

QPA IGBT BOARD TEST PROCEDURE

Equipment List: 100Mhz Storage Oscilloscope
Fluke Model 77 Digital Multimeter or equivalent
IGBT Single Board Test Fixture

1. Ensure the board under test has passed hipot testing.
2. Ensure fixture circuit breaker is in de-energized position. Place board on fixture so that its corner mounting holes align with the nylon studs atop the fixture.
3. Connect P1, P2, & P3 plugs to their respective mates on the PCB.
4. Install the 120VAC barrier in place by swinging the plexiglass hinged cover down over upper left hand corner of PCB.

CAUTION: ELECTRIC SHOCK HAZARD EXISTS WITHOUT COVER
INSTALLED ON ENERGIZED FIXTURE.

5. Connect the oscilloscope and DMM's inputs to BNC "B".
6. Energize circuit breaker on rear of test fixture. Set IGBT switch to OFF position.
7. Ensure the pcb's PWR ON Led (DS2) glows.

NOTE: If the pcb fails to meet the specifications, troubleshoot using the following prints:

"Quench Protection QPE-11 IGBT Driver Board Schematic" Drawing #23049120 Rev B
"QPA IGBT Driver Card Test Fixture Schematic Diagram" Drawing #R23049125 Rev A

Ensure the document revisions you have are current. The prints may have been updated since this procedure was written.

8. Press and hold FUSE FAULT push button switch. Ensure the pcb's FUSE FAULT Led (DS4) and the test fixture FUSE FAULT Led glow. Release switch.
9. Toggle IGBT switch to ON position. IGBT ON Led (DS3) on pcb and test fixture IGBT ON Led should glow.
10. Press and hold test fixture's OVC FAULT push button switch. Ensure the pcb's IGBT FAULT Led (DS1) and the test fixture OVC FAULT Led glow. The IGBT ON Led (DS3) should extinguish. Release switch.

11. Toggle PULSE switch to FAST position. Toggle IGBT switch to OFF (center off position).

Verify DMM measures: -9.66 VDC (+/- 0.7 VDC)
Thus the range is -8.96 to -10.36 VDC.

12. Toggle IGBT switch to ON position.

Verify DMM measures: +10.1 VDC (+/- 0.7 VDC)
Thus the range is +9.4 to +10.8 VDC

13. Toggle PULSE switch to FAST. Toggle IGBT switch to PULSE position.

Verify DMM measures: +4.0 to +8.0 VDC PEAK. Signal fluctuates normally.

14. Toggle PULSE switch to SLOW. Observe the oscilloscope display for a signal similar to Diagram #1. Check the Table #1 list of scope settings to assist in signal acquisition if needed.

15. Press and hold OVC FAULT push button switch. Observe the oscilloscope display for a signal similar to Diagram #2. Release switch.

16. Connect oscilloscope input to BNC F. Press and hold the OVC FAULT push button switch. Observe the oscilloscope display for a signal similar to Diagram #3. Release switch.

16. De-energize the fixture. Label or tag the pcb to indicate it passed test. Have the board conformal coated.

Document file name: QPAIGBT BOARD TEST PROCEDURE.doc
5 pages with 3 diagrams and one table.

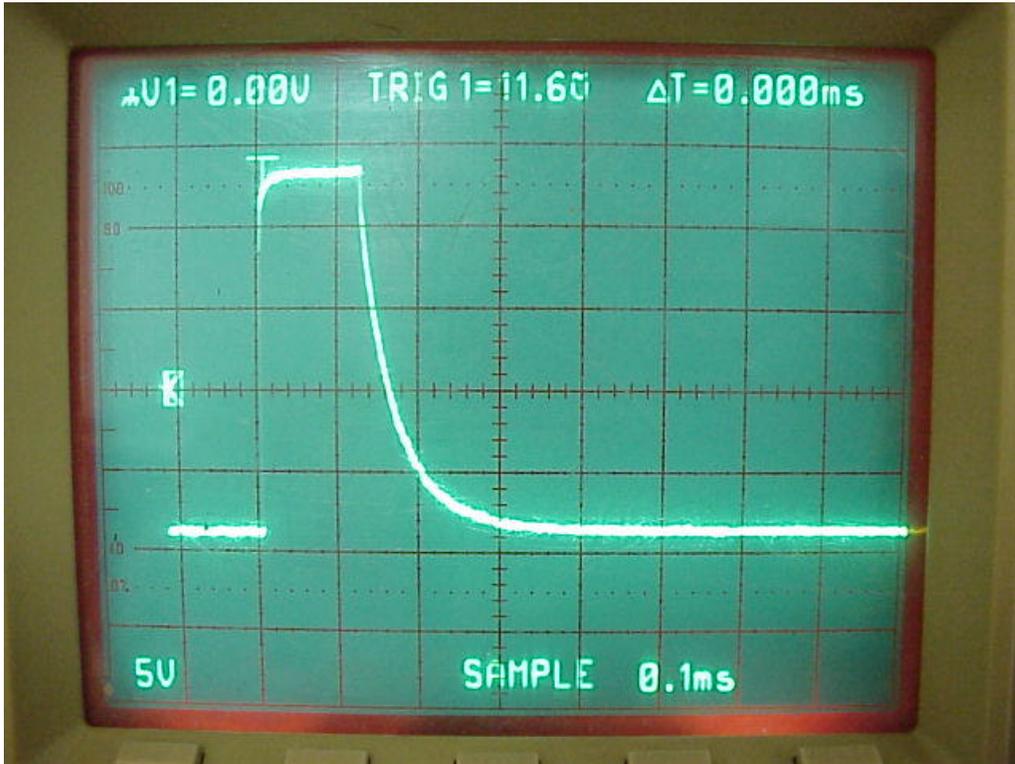


Diagram #1

Signal 22vp-p (+/-10%). Pulse width at peak: 120.0 microseconds. Scope settings 5v/div & 0.1msec/div horiz time base. Center horizontal grid line is 0.0Vdc.



Diagram #2

Settings same diagram #1. Signal same parameters as diagram #1 except amplitude and pulse width reduced.

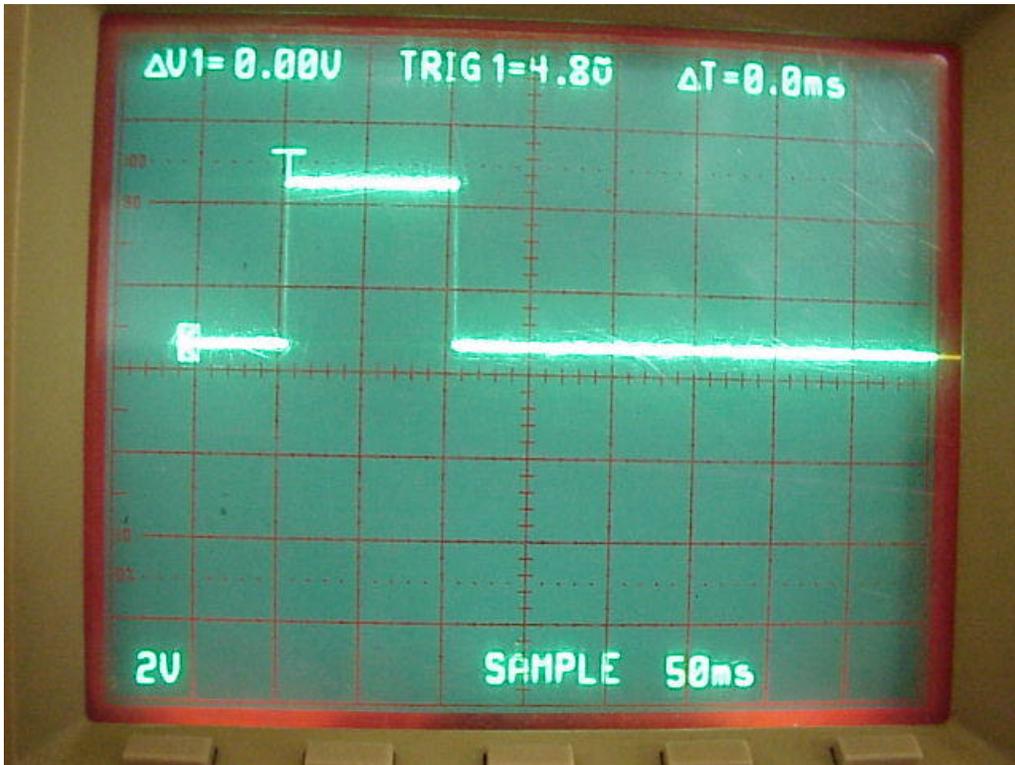


Diagram #3

Scope settings 2V /div & 50.0msec/div horiz time base.

4.0vp-p (+/-10%) 100.0ms (+/-10%).

TABLE #1:

Suggested oscilloscope settings to assist in signal acquisition:

Scope set on STORE mode.
Variable holdoff set CCW (norm)
A TRIGGER: Norm
 Negative slope
 Level approx 1:00
A+B Source: CH 1
A Coupling: LF Reject
A Ext Coupling: DC

Test Equipment:

Tektronix 2232 100Mhz Digital Storage Oscilloscope
Fluke 77 Series Multimeter