参考資料

TEST DATA OF MGFS104805

Regulated DC Power Supply
December 28, 2016

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COSEL CO.,LTD.

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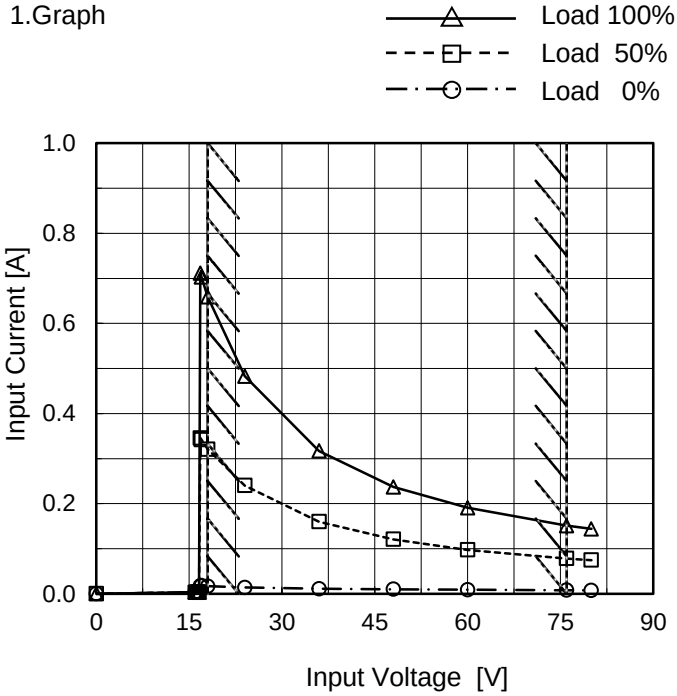

Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
16.0	0.004	0.003	0.004
16.2	0.003	0.003	0.004
16.4	0.004	0.004	0.003
16.6	0.003	0.004	0.003
16.8	0.018	0.346	0.711
17.0	0.018	0.342	0.703
18.0	0.017	0.321	0.659
24.0	0.014	0.240	0.483
36.0	0.011	0.160	0.317
48.0	0.010	0.121	0.237
60.0	0.009	0.098	0.191
76.0	0.008	0.078	0.151
80.0	0.008	0.075	0.144
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-11075

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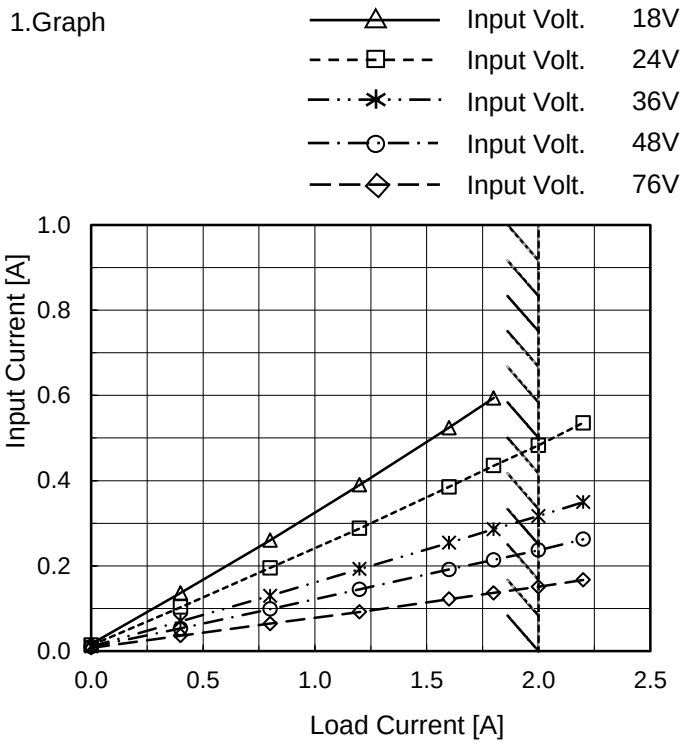
Model	MGFS104805
Item	Input Current (by Load Current)
Object	――――――

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]
0.0	0.017	0.014	0.011	0.010	0.008
0.4	0.137	0.103	0.070	0.053	0.036
0.8	0.260	0.195	0.130	0.099	0.065
1.2	0.390	0.288	0.192	0.145	0.092
1.6	0.524	0.385	0.254	0.191	0.122
1.8	0.594	0.435	0.286	0.214	0.137
2.0	- ※	0.483	0.317	0.237	0.151
2.2	- ※	0.535	0.349	0.262	0.167
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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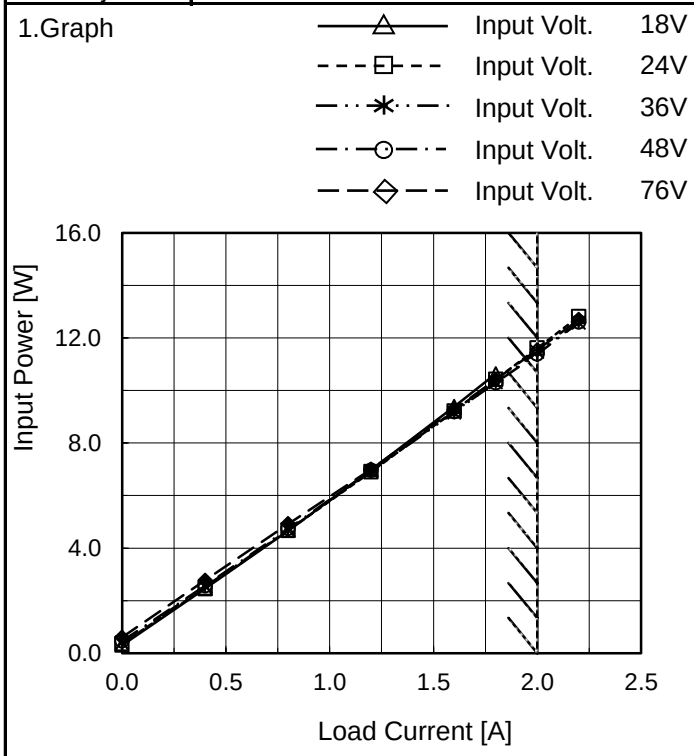
Model	MGFS104805
Item	Input Power (by Load Current)
Object	———————

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]
0.0	0.31	0.36	0.41	0.46	0.61
0.4	2.46	2.48	2.53	2.57	2.77
0.8	4.66	4.68	4.69	4.74	4.92
1.2	6.98	6.90	6.93	6.96	7.00
1.6	9.39	9.22	9.16	9.20	9.27
1.8	10.63	10.42	10.31	10.29	10.41
2.0	- ※	11.61	11.47	11.38	11.55
2.2	- ※	12.81	12.58	12.60	12.70
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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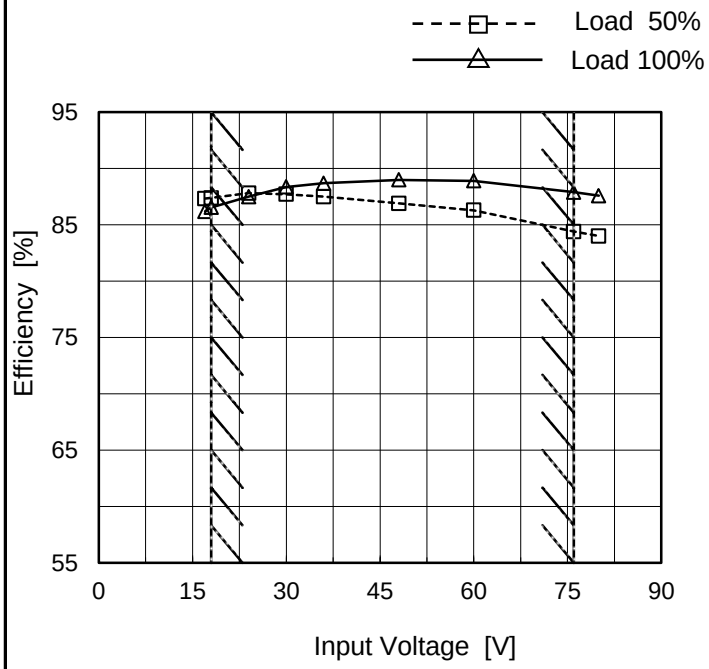
Model	MGFS104805
Item	Efficiency (by Input Voltage)
Object	――――――――――

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	86.2 ※1
18	87.4	86.6 ※1
24	87.8	87.5
30	87.7	88.4
36	87.5	88.7
48	86.9	89.0
60	86.3	88.9
76	84.4	87.9
80	84.0	87.6

※1:Load 80%

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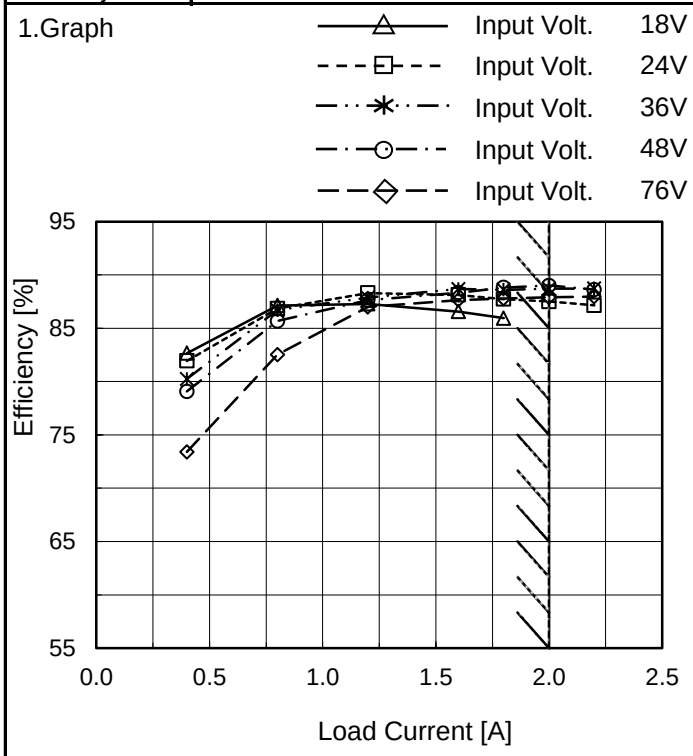
Model	MGFS104805
Item	Efficiency (by Load Current)
Object	————————

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]
0.0	-	-	-	-	-
0.4	82.7	81.9	80.2	79.1	73.4
0.8	87.1	86.8	86.7	85.7	82.5
1.2	87.3	88.3	87.9	87.6	87.0
1.6	86.6	88.1	88.7	88.3	87.6
1.8	85.9	87.7	88.6	88.8	87.8
2.0	- ※	87.5	88.7	89.0	87.9
2.2	- ※	87.1	88.7	88.6	88.0
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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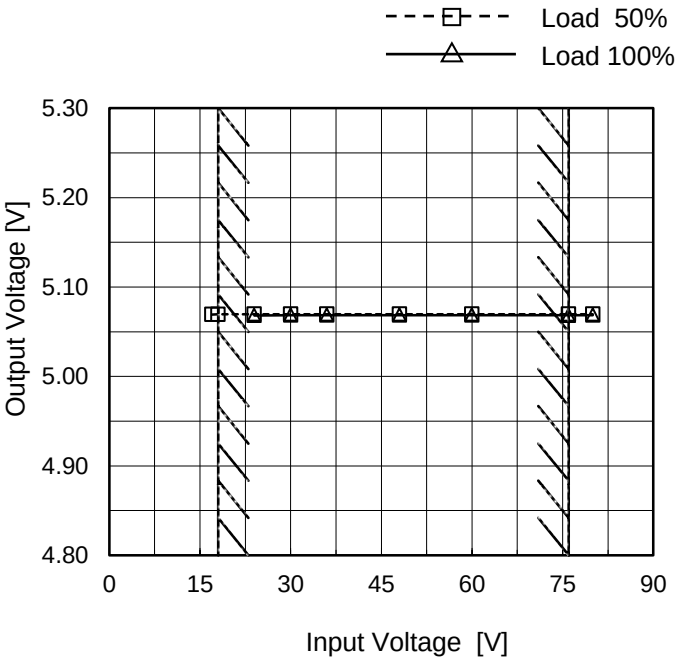
Model	MGFS104805
Item	Line Regulation
Object	+5V2A

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	5.069	- ※
18	5.069	- ※
24	5.070	5.068
30	5.070	5.069
36	5.070	5.069
48	5.070	5.069
60	5.070	5.069
76	5.070	5.068
80	5.070	5.069

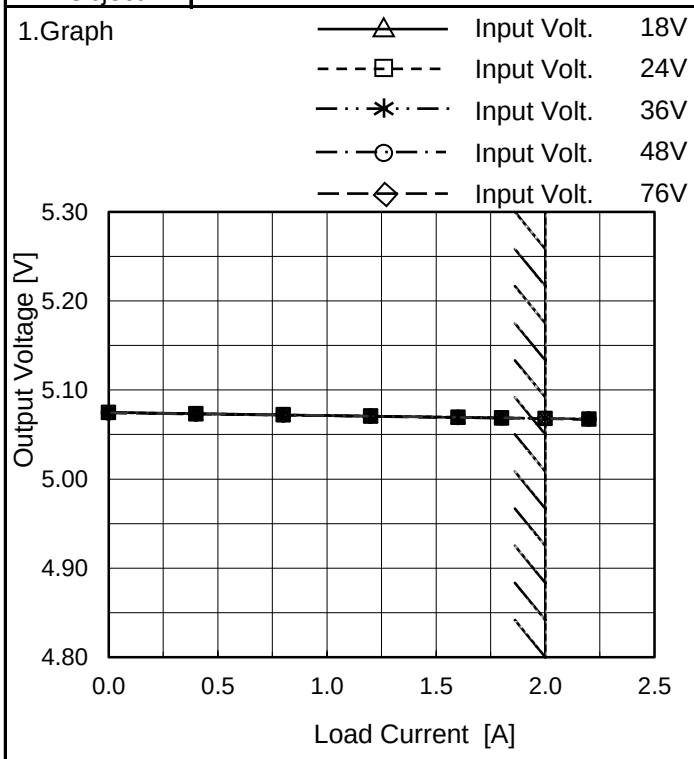
※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

COSEL

Model	MGFS104805
Item	Load Regulation
Object	+5V2A

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]
0.0	5.075	5.075	5.075	5.074	5.075
0.4	5.074	5.074	5.073	5.073	5.073
0.8	5.072	5.072	5.072	5.072	5.072
1.2	5.071	5.071	5.071	5.071	5.070
1.6	5.069	5.070	5.069	5.069	5.069
1.8	5.069	5.069	5.069	5.069	5.068
2.0	- ※	5.068	5.068	5.068	5.068
2.2	- ※	5.067	5.067	5.067	5.067
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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	MGFS104805	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+5V2A	

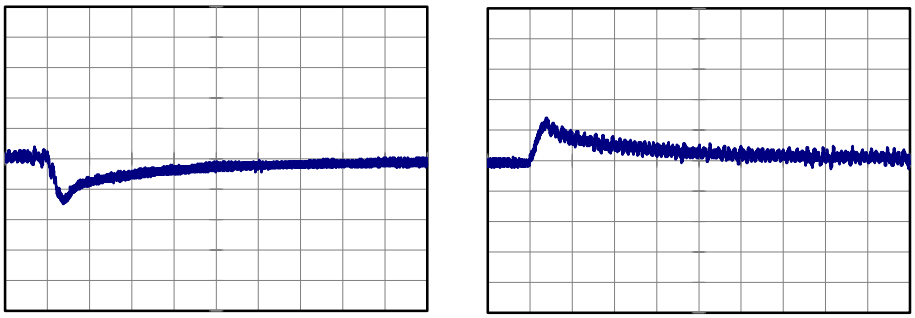
Input Volt. 48 V
Cycle 100 ms

t1,t2 = 100 μ s

Load Current

t1 t2

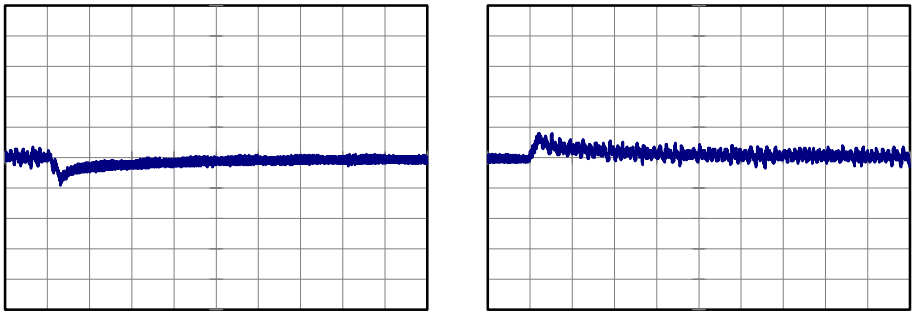
Min.Load (0A)←→
Load 100% (2A)



200 mV/div

200 μs/div 200 μs/div

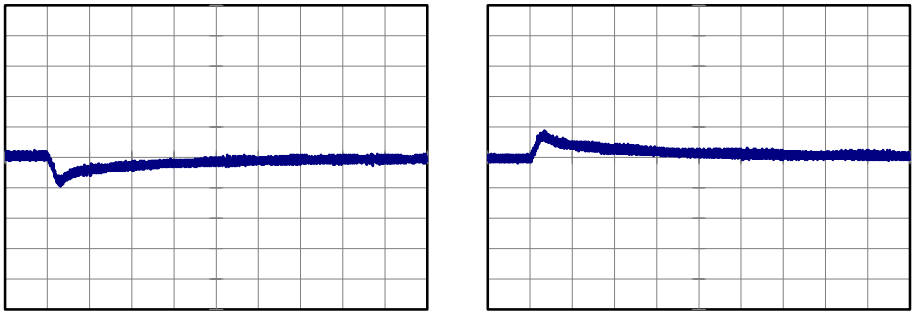
Min.Load (0A)←→
Load 50% (1A)



200 mV/div

200 μs/div 200 μs/div

Load 50% (1A)←→
Load 100% (2A)



200 mV/div

200 μs/div 200 μs/div

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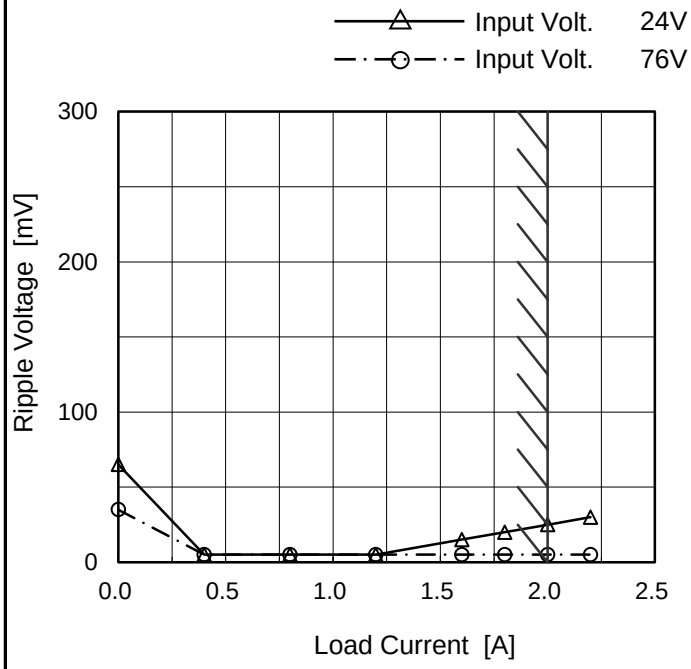
Model	MGFS104805
Item	Ripple Voltage (by Load Current)
Object	+5V2A

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]

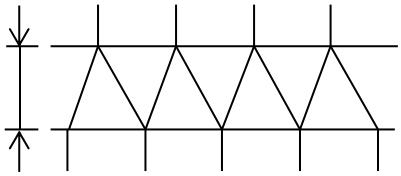


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 24 [V]	Input Volt. 76 [V]
0.0	65	35
0.4	5	5
0.8	5	5
1.2	5	5
1.6	15	5
1.8	20	5
2.0	25	5
2.2	30	5
--	-	-
--	-	-
--	-	-

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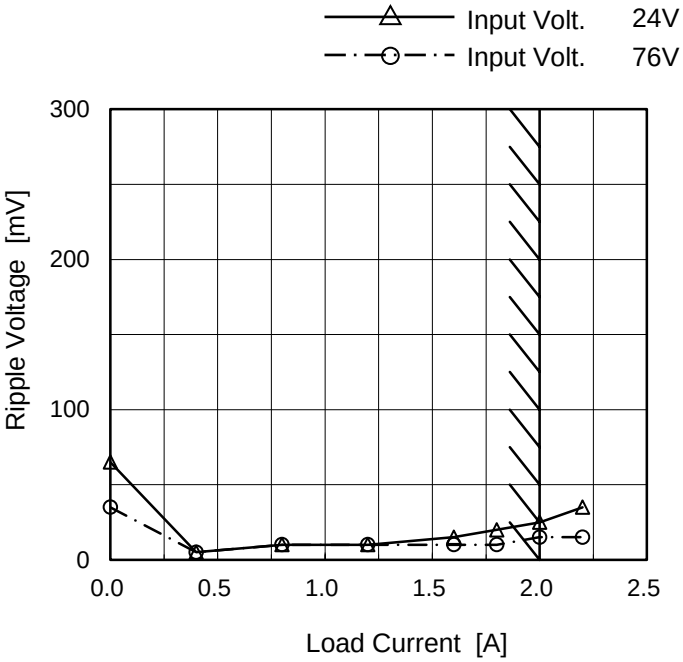
Model	MGFS104805
Item	Ripple-Noise
Object	+5V2A

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]

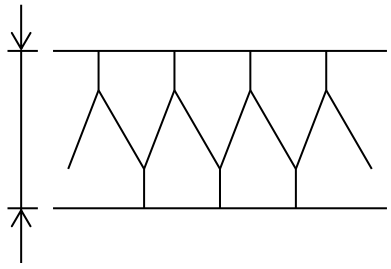


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 24 [V]	Input Volt. 76 [V]
0.0	65	35
0.4	5	5
0.8	10	10
1.2	10	10
1.6	15	10
1.8	20	10
2.0	25	15
2.2	35	15
--	-	-
--	-	-
--	-	-

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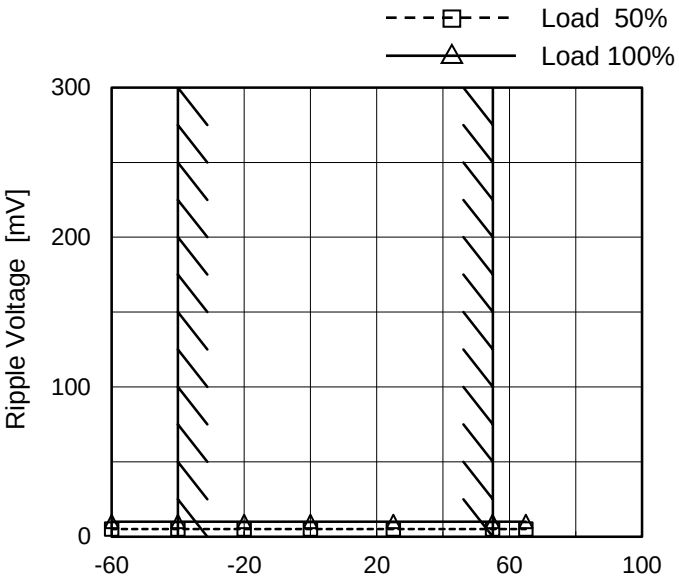
Model	MGFS104805
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V2A

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
--	-	-
--	-	-
--	-	-
--	-	-

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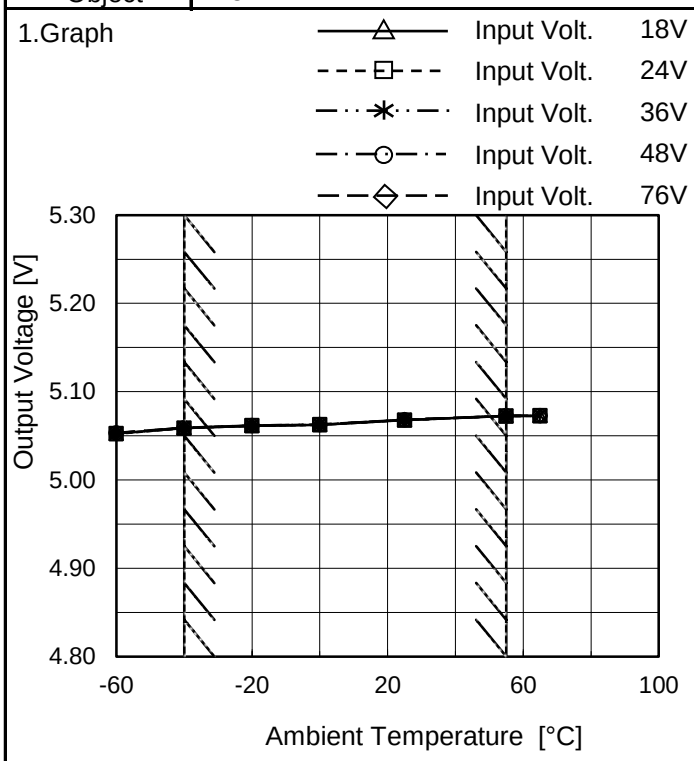
Model	MGFS104805
Item	Ambient Temperature Drift
Object	+5V2A

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	5.053	5.052	5.053	5.053	5.053
-40	5.059	5.059	5.059	5.059	5.059
-20	5.061	5.061	5.062	5.062	5.061
0	5.063	5.063	5.063	5.063	5.063
25	5.068	5.068	5.068	5.068	5.068
55	5.073	5.072	5.073	5.073	5.073
65	5.073	5.073	5.073	5.073	5.073
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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

Model	MGFS104805	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+5V2A	

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 - 2A

* 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	5.079	±10	±0.2
Minimum Voltage	-40	24	2	5.059		

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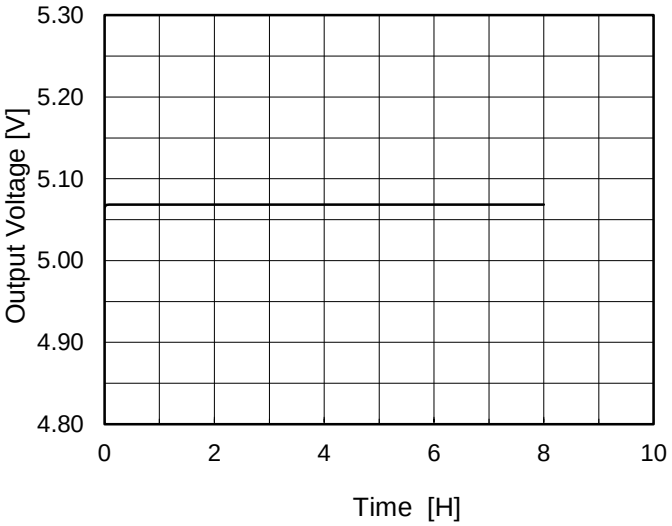
Model	MGFS104805
Item	Time Lapse Drift
Object	+5V2A

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	5.065
0.5	5.069
1.0	5.069
2.0	5.069
3.0	5.069
4.0	5.069
5.0	5.069
6.0	5.069
7.0	5.069
8.0	5.069

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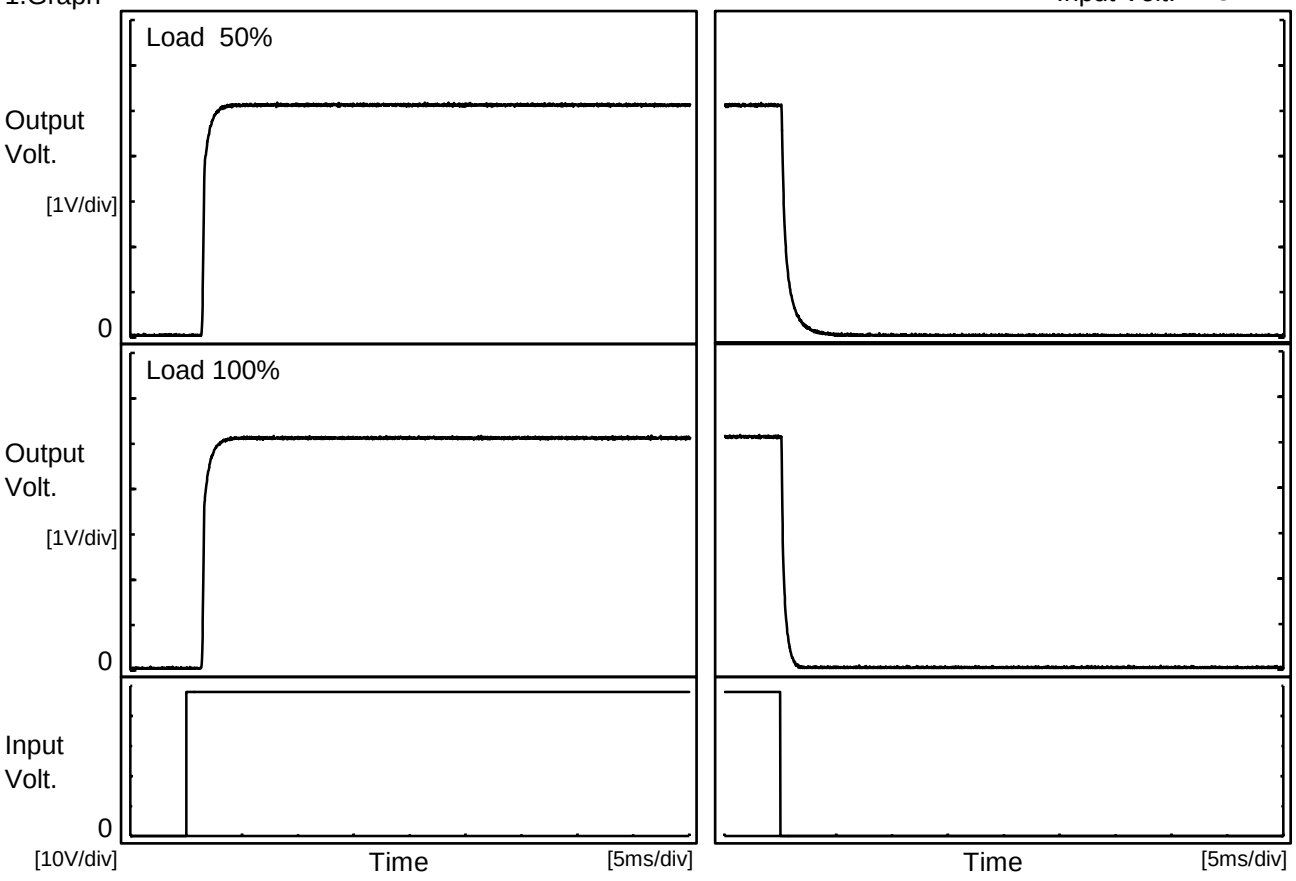
Model	MGFS104805	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+5V2A	

1.Graph

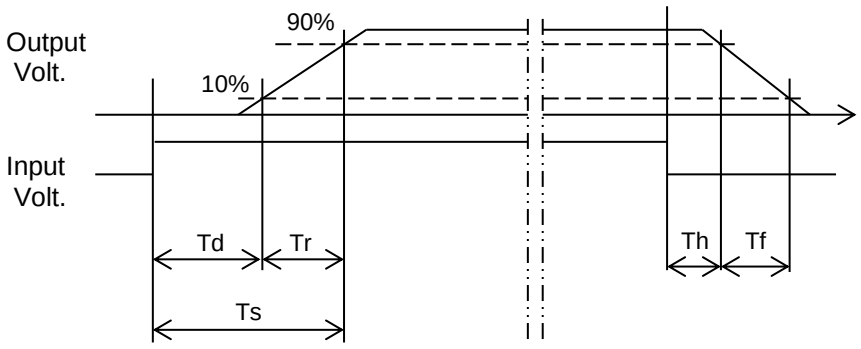
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.5	0.6	2.1	0.2	1.3
100 %	1.5	0.7	2.2	0.1	0.7



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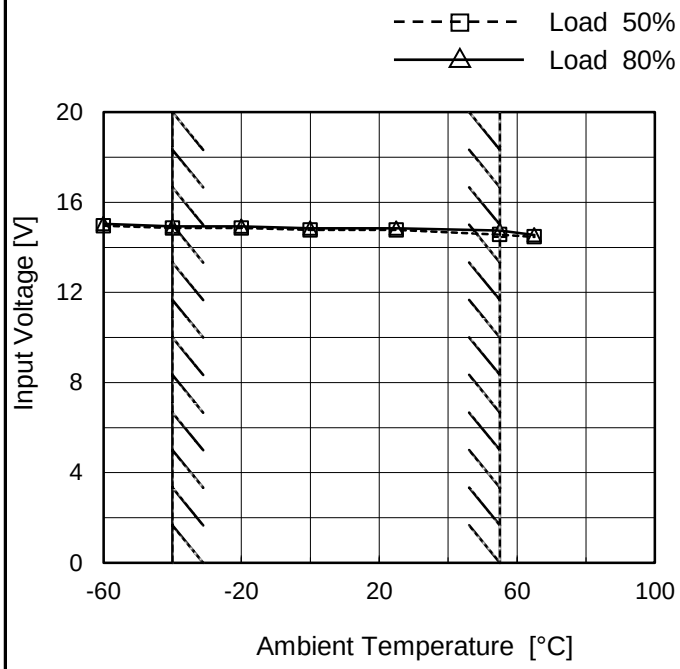
Model	MGFS104805
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V2A

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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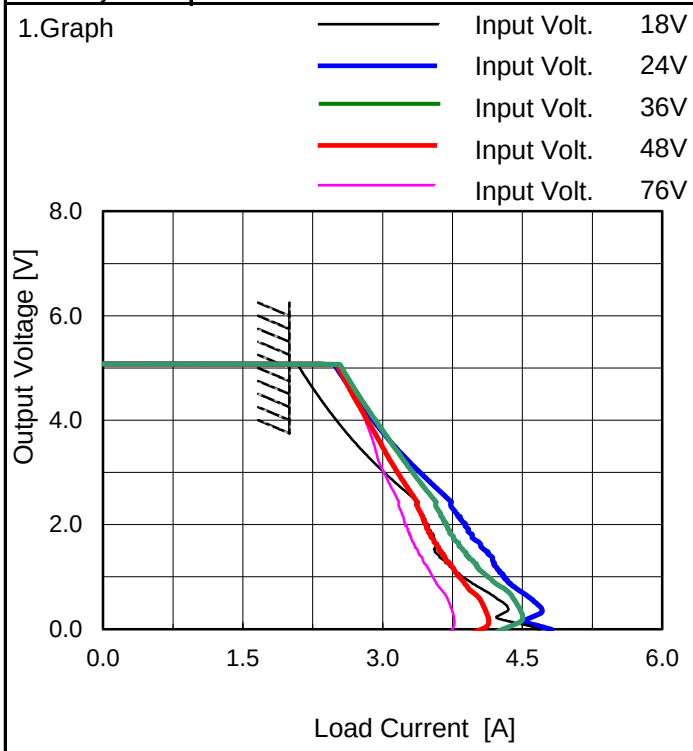
Model	MGFS104805
Item	Overcurrent Protection
Object	+5V2A

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

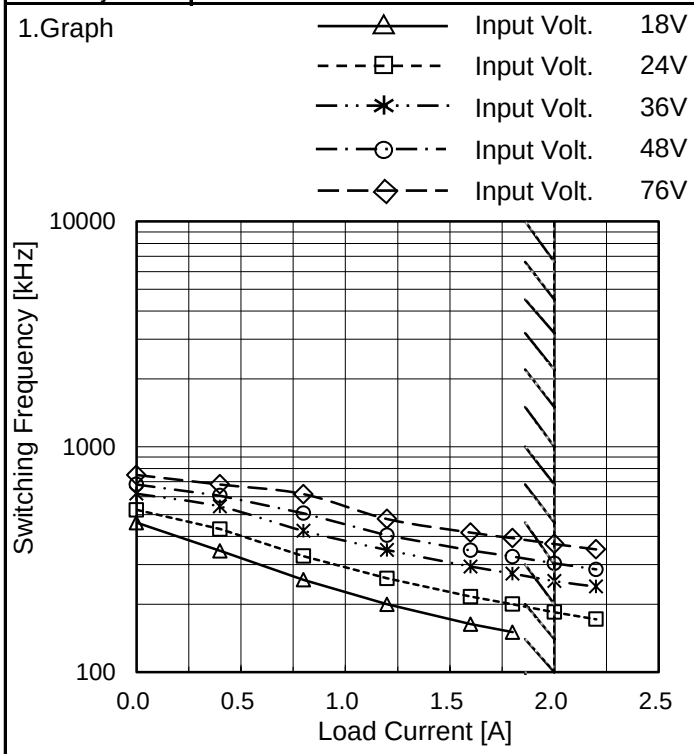
Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
4.75	2.199	2.599	2.644	2.600	2.632
4.50	2.294	2.695	2.732	2.673	2.693
4.00	2.498	2.893	2.915	2.830	2.811
3.50	2.732	3.126	3.111	2.992	2.913
3.00	3.014	3.399	3.315	3.157	3.011
2.50	3.335	3.688	3.534	3.339	3.153
2.00	3.485	3.890	3.681	3.466	3.246
1.50	3.561	4.102	3.864	3.609	3.377
1.00	3.847	4.305	4.124	3.817	3.536
0.50	4.296	4.635	4.432	4.063	3.712
0.00	4.684	4.814	4.199	3.820	3.733
--	-	-	-	-	-

COSEL

Model	MGFS104805
Item	Switching frequency (by Load Current)
Object	+5V2A

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]
0.0	460	525	619	680	750
0.4	345	431	543	607	680
0.8	257	327	423	507	616
1.2	200	260	348	405	478
1.6	163	216	294	347	416
1.8	150	200	274	325	393
2.0	- ※	184	253	304	370
2.2	- ※	172	240	285	350
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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

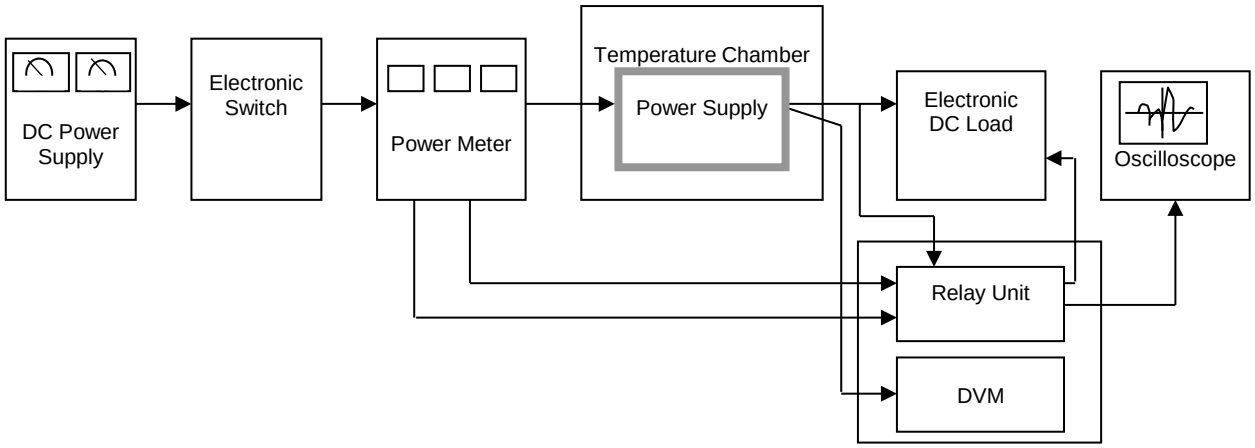


Figure A

Data Acquisition/Control Unit

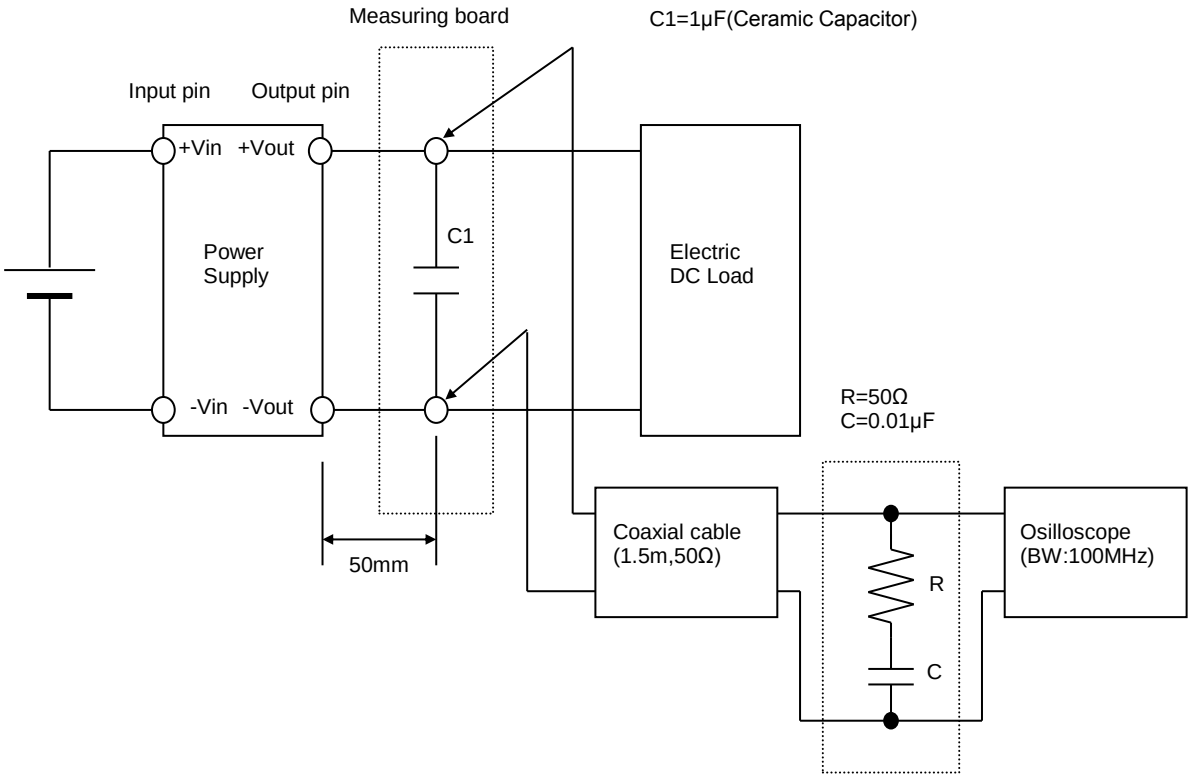


Figure B（Ripple and Ripple noise Characteristic）