

SPECIFICATION FOR  
CONNECTOR USED FOR FPC/FFC WITH 1mm CONTACT SPACING  
COPING WITH AUTOMATIC MOUNTING & SMT  
HFW\_\_S-2STA\_\_LF / HFW\_\_S-2STB\_\_LF

## 1. SCOPE

This specification covers the requirements for the connector (HFW\_\_S-2ST\_\_LF) which the edge of 1mm spacing FPC(Flexible Printed circuit) and FFC(Flexible Flat Cable) are inserted into directly and connected to and which copes with automatic mounting and SMT.

## 2. APPLICABLE STANDARDS

JIS C 5402	Method for Test of Connectors for Electronic Equipment
JIS C 0806	Packaging of Electronic Components on Continuous Tapes (Surface Mount Components)
UL - 94	TESTS FOR FLAMMABILITY OF PLASTIC MATERIALS FOR PARTS IN DEVICES AND APPLIANCES.

## 3. CATALOG No.

	HFW	20	S	-	2	ST	B	E1	LF
Series									
Number of Contacts									
Straight									
For FPC/FFC									
Cope with automatic mounting & SMT									
Contact plating									
A: Selective gold plating									
B: All gold plating									
Plastic Tape Packaging									
Lead Free									

## 4. SHAPE, DIMENSIONS AND MATERIALS

See attached drawings.

## 5. ACCOMMODATED CONDUCTORS (FPC/FFC)

See attached drawings.

## 6. PACKAGING CONDITION

See attached drawings.

## 7. RECOMMENDED MOUNTING PATTERN DIMENSIONS

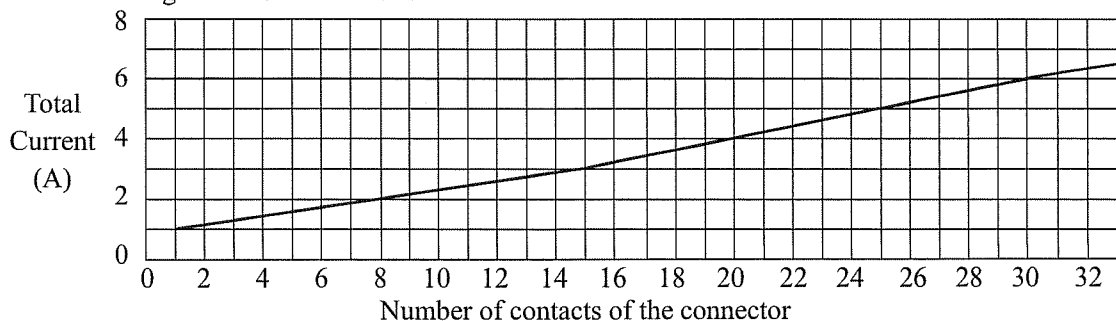
See attached drawings.

## 8. RATING

- 8-1. Voltage : A.C.100V      D.C.100V  
8-2. Current : A.C.1A      D.C.1A (Refer to the following note.)  
8-3. Operating Temperature : -55°C ~ +85°C  
(Including terminal temperature rises)

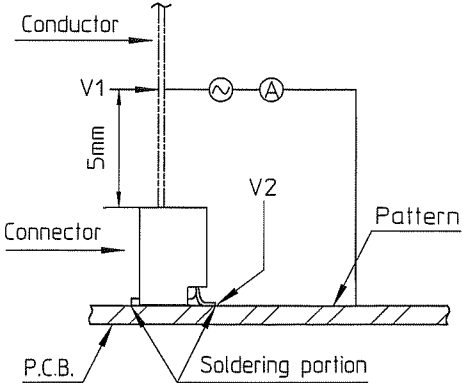
NOTE

Allowable maximum current for one contact is 1A. Total allowable current for a whole connector is the following values shown below.



## 9. PERFORMANCE CHARACTERISTICS

## 9-1. Electrical Performance

No.	Test Item	Test Method	Requirements
9-1-1	Contact resistance	<p>1) Measure contact resistance between <math>V_1</math>-<math>V_2</math> by voltage drop method using the following circuit by mating accommodated conductor stipulated in clause 5 after reflow soldering the connector on the P.C.B. and cleaning flux dregs.</p>  <p>2) Open circuit voltage : Less than A.C.20mV 3) Test current : Less than A.C.20mA</p>	<p>1) Initial value : Less than 30mΩ 2) Contact resistance after the test is in accordance with the value specified in each test item.</p>
9-1-2	Insulation resistance	<p>1) Measure insulation resistance between adjacent contacts in a connector individual. 2) Test voltage : D.C.500V 3) Read value one minute after applying test voltage.</p>	1) More than 500MΩ
9-1-3	Dielectric withstanding voltage	<p>1) For one minute, apply A.C.500V between adjacent contacts in a connector individual. 2) Set current : A.C.1mA</p>	1) Free from any short circuit and insulation breakdown.

## 9-2. Mechanical Performance

No.	Test Item	Test Method	Requirements
9-2-1	Durability (Insertion and extraction)	<p>1) Measure contact resistance before and after the test by the method in clause 9-1-1 by mating the accommodated conductor specified in clause 5. 2) Number of Insertion and extraction : 30 times 3) Speed of insertion and extraction : Less than 10 times per minute.</p>	<p>1) Initial contact resistance : Less than 30mΩ 2) Contact resistance after the test : Less than 50mΩ 3) Free from any defect such as break etc. on the connector and conductor.</p>
9-2-2	Vibration (Sinusoidal)	<p>JIS C 60068-2-6 (IEC60068-2-6) 1) Frequency range : 10 ~ 500Hz 2) Amplitude : 0.75mm or Acceleration : 100m/s<sup>2</sup> 3) Sweep rate : 1 octave/minute 4) Kind of test : Sweep endurance test 5) Test time : 10 cycles</p>	<p>1) During the test, no circuit opening for more than 1μs. 2) Free from any defect such as break, deformation, loosening and falling off etc. on each portion of the connector.</p>

## 9-3. Environmental Performance

No.	Test Item	Test Method	Requirements															
9-3-1	Damp heat (Steady state)	JIS C 60068-2-78 (IEC60068-2-78) 1)Measure contact resistance before and after the test by the method in clause 9-1-1 by mating the accommodated conductor specified in clause 5. 2)Measure insulation resistance after the test by the method in clause 9-1-2. 3)Bath temperature : 40°C 4)Bath humidity : 90 ~ 95% (relative humidity) 5)Period of exposure : 48 hours 6)Expose conductor and connector in mated condition and leave them under normal temperature. (Without insertion and separation)	1)Initial contact resistance : Less than 30mΩ 2)Contact resistance after the test : Less than 50mΩ 3)Insulation resistance after the test : More than 100MΩ															
9-3-2	Salt spray	JIS C 60068-2-11 (IEC60068-2-11) 1)Measure contact resistance before and after the test according to the method in clause 9-1-1 by mating the accommodated conductor specified in clause 5. 2)Salt solution concentration : 5% 3)Period of exposure : 48 hours 4)Expose conductor and connector in mated condition and leave them under normal temperature after posttreatment. (24 hours)	1)Initial contact resistance : Less than 30mΩ 2)Contact resistance after the test : Less than 50mΩ															
9-3-3	Change of temperature	JIS C 0025 (IEC60068-2-14) 1)Measure contact resistance before and after the test according to the method in clause 9-1-1 by mating accommodated conductor in clause 5. 2)One cycle of temperature is as follow and test 5 cycles. <table border="1"><tr><th>Step</th><th>Temp.(°C)</th><th>Time(min.)</th></tr><tr><td>1</td><td>-55±3</td><td>30</td></tr><tr><td>2</td><td>25±2</td><td>2 ~ 3</td></tr><tr><td>3</td><td>85±2</td><td>30</td></tr><tr><td>4</td><td>25±2</td><td>2 ~ 3</td></tr></table> 3)Expose conductor and connector in mated condition and leave them under normal temperature.	Step	Temp.(°C)	Time(min.)	1	-55±3	30	2	25±2	2 ~ 3	3	85±2	30	4	25±2	2 ~ 3	1)Initial contact resistance : Less than 30mΩ 2)Contact resistance after the test : Less than 50mΩ 3)Free from any defect such as crack, warping and deformation etc. on each portion the connector.
Step	Temp.(°C)	Time(min.)																
1	-55±3	30																
2	25±2	2 ~ 3																
3	85±2	30																
4	25±2	2 ~ 3																

## 9-4. Other performance

No.	Test Item	Test Method	Requirements
9-4-1	Soldering (Resistance to reflow soldering)	<p>JIS C 60068-2-58 (IEC60068-2-58)</p> <p>1) Solder by setting reflow bath on the following condition.</p> <p>2) Preheating : 150~180°C, 120±5s</p> <p>3) Soldering : 220°C min. 60s max.</p> <p>4) Peak : 245°C min. 20s max. (Peak 255°C max.)</p> <p>(See Diagram A)</p> <p>NOTE: Temperature must be measured at contact terminal portion and peak temperature on the upper surface of P.C.B must be less than 260°C.</p> <p>4) Solder paste to be used is JIS Z 3282 Sn96.5Ag3.0Cu0.5</p>	<p>1) Contact resistance after the test : Less than 50Ω</p> <p>2) Insulation resistance after the test : More than 100MΩ</p> <p>3) No short circuit and insulation breakdown for dielectric withstanding voltage test after this test.</p> <p>4) Free from any damage on performance and contact performance after soldering.</p>
		<p><u>Diagram A</u></p> <p>Resistance to reflow soldering profile</p>	
9-4-2	Soldering (Solderability) (Reflow)	<p>JIS C 60068-2-58 (IEC60068-2-58)</p> <p>1) Solder by setting reflow bath on the following condition.</p> <p>2) Preheating : 150~180°C, 60~120s</p> <p>3) Soldering : 225°C min., 20±5s (Peak 235°C max.)</p> <p>(See Diagram B)</p> <p>NOTE: Temperature must be measured at contact terminal portion and peak temperature on the upper surface of P.C.B must be less than 260°C.</p> <p>4) Solder paste to be used is JIS Z 3282 Sn96.5Ag3.0Cu0.5</p>	<p>1) Actual soldered area must be more than 95% of the dipped area intended to be soldered.</p>
		<p><u>Diagram B</u></p> <p>Solderability profile</p>	
9-4-3	Conductor retention force (Reference)	<p>1) Measure total extraction force (initial value) by using accommodated conductor specified in clause 5.</p>	<p>1) More than 0.35N/contact</p>

## 10. INDICATION AND PACKAGING

### 10-1. Indication

- 1) Catalog number and lot number are not indicated on the connector.
- 2) Catalog number and quantity shall be indicated on the surface of the package box.

### 10-2. Packaging

- 1) The connector individuals are packed by tapes with specified quantity in accordance with [JIS C 0806 "Packaging of Electronic Components on Continuous Tapes (Surface Mount components)"] and put into package box in accordance with our packaging specification.

## 11. Remarks

- 11-1. Retention force for accommodated conductor specified in clause 9-4-3 differs due to its kind, structure and surface treatment of conductor. Therefore, the value of retention force specified in the clause for performance is reference value.
- 11-2. Please use for Gold plating cable as accommodated conductor.
- 11-3. Please refer to the "Handling procedures and remarks" before use.



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- Экспресс доставка в любую точку России;
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- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



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