SPECIFICATION FOR CONNECTOR USED FOR CIC WITH 1mm CONTACT SPACING COPING WITH AUTOMATIC MOUNTING & SMT SFW_ _S-6ST_E_LF

1. SCOPE

This specification covers the requirements for the connector (SFW_ _S-6ST_E_LF) which the edge of 1mm spacing CIC (Conductor such as silver paste, carbon etc.) 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	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

SFW 20 S - 6 STM E1 LF

- SFW — Series
- 20 — Number of Contacts
- S — Straight
- 6 — For CIC
- STM — Variation
  - STM : Cope with Automatic Mounting (SMT) with Mounting Plate
  - ST : Cope with Automatic Mounting (SMT) without Mounting Plate
- E1 — Plastic Tape Packaging
- LF — Lead Free

4. SHAPE, DIMENSIONS AND MATERIALS

See attached drawings.

5. ACCOMMODATED CONDUCTORS (CIC)

See attached drawings.

6. PACKAGING CONDITION

See attached drawings.

7. RECOMMENDED MOUNTING PATTERN DIMENSIONS

See attached drawings.

8. RATING

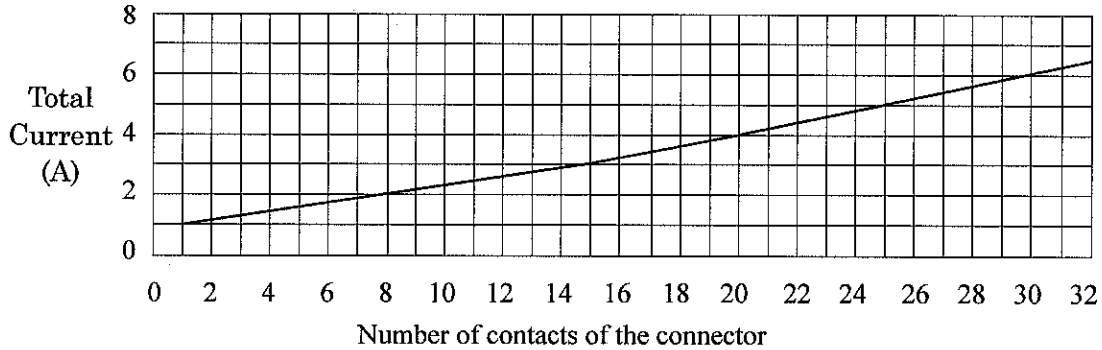
8-1. Voltage : A.C.100V D.C.100V

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)

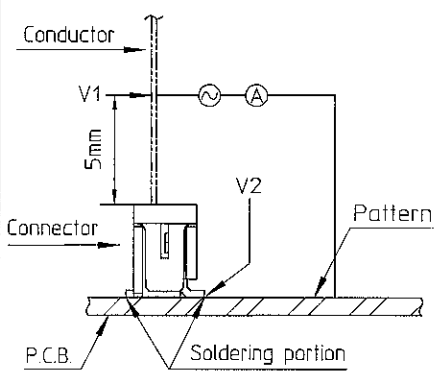
NOTE

Allowable maximum current for one contact is 1A. Total allowable current for a whole connector is the 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 stipulated in clause 5 after reflow soldering the connector on the P.CB. and cleaning flux dregs. 	1)Initial value : Less than 30Ω 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 (Slider operation)	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 slider open and close : 10 times (Insert and extract the conductor for each opening of the slider.)	1)Initial contact resistance : Less than 30Ω 2)Contact resistance after the test : Less than 50Ω 3)Free from any defect such as break etc. on the connector and conductor.
9-2-2	Vibration (Sinusoidal)	JIS C 0040 1)Use the conductor in clause 5. 2)Kind of test : Sweep endurance test 3)Frequency range : 10 ~ 500 Hz 4)Full amplitude, acceleration amplitude : 1.5mm or 98m/s^2 5)Sweep rate : About 11 minutes for (10-500-10Hz) 6)Test time : 6 hours (2 hours for each axis)	1)During the test, no circuit opening for more than 1μsec. 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 0022 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%RH 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 30Ω 2)Contact resistance after the test : Less than 50Ω 3)Insulation resistance after the test : More than 100MΩ
9-3-2	Change of temperature	JIS C 0025 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.	1)Initial contact resistance : Less than 30Ω 2)Contact resistance after the test : Less than 50Ω 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

3)Expose conductor and connector by mating them and leave them under normal temperature.

9-4. Other performance

No.	Test Item	Test Method	Requirements
9-4-1	Soldering (Resistance to reflow soldering)	1)Solder by setting reflow bath on the following condition. 2)Preheating : 150±10°C, 60~120 sec. 3)Soldering : 240±5°C, 30±1sec. 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 H60A or H63A. Soldering particle is more than 200 mesh and flux is inactive rosin family flux.	1)Contact resistance after the test : Less than 50Ω 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.
9-4-2	Soldering (Solderability) (Reflow)	1)Solder by setting reflow bath on the following condition. 2)Preheating : 150±10°C, 60~120 sec. 3)Soldering : 230±5°C,10±1sec. 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 H60A or H63A. Soldering particle is more than 200 mesh and flux is inactive rosin family flux.	1)Actual soldered area must be more than 90% of the dipped area intended to be soldered.
9-4-3	Conductor retention force (Reference)	1)Measure initial retention force after inserted and locked by using accommodated conductor specified in clause 5.	1)More than 0.49N/contact for CIC (More than 50g/contact for CIC)

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 it's kind, structure and surface treatment of conductor. Therefore, the value of retention force specified in the clause for performance is reference value.

11-2. Since this connector can not be used for FPC(Flexible Printed Circuit) and FFC(Flexible Flat Cable) as accommodated conductor, please consult us separately.

11-3. Please refer to the "Handing procedures and remarks" before use.

CAT. NO. & DIMENSIONS

NOTE3	NO. OF CONTACTS (n)	CAT. NO.	DIMENSIONS (NOTE2) A ±0.2	B ±0.2	C±0.2
	4	SFW4S-6ST___LF	10.4	5.24	3
	5	SFW5S-6ST___LF	11.4	6.24	4
	6	SFW6S-6ST___LF	12.4	7.24	5
*	7	SFW7S-6ST___LF	13.4	8.24	6
	8	SFW8S-6ST___LF	14.4	9.24	7
*	9	SFW9S-6ST___LF	15.4	10.24	8
	10	SFW10S-6ST___LF	16.4	11.24	9
	11	SFW11S-6ST___LF	17.4	12.24	10
*	12	SFW12S-6ST___LF	18.4	13.24	11
	13	SFW13S-6ST___LF	19.4	14.24	12
	14	SFW14S-6ST___LF	20.4	15.24	13
	15	SFW15S-6ST___LF	21.4	16.24	14
	16	SFW16S-6ST___LF	22.4	17.24	15
	17	SFW17S-6ST___LF	23.4	18.24	16
*	18	SFW18S-6ST___LF	24.4	19.24	17
*	19	SFW19S-6ST___LF	25.4	20.24	18
	20	SFW20S-6ST___LF	26.4	21.24	19
*	21	SFW21S-6ST___LF	27.4	22.24	20
	22	SFW22S-6ST___LF	28.4	23.24	21
	23	SFW23S-6ST___LF	29.4	24.24	22
	24	SFW24S-6ST___LF	30.4	25.24	23
*	25	SFW25S-6ST___LF	31.4	26.24	24
	26	SFW26S-6ST___LF	32.4	27.24	25
*	27	SFW27S-6ST___LF	33.4	28.24	26
	28	SFW28S-6ST___LF	34.4	29.24	27
	29	SFW29S-6ST___LF	35.4	30.24	28
	30	SFW30S-6ST___LF	36.4	31.24	29
*	31	SFW31S-6ST___LF	37.4	32.24	30
*	32	SFW32S-6ST___LF	38.4	33.24	31

CAT. NO. SFW (n) S -6 ST___LF

SERIES — SFW

NO. OF CONTACTS — (n)

STRAIGHT TYPE — S

FOR CIC — 6

VARIATION — ST
- STM : FOR AUTOMATIC MOUNTING (SMT) WITH MOUNTING PLATE
- ST : FOR AUTOMATIC MOUNTING (SMT) WITHOUT MOUNTING PLATE

PACKAGE STYLE — ___

LEAD FREE — LF

NOTES
1. THIS PRODUCT IS THE CONNECTOR, DESIGNED TO TREMINATE CIC AND COPES WITH AUTOMATIC MOUNTING (SMT).
2. SEE PART DRAWINGS FOR DIMENSIONS A.B.C.
3. PLEASE CONSULT US IN CASE OF USING PARTS WITH * MARK

mat'l. code

surface 58 ISO 1302 | tolerance ISO 406 ISO 1101 | projection | product family 58SF | CODE JP

tolerances unless otherwise specified: angles / linear

ltr	ecn no	dr	date
A	J05-0377	H.T	2005-6-22
B	J05-0547	H.T	2005-8-30
C	J06-0430	H.T	2006-10-19
D	J07-0407	H.T	2007-8-9

mm

scale X

dr 2007-8-9
engr 2007-8-9
chr 2007-8-9
appd 2007-8-8

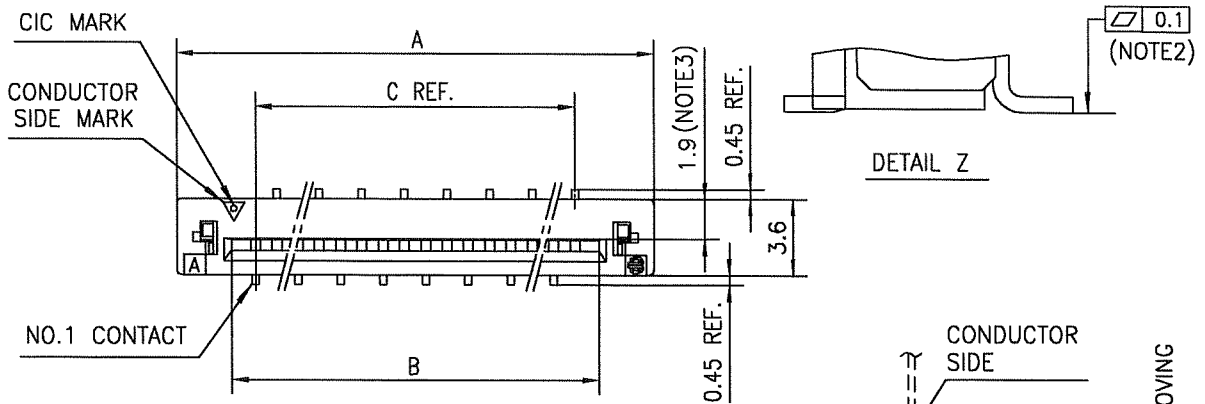
title: CAT. NO. TABLE FOR 1mm SPACING SMT CONNECTOR (CAT.No.SFW__S-6ST___LF)

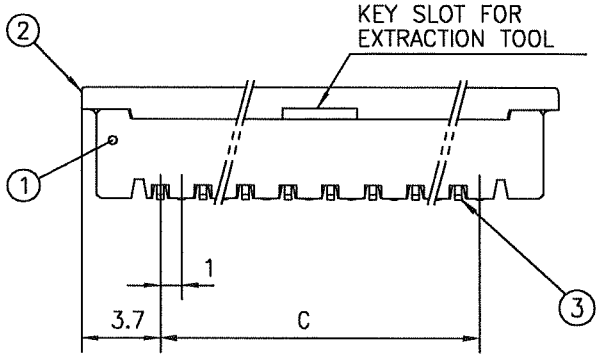
dwg no JSA 96521 — sheet 1 of 1 — size A4

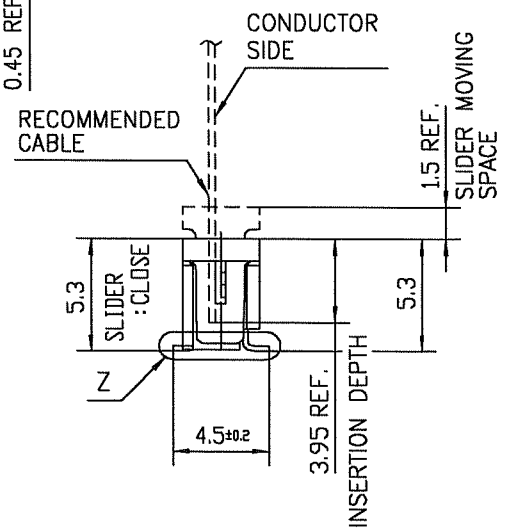
type Product Customer Drawing

sheet index — revision D — sheet 1 — Rev. D

SC-SFWS 04 JSA96522 96523 96524 93525 93904
form: A4



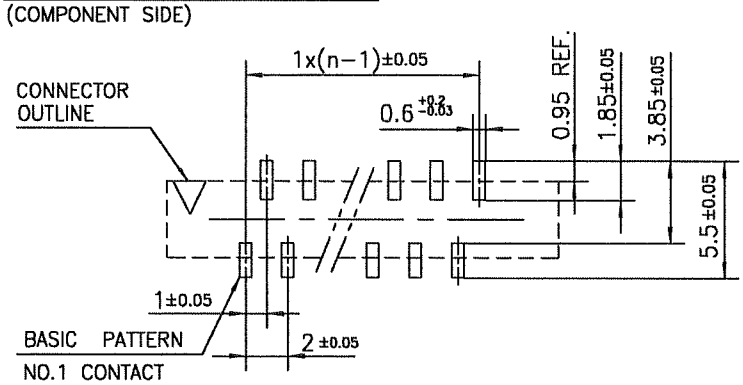




PT. NO.	PARTS NAME	MATERIAL	Q'TY	NOTE
1	HOUSING	GLASS FILLED THERMOPLASTIC RATED. (UL94V-0)	1	COLOR : BROWN
2	SLIDER		1	COLOR : BLACK
3	CONTACT	PHOSPHOR BRONZE	n	PLATING : TIN Ni UNDER PLATED(LEAD FREE)

n : NO. OF CONTACTS

RECOMMENDED PC BOARD LAYOUT
(COMPONENT SIDE)



NOTES

1. THIS PRODUCT IS THE CONNECTOR DESIGNED TO TERMINATE CIC AND COPES WITH AUTOMATIC MOUNTING (SMT).
2. FLATNESS OF CONTACT TERMINAL MUST BE WITHIN TOLERANCE IN Z PORTION DETAILED DRAWING.
3. THIS DIMENSION IS SPACE FOR THE NOZZLE OF MOUNTER.
4. THIS PRODUCT MEETS EUROPEAN UNION DIRECTIVES AND OTHER COUNTRY REGULATIONS AS DESCRIBED IN GS-22-008
5. THE HOUSING WILL WITHSTAND EXPOSURE TO 260°C PEAK TEMPERATURE FOR 10 SECONDS IN A REFLOW SOLDERING OVEN.

ltr	ecn no	dr	date
A	J05-0377	H.T	6/22/'05
B	J05-0731	H.T	10/28/'05
C	J06-0430	H.T	10/19/'06

mat'l. code

surface 58 ISO 1302

tolerance ISO 406 ISO 1101

tolerances unless otherwise specified: angles; linear ±0.2

projection

mm

scale X

dr	H.Takahashi	10/19/06
engr	H.Takahashi	10/19/06
chr	R. Shouji	10/19/'06
appd	S. Okuda	10/20/'06

product family 58SF

CODE JP

title: 1mm SPACING SURFACE MOUNT CIC CONNECTOR (CAT.No.SFW__S-6ST__LF)

dwg no JSA 96522

sheet 1 of 1

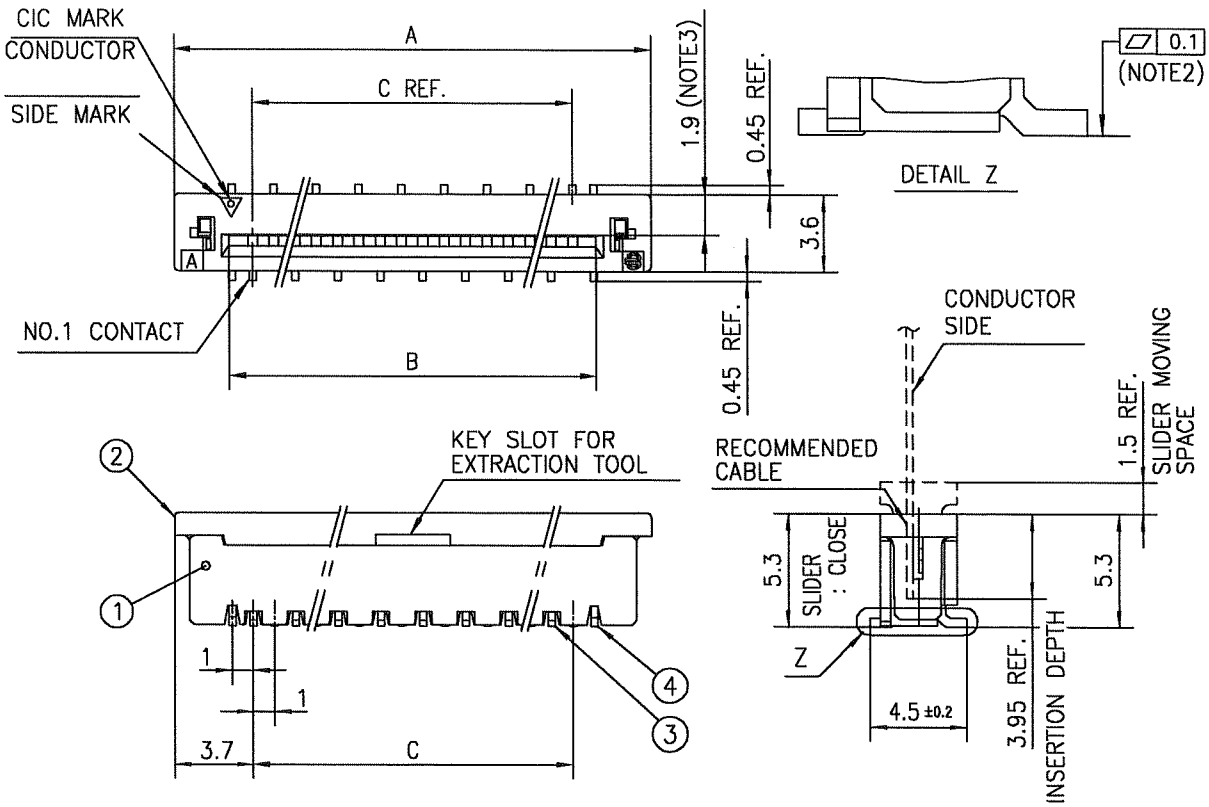
size A4

type Product Customer Drawing

sheet index	revision	C
	sheet	1

Rev. C

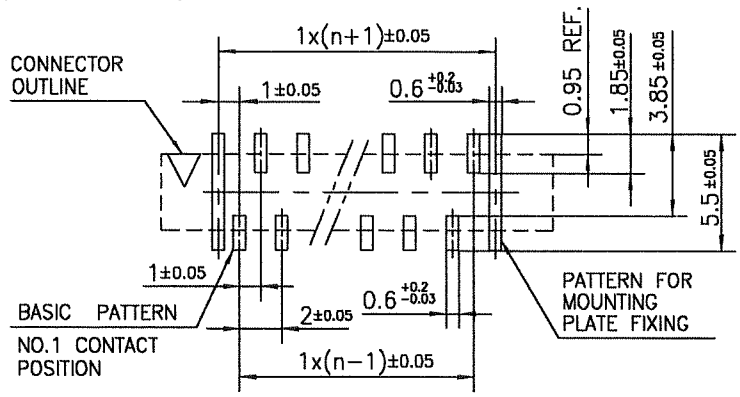
SC-SFWS 04 JSA96521
form: A4



PT. NO.	PARTS NAME	MATERIAL	Q'TY	NOTE
1	HOUSING	GLASS FILLED THERMOPLASTIC RATED. (UL94V-0)	1	COLOR : ROWN
2	SLIDER		1	COLOR : BLACK
3	CONTACT	PHOSPHOR BRONZE	n	PLATING : TIN Ni UNDER PLATED(LEAD FREE)
4	MOUNTING PLATE	BRASS	2	

n : NO. OF CONTACTS

RECOMMENDED PC BOARD LAYOUT
(COMPONENT SIDE)



NOTES

1. THIS PRODUCT IS THE CONNECTOR DESIGNED TO TERMINATE CIC AND COPES WITH AUTOMATIC MOUNTING (SMT).
2. FLATNESS OF CONTACT TERMINAL AND MOUNTING PLATE MUST BE WITHIN TOLERANCE IN Z PORTION DETAILED DRAWING.
3. THIS DIMENSION IS SPACE FOR THE NOZZLE OF MOUNTER.
4. THIS PRODUCT MEETS EUROPEAN UNION DIRECTIVES AND OTHER COUNTRY REGULATIONS AS DESCRIBED IN GS-22-008
5. THE HOUSING WILL WITHSTAND EXPOSURE TO 260°C PEAK TEMPERATURE FOR 10 SECONDS IN A REFLOW SOLDERING OVEN.

ltr	ecn no	dr	date
A	J05-0377	H.T	6/22/'05
B	J05-0731	H.T	10/28/'05
C	J06-0430	H.T	10/19/'06

mat'l. code

surface 58 ISO 1302

tolerance ISO 406 ISO 1101

tolerances unless otherwise specified: angles, linear ±0.2

projection

mm

scale X

dr	H. Takahashi	10/19/'06
engr	H. Takahashi	10/19/'06
chr	R. Sprenger	10/19/'06
appd	S. Andersen	10/20/'06

product family 58SF

CODE JP

title 1mm SPACING SURFACE MOUNT CIC CONNECTOR (CAT.No.SFW__S-6STM__LF)

dwg no JSA 96523

sheet 1 of 1

size A4

type Product Customer Drawing

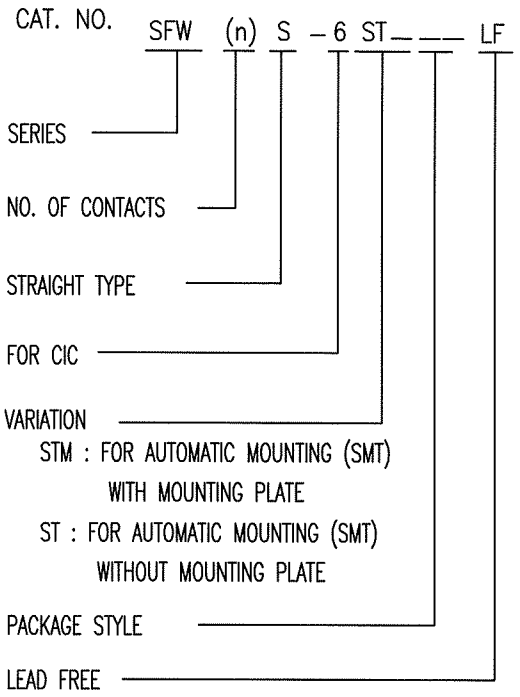
sheet index	revision sheet	C 1

Rev. C

SC-SFWS 04 JSA96521
form: A4

CAT. NO. & DIMENSIONS

(NOTE4)	NO. OF CONTACTS (n)	CAT. NO. (NOTE2)	DIMENSIONS (NOTE3)		
			D ± 5	E ± 0.3	F ± 0.1
	4	SFW4S-6ST_E1LF	28.4	24	—
	5	SFW5S-6ST_E1LF	28.4	24	—
	6	SFW6S-6ST_E1LF	28.4	24	—
*	7	SFW7S-6ST_E1LF	28.4	24	—
	8	SFW8S-6ST_E1LF	28.4	24	—
*	9	SFW9S-6ST_E1LF	28.4	24	—
	10	SFW10S-6ST_E1LF	28.4	24	—
	11	SFW11S-6ST_E1LF	28.4	24	—
*	12	SFW12S-6ST_E1LF	36.4	32	28.4
	13	SFW13S-6ST_E1LF	36.4	32	28.4
	14	SFW14S-6ST_E1LF	36.4	32	28.4
	15	SFW15S-6ST_E1LF	36.4	32	28.4
	16	SFW16S-6ST_E1LF	48.4	44	40.4
	17	SFW17S-6ST_E1LF	48.4	44	40.4
*	18	SFW18S-6ST_E1LF	48.4	44	40.4
*	19	SFW19S-6ST_E1LF	48.4	44	40.4
	20	SFW20S-6ST_E1LF	48.4	44	40.4
*	21	SFW21S-6ST_E1LF	48.4	44	40.4
	22	SFW22S-6ST_E1LF	48.4	44	40.4
	23	SFW23S-6ST_E1LF	48.4	44	40.4
	24	SFW24S-6ST_E1LF	48.4	44	40.4
*	25	SFW25S-6ST_E1LF	48.4	44	40.4
	26	SFW26S-6ST_E1LF	48.4	44	40.4
*	27	SFW27S-6ST_E1LF	60.4	56	52.4
	28	SFW28S-6ST_E1LF	60.4	56	52.4
	29	SFW29S-6ST_E1LF	60.4	56	52.4
	30	SFW30S-6ST_E1LF	60.4	56	52.4
*	31	SFW31S-6ST_E1LF	60.4	56	52.4
*	32	SFW32S-6ST_E1LF	60.4	56	52.4



NOTES

1. THIS PRODUCT IS THE CONNECTOR DESIGNED TO TERMINATE CIC AND COPES WITH AUTOMATIC MOUNTING (SMT).
2. THIS CATALOG NO. INDICATES PLASTIC TAPE PACKAGED CONNECTOR.
3. SEE PART DRAWINGS FOR DIMENSIONS D~F.
4. PLEASE CONSULT US IN CASE OF USING PARTS WITH * MARK.

ltr	ecn no	dr	date
A	J05-0377	H.T	2005-6-22
B	J05-0547	H.T	2005-8-30
C	J06-0430	H.T	2006-10-19
D	J07-0407	H.T	2007-8-9

mat'l. code

surface ISO 1302 58 / tolerance ISO 406 ISO 1101

tolerances unless otherwise specified: angles, linear

projection

mm

scale X

dr	K. Takahashi	2007-8-9
engr	K. Takahashi	2007-8-9
chr	R. Stacey	2007-8-9
appd	S. Buchanan	2007-8-16

product family 58SF — CODE JP

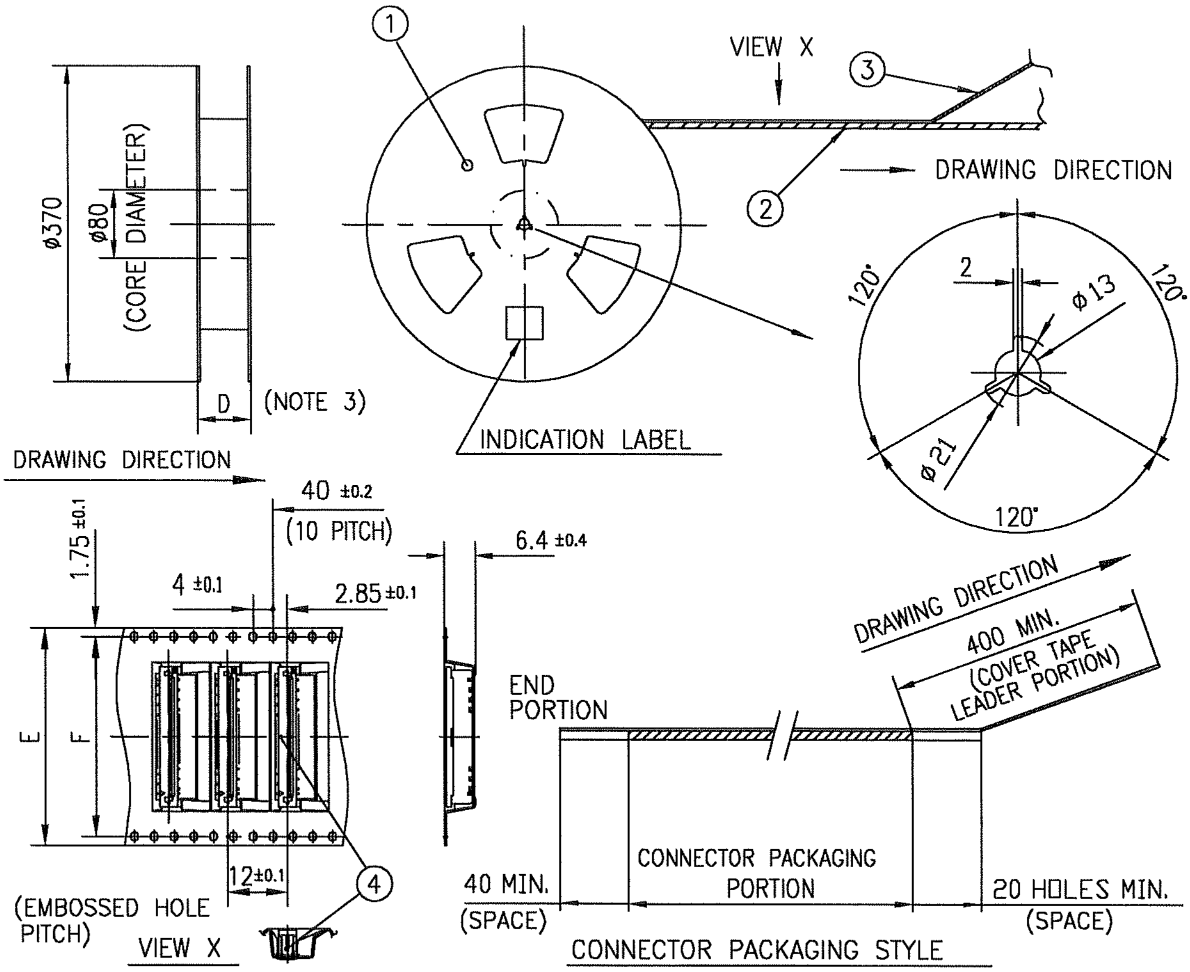
title: CAT. NO. TABLE FOR PLASTIC TAPE PACKAGED 1mm SPACING SMT CONN. (CAT.No.SFW__S-6ST_E1LF)

dwg no JSA 96524 — sheet 1 of 1 — size A4

type Product Customer Drawing

sheet index — revision D — sheet 1 — Rev. D

SC-SFWS 04 JSA96521 96525
form: A4



PT. NO.	PARTS NAME	CAT. NO.	MATERIAL	Q'TY	NOTE
1	REEL	————	CARDBOARD	1	COLOR:GRAY
2	PLASTIC (EMBOSSED) TAPE	————	PET	——	COLOR:TRANSPARENCY
3	COVER	————	POLYESTER	——	COLOR:TRANSPARENCY
4	CONNECTOR	SFW__S-6ST___LF	SEE ATTACHED DWG.	1000	————

NOTES

1. THIS IS PLASTIC TAPE PACKAGED CONNECTOR USED FOR CIC AND COPES WITH AUTOMATIC MOUNTING (SMT).
2. SEE JIS C 0806 (PACKING OF ELECTRONIC COMPONENTS ON CONTINUOUS TAPES (SURFACE MOUNTING DEVICES)) FOR SHAPE AND DIMENSIONS OF PLASTIC (EMBOSSED) TAPE AND REEL.
3. D DIMENSION IS PORTION OF THE CORE.

mat'l. code	surface 58 ISO 1302	tolerance ISO 406 ISO 1101	projection
ltr / ecn no / dr / date	tolerances unless otherwise specified		mm
A / J05-0377 / H.T / 6/22/'05	angles ±5'	linear ±5	scale X
B / J06-0430 / H.T / 10/19/'06			

dr 10/19/'06
engr 10/19/'06
chr 10/19/'06
appd 10/20/'06

product family: 58SF — CODE JP

title: PLASTIC TAPE PACKAGED 1mm SPACING SMT CONNECTOR (CAT.No.SFW__S-6ST_E1LF)

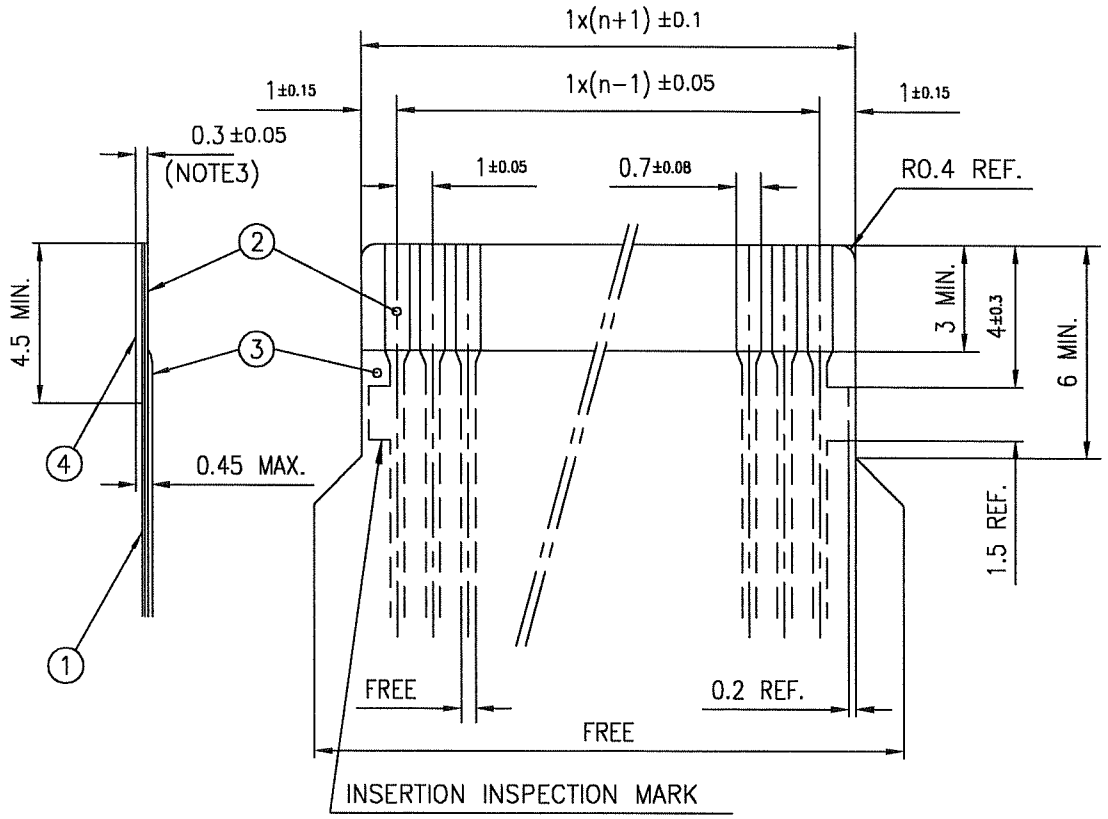
dwg no: JSA 96525 — sheet 1 of 1 — size A4

type: Product Customer Drawing

sheet index / revision B / sheet 1 — Rev. B

RECOMMENDED CABLE (CIC)

n : NO. OF CONDUCTOR



PT. NO.	PARTS NAME	MATERIAL	THICKNESS (μm)	
1	BASE FILM	POLYESTER OR EQUAL	75	25
2	CONDUCTOR	CARBON PASTE OVER SILVER PASTE	10 MIN.	
3	OVERLAY	POLYIMIDE OR POLYESTER OR EQUAL	———	
4	SUPPORTING TAPE	POLYESTER OR POLYIMIDE OR EQUAL	188	250

NOTES

1. NO BURR AT EACH PORTION.
2. NO PEELING IN COMMON USE.
3. TOTAL THICKNESS LIMIT OF EACH MATERIAL (INCLUDING ADHESIVE AGENT) IS SPECIFIED.

mat'l. code	surface 58 ISO 1302	tolerance ISO 406 ISO 1101	projection
	tolerances unless otherwise specified		mm
	angles	linear	scale 2/1

ltr	ecn no	dr	date
AA	J04-0333	H.T	Oct.13,'04
AB	J06-0430	H.T	10/19/'06

dr	10/19/06	
engr	10/19/06	
chr	10/19/'06	
appd	10/20/'06	

product family	58SF
CODE	JP
title	RECOMMENDED CABLE (CAT.No.SFW__S-6ST___)
dwg no	JSA 93904
sheet	1 of 1
size	A4
type	Product Customer Drawing

sheet index	revision	AB
	sheet	1

Rev. AB

form: A4

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

FCI / Amphenol:

SFW18S-6STME1LF SFW20S-6STME1LF SFW24S-6STE1LF SFW24S-6STME1LF SFW30S-6STE1LF SFW30S-6STME1LF SFW6S-6STME1LF SFW10S-6STE1LF SFW10S-6STME1LF SFW16S-6STME1LF SFW22S-6STME1LF SFW23S-6STME1LF SFW26S-6STE1LF SFW28S-6STE1LF SFW28S-6STME1LF SFW4S-6STE1LF SFW4S-6STME1LF SFW8S-6STE1LF SFW8S-6STME1LF SFW20S-6STE1LF SFW17S-6STE1LF