参考資料

COSEL

TEST DATA OF ZUS101215

(12.0V INPUT)

Regulated DC Power Supply

Date : Sep 21. 1996

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COSEL CO.,LTD.

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Object	+15V0.700A

Temperature 25℃
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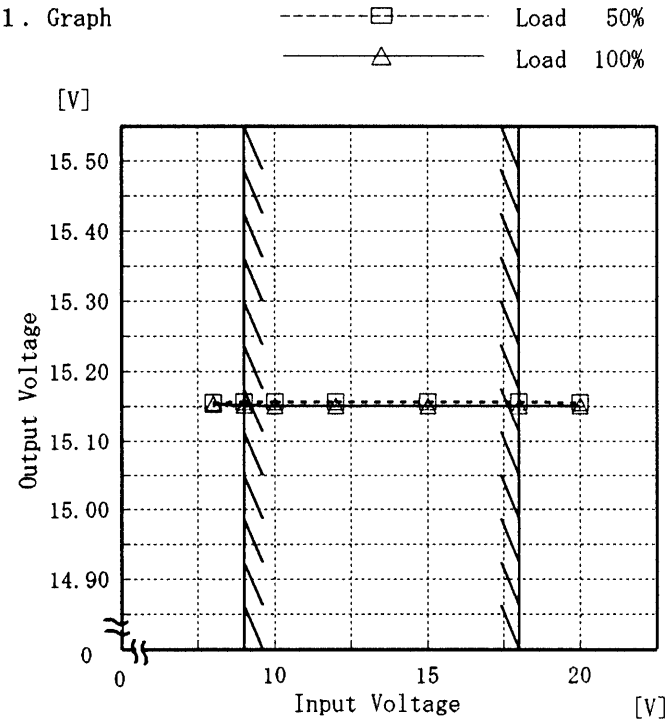
1. Graph



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

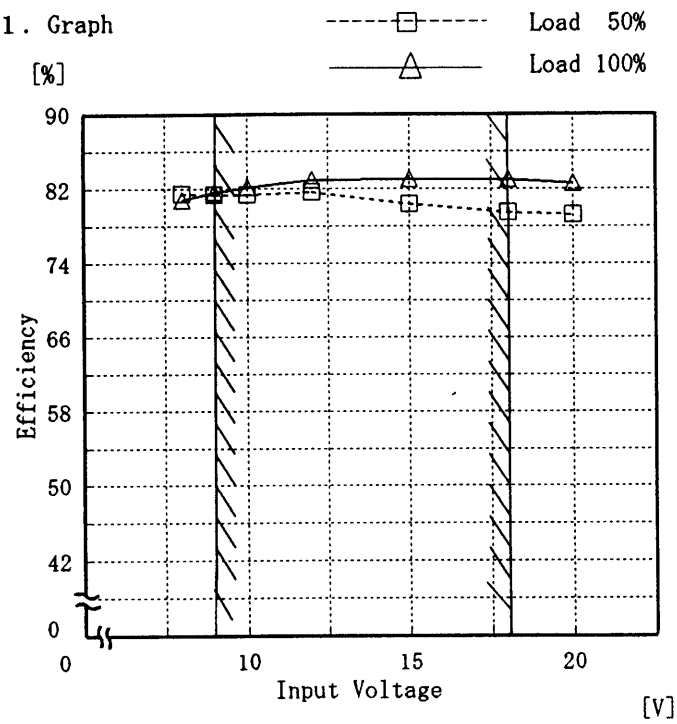
Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
8.0	15.155	15.153
9.0	15.156	15.152
10.0	15.156	15.151
12.0	15.157	15.151
15.0	15.156	15.151
18.0	15.156	15.151
20.0	15.156	15.151
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS101215
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

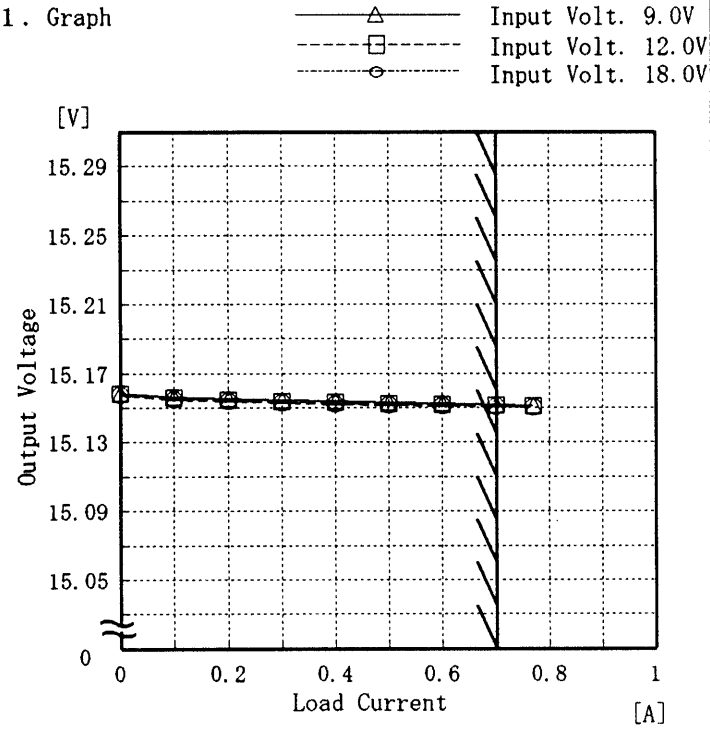
Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]
8.0	81.5	80.8
9.0	81.4	81.7
10.0	81.4	82.2
12.0	81.7	83.0
15.0	80.4	83.1
18.0	79.5	83.1
20.0	79.3	82.6
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS101215
Item	Load Regulation 静的負荷変動
Object	+15V0.700A

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

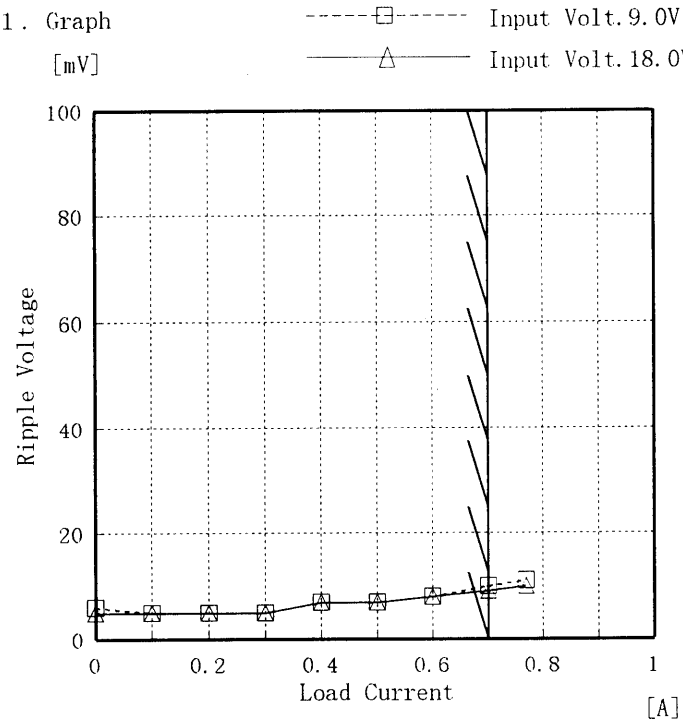
Load Current [A]	Input Volt. 9.0[V] Output Volt. [V]	Input Volt. 12.0[V] Output Volt. [V]	Input Volt. 18.0[V] Output Volt. [V]
0.00	15.159	15.158	15.158
0.10	15.157	15.156	15.155
0.20	15.155	15.155	15.154
0.30	15.155	15.154	15.153
0.40	15.154	15.153	15.152
0.50	15.153	15.152	15.152
0.60	15.153	15.152	15.151
0.70	15.152	15.151	15.151
0.77	15.151	15.151	15.150
—	—	—	—

COSEL

Model	ZUS101215
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+15V0.7A

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

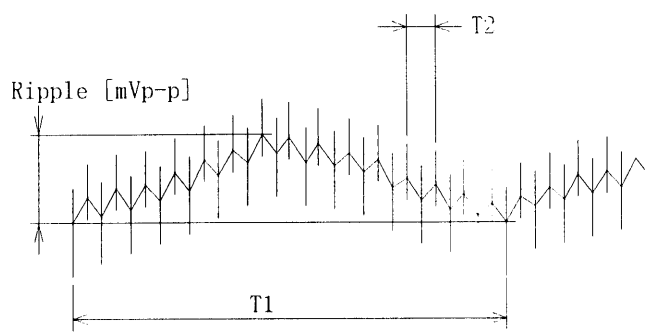


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

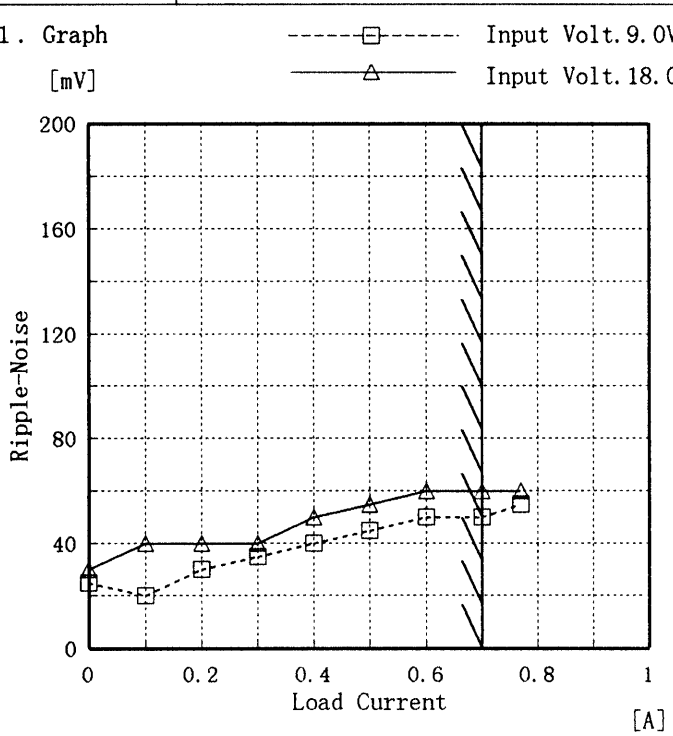
Load Current [A]	Input Volt. 9.0 [V] Ripple Output Volt. [mV]	Input Volt. 18.0 [V] Ripple Output Volt. [mV]
0.00	6	5
0.10	5	5
0.20	5	5
0.30	5	5
0.40	7	7
0.50	7	7
0.60	8	8
0.70	10	9
0.77	11	10
—	—	—
—	—	—

COSEL

Model	ZUS101215
Item	Ripple-Noise リップルノイズ
Object	+15V0.700A

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

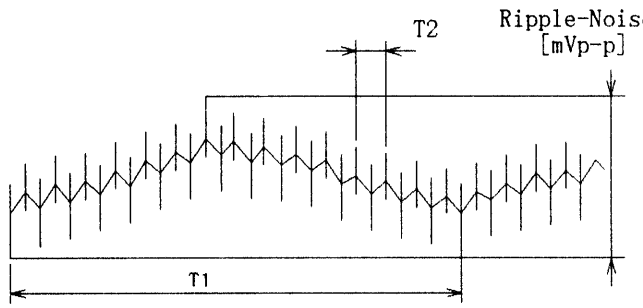


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

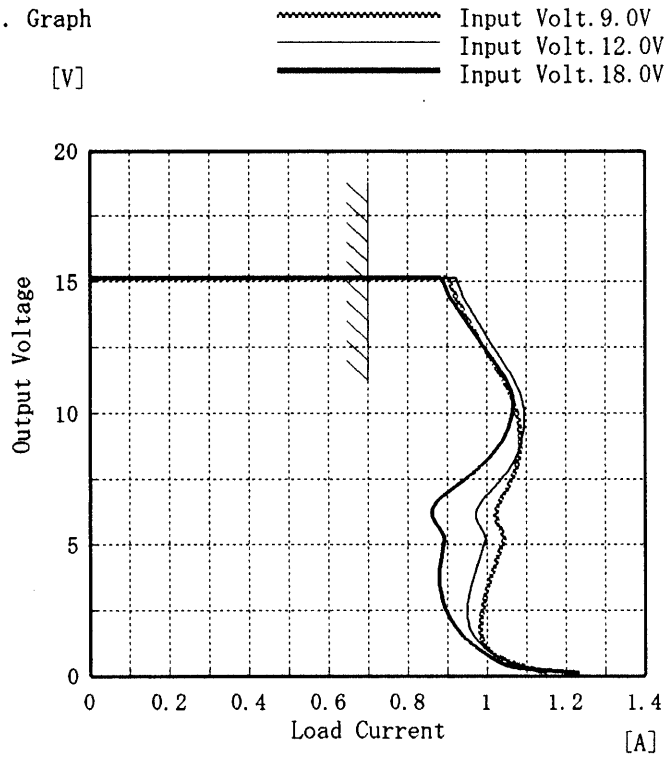
Load current [A]	Input Volt. 9.0 [V] Ripple-Noise [mV]	Input Volt. 18.0 [V] Ripple-Noise [mV]
0.00	25	30
0.10	20	40
0.20	30	40
0.30	35	40
0.40	40	50
0.50	45	55
0.60	50	60
0.70	50	60
0.77	55	60
—	—	—
—	—	—

COSEL

Model	ZUS101215
Item	Overcurrent Protection 過電流保護
Object	+15V0.700A

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]
15.00	0.00	0.00	0.00
14.25	0.93	0.95	0.91
13.50	0.95	0.97	0.94
12.00	1.01	1.03	1.01
10.50	1.06	1.09	1.07
9.00	1.08	1.09	1.04
7.50	1.07	1.04	0.95
6.00	1.02	0.97	0.86
4.50	1.03	0.98	0.88
3.00	0.99	0.95	0.88
1.50	0.98	0.96	0.93
0.00	1.15	1.15	1.23

COSEL

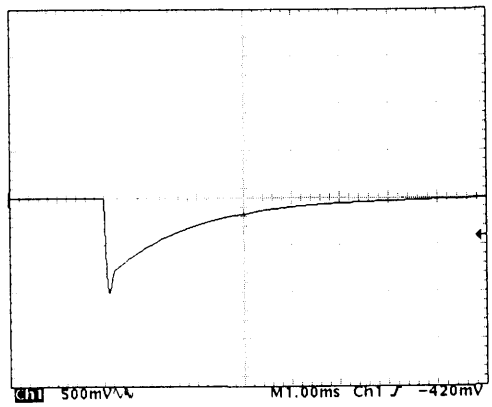
Model	ZUS101215
Item	Dynamic Load Responce 動的負荷変動
Object	+15V 0.350A

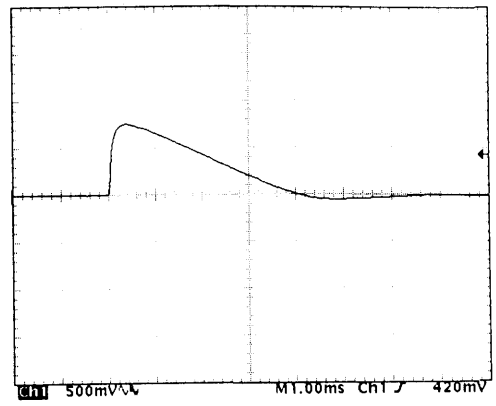
Temperature 25℃
Testing Circuitry Figure A

Input Volt. 12 V
Cycle 100 mS

Load Current

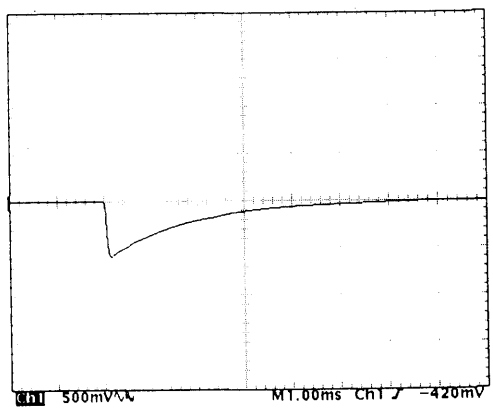
Min. Load ⟷
Load 100 %

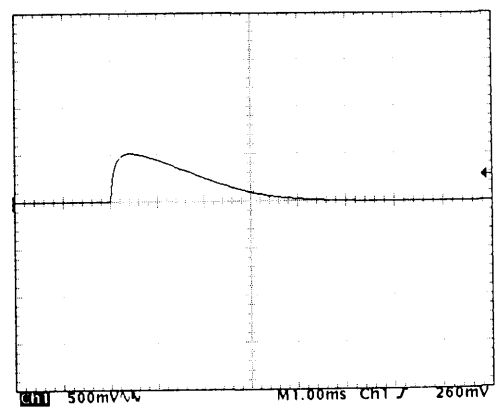




500 mV/div

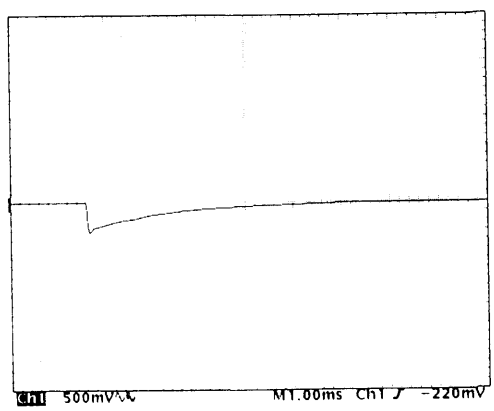
Min. Load ⟷
Load 50 %

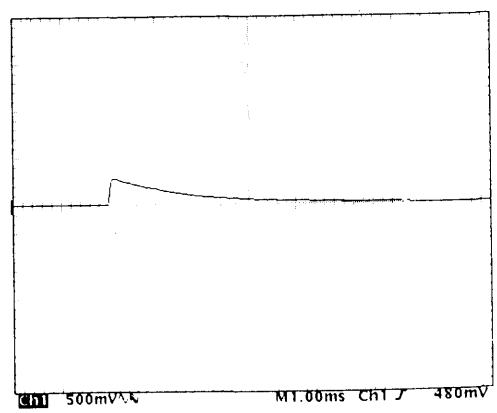




500 mV/div

Load 50%⟷
Load 100 %





500 mV/div

1 mS/div

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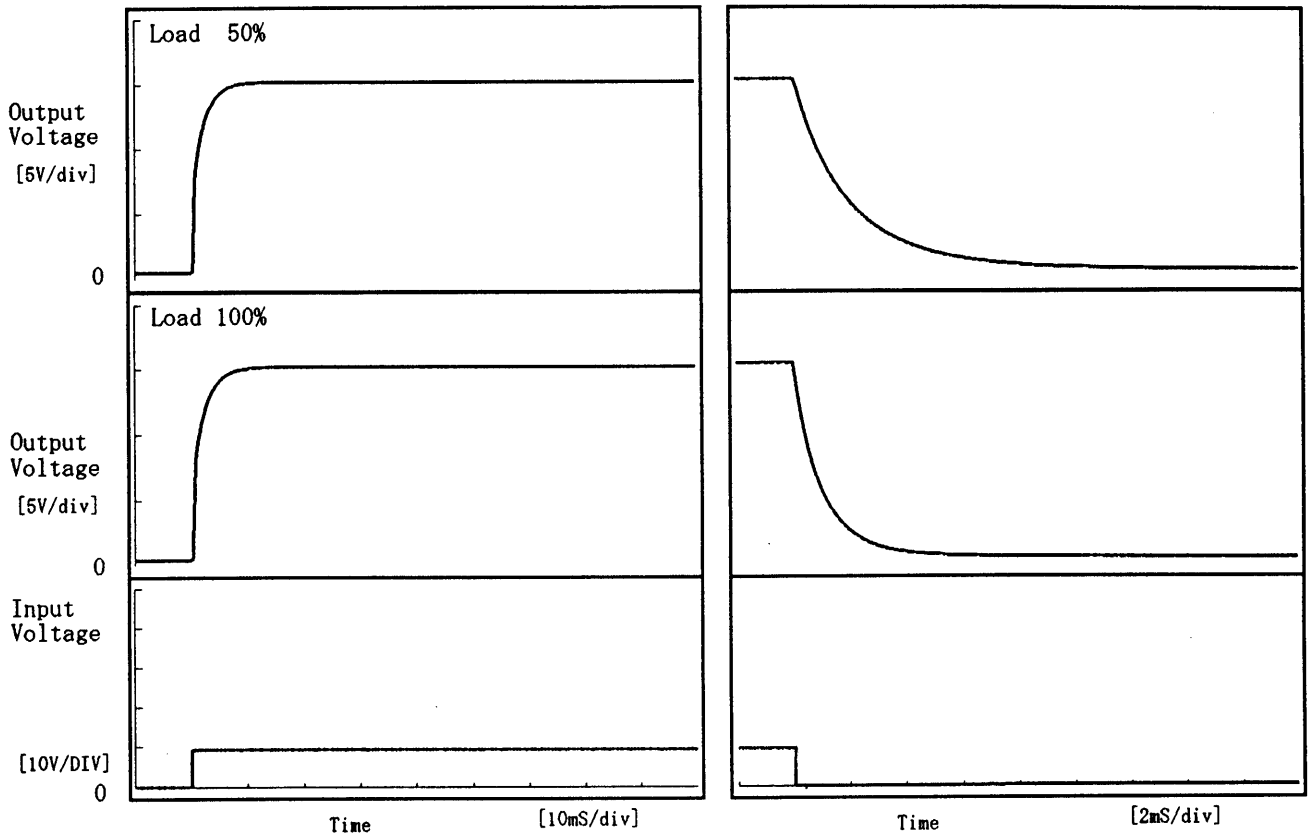
Model	ZUS101215		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	+15V0.700A		

1. Graph

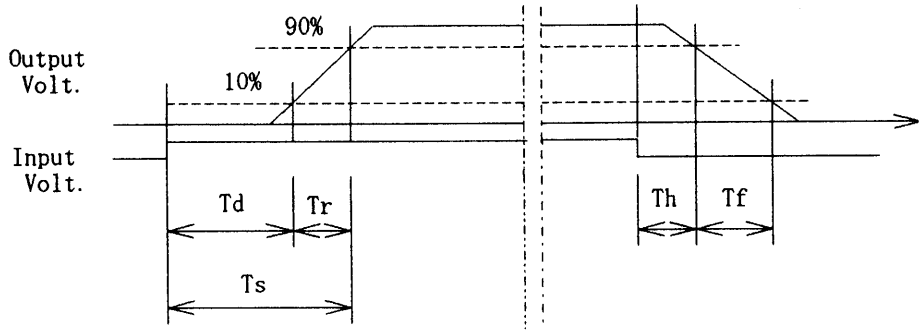
Input Volt. 9.0 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.40	3.80	4.20	0.28	5.41
100 %	0.40	4.05	4.45	0.14	2.54

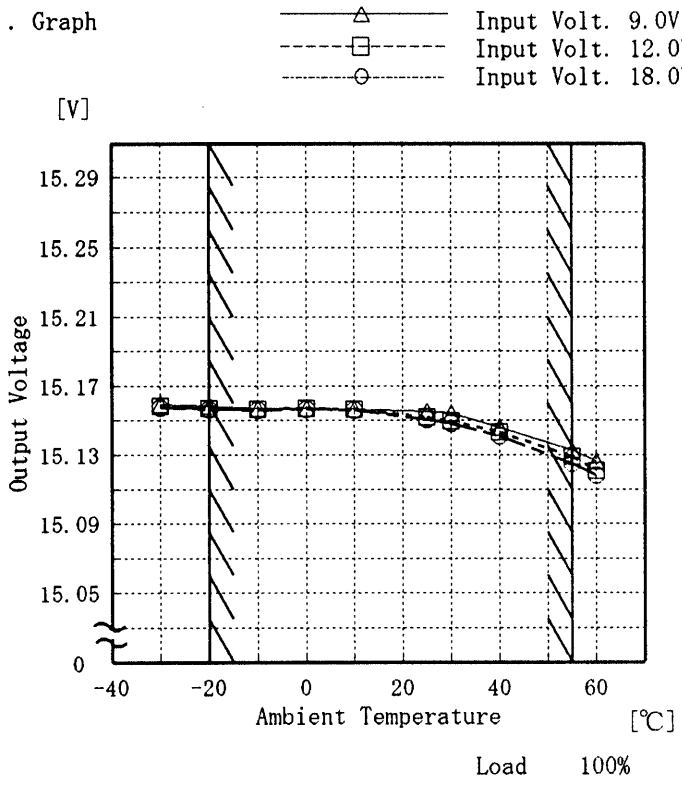


COSEL

Model	ZUS101215
Item	Ambient Temperature Drift 周囲温度変動
Object	+15V0.700A

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

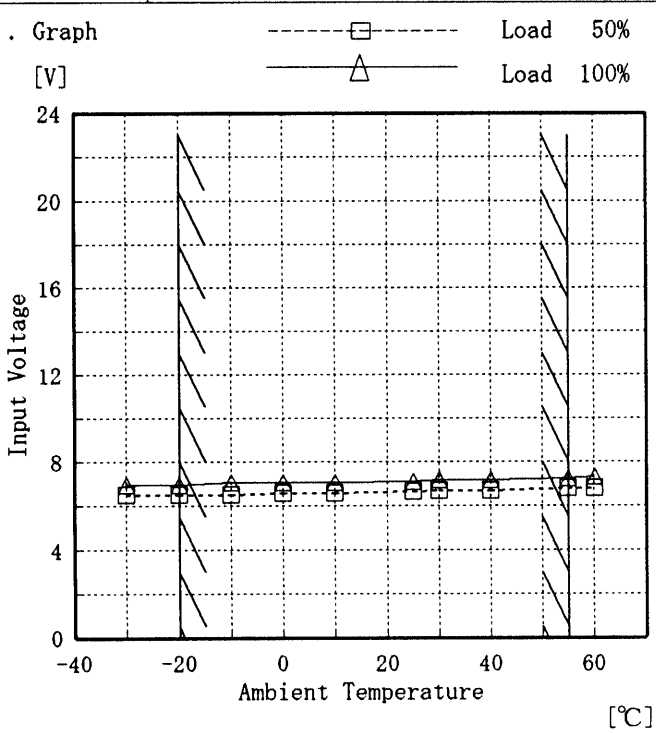
Temperature [℃]	Input Volt. 9.0[V] Output Volt. [V]	Input Volt. 12.0[V] Output Volt. [V]	Input Volt. 18.0[V] Output Volt. [V]
-30	15.159	15.158	15.158
-20	15.158	15.157	15.157
-10	15.157	15.157	15.156
0	15.157	15.157	15.157
10	15.157	15.157	15.156
25	15.155	15.152	15.151
30	15.154	15.150	15.148
40	15.146	15.143	15.141
55	15.133	15.129	15.125
60	15.126	15.121	15.118
—	—	—	—

COSEL

Model	ZUS101215
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+15V0.700A

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

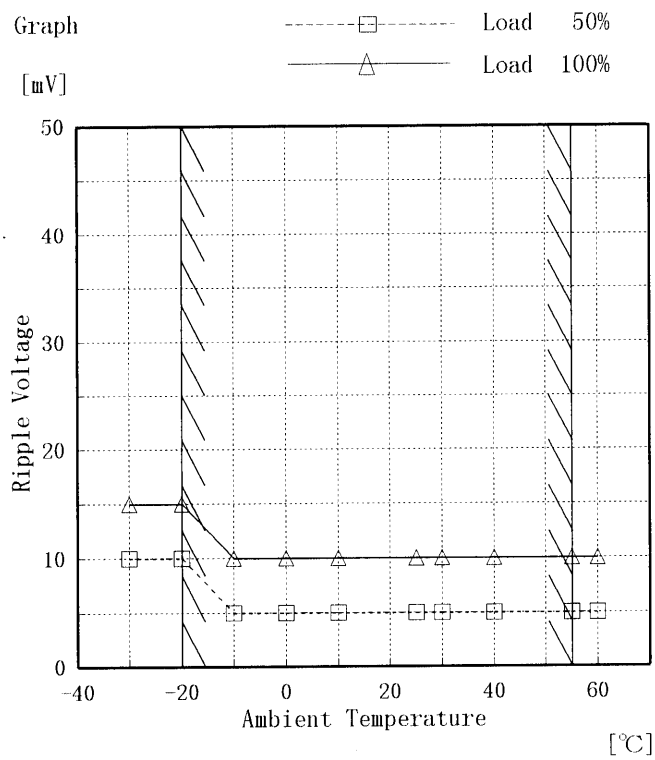
Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-30	6.5	7.0
-20	6.5	7.0
-10	6.5	7.1
0	6.6	7.1
10	6.6	7.1
25	6.7	7.1
30	6.7	7.2
40	6.7	7.2
55	6.8	7.2
60	6.8	7.3
—	—	—

COSEL

Model	ZUS101215
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	＋１５Ｖ０．７００Ａ

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

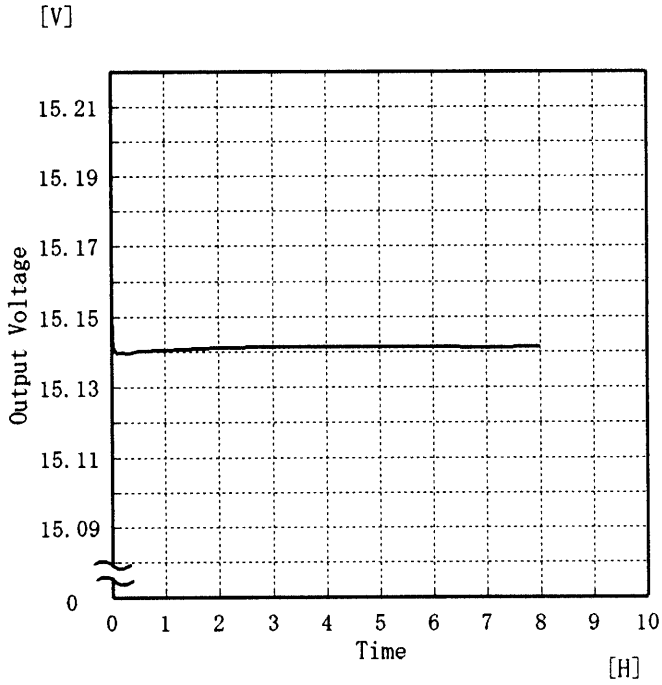
Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
-30	10	15
-20	10	15
-10	5	10
0	5	10
10	5	10
25	5	10
30	5	10
40	5	10
55	5	10
60	5	10
—	—	—

COSEL

Model	ZUS101215
Item	Time Lapse Drift 経時ドリフト
Object	+15V0.700A

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph



Input Volt. 12V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	15.151
0.5	15.140
1.0	15.141
2.0	15.141
3.0	15.141
4.0	15.142
5.0	15.141
6.0	15.142
7.0	15.141
8.0	15.142

COSEL

Model	ZUS101215	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A
Object	+15V0.700A	

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 : 0.000～0.700 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 0.000～0.700 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	0.000	15.167	±22	±0.2
Minimum Voltage	55	18.0	0.700	15.123		

COSEL

Model	ZUS101215
Item	Condensation 結露特性
Object	+15V0.700A

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	15.158	15	40
	2	15.147	15	40
	3	15.154	15	40
Load 100 %	1	15.156	20	60
	2	15.145	20	60
	3	15.153	20	60

Input Volt. 12.0 V

COSEL

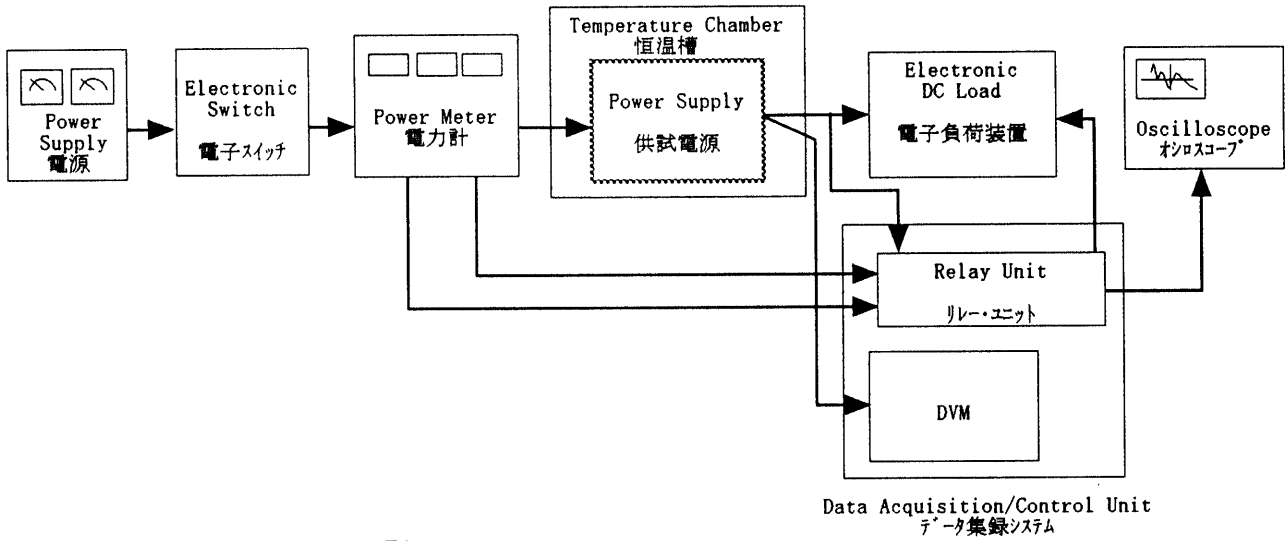


Figure A