

**!** To Be Discontinued  
Last time buy: September 30, 2019

|   |               |
|---|---------------|
| For FPC   | <h1>Y3BC</h1> |
| <b>FPC/FFC connectors<br/>(0.3mm pitch)<br/>Back lock</b> |               |

### Pitch 0.3 mm and double top and bottom contacts construction



### FEATURES

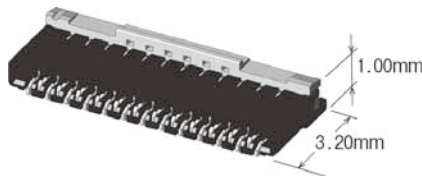
1. Double top and bottom contacts construction
2. Lever open/close operation is possible without an FPC inserted. (See “DETAILED FEATURES”.)
3. Wiring patterns can be placed under the connector.
4. Ni barrier with high resistance to solder creepage

### APPLICATIONS

Smartphones, DSC and other mobile devices

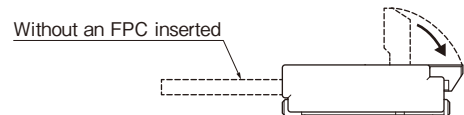
### DETAILED FEATURES

**Slim and low profile design (Contact pitch: 0.3 mm)**  
Back lock type with a slim depth of 3.50 mm (including lever). Low profile construction of 1.0 mm height facilitates device slimness and miniaturization.



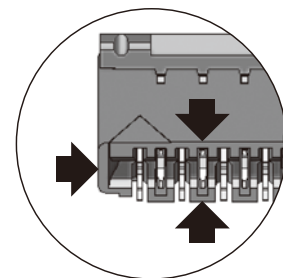
**Improvement of mechanical design flexibility**  
Top and bottom double contacts eliminate the need of using different connectors (with either top or bottom contacts) depending on the FPC wiring conditions.

**Lever open/close operation is possible without an FPC inserted.**  
Breakage troubles during transport of modules or setting devices are prevented.

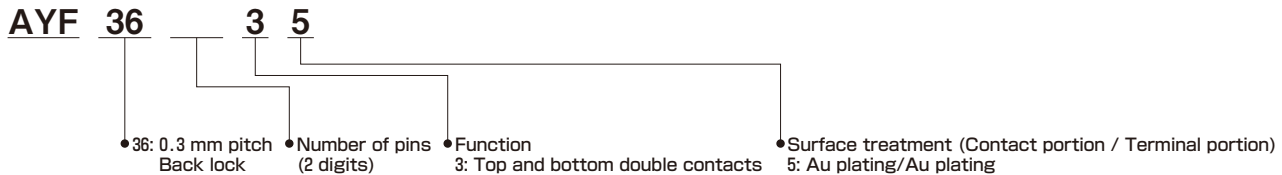


Note: Opening and closing of lever is limited to five times under same conditions and removal life.  
Please do not perform reflow heating when lever is closed or partly closed.

**Prevent displacement of FPC insertion**  
Constructed to make positional displacement difficult by surrounding the four sides on the FPC inlet side with wall molding



## ORDERING INFORMATION



## PRODUCT TYPES

| Height | Number of pins | Part number | Packing               |               |
|--------|----------------|-------------|-----------------------|---------------|
|        |                |             | Inner carton (1-reel) | Outer carton  |
| 1.0 mm | 25             | AYF362535   | 5,000 pieces          | 10,000 pieces |
|        | 31             | AYF363135   |                       |               |
|        | 39             | AYF363935   |                       |               |

Notes: 1. Order unit: For volume production: 1-inner carton (1-reel) units. For samples, please contact our sales office.  
 2. Please contact our sales office for connectors having a number of pins other than those listed above.

## SPECIFICATIONS

### 1. Characteristics

The followings show specifications, when using an applicable FPC (thickness 0.20 mm)

|  | Item   | Specifications   | Conditions   |                   |                |
|--|--|--|--|-------------------|----------------|
| Electrical characteristics                   | Rated current  | 0.2A/pin contact (Max. 5 A at total contacts)  |  |                   |                |
|  | Rated voltage  | 50V AC/DC  |  |                   |                |
|  | Dielectric strength  | 150V AC for 1 min.   | No short-circuiting or damage at a detection current of 1 mA when the specified voltage is applied for one minute.   |                   |                |
|  | Insulation resistance  | Min. 1,000MΩ (initial)   | Using 250V DC megger (applied for 1 min.)  |                   |                |
|  | Contact resistance   | Max. 100mΩ   | Based on the contact resistance measurement method specified by JIS C 5402.  |                   |                |
| Mechanical characteristics                   | FPC holding force  | 25 pins: Min. 0.20N/pin contact × pin contacts (initial)<br>31, 39 pins: Min. 0.18N/pin contact × pin contacts (initial) | Measurement of the maximum force applied until the inserted compatible FPC is pulled out in the insertion axis direction while the connector lever is closed                       |                   |                |
| Environmental characteristics                | Ambient temperature  | -55 to +85°C   | No icing. No condensation.   |                   |                |
|  | Soldering heat resistance  | The initial specification must be satisfied electrically and mechanically.   | Reflow soldering:<br>Peak temperature: 260°C or less<br>(on the surface of the PC board around the connector terminals)<br>Soldering iron: 300°C within 5 sec. 350°C within 3 sec. |                   |                |
|  | Storage temperature  | -55 to +85°C (product only)<br>-40 to +50°C (emboss packing)   | No icing. No condensation.   |                   |                |
|  | Thermal shock resistance (with FPC mated)                                  | 5 cycles, insulation resistance min. 100MΩ, contact resistance max. 100mΩ  | Conformed to MIL-STD-202F, method 107G   |                   |                |
|  |  |  | Order  | Temperature (°C)  | Time (minutes) |
|  |  |  | 1  | -55 <sub>±3</sub> | 30             |
|  |  |  | 2  | ∅                 | Max. 5         |
| 3  | 85 <sub>±3</sub>   | 30   |  |                   |                |
| 4  | ∅  | Max. 5   |  |                   |                |
| 4  | -55 <sub>±3</sub>  |  |  |                   |                |
| Humidity resistance (with FPC mated)         | 120 hours, insulation resistance min. 100MΩ, contact resistance max. 100mΩ | Conformed to IEC60068-2-78<br>Temperature 40±2°C, humidity 90 to 95% R.H.  |  |                   |                |
| Saltwater spray resistance (with FPC mated)  | 24 hours, insulation resistance min. 100MΩ, contact resistance max. 100mΩ  | Conformed to IEC60068-2-11<br>Temperature 35±2°C, saltwater concentration 5±1%   |  |                   |                |
| H <sub>2</sub> S resistance (with FPC mated) | 48 hours, contact resistance max. 100mΩ                                    | Temperature 40±2°C, gas concentration 3±1 ppm, humidity 75 to 80% R.H.   |  |                   |                |
| Lifetime characteristics                     | Insertion and removal life   | 20 times   | Repeated insertion and removal: min. 10 sec./time  |                   |                |
| Unit weight                                  |  | 25 pins: 0.05 g  |  |                   |                |

### 2. Material and surface treatment

| Part name      | Material   | Surface treatment   |
|----------------|--|---|
| Molded portion | Housing: LCP resin (UL94V-0)<br>Lever: LCP resin (UL94V-0) | —   |
| Contact        | Copper alloy   | Contact portion; Base: Ni plating, Surface: Au plating<br>Terminal portion; Base: Ni plating, Surface: Au plating |

# DIMENSIONS (Unit: mm)

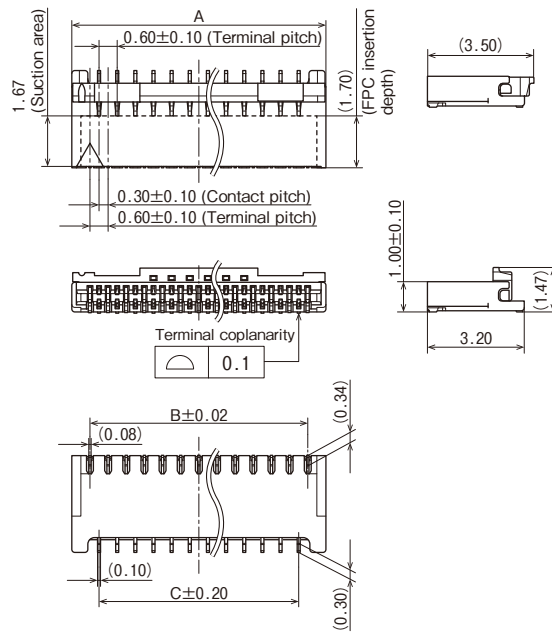
The CAD data of the products with a **CAD** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

**Y3BC**

**CAD**



## External dimensions



General tolerance:  $\pm 0.3$

Each mentioned sizes are at the stage of initial delivery.

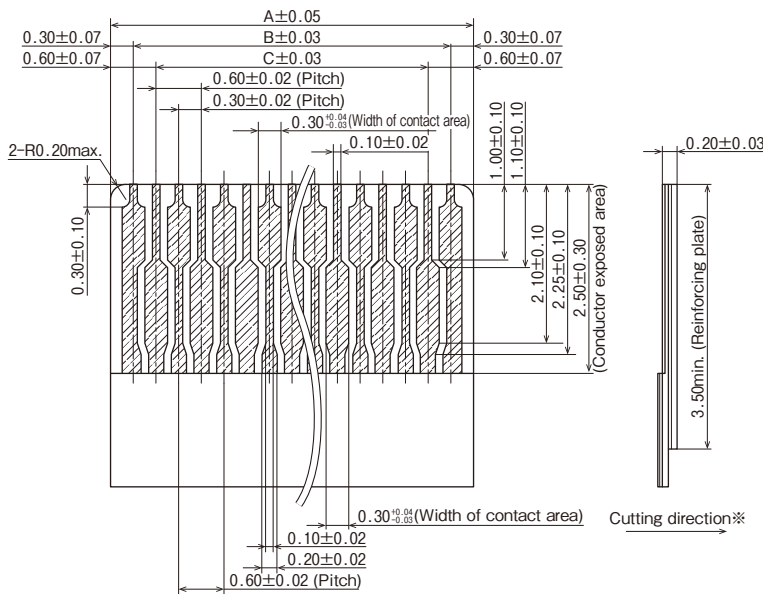
Dimension table

| Dimensions \ Number of pins | A     | B     | C     |
|-----------------------------|-------|-------|-------|
| 25                          | 8.40  | 7.20  | 6.60  |
| 31                          | 10.20 | 9.00  | 8.40  |
| 39                          | 12.60 | 11.40 | 10.80 |

## Y3BC Recommended FPC dimensions

(Finished thickness:  $t = 0.2 \pm 0.03$ )

The conductive parts should be based by Ni plating and then Au plating.



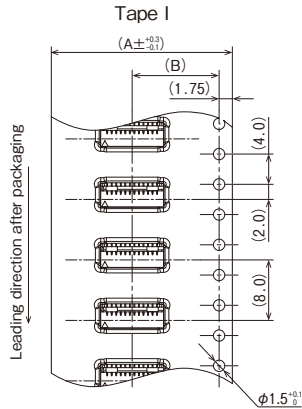
※Cut FPC from the copper foil side to the reinforcing plate side.

Dimension table

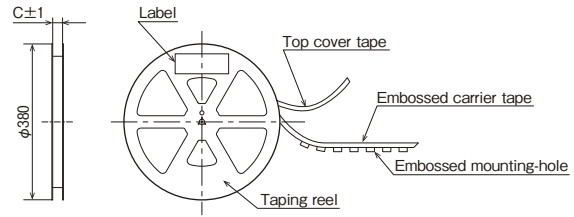
| Dimensions \ Number of pins | A     | B     | C     |
|-----------------------------|-------|-------|-------|
| 25                          | 7.80  | 7.20  | 6.60  |
| 31                          | 9.60  | 9.00  | 8.40  |
| 39                          | 12.00 | 11.40 | 10.80 |

# EMBOSSED TAPE DIMENSIONS (Unit: mm)

## Specifications for taping



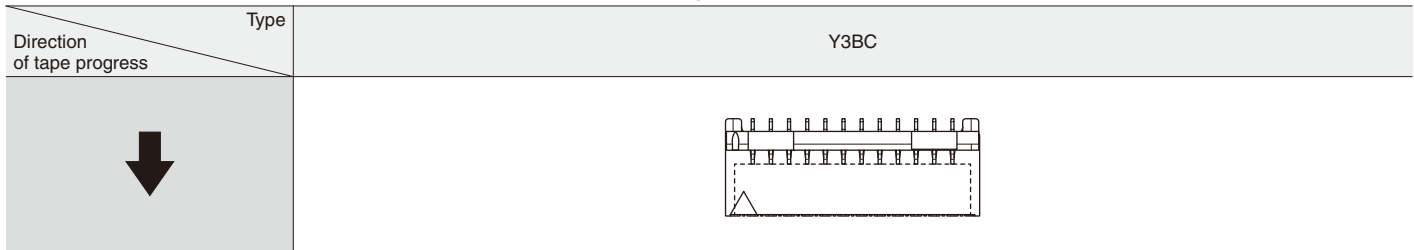
## Specifications for the plastic reel In accordance with EIAJ ET-7200B.



### Dimension table

| Number of pins | Type of taping | A    | B    | C    | Quantity per reel |
|----------------|----------------|------|------|------|-------------------|
| 25 to 39       | Tape I         | 24.0 | 11.5 | 25.4 | 5,000             |

### Connector orientation with respect to embossed tape feeding direction



## NOTES (Unit: mm)

### Design of PC board patterns

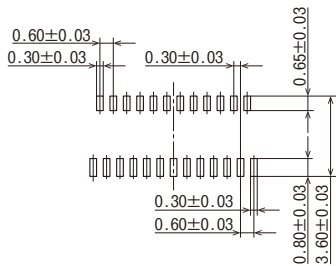
Conduct the recommended foot pattern design, in order to preserve the mechanical strength of terminal solder areas.

### Recommended PC board and metal mask patterns

Connectors are mounted with high pitch density, intervals of 0.4 mm, 0.5 mm or 0.6 mm. In order to reduce solder and flux rise, solder bridges and other issues make sure the proper levels of solder is used.

The figures are recommended patterns. Please use them as a reference.

### Recommended PC board pattern (mounting layout)

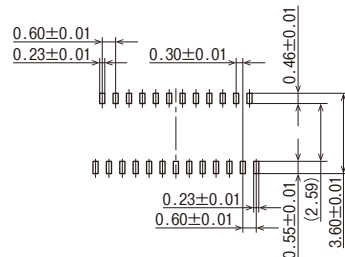


### Recommended metal mask pattern

Metal mask thickness: When 120μm

(Front terminal portion opening area ratio: 53%)

(Back terminal portion opening area ratio: 54%)



Please refer to the latest product specifications when designing your product.

# Notes on Using FPC Connectors Y3BC

## ■ About safety Remarks

- Do not use these connectors beyond the specified ranges. The use of the product outside of the specified rated current, breakdown voltage ranges, and other environmental conditions may cause abnormal heating, smoke, and fire.
- In order to avoid accidents, make sure you have thoroughly reviewed the specifications before use. Please consult us if you plan to use the product in a way not covered by the specifications. Otherwise, the quality cannot be guaranteed.
- We are consistently striving to improve quality and reliability. However, the fact remains that electrical components and devices generally cause failures at a given statistical probability. Furthermore, their durability varies with use environments or use conditions. In this respect, we ask you to check for actual electrical components and devices under actual conditions before use without fail. Continuously using them in a state of degraded performance may cause deterioration in insulation performance, thus resulting in abnormal heat generation, smoke generation, or firing. We ask you to carry out safety design including redundancy design, design for fire spread prevention, and design for malfunction prevention as well as periodic maintenance so that no accidents resulting in injury or death, fire accidents, or social damage will be caused as a result of our product failure or service life.

## ■ PC board design

- Design the recommended foot pattern in order to secure the mechanical strength in the soldered areas of the terminal.
- In order to facilitate the connector mount, make sure to design the board with reduced warpage.
- Please design and pay attention to the distance from the board edge to the pattern. When cutting the board, do not give an excessive stress to the connector, which risks damaging the connector.

## ■ FPC and equipment design

- Design the FPC based with recommended dimensions to ensure the required connector performance.
  - When back lock type is used, secure enough space for closing the lever and for open-close operation of the lever.
  - Make sure that connector positioning and FPC length are appropriate to prevent diagonal insertion of the FPC.
  - Due to the FPC size, weight, or the reaction force of the routed FPC, FPC removed and connector deformation may occur by a fall, vibration, or other impact.
- When using FPC connector for smart phones, cellular phones and other applications which require falling resistance, please pay attention to precautions.
- Carefully check the equipment design and take required measures to prevent the FPC removed.
  - If the shock of falling, vibration is applied to the FPC, please design the equipment not to be applied a load to connector, such as fixing the FPC.
  - Make sure to design the FPC insertion part with reduced warpage. Otherwise, the warpage may adversely affect the FPC insertion.

## ■ Connector mounting

Excessive mounter chucking force may deform the molded or metal part of the connector. Consult us in advance if chucking is to be applied.

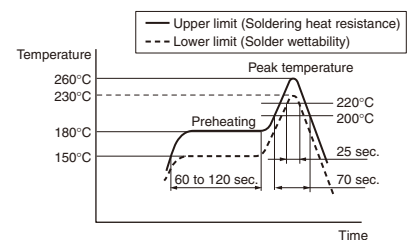
## ■ Soldering

### 1) Manual soldering

- Due to the connector's compact size, if an excessive amount of solder is applied during manual soldering, the solder may creep up and flux wicking near the contact points, or solder interference may cause impact contact.
- Make sure that the soldering iron tip is heated within the temperature and time limits indicated in the specifications.
- Flux from the solder wire may adhere to the contact surfaces during soldering operations. After soldering, carefully check the contact surfaces and cleans off any flux solder use.
- Be aware that a load applied to the connector terminals while soldering may displace the contact.
- Thoroughly clean the iron tip.

### 2) Reflow soldering

- Screen-printing is recommended for printing paste solder.
- To achieve the appropriate soldering state, make sure that the reflow temperature, PC board foot pattern, window size and thickness of metal mask are recommended condition.
- Note that excess solder on the terminals prevents complete insertion of the FPC, and causes flux climbing up.
- A screen thickness of 120 $\mu$ m is recommended during cream solder printing.
- Consult us when using a screen-printing thickness other than that recommended.
- Depending on the size of the connector being used, self alignment may not be possible. Accordingly, carefully position the terminal with the PC board pattern.
- The recommended reflow temperature profile is given in the figure below.



- The temperature is measured on the surface of the PC board near the connector terminals.
- The condition of solder or flux rise and wettability varies depending on the type of solder and flux. Solder and flux characteristics should be taken into consideration and also set the reflow temperature and oxygen level.
- Do not use resin-containing solder. Otherwise, the contacts might be firmly fixed.
- When performing reflow soldering on the back of the PC board after reflow soldering the connector, secure the connector using, for example, an adhesive.  
(Double reflow soldering on the same side is possible.)  
Do not apply reflow heating while a lever is closing or on the way of closing. The terminals may be deformed by reflow heating with a lever is closing or on the way of closing.

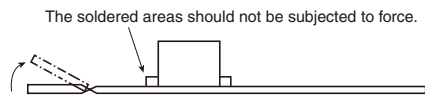
## 3) Rework of soldering portion.

- Rework must be only one time.
- In case of soldering rework of bridges. Please don't use supplementary solder flux. Doing so may cause contact problems by flux. When adding the solder for reworking, do not add an excessive solder.
- Please use the soldering iron under specification's temperature.

■ **Do not drop or handle the connector carelessly. Otherwise, the terminals may become deformed due to excessive force or applied solderability may be during reflow degrade.**

■ **Do not open/close the lever or insert/remove an FPC until the connector is soldered. Forcibly applied external pressure on the terminals can weaken the adherence of the terminals to the molded part or cause the terminals to lose their evenness. In addition, do not insert an FPC into the connector before soldering the connector.**

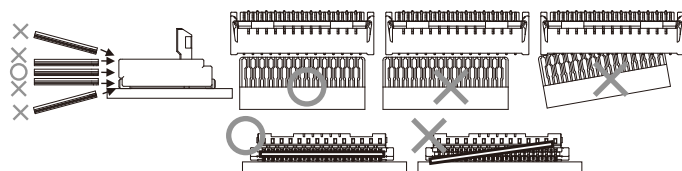
■ **When cutting or bending the PC board after mounting the connector, be careful that the soldered sections are subjected to excessive force.**

■ **PC board**

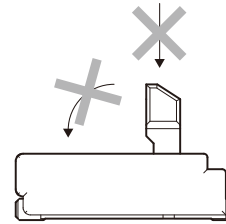
In case the thickness of the coverlay and adhesive is too thick, poor soldering may be caused. Please control and minimize the thickness of them.

■ **Precautions for insertion/removal of FPC**

- These connectors are of the back lock type, which has the FPC insertion section on the opposite side of the lever.
  - Be careful not to make a mistake in the FPC insertion position or the lever opening/closing position. Otherwise, a contact failure or connector breakage may occur.
  - Do not insert an FPC upside down. Inserting an FPC in a direction opposite to that you intended may cause an operation failure or malfunction.
  - Insert an FPC with the lever opened at right angle, that is, in the factory default position.
  - After checking the position of FPC insertion slot and FPC, completely insert the FPC horizontally to the full depth of the connector without altering the angle.
- An FPC inserted at an excessive angle to the board may cause the deformation of metal parts, crack of molding parts, FPC insertion failures, and FPC circuit breakages.



- Insert the FPC into the connector after checking the position of FPC insertion slot and FPC. Do not insert the FPC without positioning the FPC and connector. Otherwise, it may cause connector breakages. When it is hard to insert the FPC, do not insert the FPC on that condition. Confirm the FPC and connector positioning.
- Do not apply an excessive load to the lever in the opening direction beyond its open position; otherwise, the lever may be deformed or removed.
- Do not apply an excessive load to the lever in a direction perpendicular to the lever rotation axis or in the lever opening direction; otherwise, the terminals may be deformed, and the lever may be removed.



- To close the lever, turn down the lever by pressing the entire lever or both sides of the lever with fingers tips. And close the lever completely. Be careful not to apply partial load to the lever that may cause its deformation or destruction or lever going back to initial position. Close the lever completely to prevent contact failure.
- Avoid applying an excessive load to the top of the lever during or after closing the lever. Otherwise, the terminals may be deformed.
- When opening the lever to remove the FPC, rotate the lever to the initial position. Do not push the lever into the FPC inlet side and ensure that the lever will not go over the initial position; otherwise, it may be deformed or broken.
- To open the lever, if pressure to the lever is applied unevenly, such as to an edge only, it may deform or break.
- Do not open the lever forcefully with something sharp tool, otherwise, the lever may be deformed.
- Remove the FPC at parallel with the lever fully opened. If the lever is closed, or if the FPC is forcedly pulled, the product or FPC may break.
- If a lever is accidentally detached during the handling of a connector, do not use the connector any longer.

■ **After an FPC is inserted, carefully handle it so as not to apply excessive stress to the base of the FPC. When using FPC with a bent condition, please pay attention to precautions below; otherwise, in some conditions it may cause conduction failure, connector breakage, unlocking lever or FPC disconnection.**

- Design so that a load is not applied to connector directly by FPC bending.
- Avoid sharp FPC bending at the root of FPC insertion part.
- Design so that a load is not applied to the part of FPC bending.
- If there might be a load on FPC, please fix the FPC.

## ■ Cleaning treatment

Cleaning this product is not needed.

If cleaning it, pay attention to the following points to prevent the negative effect to the product.

- Carefully oversee the cleanliness of the cleaning fluids to make sure that the contact surfaces do not become dirty from the cleaning fluid itself.
- Since some powerful cleaning solutions may dissolve molded components of the connector and wipe off or discolor printed letters, we recommend semi-aqueous cleaning solvent. Please consult us if you wish to use other types of cleaning fluids.

## ■ Precautions for operating environment and storage environment

Panasonic Corporation does not guarantee the failures caused by condensation.

## ■ Other precautions

- When coating the PC board after soldering the connector to prevent the deterioration of insulation, perform the coating in such a way so that the coating does not get on the connector.
- The connectors are not meant to be used for switching.
- There is no problem on the product quality though the swelling, the black spot, the minute scratch, and the adhesion of foreign bodies, etc. might be generated in the molding parts.
- There is no problem on the product quality though the weld line might be generated in the weld part of molding parts when the use of product is within the specifications.
- The detailed shape of metal parts and molding parts may differ depending on the mold.
- Height in FPC mating depends on the way to being used, such as mounting condition, thickness of FPC, and angle of lever lock etc. Please check it by actual equipment.

Please refer to the latest product specifications when designing your product.

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Please contact .....

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