SPECIFICATION

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SPEC. NO.: PS-52200-XXXXX-XXX **REVISION:** B

PRODUCT NAME: 0.8 mm PITCH WIRE TO BOARD CONNECTOR

PRODUCT NO: 52200/52201 SERIES

PREPARED:	CHECKED:	APPROVED:
Tsai, Wang Kun	K.HISATOMI	Wang, Chun Sheng
DATE: 2020.10.21	DATE: 2020.10.21	DATE: 2020.10.21

1 REVISION HISTORY

Rev.	ECN #	Revision Description	Prepared	Date
1	ECN-2004354	NEW PROJECT SPEC FOR APD1080414	Tsai, Wang kun	2020.04.20
A	ECN-000317	RELEASE REVISION A	Tsai, Wang kun	2020.09.14
B	ECN-000993	ADD Connector tensile strength	Tsai, Wang kun	2020.10.21

2 SCOPE

This specification covers performance, tests and quality requirements for 0.8mm Wire to Board connector. ACES's P/N: 52200/ 52201series.

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.
4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials and Finish

Refer to the drawing

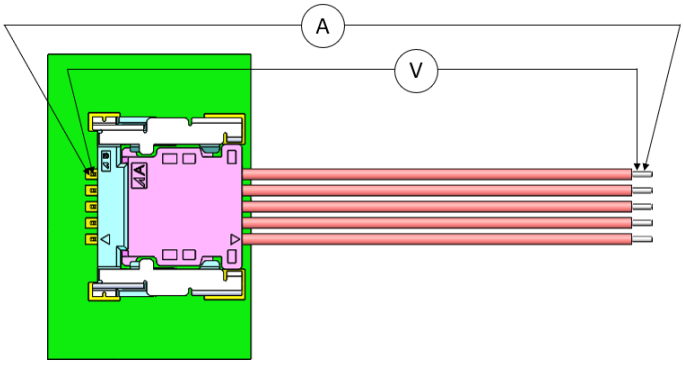
4.3 Ratings

4.3.1 Voltage: 30 V AC ,DC
4.3.2 Current Rating: AWG#30: 1.2A (Per Pin)
AWG#32: 1.0A (Per Pin)
AWG#34: 0.8A (Per Pin)
AWG#36: 0.5A (Per Pin)
4.3.3 Operating Temperature : -55℃ to +85℃

5 PERFORMANCE

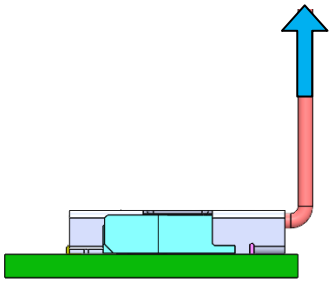
5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Appearance, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Item	**Requirement**	**Standard**
Low Level Contact Resistance	Initial: 30 mΩ max. per contact After tests: 50 mΩ max. per contact	Mated connectors: measure by dry circuit. Current : 100mA max. Voltage : 20mV max. (EIA-364-23)
Insulation Resistance	100 MΩ Min.	Mated connectors: Apply voltage between adjacent terminals. Voltage : DC100V (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 1 mA max	Mated connectors: Apply voltage for 1 minute between adjacent terminals. Voltage : Initial AC200V After test AC100V (EIA-364-20)
Temperature rise	30℃ Max. (Rising temperature)	Mated connectors: Measure the temperature rise when a rated current is applied to the all terminals series. The ambient condition is still air at 25℃ (EIA-364-70 METHOD 1, Condition 3)



Contact resistance measurement method
(Subtract the conductor resistance of the wire from the measured value)

MECHANICAL

Item	Requirement	Standard
Durability	Appearance : No damage Contact Resistance : 50 mΩ max. Mating force : 10N max. Unmating force : 1.5N min.	Mating and Untaing the sample a predetermined number of times. Number of cycles : 10 cycles (EIA-364-09)
Mating / Un-mating Forces	Mating force : 10N max. Unmating force : Initial 2.0N min. After durability 1.5N min.	Measure the force required to mate/Un-mate connector. Operation Speed： 25.4 ± 3 mm/minute. (EIA-364-13)
Crimping Terminal / Housing Retention Force (Cable Side)	3.5N MIN.	Pull out the terminal assembled in the housing in the axial direction. Operation Speed： 25.4 ± 3 mm/minute.
Crimping Pull Out Force (Cable Side)	AWG #30 : 3.0N min. AWG #32 : 3.0N min. AWG #34 : 3.0N min. AWG #36 : 3.0N min.	Pull the terminal crimped only on the core wire in the axial direction. Operation Speed： 25.4 ± 3 mm/minute.
Terminal/Housing Retention Force (Board Side)	3.0N MIN.	Pull out the terminal assembled in the housing in the axial direction. Operation Speed： 25.4 ± 3 mm/minute.
Connector tensile strength	10N MIN. 	Mated connectors: Pull the wire vertically until the connector breaks Operation Speed： 25.4 ± 3 mm/minute.
Vibration	Discontinuity : 1 μs max. Appearance : No damage Contact Resistance : 50 mΩ max.	Mated connectors: Check the discontinuity by applying 100mA to all terminals during the test. Frequency : 10~55~10Hz (Round trip 1 minute) Amplitude : 1.52mmp-p Time : 2 hours × 3 axes (EIA-364-28 Condition I)

Shock (Mechanical)	Discontinuity : 1 μs max. Appearance : No damage Contact Resistance : 50 mΩ max.	Mated connectors: Check the discontinuity by applying 100mA to all terminals during the test . Acceleration : 50G (Half-sine) Duration : 11ms Number of times : 3 times × ±3 axes (18 times in total) (EIA-364-27, Condition A)

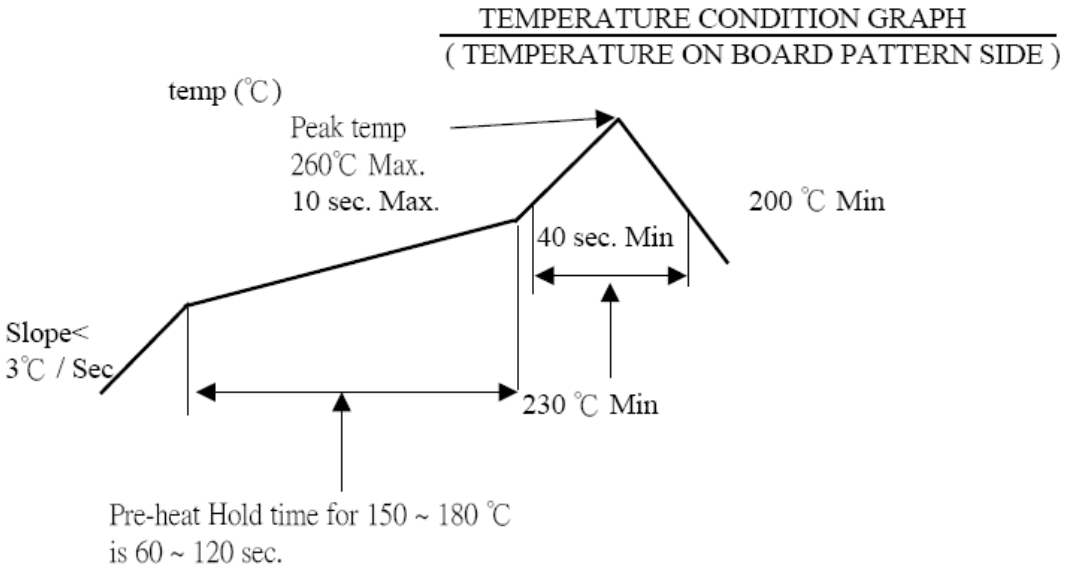
ENVIRONMENTAL

Item	Requirement	Standard
Resistance to Reflow Soldering Heat	Appearance : No damage	Pre Heat：150℃~180℃, 60~90sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max, 10sec Max.
Thermal Shock	Appearance : No damage Contact Resistance : 50 mΩ max. Insulation Resistance : 100 MΩ Min. Dielectric Withstanding Voltage : No discharge, flashover or breakdown	Mated connectors: Cycles : 25 cycles 1cycle ℃ / minutes −55 +0/−3 / 30 85 +3/−0 / 30 (EIA-364-32, Condition I)
Humidity	Appearance : No damage Contact Resistance : 50 mΩ max. Insulation Resistance : 100 MΩ Min. Dielectric Withstanding Voltage : No discharge, flashover or breakdown	Mated Connectors: Temperature : 40±2℃ Humidity : 90~95% RH Time : 240 hours (EIA-364-31,Condition A)
Temperature life	Appearance : No damage Contact Resistance : 50 mΩ max.	Mated Connectors: Temperature : 85±2℃ Time : 250 hours (EIA-364-17, Test condition A)
Salt Spray	Appearance : No damage Contact Resistance : 50 mΩ max.	Mated Connectors: After taking out from the test chamber, soak in running water and dry for 12 hours. Temperature : 35+2°C Salt water concentration :5% Time : 8 hours (EIA-364-26)
Solder ability (Board Side)	Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage	Soak in solder bath. Temperature : 245 ±5℃ Time : 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance (Board Side)	Appearance: No damage	T≧350℃, 3sec at least.

Ammonia Gas	Appearance: No damage	Mated Connectors: Ammonia water concentration :3% Temperature : 20+2°C Humidity condition : 90 to 95% Time : 7 hours (STM-1126-06)
H2S Gas	Appearance : No damage Contact Resistance : 50 mΩ max.	Mated Connectors: Concentration:3±1 ppm Temp.: 40±2°C Humidity : 80±5% RH Time : 96h

6 INFRARED REFLOW CONDITION

6.1. Lead-free Process



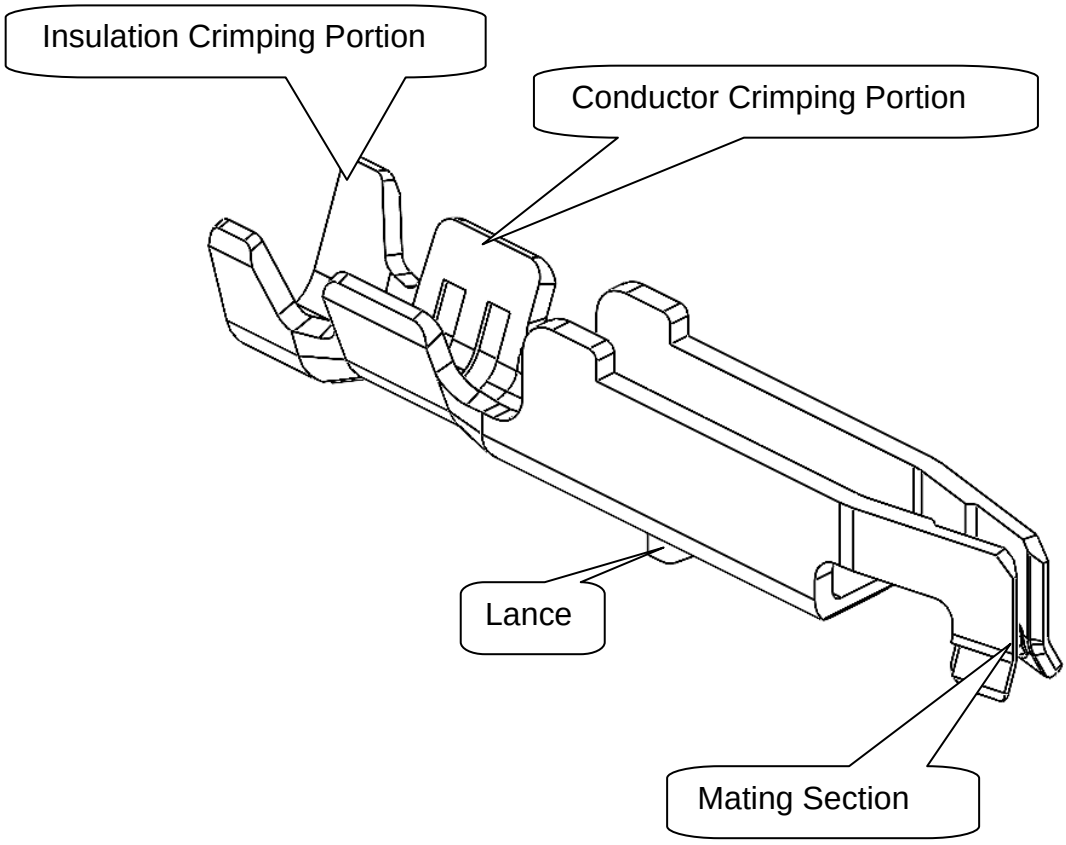
7 PRODUCT QUALIFICATION AND TEST SEQUENCE

Test or Examination	Test Group														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
	Test Sequence														
Examination of Product		1,6	1,5	1,6, 11	1,4	1,4	1,3	1,4		1,3	1,3	1,3	1	1	1
Low Level Contact Resistance		3,7	2,6	2,7, 12	2,5	2,5		2,5					3		
Insulation Resistance				3,8, 13											
Dielectric Withstanding Voltage				4,9, 14											
Temperature rise	1														
Mating / Un-mating Forces		2,4, 8													
Durability		5													
Crimping Terminal / Housing Retention Force(Cable Side)									1						
Crimping Pull Out Force (Cable Side)										2					
Terminal/Housing Retention Force(Board Side)											2				
Connector tensile strength															2
Vibration			3												
Shock (Mechanical)			4												
Thermal Shock				5											
Humidity				10											
Temperature life					3										
Salt Spray						3									
Ammonia Gas							2								
H2S Gas								3							
Solder ability(Board Side)												2			
Resistance to reflow Soldering Heat(Board Side)													2		
Hand Soldering Temperature Resistance(Board Side)														2	
Sample Size	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

8 MATING / UNMATING FORCE

NO. OF Ckt.	At Initial		At 10th
	Mating(N max)	Un-mating(N min)	Un-mating(N min)
5	10.0	2.0	1.5

9 ANATOMY OF CRIMPING TERMINAL



10 APPLICABLE WIRES: UL10064 ETFE WIRE

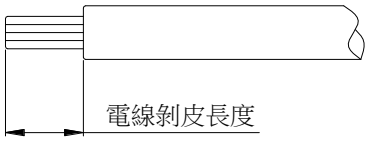
AWG Size:AWG#30 ~AWG#36 ,
Insulation OD: Φ0.5mm~Φ0.28mm

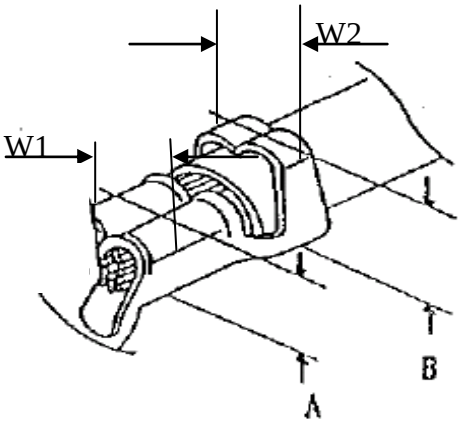
11 CRIMPING CONDITION

鉚線條件表 CRIMPING CONDITION

Part Number	Wire Specification			Crimp Height (mm)		Crimp Width (mm)	
	UL Style (REF.)	AWG Size	Insulation OD(mm)	Conductor A	Insulation B	Conductor W1	Insulation W2
52201-TXXX-001	UL10064	30	0.5	0.45~0.55	0.95MAX	0.55~0.65	0.65MAX
52201-TXXX-001	UL10064	32	0.5	0.45~0.55	0.95MAX	0.55~0.65	0.65MAX
52201-TXXX-002	UL10064	34	0.31	0.38~0.48	0.95MAX	0.55~0.65	0.65MAX
52201-TXXX-002	UL10064	36	0.28	0.38~0.48	0.95MAX	0.55~0.65	0.65MAX

Strip length





Note:

1、W1為芯線導體鉚壓後之寬度(Conductor Crimping Width)：W1值如上表(參考值）

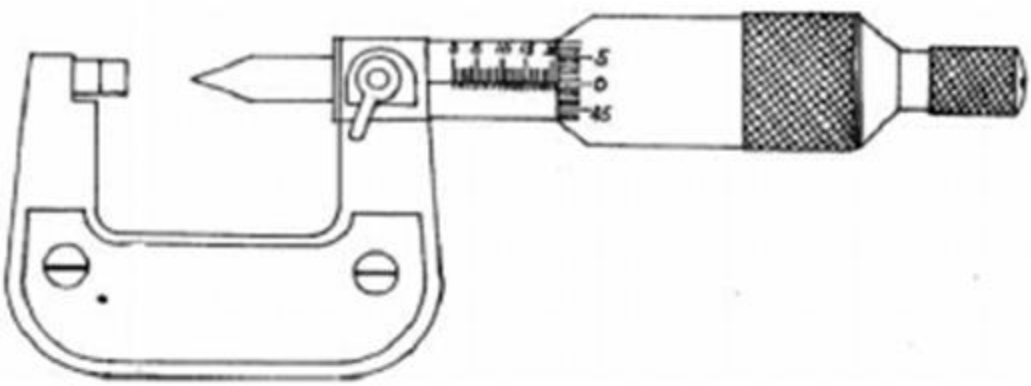
2、W2為電線外被部分鉚壓後之寬度(Insulation Crimping Width)：W2值如上表(參考值）

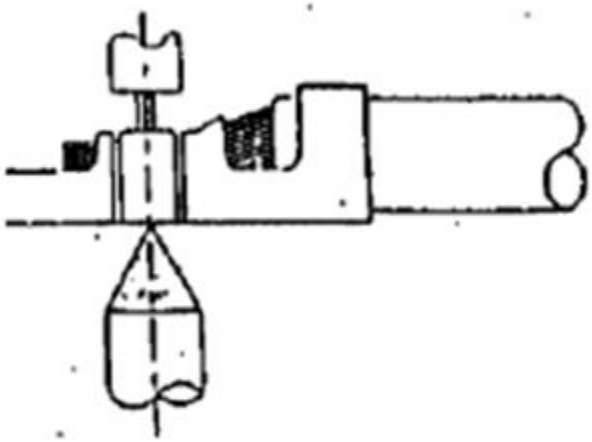
3、A為芯線導體鉚壓後之高度(Conductor Crimping height)：A值如上表(參考值）

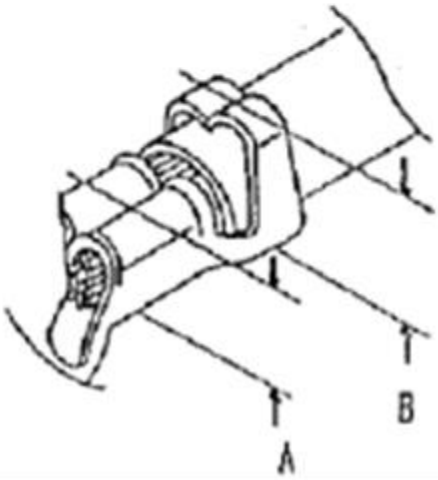
4、B為電線外被鉚壓後之高度(Insulation Crimping height)：B值如上表(參考值）

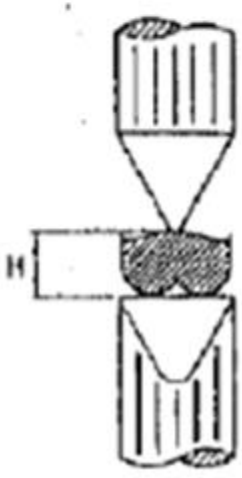
5、電線剝皮長度(Strip length)：1.5~1.9mm(參考值)

12 CRIMPING HEIGHT MEASUREMENT



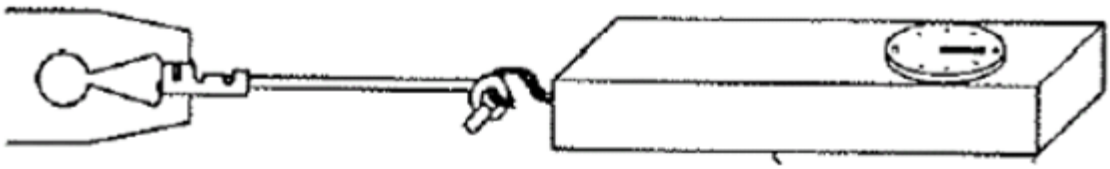






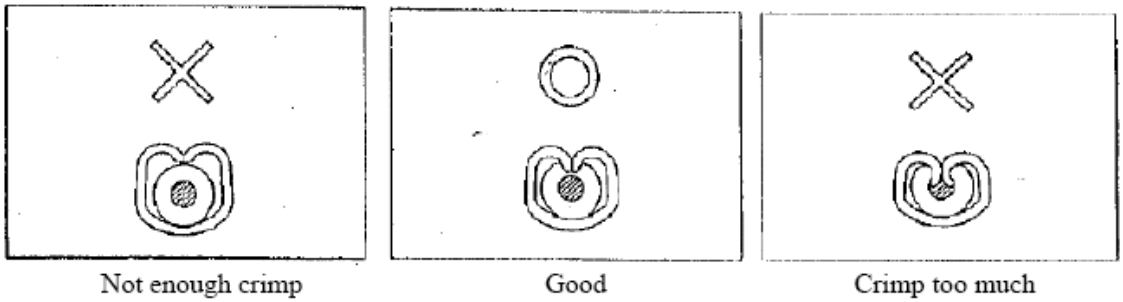
13 PULL FORCE OF CRIMPING SECTION MEASUREMENT

Before test samples, please measure crimp height and do not crimp insulation.

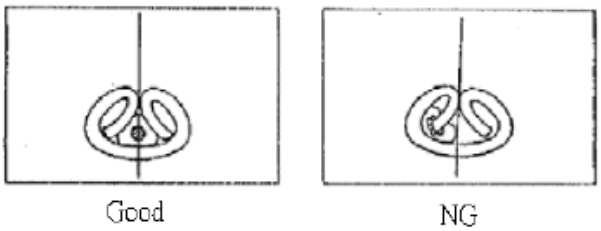


Pull Force of Crimp Section Measurement

14 STANDARD INSULATION CRIMPING

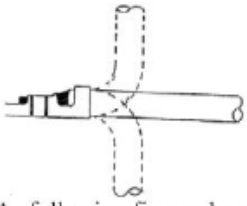


Not enough crimp | Good | Crimp too much



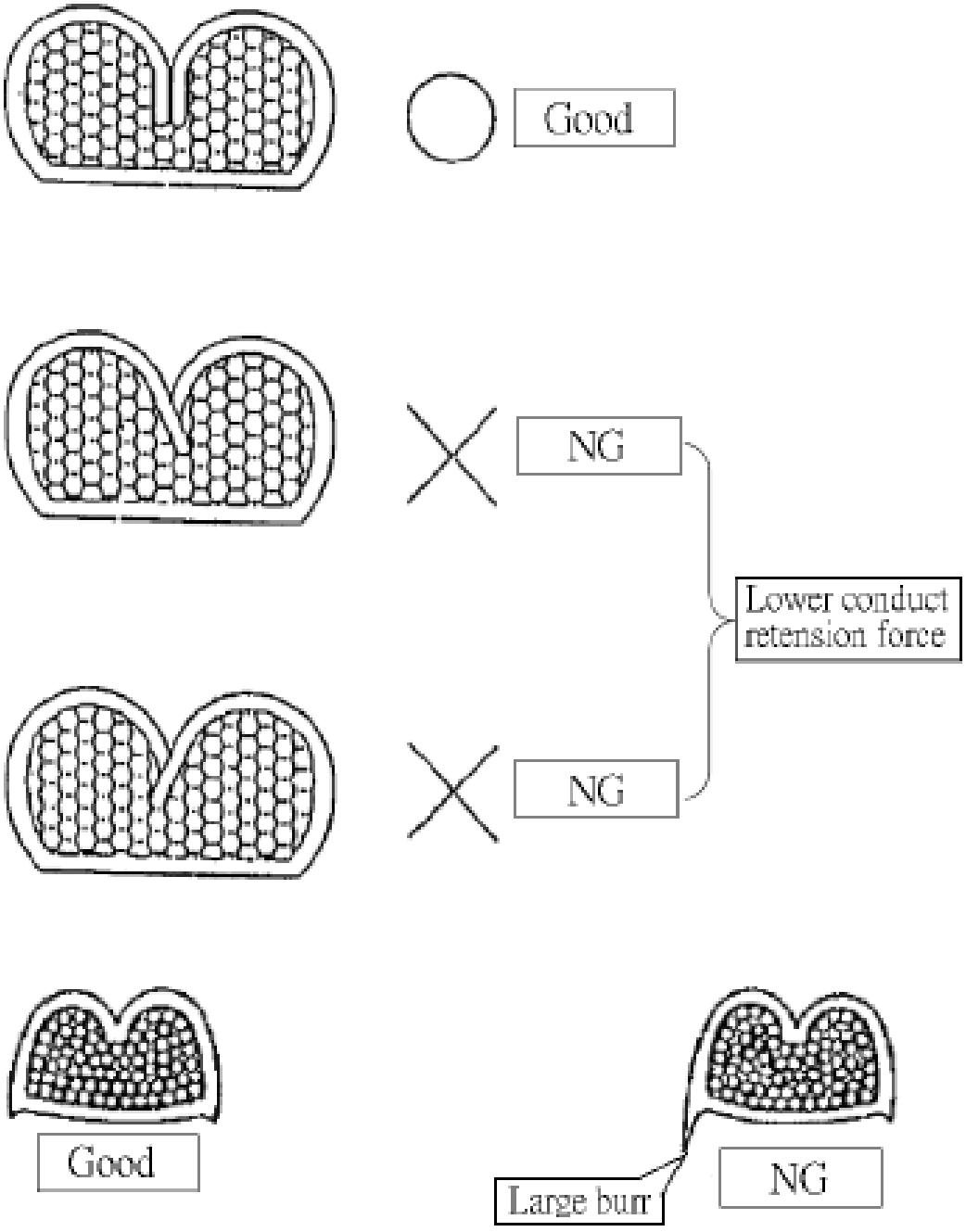
Good | NG

Insulation Crimp Condition

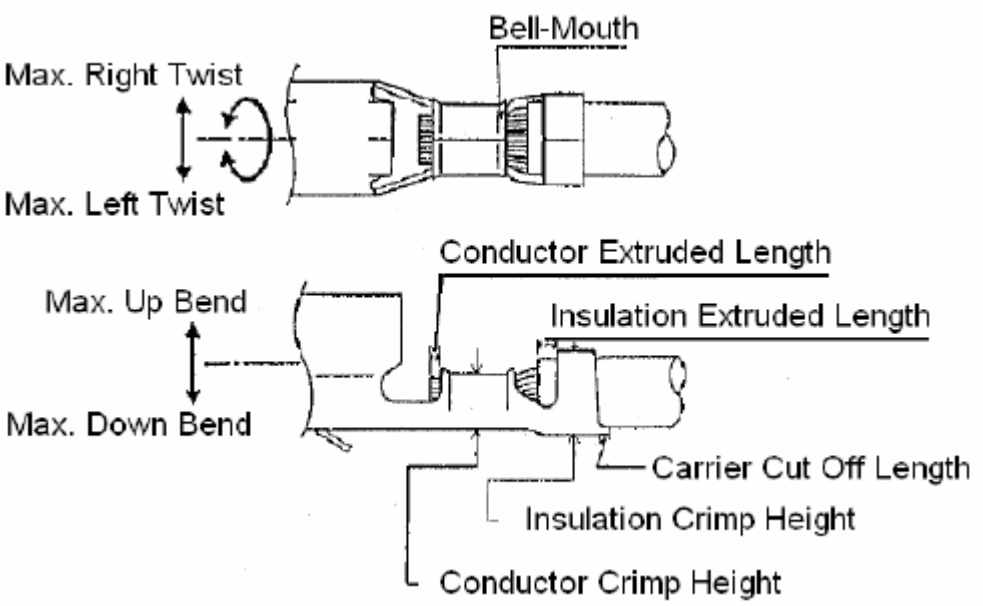


As following figure shown. It is no problem if wire bent up down 90 degrees 1 cycle and insulation position still in ideal position.

15 CONDUCTORS CRIMPING CONDITION



16 CRIMPING REQUIREMENT

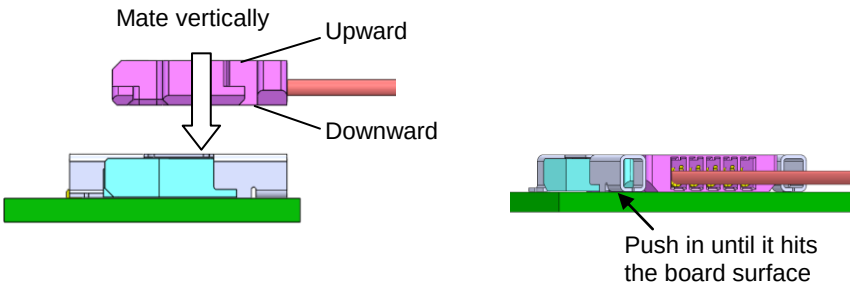


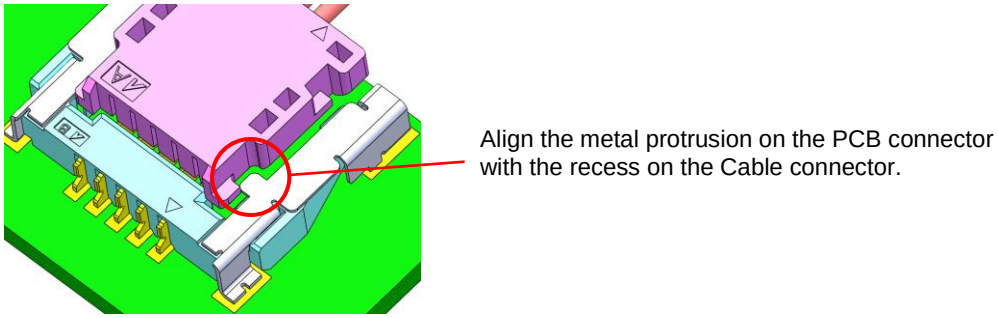
Item	Range(Ref.)
Max. Up Bend	0°
Max. Down Bend	0°
Max. Left Twist	0°
Max. Right Twist	0°
Bell-Mouth Length	0.1~0.3mm
Carrier Cut Off Length	0~0.2mm
Conductor Extruded Length	0.05~0.15mm

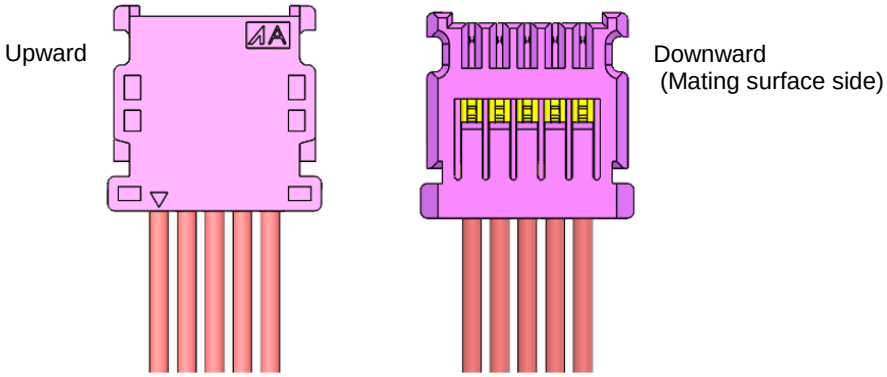
17 HANDLING PRECAUTION

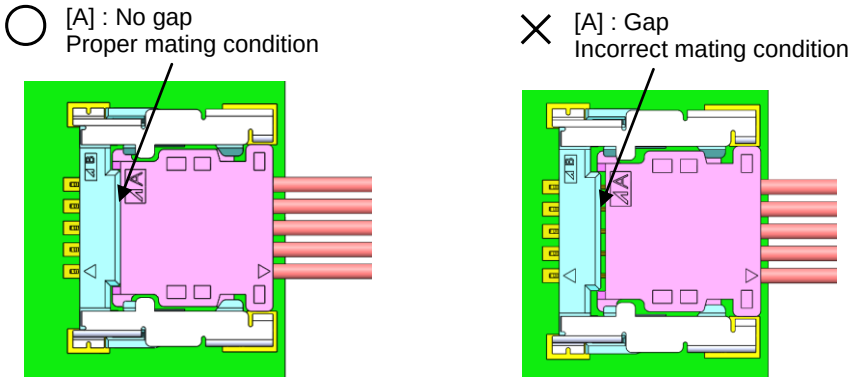
17.1 Mating Method of Connector

When mating the connector, mate the cable side connector to the board side connector from directly above. Refer to the figure for alignment of connectors. Push the cable side connector until it hits the board surface.
Also, after mating, make sure there is no gap [A] between the Cable connector and PCB connector.



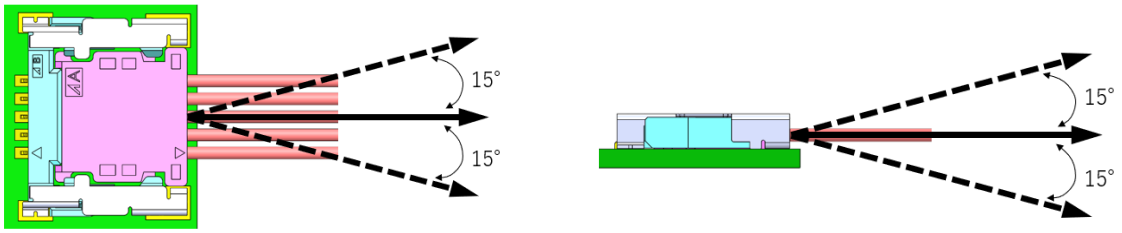






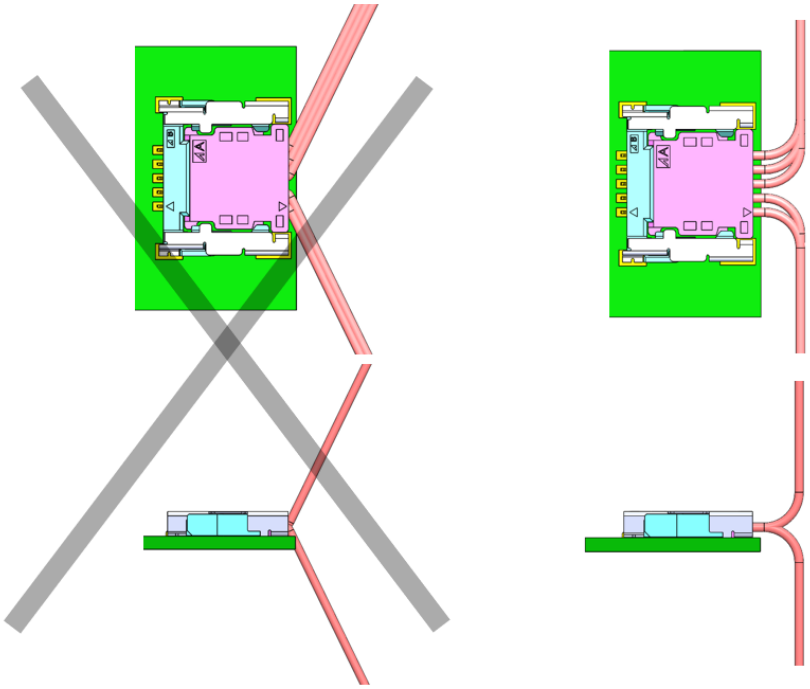
17.2 Unmating Method of Connector

When unmatining the connector, bundle the wires together, hold them together, and pull them straight out in the axial direction of the wires. Be sure to hold the wires together for all the terminals and pull. At this time, pull out at an angle of 15 ° or less with respect to the wire axis direction. If the angle is more than 15 °, it may cause damage. If pull the wires without bundling them together, the wires may be damaged or come off.



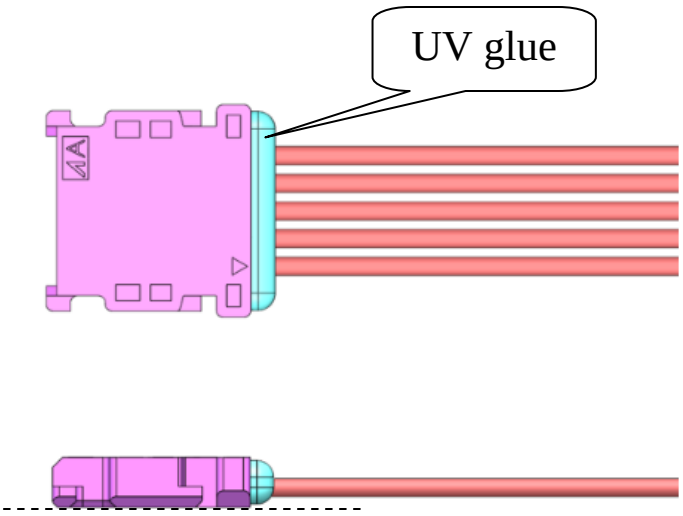
17.3 Routing of wire

Make allowance so that power more than the tension applied by bending the wire is not applied to the connector when you handle the wire.
(Provide a space above the connector in order to from the wire by bending and do not apply tension to the connector as below.)



18 ACES APPLICATION SOP

It is recommended that the wires of the crimp terminals be glued or bundled with tape.
Do not allow the adhesive to stick out of the Housing. It becomes in the way of mating.



Do not protrude below this.