COSEL

参考資料

TEST DATA OF SUCS1R54815

Regulated DC Power Supply
Sep 28, 2004

Approved by : Tetsuo Sugimori
Tetsuo Sugimori Design Manager

Prepared by : Masahiro Shima
Masahiro Shima Design Engineer

COSEL CO.,LTD.

COSEL

CONTENTS

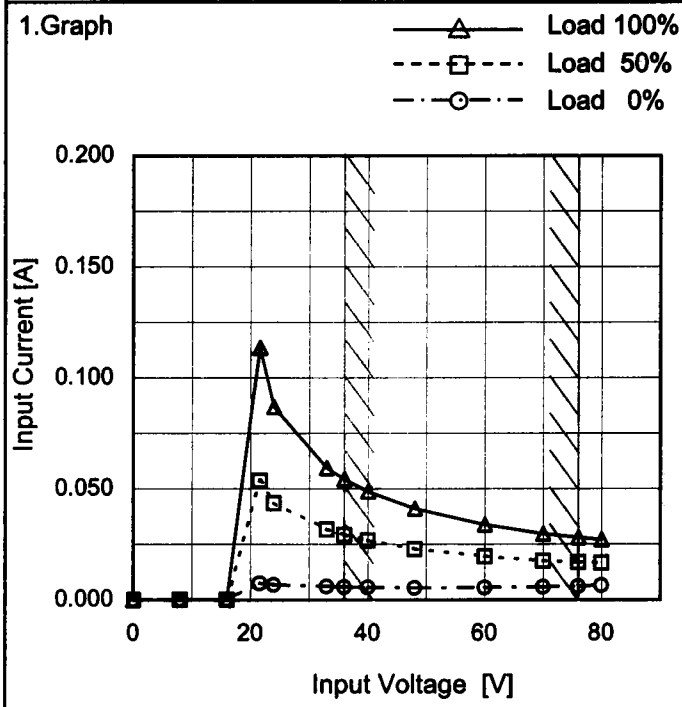
1.Input Current (by Input Voltage) 1
2.Input Current (by Load Current) 2
3.Input Power (by Load Current) 3
4.Efficiency (by Input Voltage) 4
5.Efficiency (by Load Current) 5
6.Line Regulation 6
7.Load Regulation 7
8.Dynamic Load Response 8
9.Ripple Voltage (by Load Current) 9
10.Ripple-Noise 10
11.Ripple 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.Figure of Testing Circuitry 18
(Final Page 18)

COSEL

Model	SUCS1R54815
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

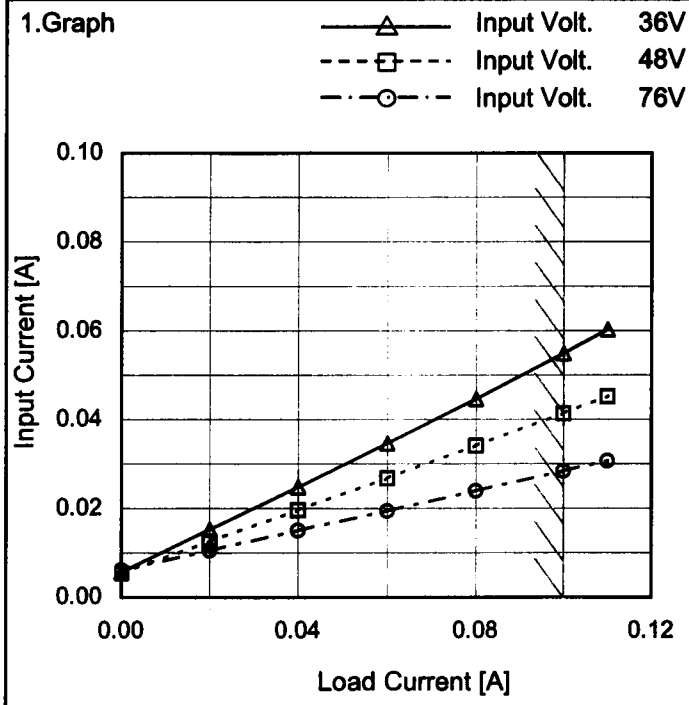
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
8.0	0.000	0.000	0.000
16.0	0.000	0.000	0.000
21.6	0.007	0.054	0.114
24.0	0.007	0.044	0.087
33.0	0.006	0.032	0.060
36.0	0.006	0.029	0.054
40.0	0.006	0.027	0.049
48.0	0.005	0.023	0.041
60.0	0.005	0.020	0.034
70.0	0.006	0.018	0.030
76.0	0.006	0.017	0.028
80.0	0.006	0.017	0.027
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUCS1R54815
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

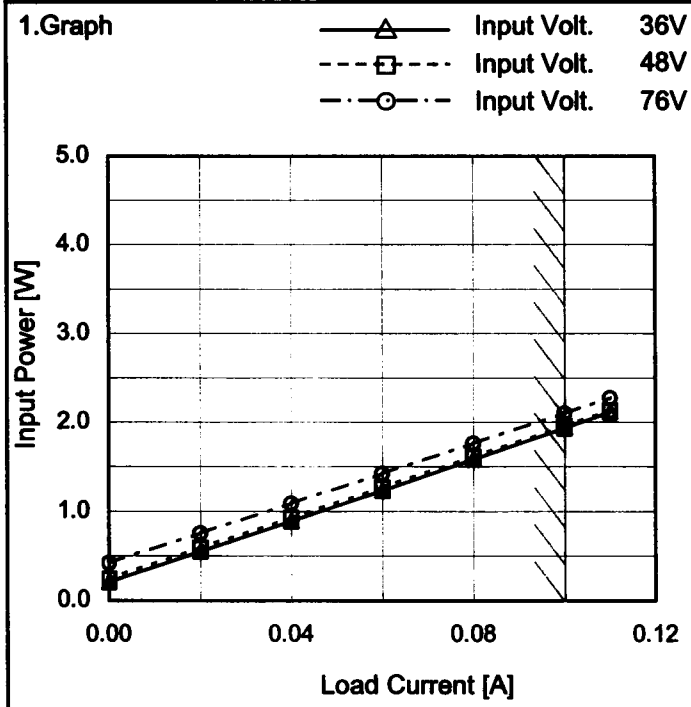
Load Current [A]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.006	0.005	0.006
0.02	0.015	0.013	0.011
0.04	0.025	0.020	0.015
0.06	0.035	0.027	0.019
0.08	0.045	0.034	0.024
0.10	0.055	0.041	0.028
0.11	0.060	0.045	0.031
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	SUCS1R54815
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

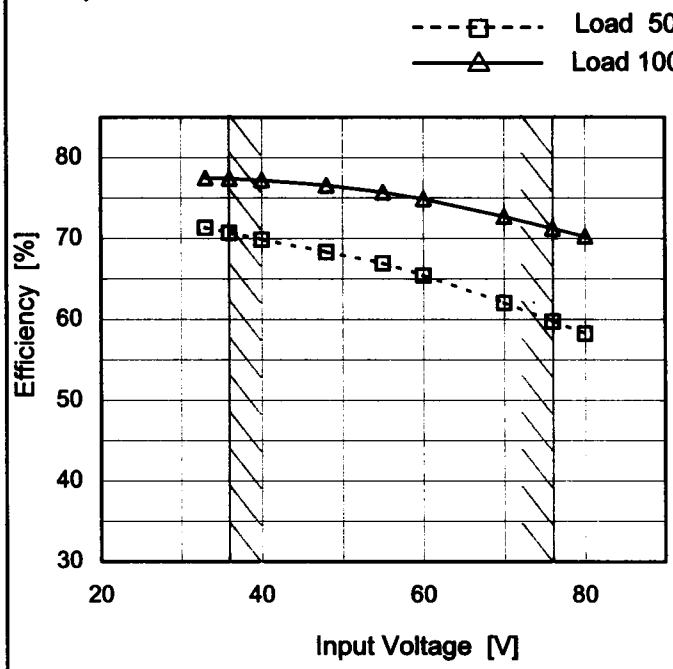
Load Current [A]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.21	0.25	0.42
0.02	0.55	0.59	0.75
0.04	0.89	0.93	1.09
0.06	1.23	1.27	1.42
0.08	1.58	1.61	1.76
0.10	1.94	1.96	2.10
0.11	2.12	2.13	2.27
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

COSEL

Model	SUCS1R54815
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

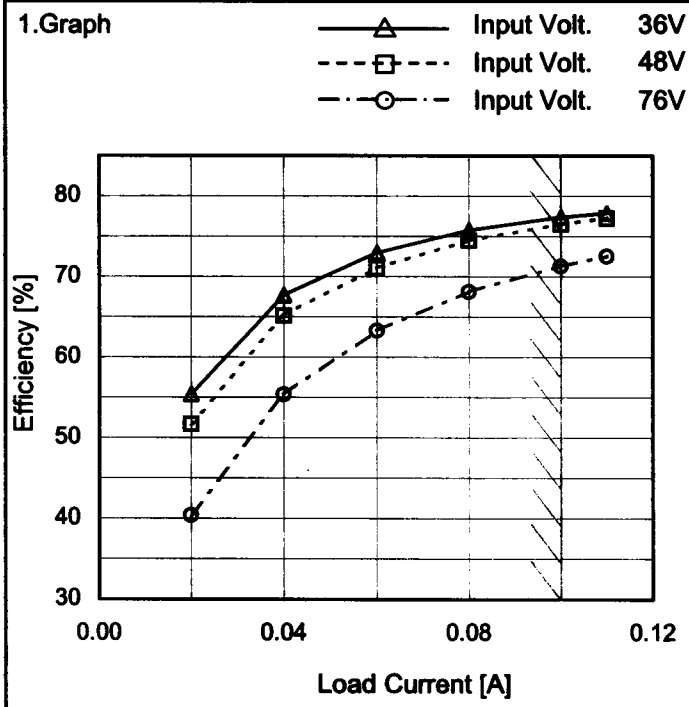
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
33	71.3	77.5
36	70.7	77.4
40	69.9	77.2
48	68.3	76.6
55	66.9	75.7
60	65.5	74.9
70	62.1	72.7
76	59.7	71.2
80	58.3	70.3

COSEL

Model	SUCS1R54815
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

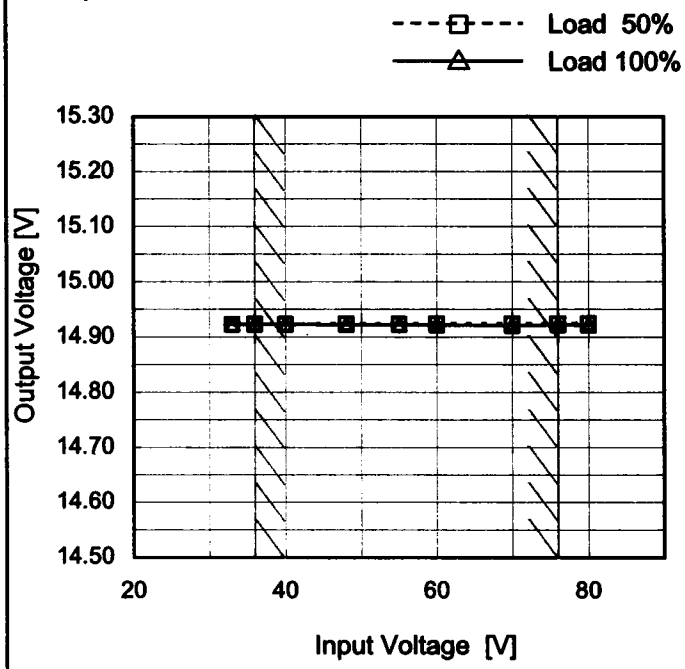
Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	-	-	-
0.02	55.4	51.7	40.4
0.04	67.7	65.2	55.4
0.06	73.0	71.0	63.3
0.08	75.8	74.5	68.1
0.10	77.4	76.5	71.3
0.11	77.9	77.3	72.5
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

COSEL

Model	SUCS1R54815
Item	Line Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

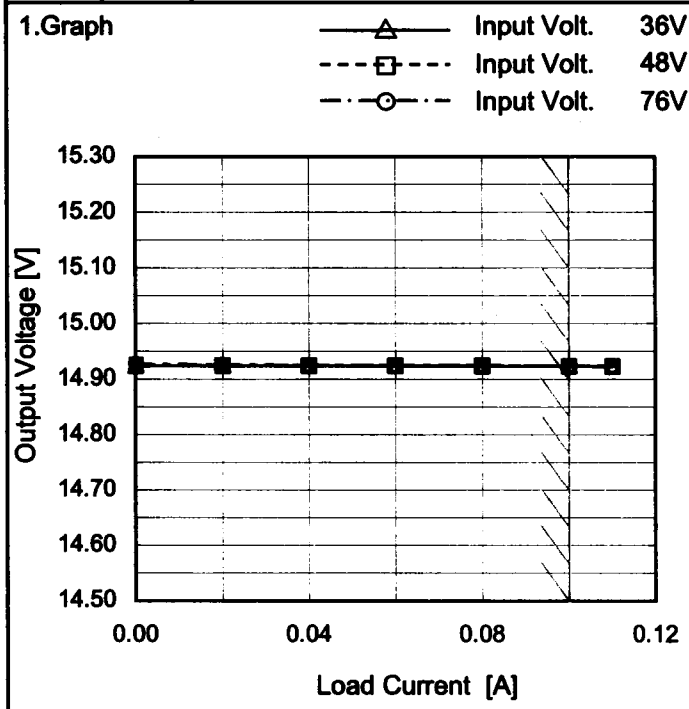
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
33	14.923	14.923
36	14.924	14.923
40	14.923	14.923
48	14.924	14.923
55	14.924	14.922
60	14.924	14.922
70	14.924	14.921
76	14.924	14.922
80	14.925	14.922

COSEL

Model	SUCS1R54815
Item	Load Regulation
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

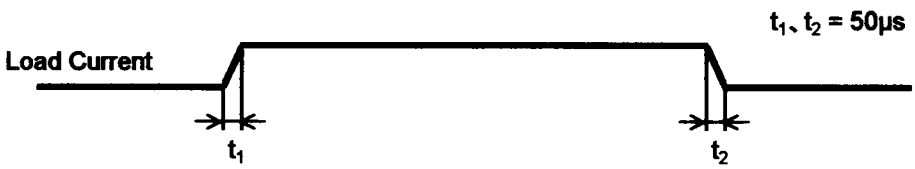
2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	14.924	14.925	14.927
0.02	14.924	14.925	14.926
0.04	14.924	14.924	14.925
0.06	14.924	14.924	14.924
0.08	14.923	14.924	14.924
0.10	14.923	14.923	14.923
0.11	14.923	14.923	14.923
—	-	-	-
—	-	-	-
—	-	-	-
—	-	-	-

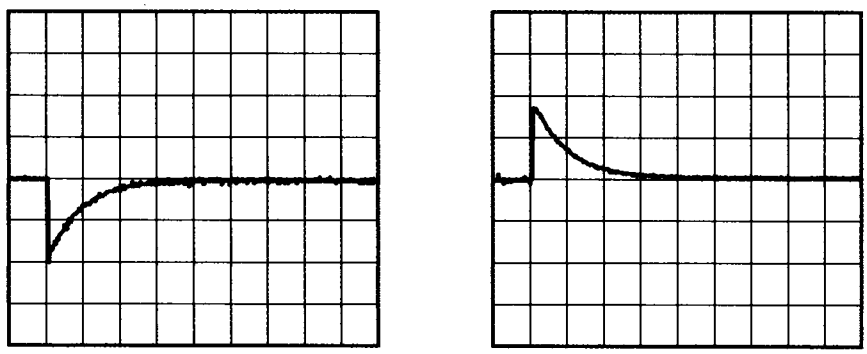
COSEL

Model	SUCS1R54815		
Item	Dynamic Load Response	Temperature	25°C
		Testing Circuitry	Figure A
Object	+15V0.1A		

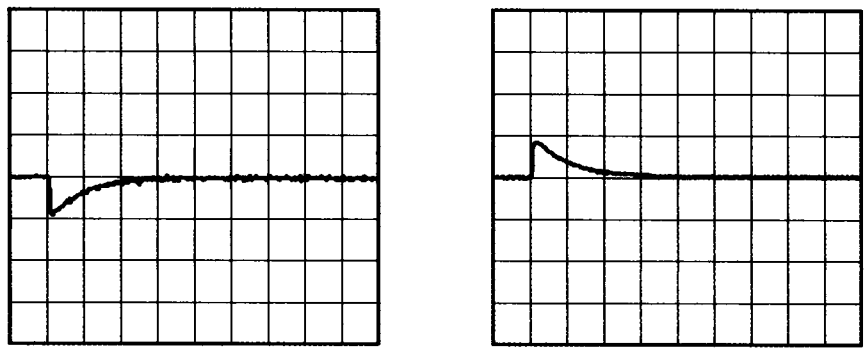
Input Volt. 48 V
Cycle 100 mS



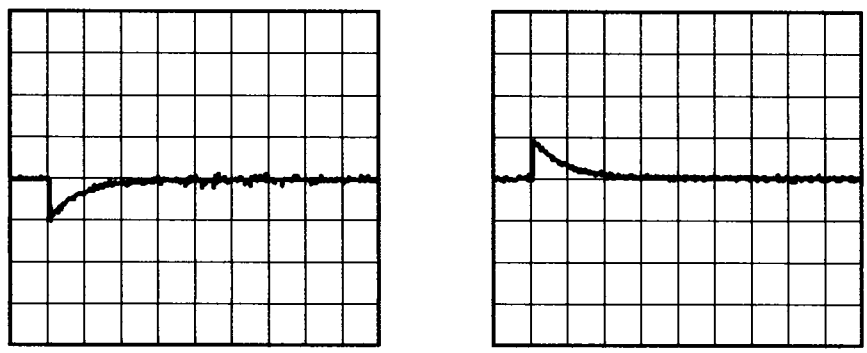
Min. Load (0A) ⟷
Load 100% (0.1A)



Min. Load (0A) ⟷
Load 50% (0.05A)



Load 50% (0.05A) ⟷
Load 100% (0.1A)

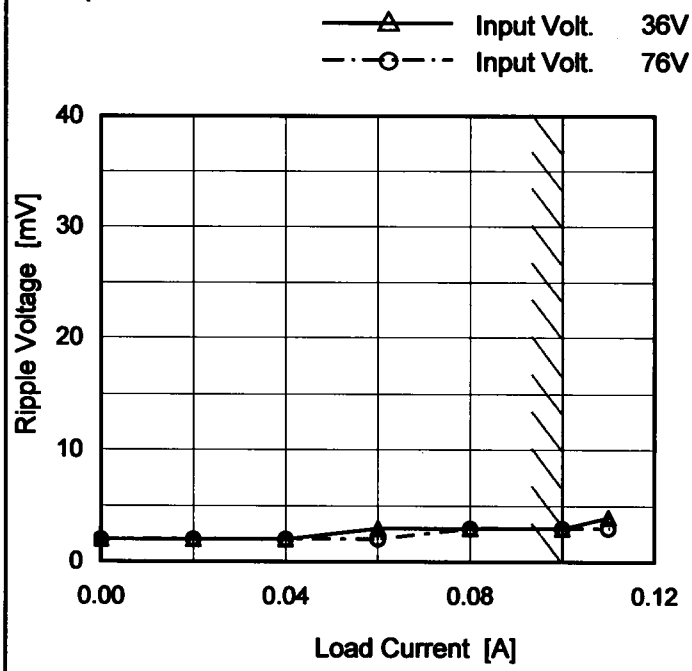


COSEL

Model	SUCS1R54815
Item	Ripple Voltage (by Load Current)
Object	+15V0.1A

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]

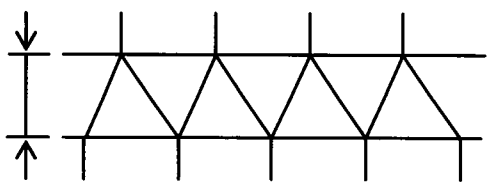


Fig.Complex Ripple Wave Form

2.Values

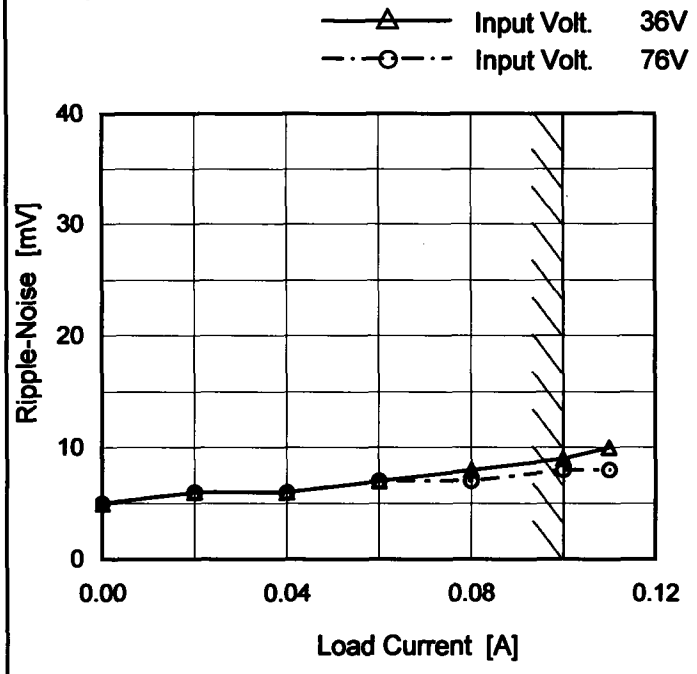
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	2	2
0.02	2	2
0.04	2	2
0.06	3	2
0.08	3	3
0.10	3	3
0.11	4	3
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUCS1R54815
Item	Ripple-Noise
Object	+15V0.1A

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.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	5	5
0.02	6	6
0.04	6	6
0.06	7	7
0.08	8	7
0.10	9	8
0.11	10	8
–	-	-
–	-	-
–	-	-
–	-	-

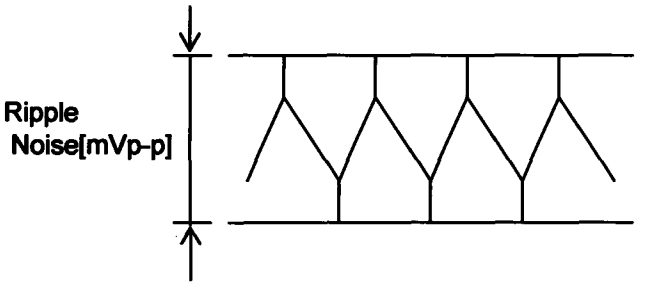


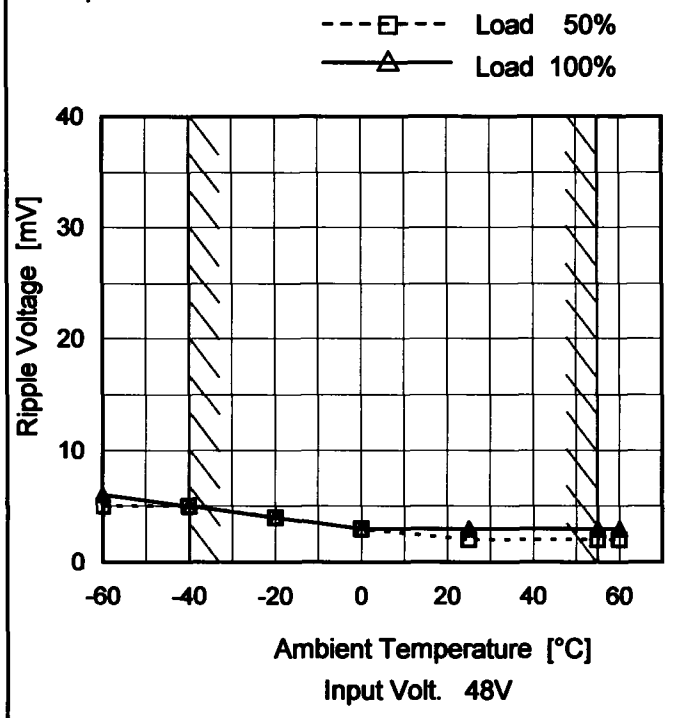
Fig.Complex Ripple Noise Wave Form

COSEL

Model	SUCS1R54815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.1A

Testing Circuitry Figure B

1.Graph



Input Volt. 48V

Measured by 100 MHz Oscilloscope.

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

2.Values

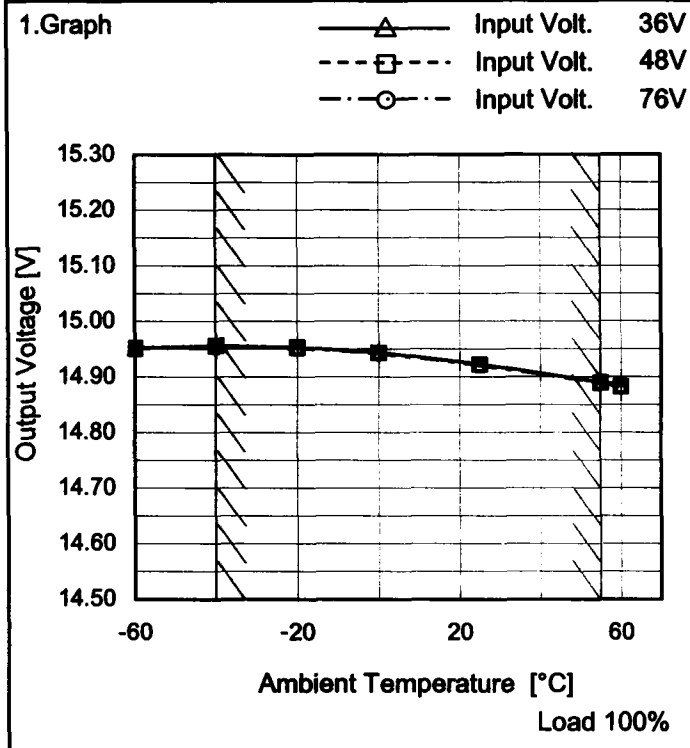
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	6
-40	5	5
-20	4	4
0	3	3
25	2	3
55	2	3
60	2	3
–	-	-
–	-	-
–	-	-
–	-	-

COSEL

Model	SUCS1R54815
Item	Ambient Temperature Drift
Object	+15V0.1A

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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.951	14.952	14.952
-40	14.956	14.956	14.955
-20	14.953	14.953	14.952
0	14.944	14.943	14.942
25	14.923	14.922	14.920
55	14.891	14.889	14.888
60	14.884	14.882	14.881
–	-	-	-
–	-	-	-
–	-	-	-
–	-	-	-

COSEL

Model	SUCS1R54815	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V0.1A	

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 - 55°C
Input Voltage : 36 - 76V
Load Current : 0 - 0.1A

* 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

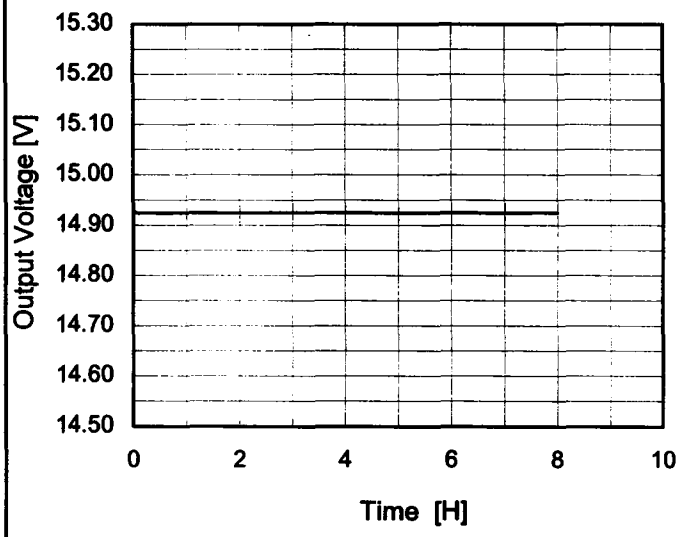
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-40	76	0	14.960	±36	±0.2
Minimum Voltage	55	76	0.1	14.888		

COSEL

Model	SUCS1R54815
Item	Time Lapse Drift
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 48V
Load 100%

2.Values

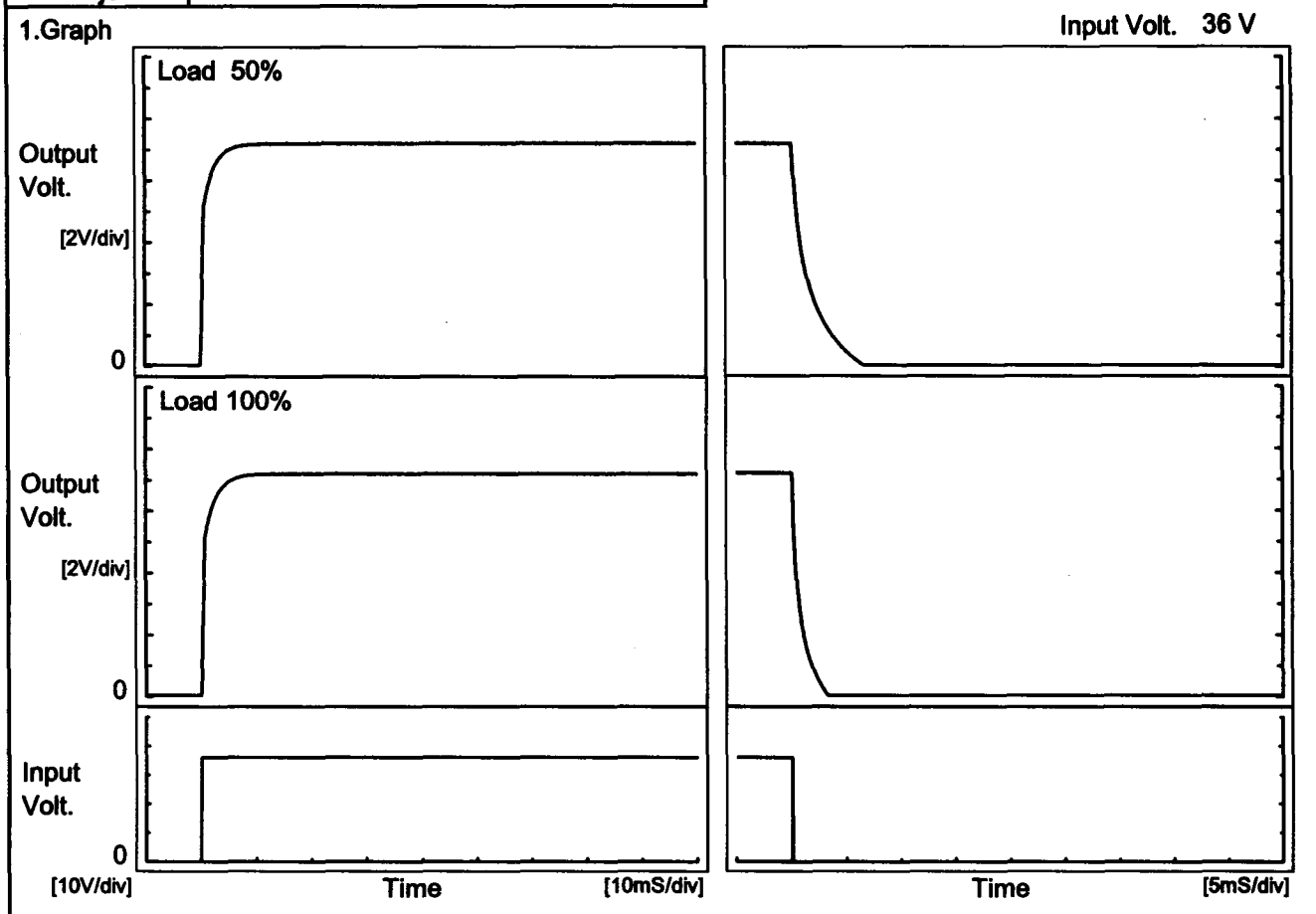
Time since start [H]	Output Voltage [V]
0.0	14.932
0.5	14.924
1.0	14.925
2.0	14.925
3.0	14.925
4.0	14.925
5.0	14.925
6.0	14.925
7.0	14.925
8.0	14.926

COSEL

Model	SUCS1R54815
Item	Rise and Fall Time
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

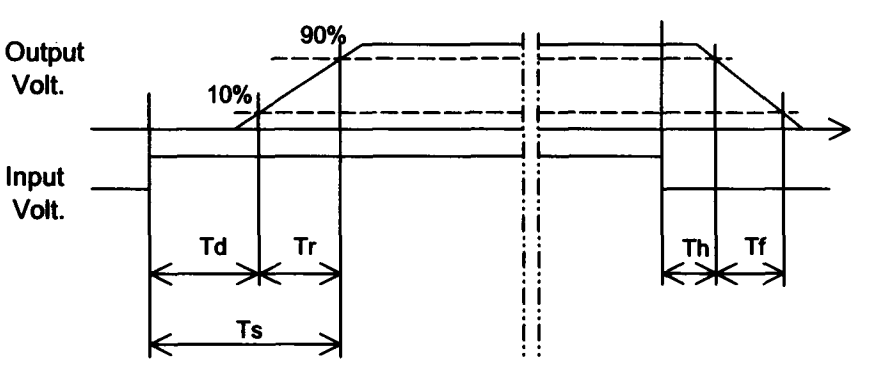
1.Graph



2.Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.1	3.8	3.9	0.1	4.2
100 %	0.1	3.9	4.0	0.1	2.1

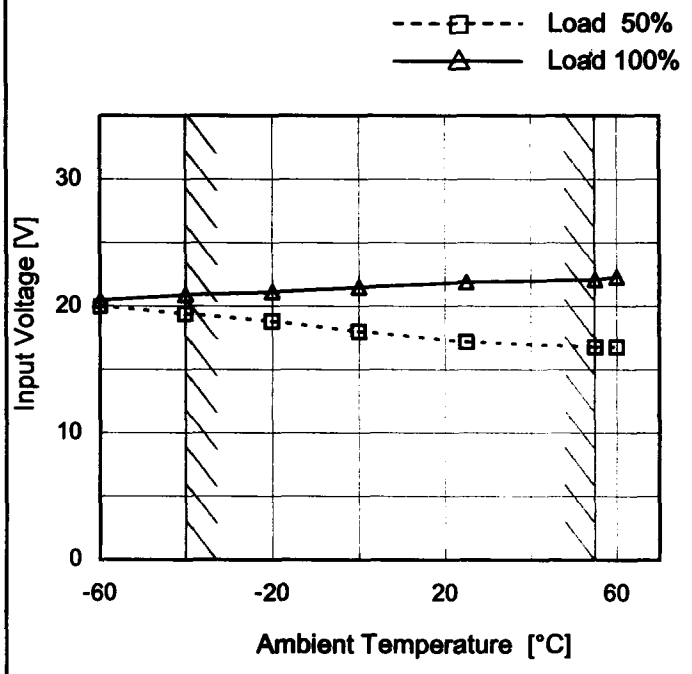


COSEL

Model	SUCS1R54815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.1A

Testing Circuitry Figure A

1.Graph



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

2.Values

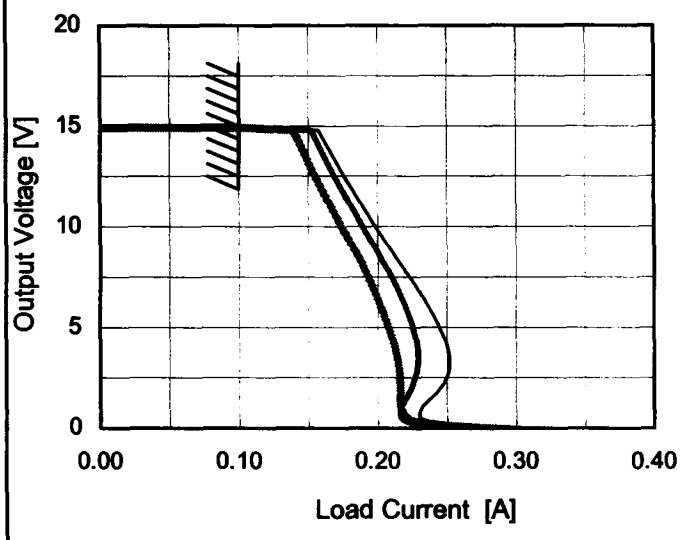
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	20.0	20.5
-40	19.4	20.9
-20	18.8	21.2
0	18.1	21.5
25	17.3	21.9
55	16.8	22.1
60	16.8	22.3
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCS1R54815
Item	Overcurrent Protection
Object	+15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
15.0	0.10	0.10	0.10
14.3	0.16	0.16	0.14
13.5	0.17	0.16	0.15
12.0	0.18	0.17	0.16
10.5	0.19	0.19	0.17
9.0	0.21	0.20	0.18
7.5	0.22	0.21	0.19
6.0	0.24	0.22	0.20
4.5	0.25	0.23	0.21
3.0	0.25	0.23	0.22
1.5	0.24	0.22	0.22
0.0	0.31	0.28	0.28

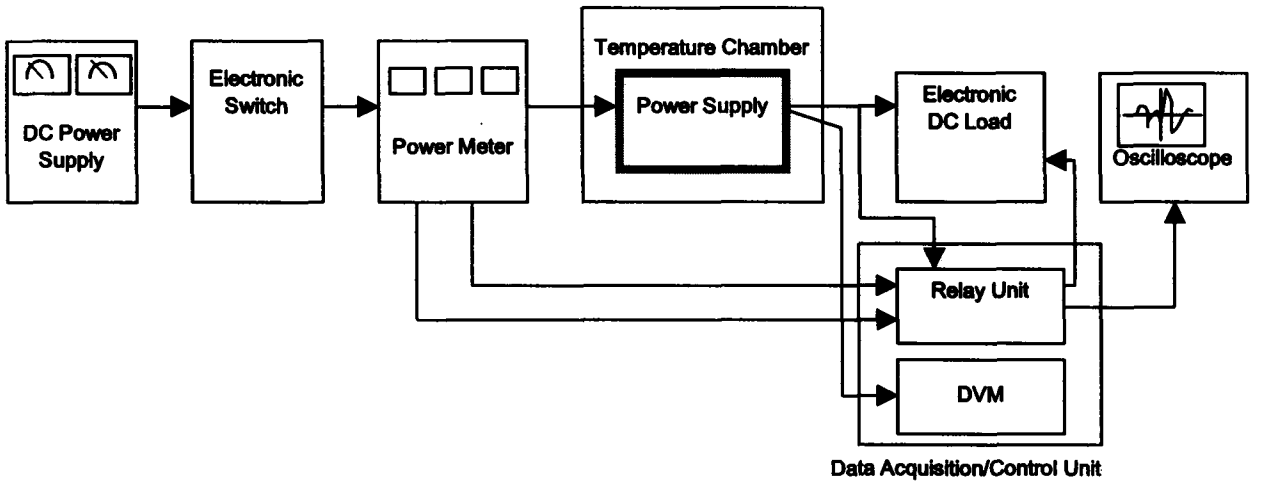


Figure A

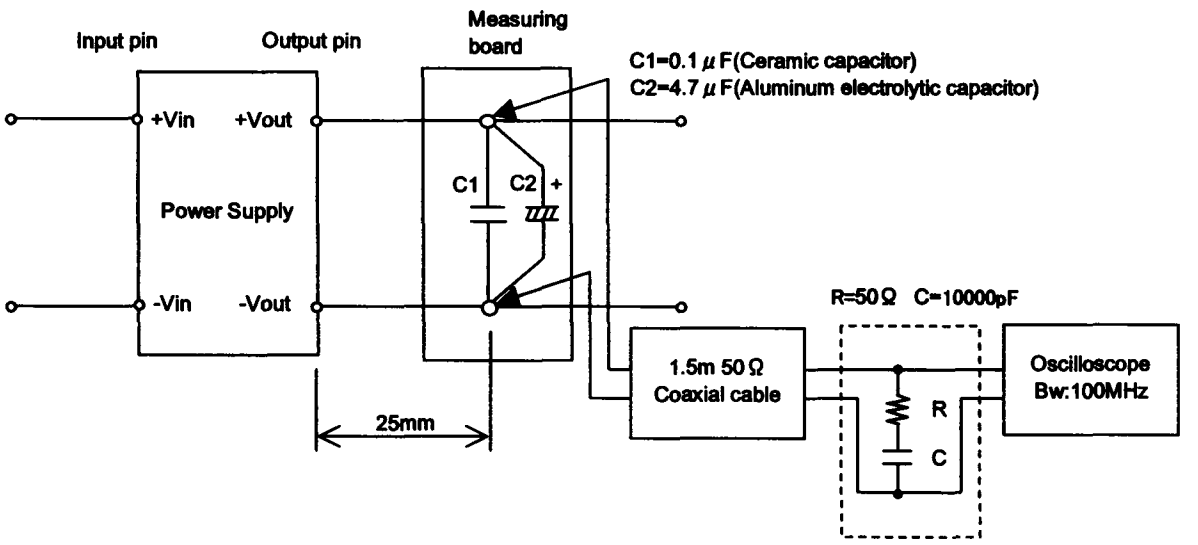


Figure B (Ripple and Ripple noise Characteristic)