参考資料

COSEL

TEST DATA OF ZUS30515

(5.0V INPUT)

Regulated DC Power Supply

Date : Nov.5. 1996

Approved by : T. Suginori
Design Manager

Prepared by : Y. Nagai
Design Engineer

コーセル株式会社

COSEL CO.,LTD.

COSEL

CONTENTS

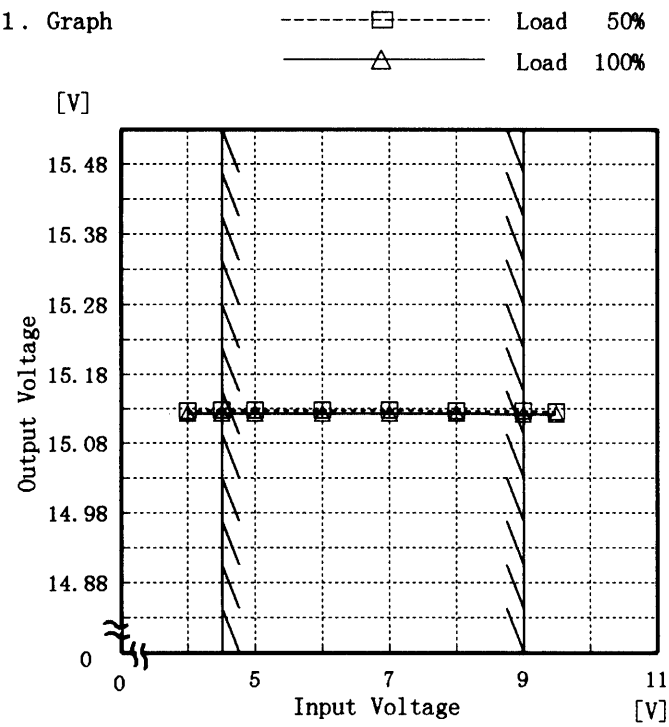
(Final Page 15)

COSEL

Model	ZUS30515
Item	Line Regulation 静的入力変動
Object	+15V0.2A

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

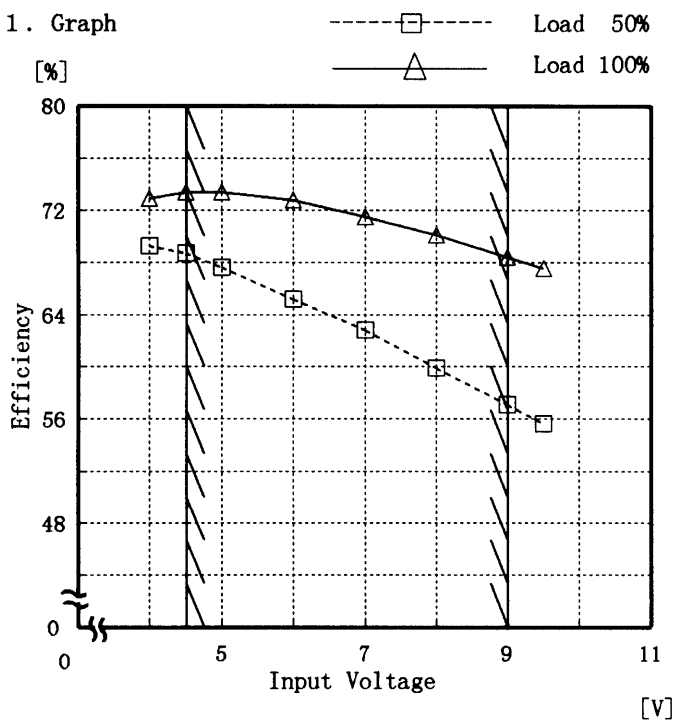
Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
4.0	15.127	15.123
4.5	15.128	15.123
5.0	15.128	15.124
6.0	15.128	15.124
7.0	15.127	15.123
8.0	15.127	15.123
9.0	15.126	15.122
9.5	15.126	15.122
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS30515
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

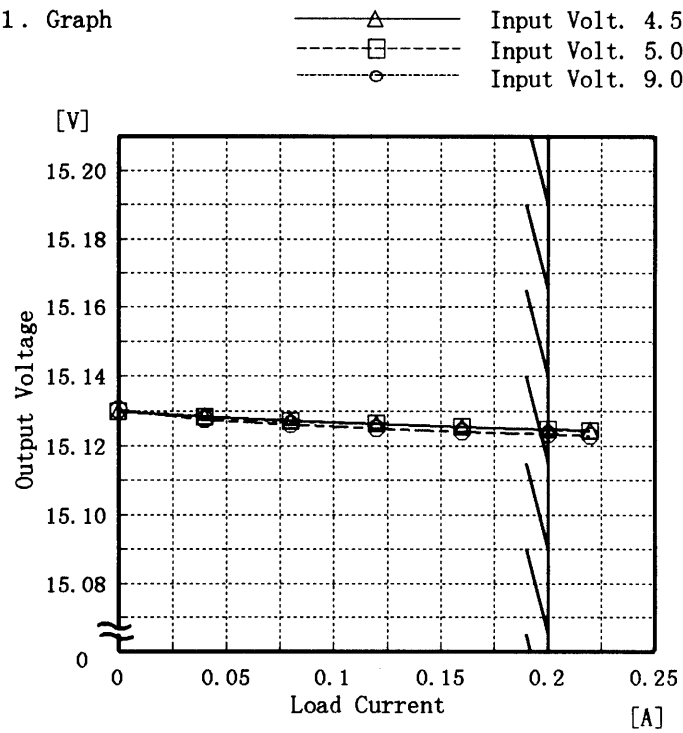
Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]
4.0	69.2	72.9
4.5	68.7	73.4
5.0	67.6	73.4
6.0	65.2	72.8
7.0	62.9	71.5
8.0	59.9	70.1
9.0	57.1	68.4
9.5	55.6	67.6
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS30515
Item	Load Regulation 静的負荷変動
Object	+15V0.2A

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

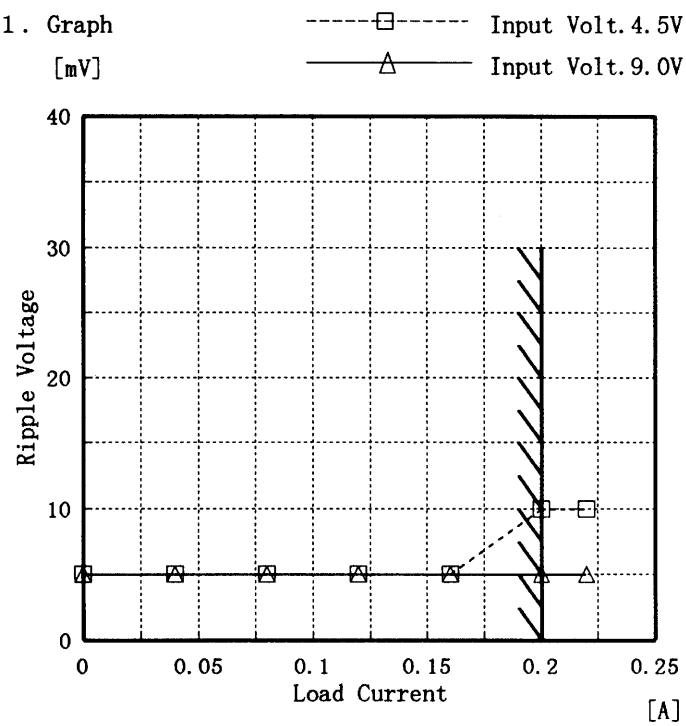
Load Current [A]	Input Volt. 4.5[V] Output Volt. [V]	Input Volt. 5.0[V] Output Volt. [V]	Input Volt. 9.0[V] Output Volt. [V]
0.00	15.130	15.130	15.130
0.04	15.128	15.128	15.128
0.08	15.127	15.127	15.126
0.12	15.126	15.126	15.125
0.16	15.126	15.126	15.124
0.20	15.125	15.125	15.123
0.22	15.125	15.124	15.123
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	ZUS30515
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+15V0.2A

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

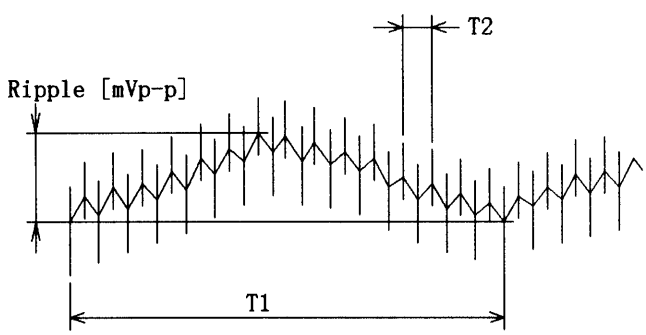


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

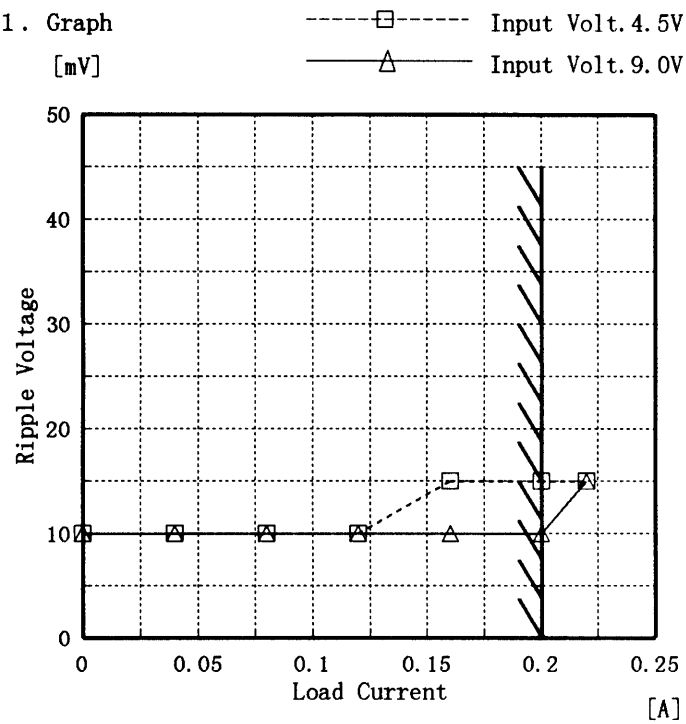
Load Current [A]	Input Volt. 4.5 [V] Ripple Output Volt. [mV]	Input Volt. 9.0 [V] Ripple Output Volt. [mV]
0.00	5	5
0.04	5	5
0.08	5	5
0.12	5	5
0.16	5	5
0.20	10	5
0.22	10	5
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS30515
Item	Ripple-Noise リップルノイズ
Object	+15V0.2A

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。

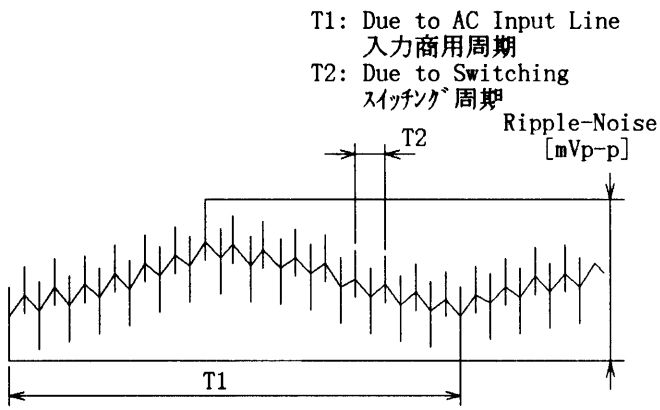


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

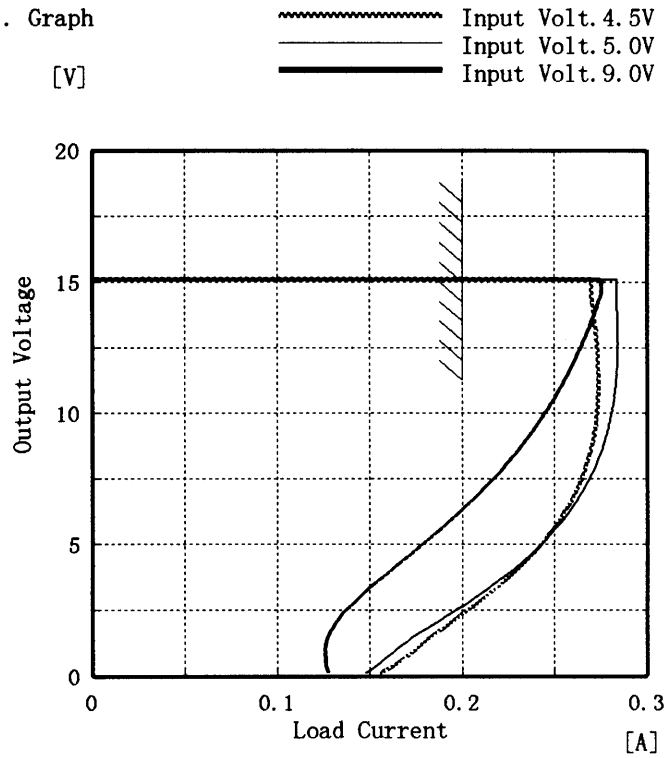
Load Current [A]	Input Volt. 4.5 [V] Ripple Output Volt. [mV]	Input Volt. 9.0 [V] Ripple Output Volt. [mV]
0.00	10	10
0.04	10	10
0.08	10	10
0.12	10	10
0.16	15	10
0.20	15	10
0.22	15	15
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS30515
Item	Overcurrent Protection 過電流保護
Object	+15V0.2A

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. 4.5[V] Load Current [A]	Input Volt. 5.0[V] Load Current [A]	Input Volt. 9.0[V] Load Current [A]
15.00	0.27	0.28	0.27
14.25	0.27	0.28	0.27
13.50	0.27	0.28	0.27
12.00	0.27	0.28	0.26
10.50	0.27	0.28	0.25
9.00	0.27	0.28	0.24
7.50	0.27	0.27	0.22
6.00	0.25	0.26	0.20
4.50	0.24	0.24	0.17
3.00	0.21	0.21	0.15
1.50	0.19	0.18	0.13
0.00	0.16	0.15	0.13

COSEL

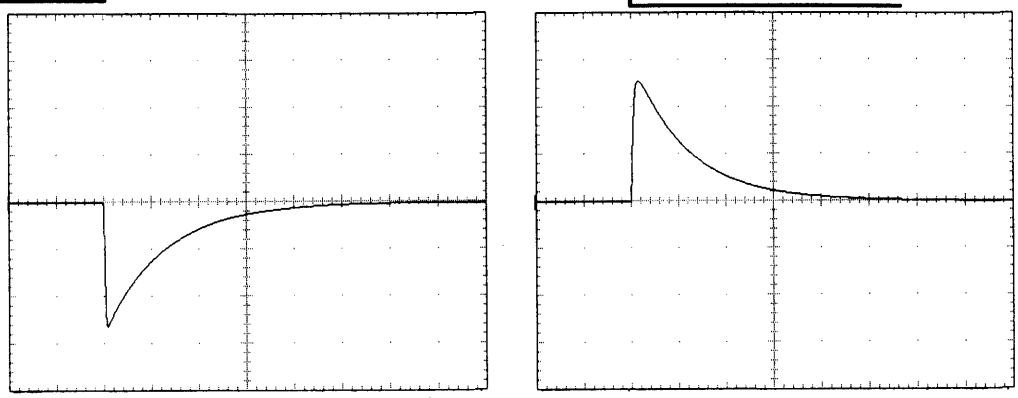
Model	ZUS30515		
Item	Dynamic Load Responce 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+15V0.2A		

Input Volt. 5.0 V

Cycle 100 mS

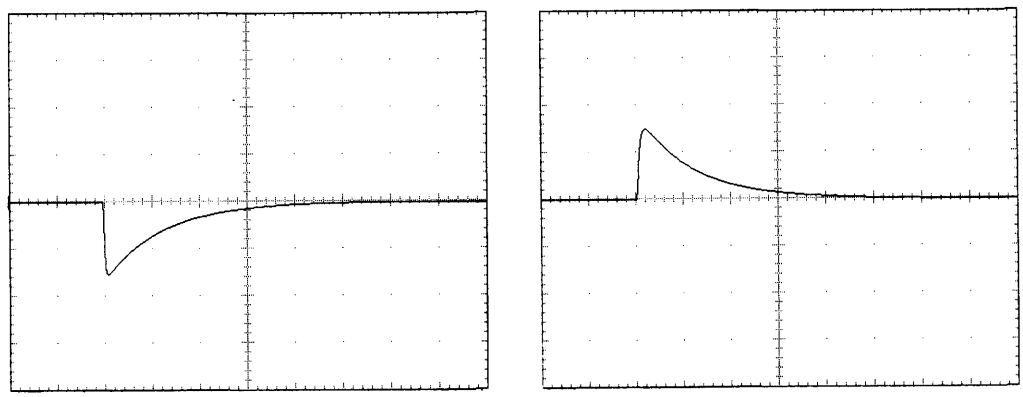
Load Current

Min. Load ⟷
Load 100 %



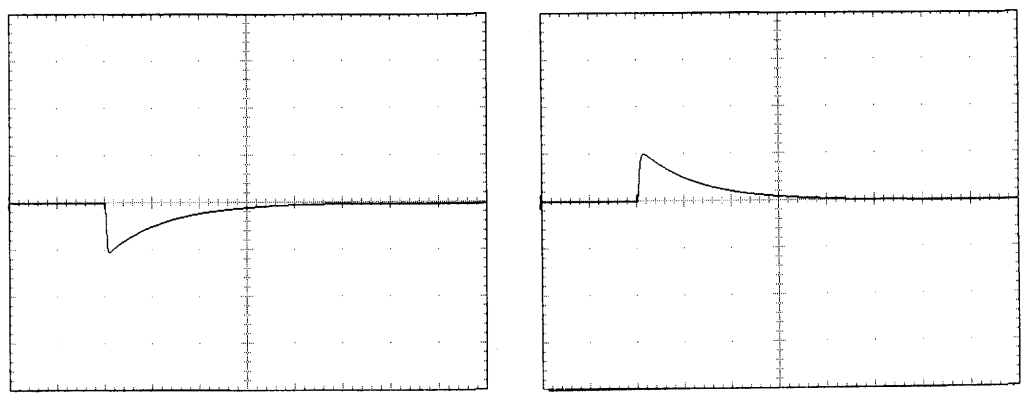
200 mV/div

Min. Load ⟷
Load 50 %



200 mV/div

Load 50%⟷
Load 100 %



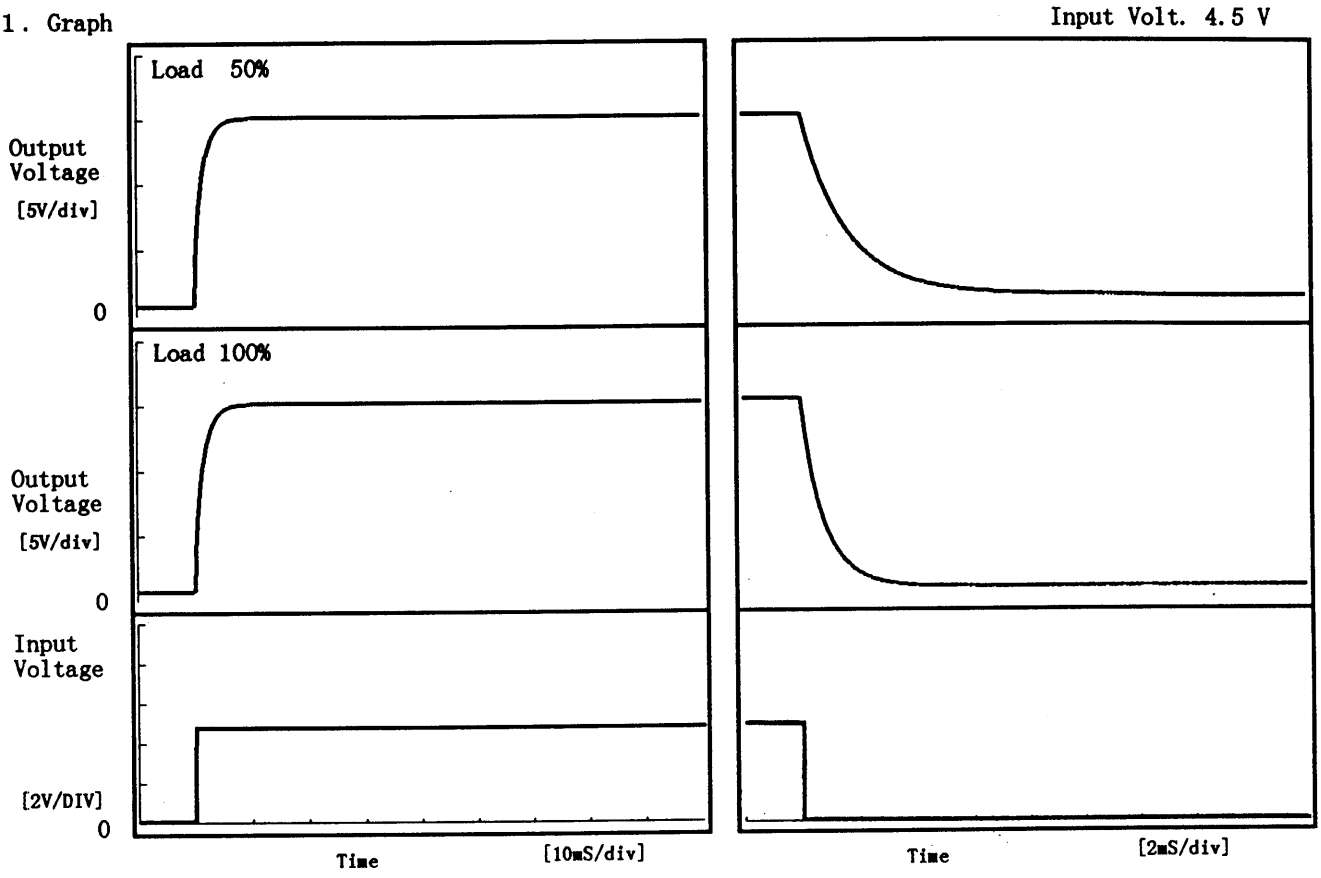
200 mV/div

1 mS/div

COSEL

Model	ZUS30515		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	+15V0.2A		

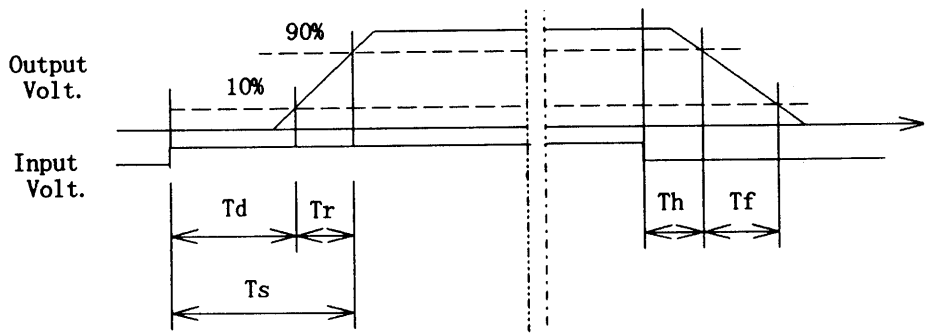
1. Graph



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.10	3.30	3.40	0.22	5.42
100 %	0.15	3.30	3.45	0.11	2.14

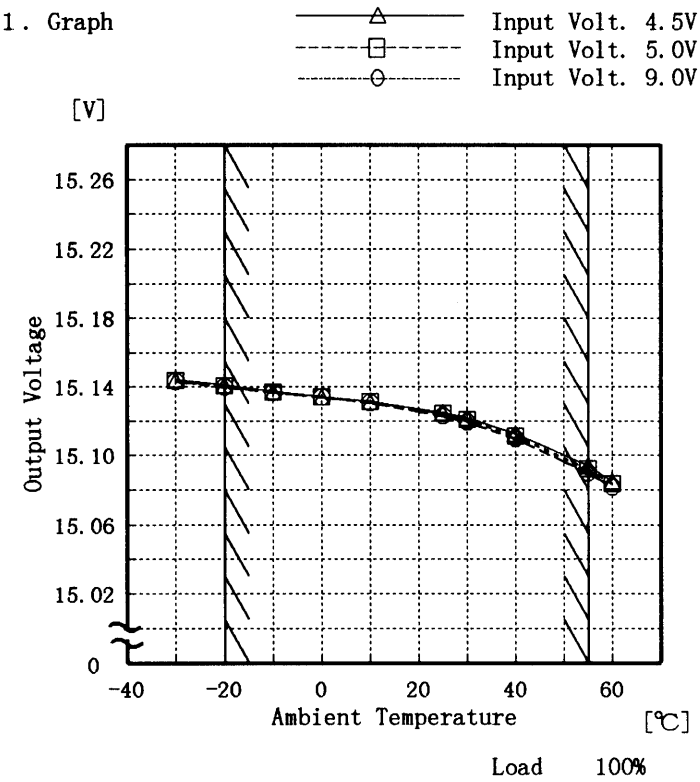


COSEL

Model	ZUS30515
Item	Ambient Temperature Drift 周囲温度変動
Object	+15V0.2A

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

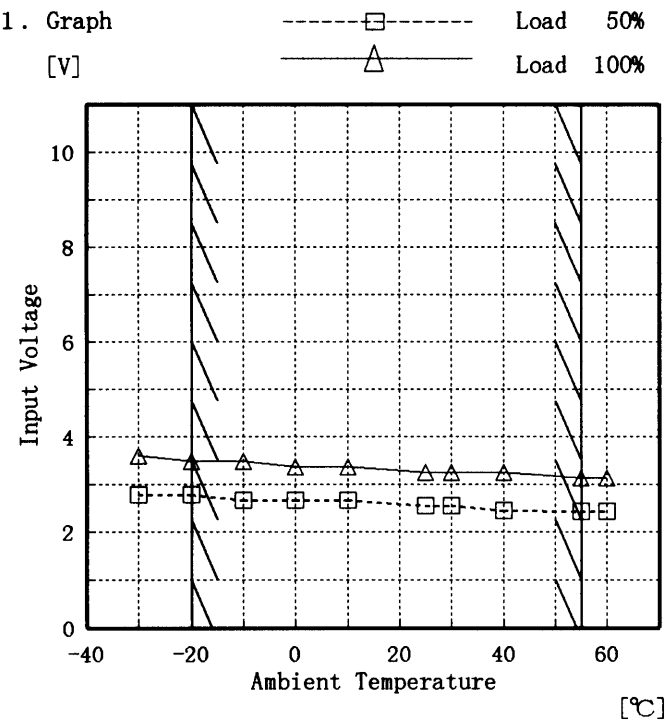
Temperature [℃]	Input Volt. 4.5[V] Output Volt. [V]	Input Volt. 5.0[V] Output Volt. [V]	Input Volt. 9.0[V] Output Volt. [V]
-30	15.144	15.144	15.144
-20	15.141	15.141	15.140
-10	15.137	15.137	15.137
0	15.134	15.134	15.134
10	15.132	15.131	15.131
25	15.125	15.124	15.123
30	15.122	15.121	15.120
40	15.113	15.111	15.110
55	15.094	15.093	15.090
60	15.085	15.084	15.082
—	—	—	—

COSEL

Model	ZUS30515
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+15V0.2A

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

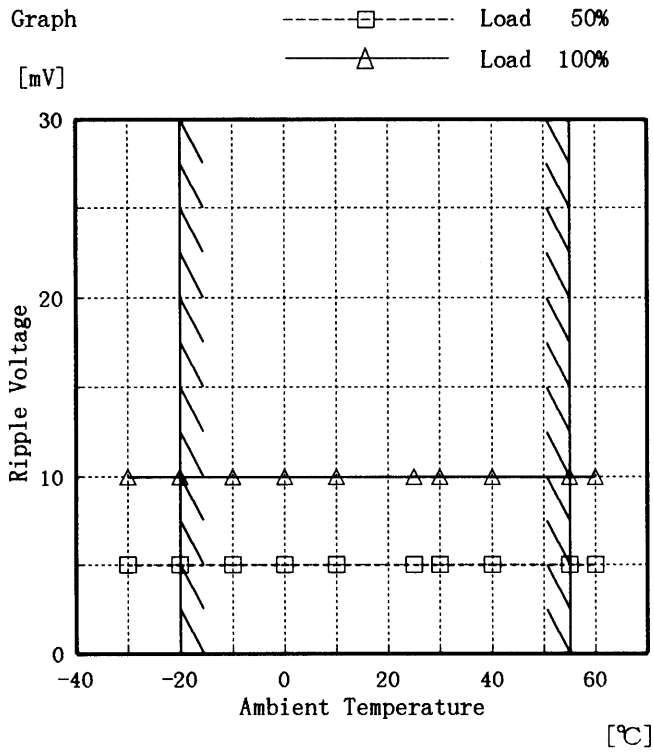
Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-30	2.8	3.6
-20	2.8	3.5
-10	2.7	3.5
0	2.7	3.4
10	2.7	3.4
25	2.6	3.3
30	2.5	3.2
40	2.4	3.2
55	2.4	3.1
60	2.4	3.1
—	—	—

COSEL

Model	ZUS30515
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+15V0.2A

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

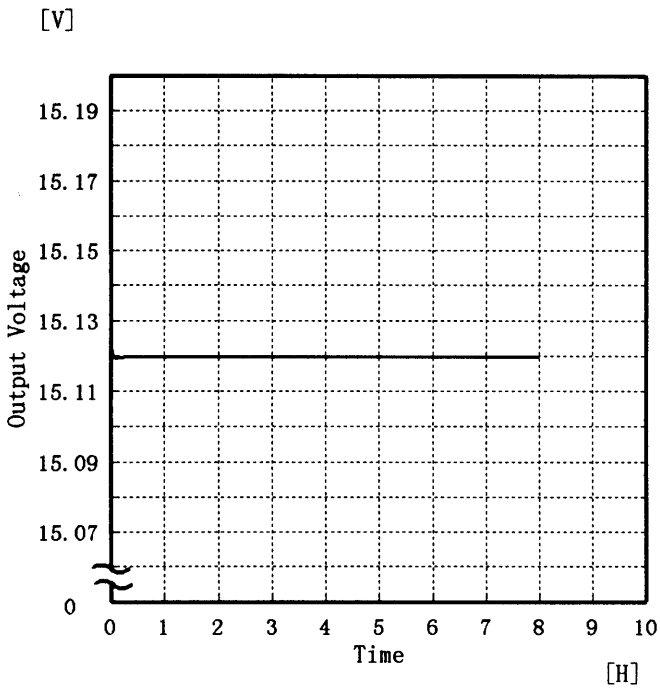
Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
-30	5	10
-20	5	10
-10	5	10
0	5	10
10	5	10
25	5	10
30	5	10
40	5	10
55	5	10
60	5	10
—	—	—

COSEL

Model	ZUS30515
Item	Time Lapse Drift 経時ドリフト
Object	+15V0.2A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Input Volt. 5V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	15.126
0.5	15.120
1.0	15.120
2.0	15.120
3.0	15.120
4.0	15.120
5.0	15.120
6.0	15.120
7.0	15.120
8.0	15.120

COSEL

Model	ZUS30515	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A
Object	+15V0.2A	

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 : 4.5～9.0 V
Load Current : 0.0～0.2 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 4.5～9.0 V
負荷電流 0.0～0.2 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	9.0	0.0	15.149	±31	±0.3
Minimum Voltage	55	9.0	0.2	15.087		

COSEL

Model	ZUS30515
Item	Condensation 結露特性
Object	+15V0.2A

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 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 [V]	Ripple Voltage [mV]	Ripple Noise [mV]
Load 50 %	1	15.048	5	10
	2	15.051	5	10
	3	15.052	5	10
Load 100 %	1	15.045	5	20
	2	15.048	5	20
	3	15.049	5	20

Input Volt. 5.0 V

COSEL

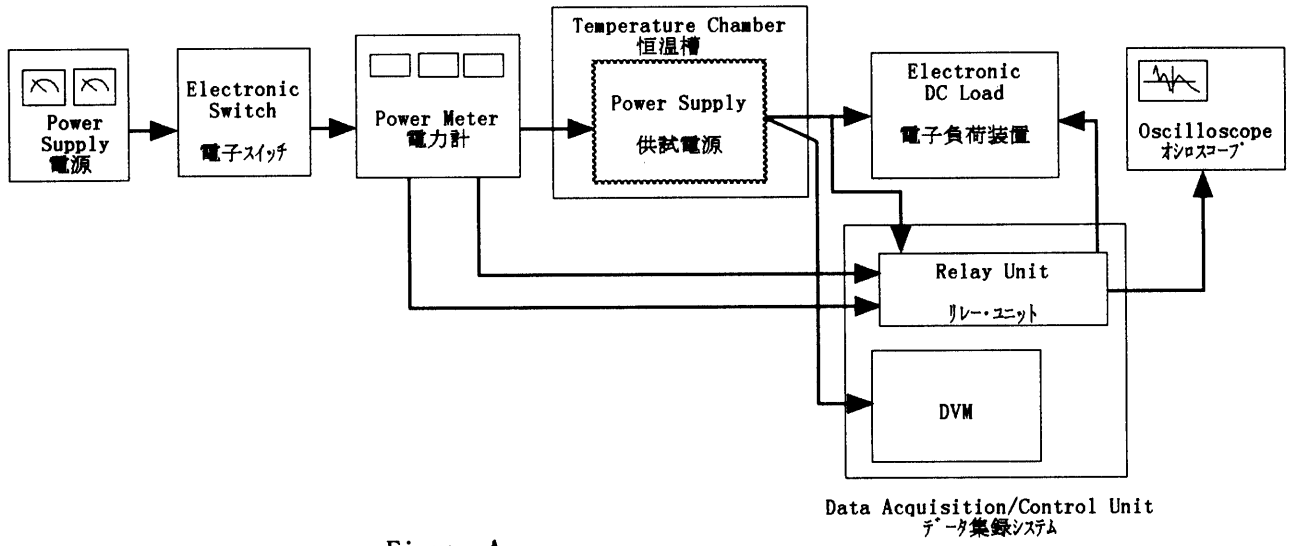


Figure A