

SPECIFICATION FOR  
 CONNECTOR USED FOR FPC WITH 0.5mm CONTACT SPACING  
 COPING WITH AUTOMATIC MOUNTING & SMT  
SFV\_\_R-1/2ST\_E\_HLF

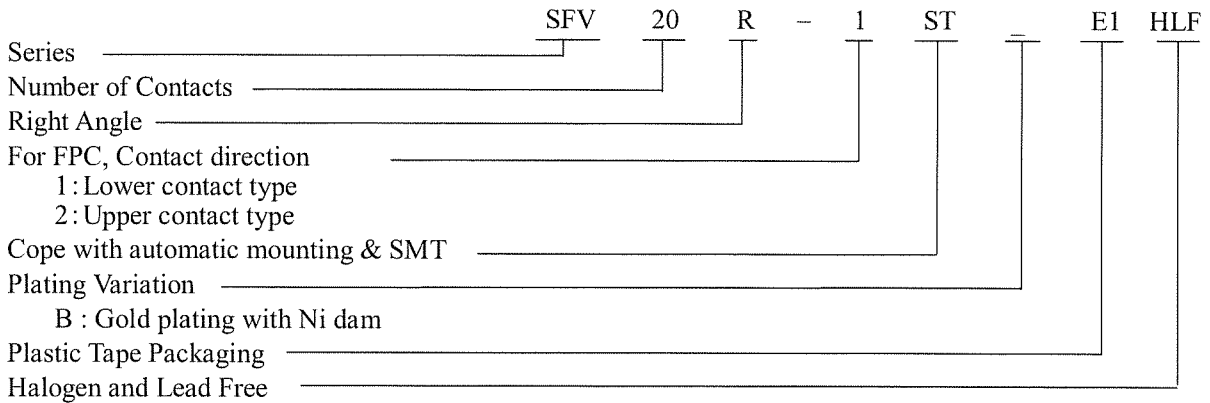
1. SCOPE

This specification covers the requirements for the connector (SFV\_\_R-1/2ST\_E\_HLF) with 0.5mm spacing to which the edge of FPC(Flexible Printed Circuit) can be connected by Zero-Insertion-Force method 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 Packing 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. STRUCTURE



4. CONNECTOR 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

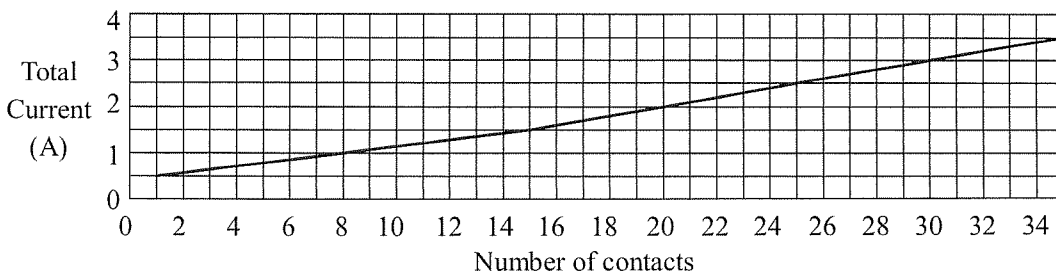
See attached drawings.

8. RATING

- 8-1. Voltage: A.C.50V      D.C.50V
- 8-2. Current: A.C.0.5A      D.C.0.5A (Refer to the following note.)
- 8-3. Operating Temperature: -55°C ~ +105°C (Including terminal temperature rises)

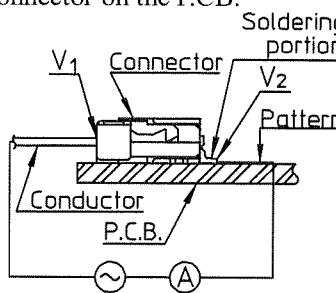
NOTE

Allowable maximum current for one contact is 0.5A. Total allowable current for a whole connector is the value which is shown in the following figure.



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 by the following circuit by mating accommodated conductor stipulated in clause 5 after reflow soldering the connector on the P.C.B.</p>  <p>2) Open circuit voltage: Less than 20mV 3) Test current: Less than 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>	<p>1) More than 100MΩ</p>
9-1-3	Dielectric withstanding voltage	<p>1) For one minute, apply A.C.200V between adjacent contacts in a connector individual. 2) Leakage current: 1mA</p>	<p>1) Free from any short circuit and insulation breakdown.</p>

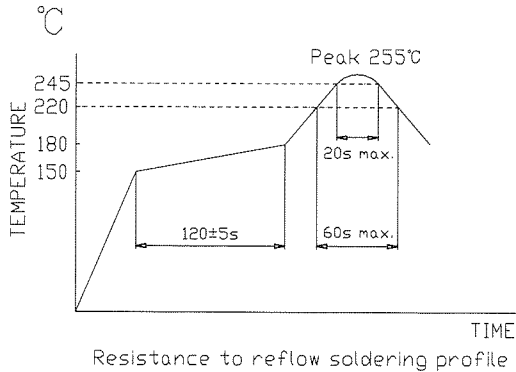
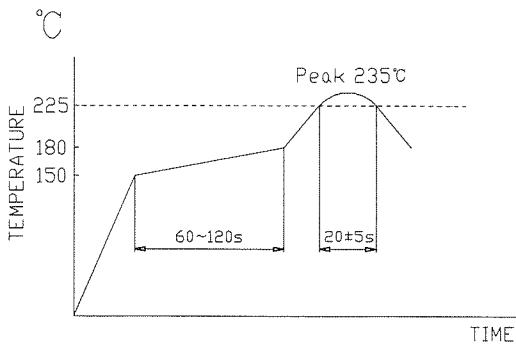
9-2. Mechanical Performance

No.	Test Item	Test Method	Requirements
9-2-1	Durability (Slider operation)	<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 slider open and close: 20 times (Insert and extract the conductor for each opening of the slider.)</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) 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 using the accommodated conductor specified in clause 5. 2)Measure insulation resistance after the test by the method in clause 9-1-2. 3)Temperature: 40°C 4)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 using accommodated conductor specified in clause 5. 2)Salt solution concentration: 5% by weight 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 using accommodated conductor in clause 5. 2)One cycle of temperature is as follow and test 5 cycles. <table border="1" data-bbox="632 1294 1038 1464"> <thead> <tr> <th>Step</th> <th>Temp.(°C)</th> <th>Time(min.)</th> </tr> </thead> <tbody> <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> </tbody> </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±5 s</p> <p>3)Soldering :220°C min. 60s max.</p> <p>4)Peak :245°C min. 20s max. (Peak 255°C max.)</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 50mΩ</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>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 90% 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 initial retention force after inserted and locked by using accommodated conductor specified in clause 5.</p> <p>*FCI Test FPC : t=0.33mm Gold plating</p>	<p>1)More than 0.25N/contact</p>

## 10. INDICATION AND PACKAGING

### 10-1. Indication

- 1) Catalog number and lot number are not be 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 FCI JAPAN packaging specification.

## 11. REMARKS

- 11-1. Please refer to the "Handling procedures and remarks" before use.
- 11-2. Retention force for accommodated conductor specified in clause 9-4-3 differs due to different thickness, structure and surface treatment of conductor. Therefore, the value of retention force specified in the clause for performance is reference value.
- 11-3. Since this connector can not be used for CIC (Conductor such as silver paste, carbon etc.) as accommodated conductor, please consult us separately.

## 12. RECOMMENDED REFLOW PROFILE

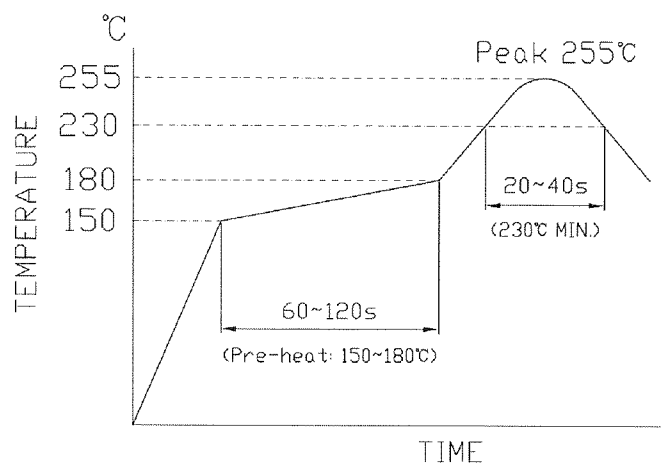


Diagram C. Recommended reflow temperature profile

Note: Please check the reflow soldering condition for your own application beforehand due to different conditions with soldering devices, P.C. Boards, etc.  
No moisture treatment before reflow process.