

Test Procedure for dh0-dhx IGBT Synchronizer Board (BNL Drawing #23049127)

This procedure should only be used to test the dh0-dhx IGBT Synchronizer Board.

Equipment needed:

1. Test Fixture for the dh0-dhx IGBT Synchronizer Board.
2. Tektronix TDS 4 channel scope

Scope Settings:

1. Set Vertical Settings according to the table below.

	Channel 1	Channel 2	Channel 3
Invert	OFF	OFF	OFF
Coupling	DC	DC	DC
Bandwidth	20 MHz	20 MHz	20 MHz
Scale	5.00 V/div	200 mV/div	2.00 V/div
Position	1.00 div	-3.00 div	-2.5 div
Offset	0.000	0.000	0.000

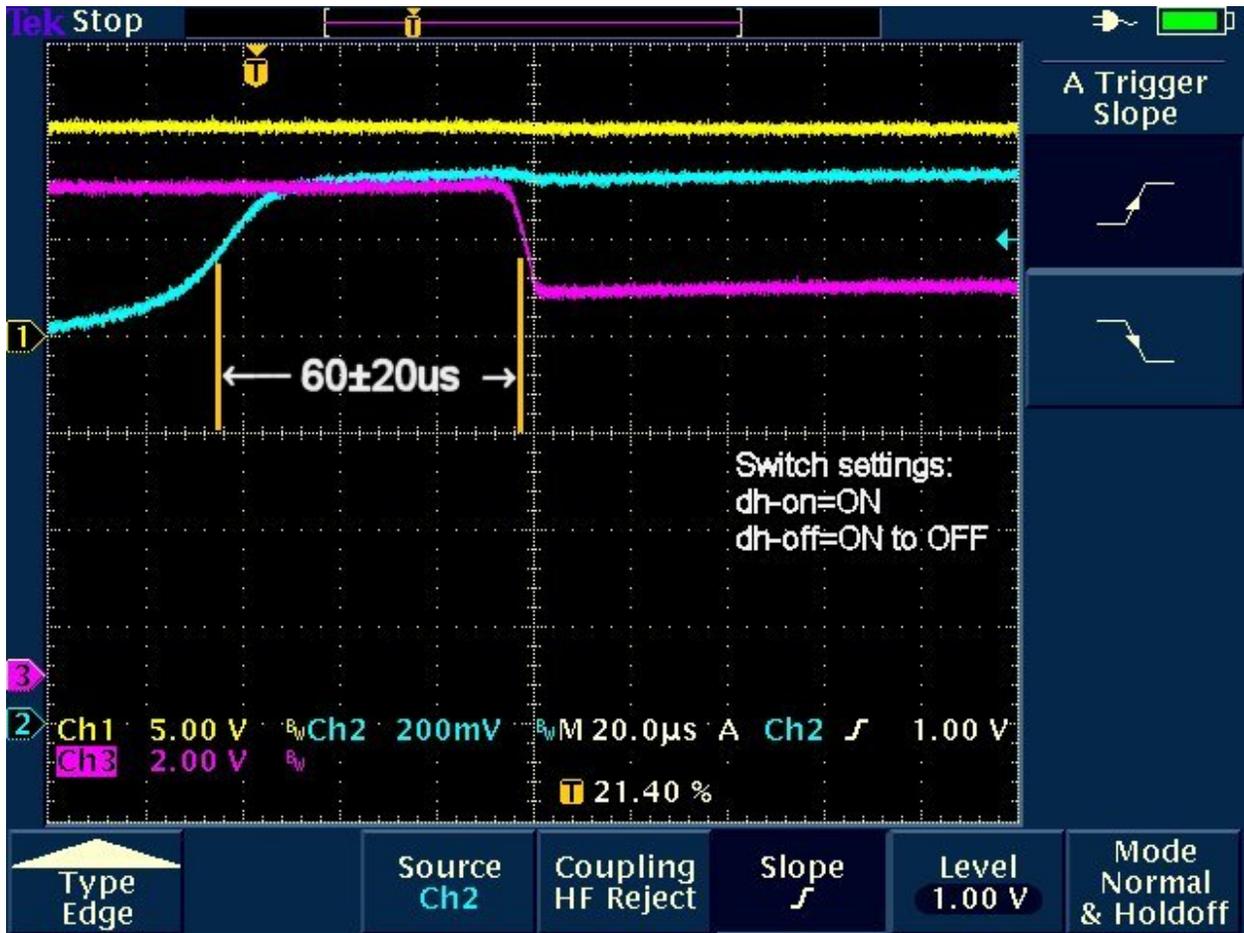
2. Horizontal Settings
 - a. Timebase – 20us
 - b. T 21.4%
3. Trigger Settings
 - a. Source – CH2
 - b. Coupling – HF Reject
 - c. Slope - \searrow
 - d. Level – 1.00 V

Setup test cable and board

1. Turn off AC power supply to the test fixture.
2. Place the Board Under Test (BUT) on the test fixture.
3. Secure the board with 4 screws, one for each corners.
4. Connect AC leads to J1 Terminal Block. Do not over tighten.
5. Connect IGBT drive leads to J4 Terminal Block.
6. Connect jumper cables between J2-1 to J3-1; J2-2 to J3-2; J2-3 to J3-3.
7. Connect three labeled clip leads to the correct points on the board.
8. Connect three RG58 cables from scope ch-1 to dh-ON BNC; ch-2 to dh-OFF BNC and ch-3 to fet-ON BNC.
9. Turn on test fixture AC power.

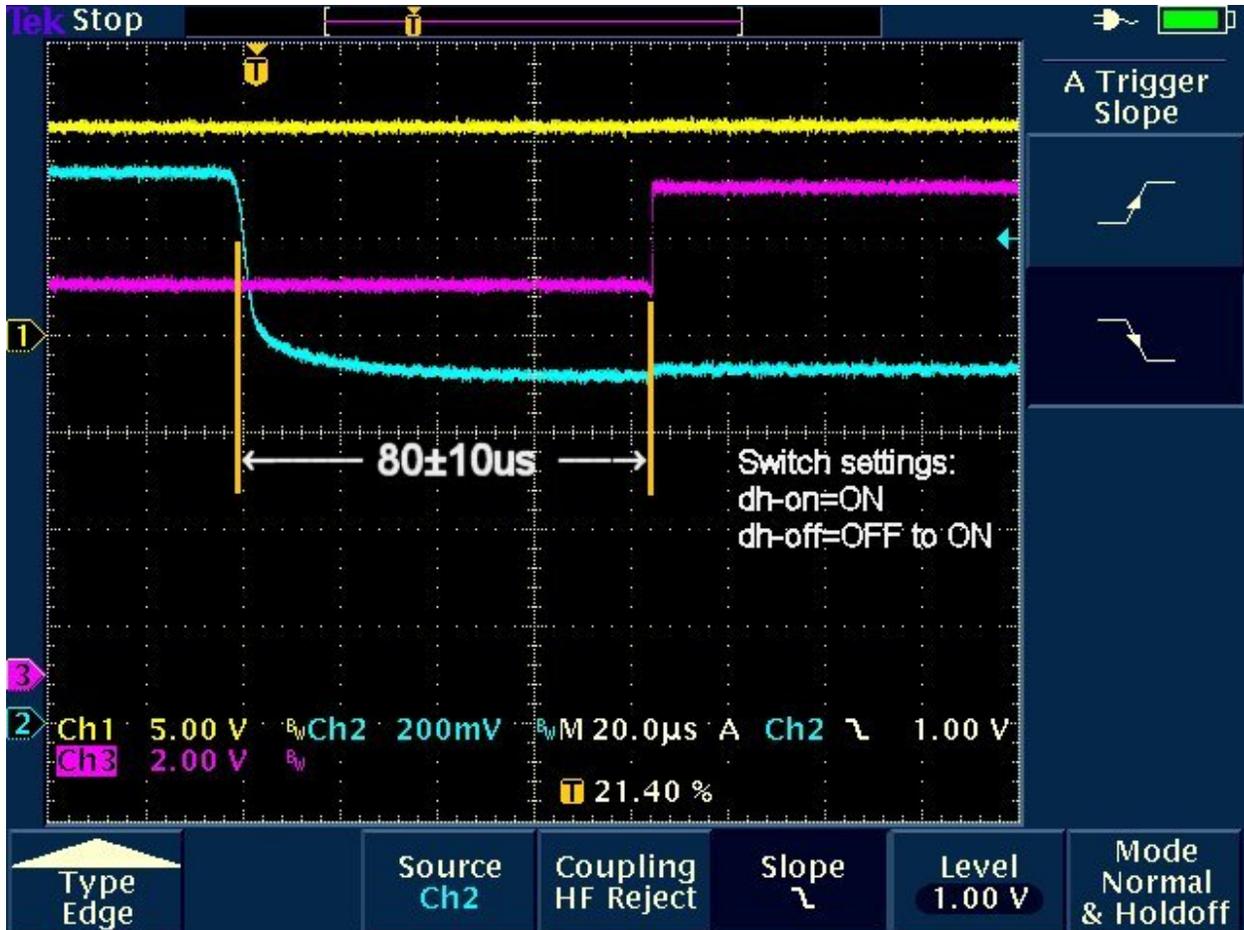
Test #1 - IGBT Turn on delay test

1. Set both the dh-ON the dh-OFF switch to the ON position.
2. Set Trigger Slope to \nearrow .
3. Set Acquire to Single seq
4. Flip the dh-OFF switch to the OFF position.
5. Verify the scope display is the same as photo below.
6. The critical timing is from ch-2 rising edge to ch-3 falling edge, it must be $60\pm 20\mu s$.



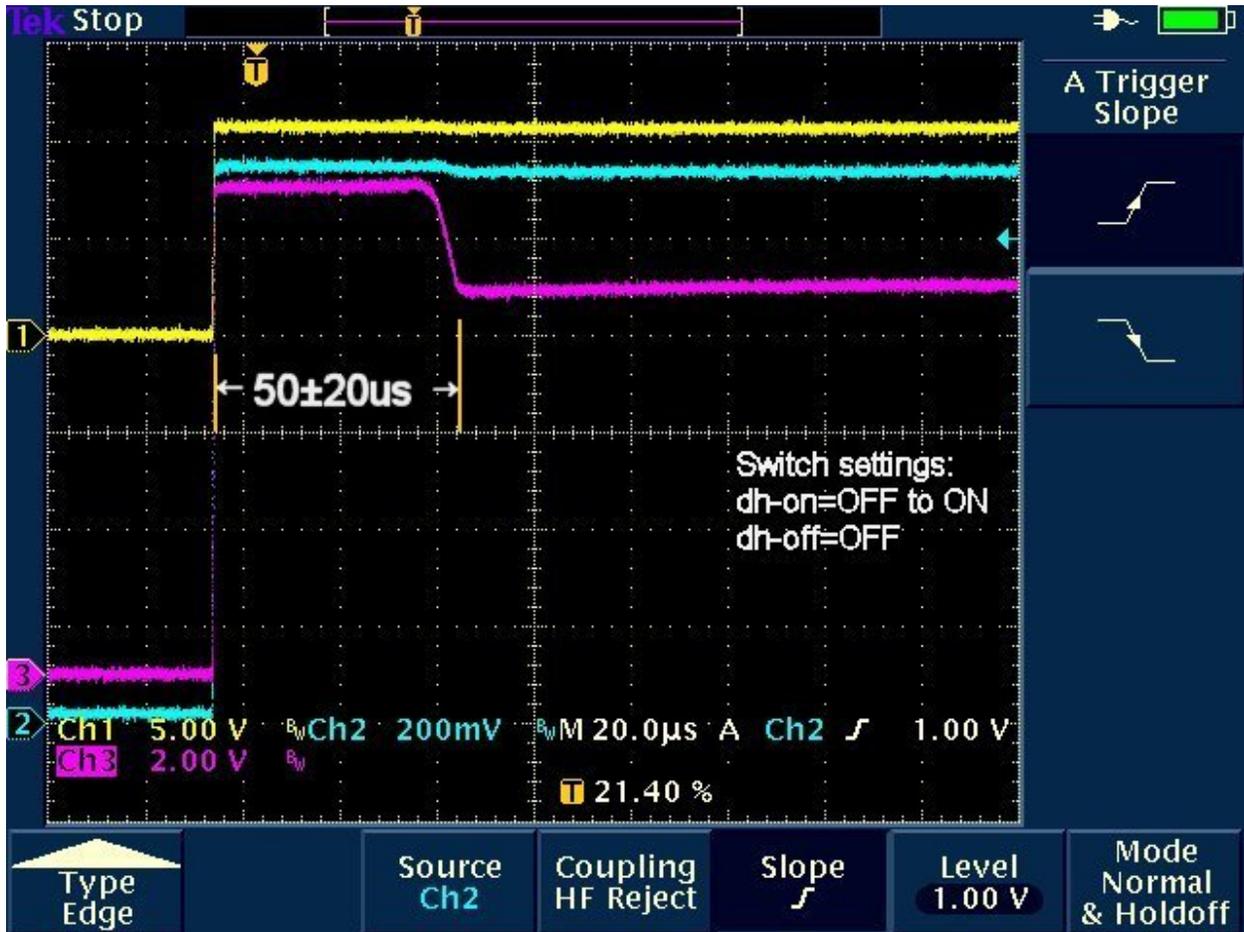
Test #2 - IGBT Shut off test

1. Set the dh-ON switch to the On position and set the dh-OFF switch to the OFF position.
2. Set Trigger Slope to \searrow .
3. Set Acquire to Single seq
4. Flip the dh-OFF switch to the ON position.
5. Verify the scope display is the same as photo below.
6. The critical timing is from ch-2 falling edge to ch-3 rising edge, it must be $80\pm 10\mu\text{s}$.



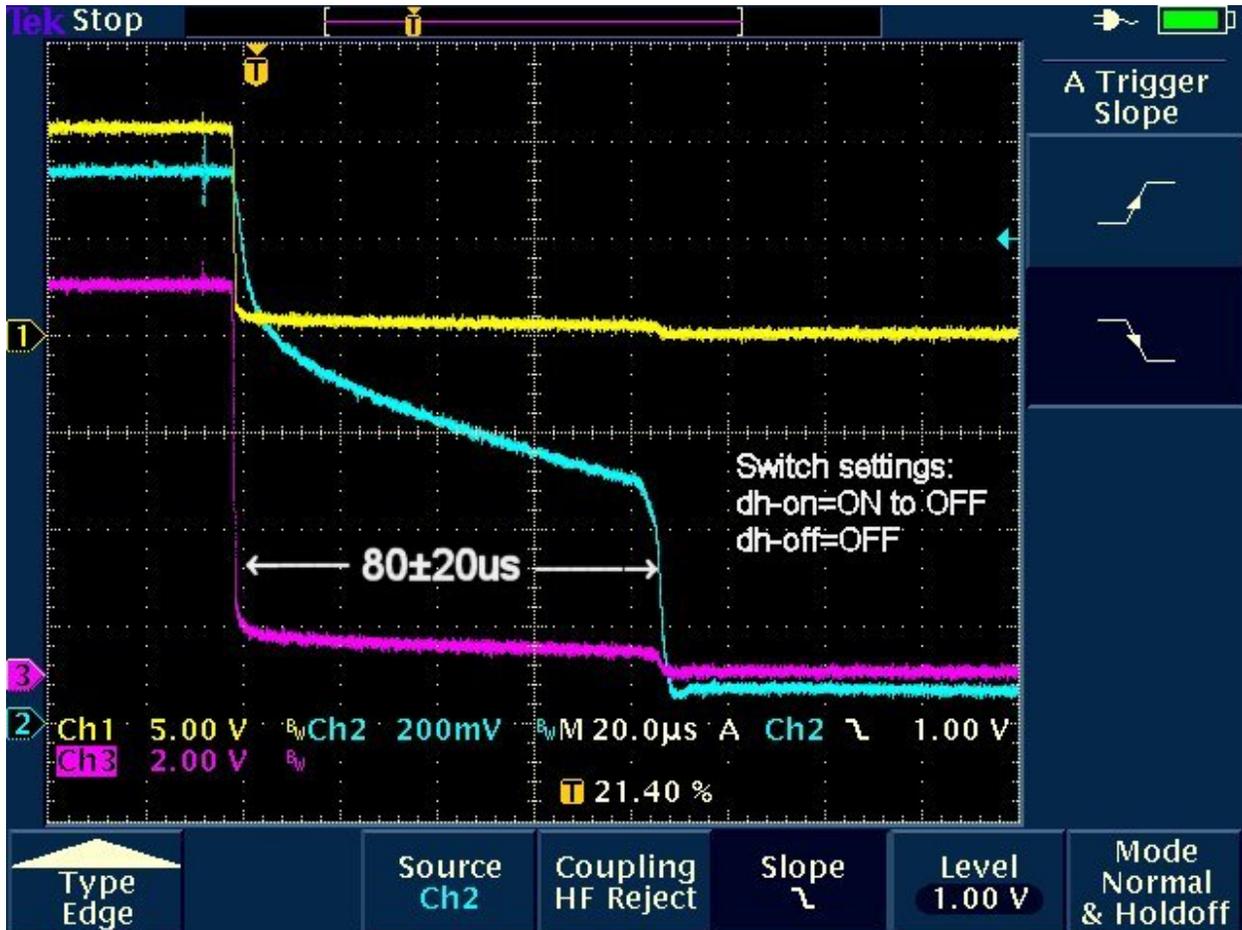
Test #3 - Input Shut off test

7. Set both the dh-ON and the dh-OFF switch to the OFF position.
8. Set Trigger Slope to \nearrow .
9. Set Acquire to Single seq
10. Flip the dh-ON switch to the ON position.
11. Verify the scope display is the same as photo below.
12. The critical timing is from ch-1 rising edge to ch-3 falling edge, it must be $50 \pm 20 \mu s$.



Test #4 - Input Turn on test

13. Set the dh-ON switch to the ON position and the dh-OFF switch to the OFF position.
14. Set Trigger Slope to \searrow .
15. Set Acquire to Single seq
16. Flip the dh-ON switch to the OFF position.
17. Verify the scope display is the same as photo below.
18. The critical timing is from ch-1 falling edge to ch-2 falling edge, it must be $80\pm 20\mu s$.



Board test completed, Turn off test fixture AC power, then put on Passed label on the tested board.