



TEST DATA OF ZUS60505

(5.0V INPUT)

Regulated DC Power Supply

Date : Sep. 23. 1996

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COSEL

Model

ZUS60505

Item

Line Regulation 静的入力変動

Object

+5V1A

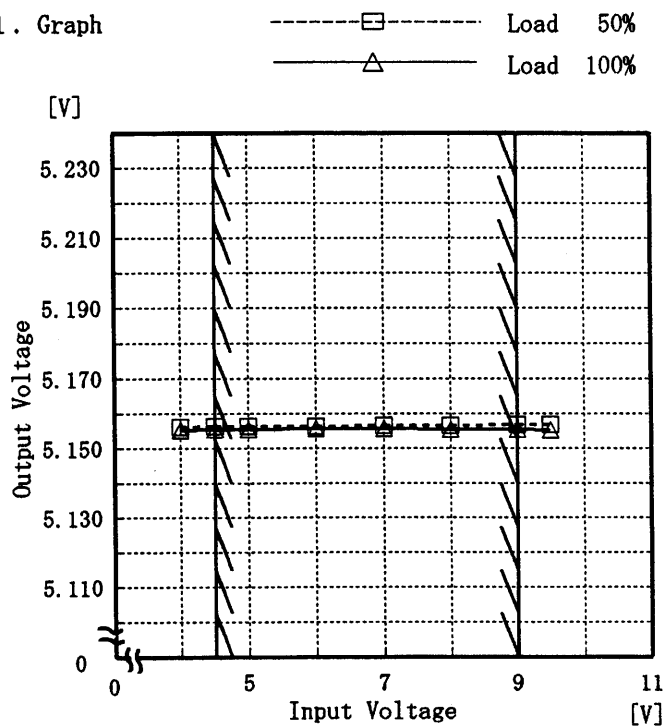
Temperature

25°C

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%	Load 100%
	Output Volt. [V]	Output Volt. [V]
4.0	5.156	5.155
4.5	5.156	5.155
5.0	5.156	5.155
6.0	5.156	5.156
7.0	5.156	5.155
8.0	5.157	5.155
9.0	5.157	5.155
9.5	5.157	5.155
—	—	—
—	—	—
—	—	—
—	—	—

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Model

ZUS60505

Item

Efficiency 効率

Object

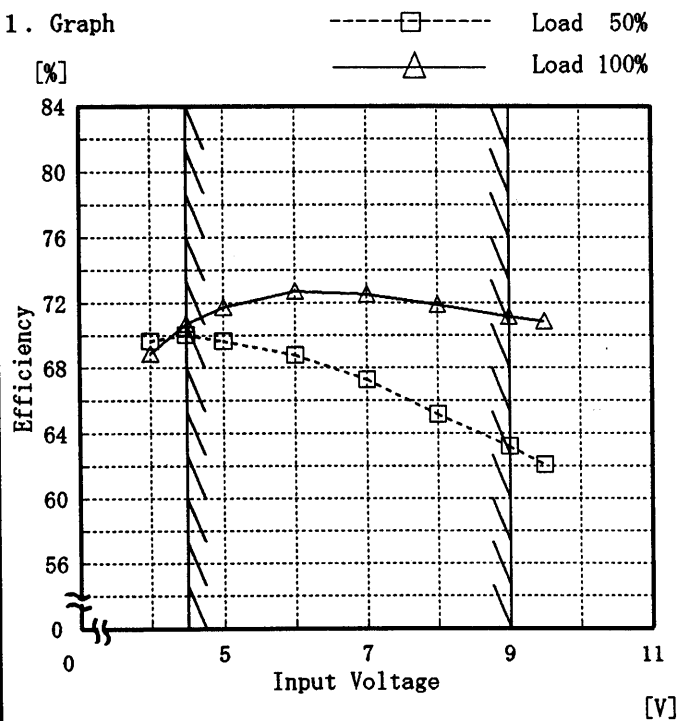
Temperature

25°C

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%	Load 100%
	Efficiency [%]	Efficiency [%]
4.0	69.6	68.9
4.5	70.0	70.7
5.0	69.7	71.8
6.0	68.8	72.7
7.0	67.3	72.5
8.0	65.2	71.9
9.0	63.2	71.1
9.5	62.1	70.9
—	—	—
—	—	—
—	—	—
—	—	—

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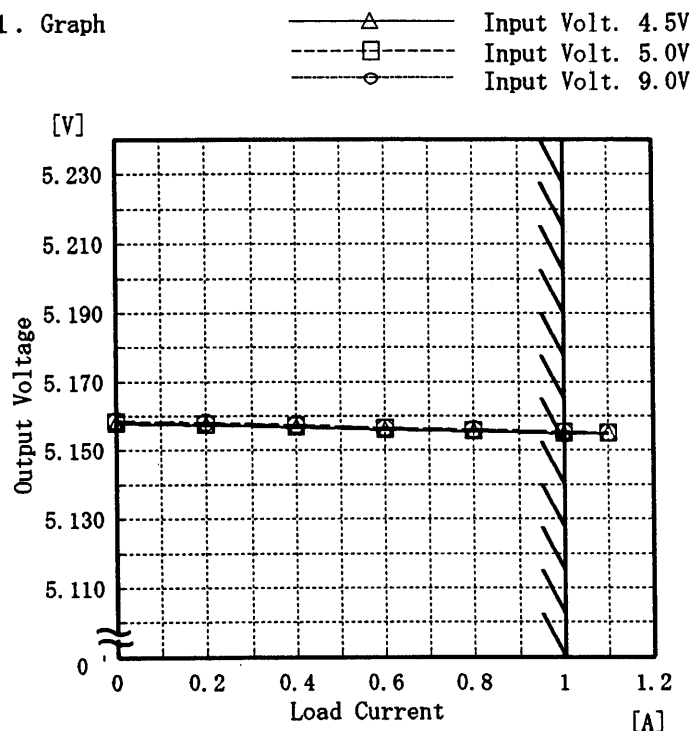
Model ZUS60505

Item Load Regulation 静的負荷変動

Object +5V1A

Temperature 25°C
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. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
0.00	5.158	5.158	5.159
0.20	5.157	5.158	5.158
0.40	5.157	5.157	5.157
0.60	5.156	5.157	5.157
0.80	5.156	5.156	5.156
1.00	5.155	5.155	5.155
1.10	5.155	5.155	5.155
—	—	—	—
—	—	—	—
—	—	—	—

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Model ZUS60505

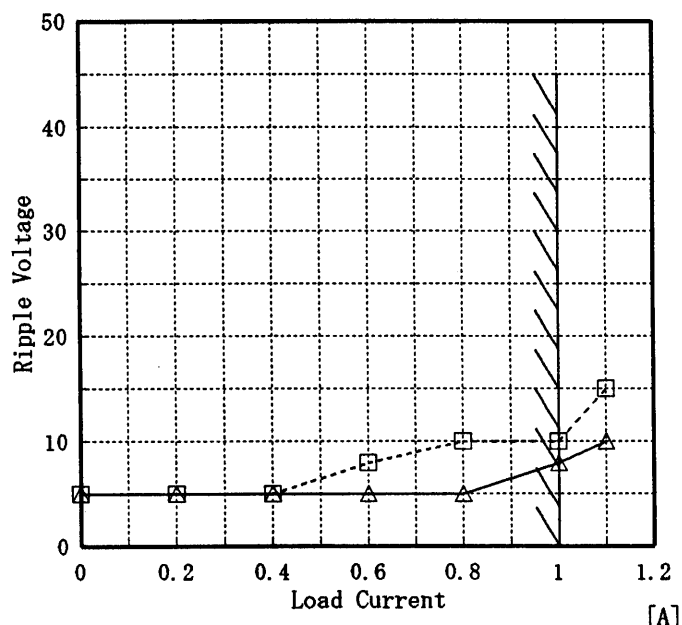
Item Ripple Voltage (by Load Current)
リップル電圧(負荷電流特性)

Object +5V 1A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

-----□----- Input Volt. 4.5V
 -----△----- Input Volt. 9.0V



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
スイッチング周期

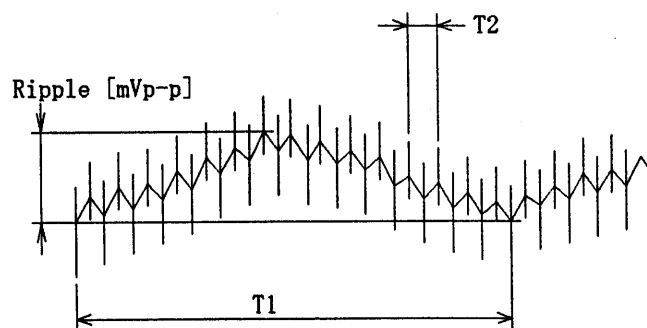


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load Current [A]	Input Volt. 4.5 [V]	Input Volt. 9.0 [V]
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
0.00	5	5
0.20	5	5
0.40	5	5
0.60	8	5
0.80	10	5
1.00	10	8
1.10	15	10
—	—	—
—	—	—
—	—	—
—	—	—

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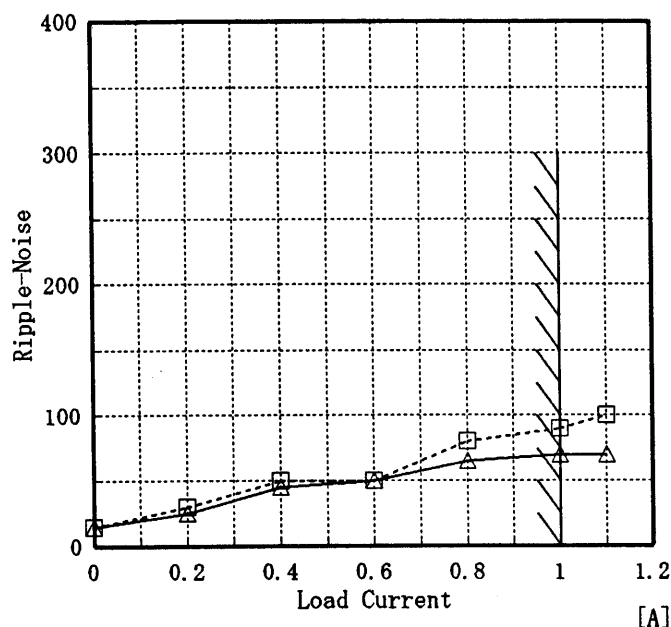
Model ZUS60505

Item Ripple-Noise リップルノイズ

Object +5V1A

Temperature 25°C
Testing Circuitry Figure A

1. Graph
- Input Volt. 4.5V
 -----△----- Input Volt. 9.0V



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

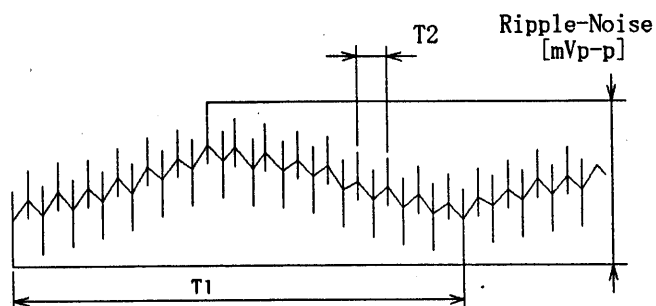


Fig. Complex Ripple Wave Form
 図 リップル波形詳細図

2. Values

Load current [A]	Input Volt. 4.5 [V]	Input Volt. 9.0 [V]
	Ripple-Noise [mV]	Ripple-Noise [mV]
0.00	15	15
0.20	30	25
0.40	50	45
0.60	50	50
0.80	80	65
1.00	90	70
1.10	100	70
—	—	—
—	—	—
—	—	—
—	—	—

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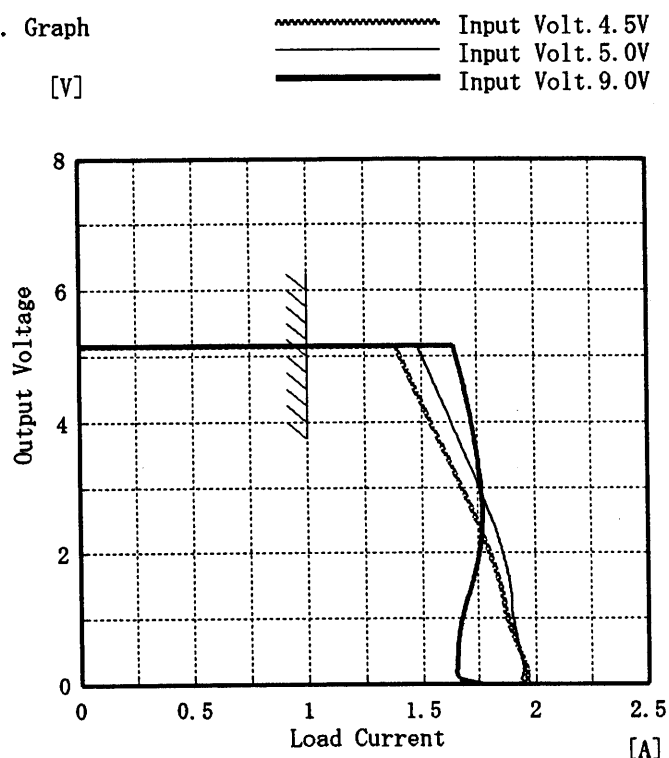
Model ZUS60505

Item Overcurrent Protection
過電流保護

Object +5V1A

Temperature 25°C
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. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]
	Load Current [A]	Load Current [A]	Load Current [A]
5.00	1.40	1.50	1.65
4.75	1.44	1.53	1.67
4.50	1.47	1.57	1.69
4.00	1.53	1.63	1.72
3.50	1.61	1.69	1.75
3.00	1.67	1.75	1.76
2.50	1.74	1.81	1.77
2.00	1.79	1.86	1.75
1.50	1.84	1.89	1.72
1.00	1.87	1.90	1.68
0.50	1.92	1.93	1.65
0.00	2.03	2.04	1.90

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Model	ZUS60505	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+5V1A		

Input Volt. 5.0 V

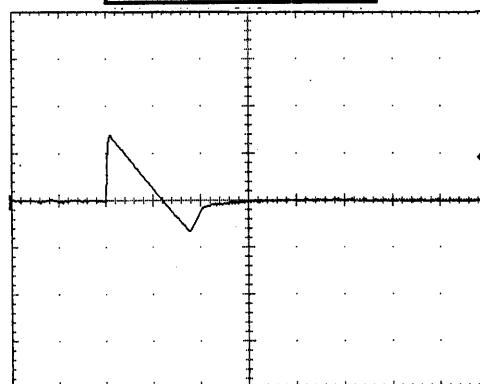
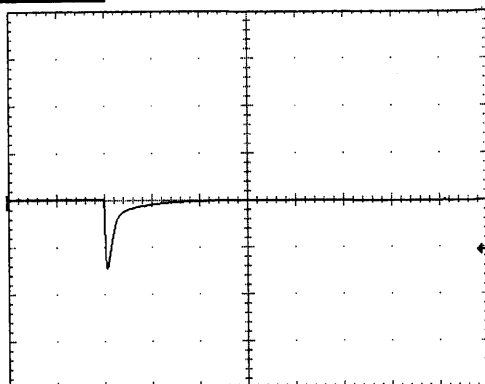
Cycle 100 mS

Load Current

Min. Load ↔

Load 100 %

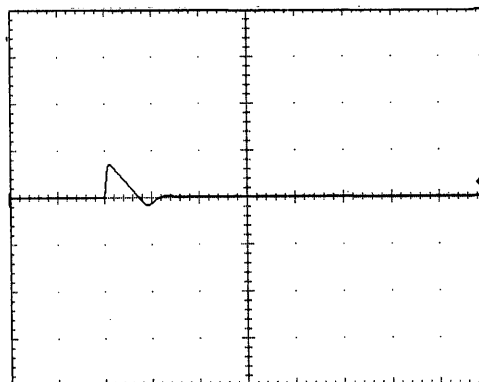
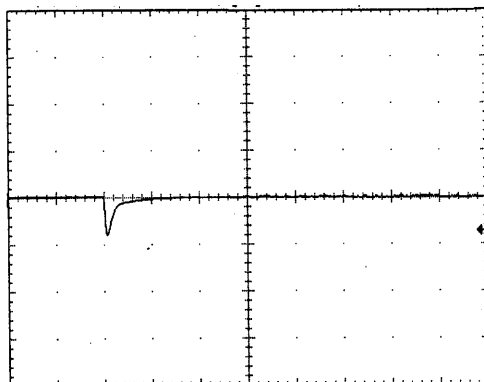
200 mV/div



Min. Load ↔

Load 50 %

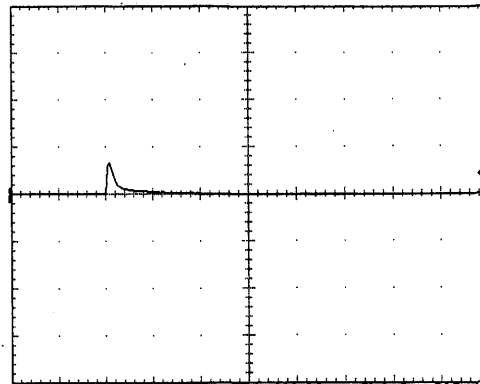
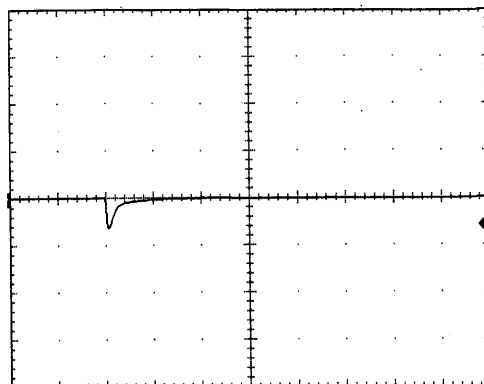
200 mV/div



Load 50% ↔

Load 100 %

200 mV/div



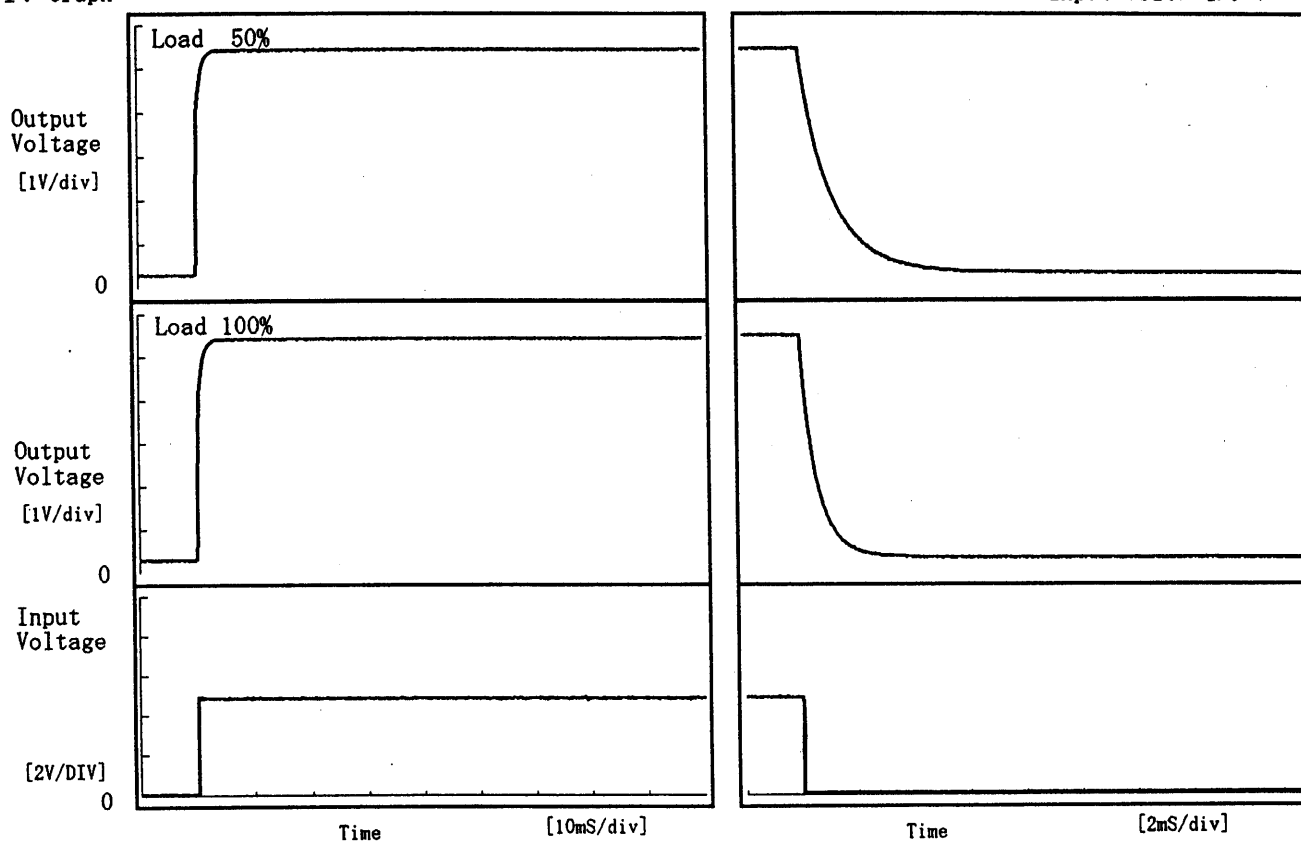
1 mS/div

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Model	ZUS60505	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+5V1A		

1. Graph

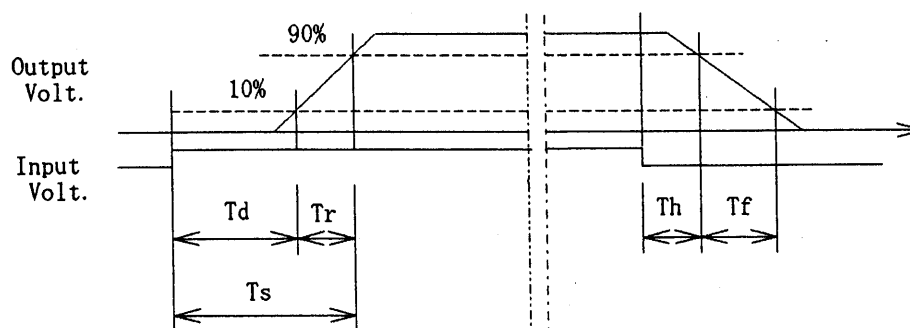
Input Volt. 4.5 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.10	0.90	1.00	0.17	2.66
100 %	0.05	0.95	1.00	0.08	1.36



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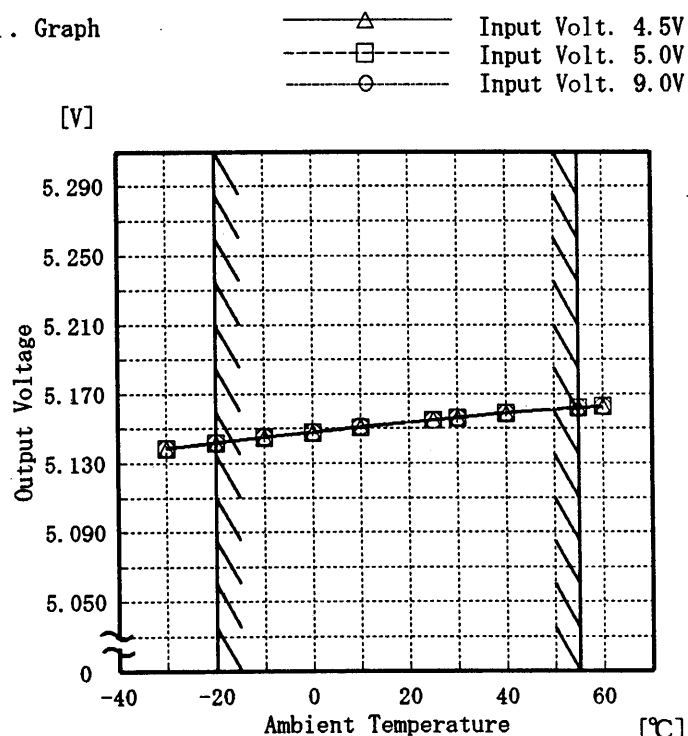
Model ZUS60505

Item Ambient Temperature Drift
周囲温度変動

Object +5V1A

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 [°C]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
-30	5.138	5.139	5.139
-20	5.141	5.142	5.142
-10	5.145	5.145	5.145
0	5.148	5.148	5.148
10	5.150	5.151	5.151
25	5.155	5.155	5.155
30	5.156	5.156	5.156
40	5.159	5.159	5.159
55	5.162	5.162	5.162
60	5.163	5.163	5.163
—	—	—	—

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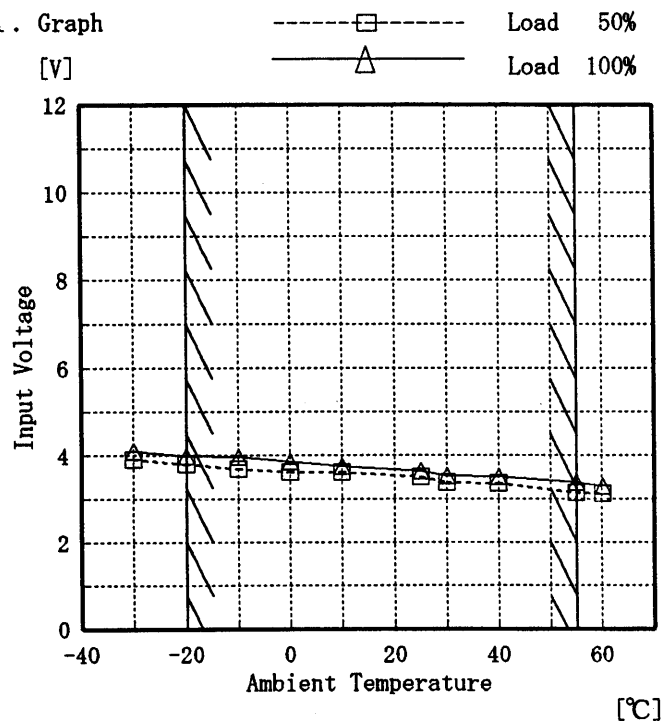
Model ZUS60505

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

Object +5V1A

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. [°C]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-30	3.9	4.1
-20	3.8	4.0
-10	3.7	4.0
0	3.6	3.9
10	3.6	3.8
25	3.5	3.6
30	3.4	3.5
40	3.4	3.5
55	3.1	3.4
60	3.1	3.3
—	—	—

COSEL

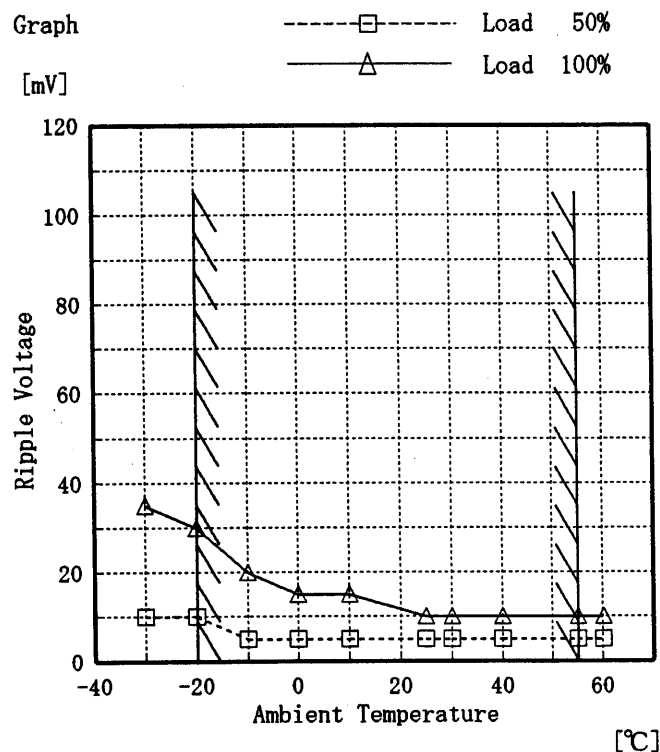
Model ZUS60505

Item Ripple Voltage (by Ambient Temp.)
リップル電圧 (周囲温度特性)

Object +5V 1 A

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. [°C]	Load 50%	Load 100%
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
-30	10	35
-20	10	30
-10	5	20
0	5	15
10	5	15
25	5	10
30	5	10
40	5	10
55	5	10
60	5	10
—	—	—

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Model ZUS60505

Item Time Lapse Drift 経時ドリフト

Object +5V1A

Temperature 25 °C
Testing Circuitry Figure A

1. Graph

[V]

Output Voltage [V]

Time [H]

Input Volt. 5V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	5.154
0.5	5.156
1.0	5.156
2.0	5.156
3.0	5.156
4.0	5.156
5.0	5.156
6.0	5.156
7.0	5.156
8.0	5.156

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Model		ZUS60505	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+5V1A	

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 : 4.5~9.0 V

Load Current : 0~1 A

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

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

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 : 4.5~9.0 V

負荷電流 : 0~1 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 [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ratio) [%]
Maximum Voltage	55	9.0	0	5.166	±12	±0.3
Minimum Voltage	-20	4.5	1	5.142		

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Model	ZUS60505	Testing Circuitry Figure A
Item	Condensation 結露特性	
Object	+5V 1A	

1. Condensation test

Testing procedure is as follows.

- ① Keeping and cooling the unit in a tank at -10°C 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°C 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°C 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°C 、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	5.150	5	50
	2	5.154	5	60
	3	5.149	5	50
Load 100 %	1	5.146	15	70
	2	5.151	15	70
	3	5.145	15	70

Input Volt. 5.0 V

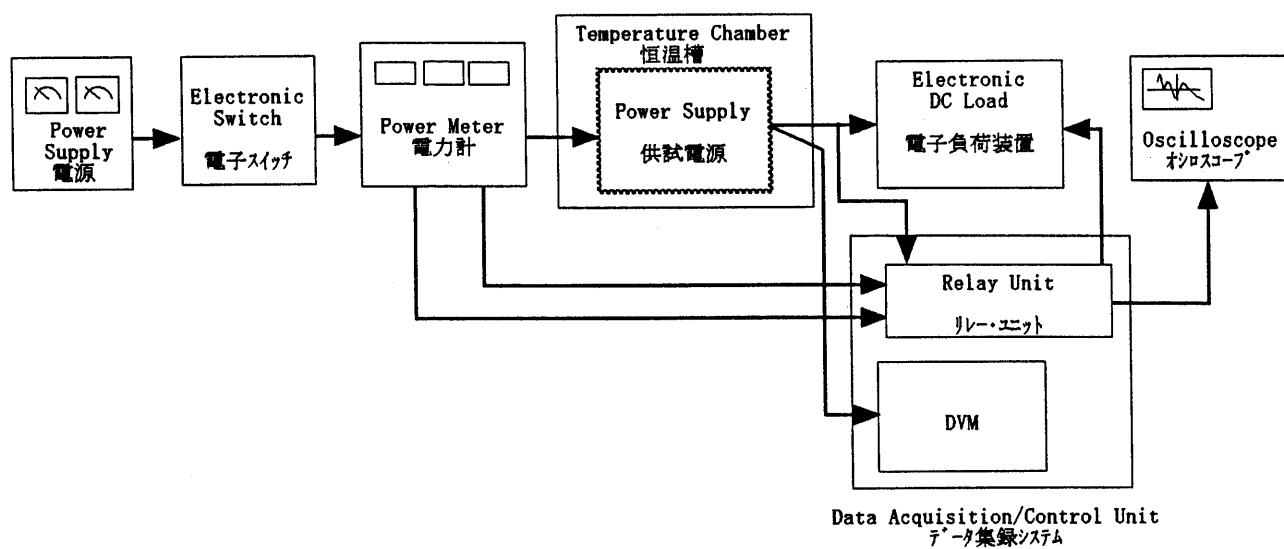
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Figure A