参考資料

TEST DATA OF MGFS104812

Regulated DC Power Supply
December 28, 2016

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COSEL CO.,LTD.

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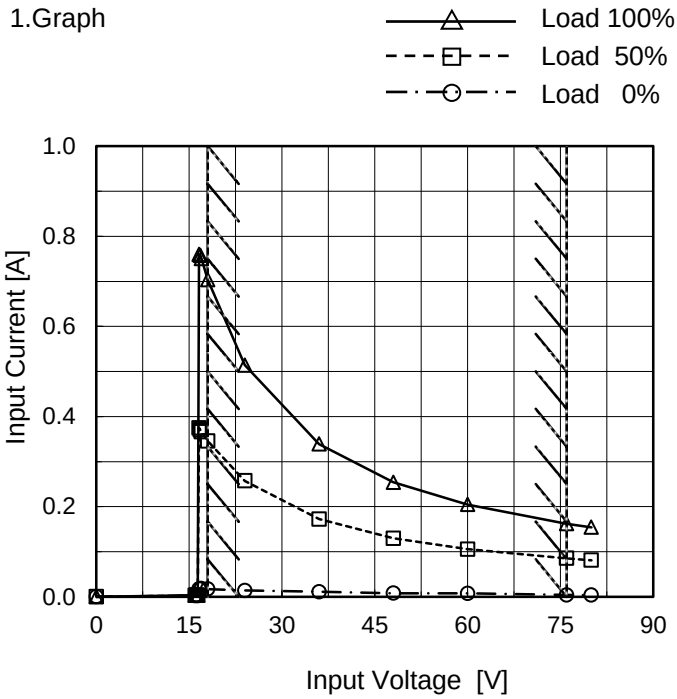


Note: Slanted line shows the range of the rated input voltage.

2.Values

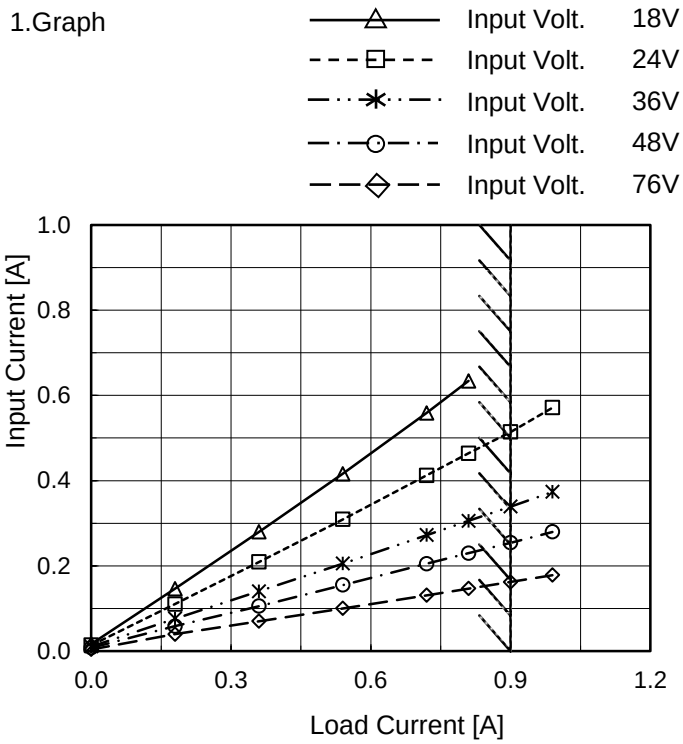
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
16.0	0.003	0.003	0.003
16.2	0.004	0.004	0.004
16.4	0.003	0.003	0.003
16.6	0.018	0.375	0.760
16.8	0.018	0.370	0.758
17.0	0.018	0.366	0.751
18.0	0.017	0.346	0.704
24.0	0.014	0.257	0.514
36.0	0.011	0.172	0.339
48.0	0.008	0.130	0.254
60.0	0.008	0.106	0.205
76.0	0.004	0.085	0.162
80.0	0.004	0.081	0.154
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGFS104812
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	0.017	0.014	0.011	0.008	0.004
0.18	0.146	0.110	0.076	0.059	0.040
0.36	0.280	0.209	0.140	0.105	0.070
0.54	0.416	0.309	0.206	0.155	0.100
0.72	0.559	0.412	0.272	0.205	0.131
0.81	0.634	0.464	0.306	0.230	0.147
0.90	- ※	0.514	0.339	0.254	0.162
0.99	- ※	0.571	0.374	0.280	0.178
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

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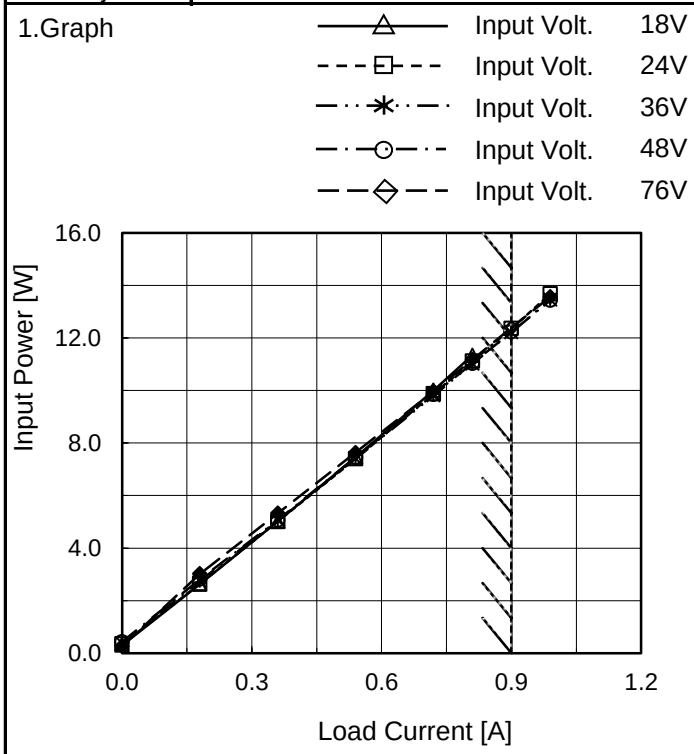
Model	MGFS104812
Item	Input Power (by Load Current)
Object	————————

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	0.30	0.34	0.38	0.44	0.26
0.18	2.63	2.65	2.75	2.82	3.02
0.36	5.02	5.01	5.06	5.06	5.33
0.54	7.46	7.40	7.41	7.45	7.63
0.72	10.00	9.88	9.81	9.85	9.97
0.81	11.34	11.12	11.01	11.04	11.18
0.90	- ※	12.35	12.22	12.22	12.39
0.99	- ※	13.67	13.46	13.43	13.56
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

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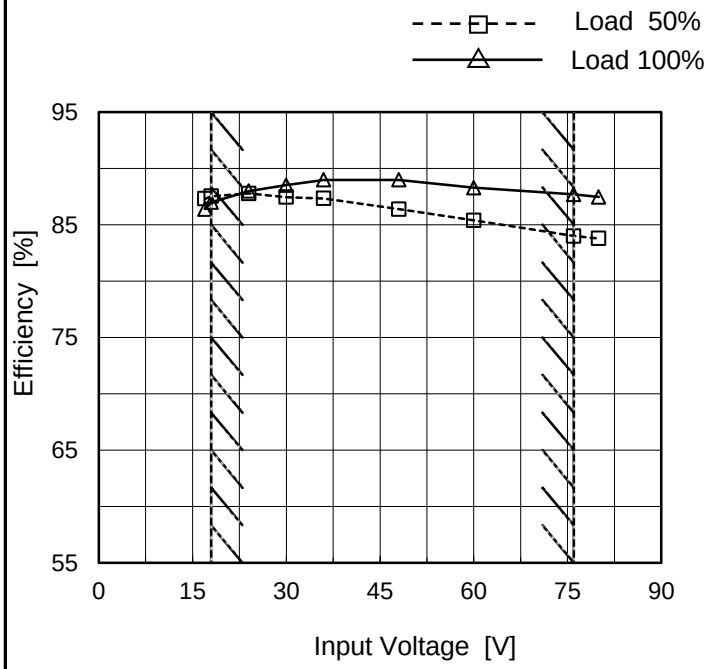
Model	MGFS104812
Item	Efficiency (by Input Voltage)
Object	――――――――――

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	87.3	86.4 ※1
18	87.5	87.0 ※1
24	87.8	88.0
30	87.5	88.5
36	87.3	89.0
48	86.4	89.0
60	85.4	88.3
76	84.0	87.7
80	83.8	87.5

※1:Load 80%

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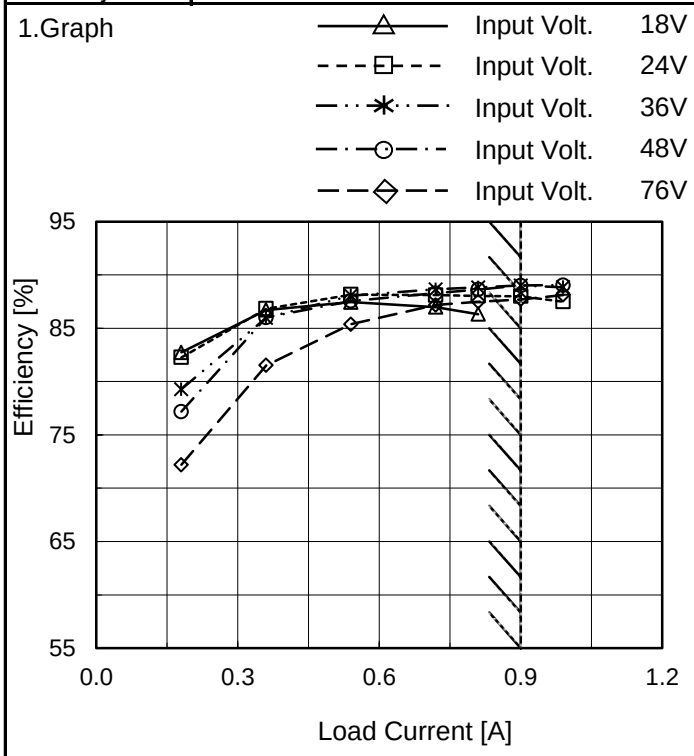
Model	MGFS104812
Item	Efficiency (by Load Current)
Object	――――――

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	-	-	-	-	-
0.18	82.7	82.3	79.3	77.2	72.2
0.36	86.7	86.8	86.0	86.0	81.5
0.54	87.5	88.2	88.1	87.5	85.4
0.72	87.0	88.1	88.6	88.3	87.2
0.81	86.3	88.0	88.8	88.6	87.5
0.90	- ※	88.0	89.0	89.0	87.7
0.99	- ※	87.5	88.8	89.0	88.1
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

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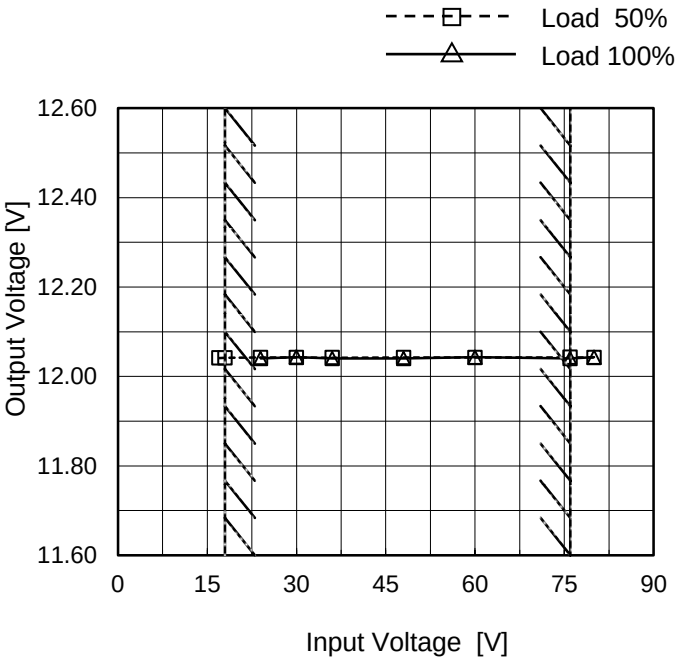
Model	MGFS104812
Item	Line Regulation
Object	+12V0.9A

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	12.041	- ※
18	12.042	- ※
24	12.042	12.040
30	12.042	12.044
36	12.042	12.040
48	12.042	12.040
60	12.042	12.043
76	12.043	12.040
80	12.042	12.043

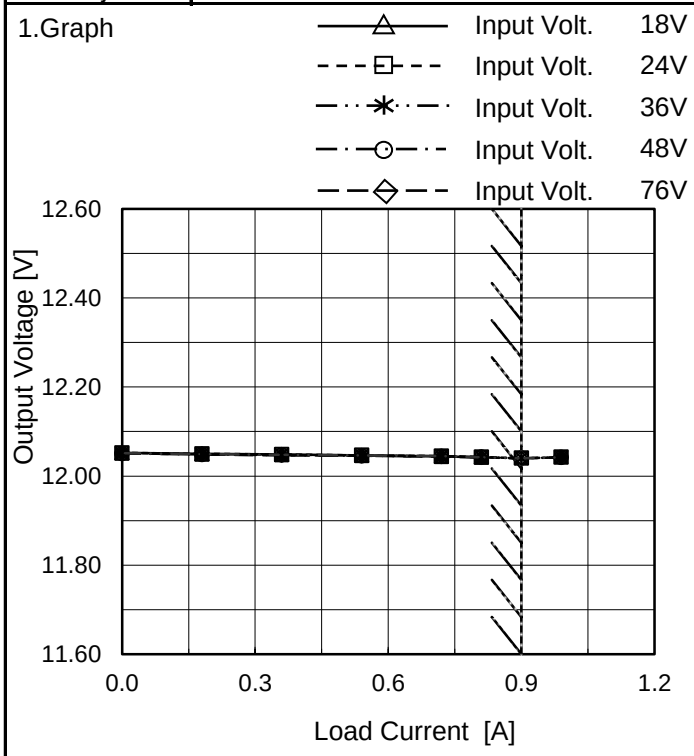
※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

COSEL

Model	MGFS104812
Item	Load Regulation
Object	+12V0.9A

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	12.052	12.052	12.051	12.051	12.051
0.18	12.050	12.050	12.049	12.048	12.048
0.36	12.048	12.048	12.048	12.047	12.047
0.54	12.046	12.047	12.046	12.045	12.045
0.72	12.044	12.045	12.045	12.044	12.044
0.81	12.042	12.042	12.042	12.042	12.042
0.90	- ※	12.040	12.040	12.040	12.040
0.99	- ※	12.042	12.042	12.042	12.042
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

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Model	MGFS104812
Item	Dynamic Load Response
Object	+12V0.9A

Temperature 25°C
Testing Circuitry Figure A

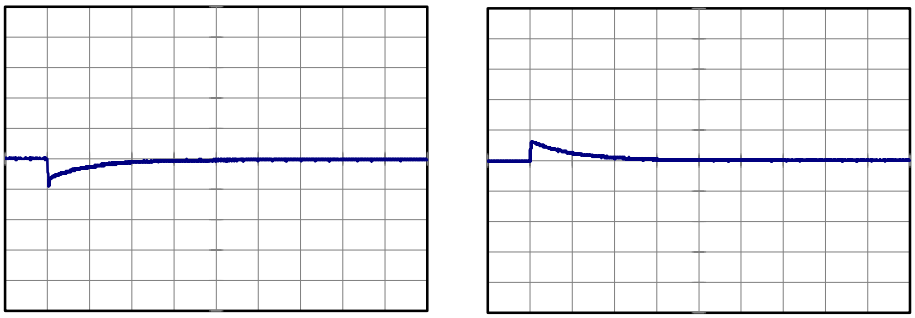
Input Volt. 48 V
Cycle 100 ms

t1,t2 = 100 μs

Load Current

t1 t2

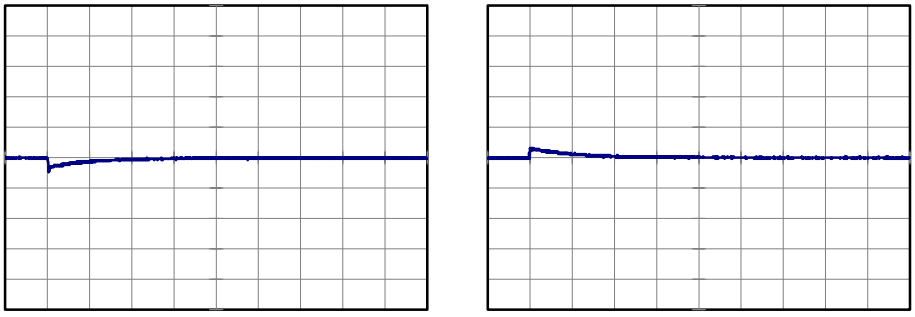
Min.Load (0A)←→
Load 100% (0.9A)



500 mV/div

2 ms/div 2 ms/div

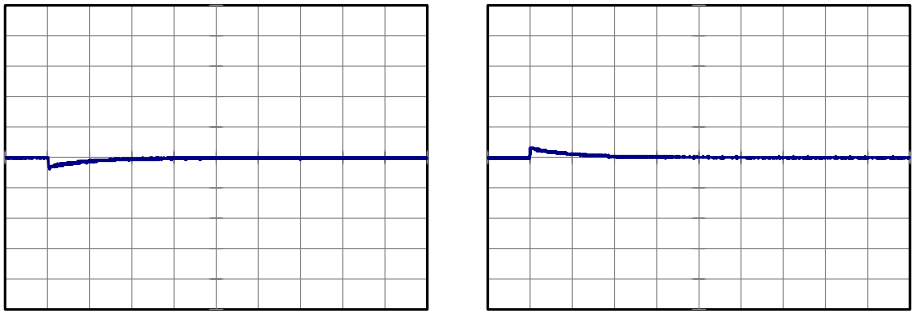
Min.Load (0A)←→
Load 50% (0.45A)



500 mV/div

2 ms/div 2 ms/div

Load 50% (0.45A)←→
Load 100% (0.9A)



500 mV/div

2 ms/div 2 ms/div

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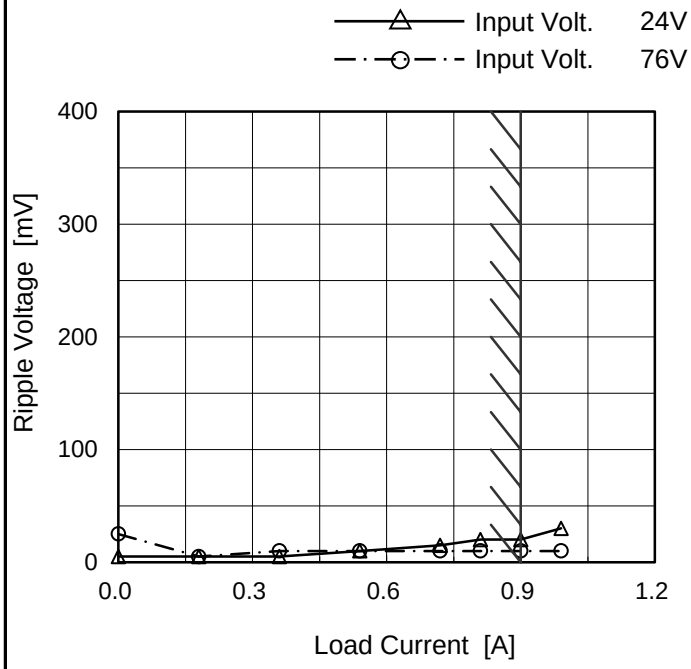
Model	MGFS104812
Item	Ripple Voltage (by Load Current)
Object	+12V0.9A

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]

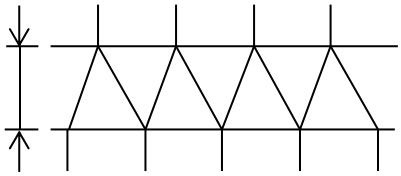


Fig.Complex Ripple Wave Form

2.Values

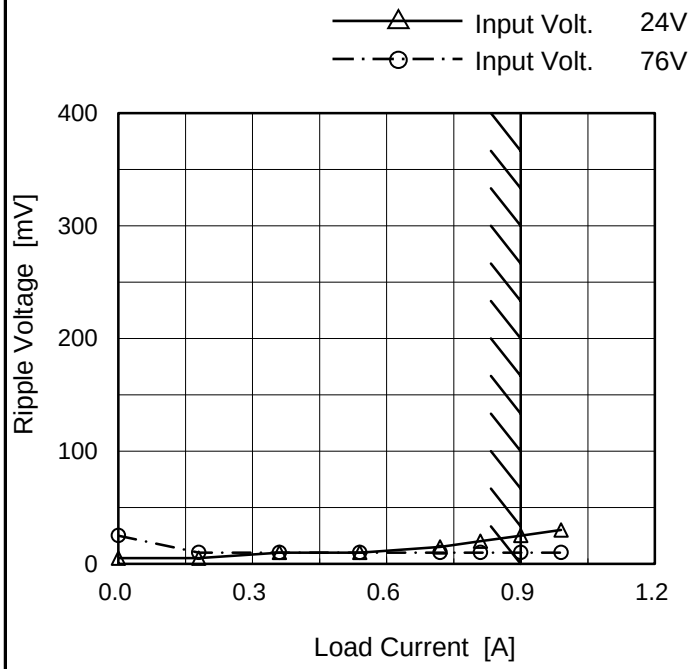
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 24 [V]	Input Volt. 76 [V]
0.00	5	25
0.18	5	5
0.36	5	10
0.54	10	10
0.72	15	10
0.81	20	10
0.90	20	10
0.99	30	10
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS104812
Item	Ripple-Noise
Object	+12V0.9A

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]

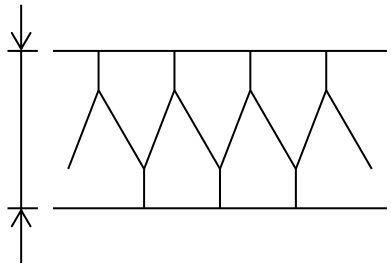


Fig.Complex Ripple Noise Wave Form

2.Values

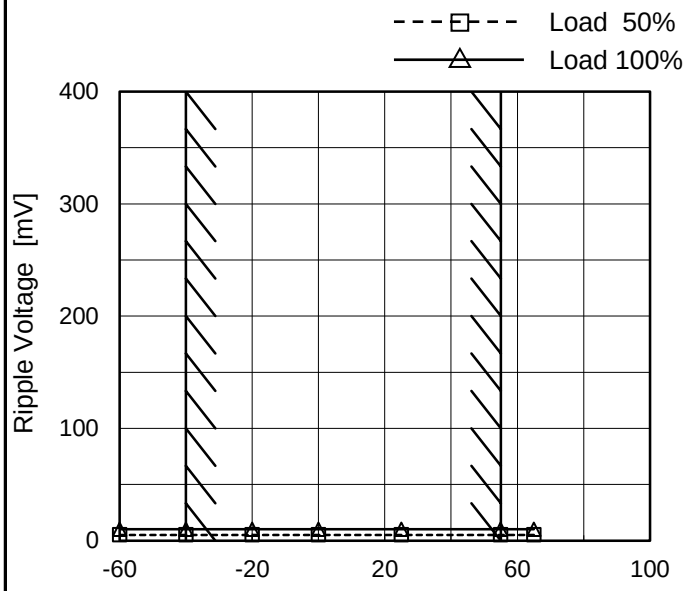
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 24 [V]	Input Volt. 76 [V]
0.00	5	25
0.18	5	10
0.36	10	10
0.54	10	10
0.72	15	10
0.81	20	10
0.90	25	10
0.99	30	10
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS104812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.9A

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

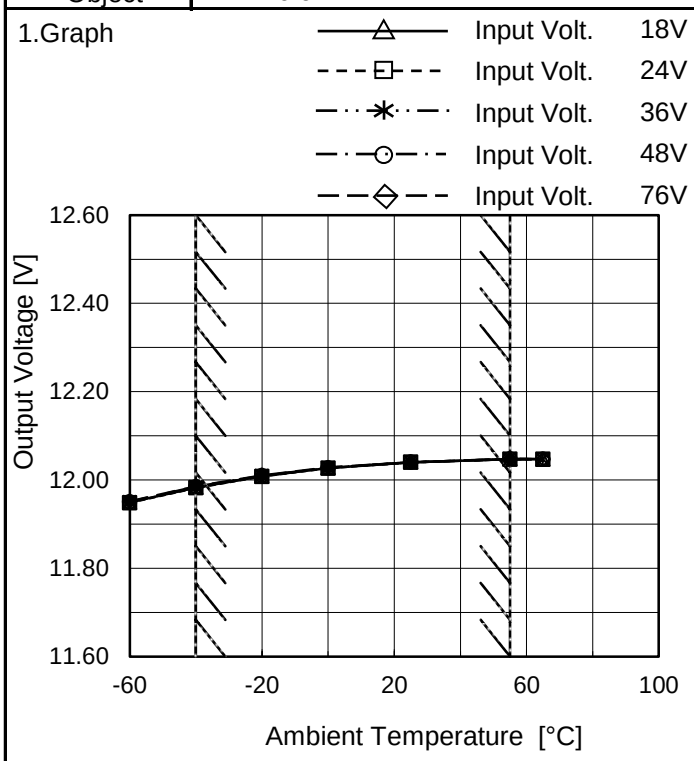
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	10
-40	5	10
-20	5	10
0	5	10
25	5	10
55	5	10
65	5	10
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS104812
Item	Ambient Temperature Drift
Object	+12V0.9A

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]	Input Volt. 48[V]	Input Volt. 76[V]
-60	11.949	11.948	11.950	11.951	11.952
-40	11.983	11.982	11.984	11.985	11.986
-20	12.009	12.008	12.009	12.010	12.010
0	12.027	12.027	12.027	12.027	12.028
25	12.040	12.040	12.040	12.040	12.040
55	12.047	12.047	12.048	12.047	12.047
65	12.047	12.047	12.047	12.047	12.047
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Note: In case of Input Volt. 18V, Load 80%. Other case Load 100%.

Model	MGFS104812	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V0.9A	

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 : 24 - 76V
Load Current : 0 - 0.9A

* 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

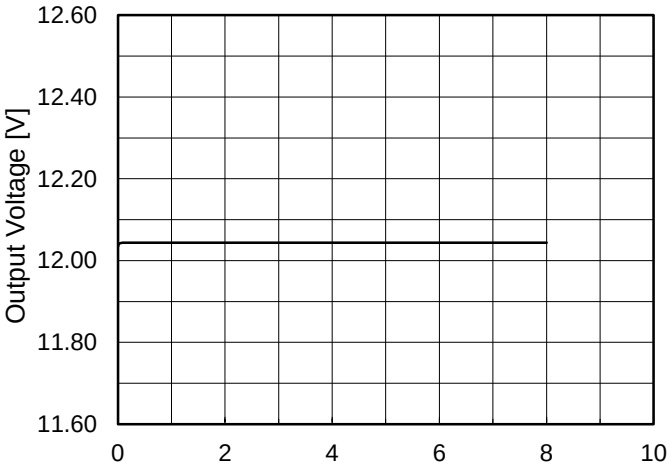
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	55	76	0	12.056	±37	±0.3
Minimum Voltage	-40	24	0.9	11.982		

COSEL

Model	MGFS104812
Item	Time Lapse Drift
Object	+12V0.9A

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	12.035
0.5	12.044
1.0	12.044
2.0	12.044
3.0	12.044
4.0	12.044
5.0	12.044
6.0	12.044
7.0	12.044
8.0	12.044

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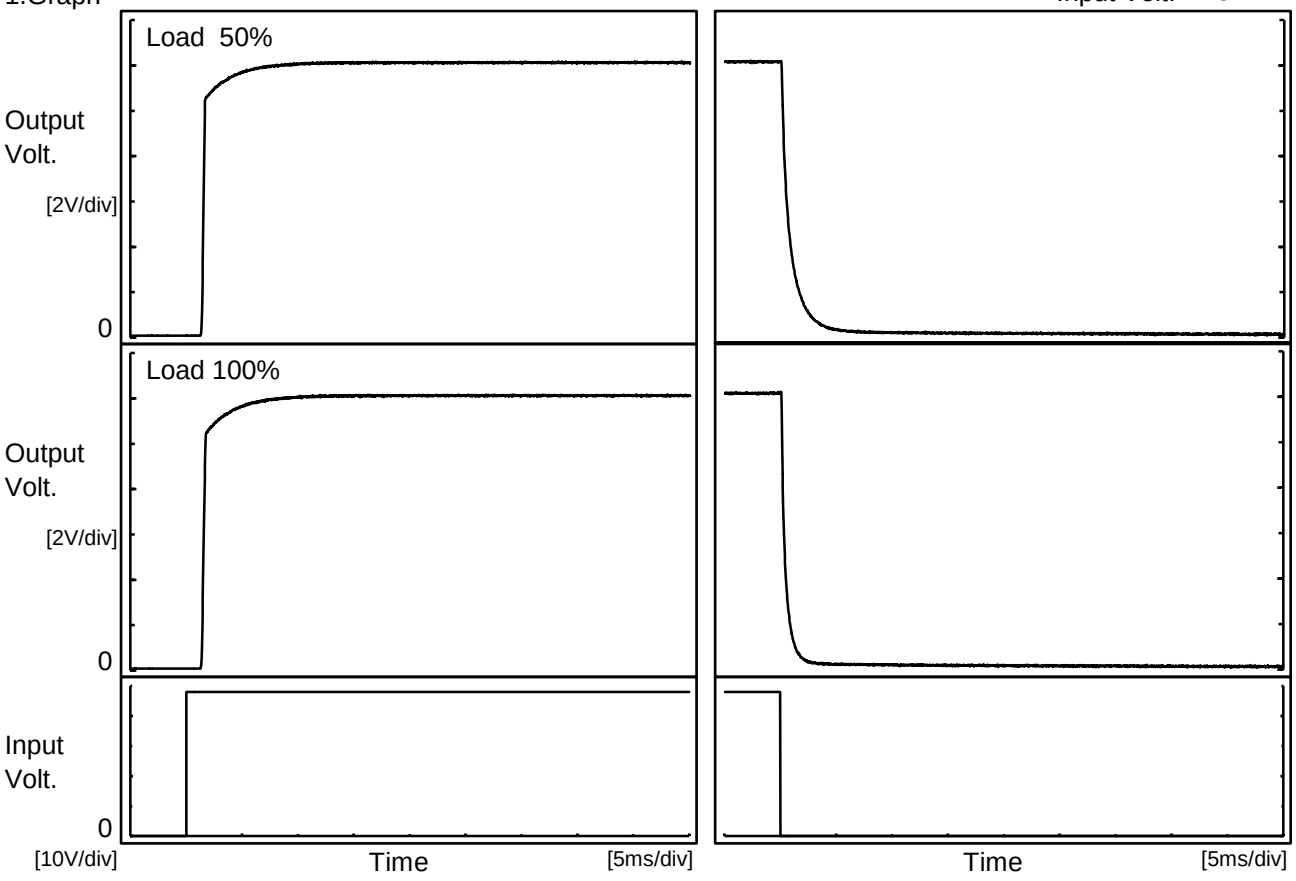
Model	MGFS104812	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+12V0.9A	

1.Graph

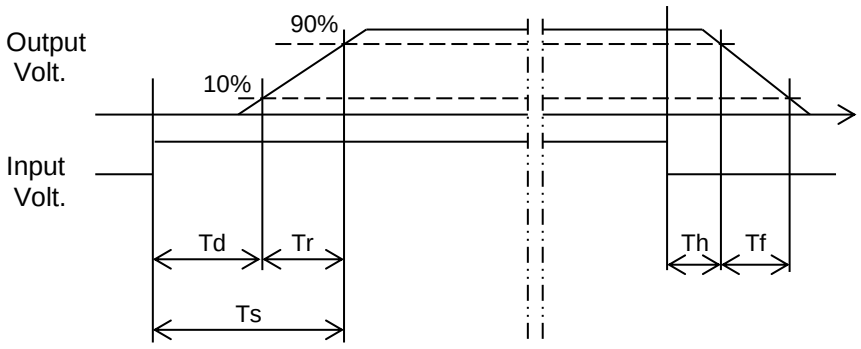
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.4	0.9	2.3	0.2	2.1
100 %	1.4	1.1	2.5	0.1	1.0



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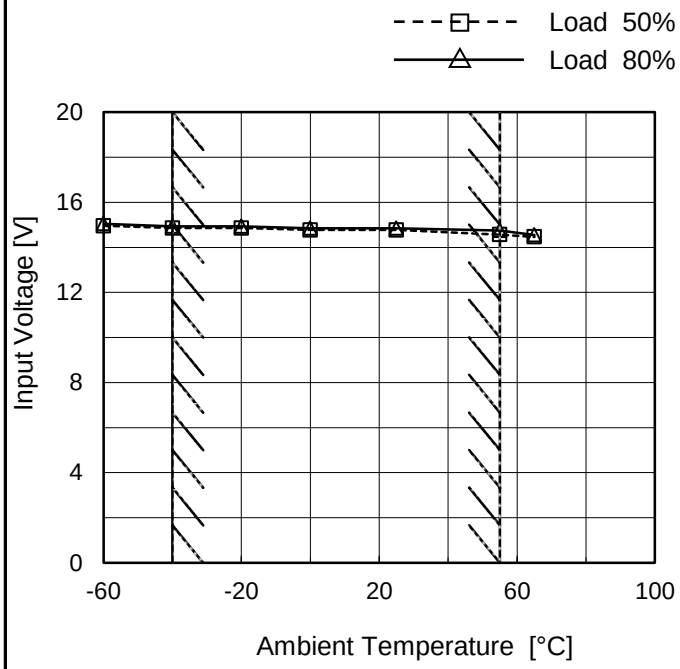
Model	MGFS104812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.9A

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 80%
-60	15.0	15.1
-40	14.9	15.0
-20	14.9	15.0
0	14.8	14.9
25	14.8	14.9
55	14.6	14.8
65	14.5	14.6
--	-	-
--	-	-
--	-	-
--	-	-

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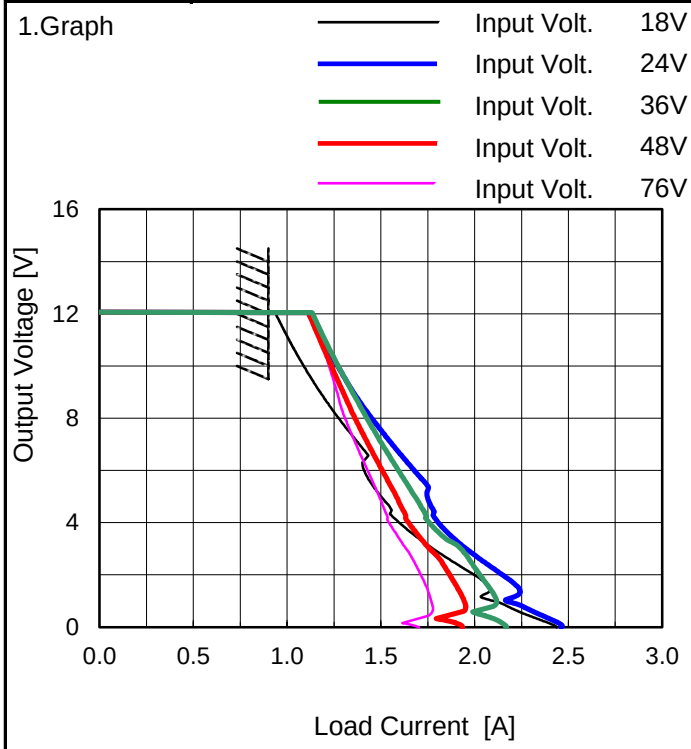
Model	MGFS104812
Item	Overcurrent Protection
Object	+12V0.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

Maximum output current at minimum input Voltage is 80% of rated load current.
Refer to instruction manuals for details of input derating.

2.Values

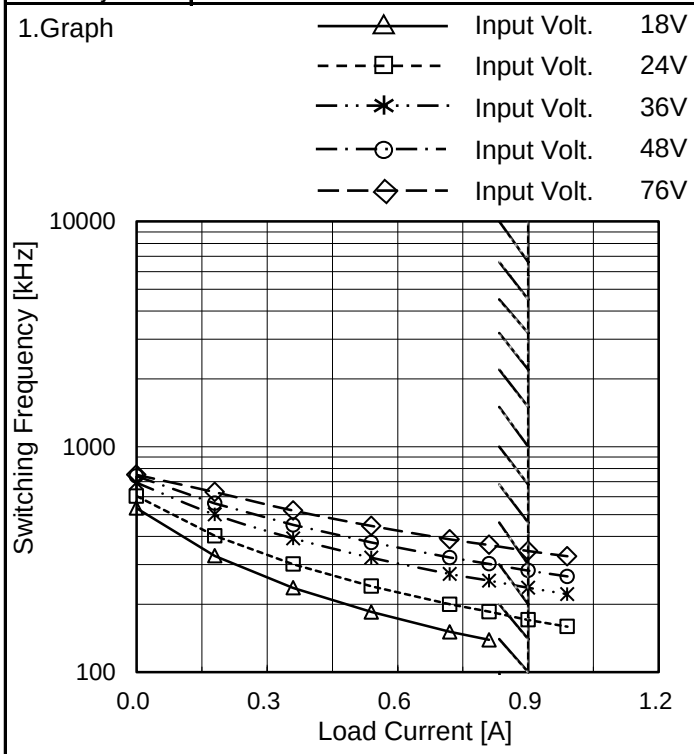
Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
11.4	0.981	1.160	1.174	1.152	1.160
10.8	1.024	1.204	1.214	1.187	1.187
9.6	1.120	1.300	1.300	1.259	1.239
8.4	1.233	1.409	1.393	1.334	1.288
7.2	1.360	1.535	1.490	1.416	1.353
6.0	1.409	1.674	1.590	1.507	1.427
4.8	1.523	1.757	1.697	1.594	1.501
3.6	1.661	1.855	1.810	1.688	1.576
2.4	1.907	2.067	1.988	1.832	1.683
1.2	2.044	2.232	2.105	1.931	1.759
0.0	2.437	2.461	2.168	1.934	1.702
--	-	-	-	-	-

COSEL

Model	MGFS104812
Item	Switching frequency (by Load Current)
Object	+12V0.9A

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	534	604	693	741	751
0.18	328	402	500	561	629
0.36	237	301	392	450	521
0.54	185	241	322	376	445
0.72	151	200	273	322	388
0.81	139	185	255	302	366
0.90	- ※	171	237	282	345
0.99	- ※	159	222	265	327
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

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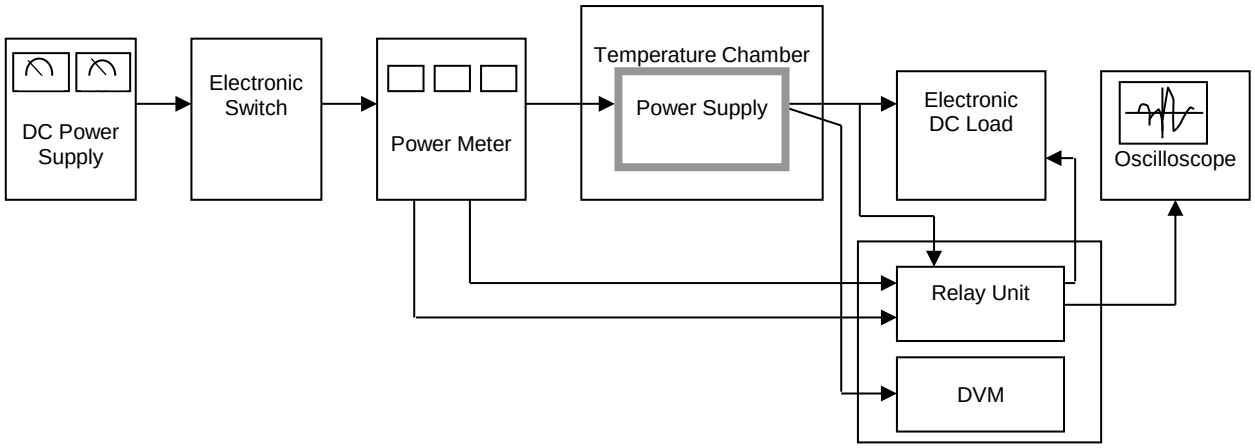

Figure A

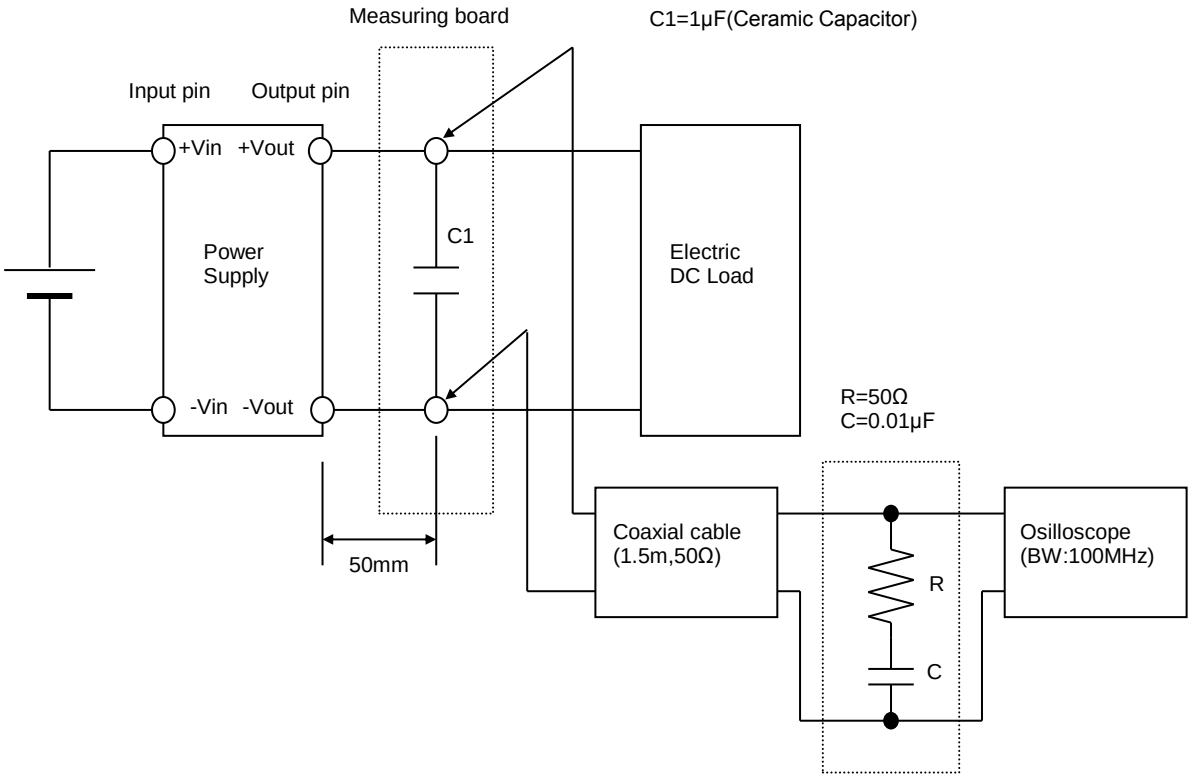

Figure B（Ripple and Ripple noise Characteristic）