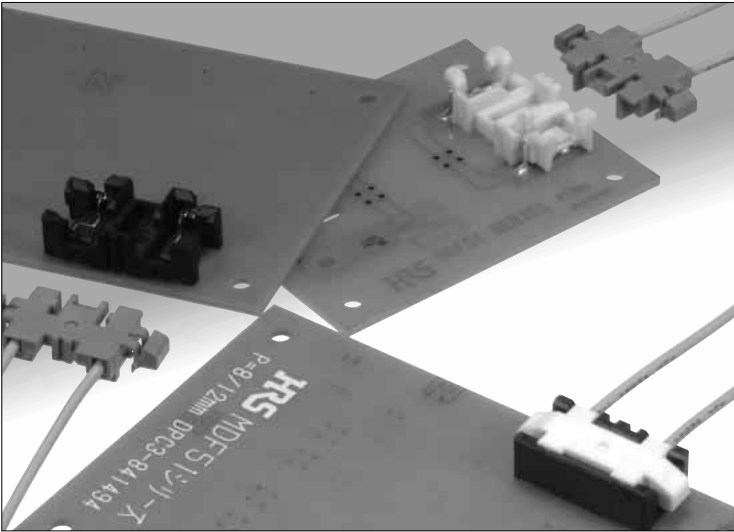
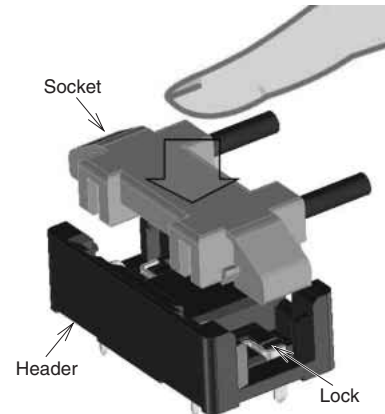


# High Voltage Board to Cable Connectors

## MDF51 Series



### ● Simple and secure mating with one push



### ■ Features

#### 1. Easy and simple mating

Built-in locks assure correct and complete mating with a single push on the plug.

#### 2. Reduced space requirement

Vertical mating direction and built-in self-aligning features eliminate the need for the extra space when mating / unmating.

#### 3. Designed for high voltage applications

Large contact pitch and the creepage distance maintain stable and safe performance at high voltage levels.

#### 4. Secure attachment to the board

Soldering at 4 points secure the headers to the board.

#### 5. Secure hold during the soldering operation.

Through-hole termination header (12mm pitch only) incorporates a hold-down feature to prevent dislocation during the soldering operation.

#### 6. UL, C-UL, and TÜV certified (12mm pitch only)

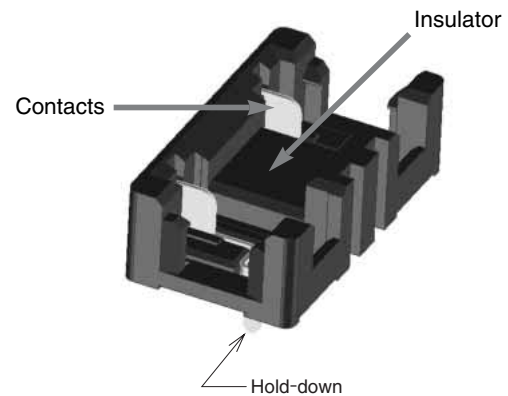
#### 7. RoHS compliant

All components and materials comply with the requirements of EU Directive 2002/95/EC.

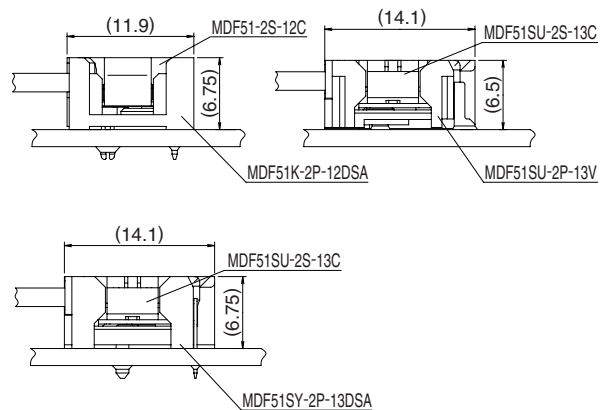
### ■ Applications

LCD TV backlights, FPD power supplies and other applications requiring small high-voltage connectors.

### ● Secure hold during the soldering operation



### ● Reduced space requirement



## Specifications

Ratings	Current rating	1 A	Operating temperature range	-35°C to +85°C (Note 1)
	Voltage rating	3000 V AC/DC	Operating humidity range	RH 20% to 80%
			Storage temperature range	-10°C to +60°C (Note 2)
			Storage humidity range	RH 40% to 70% (Note 2)

		UL, C-UL	TÜV
Ratings	Current rating	1A	1A
	Voltage rating	1000V AC/DC	1000V AC/DC

■ File and recognition numbers:

UL and C-UL : E52653  
 TÜV : R50085755

Item	Specification	Conditions
1. Insulation resistance	1000 MΩ min.	500 V DC
2. Withstanding voltage	No flashover or insulation breakdown	5000 V AC / 1 minute
3. Contact resistance	20 mΩ max.	20 mV max., at 1 mA .
4. Vibration	No electrical discontinuity of 1 μs or longer No damage, cracks or parts dislocation.	Frequency: 10 to 55 Hz, single amplitude of 0.75 mm, 10 cycles, 3 axis
5. Shock	No electrical discontinuity of 1 μs or longer No damage, cracks or parts dislocation.	Acceleration of 490 m/s <sup>2</sup> , 11 ms duration, sine half-wave, 3 cycles in each of the 3 axis
6. Humidity	Contact resistance: 40 mΩ max., Insulation resistance: 500 MΩ min. No damage, cracks or parts dislocation.	96 hours at of 40 ±2°C, and humidity of 90 to 95%
7. Temperature cycle	Contact resistance: 40 mΩ max., Insulation resistance: 500 MΩ min. No damage, cracks or parts dislocation.	-55°C → 5 to 35°C → 85°C → 5 to 35°C Times: 30 min. → 3 min. → 2 min. to 3 min. → 30 min. → 2 min. to 3 min. 5 cycles
8. Durability	Contact resistance: 40 mΩ 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 (MDF51SU) Flow: Solder temperature 260°C, 10 seconds (MDF51K and MDF51SY) Manual soldering: 380°C for 3 seconds

Note 1. Includes temperature rise caused by current flow.

Note 2. The term "storage" refers to products stored for a long period prior to mounting and use.

The operating temperature and humidity range covers the non-conducting condition of installed connectors in storage, shipment or during transportation.

Note 3. Information contained in this catalog represents general requirements for this Series. Contact us for the drawings and specifications for a specific part number shown.

## Materials/Finishes

### ● Headers

Part	Material	Finish	Remarks
Insulator	MDF51K PBT	Color: Black	UL94V-0
	MDF51SU: Polyamide	Color: Beige	
	MDF51SY: Polyamide	Color: Black	
Contacts	Brass	Tin plated	—————

### ● Crimp socket

Part	Material	Finish	Remarks
Socket Insulator	MDF51: Polyamide	Color: White	UL94V-0
	MDF51SU: Polyamide	Color: Gray	
Crimp contacts	Phosphor bronze	Tin plated	—————

**MDF51 Series High Voltage Board to Cable Connectors**

**Ordering information**

**Header**

**MDF51 # - \* P - 12 DSA**  
 ①      ②      ③ ④      ⑤      ⑥

① Series name : MDF51	③ Number of contacts : 2
② Configuration type K : Contact pitch 12mm, through hole SU : Contact pitch 13mm, surface mount SY : Contact pitch 13mm, through hole	④ Connector type P: Header Contact pitch 12mm or 13mm
	⑤ Termination type
	⑥ DSA : through hole, straight V : surface mount, straight

**Crimp socket**

**MDF51 # - \* S - 12 C**  
 ①      ②      ③ ④      ⑤      ⑥

① Series name : MDF51	③ Number of contacts : 2
② Configuration type Blank : Contact pitch 12mm, standard SU : Contact pitch 13mm, standard	④ Connector type S: Crimp socket
	⑤ Contact pitch 12mm or 13mm
	⑥ Termination C: Crimp

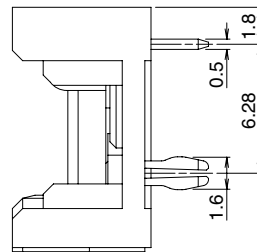
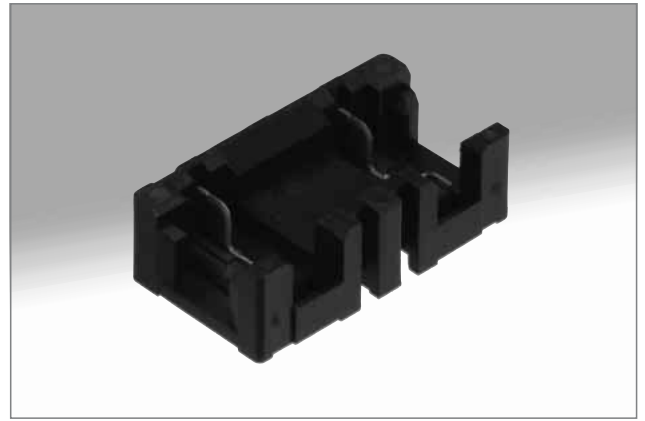
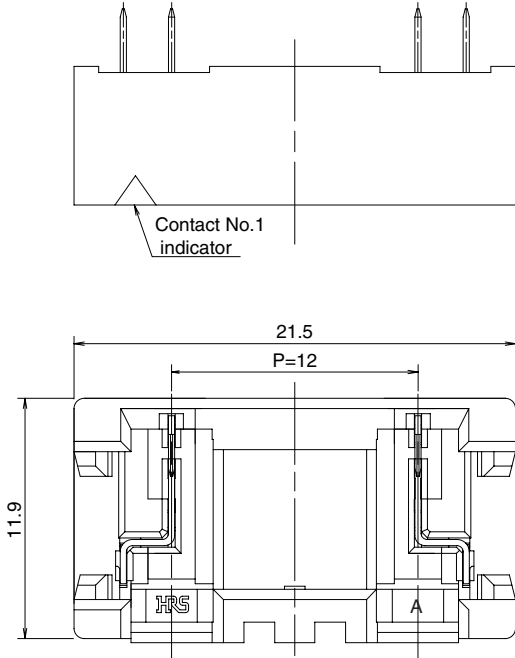
**Contacts**

**MDF51 - 24 SCF**  
 ①      ②

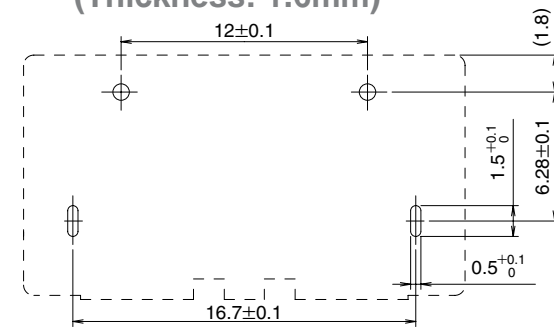
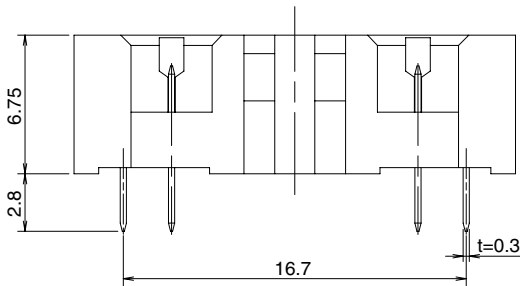
① Applicable conductor 24: AWG# 24	② Packaging SCF: Female crimp contact / reel
---------------------------------------	-------------------------------------------------

## Header, MDF51K (Contact pitch 12mm)

### ●Straight, through hole

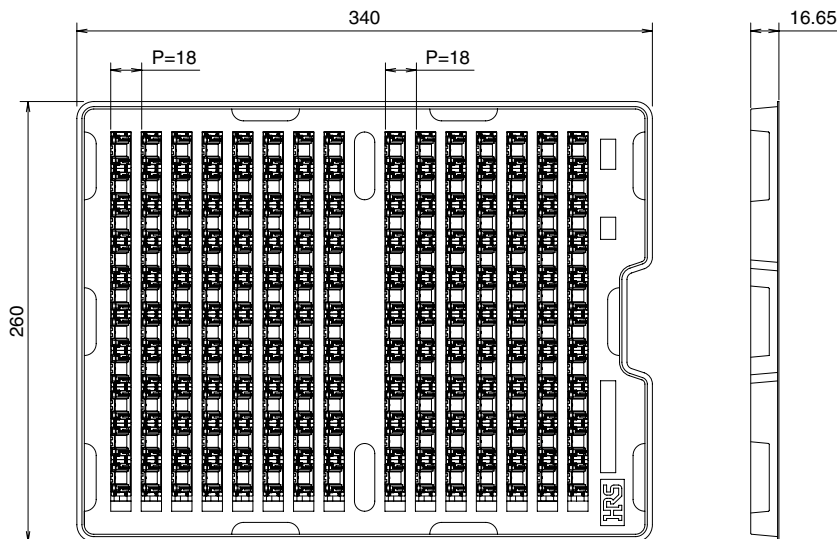


### ◆Recommended PCB mounting pattern (Thickness: 1.6mm)



All dimensions: mm

### ●Packaging Specification

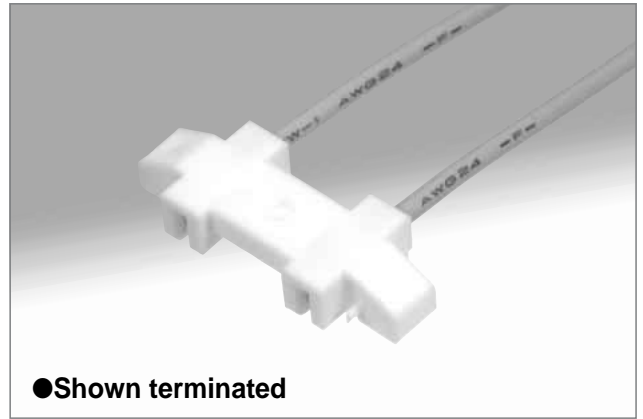
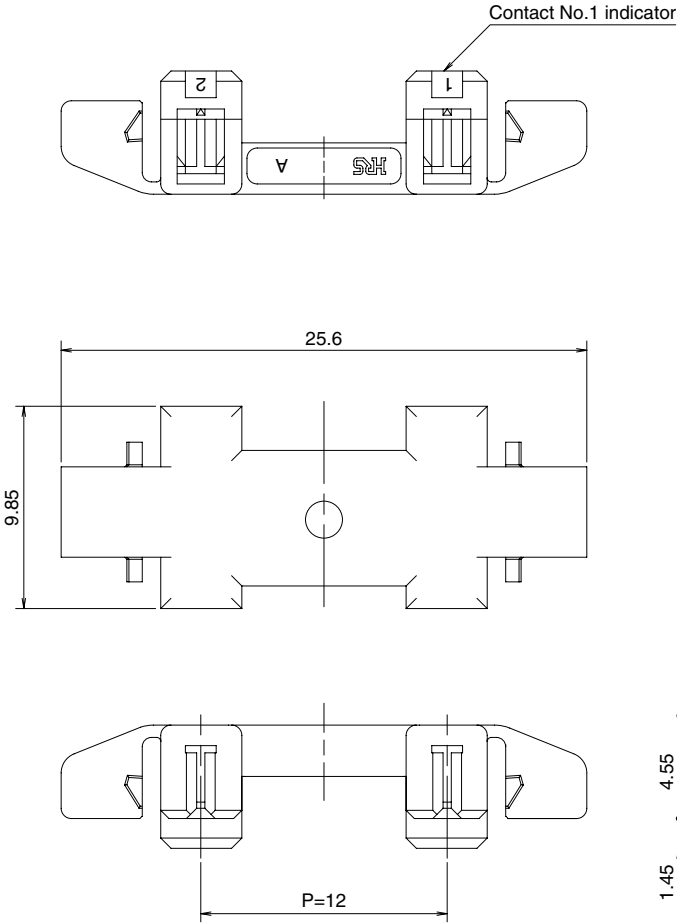


Part Number	CL No.	Number of contacts	Insulator Color	Packaging	RoHS
MDF51K-2P-12DSA(20)	547-2017-9-20	2	Black	150 pieces/ tray	YES

Order by number of 150.

**MDF51 Series High Voltage Board to Cable Connectors**

● **Crimp socket**



● **Shown terminated**

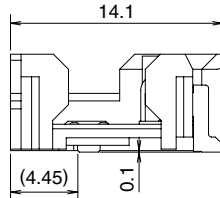
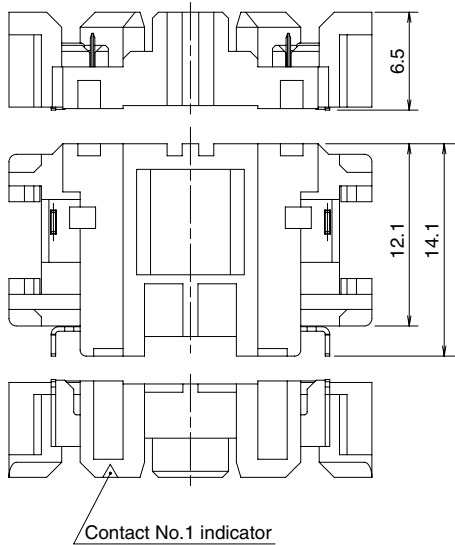
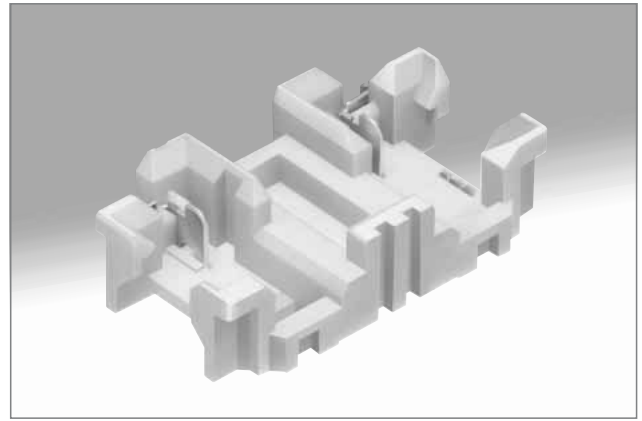
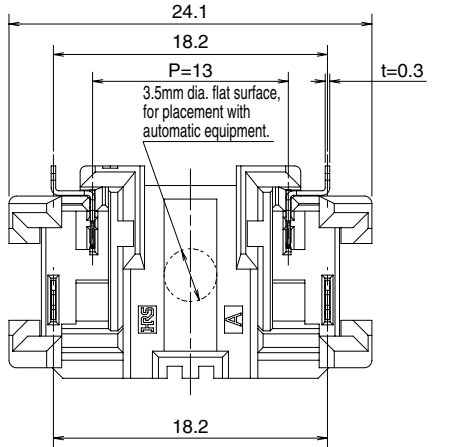
• **Contacts supplied separate**

Part Number	CL No.	Number of contacts	Insulator Color	Packaging	RoHS
MDF51-2S-12C	547-2004-7-00	2	White	100 pieces/bag	YES

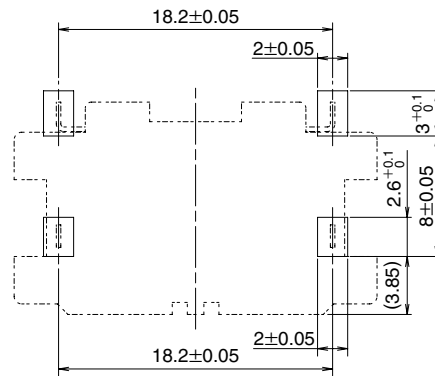
Order by number of bags.

## Header, MDF51SU (Contact pitch 13mm)

### ●Straight, surface mount

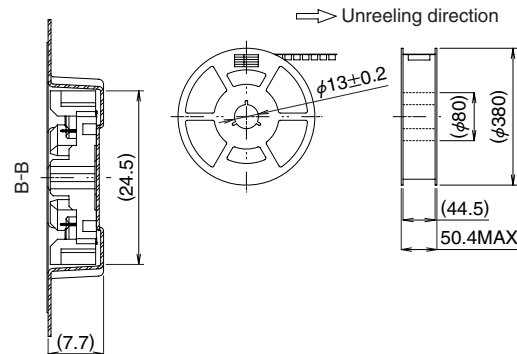
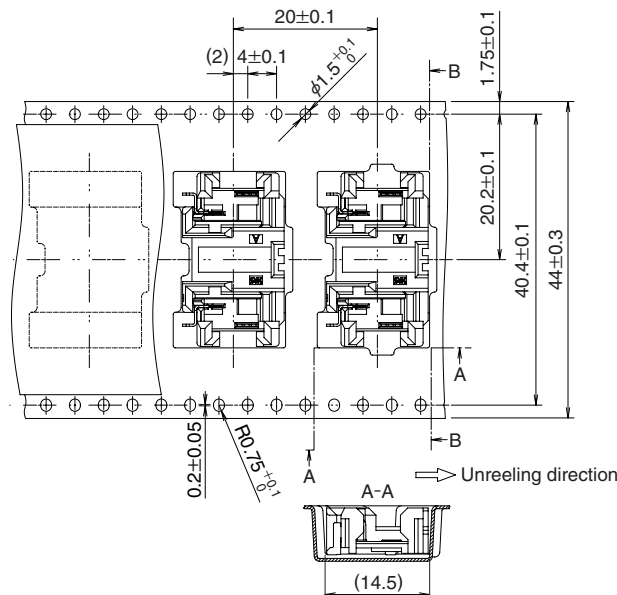


### ◆Recommended PCB mounting pattern



### ●Packaging Specification

All dimensions: mm

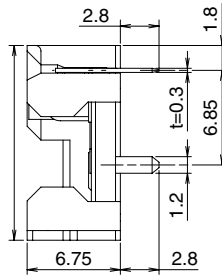
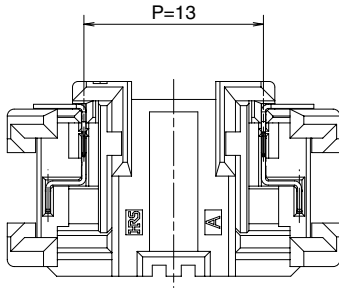
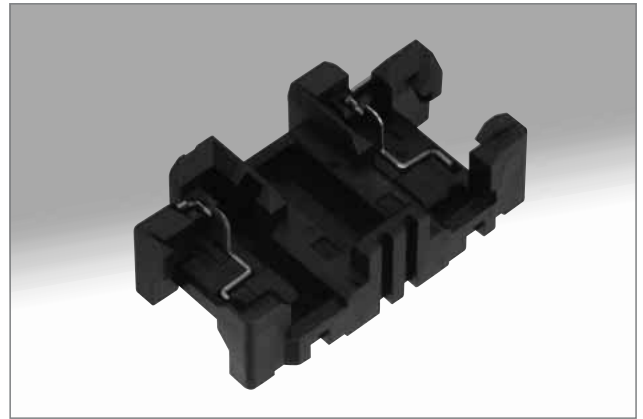
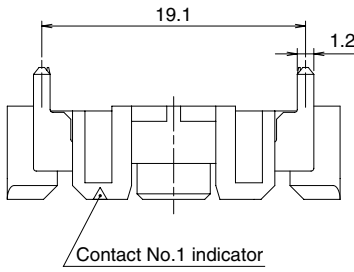


Part Number	CL No.	Number of contacts	Insulator Color	Packaging	RoHS
MDF51SU-2P-13V(23)	547-2016-6-23	2	Beige	600 pieces/reel	YES

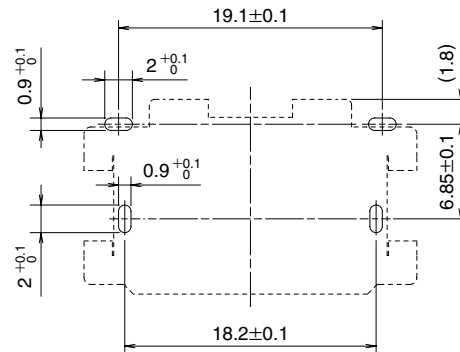
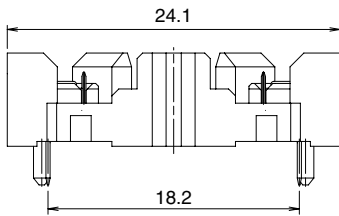
Order by number of reels.

**MDF 51 Series High Voltage Board to Cable Connectors**

● **Header, Straight, through hole**

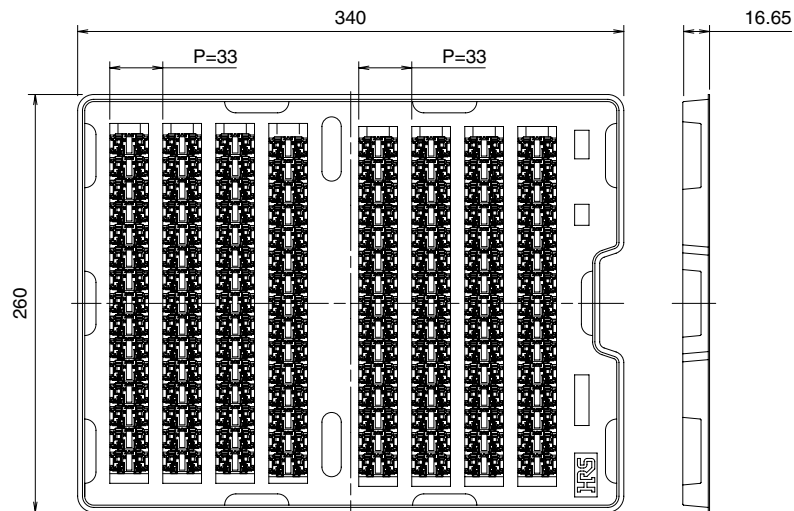


◆ **Recommended PCB mounting pattern (Thickness: 1.6mm)**



● **Packaging Specification**

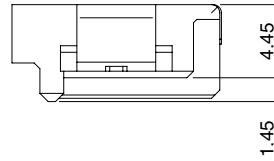
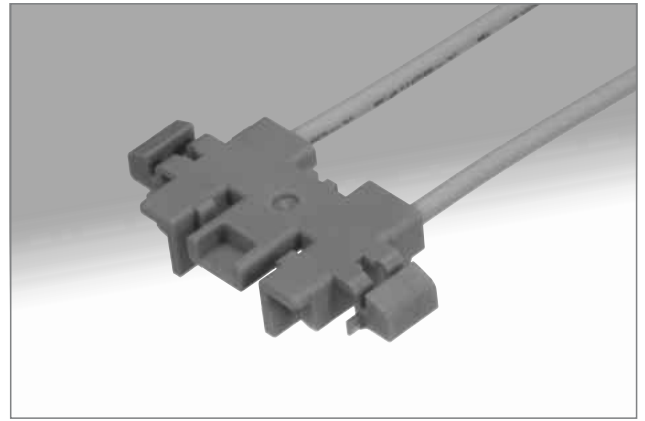
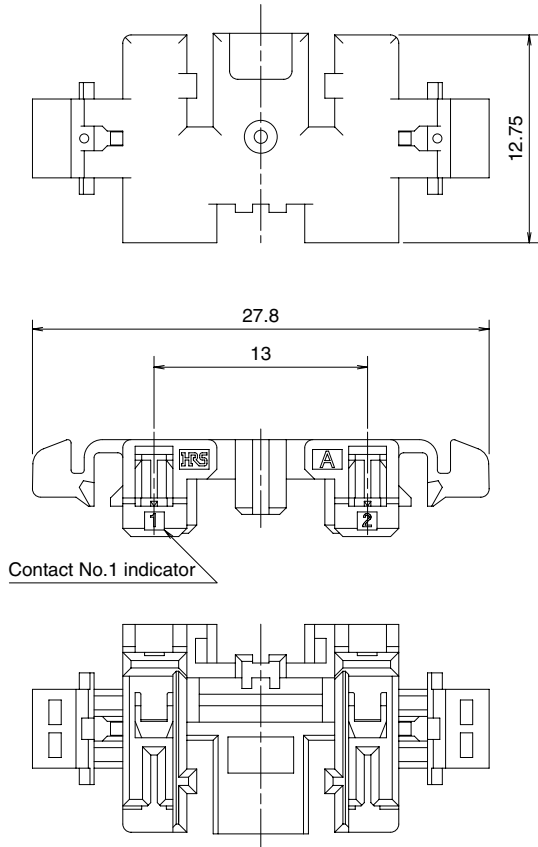
All dimensions: mm



Part Number	CL No.	Number of contacts	Insulator Color	Packaging	RoHS
MDF51SY-2P-13DSA(21)	547-0920-3-21	2	Black	120 pieces/tray	YES

Order by number of 120.

●Crimp socket



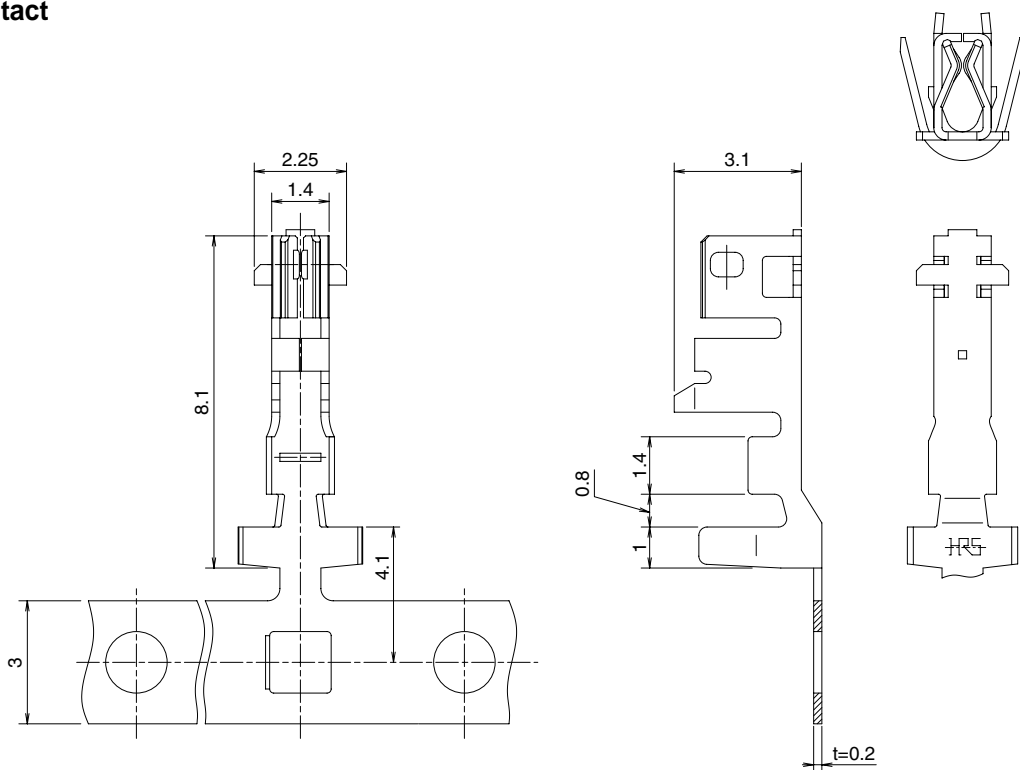
Part Number	CL No.	Number of contacts	Insulator Color	Packaging	RoHS
MDF51SU-2S-13C(03)	547-2018-1-03	2	Gray	100 pieces/bag	YES

Order by number of bags.



**MDF51 Series High Voltage Board to Cable Connectors**

● **Crimp contact**



All dimensions: mm

Part Number	CL No.	Packaging	Quantity	Finish	RoHS
MDF51-24SCF(40)	547-2005-0-40	Reel	10,000	Tin plated	YES

● **Applicable wire (Tin plated annealed copper wire)**

Wire size (Stranded wire conductor)	Jacket diameter
AWG24 (19 / 0.127mm)	1.74mm

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

- UL style: UL3239
- Strip length  
1.8 to 2.6mm

■ **Tools**

Type	Part Number	CL No.	Applicable contact
Applicator	AP105-MDF51-24S	CL901-4607-9-00	MDF51-24SCF
Press	CM-105	CL901-0005-4-00	—————
Contact extraction tool	DF-C-PO(B)	CL550-0179-2-00	MDF51-24SCF

## Usage Recommendations

<p>1. Recommended temperature profile</p>	<div data-bbox="618 204 1373 774" data-label="Figure"> <p>The graph plots Temperature (°C) on the vertical axis (100, 150, 200, 250) against Time (Seconds) on the horizontal axis. The profile consists of several segments: a rise from 100°C to 150°C with a duration of 60~120 seconds; a rise from 150°C to 180°C; a rise from 180°C to 230°C with a duration of 30~60 seconds; a peak at 255°C MAX with a duration of 10s MAX; and a final cooling phase from 230°C down to 100°C.</p> </div> <p>Note 1: Up to 2 cycles of Reflow soldering are possible under the same conditions, provided that there is a return to normal temperature between the first and second cycle.</p> <p>Note 2: The temperature profile indicates the board surface temperature at the point of contacts with the connector terminals.</p>
<p>2. Recommended flow temperature</p>	<p>Peak temperature: 260°C for 10 seconds max.</p>
<p>3. Recommended manual soldering</p>	<p>Manual soldering: 380°C for 3 seconds</p>
<p>4. Recommended screen thickness and open area ratio (Pattern area ratio)</p>	<p>Thickness: 0.15 mm Open area ratio: 100%</p>
<p>5. Board warpage</p>	<p>Maximum of 0.03 mm at the connector center, with both ends of the connector as reference points.</p>
<p>6. Cleaning conditions</p>	<p>Refer to "Nylon Connector Use Handbook".</p>
<p>7. Wire preparation and contact crimping</p>	<p>Refer to "Nylon Connector Use Handbook". The crimp contact termination must be performed using specified tools. All dimensions and crimp conditions are listed in applicable Crimp Condition Table and Crimping Quality Standards Manual.</p>

## MDP 51 Series High Voltage Board to Cable Connectors

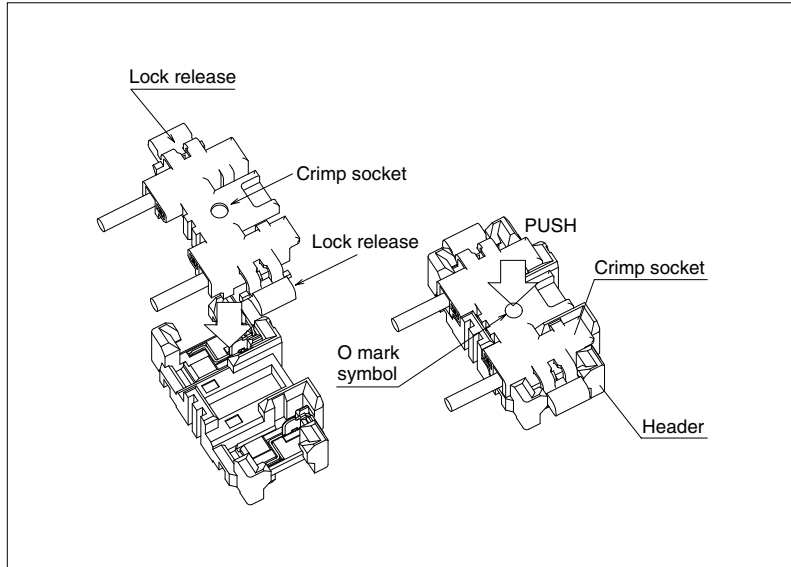
### 8. Precautions

#### ■ Mating

Socket will self-align in the header.

Align the Socket over the header and firmly push-down at the "O" symbol until both locks are fully engaged.

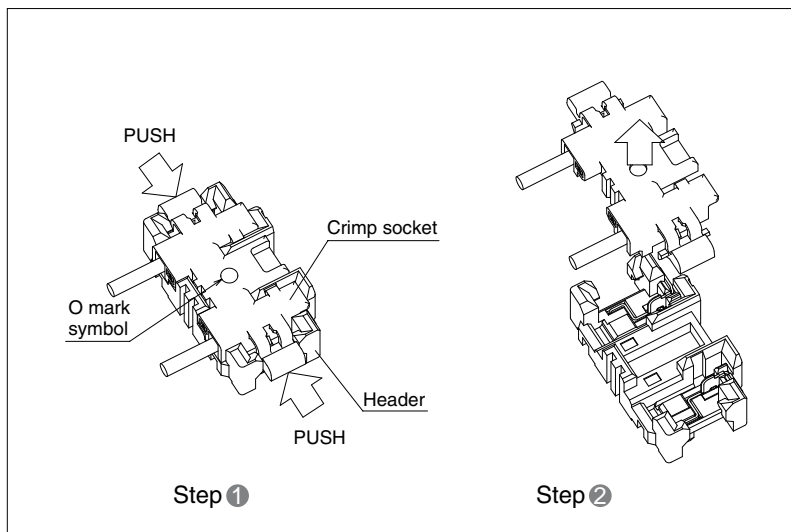
Tactile "click" sensation will confirm fully locked condition.



#### ■ Unmating

① Compress both lock releases even, toward each-other.

② While compressing the lock releases pull the socket straight up until free of the header.



■ The crimped contacts must be fully inserted in the crimp socket horizontally and will self-guide itself in the proper position

■ The header must be mounted on the PC board when mating with the corresponding socket.

■ Differences in colors shade of the molded components will not affect form, fit or function.

■ Contact HRS if additional information is required.

# Mouser Electronics

Authorized Distributor

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## Hirose Electric:

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