COSEL

参考資料

TEST DATA OF MGW101212

Regulated DC Power Supply
November 4, 2016

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COSEL CO.,LTD.

参考資料

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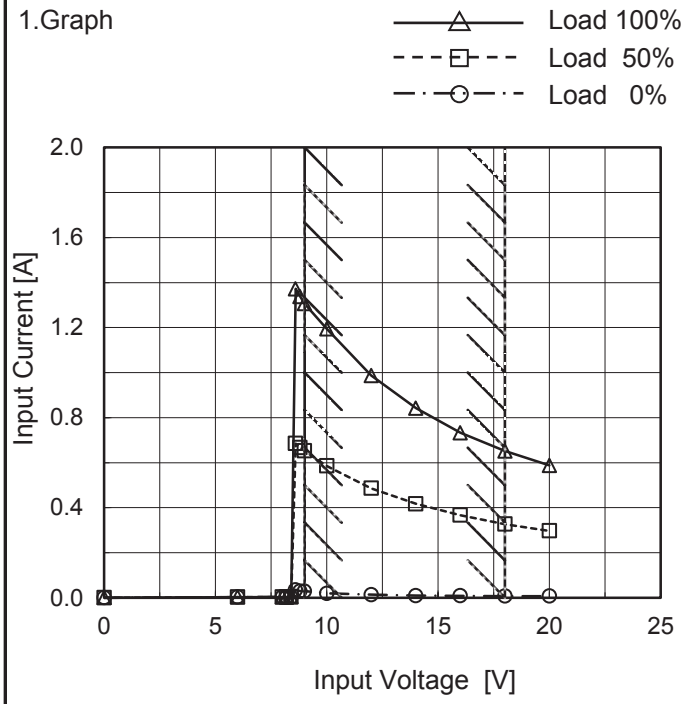
COSEL

Model	MGW101212
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	0.004	0.003	0.003
8.2	0.003	0.004	0.003
8.4	0.002	0.004	0.004
8.6	0.035	0.685	1.372
8.8	0.030	0.667	1.338
9.0	0.029	0.653	1.306
10.0	0.019	0.586	1.194
12.0	0.013	0.486	0.987
14.0	0.010	0.417	0.842
16.0	0.008	0.367	0.733
18.0	0.007	0.327	0.652
20.0	0.007	0.297	0.588
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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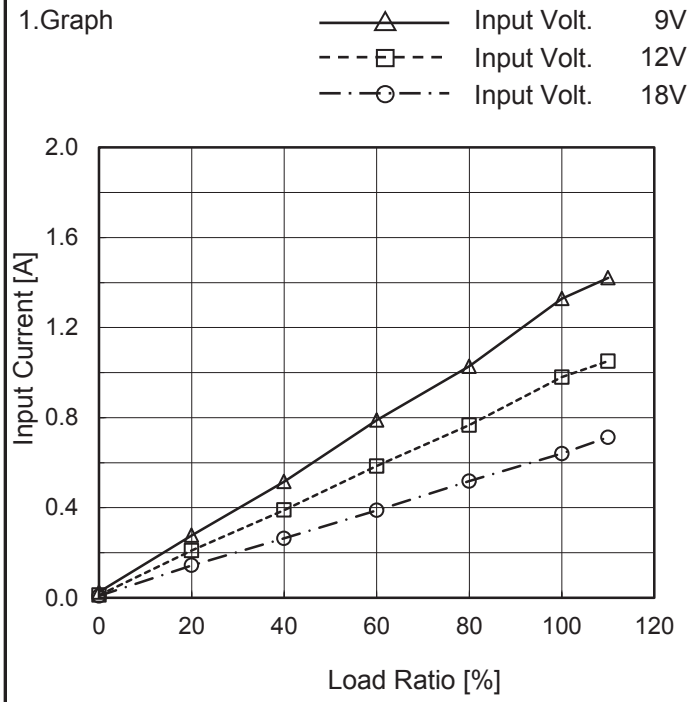
COSEL

Model	MGW101212
Item	Input Current (by Load Ratio)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ratio [%]	Input Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.025	0.011	0.008
20	0.277	0.210	0.144
40	0.516	0.390	0.264
60	0.789	0.585	0.388
80	1.028	0.767	0.518
100	1.329	0.980	0.640
110	1.421	1.051	0.713
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

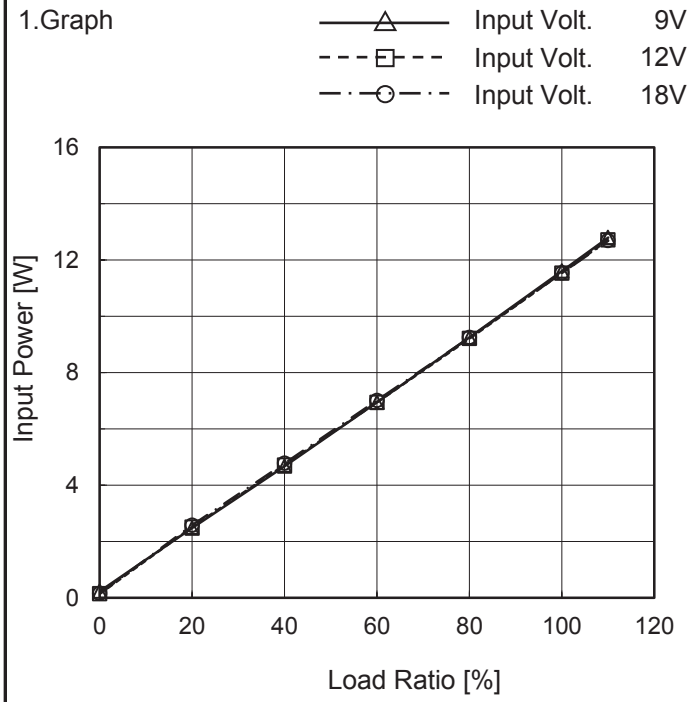
BC-11064

COSEL

Model	MGW101212
Item	Input Power (by Load Ratio)
Object	――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

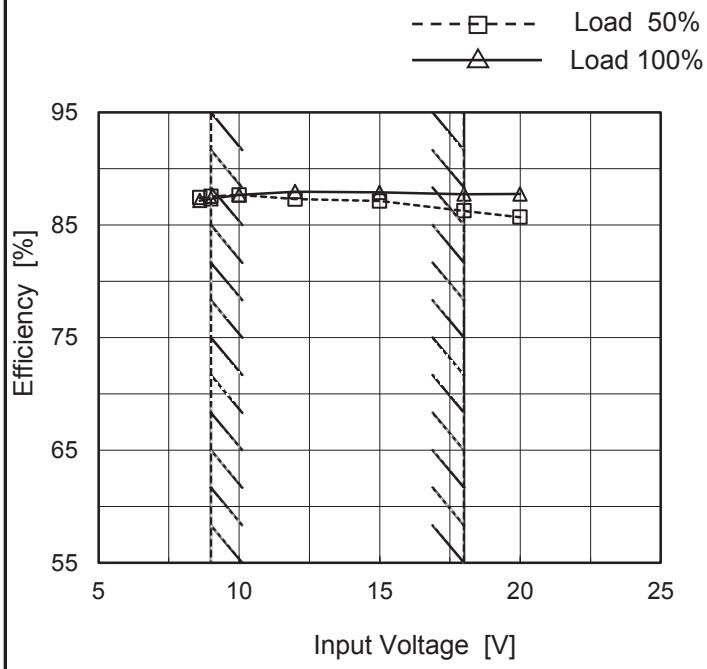
Load Ratio [%]	Input Power [W]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.23	0.13	0.15
20	2.47	2.51	2.58
40	4.68	4.71	4.78
60	6.94	6.94	7.01
80	9.25	9.21	9.24
100	11.61	11.54	11.54
110	12.80	12.71	12.69
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGW101212
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	87.4	87.2
9.0	87.5	87.3
10.0	87.7	87.7
12.0	87.3	88.0
15.0	87.1	87.9
18.0	86.3	87.7
20.0	85.7	87.8
--	-	-
--	-	-

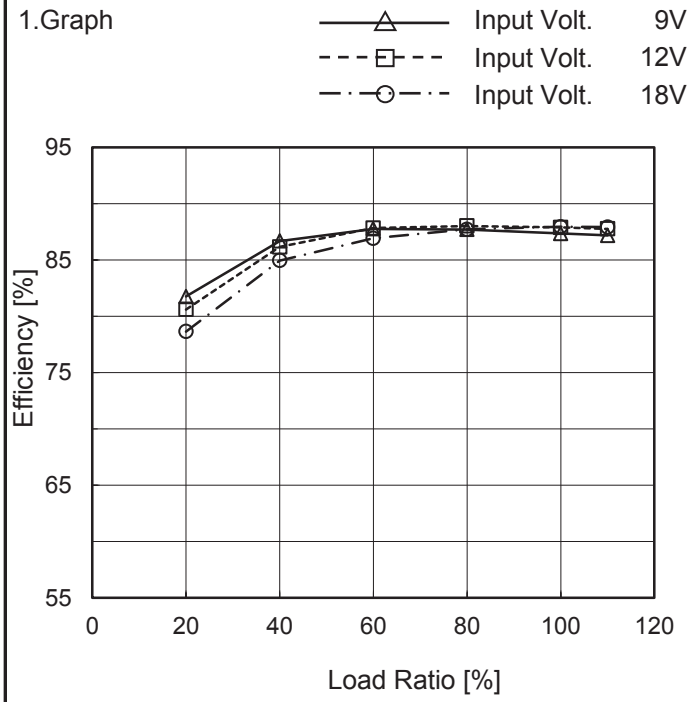
BC-11064

COSEL

Model	MGW101212
Item	Efficiency (by Load Ratio)
Object	――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ratio [%]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	-	-	-
20	81.8	80.6	78.7
40	86.7	86.2	85.0
60	87.8	87.8	86.9
80	87.7	88.0	87.7
100	87.4	87.9	88.0
110	87.2	87.8	87.9
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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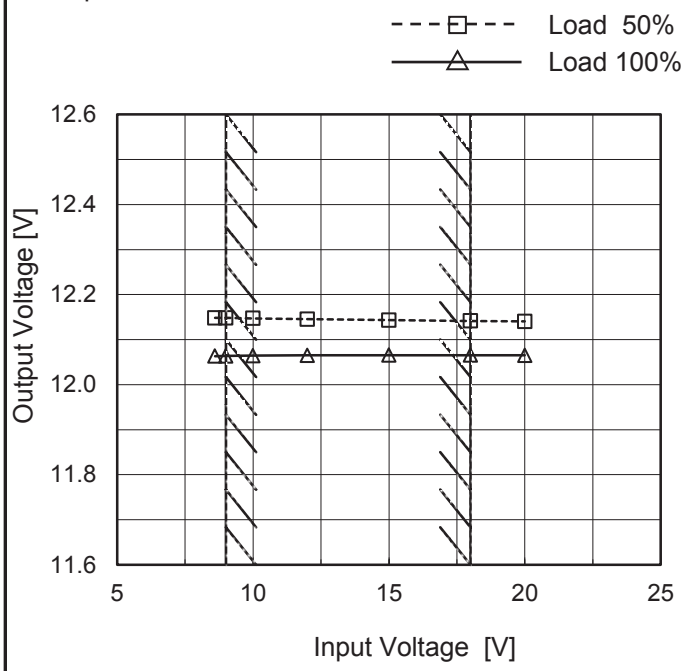
COSEL

Model	MGW101212
Item	Line Regulation
Object	+12V0.42A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



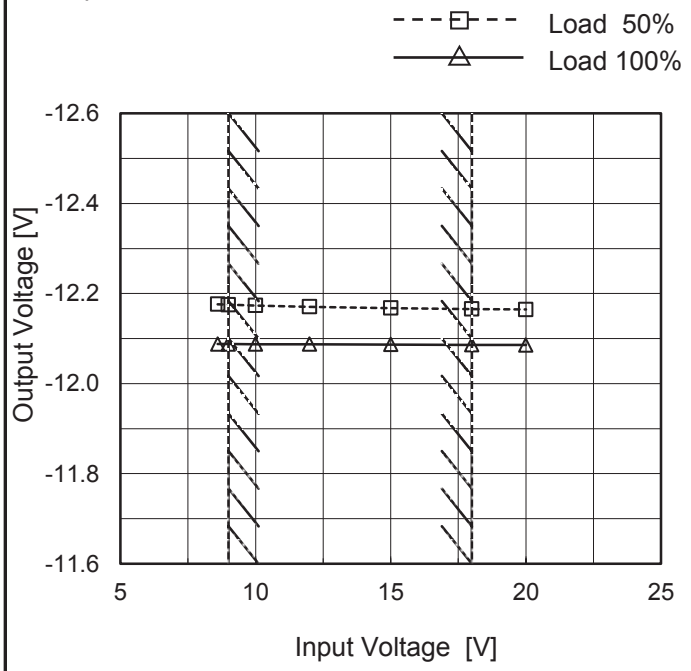
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8.6	12.148	12.063
9.0	12.148	12.064
10.0	12.147	12.064
12.0	12.145	12.065
15.0	12.143	12.065
18.0	12.141	12.065
20.0	12.141	12.065
--	-	-
--	-	-

-12V: Rated Load Current

Object	-12V0.42A

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	-12.176	-12.088
9.0	-12.175	-12.088
10.0	-12.173	-12.088
12.0	-12.171	-12.087
15.0	-12.168	-12.087
18.0	-12.166	-12.086
20.0	-12.165	-12.086
--	-	-
--	-	-

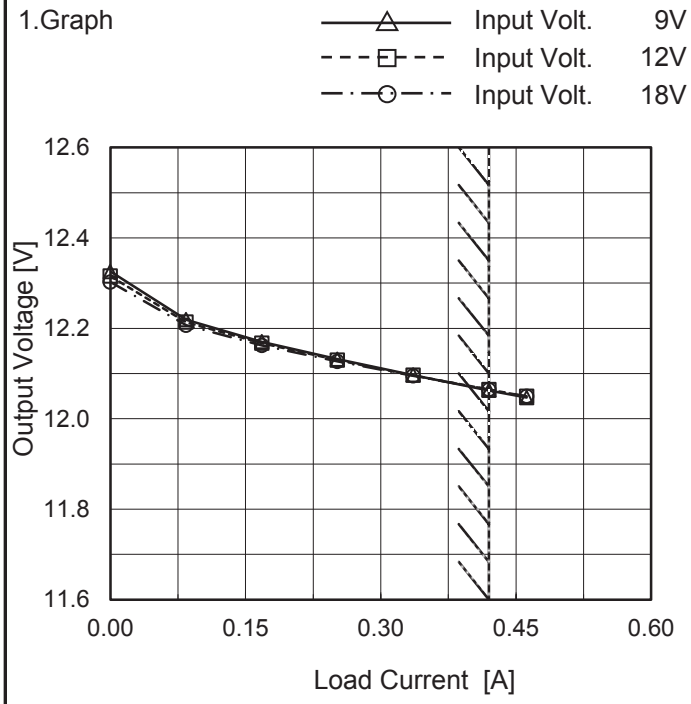
+12V: Rated Load Current

COSEL

Model	MGW101212
Item	Load Regulation
Object	+12V0.42A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



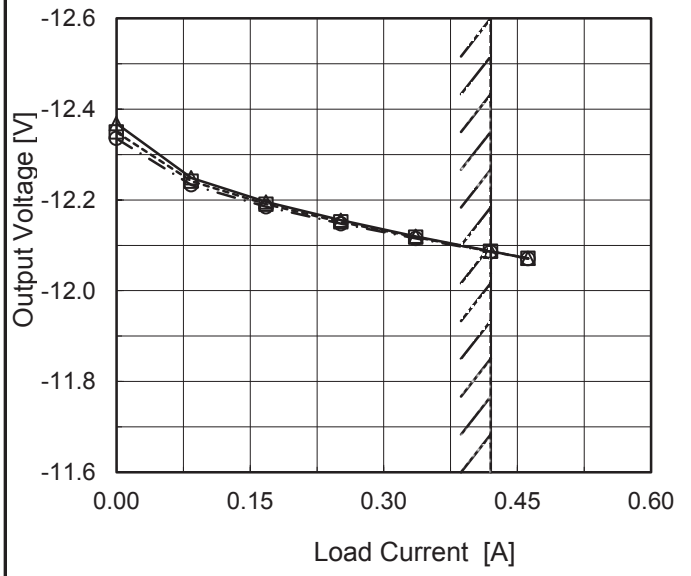
2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	12.326	12.315	12.302
0.084	12.219	12.214	12.207
0.168	12.170	12.167	12.162
0.252	12.132	12.130	12.127
0.336	12.097	12.096	12.095
0.420	12.063	12.065	12.064
0.462	12.047	12.049	12.050
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

-12V: Rated Load Current

Object	-12V0.42A

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]
0.000	-12.368	-12.350	-12.335
0.084	-12.249	-12.241	-12.233
0.168	-12.196	-12.190	-12.185
0.252	-12.155	-12.151	-12.148
0.336	-12.120	-12.118	-12.115
0.420	-12.087	-12.087	-12.085
0.462	-12.071	-12.071	-12.071
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

+12V: Rated Load Current

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COSEL

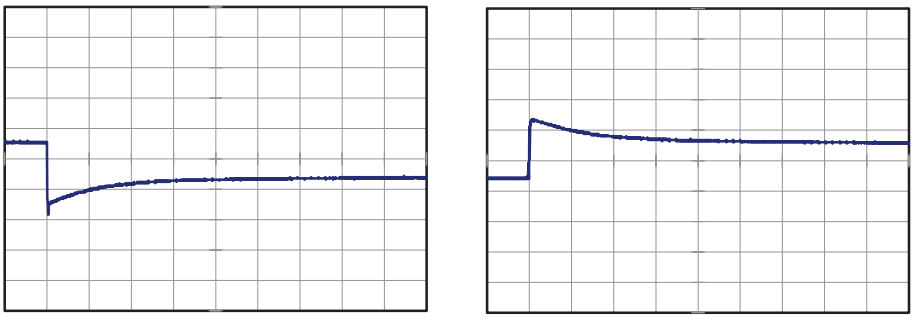
Model	MGW101212	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+12V0.42A	

Input Volt. 12 V

-12V:rated load current.

Cycle 100 ms

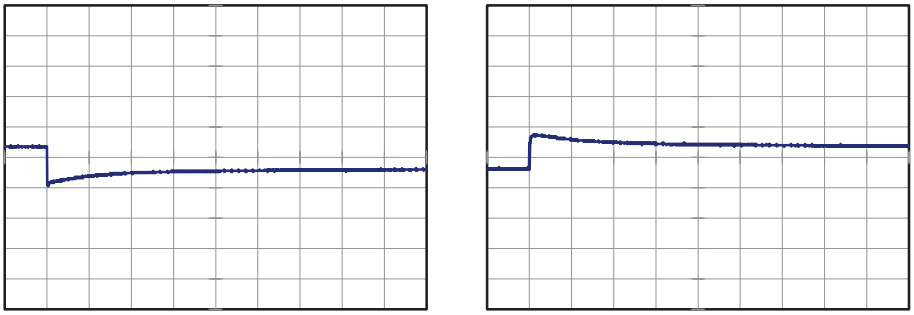
Min.Load (0A)←→
Load 100% (0.42A)



200 mV/div

4 ms/div 4 ms/div

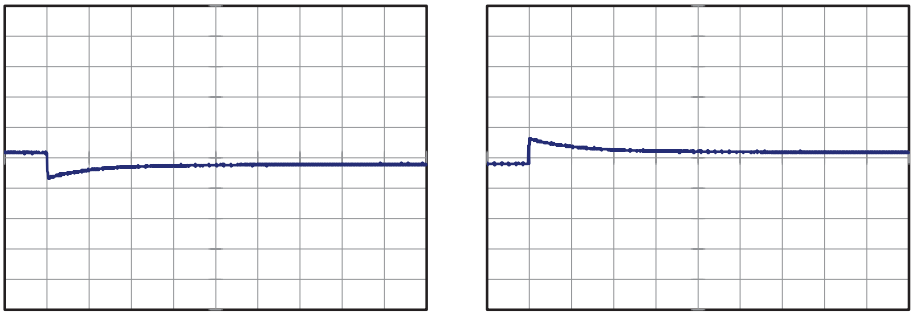
Min.Load (0A)←→
Load 50% (0.21A)



200 mV/div

4 ms/div 4 ms/div

Load 50% (0.21A)←→
Load 100% (0.42A)



200 mV/div

4 ms/div 4 ms/div

COSEL

Model	MGW101212	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	-12V0.42A	

Input Volt. 12 V

+12V:rated load current.

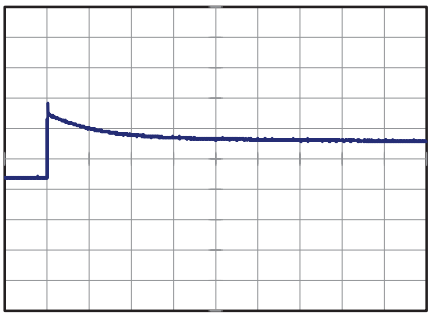
Cycle 100 ms

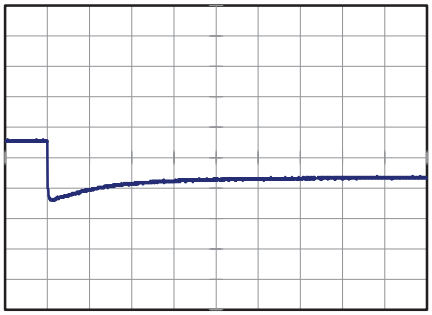
t1,t2 = 100 μ s

Load Current

t1 t2

Min.Load (0A)←→
Load 100% (0.42A)

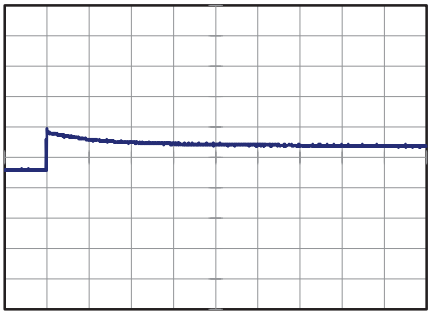


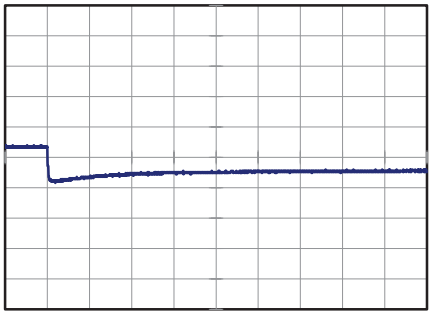


200 mV/div

4 ms/div 4 ms/div

Min.Load (0A)←→
Load 50% (0.21A)

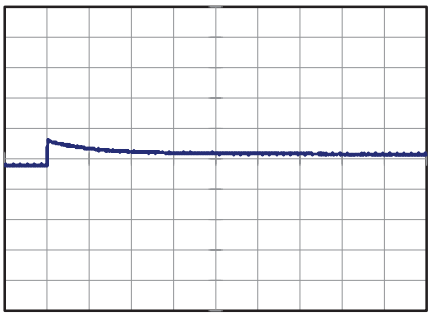


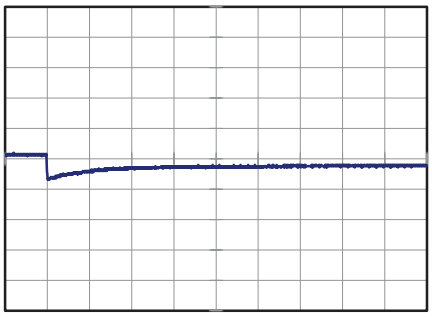


200 mV/div

4 ms/div 4 ms/div

Load 50% (0.21A)←→
Load 100% (0.42A)





200 mV/div

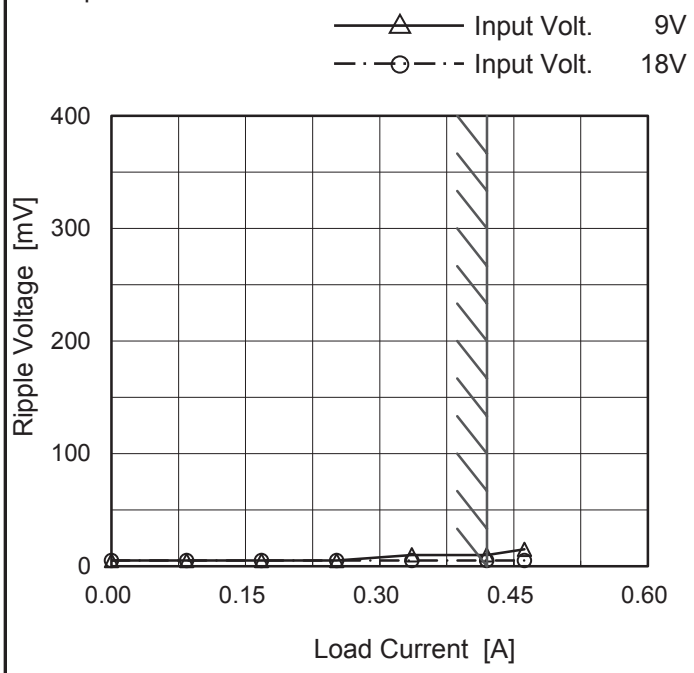
4 ms/div 4 ms/div

COSEL

Model	MGW101212
Item	Ripple Voltage (by Load Current)
Object	+12V0.42A

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]

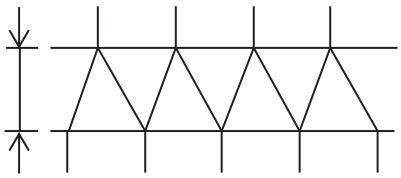


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	5	5
0.084	5	5
0.168	5	5
0.252	5	5
0.336	10	5
0.420	10	5
0.462	15	5
--	-	-
--	-	-
--	-	-
--	-	-

-12V: Rated Load Current

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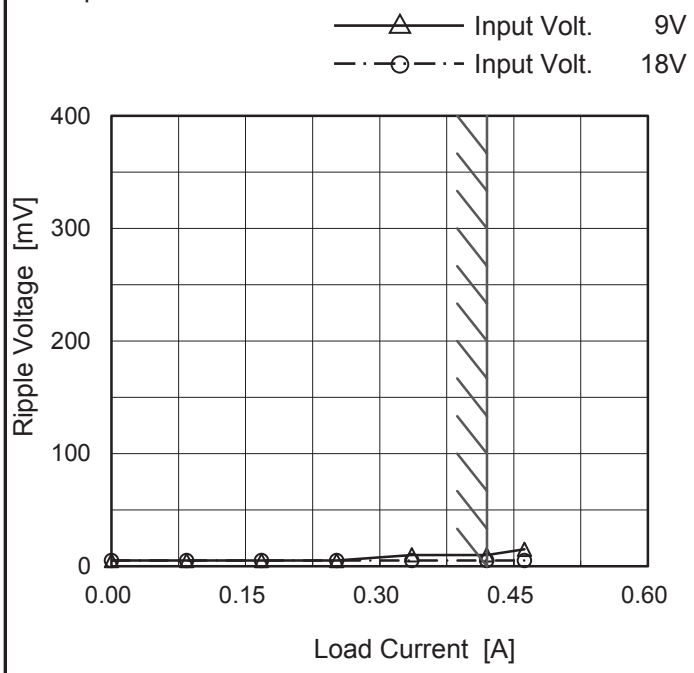
COSEL

Model	MGW101212
Item	Ripple Voltage (by Load Current)
Object	-12V0.42A

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]

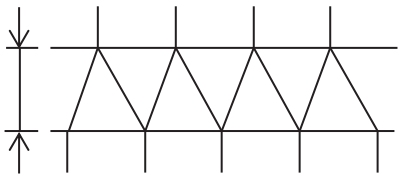


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	5	5
0.084	5	5
0.168	5	5
0.252	5	5
0.336	10	5
0.420	10	5
0.462	15	5
--	-	-
--	-	-
--	-	-
--	-	-

+12V: Rated Load Current

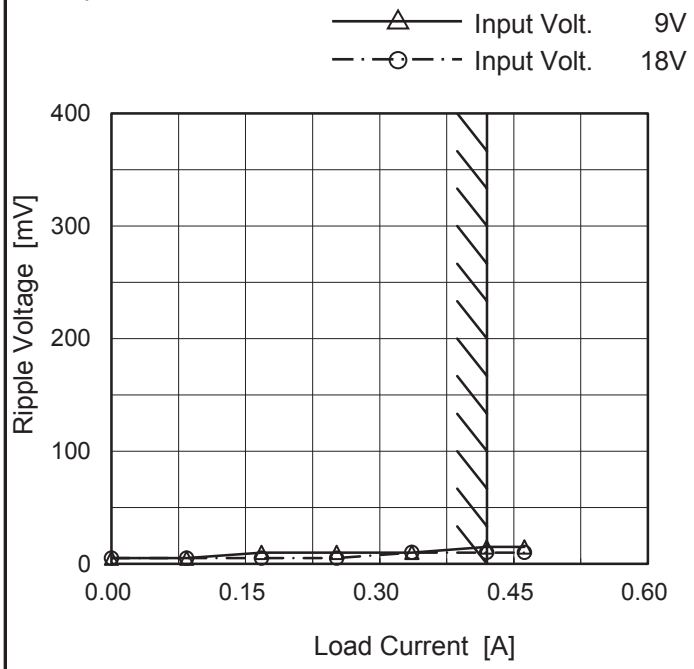
BC-11064

COSEL

Model	MGW101212
Item	Ripple-Noise
Object	+12V0.42A

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]

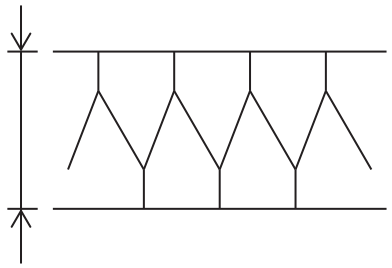


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	5	5
0.084	5	5
0.168	10	5
0.252	10	5
0.336	10	10
0.420	15	10
0.462	15	10
--	-	-
--	-	-
--	-	-
--	-	-

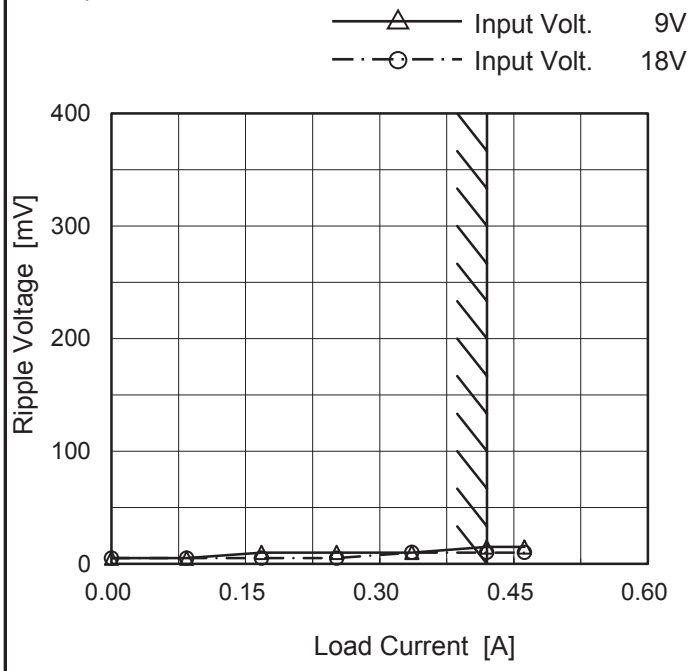
-12V: Rated Load Current

COSEL

Model	MGW101212
Item	Ripple-Noise
Object	-12V0.42A

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]

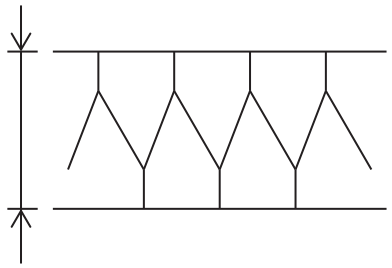


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	5	5
0.084	5	5
0.168	10	5
0.252	10	5
0.336	10	10
0.420	15	10
0.462	15	10
--	-	-
--	-	-
--	-	-
--	-	-

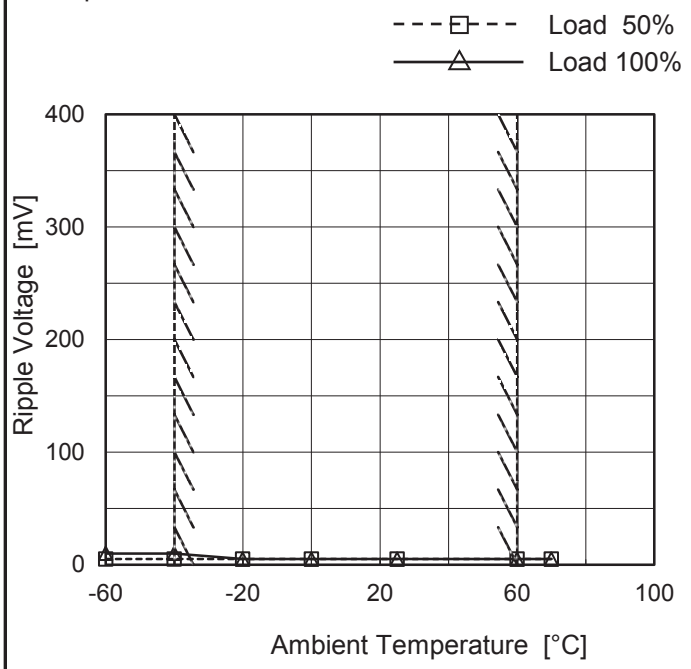
+12V: Rated Load Current

COSEL

Model	MGW101212
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.42A

Testing Circuitry Figure B

1.Graph



Input Volt. 12V

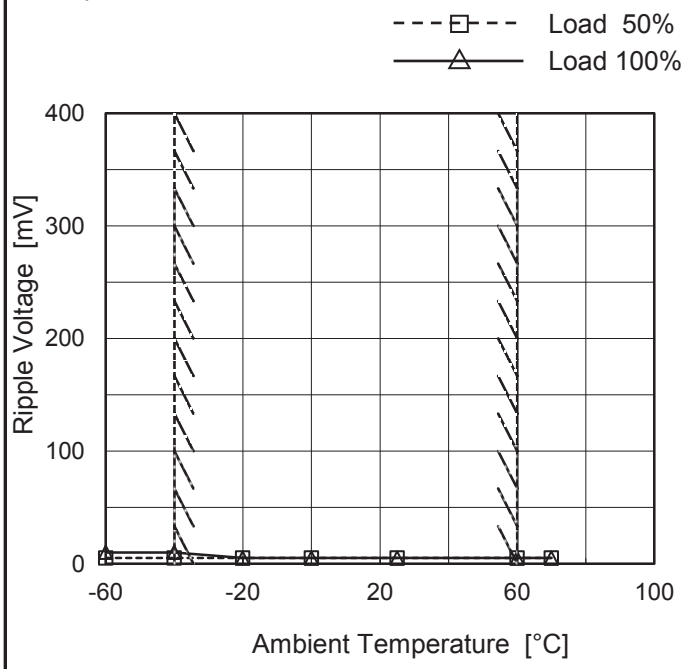
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	5	10
-40	5	10
-20	5	5
0	5	5
25	5	5
60	5	5
70	5	5
--	-	-
--	-	-
--	-	-
--	-	-

-12V: Rated Load Current

Object	-12V0.42A

1.Graph



Input Volt. 12V

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	5
0	5	5
25	5	5
60	5	5
70	5	5
--	-	-
--	-	-
--	-	-
--	-	-

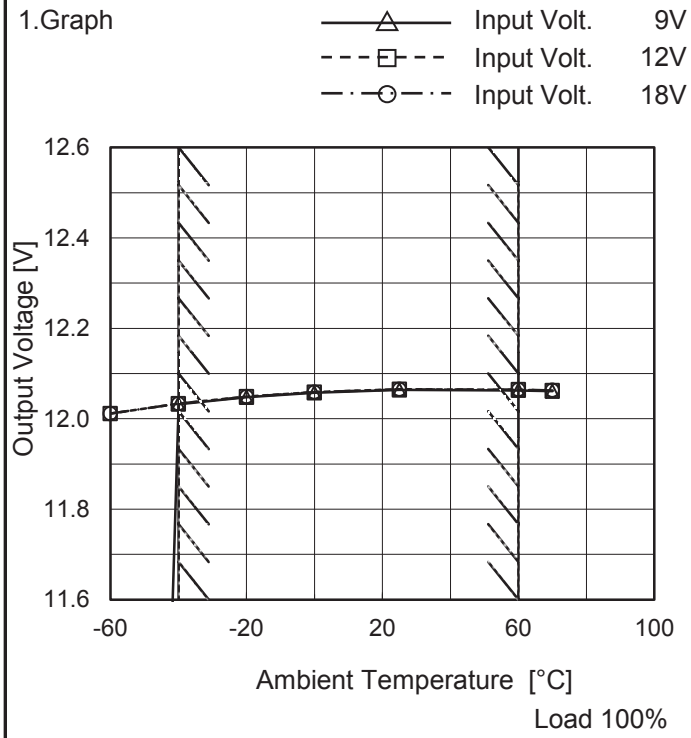
+12V: Rated Load Current

COSEL

Model	MGW101212
Item	Ambient Temperature Drift
Object	+12V0.42A

Testing Circuitry Figure A

1.Graph



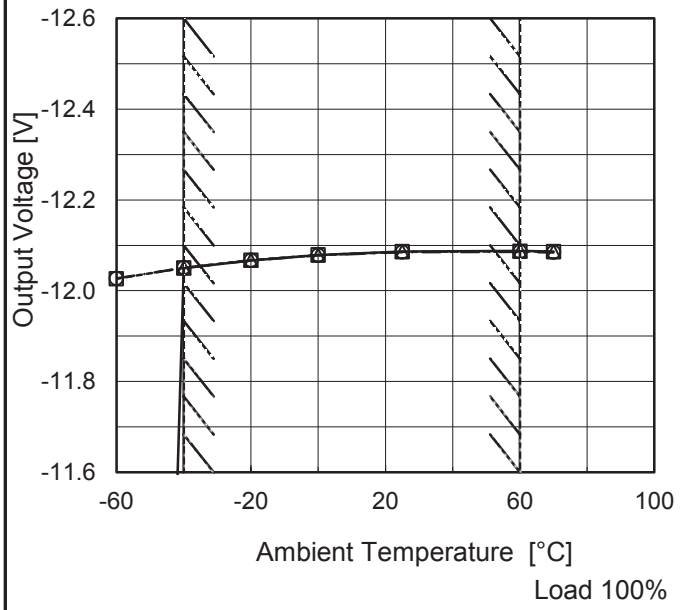
2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	7.059	12.012	12.012
-40	12.032	12.034	12.033
-20	12.047	12.049	12.049
0	12.058	12.059	12.059
25	12.064	12.065	12.065
60	12.063	12.064	12.064
70	12.061	12.062	12.063
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

-12V: Rated Load Current

Object	-12V0.42A

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]
-60	-7.100	-12.026	-12.027
-40	-12.050	-12.050	-12.051
-20	-12.067	-12.067	-12.067
0	-12.079	-12.079	-12.078
25	-12.086	-12.086	-12.085
60	-12.088	-12.087	-12.086
70	-12.086	-12.086	-12.084
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

+12V: Rated Load Current

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COSEL

Model	MGW101212	
Item	Output Voltage Accuracy	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 - 60°C

Input Voltage : 9 - 18V

Load Current (AVR 1) : 0 - 0.42A (AVR 2) : 0 - 0.42A

* 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

Object	+12V0.42A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	60	9	0	12.351	±291	±2.4
Minimum Voltage	60	9	0.42	11.770		

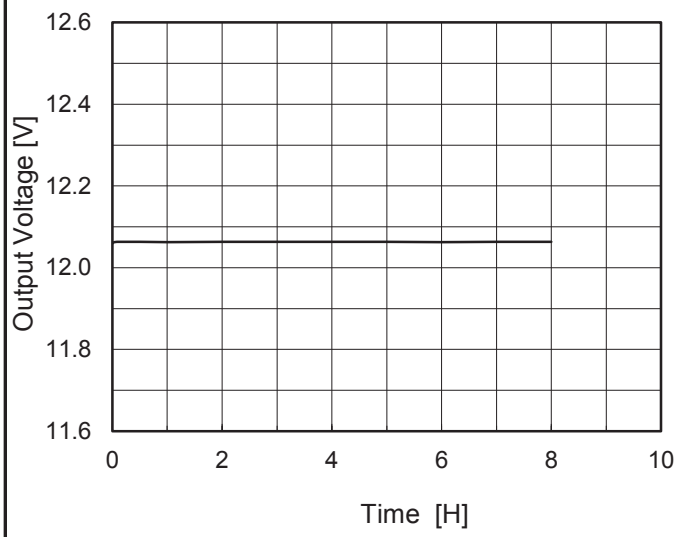
Object	-12V0.42A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	60	9	0	-12.388	±291	±2.4
Minimum Voltage	60	9	0.42	-11.806		

COSEL

Model	MGW101212
Item	Time Lapse Drift
Object	+12V0.42A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 12V
Load 100%

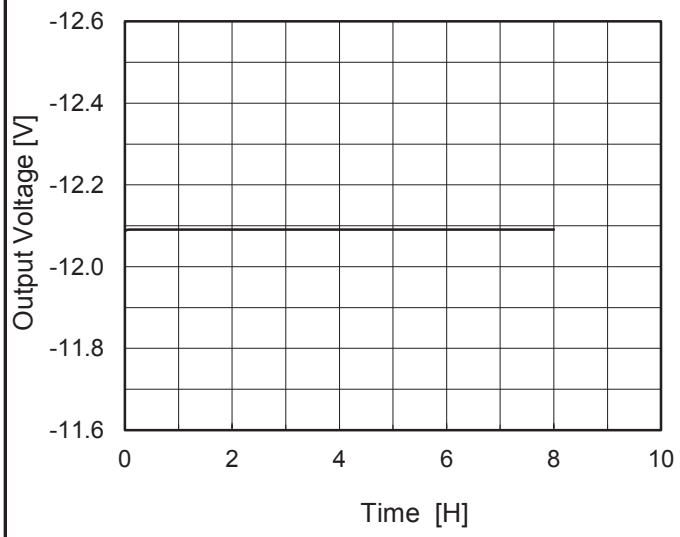
2.Values

Time since start [H]	Output Voltage [V]
0.0	12.060
0.5	12.063
1.0	12.063
2.0	12.063
3.0	12.063
4.0	12.063
5.0	12.063
6.0	12.063
7.0	12.063
8.0	12.063

-12V: Rated Load Current

Object	-12V0.42A

1.Graph



Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.085
0.5	-12.091
1.0	-12.091
2.0	-12.091
3.0	-12.091
4.0	-12.091
5.0	-12.091
6.0	-12.091
7.0	-12.091
8.0	-12.091

+12V: Rated Load Current

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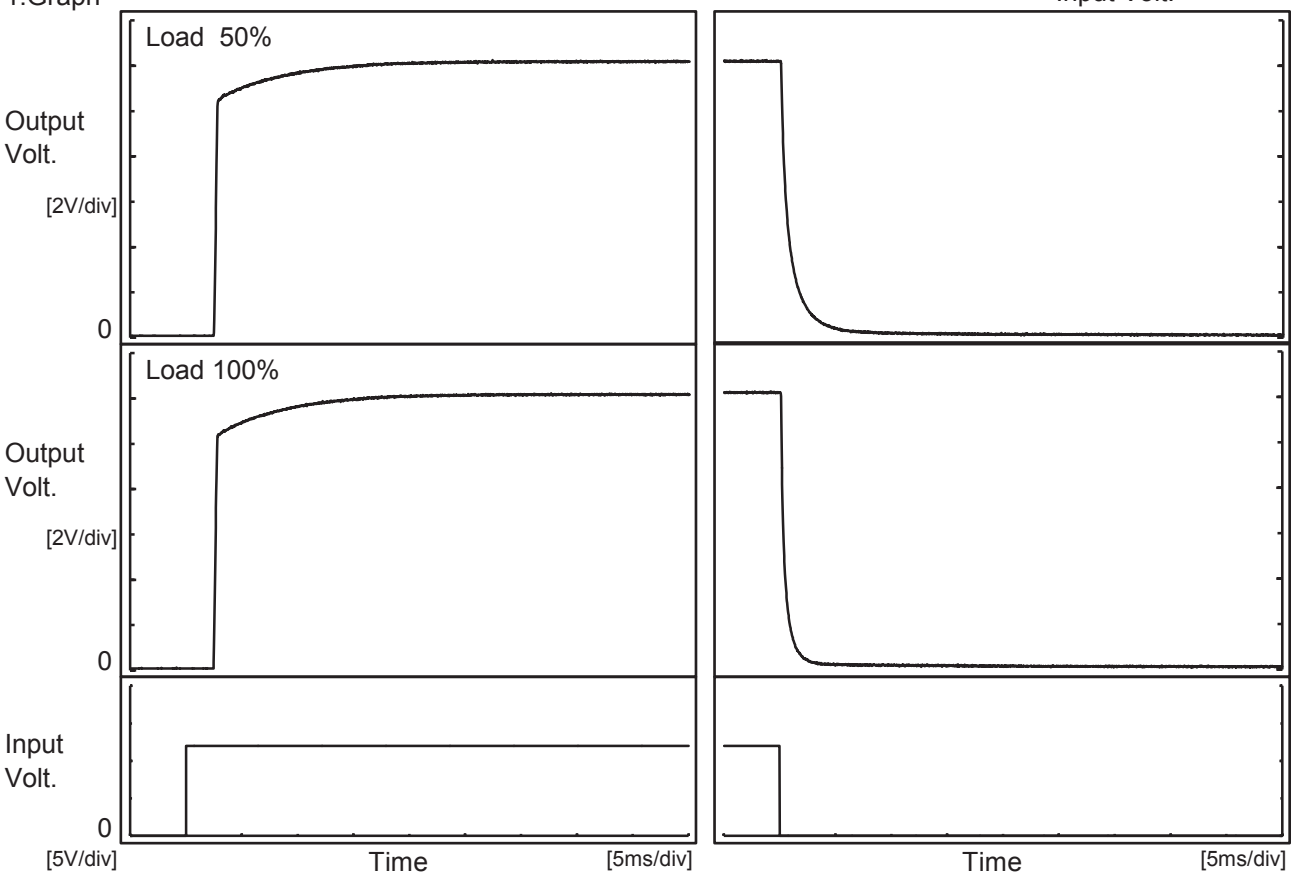
COSEL

Model	MGW101212
Item	Rise and Fall Time
Object	+12V0.42A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

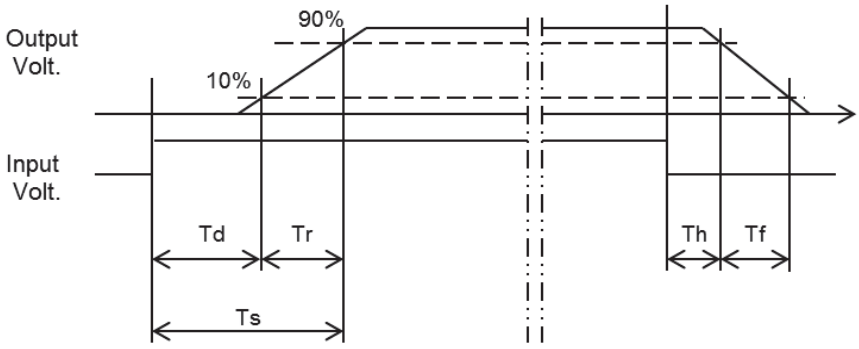
Input Volt. 12 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.6	1.8	4.4	0.2	2.3
100 %	2.5	2.2	4.7	0.1	1.1



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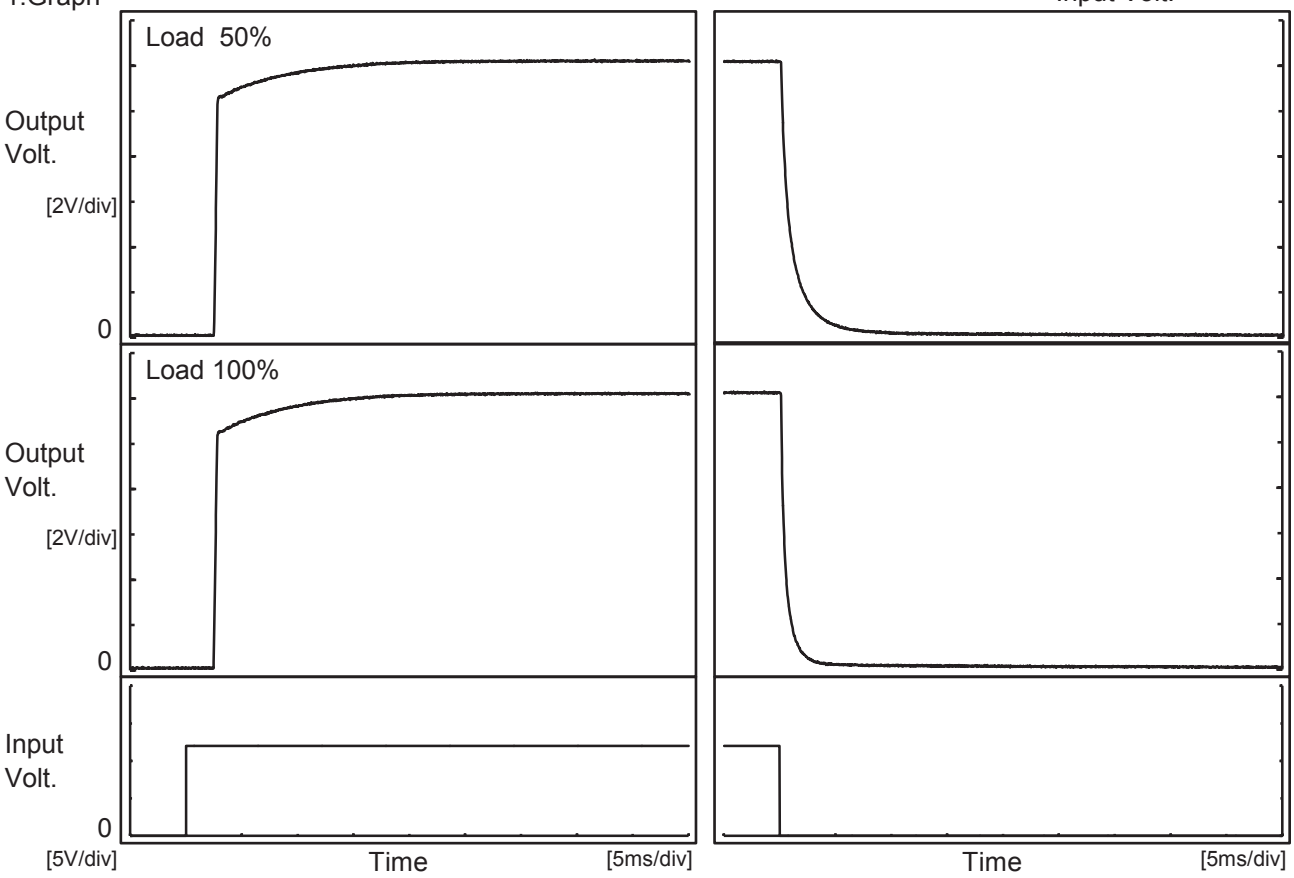
COSEL

Model	MGW101212
Item	Rise and Fall Time
Object	-12V0.42A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

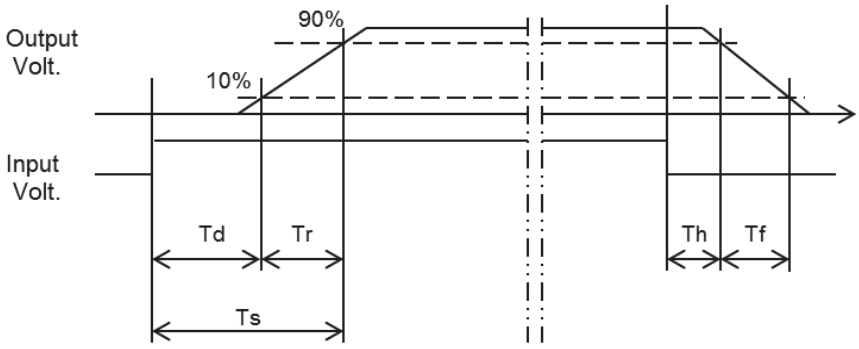
Input Volt. 12 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.6	1.6	4.2	0.2	2.8
100 %	2.5	2.0	4.5	0.2	1.3



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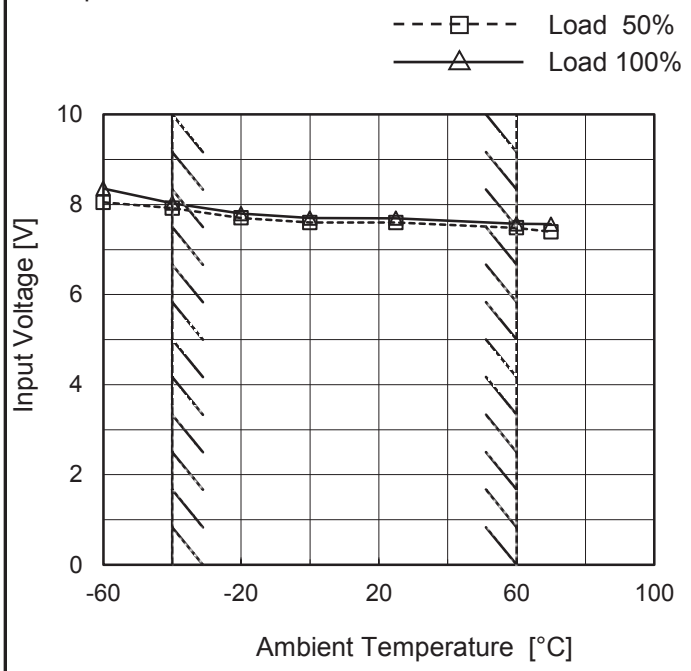
COSEL

Model	MGW101212
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object +12V0.42A

1.Graph

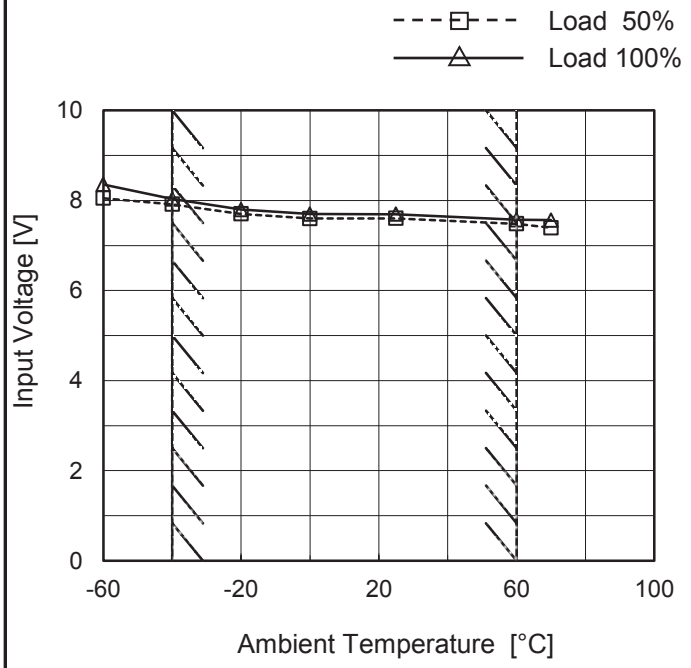


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	8.1	8.4
-40	8.0	8.1
-20	7.7	7.8
0	7.6	7.7
25	7.6	7.7
60	7.5	7.6
70	7.4	7.6
--	-	-
--	-	-
--	-	-
--	-	-

Object -12V0.42A

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	8.1	8.4
-40	8.0	8.1
-20	7.7	7.8
0	7.6	7.7
25	7.6	7.7
60	7.5	7.6
70	7.4	7.6
--	-	-
--	-	-
--	-	-
--	-	-

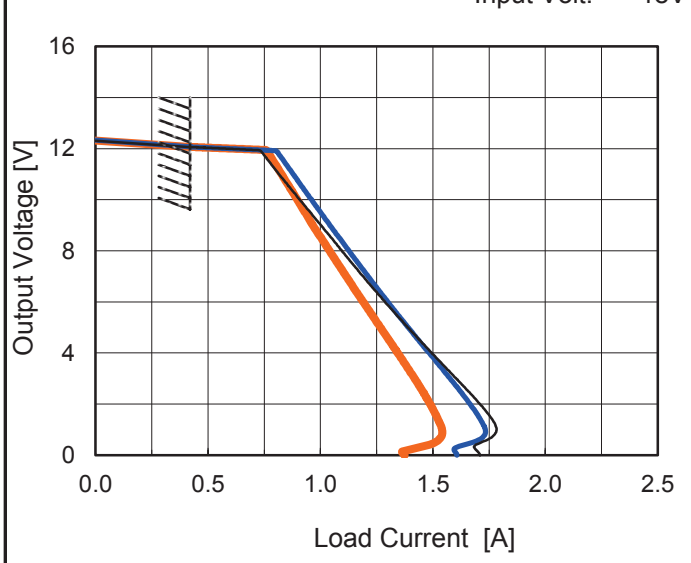
BC-11064

COSEL

Model	MGW101212
Item	Overcurrent Protection
Object	+12V0.42A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



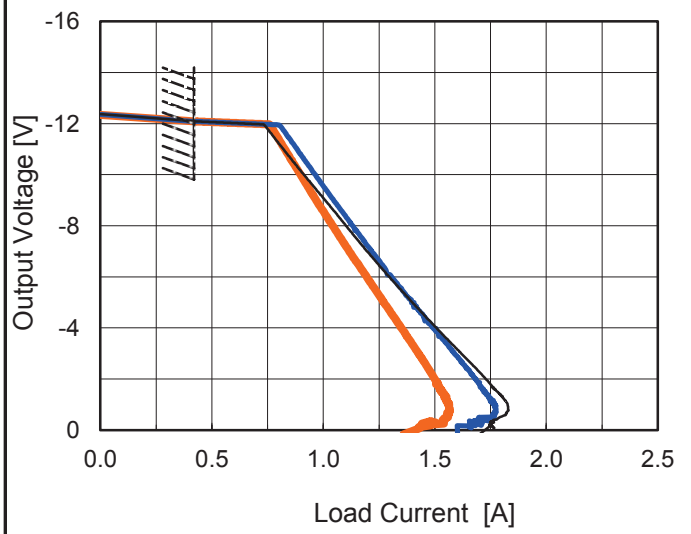
2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
11.4	0.78	0.85	0.80
10.8	0.83	0.89	0.84
9.6	0.94	0.99	0.92
8.4	1.06	1.09	1.01
7.2	1.17	1.19	1.10
6.0	1.29	1.30	1.19
4.8	1.41	1.41	1.28
3.6	1.54	1.52	1.37
2.4	1.67	1.63	1.46
1.2	1.78	1.72	1.53
0.0	1.71	1.61	1.37
--	-	-	-

-12V: Rated Load Current

Object	-12V0.42A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-11.4	0.79	0.85	0.80
-10.8	0.84	0.90	0.84
-9.6	0.95	0.99	0.92
-8.4	1.06	1.09	1.01
-7.2	1.17	1.19	1.10
-6.0	1.29	1.30	1.19
-4.8	1.42	1.41	1.29
-3.6	1.55	1.53	1.38
-2.4	1.69	1.64	1.47
-1.2	1.81	1.75	1.55
0.0	1.70	1.60	1.36
--	-	-	-

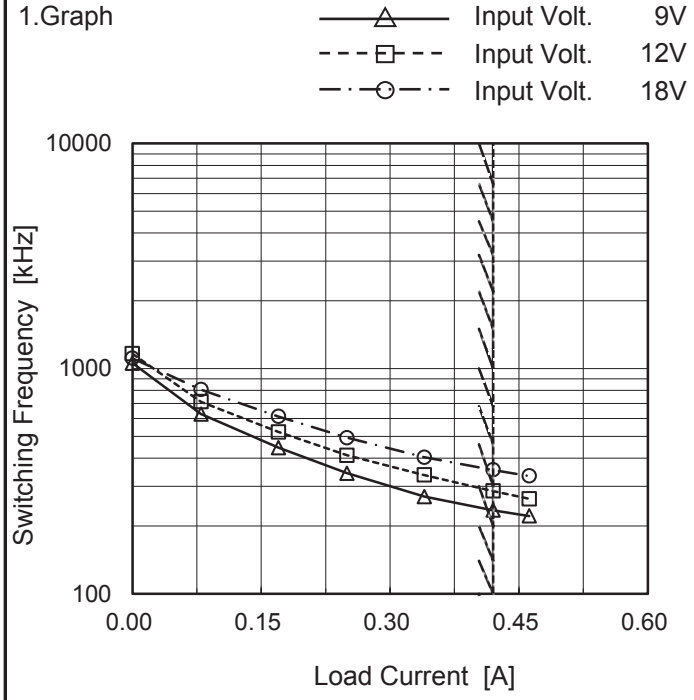
+12V: Rated Load Current

COSEL

Model	MGW101212
Item	Switching Frequency (by Load Current)
Object	+/-12V0.42A

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	1056	1163	1111
0.080	628	713	807
0.170	446	523	613
0.250	343	412	493
0.340	270	337	404
0.420	235	286	355
0.462	222	264	333
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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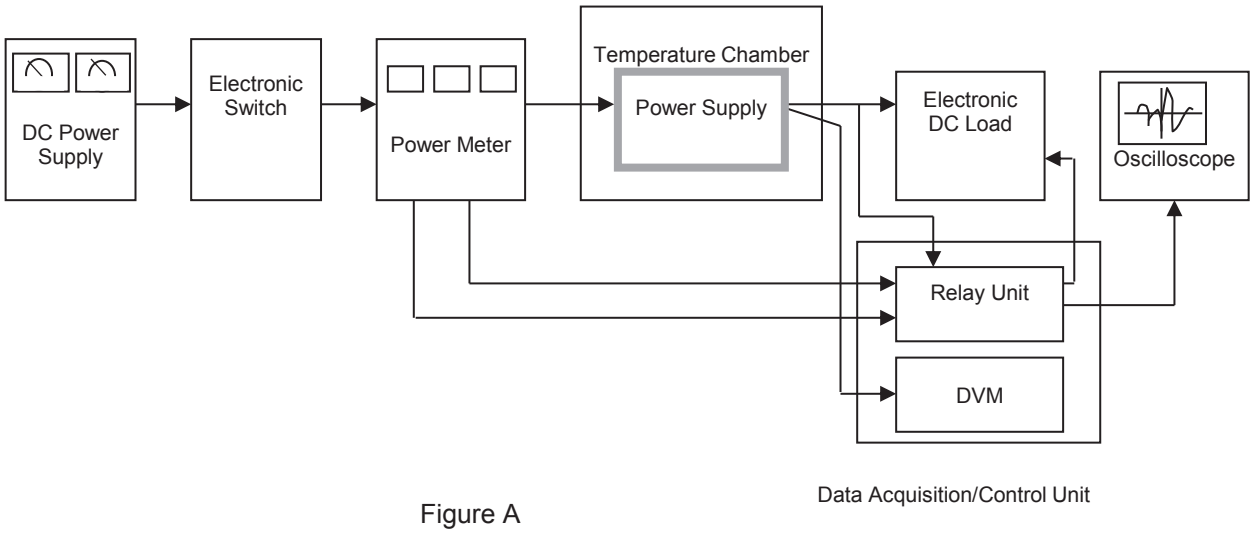

Figure A

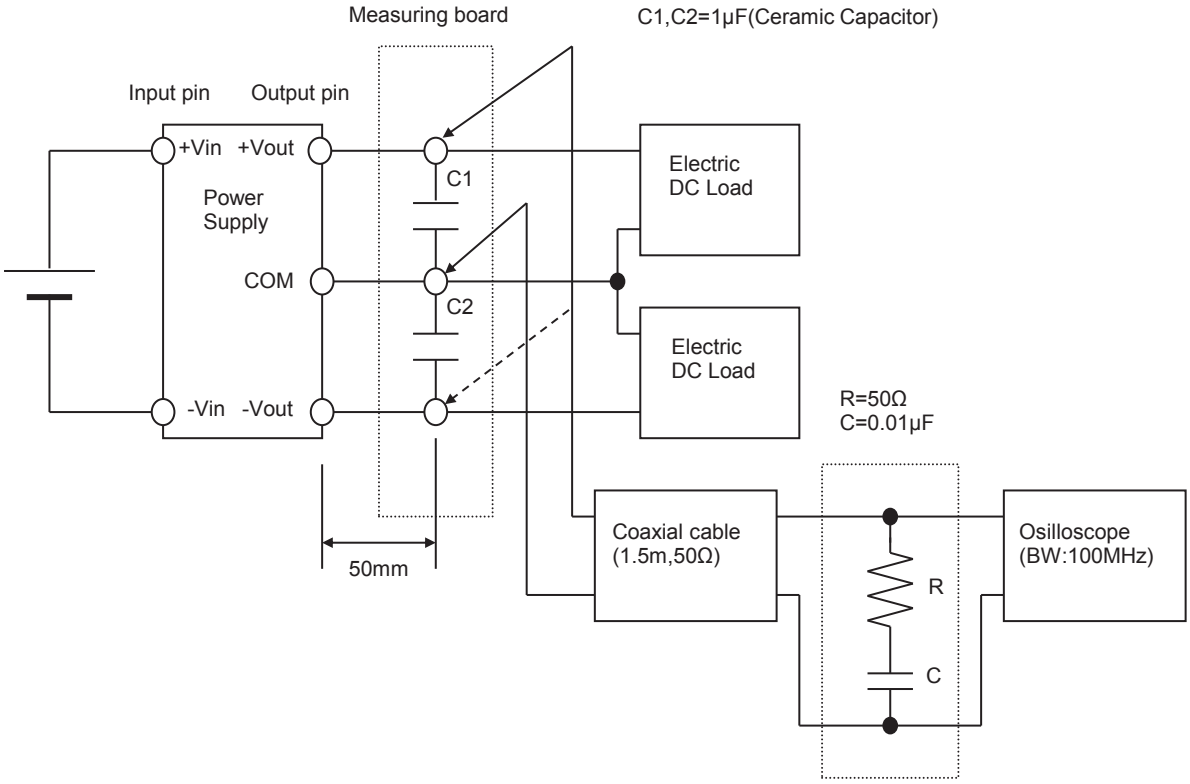

Figure B（Ripple and Ripple noise Characteristic）