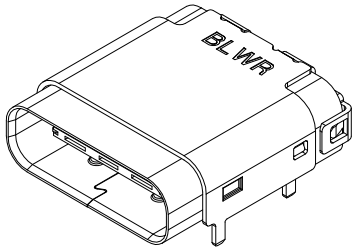
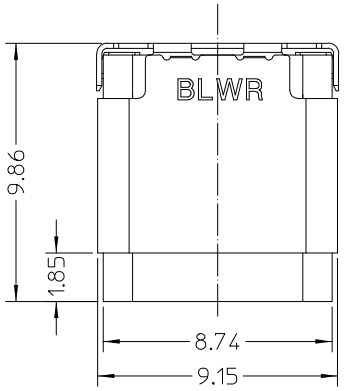
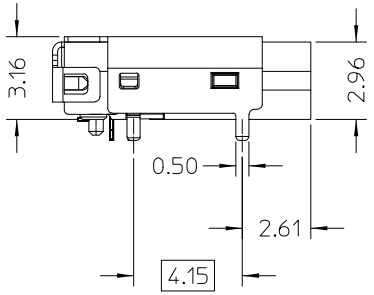
REV	ECN No.	DATE	REMARK
A	EK2015-0033	20150313	HISTORIC
A.1	EK2015-0057	20150416	HISTORIC
A.2	EK2015-0086	20150520	HISTORIC
A.3	EK2016-0228	20160713	HISTORIC
A.4	EK2017-0003	20170109	ACTIVE

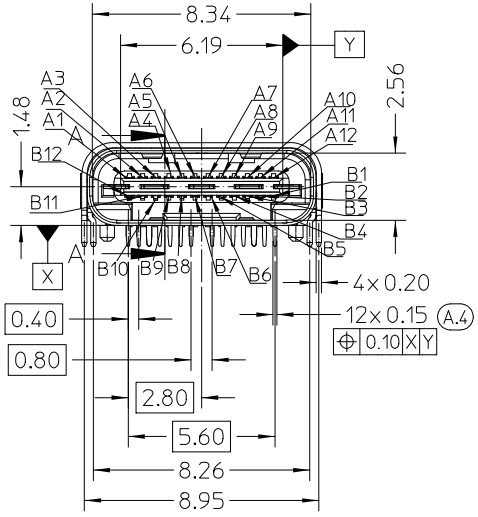
PIN NO	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
PIN ASSIGN	GND	TX1+	TX1-	VBUS	CC1	D+	D-	SBU1	VBUS	RX2-	RX2+	GND
PIN ASSIGN	GND	RX1+	RX1-	VBUS	SBU2	D-	D+	CC2	VBUS	TX2-	TX2+	GND
PIN NO	B12	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1

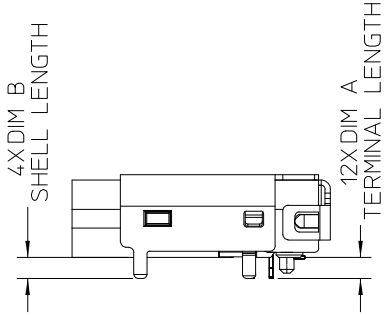
工程部
2017.02.09
正式发行

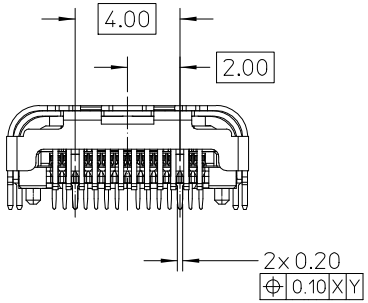


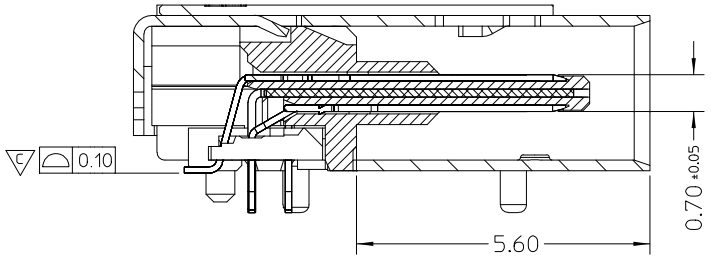






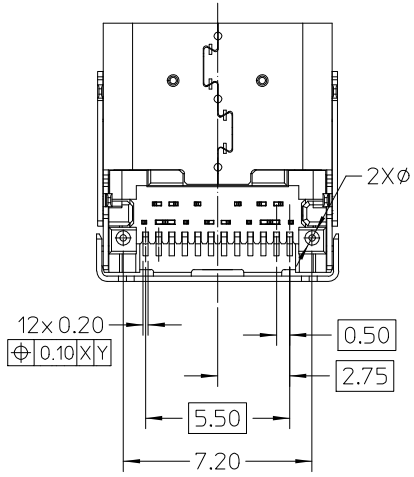






SECTION A-A

工程部
2017.02.09
工程出图章



ROHS COMPLIANT
LEAD&HALOGEN FREE

MATERIAL NO.:
REFER TO SHEET 2
REVIEW TABLE FOR DETAILS

QUALITY SYMBOL ▽= 1 ▽= 0 ▶

GENERAL TOLERANCES (UNLESS SPECIFIED)	
x.xxxx	± ---
x.xxx	± ---
x.xx	± 0.25
x.x	± 0.30
ANGULAR	± 2°

TITLE
USB TYPE C CONNECTOR
0.50MM PITCH,24 CIRCUITS,CH=1.48MM
STANDARD TYPE

Bellwether Electronic Corp.

ECN DESCRIPTION
ADD NEW PART NUMBER

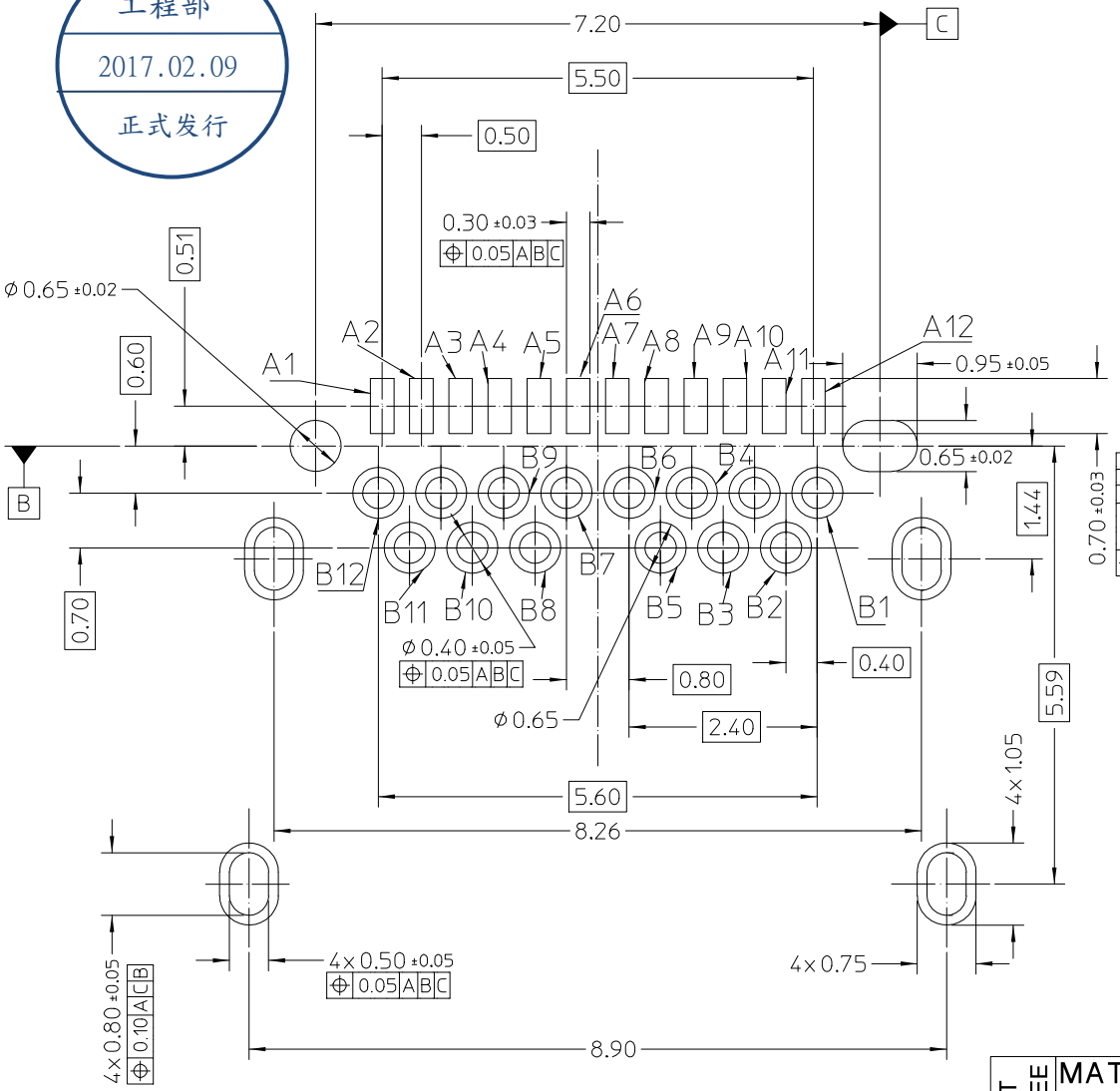
DRAWN BY	KAYSEN CHEN	DATE 20170109
CHECKED BY	IVANOV WANG	DATE 20170109
APPROVED BY	IVANOV WANG	DATE 20170109

DOCUMENT NO. SD-80211-019
SHEET NO. 1 OF 2

DIMENSION STYLE	DESIGN UNITS	SCALE
MM ONLY	METRIC	5:1

THIRD ANGLE PROJECTION

工程部
2017.02.09
正式发行



RECOMMENDED P.C.B LAYOUT, UNSPECIFIED TOLERANCE: ±0.05
PCB THICKNESS: SEE TABLE
DATUM A IS THE PCB SOLDER SURFACE

NOTES:

1. MATERIALS:
   HOUSING: HIGH TEMPERATURE THERMOPLASTIC, COLOR: BLACK, UL94V-0.
   TERMINAL:
   DIP TERMINAL: COPPER ALLOY, THICKNESS: 0.12MM.
   SMT TERMINAL: COPPER ALLOY, THICKNESS: 0.12MM.
   SHELL: STAINLESS, THICKNESS: 0.15MM.
   INNER SHELL: STAINLESS, THICKNESS: 0.20MM.
   OUTER SHELL: STAINLESS, THICKNESS: 0.20MM.
2. PLATE:
   TERMINAL: GOLD PLATED ON CONTACT AREA(SEE TABLE).
   MATTE TIN PLATED ON SOLDER TAIL
   NICKEL UNDERPLATED 1.27 MICROMETERS/50 MICROINCH OVERALL.
   SHELL:
   NICKEL UNDERPLATED 1.27 MICROMETERS/50 MICROINCH OVERALL.
3. DATE CODE FORMAT: ∗ ∗ ∗ XX(∗:YEAR ∗:MONTH ∗:DATE XX:ASSEMBLY LINE)
   THE LOCATION CAN BE ADJUSTED WHEN NEEDED.
4. PRODUCT SPECIFICATION IS REFERED TO PS-80210-001.
5. PACKAGE SPECIFICATION IS REFERED TO PK-80211-001.
6. LEAD FREE/ROHS AND HF COMPLIANT PRODUCT.

工程部
2017.02.09
工程出图章

PART NUMBER	DIM A	DIM B	PCB THICKNESS	REMARK
80211-192∗	0.80	0.80	1.00	∗: CONTACT AREA PLATING SPECIFICATION 1: GOLD FLASH 2: GOLD PLATED 0.127 MICROMETERS/5 MICROINCH 3: GOLD PLATED 0.254 MICROMETERS/10 MICROINCH 4: GOLD PLATED 0.381 MICROMETERS/15 MICROINCH 5: GOLD PLATED 0.762 MICROMETERS/30 MICROINCH
80211-792∗	1.20	1.20	1.20	
80211-892∗	1.60	1.60	1.60	

A.4

ROHS COMPLIANT
LEAD&HALOGEN FREE

MATERIAL NO.:
REFER TO SHEET 2
REVIEW TABLE FOR DETAILS

QUALITY SYMBOL ▽ = 0

GENERAL TOLERANCES (UNLESS SPECIFIED)	
x.xxxx	± ---
x.xxx	± ---
x.xx	± 0.25
x.x	± 0.30
ANGULAR	± 2°

TITLE: USB TYPE C CONNECTOR
0.50MM PITCH,24 CIRCUITS,CH=1.48MM
STANDARD TYPE

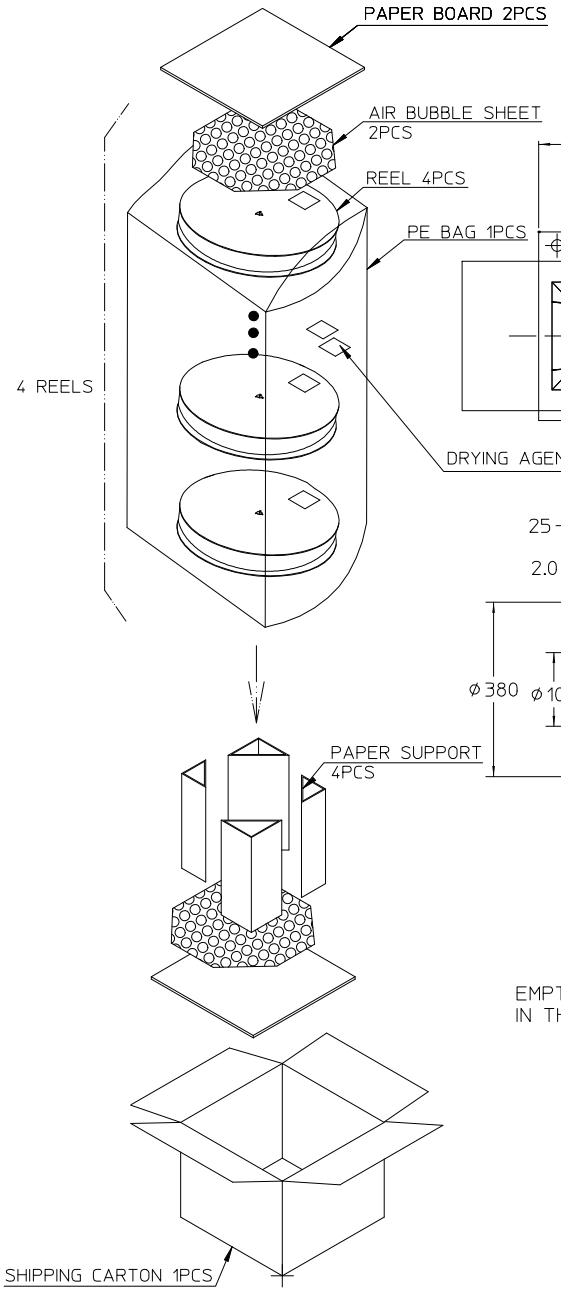
Bellwether Electronic Corp.

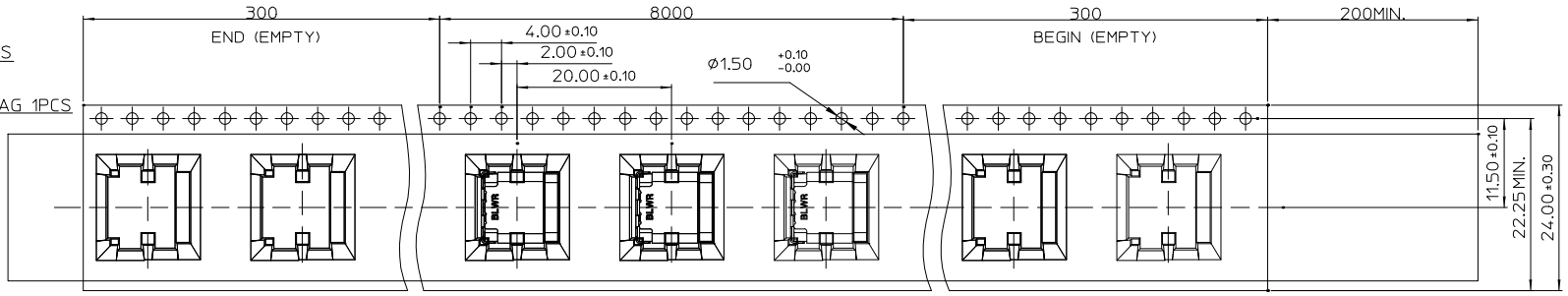
ECN DESCRIPTION: ADD NEW PART NUMBER

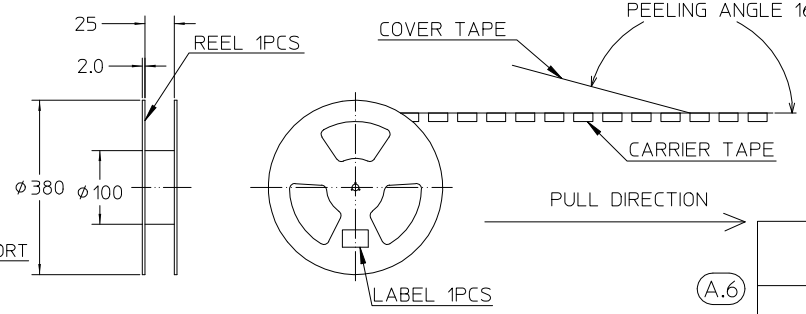
DRAWN BY	KAYSEN CHEN	DATE 20170109
CHECKED BY	IVANOV WANG	DATE 20170109
APPROVED BY	IVANOV WANG	DATE 20170109

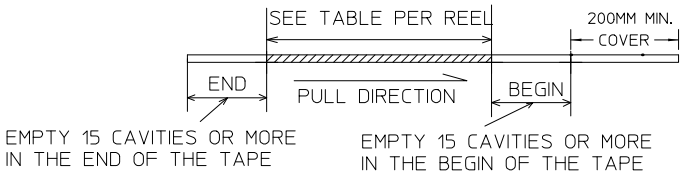
DOCUMENT NO.: SD-80211-019
SHEET NO.: 2 OF 2
DIMENSION STYLE: MM ONLY
DESIGN UNITS: METRIC
SCALE: 5:1
THIRD ANGLE PROJECTION

REV	ECN No.	DATE	REMARK
A	EK2015-0033	20150313	HISTORIC
A.1	EK2015-0079	20150515	HISTORIC
A.2	EK2015-0086	20150521	HISTORIC
A.3	EK2016-0081	20160411	HISTORIC
A.4	EK2017-0003	20170109	HISTORIC
A.5	EK2017-0086	20170321	HISTORIC
A.6	EK2017-0085	20170321	ACTIVE









NOTES:
1. STAPLES SHOULD ONLY BE USED TO SET UP CARTON. ALL CARTON CLOSURES MUST BE DONE WITH TAPE.
2. FILL PACKAGING TAPE REEL WITH THE QUANTITIES AS INDICATED IN THE CHART.

(A.6)

PRODUCT NUMBER	TOTAL QUANTITY PER CARTON	PART QUANTITY PER REEL	REEL QUANTITY PER CARTON
80211-102*	3600 PCS	900 PCS	4 PCS
80211-192*/80211-112*	3600 PCS	900 PCS	4 PCS
80211-782*	3200 PCS	800 PCS	4 PCS
80211-792*/80211-712*	3200 PCS	800 PCS	4 PCS
80211-882*	3200 PCS	800 PCS	4 PCS
80211-892*/80211-812*	3200 PCS	800 PCS	4 PCS

ROHS COMPLIANT
LEAD&HALOGEN FREE

MATERIAL NO.:
SEE TABLE
REVIEW TABLE FOR DETAILS

QUALITY SYMBOL ▶ = 0 ▽= 0

GENERAL TOLERANCES (UNLESS SPECIFIED)	
x.xxxx	± ---
x.xxx	± ---
x.xx	± 0.25
x.x	± 0.30
ANGULAR	± --°

TITLE: USB TYPE C CONNECTOR 0.50MM PITCH,24 CIRCUITS,CH=1.48MM STANDARD TYPE, ASSEMBLY

ECN DESCRIPTION: ADD NEW PART NUMBER

Bellwether Electronic Corp.

DRAWN BY: SHAWN XU DATE: 20170321
CHECKED BY: RAINY ZHU DATE: 20170321
APPROVED BY: IVANOV WANG DATE: 20170321

DOCUMENT NO.: PK-80211-001
SHEET NO.: 1 OF 1

DIMENSION STYLE: MM ONLY
DESIGN UNITS: METRIC
SCALE: N/A

THIRD ANGLE PROJECTION

frame size: A4
QR-QP025-06 REV:A

PRODUCT SPECIFICATION

PRODUCT DESCRIPTION:

UNIVERSAL SERIAL BUS
TYPE-C RECEPTACLE AND PLUG SERIES

PRODUCT NUMBER:

80210 Series / 80211 Series

1.0 SCOPE

The Product Specification covers performance, tests and quality requirements for the USB Type-C Receptacles, Plugs.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

PRODUCT NAME: 0.50MM PITCH, USB TYPE-C RECEPTACLE AND PLUG CONNECTOR.

SERIES NUMBER(S): 80210 / 80211 series

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate Sales Drawings for information on dimensions, materials, plating, and markings.

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

EIA-364.

The following documents are part of this specification between the requirements of this specified herewith. In the event of conflict between the requirements of this specification and the product drawings, the product drawings shall take precedence. In the event of conflict between the requirements of this specification and reference documents, this specification shall take precedence.

4.0 RATINGS

4.1 VOLTAGE

20 Volts AC Per Contact

4.2 TEMPERATURE

Operating: - 40°C to + 80°C

5.0 PERFORMANCE

5.1 APPEARANCE REQUIREMENTS

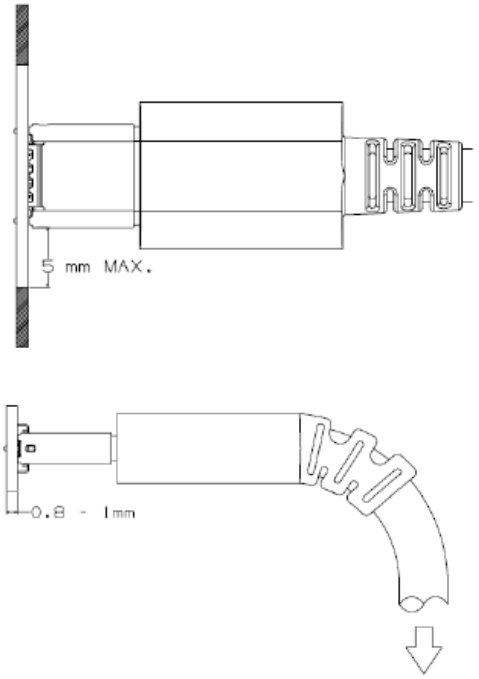
ITEM	TEST DESCRIPTION	TEST CONDITION	REQUIREMENT
1	**Visual and dimensional inspections**	Visual, dimensional and functional per applicable quality inspection plan. **Per EIA 364-18**	Meets requirements of product drawing. No physical damage.

5.2 ELECTRICAL REQUIREMENTS

ITEM	TEST DESCRIPTION	TEST CONDITION	REQUIREMENT
2	**Contact Resistance (Low Level)**	Mate connectors: apply a maximum voltage of **20** mV and a current of **100** mA. Measurement is made from the solder tail of the receptacle to the soldering point of the plug (including any internal paddle cards, contacts and substrates of the plug and receptacle). **Per EIA-364-23B**	**40** milliohms ,[initial] MAX. PER CONTACT **10** milliohms MAX. (change from initial)
3	**Insulation Resistance**	Unmated & mated connectors: apply a voltage of **500** VDC between adjacent contacts. **Per EIA-364-21**	**100** Megohms MIN.
4	**Dielectric Withstanding Voltage**	Unmated & mated connectors: apply a voltage of **100** VAC (RMS) for **1** minute between adjacent contacts. **Per EIA-364-20**	No Breakdown
5	**Temperature Rise**	Mate connectors: Apply 5.0 A to VBUS pins and 1.25A to VCONN pins with the return path through the corresponding GND pins. A minimum current of 0.25A shall also be applied individually to all the other contacts. The temperature rise above shall not exceed 30℃ at any point on the mated plug and receptacle under test. The ambient condition is still air at 25℃ **Per EIA-364-70, Method 2**	Temperature rise: **+30**℃ MAX.

5.3 MECHANICAL REQUIREMENTS

ITEM	TEST DESCRIPTION	TEST CONDITION	REQUIREMENT
6	**Insertion Force / Extraction Force**	Mate connectors (male to female) at a maximum rate of 12.5 mm per minute. (this requirement does not apply when the connectors are used in a docking application) **Per EIA-364-13**	Insertion force : 5-20N Extraction force : 8-20N up to 1,000 mating cycles and within the range of 6 N to 20 N
7	**Durability**	10,000 cycles at a maximum rate of 200 cycles per hour. **Per EIA-364-09**	No physical damage.
8	**Cable Flexing**	Flexing occur to the cable assembly with Dimension X=3.7 times the cable diameter and 100 cycles in each of two planes. **Per EIA 364-41, Condition 1**	No physical damage & Discontinuity1 μs MAX.

9	**Cable Pull-out**	Apply a 40N axial load to cable assembly for a minimum of 1 minute while clamping one end of the cable plug. **Per EIA 364-38, Method A**	No physical damage
10	**4-Axis Continuity Test**	The connector family shall be tested for continuity under stress using the test configurations shown in following figure.  Apply an 8N tensile force to the cable in a direction of perpendicular to the axis of insertion for 10 seconds at least. Measure the continuity across each contact and conform that each non-ground contact shall not short to the shell during the stresses. Repeat the test for 90 degree, 180 degree and 270 degree rotations.	Discontinuity1 μs MAX. & Non-ground contact not any shorting to the shell
11	**Wrenching Strength**	Apply a perpendicular force to a plug when inserted at a distance of 15mm from the edge of the receptacle. The force shall be applied in all four directions （i.e., left, right, up, and down）.	0-50N No plug or receptacle damaged 50-75N The plug may be damaged, No damage in receptacle
12	**Vibration**	Amplitude: 1.52mm p-p Sweep time: 50-2000-50 Hz in 20minute. Duration: 12 times in each X, Y, Z. Axes. Electrical load: DC 100 mA current shall be flowed during the test **Per EIA-364-28 Condition III**	Discontinuity1 μs MAX. & No physical damage & 10 milliohms MAX. (change from initial)

13	**Shock (Mechanical)**	Mate connectors and shock at 50 g's with ½sine wave (11 milliseconds) , 3 strokes in the ±X, ±Y, ± Z axes **Per EIA-364-27, Condition A**	Discontinuity1 μs MAX. & No physical damage & 10 milliohms MAX. (change from initial)

5.4 ENVIRONMENTAL REQUIREMENTS

ITEM	TEST DESCRIPTION	TEST CONDITION	REQUIREMENT
14	**Thermal Shock**	Mate connectors to follow condition for **10** cycles. 1 cycles a). **–5**5 +0/-3 ℃, 30 minutes b)+25+10/-5 ℃, 5 minutes MAX. c). 85 +3/-0 ℃ , 30 minutes d) +25+10/-5 ℃ 5 minutes MAX. **Per EIA-364-32D, Test condition I**	No physical damage & 10 milliohms MAX. (change from initial)
15	**Cyclic temperature and Humidity**	Mate connectors to cycle the connector between **25** ℃**±3** ℃ at **80 % ±3 %** RH and **65** ℃**±3** ℃ at **50 % ±3 %** RH. Dwell time of **1.0** hour; ramp time of **0.5** hours. 24 cycles **Per EIA-364-31B**	No physical damage & 10 milliohms MAX. (change from initial)
16	**Temperature life**	Mate connectors to expose to 105 **± 2** ℃ for **120** hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. **Per EIA-364-17B, Test condition A**	No physical damage & 10 milliohms MAX. (change from initial)
17	**Salt Spray**	The mated connectors shall be exposed to the following salt mist conditions. At the completion of the exposure period, salt deposits shall be removed by a gentle wash or dip in running water, after which the specified measurements shall be performed. NaCl solution concentration: 5±1%, Spray time: 48 hours, Temperature:35±2℃. **Per EIA-364-26B condition B**	No physical damage & 10 milliohms MAX. (change from initial)
18	**Solder Heat for Rework/Repair**	Connector to withstand PCB solder/re-solder operation with hand held solder iron at temperature of 350℃ minimum for a dwell time of at least 3sec	No mechanical degradation
19	**Solder Resistance**	Receptacle connector: 2 cycles for IR process (refer to 7.1 for profile.)	No physical damage or discoloration of connector materials.

6.0 TESTING SEQUENCE

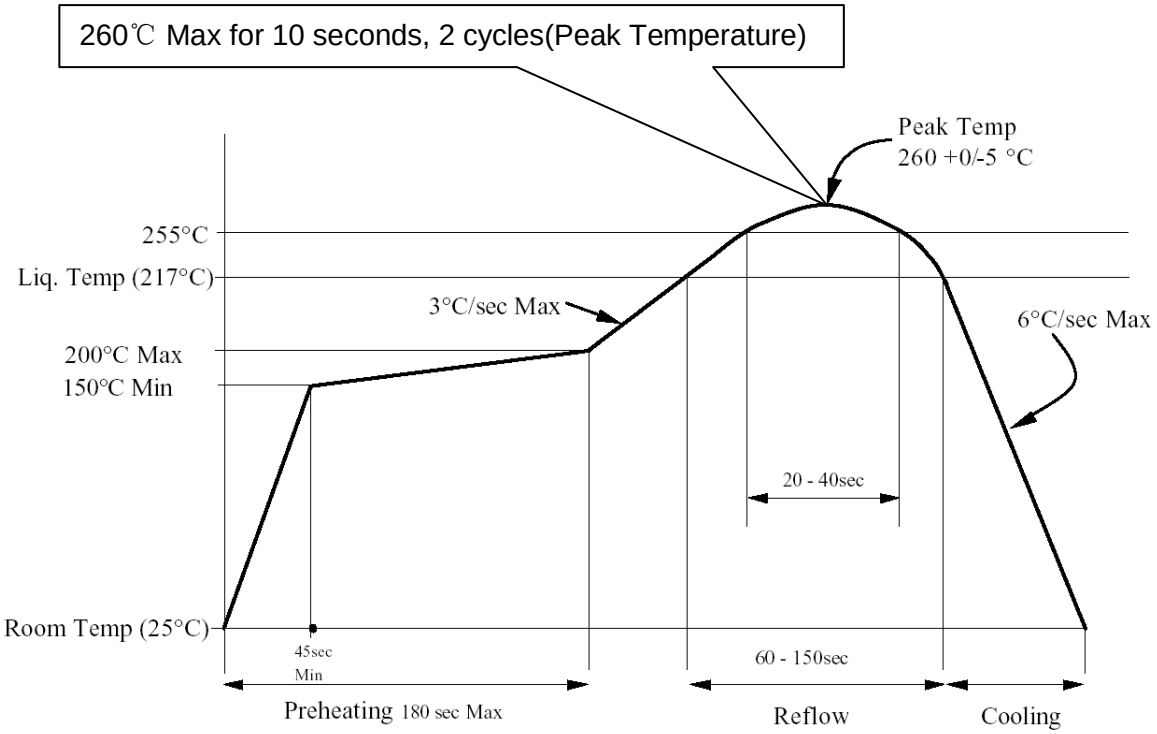
6.1 TEST GROUP

Test or Examination	Test Group							
	A	B	C	D	E	F	H	J
	Test Sequence							
Examination of Product	1,6	1,8	1,12	1,8	1,6	1,3	1,3	1,3
Contact Resistance (Low Level)	2,5	2,5,7	2,7,9	2,7	2,5			
Dielectric Withstanding Resistance			3,10					
Insulation Resistance			4,11					
Temperature Rise							2	
Insertion Force / Extraction Force				3,5				
Durability	3	3	5	4				
Cable Flexing								
Cable Pull-out								
4-Axis Continuity Test								2
Wrenching Strength						2		
Vibration					3			
Shock (Mechanical)					4			
Thermal Shock		4	6					
Cyclic temperature and Humidity		6	8					
Temperature Life	4							
Salt Spray				6				
Sample Size	5	5	5	5	5	5	5	5

7.0 IR PROFILE

Recommended Reflow Pre-Solder Process and Profile.

Actual reflow profile also depends on equipment, solder paste, PCB thickness, and other components on the board. Please consult your solder paste & reflow equipment manufacturer for their recommendations to adopt a suitable process.



LEAD-FREE PROFILE FOR PEAK REFLOW - 260°C

Notes:

1. Reflow solder Preheat at 3°C/s to 150°C.
2. Reflow at 255°C for 30s per figure.
3. Peak temperature to be at 260 +0/-5°C.