

DESIGN OBJECTIVES

108-101385

勝特力電材超市-龍山店 886-3-5773766
 勝特力電材超市-光復店 886-3-5729570
 勝特力電子(上海) 86-21-34970699
 勝特力電子(深圳) 86-755-83298787
<http://www.100y.com.tw>

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 performances, test and quality requirements for the MCON 12P Through Wall Connector.

TE part No.:

2278701-1	12P Through Wall Connector
2278770-1/2	4+8P Unseal Plug

Test with mating parts:

7-1452656-3	MCON 1.2 LL Contact
1897462-2	12P Sealed Plug
1670144-3	MCON 1.2 CB Contact

1.2 Qualification

When tests are performed on the subject product line, the procedures specified in TE Connectivity 109 series specifications shall be used. All inspections shall be performed using the applicable Inspection Plan and Product Drawing.

				DR X. Li 27OCT.17	 TE Connectivity Shanghai, China						
				CHK W.Wu 01NOV17							
				APP I.Yin 02NOV17					NO. 108-101385	REV A	LOC ES
				PAGE					TITLE		
A	Initial Released	X.L.	02 NOV.17	1 of 7	MCON 12P Through Wall Connector						
LTR	REVISION RECORD	DR	DATE								

2. Applicable Documents:

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

2.1 TE connectivity Specifications:

A. 109-1 General Requirements for Test Specifications

2.2 Other documents

A. GMW3191-2012 Connector Test and Validation Specification

3. Requirements:

3.1 Design and Construction

Product shall be of the design, construction and physical dimensions specified in the applicable product drawings.

3.2 Materials

A. Contact (MCON 1.2 TAB Contact)

Material: CuZn30 H04

Finish: Ag over Ni plating

B. Through Wall Connector Material: PA66 GF30

Plug Material: PA66 GF15

3.3 Ratings:

Operating temperature Range : -40 °C to + 125 °C

3.4 Performance and Test Descriptions

The products are designed to meet the mechanical, electrical and environmental performances specified in Table.1. All testes must be performed at the test condition of the TE test specification 109-1 unless otherwise specified.



TE Connectivity
Shanghai, china

PAGE

2 of 7

NO.

108-101385

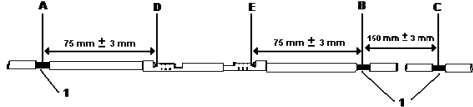
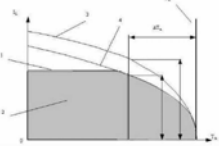
REV

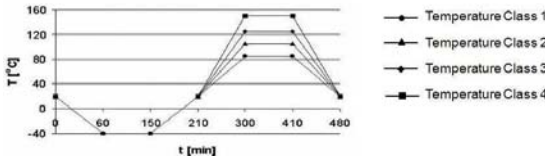
A

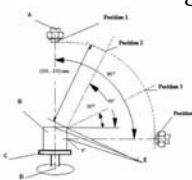
LOC

ES

Para.	Test items	Requirements	Procedures			
MECHANICAL TEST						
3.5.1	Visual Examination	There shall be no corrosion, discoloration, cracks, etc., which could affect the functionality of the part. Swelling or physical distortion shall not exceed the tolerances specified on the part drawing.	Visually examine each test specimen. GMW3191-3.4.1			
3.5.2	Connector to Connector Engagement Force (Two Side Plug)	Mating Force<75N	Mating connectors at a rate of (50 ± 10) mm/minute. GMW3191-4.2.8			
3.5.3	Unlocked Connector Disengagement Force (Two Side Plug)	Unmating Force < 75N	Pull the mated connectors apart at a rate of (50 ± 10) mm/minute. GMW3191-4.2.19			
3.5.4	Terminal Push-out Force (Tab)	Retention Force > 50N	Using the force tester, apply pressure to the male terminal pin at rate of (50 ± 10) mm/minute. Record the peak force required to displace the terminal a distance of 0.20 mm. Repeat for each pin location. GMW3191-4.5.2			
3.5.5	Terminal from Connector Extraction Force (primary lock with second lock)	Extraction Force>80N	Pull the lead at a uniform rate of (50 ± 10) mm/minute until pull-out occurs. Note the pull-out value and failure mode. GMW3191-4.2.5			
3.5.6	Locked Connector Disengagement Force	Disengage Force>80N	Pull the mated connectors apart at a rate of (50 ± 10) mm/minute. GMW3191-4.2.18			
3.5.7	Conditioning	10 cycle	Mate and unmate the connectors with terminals 10 times with the corresponding connector or header interface. GMW3191-3.2.1			
 TE Connectivity Shanghai, China			PAGE 3 of 7	NO. 108-101385	REV A	LOC ES

Para.	Test items	Requirements	Procedures
3.5.8	Terminal from Connector Extraction Force (primary lock only)	Extraction Force > 50N	Pull the lead at a uniform rate of (50 ± 10) mm/minute until pull-out occurs. Note the pull-out value and failure mode. GMW3191-4.2.5
ELECTRICAL TEST			
3.5.9	Dry Circuit Resistance (two side)	Contact Resistance < 8m Ω Ohms Contact Resistance < 16m Ohms (two side)	Calculate the combined resistance of the terminal conductor attachments and the interface with the following formula:  $R_{\text{Total Connection}} = R(DE) = R(AB) - R(BC)$ GMW3191-4.3.2
3.5.10	Isolation Resistance	All measured isolation resistances shall be greater than 100 MΩ.	Measure the isolation resistance by applying 500 VDC between all adjacent pairs of terminals. GMW3191-4.3.5
3.5.11	Dielectric Strength	No dielectric breakdown or flash-over shall occur between cavities at any time during the test. No dielectric breakdown or flash-over shall occur between the cavities and the outside of a connector at any time during the test.	Apply an AC voltage of 1000 VRMS at 50 Hz or 60 Hz, or a DC voltage of 1600V across each adjacent cavity for at least 60 seconds. Apply an AC voltage of 1000 VRMS at 50 Hz or 60 Hz, or a DC voltage of 1600 V between the terminals and the metal foil for at least 60 seconds. GMW3191-4.3.6
3.5.12	Maximum Current Rating	This is not a pass/fail test. The data developed for this test procedure shall be used to develop the derating curves for each terminal/wire size.	Graph the data with the temperature on the X-axis and the current (in Amperes) on the Y-axis for all wire sizes and types tested.  GMW3191-4.3.1
 TE Connectivity Shanghai, China		PAGE 4 of 7	NO. 108-101385
		REV A	LOC ES

Para.	Test items	Requirements	Procedures																																																																																																																																																																								
ENVIRONMENTAL TEST																																																																																																																																																																											
3.5.13	Mechanical Shock	There shall be no loss of electrical continuity during this test for any connector.	<p>Perform the Mechanical Shock Test according to EN 60068-2-27 and Table 10.</p> <table><tr><th rowspan="2"></th><th colspan="2">Test Number</th></tr><tr><th>1</th><th>2</th></tr><tr><td>Acceleration (in Gravity (G))</td><td>25</td><td>100</td></tr><tr><td>Nominal Shock Duration (in millisecond (ms))</td><td>15</td><td>11</td></tr><tr><td>Nominal Shock Shape</td><td>half sine</td><td>half sine</td></tr><tr><td>Number of shocks per axis, (positive and negative)</td><td>132 × 6 = 792</td><td>3 × 6 = 18</td></tr></table> <p>GMW3191-4.2.21</p>		Test Number		1	2	Acceleration (in Gravity (G))	25	100	Nominal Shock Duration (in millisecond (ms))	15	11	Nominal Shock Shape	half sine	half sine	Number of shocks per axis, (positive and negative)	132 × 6 = 792	3 × 6 = 18																																																																																																																																																							
	Test Number																																																																																																																																																																										
	1	2																																																																																																																																																																									
Acceleration (in Gravity (G))	25	100																																																																																																																																																																									
Nominal Shock Duration (in millisecond (ms))	15	11																																																																																																																																																																									
Nominal Shock Shape	half sine	half sine																																																																																																																																																																									
Number of shocks per axis, (positive and negative)	132 × 6 = 792	3 × 6 = 18																																																																																																																																																																									
3.5.14	Vibration with Thermal Cycling (With Oil)	There shall be no loss of electrical continuity during this test for any connector No leakage oil	<p>Temperature: Class 3 (-40~+125℃)</p>  <p>Vibration: Transmission Application</p> <table><tr><th colspan="2">Fore/Aft Breakpoints 33 hours/Axis</th><th colspan="2">Lateral Breakpoints 33 hours/Axis</th><th colspan="2">Vertical Breakpoints 33 hours/Axis</th><th colspan="2">Fore/Aft Breakpoints 33 hours/Axis</th></tr><tr><th>Hz</th><th>G²/Hz</th><th>Hz</th><th>G²/Hz</th><th>Hz</th><th>G²/Hz</th><th>Hz</th><th>G²/Hz</th></tr><tr><td>12</td><td>1.48E-02</td><td>12</td><td>3.67E-03</td><td>12</td><td>1.47E-02</td><td>12</td><td>1.48E-02</td></tr><tr><td>36</td><td>1.43E-03</td><td>56</td><td>3.16E-04</td><td>32</td><td>3.11E-03</td><td>32</td><td>3.11E-03</td></tr><tr><td>52</td><td>7.50E-03</td><td>264</td><td>1.69E-02</td><td>60</td><td>7.38E-03</td><td>52</td><td>7.50E-03</td></tr><tr><td>92</td><td>3.54E-03</td><td>396</td><td>4.52E-03</td><td>128</td><td>1.27E-02</td><td>128</td><td>1.27E-02</td></tr><tr><td>300</td><td>1.54E-02</td><td>528</td><td>1.72E-02</td><td>180</td><td>2.38E-03</td><td>180</td><td>5.80E-03</td></tr><tr><td>628</td><td>3.40E-03</td><td>776</td><td>5.69E-03</td><td>280</td><td>3.47E-02</td><td>280</td><td>3.47E-02</td></tr><tr><td>848</td><td>1.01E-02</td><td>848</td><td>1.52E-02</td><td>448</td><td>2.71E-03</td><td>448</td><td>8.00E-03</td></tr><tr><td>1228</td><td>1.13E-03</td><td>1936</td><td>1.28E-04</td><td>508</td><td>1.07E-02</td><td>528</td><td>1.72E-02</td></tr><tr><td>1616</td><td>1.00E-02</td><td>2000</td><td>7.26E-05</td><td>696</td><td>2.62E-03</td><td>776</td><td>5.69E-03</td></tr><tr><td>1748</td><td>1.62E-03</td><td></td><td>3.1G_{RMS}</td><td>1396</td><td>1.29E-02</td><td>848</td><td>1.52E-02</td></tr><tr><td>1944</td><td>3.23E-03</td><td></td><td>kurtosis = 9</td><td>2000</td><td>1.51E-03</td><td>1068</td><td>6.20E-03</td></tr><tr><td>2000</td><td>2.73E-03</td><td></td><td></td><td></td><td>3.7G_{RMS}</td><td>1396</td><td>1.28E-02</td></tr><tr><td></td><td>3.2G_{RMS}</td><td></td><td></td><td></td><td>kurtosis = 9</td><td>1616</td><td>1.00E-02</td></tr><tr><td></td><td>kurtosis = 9</td><td></td><td></td><td></td><td></td><td>1676</td><td>4.80E-03</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1864</td><td>2.50E-03</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td>1944</td><td>3.23E-03</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td>2000</td><td>2.73E-03</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>4.4G_{RMS}</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>kurtosis = 9</td></tr></table> <p>GMW3191-4.4.8</p>	Fore/Aft Breakpoints 33 hours/Axis		Lateral Breakpoints 33 hours/Axis		Vertical Breakpoints 33 hours/Axis		Fore/Aft Breakpoints 33 hours/Axis		Hz	G ² /Hz	Hz	G ² /Hz	Hz	G ² /Hz	Hz	G ² /Hz	12	1.48E-02	12	3.67E-03	12	1.47E-02	12	1.48E-02	36	1.43E-03	56	3.16E-04	32	3.11E-03	32	3.11E-03	52	7.50E-03	264	1.69E-02	60	7.38E-03	52	7.50E-03	92	3.54E-03	396	4.52E-03	128	1.27E-02	128	1.27E-02	300	1.54E-02	528	1.72E-02	180	2.38E-03	180	5.80E-03	628	3.40E-03	776	5.69E-03	280	3.47E-02	280	3.47E-02	848	1.01E-02	848	1.52E-02	448	2.71E-03	448	8.00E-03	1228	1.13E-03	1936	1.28E-04	508	1.07E-02	528	1.72E-02	1616	1.00E-02	2000	7.26E-05	696	2.62E-03	776	5.69E-03	1748	1.62E-03		3.1G _{RMS}	1396	1.29E-02	848	1.52E-02	1944	3.23E-03		kurtosis = 9	2000	1.51E-03	1068	6.20E-03	2000	2.73E-03				3.7G _{RMS}	1396	1.28E-02		3.2G _{RMS}				kurtosis = 9	1616	1.00E-02		kurtosis = 9					1676	4.80E-03							1864	2.50E-03							1944	3.23E-03							2000	2.73E-03								4.4G _{RMS}								kurtosis = 9
Fore/Aft Breakpoints 33 hours/Axis		Lateral Breakpoints 33 hours/Axis		Vertical Breakpoints 33 hours/Axis		Fore/Aft Breakpoints 33 hours/Axis																																																																																																																																																																					
Hz	G ² /Hz	Hz	G ² /Hz	Hz	G ² /Hz	Hz	G ² /Hz																																																																																																																																																																				
12	1.48E-02	12	3.67E-03	12	1.47E-02	12	1.48E-02																																																																																																																																																																				
36	1.43E-03	56	3.16E-04	32	3.11E-03	32	3.11E-03																																																																																																																																																																				
52	7.50E-03	264	1.69E-02	60	7.38E-03	52	7.50E-03																																																																																																																																																																				
92	3.54E-03	396	4.52E-03	128	1.27E-02	128	1.27E-02																																																																																																																																																																				
300	1.54E-02	528	1.72E-02	180	2.38E-03	180	5.80E-03																																																																																																																																																																				
628	3.40E-03	776	5.69E-03	280	3.47E-02	280	3.47E-02																																																																																																																																																																				
848	1.01E-02	848	1.52E-02	448	2.71E-03	448	8.00E-03																																																																																																																																																																				
1228	1.13E-03	1936	1.28E-04	508	1.07E-02	528	1.72E-02																																																																																																																																																																				
1616	1.00E-02	2000	7.26E-05	696	2.62E-03	776	5.69E-03																																																																																																																																																																				
1748	1.62E-03		3.1G _{RMS}	1396	1.29E-02	848	1.52E-02																																																																																																																																																																				
1944	3.23E-03		kurtosis = 9	2000	1.51E-03	1068	6.20E-03																																																																																																																																																																				
2000	2.73E-03				3.7G _{RMS}	1396	1.28E-02																																																																																																																																																																				
	3.2G _{RMS}				kurtosis = 9	1616	1.00E-02																																																																																																																																																																				
	kurtosis = 9					1676	4.80E-03																																																																																																																																																																				
						1864	2.50E-03																																																																																																																																																																				
						1944	3.23E-03																																																																																																																																																																				
						2000	2.73E-03																																																																																																																																																																				
							4.4G _{RMS}																																																																																																																																																																				
							kurtosis = 9																																																																																																																																																																				
3.5.15	Pressure/Vacuum Leak	When samples are subjected to positive pressure, there shall be no loss in the applied pressure and no bubbles visible exiting any test sample.	<p>Prepare enough salt water solution to completely submerge all samples to a depth of 300 mm to 400 mm below the surface. Use tap water at (+23 C ± 5) °C and 15 g to 16 g of NaCl (table salt) per liter.</p> <p>Slowly increase the air pressure of the regulated pressure source supplying the tube in each sample until the gauge reads 48 kPa (7 psig, Before Aging) / 28 kPa(4 psig, After Aging).</p> <p>GMW3191-4.4.10</p>																																																																																																																																																																								
 TE Connectivity Shanghai, China			<table><tr><td>PAGE</td><td>NO.</td><td>REV</td><td>LOC</td></tr><tr><td>5 of 7</td><td>108-101385</td><td>A</td><td>ES</td></tr></table>	PAGE	NO.	REV	LOC	5 of 7	108-101385	A	ES																																																																																																																																																																
PAGE	NO.	REV	LOC																																																																																																																																																																								
5 of 7	108-101385	A	ES																																																																																																																																																																								

Para.	Test items	Requirements	Procedures			
3.5.16	Thermal Cycling with Oil	All test samples shall meet the visual requirements. All mechanical assists and/or other elements required to separate connectors for service shall function without breakage. No leakage oil.	Place the samples in the chamber and heat age for 1008 hours using the following profile: <ul style="list-style-type: none"> • 963 hours at 125 °C • 41 hours at 132 °C • 4 hours at 140 °C GMW3191-4.4.1			
3.5.17	Water Submersion	No evidence of water or florescent dye shall be present in the interior of either mated connector.	Place mated connector samples into a thermal chamber and heat soak the samples for a minimum of 30 minutes at the maximum Ambient Operating Temperature for the appropriate temperature class. (125 °C) Remove the heated test samples from the thermal chamber and immediately immerse the heated test sample into (+23 ± 5) °C de-ionized water to a depth of 100 mm for at least 1 hour. GMW3191-4.4.9			
3.5.18	High Pressure Spray	All parts shall meet the Isolation Resistance Test Acceptance Criteria There shall be no traces of water visible inside the connector upon examination of the interior of the connection system at the end of test. All parts shall meet the visual examination acceptance criteria	Mount the test samples on a turntable with a rotation rate of (5 ± 1) rpm. Subject the connector samples to the high pressure water spray for in Positions 1 thru Position 4 as illustrated in Figure 32 for 30 seconds each.  80°C , 14 – 10 liters /Min. , 1100-1450 psi GMW3191-4.4.11			
3.5.19	Thermal Shock with Oil	All test samples shall meet the visual requirements No leakage oil	300 cycle , -40°C~+125°C Allow the test samples to soak for 30 minutes. Chamber to chamber transfer time shall be less than 10 seconds. Transfer test samples between temperature extremes 300 total times. GMW3191-4.4.2			
 TE Connectivity Shanghai, China			PAGE	NO.	REV	LOC
			6 of 7	108-101385	A	ES

Para.	Test items	Requirements	Procedures
3.5.20	Temperature Humidity Cycling	<p>Test samples shall meet the dry circuit requirements</p> <p>All test samples shall meet the visual requirements</p> <p>There shall be no loss of seal integrity for sealed connectors</p>	<p>-10℃~+65℃ , Humidity 93%, 10 cycle</p> <p>Perform The Following Five Times</p> <p>GMW3191-4.4.3</p>

4 Product Qualification Test and Sequences

SAMPLE QUANTITIES

Test or examination	TEST GROUP							
	1	2	3	4	5	6	7	8
3.5.1 Visual Examination	1,5	1,4	1,3	1,7	1,12,17	1,12,17	1,12,17	1,6
3.5.2 Connector to Connector Engagement Force	2							
3.5.3 Unlocked Connector Disengagement Force	3							
3.5.4 Terminal Push-out Force (Tab)	4							
3.5.5 Terminal from Connector Extraction Force (primary lock with second lock)			2					
3.5.6 Locked Connector Disengagement Force		2						
3.5.7 Conditioning								3
3.5.8 Terminal from Connector Extraction Force (primary lock only)		3						
3.5.9 Dry Circuit Resistance				2,6	3,16	3,16	3,16	2,5
3.5.10 Isolation Resistance					2,5,7,9,11,14	2,5,7,9,11,14	2,5,7,9,11,14	
3.5.11 Dielectric Strength					15	15	15	
3.5.12 Maximum Current Rating								4
3.5.13 Mechanical Shock				3				
3.5.14 Vibration with Thermal Cycling (With Oil)				4				
3.5.15 Pressure/Vacuum Leak				5	4,8	4,8	4,8	
3.5.16 Thermal Cycling with Oil					6			
3.5.17 Water Submersion					10	10	10	
3.5.18 High Pressure Spray					13	13	13	
3.5.19 Thermal Shock with Oil						6		
3.5.20 Temperature Humidity Cycling							6	
Sample size	3	3	3	3	6	6	6	6



TE Connectivity
Shanghai, China

PAGE

7 of 7

NO.

108-101385

REV

A

LOC

ES