NUMBER	TYPE	
SC-HFWR 04	PRODUCT SPECIFICATION	FCI

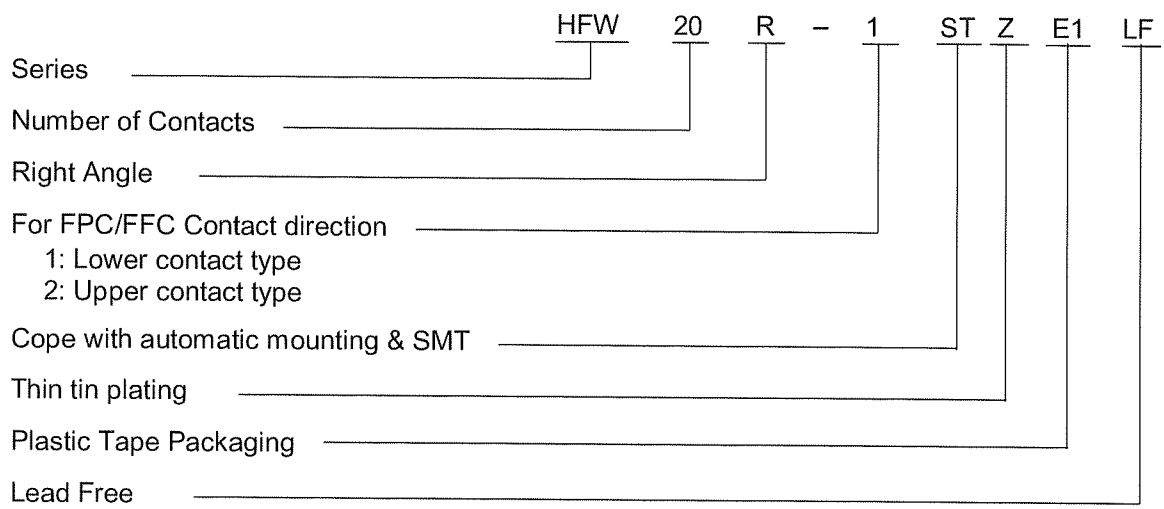
TITLE	PAGE	REVISION
1mm CONTACT SPACING FPC/FFC CONNECTOR (HFW_ _R-1/2STZ_ _LF)	1 of 9	D
	AUTHORIZED BY: M.Yamashita	DATE: 18 Feb 10
	CLASSIFICATION: UNRESTRICTED	

1. SCOPE
This specification covers the requirements for the connector (HFW_ _ R-1/2STZ_ _ 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. STRUCTURE



4. CONNECTOR SHAPE, DIMENSIONS AND MARTERIALS
Refer product drawings.

5. ACCOMMODATED CONDUCTORS (FPC/FFC)
Refer product drawings.

6. PACKAGING CONDITION
Refer product drawings.

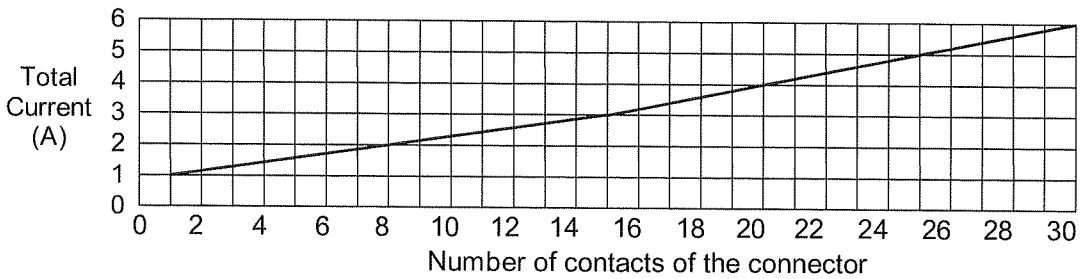
7. RECOMMENDED MOUNTING PATTERN DIMENSIONS
Refer product drawings.

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 ~ +105°C (Including terminal temperature rises)	

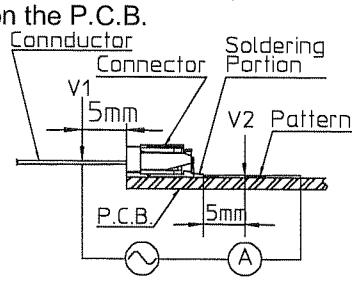
NOTE

Allowable maximum current for one contact is 1A. 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	1) Measure contact resistance between V_1-V_2 by voltage drop method using the following circuit by mating accommodated conductor specified in clause 5 after reflow soldering the connector on the P.C.B.  2) Open circuit voltage : Less than A.C. 20mV 3) Test current : Less than A.C. 20mA	1) Initial value: Less than 30mΩ 2) Contact resistance after the test is in accordance with the value specified in each test item.
9-1-2	Insulation resistance	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.	1) More than 500MΩ
9-1-3	Dielectric withstanding voltage	1) For one minute, apply A.C. 500V between adjacent contacts in a connector individual. 2) Set current : A.C. 1mA	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)	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) Number of insertion and extraction: 30 times. 3) Speed of insertion and extraction: Less than 10 times per minute.	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 the conductor.
9-2-2	Vibration (Sinusoidal)	JIS C 60068-2-6 (IEC60068-2-6) 1) Frequency range : 10 ~ 500Hz 2) Amplitude : 0.75mm or Acceleration : 100m/s^2 3) Sweep rate : 1 octave / minute 4) Kind of test : Sweep endurance test 5) Test time : 10 cycles	1) During the test, no circuit opening for more than 1μs 2) Free from any defect such as break, deformation, loosing and falling off etc. on each portion of the connector.

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) Bath temperature : 40°C 4) Bath humidity : 90~95% (Relative humidity) 5) Period of exposure : 48 hours 6) Expose conductor and connector after mating them (Without insertion and extraction) and dry them naturally after posttreatment.	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% 3) Period of exposure : 48 hours 4) Expose conductor and connector in mated condition and dry them naturally after post treatment. (24 hours)	1) Initial contact resistance Less than 30mΩ 2) Contact resistance after the test: Less than 50mΩ

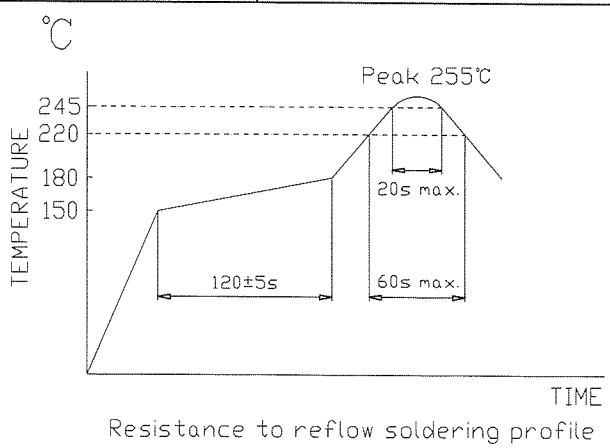
No.	Test Item	Test Method	Requirements
9-3-3	Change of temperature	JIS C 0025 (IEC60068-2-14) 1) Measure contact resistance before and after the test according to the method in clause 9-1-1 by mating accommodated conductor in clause 5. 2) One cycle of temperature is as follow and test 5 cycles. 3) Expose conductor and connector by mating them and leave them under normal temperature.	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 of the connector.

Step	Temp.(°C)	Time (min.)
1	-55±3	30
2	25±2	2 ~ 3
3	105±2	30
4	25±2	2 ~ 3

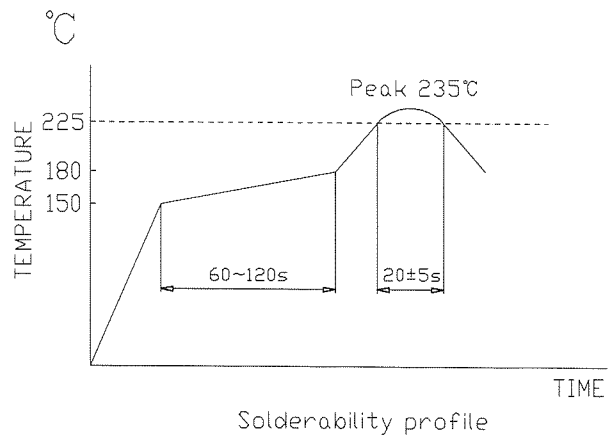
9-4. Other performance

No.	Test Item	Test Method	Requirements
9-4-1	Soldering (Resistance to reflow soldering)	JIS C 60068-2-58 (IEC60068-2-58) 1) Solder by setting reflow bath on the following condition. 2) Preheating: 150~180°C, 120±5s 3) Soldering : 220°C min. 60s max. 4) Peak : 245°C min. 20s max. (Peak 255°C max.) (See Diagram A) 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. 5) Solder paste to be used is JIS Z 3282 Sn96.5Ag3.0Cu0.5	1) Contact resistance after the test Less than 50mΩ 2) Insulation resistance after The test: More than 100MΩ 3) No short circuit and insulation Breakdown for dielectric withstanding voltage test after this test. 4) Free from any damage on performance and contact performance after soldering.

Diagram A



Resistance to reflow soldering profile

No.	Test Item	Test Method	Requirements
9-4-2	Soldering (Solderability) (Reflow)	JIS C 60068-2-58 (IEC60068-2-58) 1) Solder by setting reflow bath on the following condition. 2) Preheating: 150~180°C, 60~120s 3) Soldering : 225°C min., 20±5s (Peak 235°C max.) (See Diagram B) 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. 4) Solder paste to be used is JIS Z 3282 Sn96.5Ag3.0Cu0.5	1) Actual soldered area must be more than 95% of the dipped area intended to be soldered.
		Diagram B  Solderability profile	
9-4-3	Cable insertion force and retention force (Reference)	1) Measure insertion force and retention force by using the accommodated conductor (cable)	Initial Insertion: Less than 1.7N/contact Retention: More than 0.49N/contact

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. Cleaning of flux is recommended by considering the reliability of insulation resistance and corrosion characteristic after soldered.

11-2. Insertion and extraction force for accommodated conductor (cable) specified in clause 9-4-3 differs due to it's kind, structure and surface treatment of conductor. Therefore, the force value 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.

11-4. Please refer to the "Handing procedures and remarks" before use.

12. RECOMMENDED REFLOW PROFILE

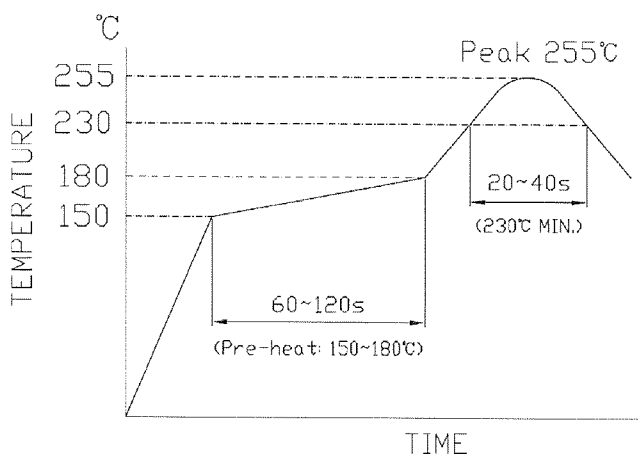


Diagram C. Recommended reflow temperature profile

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.

13. REVISION RECORD

REV.	PAGE	DESCRIPTION	ECR #	DATE
A	ALL	New Release	J05-0653	14 Oct 05
B	ALL	Corrected writing error (Contact resistance unit: m --> mΩ)	J06-0030	25 Jan 06
C	ALL	Revise spec for lead-free solder Add "Diagram A" Resistance to Reflow Soldering Profile. Add "Diagram B" Solderability Profile. Add "Diagram C" Recommended Reflow Profile.	J09-0360	05 Oct 09
D	ALL	Changed spec format	J10-0039	18 Feb 10