| | | | | | | | | 1 | T | | | | | | 0 | | |
|---------------|------------------|-----------------|------------------------------|----------------------------|-----------------------------|------------------|-------------------|----------------|-------------|---|--------------|--------------------------------------|---------------------------|--------------------|-------------------|-----------------|----------|
| (| COUNT | DE | SCRIPTION | OF REVIS | ONS | BY | CHKD | DATE | | COUN | T D | ESCRIPTION C | FREVISIONS | BY | CHKD | DA [•] | ľE |
| Δ | | | | | | | ļ | | Ŕ | L | | | | <u> </u> | _ | | |
| Δ | | | | | | | | | \square | | | | | | | | |
| APF | LICA | BLE | STAND | ARD | | | | | | | | | | | | | |
| RAT | TING | | OLTAGE | | 250 V AC TEMPE | | | | IPERATI | ATING ERATURE RANGE -30 °C TO +85 °C(N | | | | | 1) | | |
| | | | URRENT | - | | | 2 | А | | TEN | AGE | ATURE RANGE | -10 °C T | O +6 | 0 °C(I | NOTE | 2) |
| | | | | | | | S | PECIFI | CAT | TION | IS | | | | | | |
| | 1- | TEN | 1 | | | TES | TME | THOD | | | | REC | UIREMEN | NTS | | QT | AT |
| col | NSTR | UCI | TION | I | | | | | | | | | | | | | |
| GEN | IERAL E | EXAN | INATION | VISUALI | LY ANI | D BY N | MEASU | RING INST | RUM | ENT. | AC | CORDING TO | D DRAWING. | | | X | X |
| MAR | KING | | - | CONFIR | MED V | /ISUA | LLY. | | | | | | | | | × | X |
| ELE | CTRI | C C | HARACT | ERISTI | CS | | | | | | - - | | | | | - | |
| CON | TACT | RESI | STANCE | 100 mA | (DC OI | R 100 | 0 Hz). | | | | 30 | mΩ MAX. | | | | X | |
| INSU | JLATIO | N | | 500 V D | С. | · · · · | | | | | 100 | 00 MΩ MIN. | | | | | _ |
| RES | ISTAN | CE | <u> </u> | 050 1/ 4 | 0 000 | 1 | | | | | | | | | | + | |
| VOL | IAGE | PRO | | A V UCO | | . i min | · | | | | | | | | •• | | 1- |
| ME | CHAN | | L CHAR | | STIC | S | NC AN | | | <u>c</u> | | CONTACT | FRIGTANOF | 30 | | | <u> </u> |
| мес | HANICA | al Oi | PERATION | | 5 IN31 | -8110 | ing an | DEATRAC | | J. | @ @ | NO DAMAGI OF PARTS. | E, CRACK OF | LOOS | ENESS | × | - |
| VIBF | RATION | 1 | | FREQUI 0.75 mm | ENCY 1, AT | 10 TO 2 h, F | 55 Hz, OR 3 D | SINGLE AN | MPLI" 3. | TUDE | 1 | NO ELECTR 1 μs. | ICAL DISCON | ITINUI | TY OF | × | - |
| SHC | CK | | | 490 m/s FOR 3 [| ² DUR/ DIRECT | ATION FIONS | I OF PL | JLSE 11 ms | AT 3 | TIME | sø | NO DAMAGI OF PARTS. | E, CRACK OF | LOOS | ENESS | ° 🖂 | - |
| EN | VIRON | NME | NTAL CH | ARAC | TERIS | STIC | S | | | | | | | | | | |
| RAP | ID CHA | ANGE | OF | TEMPE | RATUR | RE -55 | 5 → 5 T | O 35→+85- | →5 T(| O 35℃ | D | CONTACT F | ESISTANCE | 30 mS | 2 MAX. | | |
| TEM | IPERAT | fure | | TIME UNDER | 5 CYC | 30 LES. |)→ 5 T(| 0 15→ 30- | →5 TC | D 15mii | n (2) (3) | INSULATION NO DAMAGI OF PARTS. | RESISTANCE E, CRACK OF | ::1000 I R LOOS | MΩ MIN SENESS | × | - |
| DAN (STE | IP HEA EADY S | T STAT | E) | EXPOS | ED AT | 40±2 | °C, 90 | TO 95 %, 9 | 6 h. | | 1 | CONTACT F | ESISTANCE: RESISTANCE | : 30 ms : 500 N | Ω MAX. 1Ω MIN. | | |
| | | | | | | | | | | | 3 | NO DAMAG OF PARTS. | E, CRACK OF | R LOOS | SENESS | | |
| RES | ISTAN | CET | 0 | 1) AUTO | MATIC | SOLDE | RING | (REFLOW) | | | | | TON OF CAS | EOF | | | |
| SOL | UEKIN | GH | AI. | MAX 2 | ₩ ARE 40°C | ~// WI1 | THIN 10 | sec. | | | | ERMINALS. | | | | | |
| | | | | MIN 22 | 0°C | 10 | sec to 30 |) sec. | | | | | | | | | |
| | | | | «PREHE 150℃ | A FING 100 TC | АКЕА) 0 120 s | <i>))</i> | | | | | | | | | | |
| | | | | PUT TH | ROUGI | I IN RE | FLOW F | UMACE TWI | CE. | | | | | | | | |
| | | | | | IN AMBI TY FOP | ENT T | EMPER/ JR. CON | ATURE AND | | | | | | | | | - |
| | | | | TEMPE | RATUR | E TO B | E AMBI | ENT FOR | | | | | | | | | |
| | | | | SECON | | OW. | C. | | | | | | | | | | |
| | | | | SOLDE | AL SUL RING IR | | MPERA | TURE : 290± | 10°C, | | | | | | | | |
| | | | | SOLDE | | ME : 3 | S | - | | | | | | | | | |
| SOI | DERAS | | <u>v</u> | | | | | I. EMPERATI | IRF | | | | | OF SC | DLDER | | |
| 501 | | | • | 230±5° | C FOF | RININ | MERS | ION ,DURA | TION | l,3 s. | SI | HALL COVER | MINIMUM O | F 95 % D. | OF TH | e × | - |
| RE | MARK | S | | L | | | | | | DRAWN | 1 | DESIGNED | CHECKED | APPR | OVED | RELE/ | ASED |
| NOTE | | DING | THE TEMPERA | | | RENT. | FOR UN | USED | | | | | | | 1 | | |
| NUL | PRODU | JCTSI | SEFORE PCB C | IN BOARD, | AFTER P | CB BOA | ARD, OPE | RATING | _ | 14-1- | <u>ا بر</u> | 1 Autours | 8/7/ | \sim | γ | | |
| | TEMPE | ERATU AGE DI | RE AND HUMIE JRING TRANSF | DITY RANGE | is appl | IED FO | R INTERI | М | F. | .watst | JKI N | X. DOC PEONING | ··· umenara | J.(| ana | | |
| | | | | | 4. 110 | 0 | 00 | |) 'O | 94.03.3 | 30 | 04.04,0[] | 104.04.01 | 04.0 | 4.0Z | | |
| Unl | ess oth | nerw | Ise specifie | ea, refer | to JIS | U 54 | <u>UZ.</u> | | | | | ' | | - | | | |
| NOte | <u>זר</u> | Juali | | | | | SF | | יי אדו | ION | SHI | | NO. | | <u> </u> | <u></u> | |
| | | ا | | | CO., | LTD. | <u> </u> | | | | | | Ur Z- | *05- | 28 (2) |)) | 4 |
| CODE NO.(OLD) | | | | DRAWING NO. PART NO. CL543 | | | | | | | | | | | | | |

ТО

2016/08/11 23:59:51(JST) Rachelle Sheffer DRAWING FOR REFERENCE: This is subject to change without notice



| CODE No. | PART No. | NUMBER OF CONTACT | А | В | С | D |
|-----------------|-------------------|----------------------|------|------|------|-------|
| CL543-2001-3-20 | DF11Z- 4DS-2V(20) | 4 | 2.0 | 8.5 | 4.5 | 8.7 |
| CL543-2002-6-20 | DF11Z- 6DS-2V(20) | 6 | 4.0 | 10.5 | 6.5 | 10.7 |
| CL543-2003-9-20 | DF11Z- 8DS-2V(20) | 8 | 6.0 | 12.5 | 8.5 | 12.7 |
| CL543-2004-1-20 | DF11Z-10DS-2V(20) | 10 | 8.0 | 14.5 | 10.5 | 14.7 |
| CL543-2005-4-20 | DF11Z-12DS-2V(20) | 12 | 10.0 | 16.5 | 12.5 | 16.7 |
| CL543-2006-7-20 | DF11Z-14DS-2V(20) | 14 | 12.0 | 18.5 | 14.5 | 18.7 |
| CL543-2007-0-20 | DF11Z-16DS-2V(20) | 16 | 14.0 | 20.5 | 16.5 | 20.7 |
| CL543-2008-2-20 | DF11Z-18DS-2V(20) | 18 | 16.0 | 22.5 | 18.5 | 22.7 |
| CL543-2009-5-20 | DF11Z-20DS-2V(20) | 20 | 18.0 | 24.5 | 20.5 | 24.7 |
| CL543-2010-4-20 | DF11Z-22DS-2V(20) | 22 | 20.0 | 26.5 | 22.5 | 26, 7 |
| CL543-2011-7-20 | DF11Z-24DS-2V(20) | 24 | 22.0 | 28.5 | 24.5 | 28.7 |
| CL543-2012-0-20 | DF11Z-26DS-2V(20) | 26 | 24.0 | 30.5 | 26.5 | 30.7 |
| CL543-2013-2-20 | DF11Z-28DS-2V(20) | 28 | 26.0 | 32.5 | 28.5 | 32, 7 |
| CL543-2014-5-20 | DF11Z-30DS-2V(20) | 30 | 28.0 | 34.5 | 30.5 | 34.7 |
| CL543-2015-8-20 | DF11Z-32DS-2V(20) | 32 | 30.0 | 36.5 | 32.5 | 36,7 |
| CL543-2016-0-20 | DF11Z-40DS-2V(20) | 40 | 38.0 | 44.5 | 40.5 | 44.7 |





NOTES 1>: IF THERE IS PATTERN ON WWW PART, THERE IS A POSSIBILITY THAT IT WILL MAKE CONTACT WITH THE LEADS. 2 :LEAD CO-PLANARITY INCLUDE REINFORCED METAL FITTINGS

- SHALL BE 0.1mm MAX.
- ▲ 3 :METAL MASK THICKNESS:0.15~0.2mm OPENING RATIO:100%

| | | | | | | | | 5 | ELASIO | MEH | SIO | PPER, GRAY | |
|---------------|------|--------------|----|--------|-------|----------|-------------|--------|---------|-----------|------|---------------------|-----------|
| 2 | POL | _YAMIDE | | UL94\ | /-0, | NATURA | AL(BEIGE) | 4 | PS | | ELEC | CTROSTATIC PROTECTI | ON, CLEAR |
| 1 | PHOS | SPHOR BRONZE | | TIN | | TED 2# | m min | 3 | BRASS | | TIN | I PLATED 1⊬m mi | .n |
| N0. | | MATERIAL | | F | | SH . | REMARKS | N0. | MA | TERIAL | | FINISH , REMA | ARKS |
| UNIT | ٢S | | S | CALE | | COUNT | DESCRIPTION | OF REV | ISIONS | DESIGNEI |) | CHECKED | DATE |
| mm | ı | $\Psi \Box$ | 5 | : 1 | 2 | 4 | DIS-H-0036 | 27 | | KT. ISHII | | TS. KUMAZAWA | 09.01.23 |
| I | | | | APPROV | /ED : | KJ.KAT/ | AYOSE 05 | 01.05 | DRAWING | ΕC | 003 | -306129-01 | |
| ▏ Ъ₋ ┎ | 3 C | | 10 | CHECKE | D: | TY. OMA | 05 | 01.05 | PART | D F | 11 | 7 - * DS - 2V(2 | 0) |
| ▏┛┗ | | | ה | DESIGN | IED : | IO. DENN | POUYA 05 | 01. 05 | NO. | DT | 1 1 | | |
| | | 00., 11 | | DRAWN | : | IO. DEN | POUYA 05 | 01.05 | NO. | CL | _54 | 43 | $2^{1}/2$ |
| 5 | | | | | | 6 | | | 7 | | | 8 | |

A 1 RECOMMENDED PATTERN(2:1) PCB THICKNESS:1.6mm

Е

D

В

С



TR543E-10319

QUALITY EVALUATION TEST REPORT ON DF11 SERIES (LEAD-FREE PRODUCT)

APPROVED SI.TOMIOKA CHECKED SI.TOMIOKA CHARGED HT.SAKATA



[1] Objective:

To evaluate the performance and quality of DF11 Series (lead-free product).

[2] Specimens:

DF11Z-32DP-2V(27) DF11Z-32DS-2V(22)

[Above test specimens were tested in the condition as it is received from the client.]

- [3] Test period:From: 2004-06-09To: 2004-06-24
- [4] Test temperature: 18 °C to 28 °C
- [5] Test humidity:25 %RH to 75 %RH

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| [<u>6] Tes</u> t | t item, Number of specimens, Page No. | | | | | | | |
|-------------------|--|---|---|------|---|---|-----------|------|
| Test item | Test item/ | | G | irou | р | | Number of | Page |
| No. | (Applicable standard) | Α | В | С | D | Е | Specimens | No. |
| 1 | Appearance, Construction (JIS C 5402 4.1 4.3) | 0 | 0 | 0 | 0 | 0 | 20 sets | 9 |
| 2 | Contact resistance (JIS C 5402 5.4) | | 0 | 0 | 0 | 0 | 16 sets | 10 |
| 3 | Insulation resistance (JIS C 5402 5.2) | | | 0 | 0 | | 8 sets | 11 |
| 4 | Voltage proof (JIS C 5402 5.1) | | | 0 | 0 | | 8 sets | 12 |
| 5 | Contact's gauge insertion and extraction forces (JIS C 5402 6.4) | | 0 | | | | 4 pcs | 13 |
| 6 | Vibration (JIS C 5402 6.1) | 0 | | | | | 4 sets | 14 |
| 7 | Shock (JIS C 5402 6.2) | 0 | | | | | 4 sets | 15 |
| 8 | Mechanical operation, 30 times (JIS C 5402 6.3) | | 0 | | | | 4 sets | 16 |
| 9 | Change of temperature (JIS C 5402 7.2) | | | 0 | | | 4 sets | 17 |
| 10 | Dry heat (JIS C 5402 7.8) | | | 0 | | | 4 sets | 18 |
| 11 | Cold (JIS C 5402 7.9) | | | 0 | | | 4 sets | 19 |
| 12 | Damp heat (JIS C 5402 7.3) | | | | 0 | | 4 sets | 20 |
| 13 | Corrosion, salt mist | | | | 0 | | 4 sets | 21 |
| 14 | Mechanical operation, 30 times (JIS C 5402 6.3) | | | | | 0 | 4 sets | 22 |
| 15 | Corrosion, H_2S gas | | | | | 0 | 4 sets | 23 |

Note 1) Different specimens (in a condition that the specimens are not mounted on a board) are used for [Insulation resistance] and [Voltage proof] from those for [Contact resistance].

Note 2) All tests except Test item Nos. 1, 3, 4, 5, 8, and 14 and measurements are conducted in a condition that boards on the header side and the socket side are fixed (with screws and spacers).

* Refer to the figure of measuring points in [Contact resistance] in page 10.

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Table for each test item to be measured

| Test item No. | Test item | (1) | (2) | (3) | (4) | (5) | (6) |
|------------------|--------------------------------|-----|-----|-----|-----|-----|-----|
| 6 | Vibration | 0 | | | | | 0 |
| 7 | Shock | 0 | | | | | 0 |
| 8 | Mechanical operation, 30 times | 0 | 0 | | | 0 | |
| 9 | Change of temperature | 0 | 0 | 0 | 0 | | |
| 10 | Dry heat | 0 | 0 | 0 | 0 | | |
| 11 | Cold | 0 | 0 | 0 | 0 | | |
| 12 | Damp heat | 0 | 0 | 0 | 0 | | |
| 13 | Corrosion, salt mist | 0 | 0 | | | | |
| 14 | Mechanical operation, 30 times | 0 | 0 | | | | |
| 15 | Corrosion, H_2S gas | 0 | 0 | | | | |

Remarks: (1) Appearance, Construction

- (2) Contact resistance
- (3) Insulation resistance
- (4) Voltage proof
- (5) Contact's gauge insertion and extraction forces
- (6) Electrical discontinuity

[7] Test results

See the page which describes each test item. See the pages shown below for variation graphs and result data.

Contact resistance, variation graphs and result data

See page 5 for Groups B and C.

See page 6 for Groups D and E.

Insulation resistance, result data See page 7 for Groups C and D.

Contact's gauge insertion and extraction forces, variation graph and result data See page 8 for Group B.







Insulation resistance

Requirements:

1000 $\mbox{M}\Omega$ or more

Group C Between adjacent contacts

| Betwee | en adjacent contact | S | | Unit: [× 10 ⁴ ΜΩ] |
|--------|---------------------|-----------------------|----------|------------------------------|
| | Initial | Change of temperature | Dry heat | Cold |
| Max | 100 | 100 | 100 | 100 |
| Min | 100 | 100 | 100 | 100 |

Requirements:

Initial: Damp heat: 1000 M Ω or more 500 M Ω or more

Group D

| Betwee | en adjacent contacts | Unit: [× 10 ⁴ ΜΩ] |
|--------|----------------------|------------------------------|
| | Initial | Damp heat |
| Max | 100 | 0.3 |
| Min | 100 | 0.2 |





1. Appearance, Construction

- 1.1 RequirementsAppearance, Construction: No breakage, crack or looseness on the component.Intermateability: No defect in mating.
- 1.2 Test method
 Appearance, Construction: Check visually with a magnifying glass for existence of breakage, crack or looseness on the component.
 Intermateability: Check for existence of any defect when specimens are mated with the applicable connector.
- 1.3 Test results

Appearance, Construction:

No breakage, crack or looseness on the component was found.

Intermateability:

No defect in mating was found.

2. Contact resistance

2.1 Requirements $30 \text{ m}\Omega$ or less.

2.2 Test method

Contact resistance is measured according to the conditions specified in the table below:

| Open circuit voltage | 20 mV a.c. or less, 1 kHz |
|----------------------|---------------------------|
| Test current | 1 mA a.c. |

Measuring method:

Measured by milliohm-meter at the points shown in the following figure.



Figure: Measuring points

2.3 Test equipment

| Test equipment | Model | Manufacturer |
|----------------|-------|----------------|
| Milliohm-meter | 2420 | NF Corporation |

| (Groups B t | o E) Unit: [mΩ] |
|----------------|-----------------|
| Max | 6.2 |
| Min | 5.5 |
| Avg | 5.81 |
| σ_{n-1} | 0.12 |

3. Insulation resistance

3.1 Requirements 1000 M Ω or more.

3.2 Test method

Insulation resistance is measured according to the conditions specified in the table below:

| Test voltage | 500 V d.c. |
|--------------|---|
| Duration | For 1 min \pm 5 s. However, if the results are |
| | verified as the required value or more during the |
| | testing, the measurement can be terminated. |

Measuring point: Between adjacent contacts. (Measured for each 1 pin.) Mated/Unmated: Mated.

3.3 Test equipment

| Test equipment | Model | Manufacturer |
|--------------------|---------|-----------------|
| Super Megohm-meter | SM-8210 | Toa Electronics |

| (Groups C | and D) | Unit: [× 10 | ⁴ ΜΩ] |
|-----------|---------|--------------|------------------|
| | Detwoor | odiocont cor | ataata |

| | Between adjacent contacts |
|-----|---------------------------|
| Max | 100 |
| Min | 100 |

4. Voltage proof

4.1 Requirements

No flashover or dielectric breakdown.

4.2 Test method

Voltage proof is checked according to the conditions specified in the table below:

| Test voltage | 650 V a.c. | | |
|------------------|--|--|--|
| Duration | For 1 min ± 5 s | | |
| Imposing method: | Test voltage is raised in a rate of 500 V/s or less until it | | |
| | reaches to the value listed above. | | |
| Leak current: | Judged flashover or dielectric breakdown at 2 mA. | | |
| Measuring point: | Between adjacent contacts. | | |
| Mated/Unmated: | Mated. | | |

4.3 Test equipment

| Test equipment | Model | Manufacturer |
|----------------------|---------|---------------------|
| Voltage proof tester | TOS8750 | Kikusui Electronics |

4.4 Test results

(Groups C and D)

No flashover or dielectric breakdown was found.

5. Contact's gauge insertion and extraction forces

5.1 Requirements 0.5 N to 4.4 N.

5.2 Test method

Measured by means of that the following sized steel gauge is inserted/extracted to/from the female contact at normally applied depth.

Contact gauge dimension \Box 0.5 mm ± 0.002 mm

5.3 Test equipment

| Test equipment | Model | Manufacturer |
|---------------------------------|-------|-------------------|
| Insertion and extraction tester | 1840 | Aikoh Engineering |

5.4 Test results

See page 8 for variation graph and result data.

6. Vibration

6.1 Requirements

Appearance, Construction:No breakage, crack or looseness on the component.Electrical discontinuity:No electrical discontinuity of 1 μs or more.

6.2 Test method

The test is conducted according to the conditions specified in the table below:

| Frequency range | 10 Hz to 55 Hz |
|--------------------|--|
| Single amplitude | 0.75 mm |
| Time for one cycle | 10 Hz to 55 Hz to 10 Hz, for approx. 5 min |
| Number of cycles | 3 axial directions, 10 cycles each, 30 cycles in total |
| Connection method: | Series connection for all contacts |

Test voltage:5 V d.c.Test current:100 mA d.c.

Note) [Electrical discontinuity] is checked continuously during the test.

6.3 Test equipment

| Test equipment | Model | Manufacturer |
|--|---------------|---------------------|
| Vibration machine | F-300BM/A-E78 | Emic |
| Digital oscilloscope | 9362 | Lecroy |
| Variable constant dc volt and ampere generator | PAC35-3 | Kikusui Electronics |

6.4 Test results

Appearance, Construction:

No breakage, crack or looseness on the component was found. Electrical discontinuity:

No electrical discontinuity of 1 μs or more was found.

7. Shock

Appearance, Construction:No breakage, crack or looseness on the component.Electrical discontinuity:No electrical discontinuity of 1 μs or more.

7.2 Test method

The test is conducted according to the conditions specified in the table below:

| Acceleration | 490 m/s ² |
|--------------------|--|
| Duration | 11 ms |
| Wave form | Half-sine wave |
| Number of shocks | 3 both axial directions, 3 times each, 18 times in total |
| Connection method: | Series connection for all contacts |
| Test voltage: | 5 V d.c. |
| Test current: | 100 mA d.c. |

Note) [Electrical discontinuity] is checked during the test.

7.3 Test equipment

| Test equipment | Model | Manufacturer |
|--|-----------|---------------------|
| Shock testing machine | PEP-250MR | Itoh Seiki |
| Digital oscilloscope | 9362 | Lecroy |
| Variable constant dc volt and ampere generator | PAC35-3 | Kikusui Electronics |

7.4 Test results

Appearance, Construction:

No breakage, crack or looseness on the component was found.

Electrical discontinuity:

No electrical discontinuity of 1 μ s or more was found.

8. Mechanical operation, 30 times

8.1 Requirements

Appearance, Construction: No breakage, crack or looseness on the component.
Contact resistance: 30 mΩ or less.
Contact's gauge insertion and extraction forces: 0.5 N to 4.4 N

8.2 Test method30 times of insertions and withdrawals are conducted at a rate of 600 times/h or less.

8.3 Test results

Appearance, Construction: No breakage, crack or looseness on the component was found.
Contact resistance: See page 5 for variation graph and result data.
Contact's gauge insertion and extraction forces:

See page 8 for variation graph and result data.

9. Change of temperature

| 9.1 | Requirements | | | |
|-----|---------------------------|---|--|--|
| | Appearance, Construction: | No breakage, crack or looseness on the component. | | |
| | Contact resistance: | 30 m Ω or less. | | |
| | Insulation resistance: | 1000 M Ω or more. | | |
| | Voltage proof: | No flashover or dielectric breakdown. | | |

9.2 Test method

The test is conducted according to the conditions specified in the table below:

| Step | 1 | 2 |
|------------------|---------|--------|
| Temperature (°C) | -55 ± 3 | 85 ± 2 |
| Duration (min) | 30 | 30 |

Note) Chamber transfer time is 2 min to 3 min.

Number of cycles:5 cycles are conducted with the above condition as 1 cycle.Mated/Unmated:Mated.Recovery:After completion of the test, let the specimens rest in ambient

temperature for 1 h to 2 h.

9.3 Test equipment

| Test equipment | Model | Manufacturer |
|----------------------------------|---------|--------------|
| Constant low temperature chamber | TSV-40S | Espec |

9.4 Test results

Appearance, Construction: No breakage, crack or looseness on the component was found.

| Contact resistance: | See page 5 for variation graph and result data. |
|------------------------|---|
| Insulation resistance: | See page 7 for result data. |
| Voltage proof: | No flashover or dielectric breakdown was found. |

10. Dry heat

| 10.1 | Requirements | | |
|------|---------------------------|---|--|
| | Appearance, Construction: | No breakage, crack or looseness on the component. | |
| | Contact resistance: | 30 m Ω or less. | |
| | Insulation resistance: | 1000 M Ω or more. | |
| | Voltage proof: | No flashover or dielectric breakdown. | |
| | | | |

10.2 Test method

The test is conducted according to the conditions specified in the table below:

| Temperature | 85 °C ± 2 °C |
|-----------------|--------------|
| Duration | 96 h |
| Motod/Llomotodu | Matad |

Mated/Unmated: Mated. Recovery: After completion of the test, let the specimens rest in ambient temperature for 1 h to 2 h.

10.3 Test equipment

| Test equipment | Model | Manufacturer |
|-----------------------------------|---------|--------------|
| Constant high temperature chamber | PVH-220 | Espec |

| Appearance, Construction: | No breakage, crack or looseness on the component was found. |
|---------------------------|---|
| Contact resistance: | See page 5 for variation graph and result data. |
| Insulation resistance: | See page 7 for result data. |
| Voltage proof: | No flashover or dielectric breakdown was found. |
| | |

11. Cold

| quirements | |
|------------------------|--|
| earance, Construction: | No breakage, crack or looseness on the component. |
| ntact resistance: | 30 m Ω or less. |
| ulation resistance: | 1000 M Ω or more. |
| tage proof: | No flashover or dielectric breakdown. |
| | juirements bearance, Construction: ntact resistance: ulation resistance: tage proof: |

11.2 Test method

The test is conducted according to the conditions specified in the table below:

| Temperature | -55 °C ± 3 °C |
|-------------|---------------|
| Duration | 96 h |
| | Matad |

Mated/Unmated: Mated.

Recovery: After completion of the test, let the specimens rest in ambient temperature for 1 h to 2 h.

11.3 Test equipment

| Test equipment | Model | Manufacturer |
|----------------------------------|--------|--------------|
| Constant low temperature chamber | MC-810 | Espec |

| Appearance, Construction: | No breakage, crack or looseness on the component was found. |
|---------------------------|---|
| Contact resistance: | See page 5 for variation graph and result data. |
| Insulation resistance: | See page 7 for result data. |
| Voltage proof: | No flashover or dielectric breakdown was found. |
| | |

12. Damp heat

| 12.1 | Requirements | | |
|------|---------------------------|---|--|
| | Appearance, Construction: | No breakage, crack or looseness on the component. | |
| | Contact resistance: | 30 m Ω or less. | |
| | Insulation resistance: | 500 M Ω or more. | |
| | Voltage proof: | No flashover or dielectric breakdown. | |
| | | | |

12.2 Test method

The test is conducted according to the conditions specified in the table below:

| Temperature | 40 °C ± 2 °C | |
|-------------|------------------|--|
| Humidity | 90 %RH to 95 %RH | |
| Duration | 96 h | |
| | | |

Mated/Unmated: Mated.

Recovery: After completion of the test, let the specimens rest in ambient temperature for 1 h to 2 h.

12.3 Test equipment

| Test equipment | Model | Manufacturer |
|---|---------|--------------|
| Constant temperature and humidity chamber | LHL-111 | Espec |

| Appearance, Construction: | No breakage, crack or looseness on the component | |
|---------------------------|--|--|
| | was found. | |
| Contact resistance: | See page 6 for variation graph and result data. | |
| Insulation resistance: | See page 7 for result data. | |
| Voltage proof: | No flashover or dielectric breakdown was found. | |

13. Corrosion, salt mist

13.1 Requirements

Appearance, Construction:No excessive corrosion.Contact resistance: $30 \text{ m}\Omega$ or less.

13.2 Test method

The test is conducted according to the conditions specified in the table below:

| Concentration | 5 wt% ± 1 wt% |
|---------------|---------------|
| Temperature | 35 °C ± 2 °C |
| pH value | 6.5 to 7.2 |
| Duration | 48 h |

Mated/Unmated: Mated.

Recovery: After completion of the test, let the specimens rest in ambient temperature for 24 h.

13.3 Test equipment

| Test equipment | Model | Manufacturer |
|----------------|--------------|----------------------|
| CASS tester | CASSER-ISO-3 | Suga Test Instrument |

13.4 Test results

Appearance, Construction:No excessive corrosion was found.Contact resistance:See page 6 for variation graph and result data.

- 14.1 Requirements
 Appearance, Construction: No breakage, crack or looseness on the component.
 Contact resistance: 30 mΩ or less.
- 14.2 Test method30 times of insertions and withdrawals are conducted at a rate of 600 times/h or less.
- 14.3 Test results
 Appearance, Construction: No breakage, crack or looseness on the component was found.
 Contact resistance: See page 6 for variation graph and result data.

15. Corrosion, H₂S gas

15.1 Requirements

Appearance, Construction:No excessive corrosion.Contact resistance: $30 \text{ m}\Omega$ or less.

15.2 Test method

The test is conducted according to the conditions specified in the table below:

| Concentration | 10 ppm to 15 ppm |
|---------------|------------------|
| Temperature | 25 °C ± 2 °C |
| Humidity | 75 %RH ± 5 %RH |
| Duration | 96 h |

Mated/Unmated: Mated.

Recovery: After completion of the test, let the specimens rest in ambient temperature for 1 h to 2 h.

15.3 Test equipment

| Test equipment | Model | Manufacturer |
|----------------------|----------|----------------|
| Gas corrosion tester | GH-180MT | Yamazaki Seiki |

15.4 Test results

Appearance, Construction:No excessive corrosion was found.Contact resistance:See page 6 for variation graph and result data.