



GE Energy

## Functional Testing Specification

Parts & Repair Services  
Louisville, KY

DS200ITXDG1A

## Test Procedure for a DS200ITXDG1A IGBT Q DB Snubber Card

DOCUMENT REVISION STATUS: Determined by the last entry in the "REV" and "DATE" column

REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Transferred GEDS instruction into this format.	J. Hardin	08/13/2014
B	Move step 7.2.3.5 to 7.2.3.2	G. Chandler	10/10/2014
C			

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DATE 08/13/2014	DATE 10/10/2014	DATE	DATE 8/13/2014

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## 1. SCOPE

1.1 This is a functional testing procedure for a DS200ITXDG1A IGBT Q DB Snubber Card.

## 2. STANDARDS OF QUALITY

2.1 Refer to the current revision of the IPC-A-610 standard for workmanship standards.

## 3. APPLICABLE DOCUMENTS

3.1 The following document(s) shall form part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue shall apply.

3.1.1 Check board's electronic folder for more information

## 4. ENGINEERING REQUIREMENTS

### 4.1 Equipment Cleaning

4.1.1 Equipment should be clean and free of debris prior to applying power unless performing an initial check. Refer to site specific SRA's for cleaning guidelines.

### 4.2 Equipment Inspection

4.2.1 Equipment should be visually inspected for any defects prior to applying power.

This inspection should include the following as a minimum:

4.2.1.1 Wires - broken, cracked, or loosely connected

4.2.1.2 Terminal strips / connectors - broken or cracked

4.2.1.3 Components - visually damaged

4.2.1.4 Capacitors - bloated or leaking

4.2.1.5 Solder joints - damaged or cold

4.2.1.6 Circuit board - burned or de-laminated

4.2.1.7 Printed wire runs / Traces - burned or damaged

## 5. EQUIPMENT REQUIRED

5.1 The following equipment is required to perform the process requirements. Equipment may be substituted provided that all accuracy's and test ratios are equivalent or better.

Quantity	Reference #	Description
1		60VDC power supply
2		Digital Voltmeter
1		1K 10W resistor

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## 6. Modifications/Upgrades

6.1 Check Orange Book for any modifications or upgrades.

## 7. Testing Process

### 7.1 Setup and pre-test.

7.1.1 Check that Capacitors C9, C10, C11, and C12 have their plus lead soldered to the plus side on the silk-screen.

7.1.2 Make sure PL connector is mounted with the high guard side facing resistor R10.

7.1.3 Check to see that there are 4 pins in the PL connector.

7.1.4 Verify that all parts are mounted per the silk-screen.

### 7.2 Testing Procedure

#### 7.2.1 Diode D4

7.2.1.1 Connect Digital Voltmeter #1, set to diode checking with the plus lead to E9 and minus lead to E8, measure a forward voltage drop of 0.5 to 0.57VDC.  
Reverse the leads and measure infinity.

#### 7.2.2 Diodes D3 & D5

7.2.2.1 Connect Digital Voltmeter #1, set to diode checking plus lead to E5 and minus lead to E10, measure a forward voltage drop of 1.02 to 1.14VDC.  
Reverse the leads and measure infinity.

#### 7.2.3 Zeners D1 and D2 Test (See circuit page 5)

7.2.3.1 Set DC Power Supply #1 to current limit at 125 ma as follows:

7.2.3.2 Turn the I-limit and voltage knob fully counterclockwise.

7.2.3.3 With Supply off connect a jumper across (+) and (-) terminals.

7.2.3.4 Turn the Supply on and adjust I limit to 125 ma.

7.2.3.5 Turn Supply off and remove jumper from the + and – terminal.

7.2.3.6 Connect DC Power Supply #1 with a 1K 10W resistor (104X123AG 008) in series with the plus lead to E6 and the minus lead to E7. Connect Digital Voltmeter #1 plus to plus of supply before 1K 10W and minus to supply minus.

7.2.3.7 Connect Digital Voltmeter #2 plus to E6 and minus to E7.

7.2.3.8 Adjust the DC Power Supply #1 slowly to 40 VDC on Digital Voltmeter #1, while watching the Voltage on Digital Voltmeter #2 it should read 17.1 to 19.7 VDC.

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**7.2.3.9** Turn the DC Power Supply #1 voltage to zero and connect the plus lead (after the 1K resistor) to E7 and minus to E6.

**7.2.3.10** Adjust the DC Power Supply #1 slowly to 40 VDC, while watching the voltage on the Digital Voltmeter #2 it should read - 17.1 to -19.7 VDC.

## **7.2.4 Transistor Tests Q1 (See circuit Next page)**

**7.2.4.1** Jumper DBPL-4 to DBPL-3.

**7.2.4.2** Connect DC Power Supply with the plus lead to DBPL-3 and the minus lead to DBPL-2.

**7.2.4.3** Connect Digital Voltmeter #1 across the Supply, plus lead to Supply plus and the minus Supply minus.

**7.2.4.4** Connect Digital Voltmeter #2 plus to E6 and minus to E7.

**7.2.4.5** Adjust DC Power Supply for 15 VDC on Digital Voltmeter #1.

**7.2.4.6** Verify that Digital Voltmeter #2 reads 13.8 to 14.8 VDC.

**7.2.4.7** Turn off Supply and disconnect all leads in preparation of next test.

## **7.2.5 Transistor Tests Q2 (See circuit Next page)**

**7.2.5.1** Jumper DBPL-3 to DBPL-1.

**7.2.5.2** Connect DC Power Supply with the plus lead to DBPL-2 and the minus lead to DBPL-3.

**7.2.5.3** Connect Digital Voltmeter #1 across the Supply, plus lead to Supply plus and the minus Supply minus.

**7.2.5.4** Connect Digital Voltmeter #2 minus to E6 and plus to E7.

**7.2.5.5** Adjust DC Power Supply for 15 VDC on Digital Voltmeter #1.

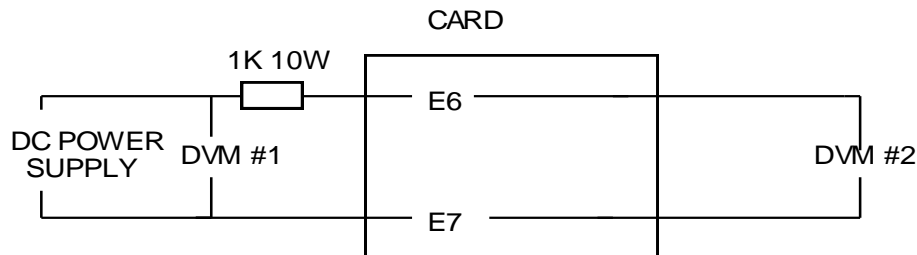
**7.2.5.6** Verify that Digital Voltmeter #2 reads 13.8 to 14.8 VDC.

## **7.2.6 FET'S & HV DIODES MUST BE FILLED WITH RTV.**

## **7.3 \*\*\*Test Complete\*\*\***

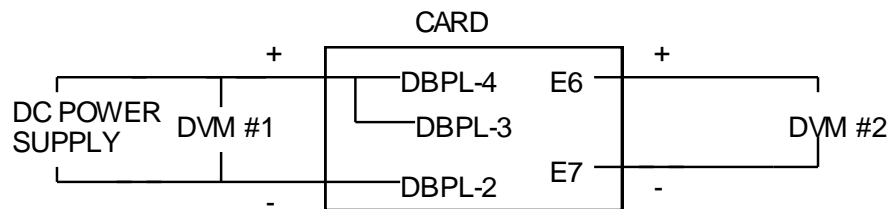
**CONNECTION DIAGRAMS:  
D1 & D2 CIRCUIT**

DVM = Digital Voltmeter



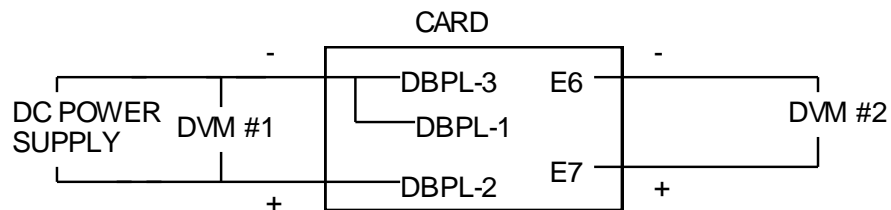
**TRANSISTOR Q1**

DVM = Digital Voltmeter



**TRANSISTOR Q2**

DVM = Digital Voltmeter



**8. Attachments**

8.1.1 None at this time.