参考資料

COSEL

TEST DATA OF CDS4004828

(48V INPUT)

Regulated DC Power Supply

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コーセル株式会社

COSEL CO., LTD.

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CONTENTS

1. Line Regulation ・・・・・・・・・・・・・・・・・・・・・・・ 1
静的入力変動
2. Input Current (by Input Voltage) ・・・・・・・・・・・・・・ 2
入力電流（入力電圧特性）
3. Input Current (by Load Current) ・・・・・・・・・・・・・・ 3
入力電流（負荷特性）
4. Input Power (by Load Current) ・・・・・・・・・・・・・・・ 4
入力電力（負荷特性）
5. Efficiency (by Input Voltage) ・・・・・・・・・・・・・・・ 5
効率（入力電圧特性）
6. Efficiency (by Load Current) ・・・・・・・・・・・・・・・・ 6
効率（負荷特性）
7. Load Regulation ・・・・・・・・・・・・・・・・・・・・・・ 7
静的負荷変動
8. Ripple Voltage (by Load Current) ・・・・・・・・・・・・・・ 8
リップル電圧（負荷特性）
9. Ripple-Noise ・・・・・・・・・・・・・・・・・・・・・・・・ 9
リップルノイズ
10. Overcurrent Protection ・・・・・・・・・・・・・・・・・・ 10
過電流保護
11. Overvoltage Protection ・・・・・・・・・・・・・・・・・・ 11
過電圧保護
12. Dynamic Load Responce ・・・・・・・・・・・・・・・・・・ 12
動的負荷変動
13. Rise and Fall Time ・・・・・・・・・・・・・・・・・・・・・ 13
立上り、立下り時間
14. Ambient Temperature Drift ・・・・・・・・・・・・・・・・ 14
周囲温度変動
15. Minimum Input Voltage for Regulated Output Voltage ・・・・ 15
最低レギュレーション電圧
16. Ripple Voltage (by Ambient Temperature) ・・・・・・・・・ 16
リップル電圧（周囲温度特性）
17. Time Lapse Drift ・・・・・・・・・・・・・・・・・・・・・・ 17
経時ドリフト
18. Output Voltage Accuracy ・・・・・・・・・・・・・・・・・ 18
定電圧精度
19. Condensation ・・・・・・・・・・・・・・・・・・・・・・・・ 19
結露特性
20. Line Noise Tolerance ・・・・・・・・・・・・・・・・・・・ 20
入力雑音耐量
21. Figure of Testing Circuitry ・・・・・・・・・・・・・・・・ 21
測定回路図

(Final Page 21)

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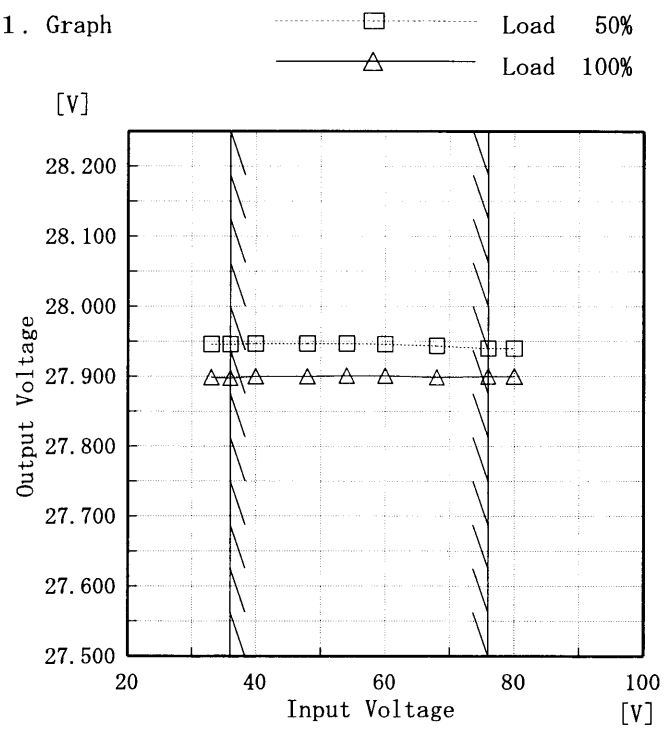
Model	CDS4004828
Item	Line Regulation 静的入力変動
Object	+28.0V18A

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

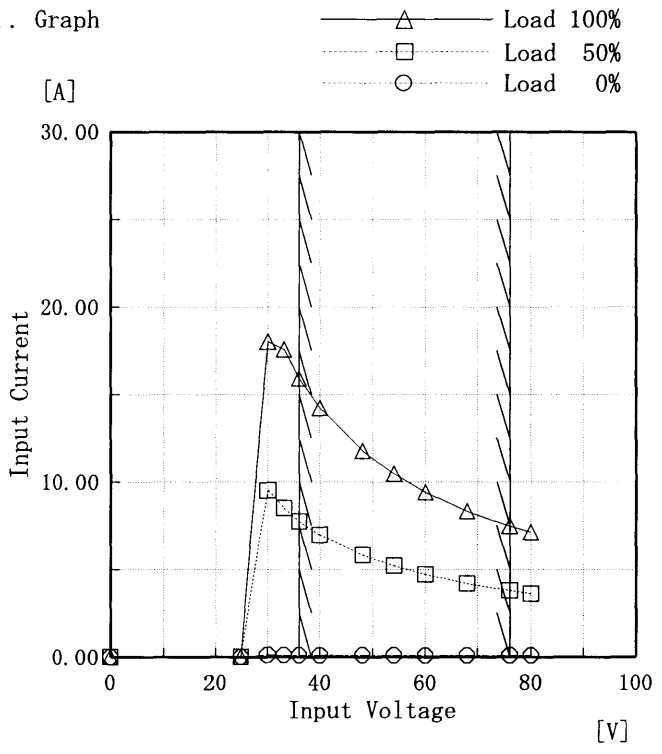
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	27.946	27.899
36	27.946	27.898
40	27.947	27.900
48	27.947	27.900
54	27.947	27.901
60	27.946	27.901
68	27.944	27.899
76	27.940	27.900
80	27.940	27.900

COSEL

Model	CDS4004828
Item	Input Current (by Input Voltage) 入力電流（入力電圧特性）
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

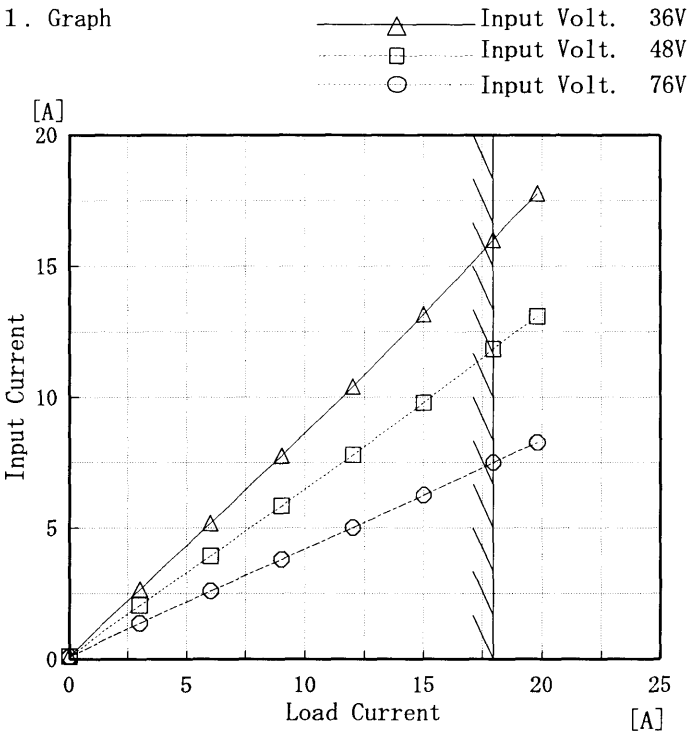
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
25.0	0.017	0.015	0.015
30.0	0.114	9.520	18.010
33.0	0.105	8.500	17.580
36.0	0.101	7.740	15.930
40.0	0.096	6.970	14.230
48.0	0.092	5.830	11.780
54.0	0.090	5.210	10.460
60.0	0.088	4.710	9.410
68.0	0.084	4.190	8.320
76.0	0.080	3.790	7.470
80.0	0.079	3.620	7.120
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	CDS4004828
Item	Input Current (by Load Current) 入力電流 (負荷特性)
Object	————

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

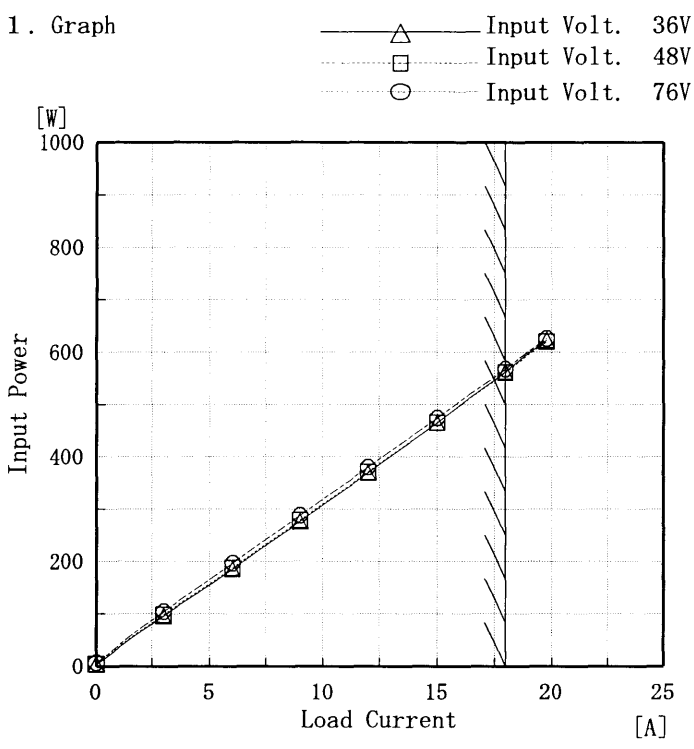
Load Current [A]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	0.102	0.092	0.082
3.0	2.664	2.055	1.376
6.0	5.181	3.926	2.592
9.0	7.760	5.840	3.797
12.0	10.410	7.790	5.017
15.0	13.160	9.790	6.250
18.0	16.010	11.840	7.510
19.8	17.780	13.100	8.270
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	CDS4004828
Item	Input Power (by Load Current) 入力電力 (負荷特性)
Object	————

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

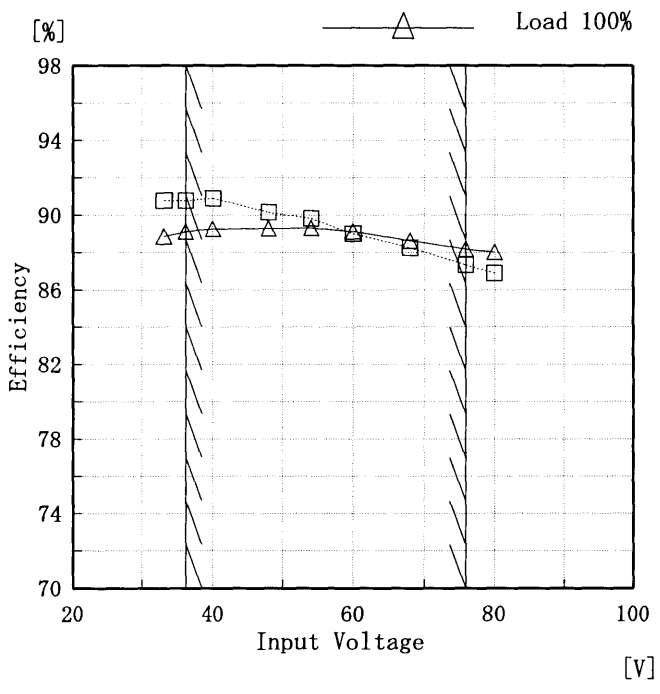
Load Current [A]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	3.67	4.44	6.24
3.0	95.60	98.60	104.60
6.0	185.20	187.90	196.80
9.0	276.30	278.90	288.10
12.0	369.20	371.30	380.40
15.0	465.00	465.40	474.00
18.0	563.00	561.00	568.00
19.8	623.00	620.00	626.00
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	CDS4004828
Item	Efficiency (by Input Voltage) 効率 (入力電圧特性)
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

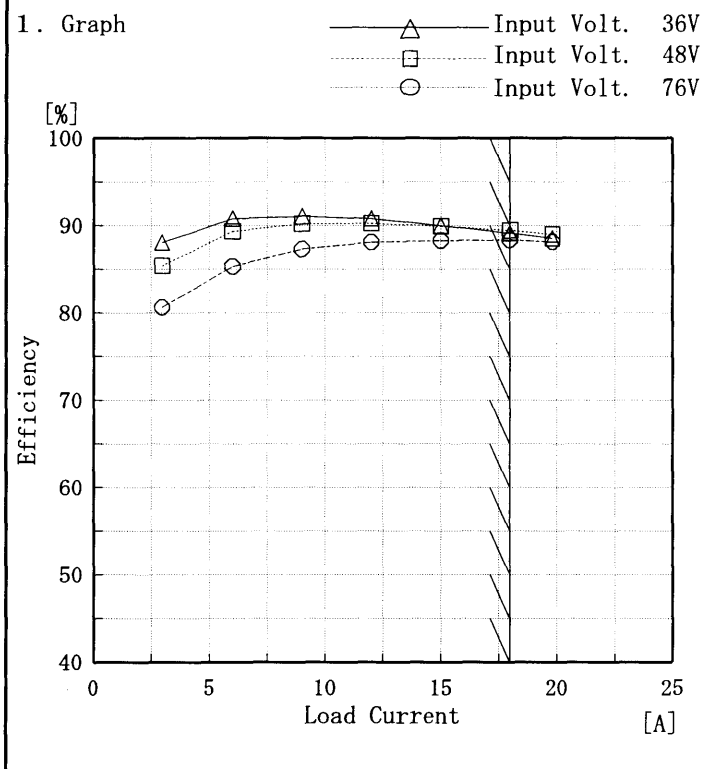
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	90.8	88.8
36	90.8	89.1
40	90.9	89.3
48	90.1	89.3
54	89.8	89.3
60	89.0	89.1
68	88.2	88.6
76	87.3	88.2
80	86.9	88.0

COSEL

Model	CDS4004828
Item	Efficiency (by Load Current) 効率 (負荷特性)
Object	————

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]	Efficiency [%] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
3.0	88.1	85.4	80.7
6.0	90.8	89.3	85.3
9.0	91.0	90.2	87.3
12.0	90.8	90.3	88.1
15.0	90.0	89.9	88.3
18.0	89.1	89.4	88.4
19.8	88.6	89.0	88.1
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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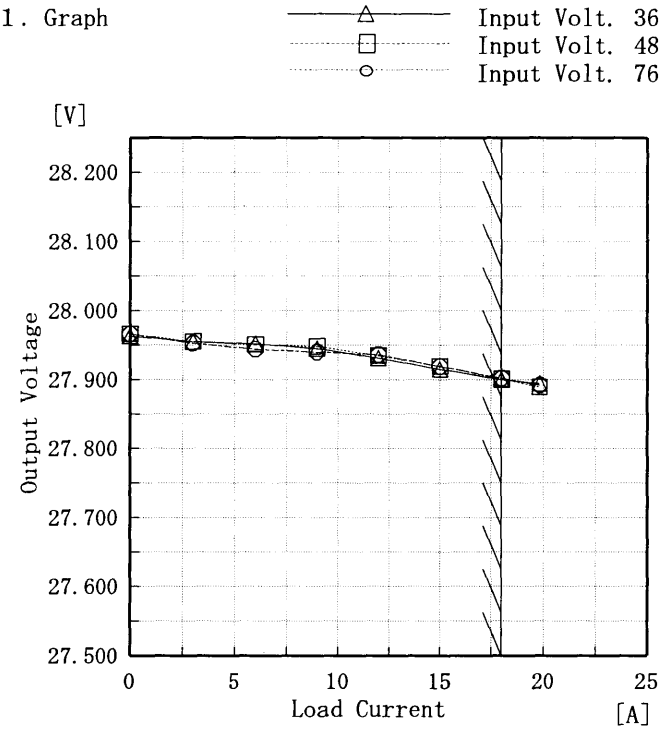
Model	CDS4004828
Item	Load Regulation 静的負荷変動
Object	+28.0V18A

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

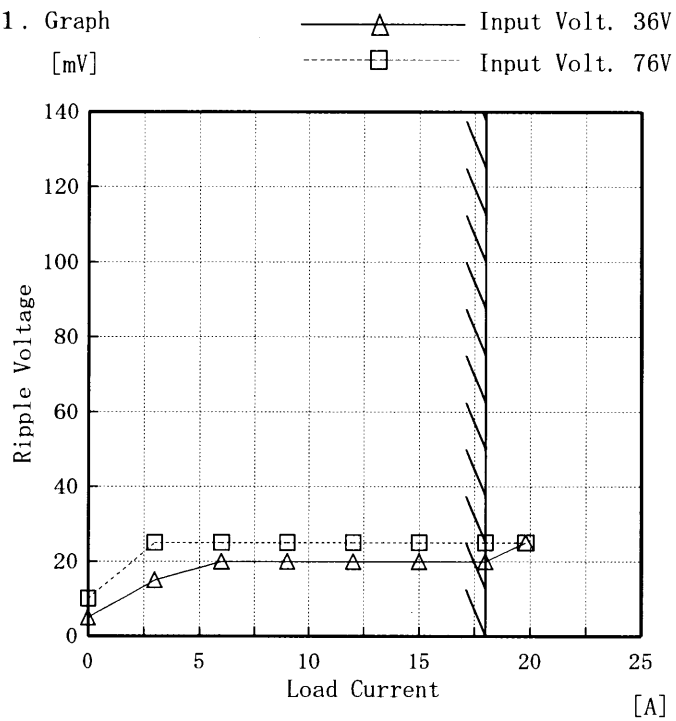
Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	27.963	27.966	27.966
3.0	27.955	27.955	27.953
6.0	27.952	27.951	27.944
9.0	27.945	27.948	27.940
12.0	27.931	27.935	27.936
15.0	27.915	27.919	27.919
18.0	27.900	27.901	27.902
19.8	27.894	27.889	27.892
—	—	—	—
—	—	—	—

COSEL

Model	CDS4004828
Item	Ripple Voltage(by Load Current) リップル電圧(負荷特性)
Object	+28V18A

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。

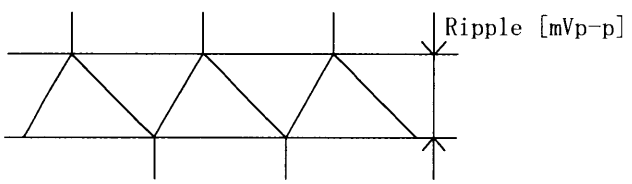


図　リップル波形図

2. Values

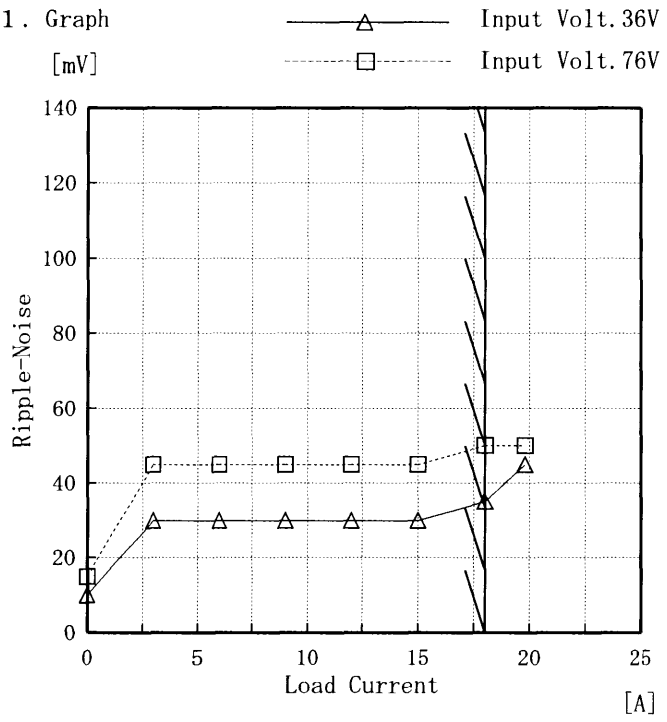
Load Current [A]	Ripple Output Volt. [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	5	10
3.0	15	25
6.0	20	25
9.0	20	25
12.0	20	25
15.0	20	25
18.0	20	25
19.8	25	25
—	—	—
—	—	—
—	—	—

COSEL

Model	CDS4004828
Item	Ripple-Noise　リップルノイズ
Object	+28V18A

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。

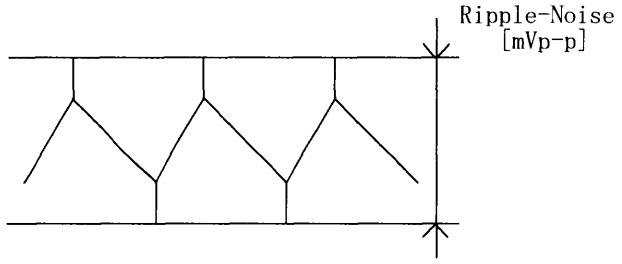


図　リップルノイズ波形図

2. Values

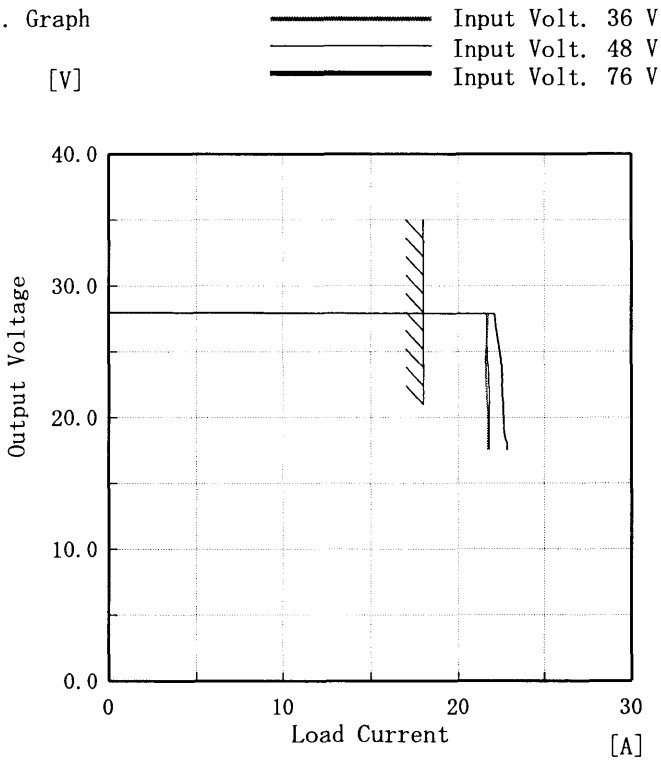
Load current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	10	15
3.0	30	45
6.0	30	45
9.0	30	45
12.0	30	45
15.0	30	45
18.0	35	50
19.8	45	50
—	—	—
—	—	—
—	—	—

COSEL

Model	CDS4004828
Item	Overcurrent Protection 過電流保護
Object	+28.0V18A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Note: Slanted line shows the range of the rated load current.
Intermittent operation occurs when the output voltage is from 17.5V to 0V.

(注)斜線は定格負荷電流範囲を示す。
17.5V～0V間は、間欠モードとなる。

2. Values

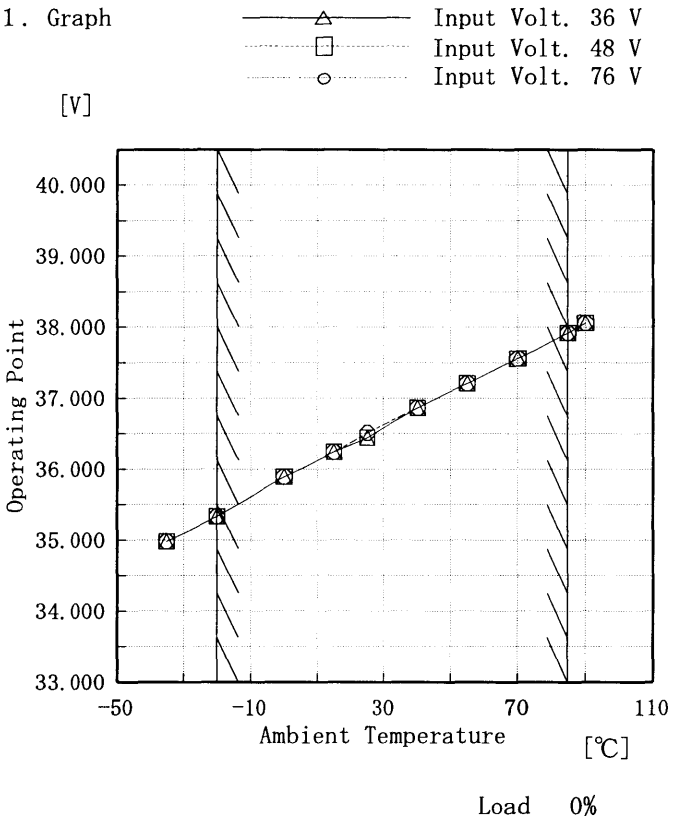
Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
28.00	0.00	0.00	0.00
26.60	21.70	21.67	22.22
25.20	21.65	21.71	22.38
22.40	21.64	21.79	22.53
19.60	21.75	21.81	22.62
16.80	—	—	—
14.00	—	—	—
11.20	—	—	—
8.40	—	—	—
5.60	—	—	—
2.80	—	—	—
0.00	—	—	—

COSEL

Model	CDS4004828
Item	Overvoltage Protection 過電圧保護
Object	+28.0V18A

Testing Circuitry Figure A

1. Graph



Load 0%

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 Temperature [℃]	Operating Point [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-35	34.98	34.98	34.98
-20	35.33	35.33	35.33
0	35.89	35.89	35.89
15	36.24	36.24	36.24
25	36.44	36.44	36.51
40	36.86	36.86	36.86
55	37.21	37.21	37.21
70	37.56	37.56	37.56
85	37.92	37.92	37.92
90	38.06	38.06	38.06
—	—	—	—

COSEL

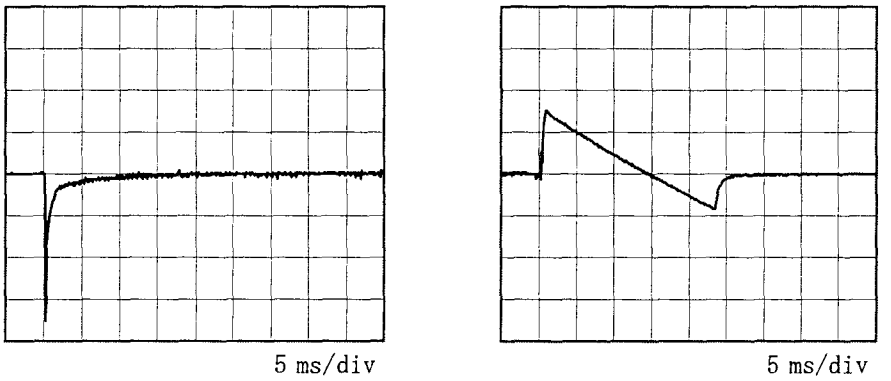
Model	CDS4004828		
Item	Dynamic Load Response 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+28V18A		

Input Volt. 48 V

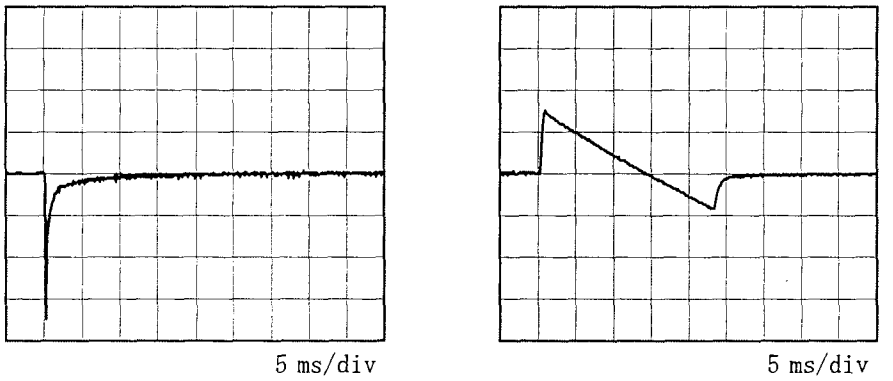
Cycle 1000 ms

Load Current

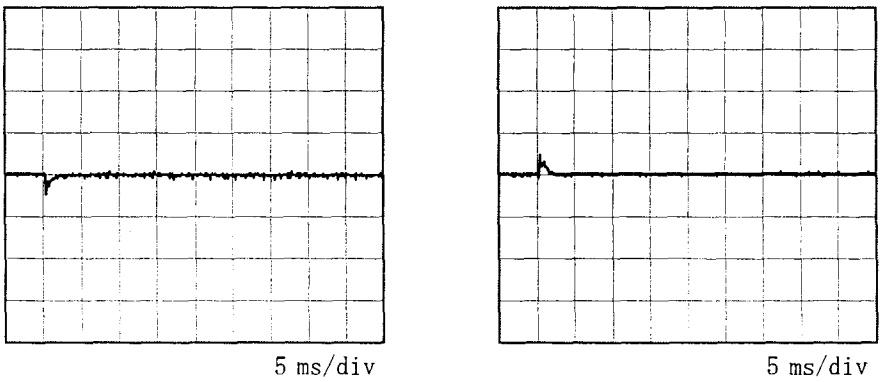
Min. Load (0A) ⟷
Load 100% (18A)



Min. Load (0A) ⟷
Load 50% (9A)



Load 10% (1.8A) ⟷
Load 100% (18A)

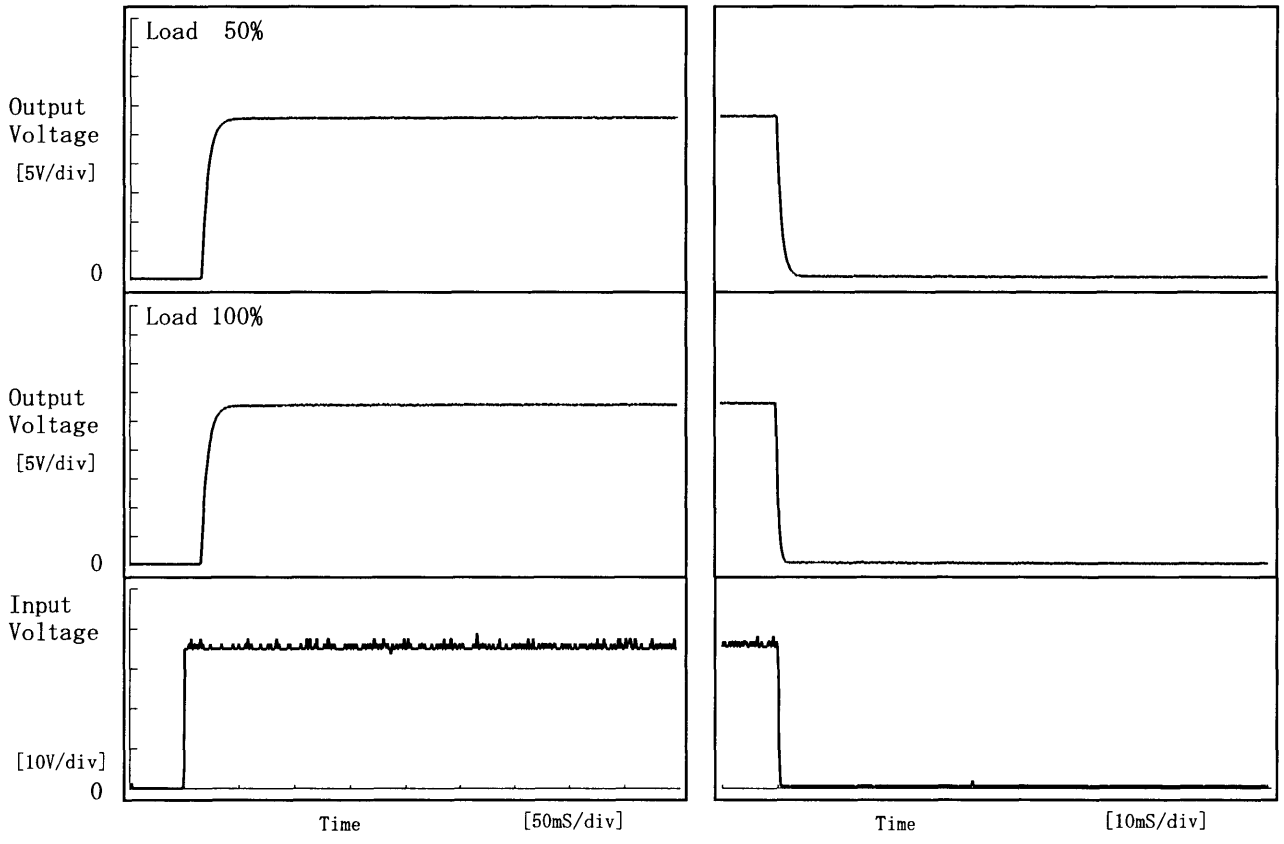


COSEL

Model	CDS4004828		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+28.0V18A		

1. Graph

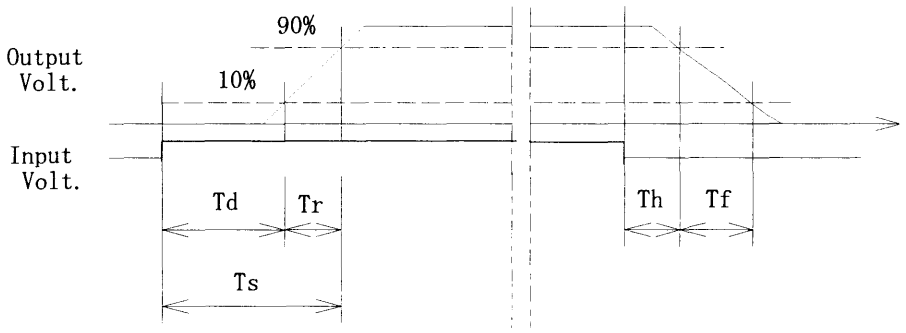
Input Volt. 36 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	15.50	13.50	29.00	0.15	2.10
100 %	15.50	13.50	29.00	0.05	1.05



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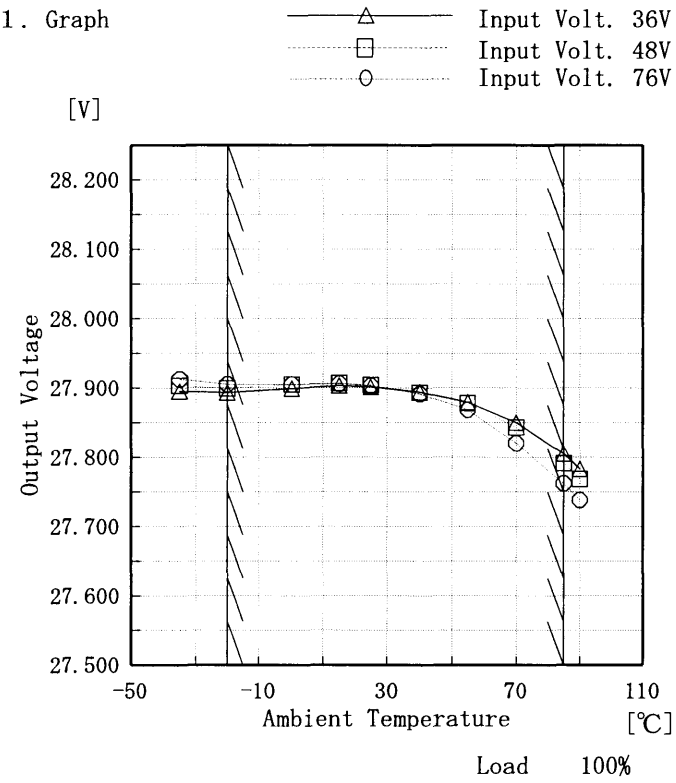
Model	CDS4004828
Item	Ambient Temperature Drift 周囲温度変動
Object	+28.0V18A

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

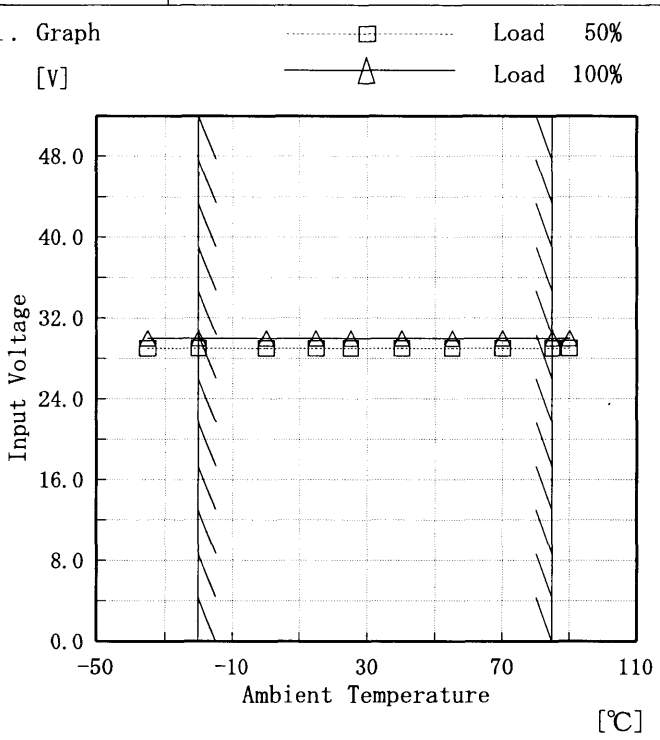
Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-35	27.895	27.903	27.912
-20	27.893	27.899	27.905
0	27.899	27.905	27.905
15	27.903	27.907	27.906
25	27.901	27.904	27.903
40	27.894	27.893	27.891
55	27.879	27.878	27.868
70	27.850	27.843	27.820
85	27.805	27.791	27.762
90	27.783	27.768	27.738
—	—	—	—

COSEL

Model	CDS4004828
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+28.0V18A

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

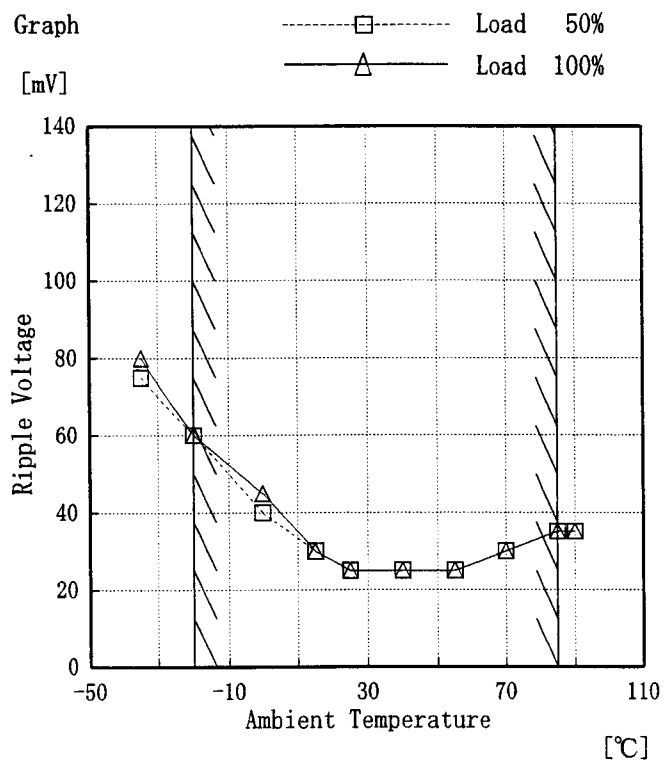
Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-35	29.0	30.0
-20	29.0	30.0
0	29.0	30.0
15	29.0	30.0
25	29.0	30.0
40	29.0	30.0
55	29.0	30.0
70	29.0	30.0
85	29.0	30.0
90	29.0	30.0
—	—	—

COSEL

Model	CDS4004828
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+28V18A

Testing Circuitry Figure A

1. Graph



Input Volt. 48 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

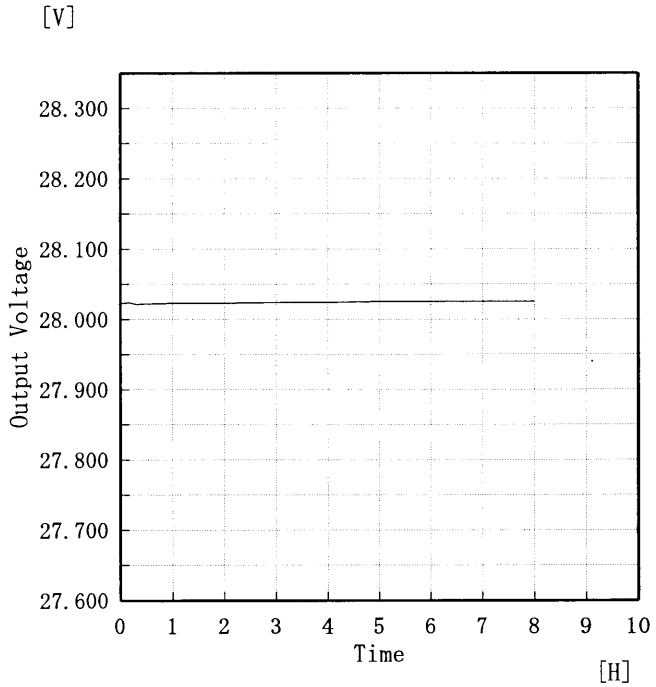
Ambient Temp. [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-35	75	80
-20	60	60
0	40	45
15	30	30
25	25	25
40	25	25
55	25	25
70	30	30
85	35	35
90	35	35
—	—	—

COSEL

Model	CDS4004828
Item	Time Lapse Drift 経時ドリフト
Object	+28.0V18A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Input Volt. 48V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	28.030
0.5	28.022
1.0	28.023
2.0	28.023
3.0	28.024
4.0	28.024
5.0	28.025
6.0	28.025
7.0	28.025
8.0	28.025

COSEL

Model	CDS4004828	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A
Object	+28.0V18A	

1. 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 : -20～85 ℃
Input Voltage : 36～ 76 V
Load Current : 0～18 A

* Output Voltage Accuracy = ±(Maximum of Output Voltage − Minimum of Output Voltage)／2

$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、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 -20～85 ℃
入力電圧 36～ 76 V
負荷電流 0～18 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

$$\text{* 定電圧精度(変動率)} = \frac{\text{変動値}}{\text{定格出力電圧}} \times 100$$

2. Values

Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-20	36	0	27.974	±112	±0.4
Minimum Voltage	85	76	18	27.750		

COSEL

Model	CDS4004828
Item	Condensation　結露特性
Object	+28V18A

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.

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行い、異常のないことを確認する。

2．Values

Item	Data	Testing Conditions
Output Voltage [V]	28.08	Input Volt.: 48V, Load Current:18A
Line Regulation [mV]	12	Input Volt.: 36～76V, Load Current:18A
Load Regulation [mV]	26	Input Volt.: 48V, Load Current:0～18A

COSEL

Model	CDS4004828		
Item	Line Noise Tolerance 入力雑音耐量	Temperature Testing Circuitry	25℃ Figure B
Object	+28.0V18A		

1. Results

Pulse Width [nS]	MODE	POLARITY	No protection failure should occur 保護回路の誤動作がない	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON	+	OK	no fluctuation
		−	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		−	OK	no fluctuation
1000	COMMON	+	OK	no fluctuation
		−	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		−	OK	no fluctuation

2. Conditions

Input Voltage : 48 V
Pulse Voltage : 2000 V
Pulse Cycle : 10 mS
Pulse Input Duration : 1 min. or more
Load : 100 %

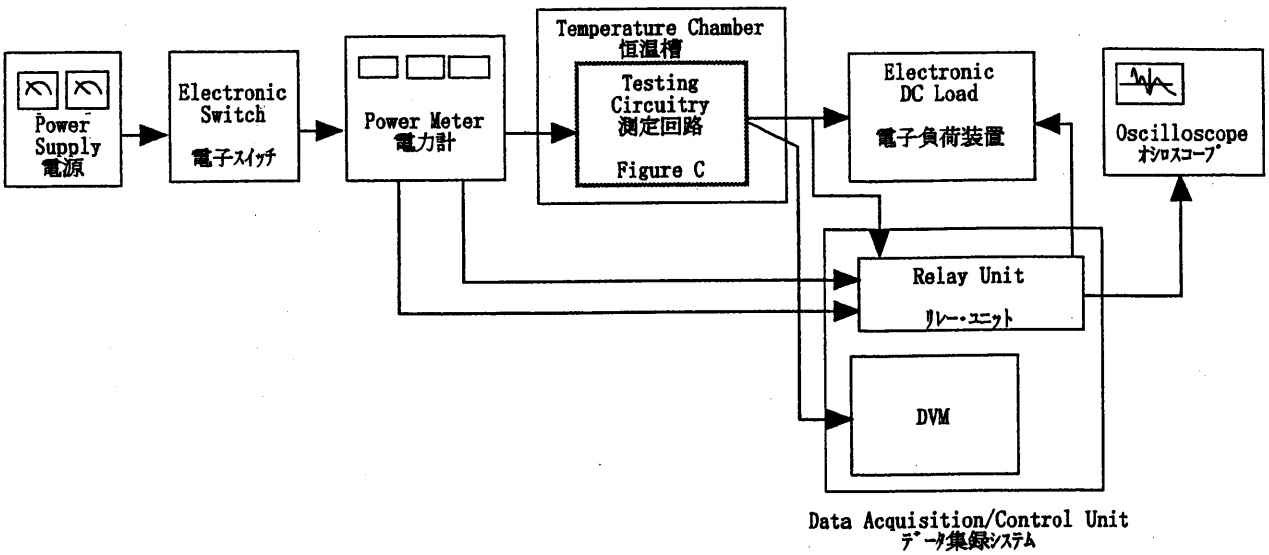


Figure A

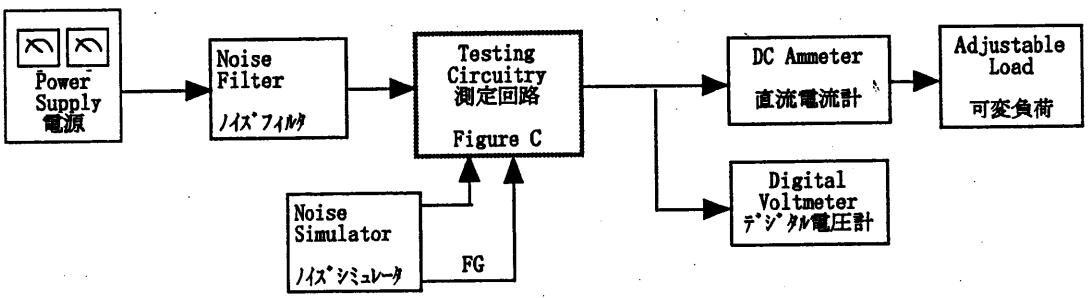


Figure B

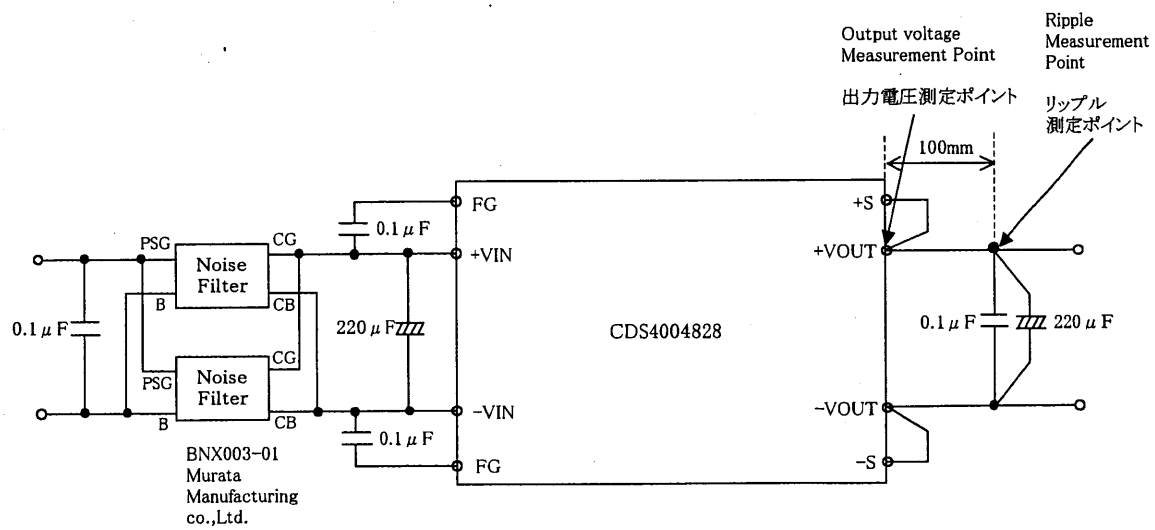


Figure C (General Electric Characteristic)
一般電気特性