参考資料

TEST DATA OF MGXS1R52405

Regulated DC Power Supply
February 19, 2018

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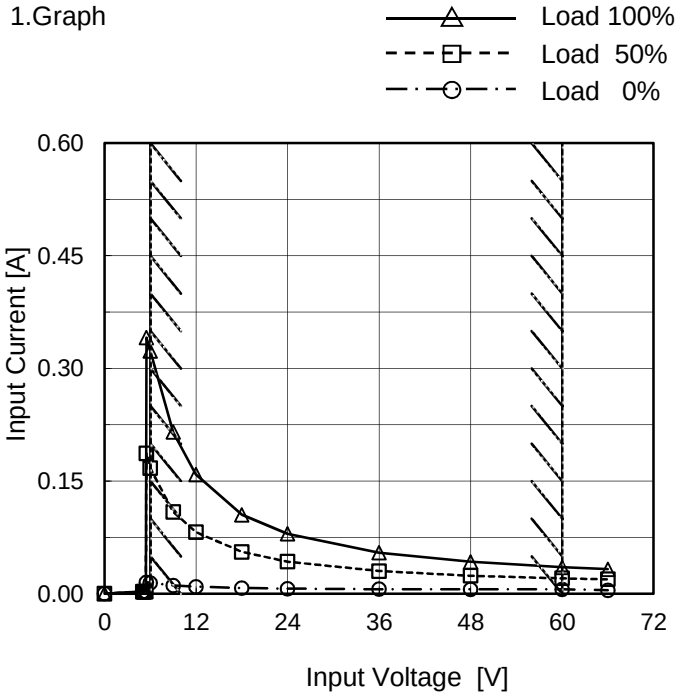

Note: Slanted line shows the range of the rated input voltage.

2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
5.0	0.003	0.003	0.003
5.2	0.003	0.003	0.003
5.4	0.003	0.003	0.003
5.5	0.015	0.187	0.341
6.0	0.014	0.167	0.323
9.0	0.011	0.109	0.216
12.0	0.009	0.082	0.159
18.0	0.007	0.056	0.105
24.0	0.007	0.043	0.080
36.0	0.006	0.030	0.055
48.0	0.006	0.024	0.042
60.0	0.006	0.021	0.035
66.0	0.005	0.019	0.033
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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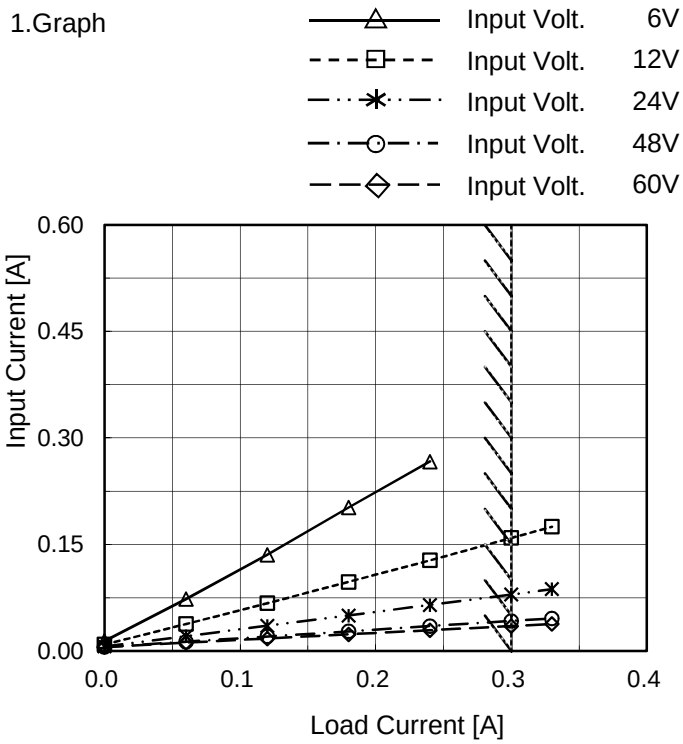
Model	MGXS1R52405
Item	Input Current (by Load Current)
Object	———

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. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0.00	0.014	0.009	0.007	0.006	0.006
0.06	0.073	0.038	0.021	0.013	0.012
0.12	0.135	0.067	0.036	0.020	0.018
0.18	0.202	0.097	0.050	0.028	0.023
0.24	0.267	0.128	0.065	0.035	0.029
0.30	- ※	0.159	0.080	0.042	0.035
0.33	- ※	0.175	0.087	0.046	0.038
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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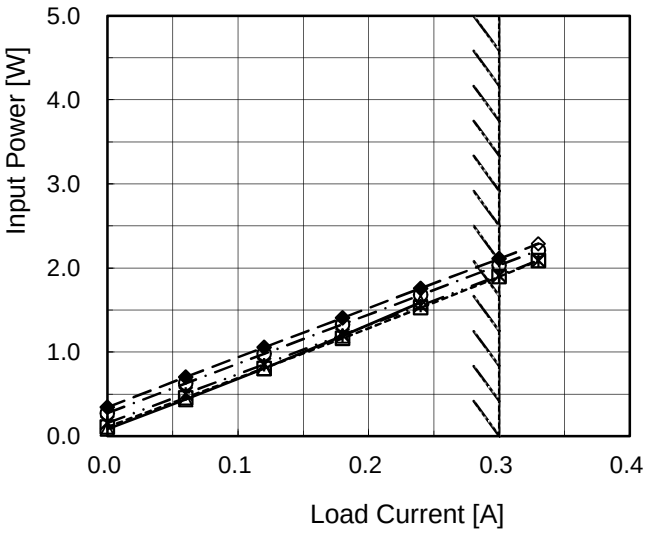
Model	MGXS1R52405
Item	Input Power (by Load Current)
Object	

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. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0.00	0.08	0.11	0.16	0.27	0.34
0.06	0.44	0.46	0.51	0.63	0.70
0.12	0.80	0.81	0.85	0.98	1.06
0.18	1.19	1.16	1.20	1.33	1.41
0.24	1.59	1.53	1.55	1.68	1.76
0.30	- ※	1.90	1.91	2.03	2.11
0.33	- ※	2.09	2.09	2.21	2.29
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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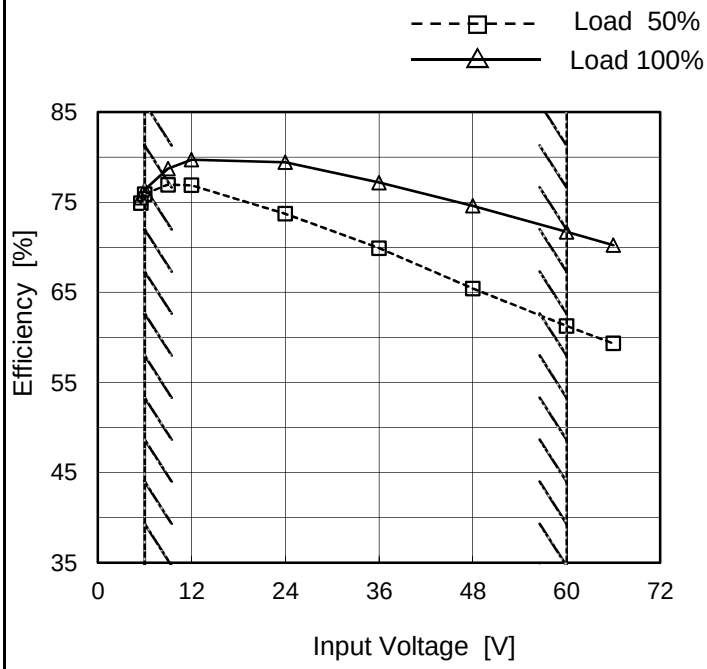
Model	MGXS1R52405
Item	Efficiency (by Input Voltage)
Object	

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%
5.5	74.9	75.5 ※1
6.0	75.9	76.4 ※1
9.0	76.9	78.7
12.0	76.9	79.7
24.0	73.7	79.4
36.0	69.9	77.2
48.0	65.4	74.6
60.0	61.3	71.7
66.0	59.3	70.2

※1:Load 70%

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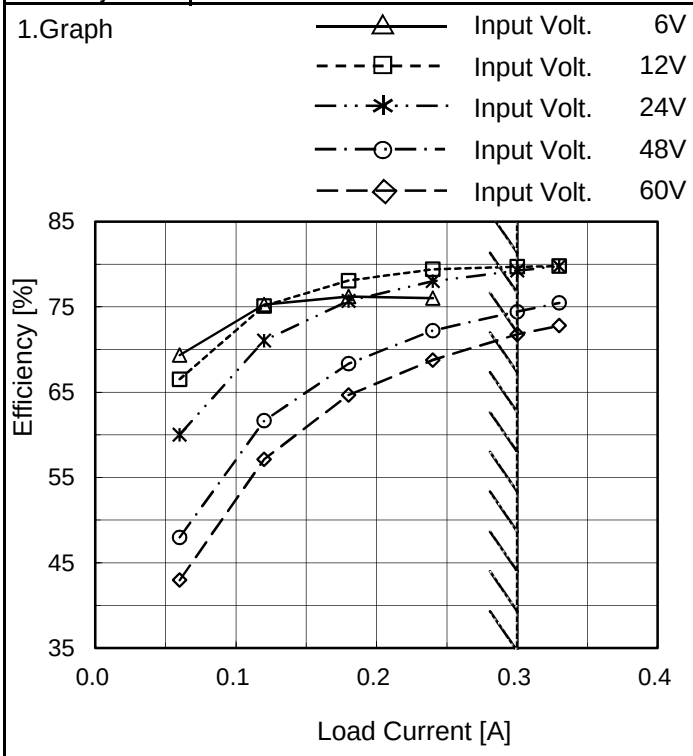
Model	MGXS1R52405
Item	Efficiency (by Load Current)
Object	———

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. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0.00	-	-	-	-	-
0.06	69.3	66.5	60.0	48.0	43.0
0.12	75.3	75.1	71.1	61.6	57.1
0.18	76.2	78.1	75.7	68.3	64.7
0.24	76.0	79.4	78.0	72.2	68.8
0.30	- ※	79.7	79.2	74.4	71.8
0.33	- ※	79.8	79.8	75.5	72.8
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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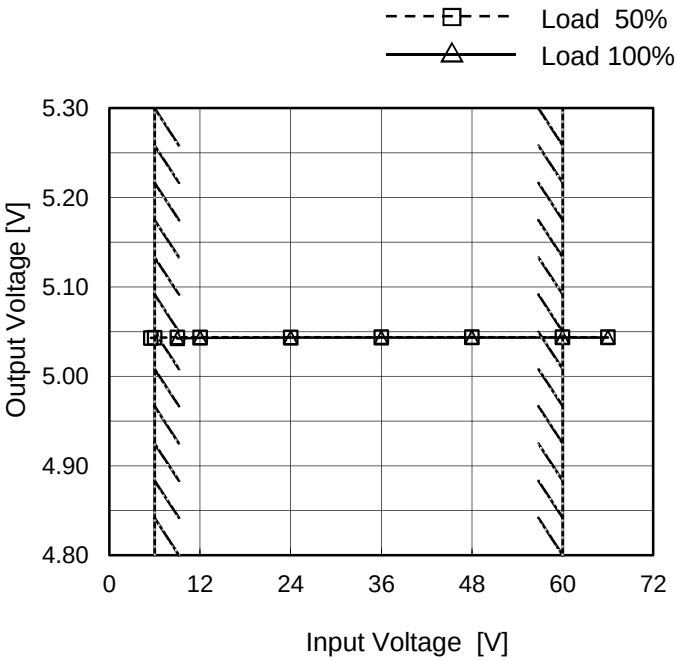
Model	MGXS1R52405
Item	Line Regulation
Object	+5V0.3A

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%
5.5	5.043	- ※
6.0	5.043	- ※
9.0	5.044	5.042
12.0	5.044	5.043
24.0	5.044	5.043
36.0	5.044	5.043
48.0	5.044	5.044
60.0	5.044	5.044
66.0	5.044	5.044

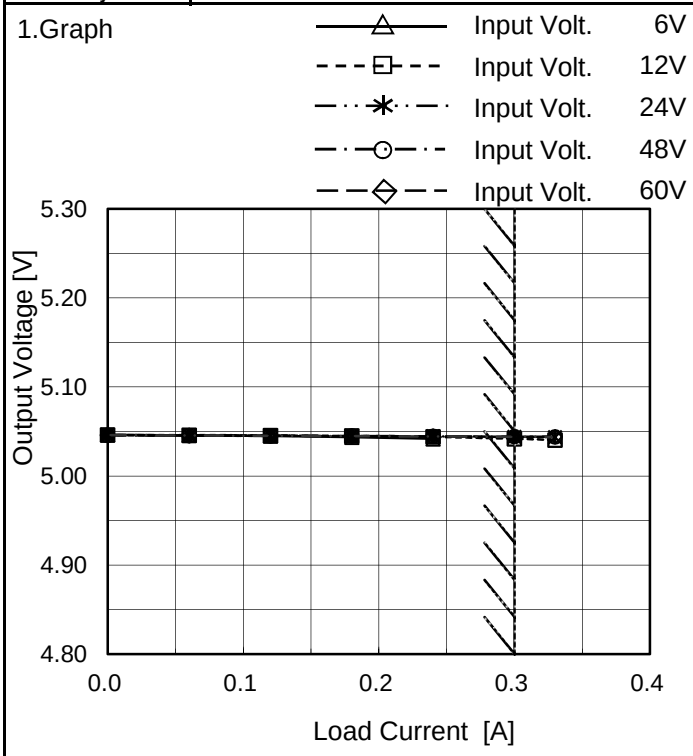
※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXS1R52405
Item	Load Regulation
Object	+5V0.3A

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. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0.00	5.046	5.046	5.046	5.046	5.046
0.06	5.046	5.046	5.046	5.045	5.045
0.12	5.045	5.045	5.045	5.045	5.045
0.18	5.044	5.045	5.045	5.045	5.045
0.24	5.042	5.044	5.045	5.045	5.045
0.30	- ※	5.042	5.044	5.044	5.044
0.33	- ※	5.040	5.044	5.044	5.044
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

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Model	MGXS1R52405
Item	Dynamic Load Response
Object	+5V0.3A

Temperature 25°C
Testing Circuitry Figure A

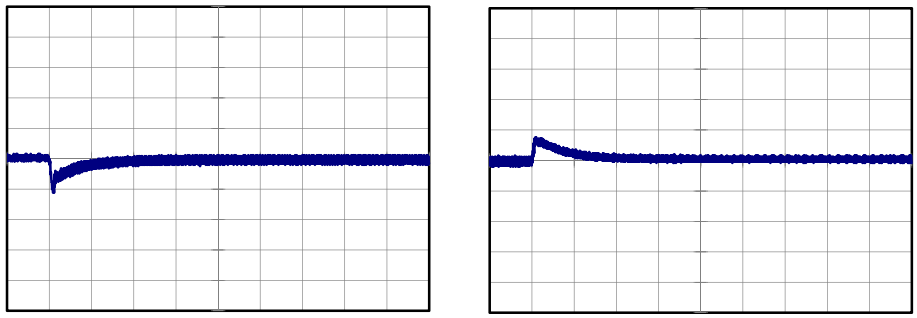
Input Volt. 24 V
Cycle 100 ms

t1,t2 = 100 μ s

Load Current

t1 t2

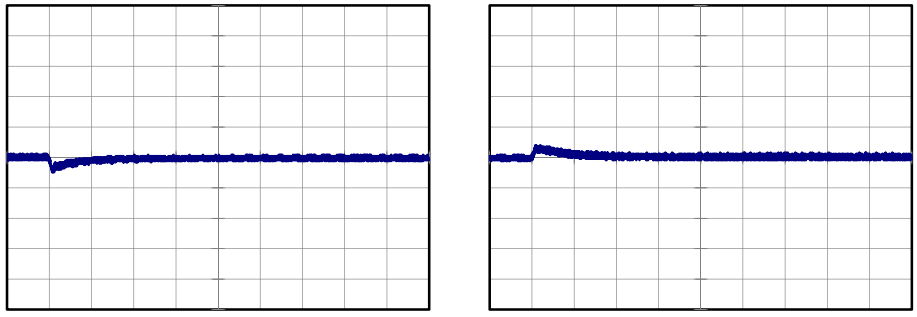
Min.Load (0A)←→
Load 100% (0.3A)



100 mV/div

400 μs/div 400 μs/div

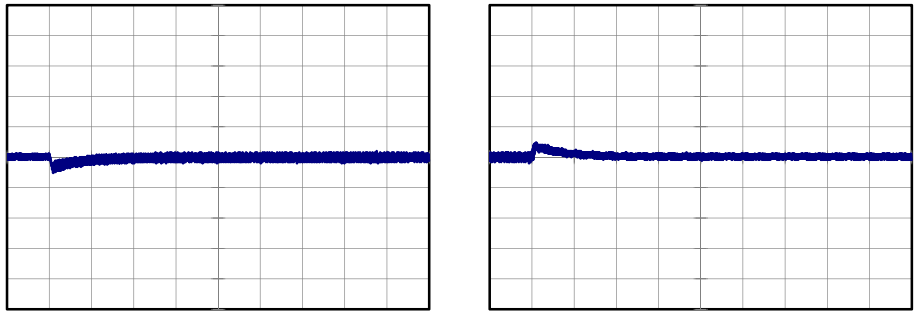
Min.Load (0A)←→
Load 50% (0.15A)



100 mV/div

400 μs/div 400 μs/div

Load 50% (0.15A)←→
Load 100% (0.3A)



100 mV/div

400 μs/div 400 μs/div

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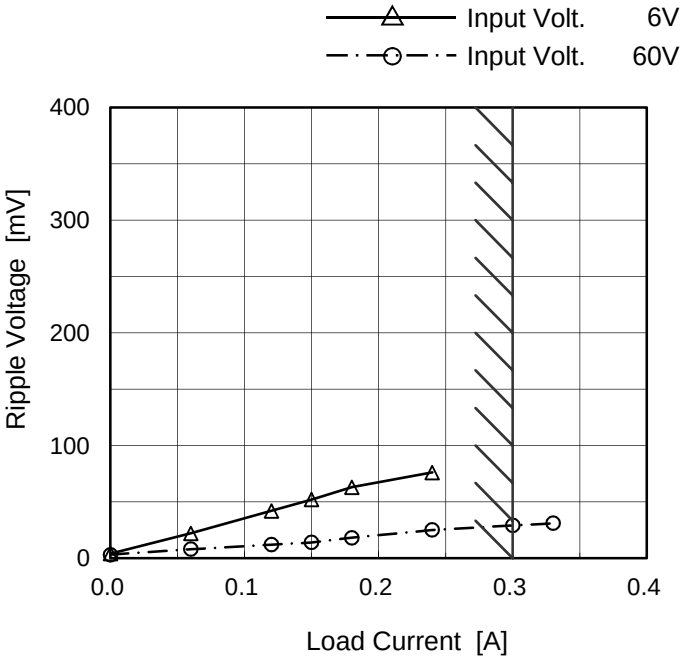
Model	MGXS1R52405
Item	Ripple Voltage (by Load Current)
Object	+5V0.3A

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]

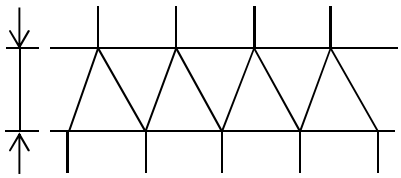


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.00	4	3
0.06	22	8
0.12	42	12
0.15	52	14
0.18	63	18
0.24	76	25
0.30	- ※	29
0.33	- ※	31
--	-	-
--	-	-
--	-	-

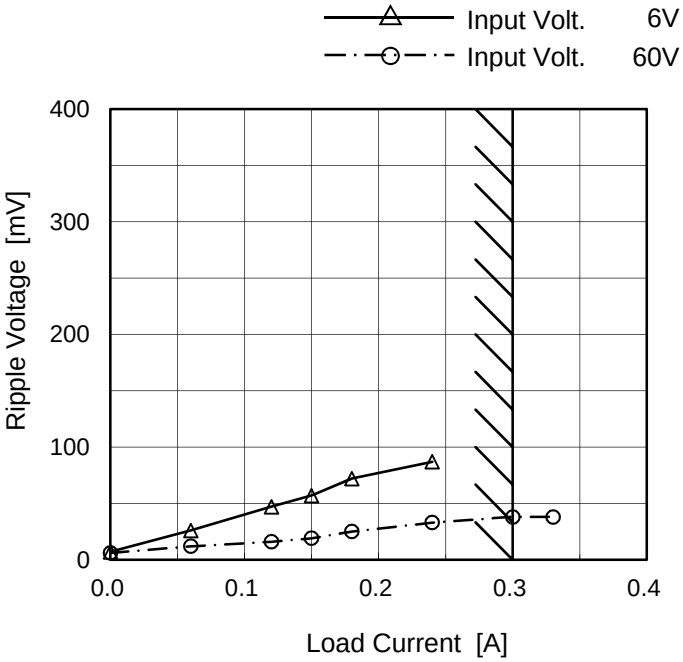
※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXS1R52405
Item	Ripple-Noise
Object	+5V0.3A

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]

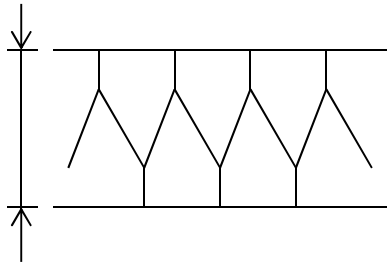


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 6 [V]	Input Volt. 60 [V]
0.00	7	6
0.06	26	12
0.12	47	16
0.15	57	19
0.18	72	25
0.24	87	33
0.30	- ※	38
0.33	- ※	38
--	-	-
--	-	-
--	-	-

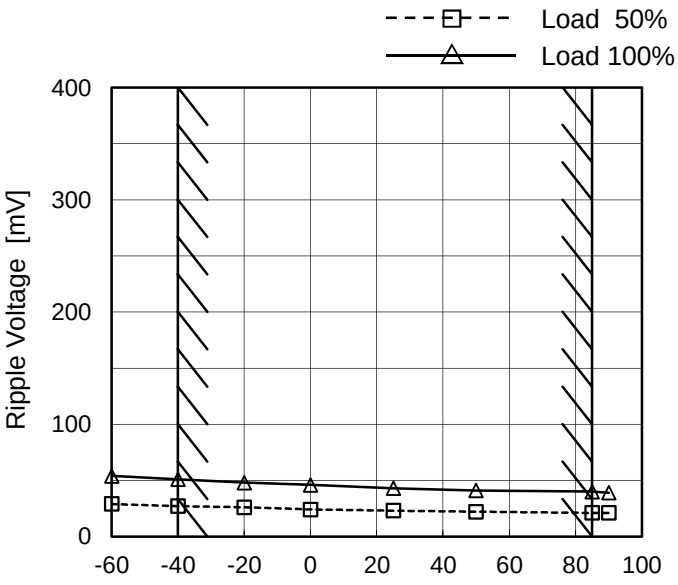
※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXS1R52405
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V0.3A

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	29	54
-40	27	51
-20	26	48
0	24	46
25	23	43
50	22	41
85	21	40
90	21	39
--	-	-
--	-	-
--	-	-

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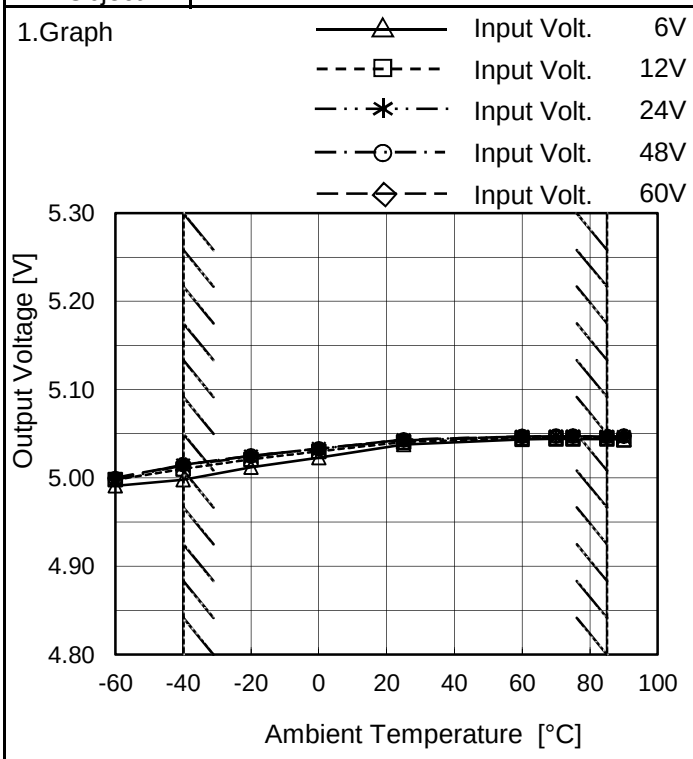
Model	MGXS1R52405
Item	Ambient Temperature Drift
Object	+5V0.3A

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. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
-60	4.991	4.998	4.998	4.999	5.000
-40	4.998	5.010	5.014	5.015	5.015
-20	5.012	5.021	5.024	5.025	5.025
0	5.023	5.030	5.033	5.033	5.033
25	5.038	5.041	5.043	5.043	5.043
60	5.044	5.045	5.047	5.047	5.047
70	5.044	5.045	5.047	5.047	5.047
75	5.044	5.045	5.047	5.047	5.047
85	5.044	5.045	5.047	5.047	5.047
90	5.044	5.043	5.046	5.047	5.047
--	-	-	-	-	-

Note: In case of input Volt. 6V, Load 70%.
Other case Load 100%.

Model	MGXS1R52405
Item	Output Voltage Accuracy
Object	+5V0.3A

Testing Circuitry Figure A

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 : 6 - 60V
Load Current : 0 - 0.3A

* 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	85	60	0	5.049	±26	±0.5
Minimum Voltage	-40	6	0.21 ※	4.998		

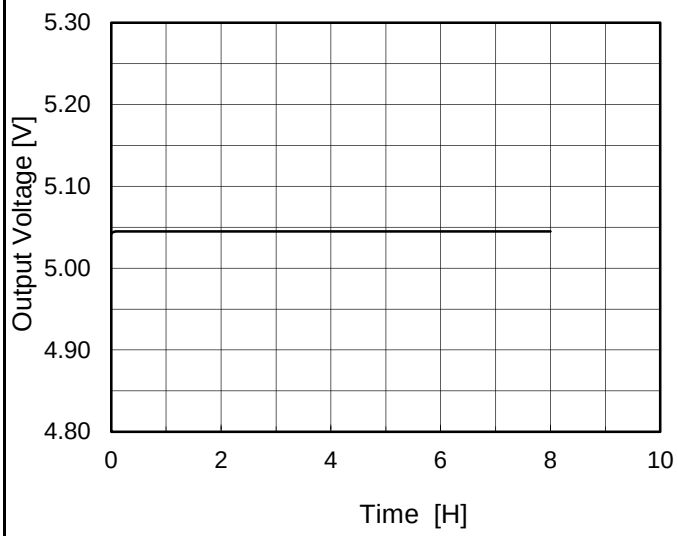
※ Maximum output current at minimum input Voltage is 70% of rated load current.
Refer to instruction manuals for details of input derating.

COSEL

Model	MGXS1R52405
Item	Time Lapse Drift
Object	+5V0.3A

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	5.042
0.5	5.045
1.0	5.045
2.0	5.045
3.0	5.045
4.0	5.045
5.0	5.045
6.0	5.045
7.0	5.045
8.0	5.045

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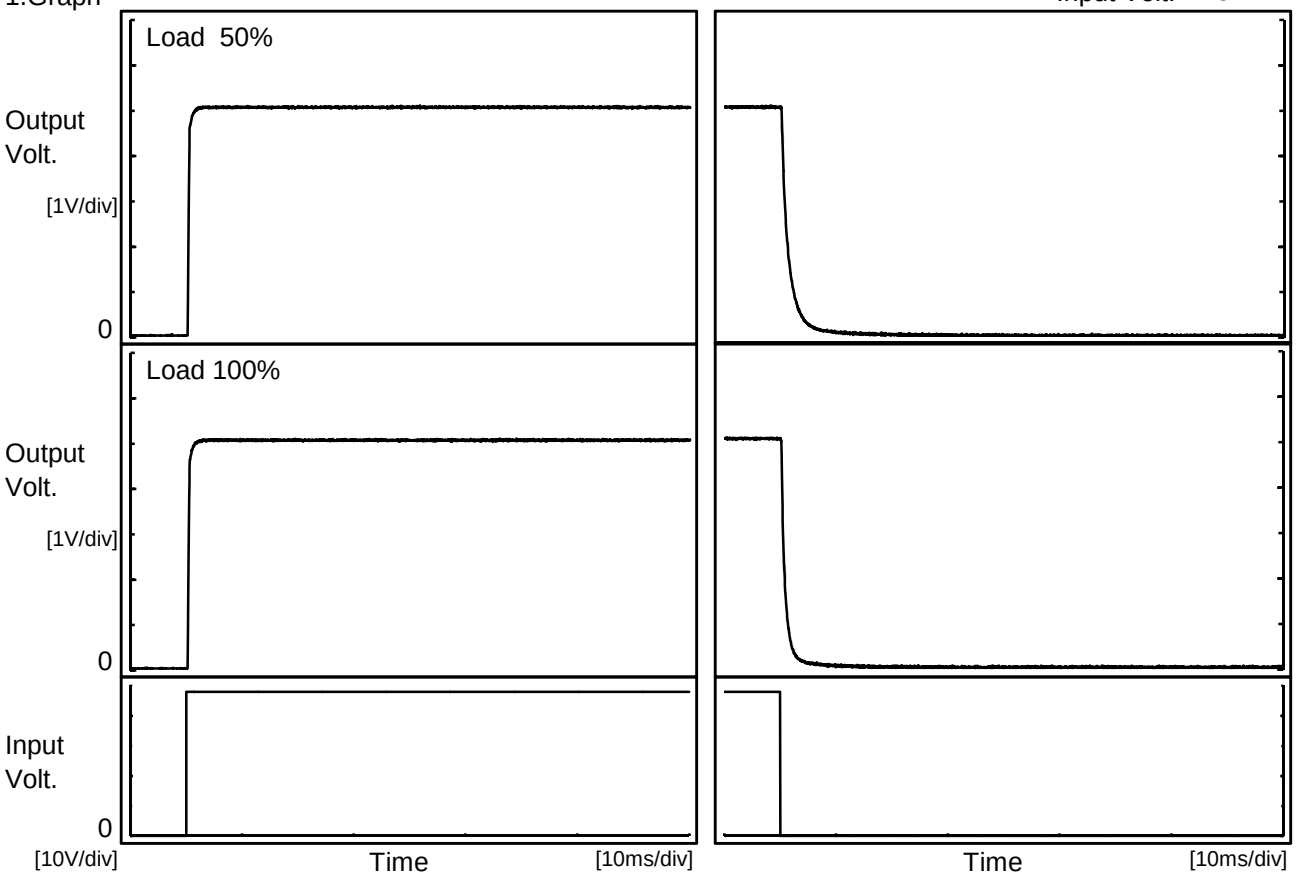
Model	MGXS1R52405
Item	Rise and Fall Time
Object	+5V0.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

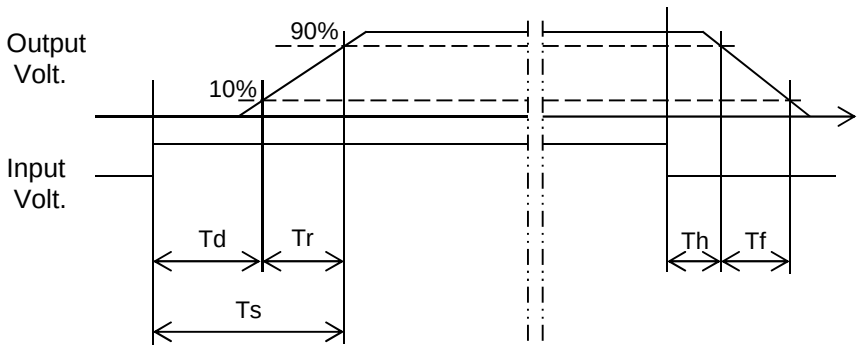
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.3	0.3	0.6	0.3	3.2
100 %	0.3	0.4	0.7	0.3	1.8



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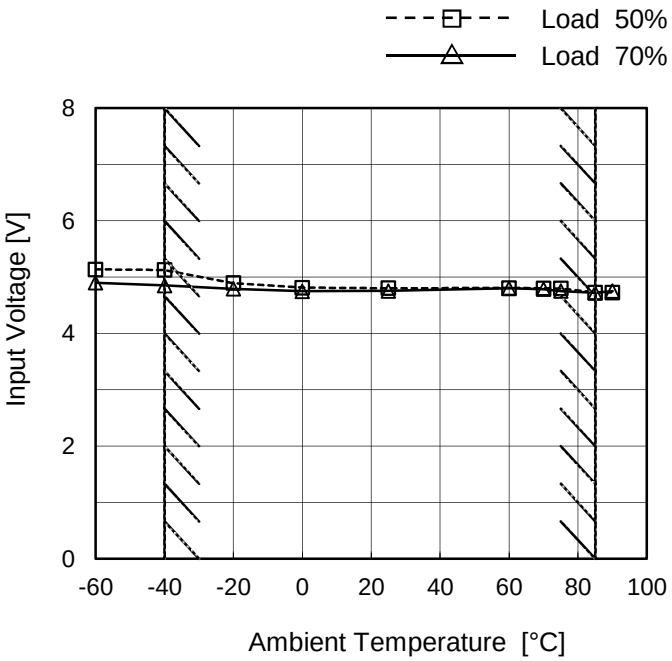
Model	MGXS1R52405
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V0.3A

Testing Circuitry Figure A

1.Graph



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

2.Values

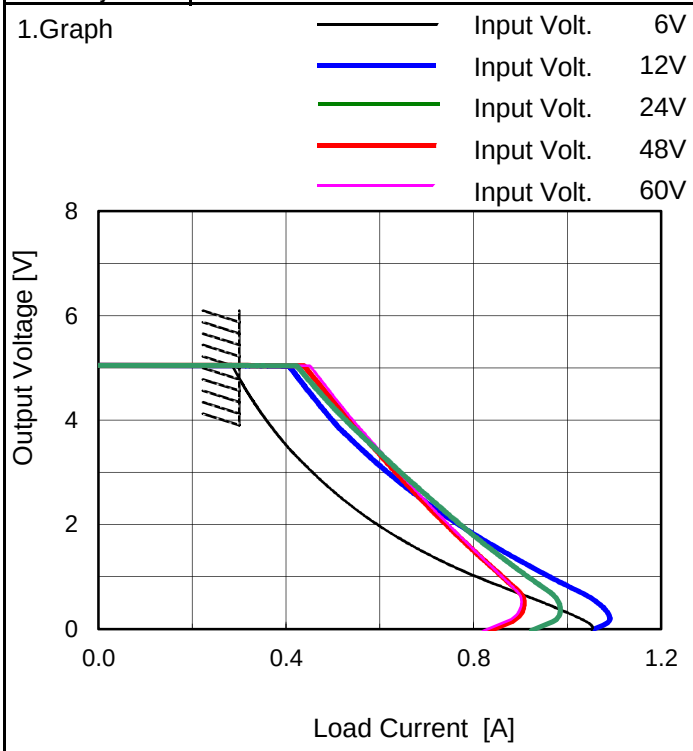
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 70%
-60	5.2	4.9
-40	5.2	4.9
-20	4.9	4.8
0	4.9	4.8
25	4.8	4.8
60	4.8	4.8
70	4.8	4.8
75	4.8	4.8
85	4.8	4.8
90	4.8	4.8
--	-	-

COSEL

Model	MGXS1R52405
Item	Overcurrent Protection
Object	+5V0.3A

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 70% of rated load current.
Refer to instruction manuals for details of input derating.

2.Values

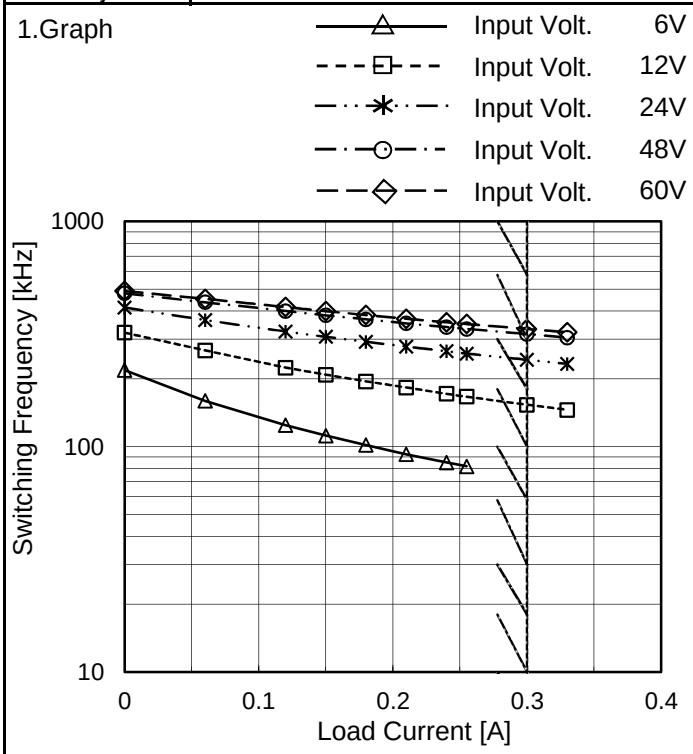
Output Voltage [V]	Load Current [A]				
	Input Volt. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
4.75	0.303	0.431	0.450	0.466	0.476
4.50	0.320	0.452	0.474	0.487	0.498
4.00	0.357	0.499	0.527	0.533	0.542
3.50	0.401	0.554	0.585	0.582	0.590
3.00	0.456	0.616	0.642	0.634	0.641
2.50	0.518	0.687	0.706	0.686	0.692
2.00	0.593	0.767	0.771	0.741	0.745
1.50	0.687	0.858	0.840	0.799	0.803
1.00	0.804	0.962	0.914	0.861	0.861
0.50	0.948	1.064	0.981	0.908	0.902
0.00	1.052	1.056	0.923	0.832	0.820
--	-	-	-	-	-

COSEL

Model	MGXS1R52405
Item	Switching frequency (by Load Current)
Object	+5V0.3A

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. 6[V]	Input Volt. 12[V]	Input Volt. 24[V]	Input Volt. 48[V]	Input Volt. 60[V]
0.000	219	321	415	480	491
0.060	160	268	365	438	454
0.120	125	224	325	400	417
0.150	112	209	307	383	400
0.180	102	195	292	367	384
0.210	93	183	278	353	370
0.240	85	172	266	340	357
0.255	82	167	259	334	351
0.300	- ※	154	243	316	333
0.330	- ※	146	233	305	322
--	-	-	-	-	-

※ Maximum output current at minimum input Voltage is 70% of rated load current. Refer to instruction manuals for details of input derating.

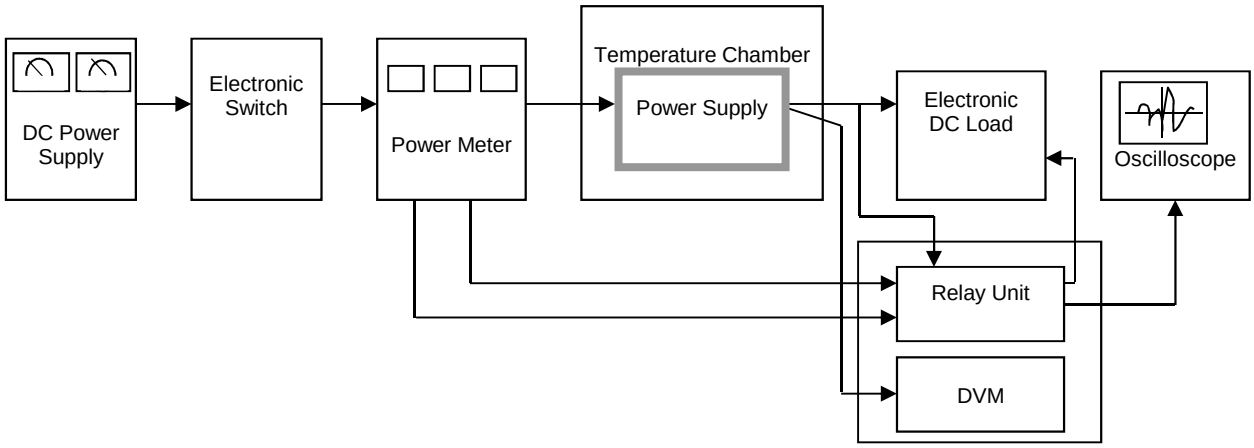


Figure A

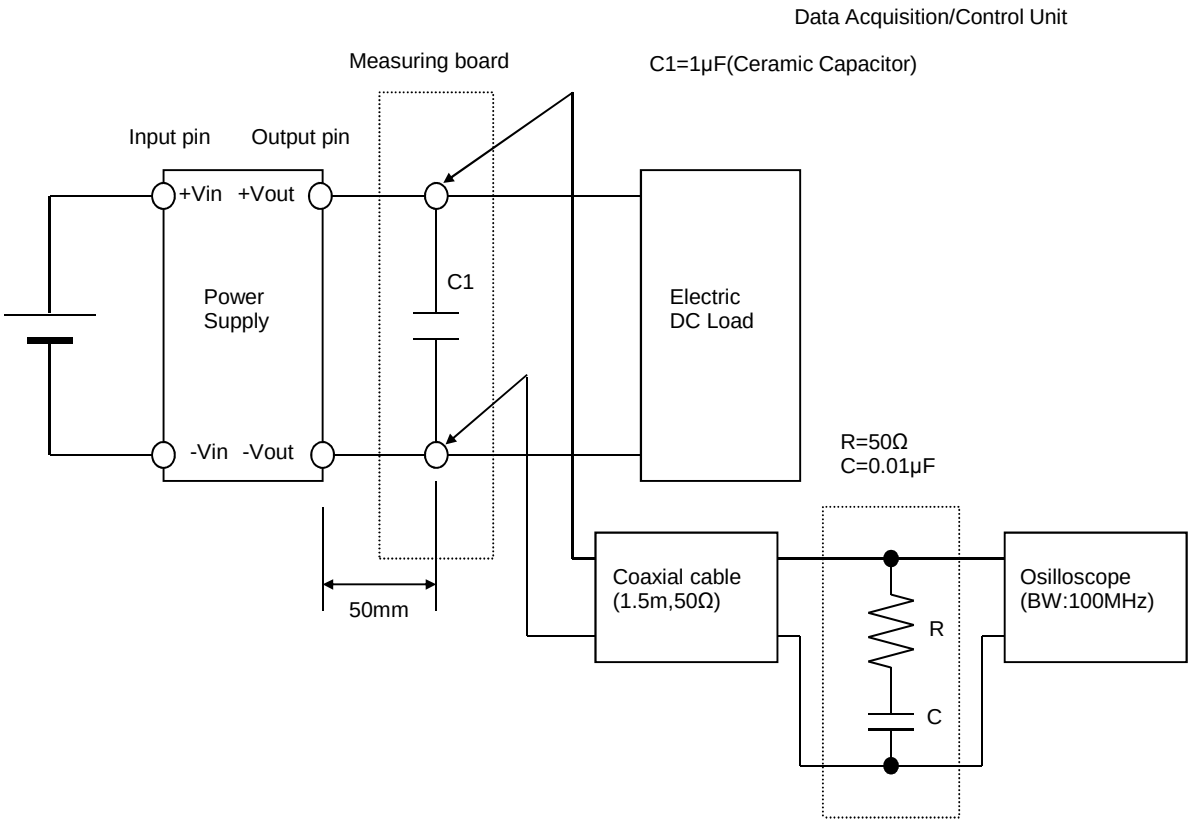


Figure B（Ripple and Ripple noise Characteristic）