

规 格 书
SPECIFICATION

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1. Scope:

This product specification covers the performance requirements for 0.5mm Pitch FPC&FFC connector with 2 contacts series.

2. Part name&part number:

Part name	Part number
FPC	F0515H
FFC	FFC0515

3. Construction、dimensions、material&surface finish:

Construction and dimensions shall be in accordance with the referenced drawings.

Material and surface finish shall be as specified below.

Part name	Material	Surface finish
Housing	LCP	UL94V-0
Slider	Nylon6T+30%GF	UL94V-0
Terminal	Phosphor Bronze	Gold Plated
Fitting Nail	Phosphor Bronze	Tin Plated

4. Characteristics:

Current rating: 0.5A AC/DC

Voltage rating: 50V AC/DC

Temperature range: -40°C ~ +105°C

Storage temperature range: 10°C ~ 30°C

Storage humidity range: <75 %

5. FPC Retention Force

5.1 FPC Retention Force (with tabs)

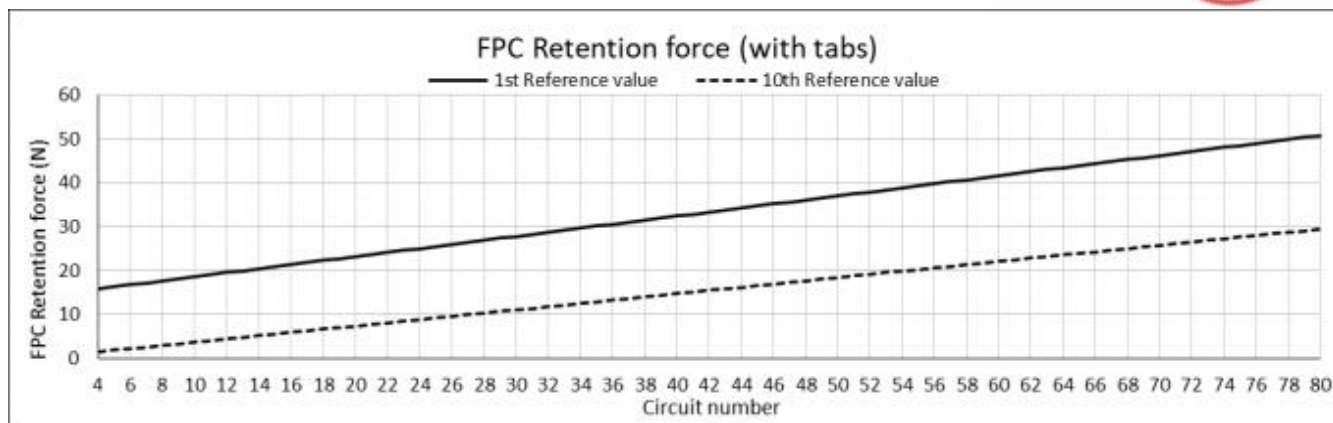
Graph shown below is a data of FPC retention force when using a thickness of 0.3mm FPC. But, there's a case which FPC retention force doesn't fulfill the specification shown below, because FPC specification affects the result of FPC retention force.

Notice: This graph shows reference value.

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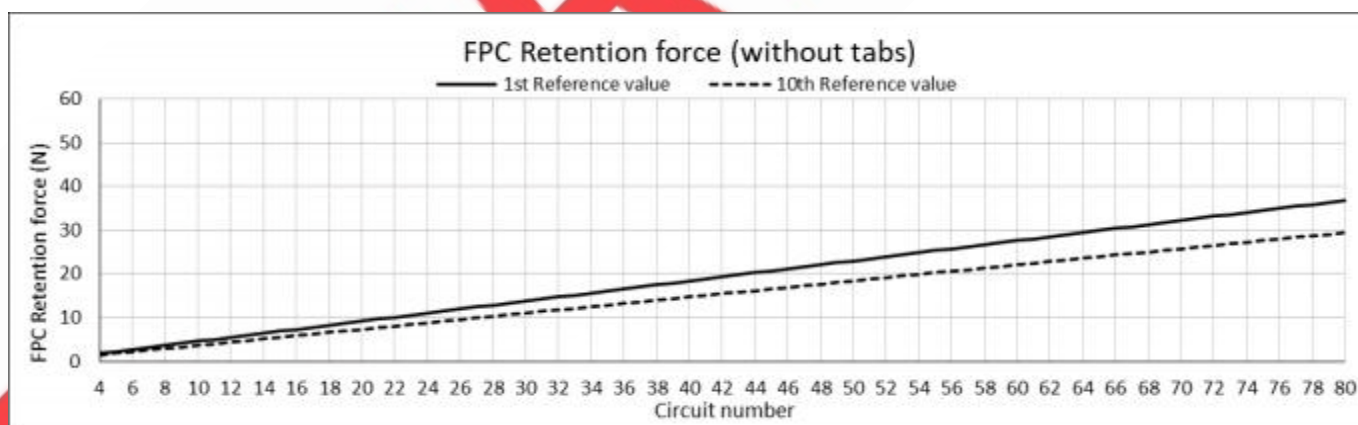
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5.2 FPC Retention Force (without tabs)

Graph shown below is a data of FPC retention force when using a thickness of 0.3mm FPC. But, there's a case which FPC retention force doesn't fulfill the specification shown below, because FPC specification affects the result of FPC retention force.

Notice : This graph shows reference value.



5.3 Test method: Mate applicable FPC, close actuator, and pull the FPC at the speed rate of 25+/-3 mm per minute.

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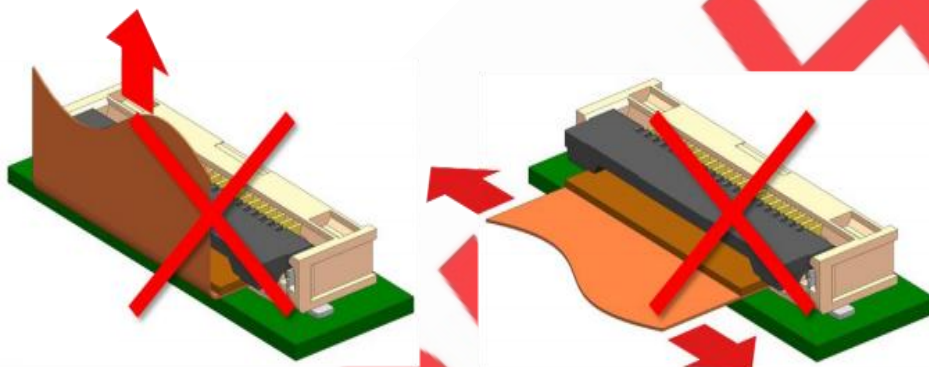
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6. Mounting:

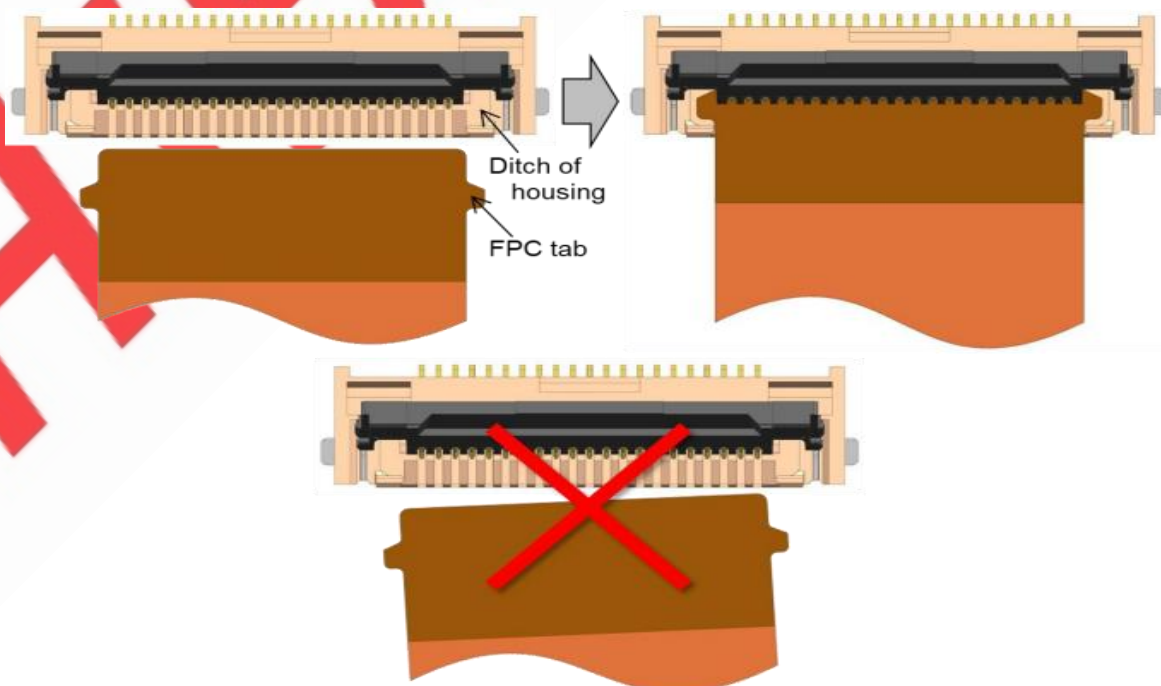
6.1 Inserting the FPC

6.1.1 Please pay special attention not to have any pulling force/tension on the FPC when it is inserted into the connector.

This can cause: the actuator to be unlocked, the actuator to come off, cut the traces on the FPC, and/or damage the FPC. Please be especially careful to avoid placing the FPC in a location where it will have a constant force applied on the FPC. If necessary, please fix the FPC directly on the chassis. Also, please avoid pulling the FPC vertically or twisting the FPC back and forth horizontally while it is inserted in the connector.



6.1.2 When inserting the FPC into the connector, please ensure that the actuator is completely open during insertion. Please also ensure that the FPC is completely inserted until the end of the FPC touches the housing and that the FPC ear is positioned correctly. Diagonal insertion of the FPC into the connector can cause a short circuit due to the misaligned pitch. Diagonal insertion can also deform the terminal and/or damage the FPC contact area because the FPC edge may contact the terminal.



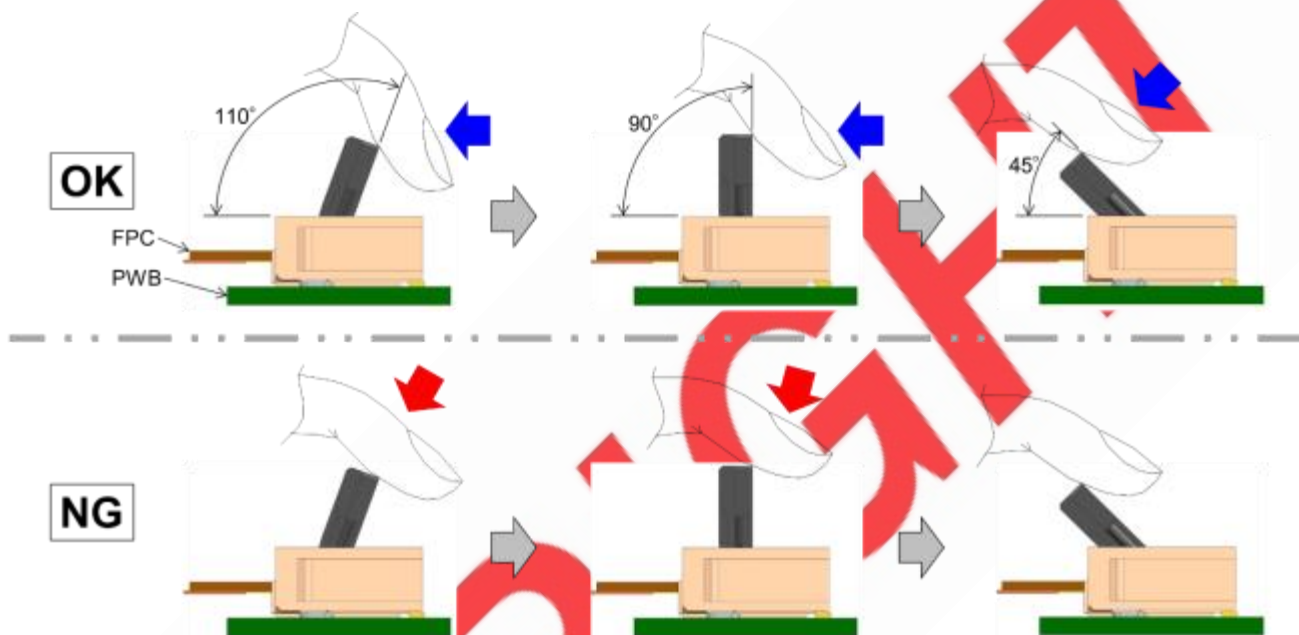
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6.2 Closing the actuator

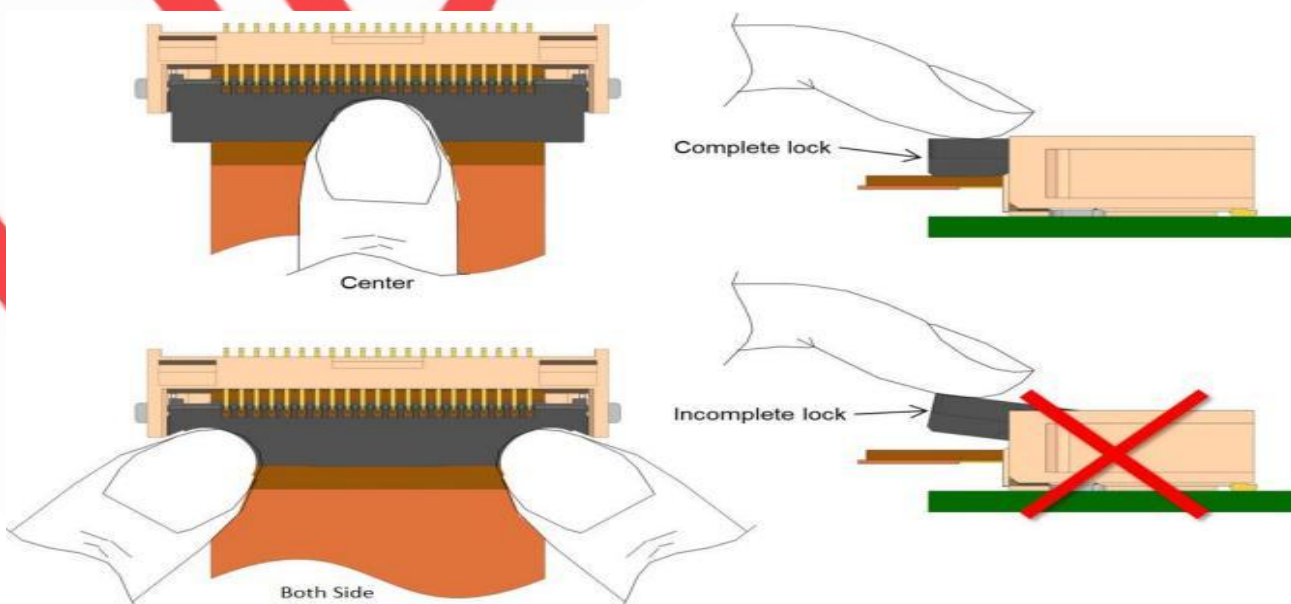
Close the actuator, seeing following figures. Actuator open-angle is 90 degrees or more. Add force in the direction parallel to the P.C. board. Less than 90 degrees. Add force in the direction of the P.C. board (direction of closing actuator). Do not manipulate it, adding extra force to actuator's axis of rotation.



6.3 Locking the actuator

When you lock, it is recommended to do on center or both sides of the actuator.

After the actuator is closed, please apply soft pressure to ensure that the actuator is completely locked (as shown in figure below).



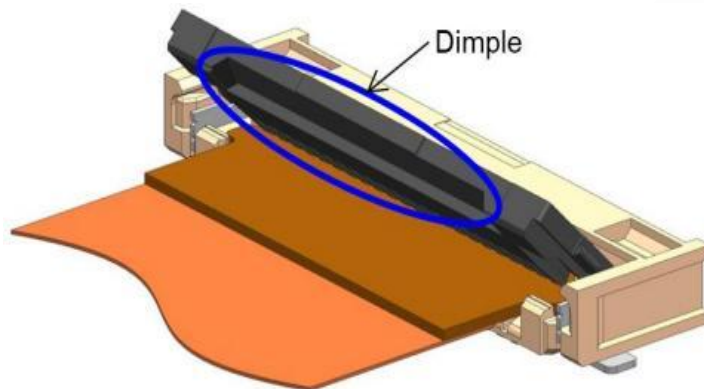
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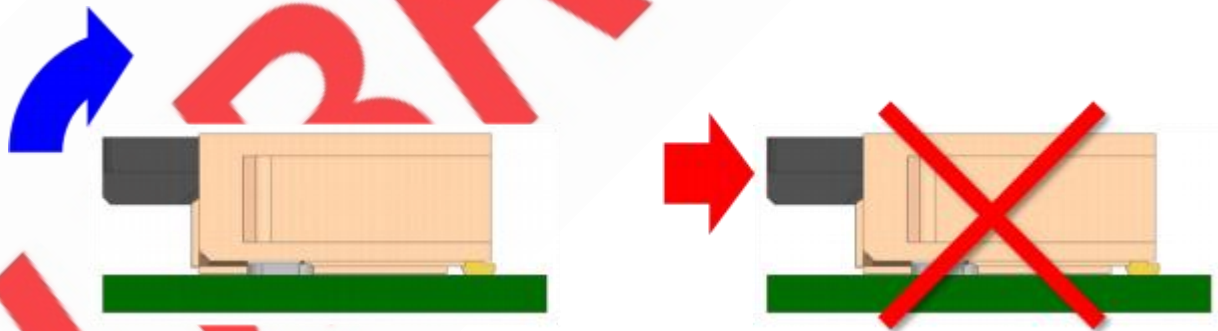
6.4 Unlocking the actuator

6.4.1 When unlocking the actuator, please pull up on the center of actuator in the direction of actuator rotation, which delivers even force to both edges of actuator.

Please do not apply any force in any other direction as this may deform or damage the actuator.



6.4.2 It opens as the actuator is rotating. Therefore do not manipulate to add extra force only to the FPC insertion direction because the actuator may stop and break. Operation of opening actuator: Push up dimple of actuator.



7. Electrical test

7.1 Contact resistance

7.1.1 Requirement: Initial:20mΩ(max.);After environmental test:20mΩ(max.)

7.1.2 Condition: Test current:10mA(DC);Open voltage:20mV(max.)

7.1.3 Test result: See items 8.1~8.4

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7.2 Insulation resistance

7.2.1 Requirement: Initial:500MΩ(min.)

After humidity test: 500MΩ(min.)

After thermal shock test: 500MΩ(min.)

7.2.2 Test method: DC 125V shall be applied between outer surface of housing and terminal and between adjacent terminals to measure insulation resistance.
(MIL-STD-202,test method302,condition B)

7.2.3 Test result: See items 8.1&8.3

7.3 Dielectric withstanding voltage

7.3.1 Requirement: There shall be no breakdown nor flashover.

7.3.2 Test method: Initially AC 200V (rms) and after humidity and thermal shock tests AC 200V (rms) shall be applied between outer surface of housing and terminal and between adjacent terminals for one minutes.(MIL-STD-202,test method301)

Test current:1mA

7.3.3 Test result: See items 8.1&8.3

8. Environment test:

8.1 Humidity

8.1.1 Requirement: Contact resistance shall be 20milliohms (max.) after the test.
Insulation resistance shall be 500megohms (min.) after the test. There shall be no breakdown nor flashover on dielectric withstanding voltage test.

8.1.2 Test method: Mated connector shall be placed in a humidity chamber of the following conditions. After the test , contact resistance , insulation resistance and dielectric with-standing voltage shall be measured.

(MIL-STD-202,test method103,condition A)

Temperature: $40 \pm 2^{\circ}\text{C}$

Humidity: 90% ~ 95% (RH)

Period: 96 hours continuously

8.1.3 Test results:

Test item	Initial(mΩ)			After test(mΩ)		
	Max.	Min.	Ave.	Max	Min	Ave
Contact resistance	9.58	7.58	8.31	9.23	7.56	8.19

Test item	Housing-Terminal(MΩ)		Terminal-Terminal(MΩ)	
	Initial	After test	Initial	After test
Insulation resistance	500min.	500min.	500min.	500min.

Test item	Housing-Terminal(V)		Terminal-Terminal(V)	
	Initial	After test	Initial	After test
D.W.V. 200Vmin	PASS	PASS	PASS	PASS

(D.W.V.: Dielectric withstanding voltage)

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8.2 Salt spray

8.2.1 Requirement: Contact resistance shall be 20milliohms(max.) after the test.

8.2.2 Test method: Mated connector shall be subjected to salt spray test of the following conditions. After the test, specimen shall be washed with running water and dried naturally before the measurement of contact resistance.

Temperature: $35 \pm 2^{\circ}\text{C}$

Humidity: 90% ~ 95% (RH)

Period: 24 or 48 hours (Depending on demand)

8.2.3 Test result:

Test item	Initial(mΩ)			After test (mΩ)		
Contact resistance	Max.	Min.	Ave.	Max.	Min.	Ave.
	8.73	7.65	8.17	8.55	7.43	8.05

8.3 Thermal shock

8.3.1 Requirement: Contact resistance shall be 20milliohms (max.) after the test.

Insulation resistance shall be 500megohms (min.) after the test. There shall be no breakdown nor flashover on dielectric withstanding voltage test.

8.3.2 Test method: Mated connector shall be subjected to thermal shock test of the following conditions. After the test, contact resistance, insulation resistance and dielectric withstanding voltage shall be measured.

1 cycle consists of:

-40°C for 30 minutes

+105°C for 30 minutes

Times of cycles: 25 cycles

8.3.3 Test results:

Test item	Initial(mΩ)			After test(mΩ)		
Contact resistance	Max.	Min.	Ave.	Max	Min	Ave
	9.67	7.32	8.53	9.23	7.21	8.41

Test item	Housing-Terminal(MΩ)		Terminal-Terminal(MΩ)	
Insulation resistance	Initial	After test	Initial	After test
	500min.	500min.	500min.	500min.

Test item	Housing-Terminal(V)		Terminal-Terminal(V)	
D.W.V. 200Vmin	Initial	After test	Initial	After test
	PASS	PASS	PASS	PASS

(D.W.V.: Dielectric withstanding voltage)

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8.4 Vibration

8.4.1 Requirements: Contact resistance shall be 20milliohms (max.) after the test.
There shall be no current discontinuity longer than 1 microsecond during the test.

8.4.2 Test method: Mated connector shall be mounted on a PCB and subjected to a vibration test of the following conditions. During the test , current continuity shall be checked. After the test , contact resistance shall be measured. (MIL-STD-202 , test method 201)

Frequency: 10~55~10 Hz/min.

Amplitude: 1.5 mm

Direction: 1.Axis of up and down

2. Axis of right and left

3.Axis of front and back

8.4.3 Test result:

Test item	Initial(mΩ)			After test(mΩ)		
	Max.	Min.	Ave.	Max.	Min	Ave.
Contact resistance	9.06	7.31	8.26	8.89	7.28	8.10

Current discontinuity: There shall be no current discontinuity longer than 1 microsecond during the test.

8.5 Solderability

8.5.1 Requirements: Minimum 95% solder-dipping section shall be covered by solder smooth solder.

8.5.2 Test method: Fluxed soldering section of shrouded header shall be dipped in solder of the following conditions.

Solder temperature : $255 \pm 5^{\circ}\text{C}$

Immersion period : 3-5 seconds

8.5.3 Test result: Good.

8.6 Resistance to soldering heat

8.6.1 Wave soldering

(1)Requirements: There shall be no deformation nor damage which may affect the performance.

(2)Test method : Specimen shall be mounted on a PCB (inserted only) and subjected to resistance to soldering heat test of the following conditions.

Solder temperature: $250 \pm 5^{\circ}\text{C}$

Immersion period: 3-5 seconds

(3)Test result: Good.

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8.6.2 By soldering iron

- (1) Requirements: There shall be no deformation nor damage which may affect the performance.
- (2) Test method: The specimen shall be soldered by soldering iron of the following conditions.
No abnormal force such as lateral load shall be applied to the specimen during the test.

Soldering iron temperature: $360 \pm 10^{\circ}\text{C}$

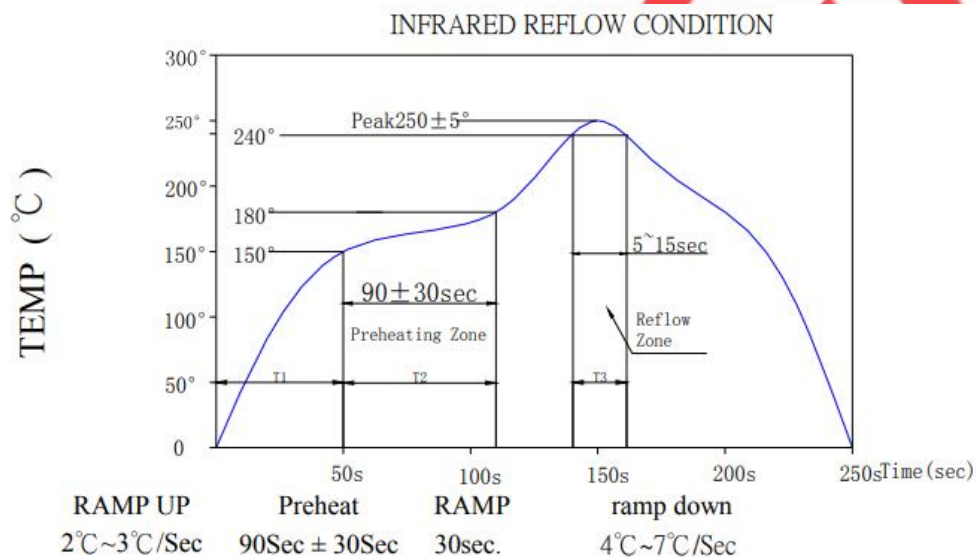
Immersion period: 1-3 seconds

- (3) Test result: Good.

8.6.3 By reflow soldering

- (1) Requirements: Solder-dipping section shall be covered by solder entirely.

- (2) Test method:



T1:	Temperature ramp up rate:	2°C~3°C/sec
T2:	Preheat: 150°C~160°C	60~120sec
T3:	Time Over 240°C:	5 ~ 15sec
	Ramp down rate during cooling:	4°C~7°C/sec
	Peak temperature:	250°CMax

- (3) Test result: Good.

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PRODUCT SPECIFICATION**F0515H (0.50MM) SERIES****Notice:**

1. The values specified in this specification are only for reference. The products and their specifications are subject to change without notice. Contact our sales for further information before considering or ordering any of our products.
2. For purchase, a product specification must be agreed upon.
3. Users are requested to provide protection circuits and redundancy circuits to ensure safety of the equipment, and sufficiently review the suitability of BRIGHT-E's products to the equipment.
4. The products presented in this series are designed for the uses recommended below.
We strongly suggest you contact our sales staff when considering use of any of the products in any other way than the recommended applications or for a specific use that requires an extremely high reliability.
 - (1) Applications that require consultation:
 - (i) Please contact us if you are considering use involving a quality assurance program that you specify or that is peculiar to the industry, such as:
Automotive electrical components, train control, telecommunications devices (mainline), traffic light control, electric power, combustion control, fire prevention or security systems, disaster prevention equipment, etc.
 - (ii) We may separately give you our support with a quality assurance program that you specify, when you think of a use such as:
Aviation or space equipment, submarine repeaters, nuclear power control systems, medical equipment for life support, etc.
 - (2) Recommended applications include:
Computers, office appliances, telecommunications devices (terminals, mobile units), measuring equipment, audiovisual equipment, home electric appliances, factory automation equipment, etc.