

|                                                                                                                                                                                                                                                                                                             |                             |                                                                                                                                                                             |                                                                                                                        |             |                         |                                                                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------|-------------------------------------------------------------------------------------------|
| Applicable standard                                                                                                                                                                                                                                                                                         |                             |                                                                                                                                                                             |                                                                                                                        |             |                         |                                                                                           |
| Rating                                                                                                                                                                                                                                                                                                      | Operating Temperature Range | -55 to +105°C (Note1)                                                                                                                                                       | Storage Temperature Range                                                                                              |             | -10 °C to +60°C (Note3) |                                                                                           |
|                                                                                                                                                                                                                                                                                                             | Operating Humidity Range    | 20% to 80% (Note2)                                                                                                                                                          | Storage Humidity Range                                                                                                 |             | 40% to 70% (Note3)      |                                                                                           |
|                                                                                                                                                                                                                                                                                                             | Voltage                     | 250V AC/DC                                                                                                                                                                  | UL • C-UL<br>Rating                                                                                                    | Voltage     | 30 V AC/DC              |                                                                                           |
|                                                                                                                                                                                                                                                                                                             | Current                     | AWG 22 : 3.0A<br>AWG 24 : 2.5A<br>AWG 26 : 2.0A<br>AWG 28 : 1.0A<br>AWG 30 : 0.5A                                                                                           |                                                                                                                        | Current     | 2.0A                    |                                                                                           |
|                                                                                                                                                                                                                                                                                                             | Applicable Connector        |                                                                                                                                                                             |                                                                                                                        | DF51-4DS-2C |                         |                                                                                           |
| Applicable Contact                                                                                                                                                                                                                                                                                          |                             |                                                                                                                                                                             | DF11-****SC(F)(##)                                                                                                     |             |                         |                                                                                           |
| Specifications                                                                                                                                                                                                                                                                                              |                             |                                                                                                                                                                             |                                                                                                                        |             |                         |                                                                                           |
| Item                                                                                                                                                                                                                                                                                                        |                             | Test method                                                                                                                                                                 | Requirements                                                                                                           |             | QT AT                   |                                                                                           |
| Construction                                                                                                                                                                                                                                                                                                |                             |                                                                                                                                                                             |                                                                                                                        |             |                         |                                                                                           |
| General Examination                                                                                                                                                                                                                                                                                         |                             | Visually and by measuring instrument.                                                                                                                                       | According to drawing.                                                                                                  |             | X X                     |                                                                                           |
| Marking                                                                                                                                                                                                                                                                                                     |                             | Confirmed visually.                                                                                                                                                         |                                                                                                                        |             | X X                     |                                                                                           |
| Electric Characteristics                                                                                                                                                                                                                                                                                    |                             |                                                                                                                                                                             |                                                                                                                        |             |                         |                                                                                           |
| Contact Resistance<br>Millivolt Level Method                                                                                                                                                                                                                                                                |                             | 20mV MAX, 1mA (DC or 1000Hz).                                                                                                                                               | 30 mΩ MAX.                                                                                                             |             | X —                     |                                                                                           |
| Insulation Resistance                                                                                                                                                                                                                                                                                       |                             | 500 V DC.                                                                                                                                                                   | 1000 MΩ MIN.                                                                                                           |             | X —                     |                                                                                           |
| Voltage Proof                                                                                                                                                                                                                                                                                               |                             | 650 V AC for 1 min.                                                                                                                                                         | No flashover or breakdown.                                                                                             |             | X —                     |                                                                                           |
| Mechanical Characteristics                                                                                                                                                                                                                                                                                  |                             |                                                                                                                                                                             |                                                                                                                        |             |                         |                                                                                           |
| Mechanical Operation                                                                                                                                                                                                                                                                                        |                             | 30 times insertion and extraction.                                                                                                                                          | 1.Contact resistance: 30 mΩ MAX.<br>2.No damage, crack or looseness of parts.                                          |             | X —                     |                                                                                           |
| Mating and unmating force                                                                                                                                                                                                                                                                                   |                             | It takes out and inserts with a conformity connector.                                                                                                                       | 1.Insertion Force :24.2 N MAX.<br>2.Extraction Force :1.2 N MIN.                                                       |             | X —                     |                                                                                           |
| Vibration                                                                                                                                                                                                                                                                                                   |                             | Frequency 10 to 55 Hz, single amplitude 0.75 mm, at 10 cycles for 3 directions.                                                                                             | 1.No electrical discontinuity of 1 μ s.<br>2.No damage, crack or looseness of parts.                                   |             | X —                     |                                                                                           |
| Shock                                                                                                                                                                                                                                                                                                       |                             | Acceleration 490 m/s <sup>2</sup> duration of pulse 11 ms at 3 times for 3 directions.                                                                                      |                                                                                                                        |             | X —                     |                                                                                           |
| Environmental Characteristics                                                                                                                                                                                                                                                                               |                             |                                                                                                                                                                             |                                                                                                                        |             |                         |                                                                                           |
| Damp Heat<br>(Steady State)                                                                                                                                                                                                                                                                                 |                             | Exposed at 40 ± 2°C , humidity 90 to 95 %, 96 h.<br>(After leaving the room temperature for 1 to 2h.)                                                                       | 1.Contact resistance: 30 mΩ MAX.<br>2.Insulation resistance: 500 MΩ MIN.<br>3.No damage, crack or looseness of parts.  |             | X —                     |                                                                                           |
| Rapid Change Of Temperature                                                                                                                                                                                                                                                                                 |                             | Temperature -55°C→ +105°C<br>Time 30min→ 30min<br>Under 5 Cycles.<br>(The transferring time of the tank is 2 to 3 MIN)<br>(After leaving the room temperature for 1 to 2h.) | 1.Contact resistance: 30 mΩ MAX.<br>2.Insulation resistance: 1000 MΩ MIN.<br>3.No damage, crack or looseness of parts. |             | X —                     |                                                                                           |
| Dry Heat                                                                                                                                                                                                                                                                                                    |                             | Exposed at 105±2°C, 96h                                                                                                                                                     | 1.Contact resistance: 30 mΩ MAX.<br>2.Insulation resistance: 1000 MΩ MIN.<br>3.No damage, crack or looseness of parts. |             | X —                     |                                                                                           |
| Cold                                                                                                                                                                                                                                                                                                        |                             | Exposed at -55±3°C, 96h                                                                                                                                                     | 1.Contact resistance: 30 mΩ MAX.<br>2.Insulation resistance: 1000 MΩ MIN.<br>3.No damage, crack or looseness of parts. |             | X —                     |                                                                                           |
| Remarks<br>Note 1:Include the temperature rising by current.<br>Note 2:No condensing<br>Note 3:Apply to the condition of long term storage for unused products before mount on pcb,<br>After mounted on pcb, operating temperature and humidity range is applied for interim storage during transportation. |                             |                                                                                                                                                                             |                                                                                                                        |             |                         |                                                                                           |
|                                                                                                                                                                                                                                                                                                             | COUNT                       | DESCRIPTION OF REVISIONS                                                                                                                                                    | DESIGNED                                                                                                               |             | CHECKED                 | DATE                                                                                      |
|                                                                                                                                                                                                                          | 1                           | DIS-H-00005276                                                                                                                                                              | TS. MIYAKI                                                                                                             |             | SZ. ONO                 | 20190917                                                                                  |
| Unless otherwise specified, refer to IEC 60512.                                                                                                                                                                                                                                                             |                             |                                                                                                                                                                             | APPROVED                                                                                                               | HS. OKAWA   | 20180529                |                                                                                           |
|                                                                                                                                                                                                                                                                                                             |                             |                                                                                                                                                                             | CHECKED                                                                                                                | ST. WADA    | 20180529                |                                                                                           |
|                                                                                                                                                                                                                                                                                                             |                             |                                                                                                                                                                             | DESIGNED                                                                                                               | TH. SATO    | 20180528                |                                                                                           |
|                                                                                                                                                                                                                                                                                                             |                             |                                                                                                                                                                             | DRAWN                                                                                                                  | TH. SATO    | 20180528                |                                                                                           |
| Note QT:Qualification Test AT:Assurance Test X:Applicable Test                                                                                                                                                                                                                                              |                             |                                                                                                                                                                             | DRAWING NO.                                                                                                            |             | ELC-362040-20-00        |                                                                                           |
|                                                                                                                                                                                                                          | SPECIFICATION SHEET         |                                                                                                                                                                             | PART NO.                                                                                                               |             | DF51-4DP-2DS (20)       |                                                                                           |
|                                                                                                                                                                                                                                                                                                             | HIROSE ELECTRIC CO., LTD.   |                                                                                                                                                                             | CODE NO.                                                                                                               |             | CL543-5016-7-20         |  1/2 |

Apr.1.2024 Copyright 2024 HIROSE ELECTRIC CO., LTD. All Rights Reserved.  
In case of consideration for using Automotive equipment / device which demand high reliability, kindly contact our sales window correspondents.

| Specifications                                                                      |                                                                                                                                                                                                                                                                                                |                                                                                            |                   |                                                                                       |     |
|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------|---------------------------------------------------------------------------------------|-----|
| Item                                                                                | Test method                                                                                                                                                                                                                                                                                    | Requirements                                                                               | QT                | AT                                                                                    |     |
| Resistance To Soldering Heat                                                        | 1)Solder bath method <br>Soldered at solder temperature, 260°C for in immersion, duration, 5 s.<br>2)Manual soldering<br>Soldering iron temperature :270°C,<br>Soldering time :3s.<br>No strength on contact. | Such as impaired function ,no deformation of case of excessive looseness of the terminals. | X                 | —                                                                                     |     |
| Solderability                                                                       | Soldering temperature : 245°C<br>Duration of immersion :soldering, for 5 sec.                                                                                                                                                                                                                  | New uniform coating of solder shall cover minimum of 95 % of the surface Being immersed.   | X                 | —                                                                                     |     |
|                                                                                     |                                                                                                                                                                                                                                                                                                |                                                                                            |                   |                                                                                       |     |
| Note QT:Qualification Test AT:Assurance Test X:Applicable Test                      |                                                                                                                                                                                                                                                                                                | DRAWING NO.                                                                                | ELC-362040-20-00  |                                                                                       |     |
|  | SPECIFICATION SHEET                                                                                                                                                                                                                                                                            | PART NO.                                                                                   | DF51-4DP-2DS (20) |                                                                                       |     |
|                                                                                     | HIROSE ELECTRIC CO., LTD.                                                                                                                                                                                                                                                                      | CODE NO                                                                                    | CL543-5016-7-20   |  | 2/2 |