参考資料

TEST DATA OF MGFS10243R3

Regulated DC Power Supply
December 13, 2016

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COSEL CO.,LTD.

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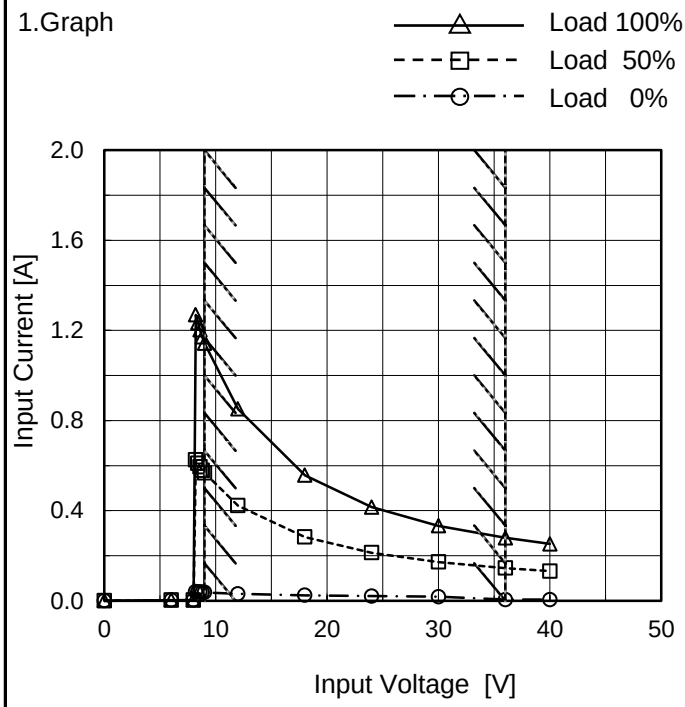
Model	MGFS10243R3
Item	Input Current (by Input Voltage)
Object	————————

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
6.0	0.003	0.003	0.003
8.0	0.003	0.003	0.003
8.2	0.040	0.625	1.269
8.4	0.039	0.610	1.234
8.6	0.039	0.595	1.202
8.8	0.037	0.580	1.172
9.0	0.037	0.568	1.144
12.0	0.031	0.423	0.851
18.0	0.025	0.283	0.557
24.0	0.021	0.213	0.416
30.0	0.018	0.172	0.332
36.0	0.005	0.145	0.279
40.0	0.005	0.132	0.252
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-11070

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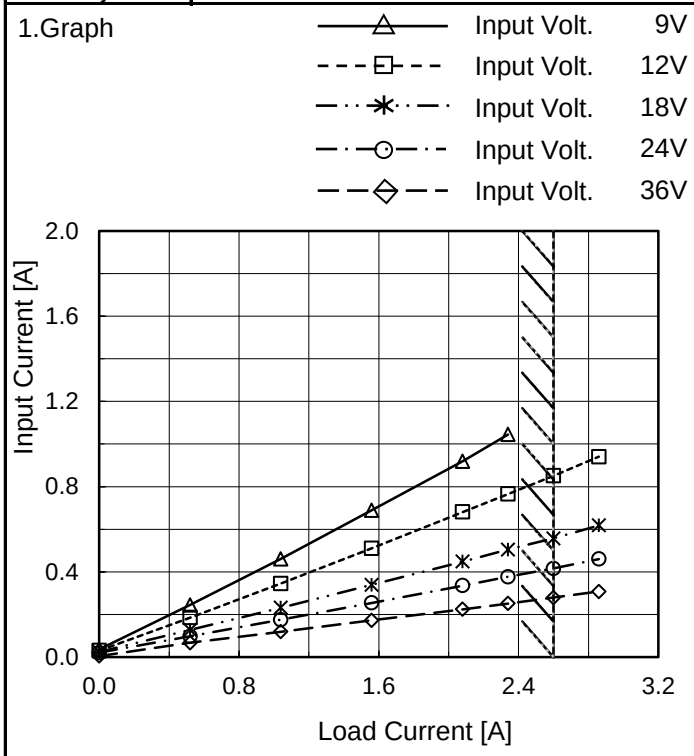
Model	MGFS10243R3
Item	Input Current (by Load Current)
Object	――――――

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.037	0.031	0.025	0.021	0.005
0.52	0.244	0.186	0.128	0.097	0.068
1.04	0.461	0.345	0.232	0.176	0.119
1.56	0.689	0.511	0.339	0.255	0.172
2.08	0.919	0.681	0.448	0.336	0.225
2.34	1.045	0.765	0.505	0.377	0.252
2.60	- ※	0.851	0.557	0.416	0.279
2.86	- ※	0.940	0.618	0.460	0.308
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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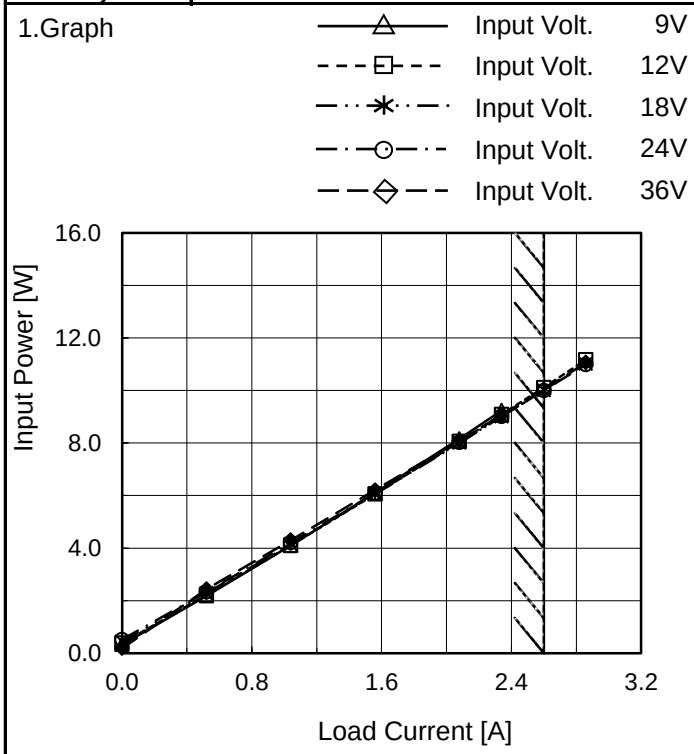
Model	MGFS10243R3
Item	Input Power (by Load Current)
Object	————————

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.33	0.38	0.44	0.52	0.19
0.52	2.18	2.21	2.28	2.33	2.44
1.04	4.10	4.10	4.14	4.21	4.30
1.56	6.10	6.06	6.06	6.09	6.21
2.08	8.16	8.06	8.00	8.02	8.09
2.34	9.23	9.08	9.01	9.01	9.06
2.60	- ※	10.11	10.01	10.00	10.03
2.86	- ※	11.17	11.01	10.99	11.06
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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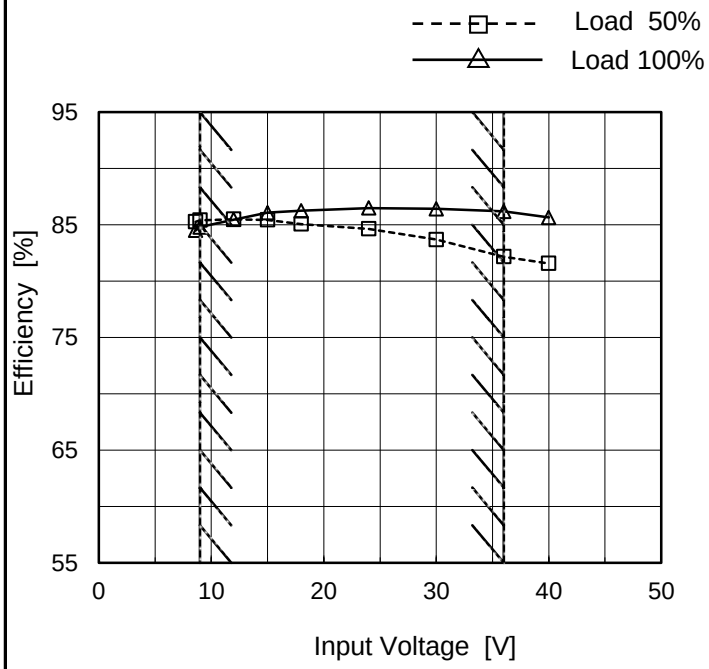
Model	MGFS10243R3
Item	Efficiency (by Input Voltage)
Object	――――――――――

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%
8.6	85.3	84.5 ※1
9.0	85.4	84.8 ※1
12.0	85.5	85.5
15.0	85.4	86.1
18.0	85.1	86.3
24.0	84.6	86.5
30.0	83.7	86.4
36.0	82.2	86.2
40.0	81.6	85.6

※1:Load 80%

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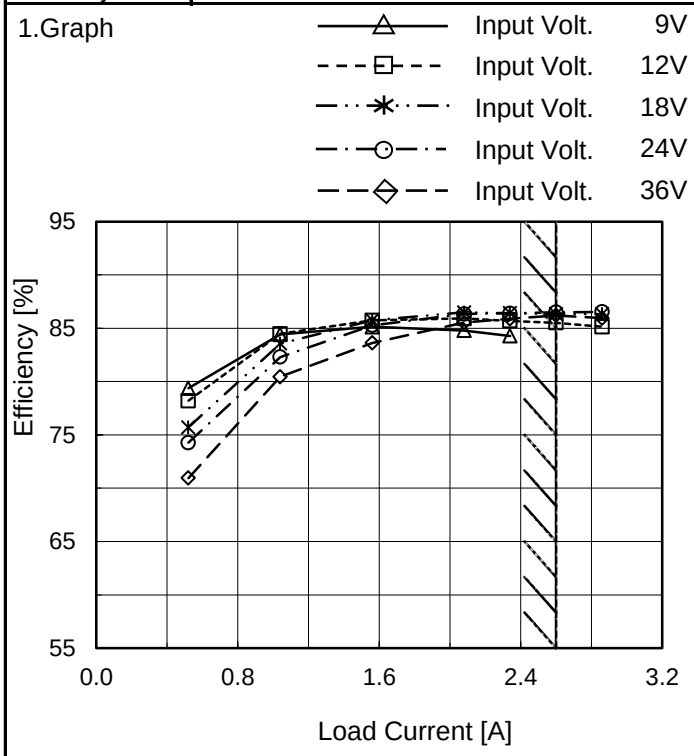
Model	MGFS10243R3
Item	Efficiency (by Load Current)
Object	————————

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	-	-	-	-	-
0.52	79.4	78.2	75.7	74.3	70.9
1.04	84.4	84.5	83.6	82.3	80.5
1.56	85.1	85.7	85.8	85.3	83.6
2.08	84.8	85.9	86.5	86.3	85.5
2.34	84.3	85.7	86.4	86.4	85.9
2.60	- ※	85.5	86.3	86.5	86.2
2.86	- ※	85.1	86.3	86.5	85.9
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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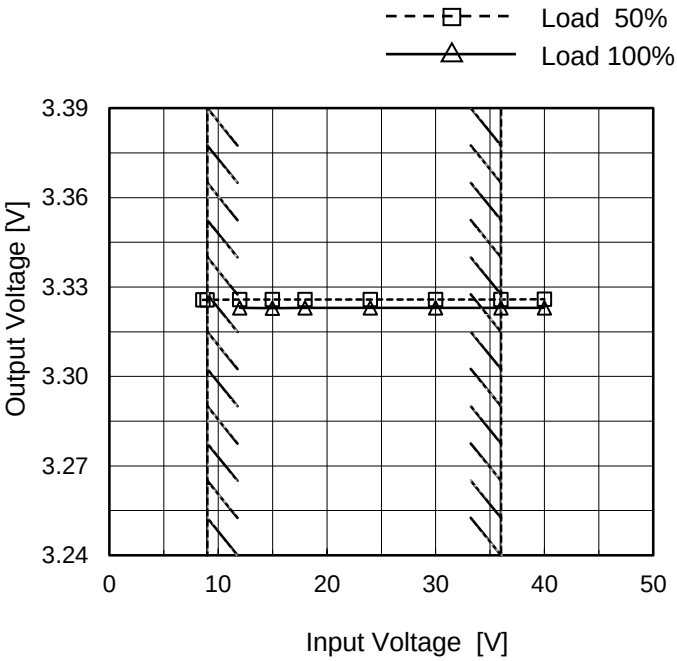
Model	MGFS10243R3
Item	Line Regulation
Object	+3.3V2.6A

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%
8.6	3.326	- ※
9.0	3.326	- ※
12.0	3.326	3.323
15.0	3.326	3.323
18.0	3.326	3.323
24.0	3.326	3.323
30.0	3.326	3.323
36.0	3.326	3.323
40.0	3.326	3.323

※ 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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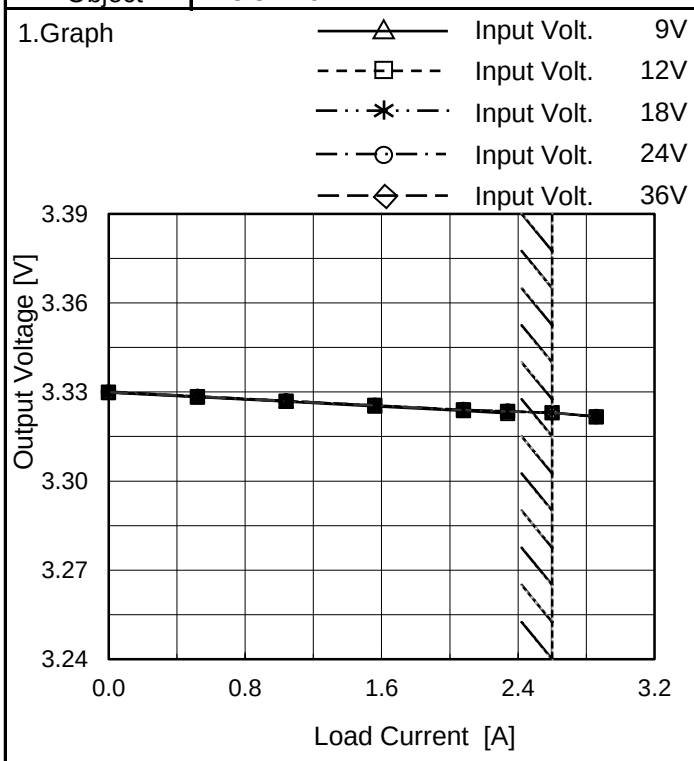
Model	MGFS10243R3
Item	Load Regulation
Object	+3.3V2.6A

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	3.330	3.330	3.330	3.330	3.330
0.52	3.328	3.328	3.329	3.329	3.329
1.04	3.327	3.327	3.327	3.327	3.327
1.56	3.325	3.326	3.326	3.325	3.325
2.08	3.324	3.324	3.324	3.324	3.324
2.34	3.323	3.323	3.323	3.324	3.324
2.60	- ※	3.323	3.323	3.323	3.323
2.86	- ※	3.322	3.322	3.322	3.322
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ 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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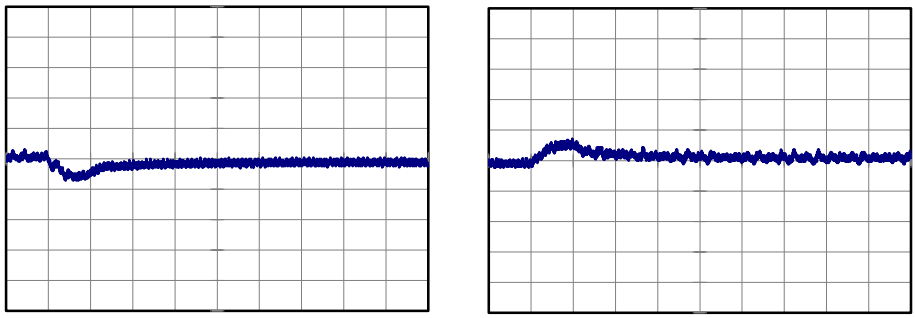
Model	MGFS10243R3	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+3.3V2.6A	

Input Volt. 24 V
Cycle 100 ms

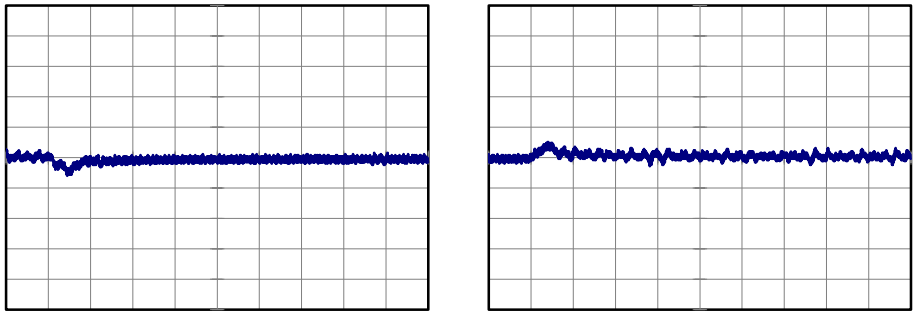
Min.Load (0A)←→
Load 100% (2.6A)



200 mV/div

100 μs/div 100 μs/div

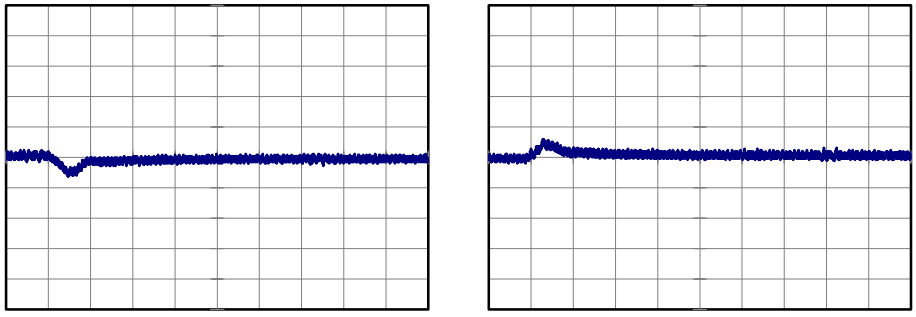
Min.Load (0A)←→
Load 50% (1.3A)



200 mV/div

100 μs/div 100 μs/div

Load 50% (1.3A)←→
Load 100% (2.6A)



200 mV/div

100 μs/div 100 μs/div

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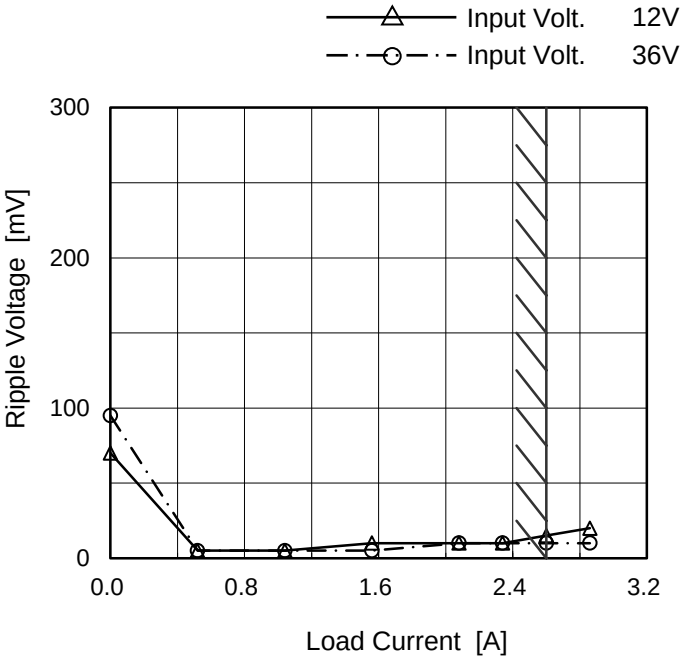
Model	MGFS10243R3
Item	Ripple Voltage (by Load Current)
Object	+3.3V2.6A

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]

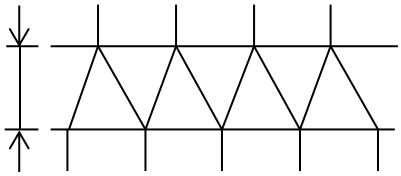


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 12 [V]	Input Volt. 36 [V]
0.00	70	95
0.52	5	5
1.04	5	5
1.56	10	5
2.08	10	10
2.34	10	10
2.60	15	10
2.86	20	10
--	-	-
--	-	-
--	-	-

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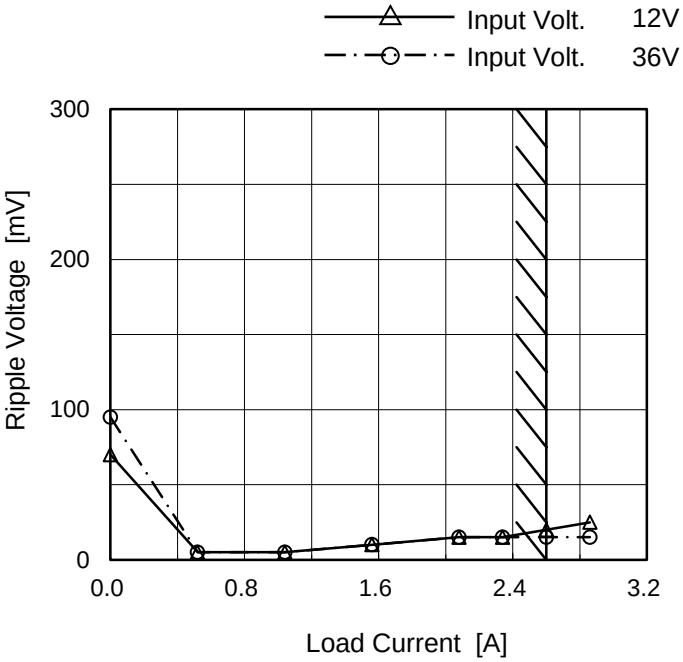
Model	MGFS10243R3
Item	Ripple-Noise
Object	+3.3V2.6A

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]

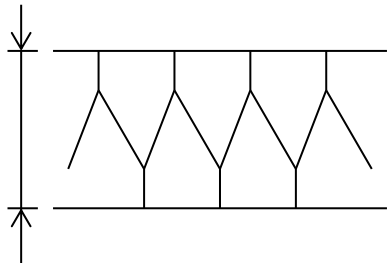


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 12 [V]	Input Volt. 36 [V]
0.00	70	95
0.52	5	5
1.04	5	5
1.56	10	10
2.08	15	15
2.34	15	15
2.60	20	15
2.86	25	15
--	-	-
--	-	-
--	-	-

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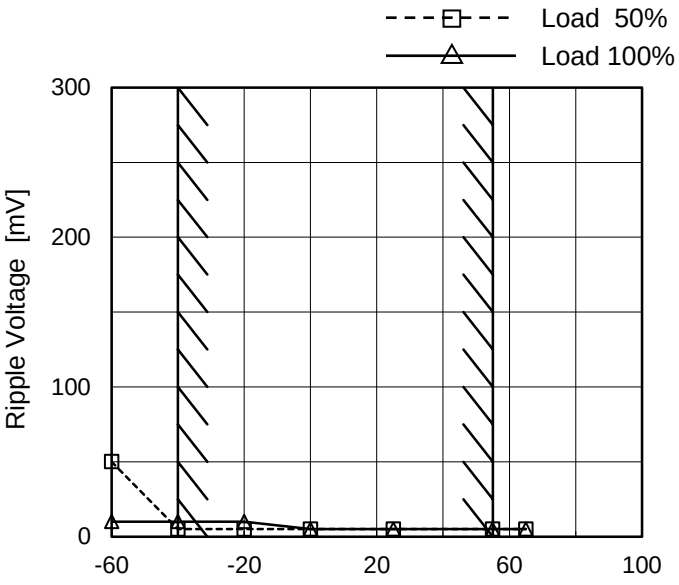
Model	MGFS10243R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V2.6A

Testing Circuitry Figure B

1.Graph



Input Volt. 24V

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	50	10
-40	5	10
-20	5	10
0	5	5
25	5	5
55	5	5
65	5	5
--	-	-
--	-	-
--	-	-
--	-	-

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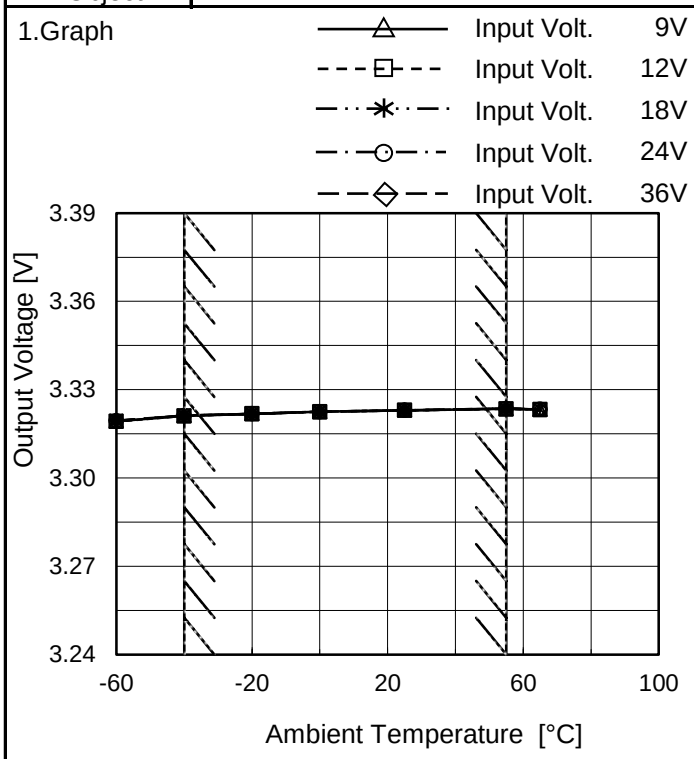
Model	MGFS10243R3
Item	Ambient Temperature Drift
Object	+3.3V2.6A

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	3.319	3.319	3.319	3.319	3.320
-40	3.321	3.321	3.321	3.321	3.321
-20	3.322	3.322	3.322	3.322	3.322
0	3.323	3.323	3.323	3.323	3.323
25	3.323	3.323	3.323	3.323	3.323
55	3.324	3.324	3.324	3.324	3.324
65	3.323	3.323	3.323	3.323	3.323
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Note: In case of Input Volt. 9V, Load 80%.
Other case Load 100%.

Model	MGFS10243R3	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+3.3V2.6A	

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 : 12 - 36V
Load Current : 0 - 2.6A

* 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	36	0	3.331	±5	±0.2
Minimum Voltage	0	12	2.6	3.321		

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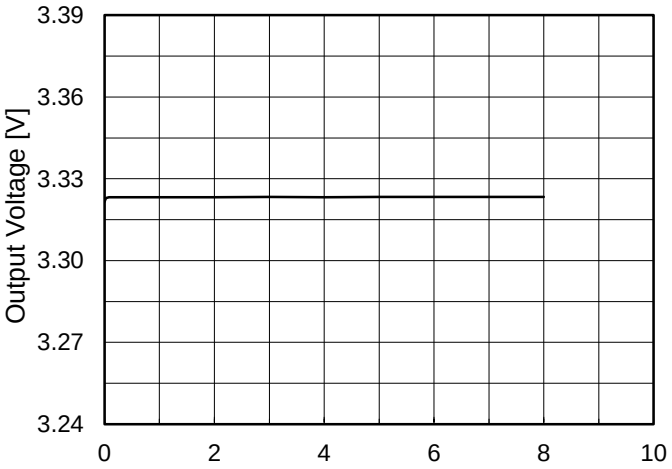
Model	MGFS10243R3
Item	Time Lapse Drift
Object	+3.3V2.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	3.322
0.5	3.323
1.0	3.323
2.0	3.323
3.0	3.323
4.0	3.323
5.0	3.323
6.0	3.323
7.0	3.323
8.0	3.323

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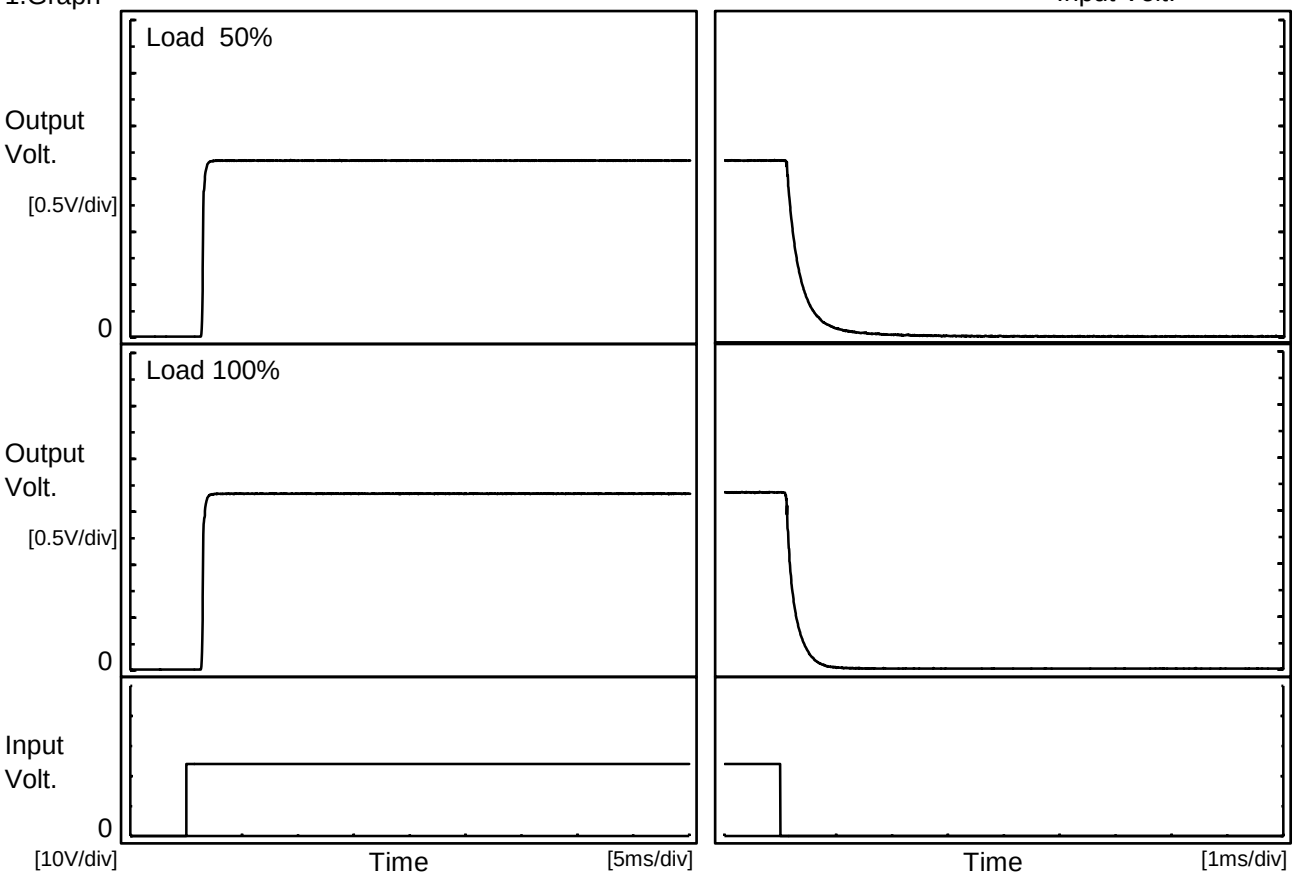
Model	MGFS10243R3
Item	Rise and Fall Time
Object	+3.3V2.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

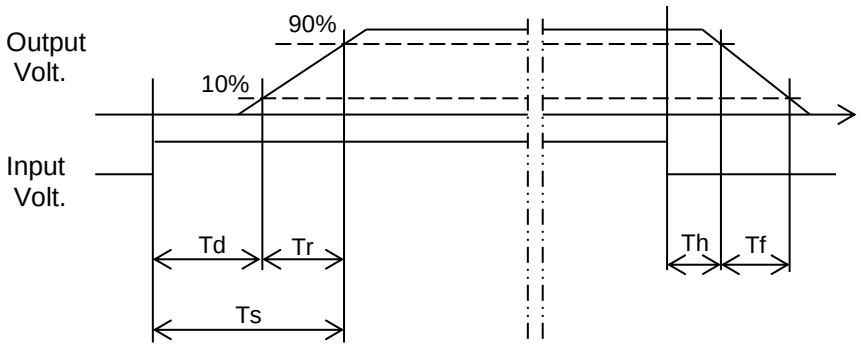
Input Volt. 24 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.4	0.3	1.7	0.1	0.6
100 %	1.4	0.3	1.7	0.1	0.4

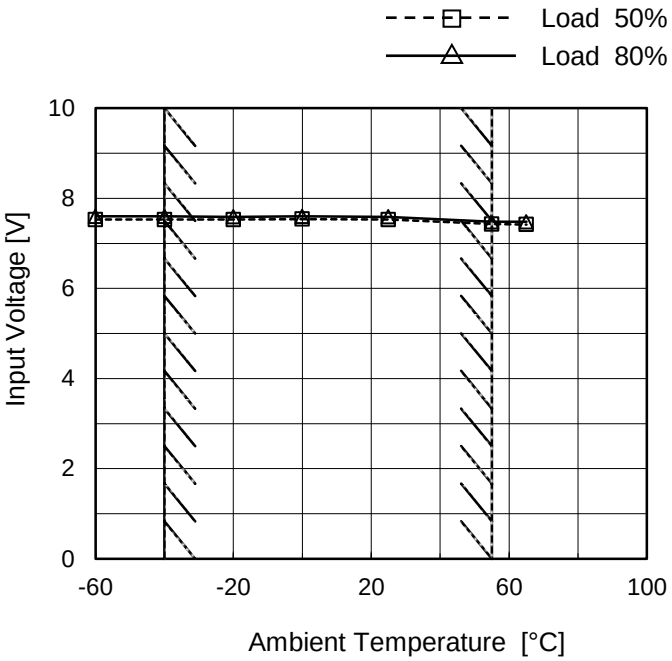


COSEL

Model	MGFS10243R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V2.6A

Testing Circuitry Figure A

1.Graph



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

2.Values

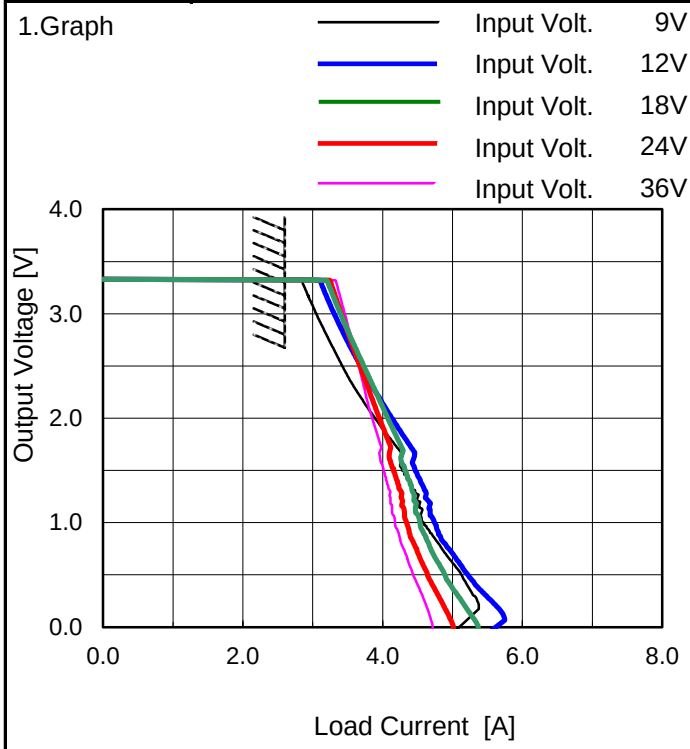
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 80%
-60	7.6	7.6
-40	7.6	7.6
-20	7.6	7.6
0	7.6	7.6
25	7.6	7.6
55	7.5	7.5
65	7.5	7.5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGFS10243R3
Item	Overcurrent Protection
Object	+3.3V2.6A

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

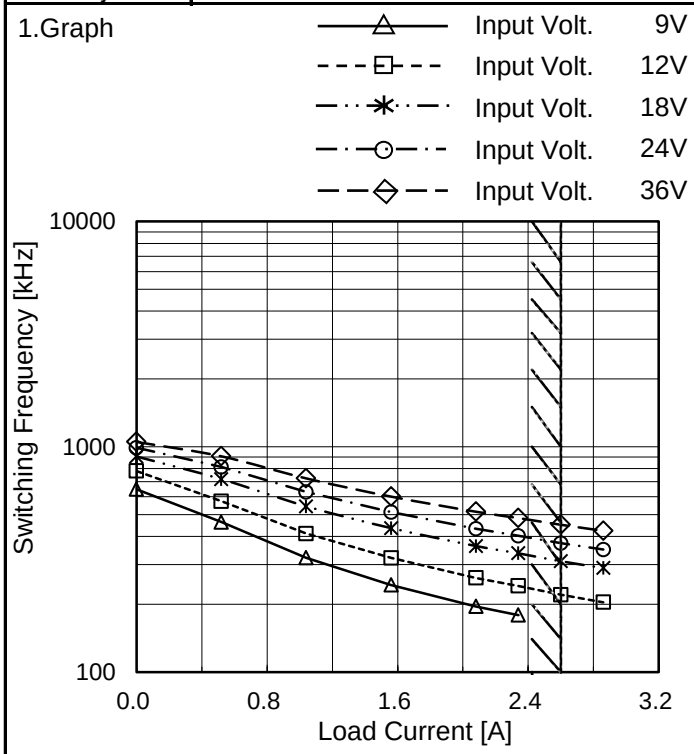
Output Voltage [V]	Load Current [A]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
3.14	2.955	3.219	3.314	3.340	3.405
2.97	3.068	3.327	3.416	3.420	3.470
2.64	3.315	3.567	3.630	3.593	3.596
2.31	3.576	3.847	3.855	3.779	3.729
1.98	3.911	4.153	4.080	3.964	3.860
1.65	4.289	4.459	4.295	4.100	3.953
1.32	4.415	4.587	4.414	4.233	4.083
0.99	4.593	4.740	4.532	4.341	4.175
0.66	4.936	5.044	4.750	4.533	4.348
0.33	5.274	5.427	5.046	4.767	4.549
0.00	5.058	5.289	5.373	5.016	4.720
--	-	-	-	-	-

COSEL

Model	MGFS10243R3
Item	Switching frequency (by Load Current)
Object	+3.3V2.6A

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	648	781	906	990	1051
0.52	463	574	719	813	907
1.04	322	412	544	630	724
1.56	244	321	436	513	601
2.08	196	262	363	432	515
2.34	179	241	337	403	483
2.60	- ※	221	310	373	451
2.86	- ※	204	290	350	424
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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

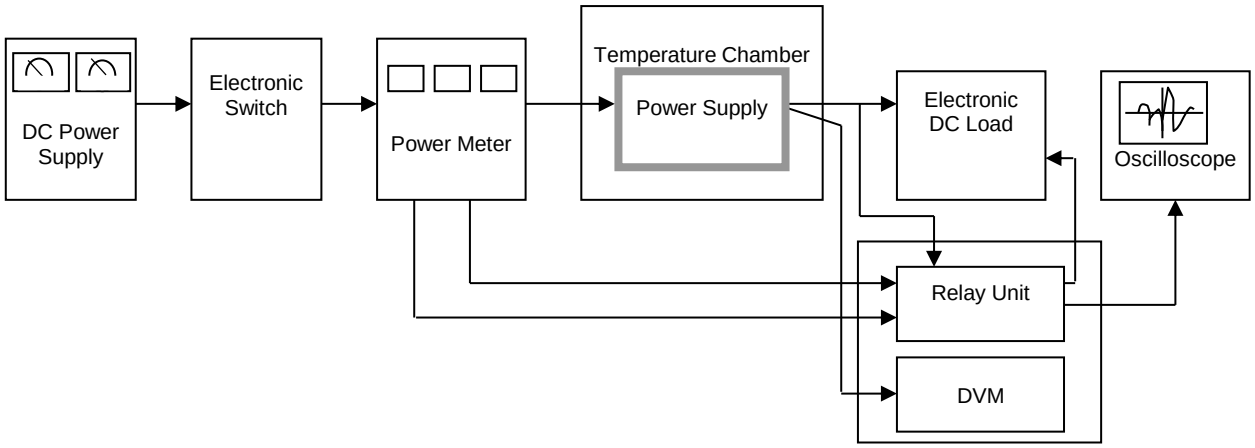


Figure A

Data Acquisition/Control Unit

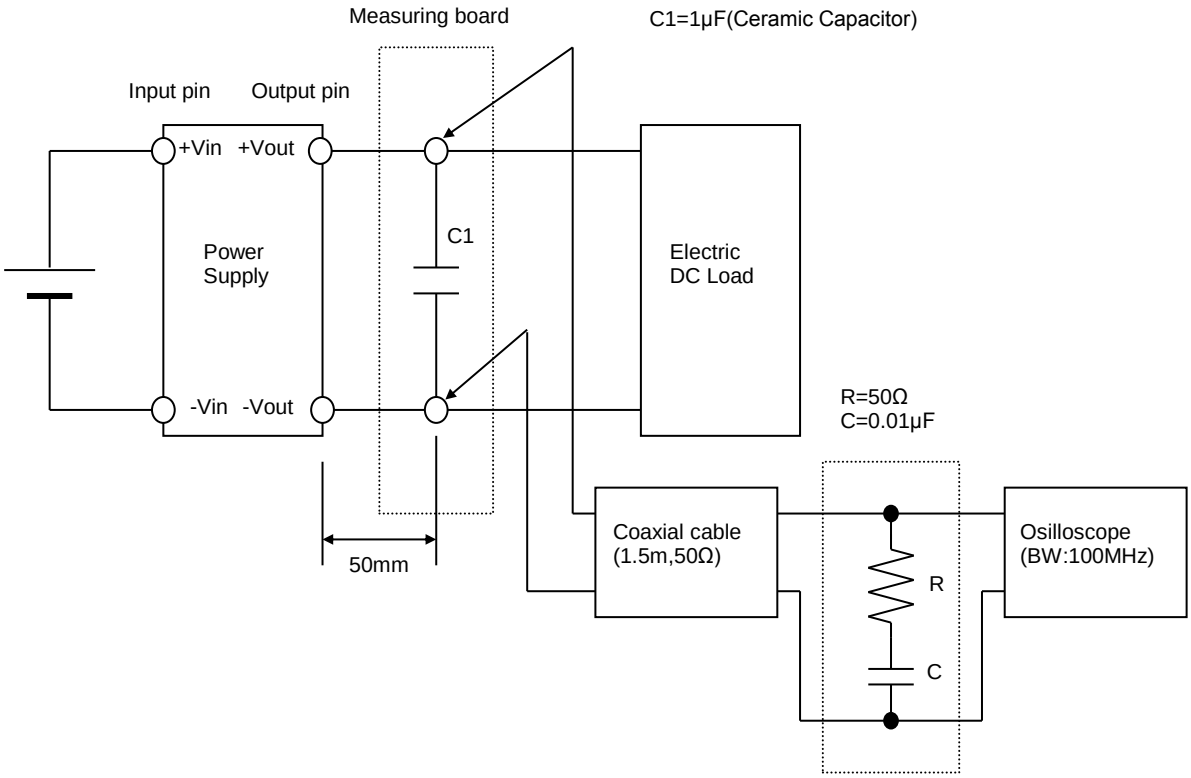


Figure B（Ripple and Ripple noise Characteristic）