

TO

SPECIFICATION FOR APPROVAL

DESCRIPTION: Pitch 0.50mm ZIF FPC Connector, R/A, SMT Type Bottom Contact

CUSTOMER PROD.NO/DWG.NO:

E&T PROD.NO: 6707K-XXXX-XXX

APPROVAL SHEET NO:

E&T DWG. NO./DOCUMENT: 6707K-XXXX-XXX

REV: A3

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APPROVED SIGNATURES			



**ENTERY INDUSTRIAL CO., LTD.
E&T ELECTRONICS (DONG GUAN) CO., LTD.
E&T ELECTRONICS (SU ZHOU) CO., LTD.
E&T ELECTRONICS (NANKEEN)CO.,LTD.**

ENTERY INDUSTRIAL CO., LTD.

**Title : Pitch 0.50mm ZIF FPC Connector,
R/A, SMT Type Bottom Contact**

**RELEASE
HISTORY**

Title: Pitch 0.50mm ZIF FPC Connector, R/A, SMT Type Bottom Contact

A3 05,31,2012'

This Document Contains Information That Is Proprietary To
E&T And Should Not Be Used Without Written Permission

Rev Description

Document No.

6707K-XXXX-XXX

Prepared By: Josh Lee

Date: 01,27,2007'

Checked By: *[Signature]*

Date: *06, 07, 2012*

Approved By: *[Signature]*

Date:

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PRODUCT SPECIFICATION

1. SCOPE :

This specification covers the pitch 0.5 mm ZIF FPC connector series.

2. PRODUCT NAME AND PART NUMBER :

Product Name	E&T Part Number
0.50mm ZIF FPC Connector, R/A, SMT Type Bottom Contact	6707K-XXXX-XXX

3. RATINGS :

Item	Standard	
Rated Voltage (MAX.)	50 V	DC
Rated Current (MAX.)	0.5A	
Operating Temperature Range	-40 ⁰ C ~ +80 ⁰ C	

*Including terminal temperature rise

4.PERFORMANCE :

4- 1 Electrical Performance

Item	Test Condition	Requirement
4-1-1 Contact Resistance	Test Current: 1 mA Max. Test Voltage: 20mV Max Test Method:EIA-364-06B	50 mΩ MAX.
4-1-2 Insulation Resistance	Test Voltage: 100V DC. Test Duration: 1 minutes. Test Method:EIA-364-21C	Initial: 500 MΩ Min
		Final: 100 MΩ Min.
4-1-3 Dielectric Strength	Test Voltage: 200V AC. Test Time: 60 sec. Test Method:EIA-364-09C	No Breakdown

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4-2 Mechanical Performance

Item		Test Condition	Requirement
4-2-1	FPC Retention Force	Test Speed: 25±3 mm/min. Test Method:EIA-364-38B	0.015kgf (per pin) MIN
4-2-3	Terminal / Housing Retention Force	Test Speed: 25mm/min.	0.3kgf (Min)

4-3 Environmental Performance and Others

Item		Test Condition	Requirement	
4-3-1	Durability	Insert and withdraw actuator up to 20cycles at the speed rate of less than 10 cycles/minute. Test Method:EIA-364-09C	Contact Resistance	
			Initial Value	≤ 50 mΩ
			Final Value	≤ 80 mΩ
4-3-2	Vibration	Amplitude : 1.5 mm Frequency range: 10~55~10 Hz in 1 minute Duration: 2 hours in each X.Y.Z axes Current: 100mA. Test Method:EIA-364-28D	Appearance	No Damage
			Contact Resistance	≤ 80 mΩ
			Discontinuity	1μsec
4-3-4	Heat Resistance	Temperature: 80±2°C Duration: 96 hours	Appearance	No Damage
			Contact Resistance	≤ 80 mΩ
4-3-5	Cold Resistance	Temperature: -40±2°C Duration: 96 hours	Appearance	No Damage
			Contact Resistance	≤ 80 mΩ
4-3-6	Humidity	Temperature: 40±2°C Relative Humidity: 90~95% Duration: 96 hours Test Method:EIA-364-31B	Appearance	No Damage
			Contact Resistance	≤ 80 mΩ
			Insulation Resistance	≥ 100MΩ
			Dielectric Strength	Must meet 4-1-3

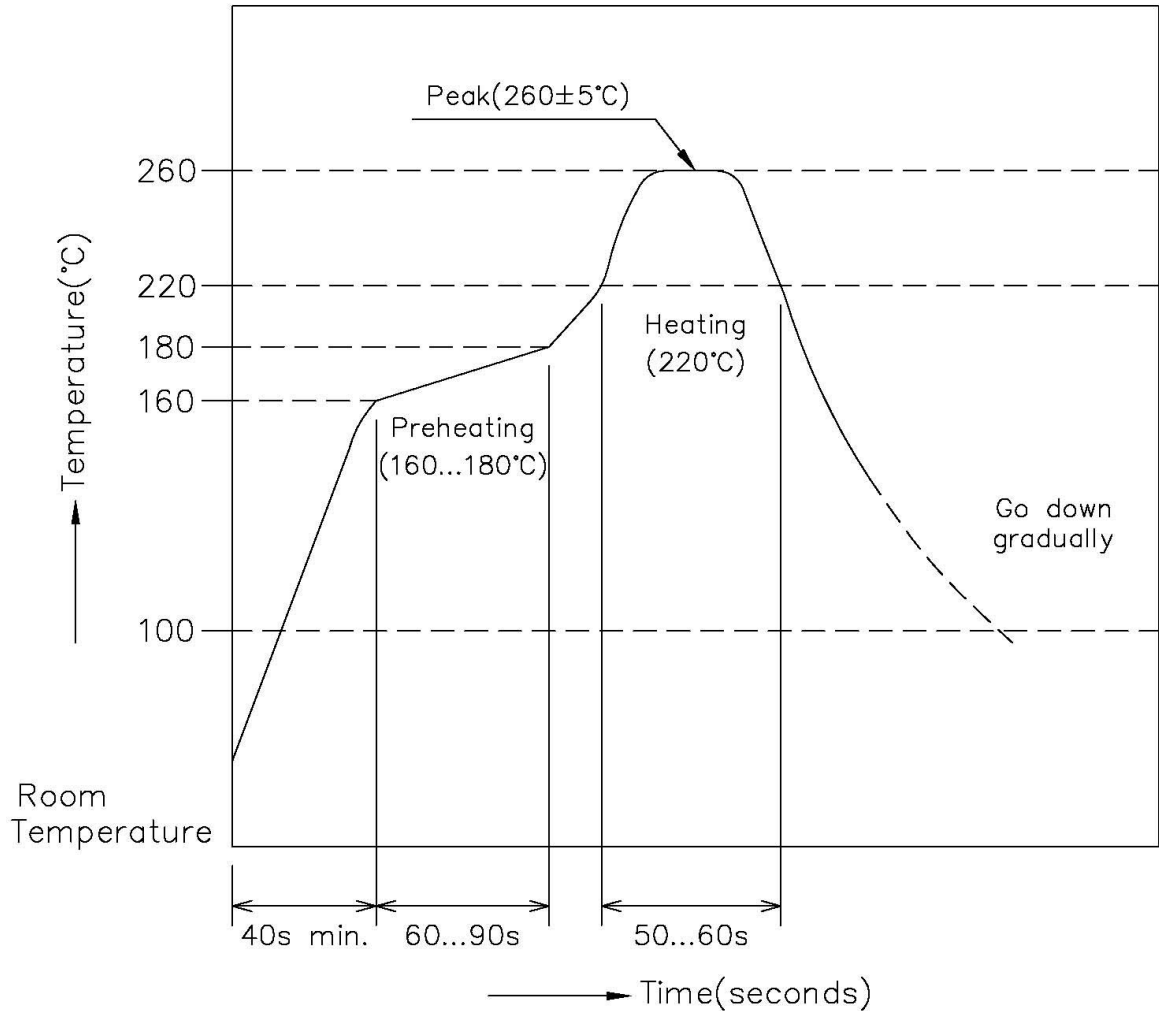
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Item		Test Condition	Requirement	
4-3-7	Solder Ability	Soldering Time : 3 ± 0.5 sec Solder Temperature : $245 \pm 5^\circ\text{C}$ Test Method: EIA-364-52	Solder Wetting	95% Of Immersed Area Must Show No Voids, Pin Holes
4-3-8	Resistance To Soldering Heat	Soldering Time : 10 ± 0.5 sec Solder Temperature : $260 \pm 5^\circ\text{C}$ Test Method: EIA-364-56C	Appearance	No Damage
4-3-9	Steam Aging	Steam Aging Temperature : $98 \pm 2^\circ\text{C}$ Duration: 8 hours Solder Temperature : $235 \pm 5^\circ\text{C}$ Soldering Time : 3 ± 0.5 sec Test Method: EIA-364-17B	Appearance	No Damage
			Solder Wetting	95% Of Immersed Area Must Show No Voids, Pin Holes
4-3-10	Salt Spray	Chamber Temperature : $35 \pm 2^\circ\text{C}$ Air Tank Temperature : $47 \pm 1^\circ\text{C}$ Salt Solution : $5 \pm 0.5\%$ Duration : 48 hours Test Method: EIA-364-26B	Appearance	No Damage
			Contact Resistance	$\leq 80 \text{ m}\Omega$
4-3-11	Temperature Cycling	5 cycles of : a) $-55 \pm 3^\circ\text{C}$ 30 minutes b) $+25 \pm 3^\circ\text{C}$ 30 minutes c) $+85 \pm 2^\circ\text{C}$ 30 minutes Test Method: EIA-364-31B	Appearance	No Damage
			Contact Resistance	$\leq 80 \text{ m}\Omega$

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INFRARED REFLOW CONDITION

- 1) Ascending time to preheating temperature 170°C shall be 40 seconds minimum.
- 2) Preheating shall be fixed at 160...180°C for 60...90 seconds.
- 3) Heating shall be fixed at 220°C for 50...60 seconds.
- 4) At 260±5°C peak shall be 10 seconds maximum.





2. Physical, Mechanical and Thermal property

Table 1 Properties of Sumikasuper[®] LCP

	ASTM	Unit	E6007LHF Z	E6807LHF Z	E6808LHF Z	E6808UHF Z	E6810LHF Z
Filler	-		GF	GF/mineral	GF/mineral	GF/mineral	GF/mineral
Kind of GF	-		Chopped	Chopped	Chopped	Milled	Chopped
Filler content	-	%	35	35	40	40	50
Physical property							
Gravity	D792		1.65	1.67	1.71	1.72	1.84
Water absorption	D570	%	0.02	0.02	0.02	0.02	0.02
Mold shrinkage MD	SC method	%	0.26	0.20	0.23	0.22	0.13
TD	*1	%	0.60	0.73	0.63	1.02	0.38
Mechanical Property							
Tensile strength	D638	MPa	157	135	127	100	105
elongation		%	5.1	5.3	4.5	5.0	4.0
Flexural strength	D790	MPa	158	143	146	120	133
6.4mmt modules		GPa	11.8	10.5	11.8	9.4	12.6
Izod impact strength	D256	J/m	251	335	302	350	200
Non-notched							
TDUL	D648	°C	269	269	274	240	266
1.82MPa							
Thermal property							
Solder resistance	SC method *2	°C	305	300	300	290	280
Linear expansion coefficient 50 - 250°C	SC method ^{*)}	× 10 ⁻⁵ /°C	0.2	1.0	0.4	1.0	-
	Upper : MD		8.5	6.3	8.1	6.2	
	Lower : TD						

*1: Ratio of the molded article to the tool of 64mm×64mm×3mmt

*2: The highest temperature at which the test piece does not deform after immersing into a solder bath for 60 sec.

*3: Test piece is the cut one of center portion of the test piece for tensile property.

Product Information

DuPont™ Zenite® LCP

Liquid crystal polymer resin

PRELIMINARY DATA

Zenite® ZE17235 BK010 & NC010

35% Glass/Mineral Reinforced LCP Resin

Zenite® ZE17235 is a 35% glass/mineral reinforced Low Warp and High Flow LCP resin. It is well suited for use in the automotive, electrical/electronic, telecommunications and aerospace industries.

Property	Test Method	Units	Value
Mechanical			
Stress at Break	ISO 527-1/-2	MPa	130
Strain at Break	ISO 527-1/-2	%	1.80
Tensile Modulus	ISO 527-1/-2	MPa	11060
Flexural Strength	ISO 178	MPa	180
Flexural Modulus	ISO 178	MPa	13300
Notched Charpy Impact	ISO 180/1A	kJ/m ²	8.6
Thermal			
Deflection Temperature 1.80MPa	ISO 75-1/-2	°C	285
Other			
Density	ISO 1183	Kg/m ³ (g/cm ³)	1690 (1.69)
Molding Shrinkage	ISO 294-4	%	
Normal			0.63
Parallel			0.17
Flammability			
UL 94 Rating at Min. Thickness	UL94		V-0
UL 94 Min. Thickness Tested	UL94	mm	
Black			0.4
Natural			0.4
Processing			
Melt Temperature Range		°C	350-370
Mold Temperature Range		°C	30-95

Contact DuPont for Material Safety Data Sheet, general guides and/or additional information about ventilation, handling, purging, drying, etc.
 Mechanical properties measured at 23°C (73°F) unless otherwise stated.
 Mechanical properties measured at 4.0mm unless otherwise stated.
 Mold shrinkage measured at 2.0mm

During molding, use protective equipment and clothing. Skin contact with molten Zenite® resins can cause severe burns. Be particularly alert during purging.

The above data are preliminary and are subject to change as additional data are developed on subsequent lots.

Zenite® is a DuPont registered trademark.

The information provided in this data sheet corresponds to our knowledge on the subject at the date of its publication. This information may be subject to revision as new knowledge and experience becomes available. The data provided fall within the normal range of product properties and relate only to the specific material designated; these data may not be valid for such material used in combination with any other materials or additives or in any process, unless expressly indicated otherwise. The data provided should not be used to establish specification limits or used alone as the basis of design; they are not intended to substitute for any testing you may need to conduct to determine for yourself the suitability of a specific material for your particular purposes. Since DuPont cannot anticipate all variations in actual end-use conditions DuPont makes no warranties and assumes no liability in connection with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent rights. Caution: Do not use this product in medical applications involving permanent implantation in the human body. For other medical applications see "DuPont Medical Caution Statement", H-51459 or H-50102.



The miracles of science®



QMFZ2 Component - Plastics

Wednesday, February 11, 2004

E54705

SUMITOMO CHEMICAL CO LTD

5-33 KITAHAWA 4-CHOME CHUO-KU OSAKA 541-8550 JP

Material Designation: **E6808UHF**

Product Description: Liquid Crystal Polymer (LCP), designated "SUMIKASUPER" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
NC, BK	0.30	V-0	-	130	130	130	-	-

CTI: - **IEC CTI:** - **HVTR:** - **D495:** - **IEC Ball Pressure (°C):** -
Dielectric Strength (kV/mm): - **Volume Resistivity (10¹⁰ohm-cm):** - **Dimensional Stability(%):** -
ISO Tensile Strength (MPa): - **ISO Flexural Strength (MPa):** - **ISO Heat Deflection (°C):** -
ISO Tensile Impact (kJ/m²): - **ISO Izod Impact (kJ/m²):** - **ISO Charpy Impact (kJ/m²):** -

Report Date:

Underwriters Laboratories Inc®

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

POLYPLASTICS CO LTD

VECTRA DIV 18-1 KONAN 2-CHOME MINATO-KU TOKYO 108-8280 JP

Material Designation: **E471i(d)**

Product Description: Liquid Crystal Polymer (LCP), designated "VECTRA" furnished as pellets.

Color	Min. Thick. (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str	IEC GWIT	IEC GWFI
NC, BK	0.8	V-0	-	-	130	130	130	-	-
ALL	1.5	V-0	-	-	130	130	130	-	-
	3.0	V-0	-	-	130	130	130	-	-

CTI: 3 **IEC CTI (V):** - **HVTR:** - **D495:** - **IEC Ball Pressure (°C):** -

Dielectric Strength

(kV/mm): -

ISO Tensile Strength (MPa):

-

ISO Tensile Impact (kJ/m²):

-

Volume Resistivity (10⁵ohm-cm): -

ISO Flexural Strength (MPa): -

ISO Izod Impact (kJ/m²): -

Dimensional

Stability(%): -

ISO Heat Deflection

(°C): -

ISO Charpy Impact

(kJ/m²): -

(d) Virgin and regrind up to 50% by weight incl. have the same basic material characteristics for colors NC and BK in the 0.75, 1.5 and 3.0 thickness.

Report Date: 1/31/2000

Underwriters Laboratories Inc®

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UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

COPPER ALLOY SPECIFIC

Article	Standard NO	Dimension & Tempe
C2680	JIS H 3100	0.15mm X 16.5mm RH

Chemical Compositions (%)									
Element	Cu	Pb	Fe	Sn	Zn	P	Ni	Mn	Mg
Spec.	64~68	0.0500↓	0.05↓	—	REM	—	—	—	—
Actual	65.21	0.0001	0.01	—	REM	—	—	—	—

Mechanical Properties.								
Item	Grain Size	Hardness	Tension Strength	Elongation	Electrical Conductivity	Bending Test	Surface Roughness	Camber
Unit	mm	HV	Kgf/mm	%	% IACS	180 °	Ra(μm)	mm/1M
Spec.	—	160~175	52~62	8↑	—	—	—	—
Actual	—	164	53.9	16.3	—	—	—	—

COPPER ALLOY SPECIFIC

Article	Standard NO	Dimension & Tempe
C5210	JIS H 3130	0.12mm X 16.5 mm SH

Chemical Compositions (%)									
Element	Cu	Sn	P	Zn	Fe	Pb			
Spec.	—	7.0~9.0	0.03~0.35	0.2 ↓	0.1 ↓	0.009 ↓			
Actual	92.11	7.52	0.0927	0.01	0.0089	0.003			

Mechanical Properties.								
Item	Grain Size	Hardness	Tension Strength	Elongation	Electrical Conductivity	Bending Test	Surface Roughness	Camber
Unit	mm	HV	Kgf/mm	%	% IACS	180 °	Ra(μm)	mm/1M
Spec.	—	230~250	75~82	9↑	—	—	0.15 ↓	—
Actual	—	238	76.8	14	13	Good	0.085	—

FPC /FFC Connector Front Flip Lock Type Handling Precautions

This manual is to describe basic precautions. When there are doubtful points in use of, please contact E&T.

1. Common Handling Precautions

- Do not expose E&T's ZIF FPC/FFC connector, processing process product and processing product to corrosive substance, corrosive gas, high temperature and high humidity and direct sunshine. It causes corrosion of contact and deterioration of insulation performance of housing, etc., so that it causes motion defect of appliances.
- Do not apply external load to E&T's ZIF FPC/FFC connector, processing process product and processing product . Deformation and breakage, etc. occur, and it causes performance defect of.
- There may be slight differences in the housing coloring, but there will be no influence on the product's performance.
- Please add a stiffener on the flexible printed circuit (FPC/FFC) when you mount the connector onto FPC in order to prevent deformation of the FPC/FFC.
- Please do not conduct any "washing process" on the connector because it may damage the product's function.

2. PC Board Precautions

- Exercise caution when handling boards with the connectors installed. Do not apply any forces affecting soldered joints. (see figure 1).
- The mounting specification for coplanarity does not include the influence of warpage of the printed circuit board. (see figure 1).

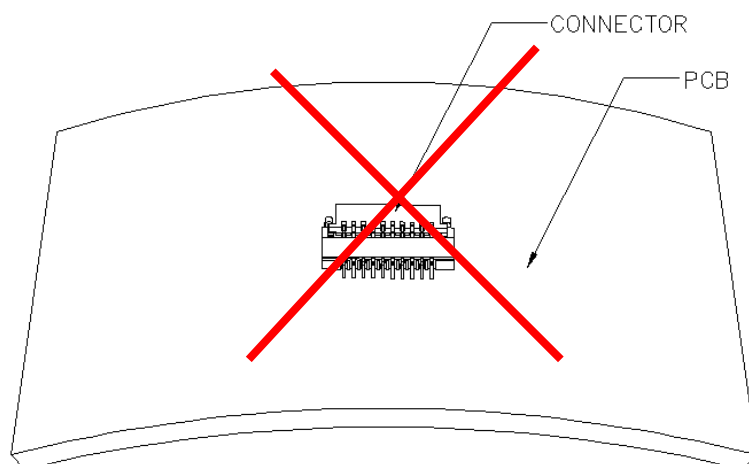


Figure 1.

3. Operation

FPC/FFC Insertion Procedure.

- 1) Connector installed on the board.
Lift up the actuator(Lock). Use thumb or index finger. (see figure 2).

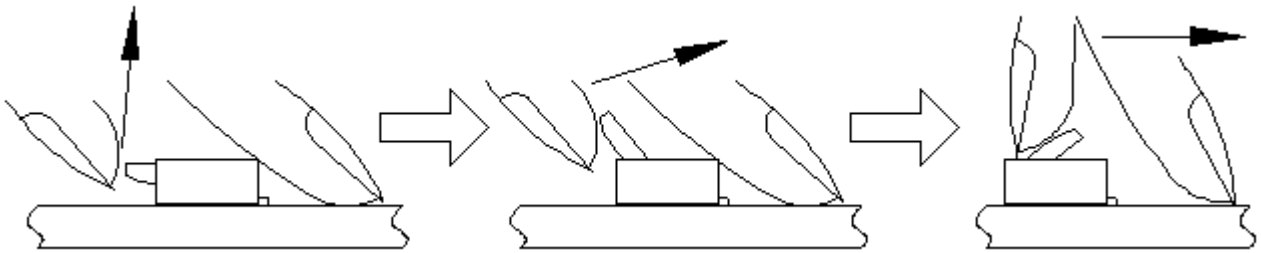


Figure 2.

- 2) Assure that the FPC/FFC is fully inserted parallel to mounting surface, with the exposed conductive traces facing down. (see figure 3).

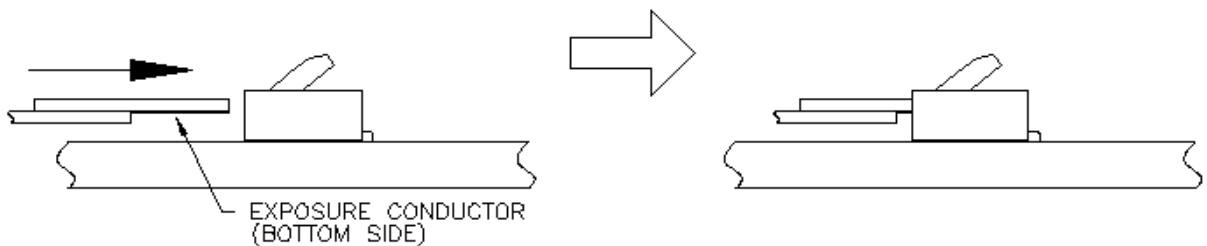


Figure 3.

- 3) Rotate down the actuator(Lock) until firmly closed. It is critical that the inserted FPC is not moved and remains fully inserted. Should the FPC be moved, open the actuator(Lock) and repeat the process, starting with Step 1(see figure 4).

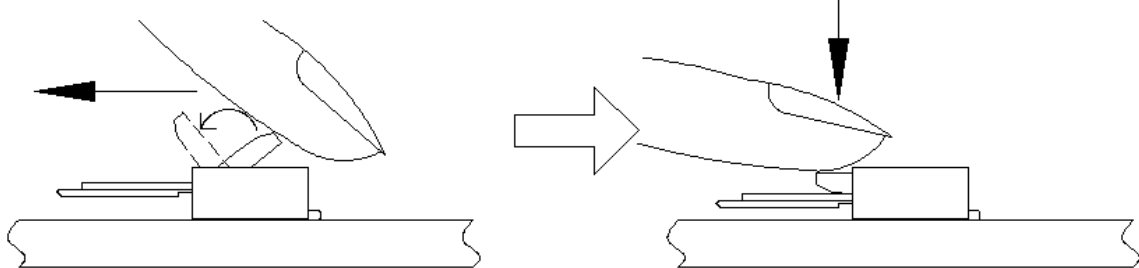


Figure 4.

FPC/FFC Removal.

- 1) Lift up the actuator(Lock). Carefully withdraw the FPC/FFC. (see figure 5).

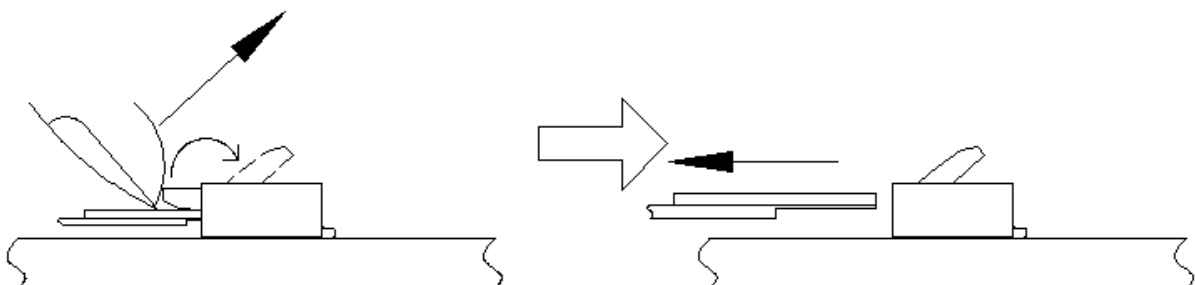


Figure 5.

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4. Precautions When Inserting or Withdrawal FPC/FFC

- FPC/FFC to be insertion and withdrawal at an angle of about 15° , and the FPC/FFC should be inserted firmly all the way to the back. (see figure 6).

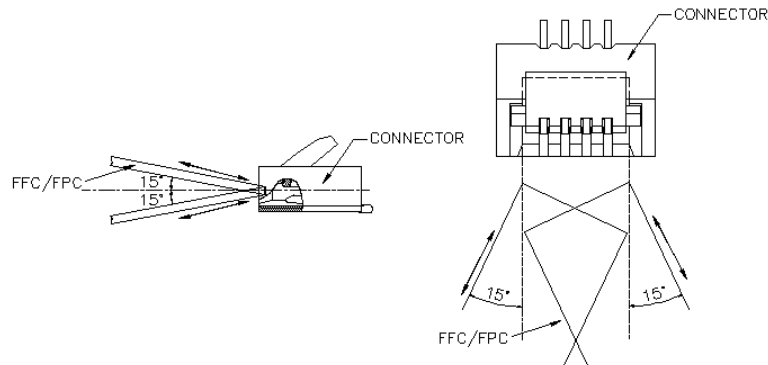


Figure 6.

- Do not apply excessive force or use any type of tool to operate the actuator(Lock).
- When locking the actuator(Lock), please make sure that the actuator is entirely closed by pressing on the entire actuator. Pushing the one specific point of the actuator may cause the actuator to be detached or damaged. When locking the longer actuator(Lock), please use two points to put pressure on locking. (see figure 7).

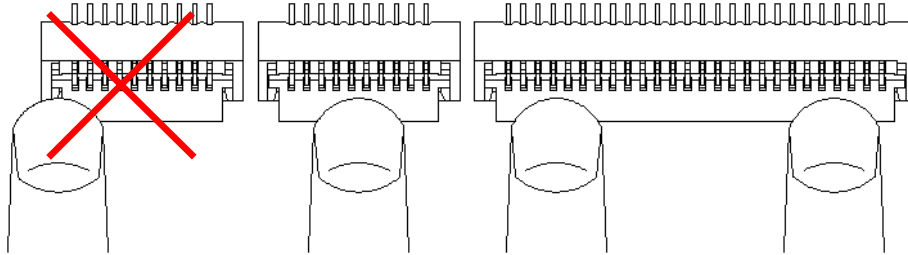


Figure 7.

- The connector will assure reliable performance when the actuator is open to an angle (please refer to drawing) maximum. Do not exceed this angle, as this may cause permanent damage to the connector. (see figure 8)
- Avoid grasping the actuator(Lock) with two fingers or lifting the actuator(Lock) with fingernail. (see figure 8)
- Do not apply force in the direction of arrows. Doing this may cause the actuator to be detached or damaged. (see figure 8).

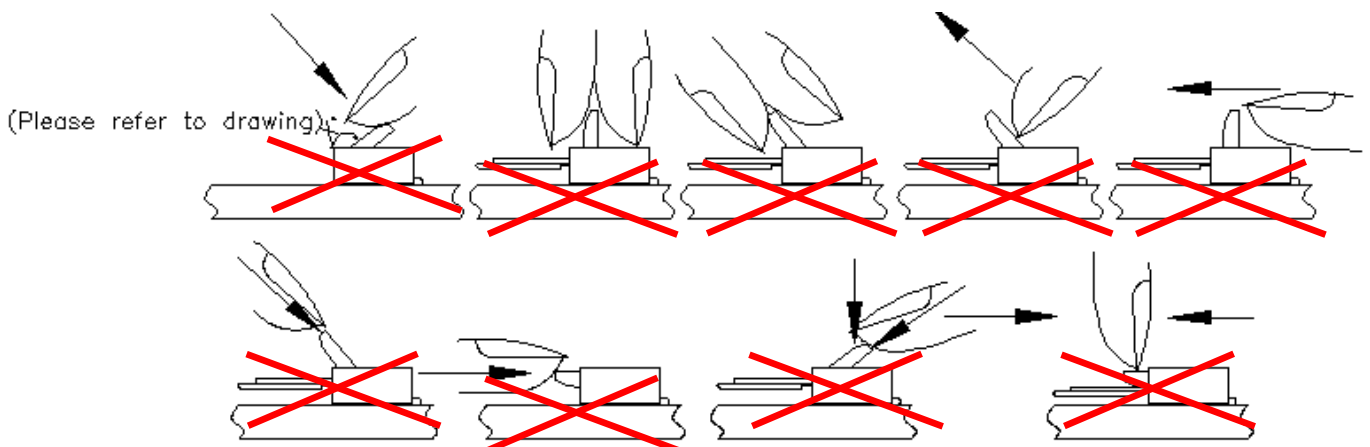


Figure 8.

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- When inserting the FPC/FFC, do not forcefully rub against the surface beneath the connector insertion slot. Doing so will result in the FPC/FFC forcefully striking the contacts and this will cause contact deformation, peeling of the FPC/FFC conductors, and other irregularities. (see figure 9).

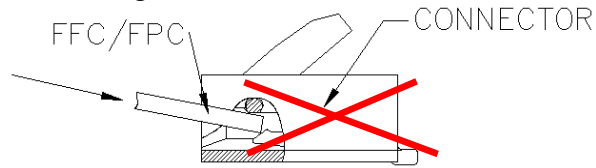


Figure 9.

- Do not apply any forces affecting soldered joints. Do not apply upward pull-force to the FPC/FFC close to the connector. (see figure 10).
- If necessary, please fix the FPC/FFC directly on the chassis. Also, please avoid pulling the FPC/FFC vertically or twisting the FPC back and force horizontally while it is inserted in the connector(see figure 10).
- Forming processing is conducted to FPC so as not to load force to connector. (see figure 10).

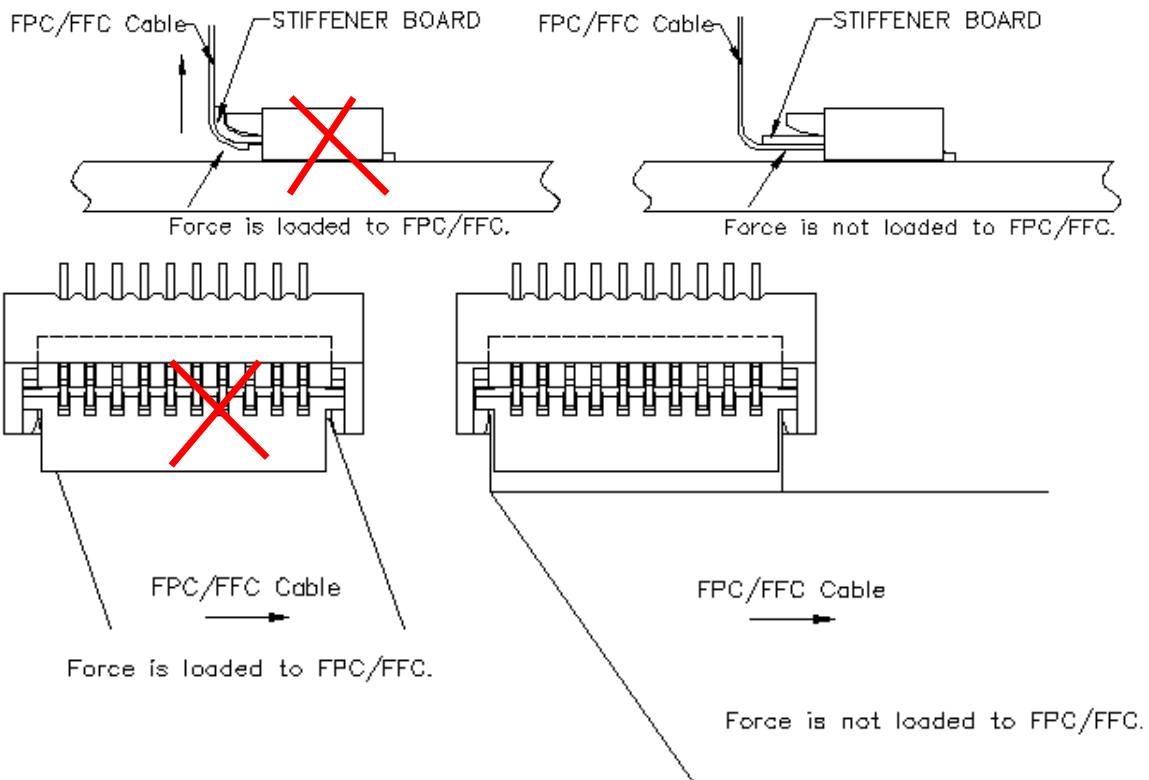


Figure 10.

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RELEASE HISTORY

Rev.	Revisions	Date	Executor	Description
A0	First Release	JAN-27-2007	JOSH	First Release
A1	RE201108011	AUG-04-2011	JIMMY	ADD Handling Precautions
A2	RE201112022	JAN-04-2012	JIMMY	MODIFY COPPER ALLOY
A3	RE201204022	MAY-31-2012	JIMMY	MATERIAL CHANGE