参考資料

COSEL

# TEST DATA OF ZUS61205

(12.0V INPUT)

Regulated DC Power Supply

Date : Sep.23. 1996

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Design Manager

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Design Engineer

コーセル株式会社

COSEL CO.,LTD.

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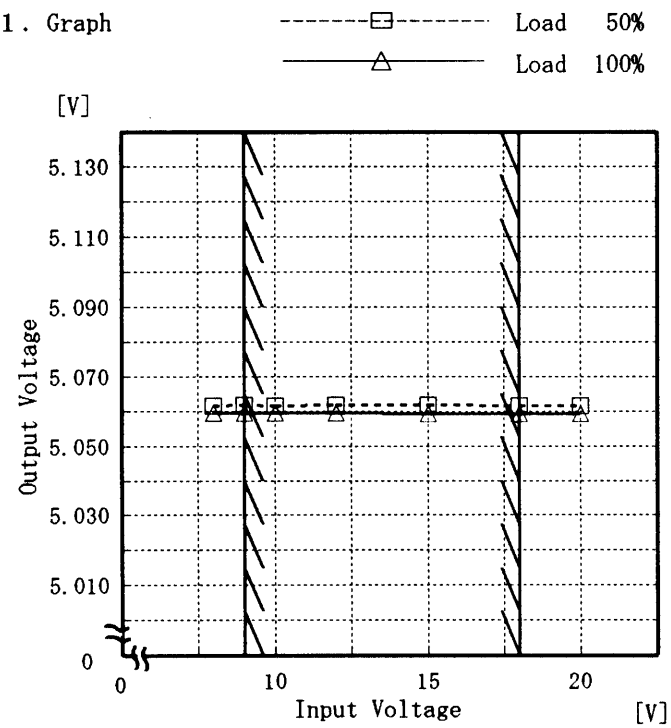
COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Line Regulation 静的入力変動 |
| Object | +5V1.2A |

Temperature 25℃
Testing Circuitry Figure A

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

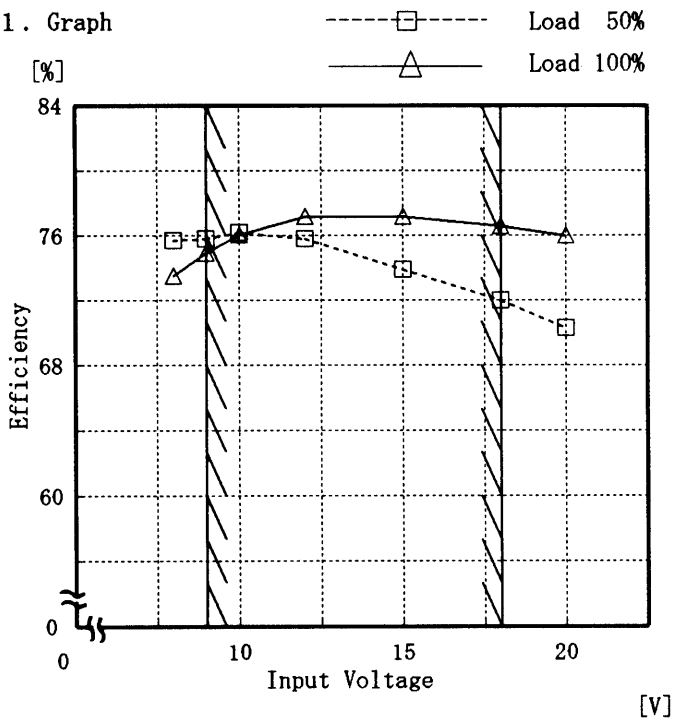
| Input Voltage [V] | Load 50% Output Volt. [V] | Load 100% Output Volt. [V] |
|---|---|---|
| 8.0 | 5.062 | 5.059 |
| 9.0 | 5.062 | 5.059 |
| 10.0 | 5.062 | 5.059 |
| 12.0 | 5.062 | 5.059 |
| 15.0 | 5.062 | 5.059 |
| 18.0 | 5.062 | 5.059 |
| 20.0 | 5.061 | 5.059 |
| — | — | — |
| — | — | — |
| — | — | — |
| — | — | — |
| — | — | — |

COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Efficiency 効率 |
| Object | ——————————— |

Temperature 25℃
Testing Circuitry Figure A

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

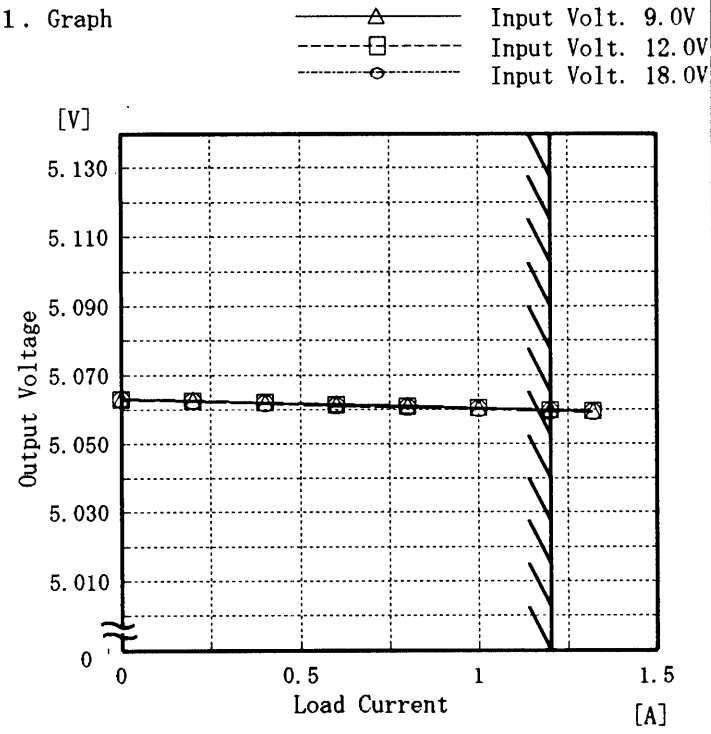
| Input Voltage [V] | Load 50% Efficiency [%] | Load 100% Efficiency [%] |
|---|---|---|
| 8.0 | 75.7 | 73.5 |
| 9.0 | 75.8 | 74.9 |
| 10.0 | 76.2 | 76.1 |
| 12.0 | 75.8 | 77.1 |
| 15.0 | 73.9 | 77.2 |
| 18.0 | 72.0 | 76.6 |
| 20.0 | 70.3 | 76.0 |
| — | — | — |
| — | — | — |
| — | — | — |
| — | — | — |
| — | — | — |

COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Load Regulation 静的負荷変動 |
| Object | +5V1.2A |

Temperature 25℃
Testing Circuitry Figure A

1. Graph




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

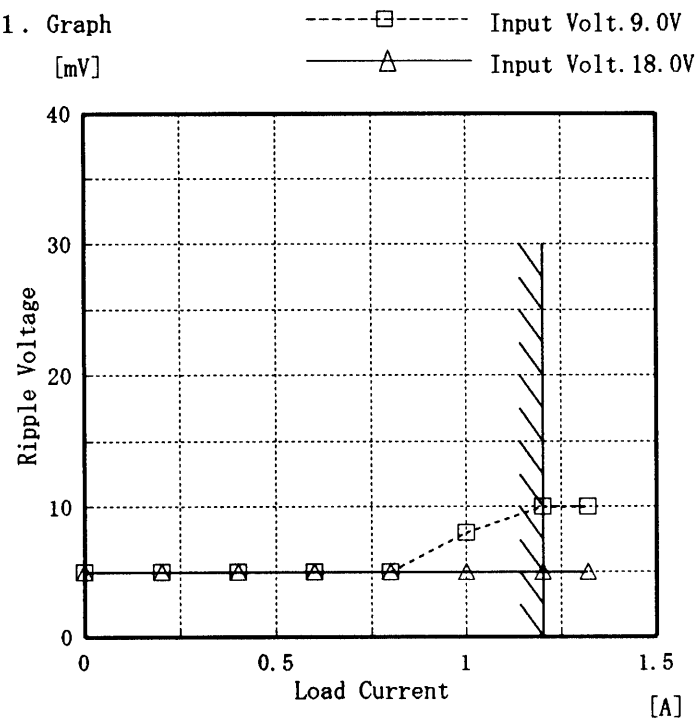
| Load Current [A] | Input Volt. 9.0[V] Output Volt. [V] | Input Volt. 12.0[V] Output Volt. [V] | Input Volt. 18.0[V] Output Volt. [V] |
|---|---|---|---|
| 0.00 | 5.063 | 5.063 | 5.063 |
| 0.20 | 5.063 | 5.063 | 5.062 |
| 0.40 | 5.062 | 5.062 | 5.062 |
| 0.60 | 5.062 | 5.062 | 5.061 |
| 0.80 | 5.061 | 5.061 | 5.061 |
| 1.00 | 5.060 | 5.060 | 5.060 |
| 1.20 | 5.060 | 5.060 | 5.060 |
| 1.20 | 5.060 | 5.060 | 5.060 |
| 1.32 | 5.060 | 5.060 | 5.059 |
| — | — | — | — |

COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Ripple Voltage(by Load Current)<br>リップル電圧(負荷電流特性) |
| Object | +5V 1.2A |

Temperature 25℃
Testing Circuitry Figure A

1. Graph




Ripple Voltage is shown as p-p in the figure below.

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

リップル電圧は、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
ｽｲｯﾁﾝｸﾞ周期

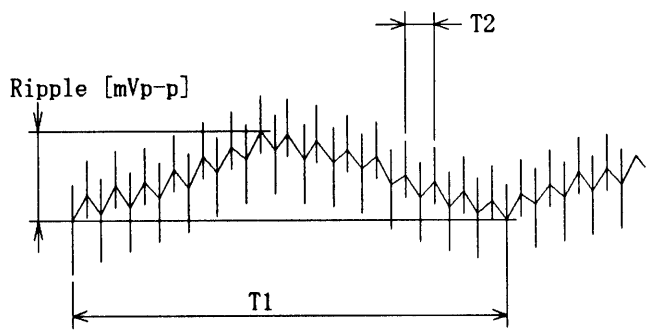



Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

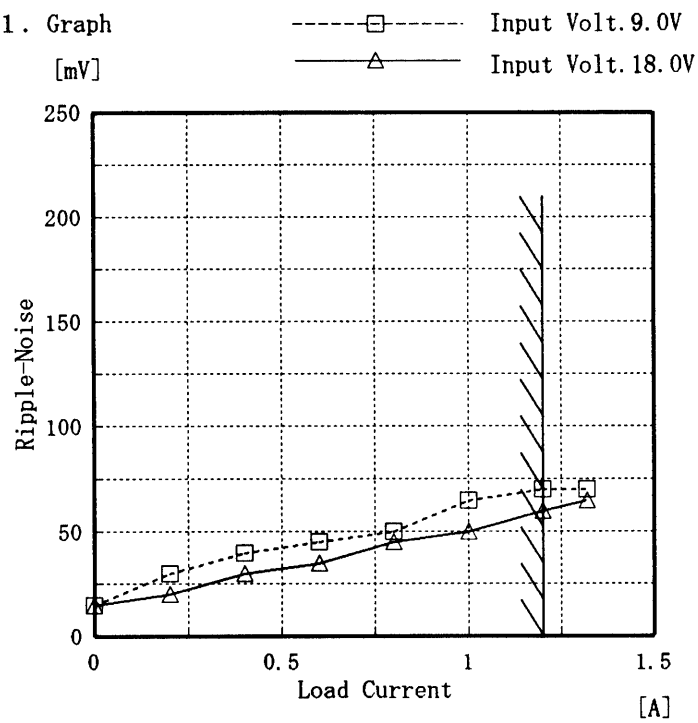
| Load Current [A] | Input Volt. 9.0 [V] Ripple Output Volt. [mV] | Input Volt. 18.0 [V] Ripple Output Volt. [mV] |
|---|---|---|
| 0.00 | 5 | 5 |
| 0.20 | 5 | 5 |
| 0.40 | 5 | 5 |
| 0.60 | 5 | 5 |
| 0.80 | 5 | 5 |
| 1.00 | 8 | 5 |
| 1.20 | 10 | 5 |
| 1.3 | 10 | 5 |
| — | — | — |
| — | — | — |
| — | — | — |

COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Ripple-Noise リップルノイズ |
| Object | +5V1.2A |

Temperature 25℃
Testing Circuitry Figure A

1. Graph




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
ｽｲｯﾁﾝｸﾞ周期

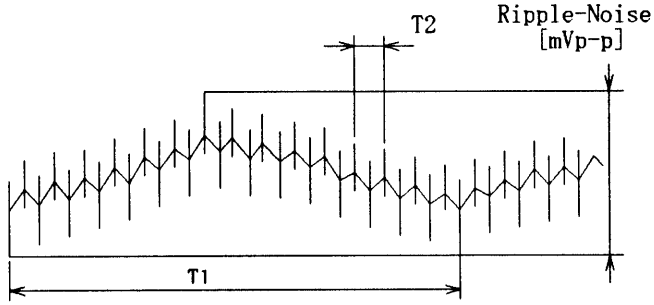



Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

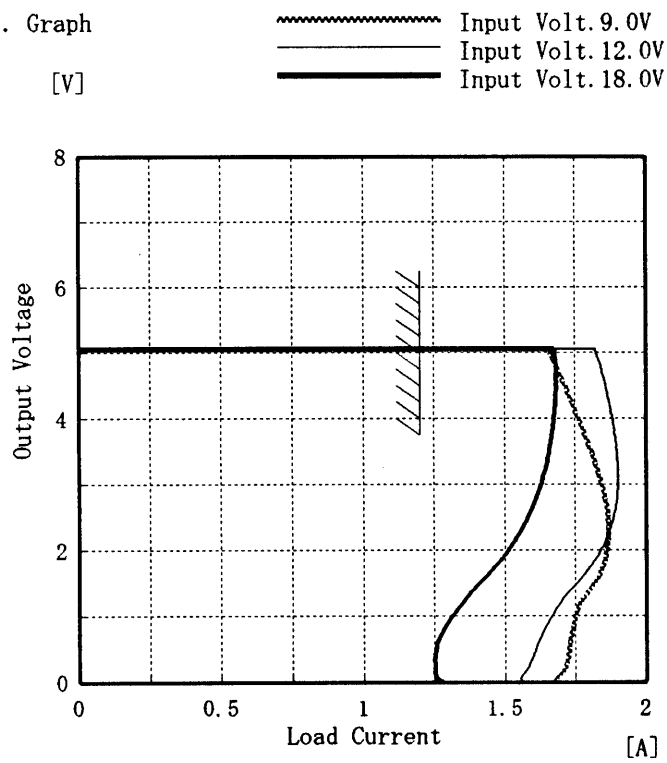
| Load current [A] | Input Volt. 9.0 [V] Ripple-Noise [mV] | Input Volt. 18.0 [V] Ripple-Noise [mV] |
|---|---|---|
| 0.00 | 15 | 15 |
| 0.20 | 30 | 20 |
| 0.40 | 40 | 30 |
| 0.60 | 45 | 35 |
| 0.80 | 50 | 45 |
| 1.00 | 65 | 50 |
| 1.20 | 70 | 60 |
| 1.32 | 70 | 65 |
| — | — | — |
| — | — | — |
| — | — | — |

COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Overcurrent Protection<br>過電流保護 |
| Object | +5V1.2A |

Temperature 25℃
Testing Circuitry Figure A

1. Graph




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. 9.0[V] Load Current [A] | Input Volt. 12.0[V] Load Current [A] | Input Volt. 18.0[V] Load Current [A] |
|---|---|---|---|
| 5.00 | 1.66 | 1.82 | 1.68 |
| 4.75 | 1.69 | 1.84 | 1.68 |
| 4.50 | 1.71 | 1.86 | 1.68 |
| 4.00 | 1.76 | 1.88 | 1.68 |
| 3.50 | 1.81 | 1.90 | 1.66 |
| 3.00 | 1.84 | 1.90 | 1.63 |
| 2.50 | 1.87 | 1.89 | 1.58 |
| 2.00 | 1.86 | 1.85 | 1.52 |
| 1.50 | 1.82 | 1.76 | 1.41 |
| 1.00 | 1.75 | 1.67 | 1.32 |
| 0.50 | 1.73 | 1.61 | 1.26 |
| 0.00 | 1.73 | 1.64 | 1.34 |

COSEL

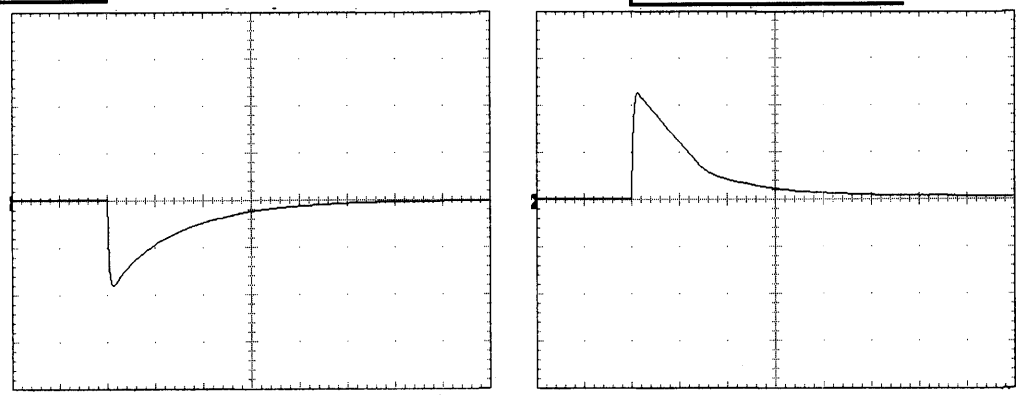
| | | | |
|---|---|---|---|
| Model | ZUS61205 | | |
| Item | Dynamic Load Responce<br>動的負荷変動 | Temperature<br>Testing Circuitry | 25℃<br>Figure A |
| Object | +5V1.2A | | |

Input Volt. 12.0 V

Cycle 100 mS

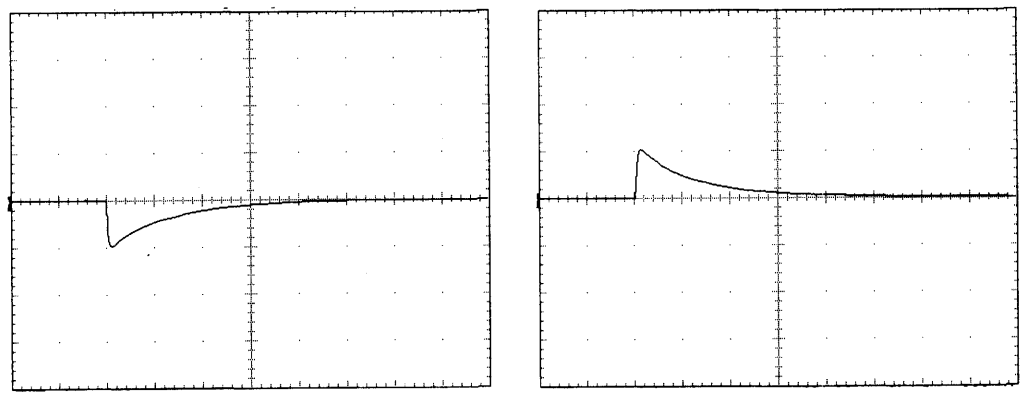
Load Current

Min. Load ⟷
Load 100 %



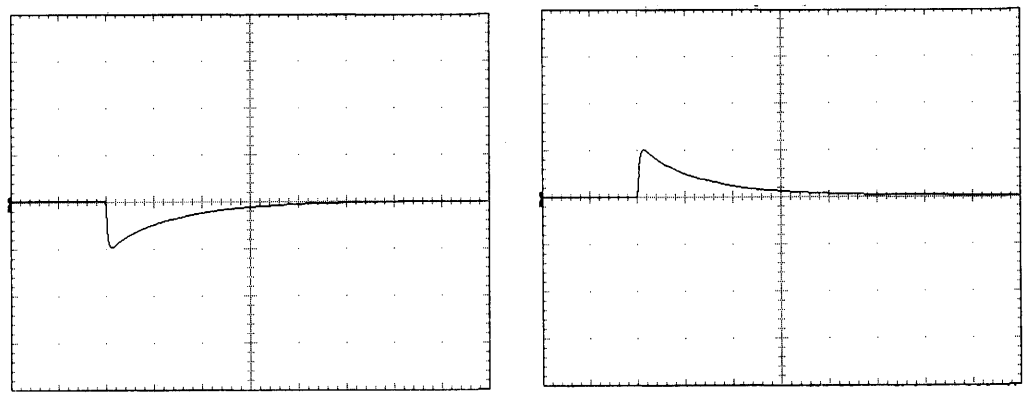
200 mV/div

Min. Load ⟷
Load 50 %



200 mV/div

Load 50%⟷
Load 100 %



200 mV/div

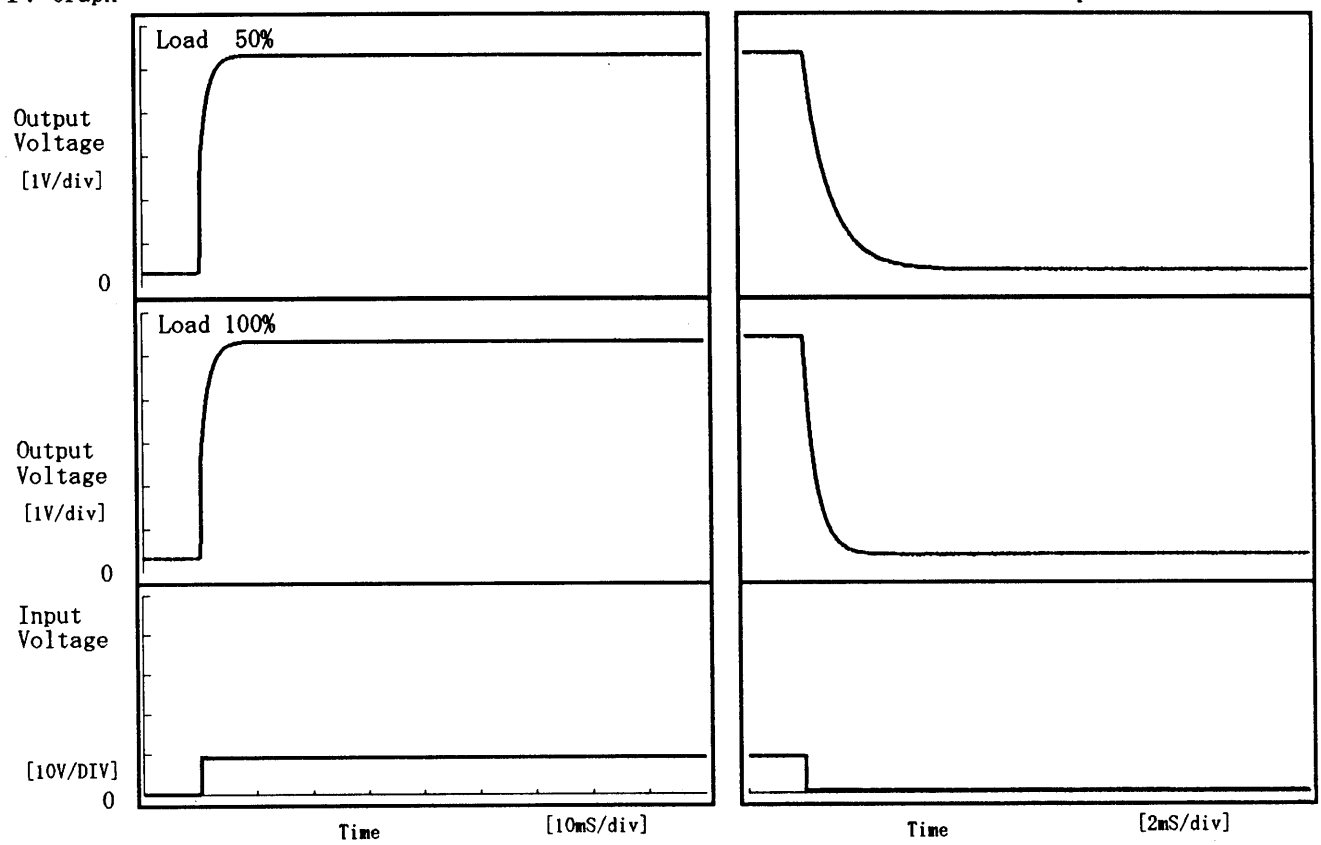
1 mS/div

COSEL

| | | | |
|---|---|---|---|
| Model | ZUS61205 | | |
| Item | Rise and Fall Time 立上り、立下り時間 | Temperature<br>Testing Circuitry | 25℃<br>Figure A |
| Object | +5V1.2A | | |

1. Graph

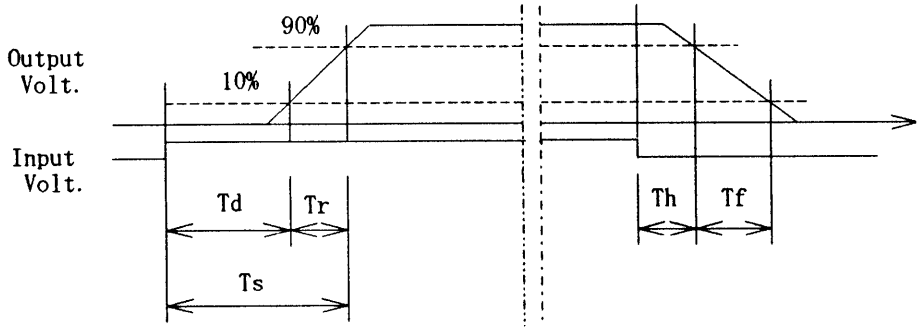
Input Volt. 9.0 V




2. Values

[mS]

| Load \ Time | T d | T r | T s | T h | T f |
|---|---|---|---|---|---|
| 50 % | 0.05 | 2.35 | 2.40 | 0.19 | 2.15 |
| 100 % | 0.05 | 2.55 | 2.60 | 0.09 | 1.05 |

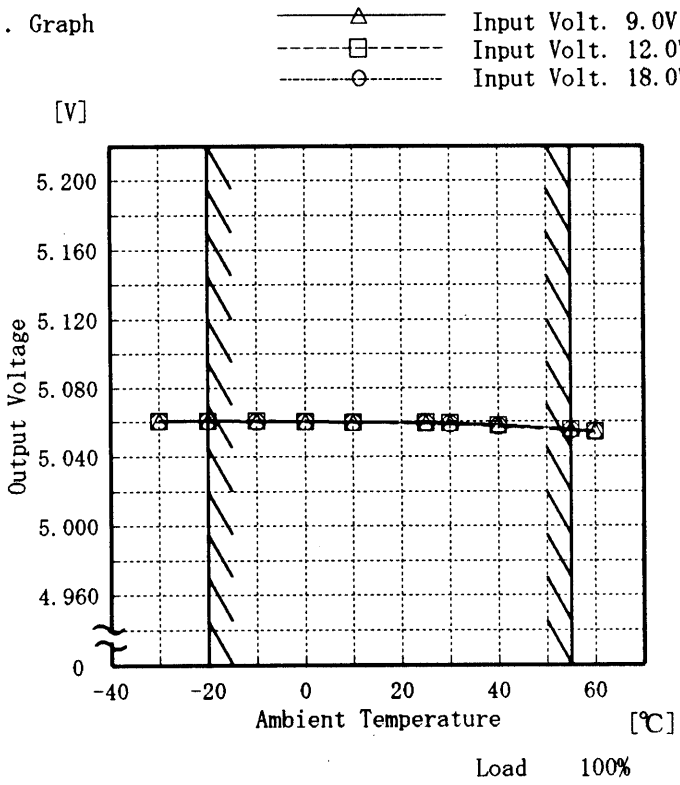


COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Ambient Temperature Drift<br>周囲温度変動 |
| Object | +5V1.2A |

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

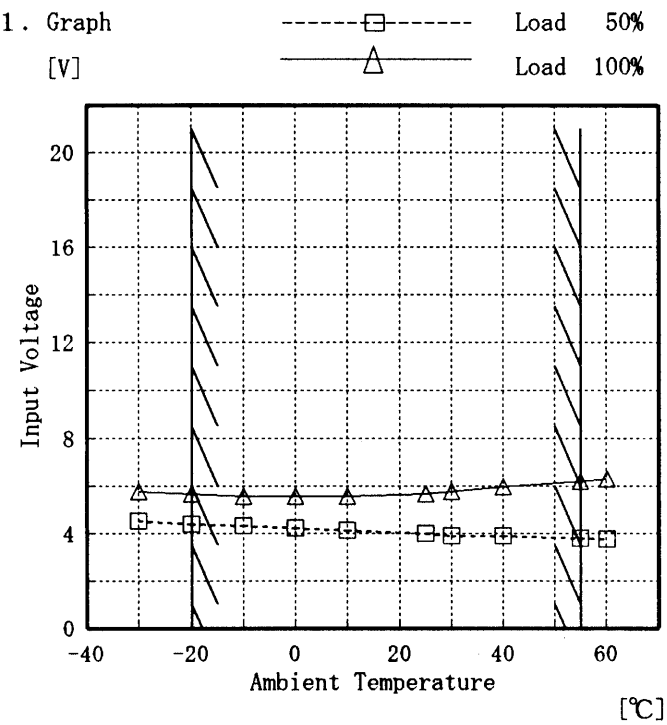
| Temperature [℃] | Input Volt. 9.0[V] Output Volt. [V] | Input Volt. 12.0[V] Output Volt. [V] | Input Volt. 18.0[V] Output Volt. [V] |
|---|---|---|---|
| -30 | 5.061 | 5.061 | 5.061 |
| -20 | 5.061 | 5.061 | 5.061 |
| -10 | 5.060 | 5.060 | 5.060 |
| 0 | 5.060 | 5.060 | 5.060 |
| 10 | 5.060 | 5.060 | 5.060 |
| 25 | 5.059 | 5.060 | 5.059 |
| 30 | 5.059 | 5.059 | 5.059 |
| 40 | 5.058 | 5.058 | 5.058 |
| 55 | 5.056 | 5.056 | 5.055 |
| 60 | 5.055 | 5.054 | 5.054 |
| — | — | — | — |

COSEL

| Model | ZUS61205 |
|---|---|
| Item | Minimum Input Voltage for Regulated Output Voltage<br>最低レギュレーション電圧 |
| Object | +5V1.2A |

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

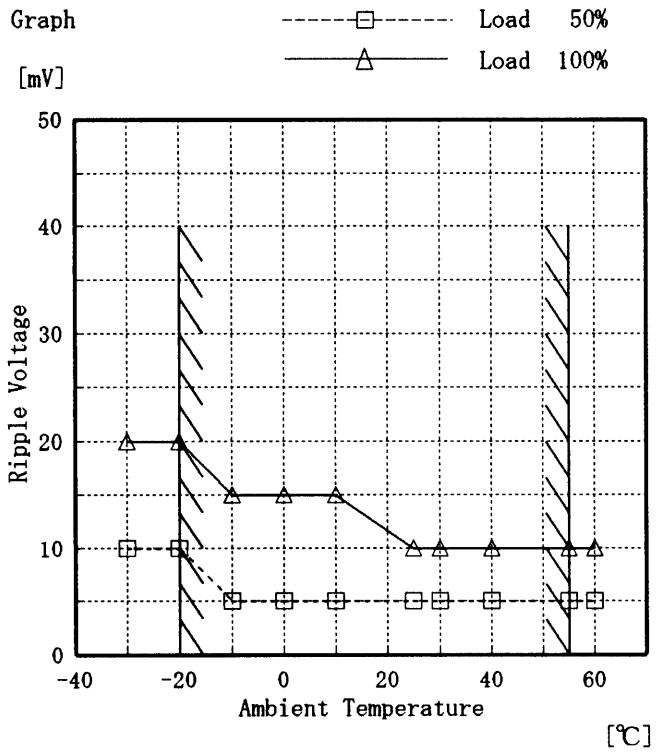
| Ambient Temp. [℃] | Load 50% Input Volt. [V] | Load 100% Input Volt. [V] |
|---|---|---|
| -30 | 4.5 | 5.8 |
| -20 | 4.4 | 5.7 |
| -10 | 4.4 | 5.6 |
| 0 | 4.2 | 5.6 |
| 10 | 4.1 | 5.6 |
| 25 | 4.0 | 5.7 |
| 30 | 3.9 | 5.8 |
| 40 | 3.9 | 6.0 |
| 55 | 3.8 | 6.2 |
| 60 | 3.8 | 6.3 |
| — | — | — |

COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Ripple Voltage (by Ambient Temp.)<br>リップル電圧 (周囲温度特性) |
| Object | +5V1.2A |

Testing Circuitry Figure A

1. Graph




Input Volt. 9.0 V

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

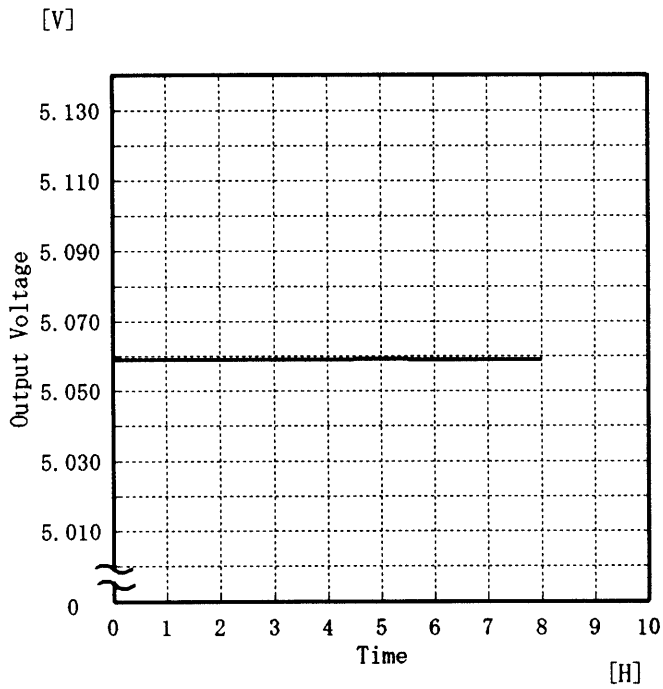
| Ambient Temp. [℃] | Load 50% Ripple Output Volt. [mV] | Load 100% Ripple Output Volt. [mV] |
|---|---|---|
| -30 | 10 | 20 |
| -20 | 10 | 20 |
| -10 | 5 | 15 |
| 0 | 5 | 15 |
| 10 | 5 | 15 |
| 25 | 5 | 10 |
| 30 | 5 | 10 |
| 40 | 5 | 10 |
| 55 | 5 | 10 |
| 60 | 5 | 10 |
| — | — | — |

COSEL

| | |
|---|---|
| Model | ZUS61205 |
| Item | Time Lapse Drift 経時ドリフト |
| Object | +5V1.2A |

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph




Input Volt. 12V
Load 100%

2. Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 5.060 |
| 0.5 | 5.059 |
| 1.0 | 5.059 |
| 2.0 | 5.059 |
| 3.0 | 5.059 |
| 4.0 | 5.059 |
| 5.0 | 5.059 |
| 6.0 | 5.059 |
| 7.0 | 5.059 |
| 8.0 | 5.059 |

COSEL

| | | |
|---|---|---|
| Model | ZUS61205 | |
| Item | Output Voltage Accuracy 定電圧精度 | Testing Circuitry Figure A |
| Object | +5V1.2A | |

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 ℃
Input Voltage : 9.0～18.0 V
Load Current : 0.0～1.2 A

* Output Voltage Accuracy = ±(Maximum of Output Voltage − Minimum of Output Voltage)／2

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

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 ℃
入力電圧 9.0～18.0 V
負荷電流 0.0～1.2 A

* 定電圧精度(変動値) = ±(出力電圧の最高値−出力電圧の最低値)／2

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

| Item | Temperature [℃] | Input Voltage [V] | Output Current [A] | Output Voltage [V] | Output Voltage Accuracy [mV] | Output Voltage Accuracy(Ration) [%] |
|---|---|---|---|---|---|---|
| Maximum Voltage | -20 | 18.0 | 0.0 | 5.065 | ±5 | ±0.2 |
| Minimum Voltage | 55 | 18.0 | 1.2 | 5.055 | | |

COSEL

| Model | ZUS61205 | |
|---|---|---|
| Item | Condensation 結露特性 | Testing Circuitry Figure A |
| Object | +5V 1.2A | |

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 26℃ 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２６℃、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 [V] | Ripple Voltage [mV] | Ripple Noise [mV] |
|---|---|---|---|---|
| Load 50 % | 1 | 5.061 | 5 | 45 |
| | 2 | 5.062 | 5 | 45 |
| | 3 | 5.062 | 5 | 50 |
| Load 100 % | 1 | 5.059 | 15 | 75 |
| | 2 | 5.060 | 15 | 75 |
| | 3 | 5.059 | 15 | 75 |

Input Volt. 12.0 V

COSEL

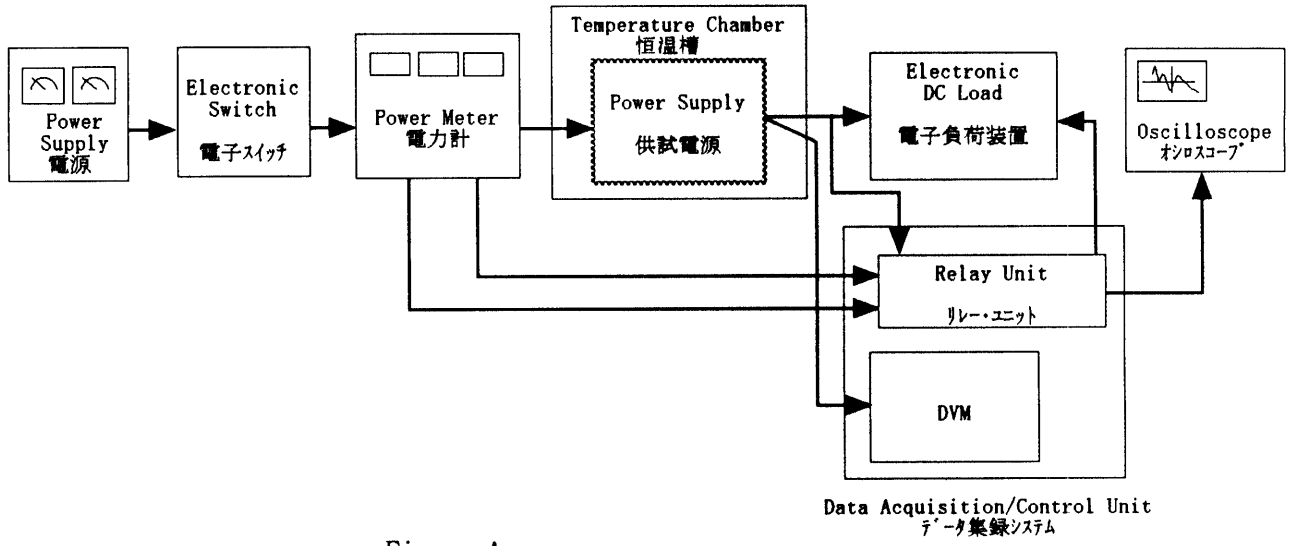



Figure A