NEW

2mm Pitch, Multi functional Connector System. (Floating [Board-to-Board], Swing-Lock [Wire-to-Board], Short Pin)

DF59 Series

■Features

1. Floating Structure (Board-to-Board)

The Board-to-Board connector can be used to connect multiple boards together in a co-planar arrangement and features a “Stress free contact” that floats ± 0.5mm in the X, Y and Z dimensions to allow for thermal expansion.

2. Swing Lock Structure (Wire-to-Board)

The DF59 features a “swing-lock” mechanism that employs both a positive and friction lock. This helps to prevent the cable assembly from unmating in demanding applications.

3. Short-Circuit Pin Connector

The Short-Circuit Pin connector allows the termination of an open circuit. Typically used at the end of a series of connected circuit boards.

4. Multi Function Design

The DF59 has the ability to function as either a Board-to-Wire or Board-to-Board System. The PCB mounted receptacle is designed to mate with the B-to-W, B-to-B, and Short Circuit Pin connectors. This multi function ability allows versatility while keeping connectors to a minimum.

5. Performance and Space Savings

The DF59 series offers high performance in a compact, space saving design; featuring a 3 amp current rating, a 2mm pitch and coupled with a mated height of only 2.48mm.

6. Contact Design

The terminal’s design features two points of contact to ensure a highly reliable connection.

7. High Operating Temperature

DF59’s are rated at temperatures up to 105 ℃.

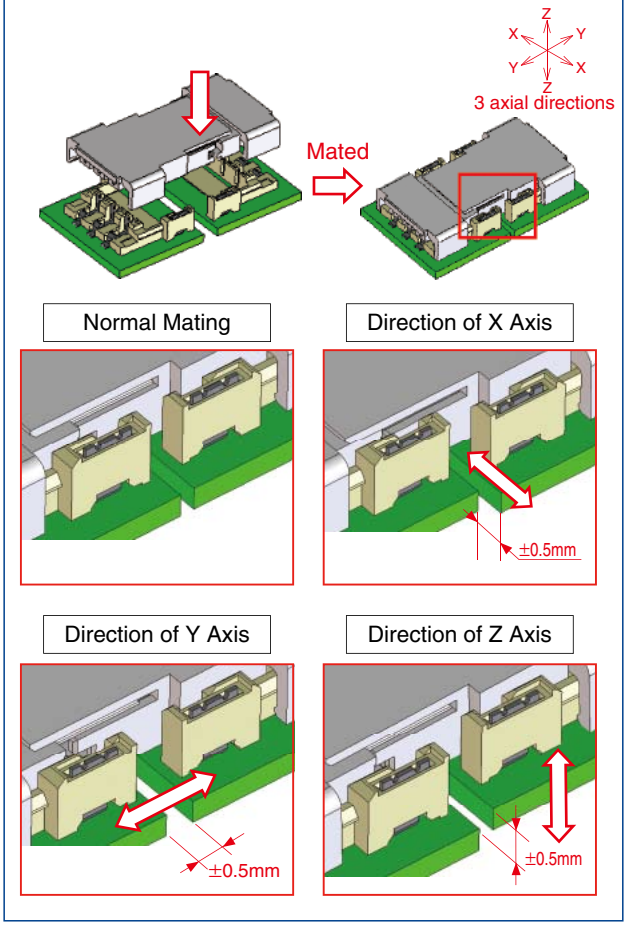
8. Applicator Sharing

Crimping can be performed using the applicator (AP105-DF11-22S) for the existing series DF11-22S C F(A), by replacing the die with the one for DF59 series.
* For crimping quality standards and crimping conditions, crimping needs to be performed in accordance with the specific conditions of DF59-22PCFA.

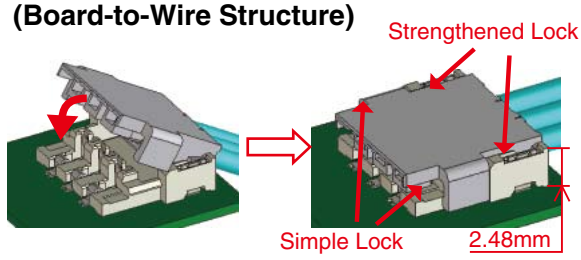
■Applications

The DF59 connector is extremely effective in LED lighting applications. However, it does not need to be limited to LED work, but can be used in other traditional Board-to-Wire applications.

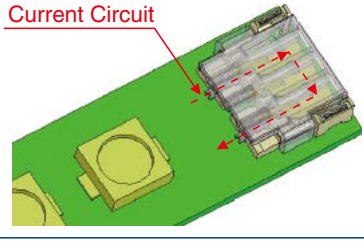
◆Floating Structure in Three Axial Directions (Board-to-Board Structure)



◆Swing-Lock Structure (Board-to-Wire Structure)



◆Short Pin Connector



■Product Specifications

Ratings	Current rating	3A	Operating Temperature Operating Humidity Range	-35～105℃ 20～80%	(Note 1)
	Voltage rating	AC/DC 230V AC/DC 350V (Without the central contact)	Storage Temperature Range Storage Humidity Range	-10～60℃ 40～70%	(Note 2) (Note 2)

Items	Specifications	Conditions
1.Insulation resistance	Over 1000MΩ	Measured at DC 500V
2.Withstanding voltage	No flashover or breakdown	AC650V / minute.
3.Contact resistance	50mΩ or less (DF59-∗P-2FC/SP) 30mΩ or less (DF59-∗P-2C)	Under 6V DC, must be Measured by 100Ma (DC or 1000Hz)
4.Vibration	No electrical discontinuity over 1μs.	Frequency 10-55Hz, single amplitude 0.75mm, 3 directions, 10 cycles each
5.Shock	No electrical discontinuity over 1μs.	Acceleration 490 m/s^2, 11ms; duration, sine half-wave 3 cycles in each of the 3 axis.
6.Humidity	■Contact resistance 50mΩ (DF59-∗P-2FC/SP) max. 30mΩ (DF59-∗P-2C) max. Insulation resistance1000MΩ min	Temperature 40 ± 2℃, humidity 90-95%, left for 96 hours
7.Temperature cycle	■Contact resistance 50mΩ (DF59-∗P-2FC/SP) max. 30mΩ (DF59-∗P-2C) max. ■Insulation resistance 1000MΩ min.	(-55℃: 30 min. → 5-35℃: 2-3 min. →85℃: 30 min. →5-35℃: 2-3 min.) 5 cycles
8. Operating Life	■Contact resistance 50mΩ max. (DF59-∗P-2FC/SP) 30mΩ max. (DF59-∗P-2C)	■Number of insertion and withdrawal force 30times (DF59-∗P-2FC/C) 10times (DF59-∗P-2SP)
9.Resistance to soldering heat	No solubility of resin which affect the item's performance.	Reflow: Depends on recommended temperature profile. Hand soldering: Soldering iron temperature 350 ± 10℃, 3 sec.

(Note 1) Including temperature rise caused by current flow.
(Note 2) The term "storage" refers to products stored for long period of time prior to mounting and use.
Operating temperature and humidity range covers connectors after installation, storage, shipment or dur ing transportation.
(Note 3) Information contained in this catalog represents general requirements for this series.
Contact us for drawings and specifications for a specific part number.

■Materials

Items	Parts	Materials	Treatment	UL Specification
Receptacle	Insulator	LCP	Natural	UL94V-0
	Contact	Phosphorous bronze	Gold plated	————
	Metal fittings	Brass	Tin plated	————
Floating plug	Insulator	PBT	White	UL94V-0
	Contact	Brass	Gold plated	————
Short pin	Insulator	PBT	White	UL94V-0
	Contact	Brass	Gold plated	————
Crimp case	Insulator	PBT	White	UL94V-0
Crimp contact	Contact	Phosphorous bronze	Gold plated	————

■Ordering Information

Please refer to the ordering information below for each connector type

●Receptacle

DF 59 – ＊ S – 2 V
❶ ❷ ❸ ❹ ❺ ❻

❶ Series Name: DF	❺ Pitch: 2mm (4mm: Without the central contact)
❷ Series No.: 59	❻ Termination form V: SMT straight type
❸ Number of contacts: 2, 3, 4	
❹ Type of connector S: Receptacle	

●Floating plug

DF 59 – ＊ P – 2 FC
❶ ❷ ❸ ❹ ❺ ❻

❶ Series Name: DF	❺ Pitch: 2mm (4mm: Without the central contact)
❷ Series No.: 59	❻ Termination form FC: Floating
❸ Number of contacts: 2, 3, 4	
❹ Type of connector P: Plug	

●Short pin

DF 59 – ＊ P – 2 SP
❶ ❷ ❸ ❹ ❺ ❻

❶ Series Name: DF	❺ Pitch: 2mm
❷ Series No.: 59	❻ Termination form SP: Short Circuit pin
❸ Number of contacts: 2, 3	
❹ Type of connector P: Plug	

●Crimp Socket

DF 59 – ＊ P – 2 C
❶ ❷ ❸ ❹ ❺ ❻

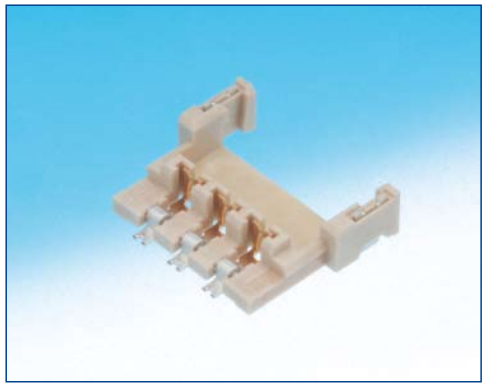
❶ Series Name: DF	❺ Pitch: 2mm
❷ Series No.: 59	❻ Termination form C: Crimp Housing
❸ Number of contacts: 2, 3, 4	
❹ Type of connector P: Plug	

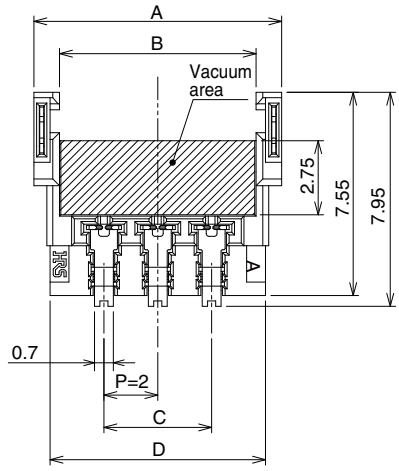
●Crimp contact

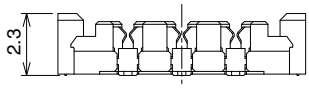
DF 59 – 22 PCFA
❶ ❷

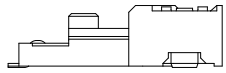
❶ Applicable Wire Size 22: AWG22	❷ Form Type/Package Type PCFA: Crimp plug contact = Reel PCA: Crimp plug contact = Bulk Crimp contacts are reqired on the DF59-＊P-2C part.

■Straight Receptacle (SMT)

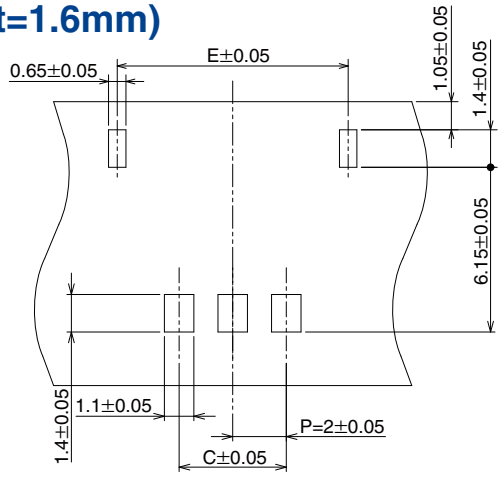








■Recommended PCB Dimensions (t=1.6mm)



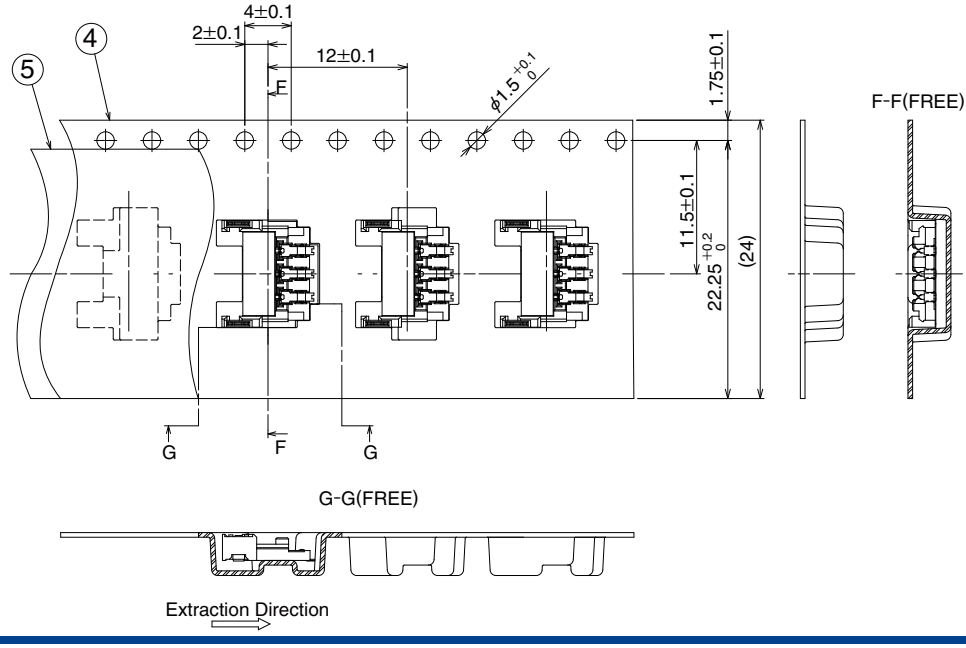
[Specification No.]
(51): Gold plating, emboss packaging

Unit : mm

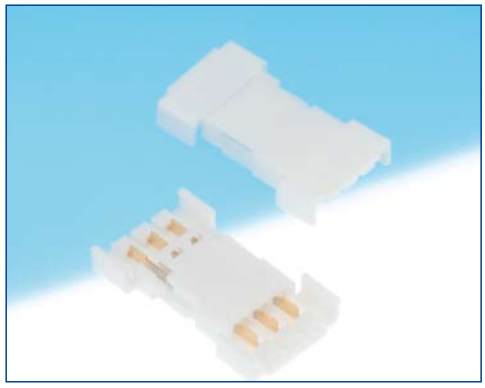
Product Number	HRS No.	# of connectors	A	B	C	D	E
DF59-2S-2V(51)	CL667-0001-0-51	2	7.2	5.3	2.0	6.0	6.62
DF59-3S-2V(51)	CL667-0002-3-51	3	9.2	7.3	4.0	8.0	8.62
DF59-4S-2V(51)	CL667-0003-6-51	4	11.2	9.3	6.0	10.0	10.62
DF59-2S-4V(51)	CL667-0021-8-51	2*	9.2	7.3	4.0	8.0	8.62

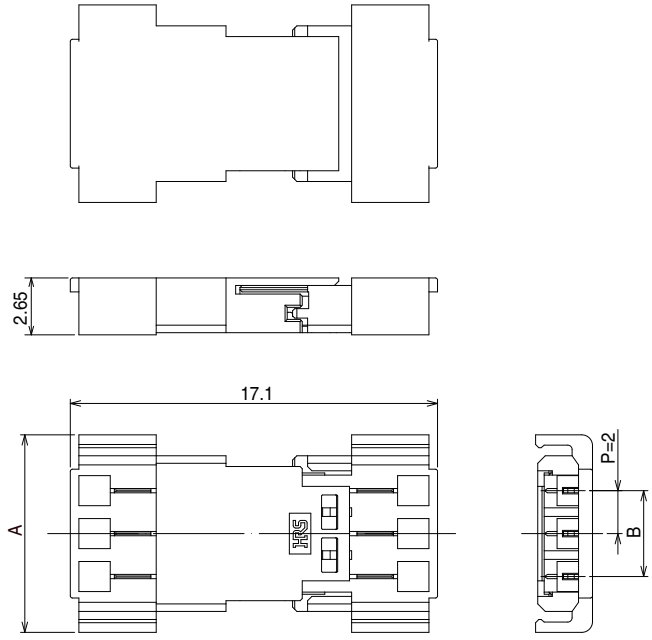
* DF59-2S-4V(51) is created by removing the middle pin of DF59-3S-2V(51) at the factory.
(Note) Please order in full reel quantities. (1 reel = 2000 pieces)

●Carrier Tape Dimensions



■Floating plug





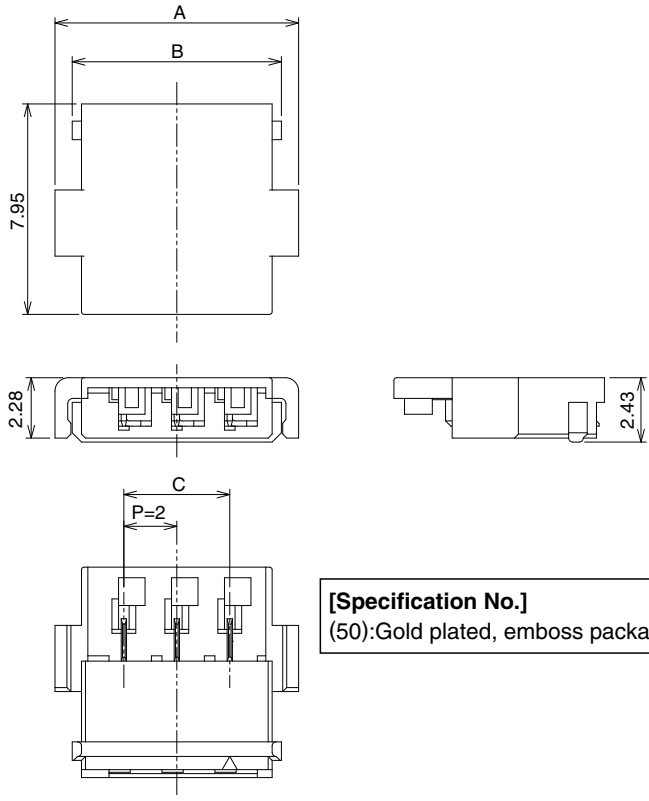
[Specification No.]
(50):Gold plating, tray packaging

Unit : mm

Product Number	HRS No.	# of connectors	A	B	Packaged Quantity/Tray
DF59-2P-2FC(50)	CL667-0006-4-50	2	7.2	2.0	50
DF59-3P-2FC(50)	CL667-0007-7-50	3	9.2	4.0	50
DF59-4P-2FC(50)	CL667-0008-0-50	4	11.2	6.0	50
DF59-2P-4FC(50)	CL667-0020-5-50	2*	9.2	4.0	50

*DF59-2P-4FC(50) is created by removing the middle pin of DF59-3P-2FC(50) at the factory.
(Note) Please order in full tray quantities. (1 tray = 50 pieces)

■Short pin



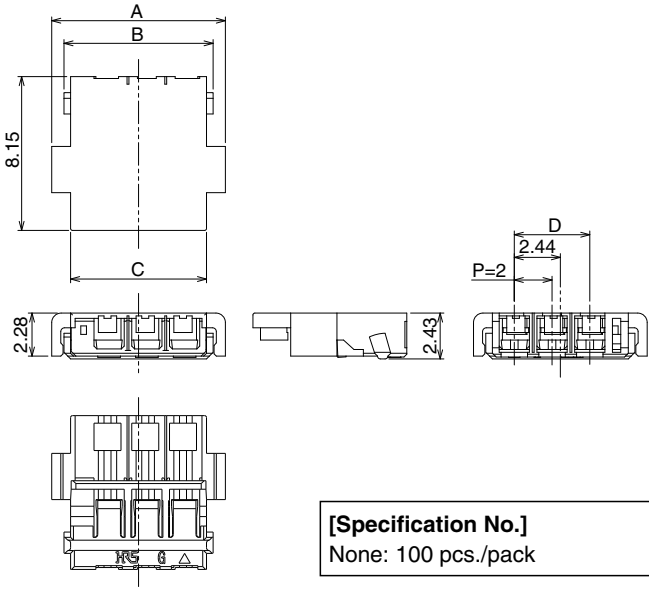
[Specification No.]
(50):Gold plated, emboss packaging

Unit : mm

Product Number	HRS No.	# of connectors	A	B	C	Packaged Quantity/Tray
DF59-2P-2SP(50)	CL667-0017-0-50	2	7.2	5.9	2.0	100
DF59-3P-2SP(50)	CL667-0018-3-50	3	9.2	7.9	4.0	100

(Note) Please order in full tray quantities. (1 tray = 100 pieces)

■Crimp Socket



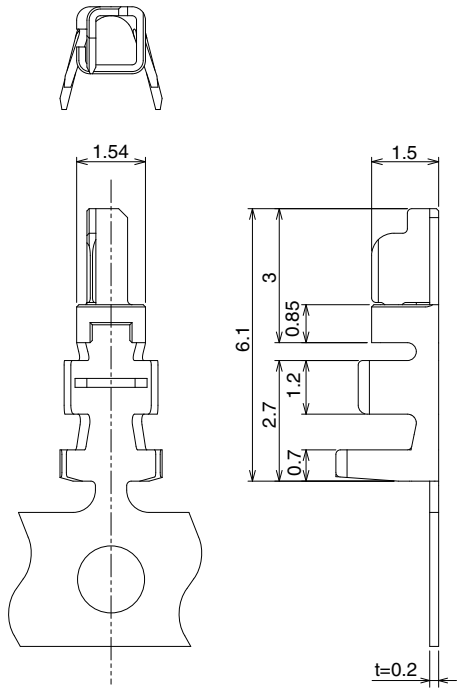
[Specification No.]
None: 100 pcs./pack

Unit : mm

Product Number	HRS No.	# of connectors	A	B	C	D
DF59-2P-2C	CL667-0011-4-00	2	7.2	5.9	5.2	2.0
DF59-3P-2C	CL667-0012-7-00	3	9.2	7.9	7.2	4.0
DF59-4P-2C	CL667-0013-0-00	4	11.2	9.9	9.2	6.0

(Note) Please order in full bag quantities. (1 bag = 100 pieces)

■Crimp contact



Product Number	HRS No.	By Type	Quantity	Treatment
DF59-22PCFA	CL667-0016-8-00	Reel contact (Note 1)	10,000 contacts per reel	Gold plated
DF59-22PCA	CL667-0022-0-00	Loose contact (Note 2)	100 contacts per pack	

(Note1) Please order reel contacts by full reel quantities. (1 reel = 10000 pieces)
(Note2) Please order loose piece contacts in full bags. (1 bag = 100 pieces)

●Applicable Wire (Tin plated soft copper wire)

Conductor Size (Wire Constitution)	Coating Diameter
AWG22 (17 wires/ϕ0.16mm)	UL1061 (ϕ1.26mm)
	UL3265(ϕ1.38mm)

(Note) Please contact your nearest Hirose Sales Representative for information regarding compatible wire Remarks: Please consult with our sales representative when using wires other than applicable wire.

●Recommended Wire
UL1061, UL3265

●Strip Length
1.7～2.3mm

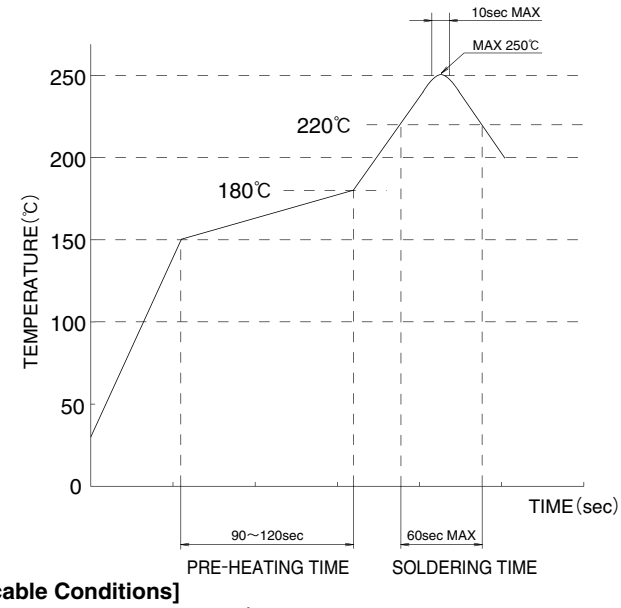
■Applicable Crimping Tool

Types	Product Number	HRS No.	Applicable Contact
Applicator	AP105-DF59-22P	CL901-4619-8-00	DF59-22PCFA
Press Unit	CM-105	CL901-0005-4-00	-
Hand Tool	HT801/DF59-22P	CL902-4638-9-00	DF59-22PCA
Extraction Tool	DF-C-PO(B)	CL550-0179-2-00	DF59-22PCFA DF59-22PCA

It is possible to use tooling from the AP105-DF11-22S applicator. Certain parts will need the be changed out. Please contact Hirose for details.

Note: Customers are strongly encouraged to utilize HRS application tooling or tooling created by a Hirose tooling partner. Please check our website, www.hiroseusa.com, for tooling options. Hirose assumes no liability for customers using tooling from non-recognized sources.

■Operating Precautions

1. Recommended Temperature Profile (Lead-free soldering possible)	 **[Applicable Conditions]** 1. Peak Temperature: MAX 250℃ 2. Heated Area: 220℃ or above, within 60 sec. 3. Pre-heating Area: 150-180℃, 90-120 sec. 4. Number of Times: within 2 times ✻Measured at contact lead area Please be noted that the reflow condition may vary depending on soldering paste type, manufacturer of soldering material, board size, as well as conditions of other mounting materials. (✻1) Above temperature profile is our recommended value.
2. Recommended Hand Solder Conditions	Soldering iron temperature: 350 ± 10℃, soldering time: within 3 seconds
3. Recommended Screen Thickness, Open Ratio (Pattern Area Ratio)	Thickness 0.1 mm, Open ratio: 100%
4. Warpage of PC board	Maximum of 0.02mm at the connector center, with both ends of the connector as reference points.
5. Cleaning Condition	Cleaning with IPA is possible. (Cleaning is not recommended. In case of cleaning, please evaluate if it causes a decrease in the performance which includes mechanical operation and environmental resistance.)
6. Precautions	■ When inserting crimp-type (solderless) terminals to crimping (solderless) sockets, to maintain reliable performance, please do not insert obliquely. ■ DO NOT mate/un-mate a non-terminated plug with a non-mounted receptacles. This may lead to damage or deformation of the contacts. ■ Please note that pulling on the wires or cable during un-mating may cause damage. ■ DO NOT apply flux to the contact terminals when hand soldering the receptacle to the board. Flux can wick into the electrical contact areas and may lead to connection failures. ■ Slight discoloration on the insulating materials will not affect form, fit or function of the connectors. ■ For operating suggestions on insertion and removal, please refer to the “DF59 Insertion and Removal Manual”

Creative Links to World Electronics ®

HRS

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Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
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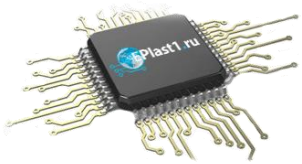
- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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