参考資料

COSEL

TEST DATA OF ZUS1R50515

(5.0V INPUT)

Regulated DC Power Supply

Date : June 14. 1996

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コーセル株式会社

COSEL CO.,LTD.

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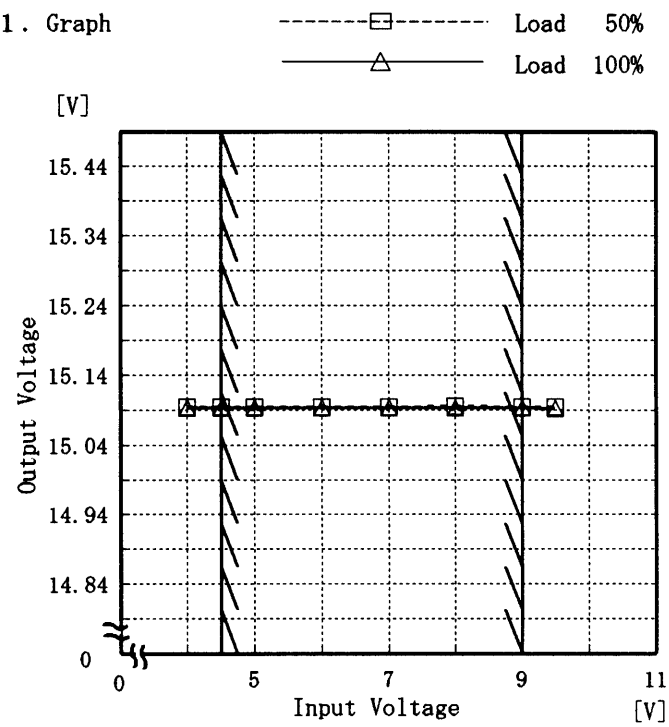
1. Graph



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

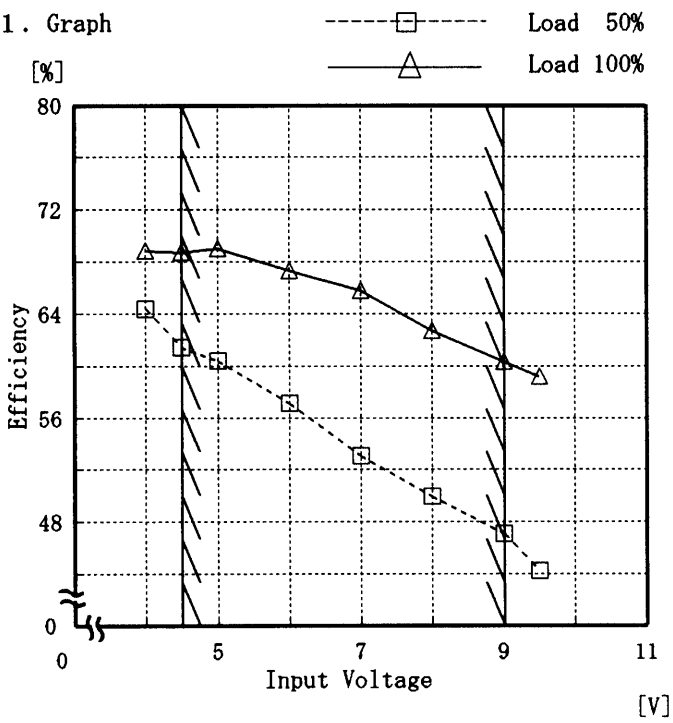
Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
4.0	15.094	15.093
4.5	15.094	15.093
5.0	15.095	15.093
6.0	15.094	15.093
7.0	15.095	15.093
8.0	15.095	15.093
9.0	15.095	15.092
9.5	15.094	15.092
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS1R50515
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

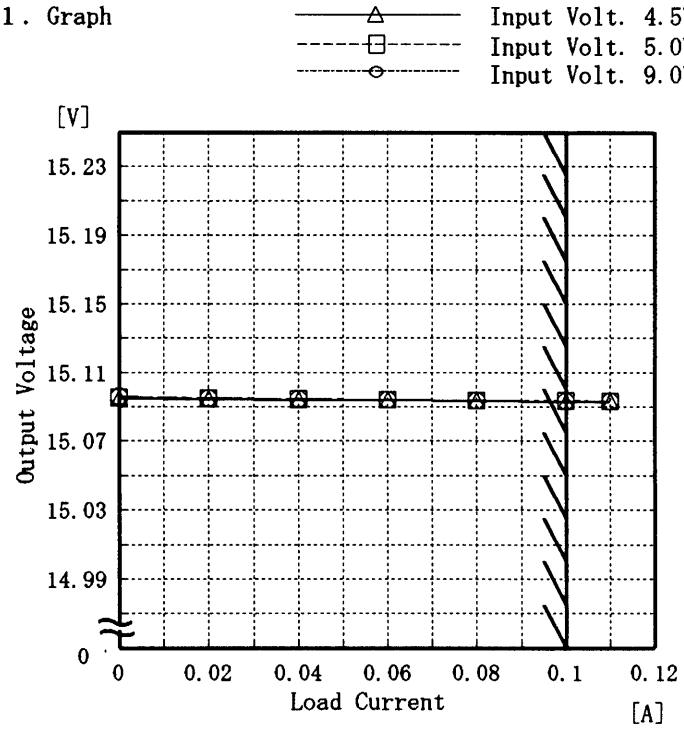
Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]
4.0	64.4	68.8
4.5	61.5	68.7
5.0	60.4	69.0
6.0	57.1	67.3
7.0	53.0	65.8
8.0	49.9	62.7
9.0	47.1	60.4
9.5	44.2	59.2
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS1R50515
Item	Load Regulation 静的負荷変動
Object	+15V0.1A

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

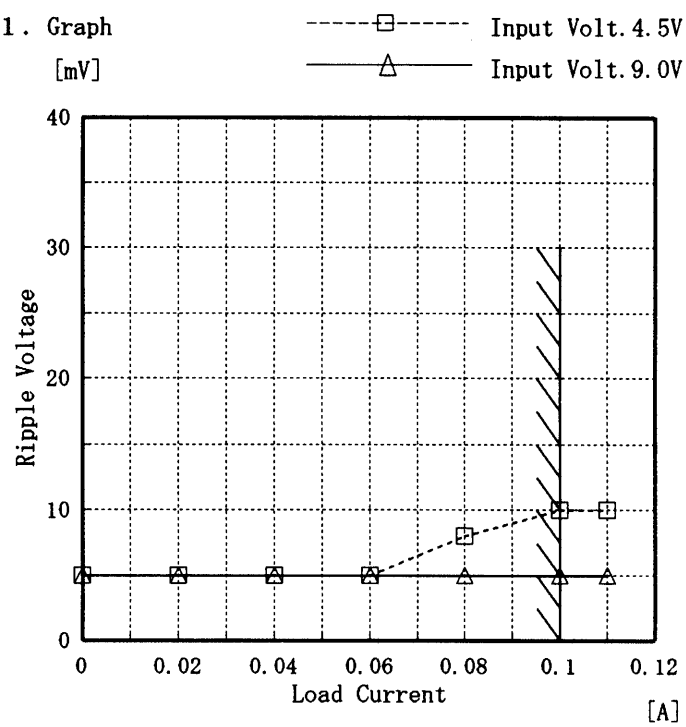
Load Current [A]	Input Volt. 4.5[V] Output Volt. [V]	Input Volt. 5.0[V] Output Volt. [V]	Input Volt. 9.0[V] Output Volt. [V]
0.00	15.095	15.095	15.096
0.02	15.095	15.095	15.095
0.04	15.094	15.095	15.095
0.06	15.094	15.094	15.094
0.08	15.094	15.094	15.094
0.10	15.093	15.094	15.093
0.11	15.093	15.093	15.093
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	ZUS1R50515
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+15V 0.1A

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

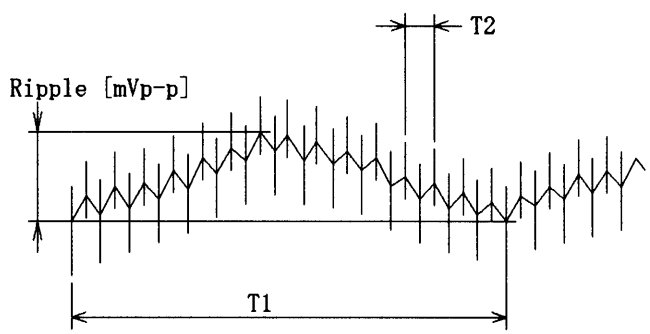


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

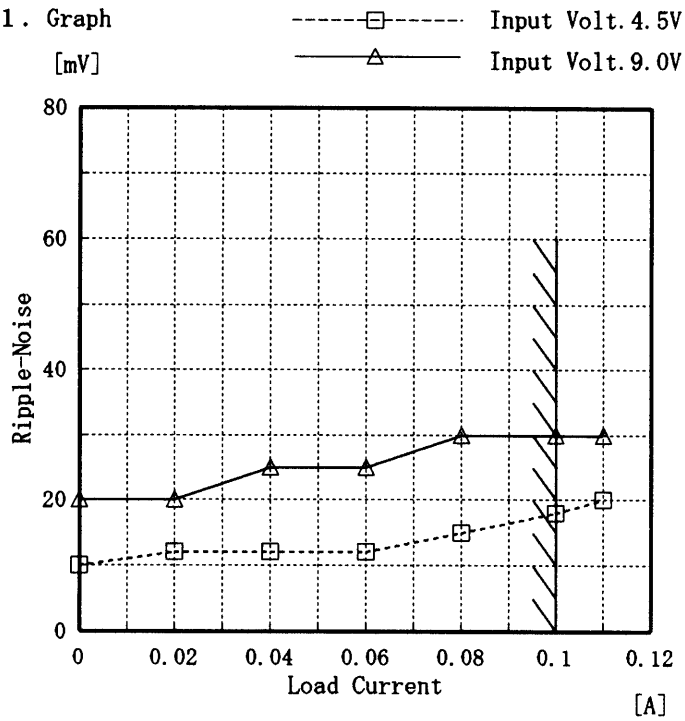
Load Current [A]	Input Volt. 4.5 [V] Ripple Output Volt. [mV]	Input Volt. 9.0 [V] Ripple Output Volt. [mV]
0.00	5	5
0.02	5	5
0.04	5	5
0.06	5	5
0.08	8	5
0.10	10	5
0.11	10	5
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS1R50515
Item	Ripple-Noise リップルノイズ
Object	+15V0.1A

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

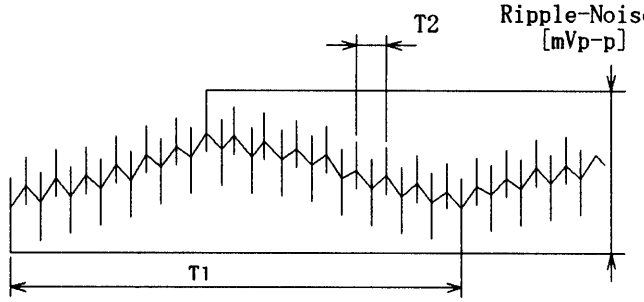


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

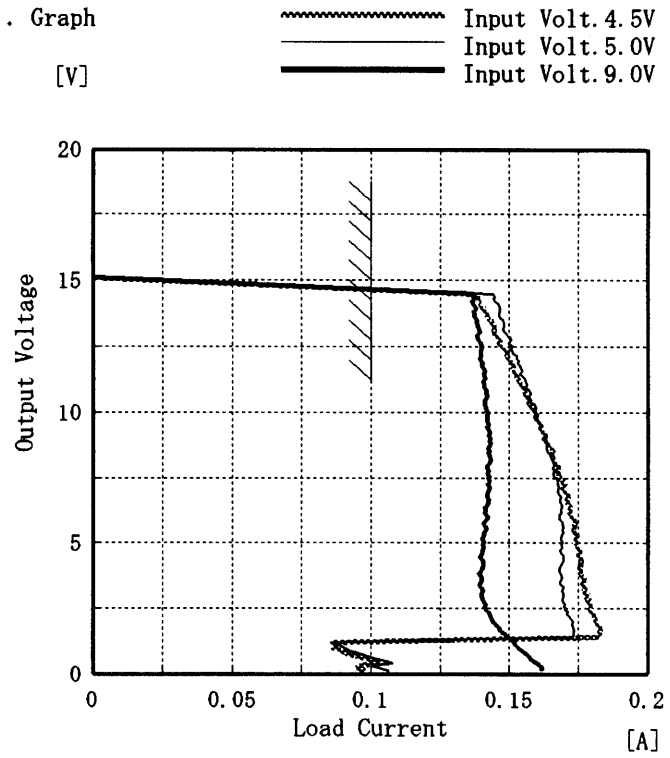
Load current [A]	Input Volt. 4.5 [V] Ripple-Noise [mV]	Input Volt. 9.0 [V] Ripple-Noise [mV]
0.00	10	20
0.02	12	20
0.04	12	25
0.06	12	25
0.08	15	30
0.10	18	30
0.11	20	30
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS1R50515
Item	Overcurrent Protection 過電流保護
Object	+15V0.1A

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. 4.5[V] Load Current [A]	Input Volt. 5.0[V] Load Current [A]	Input Volt. 9.0[V] Load Current [A]
15.00	0.14	0.14	0.14
14.25	0.14	0.14	0.14
13.50	0.14	0.15	0.14
12.00	0.15	0.15	0.14
10.50	0.16	0.16	0.14
9.00	0.16	0.16	0.14
7.50	0.17	0.17	0.14
6.00	0.17	0.17	0.14
4.50	0.17	0.17	0.14
3.00	0.18	0.17	0.14
1.50	0.18	0.17	0.15
0.00	0.10	0.11	0.16

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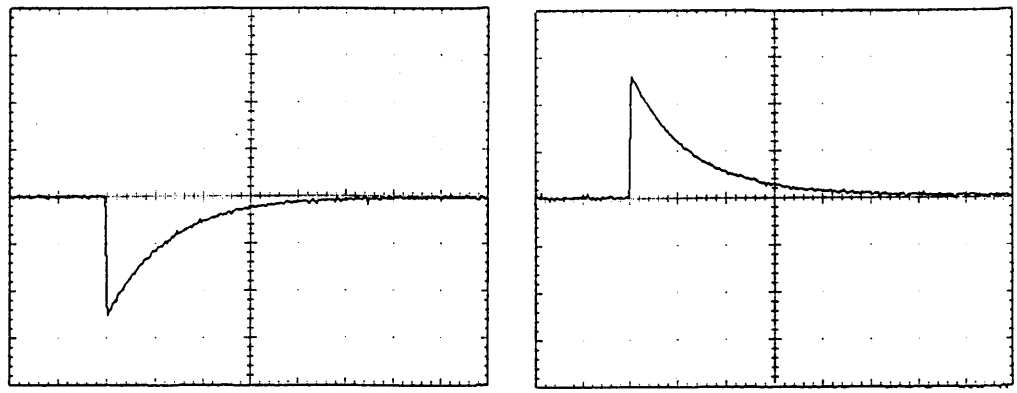
Model	ZUS1R50515		
Item	Dynamic Load Responce 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+15V0.1A		

Input Volt. 5.0 V

Cycle 100 mS

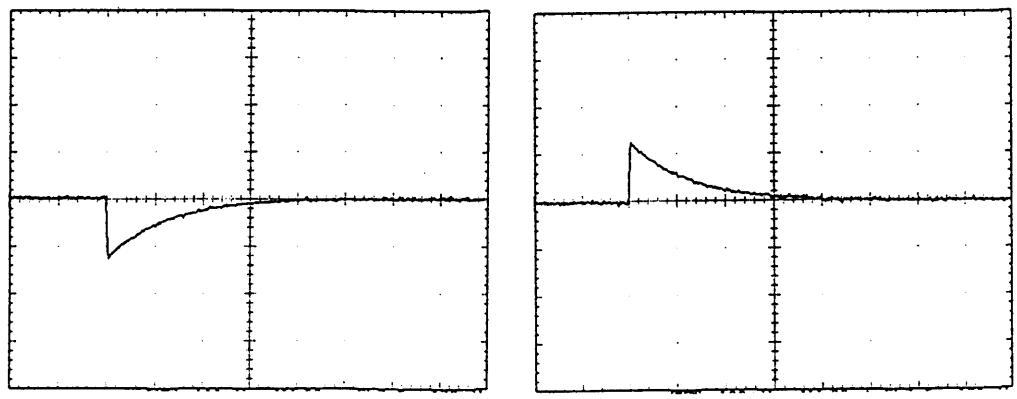
Load Current

Min. Load ⟷
Load 100 %



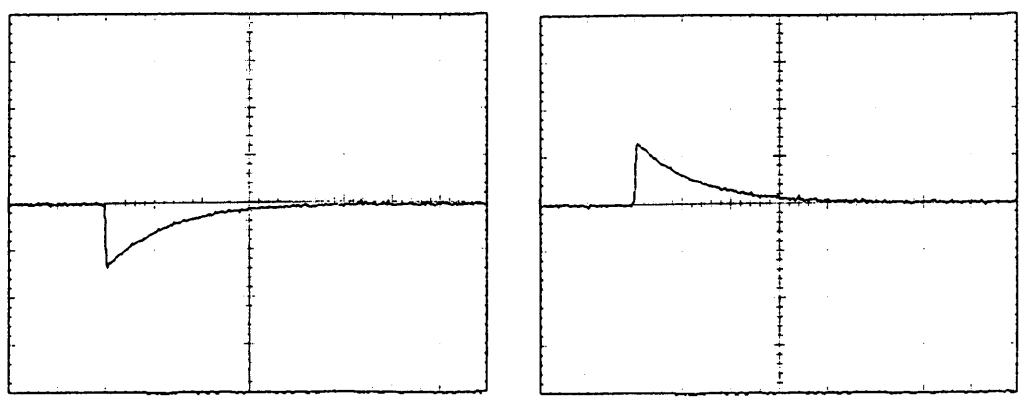
100 mV/div

Min. Load ⟷
Load 50 %



100 mV/div

Load 50%⟷
Load 100 %



100 mV/div

1 mS/div

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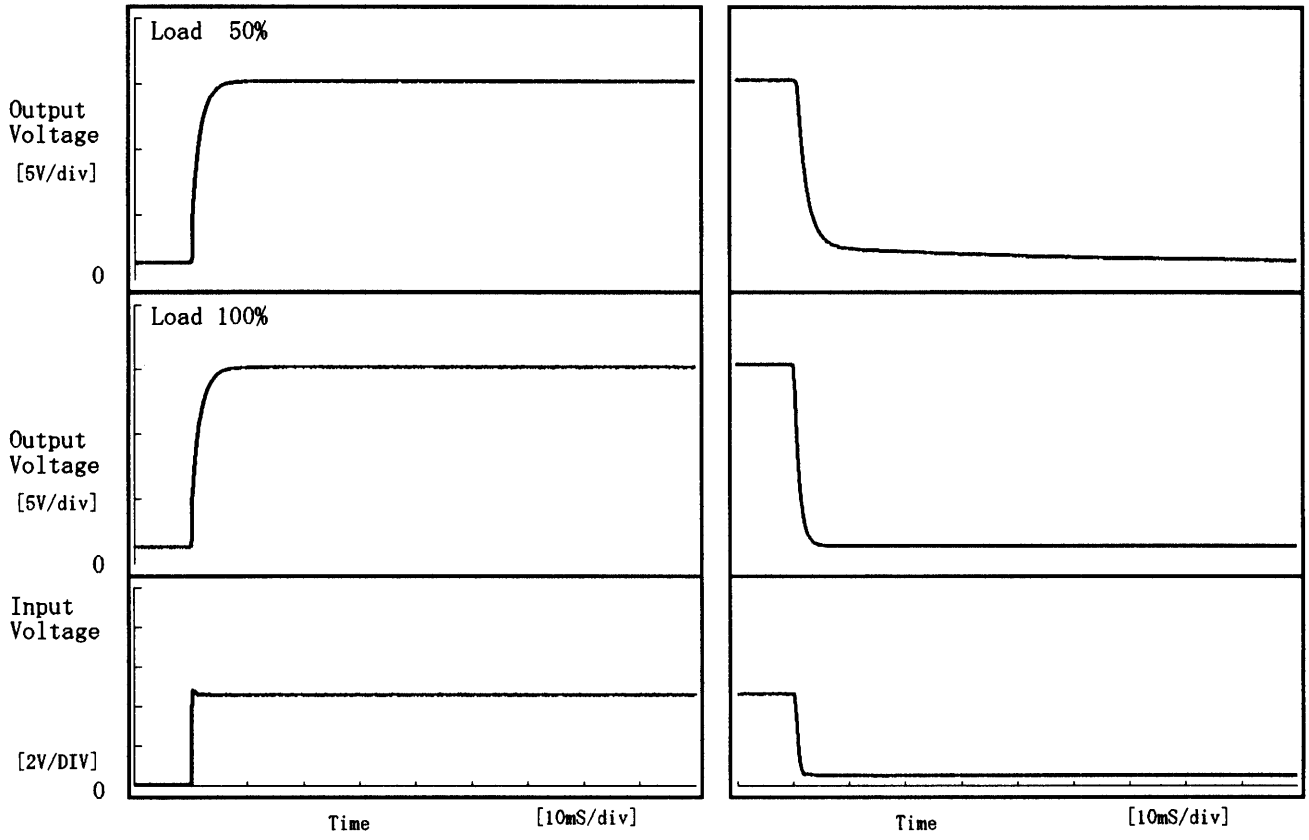
Model	ZUS1R50515		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	+15V0.1A		

1. Graph

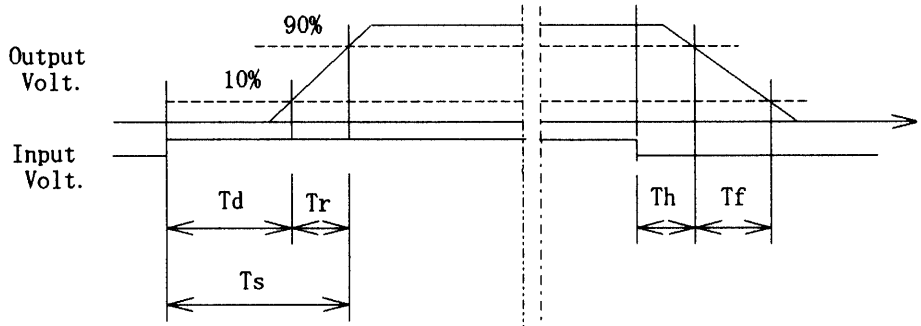
Input Volt. 4.5 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.05	3.10	3.15	1.10	51.40
100 %	0.05	3.20	3.25	0.45	3.15



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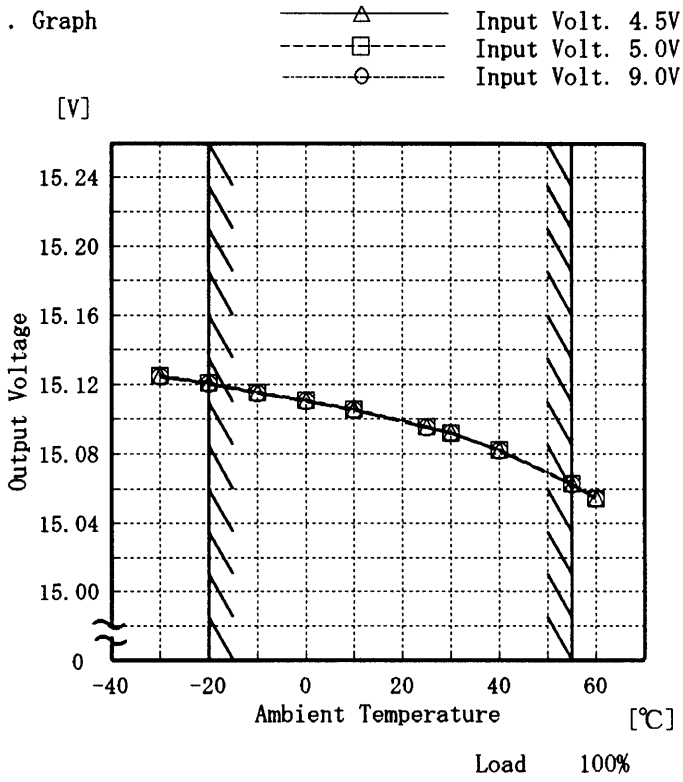
Model	ZUS1R50515
Item	Ambient Temperature Drift 周囲温度変動
Object	+15V0.1A

Testing Circuitry Figure A

1. Graph



Load 100%

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. 4.5[V] Output Volt. [V]	Input Volt. 5.0[V] Output Volt. [V]	Input Volt. 9.0[V] Output Volt. [V]
-30	15.125	15.125	15.125
-20	15.121	15.121	15.120
-10	15.115	15.115	15.115
0	15.111	15.111	15.110
10	15.106	15.106	15.105
25	15.095	15.095	15.095
30	15.092	15.092	15.092
40	15.082	15.082	15.082
55	15.063	15.063	15.063
60	15.055	15.054	15.054
—	—	—	—

COSEL

Model	ZUS1R50515
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+15V0.1A

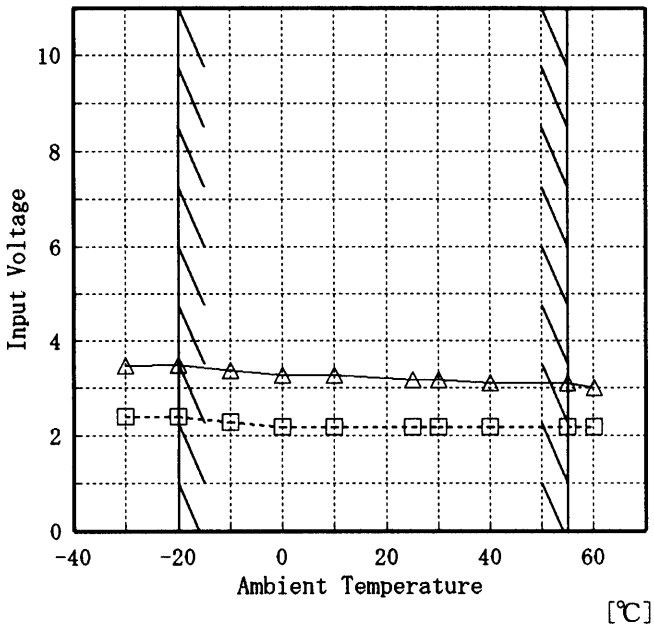
Testing Circuitry Figure A

1. Graph

[V]

Load 50%

Load 100%



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

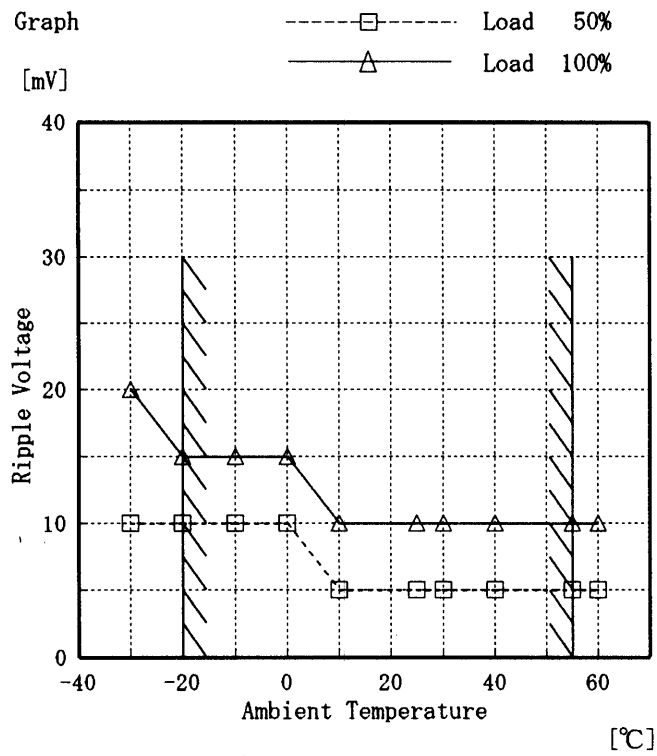
Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-30	2.4	3.5
-20	2.4	3.5
-10	2.3	3.4
0	2.2	3.3
10	2.2	3.3
25	2.2	3.2
30	2.2	3.2
40	2.2	3.1
55	2.2	3.1
60	2.2	3.0
—	—	—

COSEL

Model	ZUS1R50515
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	+15V0.1A

Testing Circuitry Figure A

1. Graph



Input Volt. 4.5 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。

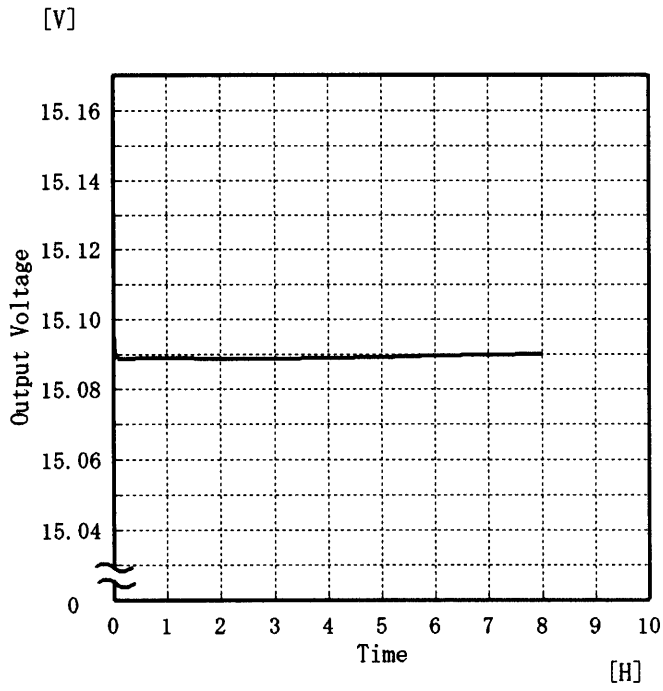
2. Values

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

COSEL

Model	ZUS1R50515	
Item	Time Lapse Drift 経時ドリフト	Temperature 25 ℃ Testing Circuitry Figure A
Object	+15V0.1A	

1. Graph



Input Volt. 5V

Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	15.097
0.5	15.089
1.0	15.089
2.0	15.089
3.0	15.089
4.0	15.089
5.0	15.089
6.0	15.090
7.0	15.090
8.0	15.090

COSEL

Model	ZUS1R50515	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A
Object	+15V0.1A	

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 : 4.5～9.0 V
Load Current : 0.0～0.1 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 4.5～9.0 V
負荷電流 0.0～0.1 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	9.0	0.0	15.124	±33	±0.3
Minimum Voltage	55	5.0	0.1	15.058		

COSEL

Model	ZUS1R50515
Item	Condensation 結露特性
Object	+15V 0.1A

Testing Circuitry Figure A

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 24℃ 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２４℃、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	15.102	5	10
	2	15.107	5	10
	3	15.109	5	10
Load 100 %	1	15.100	10	30
	2	15.106	10	30
	3	15.107	10	30

Input Volt. 5.0 V

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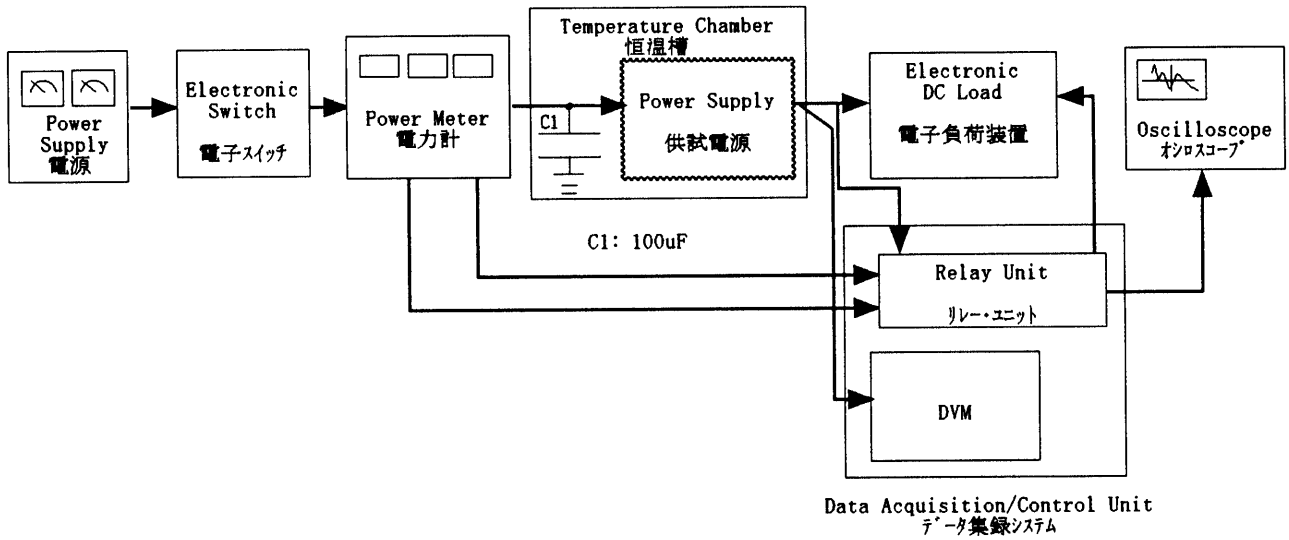

Figure A