COSEL

参考資料

TEST DATA OF MGW101215

Regulated DC Power Supply
November 4, 2016

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COSEL CO.,LTD.

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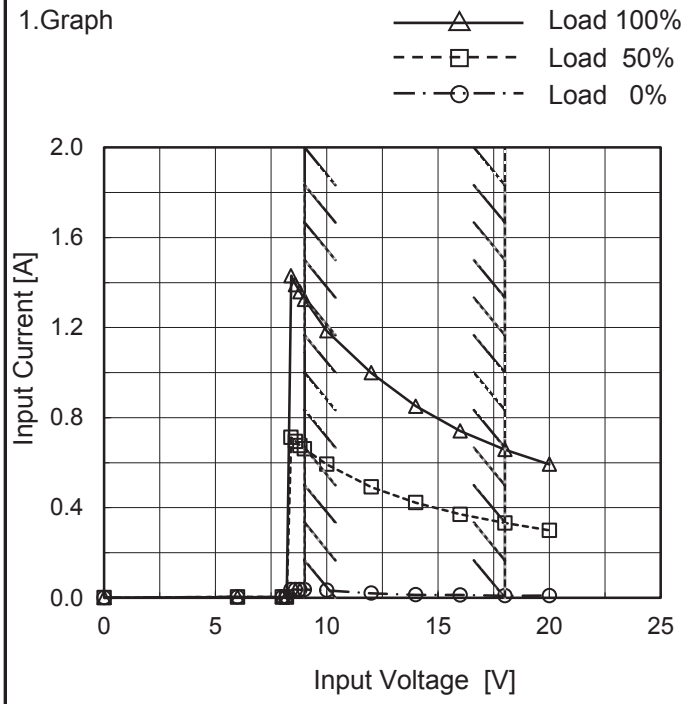
COSEL

Model	MGW101215
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	0.004	0.003	0.003
8.0	0.003	0.003	0.003
8.2	0.004	0.003	0.003
8.4	0.037	0.712	1.430
8.6	0.036	0.694	1.390
8.8	0.035	0.676	1.359
9.0	0.036	0.661	1.325
10.0	0.033	0.592	1.185
12.0	0.020	0.492	0.999
14.0	0.013	0.422	0.850
16.0	0.012	0.371	0.741
18.0	0.009	0.332	0.658
20.0	0.009	0.299	0.593
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

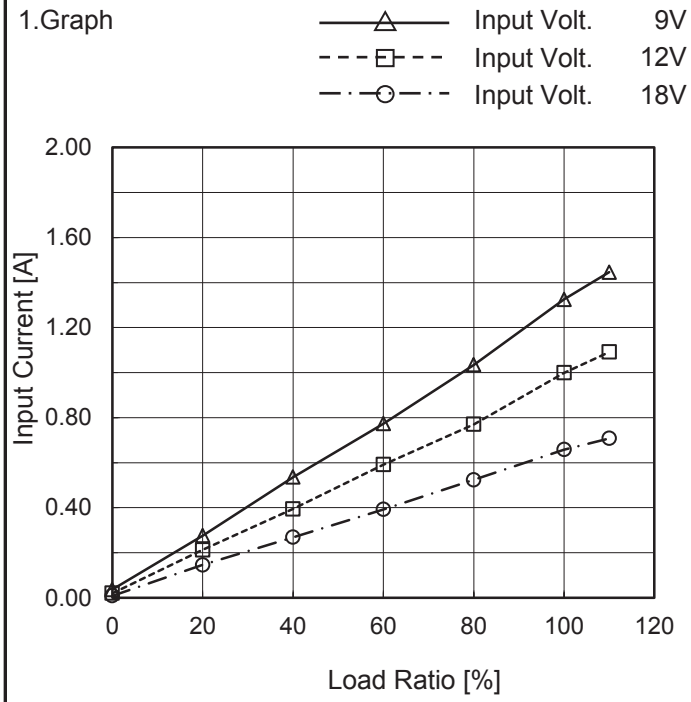
BC-11065

COSEL

Model	MGW101215
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	0.036	0.020	0.009
20	0.276	0.212	0.146
40	0.536	0.394	0.269
60	0.773	0.592	0.392
80	1.035	0.770	0.524
100	1.325	0.999	0.658
110	1.446	1.091	0.708
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

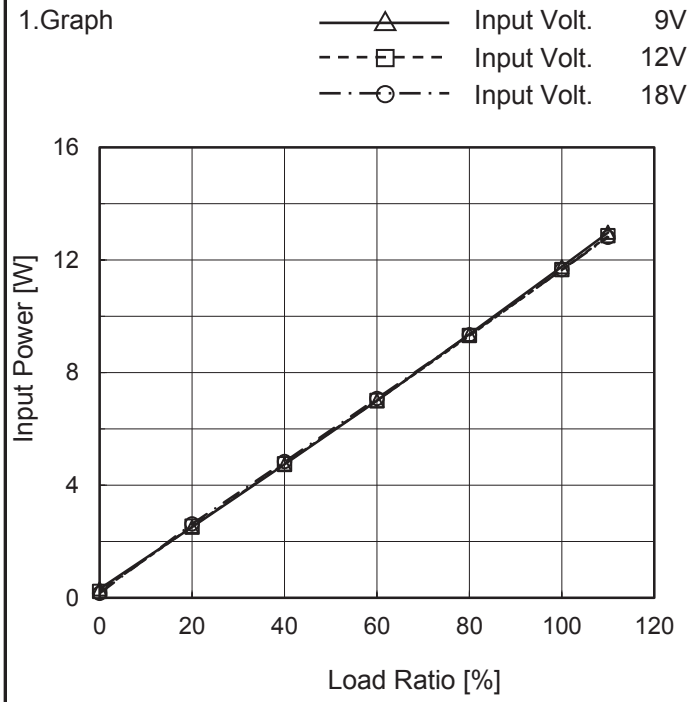
BC-11065

COSEL

Model	MGW101215
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	0.31	0.22	0.15
20	2.51	2.54	2.62
40	4.73	4.76	4.83
60	7.00	7.01	7.08
80	9.36	9.31	9.34
100	11.76	11.65	11.65
110	12.98	12.86	12.81
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

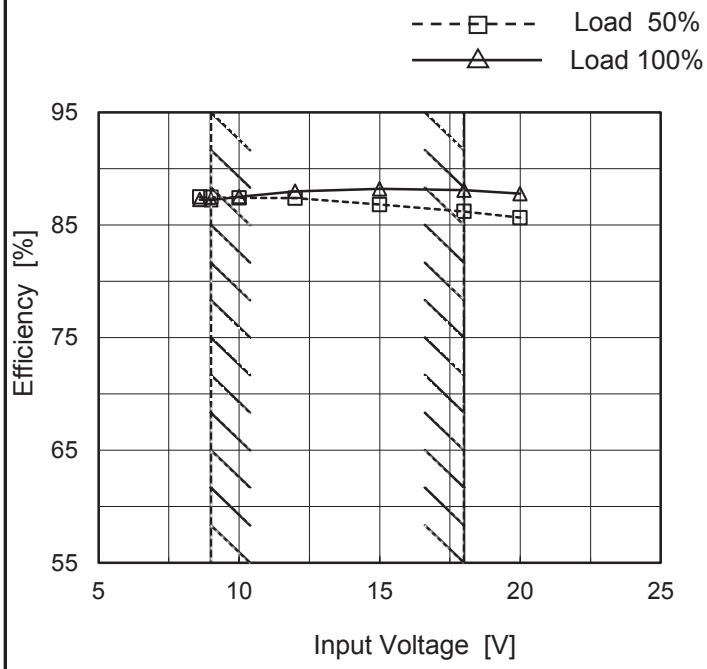
BC-11065

COSEL

Model	MGW101215
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	87.5	87.3
9.0	87.5	87.2
10.0	87.4	87.5
12.0	87.4	88.0
15.0	86.8	88.2
18.0	86.2	88.1
20.0	85.7	87.8
--	-	-
--	-	-

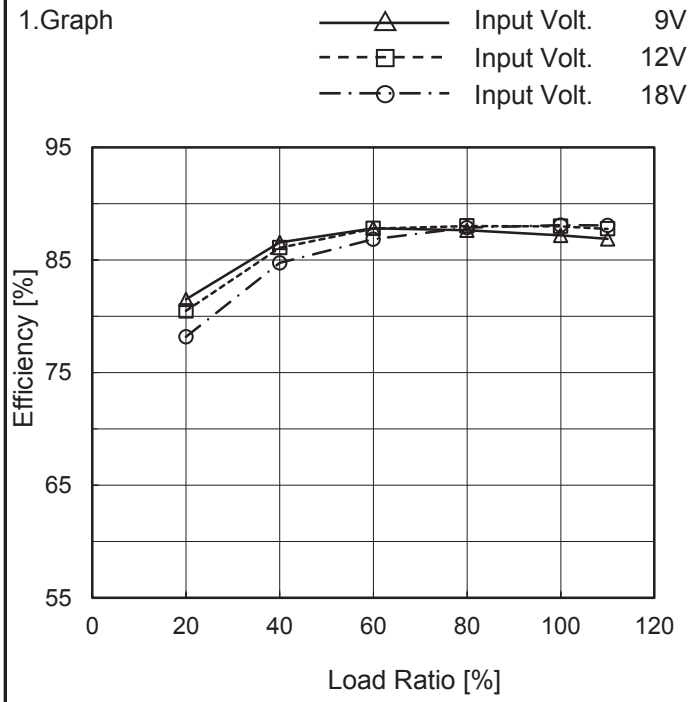
BC-11065

COSEL

Model	MGW101215
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	81.5	80.5	78.2
40	86.6	86.1	84.7
60	87.8	87.8	86.8
80	87.6	88.0	87.9
100	87.2	88.0	88.1
110	86.9	87.8	88.1
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

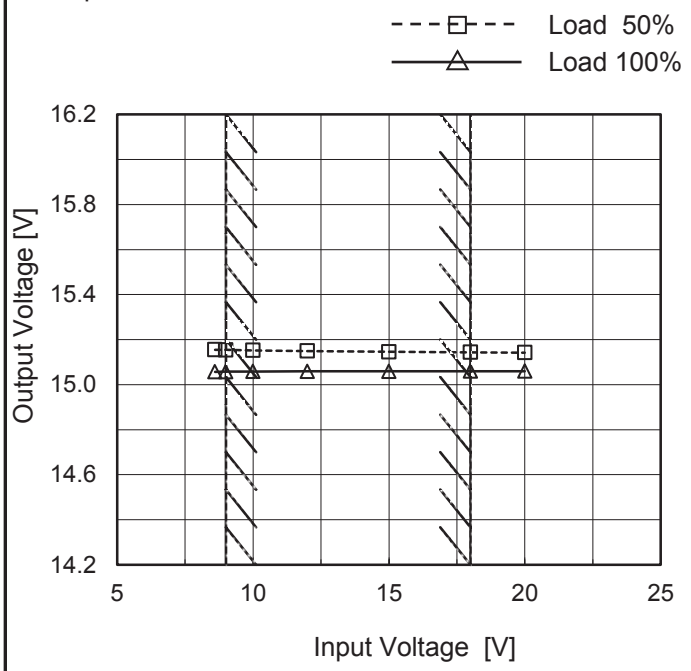
BC-11065

COSEL

Model	MGW101215
Item	Line Regulation
Object	+15V0.34A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



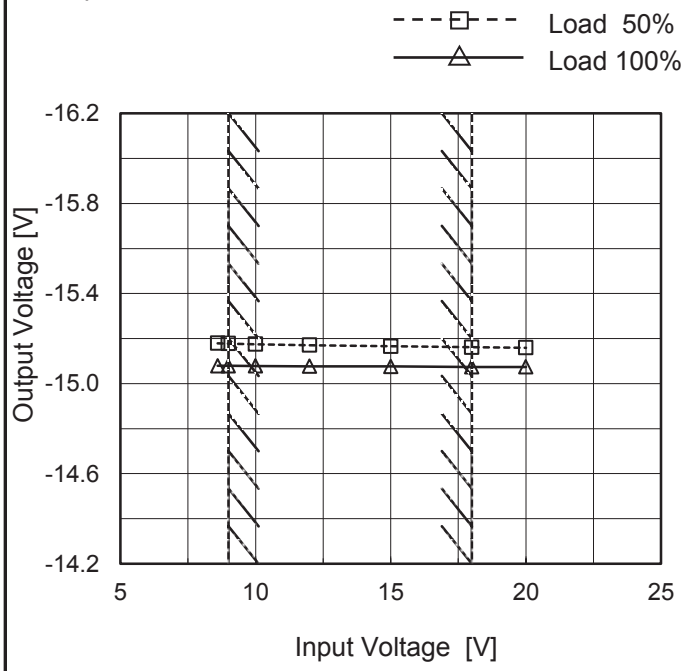
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8.6	15.155	15.057
9.0	15.154	15.058
10.0	15.153	15.059
12.0	15.150	15.059
15.0	15.146	15.060
18.0	15.143	15.060
20.0	15.142	15.060
--	-	-
--	-	-

-15V: Rated Load Current

Object	-15V0.34A

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	-15.179	-15.079
9.0	-15.178	-15.079
10.0	-15.175	-15.078
12.0	-15.170	-15.077
15.0	-15.166	-15.076
18.0	-15.162	-15.074
20.0	-15.160	-15.074
--	-	-
--	-	-

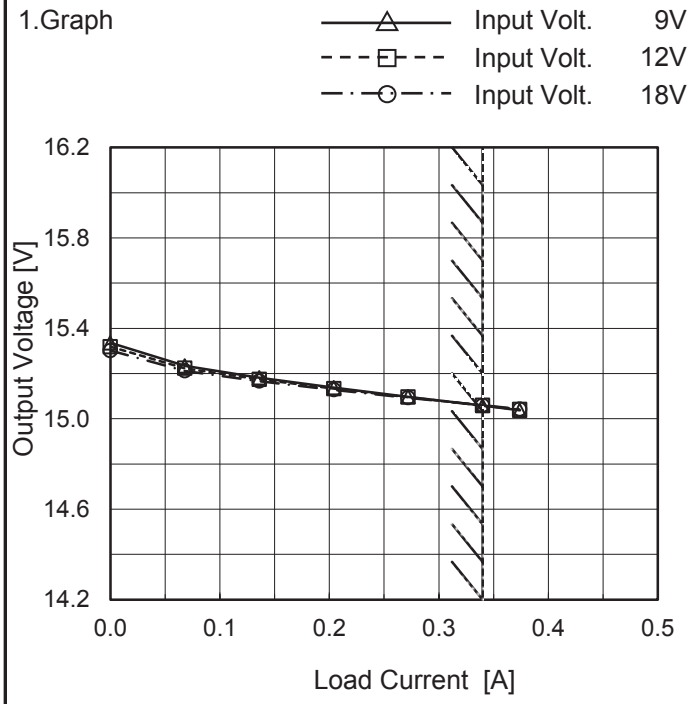
+15V: Rated Load Current

COSEL

Model	MGW101215
Item	Load Regulation
Object	+15V0.34A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



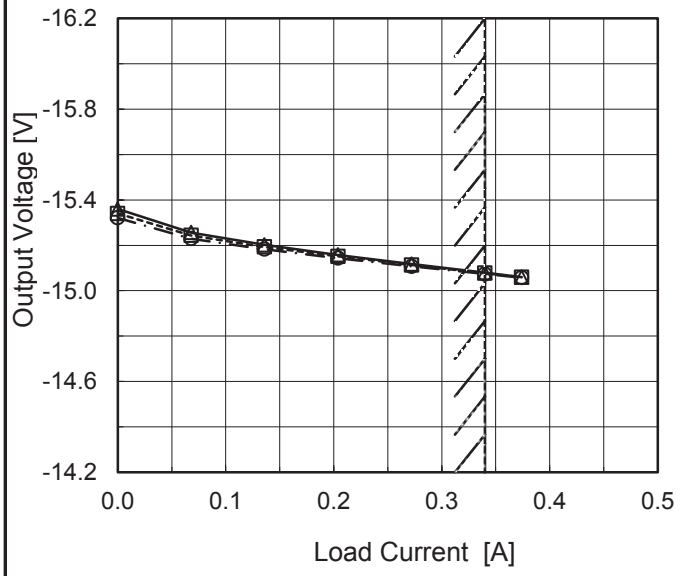
2.Values

Load Current [A]	Output Voltage [V] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	15.336	15.318	15.302
0.068	15.234	15.223	15.212
0.136	15.181	15.174	15.167
0.204	15.138	15.134	15.129
0.272	15.097	15.096	15.093
0.340	15.058	15.059	15.060
0.374	15.037	15.041	15.043
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

-15V: Rated Load Current

Object	-15V0.34A

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	-15.360	-15.340	-15.321
0.068	-15.257	-15.243	-15.230
0.136	-15.202	-15.193	-15.183
0.204	-15.157	-15.151	-15.143
0.272	-15.117	-15.113	-15.108
0.340	-15.079	-15.077	-15.074
0.374	-15.060	-15.060	-15.058
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

+15V: Rated Load Current

BC-11065

COSEL

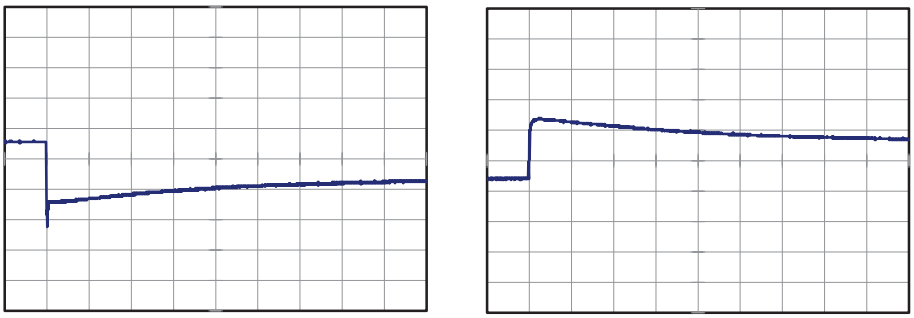
Model	MGW101215	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+15V0.34A	

Input Volt. 12 V

-15V:rated load current.

Cycle 100 ms

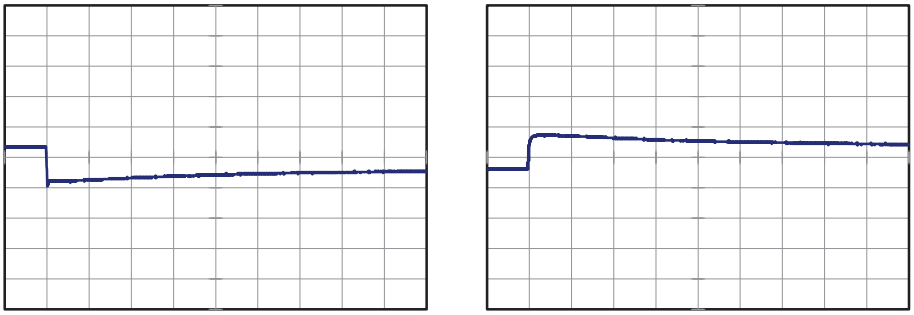
Min.Load (0A)←→
Load 100% (0.34A)



200 mV/div

2 ms/div 2 ms/div

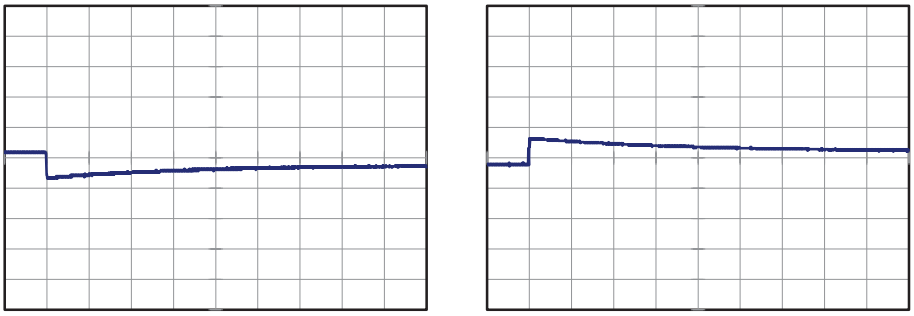
Min.Load (0A)←→
Load 50% (0.17A)



200 mV/div

2 ms/div 2 ms/div

Load 50% (0.17A)←→
Load 100% (0.34A)



200 mV/div

2 ms/div 2 ms/div

COSEL

Model	MGW101215
Item	Dynamic Load Response
Object	-15V0.34A

Temperature 25°C
Testing Circuitry Figure A

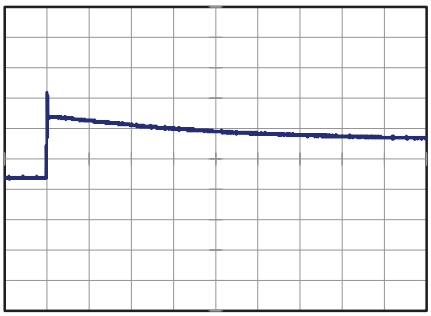
Input Volt. 12 V
+15V:rated load current.
Cycle 100 ms

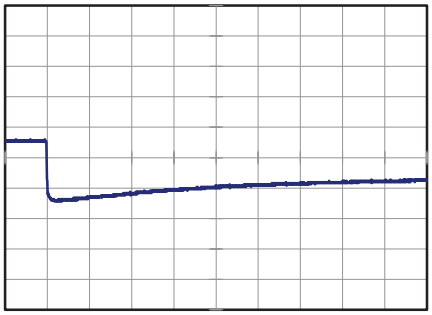
t1,t2 = 100 μ s

Load Current

t1 t2

Min.Load (0A)←→
Load 100% (0.34A)

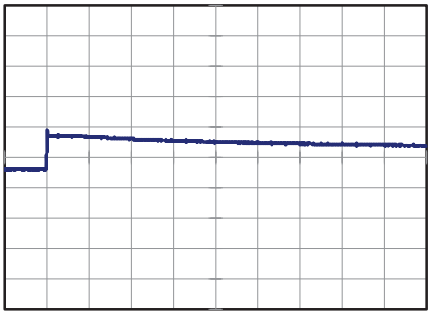


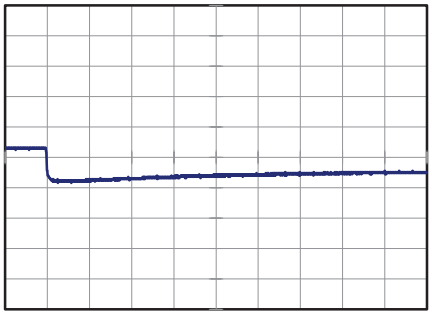


200 mV/div

2 ms/div 2 ms/div

Min.Load (0A)←→
Load 50% (0.17A)

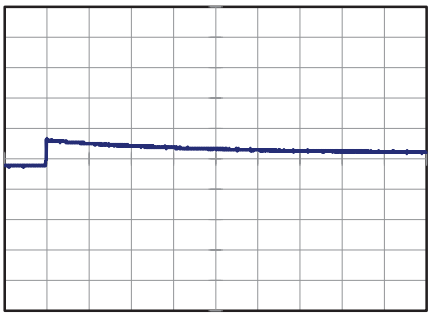


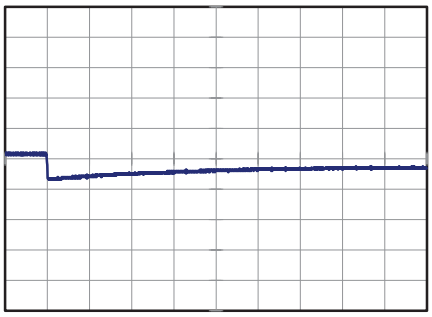


200 mV/div

2 ms/div 2 ms/div

Load 50% (0.17A)←→
Load 100% (0.34A)





200 mV/div

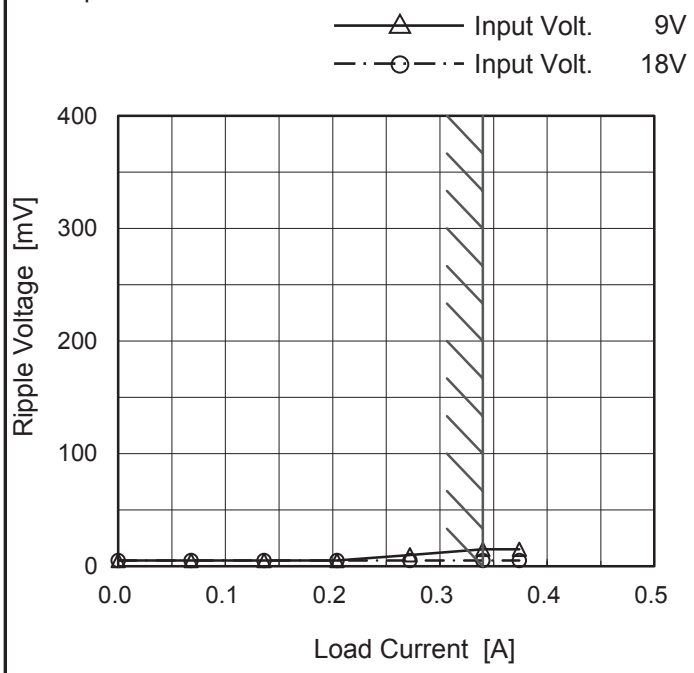
2 ms/div 2 ms/div

COSEL

Model	MGW101215
Item	Ripple Voltage (by Load Current)
Object	+15V0.34A

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]

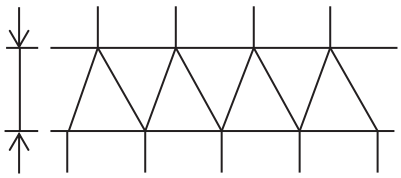


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	5	5
0.068	5	5
0.136	5	5
0.204	5	5
0.272	10	5
0.340	15	5
0.374	15	5
--	-	-
--	-	-
--	-	-
--	-	-

-15V: Rated Load Current

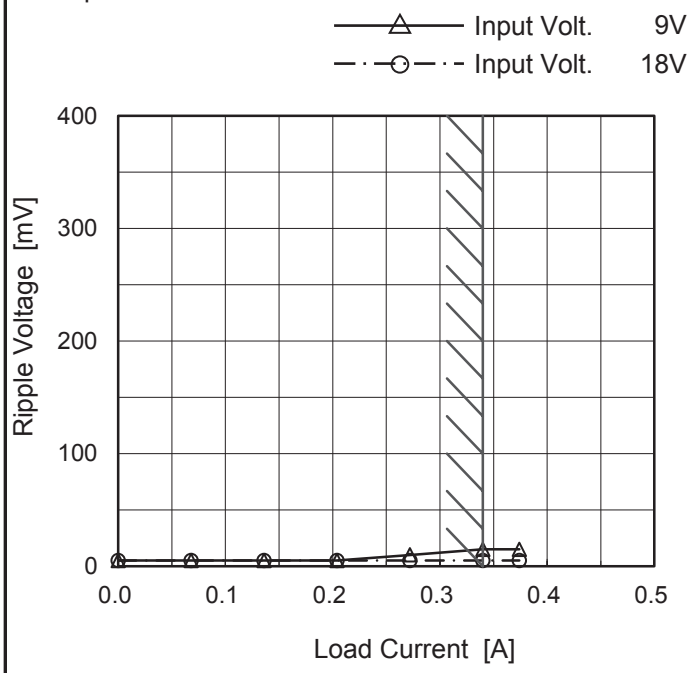
BC-11065

COSEL

Model	MGW101215
Item	Ripple Voltage (by Load Current)
Object	-15V0.34A

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]

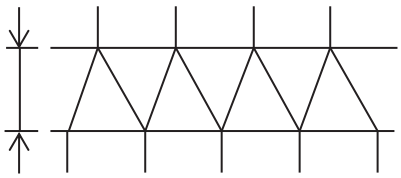


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	5	5
0.068	5	5
0.136	5	5
0.204	5	5
0.272	10	5
0.340	15	5
0.374	15	5
--	-	-
--	-	-
--	-	-
--	-	-

+15V: Rated Load Current

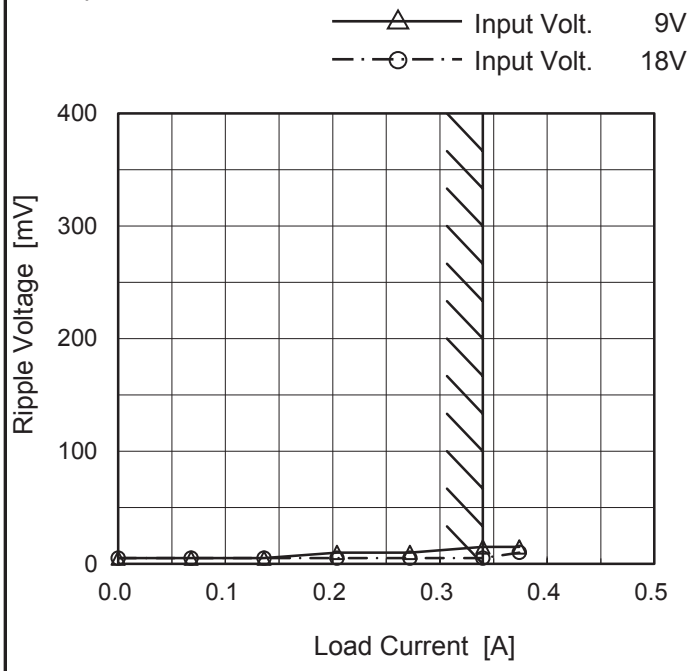
BC-11065

COSEL

Model	MGW101215
Item	Ripple-Noise
Object	+15V0.34A

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]

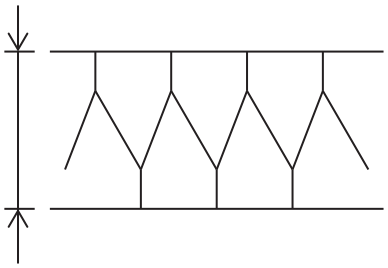


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	5	5
0.068	5	5
0.136	5	5
0.204	10	5
0.272	10	5
0.340	15	5
0.374	15	10
--	-	-
--	-	-
--	-	-
--	-	-

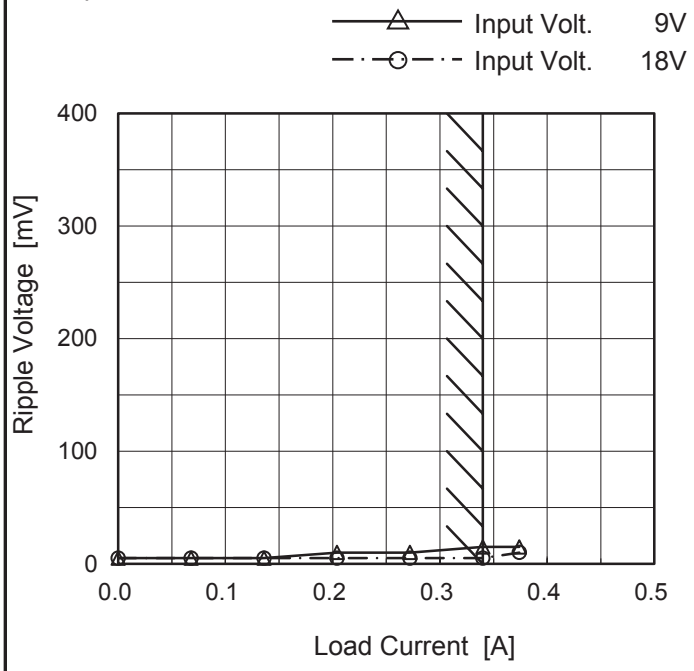
-15V: Rated Load Current

COSEL

Model	MGW101215
Item	Ripple-Noise
Object	-15V0.34A

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]

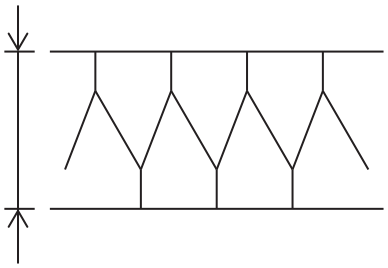


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	5	5
0.068	5	5
0.136	5	5
0.204	10	5
0.272	10	5
0.340	15	5
0.374	15	10
--	-	-
--	-	-
--	-	-
--	-	-

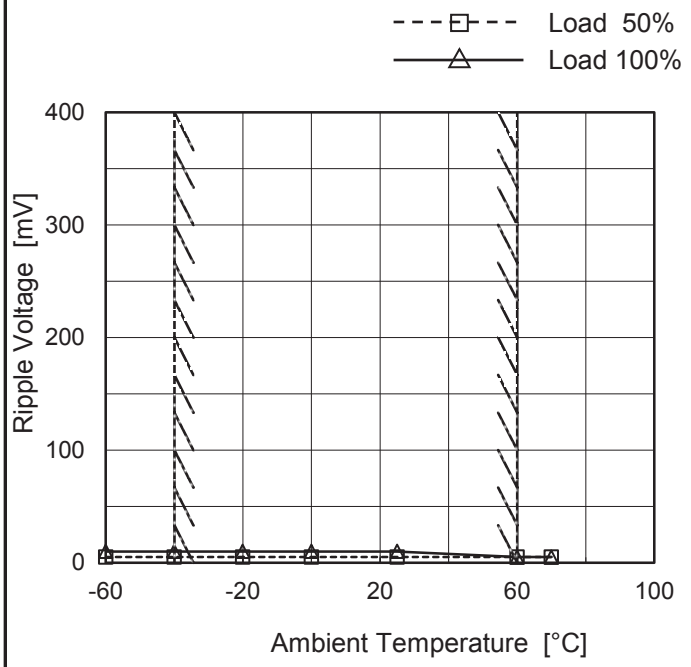
+15V: Rated Load Current

COSEL

Model	MGW101215
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.34A

Testing Circuitry Figure B

1.Graph



Input Volt. 12V

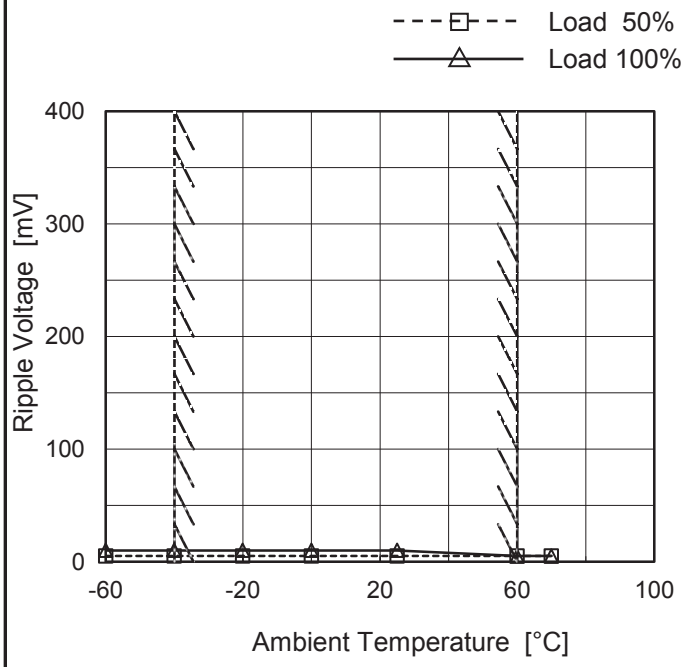
2.Values

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

-15V: Rated Load Current

Object	-15V0.34A

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	10
0	5	10
25	5	10
60	5	5
70	5	5
--	-	-
--	-	-
--	-	-
--	-	-

+15V: Rated Load Current

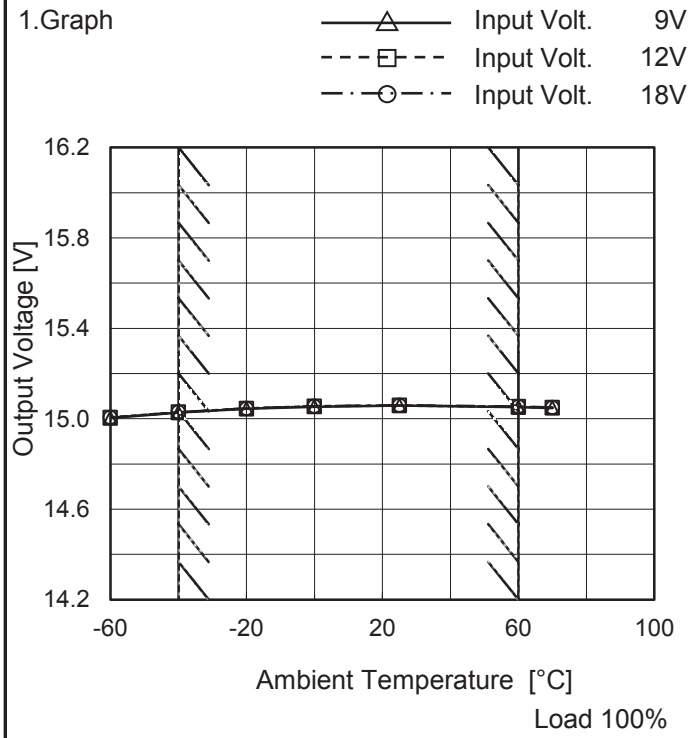
BC-11065

COSEL

Model	MGW101215
Item	Ambient Temperature Drift
Object	+15V0.34A

Testing Circuitry Figure A

1.Graph



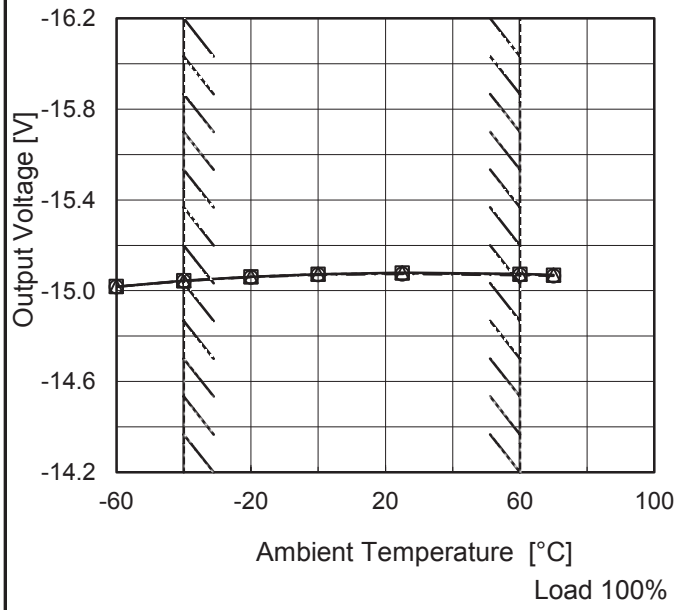
2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	15.003	15.006	15.005
-40	15.027	15.030	15.029
-20	15.044	15.046	15.046
0	15.054	15.056	15.056
25	15.058	15.059	15.060
60	15.051	15.054	15.054
70	15.048	15.050	15.050
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

-15V: Rated Load Current

Object	-15V0.34A

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	-15.018	-15.018	-15.017
-40	-15.044	-15.044	-15.042
-20	-15.062	-15.061	-15.059
0	-15.073	-15.072	-15.070
25	-15.079	-15.077	-15.074
60	-15.074	-15.072	-15.069
70	-15.070	-15.068	-15.065
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

+15V: Rated Load Current

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COSEL

Model	MGW101215	
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 - 0.34A (AVR 2) : 0 - 0.34A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

* Output Voltage Accuracy (Ratio) = $\frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$

2.Values

Object	+15V0.34A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	60	9	0	15.344	±293	±2.0
Minimum Voltage	60	9	0.34	14.759		

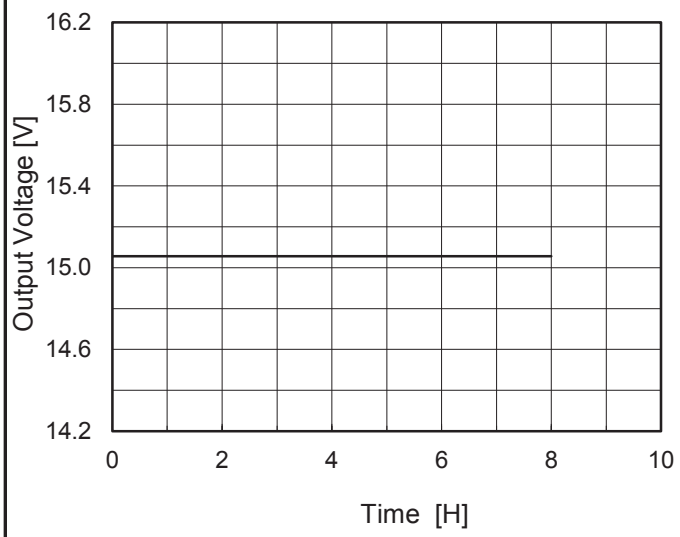
Object	-15V0.34A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	60	9	0	-15.368	±293	±2.0
Minimum Voltage	60	9	0.34	-14.783		

COSEL

Model	MGW101215
Item	Time Lapse Drift
Object	+15V0.34A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 12V
Load 100%

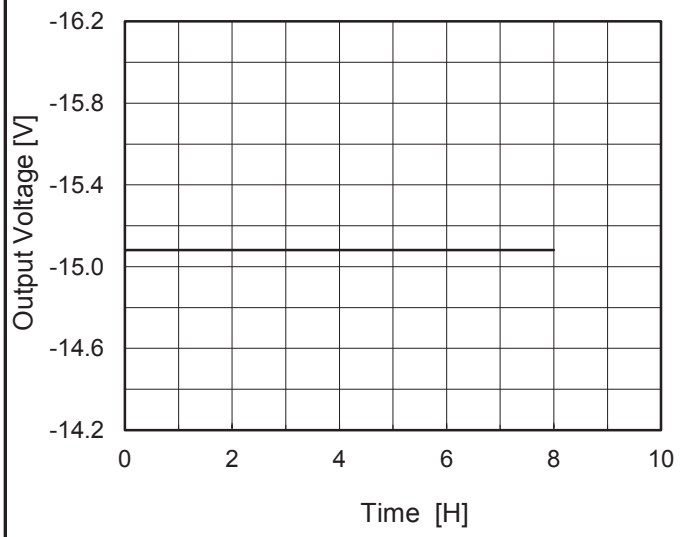
2.Values

Time since start [H]	Output Voltage [V]
0.0	15.055
0.5	15.056
1.0	15.056
2.0	15.056
3.0	15.056
4.0	15.056
5.0	15.056
6.0	15.056
7.0	15.056
8.0	15.056

-15V: Rated Load Current

Object	-15V0.34A

1.Graph



Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-15.079
0.5	-15.081
1.0	-15.081
2.0	-15.081
3.0	-15.081
4.0	-15.081
5.0	-15.081
6.0	-15.081
7.0	-15.081
8.0	-15.081

+15V: Rated Load Current

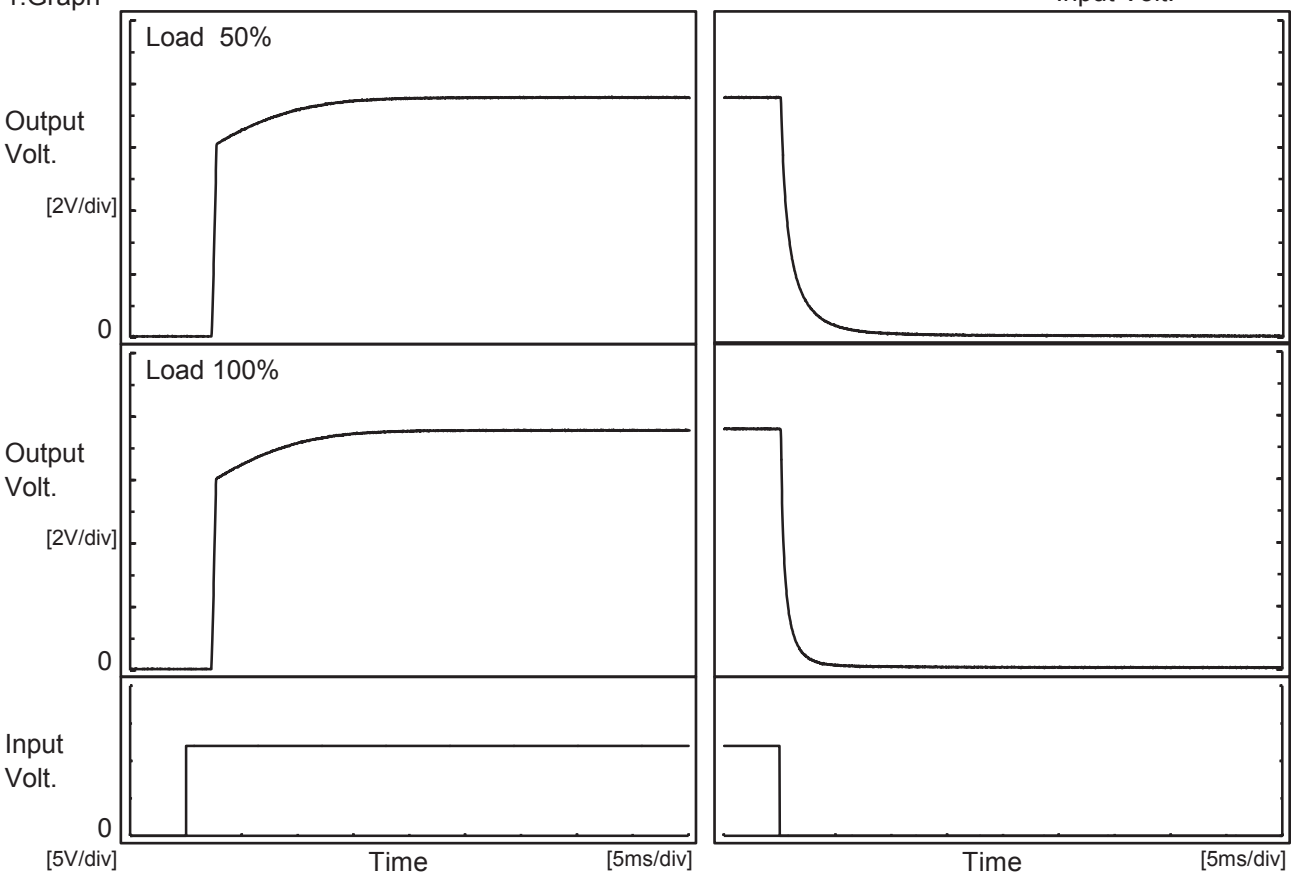
COSEL

Model	MGW101215
Item	Rise and Fall Time
Object	+15V0.34A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

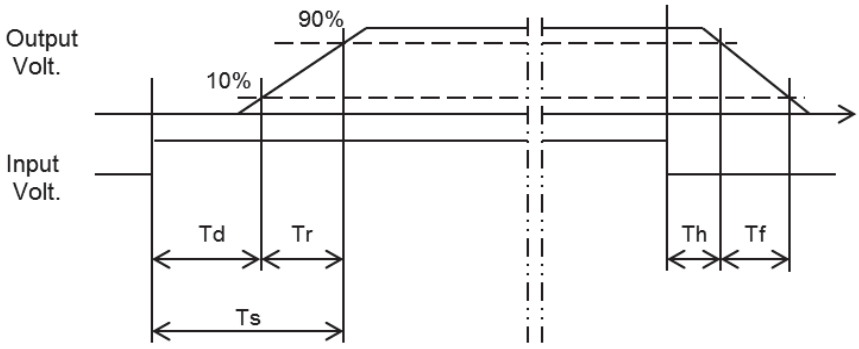
Input Volt. 12 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.4	4.2	6.6	0.2	2.9
100 %	2.4	4.5	6.9	0.1	1.5



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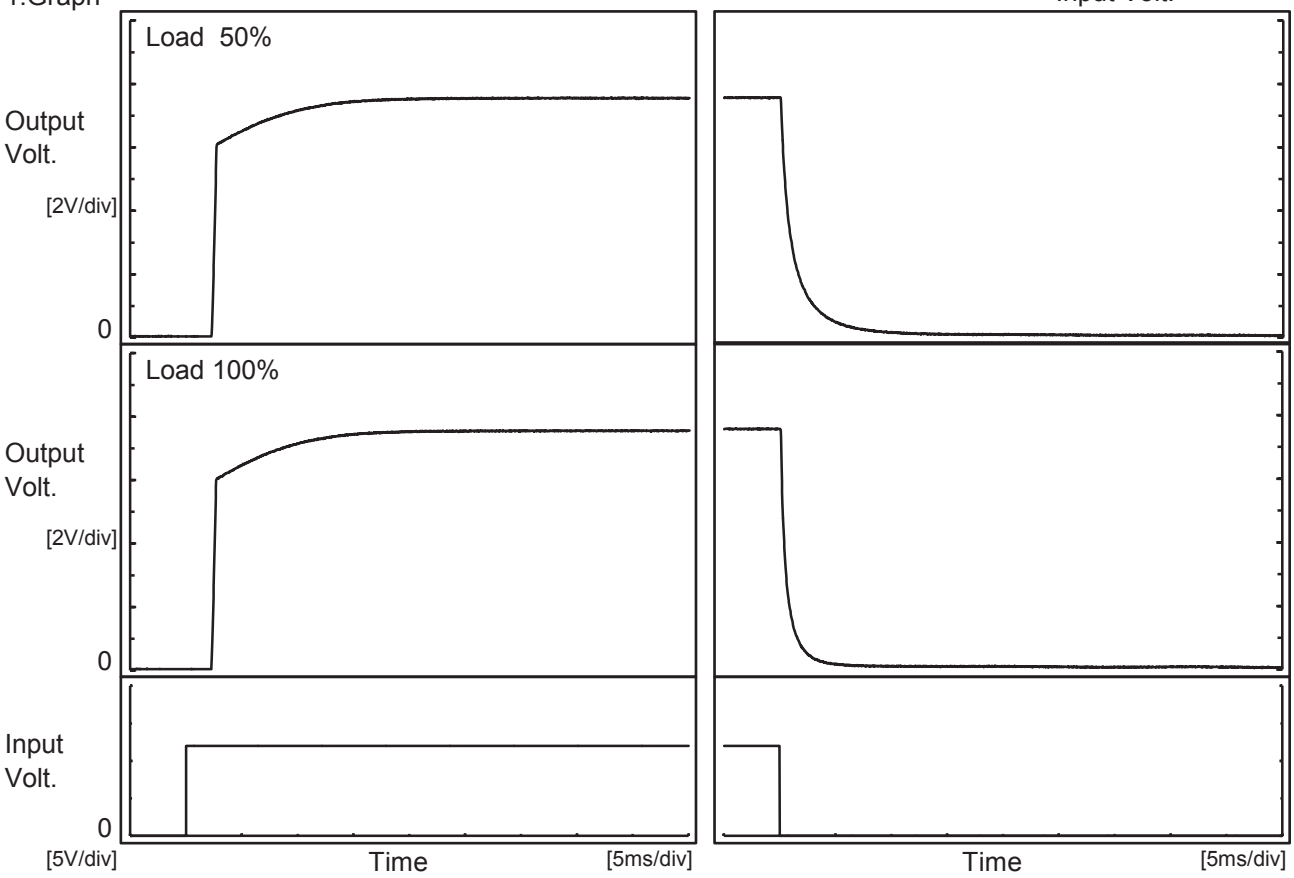
COSEL

Model	MGW101215
Item	Rise and Fall Time
Object	-15V0.34A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

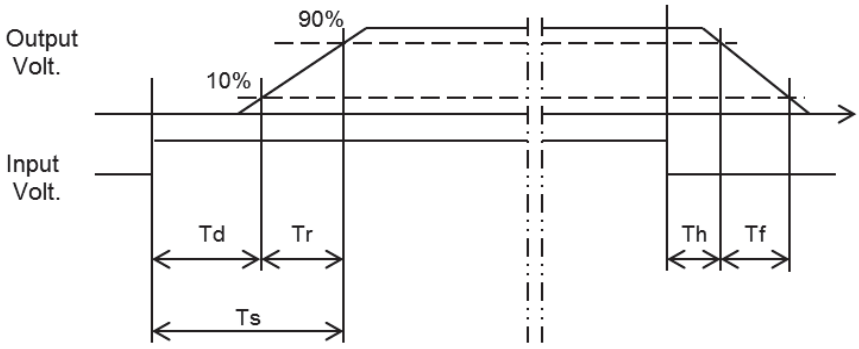
Input Volt. 12 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.4	4.4	6.8	0.2	3.5
100 %	2.4	4.5	6.9	0.1	1.7



BC-11065

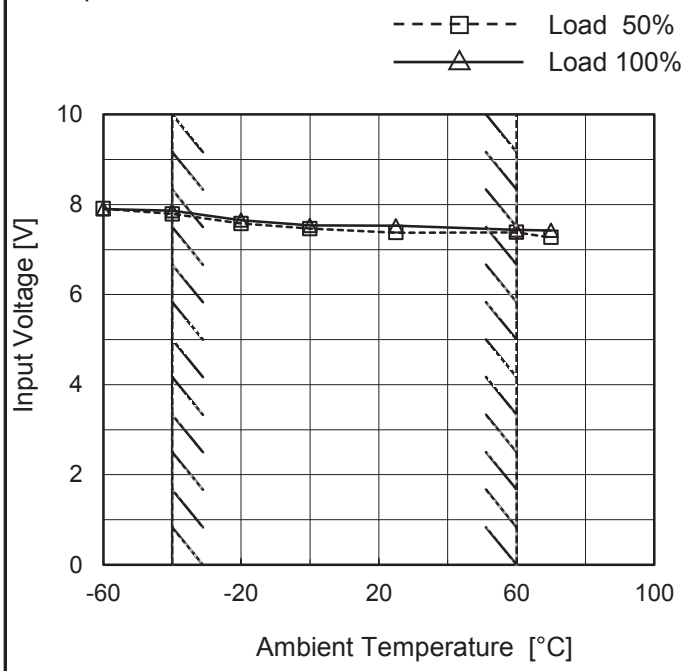
COSEL

Model	MGW101215
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object +15V0.34A

1.Graph

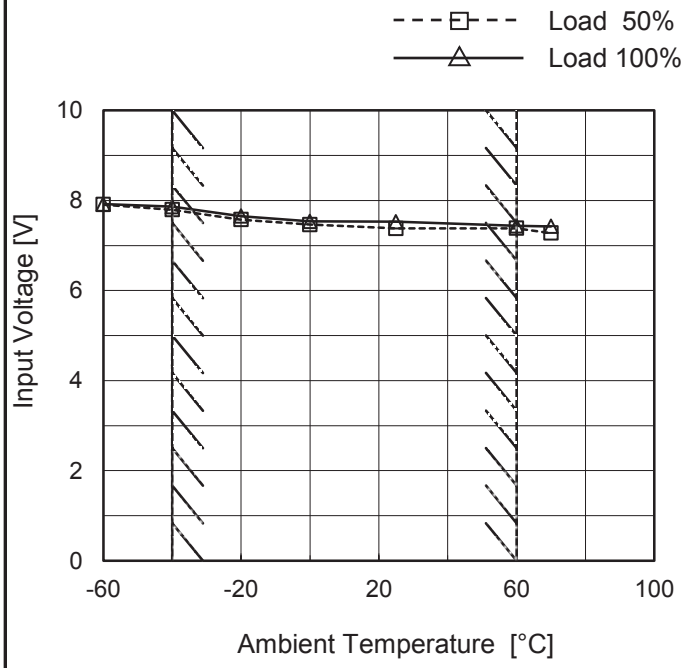


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	8.0	7.9
-40	7.8	7.9
-20	7.6	7.7
0	7.5	7.6
25	7.4	7.6
60	7.4	7.5
70	7.3	7.5
--	-	-
--	-	-
--	-	-
--	-	-

Object -15V0.34A

1.Graph



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

2.Values

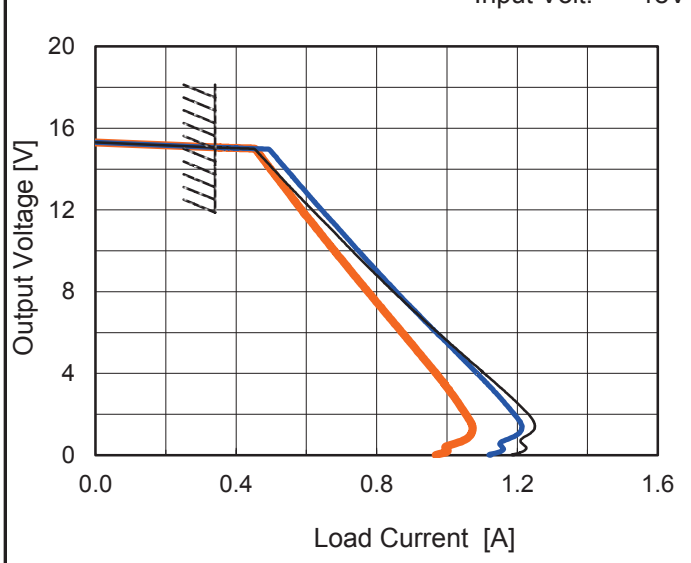
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	7.9	8.0
-40	7.8	7.9
-20	7.6	7.7
0	7.5	7.6
25	7.4	7.6
60	7.4	7.5
70	7.3	7.5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGW101215
Item	Overcurrent Protection
Object	+15V0.34A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



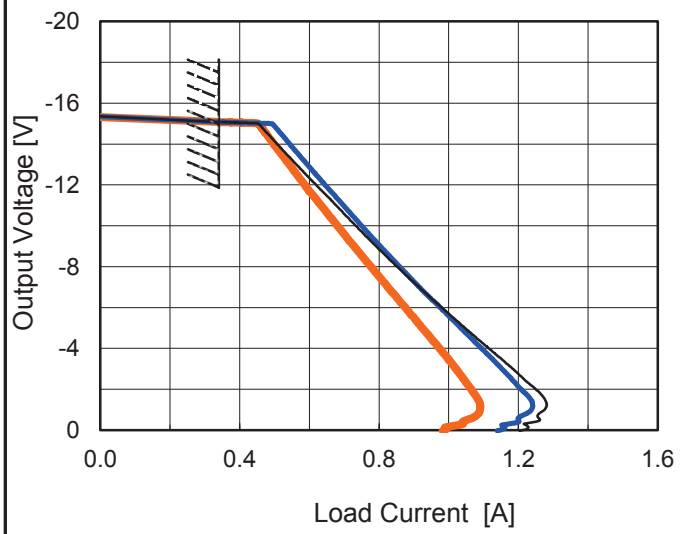
2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
14.25	0.49	0.53	0.49
13.50	0.53	0.57	0.52
12.00	0.62	0.64	0.59
10.50	0.70	0.72	0.66
9.00	0.79	0.80	0.73
7.50	0.88	0.88	0.80
6.00	0.97	0.97	0.87
4.50	1.07	1.06	0.94
3.00	1.17	1.14	1.01
1.50	1.25	1.21	1.07
0.00	1.19	1.13	0.97
--	-	-	-

-15V: Rated Load Current

Object	-15V0.34A

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]
-14.25	0.49	0.53	0.49
-13.50	0.53	0.57	0.52
-12.00	0.62	0.64	0.59
-10.50	0.70	0.72	0.66
-9.00	0.79	0.80	0.73
-7.50	0.88	0.89	0.80
-6.00	0.98	0.98	0.87
-4.50	1.08	1.06	0.95
-3.00	1.18	1.15	1.02
-1.50	1.28	1.24	1.08
0.00	1.20	1.14	0.98
--	-	-	-

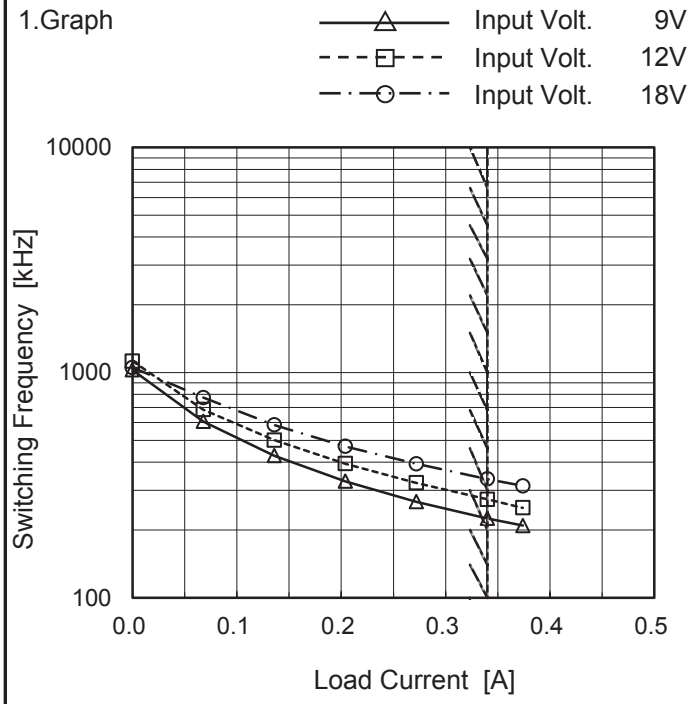
+15V: Rated Load Current

COSEL

Model	MGW101215
Item	Switching Frequency (by Load Current)
Object	+/-15V0.34A

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	1028	1124	1053
0.068	607	685	774
0.136	428	502	586
0.204	329	394	471
0.272	267	324	393
0.340	225	273	337
0.374	209	251	314
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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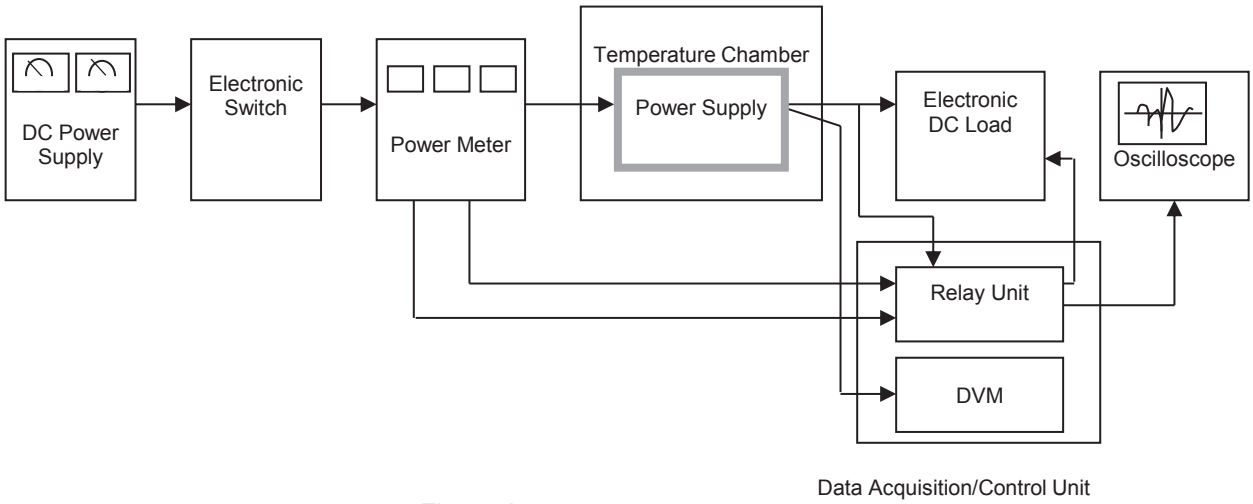

Figure A

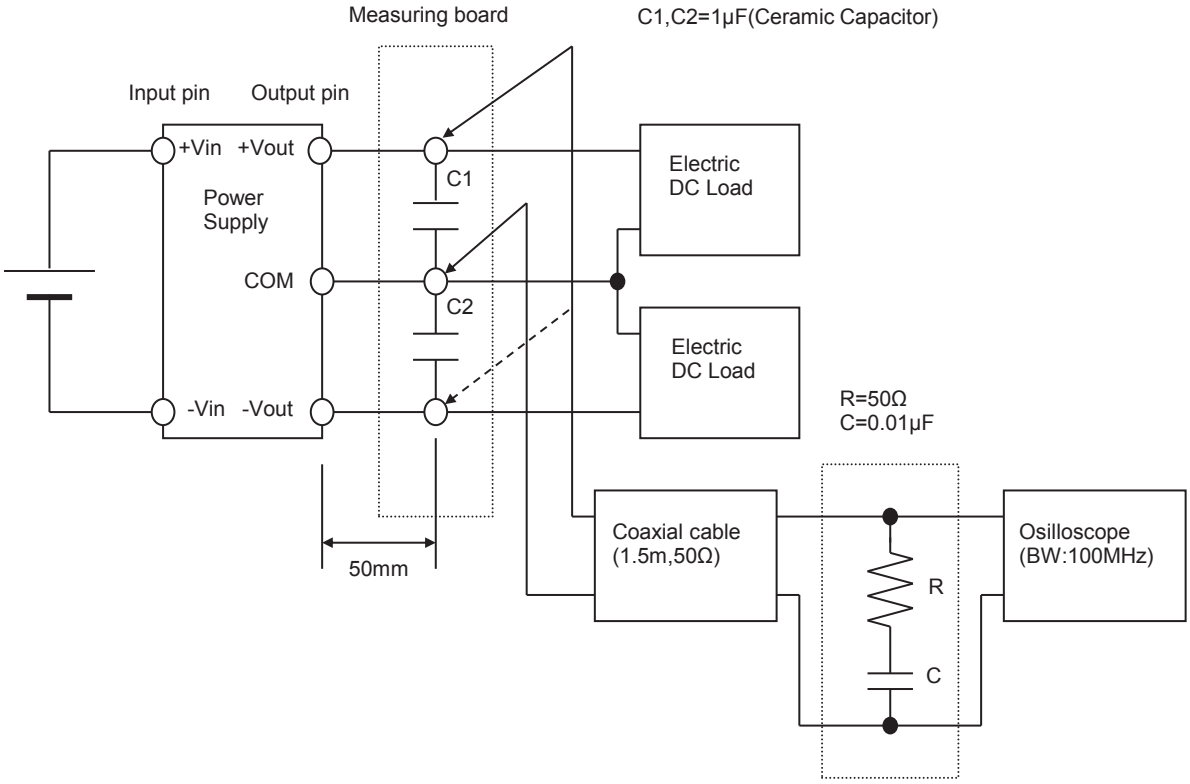

Figure B（Ripple and Ripple noise Characteristic）