

REVISIONS				
ZONE	REV.	DESCRIPTION	DATE	APPROVED
	--	Original Release	9/14/07	

REV STATUS	REV	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SHEETS	SHEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

REV STATUS	REV																
SHEETS	SHEET	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

CONTRACT No.:			<p style="text-align: center;">Planar Monolithics Industries, Inc. 7311-G Grove Road, Frederick, MD 21704</p>														
		DATE															
DRAWN	D. Bruder	9/14/07	<p>QUALIFICATION TEST PROCEDURE</p> <p>MODEL: TD-30T-914-DX-HERM</p> <p>HIGH SPEED THRESHOLD DETECTOR,</p> <p>HERMETICALLY SEALED</p>														
CHECK	E. Elder	9/14/07															
APPD.	R. Afable	9/14/07															
ENGR.	S. Kuhn	9/14/07															
PROD.	H. Hahn	9/14/07															
QC.	D. Bruder	9/14/07															
			REV: -	SCALE: N/A	SHEET <u>1</u> OF <u>7</u>												



PLANAR MONOLITHICS INDUSTRIES, INC.
7311-G GROVE RD., FREDERICK MD.21704
TEL: 301-631-1579 FAX: 301-662-2029
URL: WWW.PLANARMONOLITHICS.COM
E-MAIL: SALES@PLANARMONOLITHICS.COM
ISO 9001:2000 CERTIFIED

QUALIFICATION

TEST PROCEDURE
(QTP)

FOR

PMI MODEL NUMBER: TD-30T-914-DX-HERM

HERMETICALLY SEALED
HIGH SPEED THRESHOLD DETECTOR



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TABLE OF CONTENTS

PARAGRAPH	TITLE	PAGE
1.0	SCOPE	4
2.0	SCREENING TESTS	4
3.0	SCREENING TEST METHODS	5
4.0	QUALIFICATION TEST PROCEDURES	5
5.0	QUALIFICATION TESTS	6
6.0	QUALIFICATION TEST METHODS	7
7.0	QUALIFICATION TEST OUTPUT	7



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1.0 SCOPE

The purpose of this document is to provide a description of the Qualification Tests to be performed on PMI Model TD-30T-914-DX-HERM, the Hermetically Sealed High Speed Threshold Detector. These tests are designed to meet the Qualification Test requirements outlined in the Northrop Grumman Source Control Drawing 561R902 Rev A.

2.0 SCREENING TESTS

All Qualification Test units will initially be screened in accordance with the table shown below:

TABLE OF SCREENING TESTS

TABLE I

Item Number	TEST	WHERE PERFORMED	HOW DOCUMENTED
1	Non-Destructive Bond Pull Tests	Planar Monolithics Industries (PMI)	Non-Destruct Bond Pull Test Form, M-F-4001-3
2	Internal Visual	PMI QA	Traveler Sign-Off
3	Temperature Cycling	PMI	Chart Record
4	Vibration	Qual-Test, Florida	Qual-Test Report
5	Shock	Qual-Test, Florida	Qual-Test Report
6	PIND	Qual-Test, Florida	Qual-Test Report
7	Initial Electrical Testing	PMI Test Lab	Test Data Sheet
8	Burn-In	PMI	Chart Record/ Bias Log
9	Final Electrical Testing	PMI Test Lab	Test Data Sheet
10	Hermetic Seal	Litron, MA	Litron Test Data and C of C
11	External Visual	PMI QA	Traveler Sign-Off

3.0 SCREENING TEST METHODS

Planar Monolithics Industries, Inc., 7311-G Grove Road, Frederick, MD 21704
 Telephone: 301-631-1579 Fax: 301-662-2029 Email: sales@planarmonolithics.com



PLANAR MONOLITHICS INDUSTRIES, INC.
 7311-G GROVE RD., FREDERICK MD.21704
 TEL: 301-631-1579 FAX: 301-662-2029
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SCREENING TEST METHODS

TABLE II

ITEM	TEST	METHOD
1	Non-Destructive Bond Pull Tests	MIL-STD-883, Method 2023
2	Internal Visual	MIL-STD-883, Method 2017, Condition B
3	Temperature Cycling	MIL-STD-202, Method 107, Condition B, 10 cycles, -55°C to +125°C
4	Vibration	MIL-STD-202, Method 214, Procedure I, Condition B, 3 min./axis.
5	Shock	MIL-STD-883, Method 2002, Condition B, Y1 and Y2 axes only.
6	PIND	MIL-STD-883, Method 2020, Condition B
7	Initial Electrical Testing	PMI ATP
8	Burn-In	MIL-STD-883, Method 1015, Condition B @ 85°C for 168 hours. Unit biases individually monitored and fused.
9	Final Electrical Testing	PMI ATP
10	Hermetic Seal	MIL-STD-202, Method 112, Conditions C and D
11	External Visual	MIL-STD-883, Method 2009

4.0 QUALIFICATION TEST PROCEDURE

4.1 There will be three operational units and one “dummy” housing with solder pins used in the performance of the Qualification Tests.

- 4.1.1 The “dummy” unit will be used in Group 1A to test Resistance to Solvents and pin Solderability.
- 4.1.2 One operational unit will be used in Group 1B to test Physical dimensions, Thermal Shock, Vibration, Shock and Hermetic Seal.
- 4.1.3 Two operational units will be used in Group 2 to test Steady State Operating Life and Endpoint Electrical properties.

4.2 All units will receive a minimum of 96 hours of vacuum bake-out prior to sealing in an environmentally monitored process in order to satisfy the Internal Water Vapor Content requirement.

5.0 QUALIFICATION TESTS



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 7311-G GROVE RD., FREDERICK MD.21704
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TABLE OF QUALIFICATION TESTS

TABLE III

<u>GROUP 1A (Dummy Unit)</u>			
ITEM	TEST	WHERE PERFORMED	HOW DOCUMENTED
1	Resistance to Solvents	Qual-Test - FL	Qual-Test Report
2	Solderability	Qual-Test - FL	Qual-Test Report
<u>GROUP 1B (Operational Unit # 1)</u>			
3	Physical Dimensions	PMI QC	Dimensional Data Sheet
4	Thermal Shock	PMI	Chart Record
5	Vibration	Qual-Test - FL	Qual-Test Report
6	Shock	Qual-Test - FL	Qual-Test Report
7	Hermetic Seal	Litron, MA	Litron Test Data and C of C
<u>GROUP 2 (Operational Units # 2 and # 3)</u>			
8	Steady State Operating Life	PMI	Chart Record/Bias Log
9	Endpoint Electrical	PMI	Test Data Sheet
<u>Group 3 (See SCD TABLE I NOTE 1/</u>			
10	Internal Water Vapor Content	See ¶ 4.2	Litron Test Data and C of C

6.0 QUALIFICATION TEST METHODS



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QUALIFICATION TEST METHODS

TABLE IV

<u>GROUP 1A (Dummy Unit)</u>		
ITEM	TEST	METHOD
1	Resistance to Solvents	MIL-STD-883, Method 2015
2	Solderability	MIL-STD-883, Method 2003
<u>GROUP 1B (Operational Unit # 1)</u>		
3	Physical Dimensions	MIL-STD-883, Method 2016
4	Thermal Shock	MIL-STD-202, Method 107, Condition B, 100 cycles, -55°C to +125°C. Electrical Post Test per PMI ATP.
5	Vibration	MIL-STD-202, Method 214, Procedure I, Condition D, 3 min./axis.
6	Shock	MIL-STD-883, Method 2002, Condition B, Y1 and Y2 axes only. Electrical Post Test after Items 5 & 6 per PMI ATP.
7	Hermetic Seal	MIL-STD-202, Method 112, Conditions C and D. Electrical Post Test per PMI ATP.
<u>GROUP 2 (Operational Units # 2 and # 3)</u>		
8	Steady State Operating Life	MIL-STD-883, Method 1015, Condition B @ 85°C for 1000 hours. Unit biases individually monitored and fused.
9	Endpoint Electrical	PMI ATP (All operational units)

7.0 QUALIFICATION TEST OUTPUT

- 7.1 If the unit fails to pass any Group 1B Electrical Post Test, it must be repaired and the preceding test repeated before proceeding to the next step.
- 7.2 If either unit fails to pass the Group 2 Endpoint Electrical Test, Northrop Grumman must be contacted in order to determine the action to be taken.
- 7.3 Operational Units will be labeled as Qualification Unit 1, 2, or 3 and will have a red cross-mark across them to identify them as qualification units.
- 7.4 Upon completion of Qualification Tests a complete report including all verification data will be submitted for Northrop Grumman approval.