参考資料

COSEL

TEST DATA OF LDA300W-15

(200V INPUT)

Regulated DC Power Supply

Date : Feb. 22. 1997

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コーセル株式会社

COSEL CO.,LTD.

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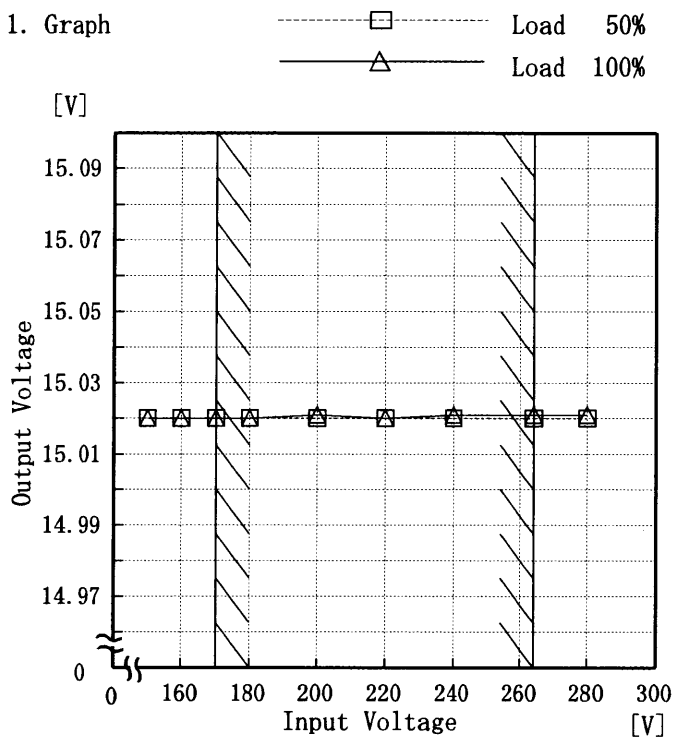
COSEL

Model	LDA300W-15
Item	Line Regulation 静的入力変動
Object	+15V22A

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]
150	15.020	15.020
160	15.020	15.020
170	15.020	15.020
180	15.020	15.020
200	15.020	15.021
220	15.020	15.020
240	15.020	15.021
264	15.020	15.021
280	15.020	15.021

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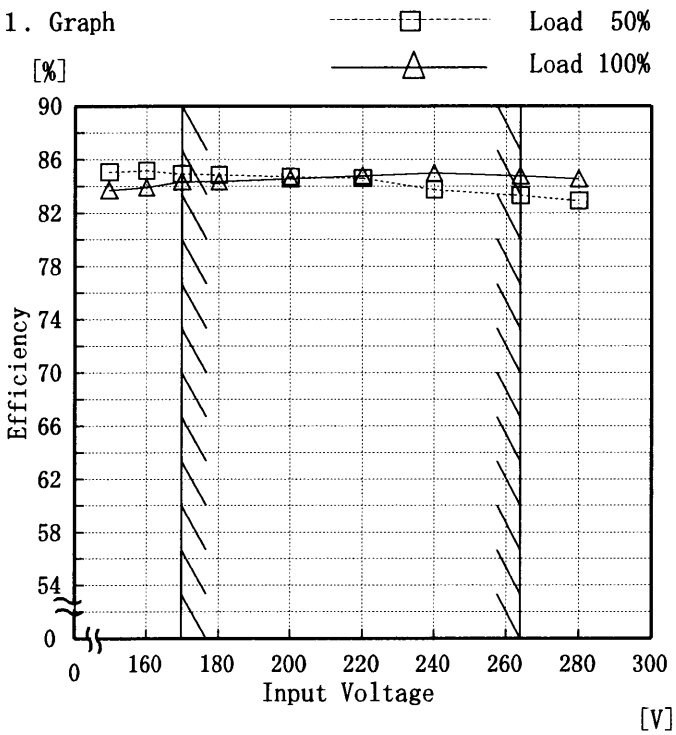
COSEL

Model	LDA300W-15
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

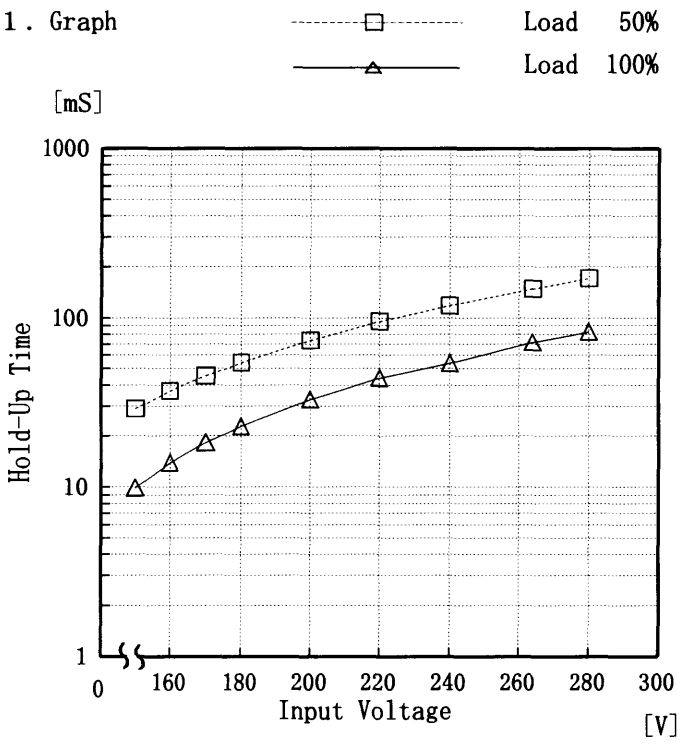
Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]
150	85.07	83.70
160	85.16	83.92
170	84.94	84.34
180	84.86	84.35
200	84.73	84.56
220	84.61	84.78
240	83.74	85.00
264	83.31	84.78
280	82.90	84.56

COSEL

Model	LDA300W-15
Item	Hold-Up Time 出力保持時間
Object	+15V22A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.

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

出力保持時間とは、ＡＣ入力断から出力電圧が、定電圧精度の規格範囲を保持しているところまでの時間。

(注)斜線は定格入力電圧範囲を示す。

2. Values

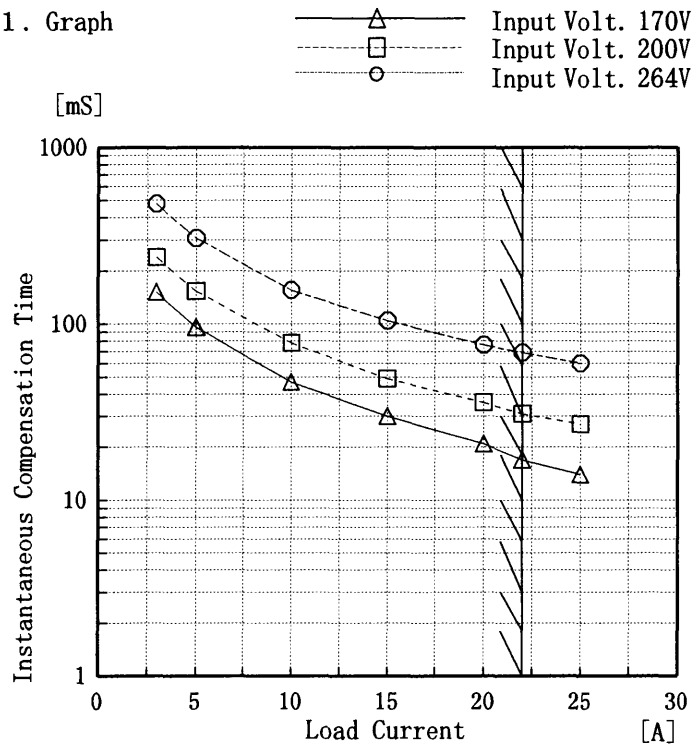
Input Voltage [V]	Load 50% Hold-Up Time [mS]	Load 100% Hold-Up Time [mS]
150	29	10
160	37	14
170	45	18
180	54	23
200	73	33
220	95	44
240	118	54
264	149	72
280	172	83

COSEL

Model	LDA300W-15
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+15V22A

Testing Circuitry Figure A 25℃

1. Graph



This duration covers from Shut-off of AC-IN to the moment when output voltage descends to its 95% of the rated.

Note: Slanted line shows the range of the rated load current.

瞬時停電保障時間とは、出力電圧が定格値の９５％になる時の瞬時停電時間をいう。

(注)斜線は定格負荷電流範囲を示す。

2. Values

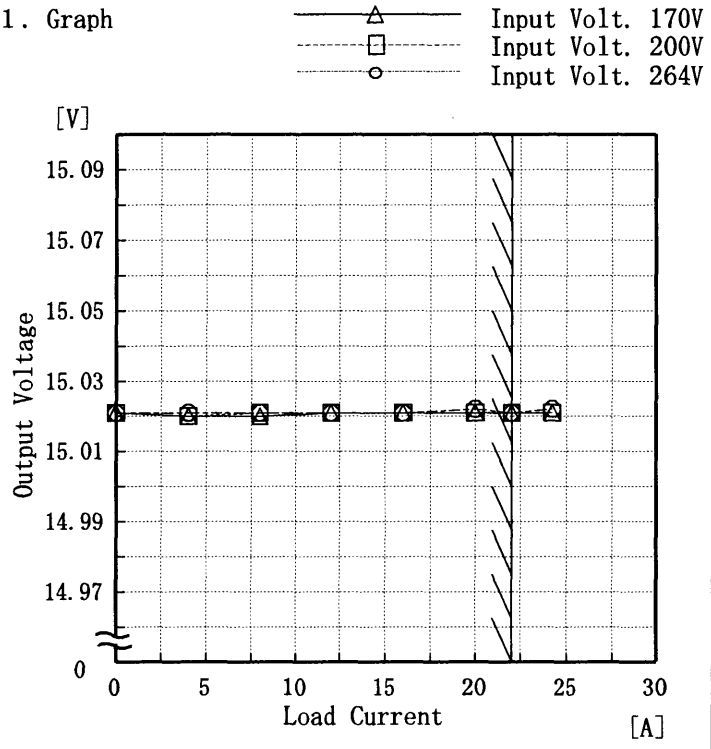
Load Current [A]	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
	Time [mS]		
0.0	—	—	—
3.0	152	239	478
5.0	96	154	306
10.0	47	78	156
15.0	30	49	105
20.0	21	36	76
22.0	17	31	69
25.0	14	27	60
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	LDA300W-15
Item	Load Regulation 静的負荷変動
Object	+15V22A

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

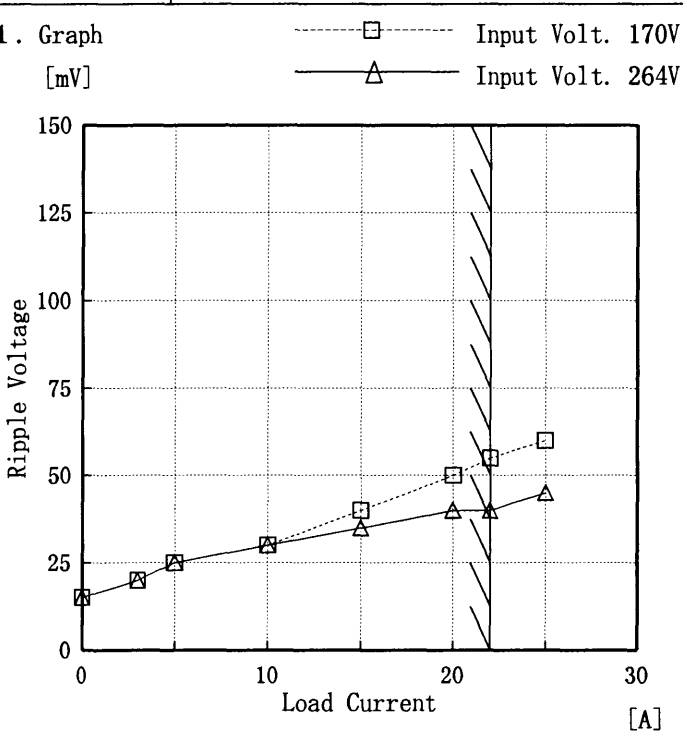
Load Current [A]	Input Volt. 170[V] Output Volt. [V]	Input Volt. 200[V] Output Volt. [V]	Input Volt. 264[V] Output Volt. [V]
0.0	15.021	15.021	15.021
4.0	15.020	15.020	15.021
8.0	15.020	15.021	15.021
12.0	15.021	15.021	15.021
16.0	15.021	15.021	15.021
20.0	15.021	15.021	15.022
22.0	15.021	15.021	15.021
24.2	15.021	15.021	15.022
—	—	—	—
—	—	—	—

COSEL

Model	LDA300W-15
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+15V22A

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

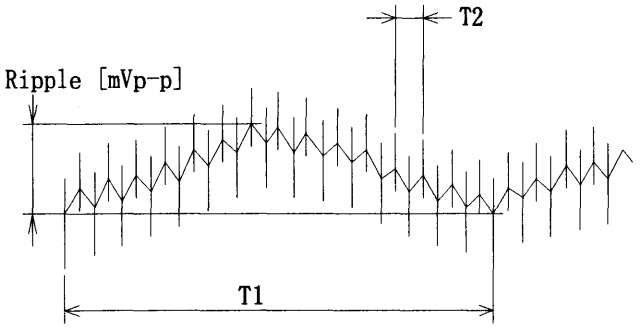


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

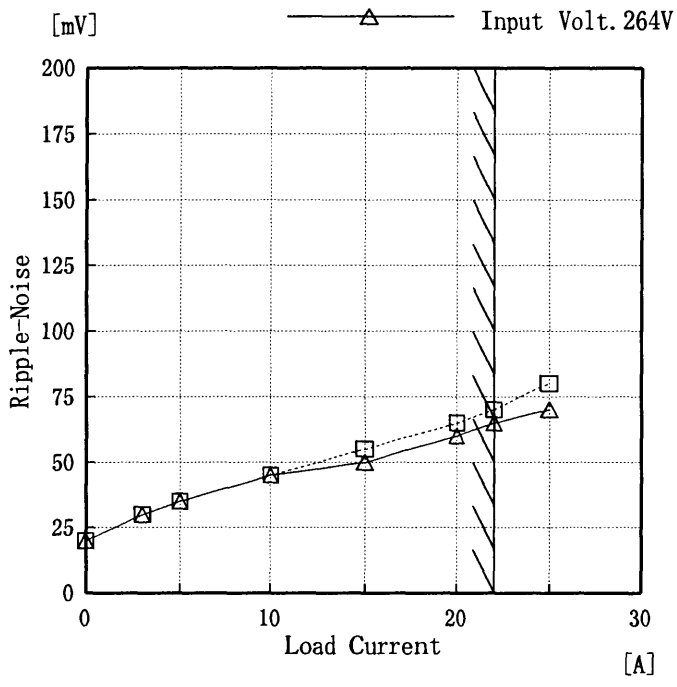
Load Current [A]	Input Volt. 170 [V] Ripple Output Volt. [mV]	Input Volt. 264 [V] Ripple Output Volt. [mV]
0.0	15	15
3.0	20	20
5.0	25	25
10.0	30	30
15.0	40	35
20.0	50	40
22.0	55	40
25.0	60	45
—	—	—
—	—	—
—	—	—

COSEL

Model	LDA300W-15
Item	Ripple-Noise　リップルノイズ
Object	+15V22A

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

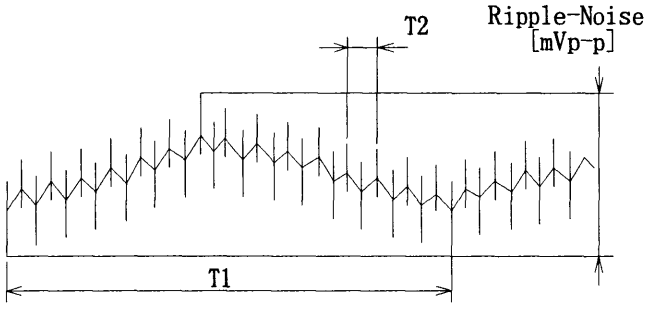


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

2. Values

Load current [A]	Input Volt. 170 [V] Ripple-Noise [mV]	Input Volt. 264 [V] Ripple-Noise [mV]
0.0	20	20
3.0	30	30
5.0	35	35
10.0	45	45
15.0	55	50
20.0	65	60
22.0	70	65
25.0	80	70
—	—	—
—	—	—
—	—	—

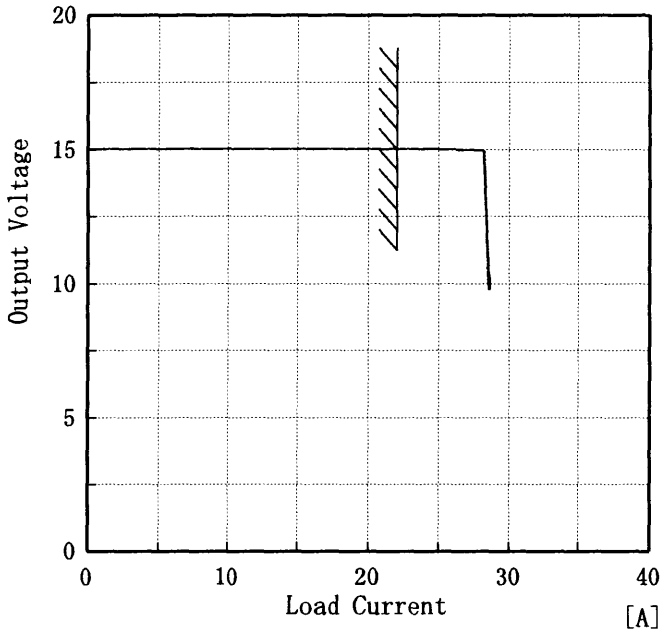
COSEL

Model	LDA300W-15
Item	Overcurrent Protection 過電流保護
Object	+15V22A

Temperature 25℃
Testing Circuitry Figure A

1. Graph

Input Volt. 170 V
Input Volt. 200 V
Input Volt. 264 V



Note: Slanted line shows the range of the rated load current.
Hiccap operation occurs when the output voltage is under 10V.

(注)斜線は定格負荷電流範囲を示す。
１０Ｖ以下は間欠動作となる。

2. Values

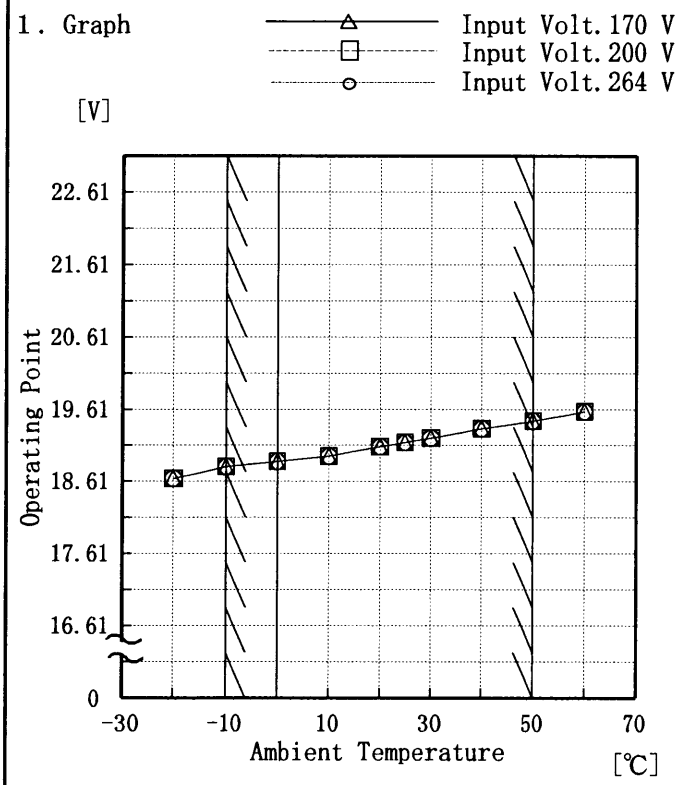
Output Voltage [V]	Input Volt. 170[V] Load Current [A]	Input Volt. 200[V] Load Current [A]	Input Volt. 264[V] Load Current [A]
15.00	28.24	28.19	28.15
14.25	28.26	28.22	28.21
13.50	28.30	28.27	28.28
12.00	28.36	28.36	28.38
10.50	28.46	28.47	28.51
9.00	—	—	—
7.50	—	—	—
6.00	—	—	—
4.50	—	—	—
3.00	—	—	—
1.50	—	—	—
0.00	—	—	—

COSEL

Model	LDA300W-15
Item	Overvoltage Protection 過電圧保護
Object	+15V22A

Testing Circuitry Figure A

1. Graph



Note: Slanted line shows the range of the rated ambient temperature.

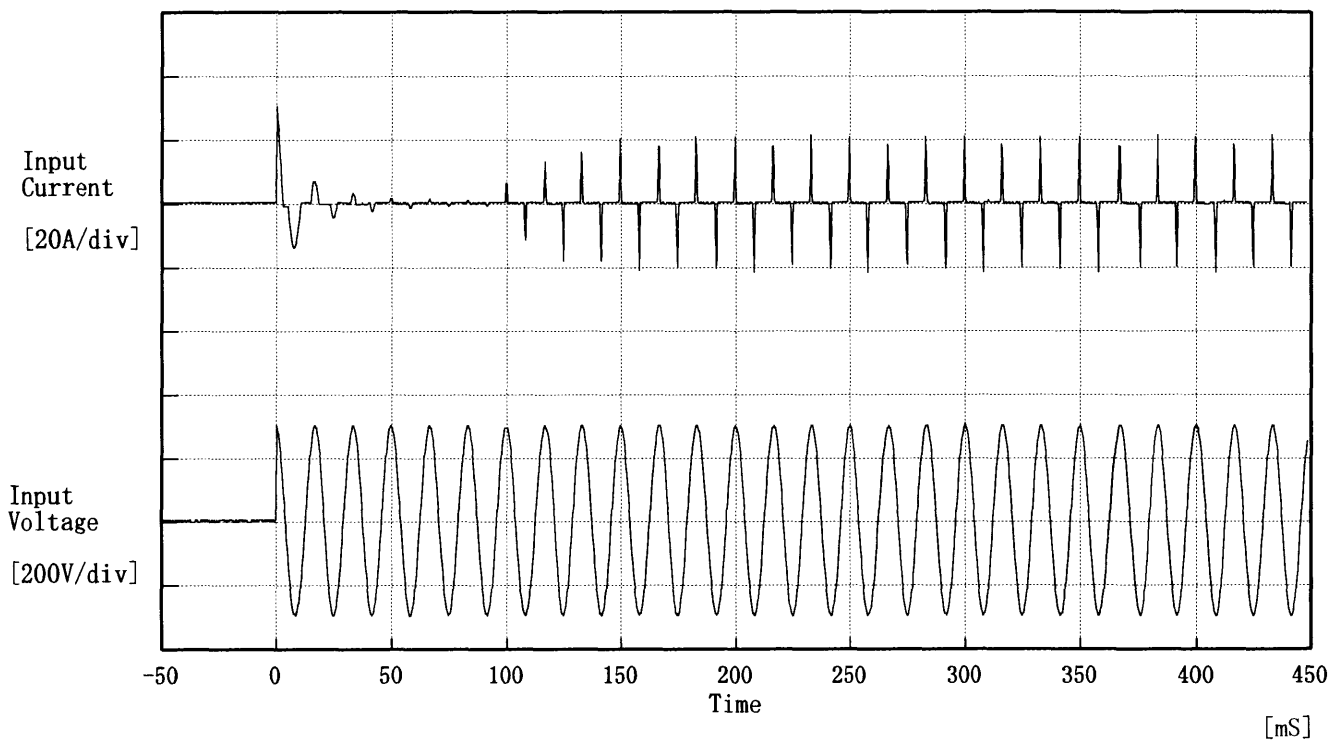
(注)斜線は定格周囲温度範囲を示す。

2. Values

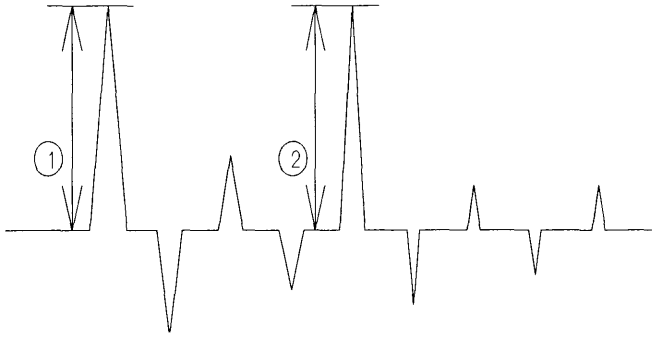
Ambient Temp. [℃]	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
	Operating Point [V]		
-20	18.65	18.65	18.65
-10	18.82	18.82	18.82
0	18.89	18.89	18.89
10	18.96	18.96	18.96
20	19.09	19.09	19.09
25	19.15	19.15	19.15
30	19.21	19.21	19.21
40	19.34	19.34	19.34
50	19.45	19.45	19.45
60	19.58	19.58	19.58
—	—	—	—

COSEL

Model	LDA300W-15		
Item	Inrush Current 突入電流	Temperature	25℃
		Testing Circuitry	Figure A
Object	————————		



Input Voltage 200 V
Frequency 60 Hz
Load 100 %
Inrush Current
① 30.60 [A]
② 21.60 [A]



COSEL

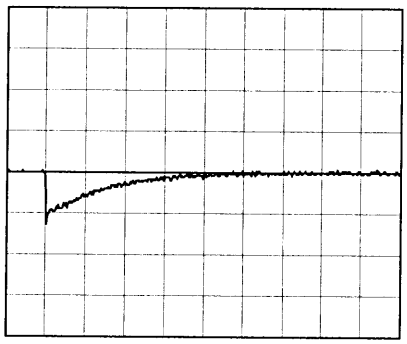
Model	LDA300W-15
Item	Dynamic Load Responce 動的負荷変動
Object	+15V22A

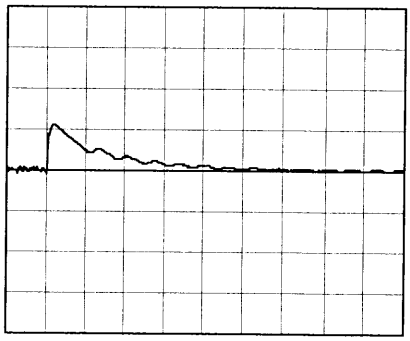
Temperature 25℃
Testing Circuitry Figure A

Input Volt. 200 V
Cycle 1000 mS

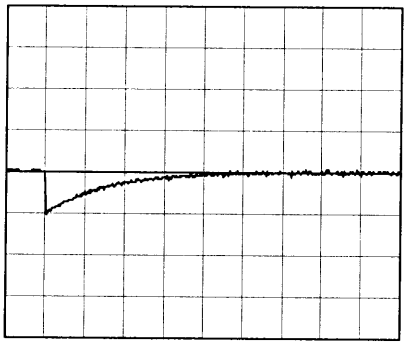
Load Current

Min. Load ←→
Load 100 %

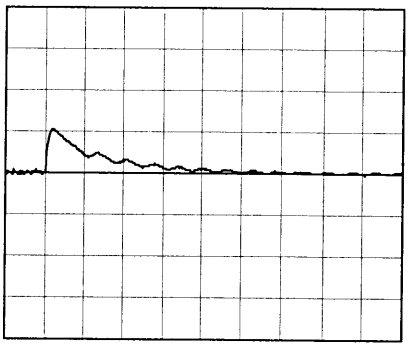




Min. Load ←→
Load 50 %



100 mV/div



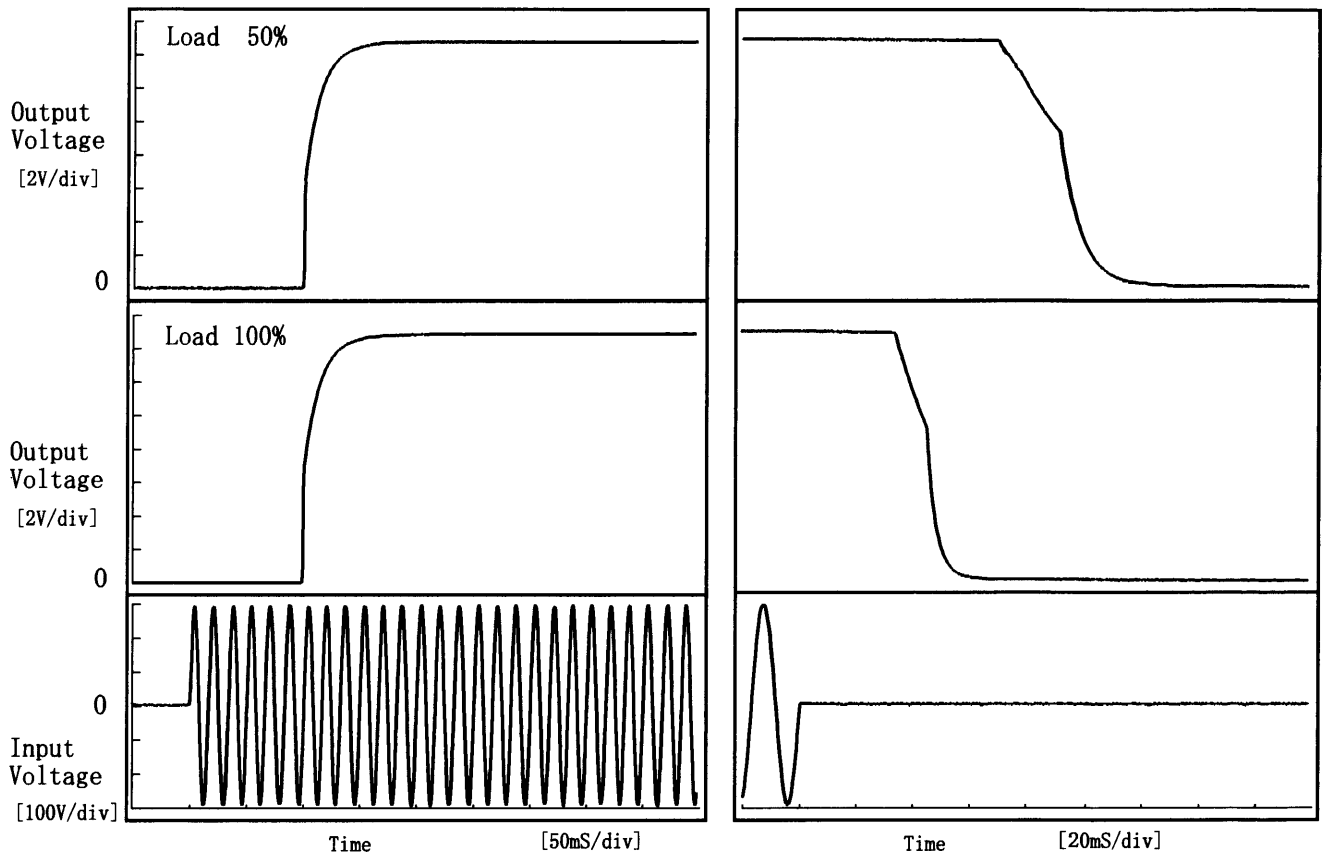
10 mV/div

COSEL

Model	LDA300W-15		
Item	Rise and Fall Time　立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+15V22A		

1. Graph

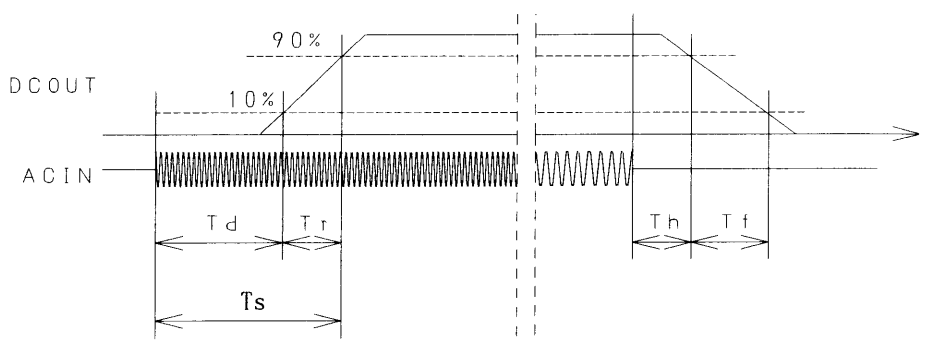
Input Volt. 200 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	98.8	21.5	120.3	76.1	28.0
100 %	98.8	20.1	119.3	36.2	15.3

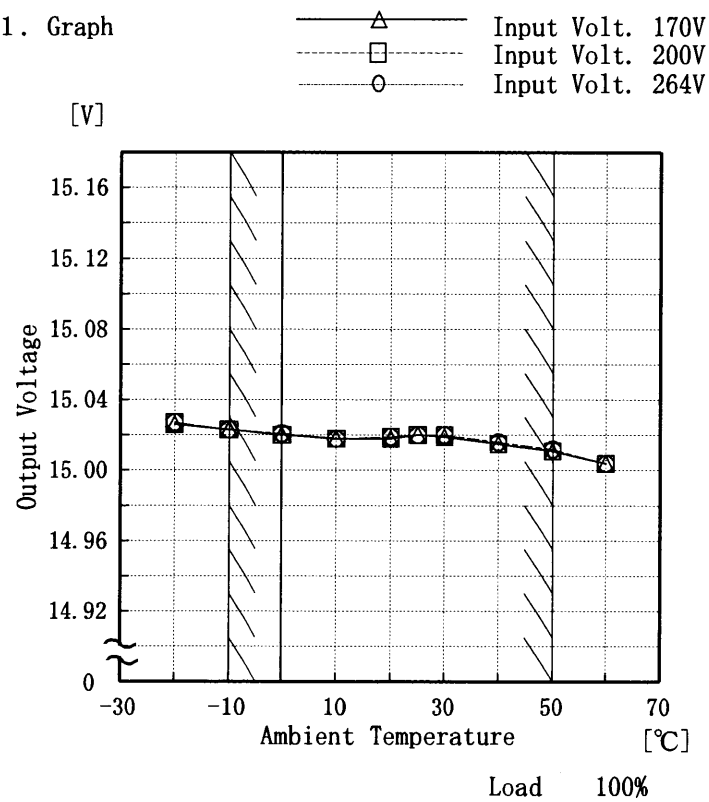


COSEL

Model	LDA300W-15
Item	Ambient Temperature Drift 周囲温度変動
Object	+15V22A

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

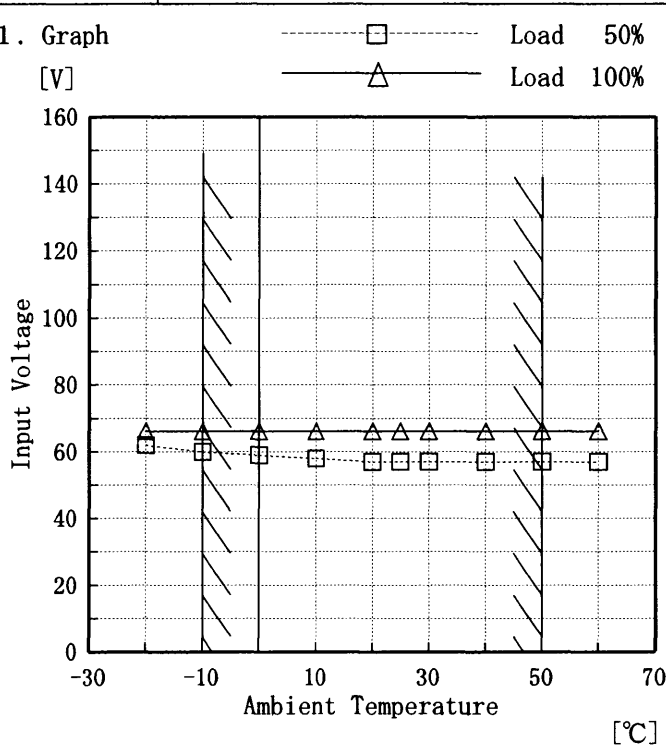
Temperature [℃]	Input Volt. 170[V] Output Volt. [V]	Input Volt. 200[V] Output Volt. [V]	Input Volt. 264[V] Output Volt. [V]
-20	15.026	15.027	15.027
-10	15.023	15.023	15.023
0	15.020	15.020	15.021
10	15.018	15.018	15.018
20	15.018	15.019	15.019
25	15.020	15.020	15.020
30	15.019	15.020	15.020
40	15.015	15.015	15.016
50	15.011	15.011	15.012
60	15.004	15.004	15.004
—	—	—	—

COSEL

Model	LDA300W-15
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+15V22A

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

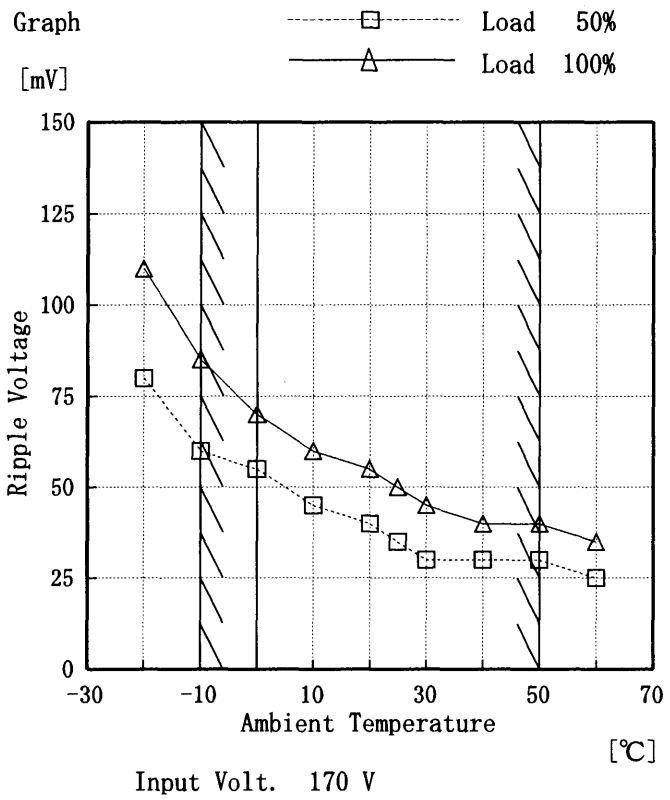
Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-20	62	66
-10	60	66
0	59	66
10	58	66
20	57	66
25	57	66
30	57	66
40	57	66
50	57	66
60	57	66
—	—	—

COSEL

Model	LDA300W-15
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	+15V22A

Testing Circuitry Figure A

1. Graph



Input Volt. 170 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

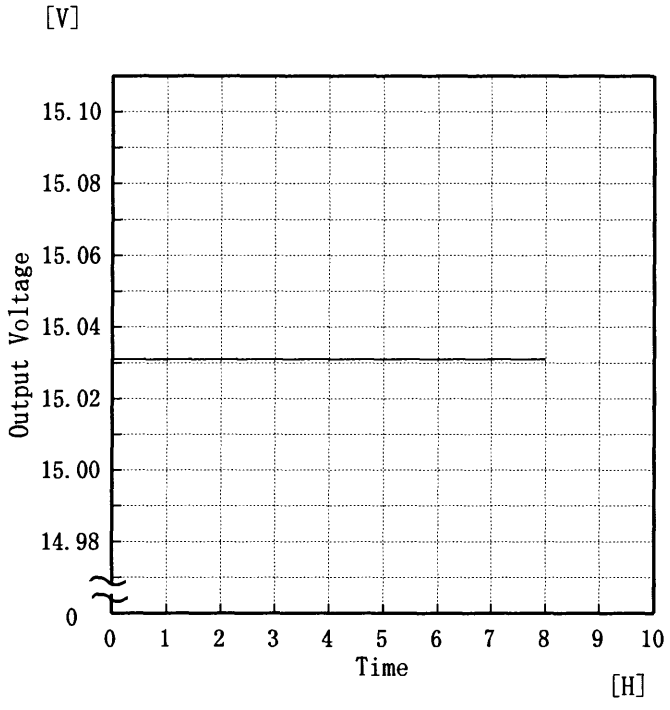
Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
-20	80	110
-10	60	85
0	55	70
10	45	60
20	40	55
25	35	50
30	30	45
40	30	40
50	30	40
60	25	35
—	—	—

COSEL

Model	LDA300W-15
Item	Time Lapse Drift 経時ドリフト
Object	+15V22A

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph



Input Volt. 200V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	15.032
0.5	15.031
1.0	15.031
2.0	15.031
3.0	15.031
4.0	15.031
5.0	15.031
6.0	15.031
7.0	15.031
8.0	15.031

COSEL

Model	LDA300W-15	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A
Object	+15V22A	

Output Voltage Accuracy

This is defined as the maximum value of the output voltage regulation load, temperature and input voltage vary at random in the range as specified below.

Temperature : -10～50 ℃
Input Voltage : 170～264 V
Load Current : 0～22 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

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 -10～50 ℃
入力電圧 170～264 V
負過電流 0～22 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	-10	264	0	15.023	±5	±0.037
Minimum Voltage	50	170	22	15.012		

COSEL

Model	LDA300W-15	
Item	Condensation 結露特性	Testing Circuitry Figure A
Object	+15V22A	

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 45%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45%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	15.03	50	65
	2	15.03	50	65
	3	15.03	50	65
Load 100 %	1	15.03	50	65
	2	15.03	50	65
	3	15.03	50	65

Input Volt. 200 V

COSEL

Model	LDA300W-15
Item	Leakage Current　漏洩電流
Object	+15V22A

Testing Circuitry　Figure B

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	—	—	—
(B) UL	—	—	—
(C) CSA	—	—	—

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 220 [V]	Input Volt. 264 [V]
(D) VDE	0.32	0.37	0.52

2. Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

交流入力の両相について測定し、その大きい方を漏洩電流測定値とする。

Load 100 %

COSEL

Model	LDA300W-15
Item	Line Noise Tolerance 入力雑音耐量
Object	+15V22A

Testing Circuitry Figure C

1. Results

Pulse Width [nS]	MODE	Operating Point of Overvoltage Protection [V] 過電圧保護動作値	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON	19.10	no regulation
	NORMAL	19.10	no regulation
1000	COMMON	19.10	no regulation
	NORMAL	19.10	no regulation

Conditions

Input Voltage :200 V
Pulse Voltage :2000 V
Pulse Cycle :10 mS
Pulse Input Duration:1 min. or more
Load :100 %

COSEL

Model	LDA300W-15
Item	Conducted Emission 雑音端子電圧
Object	+15V22A

Testing Circuitry Figure D

1. Graph

Remarks

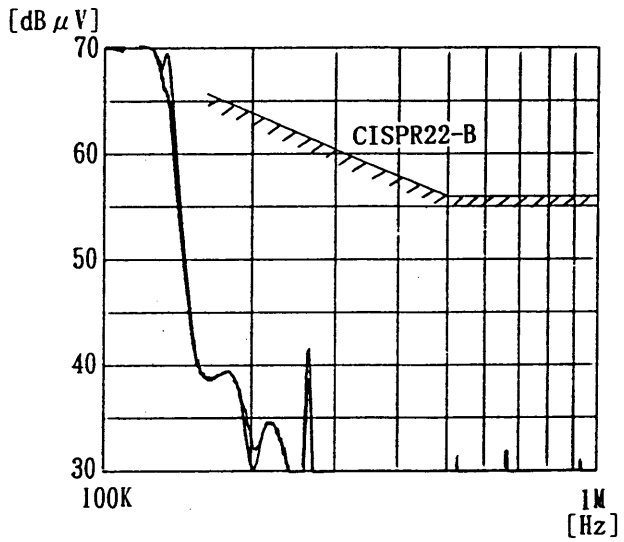
Input Volt. 240 V

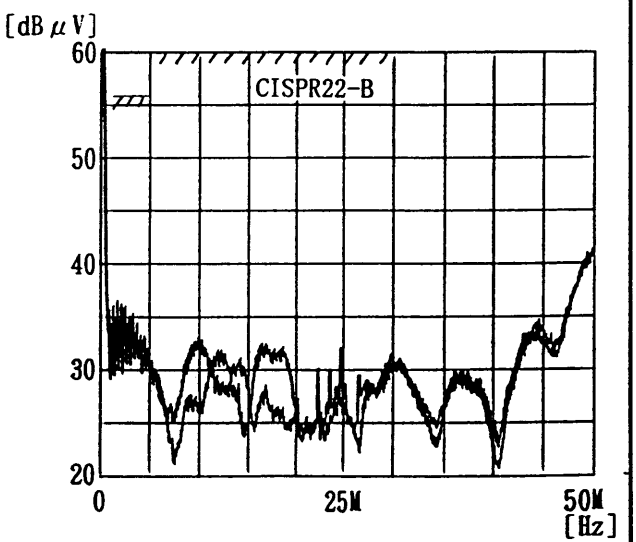
Load 100 %

Note: Slanted line shows the range of Tolerance.

(注)斜線は許容値を示す。

NO	Standards	Standards Complied	Frequency [MHz]	Tolerance [dB/μV]
1	FCC Class A		0.45～1.6	60
			1.6～30	69.5
2	FCC Class B		0.45～30	48
3	VCCI -1		0.15～0.5	79
			0.5～30	73
4	VCCI -2		0.15～0.5	66-56
			0.5～5	56
			5～30	60
5	CISPR 22 Class A (EN55022)		0.15～0.5	79
			0.5～30	73
6	CISPR 22 Class B (EN55022)	○	0.15～0.5	66-56
			0.5～5	56
			5～30	60





COSEL

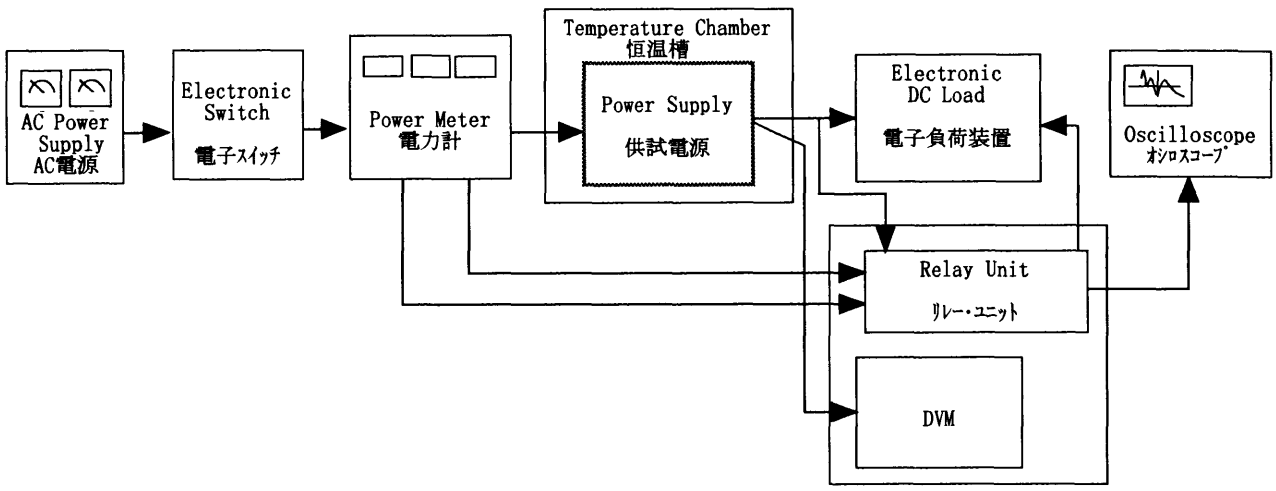


Figure A

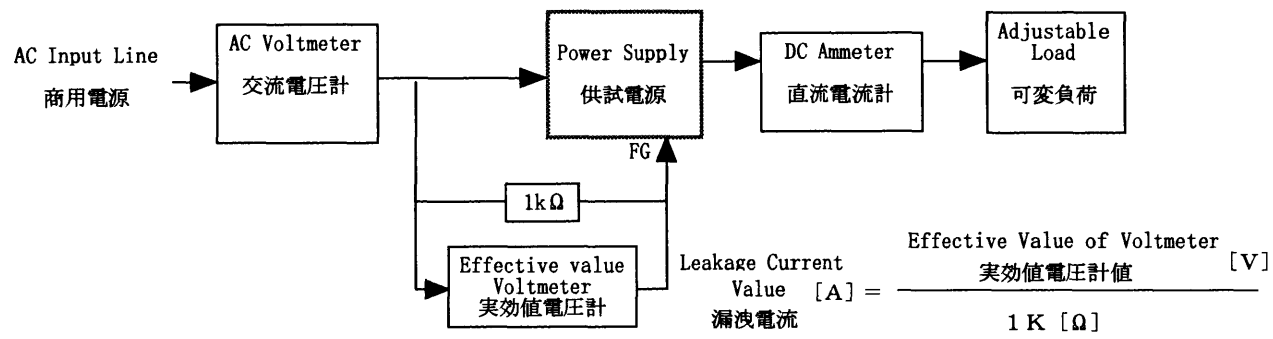


Figure B(DENTORI)

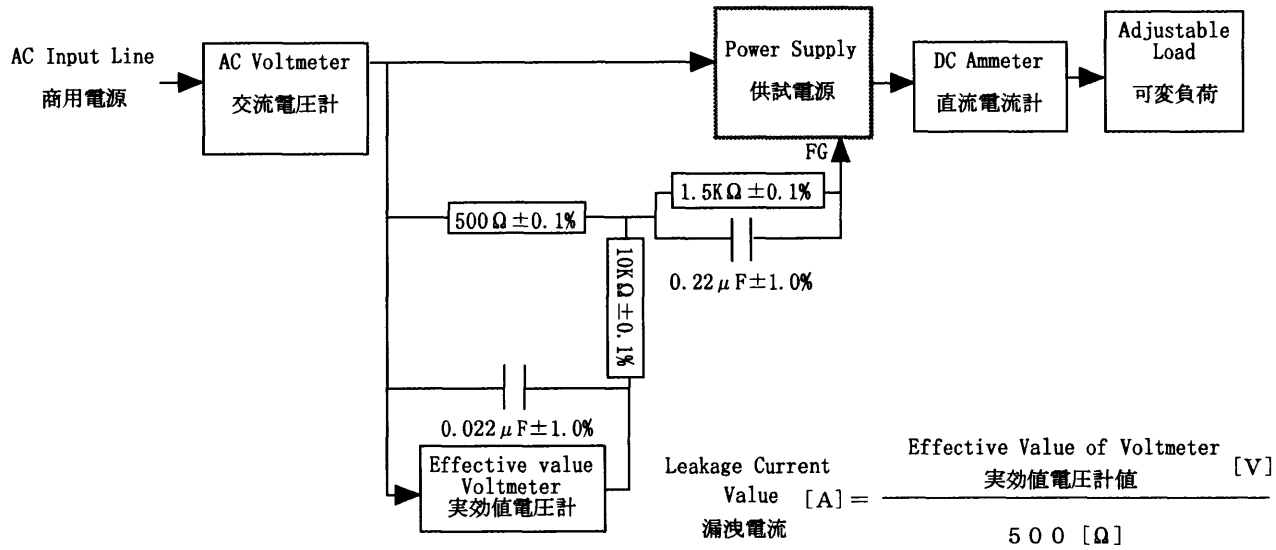


Figure B (UL, CSA, VDE)

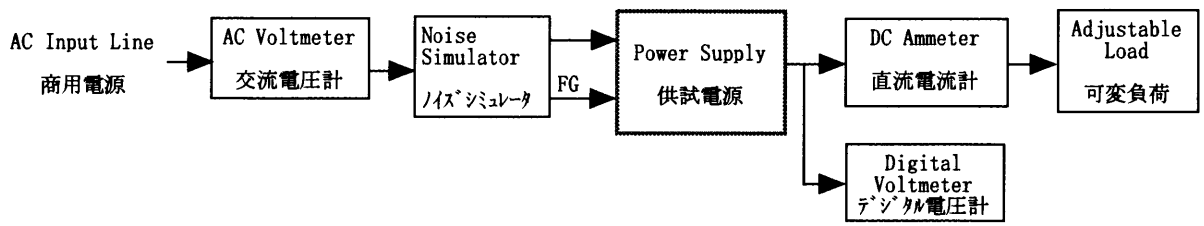


Figure C

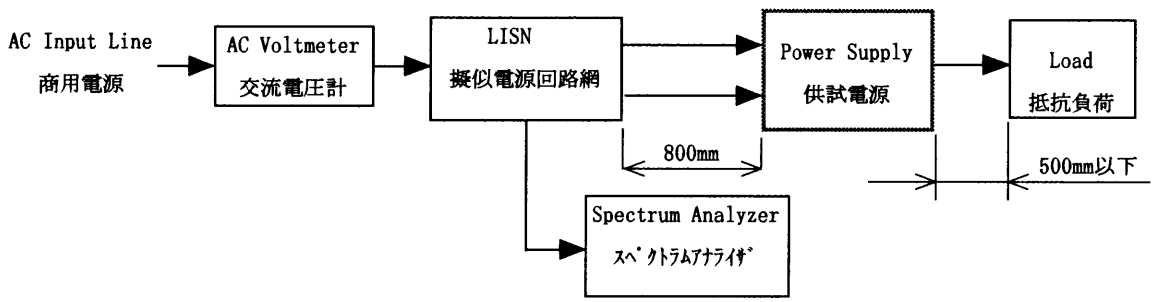


Figure D

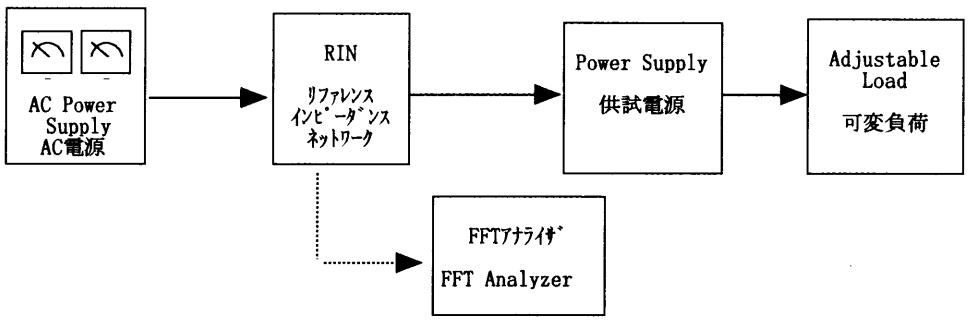


Figure E