DESIGN OBJECTIVES

43WAY SEAL PLUG,40 WAY MCON 1.2+ 3WAY MOCN 2.8

108-101363

The product described in this document has not been fully tested to ensure conformance to the requirements outlined herein. TE Connectivity makes no representation or warranty, express or implied that the product will comply with these requirements. Further, TE Connectivity reserves the right these requirements based on the results of additional testing and evaluation. Contact TE Connectivity Engineering for further information. If necessary, This document will become the Product Specification at successful completion of testing.

1. Scope:

1.1 Content

This specification covers the requirements for product performance, test methods and qual ity assurance provisions of 43WAY SEAL plug connector.

43WAY SEAL PLUG : 2278748-1 Consists of 2278749-1, 2278750-1,2278751-1, 2278752-1, 2278753-1, 2278754-1, 1418399-1, 1418400-1

2. Applicable Documents:

The following documents form a part of this Specification to the extent specified herein. In the event of conflict between the requirements of this Specification and the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1 TE Connectivity Specifications:

A. 109 SERIES: Test Specification, Requirements for Test Methods.
B. USCAR-2 REVISION 6

3. Requirements:

3.1 Design and Construction

Product shall be of the design, construction and physical dimensions specified in the Applicable product drawing.

				DR J.Z 28NOVY14	TE Connectivity		
				CHK A.D 28NOVY14	Shanghai, China		
				APP SY.W 28NOVY14	NO. 108-101363	REV A	LOC ES
				PAGE 1 of 6	TITLE 43WAY SEAL PLUG		
A	**First Release**	J.Z	28NOVY14				
LTR	REVISION RECORD	DR	DATE				

3.2 Materials

A. Housing/Terminal Housing/SEALING COVER
-Material: PA66-GF35
B. TPA
- PA66-GF25
D. O-ring/Family Sealing
-SILICONE RUBBER

3.3 Ratings:

A. Operating temperature Range : -40℃ to + 125℃

B. Nominal operating voltage: 12V DC; for application at higher voltage please contact TE Connectivity.

3.4 Quality Assurance Provision

A. Sample Preparation:
The test samples to be used for the test shall be prepared by random selection from the current production. No sample shall be reused, unless otherwise specified.

B. Test Condition:
All the test shall be performed under any combination of the following test condition, unless otherwise specified:
Room temperature: 23±5℃
Relative humidity: 45~75%
Atmospheric pressure: 860~1060 mbar

3.5 Requirements and Procedures Summary

Para.	Test items	Requirements	Procedures
3.5.1	Visual Inspection	The connector assembly must not show, with the aid of 10X magnification, any evidences of deterioration, cracks, deformities, etc…Connector locking mechanisms must function without breakage.	Visually, Dimensionally and Functionally inspected per applicable inspection plan. USCAR-2 5.1.8
3.5.2	Connector and/or terminal cycling	10 Times	USCAR-2 5.1.7
Mechanical Test			
3.5.3	Terminal – Connector inserting force	Insertion: 1. Inserting force: 30N max. 2.The forward stop push-through force F≥50N	USCAR-2 5.4.1 Terminal –Connector inserting/ retention force Terminal: MCON 1.2 and MCON 2.8
3.5.4	Terminal – Connector retention force	Retention:. 1. Primary lock retention MCON 1.2 40N min MCON 2.8 60N min 2. Primary + Second lock after Moisture Condition MCON 1.2 70N min MCON 2.8 100N min 3. Primary + Second lock after Temp/Humidity and THE MCON 1.2 50N min MCON 2.8 70N min	USCAR-2 5.4.1 Terminal –Connector inserting/ retention force Terminal: MCON 1.2 and MCON 2.8
3.5.5	Connector to connector Mating /Unmating force (mechanical assist)	1.The force to engage the connector to its pre-lock position F≤ 75N (Refer to USCAR25) 2.Un-mating force≥110N with the primary connector lock fully engaged 3. Un-mating force≤ 75N with the primary connector lock completely disengaged/disabled	USCAR-2 5.4.3 Connector to connector Mating/Unmating force(mechanical assist)

Para.	Test items	Requirements	Procedures
3.5.6	TPA engage /disengage force	Insert to lock F≤60N Remove F≥25N	USCAR-2 5.4.5 Miscellaneous component engage /disengage force
3.5.7	Polarization feature effectiveness	3x the maximum value of mating connector(with force being ≥60N and ≤ 150N	USCAR-2 5.4.4 Polarization feature effectiveness
3.5.8	Vibration/ Mechanical Shock	There shall be no loss of electrical continuity	ISO16750-3 4.1.2.2.2.1 Sinusoidal vibration 4.1.2.2.2.2 Random vibration 4.2.3.2 Mechanical Shock
3.5.9	Connector Drop Test	Meet Visual Inspection acceptance Criteria	USCAR-2 5.4.8 Connector Drop Test
3.5.10	Cavity Damage susceptibility	F≥80N for ≥1.5 normal size terminal F≥60N for <1.5 normal size terminal	USCAR-2 5.4.9 Cavity Damage susceptibility
ELECTRICAL Test			
3.5.11	Isolation Resistance	All measured isolation resistance shall be greater than 100 MΩ at 500VDC	USCAR-2 5.5.1 Isolation Resistance
3.5.12	Dry Circuit Resistance – Contact Resistance	Initial MCON 1.2 ≤10mΩ MCON 2.8 ≤5mΩ After MCON 1.2 ≤20mΩ MCON 2.8 ≤10mΩ	USCAR-2 5.3.1 Dry Circuit Resistance – Contact Resistance
3.5.13	Voltage Drop	≤50mV	USCAR-2 5.3.2 Voltage Drop MCON 1.2 WIRE 0.5MM² MCON 2.8 WIRE 2.0MM²

ENVIRONMENTAL Test

Para.	Test items	Requirements	Procedures
3.5.14	Thermal Shock	No defect, crack, could not affect their fit and function	USCAR-2 5.6.1 Thermal Shock Class 3(-40℃ to + 125℃) 99Cycle
3.5.15	Temperature humidity Cycling	No defect, crack, could not affect their fit and function	USCAR-2 5.6.2 Temperature humidity Cycling 40Cycle
3.5.16	High temperature exposure	No defect, crack, could not affect their fit and function	USCAR-2 5.6.3 high temperature exposure 125℃ 1008Hours
3.5.17	Submersion	No evidence of water or florescent dye shall be present in the interior of either mated connector	USCAR-2 5.6.5 Submersion 125℃ chamber 2H 0℃ salt water 30 Minute
3.5.18	Pressure/Vacuum Leak	No evidence of water or florescent dye shall be present in the interior of either mated connector	USCAR-2 5.6.6 Pressure/Vacuum Leak air pressure: 48 kPa 15 seconds 48 kPa (7 psig) of vacuum 15 seconds
3.5.19	High pressure spray	No evidence of water or florescent dye shall be present in the interior of either mated connector	USCAR-2 5.6.7 High pressure spray Water pressure: 8000~10000KPa Water temperature: 85+/-5℃

3.6.1Product Qualification Test and Sequences

Test or examination	TEST GROUP									
	1	2	3	4	5	6	7	8	9	10
3.5.1 Visual Inspection	1,4	1,3	1,3	1,3	1,3	1,3	1,7	1,7,15	1,7,15	1,7,15
3.5.2 Connector and/or terminal cycling							2	2	2	2
3.5.3 Terminal –Connector inserting force	2									
3.5.4 Terminal –Connector retention force	3							14	14	14
3.5.5 Connector to connector Mating/Unmating force (mechanical assist)		2								
3.5.6 TPA engage/disengage force			2							
3.5.7 Polarization feature effectiveness				2						
3.5.8 Vibration/Mechanical Shock							4			
3.5.9 Connector Drop Test					2					
3.5.10 Cavity Damage susceptibility						2				
3.5.11 Isolation Resistance								5,11	5,11	5,11
3.5.12 Dry Circuit Resistance – Contact Resistance							3,5	3,8	3,8	3,8
3.5.13 Voltage Drop							6	9	9	9
3.5.14 Thermal Shock								6		
3.5.15 Temperature humidity Cycling									6	
3.5.16 High temperature exposure										6
3.5.17 Submersion								12	12	12
3.5.18 Pressure/Vacuum Leak								4,10	4,10	4,10
3.5.19 High pressure spray								13	13	13
Sample Size	4	5	5	5	3	5	3	10	10	10

Fig. 2

4. QUALIFICATION TEST

4.1 Sample selection
Samples shall be prepared in accordance with applicable specification.

4.2 Test sequence
Qualification test shall be conducted as sequence specified in Fig. 2 .

4.3 Requalification test
If changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall co-ordinate requalification testing, consisting of all or part of original testing sequence as determined by developments, product, quality and reliability engineering.