参考資料

COSEL

TEST DATA OF ZUS1R52415

(24.0V 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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Object	+15V0.1A

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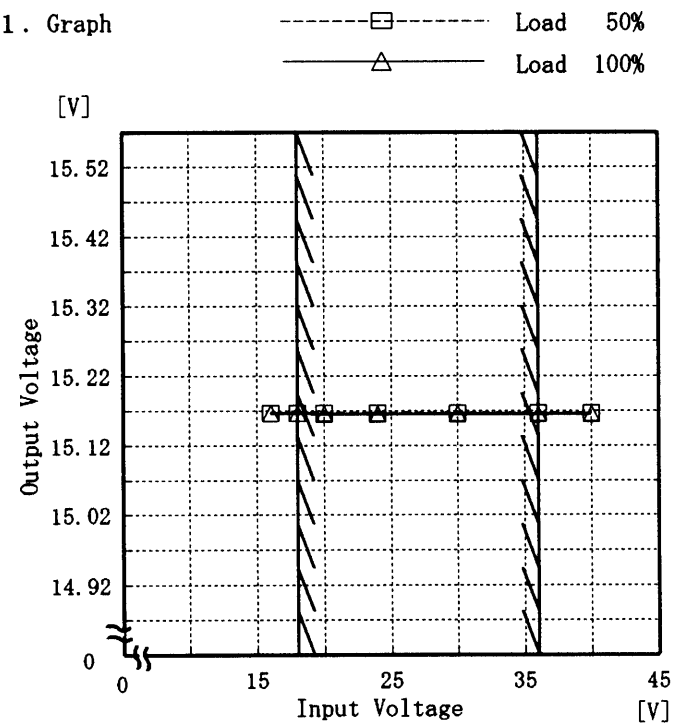


Note: Slanted line shows the range of the rated input voltage.

(注)斜線は定格入力電圧範囲を示す。

2. Values

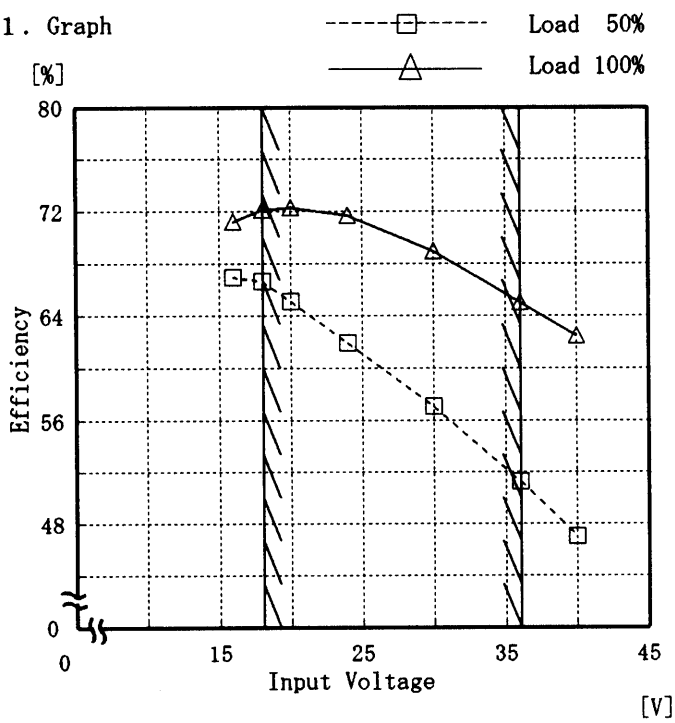
Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
16.0	15.166	15.166
18.0	15.166	15.166
20.0	15.166	15.165
24.0	15.166	15.165
30.0	15.166	15.165
36.0	15.166	15.165
40.0	15.166	15.165
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS1R52415
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 [%]
16.0	66.9	71.2
18.0	66.6	72.1
20.0	65.1	72.3
24.0	61.9	71.7
30.0	57.0	68.9
36.0	51.3	65.1
40.0	47.0	62.5
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―	―	―
―	―	―
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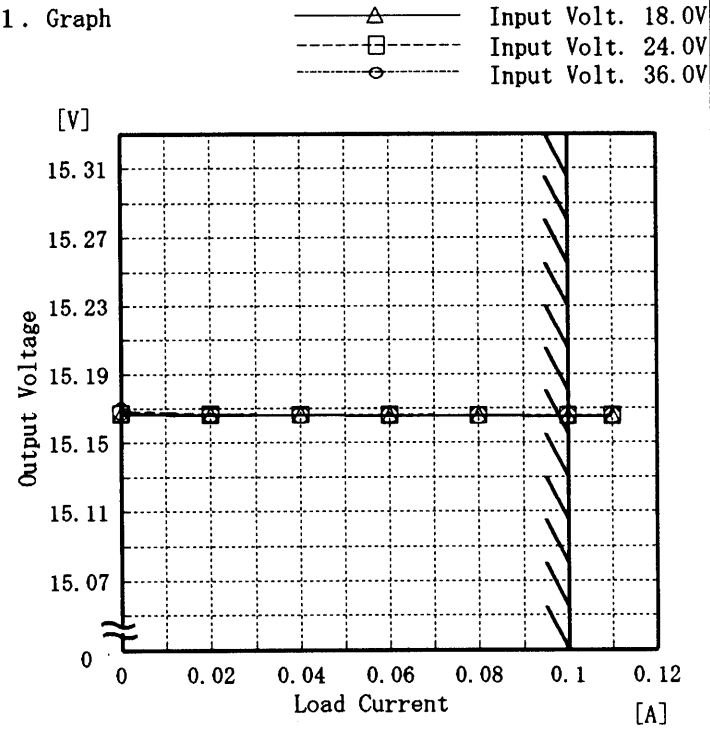
COSEL

Model	ZUS1R52415
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

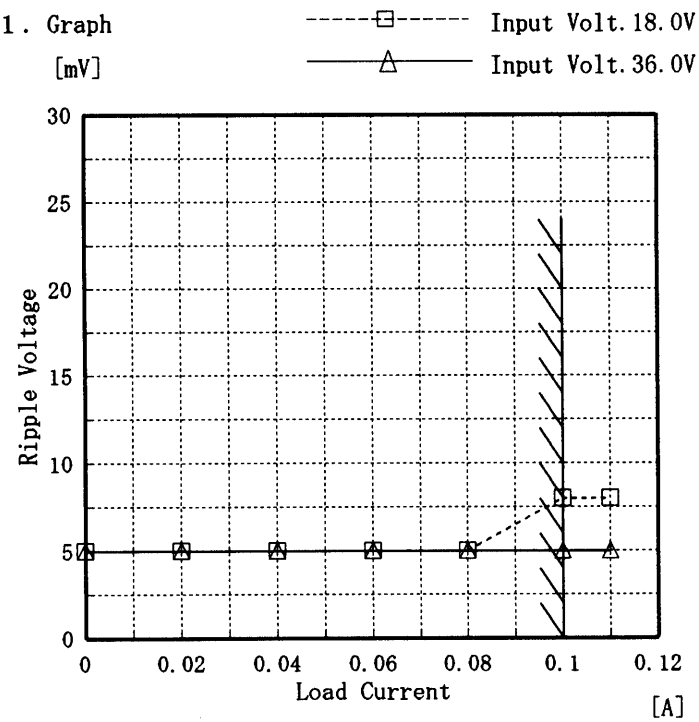
Load Current [A]	Input Volt. 18.0[V] Output Volt. [V]	Input Volt. 24.0[V] Output Volt. [V]	Input Volt. 36.0[V] Output Volt. [V]
0.00	15.167	15.167	15.168
0.02	15.166	15.167	15.167
0.04	15.166	15.166	15.166
0.06	15.166	15.166	15.166
0.08	15.166	15.166	15.166
0.10	15.166	15.166	15.166
0.11	15.165	15.166	15.165
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	ZUS1R52415
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

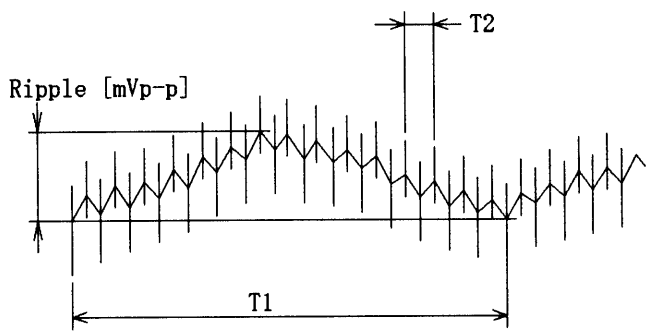


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

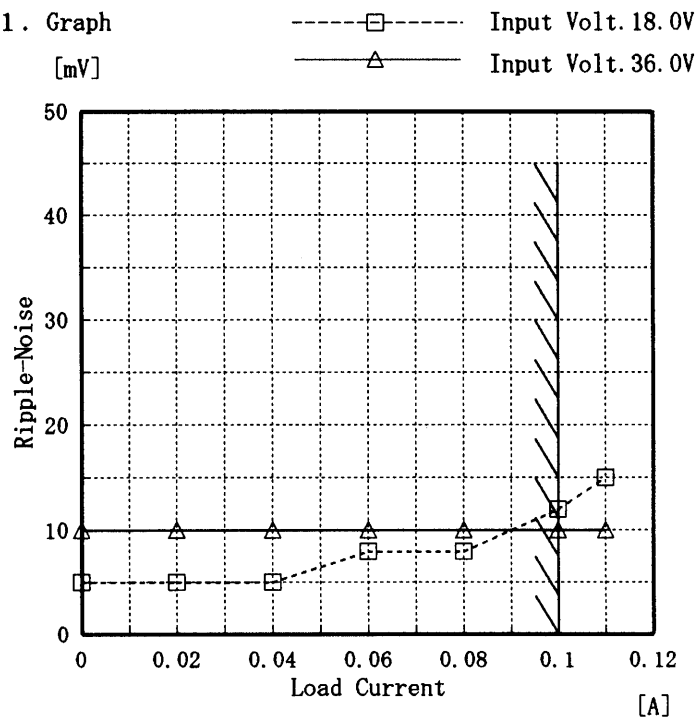
Load Current [A]	Input Volt. 18.0 [V] Ripple Output Volt. [mV]	Input Volt. 36.0 [V] Ripple Output Volt. [mV]
0.00	5	5
0.02	5	5
0.04	5	5
0.06	5	5
0.08	5	5
0.10	8	5
0.11	8	5
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS1R52415
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

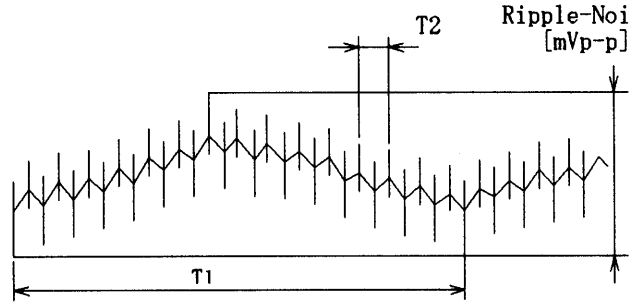


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

2. Values

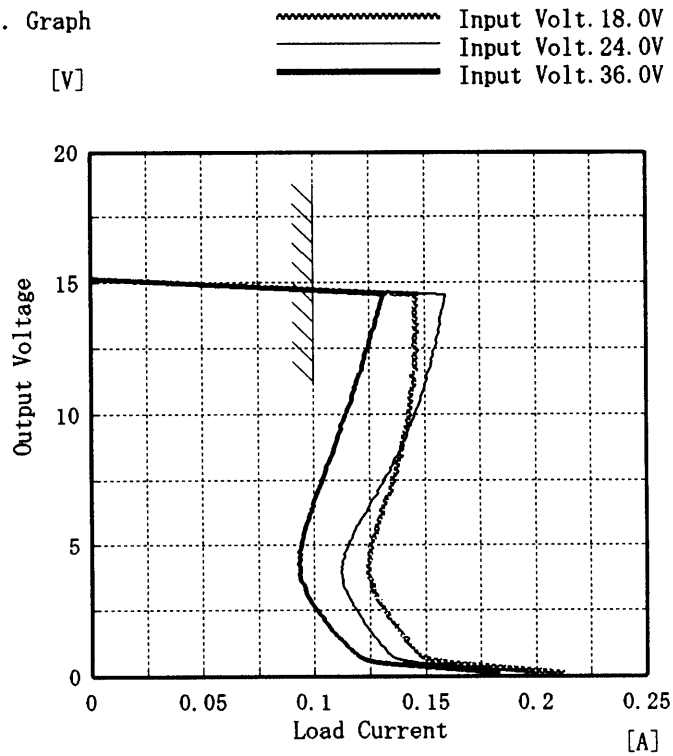
Load current [A]	Input Volt. 18.0 [V] Ripple-Noise [mV]	Input Volt. 36.0 [V] Ripple-Noise [mV]
0.00	5	10
0.02	5	10
0.04	5	10
0.06	8	10
0.08	8	10
0.10	12	10
0.11	15	10
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZUS1R52415
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. 18.0[V] Load Current [A]	Input Volt. 24.0[V] Load Current [A]	Input Volt. 36.0[V] Load Current [A]
15.00	0.15	0.16	0.13
14.25	0.15	0.16	0.13
13.50	0.15	0.16	0.13
12.00	0.15	0.15	0.12
10.50	0.14	0.15	0.12
9.00	0.14	0.14	0.11
7.50	0.14	0.13	0.10
6.00	0.13	0.12	0.10
4.50	0.12	0.11	0.09
3.00	0.13	0.11	0.10
1.50	0.14	0.13	0.11
0.00	0.21	0.20	0.18

COSEL

Model	ZUS1R52415		
Item	Dynamic Load Responce 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+15V0.1A		

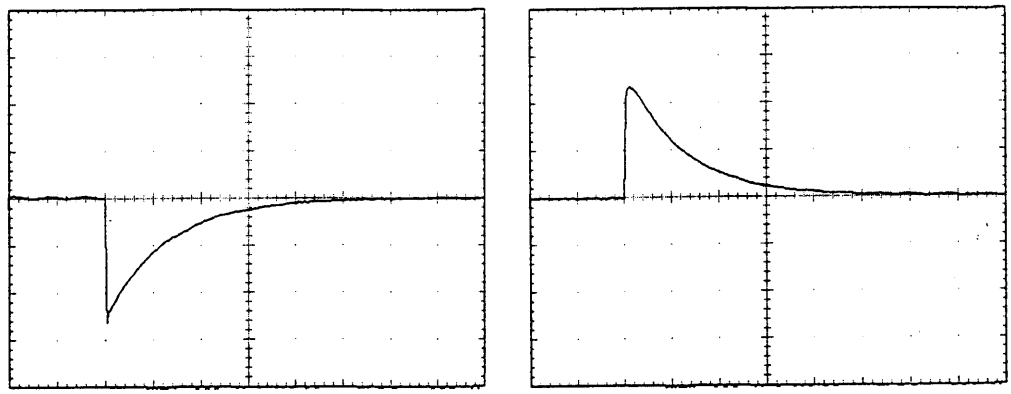
Input Volt. 24.0 V

Cycle 100 mS

Load Current

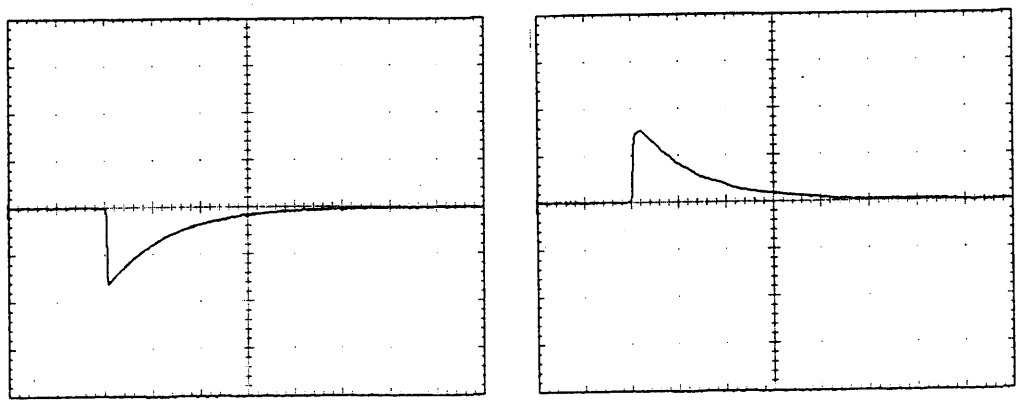
Min. Load ⟷
Load 100 %

100 mV/div



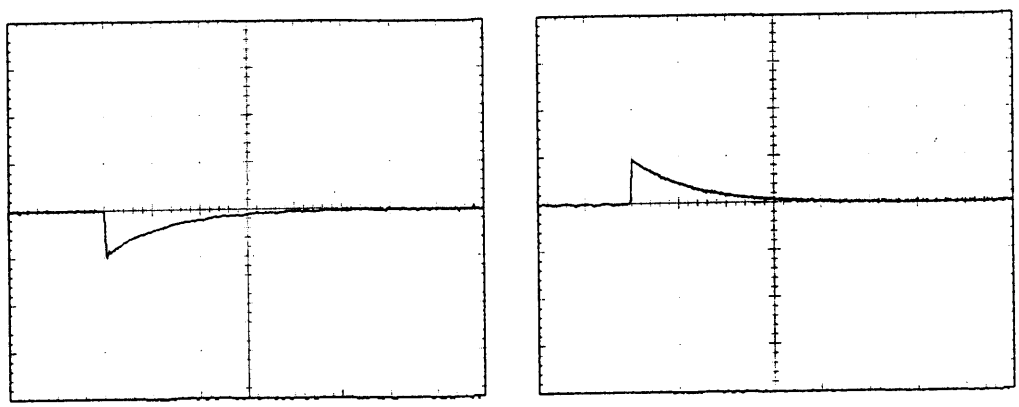
Min. Load ⟷
Load 50 %

100 mV/div



Load 50%⟷
Load 100 %

100 mV/div



1 mS/div

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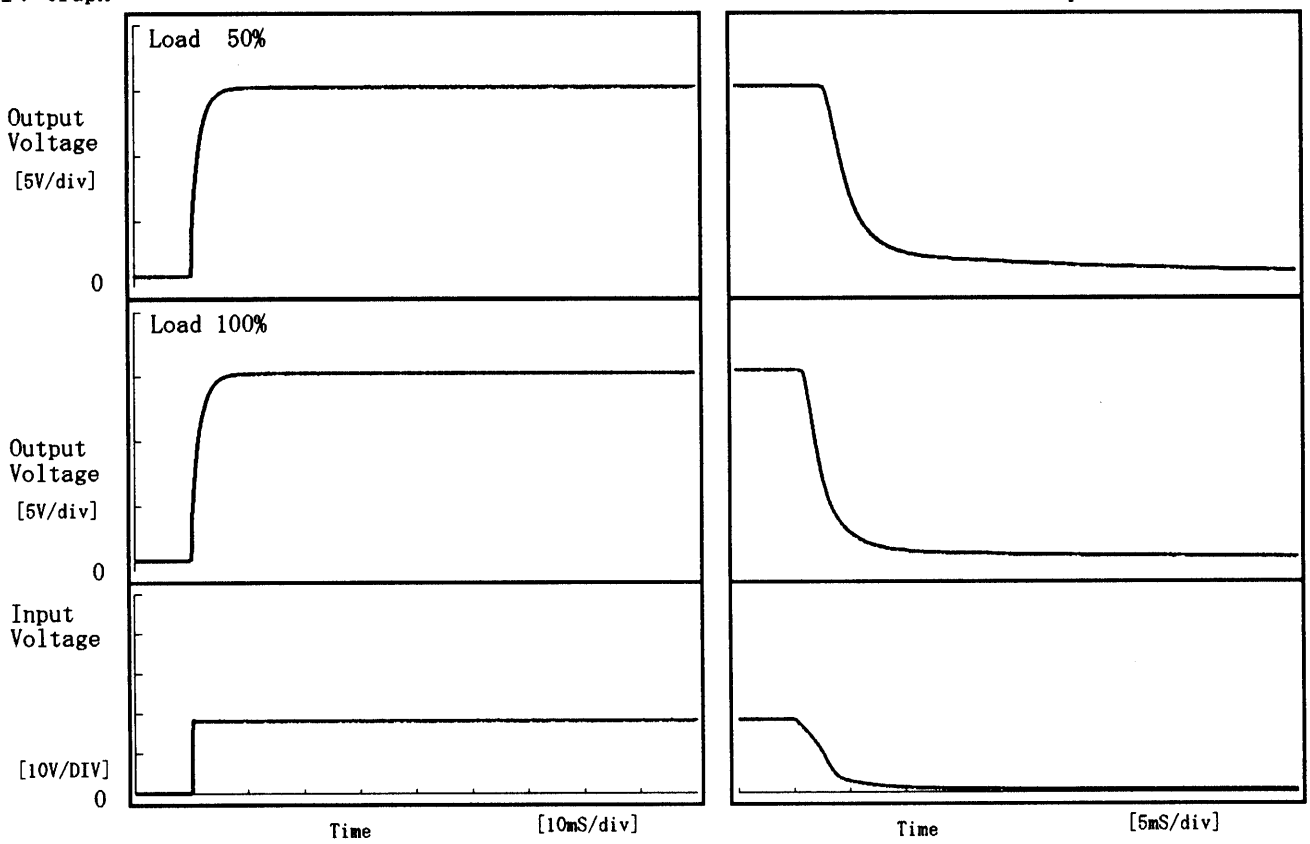
Model	ZUS1R52415		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	+15V0.1A		

1. Graph

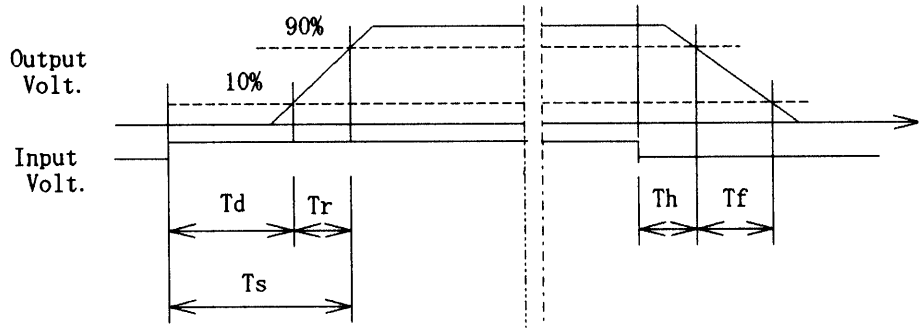
Input Volt. 18.0 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.05	3.20	3.25	3.35	17.25
100 %	0.05	3.25	3.30	1.35	6.55



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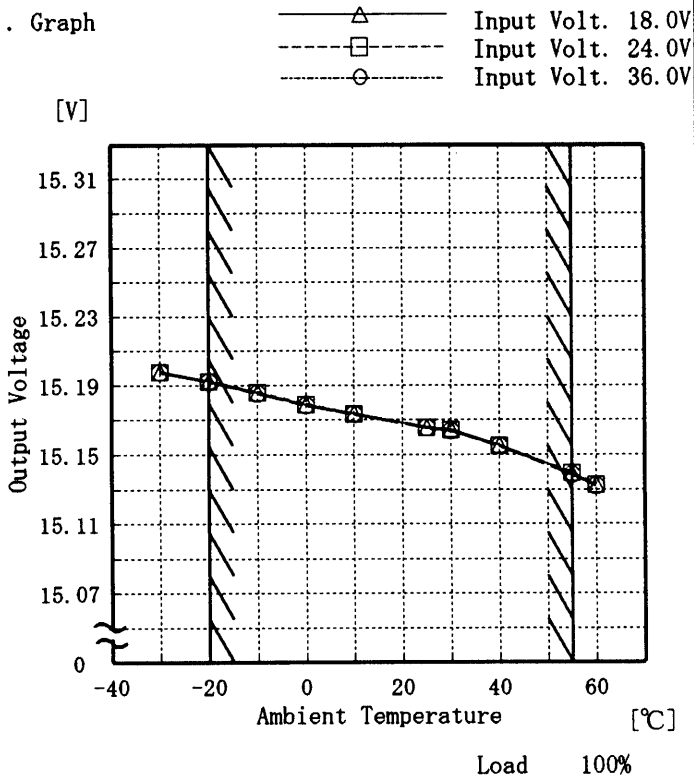
Model	ZUS1R52415
Item	Ambient Temperature Drift 周囲温度変動
Object	+15V0.1A

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. 18.0[V] Output Volt. [V]	Input Volt. 24.0[V] Output Volt. [V]	Input Volt. 36.0[V] Output Volt. [V]
-30	15.198	15.198	15.198
-20	15.192	15.192	15.192
-10	15.186	15.186	15.185
0	15.179	15.179	15.179
10	15.174	15.174	15.173
25	15.166	15.166	15.165
30	15.165	15.164	15.164
40	15.155	15.155	15.155
55	15.139	15.139	15.139
60	15.133	15.132	15.132
—	—	—	—

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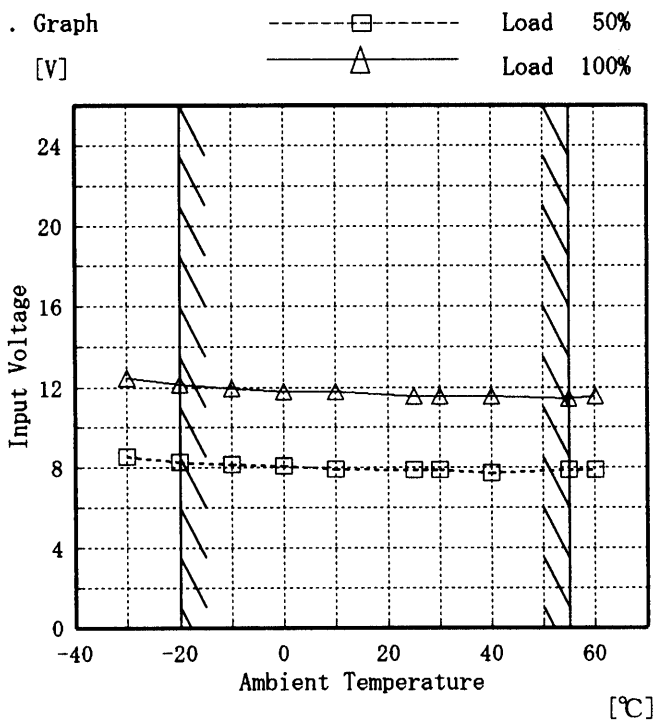
Model	ZUS1R52415
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+15V0.1A

Testing Circuitry Figure A

1. Graph



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

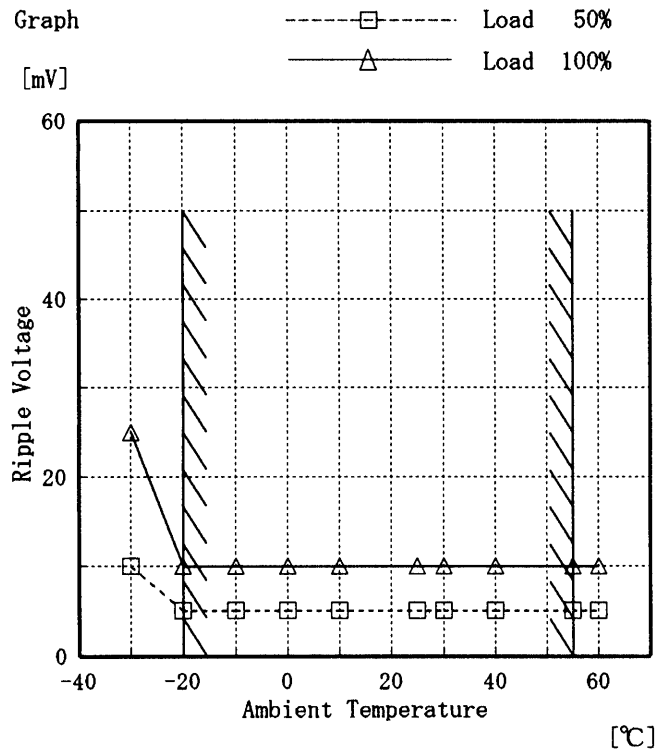
Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-30	8.6	12.5
-20	8.3	12.1
-10	8.2	11.9
0	8.1	11.8
10	7.9	11.8
25	7.9	11.6
30	7.9	11.6
40	7.7	11.6
55	7.9	11.4
60	7.9	11.6
—	—	—

COSEL

Model	ZUS1R52415
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. 18.0 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

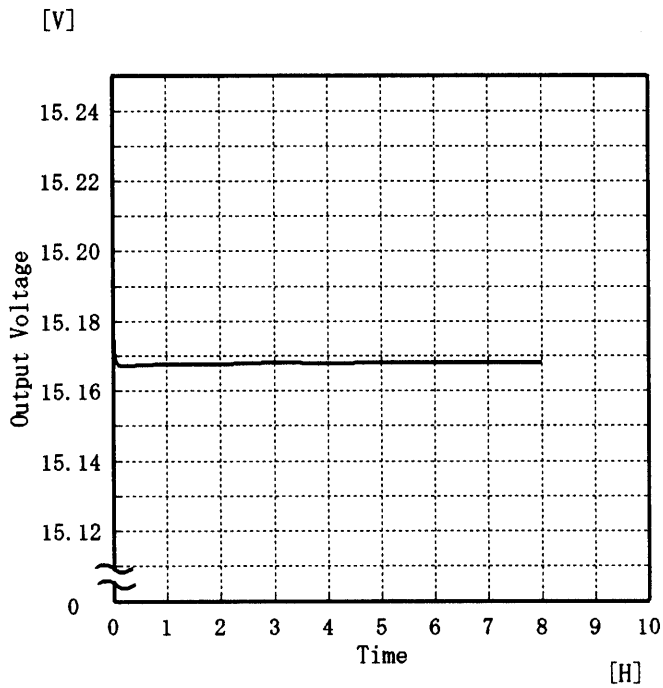
Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
-30	10	25
-20	5	10
-10	5	10
0	5	10
10	5	10
25	5	10
30	5	10
40	5	10
55	5	10
60	5	10
—	—	—

COSEL

Model	ZUS1R52415
Item	Time Lapse Drift 経時ドリフト
Object	+15V0.1A

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph



Input Volt. 24V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	15.177
0.5	15.168
1.0	15.168
2.0	15.168
3.0	15.168
4.0	15.168
5.0	15.168
6.0	15.168
7.0	15.168
8.0	15.168

COSEL

Model	ZUS1R52415	
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 : 18.0～36.0 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 18.0～36.0 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	36.0	0.0	15.196	±30	±0.2
Minimum Voltage	55	36.0	0.1	15.137		

COSEL

Model	ZUS1R52415
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	15.101	5	10
	2	15.105	5	10
	3	15.101	5	10
Load 100 %	1	15.098	10	15
	2	15.103	10	15
	3	15.100	10	15

Input Volt. 24.0 V

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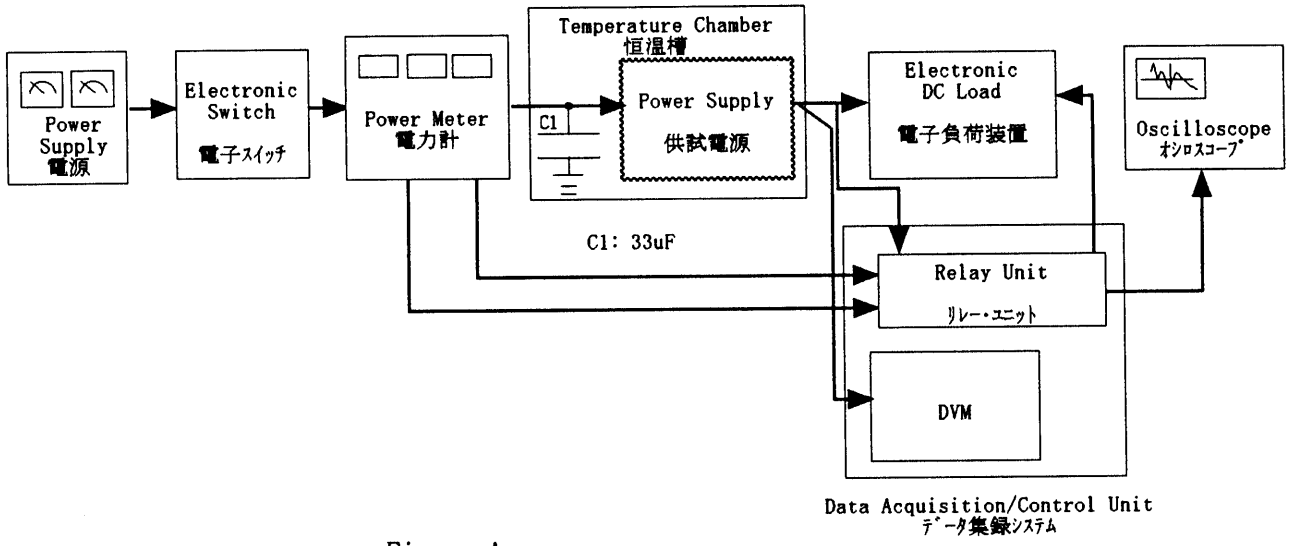

Figure A