参考資料

TEST DATA OF MGFS34815

Regulated DC Power Supply
January 11, 2017

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COSEL CO.,LTD.

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

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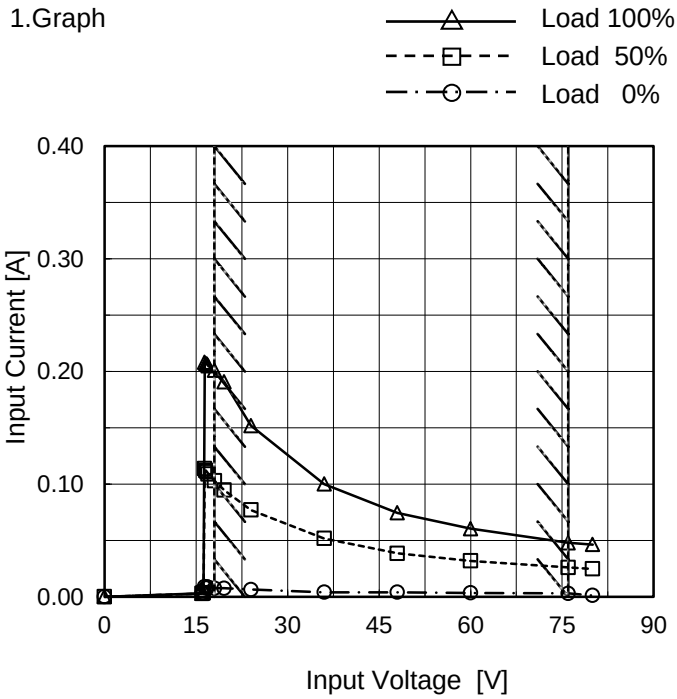
1.Graph



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

2.Values

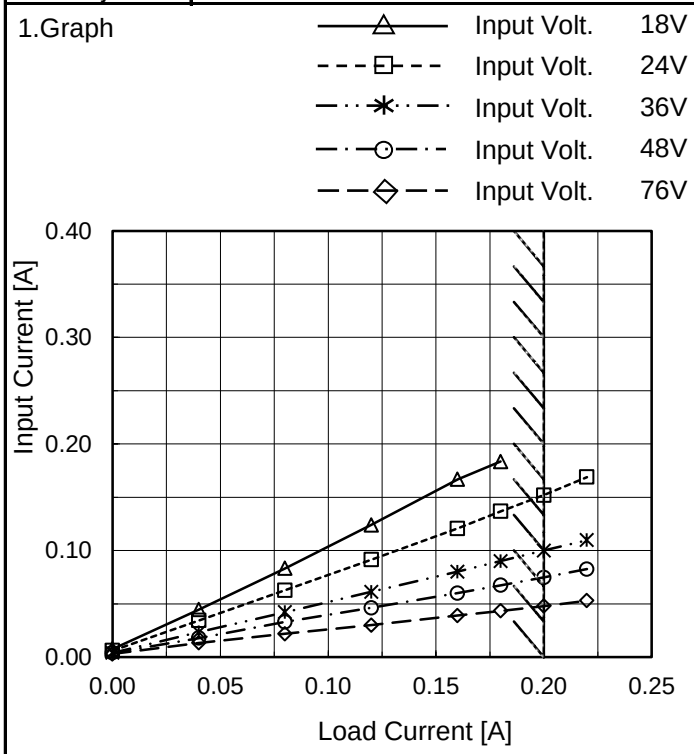
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
16.0	0.003	0.003	0.003
16.2	0.003	0.003	0.004
16.4	0.009	0.114	0.208
16.6	0.008	0.112	0.207
16.8	0.009	0.111	0.207
17.0	0.008	0.109	0.205
18.0	0.008	0.103	0.201
19.6	0.008	0.095	0.191
24.0	0.006	0.077	0.152
36.0	0.004	0.052	0.100
48.0	0.004	0.039	0.075
60.0	0.003	0.032	0.060
76.0	0.003	0.026	0.048
80.0	0.001	0.025	0.046
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGFS34815
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	0.008	0.006	0.004	0.004	0.003
0.04	0.045	0.034	0.023	0.018	0.013
0.08	0.083	0.063	0.042	0.033	0.022
0.12	0.124	0.092	0.061	0.046	0.030
0.16	0.167	0.121	0.080	0.060	0.039
0.18	0.184	0.137	0.090	0.067	0.043
0.20	- ※	0.152	0.100	0.075	0.048
0.22	- ※	0.169	0.110	0.083	0.053
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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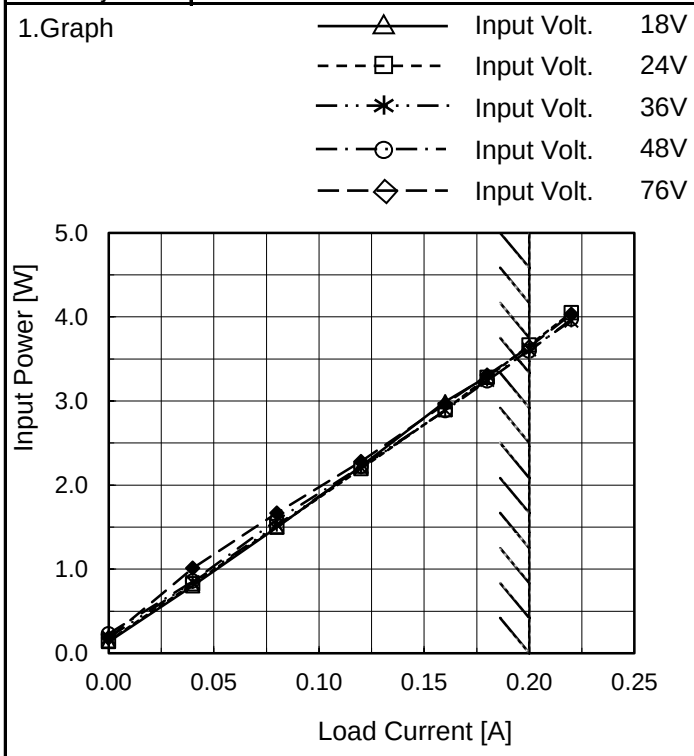
Model	MGFS34815
Item	Input Power (by Load Current)
Object	————————

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	0.14	0.15	0.19	0.23	0.18
0.04	0.80	0.83	0.84	0.86	1.01
0.08	1.50	1.50	1.52	1.58	1.67
0.12	2.22	2.19	2.21	2.22	2.28
0.16	2.99	2.89	2.89	2.89	2.97
0.18	3.29	3.28	3.25	3.24	3.31
0.20	- ※	3.66	3.61	3.59	3.64
0.22	- ※	4.05	3.95	3.97	4.03
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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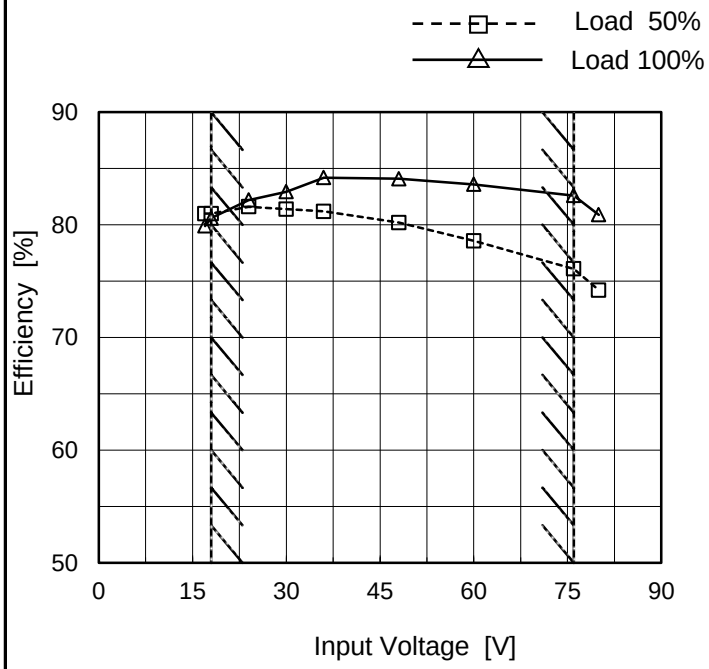
Model	MGFS34815
Item	Efficiency (by Input Voltage)
Object	――――――――――

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	81.0	79.9 ※1
18	81.0	80.6 ※1
24	81.6	82.2
30	81.4	82.9
36	81.2	84.2
48	80.2	84.1
60	78.6	83.6
76	76.1	82.6
80	74.2	80.9

※1:Load 80%

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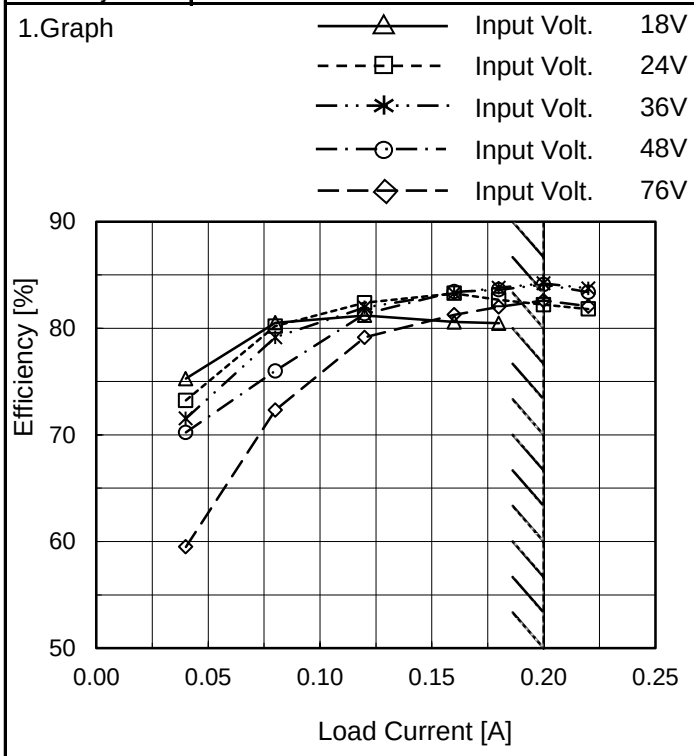
Model	MGFS34815
Item	Efficiency (by Load Current)
Object	————————

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	-	-	-	-	-
0.04	75.3	73.2	71.5	70.2	59.5
0.08	80.5	80.2	79.1	76.0	72.3
0.12	81.2	82.4	81.9	81.3	79.1
0.16	80.6	83.3	83.3	83.4	81.3
0.18	80.5	82.7	83.8	83.6	82.0
0.20	- ※	82.2	84.2	84.1	82.6
0.22	- ※	81.8	83.7	83.4	82.1
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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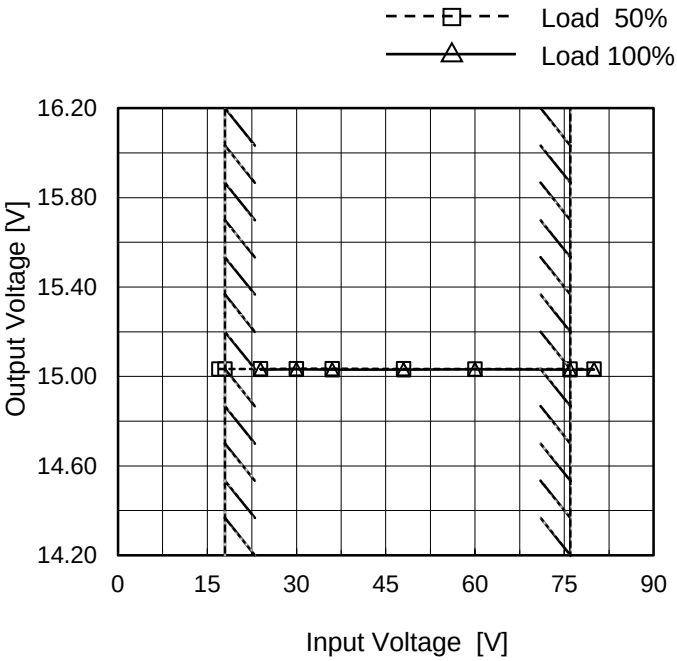
Model	MGFS34815
Item	Line Regulation
Object	+15V0.2A

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	15.033	- ※
18	15.033	- ※
24	15.034	15.031
30	15.034	15.032
36	15.034	15.030
48	15.033	15.030
60	15.033	15.031
76	15.033	15.030
80	15.033	15.031

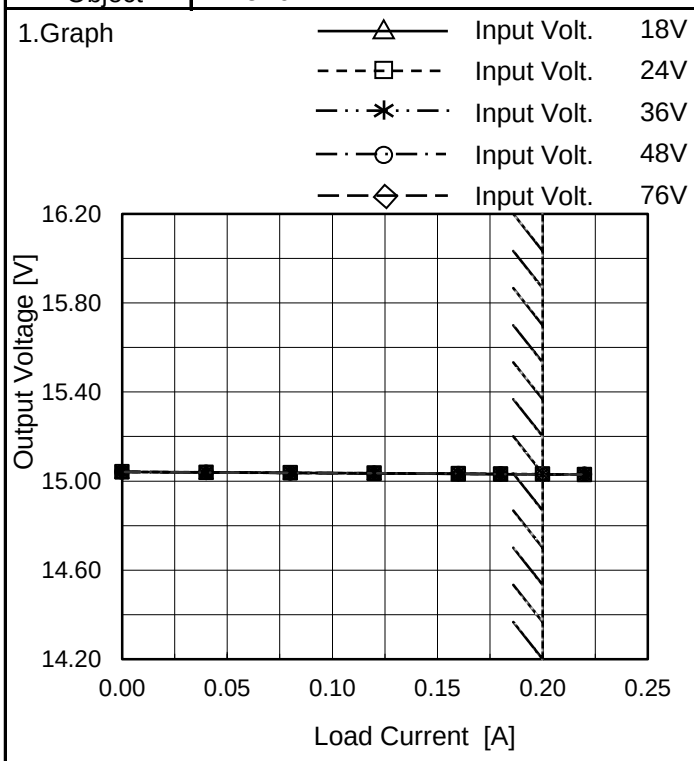
※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

COSEL

Model	MGFS34815
Item	Load Regulation
Object	+15V0.2A

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	15.041	15.041	15.041	15.041	15.042
0.04	15.039	15.039	15.039	15.038	15.038
0.08	15.037	15.037	15.037	15.037	15.036
0.12	15.035	15.035	15.035	15.035	15.034
0.16	15.032	15.033	15.033	15.033	15.032
0.18	15.031	15.032	15.032	15.031	15.031
0.20	- ※	15.031	15.030	15.030	15.030
0.22	- ※	15.029	15.030	15.030	15.030
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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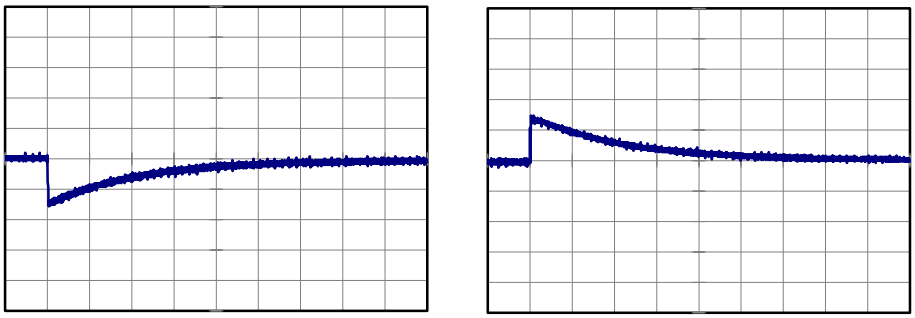
Model	MGFS34815	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+15V0.2A	

Input Volt. 48 V
Cycle 100 ms

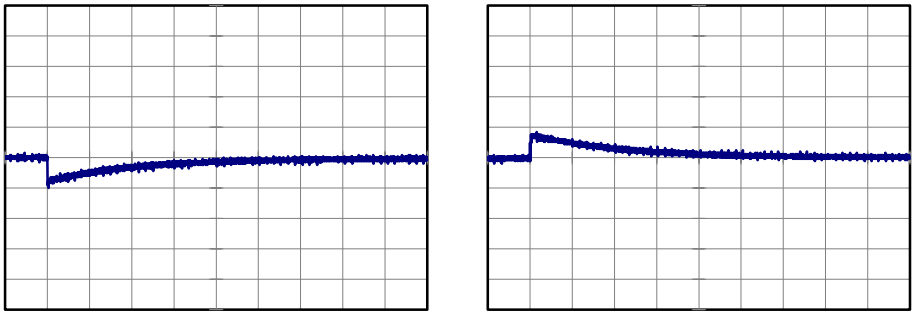
Min.Load (0A)←→
Load 100% (0.2A)



100 mV/div

4 ms/div 4 ms/div

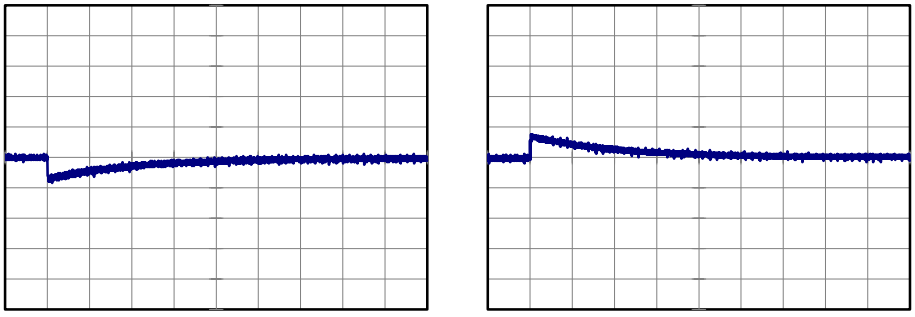
Min.Load (0A)←→
Load 50% (0.1A)



100 mV/div

4 ms/div 4 ms/div

Load 50% (0.1A)←→
Load 100% (0.2A)



100 mV/div

4 ms/div 4 ms/div

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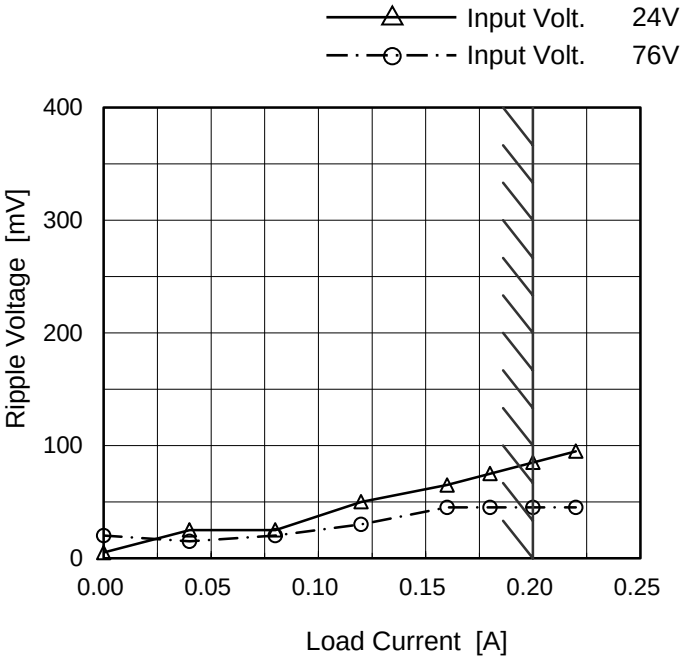
Model	MGFS34815
Item	Ripple Voltage (by Load Current)
Object	+15V0.2A

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]

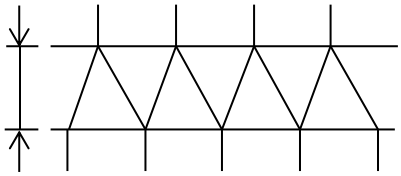


Fig.Complex Ripple Wave Form

2.Values

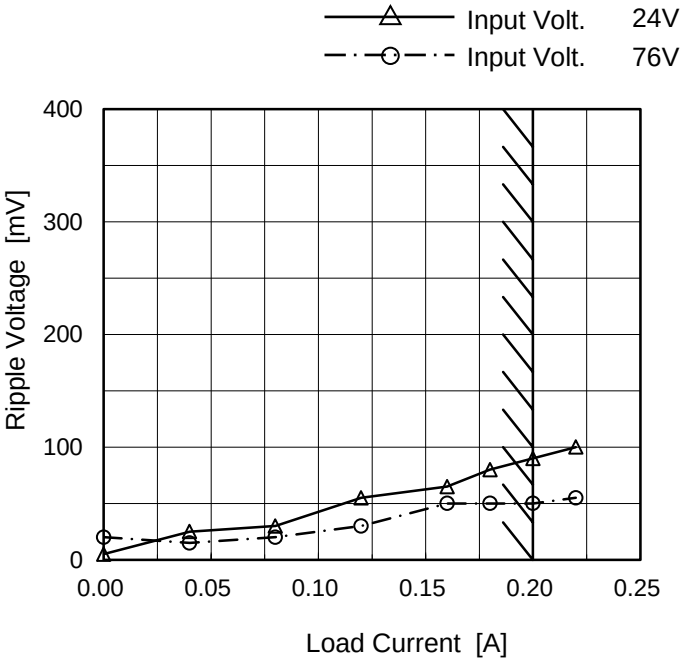
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 24 [V]	Input Volt. 76 [V]
0.00	5	20
0.04	25	15
0.08	25	20
0.12	50	30
0.16	65	45
0.18	75	45
0.20	85	45
0.22	95	45
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS34815
Item	Ripple-Noise
Object	+15V0.2A

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]

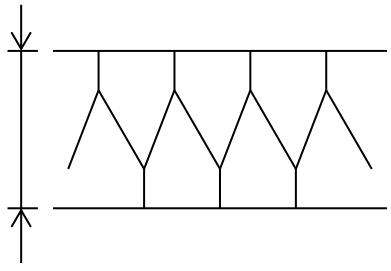


Fig.Complex Ripple Noise Wave Form

2.Values

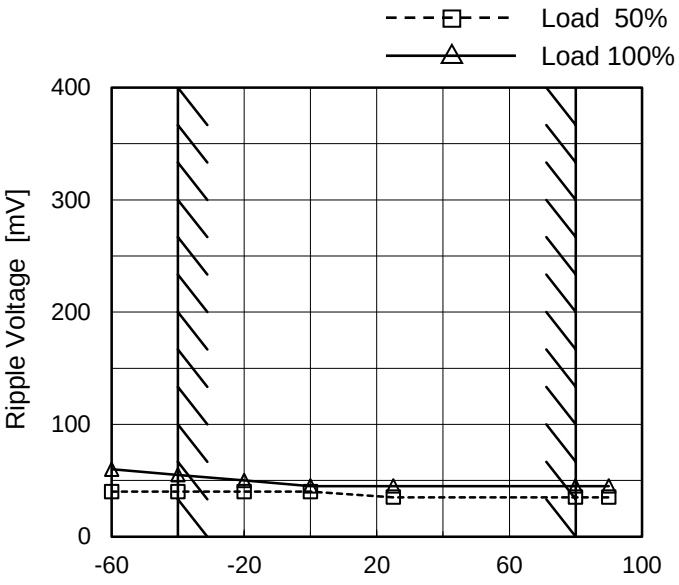
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 24 [V]	Input Volt. 76 [V]
0.00	5	20
0.04	25	15
0.08	30	20
0.12	55	30
0.16	65	50
0.18	80	50
0.20	90	50
0.22	100	55
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS34815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

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

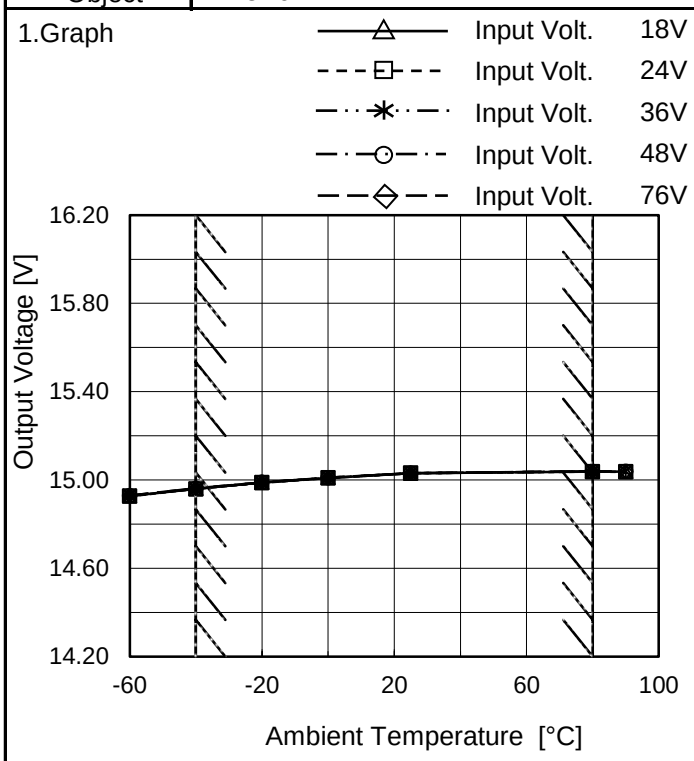
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	40	60
-40	40	55
-20	40	50
0	40	45
25	35	45
80	35	45
90	35	45
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS34815
Item	Ambient Temperature Drift
Object	+15V0.2A

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	14.927	14.926	14.928	14.929	14.930
-40	14.960	14.959	14.961	14.962	14.962
-20	14.988	14.988	14.989	14.989	14.989
0	15.009	15.009	15.010	15.010	15.010
25	15.031	15.031	15.030	15.030	15.030
80	15.038	15.038	15.039	15.039	15.039
90	15.038	15.037	15.038	15.038	15.038
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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

Model	MGFS34815	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V0.2A	

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 : 24 - 76V
Load Current : 0 - 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	70	76	0	15.054	±48	±0.3
Minimum Voltage	-40	24	0.2	14.959		

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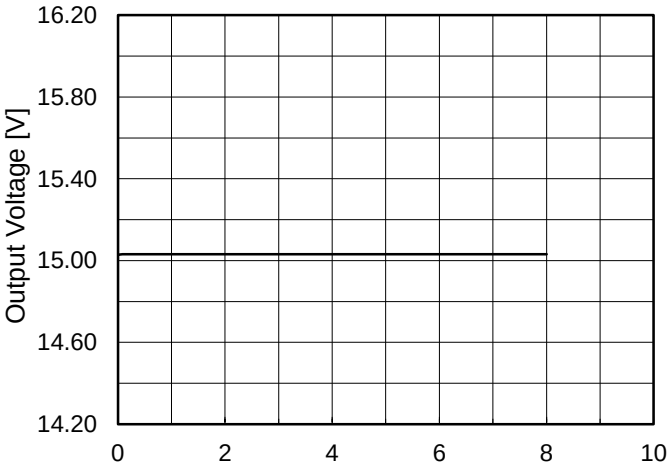
Model	MGFS34815
Item	Time Lapse Drift
Object	+15V0.2A

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	15.026
0.5	15.031
1.0	15.031
2.0	15.031
3.0	15.031
4.0	15.031
5.0	15.031
6.0	15.031
7.0	15.031
8.0	15.030

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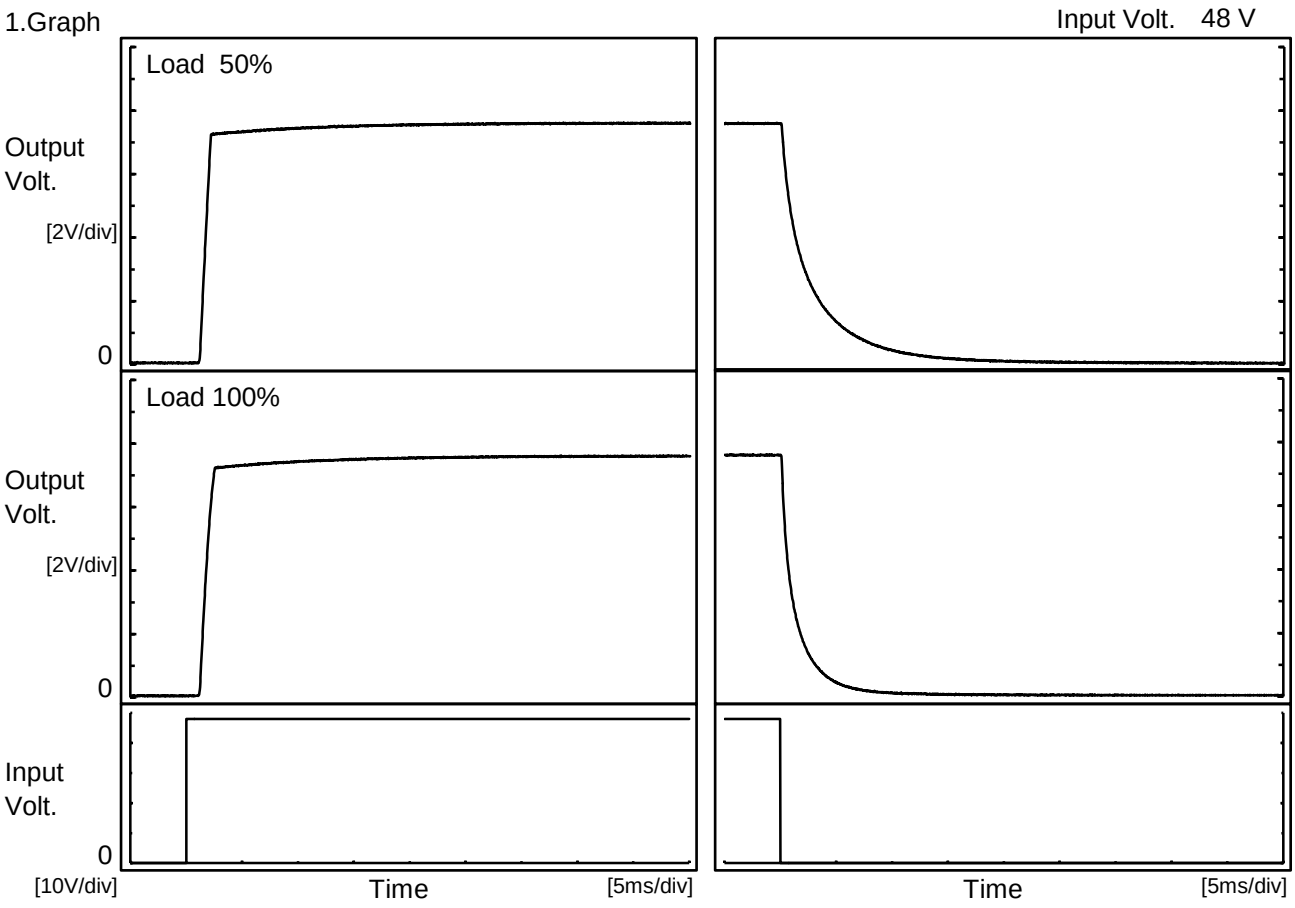
Model	MGFS34815	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+15V0.2A	

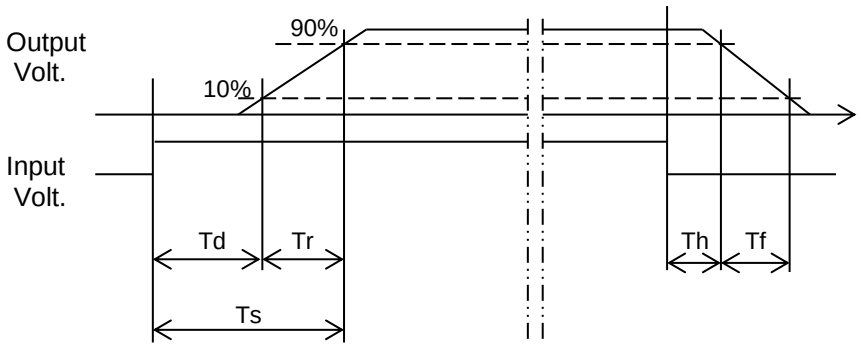
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.3	0.9	2.2	0.3	7.1
100 %	1.3	1.1	2.4	0.2	3.5



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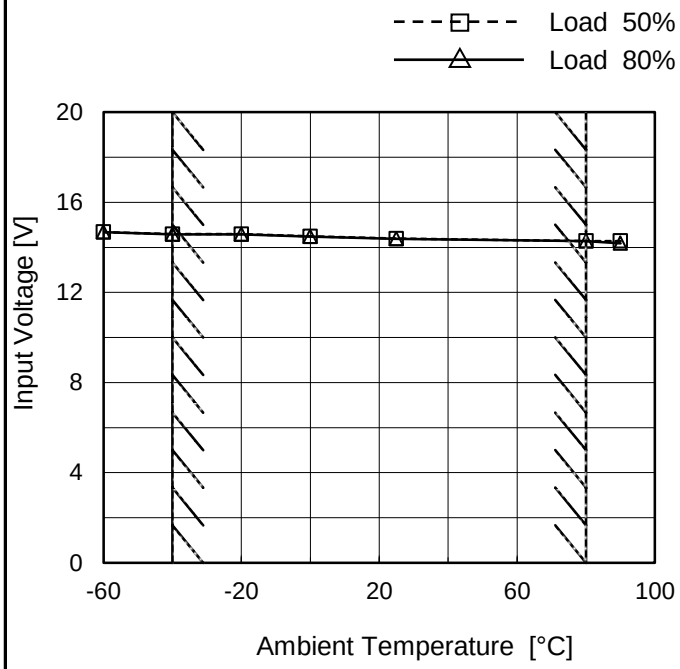
Model	MGFS34815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.2A

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	14.7	14.7
-40	14.6	14.6
-20	14.6	14.6
0	14.5	14.5
25	14.4	14.4
80	14.3	14.3
90	14.3	14.2
--	-	-
--	-	-
--	-	-
--	-	-

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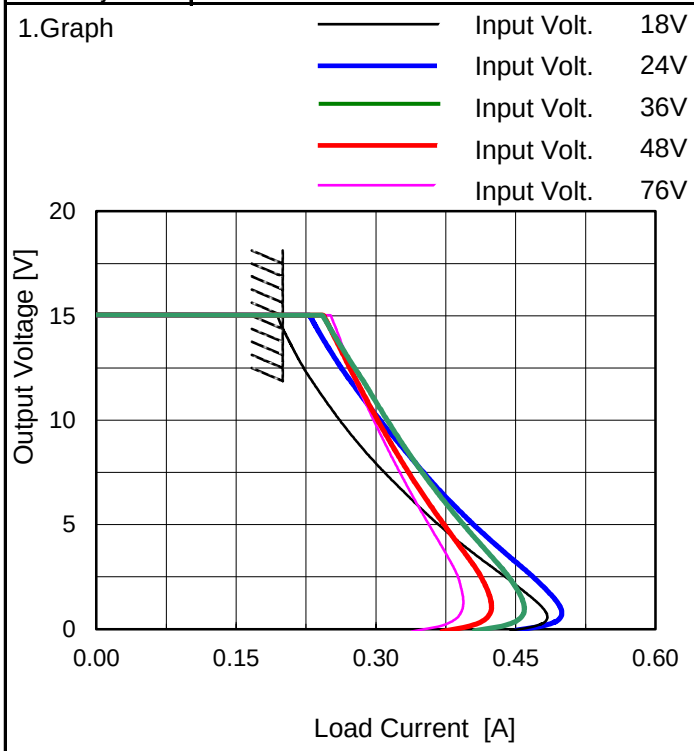
Model	MGFS34815
Item	Overcurrent Protection
Object	+15V0.2A

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

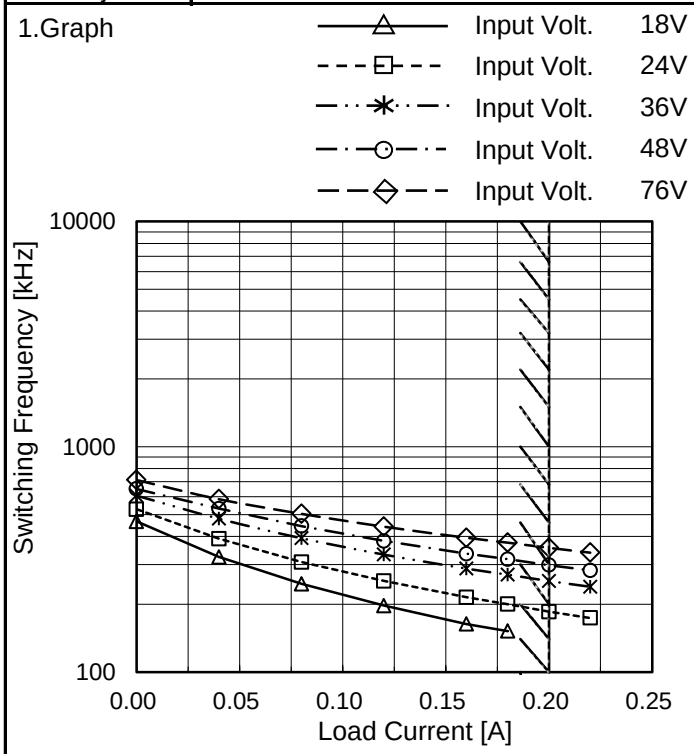
Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
14.3	0.202	0.238	0.253	0.252	0.258
13.5	0.210	0.248	0.263	0.261	0.264
12.0	0.230	0.270	0.284	0.277	0.276
10.5	0.252	0.295	0.305	0.295	0.292
9.0	0.278	0.322	0.326	0.314	0.308
7.5	0.309	0.351	0.350	0.335	0.326
6.0	0.343	0.382	0.375	0.357	0.344
4.5	0.380	0.416	0.403	0.381	0.363
3.0	0.423	0.455	0.433	0.405	0.383
1.5	0.467	0.490	0.456	0.422	0.394
0.0	0.444	0.450	0.406	0.371	0.339
--	-	-	-	-	-

COSEL

Model	MGFS34815
Item	Switching frequency (by Load Current)
Object	+15V0.2A

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	467	528	607	650	712
0.04	324	391	479	532	585
0.08	246	308	393	445	504
0.12	197	254	332	382	442
0.16	163	215	288	335	395
0.18	152	200	271	317	375
0.20	- ※	185	254	298	356
0.22	- ※	174	239	283	339
--	-	-	-	-	-
--	-	-	-	-	-
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※ Maximum output current at minimum input Voltage is 80% of rated load current. Refer to instruction manuals for details of input derating.

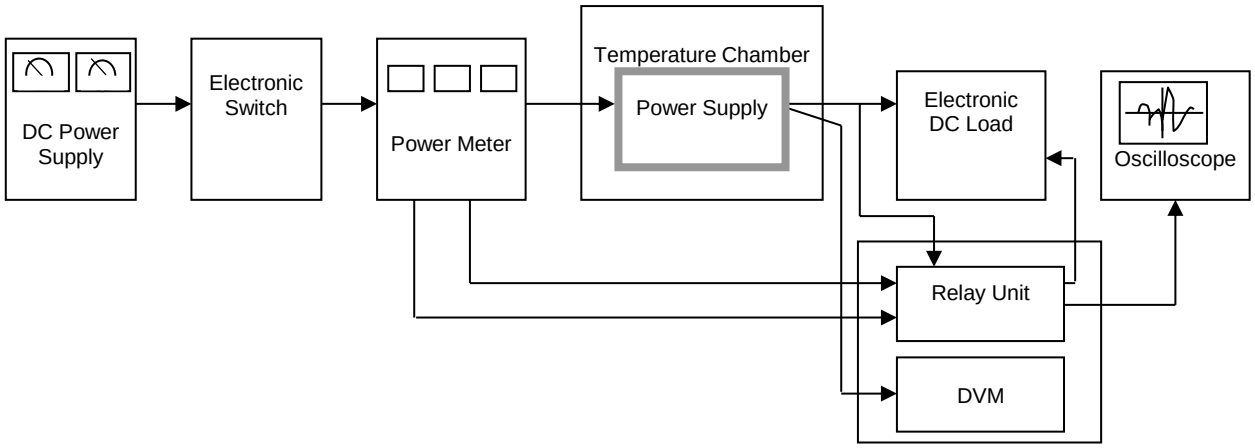

Figure A

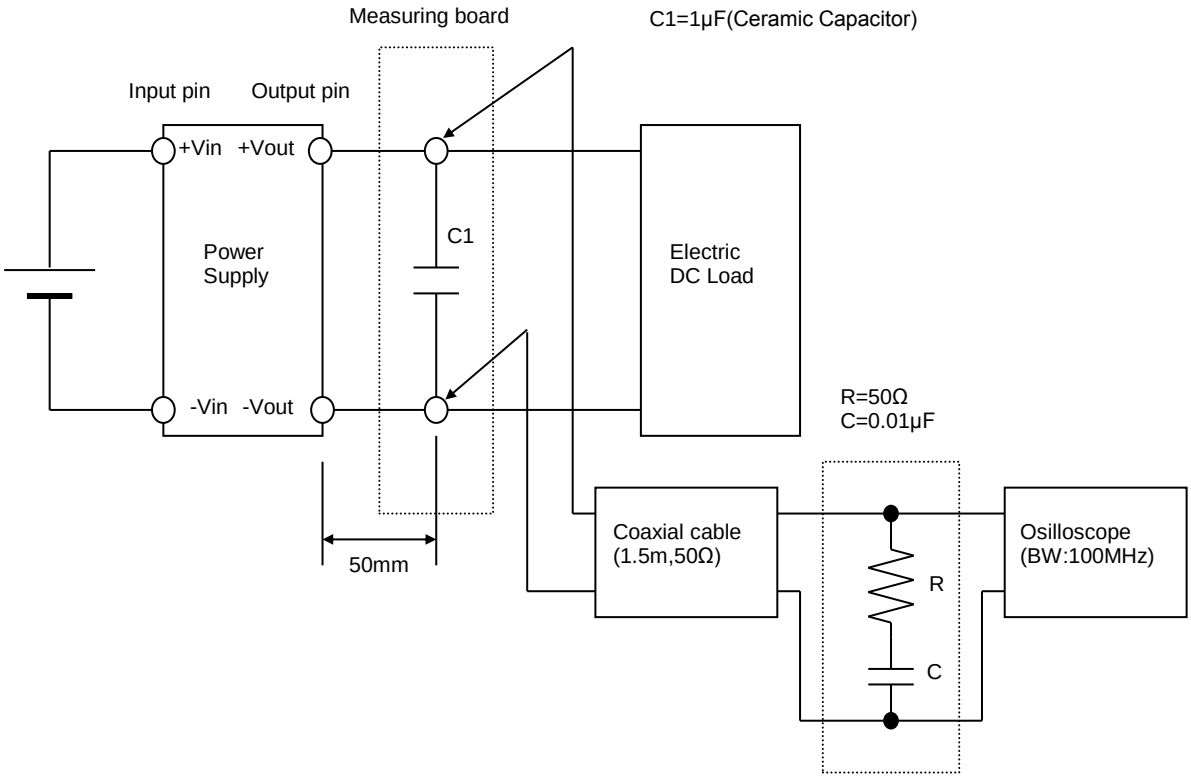

Figure B（Ripple and Ripple noise Characteristic）