



TEST DATA OF ZUS102405

(24.0V INPUT)

Regulated DC Power Supply

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Model	ZUS102405
Item	Line Regulation 静的入力変動
Object	+5V2.000A

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

-----□----- Load 50%
 -----△----- Load 100%

[V]

Output Voltage [V]

Input Voltage [V]

Note: Slanted line shows the range of the rated input voltage.

2. Values

Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
16.0	5.090	5.085
18.0	5.090	5.084
20.0	5.089	5.084
24.0	5.089	5.084
30.0	5.089	5.083
36.0	5.089	5.083
40.0	5.089	5.083
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

(注)斜線は定格入力電圧範囲を示す。

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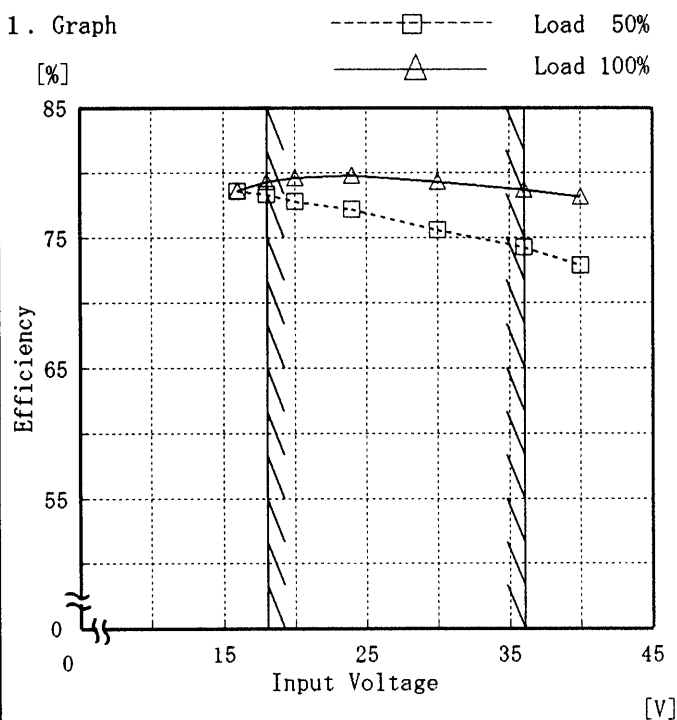
Model ZUS102405

Item Efficiency 効率

Temperature 25°C
Testing Circuitry Figure A

Object

1. Graph



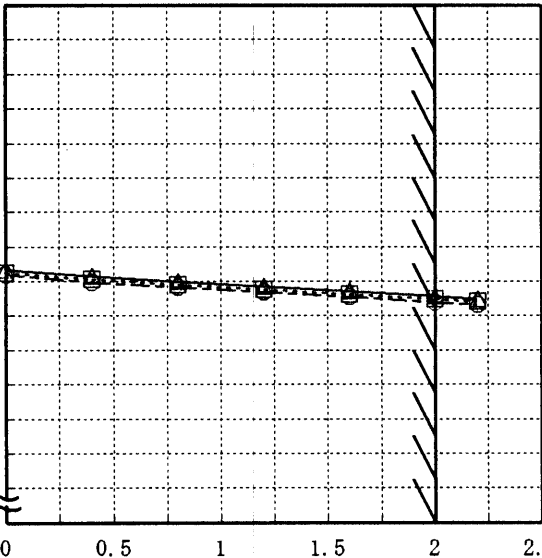
Note: Slanted line shows the range of the rated input voltage.

(注)斜線は定格入力電圧範囲を示す。

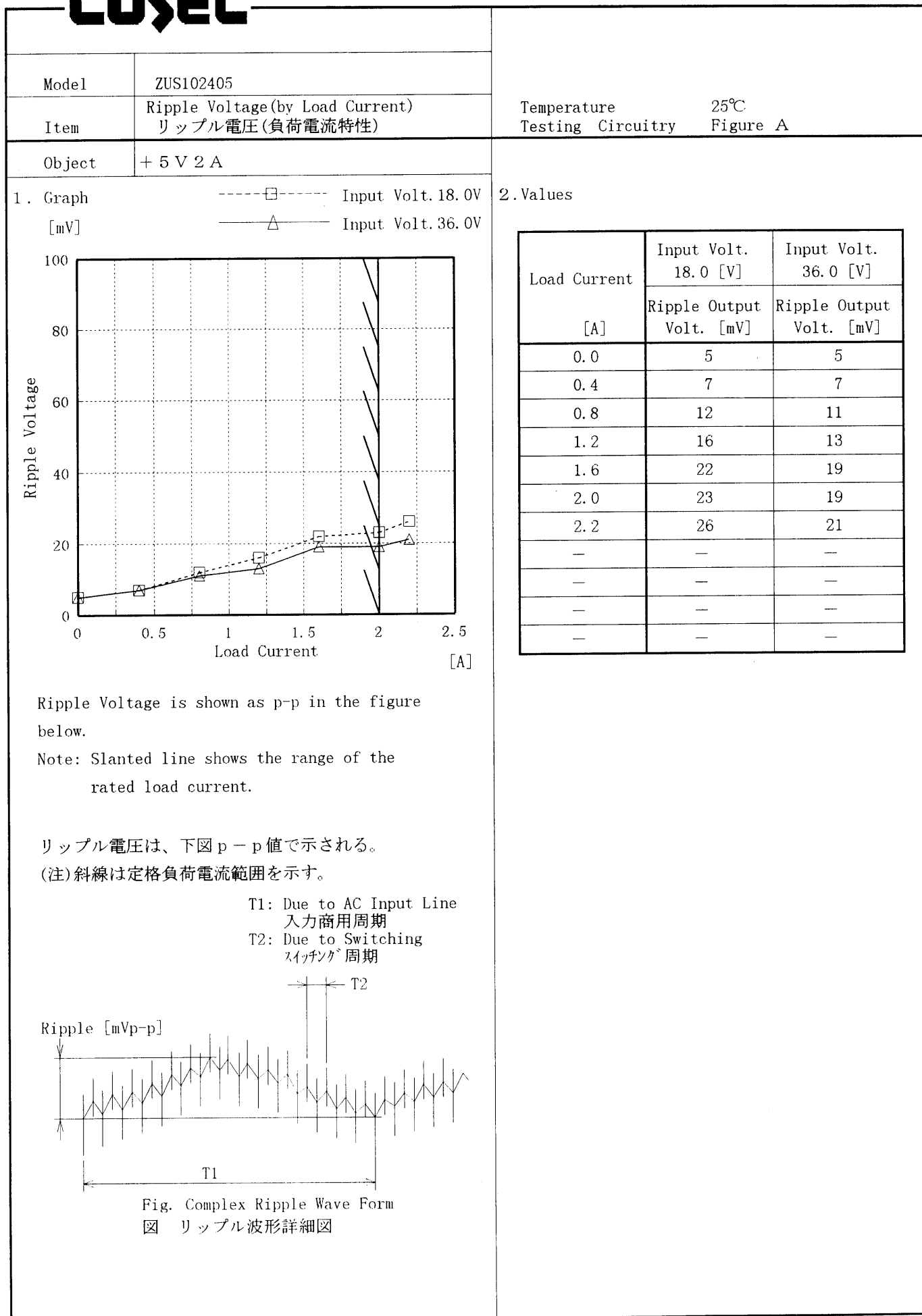
2. Values

Input Voltage [V]	Load 50%	Load 100%
	Efficiency [%]	Efficiency [%]
16.0	78.6	78.6
18.0	78.3	79.3
20.0	77.8	79.6
24.0	77.2	79.8
30.0	75.6	79.3
36.0	74.2	78.7
40.0	72.9	78.1
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

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Model		ZUS102405		Temperature		25℃																																																			
Item		Load Regulation 静的負荷変動		Testing Circuitry		Figure A																																																			
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<div><div>[V]</div><div>5.160</div><div>5.140</div><div>5.120</div><div>5.100</div><div>5.080</div><div>5.060</div><div>5.040</div><div>0</div></div> <div>Output Voltage</div>				<table><tr><th>Load Current</th><th>Input Volt.</th><th>Input Volt.</th><th>Input Volt.</th></tr><tr><th>[A]</th><th>18.0[V]</th><th>24.0[V]</th><th>36.0[V]</th></tr><tr><th></th><th>Output Volt. [V]</th><th>Output Volt. [V]</th><th>Output Volt. [V]</th></tr><tr><td>0.00</td><td>5.093</td><td>5.092</td><td>5.092</td></tr><tr><td>0.40</td><td>5.092</td><td>5.091</td><td>5.090</td></tr><tr><td>0.80</td><td>5.090</td><td>5.089</td><td>5.088</td></tr><tr><td>1.20</td><td>5.089</td><td>5.088</td><td>5.087</td></tr><tr><td>1.60</td><td>5.087</td><td>5.086</td><td>5.086</td></tr><tr><td>2.00</td><td>5.086</td><td>5.085</td><td>5.084</td></tr><tr><td>2.20</td><td>5.085</td><td>5.084</td><td>5.083</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></table>		Load Current	Input Volt.	Input Volt.	Input Volt.	[A]	18.0[V]	24.0[V]	36.0[V]		Output Volt. [V]	Output Volt. [V]	Output Volt. [V]	0.00	5.093	5.092	5.092	0.40	5.092	5.091	5.090	0.80	5.090	5.089	5.088	1.20	5.089	5.088	5.087	1.60	5.087	5.086	5.086	2.00	5.086	5.085	5.084	2.20	5.085	5.084	5.083	—	—	—	—	—	—	—	—	—	—	—	—
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(注)斜線は定格負荷電流範囲を示す。																																																									

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Model	ZUS102405	Temperature	25°C
Item	Ripple-Noise リップルノイズ	Testing Circuitry	Figure A
Object	+5V2.000A		

1. Graph

[mV]

-----□----- Input Volt.18.0V

-----△----- Input Volt.36.0V

Ripple-Noise

Load Current [A]

2. Values

Load current [A]	Input Volt. 18.0 [V]	Input Volt. 36.0 [V]
	Ripple-Noise [mV]	Ripple-Noise [mV]
0.00	10	10
0.40	20	15
0.80	30	30
1.20	45	40
1.60	55	50
2.00	60	60
2.20	70	60
—	—	—
—	—	—
—	—	—
—	—	—

Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

リップルノイズは、下図 p-p 値で示される。
(注)斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line
入力商用周期

T2: Due to Switching
スイッチング周期

Ripple-Noise [mVp-p]

Fig. Complex Ripple Wave Form
図 リップル波形詳細図

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Model		ZUS102405	Temperature25℃ Testing CircuitryFigure A	
Item		Overcurrent Protection 過電流保護		
Object		+5V2.000A		

1. Graph

[V]

~~~~~

\_\_\_\_\_

\_\_\_\_\_

Input Volt. 18.0V

Input Volt. 24.0V

Input Volt. 36.0V

8

6

4

2

0

0

1

2

3

4

Output Voltage

Load Current

[V]

[A]

Note: Slanted line shows the range of the rated load current.

(注)斜線は定格負荷電流範囲を示す。

2. Values

| Output Voltage [V] | Input Volt. 18.0[V] | Input Volt. 24.0[V] | Input Volt. 36.0[V] |
|--------------------|---------------------|---------------------|---------------------|
|                    | Load Current [A]    | Load Current [A]    | Load Current [A]    |
| 5.00               | 2.45                | 2.52                | 2.45                |
| 4.75               | 2.52                | 2.59                | 2.53                |
| 4.50               | 2.59                | 2.67                | 2.62                |
| 4.00               | 2.74                | 2.83                | 2.78                |
| 3.50               | 2.90                | 2.99                | 2.95                |
| 3.00               | 3.06                | 3.15                | 3.10                |
| 2.50               | 3.18                | 3.24                | 3.16                |
| 2.00               | 3.29                | 3.31                | 3.18                |
| 1.50               | 3.13                | 3.10                | 2.90                |
| 1.00               | 3.08                | 2.99                | 2.72                |
| 0.50               | 2.75                | 2.62                | 2.28                |
| 0.00               | 2.68                | 2.35                | 1.72                |



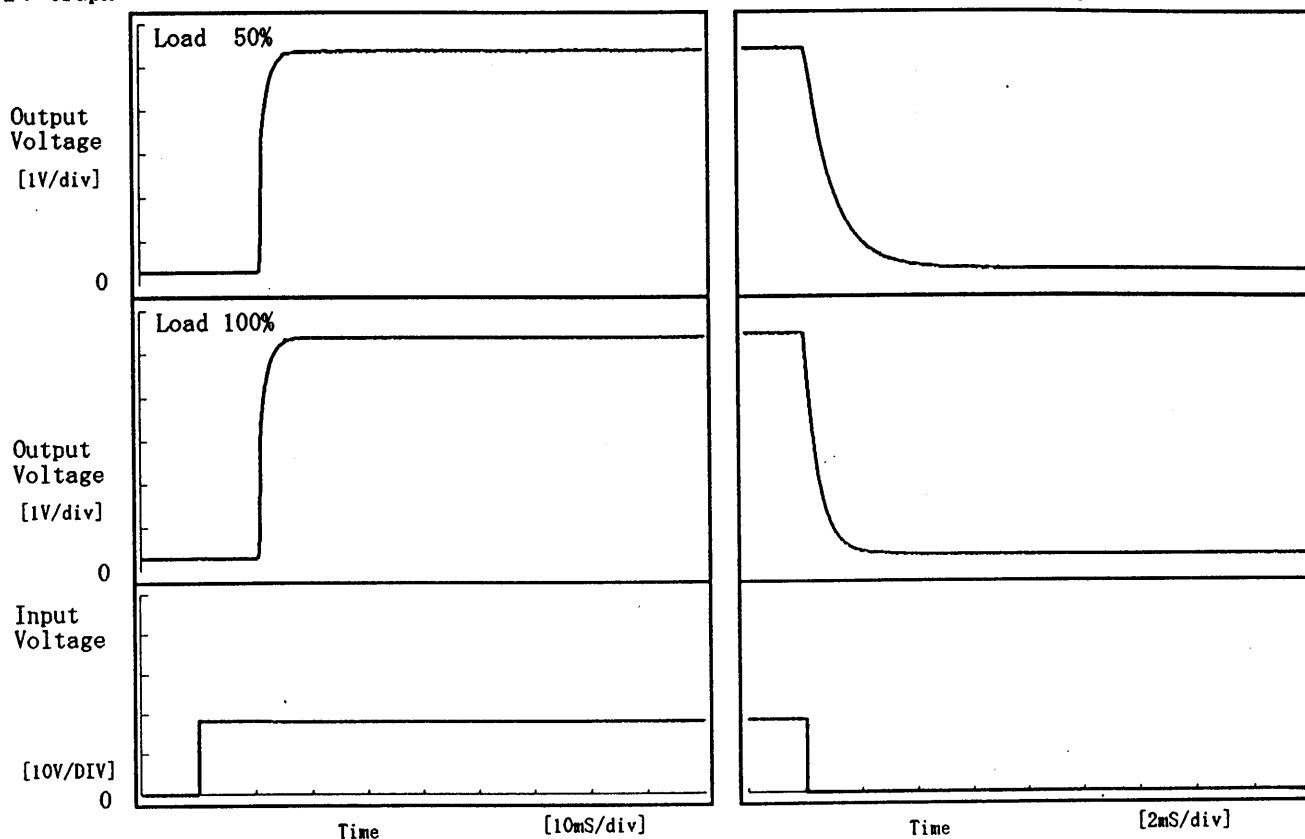


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|        |                              |                   |          |
|--------|------------------------------|-------------------|----------|
| Model  | ZUS102405                    | Temperature       | 25°C     |
| Item   | Rise and Fall Time 立上り、立下り時間 | Testing Circuitry | Figure A |
| Object | +5V2.000A                    |                   |          |

## 1. Graph

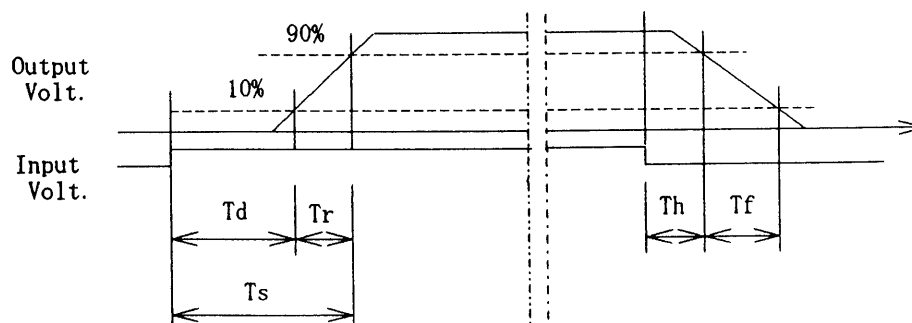
Input Volt. 18.0 V



## 2. Values

[mS]

| Load \ Time | T d   | T r  | T s   | T h  | T f  |
|-------------|-------|------|-------|------|------|
| 50 %        | 10.70 | 2.10 | 12.80 | 0.24 | 2.19 |
| 100 %       | 11.00 | 2.05 | 13.05 | 0.10 | 1.10 |



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Model ZUS102405

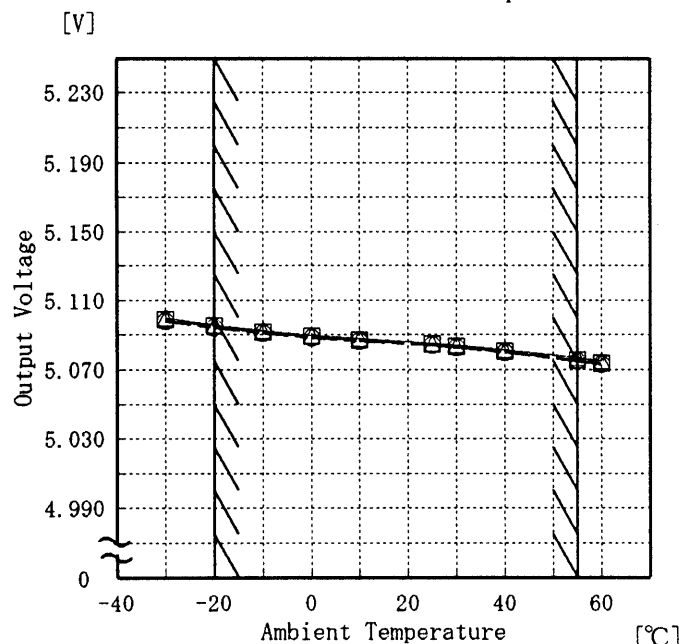
Item Ambient Temperature Drift  
周囲温度変動

Object +5V2.000A

Testing Circuitry Figure A

## 1. Graph

—△— Input Volt. 18.0V  
 - - -□- - - Input Volt. 24.0V  
 - - -○- - - Input Volt. 36.0V



Note: Slanted line shows the range of the rated ambient temperature.

(注)斜線は定格周囲温度範囲を示す。

## 2. Values

| Temperature<br>[°C] | Input Volt.<br>18.0[V] | Input Volt.<br>24.0[V] | Input Volt.<br>36.0[V] |
|---------------------|------------------------|------------------------|------------------------|
|                     | Output<br>Volt. [V]    | Output<br>Volt. [V]    | Output<br>Volt. [V]    |
| -30                 | 5.100                  | 5.099                  | 5.098                  |
| -20                 | 5.096                  | 5.095                  | 5.094                  |
| -10                 | 5.093                  | 5.092                  | 5.091                  |
| 0                   | 5.090                  | 5.089                  | 5.089                  |
| 10                  | 5.088                  | 5.087                  | 5.087                  |
| 25                  | 5.085                  | 5.085                  | 5.084                  |
| 30                  | 5.084                  | 5.083                  | 5.083                  |
| 40                  | 5.081                  | 5.081                  | 5.080                  |
| 55                  | 5.077                  | 5.076                  | 5.075                  |
| 60                  | 5.075                  | 5.074                  | 5.073                  |
| —                   | —                      | —                      | —                      |

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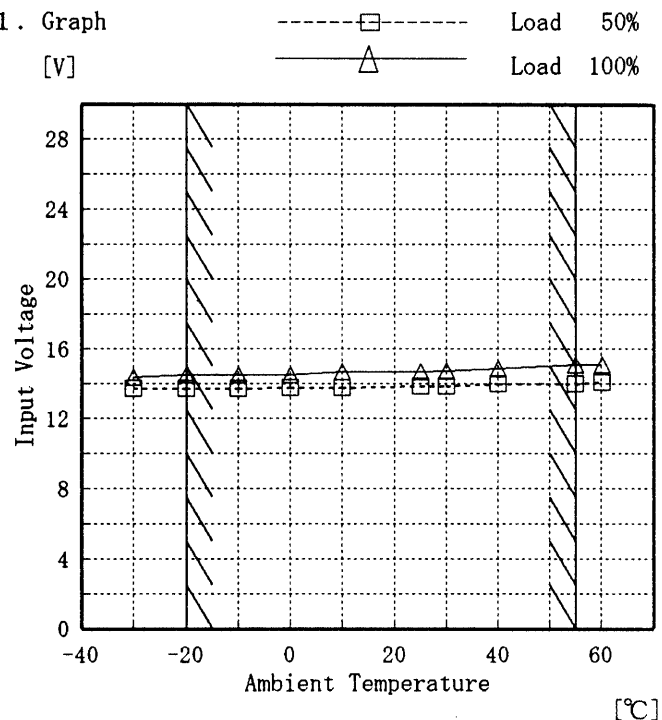
Model ZUS102405

Item Minimum Input Voltage for Regulated Output Voltage  
最低レギュレーション電圧

Object +5V2.000A

Testing Circuitry Figure A

## 1. Graph



Note: Slanted line shows the range of the rated ambient temperature.

(注)斜線は定格周囲温度範囲を示す。

## 2. Values

| Ambient Temp. | Load 50%    | Load 100%   |
|---------------|-------------|-------------|
| Input Volt.   | Input Volt. | Input Volt. |
| [°C]          | [V]         | [V]         |
| -30           | 13.7        | 14.4        |
| -20           | 13.7        | 14.5        |
| -10           | 13.7        | 14.5        |
| 0             | 13.8        | 14.5        |
| 10            | 13.8        | 14.7        |
| 25            | 13.9        | 14.7        |
| 30            | 13.9        | 14.8        |
| 40            | 14.0        | 14.9        |
| 55            | 14.0        | 15.1        |
| 60            | 14.1        | 15.1        |
| —             | —           | —           |

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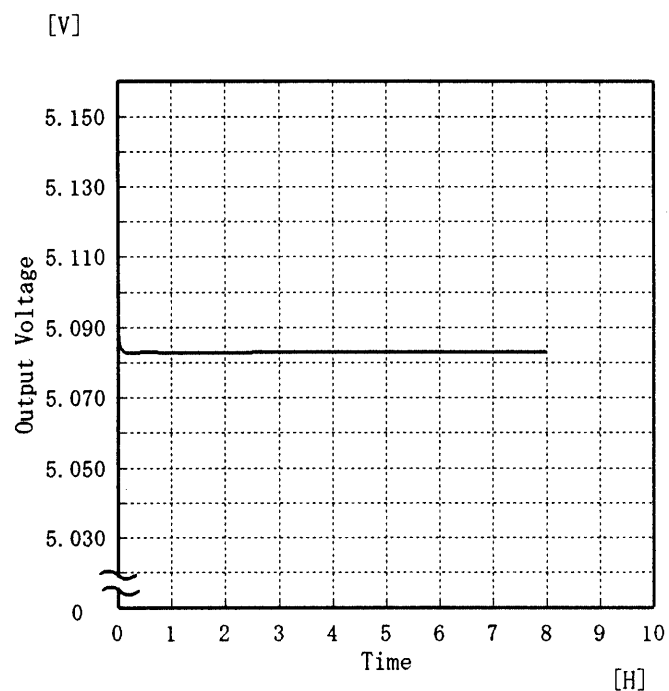
Model ZUS102405

Item Time Lapse Drift 経時ドリフト

Object +5V2.000A

Temperature 25 °C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

| Time since start [H] | Output Voltage [V] |
|----------------------|--------------------|
| 0.0                  | 5.089              |
| 0.5                  | 5.083              |
| 1.0                  | 5.083              |
| 2.0                  | 5.083              |
| 3.0                  | 5.083              |
| 4.0                  | 5.083              |
| 5.0                  | 5.083              |
| 6.0                  | 5.083              |
| 7.0                  | 5.083              |
| 8.0                  | 5.083              |

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|        |                               |                            |
|--------|-------------------------------|----------------------------|
| Model  | ZUS102405                     | Testing Circuitry Figure A |
| Item   | Output Voltage Accuracy 定電圧精度 |                            |
| Object | +5V2.000A                     |                            |

## Output Voltage Accuracy

This is defined as the value of the output voltage, regulation load, ambient temperature and input voltage varied at random in the range as specified below.

Temperature : -20~55 °C

Input Voltage : 18.0~36.0 V

Load Current : 0.000~2.000 A

\* Output Voltage Accuracy =  $\pm (\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

\* Output Voltage Accuracy (Ration) =  $\frac{\text{Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

## 定電圧精度

周囲温度、入力電圧、負荷を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

周囲温度 : -20~55 °C

入力電圧 : 18.0~36.0 V

負荷電流 : 0.000~2.000 A

\* 定電圧精度(変動値) =  $\pm (\text{出力電圧の最高値} - \text{出力電圧の最低値}) / 2$

\* 定電圧精度(変動率) =  $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

| Item            | Temperature<br>[°C] | Input<br>Voltage [V] | Output<br>Current [A] | Output<br>Voltage [V] | Output Voltage<br>Accuracy [mV] | Output Voltage<br>Accuracy(Ration) [%] |
|-----------------|---------------------|----------------------|-----------------------|-----------------------|---------------------------------|----------------------------------------|
| Maximum Voltage | -20                 | 36.0                 | 0.000                 | 5.104                 | ±15                             | ±0.4                                   |
| Minimum Voltage | 55                  | 36.0                 | 2.000                 | 5.074                 |                                 |                                        |

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|        |                   |                   |          |
|--------|-------------------|-------------------|----------|
| Model  | ZUS102405         |                   |          |
| Item   | Condensation 結露特性 | Testing Circuitry | Figure A |
| Object | +5V2.000A         |                   |          |

1. Condensation test

Testing procedure is as follows.

- ① Keeping and cooling the unit in a tank at -10℃ for an hour with the input off.
- ② Taking it out of the tank and dewing itself in a room where the temperature is 25℃ and the humidity is 40%RH.
- ③ Testing electrical characteristics of the unit to confirm there be no fault.
- ④ Repeating ①,② and ③ three times.

1. 結露特性試験

入力を切った状態で、恒温槽で－10℃に冷却しておき、約1時間後に恒温槽から取り出し、室温25℃、湿度40%RHの状態におき結露させ、その電気的特性の測定を3度行い、異常のないことを確認する。

2. Values

|                  | Times | Output Voltage<br>[V] | Ripple Voltage<br>[mV] | Ripple Noise<br>[mV] |
|------------------|-------|-----------------------|------------------------|----------------------|
| Load<br>50<br>%  | 1     | 5.091                 | 10                     | 40                   |
|                  | 2     | 5.091                 | 10                     | 40                   |
|                  | 3     | 5.092                 | 10                     | 40                   |
| Load<br>100<br>% | 1     | 5.086                 | 15                     | 60                   |
|                  | 2     | 5.084                 | 15                     | 60                   |
|                  | 3     | 5.089                 | 15                     | 60                   |

Input Volt. 24.0 V



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