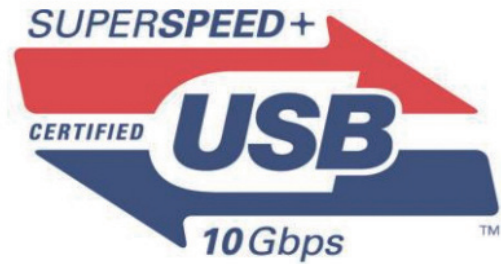


USB Type-C Connector

CX Series

USB from Hirose Electric : Standard connections, inspired solutions.



Note: Please contact HIROSE for TID acquisition status of each product.

Overview

The CX series connector conforms to the next-generation USB standard "USB Type-C™". It is expected to be widely adopted as a standard interface in various devices in the consumer, industrial machinery and automobile market.

※"USB Type-C™" is a registered trademark of USB Implementers Forum, INC

Features

1. Easy mating with reversible form factor

The symmetrical design eliminates concern for backward insertion. Simply insert the plug in either direction.

2. Conforms to the USB type-C standard

3. USB 3.1 Gen2, 10Gbps high speed transmission

USB Type-C can transfer data twice as fast compared to a conventional USB 3.0 (5Gbps), 10Gbps (Max.)

Also, if alternate mode is applied, it becomes possible to meet various video transmission standards such as MHL and Display Port.

4. Clear tactile click (Excellent Retention)

CX series has a superior "click feel" when mating and is designed to prevent incomplete mating.

5. Design for superior mechanical strength

6. Many varieties

SMT+THR Hybrid type (Mid-mount) : Fig.1

Waterproof (Mid-mount) : Fig.2

Single-row SMT (Mid-mount/16PIN) : Fig.3

Vertical (Top-mount) : Fig.4

Double-row SMT (Top-mount) : Fig.5

7. Plug harness with slim overmold Type-C (C-to-C Type)

: Fig.6

8. RoHS compliant, halogen-free product

CX series is halogen-free product.

(Maximum content of Br, Cl and Br+Cl total are 900ppm, 900ppm and 1500ppm, respectively.)

Mid-mount



Fig.1



Fig.2



Fig.3

Top-mount

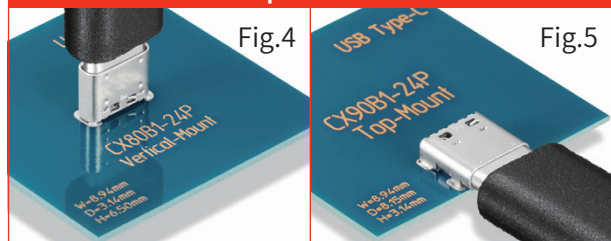


Fig.4



Fig.5

Plug Harness



Fig.6

■ Product Specifications

| Ratings | Rated Current | DC 1.25A max. for each power pin (i.e. A1, A4, A9, A12, B1, B4, B5, B9, B12) DC 0.25A for the other pins | Rated Voltage | AC 20V |
|--|---------------|--|------------------------------------|-----------------------------|
| | | | Operating Temp. Range | -40°C to + 85°C (Note 1, 2) |
| | | | Storage Temp. Range | -10°C to + 60°C |
| Items | | Specifications | Conditions | |
| 1. Contact resistance | | 40mΩ max. | Measured at 100mA (DC or 1000Hz) | |
| 2. Withstand voltage | | No flashover or breakdown | 100V AC / 1min. | |
| 3. Durability | | Contact resistance : Increase by 10mΩ or less from the initial value | 10,000 mating cycles | |
| 4. Overall insertion / Extraction forces | | Insertion : 5~20N, Extraction : 8~20N | Measured with applicable connector | |

Note 1 : Includes temperature rise caused by current flow.

Note 2 : The above specifications are representative of this series.
Please refer to product specsheet for detail each of products.

Note 3 : The above specifications are representative of this series.
Hirose does not guarantee specified performance when mating with other manufacturers' parts.

■ Materials / Finish

● Receptacle

| Parts | Materials | Color/Finish |
|--------------|------------------|--|
| Insulator | LCP or Polyamide | Black/UL94V-0 |
| Contact | Copper alloy | Mating part : Gold flash plating over Nickel-palladium plating Mounting part : Gold flash plating |
| Ground-plate | Stainless steel | - |
| Mid plate | Stainless steel | Nickel plating |
| Shell | Stainless steel | Nickel plating |

● Plug

| Parts | Materials | Color/Finish |
|---------------|------------------|--|
| Insulator | LCP or Polyamide | Black/UL94V-0 |
| Contact | Copper alloy | Mating part : Gold flash plating over Nickel-palladium plating Mounting part : Gold flash plating |
| Lock spring | Stainless steel | Nickel plating |
| Ground spring | Stainless steel | Nickel plating |
| Shield | Stainless steel | Nickel plating |

※ This is a halogen-free product.

(Maximum content of Br, Cl and Br+Cl total are 900ppm and 1500ppm, respectively.)

Note : The above data is representative of this series. Data may vary according to specifications.

■ Product Number Configurator

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.

● Receptacle

CX 90 * ** * - ** * *

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

● Plug

CX 60 - ** * - UNIT

① ② ⑥ ⑦ ⑨

CX 60 - SLDA

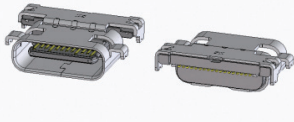



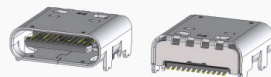



① ② ⑨

CX 60 - ** * - 1000 C

① ② ⑥ ⑦ ⑩ ⑪

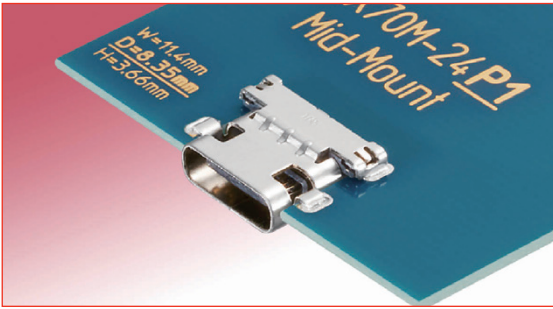
| | | |
|--------------------|-------|--|
| ① Series name | | CX |
| ② Mounting type | 60 | Paddle Card (PCB wire soldering) |
| | 70 | Right angle Hybrid (SMT+THR) |
| | 80 | Straight SMT (Vertical) |
| | 90 | Right angle SMT |
| ③ Board mounting | B | Top-mount |
| Style (Receptacle) | M | Mid-mount |
| ④ Special | WD | Waterproof |
| | Blank | Standard |
| ⑤ No. of serial | | None or 1, 2, 3, ... (CX80, CX90 Series) |
| ⑥ No. of contact | | 16, 24 |
| ⑦ Contact type | P | Receptacle (Male contacts) |
| | S | Plug (Female contacts) |
| ⑧ No. of serial | | None or 1, 2, 3, ... (CX70 Series only) |
| ⑨ Plug components | UNIT | Plug unit |
| | SLDA | Plug shell |
| ⑩ Cable length | | 1000mm |
| ⑪ Harness Type | C | Type C-to-Type-C |

Product Variation

| | PCB Mounting Type | Mounting Method | Product Name | 3D Image | Size W x H x D (mm) | Page |
|--------------|-------------------|------------------------------|-----------------|--|---------------------|--------|
| Receptacle | Mid-mount | Right angle Hybrid (SMT+THR) | CX70M-24P1 |  | 11.40x3.66x8.35 | 5 page |
| | | | CX70M-24P2 |  | 11.40x3.66x7.95 | 5 page |
| | | Right angle (Double-row SMT) | CX90MWD2-24P |  | 11.60x3.46x8.35 | 6 page |
| | | Right angle (Single-row SMT) | CX90M-16P |  | 11.00x2.96x6.55 | 6 page |
| | Top-mount | Vertical (SMT) | CX80B1-24P |  | 8.94x3.14x6.50 | 7 page |
| | | Right angle (Double-row SMT) | CX90B1-24P |  | 8.94x3.14x8.15 | 7 page |
| Plug Unit | Paddle Card | Double-row SMT | CX60-24S-UNIT |  | 8.25x2.40x11.10 | 8 page |
| Plug Shell | - | | CX60-SLDA |  | 10.25x4.40x23.35 | 8 page |
| Plug harness | - | | CX60-24S-1000-C |  | 12.35x6.50x1000 | 9 page |

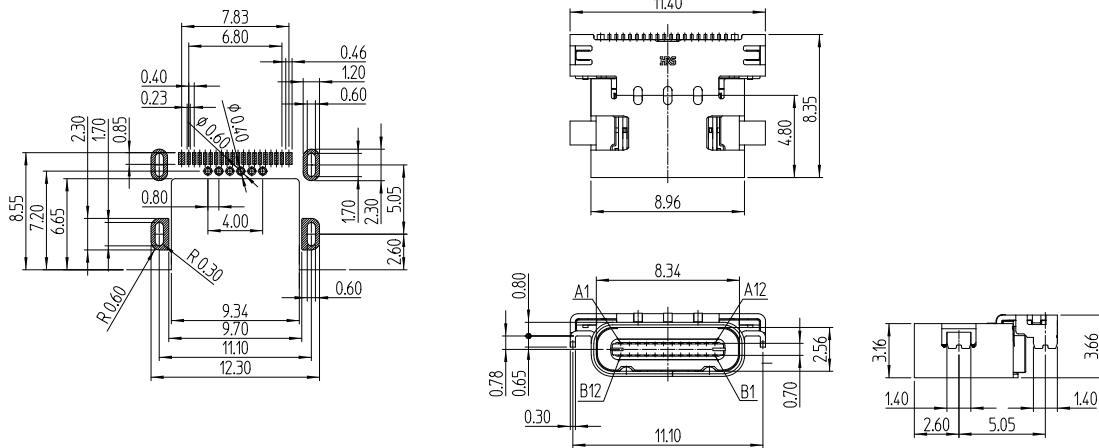
■ Receptacle

● Mid-mount Type (Right angle Hybrid) - Length 8.35mm

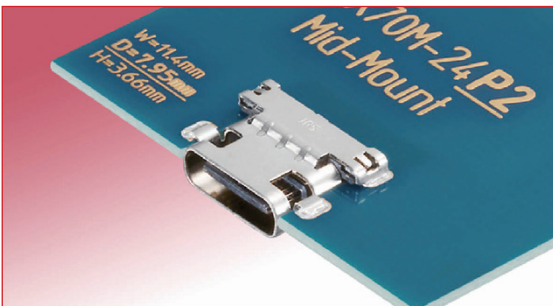


| Part No. | HRS No. | Packaging |
|------------|---------------|---------------|
| CX70M-24P1 | 480-0304-0 00 | 1,500pcs/Reel |

◆ Recommended PCB layout (Component side)

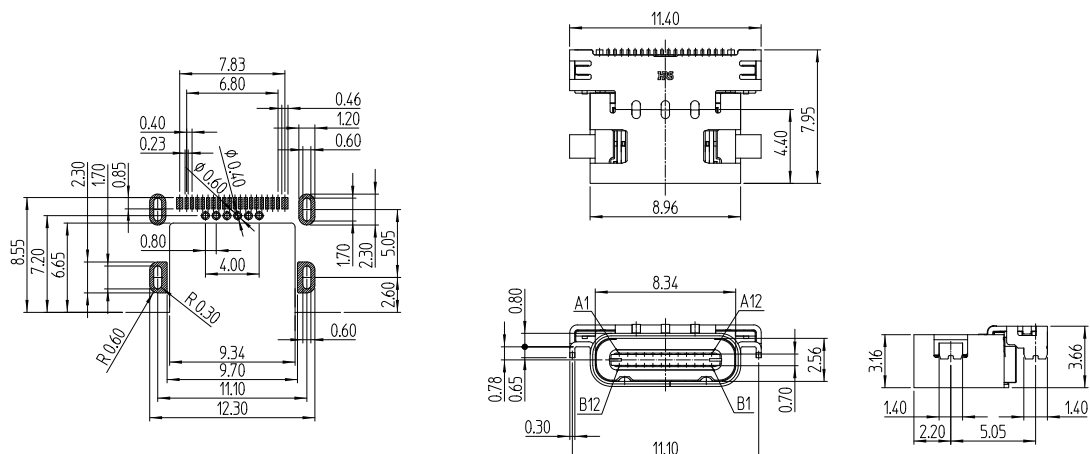


● Mid-mount Type (Right angle Hybrid) - Length 7.95mm



| Part No. | HRS No. | Packaging |
|------------|---------------|---------------|
| CX70M-24P2 | 480-0329-0 00 | 1,500pcs/Reel |

◆ Recommended PCB layout (Component side)



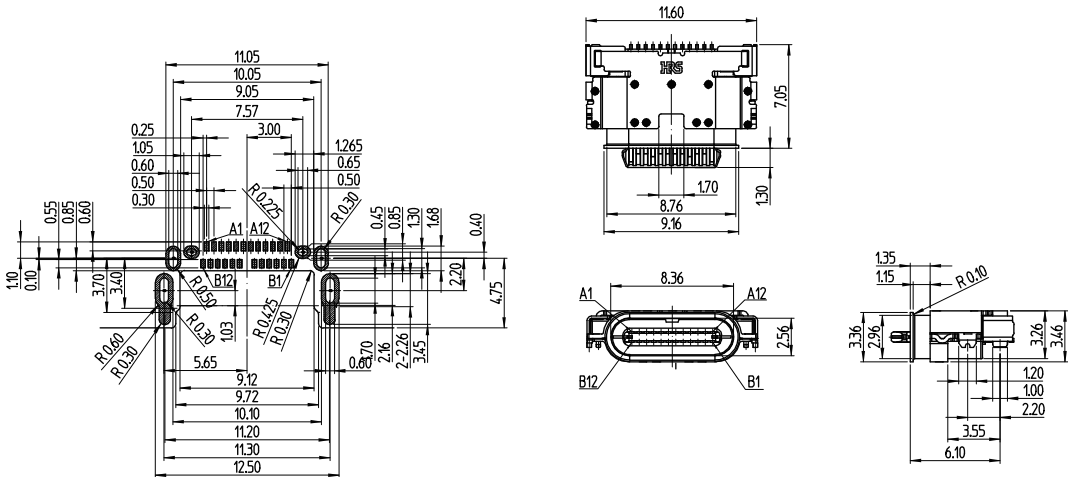
● Mid-mount type (Right angle Double-row SMT) - Waterproof (IPX8)



| Part No. | HRS No. | Packaging |
|--------------|---------------|---------------|
| CX90MWD2-24P | 480-0609-0 00 | 1,500pcs/Reel |

※ IPX8 waterproof (unmated) test condition :
Immersed in 1.5meter of water for 30 minutes

◆ Recommended PCB layout (Component side)

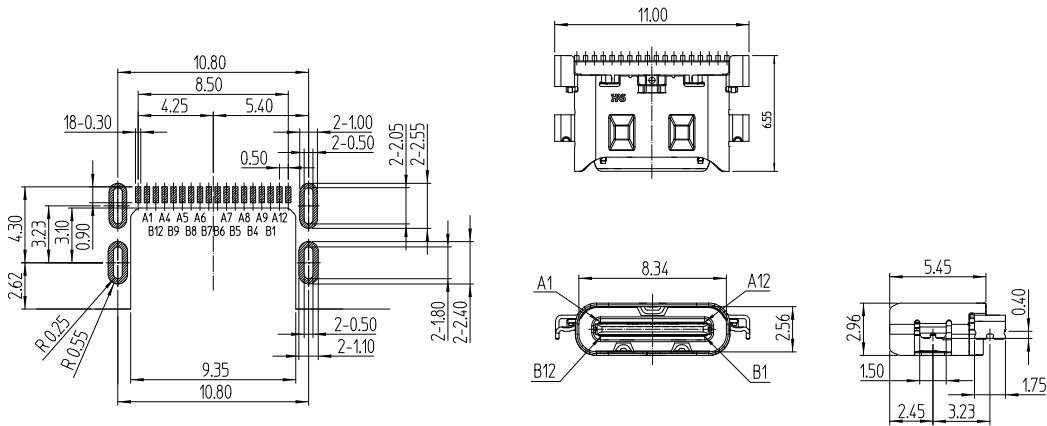


● Mid-mount type (Right angle Single-row SMT) - 16 Pin

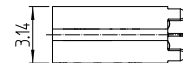


| Part No. | HRS No. | Packaging |
|-----------|---------------|---------------|
| CX90M-16P | 480-0513-0 00 | 1,600pcs/Reel |

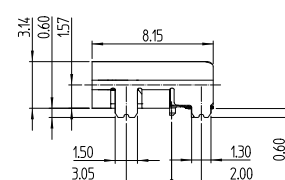
◆ Recommended PCB layout (Component side)



◆ Recommended PCB layout (Component side)



◆ Recommended PCB layout (Component side)



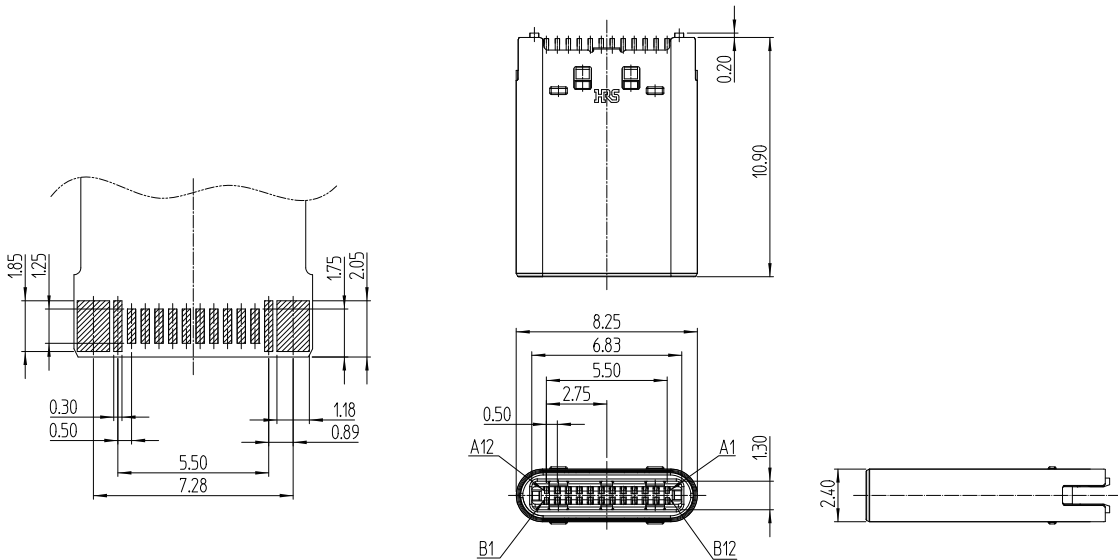
■ Plug

● Plug unit



| Part No. | HRS No. | Packaging |
|---------------|---------------|-------------|
| CX60-24S-UNIT | 480-0465-0 00 | 150pcs/Tray |

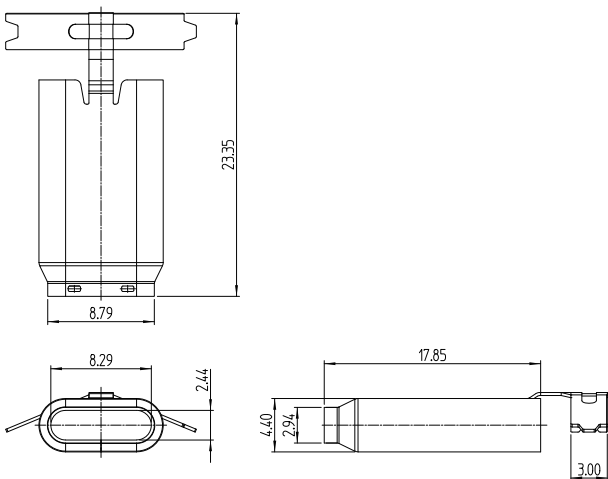
◆ Recommended PCB layout (Component side)



● Plug Shell



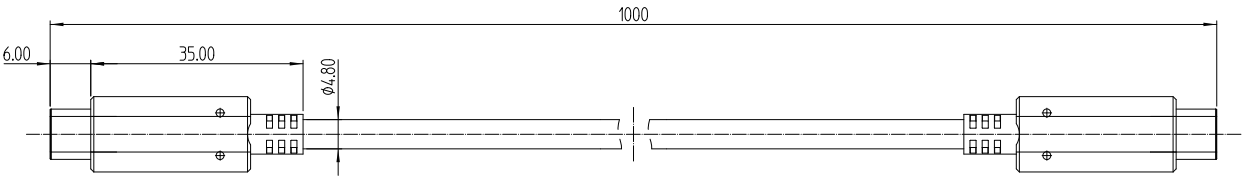
| Part No. | HRS No. | Packaging | Cable diameter |
|-----------|---------------|---------------|----------------|
| CX60-SLDA | 480-0522-0 00 | 3,000pcs/Reel | Φ4.8 |



● Plug Harness

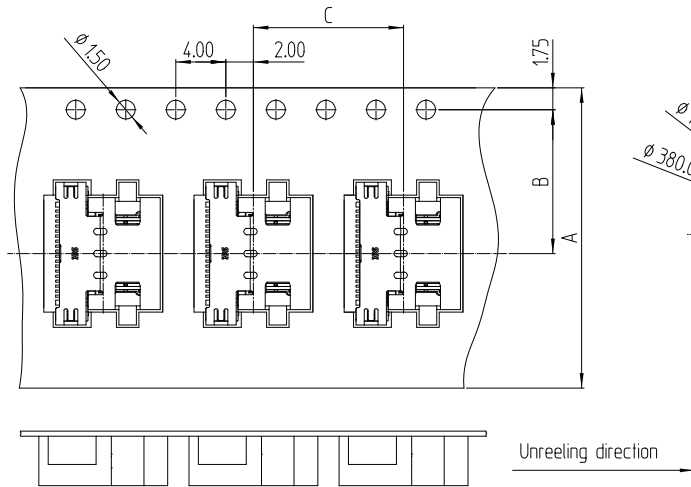


| Part No. | HRS No. | Packaging |
|-----------------|---------------|----------------|
| CX60-24S-1000-C | 480-0618-0 00 | 1pcs/Vinyl bag |

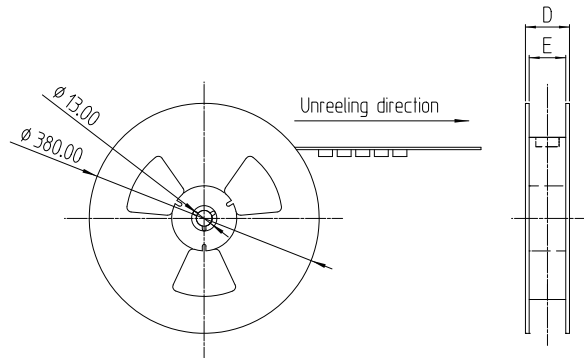


◆ Receptacle Packaging Specification (JIS C 0806-3 compliant)

● Emboss Carrier Tape Dimensions



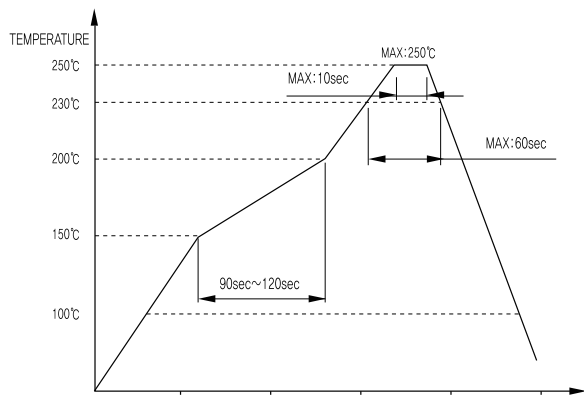
● Reel Dimensions



| Part No. | A | B | C |
|--------------|----|------|----|
| CX70M-24P1 | 24 | 11.5 | 12 |
| CX70M-24P2 | 24 | 11.5 | 12 |
| CX80B1-24P | 24 | 11.5 | 16 |
| CX90B1-24P | 24 | 11.5 | 12 |
| CX90MWD2-24P | 24 | 11.5 | 12 |
| CX90M-16P | 24 | 11.5 | 12 |

| Part No. | D | E |
|--------------|----|----|
| CX70M-24P1 | 30 | 26 |
| CX70M-24P2 | 30 | 26 |
| CX80B1-24P | 30 | 26 |
| CX90B1-24P | 30 | 26 |
| CX90MWD2-24P | 30 | 26 |
| CX90M-16P | 30 | 26 |

◆ Receptacle Recommended Solder Temperature Profile



The temperature profile is based on demonstrated conditions. In individual applications the actual temperature may vary, depending on solder paste type, volume/thickness and board size/thickness. Contact your solder paste and equipment manufacturer for specific recommendations.

Note 1 : Reflow is allowed up to 2times with the same conditions.
Please allow the parts to return to the ambient temperature before the second run is started.
Note 2 : The measured temperature is the temperature of the PCB surface around the connector leads.

Precautions

1. Please handle connectors with care. Excessive external force may damage the connectors.
2. To extract the plug, hold the plug body itself and remove straight from the receptacle.
Do not pull on the cable to extract the plug as this may damage the connector.
3. Due to the assembly process there may be some abrasions on the surface of the receptacle.
This will not have a negative impact on the performance of the product.
4. Due to external variances, the plating appearance on the surface of the receptacles may differ from lot to lot.
This difference will not affect the performance of this product.

USA:

HIROSE ELECTRIC (U.S.A.), INC. HEADQUARTERS CHICAGO OFFICE
2300 Warrenville Road, Suite 150,
Downers Grove, IL 60515
Phone : +1-630-282-6700
<http://www.hirose.com/us/>

USA:

HIROSE ELECTRIC (U.S.A.), INC. BOSTON OFFICE
300 Brickstone Square Suite 201,
Andover, MA 01810
Phone : +1-978-662-5255

GERMANY:

HIROSE ELECTRIC EUROPE B.V. NUREMBERG OFFICE
Neumeyerstrasse 22-26, 90411 Nurnberg
Phone : +49-911 32 68 89 63
Fax : +49-911 32 68 89 69
<http://www.hirose.com/eu/>

UNITED KINGDOM:

HIROSE ELECTRIC EUROPE BV (UK BRANCH)
4 Newton Court, Kelvin Drive, Knowlhill,
Milton Keynes, MK5 8NH
Phone : +44-1908 202050
Fax : +44-1908 202058
<http://www.hirose.com/eu/>

CHINA:

HIROSE ELECTRIC (CHINA) CO., LTD. SHENZHEN BRANCH
Room 09-13, 19/F, Office Tower Shun Hing Square, Di Wang Commercial Centre,
5002 Shen Nan Dong Road, Shenzhen City, Guangdong Province, 518008
Phone : +86-755-8207-0851
Fax : +86-755-8207-0873
<http://www.hirose.com/cn/>

KOREA:

HIROSE KOREA CO.,LTD.
143, Gongdan 1-daero, Siheung-si,
Gyeonggi-do, 15084, Korea
Phone : +82-31-496-7000
Fax : +82-31-496-7100
<http://www.hirose.co.kr/>

INDIA:

HIROSE ELECTRIC SINGAPORE PTE. LTD. BANGALORE LIAISON OFFICE
Unit No-403, 4th Floor, No-84, Barton Centre, Mahatma
Gandhi (MG) Road, Bangalore 560 001, Karnataka, India
Phone : +91-80-4120 1907
Fax : +91-80-4120 9908
<http://www.hirose.com/sg/>

USA:

HIROSE ELECTRIC (U.S.A.), INC. SAN JOSE OFFICE
2841 Junction Ave, Suite 200
San Jose, CA. 95134
Phone : +1-408-253-9640
Fax : +1-408-253-9641
<http://www.hirose.com/us/>

THE NETHERLANDS:

HIROSE ELECTRIC EUROPE B.V.
Hogehillweg #8 1101 CC Amsterdam Z-O
Phone : +31-20-6557460
Fax : +31-20-6557469
<http://www.hirose.com/eu/>

GERMANY:

HIROSE ELECTRIC EUROPE B.V. HANOVER OFFICE
Bayernstr. 3, Haus C 30855 Langenhagen, Germany
Phone : +49-511 97 82 61 30
Fax : +49-511 97 82 61 35
<http://www.hirose.com/eu/>

CHINA:

HIROSE ELECTRIC (CHINA) CO., LTD. (SHANGHAI, HEADQUARTERS)
18, Enterprise Center Tower 2, 209# Gong He
Road, Jing'an District, Shanghai, CHINA 200070
Phone : +86-21-6391-3355
Fax : +86-21-6391-3335
<http://www.hirose.com/cn/>

HONG KONG:

HIROSE ELECTRIC HONGKONG TRADING CO., LTD.
Room 1001, West Wing, Tsim Sha Tsui Centre, 66
Mody Road, Tsim Sha Tsui East, Kowloon, Hong Kong
Phone : +852-2803-5338
Fax : +852-2591-6560
<http://www.hirose.com/hk/>

SINGAPORE:

HIROSE ELECTRIC SINGAPORE PTE. LTD.
03, Anson Road, #20-01, Springleaf Tower,
Singapore 079909
Phone : +65-6324-6113
Fax : +65-6324-6123
<http://www.hirose.com/sg/>

MALAYSIA:

PENANG REPRESENTATIVE OFFICE
73-3-1, Ideal@The One, Jalan Mahsuri, Bayan
Lepas Penang, 11950, Malaysia
Phone : +604-648-5536
<http://www.hirose.com/sg/>

USA:

HIROSE ELECTRIC (U.S.A.), INC. DETROIT OFFICE (AUTOMOTIVE)
17197 N. Laurel Park Drive, Suite 253,
Livonia, MI 48152
Phone : +1-734-542-9963
Fax : +1-734-542-9964
<http://www.hirose.com/us/>

GERMANY:

HIROSE ELECTRIC EUROPE B.V. GERMAN BRANCH
Schoenbergstr. 20, 73760 ostfildern
Phone : +49-711-456002-1
Fax : +49-711-456002-299
<http://www.hirose.com/eu/>

FRANCE:

HIROSE ELECTRIC EUROPE B.V. PARIS OFFICE
130 Avenue Joseph Kessel, Bat E, 78960
Voisins le Bretonneux, France
Phone : +33-1-85764886
Fax : +33-1-85764823
<http://www.hirose.com/eu/>

CHINA:

HIROSE ELECTRIC (CHINA) CO.,LTD. BEIJING BRANCH
A1001, Ocean International Center, Building 56# East 4th
Ring Middle Road, ChaoYang District, Beijing, 100025
Phone : +86-10-5165-9332
Fax : +86-10-5908-1381
<http://www.hirose.com/cn/>

TAIWAN:

HIROSE ELECTRIC TAIWAN CO., LTD.
103 8F, No.87, Zhengzhou Rd., Taipei
Phone : +886-2-2555-7377
Fax : +886-2-2555-7355
<http://www.hirose.com/tw/>

INDIA:

HIROSE ELECTRIC SINGAPORE PTE. LTD. DELHI LIAISON OFFICE
Office NO.552, Regus-Green Boulevard, Level5, Tower C,
Sec62, Plot B-9A, Block B, Noida, 201301, Uttar Pradesh, India
Phone : +91-12-660-8018
Fax : +91-120-4804949
<http://www.hirose.com/sg/>

THAILAND:

BANGKOK OFFICE (REPRESENTATIVE OFFICE)
Unit 4703, 47th FL., 1 Empire Tower, South Sathorn
Road, Yannawa, Sathorn, Bangkok 10120 Thailand
Phone : +66-2-686-1255
Fax : +66-2-686-3433
<http://www.hirose.com/sg/>



HIROSE ELECTRIC CO.,LTD.

2-6-3, Nakagawa Chuoh, Tsuzuki-Ku, Yokohama-Shi 224-8540, JAPAN
TEL: +81-45-620-3526 Fax: +81-45-591-3726
<http://www.hirose.com>
<http://www.hirose-connectors.com>