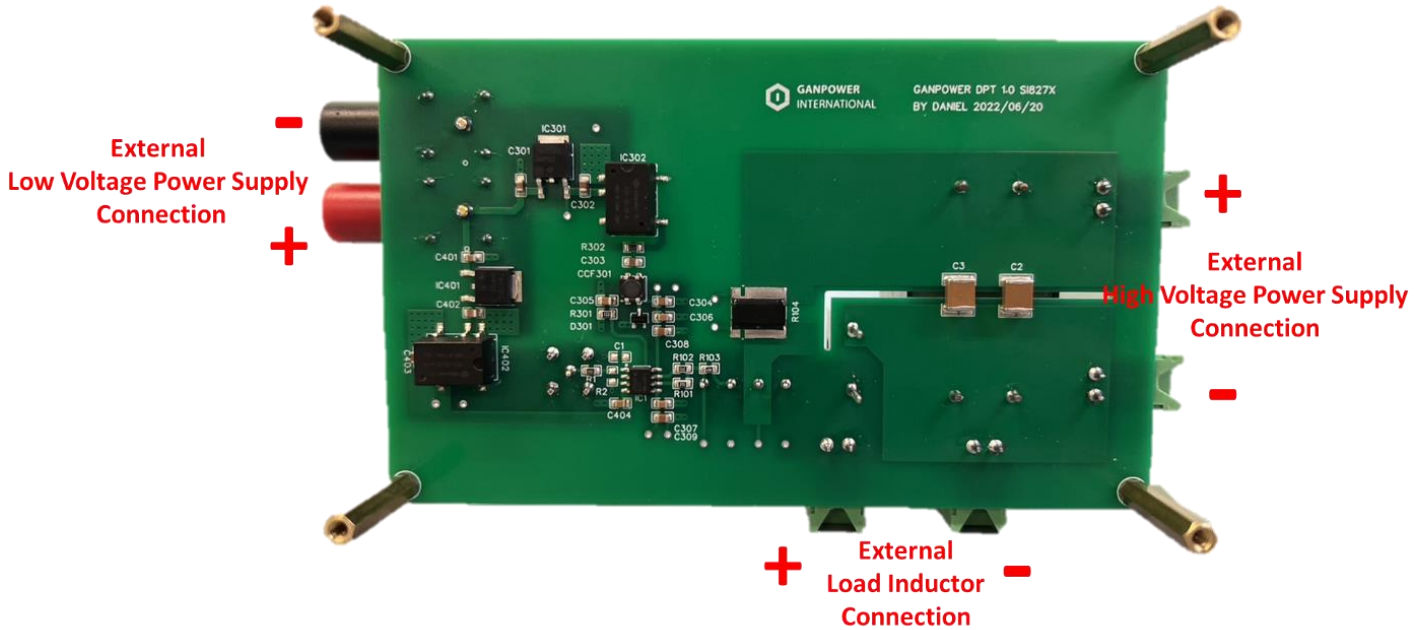


Figure 1 GaNPower Evaluation Board Bottom View



Figure 1 GaNPower Evaluation Board Top View

Schematic and Details of the DPT Evaluation Board

The schematic and the details of each component are provided in Fig. 2 and Table 1.

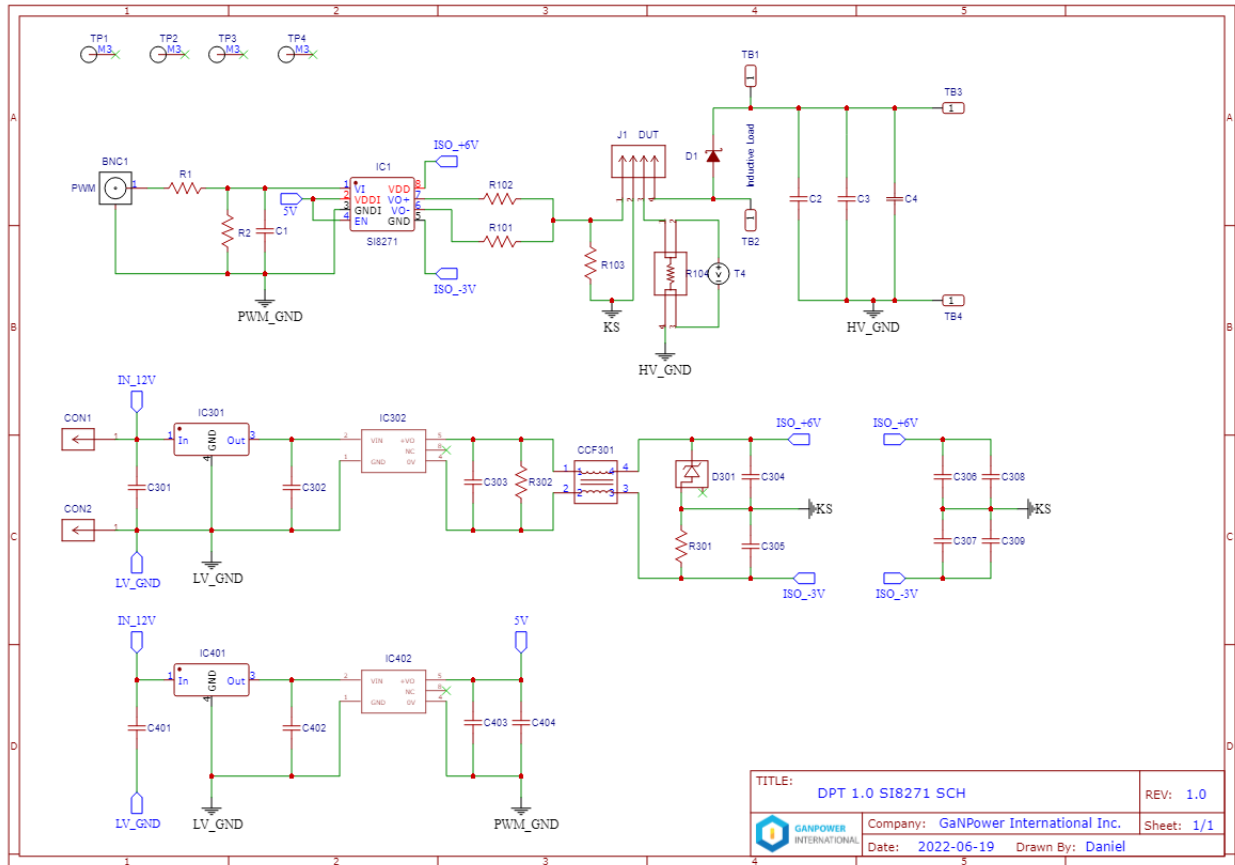


Figure2. Schematic of GaNPower Double Pulse Testing

Table 1: Bill of Components on the GaNPower DPT Evaluation Board

#ITEM	Designator	Value	Description
1	BNA1-2	BNA Socket	12V input for the board
2	BNC1	BNC Socket	PWM signal input for Vgs
3	TB1/TB2 TB3/TB4	1P Socket	Terminal blocks for load inductor Terminal blocks for Vbus
4	D1	SBD	Free-wheeling Diode
5	C4	10 μ F	Film Cap
6	R104	5mR	Current Sense
7	IC1	SI8271	Gate Driver
8	R1/	100R	SMD Resistor
9	R101	0R	SMD Resistor
10	R102	10R	SMD Resistor
11	R2/R103	10K	SMD Resistor
12	C1/C306 C307/C404	0.1u	MLCC Cap
13	C2/C3	0.1u	MLCC Cap
14	IC301/IC401	12V to 5V	LDO
15	C301/C401	0.33u	MLCC Cap
16	C302/C303/ C304/C305/ C402	4.7u	MLCC Cap
17	IC302	5V to 9V	DC-DC
18	R302	47K	SMD Resistor
19	CCF301	CCF	Common-mode Choke
20	D301	6.2V	Zener Diode
21	R301	1K	SMD Resistor
22	C308/C309 C403	10u	MLCC Cap

Quick Start Guide

This chapter will guide the user through the evaluation board overview, hardware operation, test setup, and test results.

Evaluation Board Overview

The evaluation board contains:

- Connect both the high voltage ($0\text{Vdc} < V_{in} < 1200\text{Vdc}$) and low voltage (12Vdc) power supplies.
- Always connect the external load inductor
- Connect the probes for V_{GS} , V_{DS} , I_d measurements, and other performance verifications.

Double Pulse Test Step-by-Step Guide

The general guidelines for operating the evaluation board are listed in this section. Follow the steps to configure the hardware properly.

1. Pre-set the PWM frequency and the duty cycle.



Figure3. The tested waveform from a RIGOL waveform generator that is used in the following section

2. Connect and apply the low-voltage power ($V_{dc}=12V$) supply.
3. Apply the PWM pulse signal to INPUT SIGNAL (BNC1) and check the V_{gs} waveform.
4. For double pulse measurements, probe the DUT drain (D) and source terminal (S) for V_{ds} measurements and add a current meter at the HV_GND terminal and DUT source terminal (S) for I_{ds} measurements.
5. Connect and apply the high-voltage power supply ($0V_{dc} < V_{in} < 1200V_{dc}$).
6. Apply the PWM pulse signal to INPUT SIGNAL (BNC1) and monitor the DUT drain voltage and current.
7. After testing, turn off the high-voltage power supply first, then the low-voltage power supply.

Evaluation Results

The double pulse test results in this chapter would be tested on **HV30SB5L**

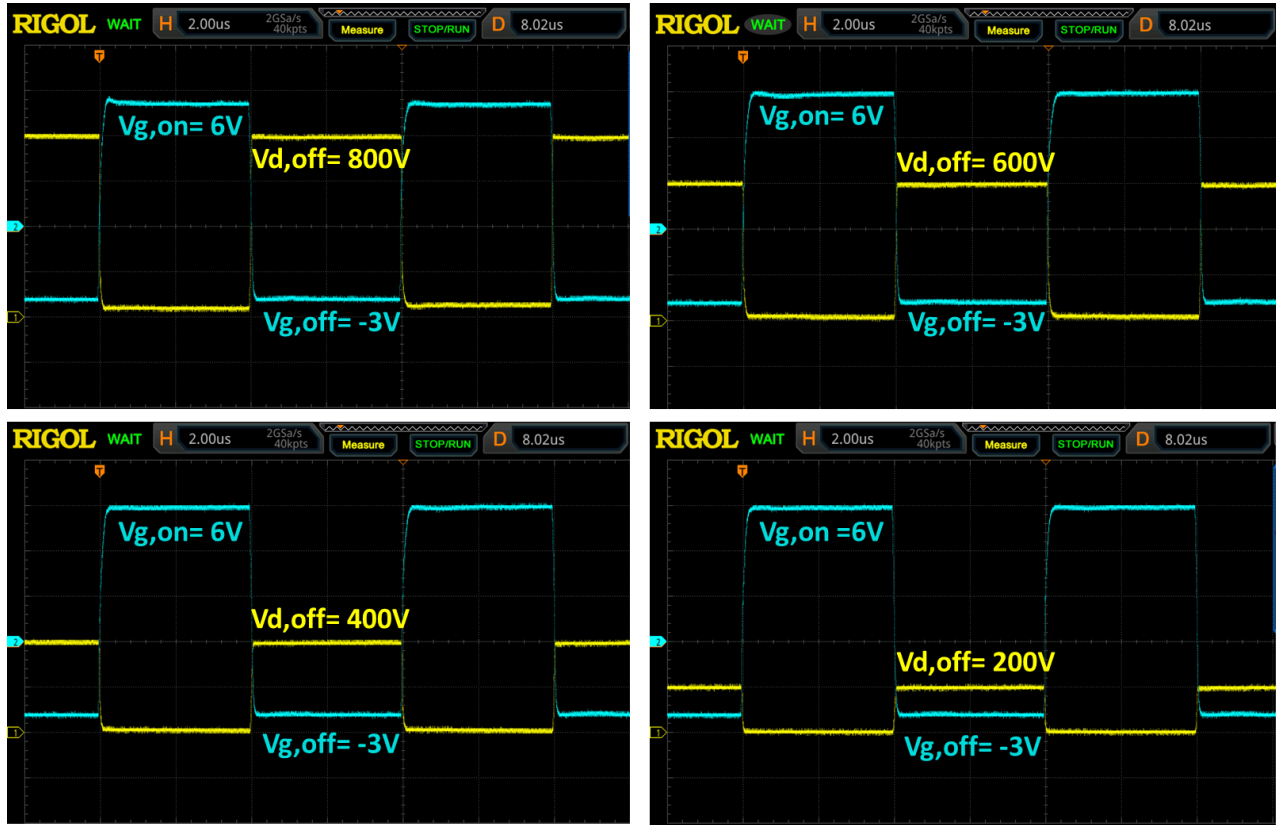


Figure4. Double Pulse Test Waveform