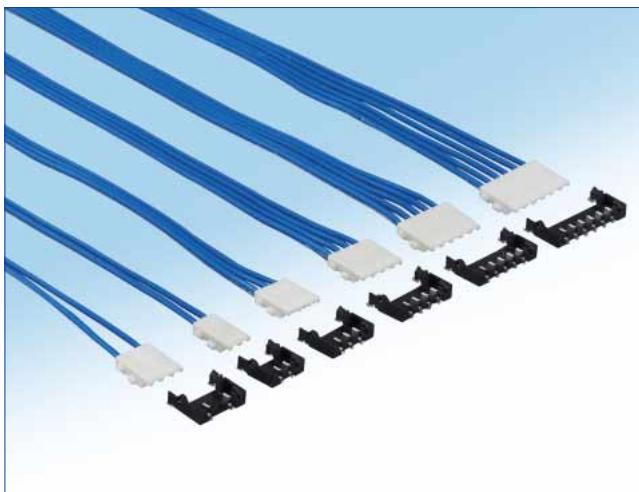


Low Profile “Swing-Lock” Board to Wire Connector for Power

DF57 Series

(Compliant with UL, C-UL standards)



■ Features

1. Reinforced lock structure with swing lock

A swing-lock structure, featuring our own unique connection method, reinforces the lock structure of the electric cable side, with a structure resistant to tough electric cable routing and disengagement of cables under load.

In addition, the connection surface has a guide insertion to facilitate insertability (patented)

2. Header lock improves plug retention

When connecting, the header connector secures the molded-lance. Play of molded lance is prevented for added strength. (patented)

3. Highly reliable contact structure

Despite the low-profile design, with a stacking height of 1.4mm, an effective mating length of 0.42mm is achieved. The structure features two-point contact terminal geometry with high contact reliability.

4. Insert guide key prevents misalignment

Insert guide key guides the crimp socket to the correct mating position and prevents misalignment, which improves mating operation and prevents possible connector breakage with incorrect mating.

5. Solder wicking prevention

The integral molding eliminates any gap between the terminals and case to prevent solder wicking.

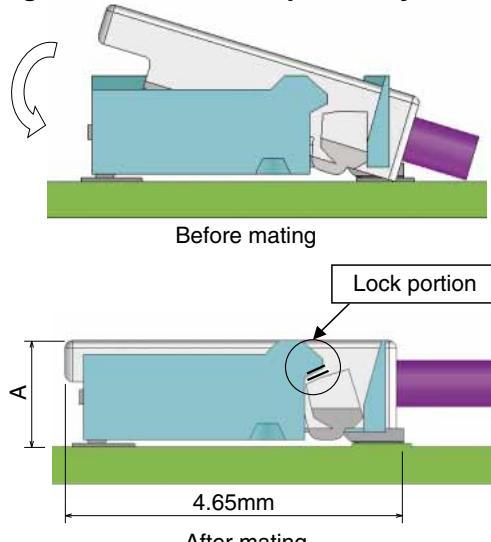
6. Case disengagement prevention

Reinforcing hardware (metal fittings) are integrated in the molding, which help prevent the case from disengaging with the terminals due to tough electric cable routing and load.

7. Cost effective

Terminals and metal fittings are collectively integrated into the molding to reduce assembly cost.

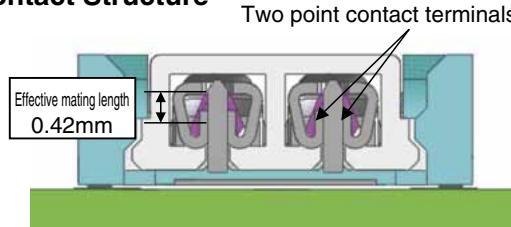
Swing-Lock Structure explanatory drawing



Mating HeightA : DF57H 1.4mm
DF57AH 1.6mm

Fig.1

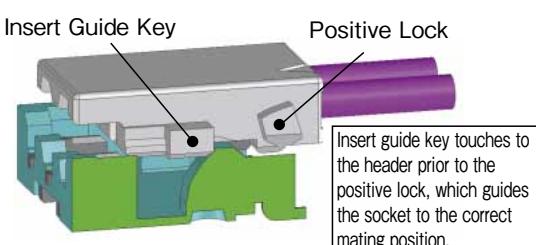
Contact Structure



Cross-sectional view of the contact surface

Fig.2

Incorrect Positioning



Starts mating after the socket is aligned to the correct position

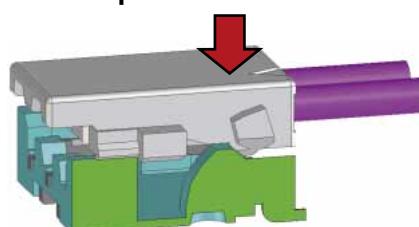


Fig.3

■Specifications

| Rating | Current rating (Note 1) | 2pos. | 3pos. | 4pos. | 5,6pos. | Operating temperature range -35°C to 85°C (Note 2) Operating humidity range 20% to 80% (Note 3) |
|--------|----------------------------|--|-------|-------|---------|--|
| | | AWG#26 | 3.0A | — | — | 1.5A |
| | | AWG#28 | 2.5A | 2.0A | 1.5A | |
| | | AWG#30 | 1.5A | | 1.0A | |
| | | AWG#32 | 1.0A | | 0.8A | |
| | AWG#34 | 0.8A | | 0.5A | | |
| | Voltage rating | 2 to 6 pos. : 50V AC/DC 2 pos. (Middle pin of 3 pos. is removed) : 100V AC/DC | | | | Storage temperature range -10°C to 60°C (Note 4) Storage humidity range 40% to 70% (Note 4) |

| UL, C-UL certified specifications | | | | | | |
|-----------------------------------|----------------------------|------------------------|-------|-------|---------|------|
| Rating | Current rating (Note 1) | 2pos. | 3pos. | 4pos. | 5,6pos. | |
| | | AWG#26 | 3.0A | — | — | 1.5A |
| | | AWG#28 | 2.5A | 2.0A | 1.5A | |
| | | AWG#30 | 1.5A | | 1.0A | |
| | | AWG#32 | 1.0A | | 0.8A | |
| | Voltage rating | 2 - 6 pos. : 29V AC/DC | | | | |

| Item | Specification | Conditions |
|---------------------------------|--|--|
| 1. Insulation resistance | 100MΩ min. | 100V DC |
| 2. Withstanding voltage | No flashover or insulation breakdown | 500V AC / 1 minute |
| 3. Contact resistance | 10mΩ max. | 20mV max., at 1mA. |
| 4. Vibration | No electrical discontinuity of 1μs or longer No damage, cracks or parts dislocation. | Frequency : 10 to 55Hz, single amplitude of 0.75mm, 10 cycles, 3 direction |
| 5. Shock | No electrical discontinuity of 1μs or longer No damage, cracks or parts dislocation. | Acceleration of 490m/s ² , 11ms duration, sine half-wave, 3 cycles in each of the 3 axis |
| 6. Humidity | Contact resistance : 20mΩ max., Insulation resistance : 500MΩ min. No damage, cracks or parts dislocation. | 96 hours at 40 ±2°C, and humidity of 90 to 95% |
| 7. Temperature cycle | Contact resistance : 20mΩ max., Insulation resistance : 500MΩ min. No damage, cracks or parts dislocation. | -55°C → 5 to 35°C → 85°C → 5 to 35°C Times : 30 min. → 2 min. to 3 min. → 30 min. → 2 min. to 3 min. 5 cycles |
| 8. Durability | Contact resistance : 20mΩ max., No damage, cracks or parts dislocation. | 30 cycles |
| 9. Resistance to soldering heat | No deformation of components affecting performance | Reflow : At the recommended temperature profile Manual soldering : 350°C for 3 seconds |

Note 1 : This is the maximum current rating while all pins are powered or used as all power lines. When isolating power lines into multiple circuits, current ratings may go above the stated current ratings. Please consult Hirose for specific details before doing this.

Note 2 : Includes the temperature rise of power lines.

Note 3 : The connector should be completely dry. (no condensation present)

Note 4 : The term “storage” refers to the long-term storage condition of unused products before PCB mounting. The operating temperature and humidity ranges are applied while in a non-energized state, while in transport or after PCB mounting.

■Material / Finish

| Item | Component | Material | Finish | UL Flammability rating |
|----------------|-----------|-----------------|-----------------------------|------------------------|
| Header | Insulator | LCP | Black | UL94V-0 |
| | | | Beige | |
| Crimp socket | Insulator | PBT | Tin plating or gold plating | UL94V-0 |
| | | | White | |
| | | LCP | Black | |
| | | | Beige | |
| Crimp contacts | Contact | Phosphor bronze | Tin plating or gold plating | — |

■Product Number Structure

Refer to the chart below when determining the product specifications from the product number.
Please select from the product numbers listed in this catalog when placing orders.

●Header

DF 57 H - * P - 1.2 V

| | |
|--------------------------------------|---|
| ① Series name : DF | ⑤ Connector type P : Plug |
| ② Series No. : 57 | |
| ③ Insert guide key H : Yes | ⑥ Contact pitch : 1.2mm |
| ④ Number of contacts : 2, 3, 4, 5, 6 | ⑦ Termination section V : Straight SMT |

DF 57 H - 2 P - 2.4 V

| | |
|--------------------------|--|
| ④ Number of contacts : 2 | ⑥ Contact pitch : 2.4mm (Middle pin of 3 pos. is removed, and rated voltage is 100 V) |
|--------------------------|--|

●Socket

DF 57 H - * S - 1.2 C

| | |
|--|--|
| ① Series name : DF | ⑤ Number of contacts : 2, 3, 4, 5, 6 |
| ② Series No. : 57 | ⑥ Connector type |
| ③ Applicable wire size : Blank : 28 to 34 AWG | S : Crimp socket |
| ④ Insert guide key H : Yes | ⑦ Contact pitch : 1.2mm ⑧ Termination section C : Crimp socket |

DF 57 A H - * S - 1.2 C

| | |
|--|--------------------------------|
| ③ Applicable wire size : A : 26 to 34 AWG | ⑤ Number of contacts : 2, 5, 6 |
|--|--------------------------------|

●Crimp contact

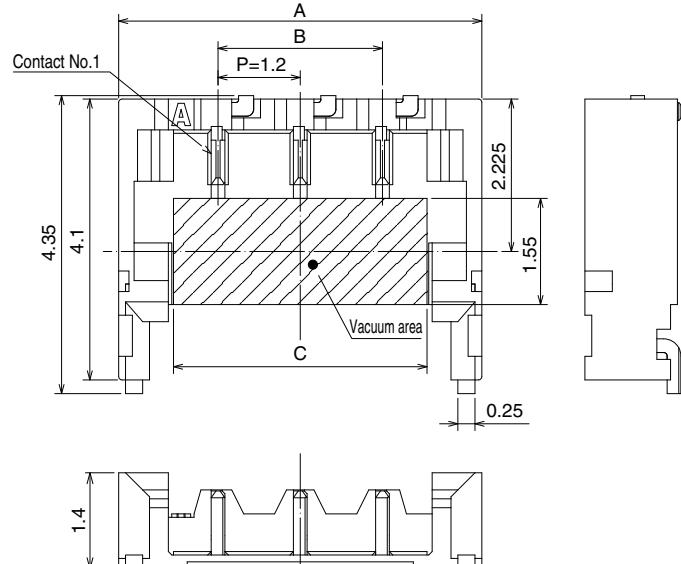
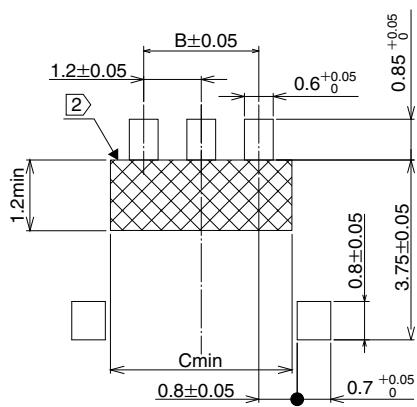
DF 57 - 2830 SCF A

| | |
|---|---|
| ① Applicable wire size : 2628 : 26 to 28 AWG 2830 : 28 to 30 AWG 3234 : 32 to 34 AWG | ② Packaging SCF : SCF : Female crimp contact / reel |
| | ③ Plating type Blank : Tin plating A : Gold plating |

■ Header(SMT)



Recommended PCB layout (Thickness : 1.0mm)



[Specification number] **
 (21) : Tin plated, color : black
 (23) : Tin plated, color : beige
 (51) : Gold plated, color : black

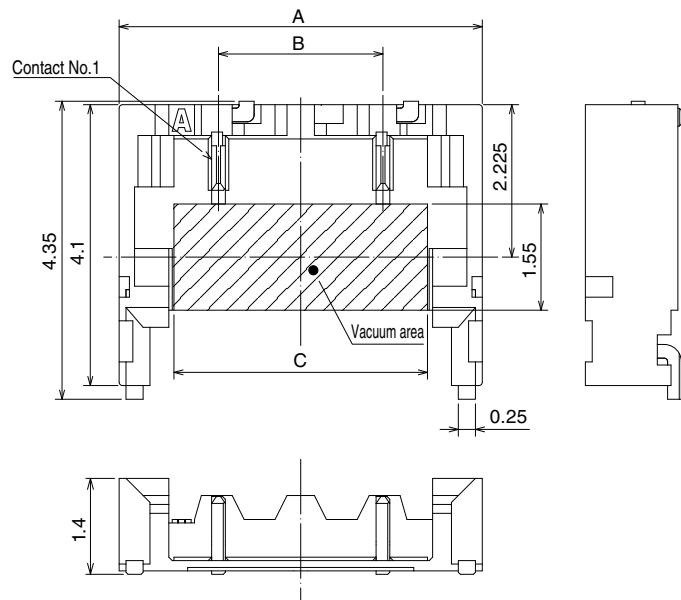
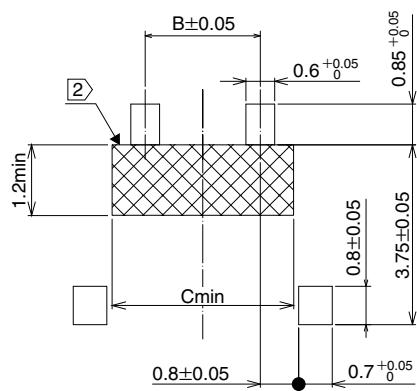
Unit : mm

| Part No. | HRS No. | No. of contacts | A | B | C |
|-------------------|---------------|-----------------|-----|-----|-----|
| DF57H-2P-1.2V(**) | 666-0104-7 ** | 2 | 4.1 | 1.2 | 2.5 |
| DF57H-3P-1.2V(**) | 666-0105-0 ** | 3 | 5.3 | 2.4 | 3.7 |
| DF57H-4P-1.2V(**) | 666-0106-2 ** | 4 | 6.5 | 3.6 | 4.9 |
| DF57H-5P-1.2V(**) | 666-0107-5 ** | 5 | 7.7 | 4.8 | 6.1 |
| DF57H-6P-1.2V(**) | 666-0108-8 ** | 6 | 8.9 | 6.0 | 7.3 |

Note 1 : Embossed tape reel packaging (5,000 pcs/reel).

Note [2] : The crossed-shaded area is a no conductive trace area.

Recommended PCB layout (Thickness : 1.0mm)

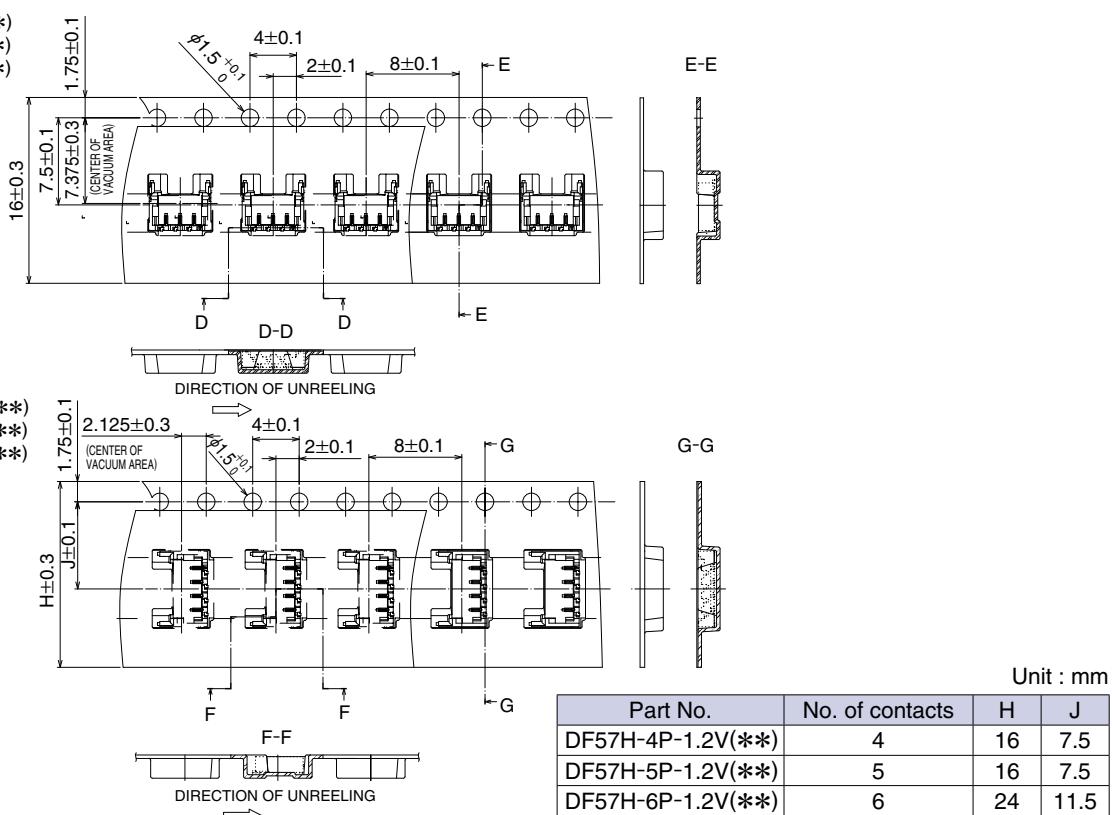


[Specification number] **
 (21) : Tin plated, color : black
 (23) : Tin plated, color : beige

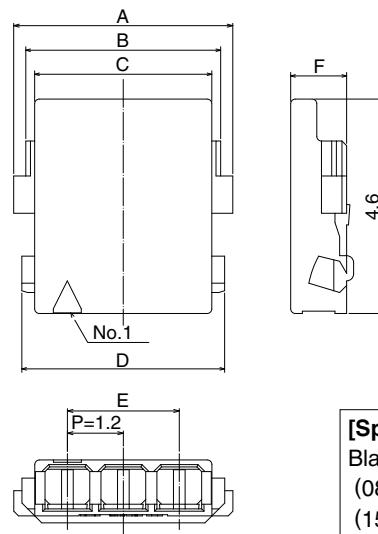
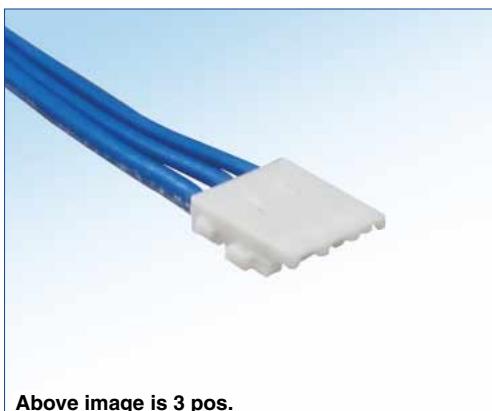
| Part No. | HRS No. | No. of contacts | A | B | C |
|-------------------|---------------|-----------------|-----|-----|-----|
| DF57H-2P-2.4V(**) | 666-0109-0 ** | 2 | 5.3 | 2.4 | 3.7 |

● Packaging Specification

DF57H-2P-1.2V(**)
DF57H-3P-1.2V(**)
DF57H-2P-2.4V(**)



■ Crimp socket



[Specification number] **
Blank : Material : PBT, color : white
(08) : Material : LCP, color : beige
(15) : Material : LCP, color : black

Unit : mm

| Part No. | HRS No. | No. of contacts | A | B | C | D | E | F |
|-------------------|---------------|-----------------|-----|------|-----|-----|-----|-----|
| DF57H-2S-1.2C(**) | 666-0100-6 ** | 2 | 3.5 | 2.98 | 2.6 | 3.2 | 1.2 | 1.2 |
| DF57H-3S-1.2C(**) | 666-0012-0 ** | 3 | 4.7 | 4.18 | 3.8 | 4.4 | 2.4 | 1.2 |
| DF57H-4S-1.2C(**) | 666-0101-9 ** | 4 | 5.9 | 5.38 | 5.0 | 5.6 | 3.6 | 1.2 |
| DF57H-5S-1.2C(**) | 666-0102-1 ** | 5 | 7.1 | 6.58 | 6.2 | 6.8 | 4.8 | 1.2 |
| DF57H-6S-1.2C(**) | 666-0103-4 ** | 6 | 8.3 | 7.78 | 7.4 | 8.0 | 6.0 | 1.2 |

Note 1 : The quantity is delivered per pack (1,000 pcs.). Order by number of pack.

■ Socket for 26 AWG

Unit : mm

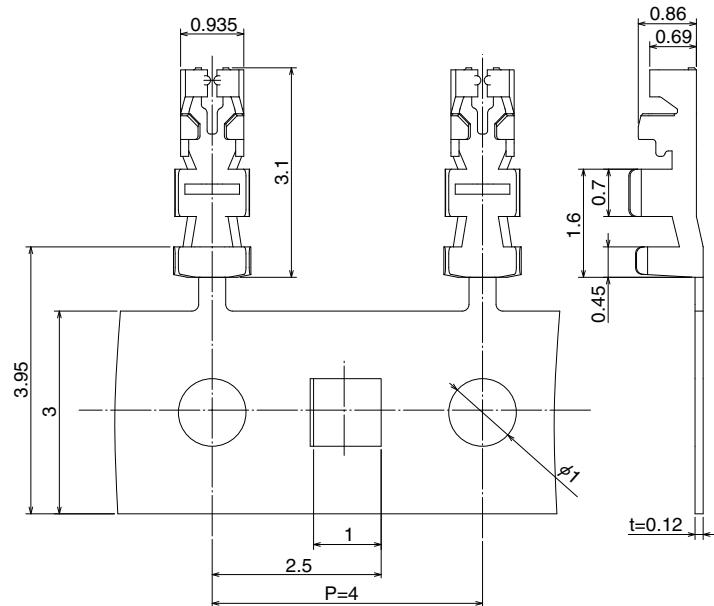
| Part No. | HRS No. | No. of contacts | A | B | C | D | E | F |
|--------------------|---------------|-----------------|-----|------|-----|-----|-----|-----|
| DF57AH-2S-1.2C(**) | 666-0112-0 ** | 2 | 3.5 | 2.98 | 2.6 | 3.2 | 1.2 | 1.4 |
| DF57AH-5S-1.2C(**) | 666-0110-0 ** | 5 | 7.1 | 6.58 | 6.2 | 6.8 | 4.8 | 1.4 |
| DF57AH-6S-1.2C(**) | 666-0111-2 ** | 6 | 8.3 | 7.78 | 7.4 | 8.0 | 6.0 | 1.4 |

Note 1 : The quantity is delivered per pack (1,000 pcs.). Order by number of pack.

[Specification number] **

Blank : Material : PBT, color : black
(10) : Material : PBT, color : white
(15) : Material : LCP, color : black

■Crimp contact



[Packaging Specification]

Blank : Embossed tape packaging (40,000 pcs/reel)
(41) : Embossed tape packaging (35,000 pcs/reel)

| Part No. | HRS No. | Packaging | Quantity | Finish | Applicable wire | Applicable socket connector |
|-------------------|----------------|-----------|----------|-------------|-----------------|---|
| DF57-2628SCF(41) | 666-0013-3 41 | Reel | 35,000 | Tin plated | 26 to 28 AWG | DF57AH-**S-1.2C(**) |
| DF57-2628SCFA(41) | 666-0033-0 41 | Reel | 35,000 | Gold plated | | |
| DF57-2830SCF | 666-0001-4 | Reel | 40,000 | Tin plated | 28 to 30 AWG | DF57H-**S-1.2C(**) DF57AH-**S-1.2C(**) |
| DF57-2830SCFA | 666-0034-3 | Reel | 40,000 | Gold plated | | |
| DF57-3234SCF | 666-0016-1 | Reel | 40,000 | Tin plated | 32 to 34 AWG | DF57AH-**S-1.2C(**) |
| DF57-3234SCFA | Under planning | Reel | 40,000 | Gold plated | | |

Note : Embossed tape reel packaging (40,000 pcs/reel).

Order by number of reels.

●Applicable wire (Tin plated annealed copper wire)

| Part No. | Wire size (Stranded wire conductor) | Jacket outer diameter | Recommended cable |
|-----------------------------------|--|-----------------------|--|
| DF57-2628SCF(41) DF57-2628SCFA | 26 AWG (7/φ0.16mm) | φ0.88mm max. | UL3302, UL3610 |
| | 28 AWG (7/φ0.127mm) | | — |
| DF57-2830SCF DF57-2830SCFA | 28 AWG (7/φ0.127mm) | φ0.5mm – φ0.63mm | UL1571(Thin wire), UL10584(ETFE wire) |
| | 30 AWG (7/φ0.102mm) | | — |
| DF57-3234SCF | 32 AWG (7/φ0.08mm) | φ0.32mm – φ0.42mm | — |
| | 34 AWG (7/φ0.08mm) | | — |

●Strip length 1.0 to 1.4mm

Note 1 : When using other than the recommended wire, contact your nearest Hirose sales representative.

Note 2 : The strip length is a reference value. Please make adjustments so finished crimps will meet the specified values.

Refer to the crimping quality standards (ATAD-H0404) for details.

◆Tools

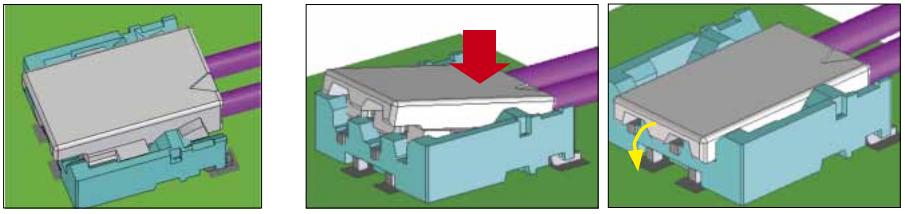
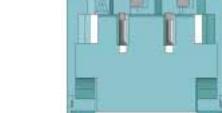
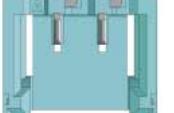
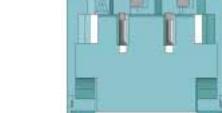
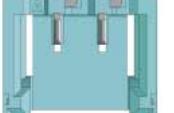
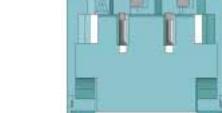
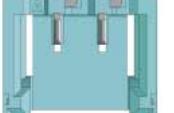
| Type | Part No. | HRS No. | Applicable contact |
|-------------------------|---------------------------|------------|---------------------------------------|
| Applicator | AP105-DF57-2628S | 901-4622-2 | DF57-2628SCF(41) DF57-2628SCFA(41) |
| | AP105-DF57-2830S | 901-4618-5 | DF57-2830SCF |
| | AP105-DF57-2830SA | 901-4645-0 | DF57-2830SCFA |
| | AP105-DF57-3234S | 901-4629-1 | DF57-3234SCF |
| Press | CM-105C | 901-0001-0 | — |
| Hand crimping tool | HT305/DF57-2830HC(Note 2) | 902-4635-0 | DF57-2830SCF |
| Contact extraction tool | DF-C-PO(B) | 550-0179-2 | DF57-****SCF(A) |

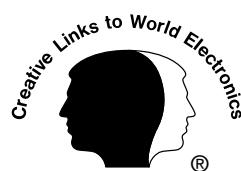
Note 1 : If any trouble has occurred due to tools other than the designated tool, Hirose bears no responsibility for any trouble.

Note 2 : The compatible wire is limited to UL1571 of thin wire type, 28 to 30 AWG.

◆Usage Recommendations

| | |
|---|--|
| 1.Recommended temperature profile | <p>The temperature profiles are based on the above conditions. In individual applications the actual temperature may vary, depending on solder paste type, volume/thickness and board size/thickness. Consult your solder paste and equipment manufacturer for specific recommendations.</p> |
| 2.Recommended manual soldering | Manual soldering : $350^{\circ}\text{C} \pm 10^{\circ}\text{C}$ for 3 seconds |
| 3.Recommended screen thickness and open area ratio (Pattern area ratio) | Thickness : 0.1mm Open area ratio : 100% |
| 4.Board warpage | Maximum of 0.02mm at the connector center, with both ends of the connector as reference points. |
| 5.Cleaning conditions | Cleaning is not recommended. When cleaning, please evaluate as if can deteriorate the performance including mechanical operation and environmental resistance. |
| 6.Precautions | <ul style="list-style-type: none"> ■ When inserting crimp-type (solderless) terminals to crimping (solderless) sockets, to maintain reliable performance, please do not insert obliquely. ■ DO NOT mate/un-mate non-terminated plugs with non-mounted receptacles. This may lead to damage or deformation of the contacts. ■ Removal of the holding electric cable may cause damage so please be careful. ■ DO NOT apply flux to the contact terminals when hand soldering the receptacle to the board. Wicking of the flux into the electrical contact areas may lead to connection failures. ■ Slight discoloration on the insulating materials will not affect form, fit or function of the connectors. ■ Please refer to the documents "DF57 Series Cable assembly Procedure ETAD-H0421", "Crimp condition" and "DF57-****SCF(A)(**) Crimp quality standards ATAD-H0404" for the cable assembly procedures. ■ Please refer to the "DF57H Series Mating/Unmating Operation Instruction Manual (ETAD-H0652)" for the connector operation. |

| 7. Insertion and removal operation method | <p>Mating</p> <p>① Determine position, fitting the external form ② Insert the cable side ③ Push the contact portion side</p>  <p>Un-mating</p> <p>① Engage lever ② Pull up and release the simple lock ③ The reinforced lock is also released and the un-mating is complete</p>  | | | | | | | | | | | | |
|---|---|--|-------|------|--------|---|--|----------------------|---|---|-------------------------|---|---|
| 8. Mating compatibility | <table border="1" data-bbox="516 977 1421 1583"> <thead> <tr> <th data-bbox="516 977 738 1134">Header</th> <th data-bbox="738 977 1056 1134">DF57H</th> <th data-bbox="1056 977 1421 1134">DF57</th> </tr> </thead> <tbody> <tr> <td data-bbox="516 1134 738 1403">Socket</td> <td data-bbox="738 1134 1056 1403">  DF57H </td> <td data-bbox="1056 1134 1421 1403">  DF57 </td> </tr> <tr> <td data-bbox="516 1403 738 1493">Mating compatibility</td><td data-bbox="738 1403 1056 1493">Y</td><td data-bbox="1056 1403 1421 1493">N</td></tr> <tr> <td data-bbox="516 1493 738 1583">Additional guiding keys</td><td data-bbox="738 1493 1056 1583">Y</td><td data-bbox="1056 1493 1421 1583">N</td></tr> </tbody> </table> | Header | DF57H | DF57 | Socket |  DF57H |  DF57 | Mating compatibility | Y | N | Additional guiding keys | Y | N |
| Header | DF57H | DF57 | | | | | | | | | | | |
| Socket |  DF57H |  DF57 | | | | | | | | | | | |
| Mating compatibility | Y | N | | | | | | | | | | | |
| Additional guiding keys | Y | N | | | | | | | | | | | |



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