参考資料

COSEL

TEST DATA OF CES24120-6

Regulated DC Power Supply
Aug 10, 2007

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COSEL CO.,LTD.

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CONTENTS

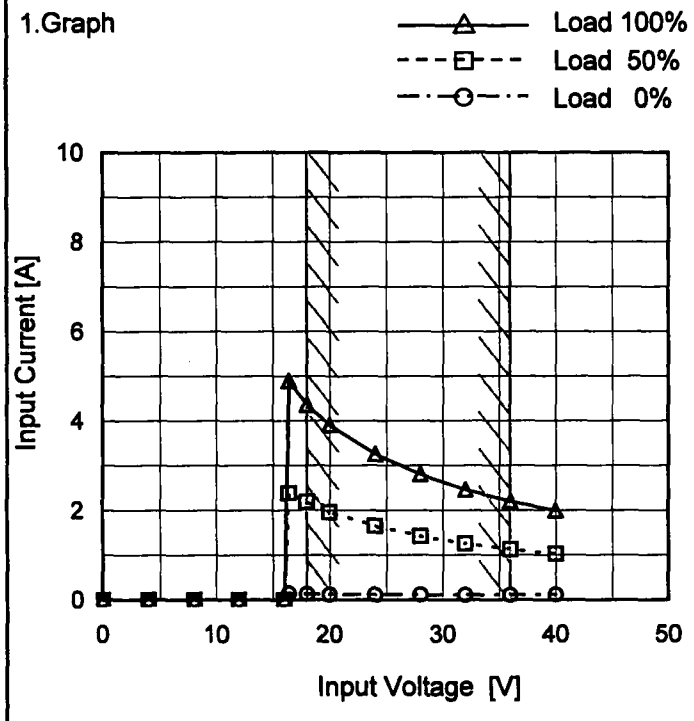
1.Input Current (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・ 1
2.Input Current (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・ 2
3.Input Power (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・ 3
4.Efficiency (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・ 4
5.Efficiency (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・・・ 5
6.Line Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 6
7.Load Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 7
8.Dynamic Load Response ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 8
9.Ripple Voltage (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・ 9
10.Ripple-Noise ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 10
11.Ripple Voltage (by Ambient Temperature) ・・・・・・・・・・・・・・・・・ 11
12.Ambient Temperature Drift ・・・・・・・・・・・・・・・・・・・・・・・・・ 12
13.Output Voltage Accuracy ・・・・・・・・・・・・・・・・・・・・・・・・・・ 13
14.Time Lapse Drift ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 14
15.Rise and Fall Time ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 15
16.Minimum Input Voltage for Regulated Output Voltage ・・・・・・・・・・・ 16
17.Overcurrent Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 17
18.Overvoltage Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 18
19.Figure of Testing Circuitry ・・・・・・・・・・・・・・・・・・・・・・・・・ 19
(Final Page 19)

COSEL

Model	CES24120-6
Item	Input Current (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
4.0	0.000	0.000	0.000
8.0	0.000	0.000	0.000
12.0	0.000	0.000	0.000
16.0	0.000	0.000	0.000
16.4	0.142	2.388	4.900
18.0	0.130	2.189	4.360
20.0	0.120	1.960	3.918
24.0	0.114	1.650	3.259
28.0	0.112	1.423	2.812
32.0	0.111	1.257	2.466
36.0	0.111	1.130	2.207
40.0	0.112	1.030	1.996
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

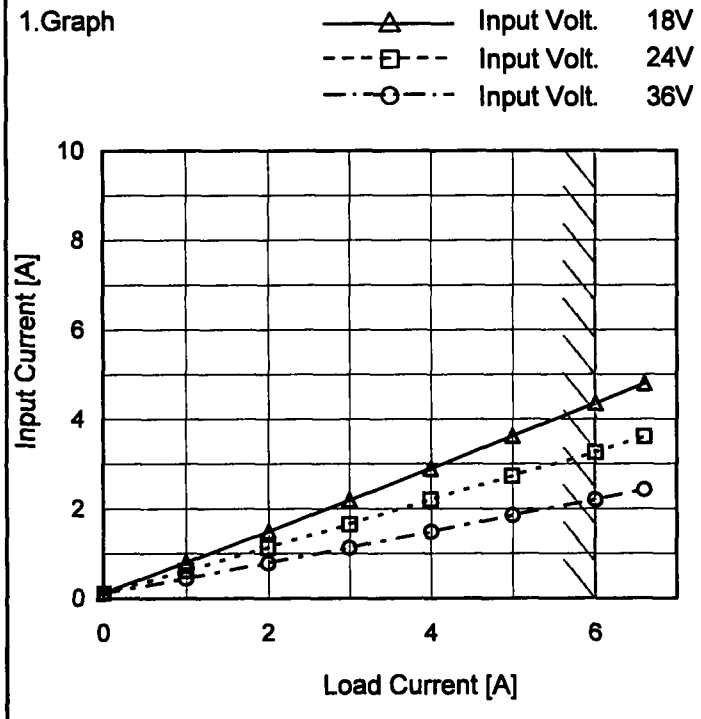
BC-10112

COSEL

Model	CES24120-6
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Input Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.0	0.130	0.114	0.111
1.0	0.806	0.621	0.447
2.0	1.491	1.133	0.789
3.0	2.189	1.650	1.130
4.0	2.894	2.202	1.489
5.0	3.630	2.727	1.850
6.0	4.360	3.259	2.207
6.6	4.800	3.612	2.430
—	-	-	-
—	-	-	-
—	-	-	-

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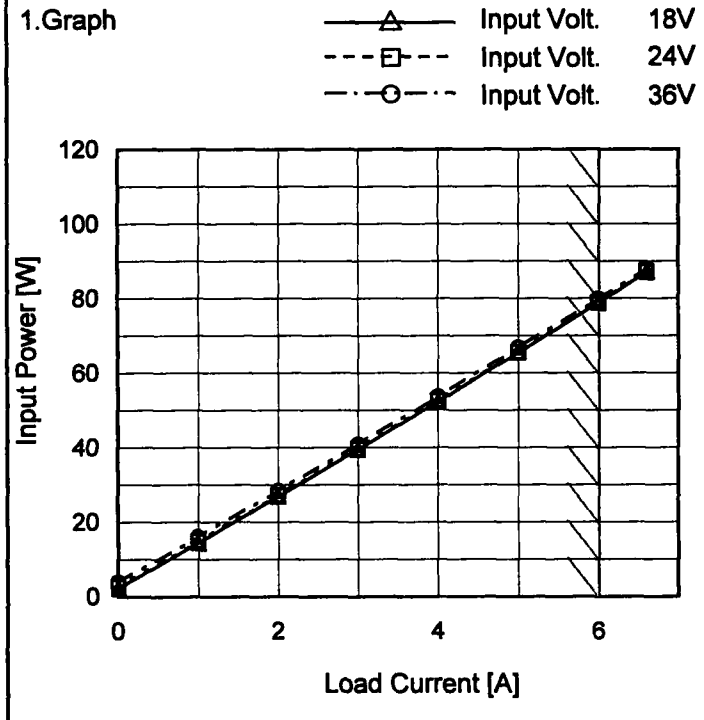
Model	CES24120-6
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

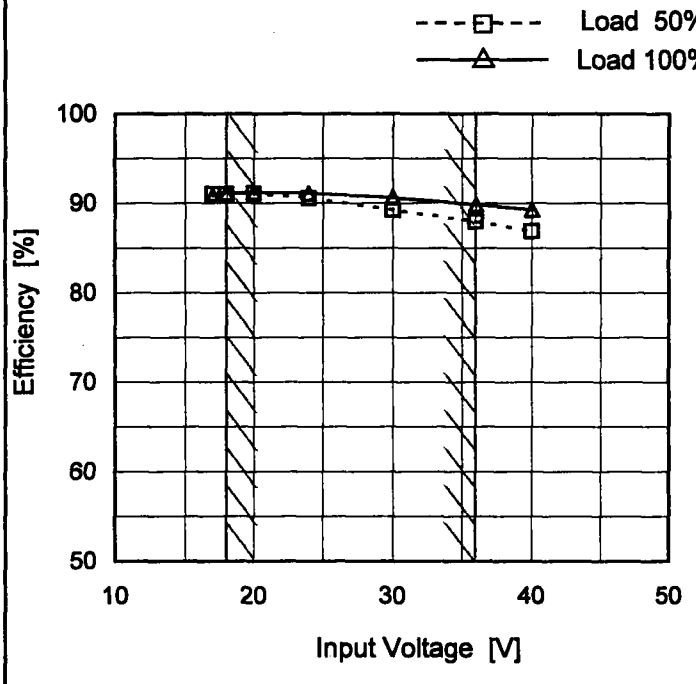
Load Current [A]	Input Power [W]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.0	2.35	2.75	3.98
1.0	14.49	14.91	16.14
2.0	26.86	27.24	28.46
3.0	39.52	39.75	40.90
4.0	52.30	52.70	53.70
5.0	65.40	65.60	66.80
6.0	78.80	78.85	79.79
6.6	87.10	87.20	87.90
—	-	-	-
—	-	-	-
—	-	-	-

COSEL

Model	CES24120-6
Item	Efficiency (by Input Voltage)
Object	———————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

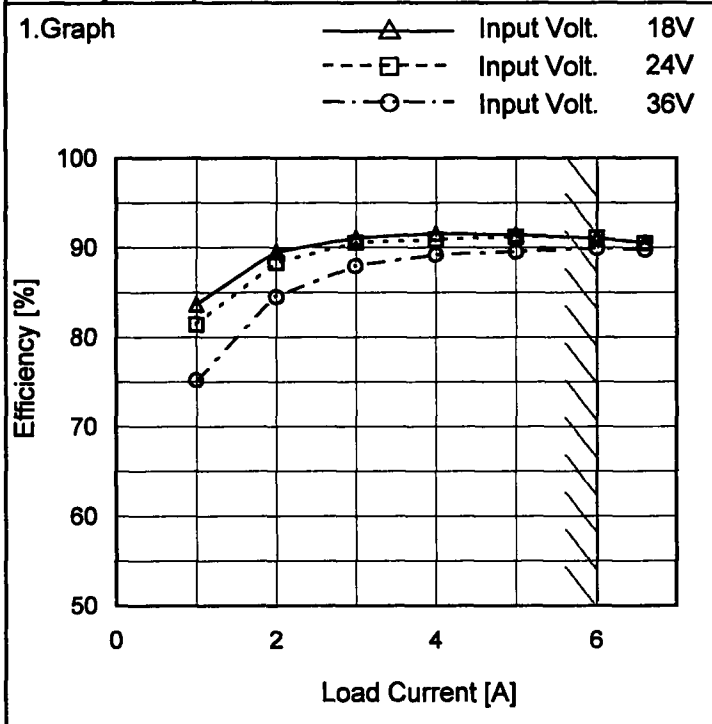
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	91.1	90.9
18	91.1	91.1
20	91.1	91.2
24	90.6	91.1
30	89.2	90.7
36	88.0	89.9
40	86.9	89.3
–	-	-
–	-	-

COSEL

Model	CES24120-6
Item	Efficiency (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

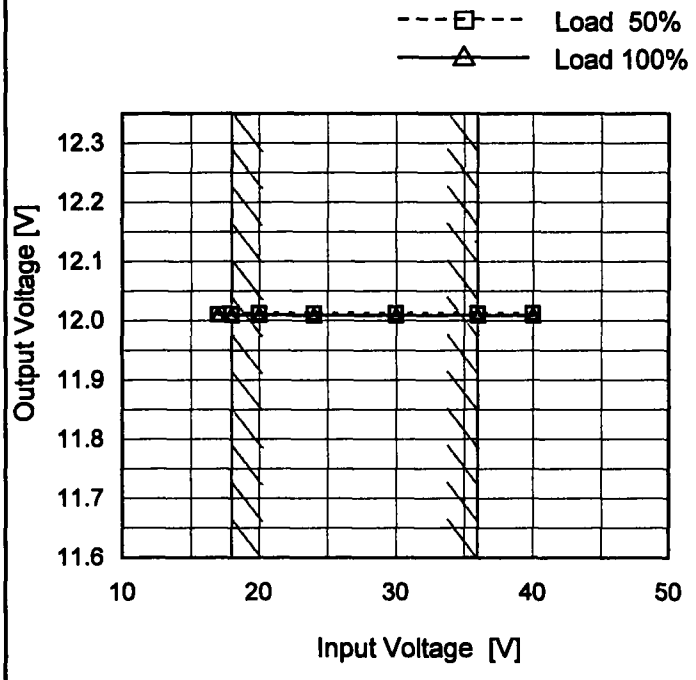
Load Current [A]	Efficiency [%]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.0	-	-	-
1.0	83.7	81.4	75.2
2.0	89.5	88.3	84.5
3.0	91.1	90.6	88.0
4.0	91.6	90.9	89.2
5.0	91.5	91.2	89.5
6.0	91.1	91.1	89.9
6.6	90.6	90.5	89.8
—	-	-	-
—	-	-	-
—	-	-	-

COSEL

Model	CES24120-6
Item	Line Regulation
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

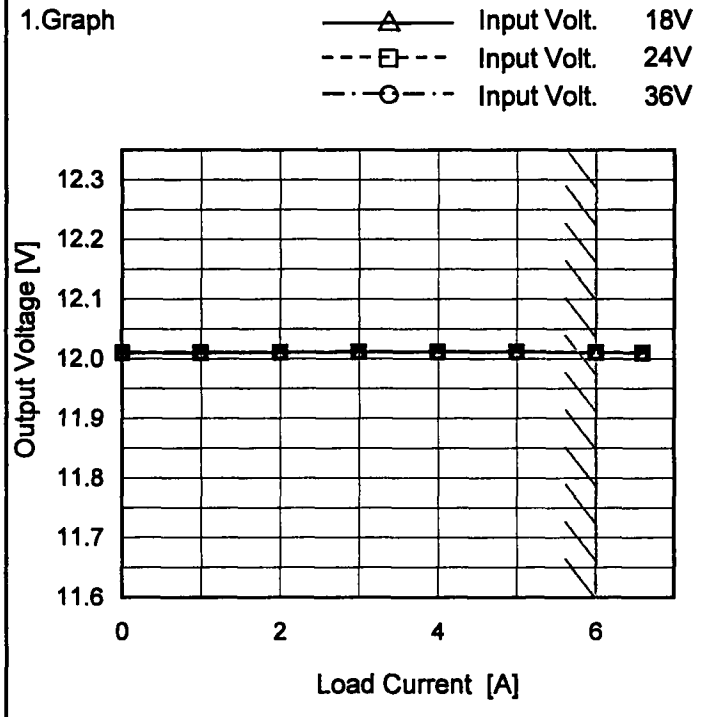
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	12.011	12.011
18	12.012	12.010
20	12.013	12.010
24	12.013	12.010
30	12.013	12.010
36	12.013	12.010
40	12.013	12.009
–	-	-
–	-	-

COSEL

Model	CES24120-6
Item	Load Regulation
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.0	12.010	12.011	12.011
1.0	12.010	12.011	12.011
2.0	12.011	12.011	12.011
3.0	12.012	12.012	12.011
4.0	12.012	12.012	12.011
5.0	12.012	12.012	12.011
6.0	12.011	12.011	12.011
6.6	12.010	12.010	12.011
—	-	-	-
—	-	-	-
—	-	-	-

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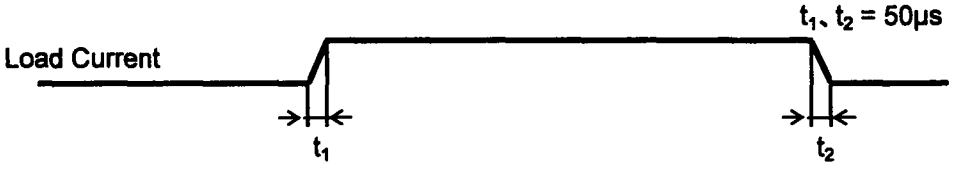
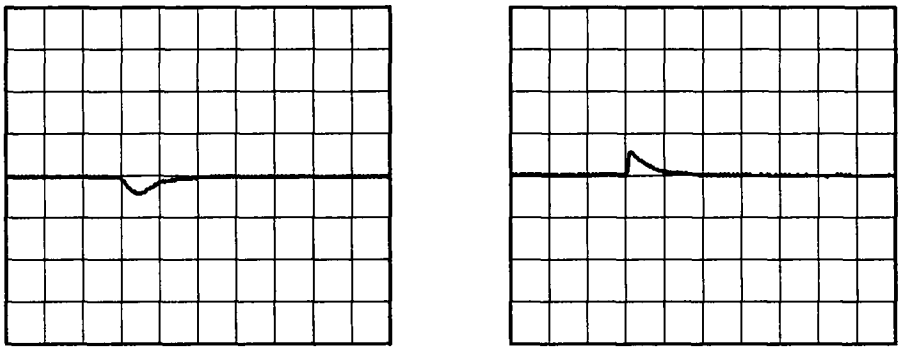
Model	CES24120-6
Item	Dynamic Load Response
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

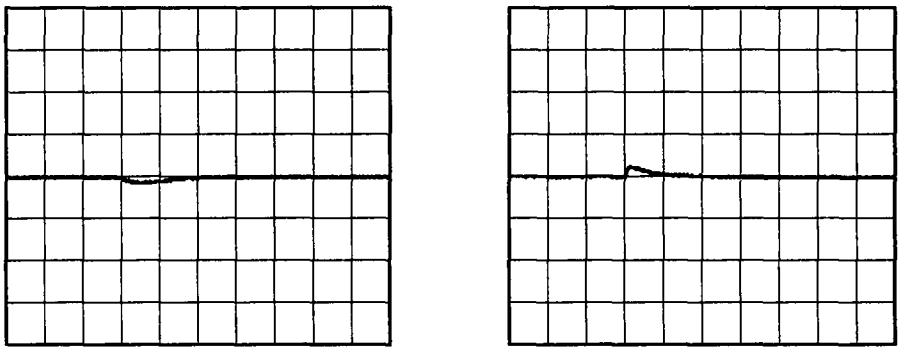
Input Volt. 24 V
Cycle 5 mS



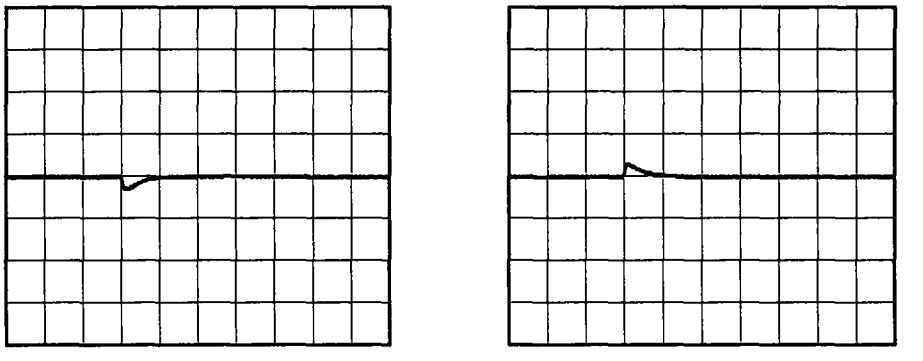
Min. Load (0A) ⟷ Load 100% (6A)



Min. Load (0A) ⟷ Load 50% (3A)



Load 50% (3A) ⟷ Load 100% (6A)

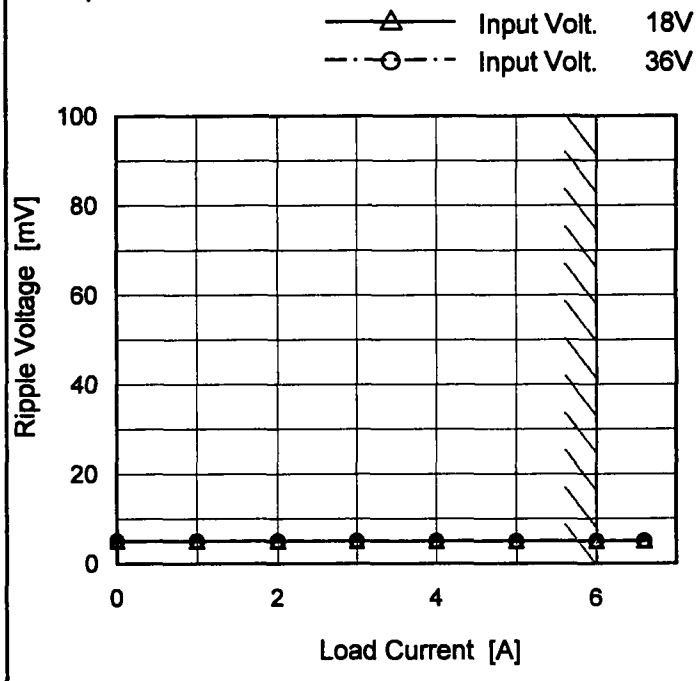


COSEL

Model	CES24120-6
Item	Ripple Voltage (by Load Current)
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Measured by 100 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

Ripple [mVp-p]

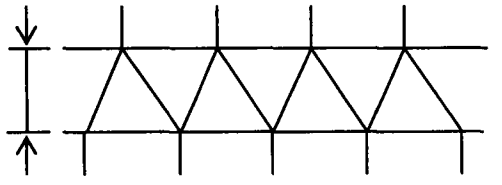


Fig.Complex Ripple Wave Form

2.Values

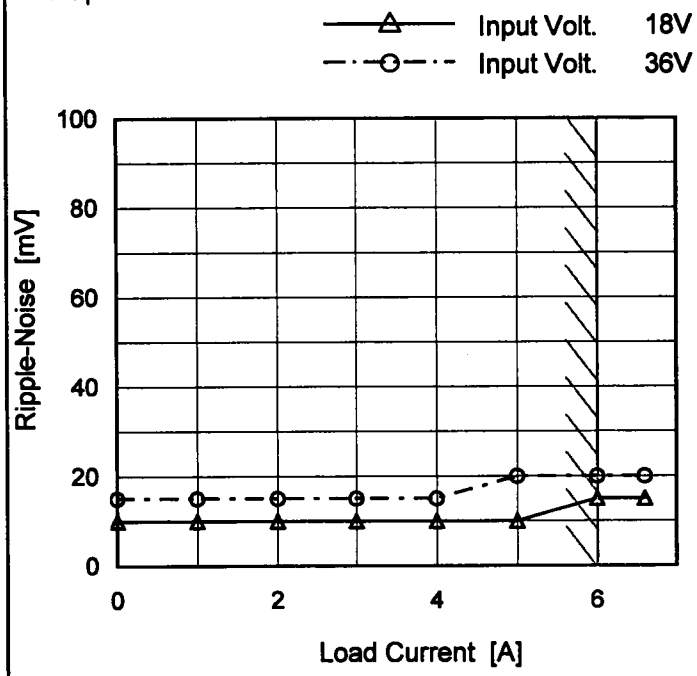
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.0	5	5
1.0	5	5
2.0	5	5
3.0	5	5
4.0	5	5
5.0	5	5
6.0	5	5
6.6	5	5
--	-	-
--	-	-
--	-	-

COSEL

Model	CES24120-6
Item	Ripple-Noise
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Measured by 100 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

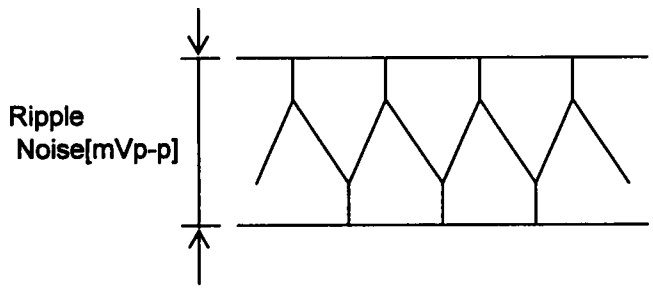


Fig.Complex Ripple Noise Wave Form

2.Values

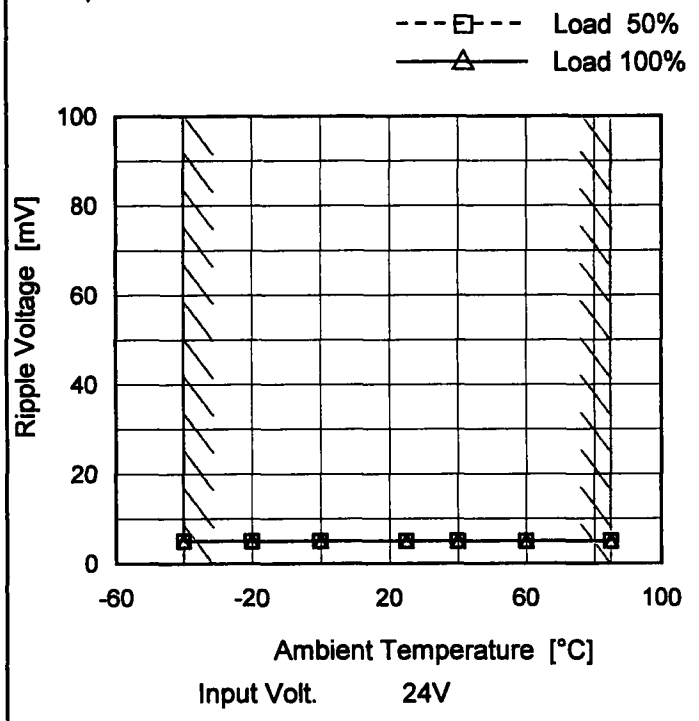
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.0	10	15
1.0	10	15
2.0	10	15
3.0	10	15
4.0	10	15
5.0	10	20
6.0	15	20
6.6	15	20
–	-	-
–	-	-
–	-	-

COSEL

Model	CES24120-6
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V6A

Testing Circuitry Figure B

1.Graph



Input Volt. 24V

Measured by 100 MHz Oscilloscope.

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

2.Values

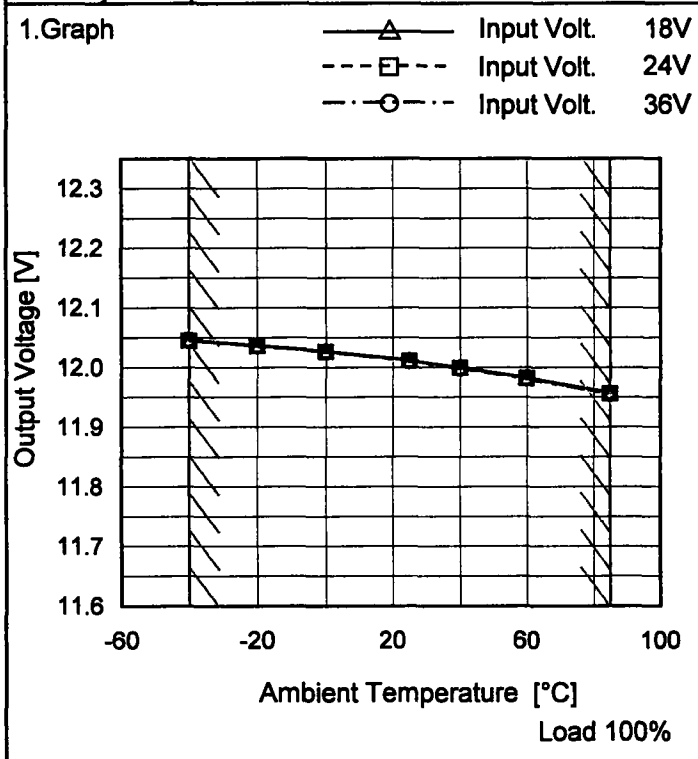
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	5	5
-20	5	5
0	5	5
25	5	5
40	5	5
60	5	5
85	5	5
—	-	-
—	-	-
—	-	-
—	-	-

COSEL

Model	CES24120-6
Item	Ambient Temperature Drift
Object	+12V6A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-40	12.046	12.045	12.046
-20	12.037	12.036	12.036
0	12.027	12.026	12.026
25	12.012	12.011	12.010
40	12.000	11.999	11.998
60	11.983	11.982	11.981
85	11.958	11.956	11.955
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	CES24120-6	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V6A	

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 : -40 - 85°C
Input Voltage : 18 - 36V
Load Current : 0 - 6A

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

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

2.Values

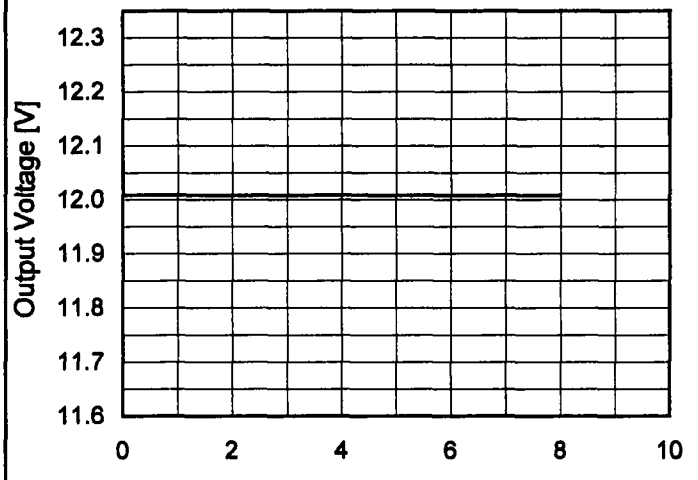
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-40	36	0	12.046	±46	±0.4
Minimum Voltage	85	36	6	11.955		

COSEL

Model	CES24120-6
Item	Time Lapse Drift
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.016
0.5	12.009
1.0	12.009
2.0	12.009
3.0	12.008
4.0	12.009
5.0	12.009
6.0	12.008
7.0	12.008
8.0	12.008

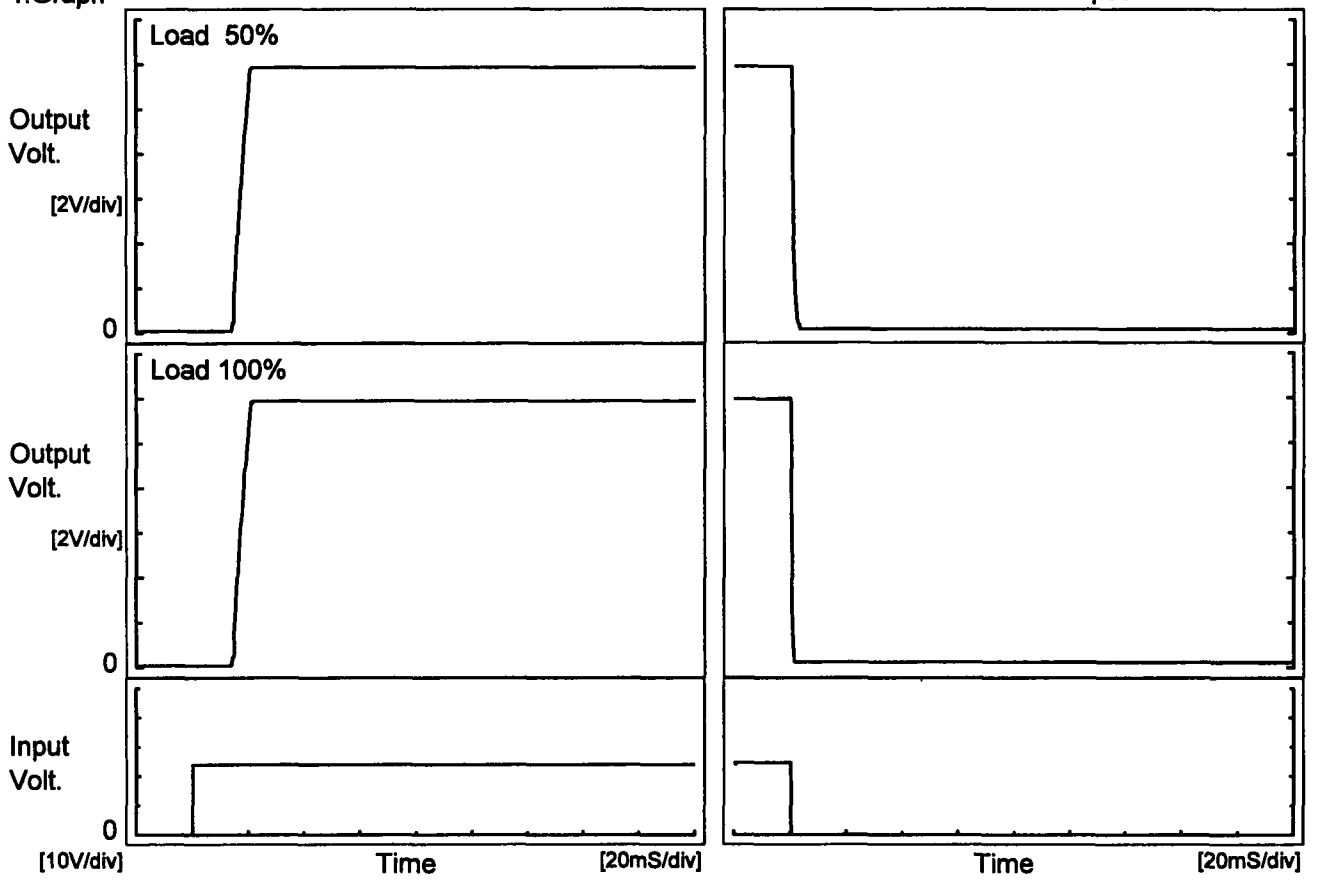
COSEL

Model	CES24120-6
Item	Rise and Fall Time
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

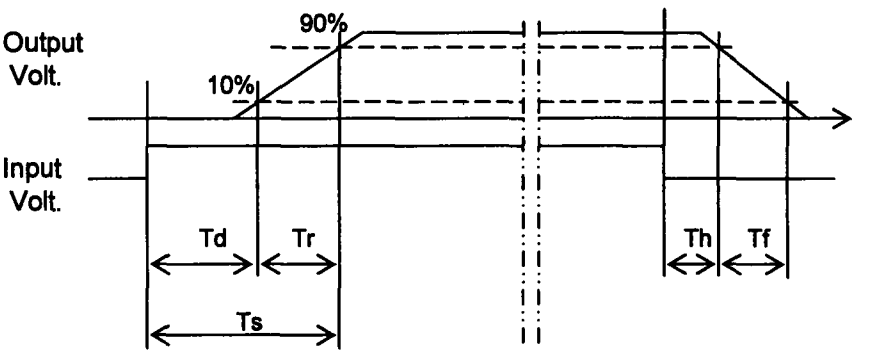
Input Volt. 24 V



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	14.7	5.4	20.1	0.2	1.5
100 %	14.7	5.6	20.3	0.2	0.8

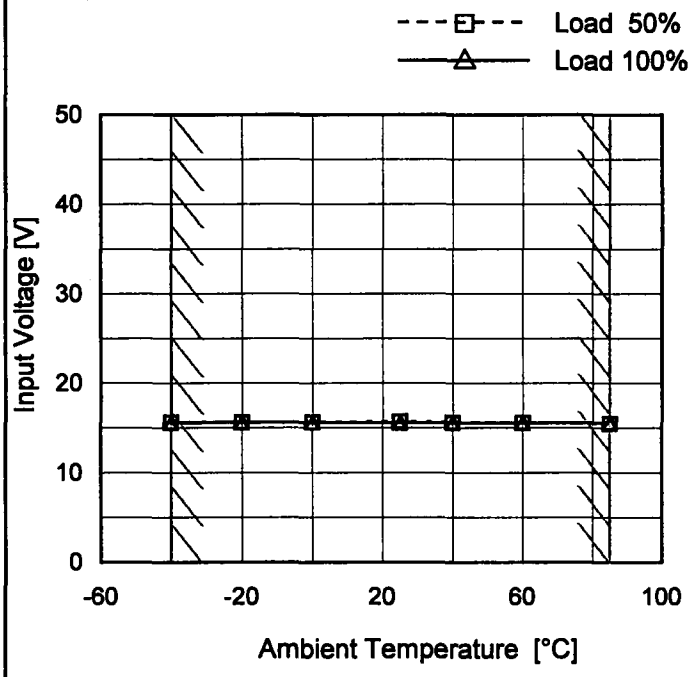


COSEL

Model	CES24120-6
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V6A

Testing Circuitry Figure A

1.Graph



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

2.Values

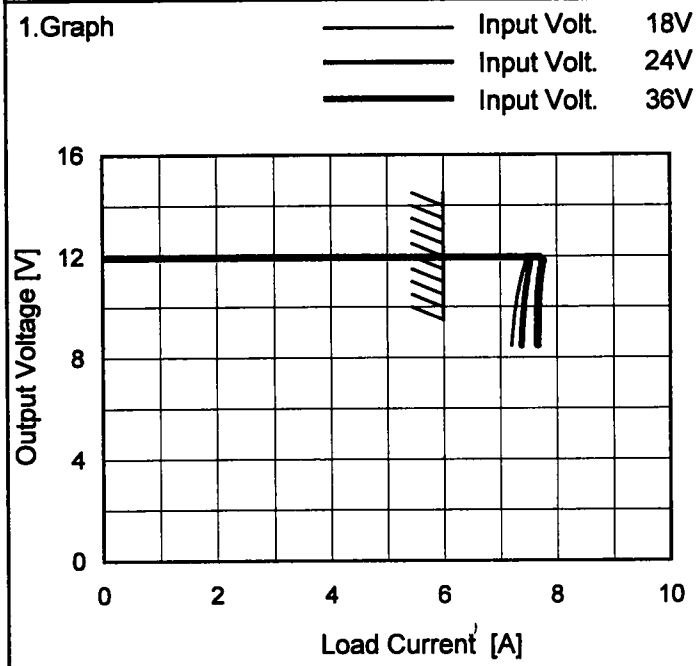
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	15.7	15.6
-20	15.7	15.7
0	15.7	15.7
25	15.8	15.6
40	15.6	15.6
60	15.6	15.6
85	15.5	15.6
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	CES24120-6
Item	Overcurrent Protection
Object	+12V6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

When the output voltage fell lower than 9.6V,the unit shuts off output by operating low voltage protection.

2.Values

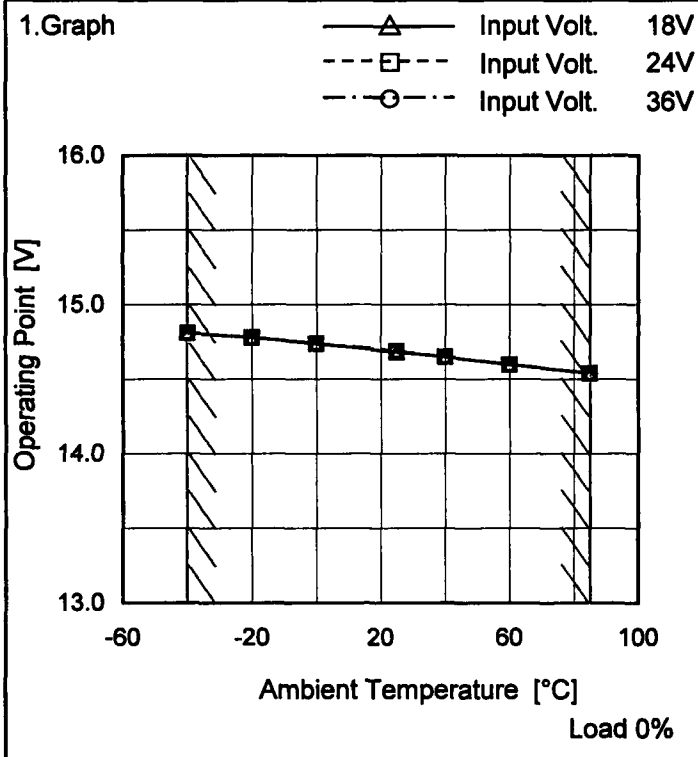
Output Voltage [V]	Load Current [A] Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
12.0	7.47	7.54	7.76
11.4	7.40	7.50	7.73
10.8	7.34	7.46	7.70
9.6	7.25	7.41	7.67
8.4	7.21	7.38	7.66
7.2	7.21	7.38	7.66
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

COSEL

Model	CES24120-6
Item	Overvoltage Protection
Object	+12V6A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-40	14.81	14.81	14.81
-20	14.78	14.78	14.78
0	14.74	14.74	14.74
25	14.68	14.69	14.69
40	14.65	14.65	14.65
60	14.60	14.60	14.60
85	14.54	14.54	14.54
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

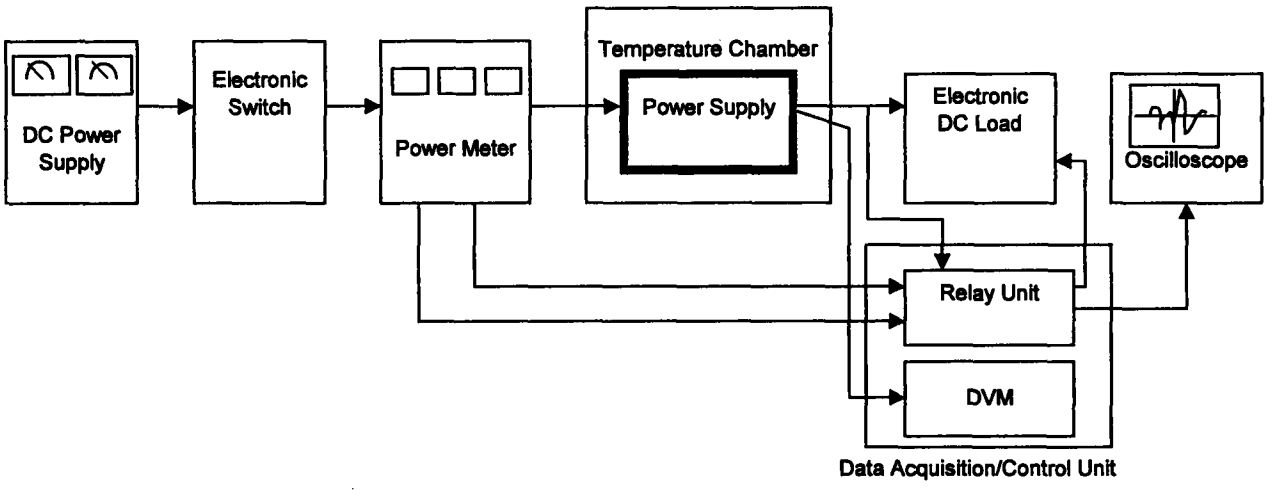


Figure A

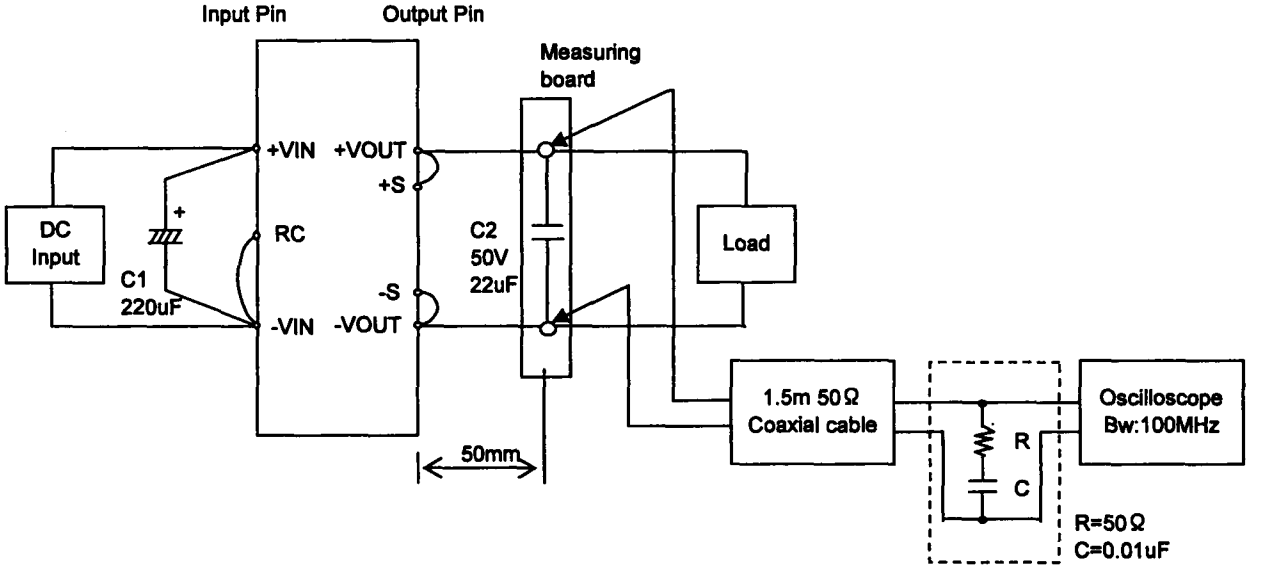


Figure B