

To Panasonic Industrial Company

# SPECIFICATIONS

*Model: UDQFBFM01CP1*

Specifications of products : UDQFBFM01CP1 1/11~11/11  
Figure of Products : UDQFBFM01CP1-ASE 1/1  
DATA 1/3~3/3

Please send us back two of specification sheets as soon as you receive these sheets, with your signed approval in order to make quick arrangement for production.

Approved by :

Date :

*Kyushu Matsushita Electric Co., Ltd.  
Devices and Components Division,  
Precision Devices*

Date: Jun. 26. 2002

**IMPORTANT HANDLING PRECAUTIONS 重要事項 冷却ファン取扱い上のお願い**  
**(MPU COOLING FAN UDQF SERIES)**

1. Please do not touch or push fan blade with fingers or any other objects.

Fan blade and bearings may be damaged and a noise defect may result.

請不要用指或其它東西觸壓風葉及軸承因會產生噪音

ファンを直接指その他で触ったり押さえないで下さい。

軸受け部にストレスがかかり音不良の原因となります。

**DON' T TOUCH!**

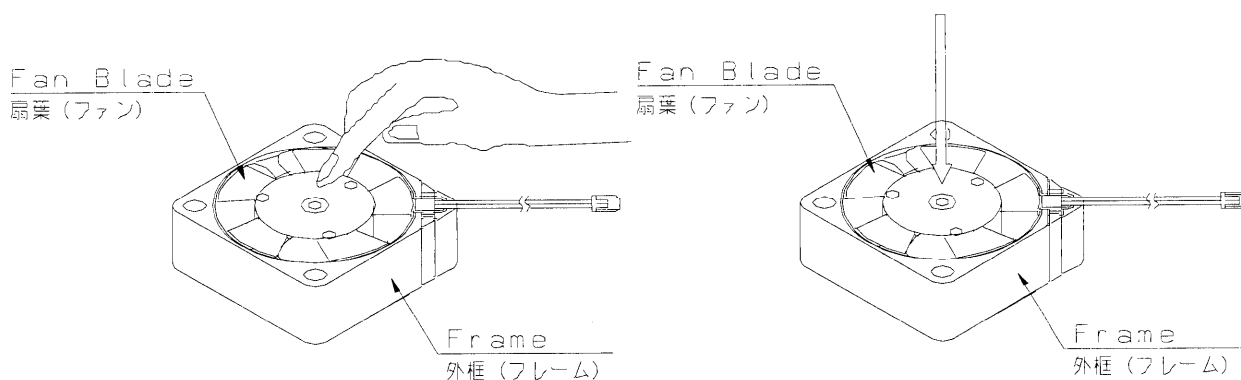
不要觸摸

触れないで下さい!

**DON' T PUSH!**

不要觸壓

押さないで下さい!



2. Do not exert excessive force on the back of the fan when applying adhesive mounting tape.

Fan blade extends beyond the front face of the frame.

当風扇倒立時請不要觸壓外框底部因風片及軸承可能造成損壞而產生噪音

當於外框底部貼上膠片時請不要讓扇葉觸・它物體

ファンを下向きにした状態でフレームを押さないで下さい。

軸受け部にストレスがかかり音不良の原因となります。

KYUSHU MATSUSHITA ELECTRIC CO.,LTD  
Tel (0978)-37-2111 Fax(0978)-37-1948

九州松下電器 (株) デバイス事業部  
Tel (0978)-37-2111 Fax(0978)-37-1948

# SPECIFICATIONS

No. 11-1

MODEL

UDQFBFM01CP1

## ⚠️ PRODUCT SAFETY

### ⚠️ WARNING



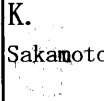
- 1) We can not guarantee our products if your application exceeds the limitations mentioned in our specifications.
- 2) Please check the safety of your product carefully when installing into your machine.
  - ① Check the safety of the motor in compliance with the application standard of your machine.
  - ② Check the safety of the motor performance in error use under the installed situation, and also check the safety by reliability test.

If problem occurs, please report it to us before the shipment of your machines into the market.
- 3) This motor is not equipped with a thermo-protector such as thermo-fuse, or current-fuse or thermos protector.  
 There may be smoking , ignition or electric shock by insulation degradation in cases of motor lock , motor lead short circuit, over load, over voltage or other failure.  
 Please add the protection circuit on your machine.
- 4) This product has no alarm signal when the motor is locked.  
 Make the proper design to your product against the motor lock.
- 5) Please do not touch the live and rotation parts during operation.  
 There may be struck by electricity or injury.
- 6) Please be careful when handling the product.
- 7) If you hit or drop this product, the product may be damaged.  
 Please be careful when handling and installing this product.
- 8) Please do not injure this product including coil and lead wires when installing or wiring. There may be smoking or fire.

|     |      |     |                   |         |         |
|-----|------|-----|-------------------|---------|---------|
| ③   |      |     |                   |         |         |
| ②   |      |     |                   |         |         |
| ①   |      |     |                   |         |         |
| No. | DATE | No. | REASONS OF CHANGE | WRITTEN | CHECKED |

# Specifications of products

No. 11-2

|                         |                            |               |  |  |  |
|-------------------------|----------------------------|---------------|--|--|--|
|                         |                            | MODEL         | UDQFBFM01CP1   |  |  |
| Specification Documents | Specifications of products | Issued        | APPROVED   | CHECKED  | DESIGNED   |
|                         |                            | Jun. 26. 2002 | R.  | S.  | K.  |

This specification is applied to the fan motor described below

**Model name**        MPU Cooling fan  
**Model number**    UDQFBFM01CP1

## Contents

1. Rating
2. Construction
3. FG Signal spec.
4. Performance
5. Temperature rise
6. Insulation resistance
7. Insulation strength
8. Noise level
9. Vibration level
10. Shockproof level
11. Life expectancy
12. Name plate
13. Packing specifications
14. Specifications decision  
    and design modification
15. Product use
16. Test condition
17. Structure and material list
18. Name plate
19. Package

| ITEMS           |      |  |  |
|-----------------|------|--|--|
| 1. Rating       | 1-1  | Voltage  | D.C. 5V                                  |
|                 | 1-2  | Operating voltage  | D.C. 4.5V~5.5V                           |
|                 | 1-3  | Starting voltage   | Start at D.C. 3.5V at25°C                |
|                 | 1-4  | Rating time  | Continuous rating                        |
|                 | 1-5  | Rating current   | 45 mA at25°C                             |
|                 | 1-6  | Suspended current  | 80 mA at25°C                             |
|                 | 1-7  | Operating temperature  | 0 ~ 70 °C                                |
|                 | 1-8  | Operating humidity   | Less than 85 Rh%                         |
|                 | 1-9  | Storage temperature  | -20 ~ 70 °C                              |
|                 | 1-10 | Speed  | 7,800 r/min at60°C                       |
|                 | 1-11 | Max. flow rate   | 0.040 m <sup>3</sup> /min N= 7,800 r/min |
|                 | 1-12 | Max. static pressure   | 24 Pa N= 7,800 r/min                     |
| 2. Construction | 2-1  | Construction and measurements of appearance<br>According to the attached motor assembly drawing. |  |
|                 | 2-2  | Bearings   | Sleeve bearing                           |
|                 | 2-3  | Direction of rotation  | C.C.W. (see from fan side)               |
|                 | 2-4  | Weight   | approximately 6.5 g                      |

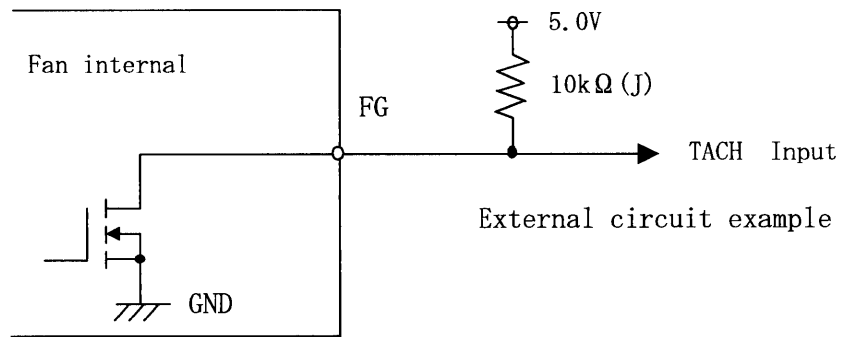
ITEM

CONTENTS

3. FG Signal Spec.

(1)FG output method      Open-collector output

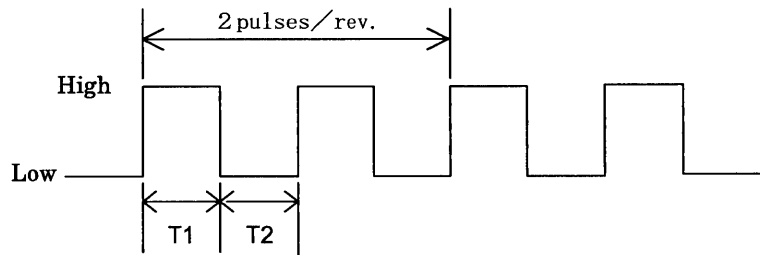
(2)FG signal circuit



- ①Maximum FG terminal voltage      : DC5.5V Max.
- ②Maximum FG terminal sink current : 5mA Max.

(3)FG output

- ①Rotor rotating condition (Ta=25°C, V<sub>DC</sub>=5.0V)
  - 2pulses/rev.
  - High : 4.5V Min.
  - Low : 0.5V Max.
  - Duty :  $T1 / (T1 + T2) \times 100\%$   
= 50% ± 20%



Note)

- Rising time when motor starts and motor is locked: 100ms Max.
- It is likely to drop to Low once whole rising , when motor starts.

②Locked rotor condition

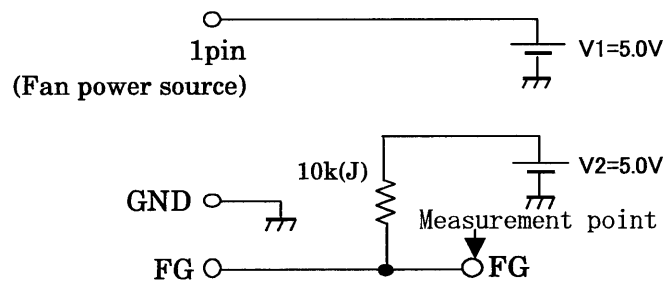
- Output is fixed in High when motor is locked.

<Measurement Conditions>

Following circuit shows measurement circuit.

Measurement point is between FG terminal and GND terminal.

※10k(J)=10kΩ ± 5%



| ITEMS                                |  |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
|--------------------------------------|--|------------|---------|---------|---------------|------------|------------|--------------|---------|---------|--|--------------|--------------------------------------|-----------|---------------------------|----------|
| 4. Performance                       | <p>Free air performance (Rated voltage DC5.0 V)</p> <table border="1" data-bbox="608 280 1316 398"> <thead> <tr> <th></th> <th>at25° C</th> <th>at60° C</th> </tr> </thead> <tbody> <tr> <td>Speed (r/min)</td> <td>5,300 ±25%</td> <td>7,800 ±20%</td> </tr> <tr> <td>Current (mA)</td> <td>100 Max</td> <td>100 Max</td> </tr> </tbody> </table> <p>(Note)</p> <ol style="list-style-type: none"> <li>Please note the speed varies with the ambient temperature. (Please refer to the attached sheet)</li> <li>Please note that noise levels vary according to speed. (Please refer to the attached sheet)</li> <li>After 3minuites aging.</li> </ol> <p>Fan performance</p> <table border="1" data-bbox="608 712 1316 831"> <thead> <tr> <th></th> <th>at7,800r/min</th> </tr> </thead> <tbody> <tr> <td>Max. flow rate (m<sup>3</sup>/min)</td> <td>0.030 Min</td> </tr> <tr> <td>Max. static pressure (Pa)</td> <td>18.0 Min</td> </tr> </tbody> </table> |            | at25° C | at60° C | Speed (r/min) | 5,300 ±25% | 7,800 ±20% | Current (mA) | 100 Max | 100 Max |  | at7,800r/min | Max. flow rate (m <sup>3</sup> /min) | 0.030 Min | Max. static pressure (Pa) | 18.0 Min |
|                                      | at25° C  | at60° C    |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| Speed (r/min)                        | 5,300 ±25%   | 7,800 ±20% |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| Current (mA)                         | 100 Max  | 100 Max    |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
|                                      | at7,800r/min   |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| Max. flow rate (m <sup>3</sup> /min) | 0.030 Min  |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| Max. static pressure (Pa)            | 18.0 Min   |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 5. Temperature rise                  | <p>Less than 105°C<br/>by thermo-couple method at rated voltage, at DC 5V, free air</p>  |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 6. Insulation resistance             | <p>More than 10 MΩ<br/>by 500 volt D.C. megger, between motor lead and frame</p>   |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 7. Insulation strength               | <p>Motor is capable of withstanding breakdown, when A.C. 500 V is applied for one minute (or A.C. 600V for one second) between motor lead and frame (limit current is 5mA)</p>   |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 8. Noise level                       | <p>Less than 38 dB A-range(test condition is shown on another sheet)</p>   |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 9. Vibration level                   | <p>Less than 7 m/s<sup>2</sup> (test condition is shown on another sheet )</p>   |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 10. Shockproof level                 | <p>980 m/s<sup>2</sup> (3msec)</p>   |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 11. Life expectancy                  | <p>at 60° C (Frame temperature).....20,000 hours<br/>Continuous driving on rated condition.<br/>Mean time until the speed becomes 30% down from initial level.</p> <p>(Note)<br/>The specifications for noise and vibration levels are the original value at the time of shipment and do not refer to the standard product life.</p>   |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 12. Nameplate                        | <p>Please refer to the nameplate drawing.</p>  |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |
| 13. Packing specifications           | <p>Please refer to the packing drawing.</p>  |            |         |         |               |            |            |              |         |         |  |              |                                      |           |                           |          |

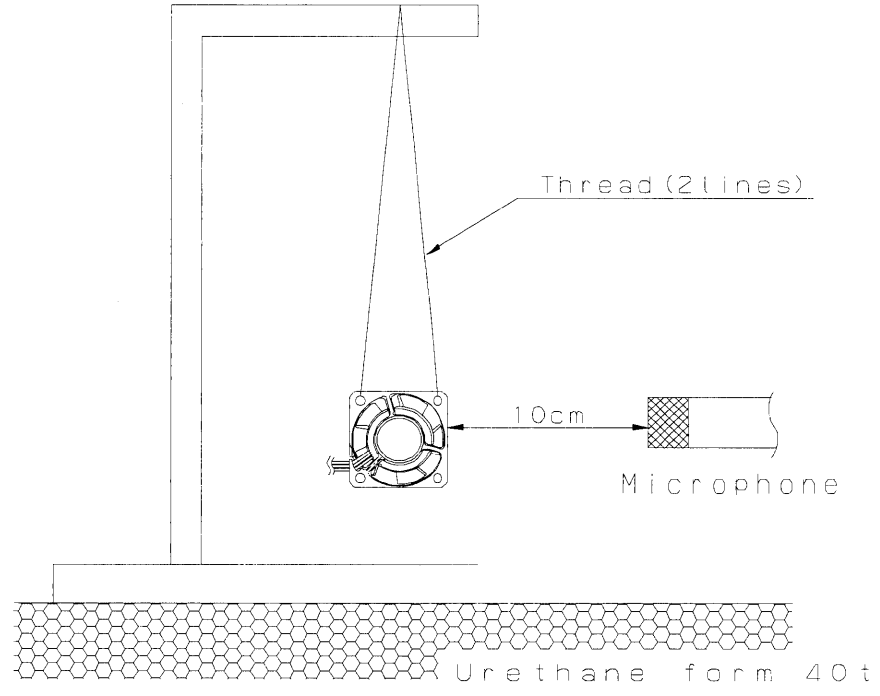
| ITEMS   |  |
|---|--|
| 14. Specifications decision and design modification | <p>14-1 We can advise for the cooling system design and fan installation.</p> <p>14-2 We have not received UL approval as fan itself. Please check the conformity of regulations at your side with your machine.</p> <p>14-3 Any items in these specifications shall be modified after obtaining your approval.</p> <p>14-4 Any items not mentioned in these specifications are the same as the final samples approved by your company. Some items in these specifications may be modified as far as those items meet the content of these specifications.</p> <p>14-5 If a certain item is not mentioned in these specifications and you think it necessary to discuss the item, please advise us in advance. Otherwise we will consider there is no specification problem and start shipment as per our specifications.</p> <p>14-6 Any modified items emerging from our mutual discussion in advance or from any other occasion shall be mentioned in these specifications, and we should consider these to be the final guaranteed items.<br/>If some of those items are missing, please advise us immediately.</p> <p>14-7 We need to reinvestigate if you will modify your machine or use our product to another application. Please advise us in advance.</p> <p>14-8 If we do not receive an order for your mass-produced models after over one year, we shall consider the mass-production of the model to be finished, and we will stop the mass-production of the model and service parts.<br/>If you need such models or service parts, please place the order of necessary quantity before we finish any mass-production.<br/>If you have any other requests, please contact our company, or our sales company, within one year of final order.</p> |
| 15. Product use                                     | <p>15-1 In regard to the matching of performance, temperature rise, EMC, setting, life and the quality by dropping shock and etc. when built in your model, please check sufficiently the variation of this product. If there will be any accidents or problems related to this product, the product in question shall be mutually checked and the problem shall be discussed.</p> <p>15-2 Please do not touch the fan with fingers or other objects.<br/>Fan holders or bearings may be damaged.<br/>Please be careful when handling this product.</p> <p>15-3 Please pay attention to handling, as internal circuit parts may damage due to static electricity.</p> <p>15-4 Please refrain from using this motor in corrosion gas (H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, Cl<sub>2</sub>, etc.), or poisonous gas atmosphere, or in place which generates poisonous gas (especially organic silicon, cyanogen, formalin, phenol, etc.).<br/>Please confirm if there is above substance or not.</p> <p>15-5 We can not guarantee the performance with regard to safety and accident due to dust, water droplets, dew, bugs, and so on.<br/>Please confirm well in advance.</p> <p>15-6 In case you need the procedure for export, please inform us in advance.</p>   |



ITEMS

16. Test

16-1 Noise Test  
at 5,300 r/min

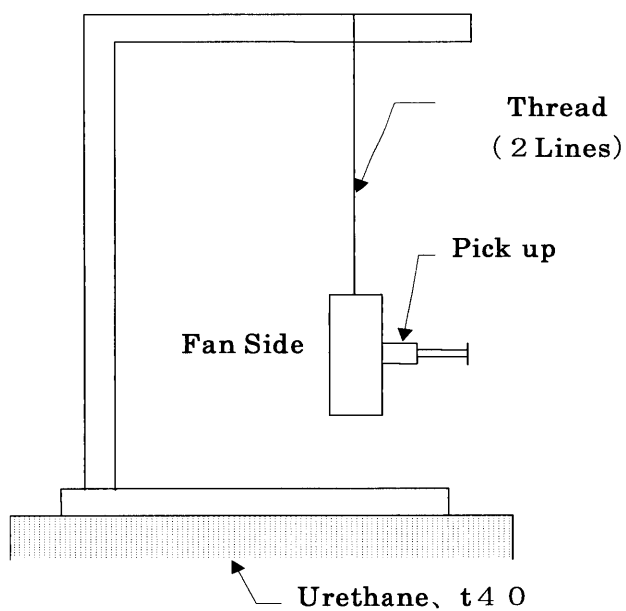


Note)

- ① About the noise under installed condition, please check that it is OK at the upper limit speed of the fan.
- ② Ambient noise shall be less than 20 dBA.  
Measuring instruments : B & K

ITEMS

16-2 Vibration test  
at 5,300 r/min

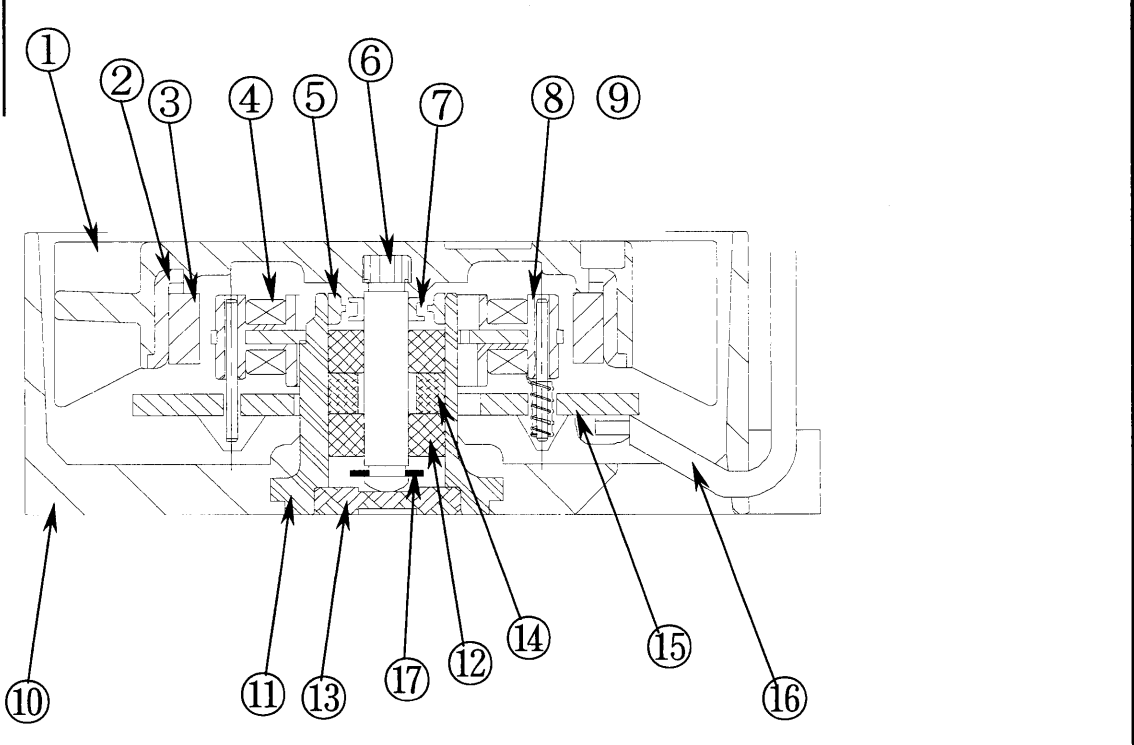


Measuring instruments :

|                 |      |        |
|-----------------|------|--------|
| Pick-up         | RION | PV-08C |
| Vibration Meter | RION | VM-80  |

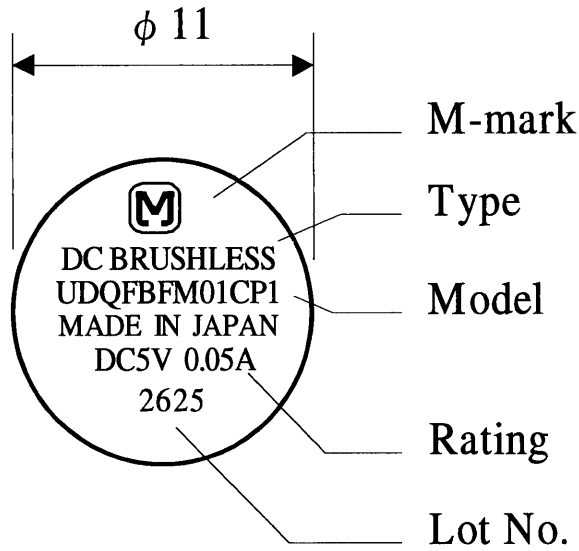
Note)

1. About the noise upper installed condition, please check that it is OK at the upper limit speed of the fan.

| Item                            | Contents   |                                |                             |                     |  |                                 |
|---------------------------------|--|--------------------------------|-----------------------------|---------------------|--|---------------------------------|
| 17. Structure and material list |  |                                |                             |                     |  |                                 |
| No.                             | Parts  | Material                       | Type                        | Grade               | Maker  | UL No.                          |
| 1                               | Fan  | FR-PET<br>PBT<br>PPS           | BN9015<br>CN7015<br>6465A62 | 94V-0<br>—<br>94V-0 | Wintech Polymer CO., LTD.<br>—<br>Polyplastics   | E213445<br>—<br>E 109088        |
| 2                               | Rotor yoke   | Steel                          | SECC 0.5t                   | —                   | —  | —                               |
| 3                               | Magnet   | Rubber Magnet                  | RMS-11Z<br>ONG-OMU-1        | 94V-0<br>94V-0      | TOKYO FERRITE MFG CO., LTD.<br>ONO GOMU KOGYO CO., LTD                                       | E64253 (S)<br>E62753 (N)        |
| 4                               | Coil   | Copper                         | —                           | —                   | —  | —                               |
| 5                               | Shield piece   | Brass or Zinc                  | —                           | —                   | —  | —                               |
| 6                               | Shaft  | Stainless-Steel                | SUS420F                     | —                   | —  | —                               |
| 7                               | Washer   | 66 Nylon                       | LEONAFG170                  | 94V-0               | ASAHI CHEMICAL INDUSTRY  | E48285 (M)                      |
| 8                               | Insulator  | 66 Nylon                       | 13G23or13G25<br>T-663G-20   | 94HB<br>94HB eq.    | ASAHI CHEMICAL INDUSTRY<br>TOYOBO CO., LTD.  | E48285 (M)                      |
| 9                               | Stator core  | Si steel                       | —                           | —                   | —  | —                               |
| 10                              | Frame  | PBT                            | 3316 or<br>7377W<br>SK665FR | 94V-0<br>—<br>94V-0 | Wintech Polymer CO., LTD.<br>—<br>DUPON  | E48285 (M)<br>—<br>E69578       |
| 11                              | Housing  | Zinc or aluminium              | —                           | —                   | NIHON KAGAKU YAKIN CO., LTD  | —                               |
| 12                              | Sleeve   | Copper type<br>sintering alloy | —                           | —                   | NIHON KAGAKU YAKIN CO., LTD  | —                               |
| 13                              | Thrust plate   | PPS                            | NT-7720                     | 94V-0               | NIHON KAGAKU YAKIN CO., LTD  | E103714 (M)                     |
| 14                              | Felt   | Polyurethane form              | PH20                        | —                   | BRIDGESTONE  | —                               |
| 15                              | PCB  | Paper-Phenol                   | 8794V-0                     | 94V-0               | KYOSHA CO., LTD.   | E55888 (S)                      |
| 16                              | Lead wire  | Heatresisting<br>vinyl         | UL1571<br>AWG28             | VW-1<br>-F-         | SUMITOMO ELECTRIC<br>INDUSRTRIES LTD.<br>SUMITOMO WIRING SYSTEMS LTD.<br>HITACHI CABLE, LTD. | E41105<br>—<br>E35984<br>E41447 |
| 17                              | Washer   | Polyester                      | —                           | —                   | —  | —                               |

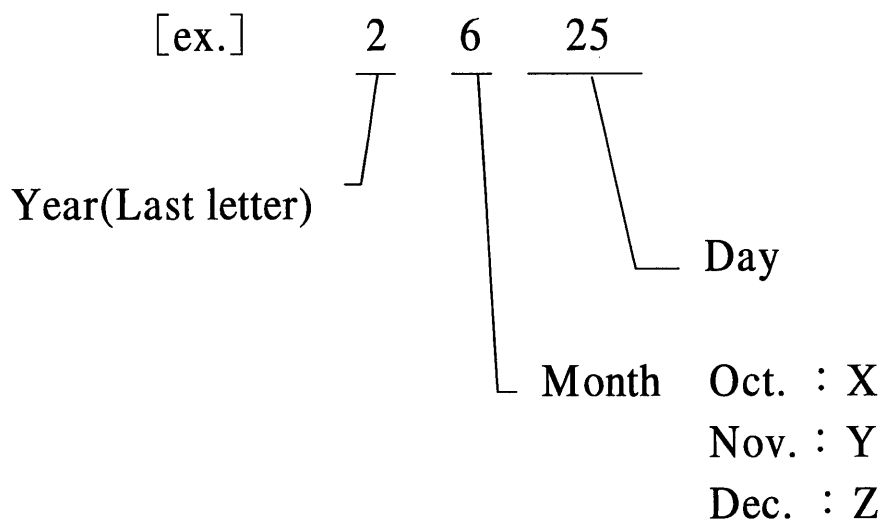
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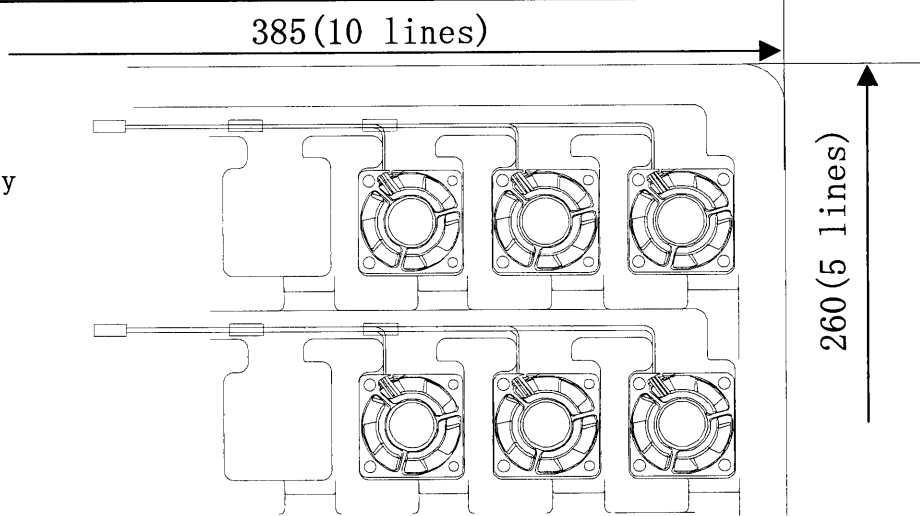
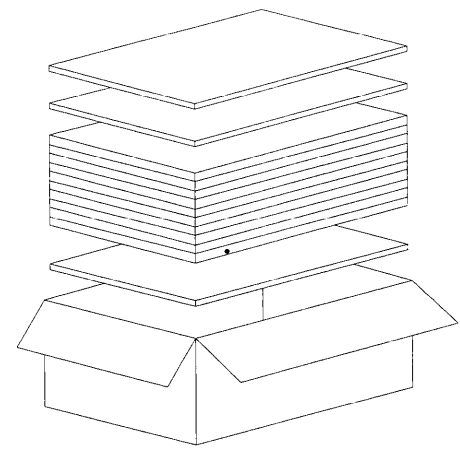
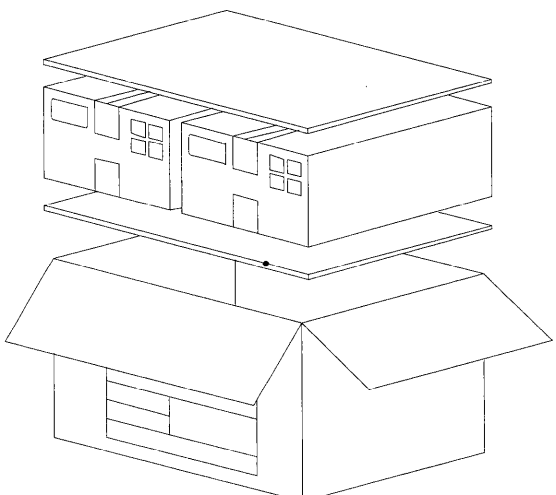
18. Name Plate



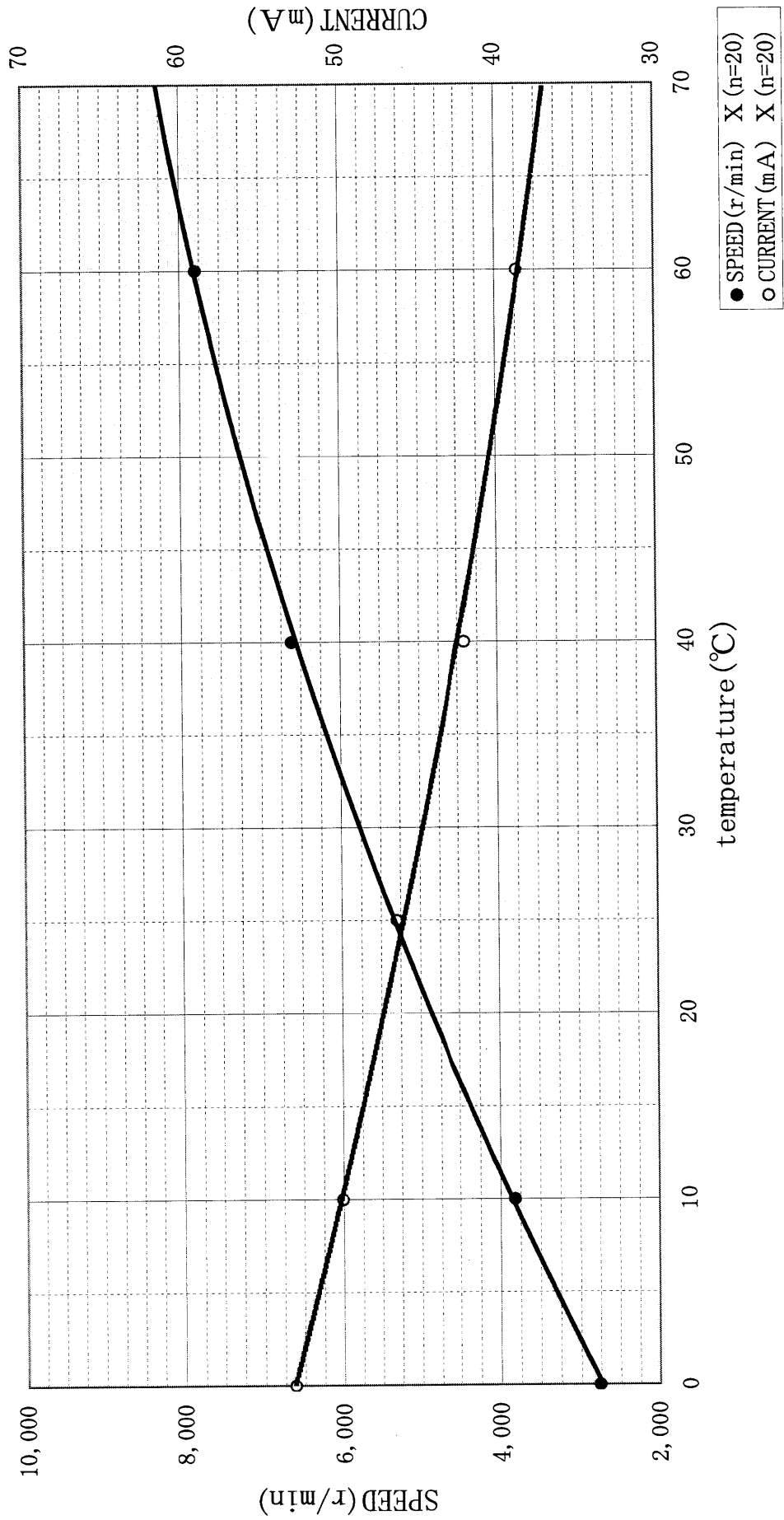
Material : Polyester film

Lot No.



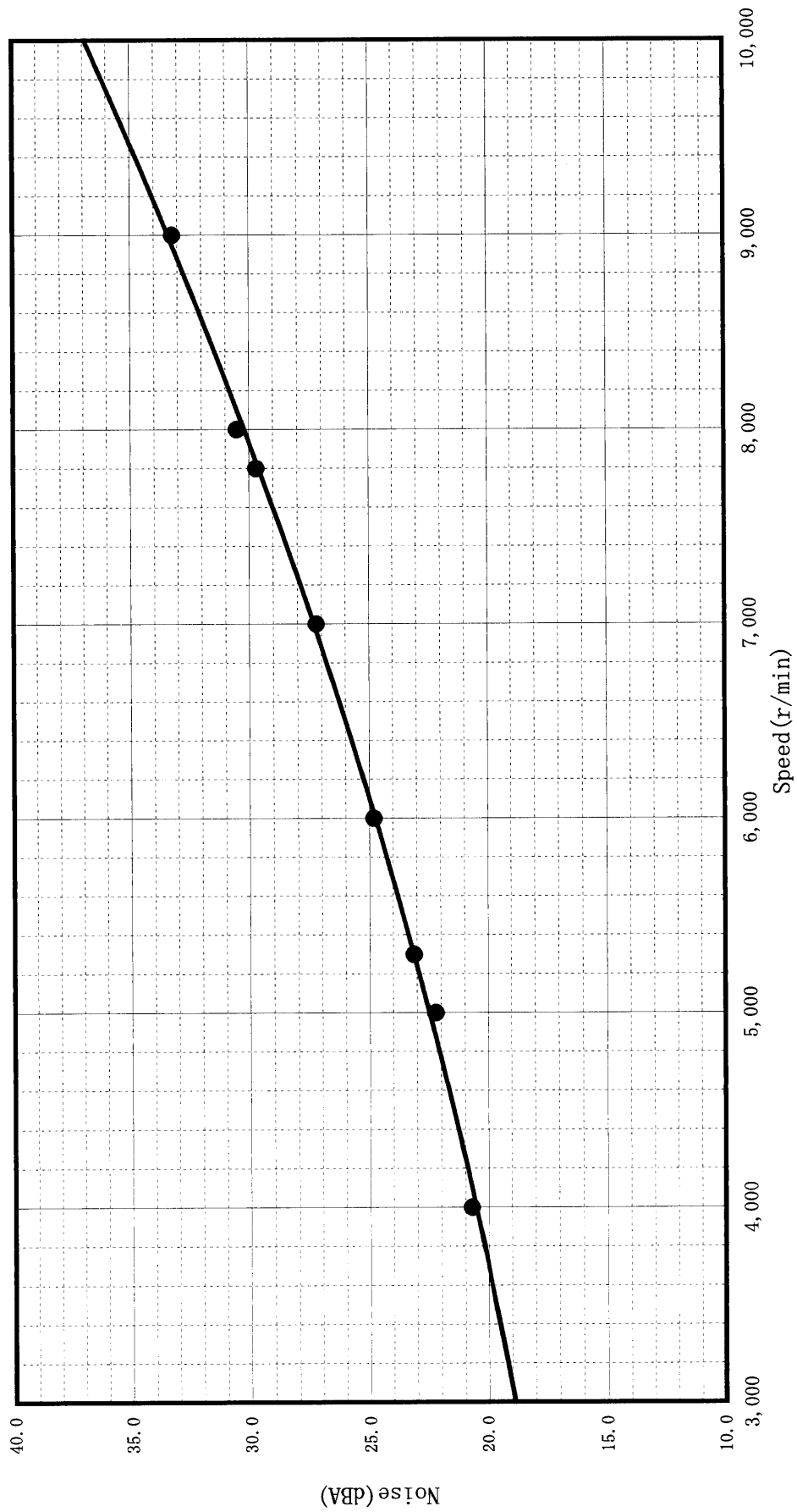
| ITEMS   | CONTENTS  |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
|---|---|-----------------|----------|-------|--------------|----------|------|--------------------------------------|--|-----|--|------|----------|-------------------|--|
| <p>19. Package</p> <p>A. Tray<br/>5×10=50pcs/Tray</p>   |  <p>385(10 lines)</p> <p>260(5 lines)</p>   |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| <p>B. Inner Box</p> <p>10Trays/1Inner Box=500pcs/1Inner Box</p>                                 | <p>Weight: about 5kg</p> <table border="1" data-bbox="1005 873 1468 1164"> <tr><td>品名</td><td>MPU冷却ファン</td></tr> <tr><td>品番</td><td>UDQFBFM01CP1</td></tr> <tr><td>カスタマー</td><td></td></tr> <tr><td>物品コード</td><td></td></tr> <tr><td>入り数</td><td></td></tr> <tr><td>製造年月</td><td>'02年6月 A</td></tr> <tr><td colspan="2">九州松下電器(株) デバイス事業部</td></tr> </table> <p>Indication(Inner Box)</p> | 品名              | MPU冷却ファン | 品番    | UDQFBFM01CP1 | カスタマー    |      | 物品コード                                |  | 入り数 |  | 製造年月 | '02年6月 A | 九州松下電器(株) デバイス事業部 |  |
| 品名  | MPU冷却ファン  |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| 品番  | UDQFBFM01CP1  |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| カスタマー   |   |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| 物品コード   |   |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| 入り数   |   |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| 製造年月  | '02年6月 A  |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| 九州松下電器(株) デバイス事業部   |   |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| <p>C. Outer Box</p> <p>2 Inner Box / 1 Outer Box = 500pcs × 2 / 1 Outer Box<br/>= 1000pcs</p>  | <p>Weight: about 11kg</p> <table border="1" data-bbox="1005 1545 1468 1747"> <tr><td colspan="2">MPU Cooling Fan</td></tr> <tr><td>Model</td><td>UDQFBFM01CP1</td></tr> <tr><td>Quantity</td><td>pcs.</td></tr> <tr><td colspan="2">Kyushu Matsushita Electric Co., Ltd.</td></tr> </table> <p>Indication(Outer Box)</p>  | MPU Cooling Fan |          | Model | UDQFBFM01CP1 | Quantity | pcs. | Kyushu Matsushita Electric Co., Ltd. |  |     |  |      |          |                   |  |
| MPU Cooling Fan   |   |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| Model   | UDQFBFM01CP1  |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| Quantity  | pcs.  |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |
| Kyushu Matsushita Electric Co., Ltd.  |   |                 |          |       |              |          |      |                                      |  |     |  |      |          |                   |  |

UDQFBFM01CP1 temperature characteristics



# UDQFBFM01CPI Type Speed—Noise

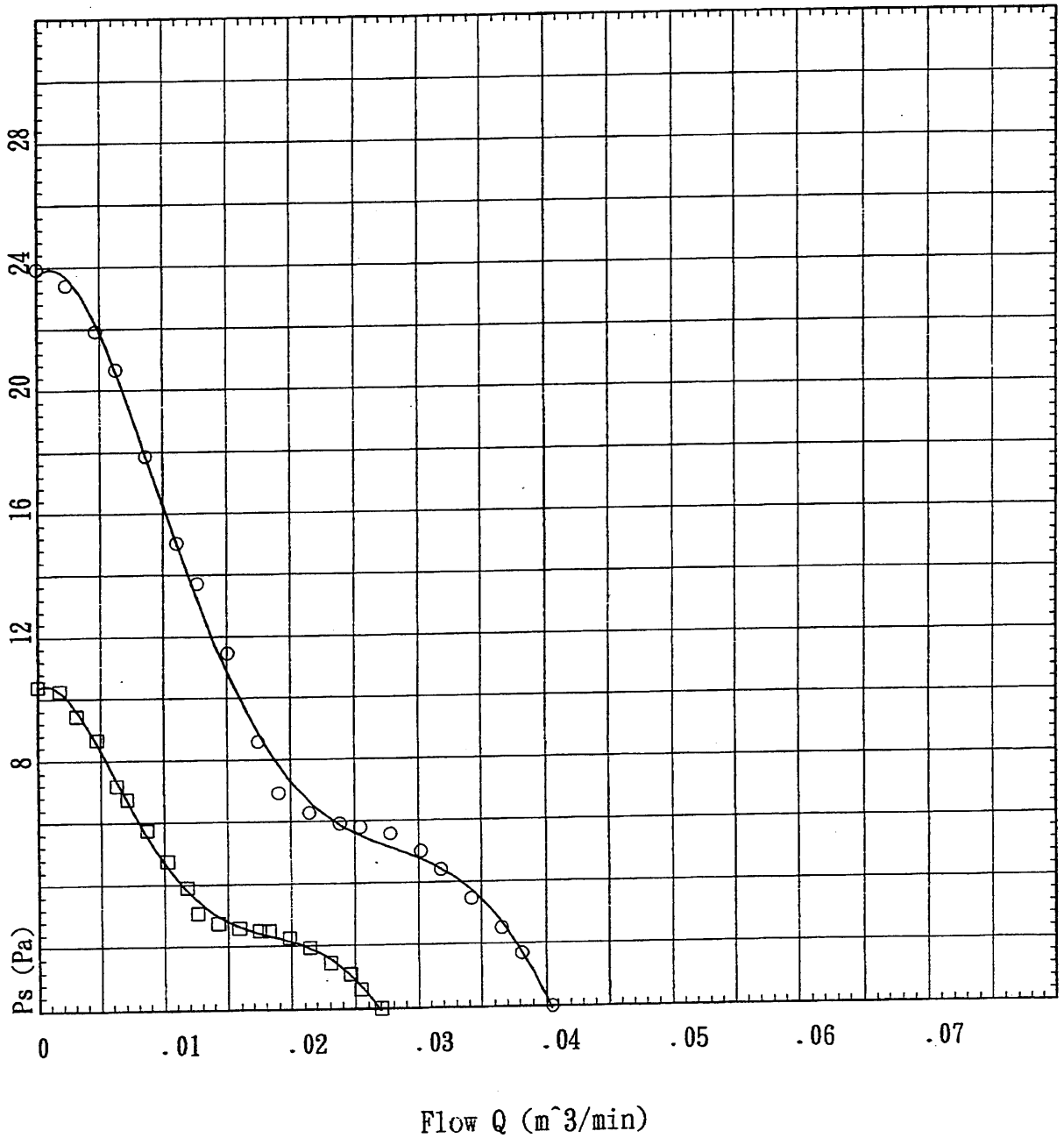
Measuring Condition  
at 20cm from frame side



● Noise (dBA) X (n=10)

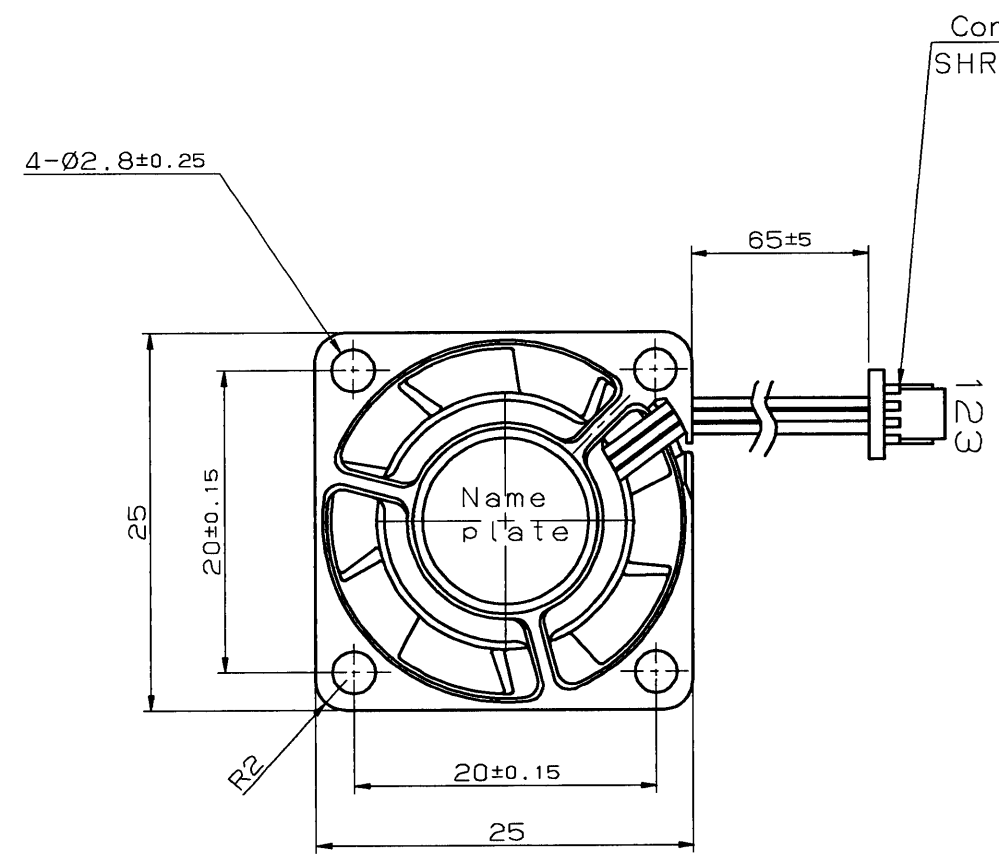
# < FAN TEST DATA >

| Mark | File name | Model name | Date     | Source | Remarks    |
|------|-----------|------------|----------|--------|------------|
| ○    | BFM01_60  | UDQFBFM01C | 01/08/22 | DC5V   | 7800 r/min |
| □    | BFM01_25  | UDQFBFM01C | 01/08/23 | DC5V   | 5300 r/min |



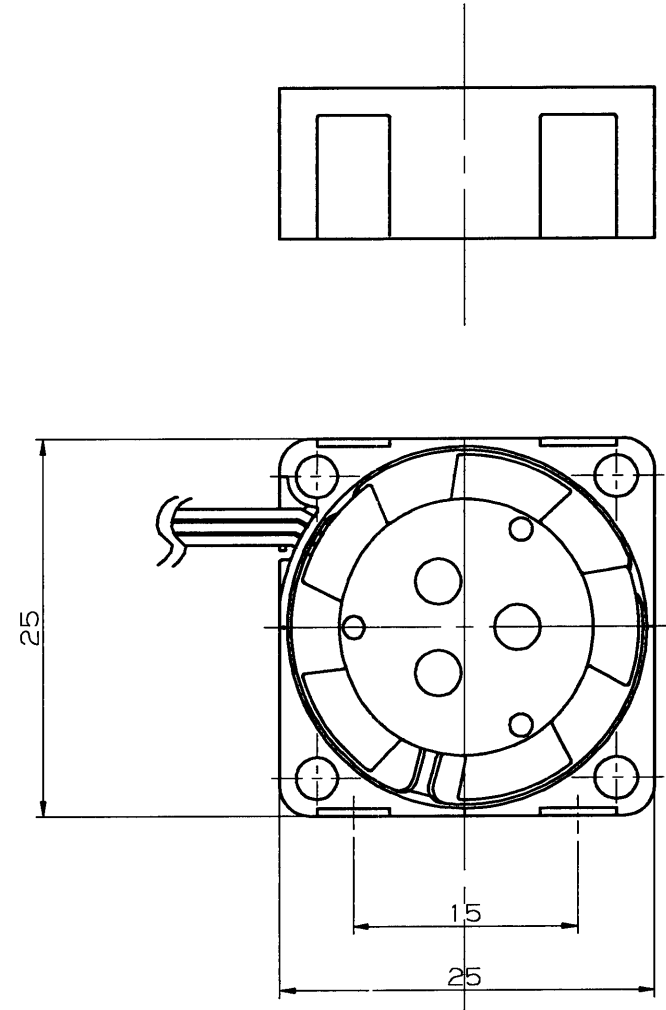
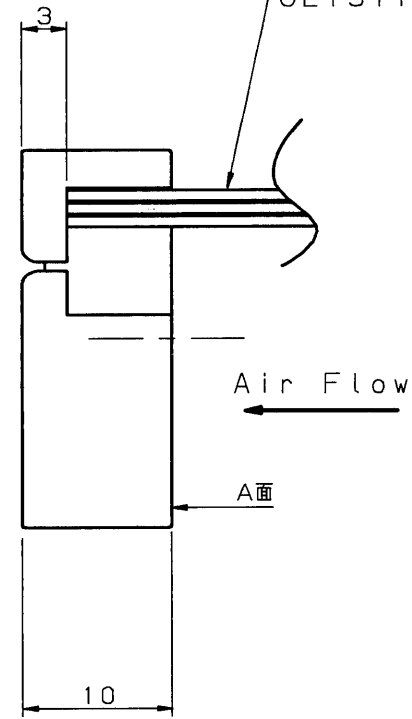


| Commercial Tolerance | Sym | Date | Re No. | Revision Point | Drawn | Checked | Approved |
|----------------------|-----|------|--------|----------------|-------|---------|----------|
| ±0.3                 | △1  |      |        |                |       |         |          |
|                      | △2  |      |        |                |       |         |          |
|                      | △3  |      |        |                |       |         |          |



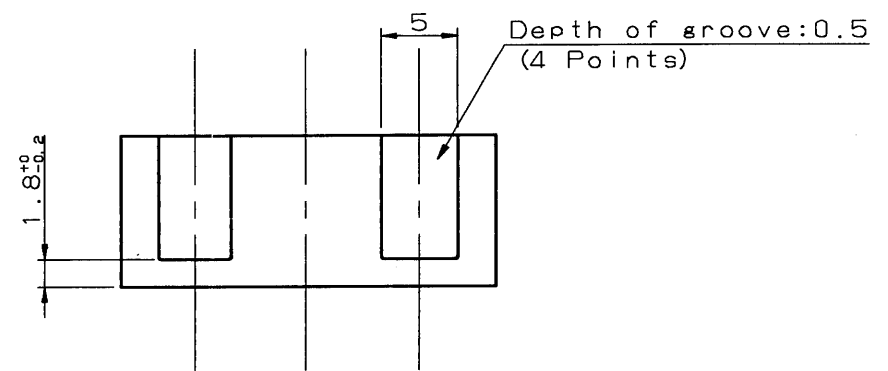
Connector (Color:Green)  
SHR-03V-S-B  
<JST>

Lead Wire  
UL1571, AWG30



| Pin No. | Signal | Note.           | Lead color |
|---------|--------|-----------------|------------|
| 1       | VDC    | +5V             | Red        |
| 2       | FG     | 2 pulses / rev. | Orange     |
| 3       | GND    |                 | Blue       |

Connector Pin Arrangement



Notes.)

- Please do not touch and push fan blade with fingers or any other object. Fan blade and ball bearings may be damaged and a noise defect may result.
- Gate mark sphere and overflow sphere means max. limit.
- Blade might be over the frame. Please assemble the motor without touching the surface A to prevent contacts of the other parts directly. Otherwise fan lock or noise may result.
- The direction of Name plate is voluntary.

| Sym     | Item             | Code No     | Material & Size | qt.         | Process | Remark                  |
|---------|------------------|-------------|-----------------|-------------|---------|-------------------------|
| Checked | v/v/v S. Yoshida |             |                 |             |         | Model<br>UDQFBFM01CP1   |
| Checked | v/v/v T. (K) Ito |             |                 |             |         |                         |
| Checked | v/v/v H. Koyama  |             |                 |             |         | Name<br>MPU Cooling Fan |
| Scale   | Designed         | Drawn       | Checked         | Approved    |         |                         |
| 2/1     | K. Sakamoto      | K. Sakamoto | S. Yoshida      | R. (K) Sato |         | No.<br>UDQFBFM01CP1-ASE |
|         | Jun/25/02        | Jun/25/02   | Jun/25/02       | Jun/25/02   |         |                         |