参考資料

COSEL

TEST DATA OF MGS1R5053R3

Regulated DC Power Supply
March 31, 2016

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COSEL CO.,LTD.

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

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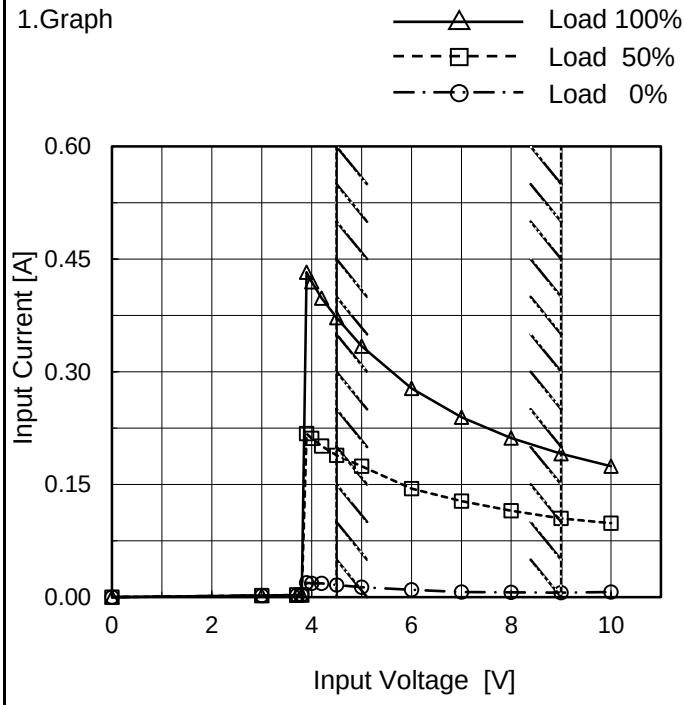
Testing Circuitry Figure A

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
3.0	0.002	0.002	0.002
3.7	0.003	0.003	0.003
3.8	0.003	0.003	0.003
3.9	0.019	0.218	0.433
4.0	0.018	0.212	0.420
4.2	0.018	0.201	0.398
4.5	0.016	0.189	0.372
5.0	0.013	0.174	0.334
6.0	0.010	0.145	0.278
7.0	0.007	0.128	0.239
8.0	0.006	0.115	0.212
9.0	0.006	0.105	0.191
10.0	0.007	0.098	0.174
--	-	-	-
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--	-	-	-
--	-	-	-

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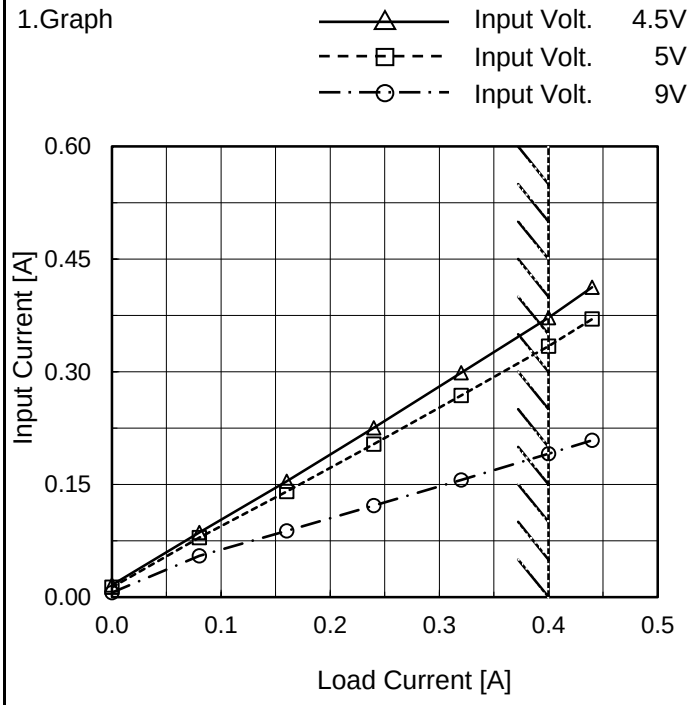
Model	MGS1R5053R3
Item	Input Current (by Load Current)
Object	――――――――

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. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.00	0.016	0.013	0.006
0.08	0.086	0.079	0.055
0.16	0.154	0.140	0.088
0.24	0.225	0.204	0.122
0.32	0.299	0.269	0.156
0.40	0.372	0.334	0.191
0.44	0.413	0.370	0.209
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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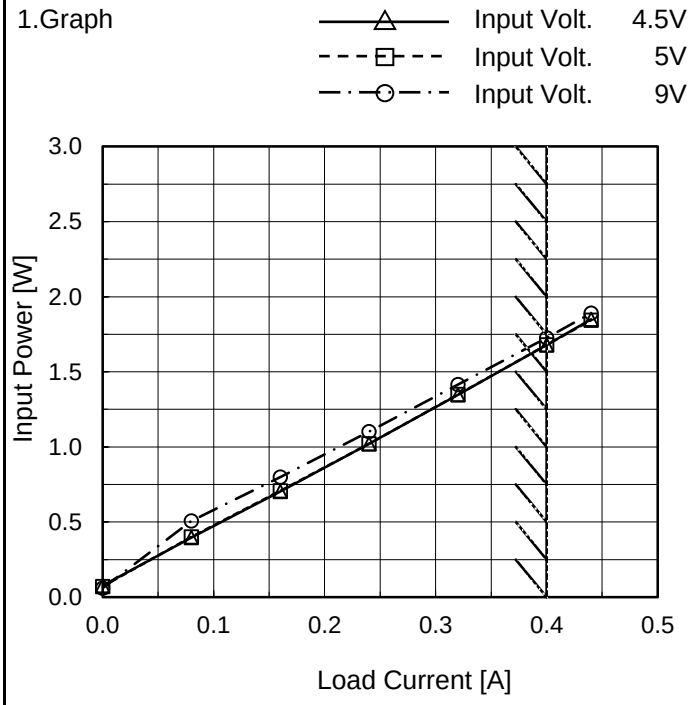
Model	MGS1R5053R3
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

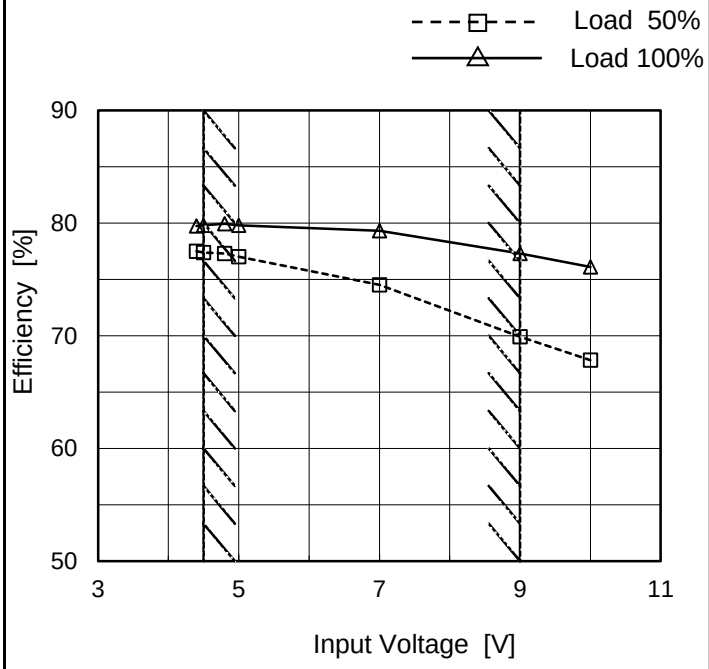
Load Current [A]	Input Power [W]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.00	0.08	0.07	0.06
0.08	0.40	0.40	0.51
0.16	0.70	0.71	0.80
0.24	1.02	1.02	1.10
0.32	1.35	1.35	1.42
0.40	1.68	1.68	1.73
0.44	1.85	1.84	1.89
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGS1R5053R3
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%
4.4	77.5	79.7
4.5	77.4	79.8
4.8	77.3	80.0
5.0	77.0	79.8
7.0	74.5	79.3
9.0	69.9	77.3
10.0	67.8	76.1
--	-	-
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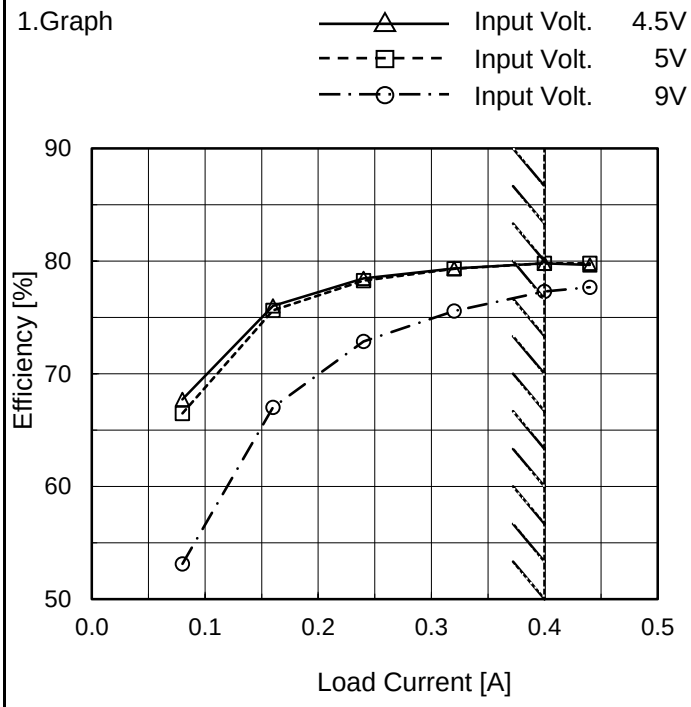
Model	MGS1R5053R3
Item	Efficiency (by Load Current)
Object	————————

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. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.00	-	-	-
0.08	67.7	66.5	53.1
0.16	76.0	75.6	67.0
0.24	78.5	78.3	72.9
0.32	79.4	79.3	75.6
0.40	79.8	79.8	77.3
0.44	79.7	79.8	77.7
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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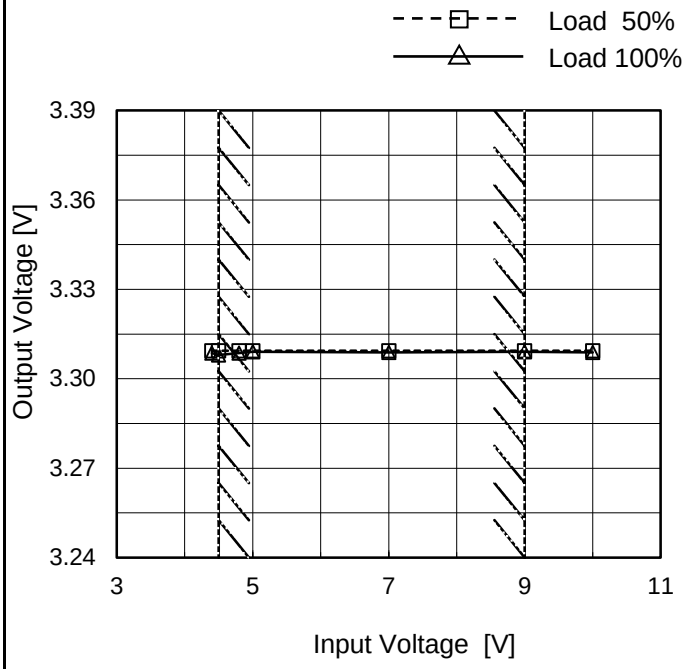
Model	MGS1R5053R3
Item	Line Regulation
Object	+3.3V0.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

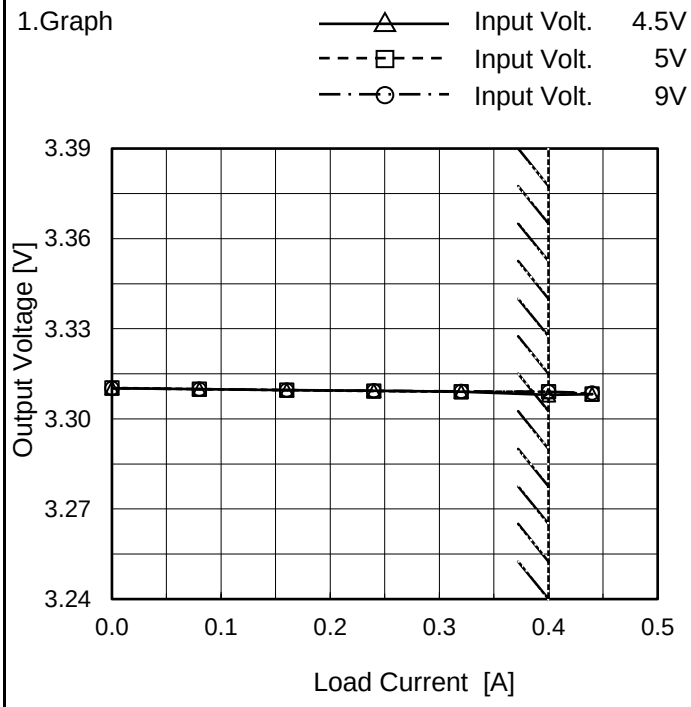
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
4.4	3.309	3.309
4.5	3.309	3.308
4.8	3.309	3.309
5.0	3.309	3.309
7.0	3.309	3.309
9.0	3.309	3.309
10.0	3.309	3.309
--	-	-
--	-	-

COSEL

Model	MGS1R5053R3
Item	Load Regulation
Object	+3.3V0.4A

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. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.00	3.310	3.310	3.310
0.08	3.310	3.310	3.310
0.16	3.310	3.310	3.310
0.24	3.309	3.309	3.309
0.32	3.309	3.309	3.309
0.40	3.308	3.309	3.309
0.44	3.308	3.308	3.309
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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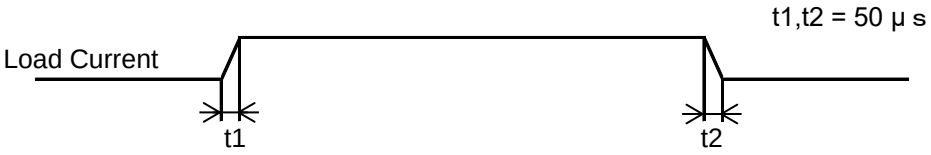
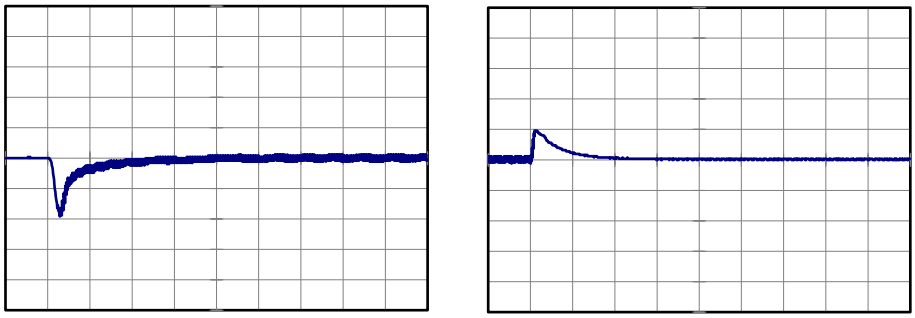
Model	MGS1R5053R3
Item	Dynamic Load Response
Object	+3.3V0.4A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 5 V
Cycle 1000 ms



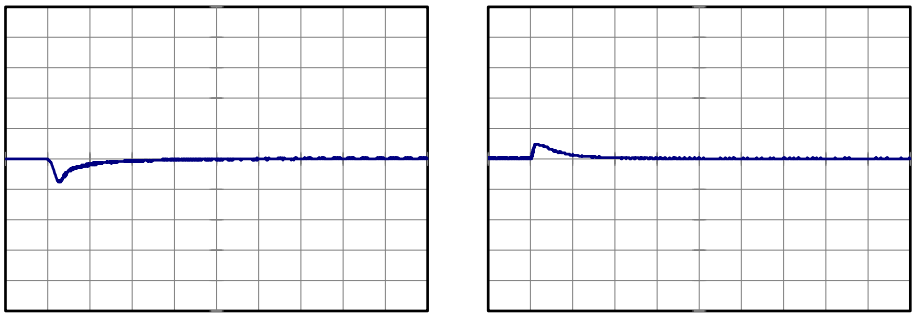
Min.Load (0)←→
Load 100% (0.4)



100 mV/div

100 μs/div 200 μs/div

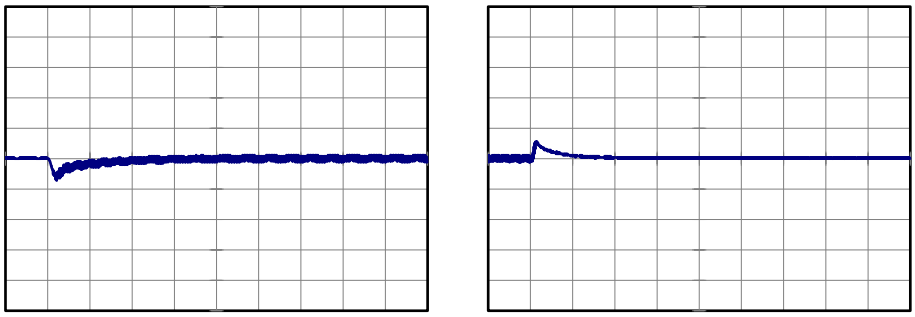
Min.Load (0)←→
Load 50% (0.2)



100 mV/div

100 μs/div 200 μs/div

Load 50% (0.2)←→
Load 100% (0.4)



100 mV/div

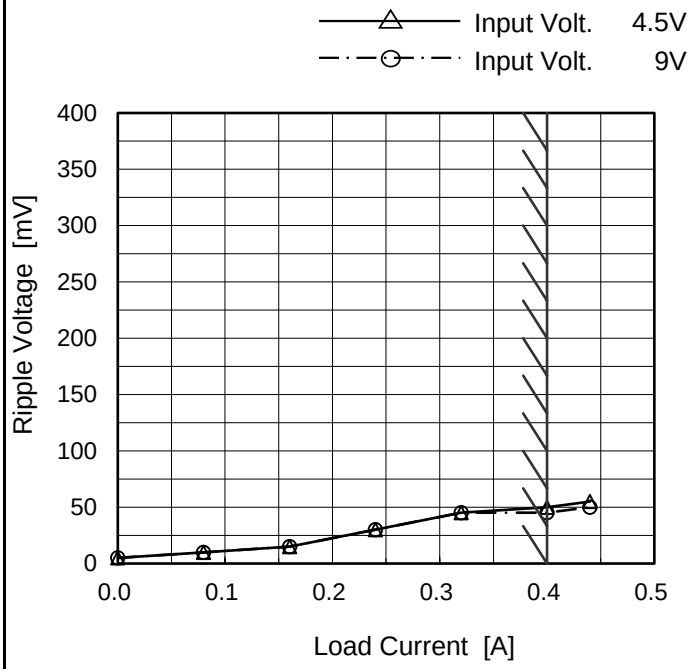
100 μs/div 200 μs/div

COSEL

Model	MGS1R5053R3
Item	Ripple Voltage (by Load Current)
Object	+3.3V0.4A

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.

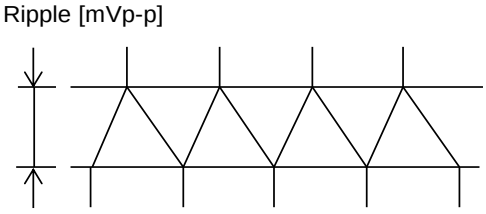


Fig.Complex Ripple Wave Form

2.Values

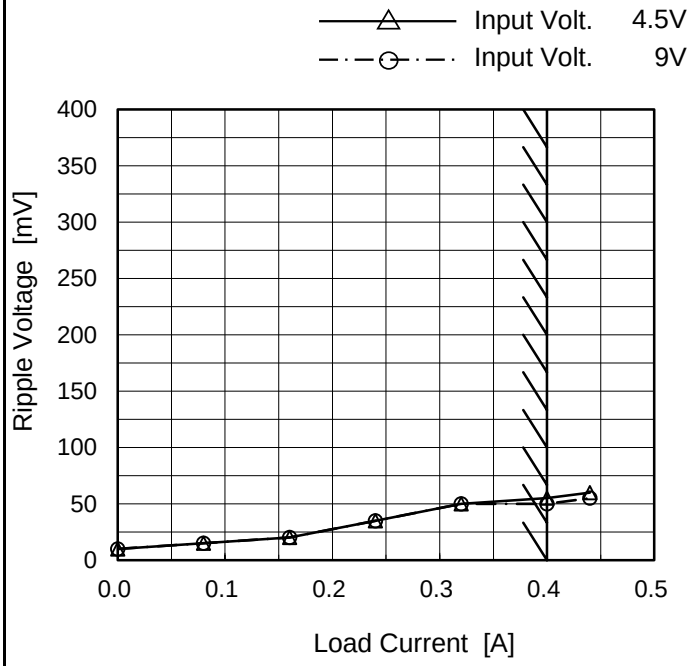
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.00	5	5
0.08	10	10
0.16	15	15
0.24	30	30
0.32	45	45
0.40	50	45
0.44	55	50
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGS1R5053R3
Item	Ripple-Noise
Object	+3.3V0.4A

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.

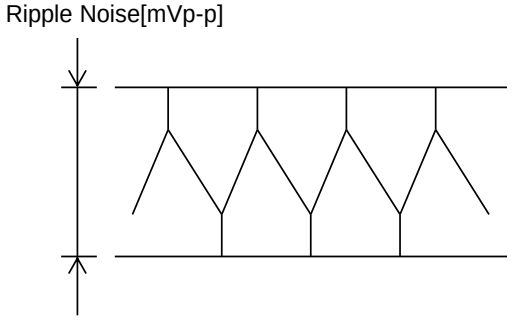


Fig.Complex Ripple Noise Wave Form

2.Values

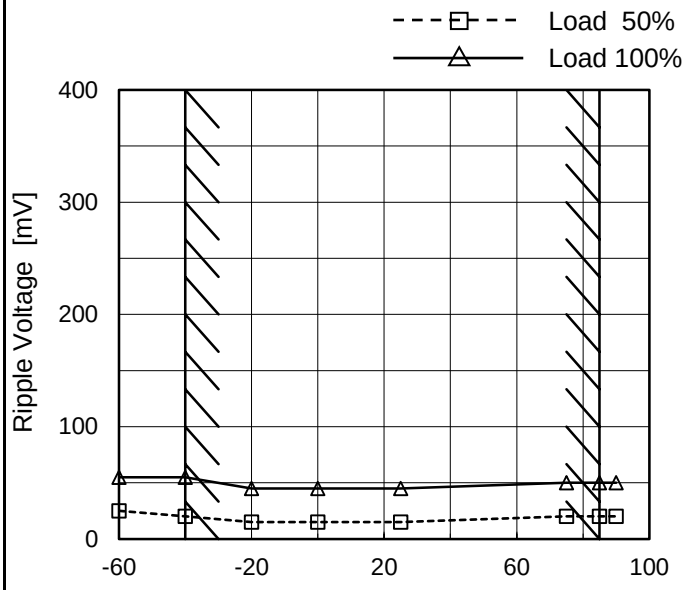
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 4.5 [V]	Input Volt. 9 [V]
0.00	10	10
0.08	15	15
0.16	20	20
0.24	35	35
0.32	50	50
0.40	55	50
0.44	60	55
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGS1R5053R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V0.4A

Testing Circuitry Figure B

1.Graph



Input Volt. 5V

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	25	55
-40	20	55
-20	15	45
0	15	45
25	15	45
75	20	50
85	20	50
90	20	50
--	-	-
--	-	-
--	-	-

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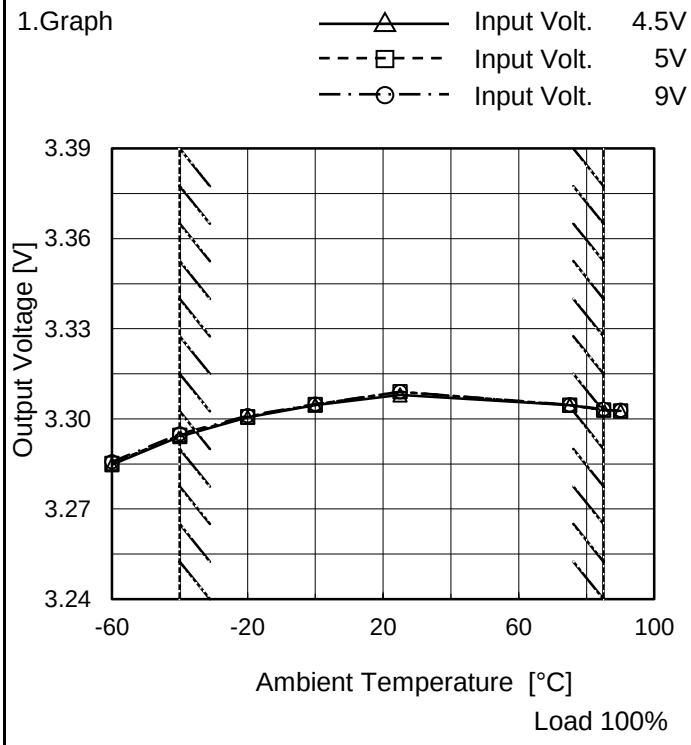
Model	MGS1R5053R3
Item	Ambient Temperature Drift
Object	+3.3V0.4A

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. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
-60	3.285	3.285	3.286
-40	3.294	3.295	3.295
-20	3.301	3.301	3.301
0	3.305	3.305	3.305
25	3.308	3.309	3.309
75	3.305	3.305	3.305
85	3.303	3.303	3.303
90	3.303	3.303	3.303
--	-	-	-
--	-	-	-
--	-	-	-

Model	MGS1R5053R3	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+3.3V0.4A	

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 : 4.5 - 9V
Load Current : 0 - 0.4A

* 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	25	4.5	0	3.309	±8	±0.2
Minimum Voltage	-40	4.5	0.4	3.294		

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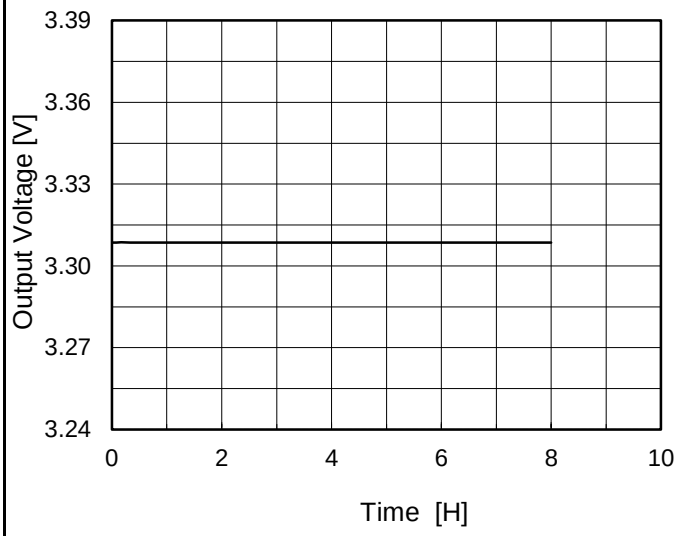
Model	MGS1R5053R3
Item	Time Lapse Drift
Object	+3.3V0.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 5V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	3.309
0.5	3.309
1.0	3.309
2.0	3.309
3.0	3.309
4.0	3.309
5.0	3.309
6.0	3.309
7.0	3.309
8.0	3.309

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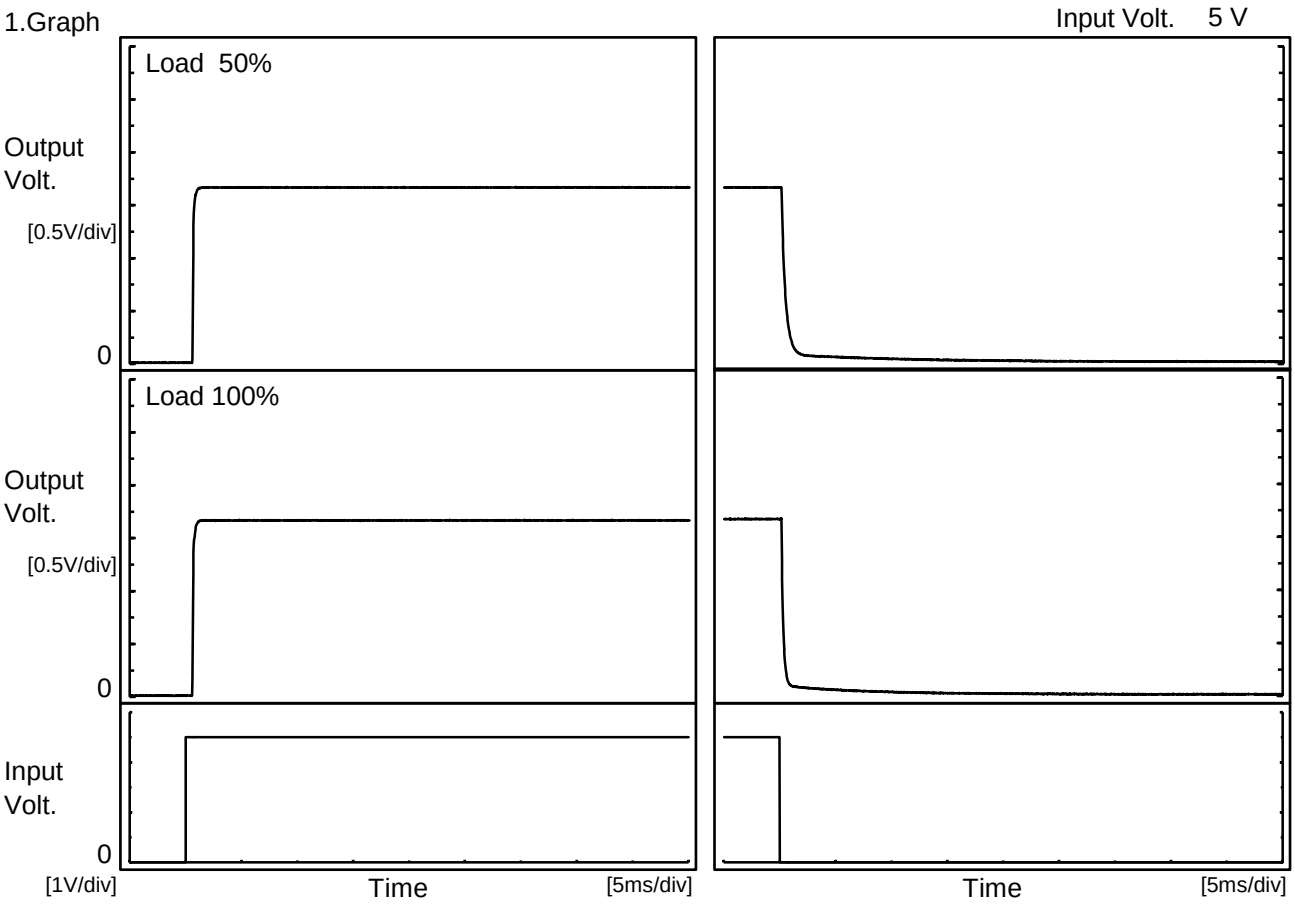
Model	MGS1R5053R3	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+3.3V0.4A	

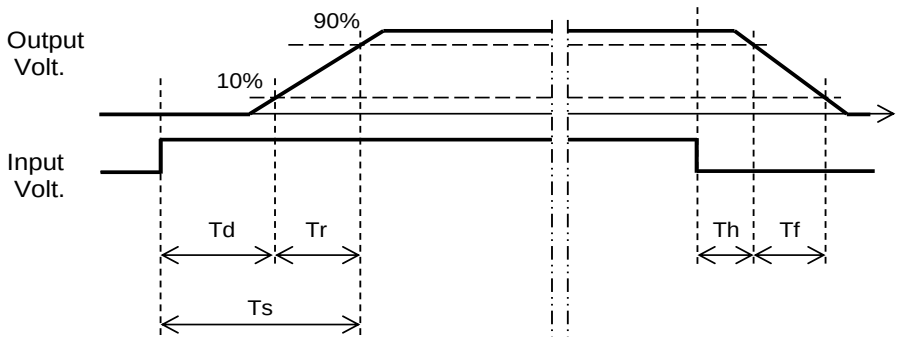
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.6	0.2	0.8	0.2	1.0
100 %	0.6	0.2	0.8	0.2	0.5

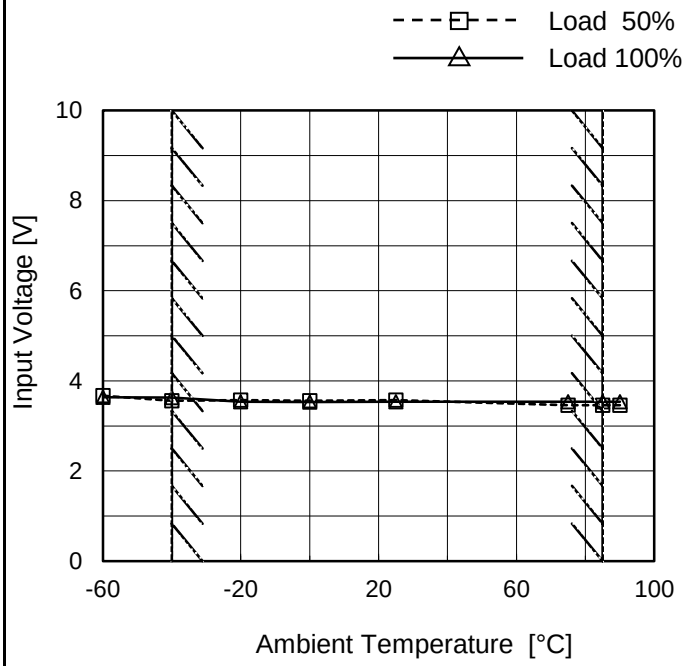


COSEL

Model	MGS1R5053R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V0.4A

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	3.7	3.7
-40	3.6	3.7
-20	3.6	3.6
0	3.6	3.6
25	3.6	3.6
75	3.5	3.6
85	3.5	3.6
90	3.5	3.6
--	-	-
--	-	-
--	-	-

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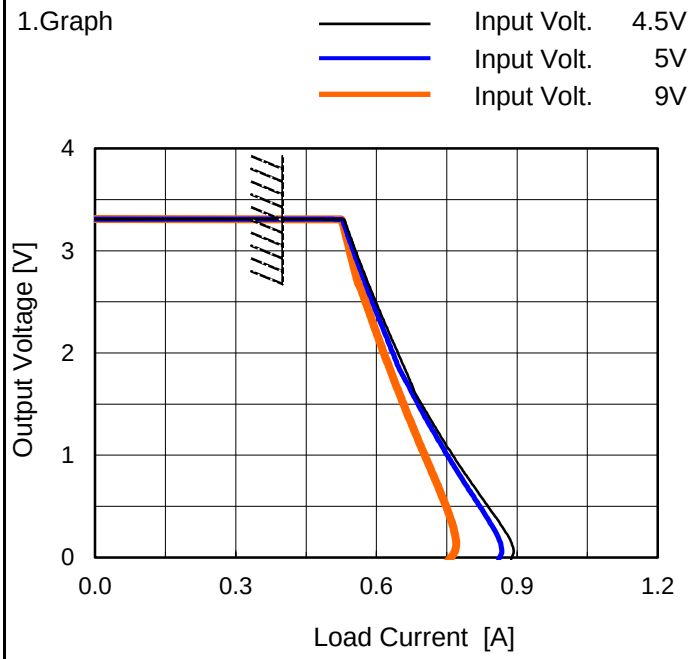
Model	MGS1R5053R3
Item	Overcurrent Protection
Object	+3.3V0.4A

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. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
3.30	0.41	0.41	0.41
3.14	0.54	0.54	0.54
2.97	0.56	0.55	0.54
2.64	0.59	0.58	0.56
2.31	0.62	0.61	0.59
1.98	0.65	0.64	0.62
1.65	0.68	0.67	0.64
1.32	0.72	0.71	0.67
0.99	0.76	0.75	0.70
0.66	0.81	0.80	0.73
0.33	0.86	0.84	0.76
0.00	0.89	0.86	0.75

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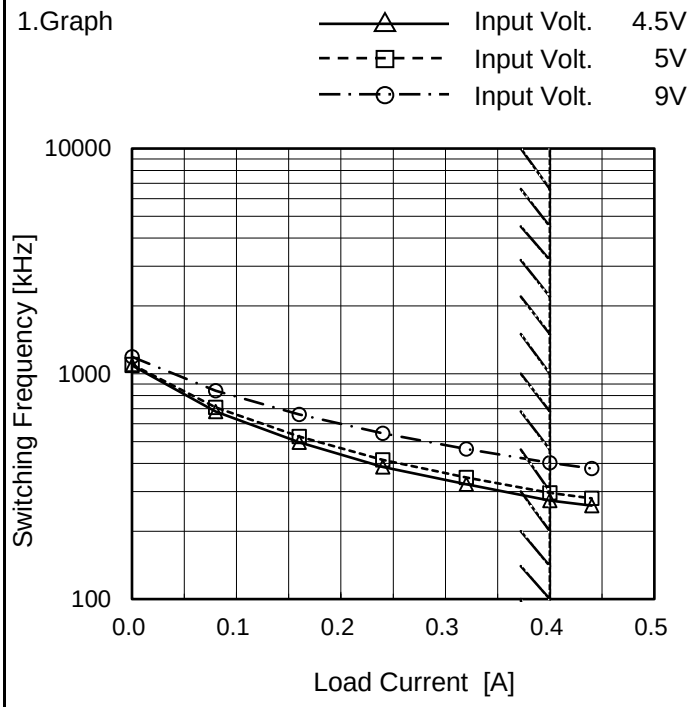
Model	MGS1R5053R3
Item	Switching Frequency (by Load Current)
Object	+3.3V0.4A

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]	Frequency [kHz]		
	Input Volt. 4.5[V]	Input Volt. 5[V]	Input Volt. 9[V]
0.00	1090	1100	1190
0.08	679	710	840
0.16	496	527	660
0.24	386	415	544
0.32	324	346	463
0.40	274	296	403
0.44	260	280	380
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

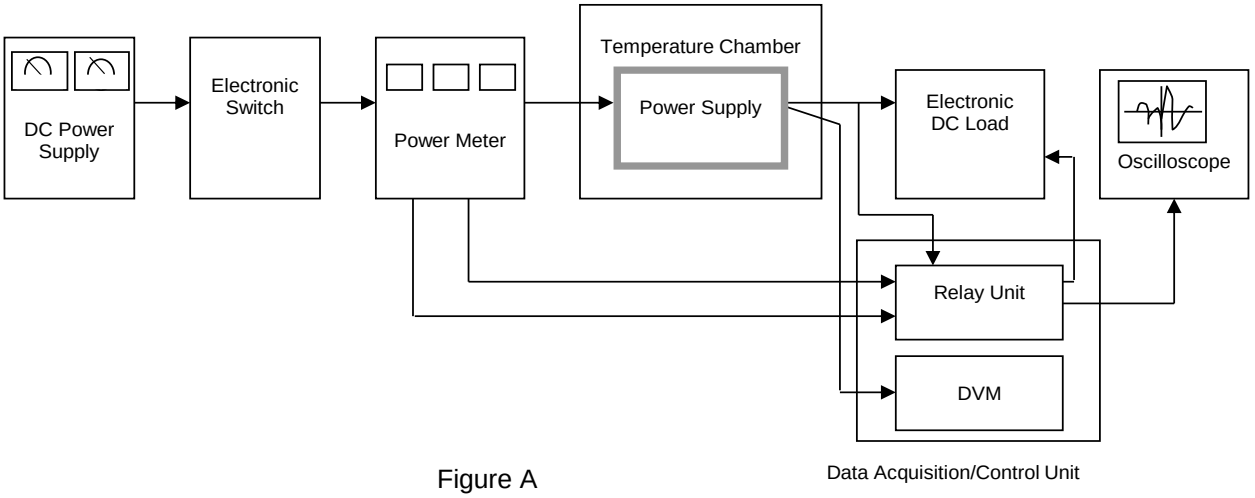


Figure A

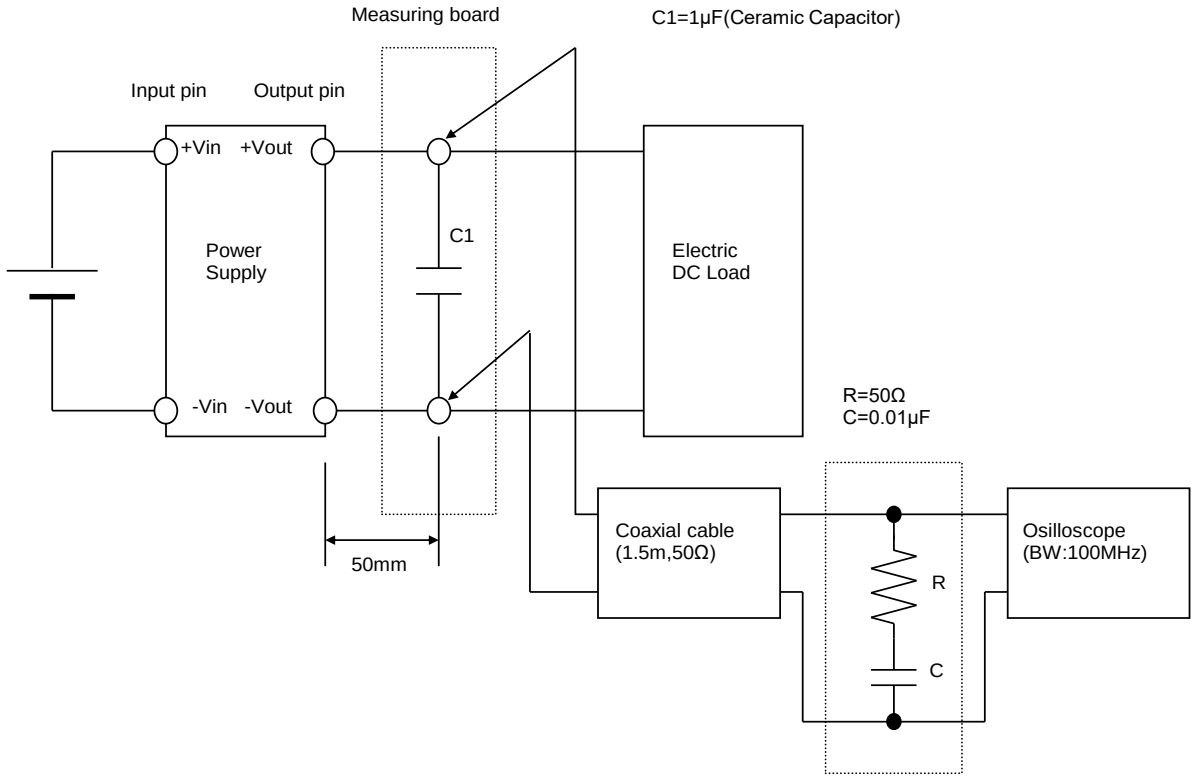


Figure B（Ripple and Ripple noise Characteristic）