#### **FPC/FFC Connector**

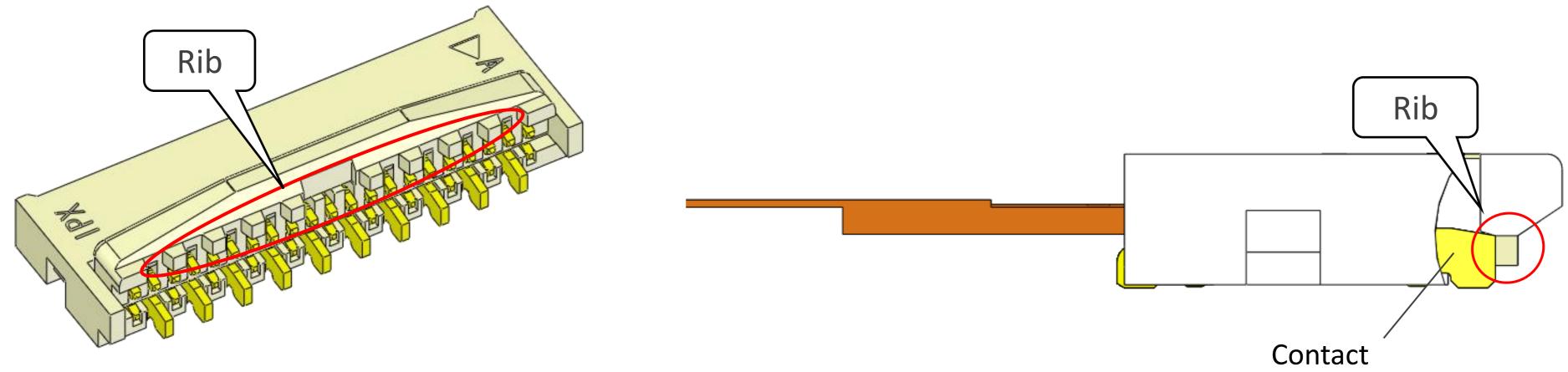
# MINIFLEX<sup>®</sup> 3-BFN

Low profile (Height = 0.9 mm), 0.3 mm pitch, horizontal mating, backflip

| Product Specifications: |           | Short Actuator   | Long Actuator                                 | Applicable FPC/FFC:    |                |
|-------------------------|-----------|--|---|------------------------|----------------|
| Board Pitch (mm)        |           | 0.3  |   | FPC/FFC Contact Pitch  | 0.3            |
| WiningLo                | ngth (mm) | Contact A: 0.9   |   | FPC/FFC Contact Point  | Top and Bottom |
|                         |           | Contact B: 0.45  |   | FPC/FFC Thickness (mm) | 0.2 +/- 0.03   |
|                         | Height    | 0.90 +/- 0.10  |   |                        |                |
| Size (mm)               | Width     | Formula: 0.9 +(0.3*?P)   |   |                        |                |
| 5120 (11111)            | Depth     | Open: 2.55   |   |                        |                |
|                         |           | Close: 3   | Close:3.5                                     |                        |                |
|                         | Range     | 13-41 (odd)  | 33-65 (odd)                                   |                        |                |
| Pin counts              | Available | 13, 15, 17, 19, 21, 23,<br>25, 27, 29, 31, 33, 35,<br>37, 39, 41 | 33, 35, 39, 41, 45, 49,<br>51, 55, 57, 61, 65 |                        |                |

\* Please inquire for pin counts not listed or outside of the pin count range.

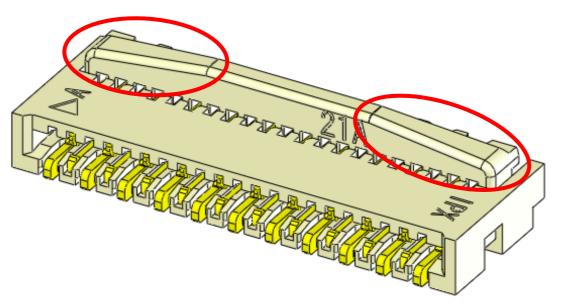
#### **Designed to prevent contact distortion**



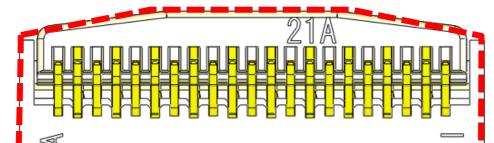
When opening the actuator, the rib will prevent the contacts from being pulled up

### **Unique actuator holder design prevents half-locking**

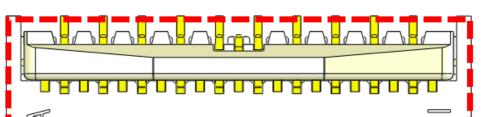
Curved design guides users to press center of the actuator to prevent half lock.



Easy-to-check that the actuator is in the closed position by looking at it from the top.



Actuator CLOSED



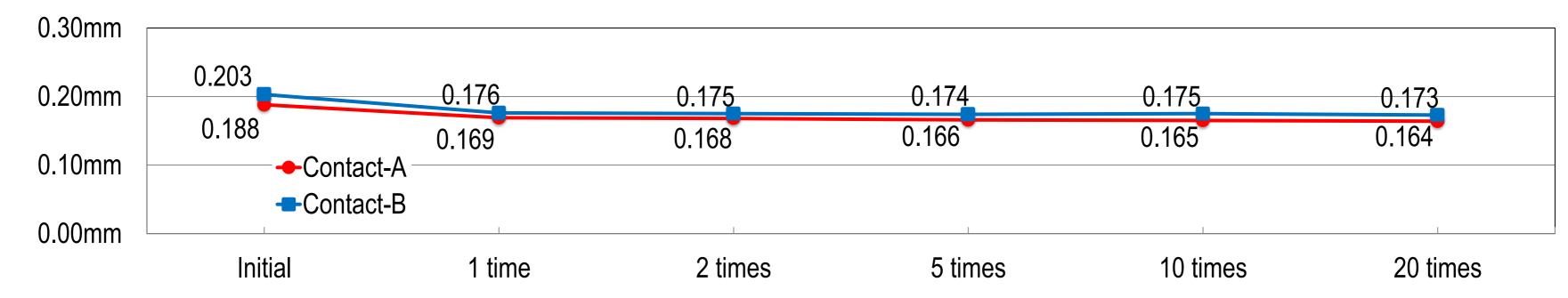
Actuator OPEN



#### **Usability for closing actuator without FPC**

The connector will still function even if the actuator is accidentally closed without the FPC being inserted after the SMT process

Connector will still function reliably (contact gap graph 35 pins before and after operating actuator without FPC inserted) 



Insertion force of connector goes up

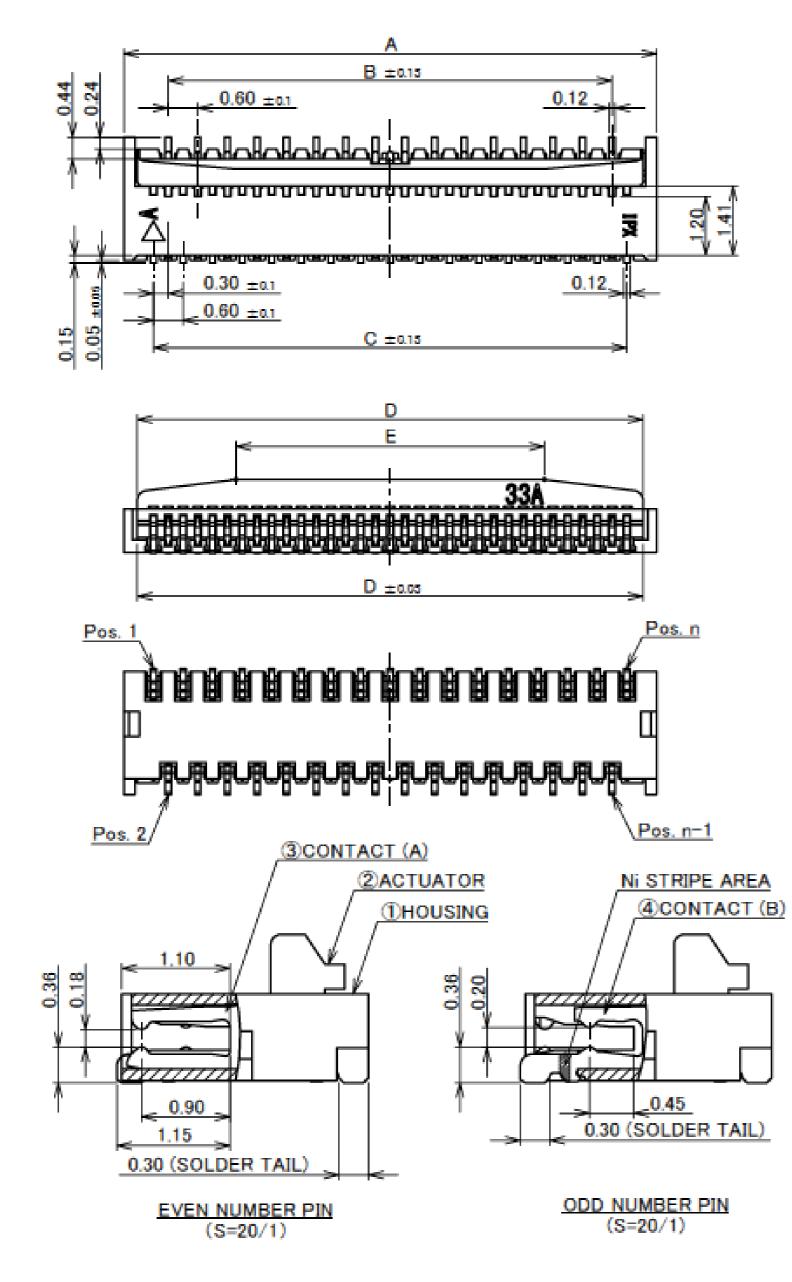
I-PEX

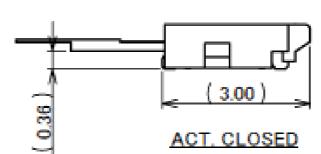
Retention force of connector does not change greatly

## **Component Parts Details**

#### **Connector Assembly**

Recommended P/N 20527-0\*\*E-01





 $\square$ 

2.50

2.55



| PART NO.      | Pos. | Α     | в     | С     | D     | E    |
|---------------|------|-------|-------|-------|-------|------|
| 20527-013E-0# | 13P  | 4.80  | 3.00  | 3.60  | 4.25  | 2.25 |
| 20527-015E-0# | 15P  | 5.40  | 3.60  | 4.20  | 4.85  | 2.85 |
| 20527-017E-0# | 17P  | 6.00  | 4.20  | 4.80  | 5.45  | 3.45 |
| 20527-019E-0# | 19P  | 6.60  | 4.80  | 5.40  | 6.05  | 4.05 |
| 20527-021E-0# | 21P  | 7.20  | 5.40  | 6.00  | 6.65  | 2.65 |
| 20527-023E-0# | 23P  | 7.80  | 6.00  | 6.60  | 7.25  | 3.25 |
| 20527-025E-0# | 25P  | 8.40  | 6,60  | 7.20  | 7.85  | 3.85 |
| 20527-027E-0# | 27P  | 9.00  | 7.20  | 7.80  | 8.45  | 4.45 |
| 20527-029E-0# | 29P  | 9.60  | 7.80  | 8.40  | 9.05  | 5.05 |
| 20527-031E-0# | 31P  | 10.20 | 8.40  | 9.00  | 9.65  | 5.65 |
| 20527-033E-0# | 33P  | 10.80 | 9.00  | 9.60  | 10.25 | 6.25 |
| 20527-035E-0# | 35P  | 11.40 | 9.60  | 10.20 | 10.85 | 6.85 |
| 20527-037E-0# | 37P  | 12.00 | 10.20 | 10.80 | 11.45 | 7.45 |
| 20527-039E-0# | 39P  | 12.60 | 10.80 | 11.40 | 12.05 | 8.05 |
| 20527-041E-0# | 41P  | 13.20 | 11.40 | 12.00 | 12.65 | 6.65 |

1. CONTACT POINT: TOP AND BOTTOM CONTACT



VISIT OUR WEBSITE FOR LATEST VERSIONS OF INSTRUCTION MANUAL NO. HIM-12007 TO HANDLE THE PRODUCT PROPERLY AND SAFELY.

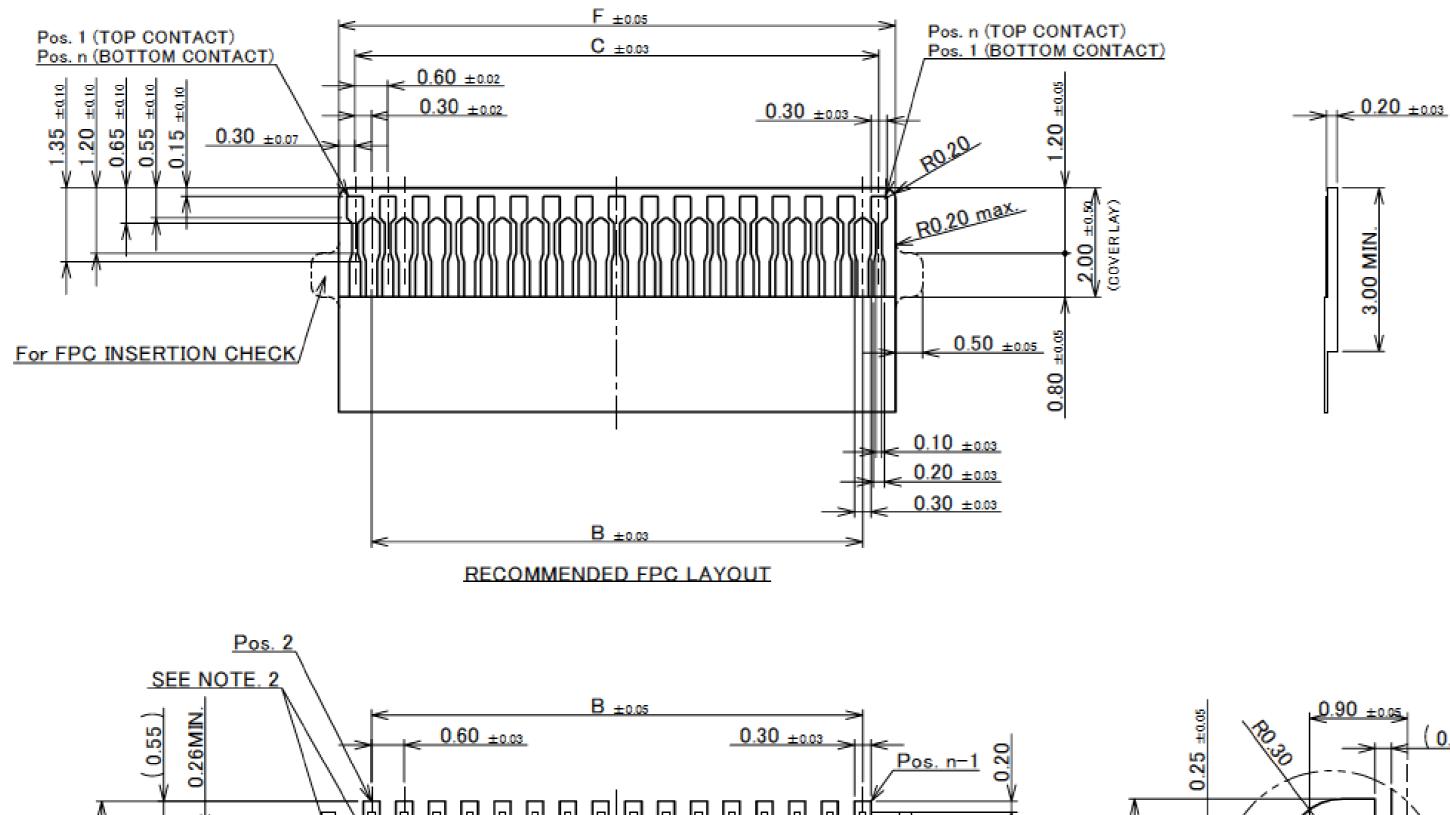
| TABLE 1       |   |  |  |  |  |  |
|---------------|---|--|--|--|--|--|
| PART NO.      | FINISH  |  |  |  |  |  |
| 20527-0**E-01 | CONTACT AREA : Au 0.10 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN.<br>SOLDERING AREA : Au 0.03 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN.  |  |  |  |  |  |
| 20527-0**E-02 | CONTACT AREA : Au 0.254 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN.<br>SOLDERING AREA : Au 0.03 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN. |  |  |  |  |  |

| 4   | CONTACT (B) PHOSPHOR BRONZE   |          | SEE TABLE 1, WITH Ni STRIPE |  |  |
|-----|-------------------------------|----------|-----------------------------|--|--|
| 3   | B CONTACT (A) PHOSPHOR BRONZE |          | SEE TABLE 1                 |  |  |
| 2   | ACTUATOR LCP                  |          | UL94V-0, BEIGE              |  |  |
| 1   | 1 HOUSING LCP                 |          | UL94V-0, BEIGE              |  |  |
| NO. | DISCRIPTION                   | MATERIAL | FINISH, REMARKS             |  |  |

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Rev.20

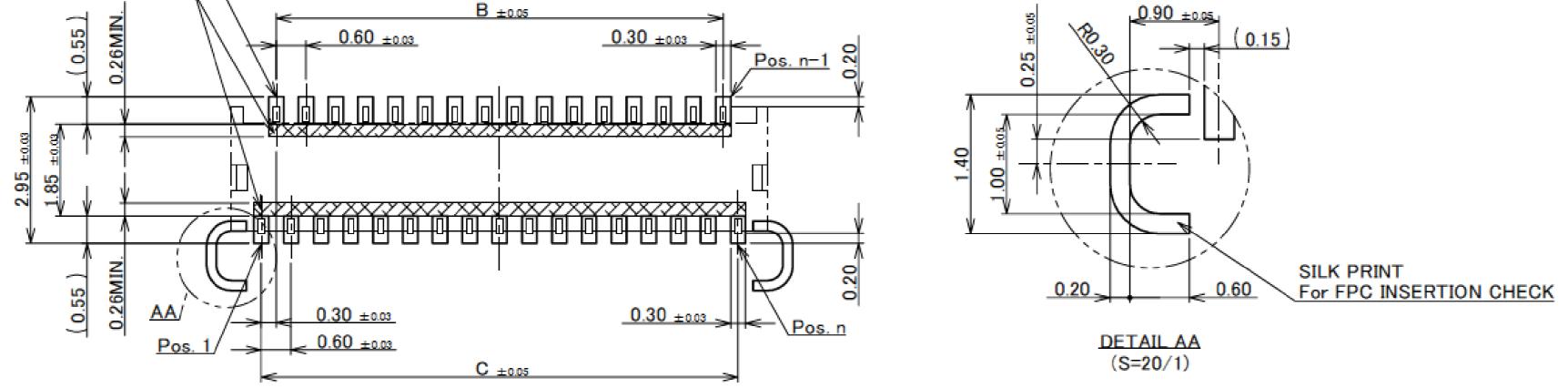


| PART NO.      | Pos. | В     | С     | F     |
|---------------|------|-------|-------|-------|
| 20527-013E-0# | 13P  | 3.00  | 3.60  | 4.20  |
| 20527-015E-0# | 15P  | 3.60  | 4.20  | 4.80  |
| 20527-017E-0# | 17P  | 4.20  | 4.80  | 5.40  |
| 20527-019E-0# | 19P  | 4.80  | 5.40  | 6.00  |
| 20527-021E-0# | 21P  | 5.40  | 6.00  | 6.60  |
| 20527-023E-0# | 23P  | 6.00  | 6.60  | 7.20  |
| 20527-025E-0# | 25P  | 6.60  | 7.20  | 7.80  |
| 20527-027E-0# | 27P  | 7.20  | 7.80  | 8.40  |
| 20527-029E-0# | 29P  | 7.80  | 8.40  | 9.00  |
| 20527-031E-0# | 31P  | 8.40  | 9.00  | 9.60  |
| 20527-033E-0# | 33P  | 9.00  | 9.60  | 10.20 |
| 20527-035E-0# | 35P  | 9.60  | 10.20 | 10.80 |
| 20527-037E-0# | 37P  | 10.20 | 10.80 | 11.40 |
| 20527-039E-0# | 39P  | 10.80 | 11.40 | 12.00 |
| 20527-041E-0# | 41P  | 11.40 | 12.00 | 12.60 |
|               |      |       |       |       |

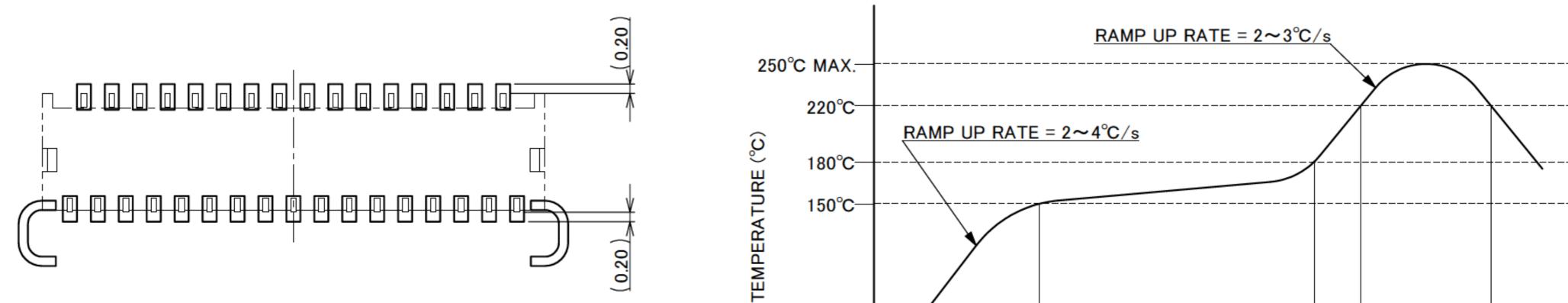
#### NOTES.

3.00 MIN.

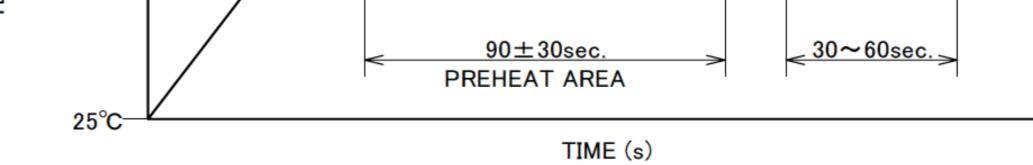
2. SOLDER RESIST SHALL BE APPLIED TO PREVENT SHORT CIRCUITS WHEN PLACING SIGNAL LINES ON GROUND AREA.



RECOMMENDED PCB LAYOUT & METAL MASK LAYOUT METAL MASK THICKNESS : t=0.12mm



Rev.20

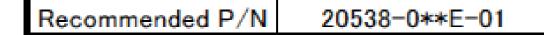


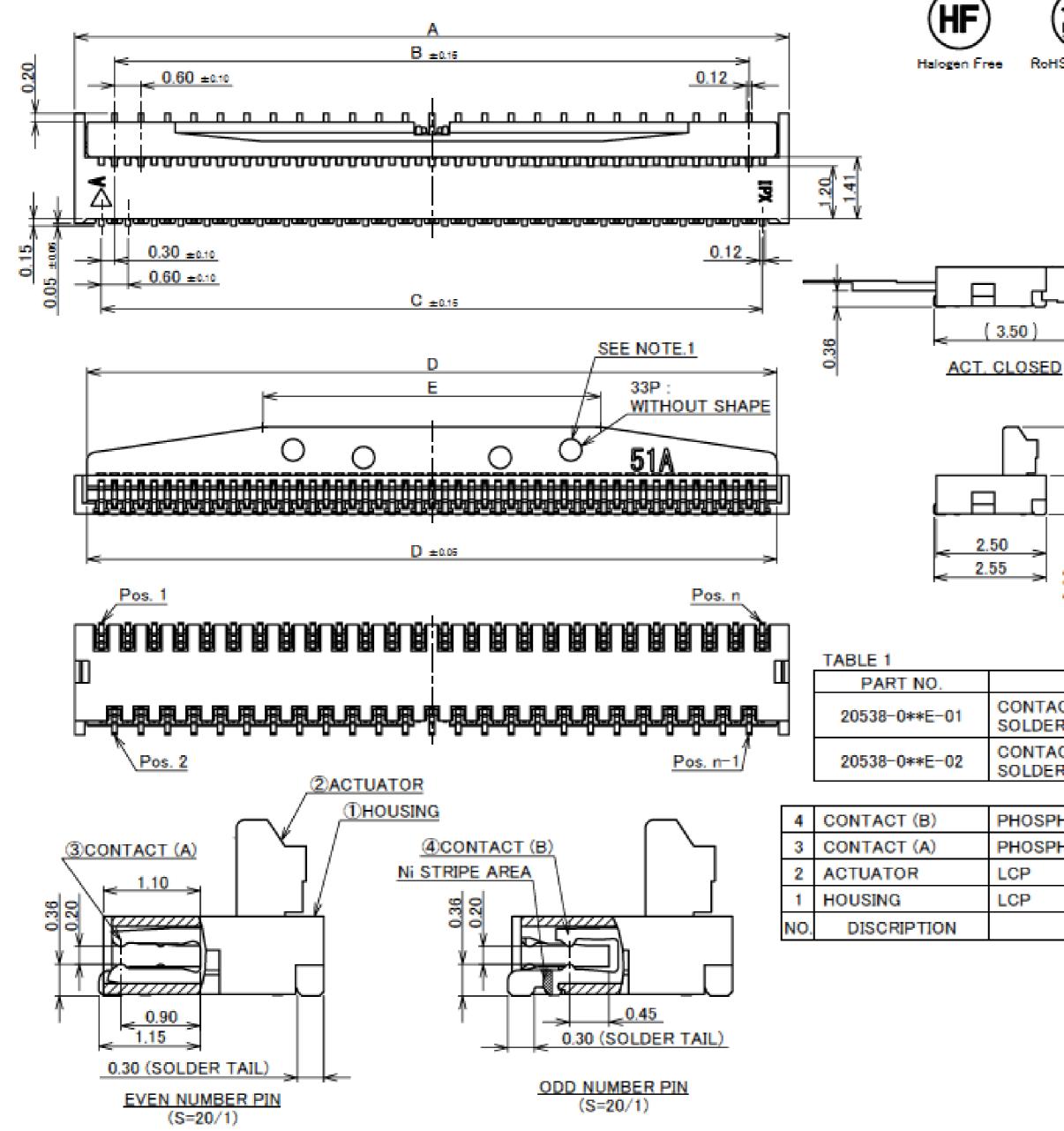
CONNECTOR ON RECOMMENDED PCB LAYOUT

REFLOW TEMPERATURE PROFILE SENJU METAL INDUSTRY CO., LTD. : M705-SHF(Sn96.5 Ag3.0 Cu0.5)

| ITEMS  | SPECIFICATION  |  |
|--|--|--|
| RATING VOLTAGE                                 | 50V AC (PER CONTACT)   |  |
| RATING AMPERAGE                                | 0.3A DC (PER CONTACT)  |  |
| OPERATING TEMPERATURE                          | 233~358K (−40°C~+85°C)   |  |
| OPERATING HUMIDITY                             | 20~80%RH (NON-CONDENSING)  |  |
| CONTACT RESISTANCE                             | INITIAL : 60mohm MAX. / AFTER TEST : 240mohm MAX.                  |  |
| INSULATION RESISTANCE                          | 100Mohm MIN.   |  |
| DIELECTRIC WITHSTANDING VOLTAGE                | AC250V 1min  |  |
| DURABILITY                                     | 20 CYCLES  |  |
| ACTUATOR LOCKING FORCE (INITIAL / 20 CYCLES)   | INITIAL / 20 CYCLES 0.31N (31gf) × n MAX.                          |  |
| ACTUATOR UNLOCKING FORCE (INITIAL / 20 CYCLES) | INITIAL / 20 CYCLES 0.02N (2gf) $\times$ n MIN.                    |  |
| FPC RETENTION FORCE (INITIAL / AFTER TEST)     | INITIAL: 0.13N (13gf) × n MIN. / AFTER TEST: 0.10N (10gf) × n MIN. |  |
| COPLANARITY                                    | 0.10 MAX.  |  |
| PRODUCT SPECIFICATION                          | PRS-1512   |  |
| TEST REPORT                                    | TR-10011   |  |
| PACKING STANDARD                               | 300-826  |  |
| INSTRUCTION MANUAL                             | HIM-12007  |  |
| APPEARANCE CRITERIA No.                        | QLS-A***   |  |

※ "n" IS THE NUMBER OF PIN







RoHS Compliant

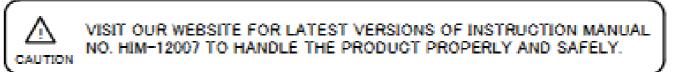
| PART NO.      | Pos. | A     | В     | С     | D     | E     |
|---------------|------|-------|-------|-------|-------|-------|
| 20538-033E-0# | 33P  | 10.80 | 9.00  | 9.60  | 10.25 | 6.25  |
| 20538-035E-0# | 35P  | 11.40 | 9.60  | 10.20 | 10.85 | 6.85  |
| 20538-039E-0# | 39P  | 12.60 | 10.80 | 11.40 | 12.05 | 8.05  |
| 20538-041E-0# | 41P  | 13.20 | 11.40 | 12.00 | 12.65 | 4.65  |
| 20538-045E-0# | 45P  | 14.40 | 12.60 | 13.20 | 13.85 | 5.85  |
| 20538-049E-0# | 49P  | 15.60 | 13.80 | 14.40 | 15.05 | 7.05  |
| 20538-051E-0# | 51P  | 16.20 | 14.40 | 15.00 | 15.65 | 7.65  |
| 20538-055E-0# | 55P  | 17.40 | 15.60 | 16.20 | 16.85 | 8.85  |
| 20538-057E-0# | 57P  | 18.00 | 16.20 | 16.80 | 17.45 | 9.45  |
| 20538-061E-0# | 61P  | 19.20 | 17.40 | 18.00 | 18.65 | 10.65 |
| 20538-065E-0# | 65P  | 20.40 | 18.60 | 19.20 | 19.85 | 11.85 |

#### NOTES.

18 1

0.90

1. THIS DENT SHAPE IS PURPOSED FOR GOOD INJECTION QUALITY. THIS DENT SHAPE WILL NOT AFFECT CONNECTR FUNCTION. DENT SHAPE SHOWN ON DRAWING IS JUST FOR REFERENCE. DENT SHAPE AND QUANTITY MIGHT CHABGE FROM DIFFERENT PIN COUNT AND DIFFERENT TOOLING. 2. CONTACT POINT: TOP AND BOTTOM CONTACT



| _ | TABLE 1                |   |
|---|------------------------|---|
|   | PART NO.               | FINISH  |
|   | 20538-0**E-01          | CONTACT AREA : Au 0.10 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN.<br>SOLDERING AREA : Au 0.03 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN.  |
|   | 20538-0 <b>*</b> *E-02 | CONTACT AREA : Au 0.254 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN.<br>SOLDERING AREA : Au 0.03 $\mu$ m MIN. OVER Ni 1.00 $\mu$ m MIN. |

| 4   | CONTACT (B)                   | PHOSPHOR BRONZE | SEE TABLE 1, WITH NI STRIPE |  |  |
|-----|-------------------------------|-----------------|-----------------------------|--|--|
| 3   | 3 CONTACT (A) PHOSPHOR BRONZE |                 | SEE TABLE 1                 |  |  |
| 2   | 2 ACTUATOR LCP                |                 | UL94V-0, BEIGE              |  |  |
| 1   | 1 HOUSING LCP                 |                 | UL94V-0, BEIGE              |  |  |
| NO. | DISCRIPTION                   | MATERIAL        | FINISH , REMARKS            |  |  |

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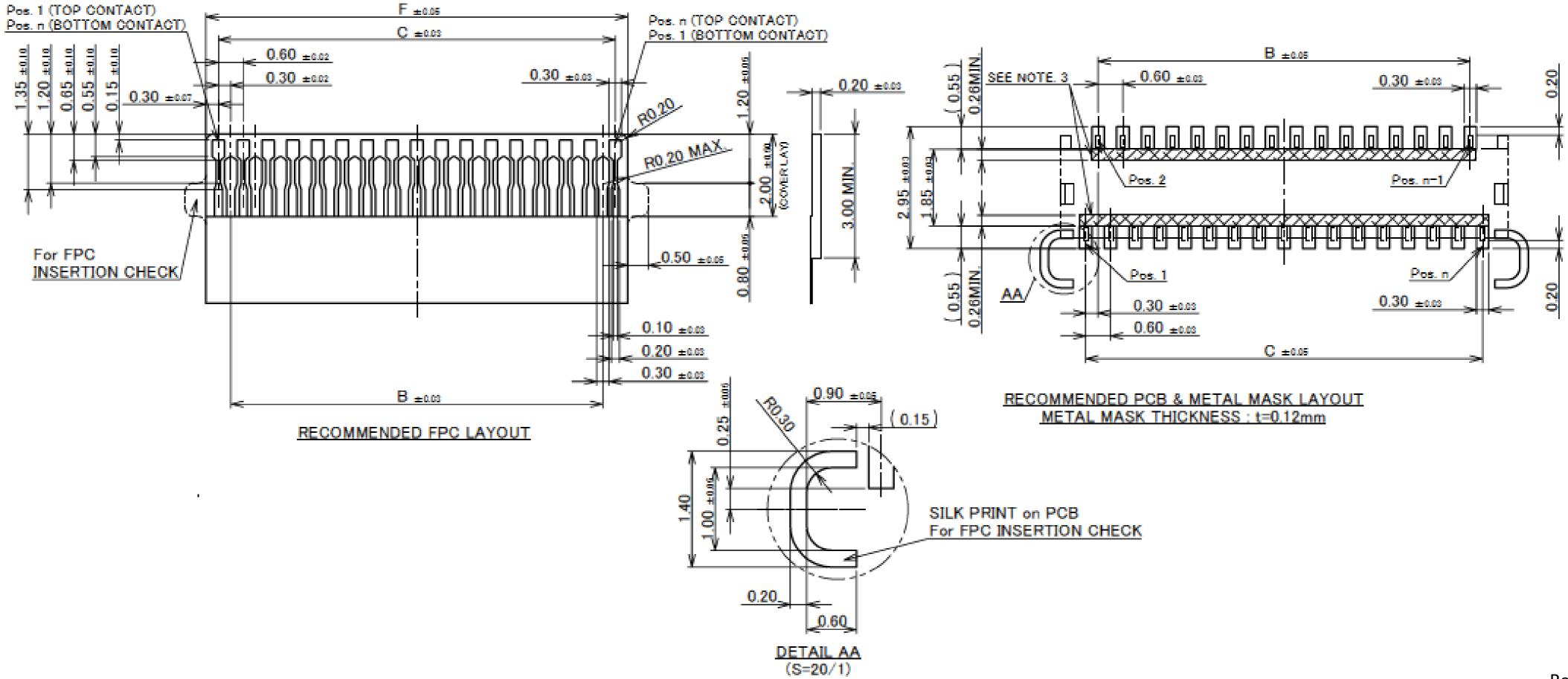
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| PART NO.      | Pos. | В     | С     | F     |
|---------------|------|-------|-------|-------|
| 20538-033E-0# | 33P  | 9.00  | 9.60  | 10.20 |
| 20538-035E-0# | 35P  | 9.60  | 10.20 | 10.80 |
| 20538-039E-0# | 39P  | 10.80 | 11.40 | 12.00 |
| 20538-041E-0# | 41P  | 11.40 | 12.00 | 12.60 |
| 20538-045E-0# | 45P  | 12.60 | 13.20 | 13.80 |
| 20538-049E-0# | 49P  | 13.80 | 14.40 | 15.00 |
| 20538-051E-0# | 51P  | 14.40 | 15.00 | 15.60 |
| 20538-055E-0# | 55P  | 15.60 | 16.20 | 16.80 |
| 20538-057E-0# | 57P  | 16.20 | 16.80 | 17.40 |
| 20538-061E-0# | 61P  | 17.40 | 18.00 | 18.60 |
| 20538-065E-0# | 65P  | 18.60 | 19.20 | 19.80 |

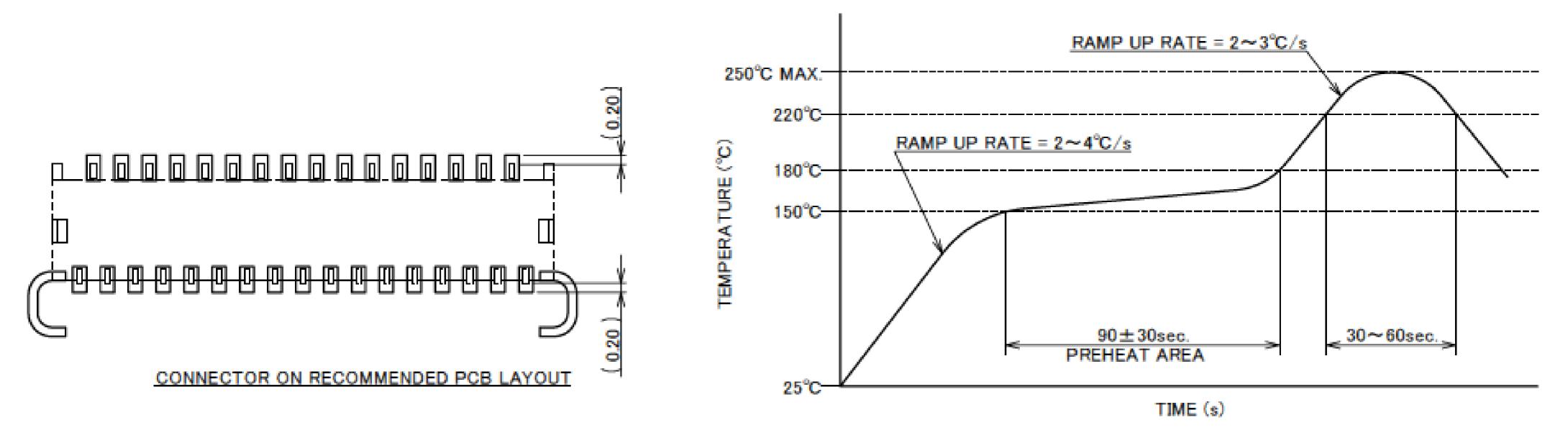
#### NOTES.

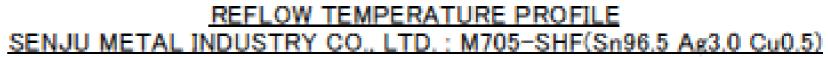
3. SOLDER RESIST SHALL BE APPLIED TO PREVENT SHORT CIRCUITS WHEN PLACING SIGNAL LINES ON GROUND AREA.













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| ITEMS  | SPECIFICATION  |  |  |
|--|--|--|--|
| RATING VOLTAGE                                 | 50V AC (PER CONTACT)   |  |  |
| RATING AMPERAGE                                | 0.3A DC (PER CONTACT)  |  |  |
| OPERATING TEMPERATURE                          | 233~358K (−40°C~+85°C)   |  |  |
| OPERATING HUMIDITY                             | 20~80%RH   |  |  |
| CONTACT RESISTANCE                             | INITIAL : 60mohm MAX. / AFTER TEST : 240mohm MAX.                  |  |  |
| INSULATION RESISTANCE                          | 100Mohm MIN.   |  |  |
| DIELECTRIC WITHSTANDING VOLTAGE                | AC250V 1min  |  |  |
| DURABILITY                                     | 20 CYCLES  |  |  |
| ACTUATOR LOCKING FORCE (INITIAL / 20 CYCLES)   | INITIAL / 20 CYCLES 0.21N (21gf) × n MAX.                          |  |  |
| ACTUATOR UNLOCKING FORCE (INITIAL / 20 CYCLES) | INITIAL / 20 CYCLES 0.014N (1.4gf) × n MIN.                        |  |  |
| FPC RETENTION FORCE (INITIAL / AFTER TEST)     | INITIAL: 0.13N (13gf) × n MIN. / AFTER TEST: 0.10N (10gf) × n MIN. |  |  |
| COPLANARITY                                    | 0.10 MAX.  |  |  |
| PRODUCT SPECIFICATION                          | PRS-1579   |  |  |
| TEST REPORT                                    | TR-12040   |  |  |
| PACKING STANDARD                               | 300-920  |  |  |
| INSTRUCTION MANUAL                             | HIM-12007  |  |  |
| APPEARANCE CRITERIA No.                        | QLS-A***   |  |  |

※ "n" IS THE NUMBER OF PIN

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I/O

MINIFLEX<sup>®</sup> series

EVAFLEX<sup>®</sup> series



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Contact your sales representative or more detailed information.

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