PRODUCT CATALOG

HIROSE ELECTRIC CO.,LTD.

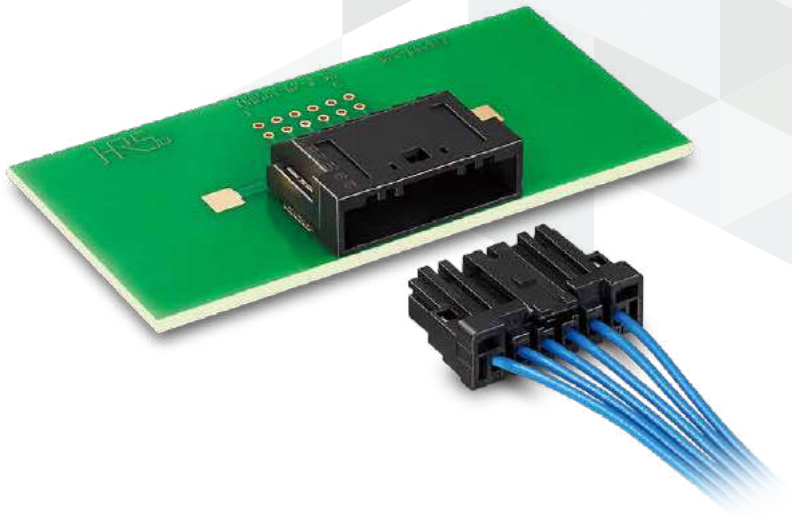
ZG05HV Series

# High-Voltage Wire-to-Board Connector : Size: 0.5, Pitch: 3.3mm

Finger Protect

125℃ High Temp

Contact Reliability



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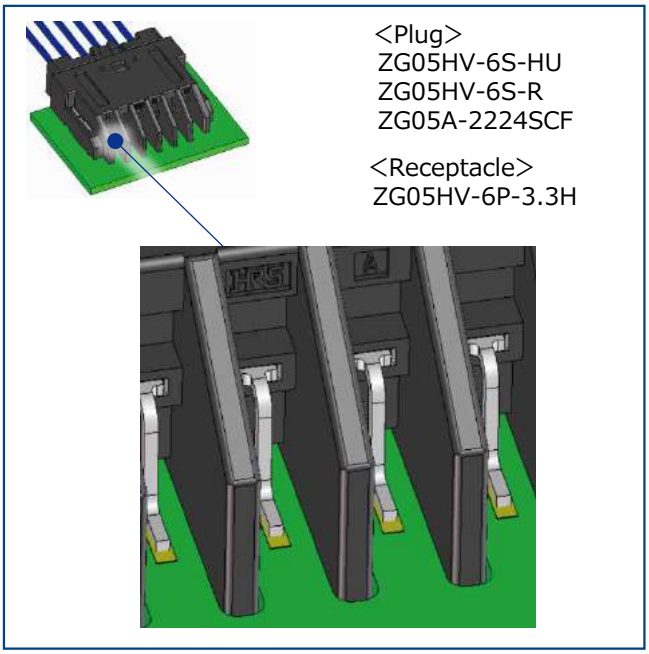
Apr. 2024

# Features

## 1. Supports High-Voltage

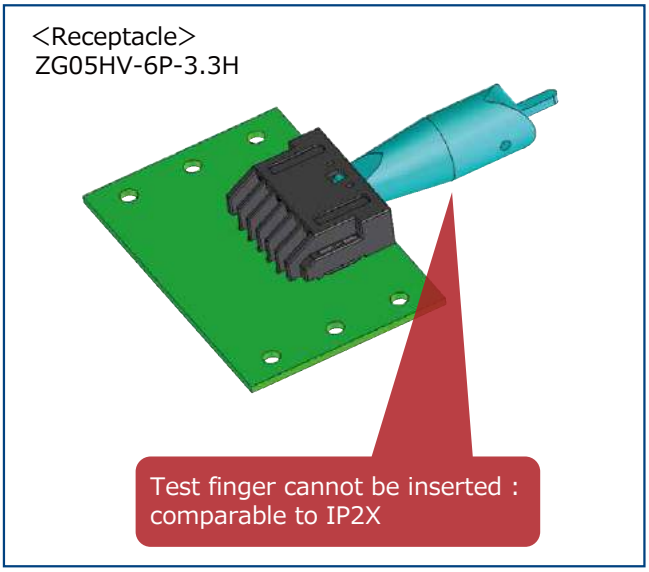
Rated Voltage : 1,000V AC/DC
Withstanding Voltage : 3,000V AC

Housing Design ensures sufficient creepage and spatial distance between contacts, allowing for high rated and withstanding voltages in a compact form.




## 2. Electric Shock Prevention Design

The depth of the design provides electric shock protection, thereby enhancing assembly safety.




## 3. High Heat Resistance up to 125℃

- Can withstand temperatures up to 125 degrees, suitable for automotive and other high-heat applications.

Note: Temperature ratings include the rise due to current flow.

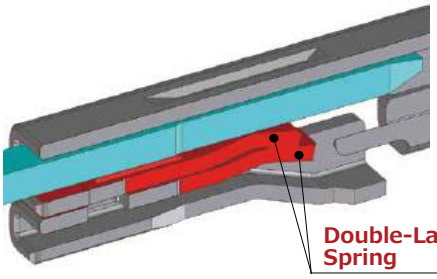
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## 4. High Vibration Resistance

- Female contact features an innovative three-point contact design.
- Double-layered spring enhances stability
- Designed to maintain contact under intense vibrations, improving reliability.

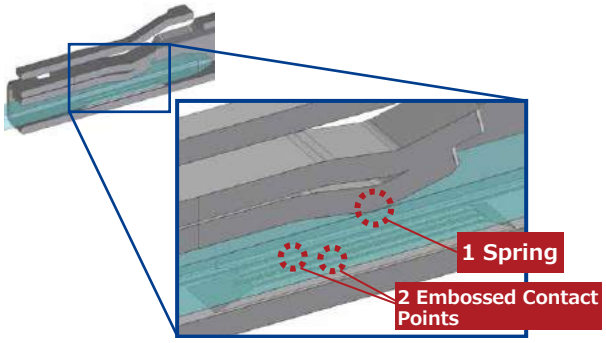
①Double-Layered Spring Design

Provides superior vibration resistance and contact reliability.




②3-Point Contact Design

Withstands severe vibration due to improved contact reliability.
1 Spring + 2 Embossed Contact Points = 3-Point Contact Design




Note: The contact is intentionally inverted to make the embossed contact points more visible.

## 5. Mating Key Design Prevents Incorrect Insertion.

Prevents incorrect insertion, ensuring proper alignment.

- Mating Keys : Standard (Black) and A (Orange), Two Key Types

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## Product Specifications

| | | | |
|---|---|---|---|
| Rated Current | 1A (All pins power supply) | Operating Temperature (Note1) | -40 to +125℃ |
| Rated Voltage | 1,000V AC/DC | Storage Temperature (Note2) | -10 to +60℃ |
| | | Storage Humidity Range (Note2) | Relative humidity 85% Max. (No condensation) |

| Items | Specifications | Conditions |
|---|---|---|
| Contact Resistance | 10mΩ Max. | Measured at 1A DC |
| Insulation Resistance | 100MΩ Min. | Measured at 1,000V DC |
| Withstanding Voltage | No insulation breakdown | Before mated connector : 2,000V AC for 1 min.<br>After mated connector : 3,000V AC for 1 min. |
| Mating Durability | Contact Resistance : 20mΩ Max. | 30 Insertion/Extraction cycles |
| Vibration Resistance | No electrical discontinuity of 7Ω Min., 1μs Min.<br>Contact Resistance : 20mΩ Max. | 20 to 200Hz (Constant Acceleration of 88m/s$^2$),<br>1 Cycle 3 min. (round trip), 3 hours in 3 directions |
| Lock Strength | 100N Min. | Lock breaking strength measured when pulling in mating axis direction |
| Humidity Resistance | Contact Resistance : 20mΩ Max.<br>Insulation Resistance : 100MΩ Min. | Left for 96 hours at a temperature of 60℃ and a relative humidity 90 to 95% |
| Thermal Shock | Contact Resistance : 20mΩ Max. | Temperature : -40℃ → Room temperature → +125℃ → Room temperature<br>Time : 30 → 5 → 30 → 5 minutes for 1,000 cycles |
| Heat Resistance | Contact Resistance : 20mΩ Max. | Left at 140℃ for 120 hours |
| Cold Resistance | Contact Resistance : 20mΩ Max. | Left at -40℃ for 120 hours |
| Sulfuric Acid Gas Resistance | Contact Resistance : 20mΩ Max. | Left in sulfuric acid gas at room temperature with a concentration of 25ppm and 75% or more RH for 96 hours while unmated |

Note 1 : Includes the temperature rise due to current flow.
Note 2 : Storage refers to long-term storage of unused items before they are mounted on the PCB.
The specified operating temperature and humidity apply when the product is unpowered post-PCB installation and during temporary storage in transit.

## Materials / Finish

| Component | Part | Material | Color / Finish | UL Standard |
|---|---|---|---|---|
| Receptacle | Housing | PA | Black or Orange | UL94V-0 |
| | Contact | Brass | Tin Plating (Nickle Underplating) | - |
| | Retention Tab | Brass | Tin Plating (Nickle Underplating) | - |
| Plug | Housing | PA | Black or Orange | UL94V-0 |
| | Retainer | PA | Dark Gray | UL94V-0 |
| Crimp Contact | Contact | Copper Alloy | Tin Plating (Copper Underplating) | - |

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# Product Number Structure

Please utilize the below part number chart when selecting.

## ■ Connector

**ZG05HV - 6 P - 3.3 H (A)**
❶ ❷ ❸ ❹ ❺ ❻

## ■ Crimp Contact

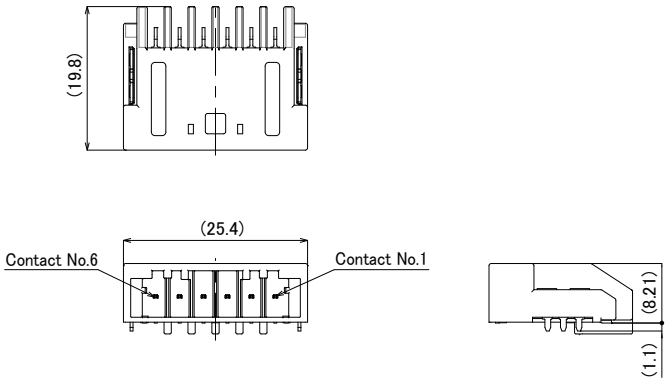
**ZG05A - 2224 SCF**
❼ ❽ ❾

| | | | |
|---|---|---|---|
| ❶ Series Name | ZG05HV | ❻ Mating Key | None : Standard<br>(A) : A key |
| ❷ No. of Pos. | Mass Production : 6pos.<br>Under Planning : 10pos. | ❼ Contact Name | ZG05A |
| ❸ Connector Type | P : Receptacle<br>S : Plug | ❽ Applicable Cable | 22, 24 AWG |
| ❹ Contact Pitch | 3.3mm | ❾ Type / Packaging Type | Socket Contact / Reel |
| ❺ Product Type | H : Horizontal Mounting Type<br>HU : Socket Housing<br>R : Retainer | | |

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## Receptacle

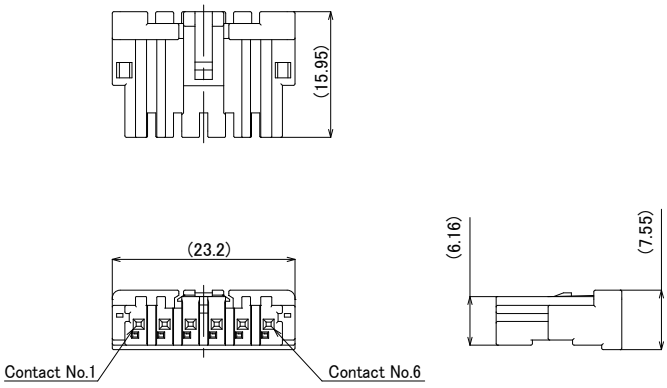





| Part No. | HRS No. | Color | Mating Key | No. of Pos. | Purchase Unit |
|---|---|---|---|---|---|
| ZG05HV-6P-3.3H | CL0754-2112-0-00 | Black | Standard | 6 | 300pcs per reel |
| ZG05HV-6P-3.3H(A) | CL0754-2113-0-00 | Orange | A Key | 6 | |

## Plug Housing



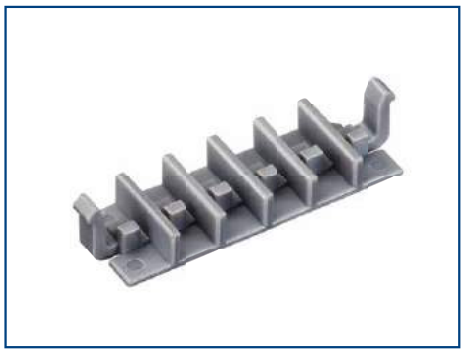


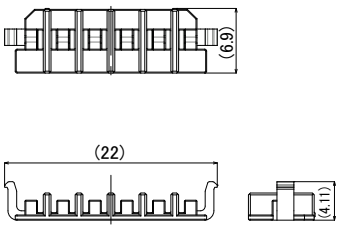

| Part No. | HRS No. | Color | Mating Key | No. of Pos. | Purchase Unit |
|---|---|---|---|---|---|
| ZG05HV-6S-HU | CL0754-2206-0-00 | Black | Standard | 6 | 1,000pcs per box |
| ZG05HV-6S-HU(A) | CL0754-2207-0-00 | Orange | A Key | 6 | |

Note : Use with the retainer (ZG05HV-6S-R), sold separately.

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## Retainer



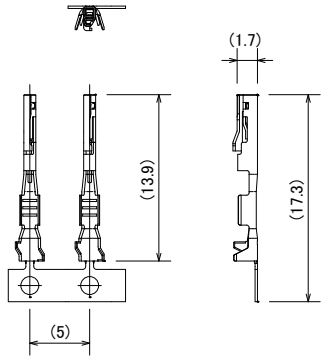



| Part No. | HRS No. | No. of Pos. | Purchase Unit |
|---|---|---|---|
| ZG05HV-6S-R | CL0754-2300-0-00 | 6 | 6,000pcs per box |

Note : Attach to the plug housing (ZG05HV-6S-HU(#)), sold separately.

## Crimp Contact






| Part No. | HRS No. | Applicable Cable | Purchase Unit |
|---|---|---|---|
| ZG05A-2224SCF | CL0754-2001-0-00 | 22, 24 AWG (0.22-0.35sq),<br>Jacket Outer Diameter ϕ 1.1-1.4mm | 15,000pcs per reel |

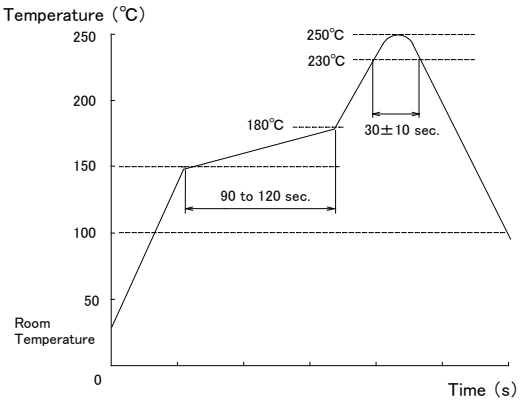
## Applicable Tools

| Type | Part No. | HRS No. | Compatible Crimp Contact |
|---|---|---|---|
| Hirose Crimping Tool | CM-105C | CL0901-0001-0-00 | - |
| Applicator for Hirose Crimping Tool | AP105-ZG05A-2224S | CL0901-5240-0-00 | ZG05A-2224SCF |
| Japan Automatic Machine Applicator (Note 1) | CHX0346000H | - | ZG05A-2224SCF |
| Hand Tool (Note 2) | HT802/ZG05A-2224S (Note 3) | CL0550-0313-0-00 | ZG05A-2224SCF |
| Retainer Releasing Tool | ZG05HV/R/RE-MD | CL0902-5176-0-00 | - |
| Contact Removing Tool | ZG05A/RE-MD | CL0902-5146-0-00 | - |

Note 1 : Contact Japan Automatic Machine (J.A.M.) regarding crimping failure relating to applicable J.A.M. applicators or for other applicator inquiries via the J.A.M. website. (URL : http://www.jam-net.co.jp)
Note 2 : Hand tools are developed as a prototype tool during product development. Use an applicator for mass production.
Note 3 : Applicable cables are limited to 0.22 and 0.35sq. Cut the reel contact for use with the hand tool.
Note 4 : Crimping should be carried out based on the "Crimping Quality Standards" and "Crimping Conditions Table."
Note 5 : Problems caused by tools other than those specified are not covered by the warranty.

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## Usage Precautions

| | |
|---|---|
| Recommended Temperature Profile | <br>【Conditions】<br>1. Reflow Heating Method Used :<br>Far infrared, air atmosphere or nitrogen<br>2. Peak Temperature 250℃ Peak<br>3. Heated part 230℃ Min. 20-40 sec.<br>4. Preheat Temperature 150 to 180℃ 90-120 sec.<br>5. Cycles 2 times Max. |
| Recommended Manual Soldering Conditions | Soldering iron temperature : 280 to 300℃ , Soldering time : within 2 seconds |
| Cautions | 1. Forcing the connector out may result in damage.<br>If difficult to remove, gently press down once before releasing the lock.<br>2. Always disconnect power before reseating the connector.<br>3. Avoid touching the terminal area when the power is active, as it's hazardous.<br>4. For harnessing guidelines, please consult a Hirose representative. |

## While Taking into Consideration

Specifications mentioned in this catalog are reference values.
When considering to order or use this product, please review the Drawing and Product Specifications sheets.
Use an appropriate cable when using the connector in combination with cables.
If considering usage of a non-specified cable, please contact your sales representative.
If assembly process is done by jigs & tools which are not identified by Hirose, the warranty of the product may be affected.
If considering usage for below mentioned applications, please contact your sales representative.
In cases where the application will demand a high level of reliability, such as automotive, medical instruments, public infrastructure, aerospace/defense etc. Hirose must review before assurance of reliability can be given.

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