4A Micro Hybrid FPC-to-Board Connectors

BM22 Series



Features

1. 4A current rating

The space-saving design utilizes two power contacts that can carry up to 4A of current, and signal contacts that can also carry 0.3A of current. This is all delivered in a small connector that features a small mounting depth of 2.64mm. (Fig.1)

2. Two point contact structure

The structure utilizes two points on each contact to ensure a secure connection for both types of contacts (power and signal). (Fig.2.3)

3. Good mating operability

The connector contributes to the enhanced mating operability by giving a click feeling which is effective in preventing incomplete mating, and mating selfalignment of 0.3mm which is secured by the guide ribs.

63% Reduction in footprint (Compared to the dimensions of Hirose's W-to-B DF57H)









Product Specifications

| Datiana | Curre ratin | ent g | Power contact : 4A Signal contact : 0.3A | Operating temperature range | -35 to | 85°C (Note 1) | Storage temperature range | -10 to 60℃ (Note 2) | |
|---|---|---|---|--------------------------------|---|---|---------------------------|---------------------|--|
| Ratings Voltag rating | | g 50V AC/DC Op humic | | Operating humidity range | 1 | 20 to 80% | Storage humidity range | 40 to 70% (Note 2) | |
| | | | Creatifier | tion | | | Conditions | | |
| nem | | Specification | | | Conditions | | | | |
| 1. Insulation resis | tance | Minimum of 100MΩ | | | Measured at 100V DC | | | | |
| 2. Withstanding v | oltage | No flashover or insulation breakdown | | | Conduct 150V AC for 1 minute | | | | |
| 3. Contact resistance Sig | | Signal contact : Max of 50mΩ Power contact : Max of 30mΩ | | | Measured at 20mV AC, 1kHz, 1mA | | | | |
| 4. Vibration | | No electrical discontinuity of 1μ s or longer | | | Frequency : 10 to 55Hz, single amplitude of 0.75mm, 10 cycles in each of 3 axis directions for 5 minutes / cycle | | | | |
| 5. Humidity | | Contact resistance : Signal contact Max of 50mΩ Power contact Max of 30mΩ Insulation resistance : Min of 50MΩ | | | 96 hours at a temperature of 40 $\pm 2^\circ\!\!C$ and a humidity range from 90 to 95% | | | | |
| 6. Temperature cycleContact resistance : Signal contact Max of $50m\Omega$ Power contact Max of $30m\Omega$ Insulation resistance : Min of $100M\Omega$ $-55^{\circ}C$: 30 minutes $\rightarrow 85^{\circ}C$ | | | utes → 85°C : 30 | minutes, 5 cycles | | | | | |
| 7. Durability | urability Contact resistance : Signal contact Max of 50mΩ Power contact Max of 30mΩ 10 mating cycles | | | cles | | | | | |
| 8. Solder Heat Resistance | | No signs of melting or deformity on the molded resin parts and no negative effects on performance. | | | s on | Reflow : according to the Recommended Solder Profile Hand soldering : Soldering iron temperature 350°C, no more than 3 seconds of contact | | | |

Note 1 : Includes temperature rise caused by current flow.

Note 2 : The term "storage" here refers to products stored for a long period prior to board mounting and use. The operating temperature and humidity range covers the non-energized condition of connectors after board mounting and the temporary storage conditions during transportation, etc.

Material

| Product | Part | Material | Finish | UL standard | |
|---------------------|-----------|--------------|-------------|-------------|--|
| Decenteria / Header | Insulator | LCP | Black | UL94V-0 | |
| | Contacts | Copper alloy | Gold plated | | |

Product Number Structure

Receptacles / Headers

$$\frac{BM 22}{0} - \frac{*}{2} \frac{S}{3} - \frac{V}{2} \frac{(51)}{5}$$

| 1 Series name : BM 22 / BM 22L | 4 Termination type | | | | |
|--|--|--|--|--|--|
| Number of contacts : 4 (2 for signal and 2 for power) 6 (4 for signal and 2 for power) | V : Straight SMT Gold plated specification and packaging status (51) : Gold plate thickness 0.05μm Embossed tape packaging (10,000pcs/reel) (53) : Gold plate thickness 0.05μm Embossed tape packaging (1,000pcs/reel) | | | | |
| Connector type : S : Receptacle P : Header | | | | | |

Receptacles



Recommended PCB layout





Recommended metal mask dimensions (mask thickness: 100 μm)



*: No conductive trace area

(No of routing different circuit; however the same circuit that is connected to the footprint is allowed, and soldering resist must be applied over the trace.)

| Part No. | HRS No. | No. of Contacts | А | В | С | D |
|---------------|---------------|-----------------|------|------|-----|-----|
| BM22-4S-V(51) | 677-1002-6 51 | 4 | 4.24 | 4.54 | 0.8 | |
| BM22-6S-V(51) | 677-1004-1 51 | 6 | 4.64 | 4.94 | 1.2 | 0.4 |

Note: This product is packaged on reels; please place your orders for full reel quantities.

Headers



A SIGNAL CONTACT No.4 SIGNAL CONTACT No.3 POWER CONTACT No.5 SIGNAL CONTACT No.5 SIGNAL CONTACT No.6

Recommended PCB layout



Recommended metal mask dimensions (mask thickness: 100 μm)



| Part No. | HRS No. | No. of Contacts | А | В | С | D | E | F |
|----------------|---------------|-----------------|-----|-----|-----|-----|-----|-----|
| BM22L-4P-V(51) | 677-1006-7 51 | 4 | 3 | 2.3 | 1.2 | 2.6 | 0.9 | |
| BM22L-6P-V(51) | 677-1007-0 51 | 6 | 3.4 | 2.7 | 1.6 | 3.0 | 1.3 | 0.4 |

Note: This product is packaged on reels; please place your orders for full reel quantities.



Embossed Tape Dimensions (complies with JIS C 0806)

Receptacle





Header

Reel dimensions



Usage Recommendations

| 1.Recommended Soldering Profile | | | | | | |
|---|---|--|--|--|--|--|
| | 250 | | | | | |
| | 220 | | | | | |
| | 200 200 200 180 | | | | | |
| | 150 | | | | | |
| | 90~120sec | | | | | |
| | | | | | | |
| | 50 | | | | | |
| | Room (temperature | | | | | |
| | 0 50 100 150 200 250 300 | | | | | |
| | Heat time (sec) [Condition] | | | | | |
| | 1. Peak temperature: Maximum of 250°C2. Heat section: 220°C min., within 60 seconds | | | | | |
| | 3. Preheat section: 150 to 180°C, 90 to 120 seconds4. Number of reflow cycles: Maximum of 2 cycles | | | | | |
| | Note 1: The temperature represents the PCB surface temperature in the vicinity of the | | | | | |
| | connector lead section. Note 2: For the use of Nitrogen reflow, mount the connectors with an oxygen density | | | | | |
| | of 1,000 ppm or higher. Consult Hirose for the condition less than 1,000 ppm. | | | | | |
| 2. Recommended manual soldering condition | Soldering iron temperature: 340 \pm 10°C, soldering time: within 3 seconds | | | | | |
| Recommended stencil thickness and open area ratio to PCB pattern area | Thickness: 0.1 mm Open area ratio: 85% for signal contact, and 60% for power contact on the Receptacle side. 70% for both contacts on the Plug side | | | | | |
| 4. Board warpage | Maximum of 0.02 mm in the center of the connector, while using both ends of the connector as reference point | | | | | |
| 5. Cleaning conditions | We do not recommend cleaning these connectors. Cleaning them may alter the mating/un-mating operations. If you do clean them, make sure you test that these operations have not been compromised prior to use. | | | | | |
| 6. Precautions | Do not mate or un-mate these connectors until they are mounted, failure to follow this precaution can lead to deformation or damage to these connectors. Provide another form of support to the PCB, this connector was not designed to be the main form of support. | | | | | |
| | When mating/un-mating this connector, do not apply excessive twisting forces onto the connector. These forces can damage the contacts and alter its performance. Do not apply excessive amounts of flux as it may cause the flux to wick. There may be a slight variance in the color of the molding between production lots; | | | | | |
| | this variance will not affect the performance of the connector. Refer to the next page for the handling precautions when mating and un-mating | | | | | |
| | If the connector becomes disconnected due to impact, a fall or a counterforce to the FPC, it may be necessary to hold the connector in place with an addition to the device's case or other cushioning material to hold the connector in place. | | | | | |



Handling Precautions when Mating Connectors



Handling Precautions when Un-mating Connectors





USA:

HIROSE ELECTRIC (U.S.A.), INC. HEADQUARTERS 2688 Westhills Court, Simi Valley, CA 93065-6235 Phone: +1-805-522-7958 Fax: +1-805-522-3217 http://www.hirose.com/us/

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. NUERNBERG OFFICE HIROSE ELECTRIC EUROPE B.V. HANOVER OFFICE

Muggenhofer Str. 136 90429 Nuernberg 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:

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HIROSE ELECTRIC TECHNOLOGIES (SHENZHEN) CO., LTD.

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/

KORFA:

HIROSE KOREA CO., LTD.

250, Huimanggongwon-ro, Siheung-si, Gyeonggi-do, Korea, 429-849 Phone: +82-31-496-7000,7124 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

3255 Scott Boulevard, Building 7, Suite 101 Santa Clara, CA 95054 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-0 Phone: +31-20-6557460 Fax: +31-20-6557469 http://www.hirose.com/eu/

GERMANY:

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 (SHANGHAI) CO., LTD.

1601, Henderson Metropolitan, NO.300, East Nanjing Road, Huangpu District, Shanghai, China 200001 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.

10 Anson Road #26-16, International Plaza 079903, Singapore Phone: +65-6324-6113 Fax:+65-6324-6123 http://www.hirose.com/sg/

MALAYSIA: HIROSE ELECTRIC SINGAPORE PTE. LTD.

1-10-07, Suntech @ Penang Cybercity (1164), Lintang

Mayang Pasir 3,11950, Bayan Baru, Penang, Malaysia. Phone: +604-619-2564 Fax: +604-619-2574 http://www.hirose.com/sg

USA:

HIROSE ELECTRIC (U.S.A.), INC. CHICAGO OFFICE

580 Waters Edge Lane, Suite 205 Lombard IL 60148 Phone: +1-630-282-6701 Mail : inguiries@hirose.com http://www.hirose.com/us/

GERMANY:

HIROSE ELECTRIC EUROPE B.V. GERMAN BRANCH

Herzog-Carl-Strasse 4 D-73760 Ostfildern (Scharnhauser Park) Phone: +49-711-4560-02-1 Fax: +49-711-4560-02-299 http://www.hirose.com/eu/

FRANCE:

HIROSE ELECTRIC EUROPE B.V. PARIS OFFICE

Regus La Garenne Colombes, Place de La Belgique, 71 Boulevard National La Garenne Colombes, 92250, France Phone: +33 (0) 1 7082 3170 Fax: +33 (1) 7082 3101 http://www.hirose.com/eu/

CHINA:

HIROSE ELECTRIC (SHANGHAI) 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:+886-2-2555-7350 http://www.hirose.com/tw/

INDIA:

HIROSE ELECTRIC SINGAPORE PTE. LTD. DELHI LIAISON OFFICE

Office NO.519, 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:

HIROSE ELECTRIC SINGAPORE PTE. LTD. **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/

Links to World Electron

HIROSE ELECTRIC CO., LTD.

6-3, Nakagawa Chuoh-2-Chome, 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

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