参考資料

TEST DATA OF MGFS64815

Regulated DC Power Supply
December 6, 2016

Approved by : Takayuki Fukuda
Takayuki Fukuda Design Manager

Prepared by : Takaaki Sekiguchi
Takaaki Sekiguchi Design Engineer

COSEL CO.,LTD.

COSEL

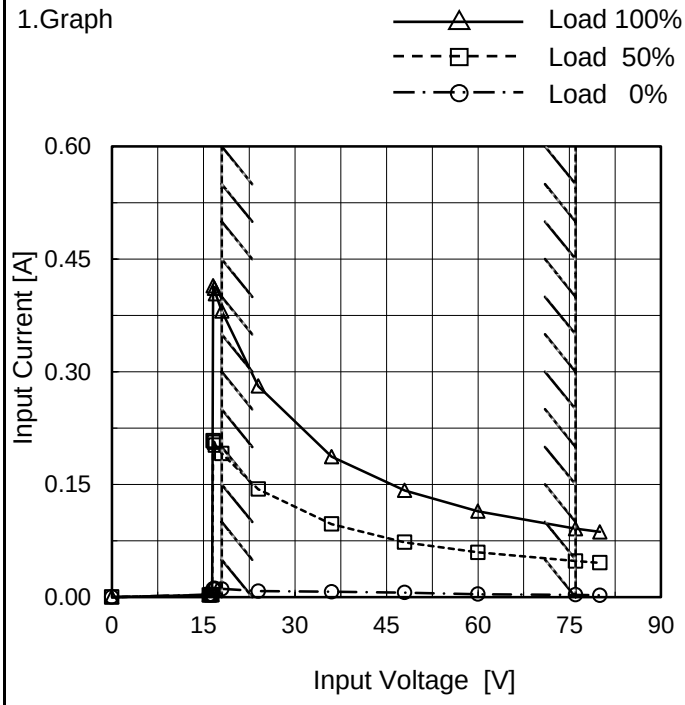
CONTENTS

COSEL

Model	MGFS64815
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
16.0	0.003	0.003	0.003
16.2	0.003	0.003	0.003
16.4	0.003	0.003	0.003
16.6	0.011	0.208	0.415
16.8	0.012	0.206	0.411
17.0	0.011	0.202	0.404
18.0	0.011	0.191	0.381
24.0	0.008	0.144	0.281
36.0	0.007	0.097	0.187
48.0	0.006	0.073	0.142
60.0	0.004	0.060	0.114
76.0	0.003	0.048	0.091
80.0	0.002	0.046	0.087
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

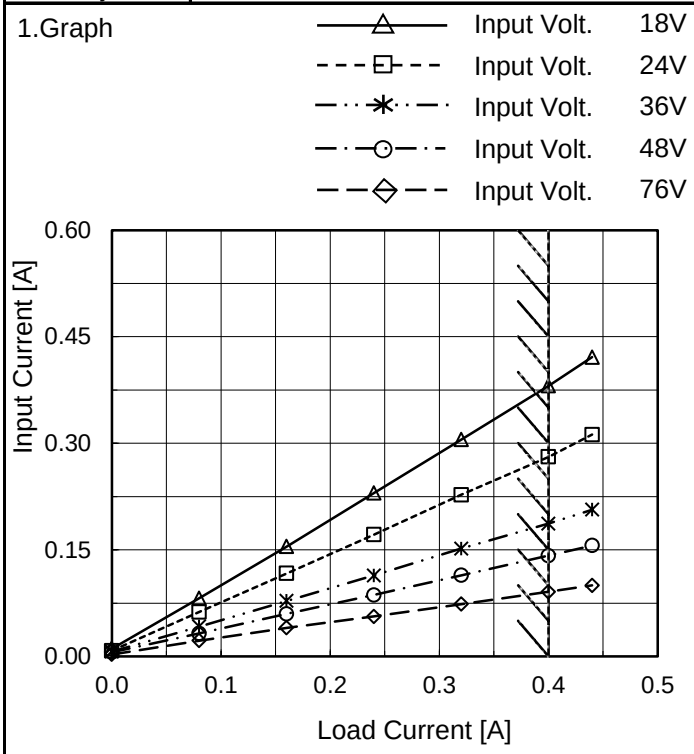
BC-11041

COSEL

Model	MGFS64815
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

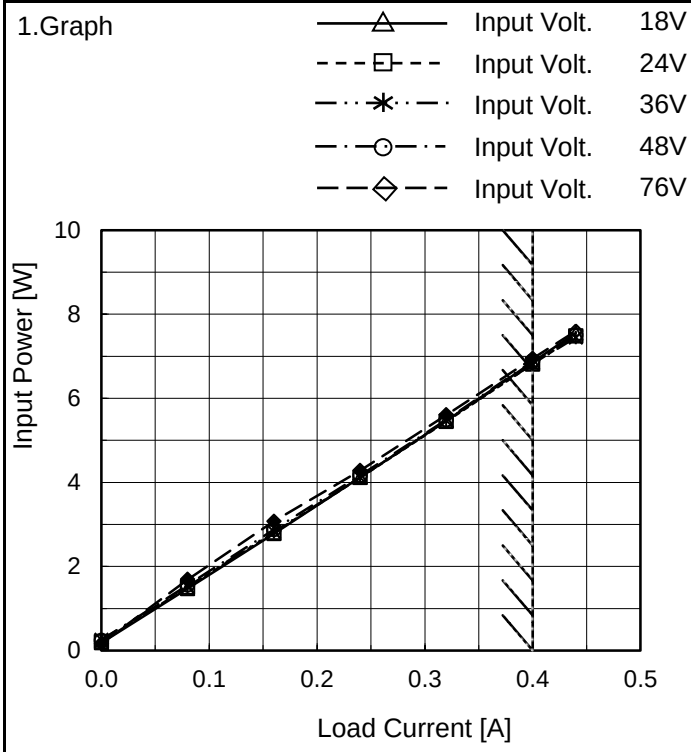
Load Current [A]	Input Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.011	0.008	0.007	0.006	0.003
0.08	0.082	0.063	0.042	0.032	0.022
0.16	0.155	0.117	0.078	0.060	0.040
0.24	0.230	0.172	0.114	0.087	0.056
0.32	0.305	0.227	0.152	0.114	0.074
0.40	0.381	0.281	0.187	0.142	0.091
0.44	0.421	0.312	0.207	0.156	0.100
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFS64815
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

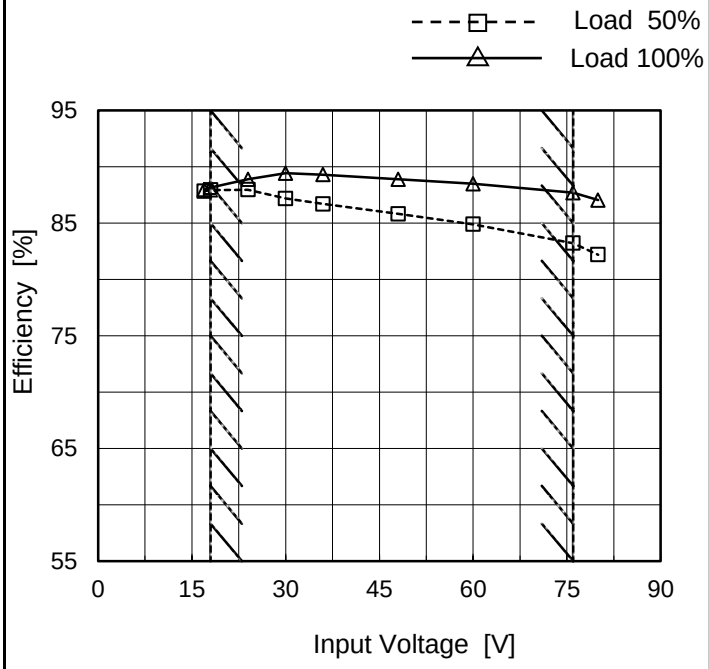
Load Current [A]	Input Power [W]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.18	0.21	0.25	0.24	0.16
0.08	1.47	1.50	1.52	1.56	1.69
0.16	2.78	2.80	2.82	2.88	3.07
0.24	4.12	4.11	4.11	4.16	4.28
0.32	5.47	5.45	5.47	5.49	5.61
0.40	6.86	6.81	6.82	6.88	6.94
0.44	7.55	7.48	7.44	7.50	7.60
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFS64815
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

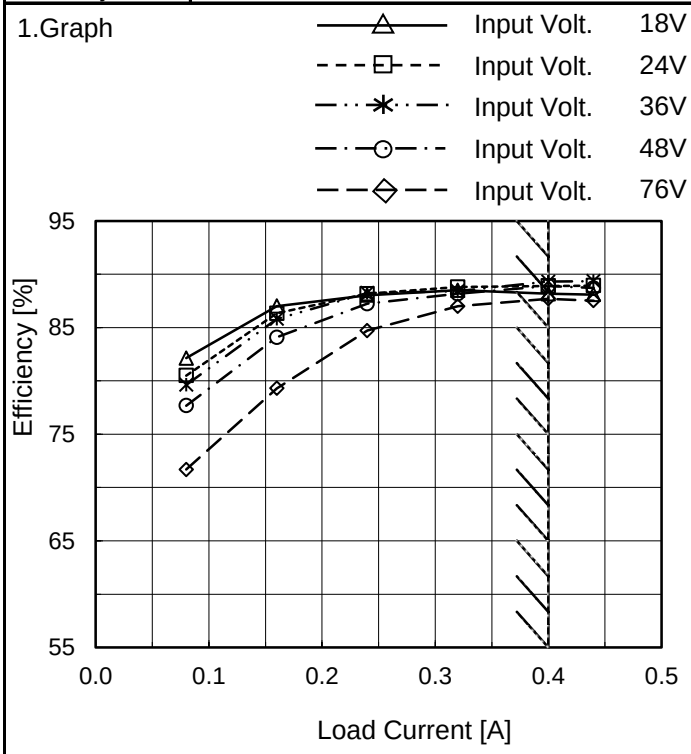
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	87.8	88.0
18	87.9	88.2
24	88.0	88.9
30	87.2	89.4
36	86.7	89.3
48	85.8	88.9
60	84.9	88.5
76	83.2	87.7
80	82.2	87.0

COSEL

Model	MGFS64815
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

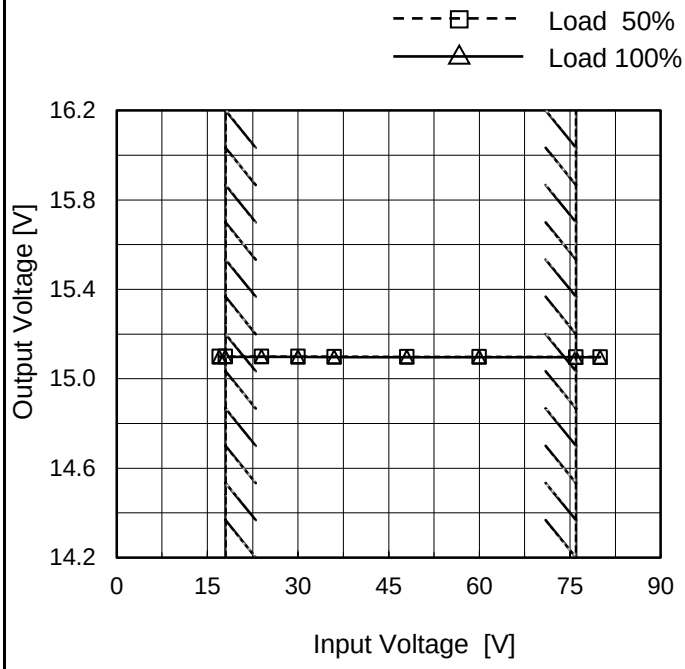
Load Current [A]	Efficiency [%]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	-	-	-	-	-
0.08	82.1	80.5	79.6	77.7	71.7
0.16	87.0	86.3	85.8	84.1	79.3
0.24	88.0	88.2	88.2	87.2	84.7
0.32	88.5	88.8	88.4	88.2	87.0
0.40	88.2	88.9	89.3	88.9	87.7
0.44	88.1	88.9	89.3	88.7	87.5
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFS64815
Item	Line Regulation
Object	+15V0.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

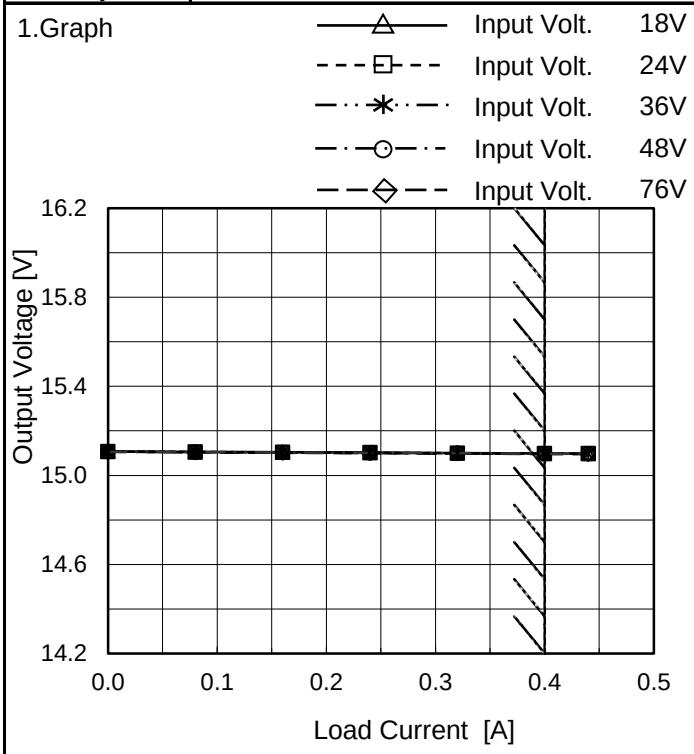
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.100	15.097
18	15.100	15.098
24	15.099	15.098
30	15.099	15.097
36	15.099	15.097
48	15.098	15.097
60	15.098	15.097
76	15.097	15.096
80	15.098	15.096

COSEL

Model	MGFS64815
Item	Load Regulation
Object	+15V0.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

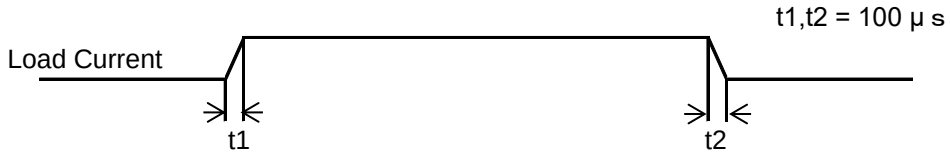
Load Current [A]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	15.107	15.107	15.106	15.106	15.108
0.08	15.106	15.105	15.104	15.104	15.103
0.16	15.104	15.103	15.103	15.102	15.101
0.24	15.102	15.102	15.101	15.101	15.099
0.32	15.100	15.100	15.100	15.099	15.098
0.40	15.098	15.098	15.097	15.097	15.096
0.44	15.098	15.097	15.097	15.097	15.096
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

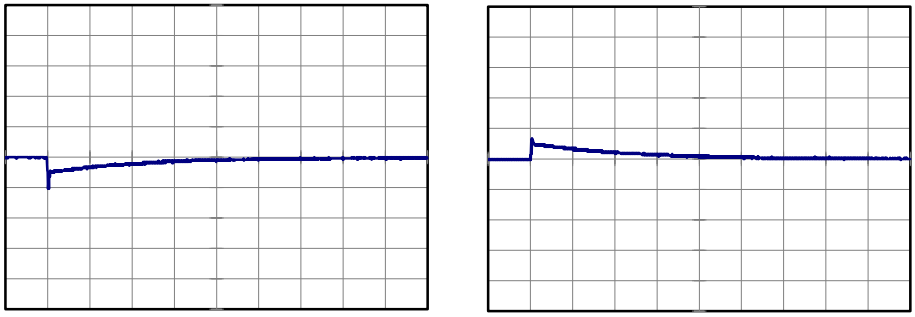
Model	MGFS64815
Item	Dynamic Load Response
Object	+15V0.4A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Cycle 100 ms



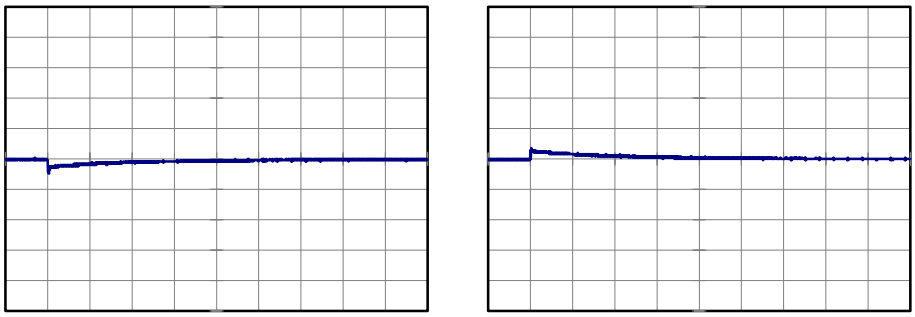
Min.Load (0A)←→
Load 100% (0.4A)



500 mV/div

2 ms/div 2 ms/div

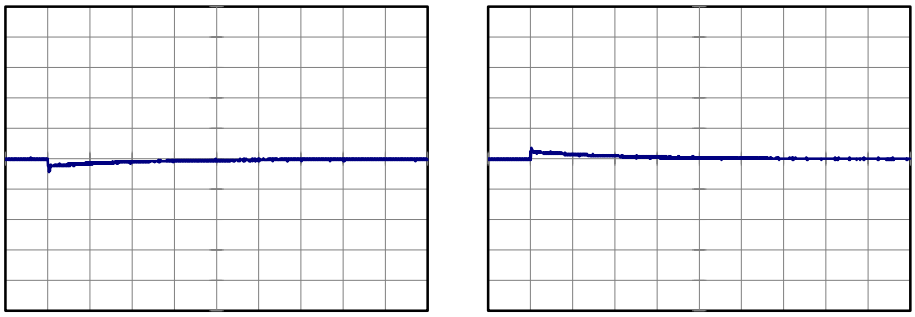
Min.Load (0A)←→
Load 50% (0.2A)



500 mV/div

2 ms/div 2 ms/div

Load 50% (0.2A)←→
Load 100% (0.4A)



500 mV/div

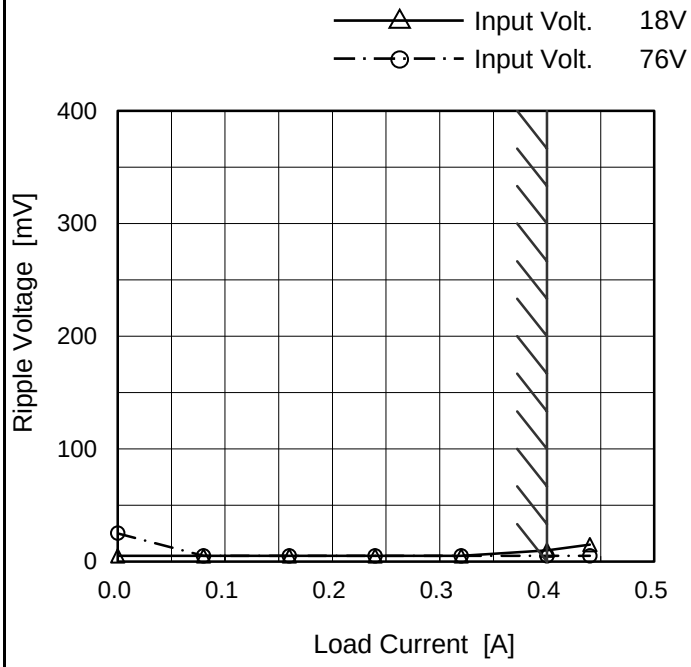
2 ms/div 2 ms/div

COSEL

Model	MGFS64815
Item	Ripple Voltage (by Load Current)
Object	+15V0.4A

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]

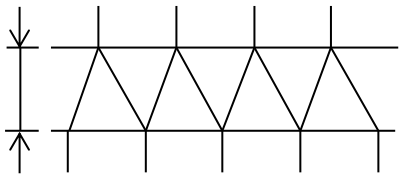


Fig.Complex Ripple Wave Form

2.Values

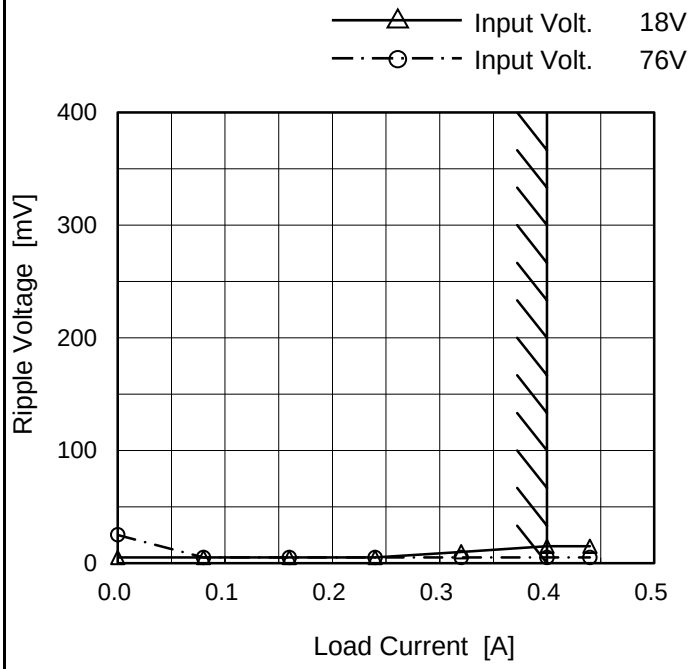
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.00	5	25
0.08	5	5
0.16	5	5
0.24	5	5
0.32	5	5
0.40	10	5
0.44	15	5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS64815
Item	Ripple-Noise
Object	+15V0.4A

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.

Ripple Noise[mVp-p]

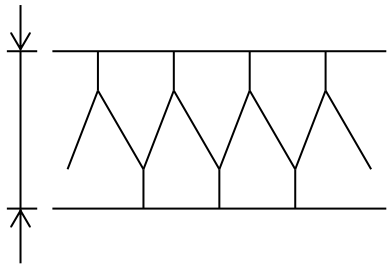


Fig.Complex Ripple Noise Wave Form

2.Values

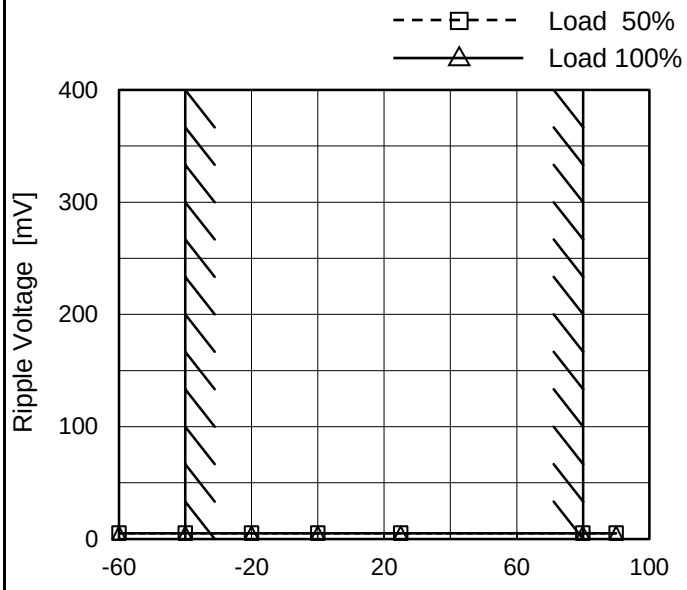
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.00	5	25
0.08	5	5
0.16	5	5
0.24	5	5
0.32	10	5
0.40	15	5
0.44	15	5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS64815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.4A

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

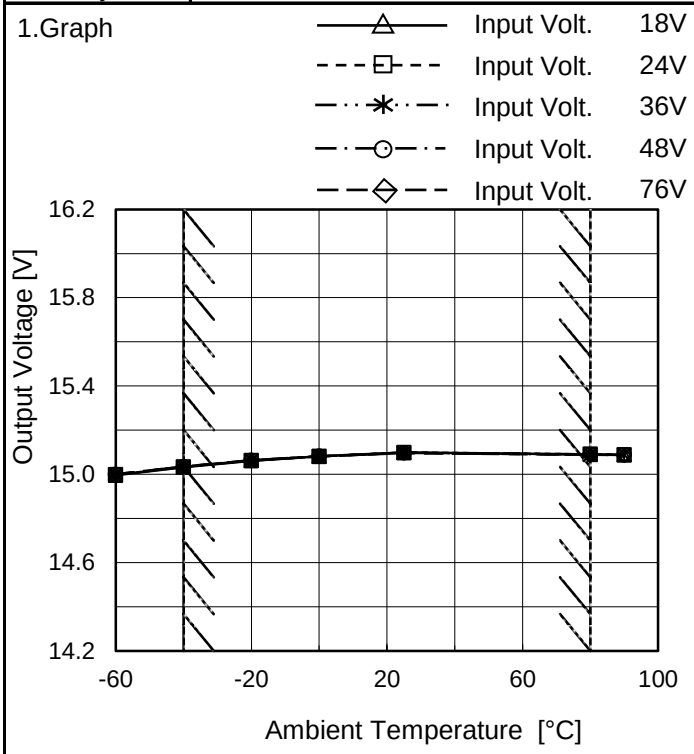
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	5
-40	5	5
-20	5	5
0	5	5
25	5	5
80	5	5
90	5	5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS64815
Item	Ambient Temperature Drift
Object	+15V0.4A

Testing Circuitry Figure A

1.Graph



Load 100%

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]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.996	14.997	14.999	15.000	15.000
-40	15.032	15.033	15.034	15.035	15.034
-20	15.062	15.062	15.063	15.064	15.062
0	15.081	15.081	15.082	15.082	15.081
25	15.098	15.098	15.097	15.097	15.096
80	15.090	15.090	15.090	15.089	15.088
90	15.088	15.088	15.088	15.087	15.087
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Model	MGFS64815	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V0.4A	

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 - 80°C
Input Voltage : 18 - 76V
Load Current : 0 - 0.4A

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

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

2.Values

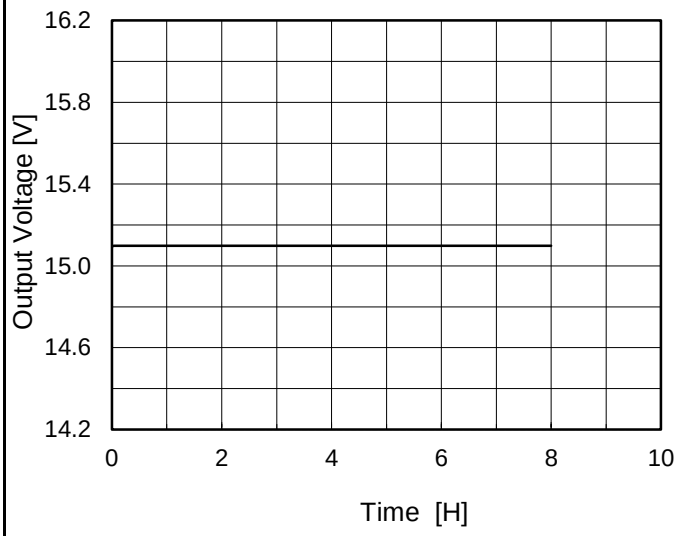
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	50	76	0	15.106	±37	±0.2
Minimum Voltage	-40	18	0.4	15.032		

COSEL

Model	MGFS64815
Item	Time Lapse Drift
Object	+15V0.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 48V
Load 100%

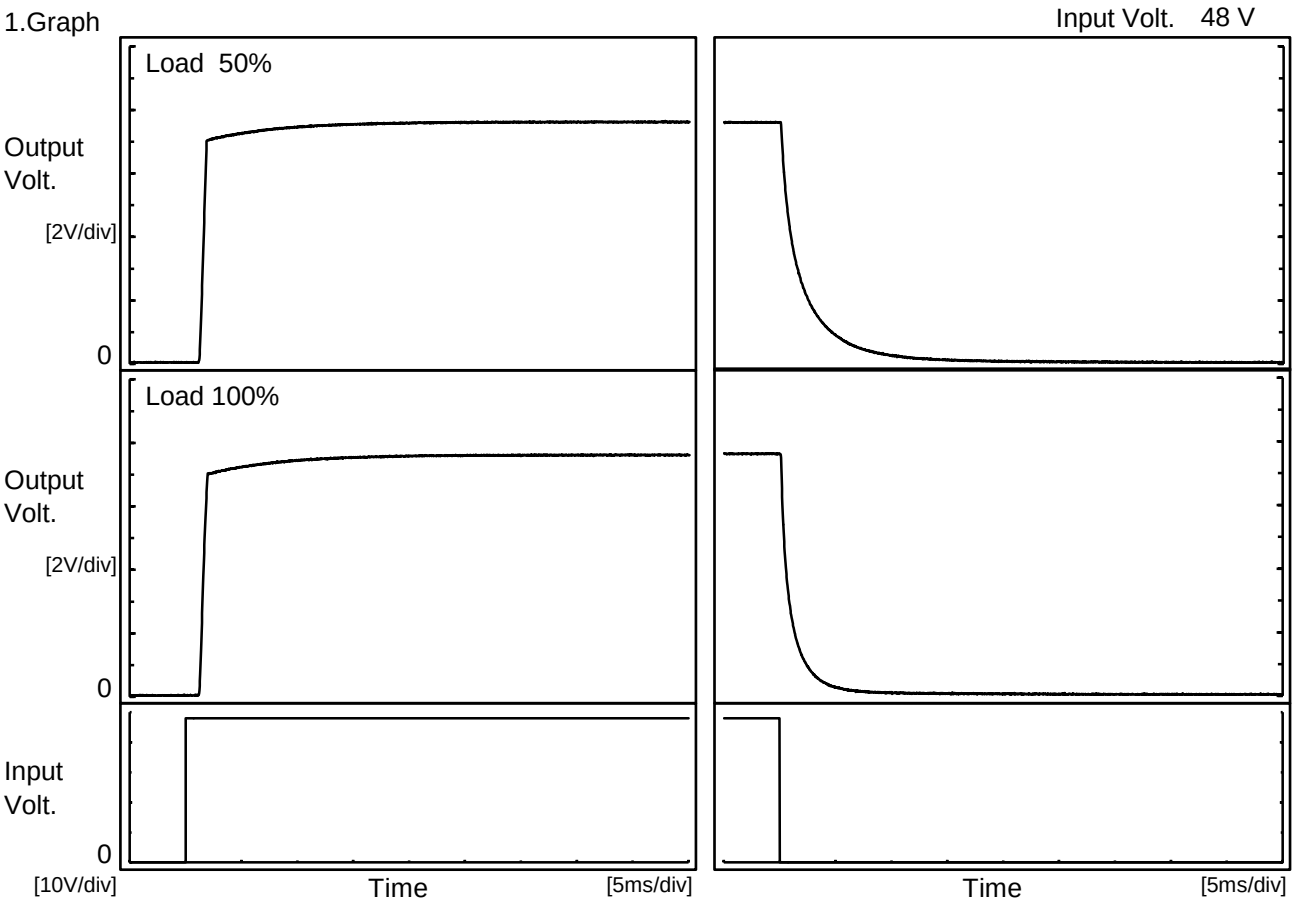
2.Values

Time since start [H]	Output Voltage [V]
0.0	15.095
0.5	15.098
1.0	15.098
2.0	15.098
3.0	15.098
4.0	15.098
5.0	15.099
6.0	15.099
7.0	15.099
8.0	15.099

COSEL

Model	MGFS64815	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+15V0.4A	

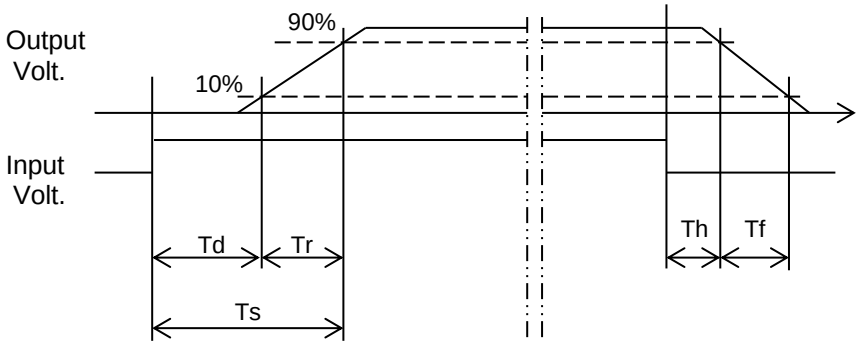
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.3	0.6	1.9	0.2	5.3
100 %	1.3	0.6	1.9	0.2	2.6

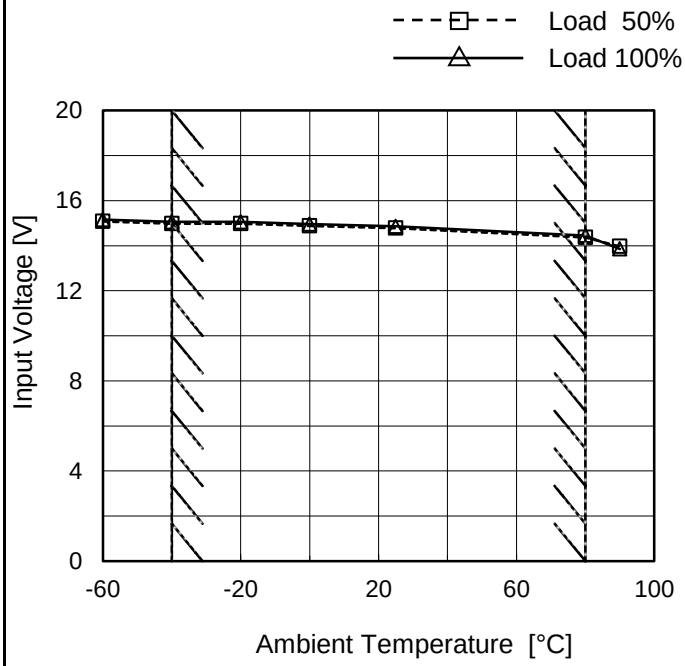


COSEL

Model	MGFS64815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.4A

Testing Circuitry Figure A

1.Graph



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

2.Values

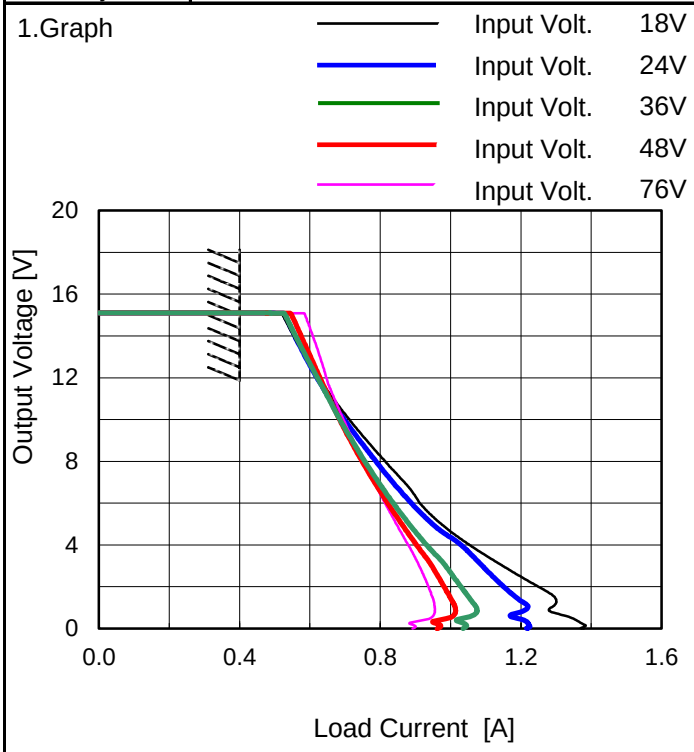
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.1	15.2
-40	15.0	15.1
-20	15.0	15.1
0	14.9	15.0
25	14.8	14.9
80	14.4	14.5
90	14.0	13.9
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS64815
Item	Overcurrent Protection
Object	+15V0.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

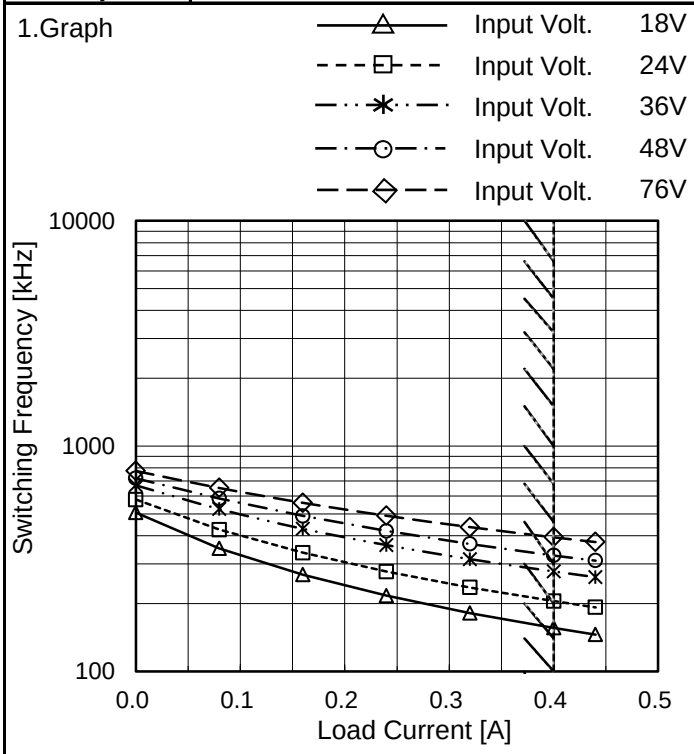
Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
14.3	0.546	0.550	0.552	0.568	0.602
13.5	0.571	0.571	0.573	0.587	0.618
12.0	0.624	0.619	0.621	0.628	0.646
10.5	0.687	0.677	0.669	0.669	0.682
9.0	0.761	0.740	0.719	0.715	0.722
7.5	0.839	0.809	0.774	0.764	0.767
6.0	0.911	0.887	0.835	0.821	0.812
4.5	1.010	0.986	0.905	0.882	0.862
3.0	1.146	1.089	0.985	0.946	0.910
1.5	1.296	1.185	1.052	0.998	0.949
0.0	1.379	1.219	1.036	0.962	0.892
--	-	-	-	-	-

COSEL

Model	MGFS64815
Item	Switching frequency (by Load Current)
Object	+15V0.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

When load current is low, MG operates intermittently, so switching frequency would not become constant.

2.Values

Load Current [A]	Input Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	507	579	670	719	776
0.08	352	426	526	585	652
0.16	269	336	429	490	560
0.24	217	277	364	420	491
0.32	181	236	315	368	437
0.40	156	205	278	327	394
0.44	146	193	262	310	375
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

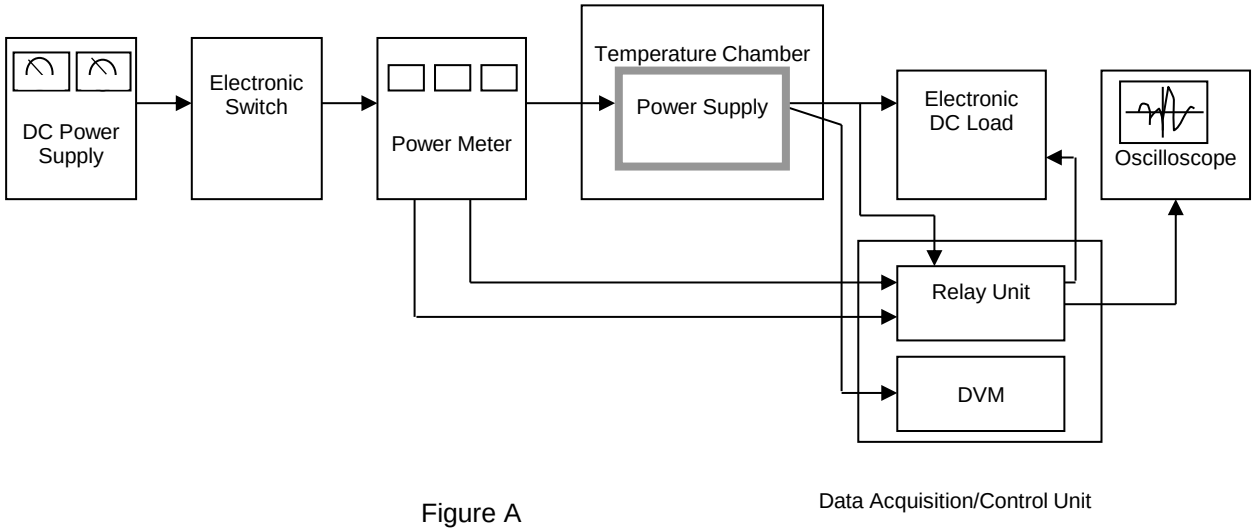


Figure A

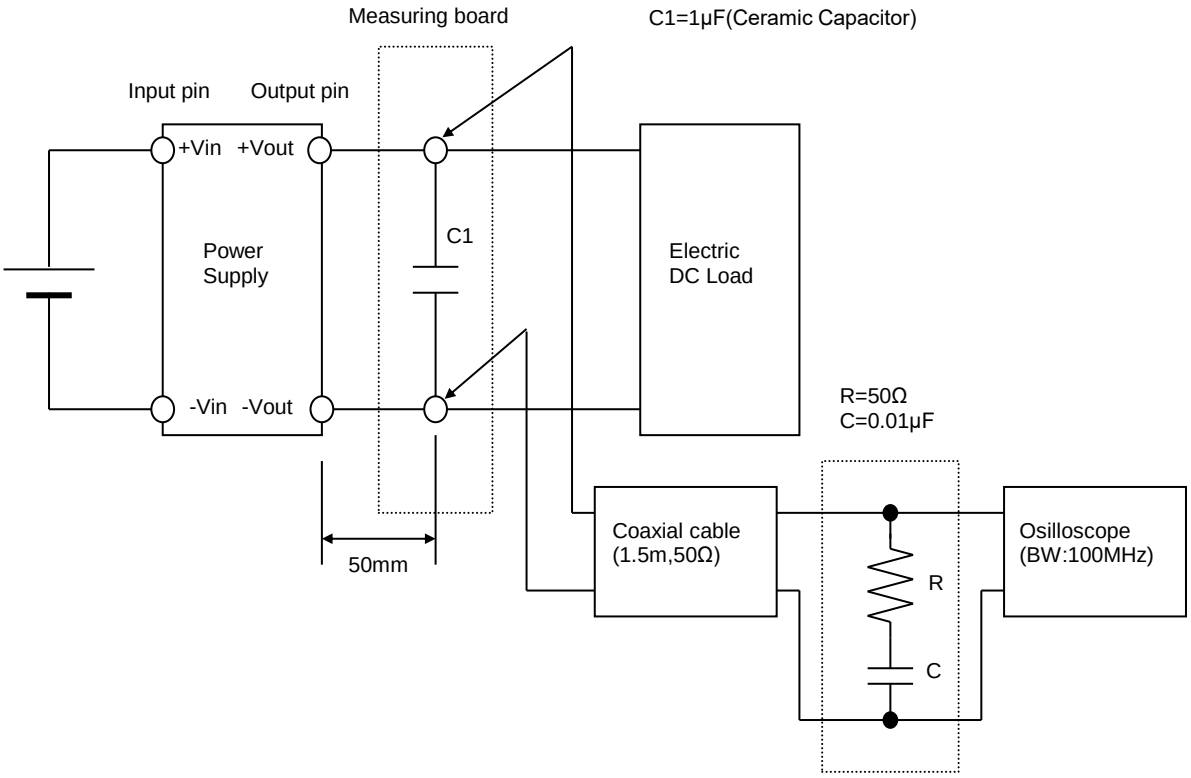


Figure B（Ripple and Ripple noise Characteristic）