参考資料

COSEL

TEST DATA OF CDS6004812

(48V INPUT)

Regulated DC Power Supply

July 2, 2001

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Design Engineer

コーセル株式会社

COSEL CO., LTD.

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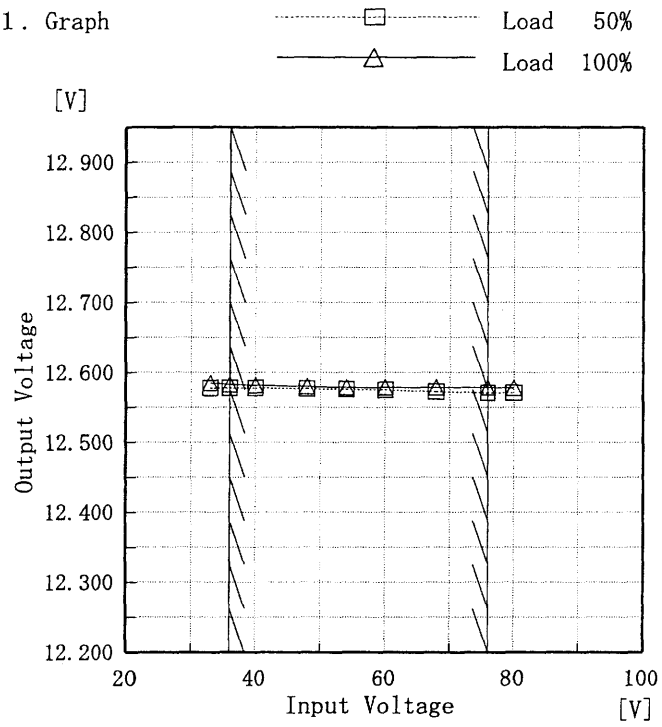
Model	CDS6004812
Item	Line Regulation 静的入力変動
Object	+12.5V56A

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	12.578	12.585
36	12.578	12.583
40	12.578	12.582
48	12.577	12.580
54	12.576	12.579
60	12.575	12.579
68	12.573	12.579
76	12.571	12.579
80	12.571	12.578

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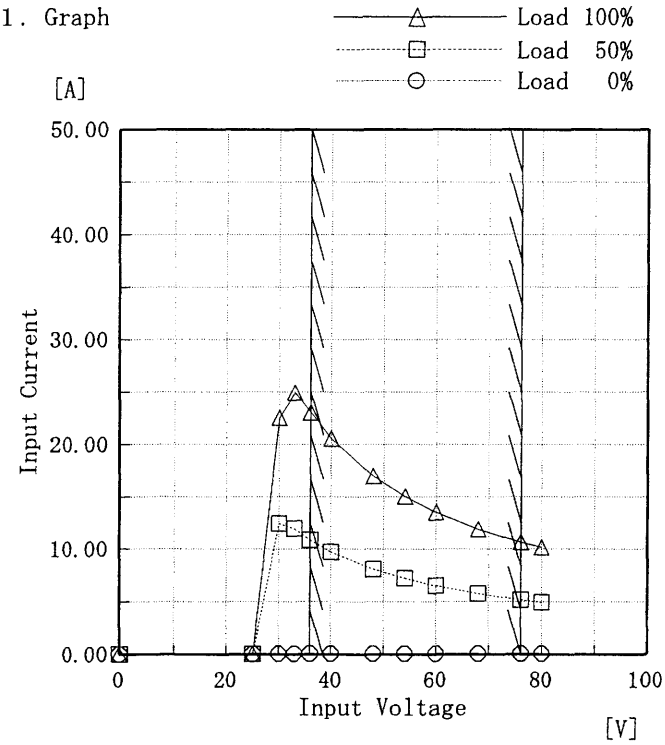
COSEL

Model	CDS6004812
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

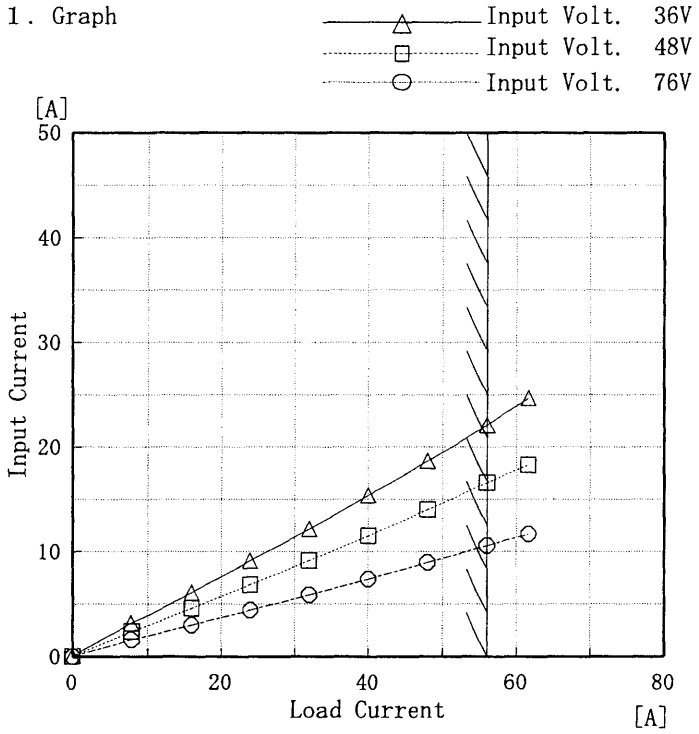
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
25.0	0.024	0.022	0.022
30.0	0.054	12.450	22.550
33.0	0.049	11.960	24.940
36.0	0.045	10.860	23.010
40.0	0.041	9.750	20.530
48.0	0.039	8.120	16.960
54.0	0.036	7.220	15.030
60.0	0.035	6.510	13.500
68.0	0.033	5.760	11.910
76.0	0.034	5.170	10.670
80.0	0.034	4.920	10.150
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	CDS6004812
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

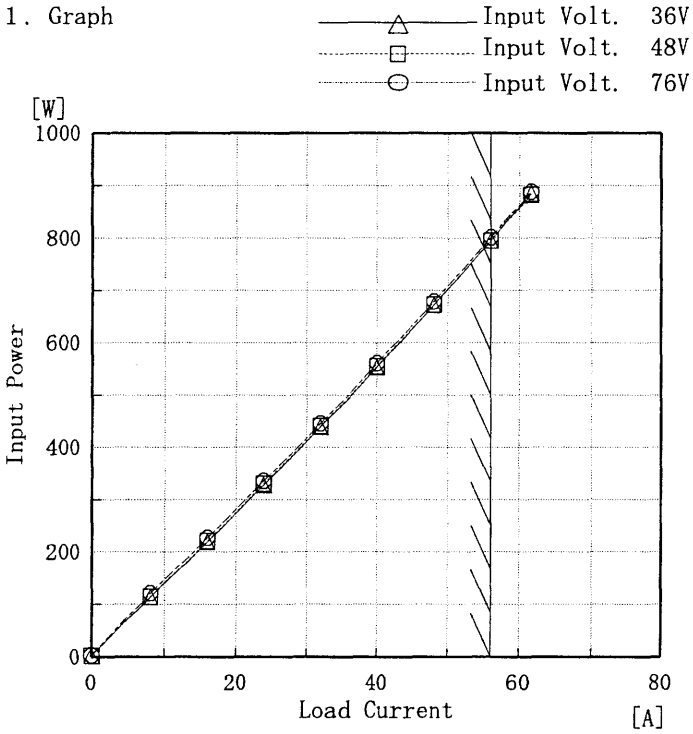
Load Current [A]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.044	0.037	0.033
8.00	3.178	2.394	1.597
16.00	6.090	4.626	2.997
24.00	9.150	6.870	4.431
32.00	12.160	9.160	5.890
40.00	15.400	11.520	7.400
48.00	18.680	14.010	8.970
56.00	22.100	16.600	10.590
61.60	24.680	18.300	11.690
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	CDS6004812
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]
0.00	1.60	1.80	2.50
8.00	113.90	114.70	121.30
16.00	219.00	221.00	227.40
24.00	328.00	330.00	335.90
32.00	439.00	441.00	446.00
40.00	553.00	555.00	561.00
48.00	672.00	673.00	679.00
56.00	795.00	795.00	801.00
61.60	884.00	882.00	888.00
—	—	—	—
—	—	—	—
—	—	—	—

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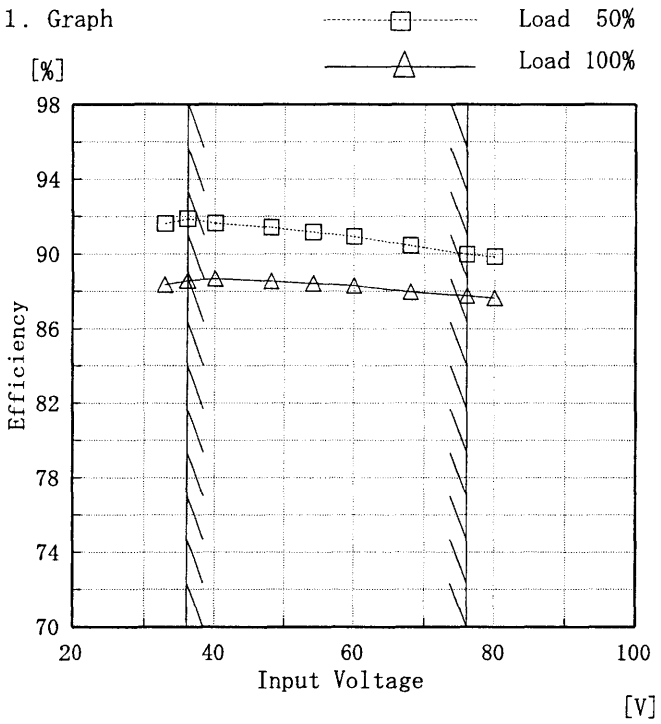
COSEL

Model	CDS6004812
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

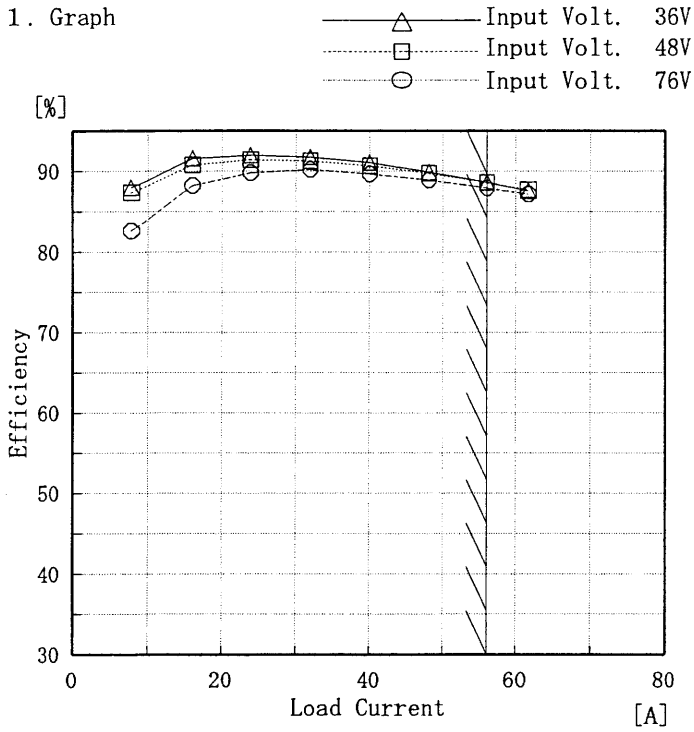
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	91.6	88.4
36	91.9	88.6
40	91.7	88.7
48	91.4	88.5
54	91.2	88.4
60	90.9	88.3
68	90.5	88.0
76	90.0	87.8
80	89.9	87.6

COSEL

Model	CDS6004812
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

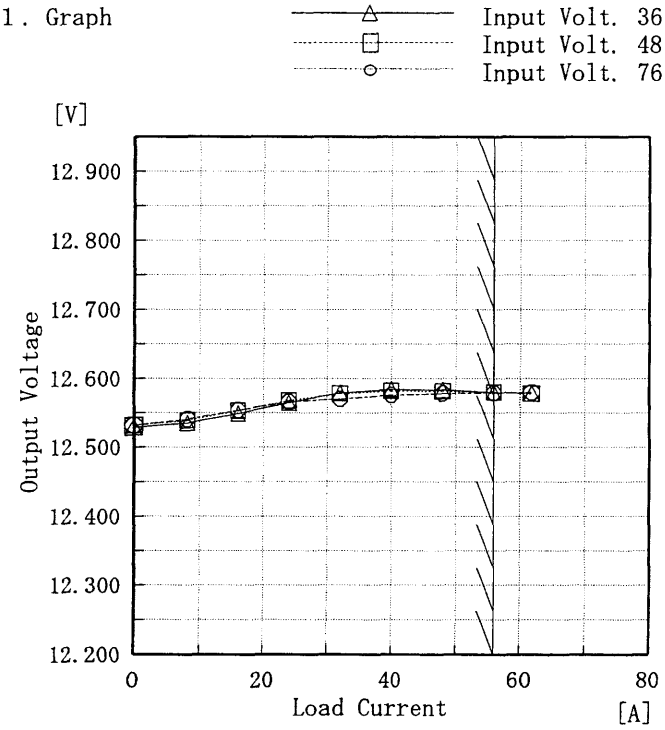
Load Current [A]	Efficiency [%] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
8.00	88.0	87.4	82.6
16.00	91.6	90.8	88.2
24.00	92.0	91.4	89.8
32.00	91.7	91.3	90.2
40.00	91.1	90.7	89.7
48.00	89.9	89.7	88.9
56.00	88.6	88.6	87.9
61.60	87.6	87.7	87.1
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	CDS6004812
Item	Load Regulation 静的負荷変動
Object	+12.5V56A

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

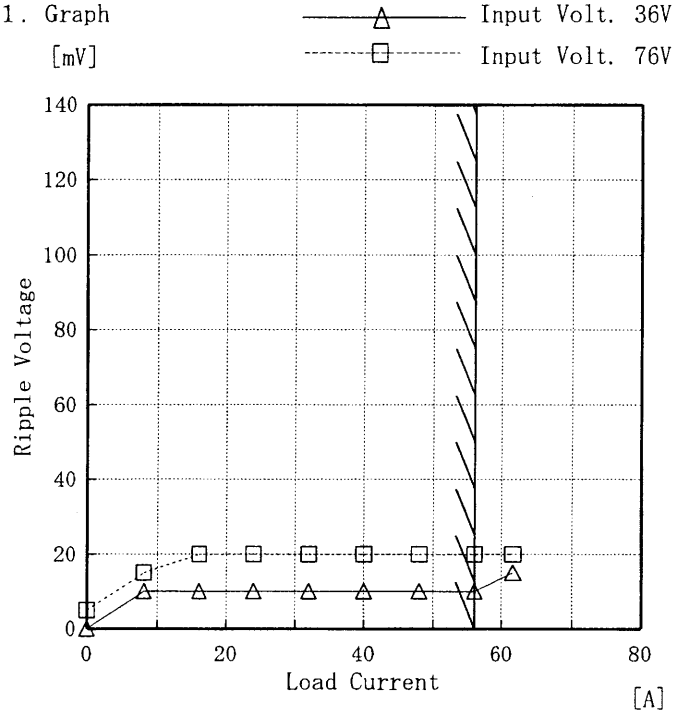
Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	12.529	12.532	12.532
8.00	12.535	12.539	12.541
16.00	12.549	12.553	12.554
24.00	12.565	12.568	12.566
32.00	12.579	12.578	12.570
40.00	12.584	12.582	12.576
48.00	12.583	12.581	12.578
56.00	12.580	12.580	12.579
61.60	12.578	12.578	12.580
—	—	—	—

COSEL

Model	CDS6004812
Item	Ripple Voltage(by Load Current) リップル電圧(負荷特性)
Object	+12.5V56A

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。

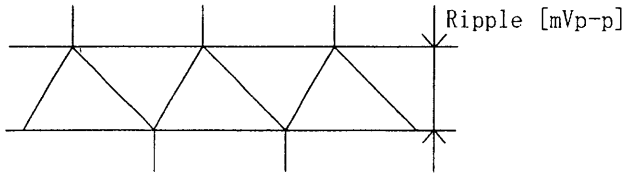


図　リップル波形図

2. Values

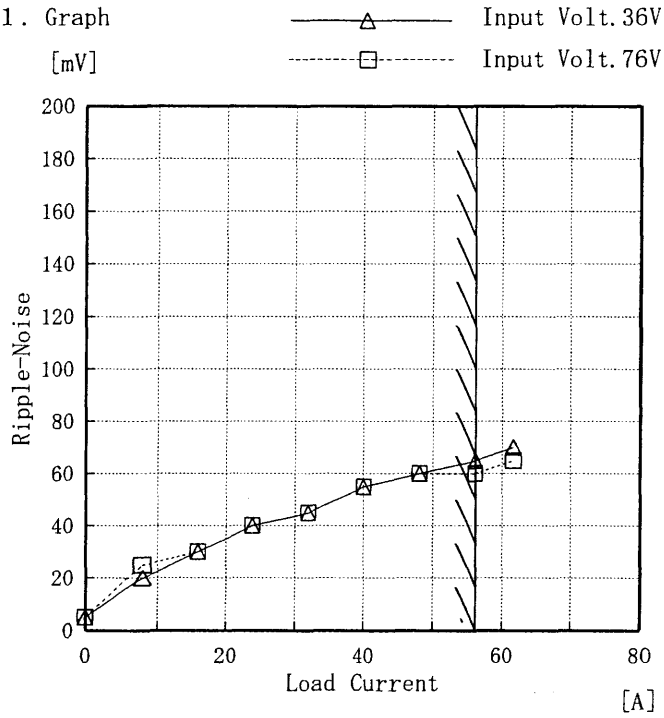
Load Current [A]	Ripple Output Volt. [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.0	0	5
8.0	10	15
16.0	10	20
24.0	10	20
32.0	10	20
40.0	10	20
48.0	10	20
56.0	10	20
61.6	15	20
—	—	—
—	—	—

COSEL

Model	CDS6004812
Item	Ripple-Noise　リップルノイズ
Object	+12.5V56A

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。

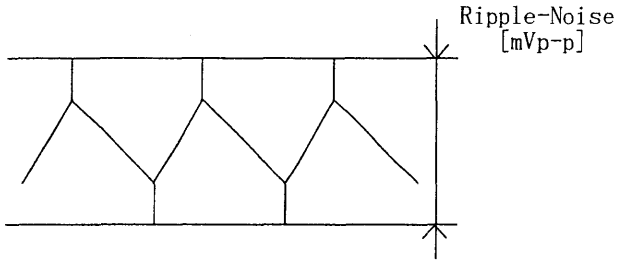


図　リップルノイズ波形図

2. Values

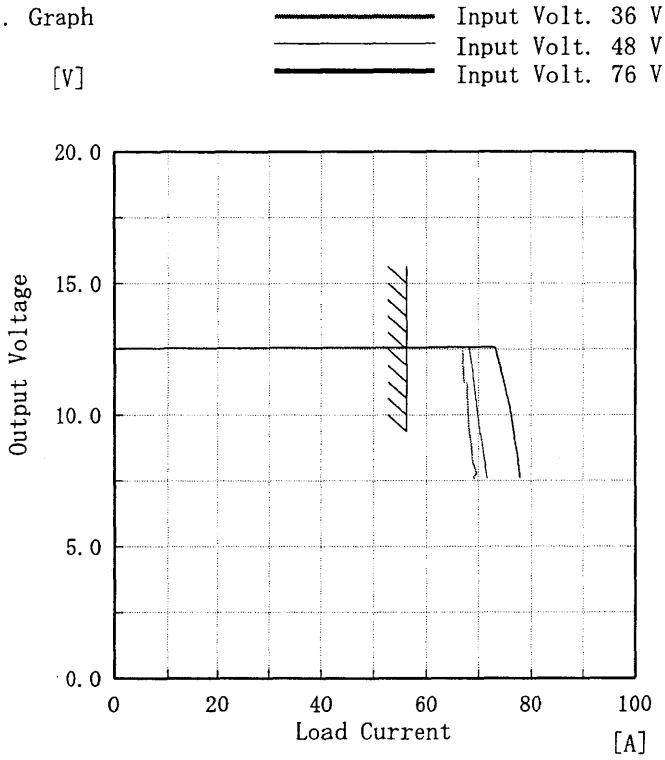
Load current [A]	Ripple-Noise [mV] Input Volt. 36 [V]	Ripple-Noise [mV] Input Volt. 76 [V]
0.0	5	5
8.0	20	25
16.0	30	30
24.0	40	40
32.0	45	45
40.0	55	55
48.0	60	60
56.0	65	60
61.6	70	65
—	—	—
—	—	—

COSEL

Model	CDS6004812
Item	Overcurrent Protection 過電流保護
Object	+12.5V56A

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 7.5V to 0V.

(注)斜線は定格負荷電流範囲を示す。
7.5V～0V間は、間欠モードとなる。

2. Values

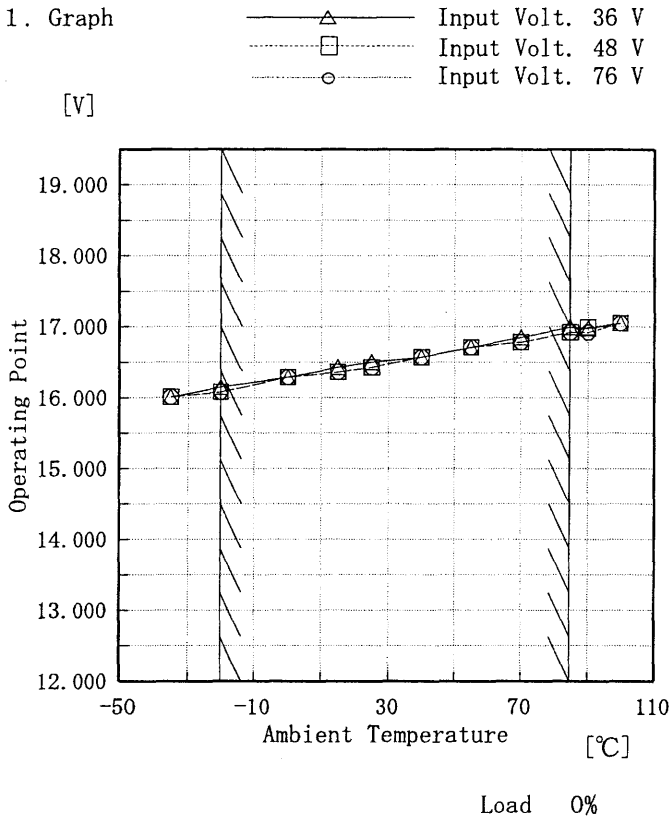
Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
12.50	66.76	68.04	73.27
11.88	66.87	68.61	73.90
11.25	67.03	68.99	74.57
10.00	67.92	69.87	76.09
8.75	68.51	70.81	76.96
7.50	69.21	71.76	78.05
6.25	—	—	—
5.00	—	—	—
3.75	—	—	—
2.50	—	—	—
1.25	—	—	—
0.00	—	—	—

COSEL

Model	CDS6004812
Item	Overvoltage Protection 過電圧保護
Object	+12.5V56A

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	16.01	16.01	16.01
-20	16.15	16.08	16.08
0	16.29	16.29	16.29
15	16.43	16.36	16.36
25	16.50	16.43	16.43
40	16.57	16.57	16.57
55	16.71	16.71	16.71
70	16.85	16.78	16.78
85	16.99	16.92	16.92
90	16.98	16.99	16.92
100	17.05	17.05	17.05

COSEL

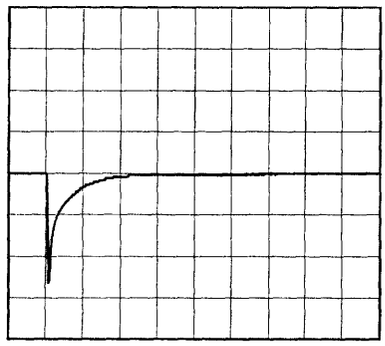
Model	CDS6004812		
Item	Dynamic Load Response 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+12.5V56A		

Input Volt. 48 V

Cycle 1000 ms

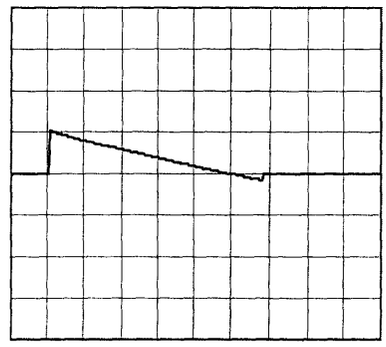
Load Current

Min. Load (0A) ←→
Load 100% (56A)



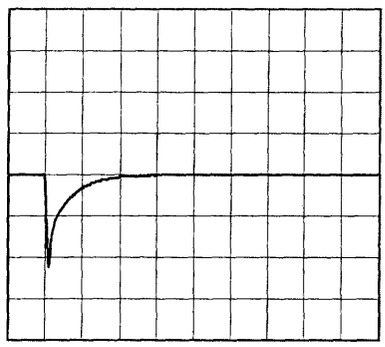
500 mV/div

1 ms/div



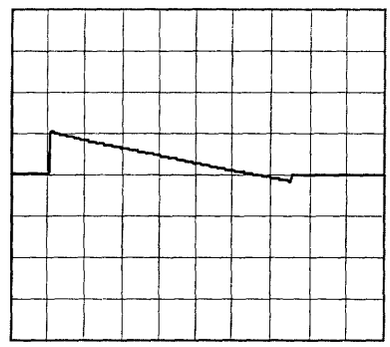
100 ms/div

Min. Load (0A) ←→
Load 50% (28A)



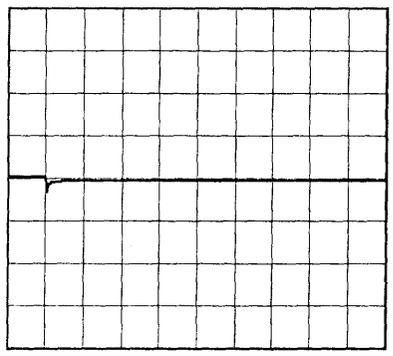
500 mV/div

1 ms/div



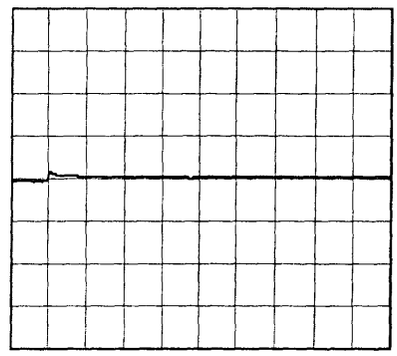
100 ms/div

Load 10% (5.6A) ←→
Load 100% (56A)



500 mV/div

1 ms/div



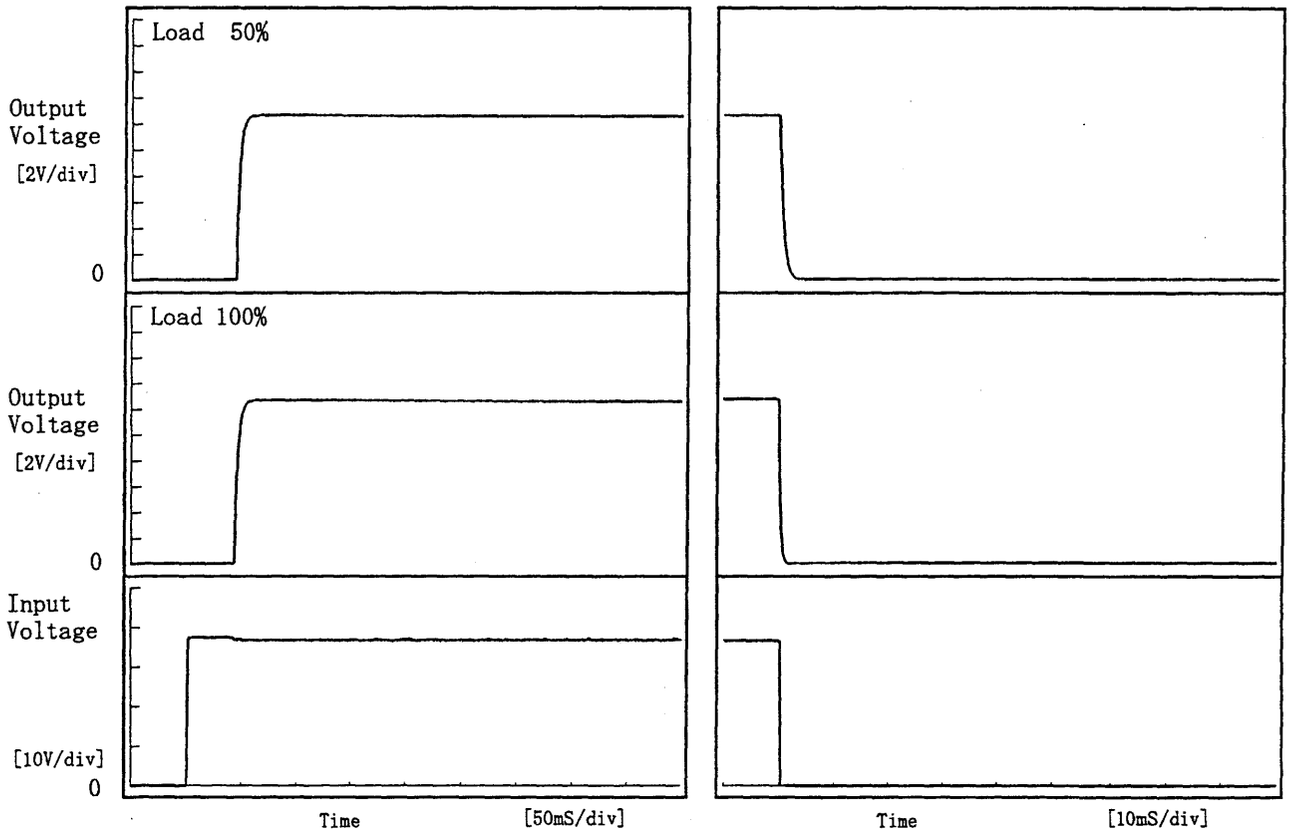
1 ms/div

COSEL

Model	CDS6004812		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+12.5V56A		

1. Graph

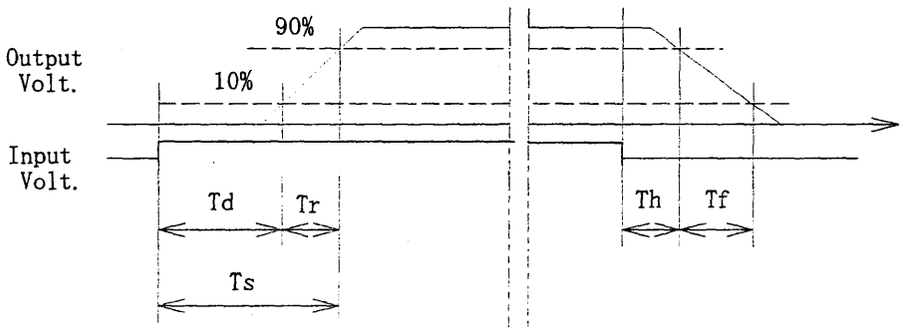
Input Volt. 36 V



2. Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	42.25	5.75	48.00	0.20	1.40
100 %	42.25	5.75	48.00	0.15	0.75



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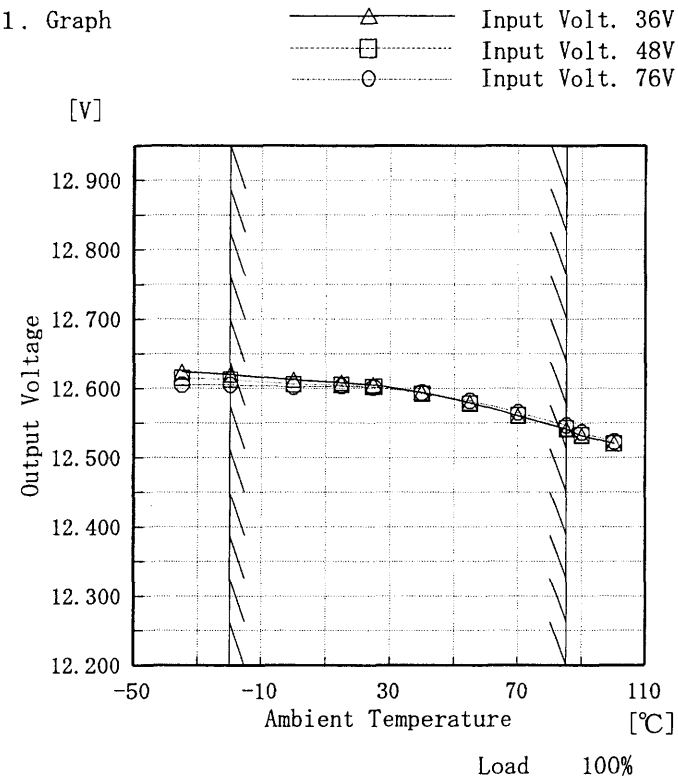
COSEL

Model	CDS6004812
Item	Ambient Temperature Drift 周囲温度変動
Object	+12.5V56A

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

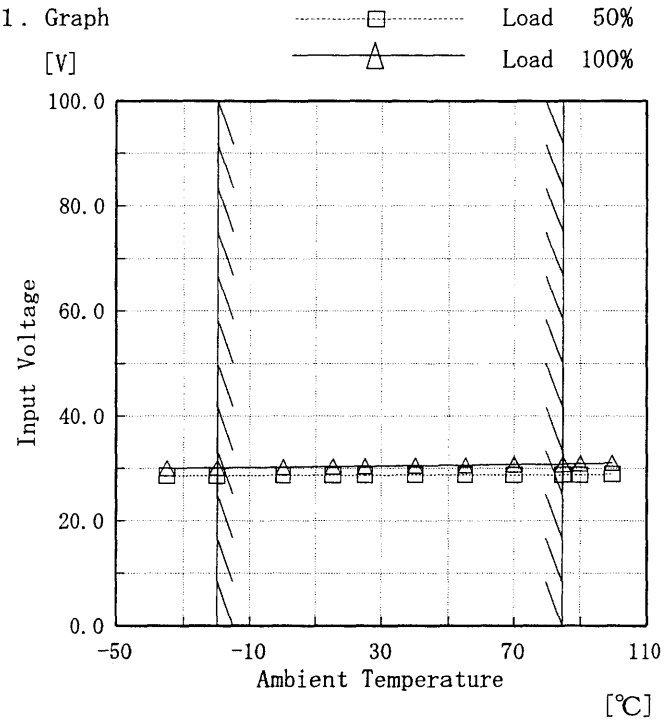
Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-35	12.624	12.615	12.605
-20	12.620	12.613	12.605
0	12.612	12.606	12.602
15	12.608	12.605	12.603
25	12.605	12.602	12.601
40	12.594	12.592	12.594
55	12.579	12.578	12.582
70	12.560	12.561	12.565
85	12.541	12.542	12.546
90	12.531	12.532	12.536
100	12.520	12.520	12.523

COSEL

Model	CDS6004812
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+12.5V56A

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

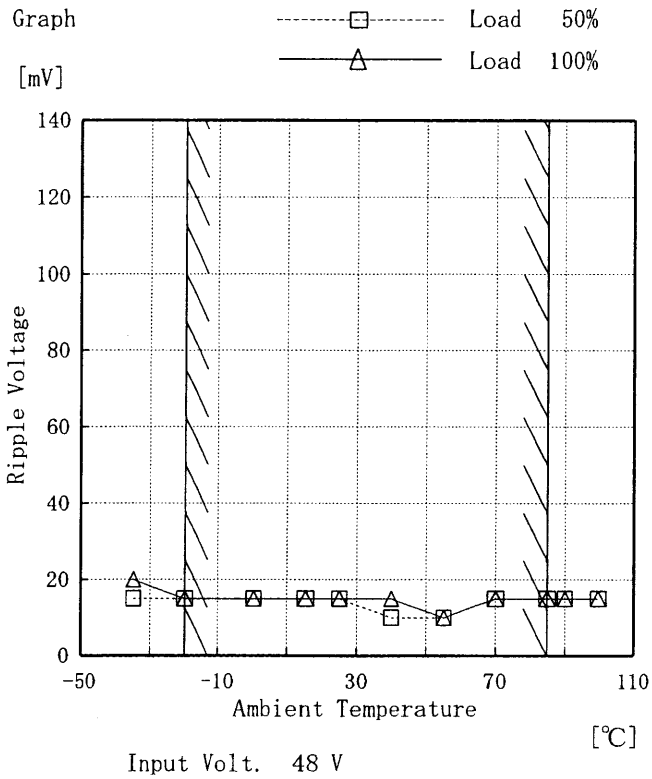
Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-35	28.6	30.0
-20	28.6	30.1
0	28.7	30.2
15	28.7	30.3
25	28.7	30.4
40	28.8	30.5
55	28.8	30.6
70	28.8	30.8
85	28.8	30.8
90	28.8	30.9
100	28.9	31.0

COSEL

Model	CDS6004812
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	+12.5V56A

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

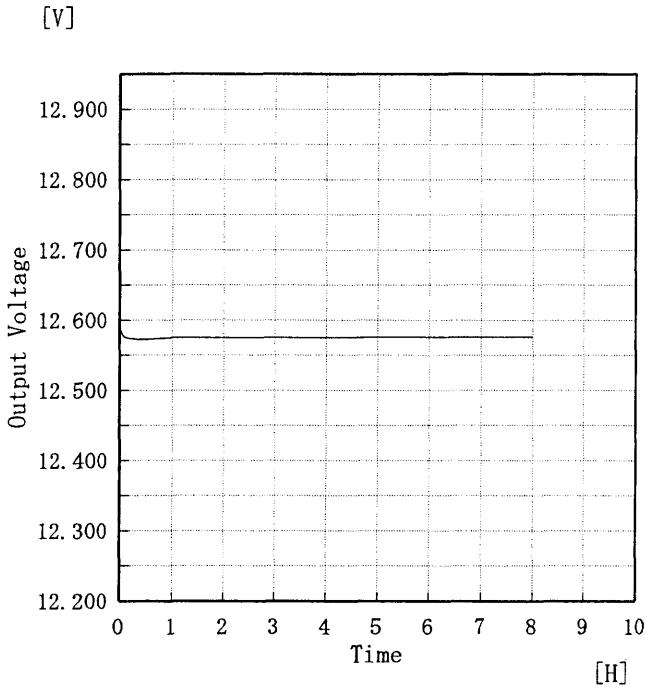
Ambient Temp. [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-35	15	20
-20	15	15
0	15	15
15	15	15
25	15	15
40	10	15
55	10	10
70	15	15
85	15	15
90	15	15
100	15	15

COSEL

Model	CDS6004812
Item	Time Lapse Drift 経時ドリフト
Object	+12.5V56A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Input Volt. 48V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	12.597
0.5	12.573
1.0	12.575
2.0	12.575
3.0	12.575
4.0	12.575
5.0	12.576
6.0	12.576
7.0	12.576
8.0	12.576

COSEL

Model	CDS6004812	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry　Figure A
Object	+12.5V56A	

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 : 0～56 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　0～56 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	56	12.621	±62	±0.5
Minimum Voltage	85	36	0	12.498		

COSEL

Model	CDS6004812
Item	Condensation 結露特性
Object	+12.5V56A

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]	12.58	Input Volt.: 48V, Load Current:56A
Line Regulation [mV]	7	Input Volt.: 36～76V, Load Current:56A
Load Regulation [mV]	50	Input Volt.: 48V, Load Current:0～56A

COSEL

Model	CDS6004812		
Item	Line Noise Tolerance 入力雑音耐量	Temperature Testing Circuitry	25℃ Figure B
Object	+12.5V56A		

1. Results

Pulse Width [nS]	MODE	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
	NORMAL	OK	no fluctuation
1000	COMMON	OK	no fluctuation
	NORMAL	OK	no fluctuation

Conditions

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

COSEL

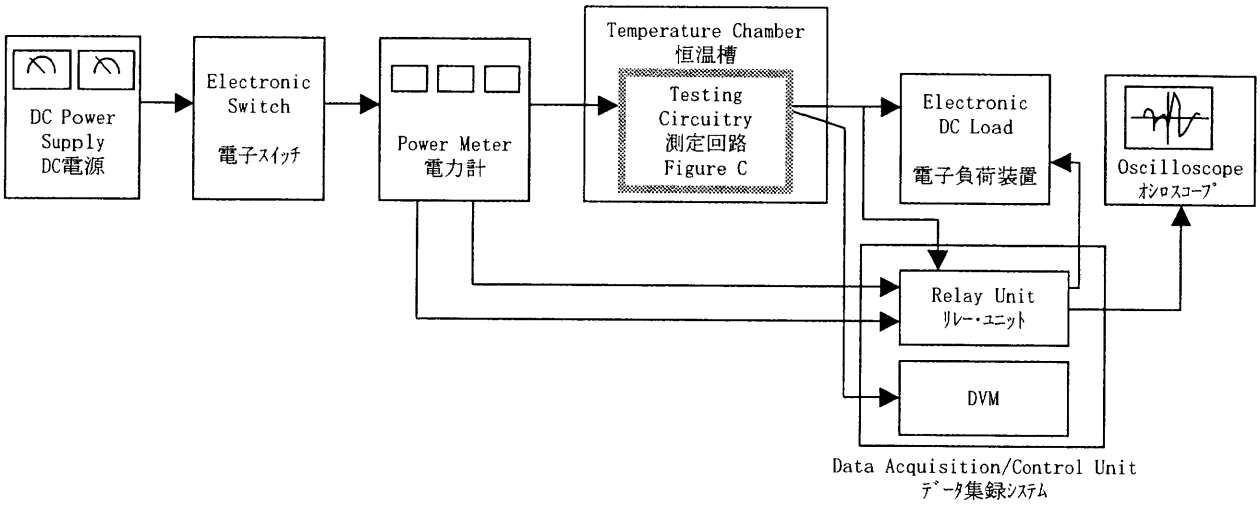


Figure A

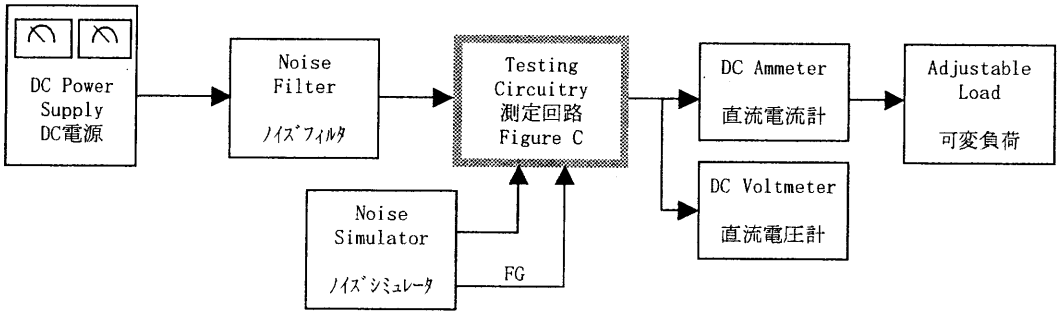


Figure B

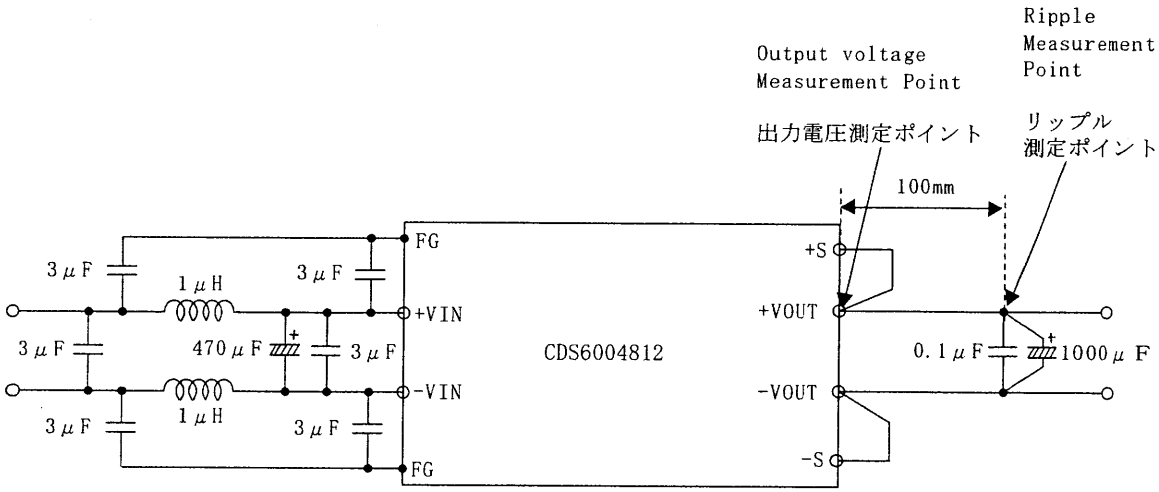


Figure C (General Electric Characteristic)
一般電気特性