COSEL

参考資料

TEST DATA OF MGW301212

Regulated DC Power Supply
December 4, 2010

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COSEL CO.,LTD.

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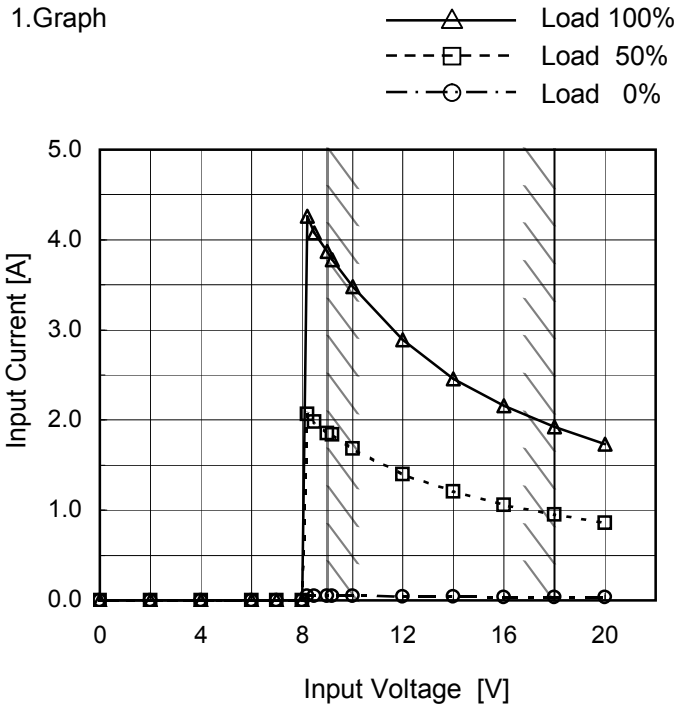
Model	MGW301212
Item	Input Current (by Input Voltage)
Object	――――――――

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
2.0	0.000	0.000	0.000
4.0	0.000	0.000	0.000
6.0	0.000	0.000	0.000
7.0	0.002	0.002	0.002
8.0	0.002	0.002	0.002
8.2	0.047	2.066	4.260
8.5	0.047	1.980	4.078
9.0	0.047	1.857	3.870
9.2	0.047	1.836	3.776
10.0	0.047	1.682	3.482
12.0	0.046	1.398	2.890
14.0	0.045	1.208	2.460
16.0	0.039	1.059	2.160
18.0	0.036	0.950	1.928
20.0	0.034	0.858	1.732
--	-	-	-
--	-	-	-

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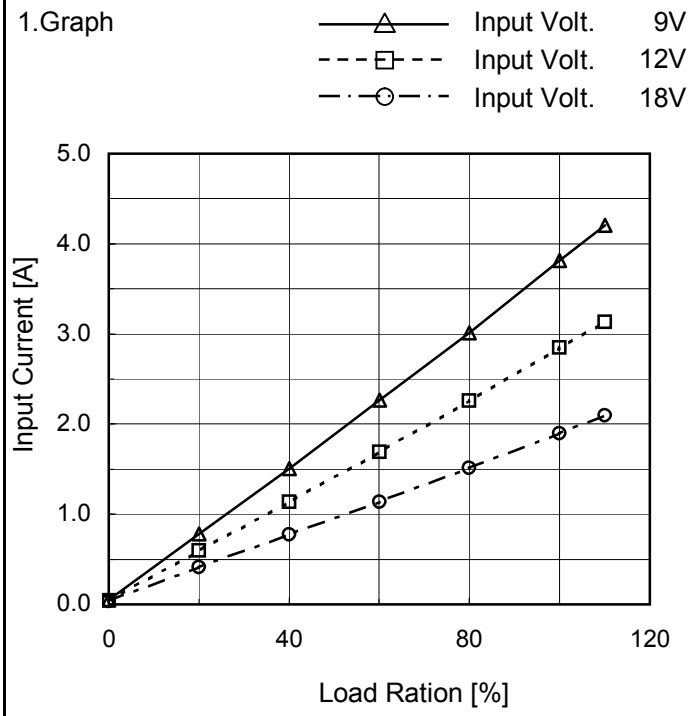
Model	MGW301212
Item	Input Current (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

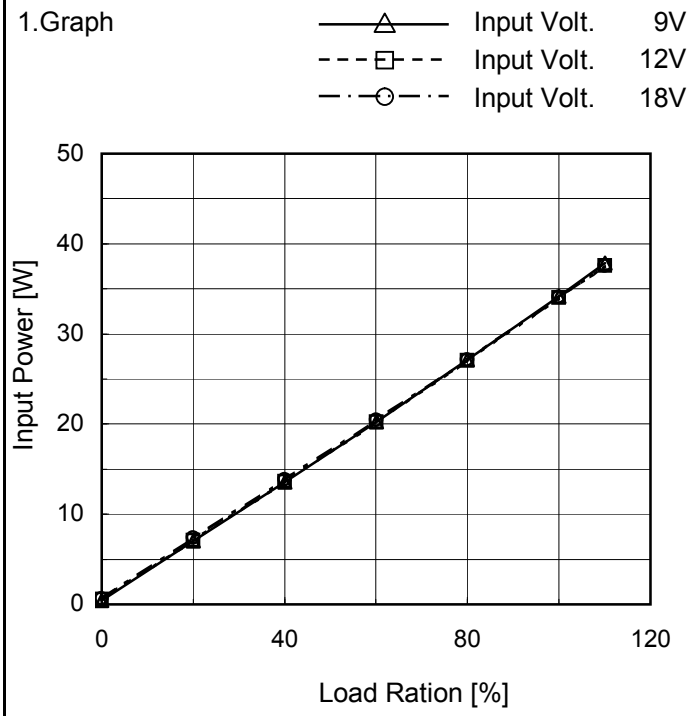
Load Ration [%]	Input Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.047	0.045	0.037
20	0.781	0.596	0.411
40	1.509	1.139	0.772
60	2.264	1.693	1.137
80	3.010	2.262	1.516
100	3.814	2.846	1.898
110	4.202	3.131	2.098
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGW301212
Item	Input Power (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Power [W]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	0.42	0.54	0.67
20	7.04	7.13	7.36
40	13.56	13.62	13.85
60	20.25	20.24	20.45
80	27.12	27.06	27.14
100	34.19	34.02	34.10
110	37.82	37.57	37.60
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

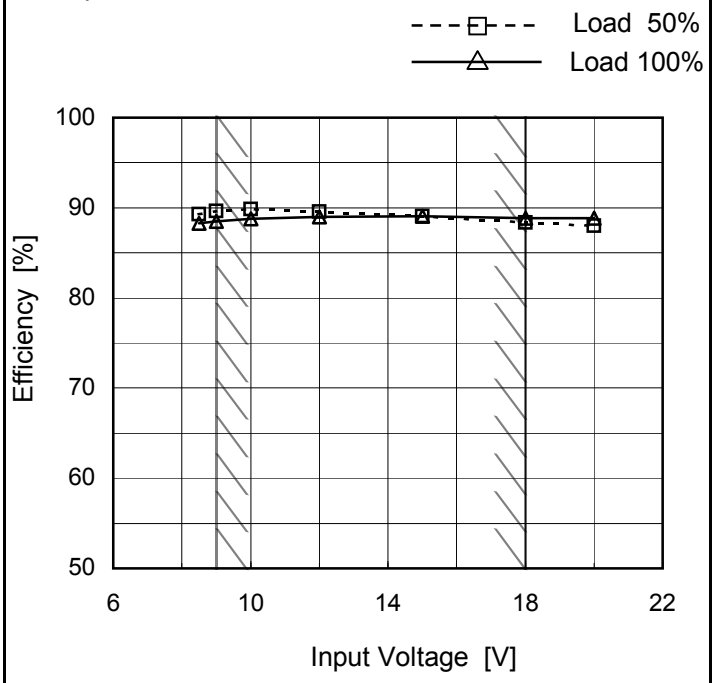
BC-10522

COSEL

Model	MGW301212
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%
8.5	89.3	88.3
9.0	89.6	88.5
10.0	89.8	88.8
12.0	89.5	89.0
15.0	89.1	89.0
18.0	88.3	88.8
20.0	88.0	88.8
--	-	-
--	-	-

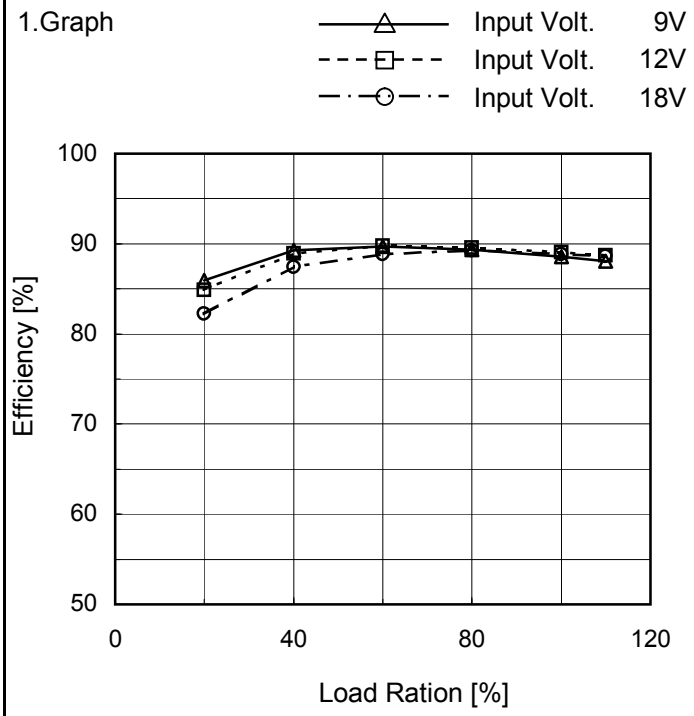
BC-10522

COSEL

Model	MGW301212
Item	Efficiency (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Efficiency [%]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0	-	-	-
20	86.0	84.9	82.2
40	89.3	88.9	87.4
60	89.7	89.8	88.8
80	89.3	89.5	89.3
100	88.6	89.0	88.8
110	88.1	88.7	88.6
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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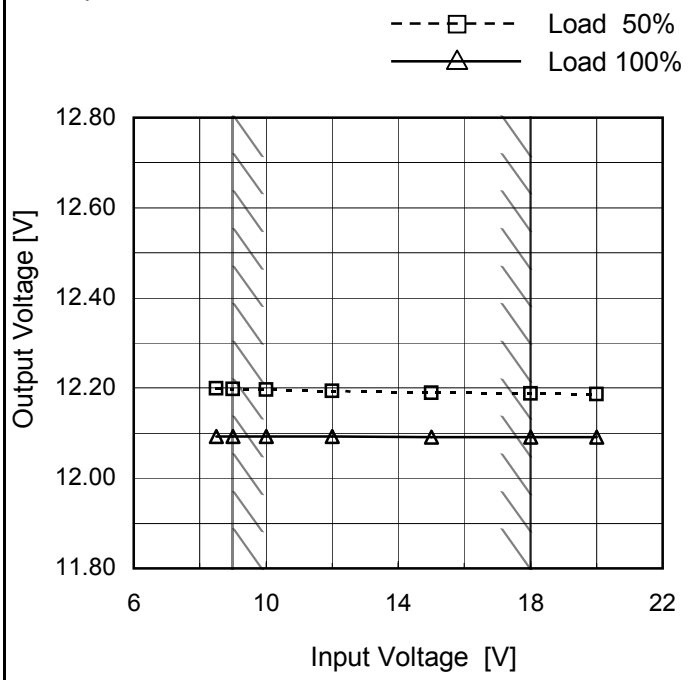
Model	MGW301212
Item	Line Regulation
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



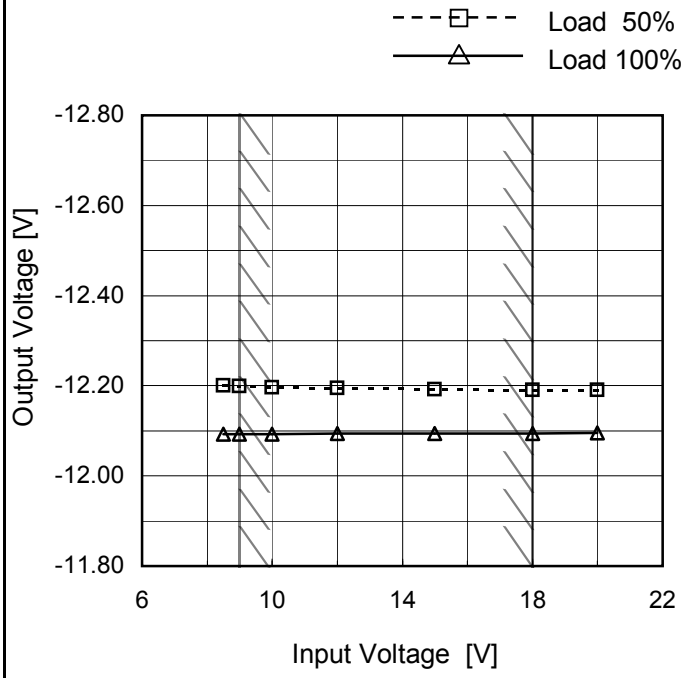
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8.5	12.200	12.093
9.0	12.198	12.093
10.0	12.196	12.093
12.0	12.193	12.092
15.0	12.190	12.092
18.0	12.188	12.091
20.0	12.187	12.091
--	-	-
--	-	-

-12V: Rated output current

Object	-12V1.25A

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%
8.5	-12.200	-12.093
9.0	-12.199	-12.093
10.0	-12.197	-12.093
12.0	-12.194	-12.094
15.0	-12.192	-12.094
18.0	-12.191	-12.095
20.0	-12.190	-12.095
--	-	-
--	-	-

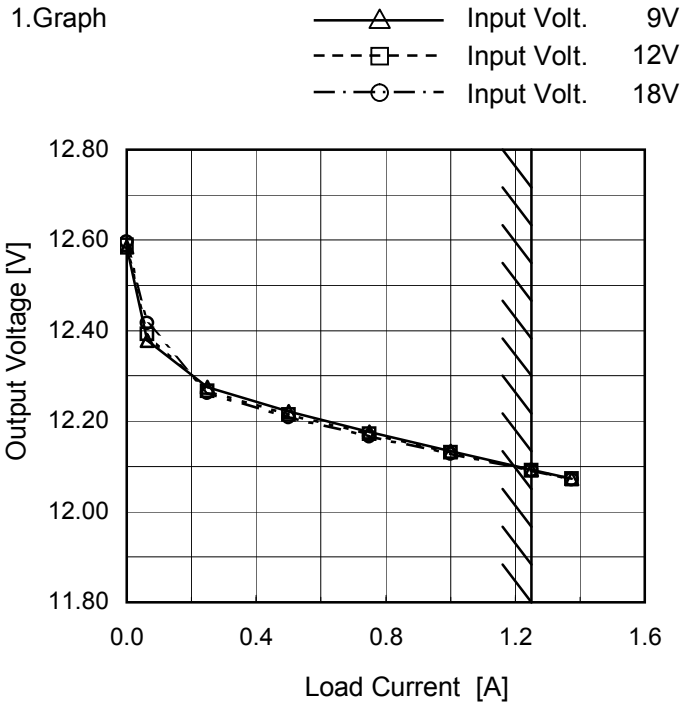
+12V: Rated output current

COSEL

Model	MGW301212
Item	Load Regulation
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



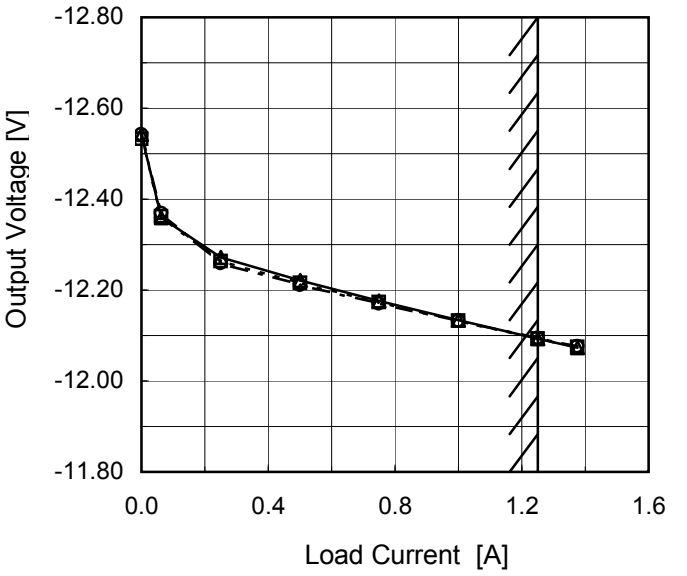
2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
0.000	12.585	12.589	12.596
0.063	12.379	12.392	12.416
0.250	12.275	12.267	12.262
0.500	12.222	12.215	12.209
0.750	12.176	12.172	12.167
1.000	12.133	12.131	12.129
1.250	12.092	12.092	12.091
1.375	12.073	12.073	12.072
--	-	-	-
--	-	-	-
--	-	-	-

-12V: Rated output current

Object	-12V1.25A

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	-12.542	-12.533	-12.542
0.063	-12.359	-12.362	-12.369
0.250	-12.271	-12.264	-12.259
0.500	-12.221	-12.215	-12.211
0.750	-12.176	-12.173	-12.170
1.000	-12.134	-12.132	-12.132
1.250	-12.093	-12.094	-12.095
1.375	-12.073	-12.075	-12.076
--	-	-	-
--	-	-	-
--	-	-	-

+12V: Rated output current

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Model	MGW301212	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	+12V1.25A	

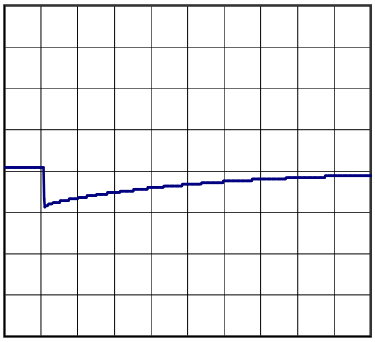
Input Volt. 12 V
Other output current rated
Cycle 1000 ms

t_1、t_2 = 50μs

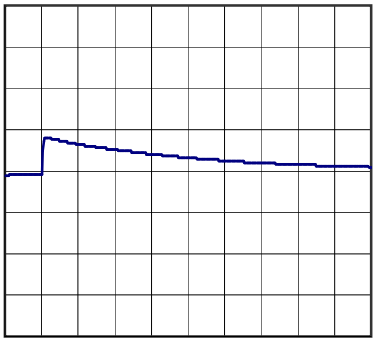
Load Current

Min. Load (0A) ←→
Load 100% (1.25A)

500mV/div



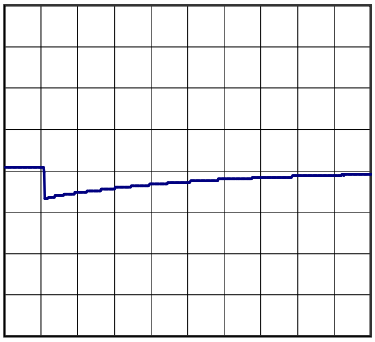
50ms/div



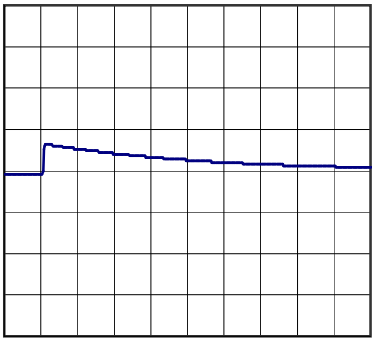
50ms/div

Min. Load (0A) ←→
Load 50% (0.625A)

500mV/div



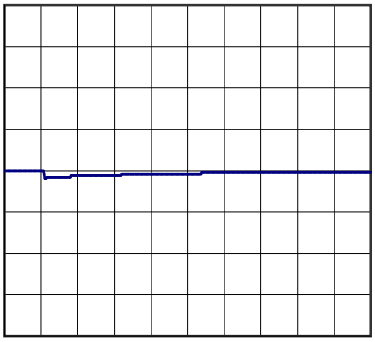
50ms/div



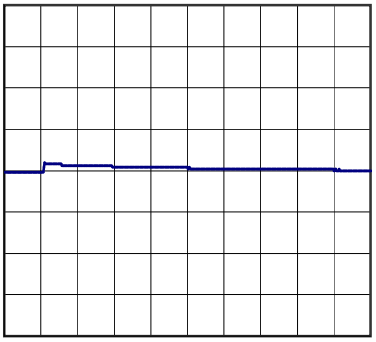
50ms/div

Load 50% (0.625A) ←→
Load 100% (1.25A)

500mV/div



50ms/div



50ms/div

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Model	MGW301212
Item	Dynamic Load Response
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure A

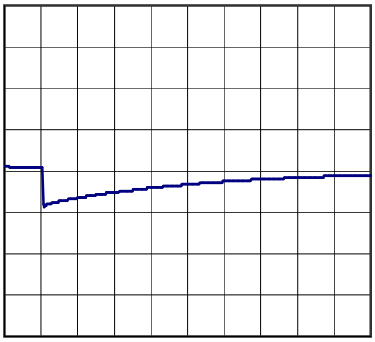
Input Volt. 12 V
Other output current rated
Cycle 1000 ms

t_1、t_2 = 50μs

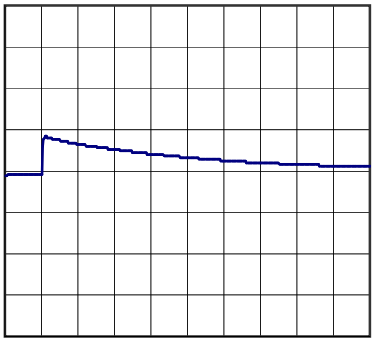
Load Current

Min. Load (0A) ←→
Load 100% (1.25A)

500mV/div



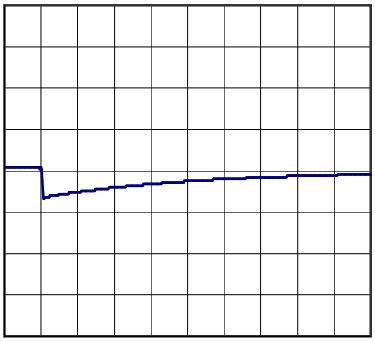
50ms/div



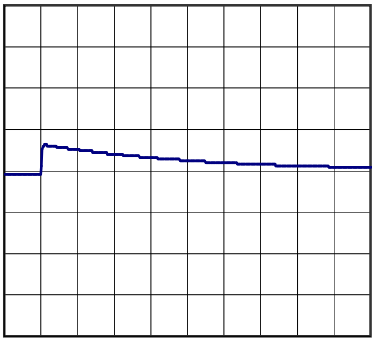
50ms/div

Min. Load (0A) ←→
Load 50% (0.625A)

500mV/div



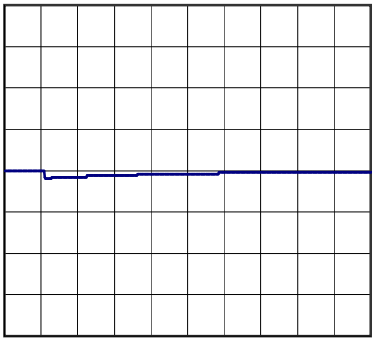
50ms/div



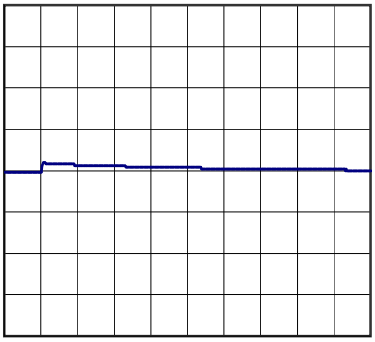
50ms/div

Load 50% (0.625A) ←→
Load 100% (1.25A)

500mV/div



50ms/div



50ms/div

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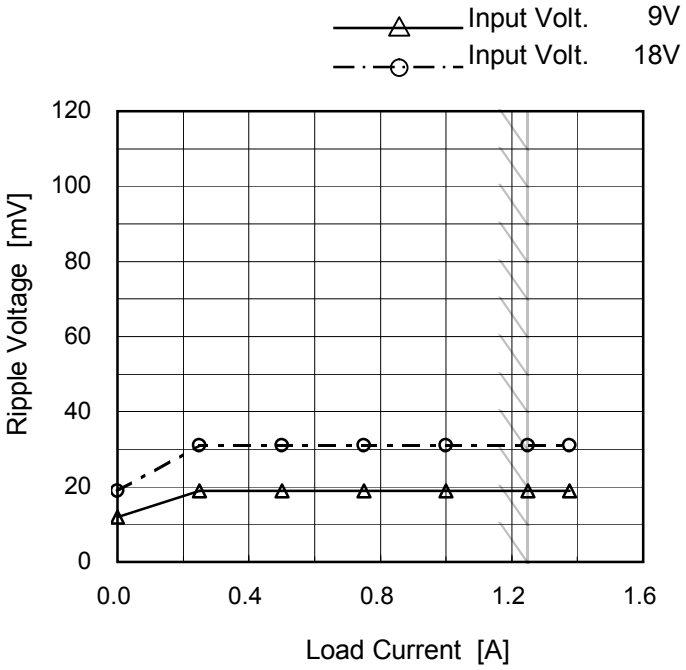
Model	MGW301212
Item	Ripple Voltage (by Load Current)
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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]

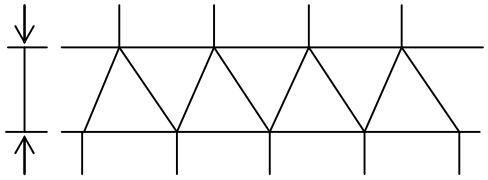


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	12	19
0.250	19	31
0.500	19	31
0.750	19	31
1.000	19	31
1.250	19	31
1.375	19	31
--	-	-
--	-	-
--	-	-
--	-	-

-12V: Rated output current

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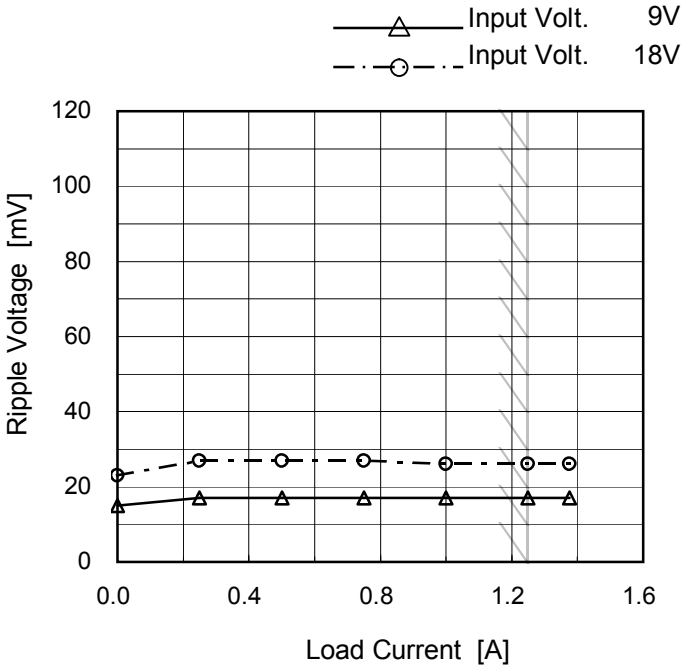
Model	MGW301212
Item	Ripple Voltage (by Load Current)
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



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]

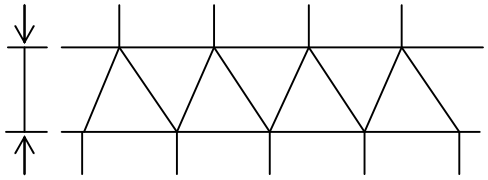


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	15	23
0.250	17	27
0.500	17	27
0.750	17	27
1.000	17	26
1.250	17	26
1.375	17	26
--	-	-
--	-	-
--	-	-
--	-	-

+12V: Rated output current

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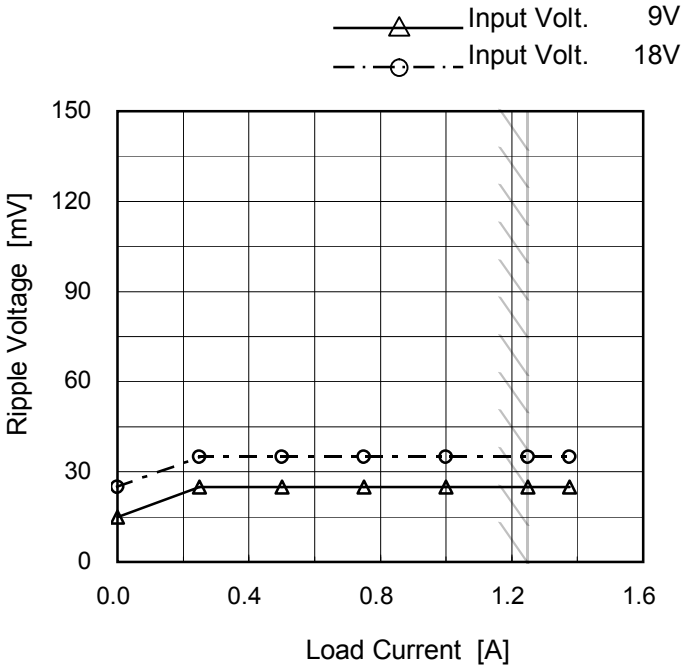
Model	MGW301212
Item	Ripple-Noise
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

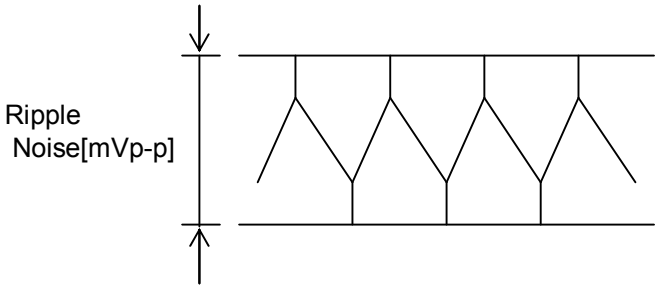


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	15	25
0.250	25	35
0.500	25	35
0.750	25	35
1.000	25	35
1.250	25	35
1.375	25	35
--	-	-
--	-	-
--	-	-
--	-	-

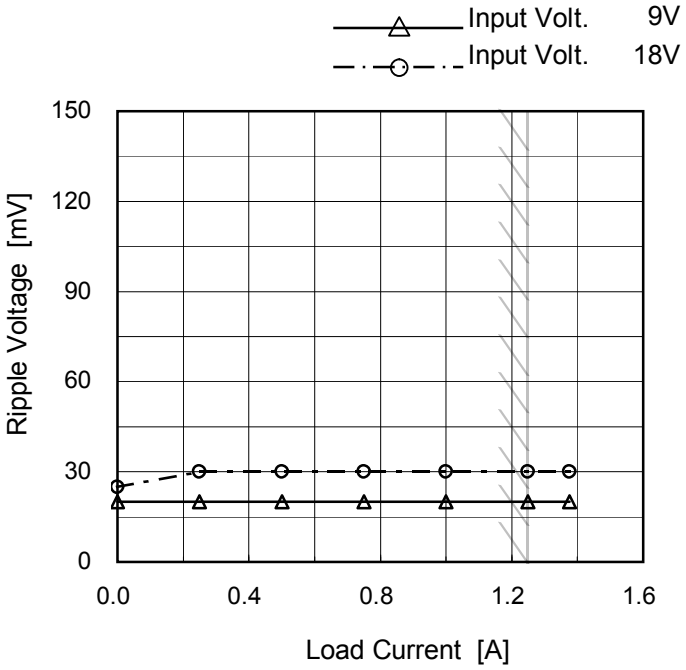
-12V: Rated output current

COSEL

Model	MGW301212
Item	Ripple-Noise
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure B

1.Graph



Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

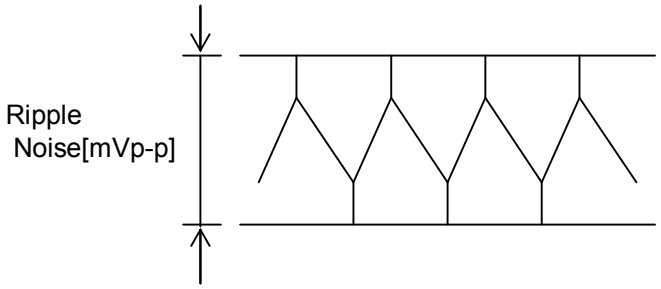


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 18 [V]
0.000	20	25
0.250	20	30
0.500	20	30
0.750	20	30
1.000	20	30
1.250	20	30
1.375	20	30
--	-	-
--	-	-
--	-	-
--	-	-

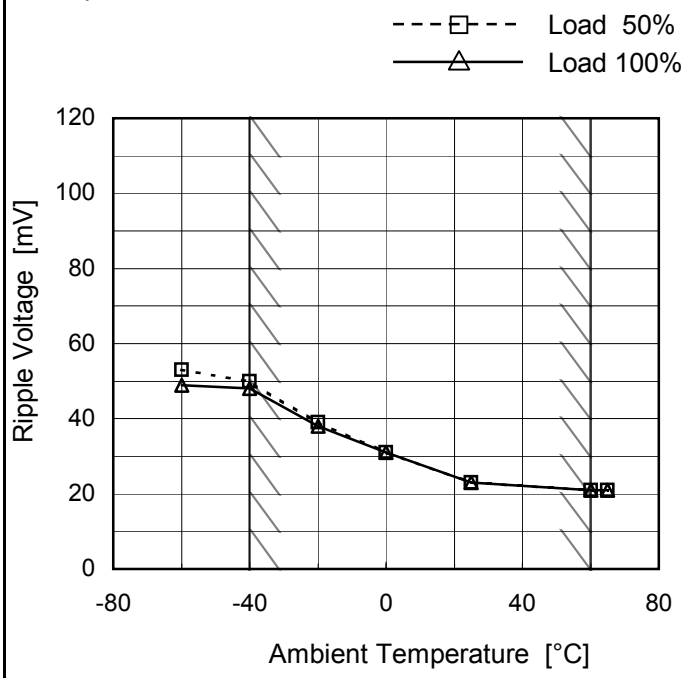
+12V: Rated output current

COSEL

Model	MGW301212
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V1.25A

Testing Circuitry Figure A

1.Graph



Input Volt. 12V

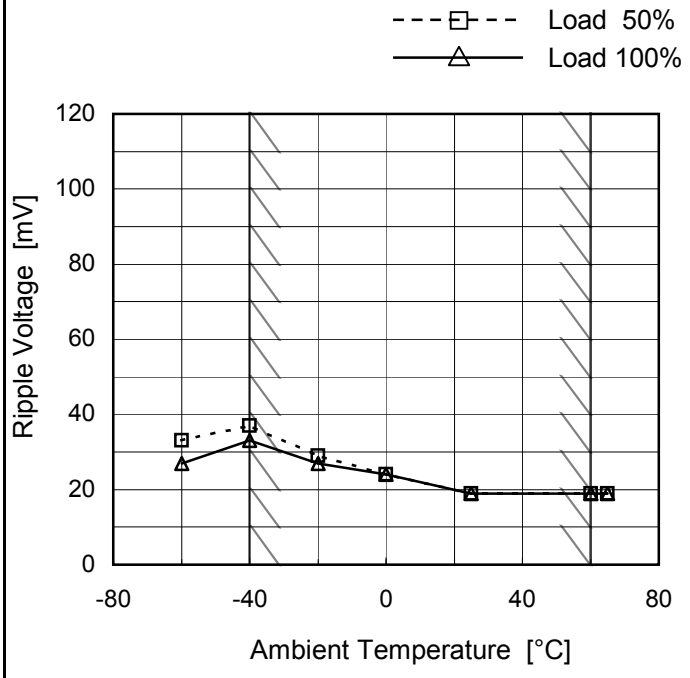
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	53	49
-40	50	48
-20	39	38
0	31	31
25	23	23
60	21	21
65	21	21
--	-	-
--	-	-
--	-	-
--	-	-

-12V: Rated output current

Object	-12V1.25A

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	33	27
-40	37	33
-20	29	27
0	24	24
25	19	19
60	19	19
65	19	19
--	-	-
--	-	-
--	-	-
--	-	-

+12V: Rated output current

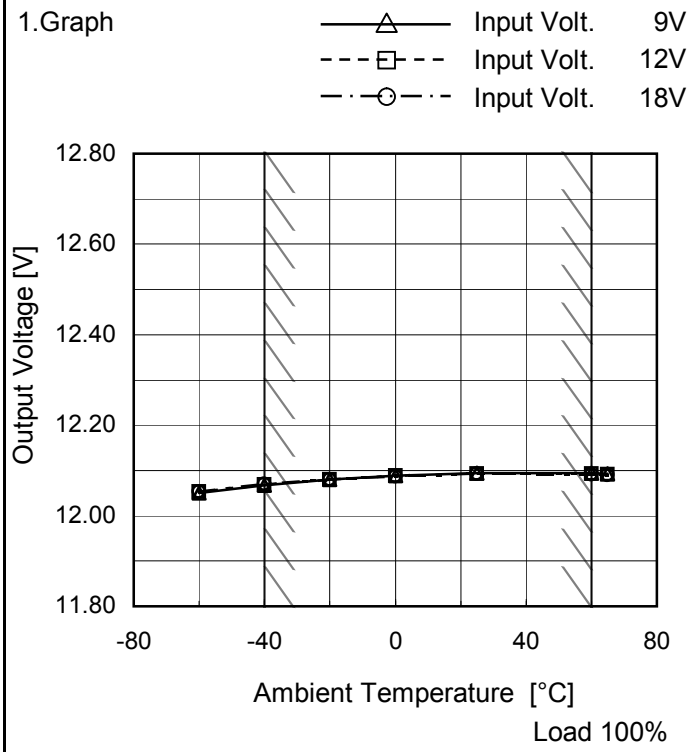
COSEL

Model	MGW301212
Item	Ambient Temperature Drift

Testing Circuitry Figure A

Object +12V1.25A

1.Graph

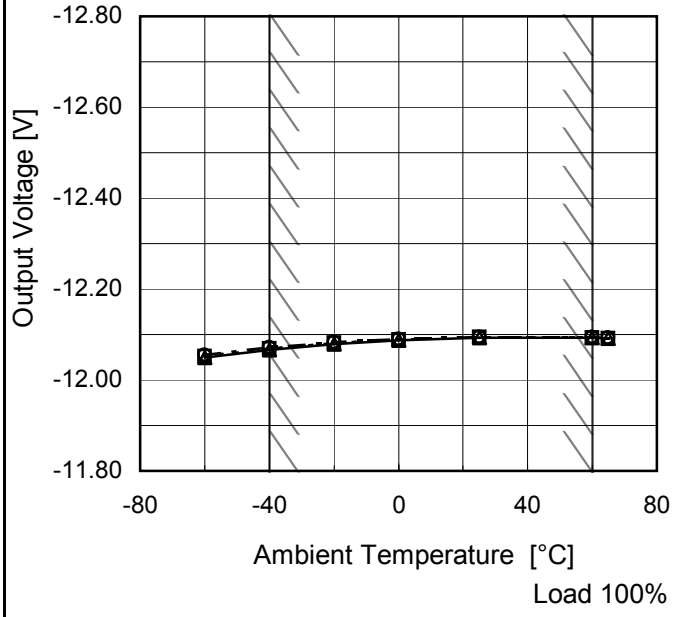


2.Values

Ambient Temperature [°C]	Output Voltage [V] Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-60	12.051	12.053	12.053
-40	12.067	12.069	12.070
-20	12.080	12.080	12.081
0	12.088	12.088	12.088
25	12.094	12.093	12.092
60	12.094	12.093	12.092
65	12.093	12.092	12.090
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Object -12V1.25A

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	-12.049	-12.053	-12.054
-40	-12.066	-12.069	-12.072
-20	-12.079	-12.081	-12.083
0	-12.088	-12.089	-12.091
25	-12.093	-12.094	-12.095
60	-12.093	-12.094	-12.094
65	-12.092	-12.092	-12.093
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGW301212	
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 - 1.25A (AVR 2) : 0 - 1.25A

* Other Output : Rated Load

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

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

2.Values

Object	+12V1.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	18	0	12.591	±262	±2.2
Minimum Voltage	-40	9	1.25	12.067		

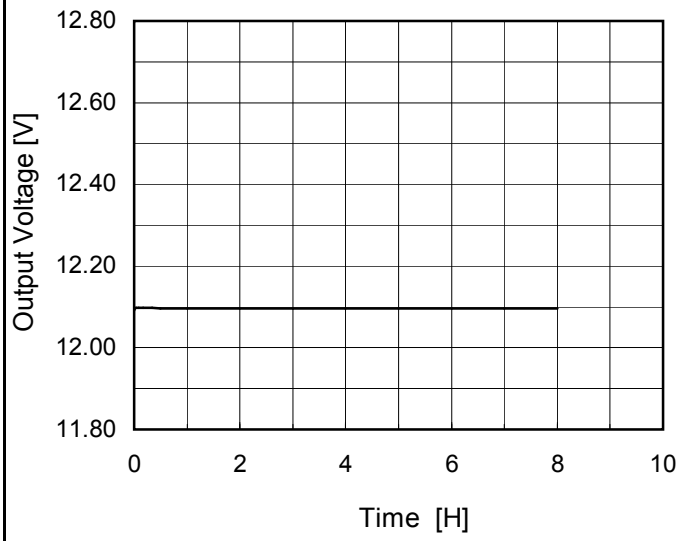
Object	-12V1.25A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	9	0	-12.546	±240	±2.0
Minimum Voltage	-40	9	1.25	-12.066		

COSEL

Model	MGW301212
Item	Time Lapse Drift
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



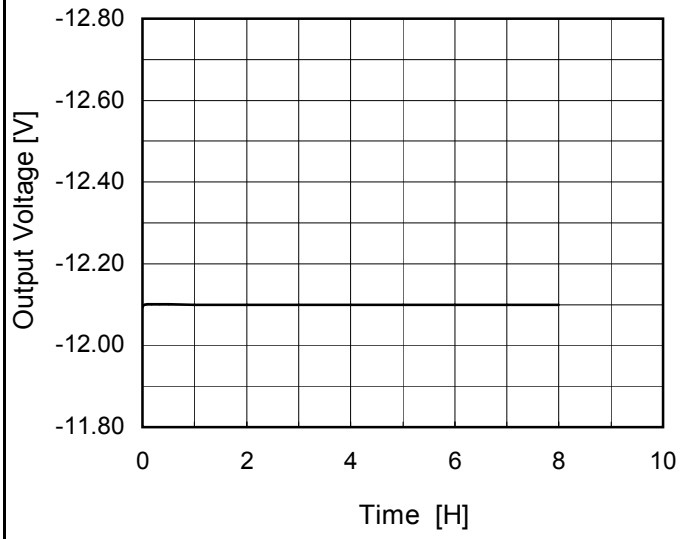
Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.092
0.5	12.097
1.0	12.097
2.0	12.096
3.0	12.096
4.0	12.096
5.0	12.096
6.0	12.096
7.0	12.096
8.0	12.096

Object	-12V1.25A

1.Graph



Input Volt. 12V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.093
0.5	-12.100
1.0	-12.100
2.0	-12.100
3.0	-12.100
4.0	-12.100
5.0	-12.099
6.0	-12.099
7.0	-12.099
8.0	-12.099

BC-10522

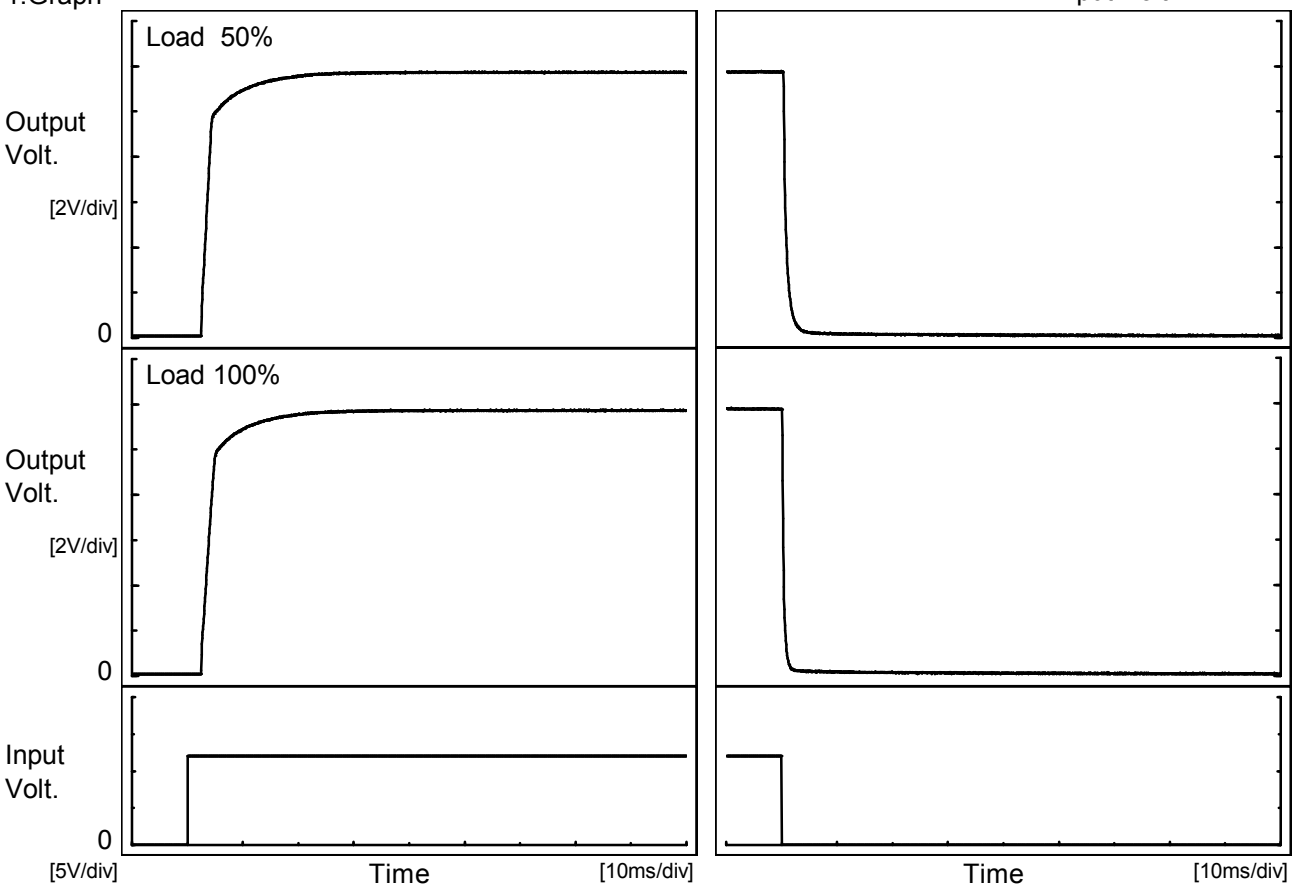
COSEL

Model	MGW301212
Item	Rise and Fall Time
Object	+12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

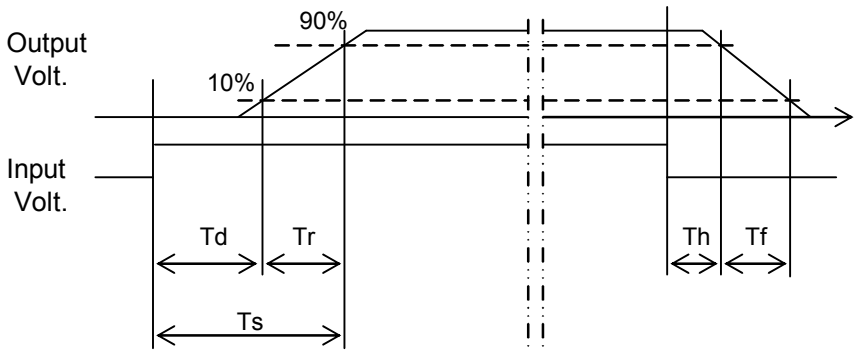
Input Volt. 12 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.6	6.8	9.4	0.3	1.4
100 %	2.6	7.4	10.0	0.1	0.7



BC-10522

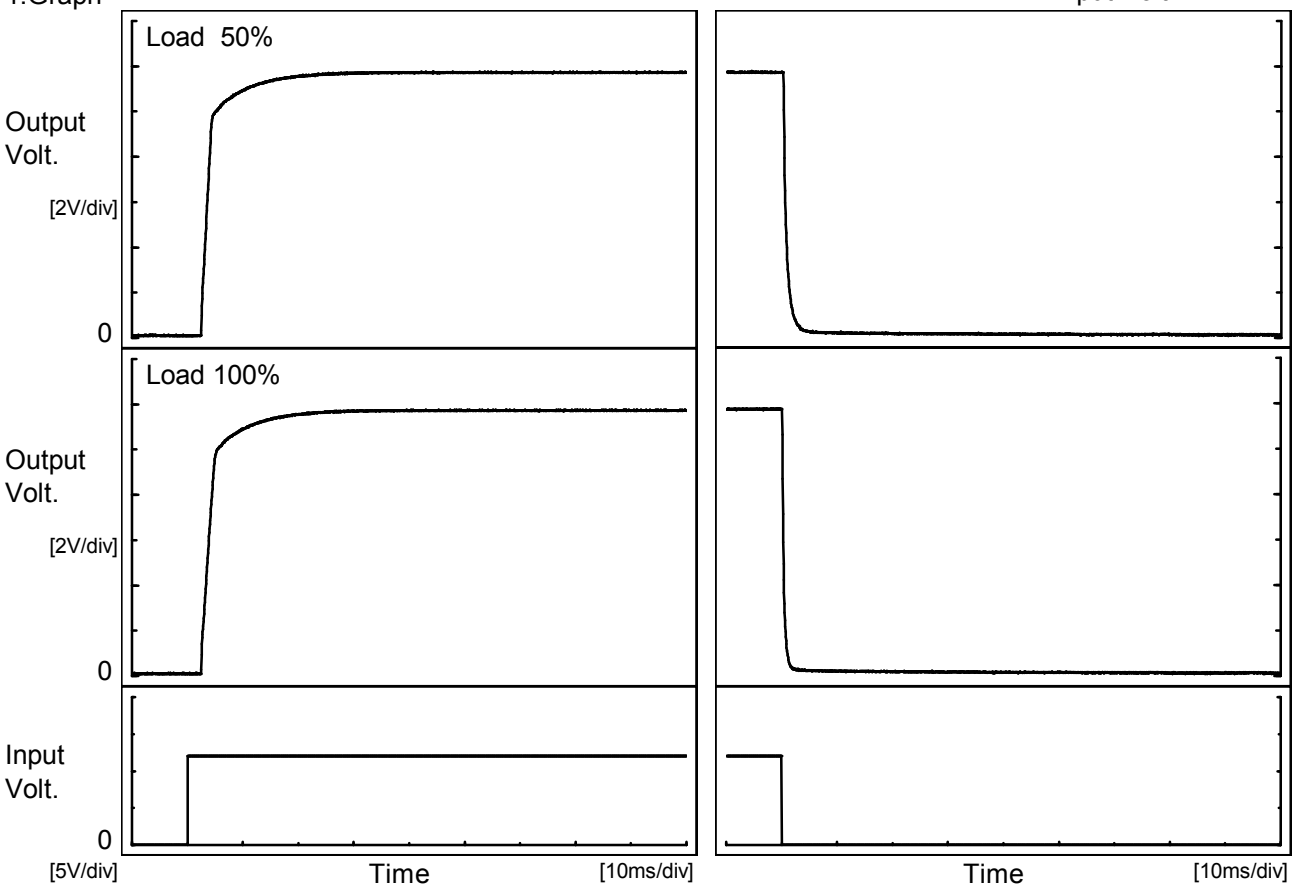
COSEL

Model	MGW301212
Item	Rise and Fall Time
Object	-12V1.25A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

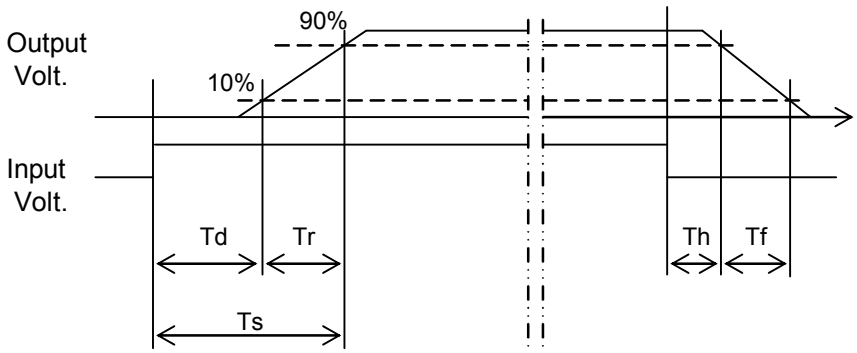
Input Volt. 12 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.6	7.0	9.6	0.3	1.5
100 %	2.6	7.2	9.8	0.1	0.8



BC-10522

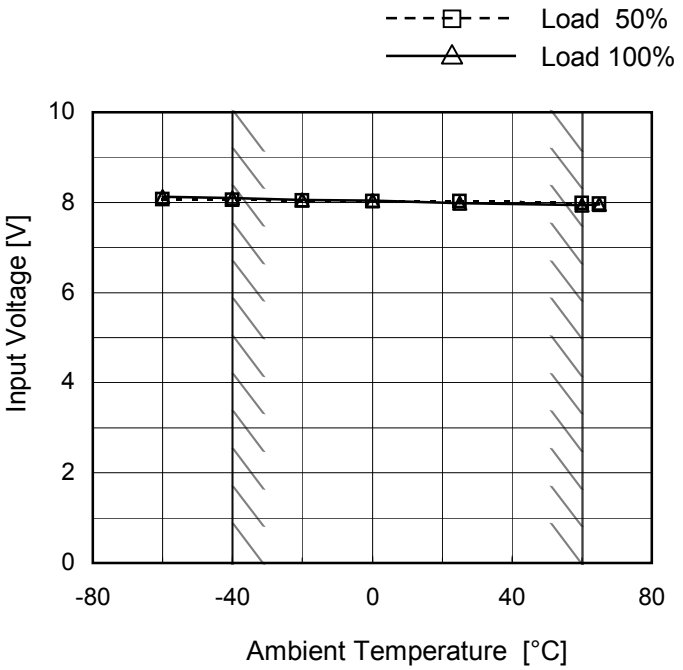
COSEL

Model	MGW301212
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object: +12V1.25A

1.Graph

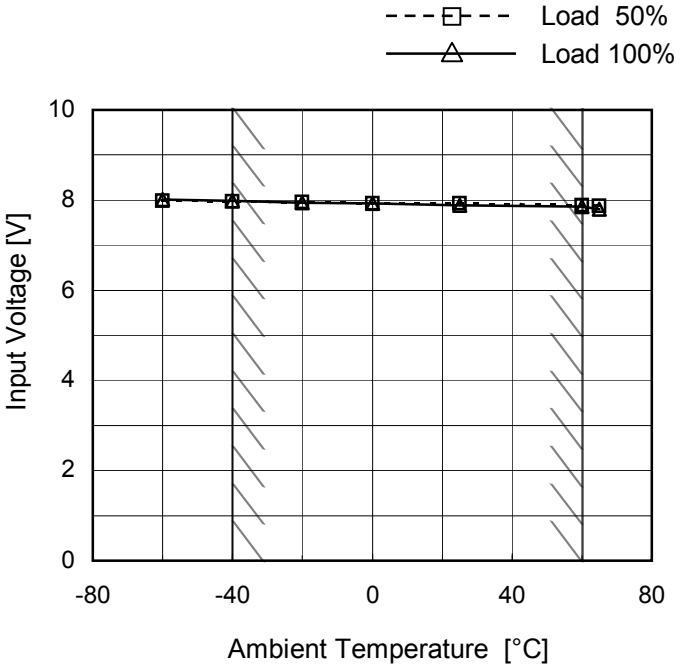


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	8.1	8.2
-40	8.1	8.1
-20	8.1	8.1
0	8.1	8.1
25	8.1	8.0
60	8.0	8.0
65	8.0	8.0
--	-	-
--	-	-
--	-	-
--	-	-

Object: -12V1.25A

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	8.0	8.1
-40	8.0	8.0
-20	8.0	8.0
0	8.0	8.0
25	8.0	7.9
60	7.9	7.9
65	7.9	7.8
--	-	-
--	-	-
--	-	-
--	-	-

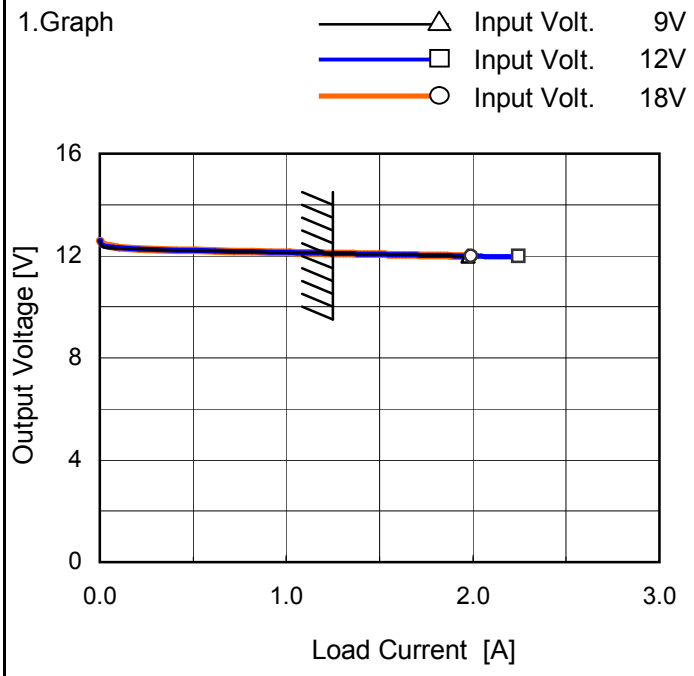
COSEL

Model	MGW301212
Item	Overcurrent Protection

Temperature 25°C
Testing Circuitry Figure A

Object +12V1.25A

1.Graph

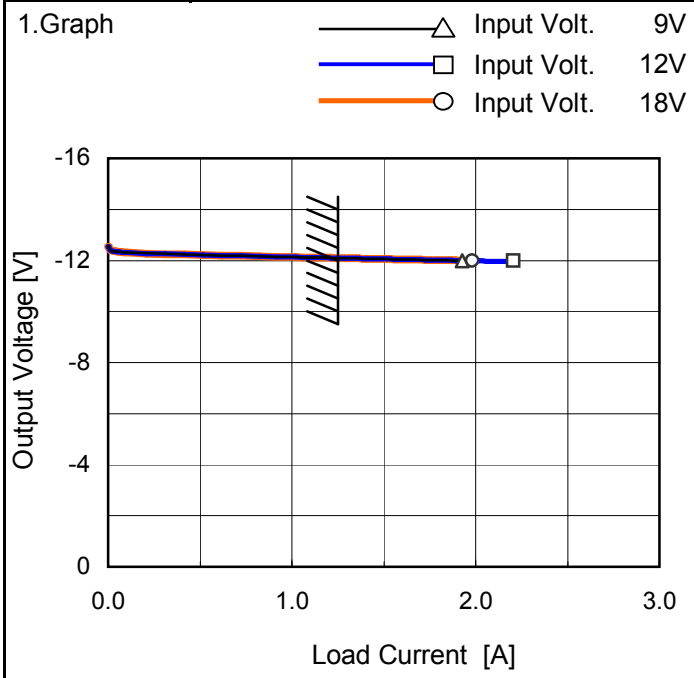


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
12.00	1.97	2.24	1.99
11.40	-	-	-
10.80	-	-	-
9.60	-	-	-
8.40	-	-	-
7.20	-	-	-
6.00	-	-	-
4.80	-	-	-
3.60	-	-	-
2.40	-	-	-
1.20	-	-	-
0.00	-	-	-

Object -12V1.25A

1.Graph



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

Intermittent operation occurs when overcurrent protection is activated.

2.Values

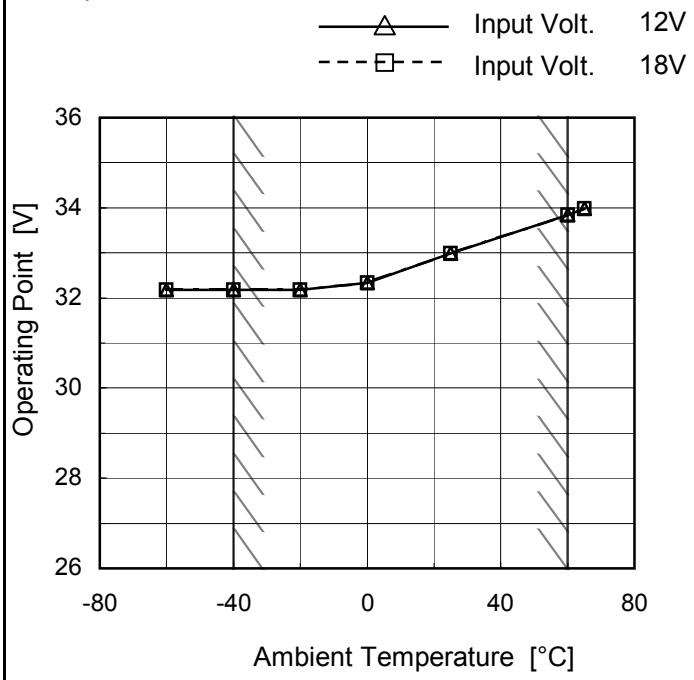
Output Voltage [V]	Load Current [A]		
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]
-12.00	1.93	2.20	1.98
-11.40	-	-	-
-10.80	-	-	-
-9.60	-	-	-
-8.40	-	-	-
-7.20	-	-	-
-6.00	-	-	-
-4.80	-	-	-
-3.60	-	-	-
-2.40	-	-	-
-1.20	-	-	-
0.00	-	-	-

COSEL

Model	MGW301212
Item	Overvoltage Protection
Object	+24V1.25A

Testing Circuitry Figure A

1.Graph



Load 0%

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

Measured as a single output(+24V).

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 12[V]	Input Volt. 18[V]
-60	32.18	32.18
-40	32.19	32.19
-20	32.19	32.19
0	32.34	32.34
25	32.98	32.98
60	33.84	33.84
65	33.98	33.98
--	-	-
--	-	-
--	-	-
--	-	-

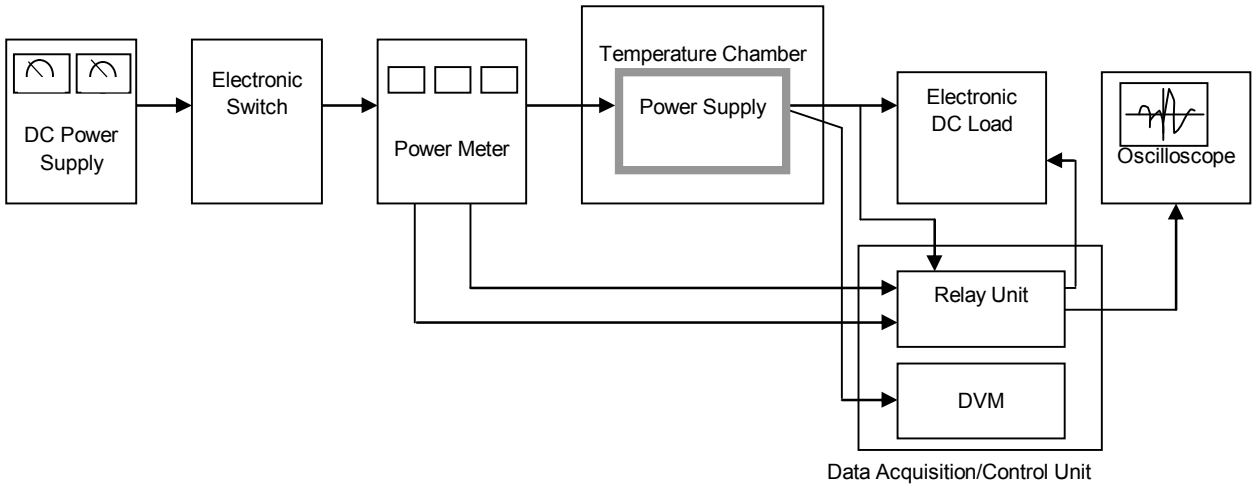


Figure A

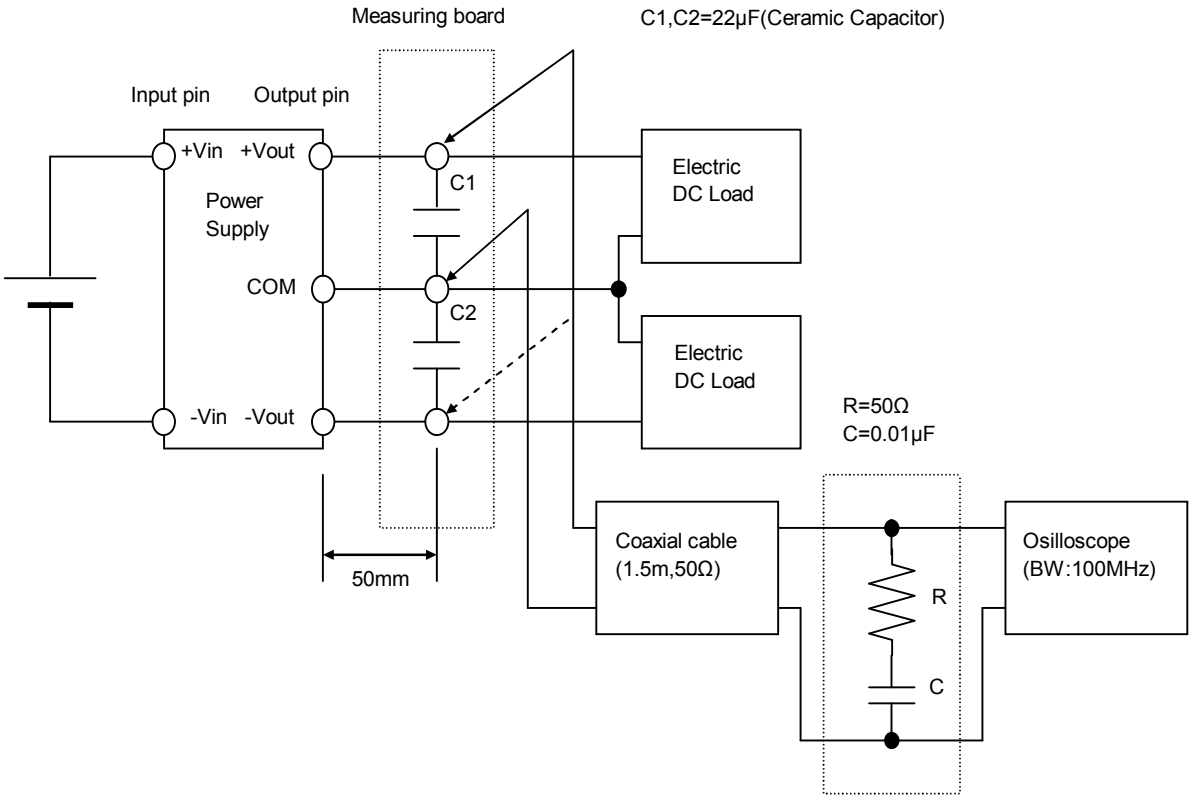


Figure B（Ripple and Ripple noise Characteristic）