参考資料

TEST DATA OF MGFS1R54812

Regulated DC Power Supply
January 10, 2017

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COSEL CO.,LTD.

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Item	Input Current (by Input Voltage)
Object	————————

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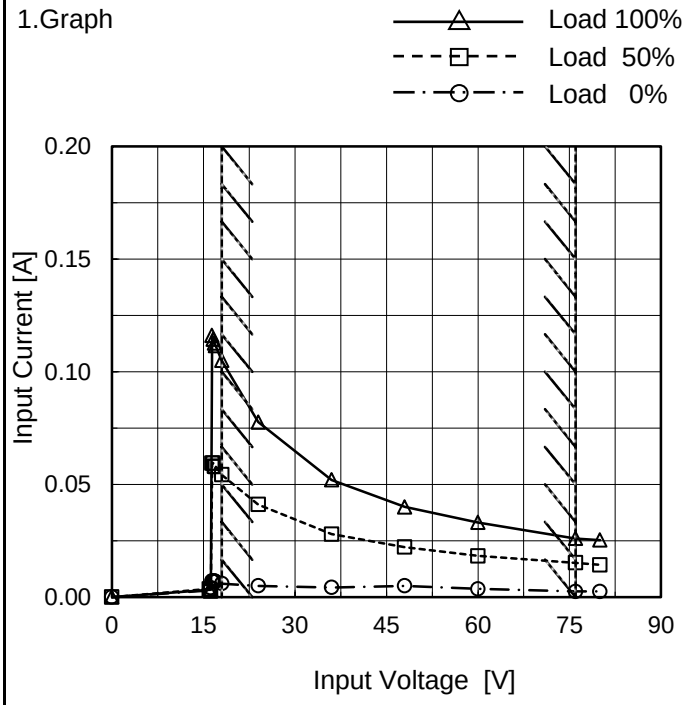

Note: Slanted line shows the range of the rated input voltage.

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	0.004	0.003
16.2	0.004	0.003	0.004
16.4	0.007	0.060	0.116
16.6	0.007	0.060	0.115
16.8	0.007	0.058	0.113
17.0	0.007	0.058	0.112
18.0	0.006	0.054	0.105
24.0	0.005	0.041	0.078
36.0	0.004	0.028	0.052
48.0	0.005	0.022	0.040
60.0	0.004	0.018	0.033
76.0	0.003	0.015	0.026
80.0	0.003	0.014	0.025
--	-	-	-
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--	-	-	-
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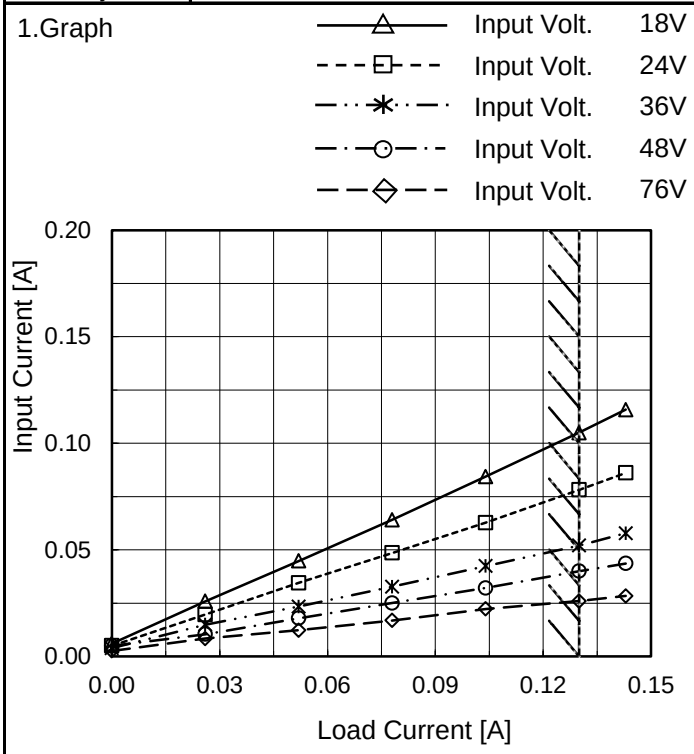
COSEL

Model	MGFS1R54812
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

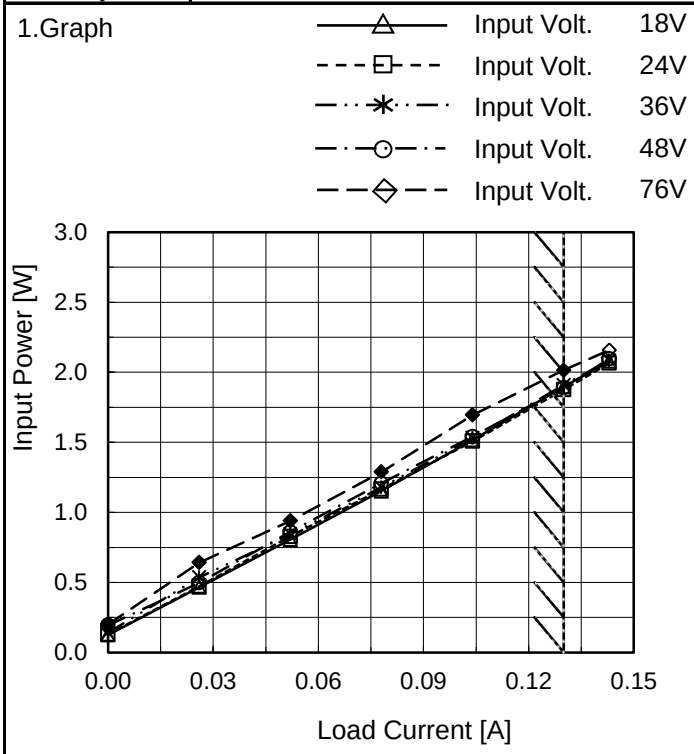
Load Current [A]	Input Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	0.006	0.005	0.004	0.005	0.003
0.026	0.026	0.020	0.015	0.010	0.008
0.052	0.045	0.035	0.023	0.018	0.012
0.078	0.064	0.049	0.033	0.025	0.017
0.104	0.084	0.063	0.042	0.032	0.022
0.130	0.105	0.078	0.052	0.040	0.026
0.143	0.116	0.086	0.058	0.044	0.028
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFS1R54812
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]
0.000	0.13	0.13	0.14	0.19	0.20
0.026	0.47	0.47	0.54	0.50	0.64
0.052	0.81	0.83	0.84	0.86	0.94
0.078	1.15	1.17	1.18	1.21	1.29
0.104	1.52	1.51	1.53	1.54	1.69
0.130	1.90	1.88	1.91	1.89	2.01
0.143	2.08	2.07	2.08	2.10	2.16
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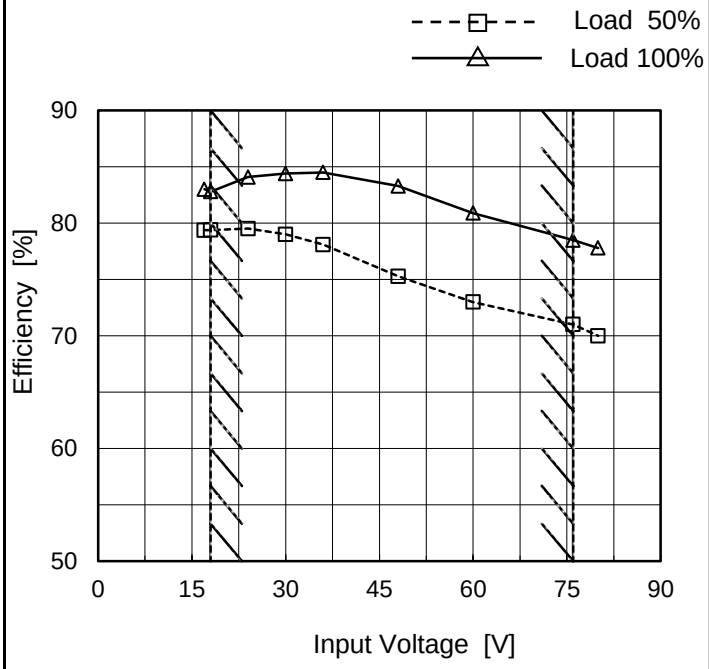
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFS1R54812
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	79.4	83.0
18	79.4	82.8
24	79.5	84.1
30	79.0	84.4
36	78.1	84.5
48	75.3	83.3
60	73.0	80.9
76	71.0	78.5
80	70.0	77.8

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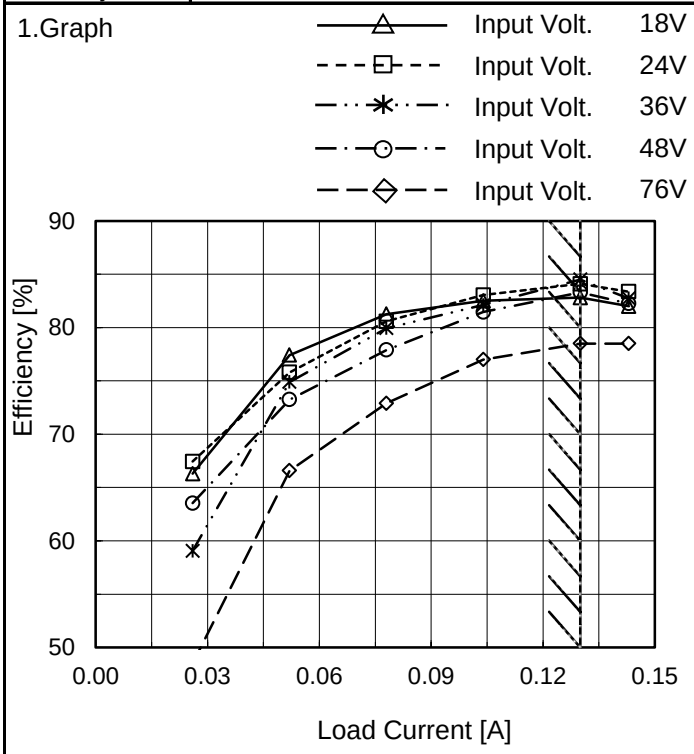
Model	MGFS1R54812
Item	Efficiency (by Load Current)
Object	————————

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]
0.000	-	-	-	-	-
0.026	66.3	67.4	59.1	63.5	48.5
0.052	77.4	75.8	74.9	73.2	66.6
0.078	81.3	80.6	79.9	77.9	72.9
0.104	82.5	83.0	82.1	81.5	77.0
0.130	82.8	84.1	84.5	83.3	78.5
0.143	82.0	83.4	82.7	82.3	78.5
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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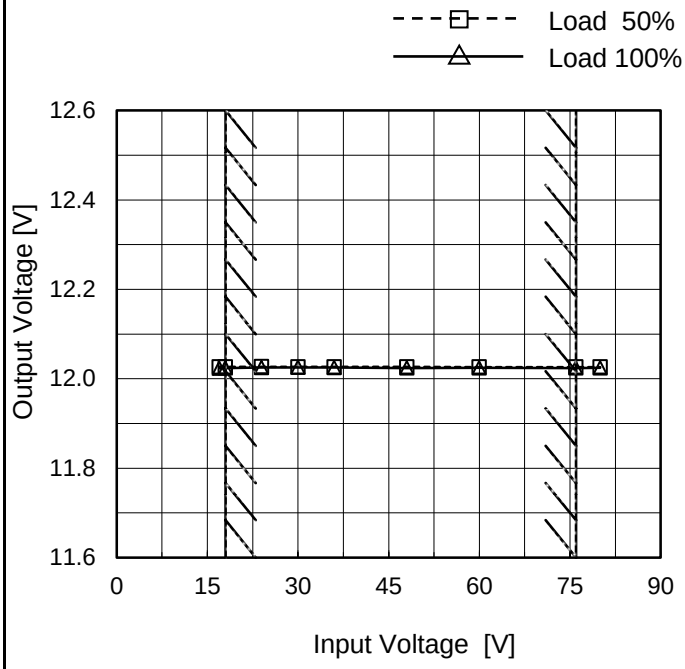
Model	MGFS1R54812
Item	Line Regulation
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

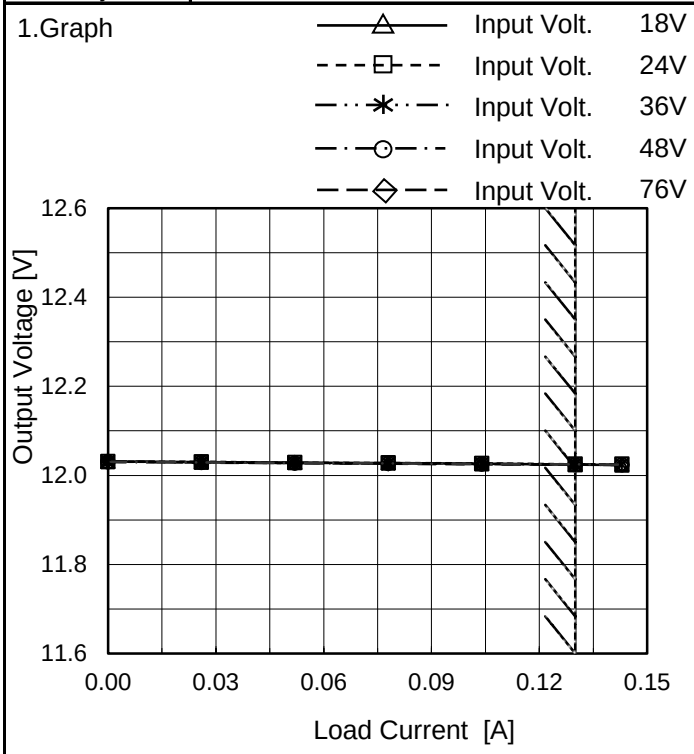
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	12.027	12.024
18	12.027	12.024
24	12.027	12.025
30	12.027	12.025
36	12.026	12.025
48	12.026	12.024
60	12.026	12.025
76	12.026	12.024
80	12.026	12.025

COSEL

Model	MGFS1R54812
Item	Load Regulation
Object	+12V0.13A

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]
0.000	12.031	12.031	12.030	12.030	12.032
0.026	12.030	12.030	12.029	12.029	12.029
0.052	12.029	12.029	12.028	12.027	12.027
0.078	12.028	12.028	12.027	12.027	12.026
0.104	12.026	12.027	12.026	12.025	12.025
0.130	12.024	12.025	12.025	12.024	12.024
0.143	12.023	12.025	12.024	12.024	12.024
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS1R54812
Item	Dynamic Load Response
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

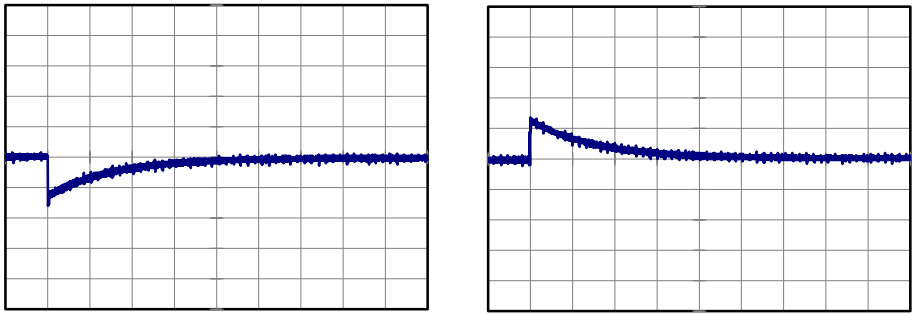
Input Volt. 48 V
Cycle 100 ms

t1,t2 = 100 μs

Load Current

t1 t2

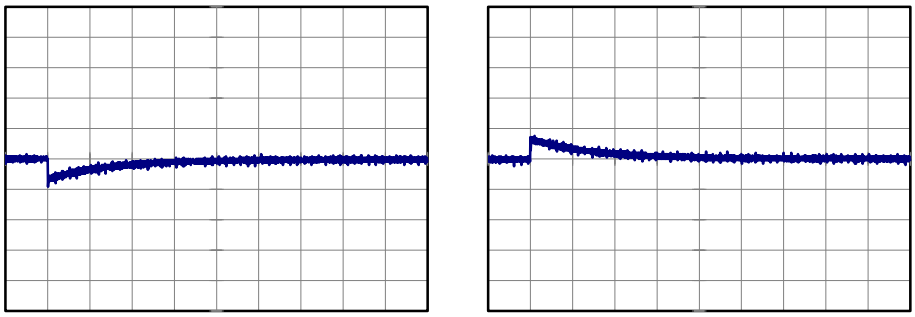
Min.Load (0A)←→
Load 100% (0.13A)



100 mV/div

4 ms/div 4 ms/div

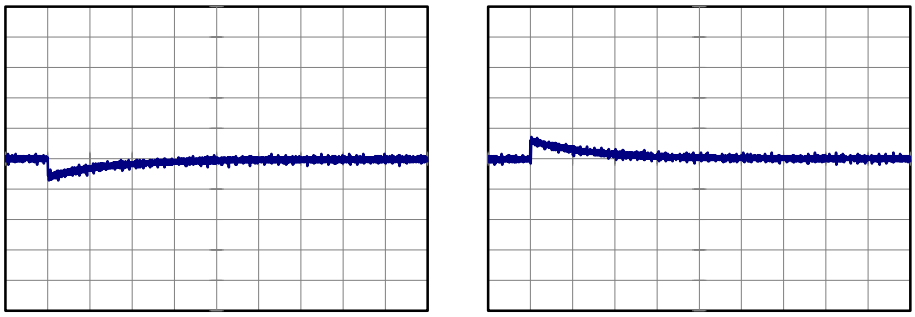
Min.Load (0A)←→
Load 50% (0.065A)



100 mV/div

4 ms/div 4 ms/div

Load 50% (0.065A)←→
Load 100% (0.13A)



100 mV/div

4 ms/div 4 ms/div

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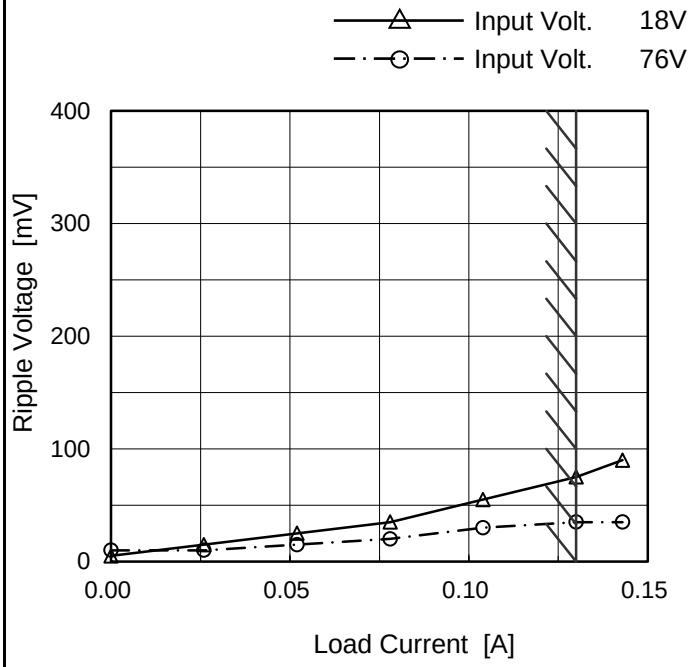
Model	MGFS1R54812
Item	Ripple Voltage (by Load Current)
Object	+12V0.13A

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]

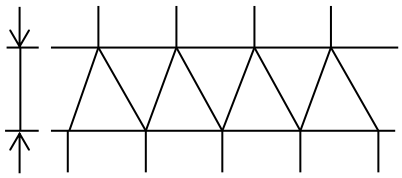


Fig.Complex Ripple Wave Form

2.Values

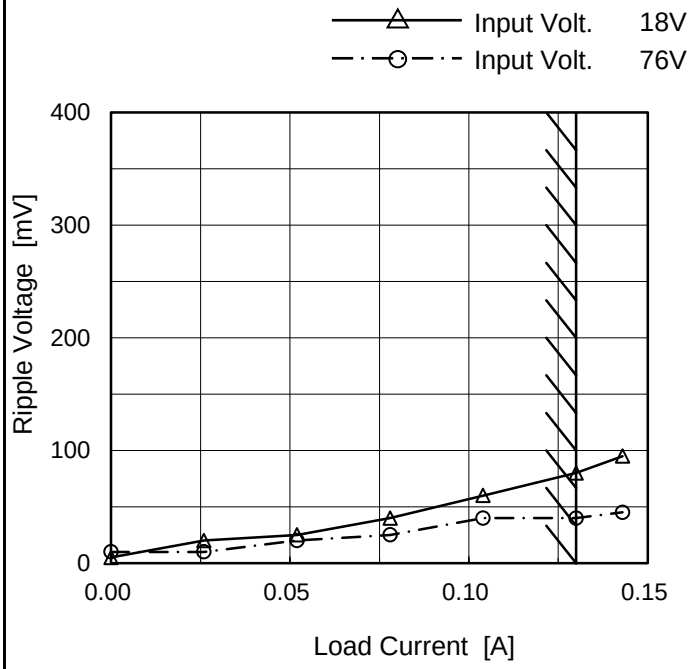
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.000	5	10
0.026	15	10
0.052	25	15
0.078	35	20
0.104	55	30
0.130	75	35
0.143	90	35
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS1R54812
Item	Ripple-Noise
Object	+12V0.13A

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]

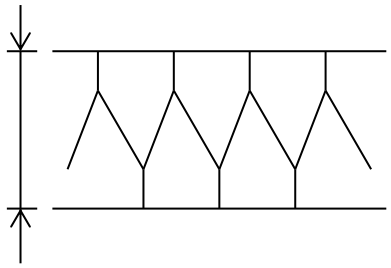


Fig.Complex Ripple Noise Wave Form

2.Values

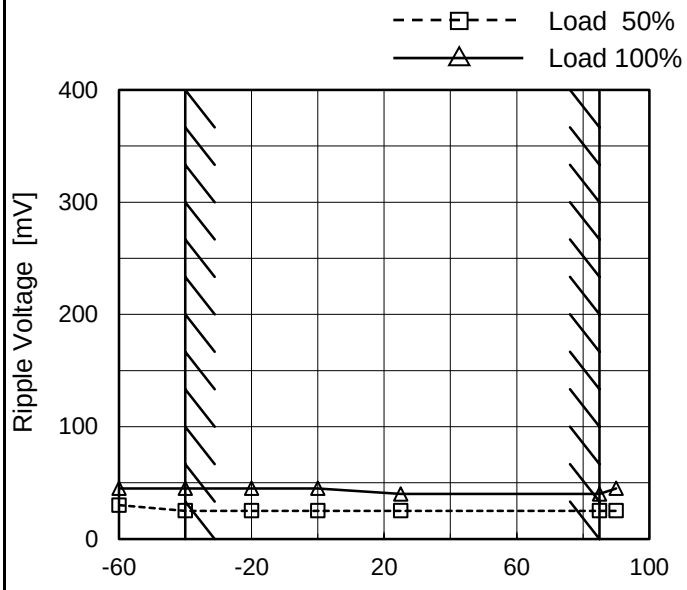
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.000	5	10
0.026	20	10
0.052	25	20
0.078	40	25
0.104	60	40
0.130	80	40
0.143	95	45
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS1R54812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.13A

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

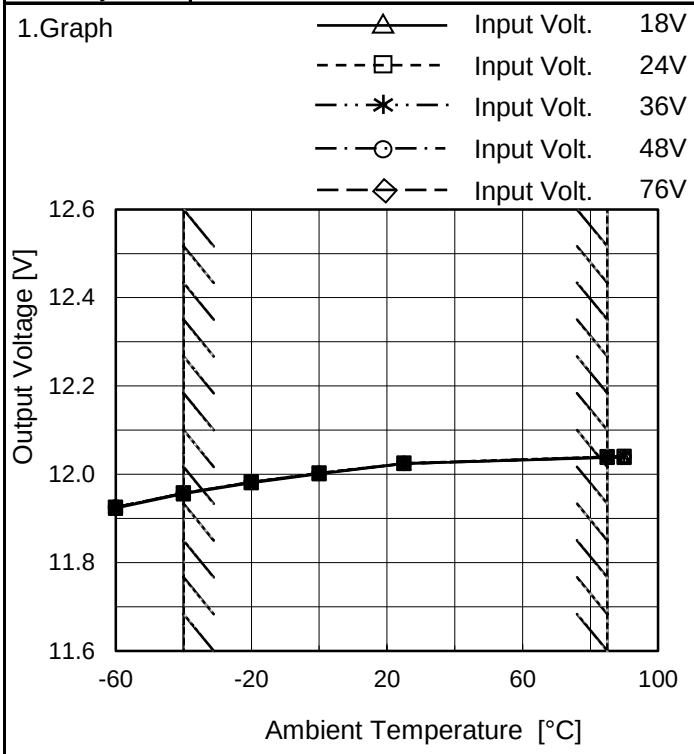
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	30	45
-40	25	45
-20	25	45
0	25	45
25	25	40
85	25	40
90	25	45
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS1R54812
Item	Ambient Temperature Drift
Object	+12V0.13A

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	11.923	11.925	11.925	11.925	11.926
-40	11.956	11.957	11.957	11.957	11.957
-20	11.981	11.983	11.982	11.982	11.982
0	12.001	12.003	12.002	12.002	12.002
25	12.024	12.025	12.025	12.024	12.024
85	12.038	12.040	12.039	12.039	12.039
90	12.038	12.040	12.040	12.040	12.039
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Model	MGFS1R54812	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V0.13A	

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 - 76V
Load Current : 0 - 0.13A

* 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

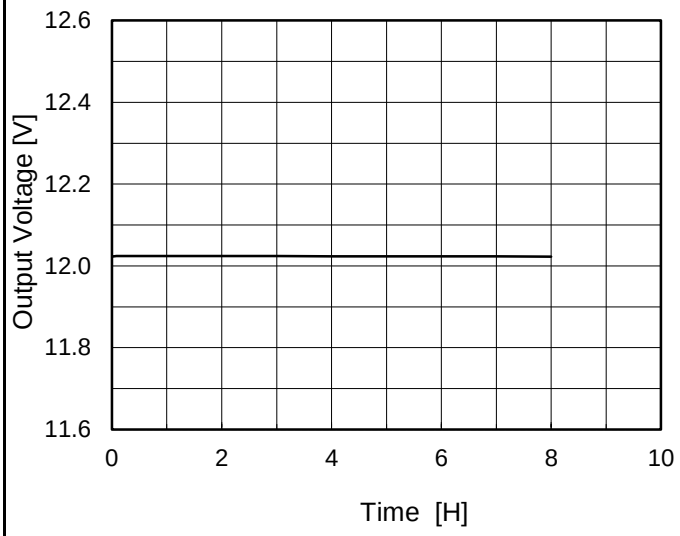
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	76	0	12.049	±47	±0.4
Minimum Voltage	-40	18	0.13	11.956		

COSEL

Model	MGFS1R54812
Item	Time Lapse Drift
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 48V
Load 100%

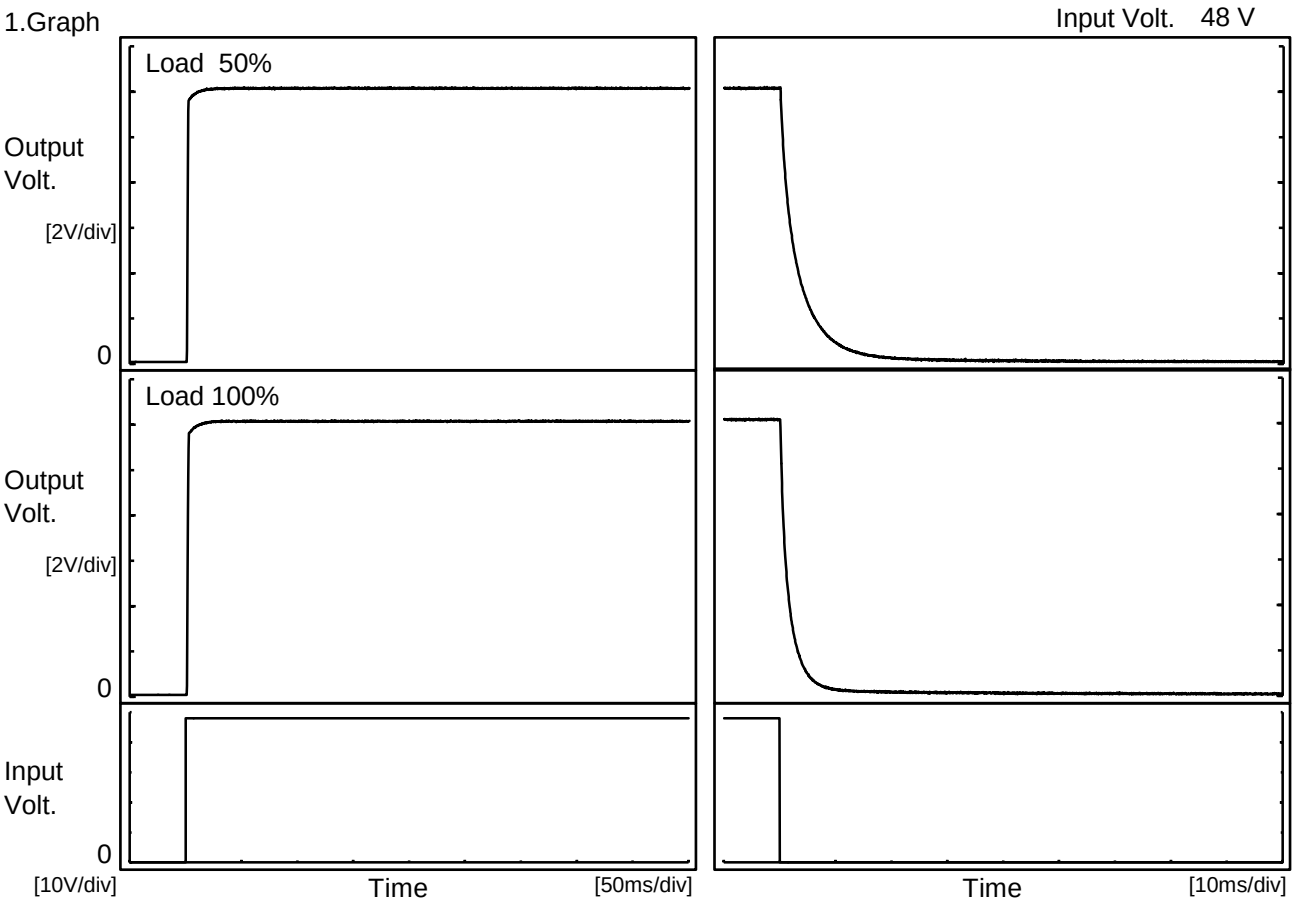
2.Values

Time since start [H]	Output Voltage [V]
0.0	12.022
0.5	12.024
1.0	12.024
2.0	12.024
3.0	12.024
4.0	12.024
5.0	12.024
6.0	12.023
7.0	12.023
8.0	12.023

COSEL

Model	MGFS1R54812	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+12V0.13A	

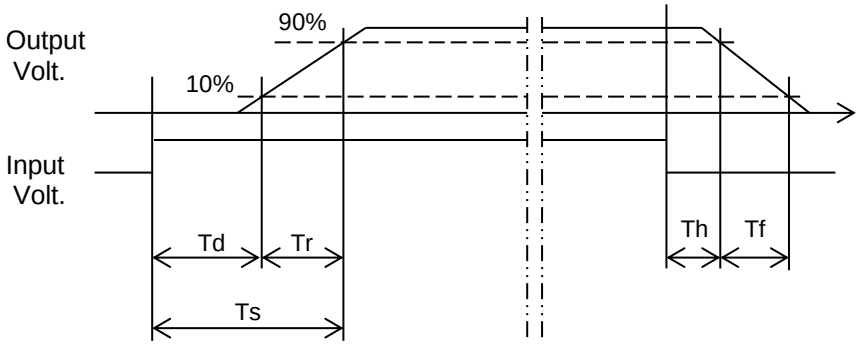
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.5	0.8	2.3	0.3	8.0
100 %	1.5	1.0	2.5	0.2	4.1

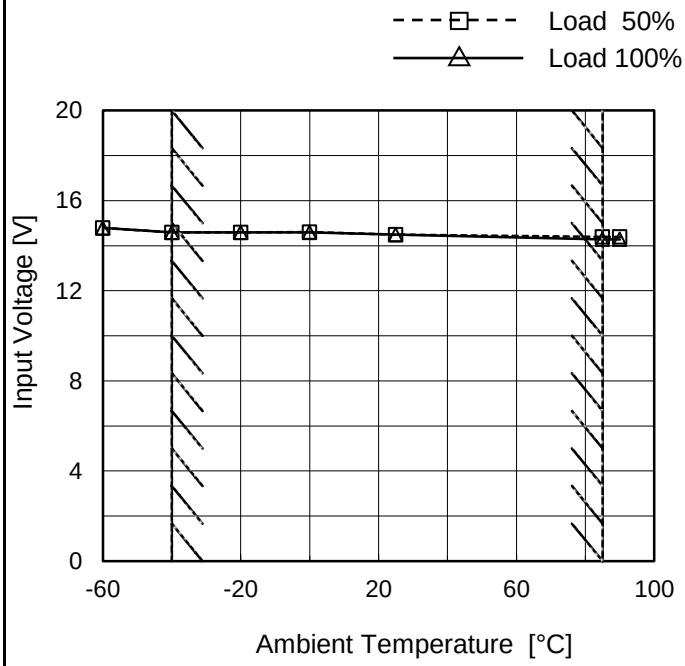


COSEL

Model	MGFS1R54812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.13A

Testing Circuitry Figure A

1.Graph



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

2.Values

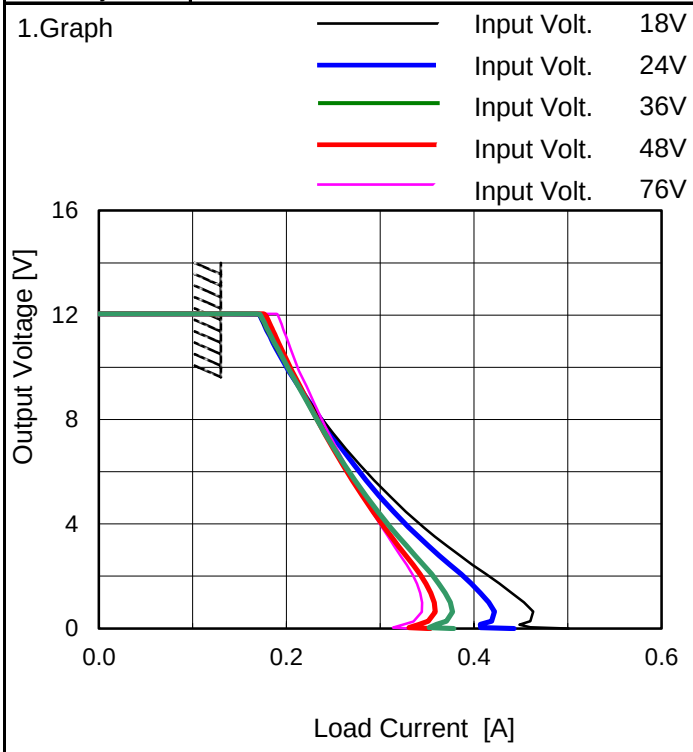
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	14.8	14.8
-40	14.6	14.6
-20	14.6	14.6
0	14.6	14.6
25	14.5	14.5
85	14.4	14.3
90	14.4	14.3
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS1R54812
Item	Overcurrent Protection
Object	+12V0.13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

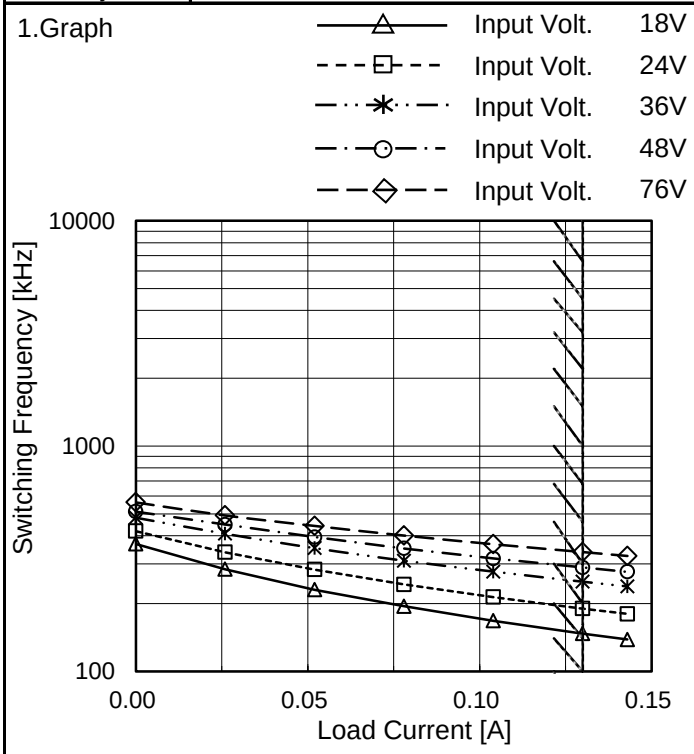
Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
11.4	0.179	0.179	0.181	0.185	0.198
10.8	0.189	0.189	0.191	0.194	0.204
9.6	0.203	0.202	0.203	0.206	0.213
8.4	0.225	0.224	0.222	0.223	0.229
7.2	0.250	0.247	0.241	0.241	0.245
6.0	0.278	0.272	0.262	0.260	0.263
4.8	0.310	0.299	0.285	0.281	0.282
3.6	0.358	0.341	0.319	0.312	0.308
2.4	0.398	0.374	0.346	0.335	0.328
1.2	0.440	0.407	0.369	0.354	0.343
0.0	0.501	0.443	0.379	0.353	0.333
--	-	-	-	-	-

COSEL

Model	MGFS1R54812
Item	Switching frequency (by Load Current)
Object	+12V0.13A

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]
0.000	368	419	481	512	563
0.026	284	338	408	448	492
0.052	230	283	353	395	442
0.078	195	243	310	351	401
0.104	168	214	277	317	367
0.130	147	190	250	289	339
0.143	138	180	238	277	325
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--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

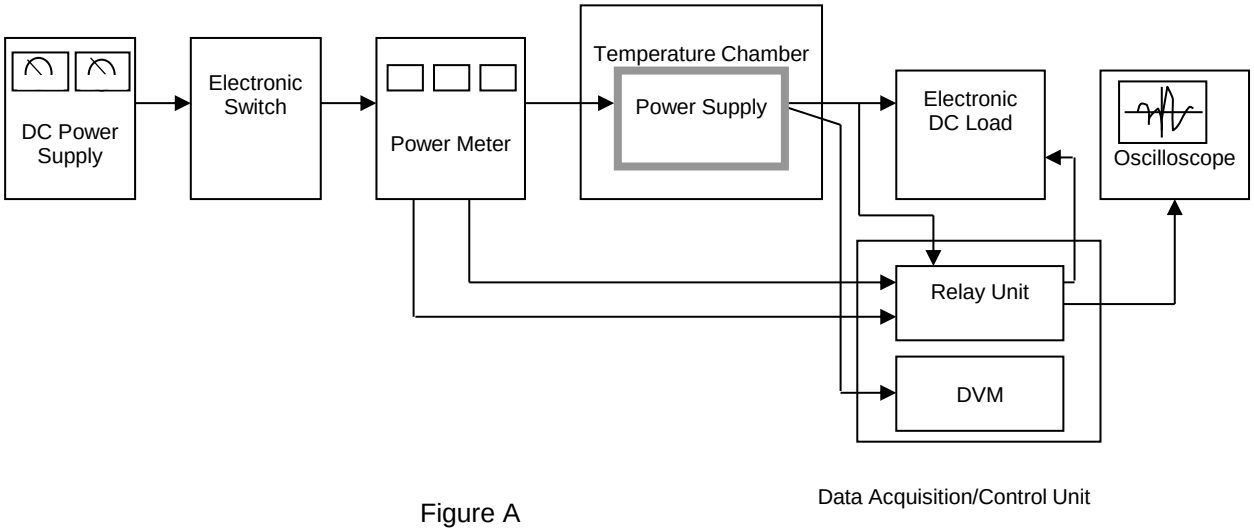

Figure A

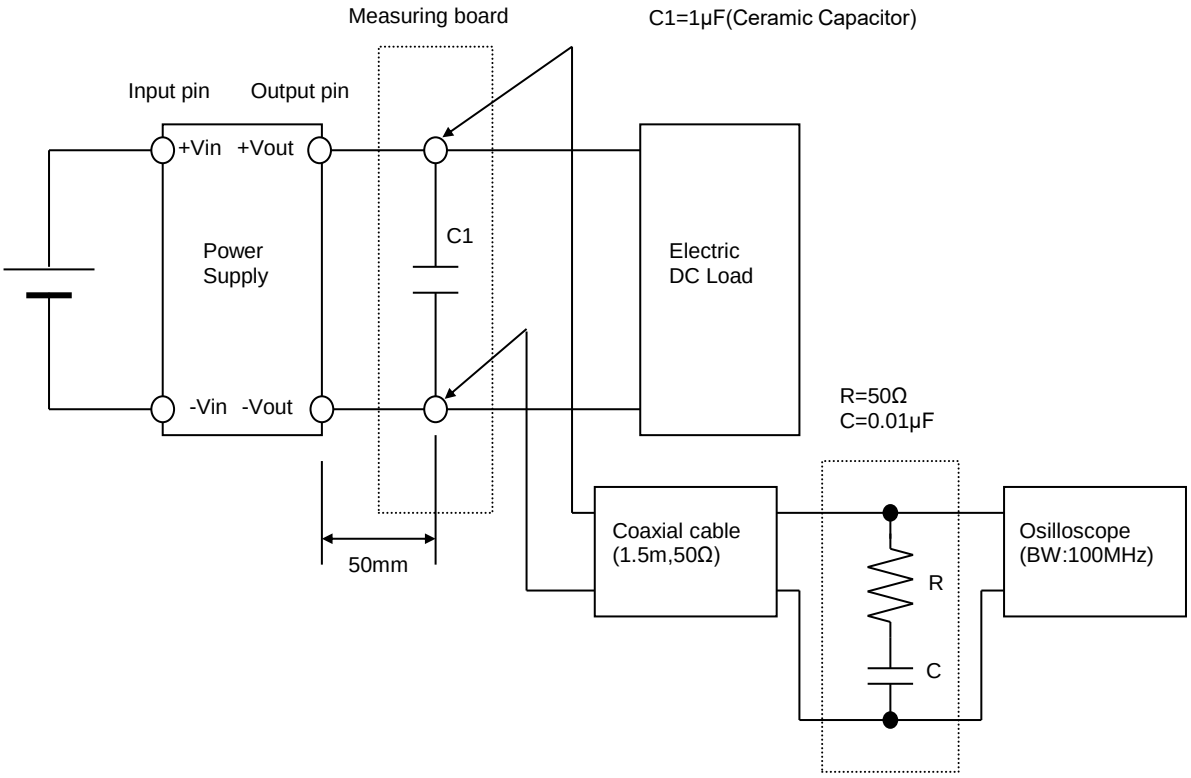

Figure B（Ripple and Ripple noise Characteristic）