COSEL

参考資料

TEST DATA OF MGW1R54812

Regulated DC Power Supply
October 28, 2016

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COSEL CO.,LTD.

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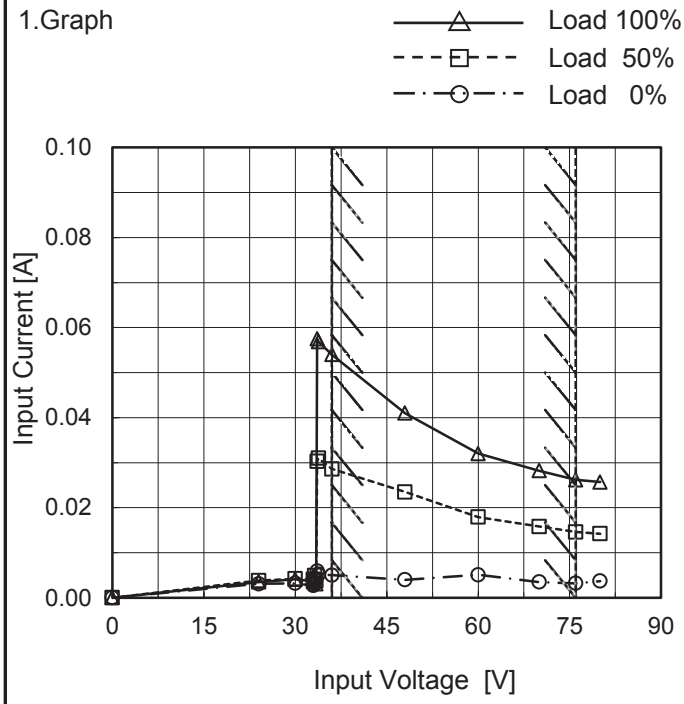
COSEL

Model	MGW1R54812
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
24.0	0.003	0.004	0.004
30.0	0.003	0.004	0.004
33.0	0.003	0.004	0.004
33.2	0.003	0.005	0.005
33.4	0.004	0.004	0.003
33.6	0.006	0.030	0.058
33.8	0.005	0.031	0.057
36.0	0.005	0.029	0.054
48.0	0.004	0.024	0.041
60.0	0.005	0.018	0.032
70.0	0.004	0.016	0.028
76.0	0.003	0.015	0.026
80.0	0.004	0.014	0.026
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

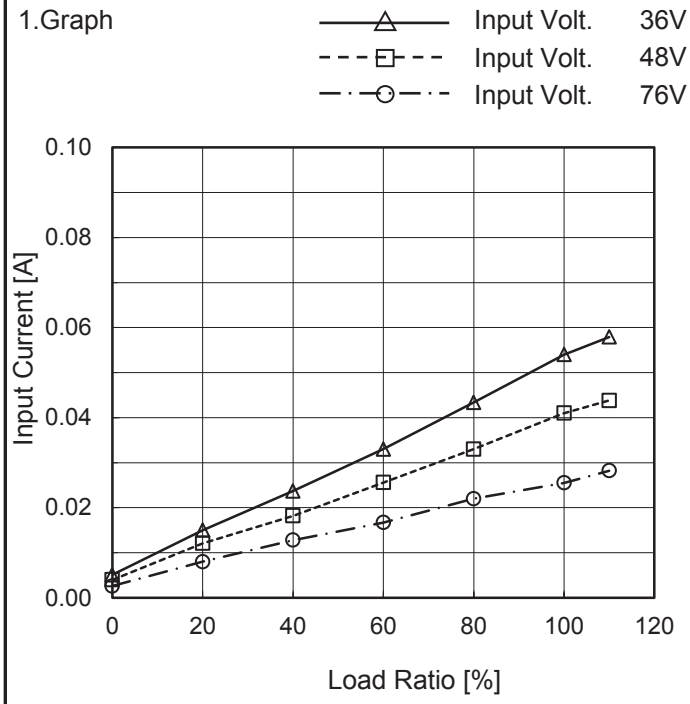
BC - 10960

COSEL

Model	MGW1R54812
Item	Input Current (by Load Ratio)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

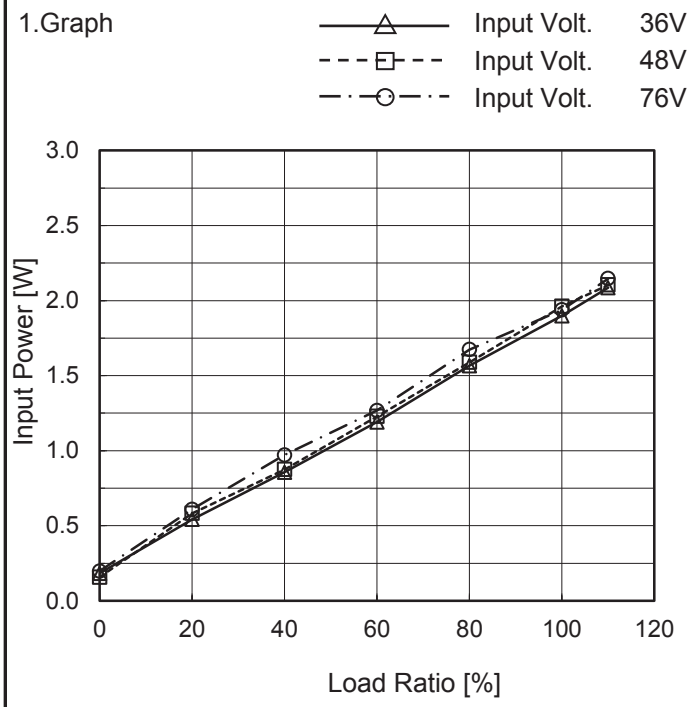
Load Ratio [%]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.005	0.004	0.003
20	0.015	0.012	0.008
40	0.024	0.018	0.013
60	0.033	0.026	0.017
80	0.043	0.033	0.022
100	0.054	0.041	0.026
110	0.058	0.044	0.028
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGW1R54812
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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.18	0.16	0.20
20	0.54	0.58	0.61
40	0.86	0.87	0.97
60	1.19	1.23	1.27
80	1.57	1.59	1.67
100	1.90	1.96	1.94
110	2.09	2.10	2.15
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

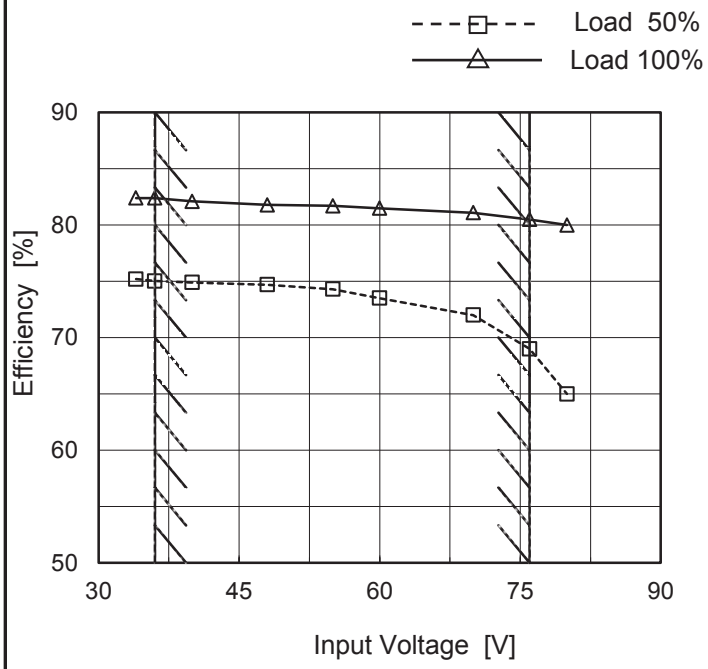
BC - 10960

COSEL

Model	MGW1R54812
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

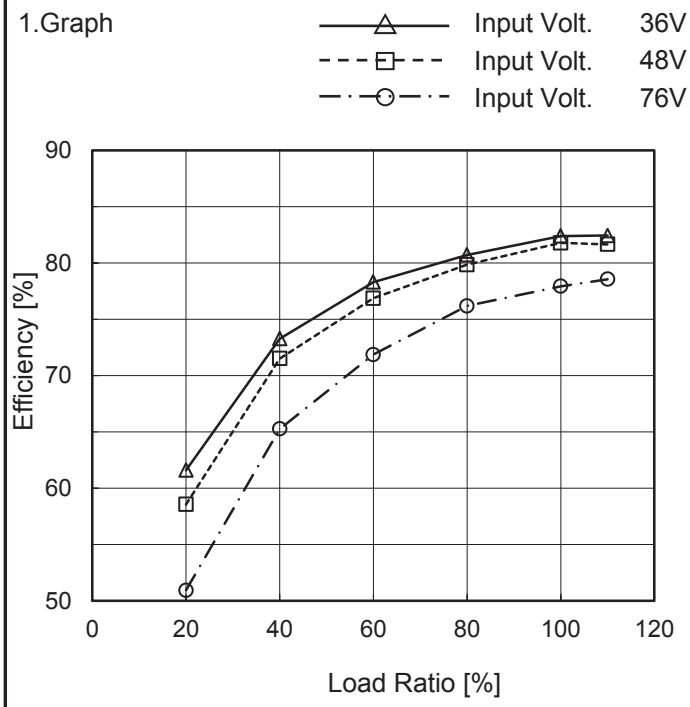
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
34	75.2	82.4
36	75.0	82.4
40	74.9	82.1
48	74.7	81.8
55	74.3	81.7
60	73.5	81.5
70	72.0	81.1
76	69.0	80.5
80	65.0	80.0

COSEL

Model	MGW1R54812
Item	Efficiency (by Load Ratio)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

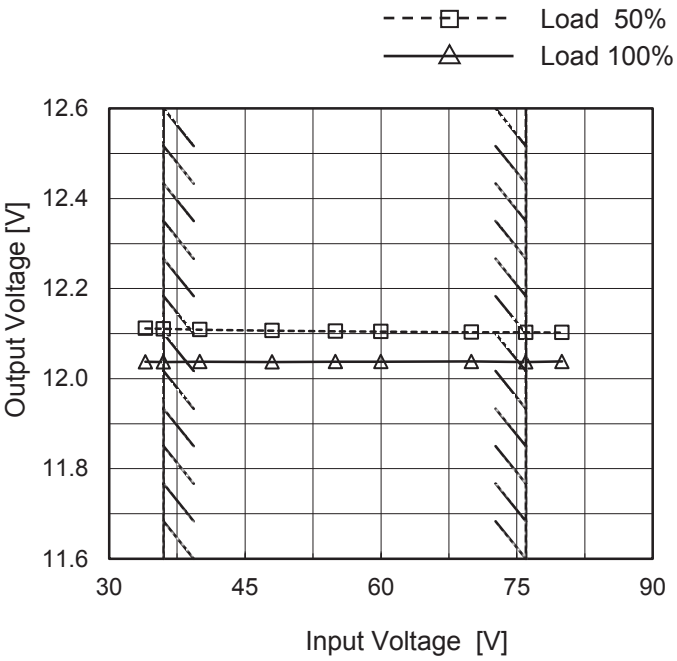
Load Ratio [%]	Efficiency [%] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	-	-	-
20	61.6	58.6	50.9
40	73.3	71.5	65.3
60	78.3	76.9	71.9
80	80.7	79.9	76.2
100	82.4	81.8	77.9
110	82.4	81.7	78.6
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGW1R54812
Item	Line Regulation
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



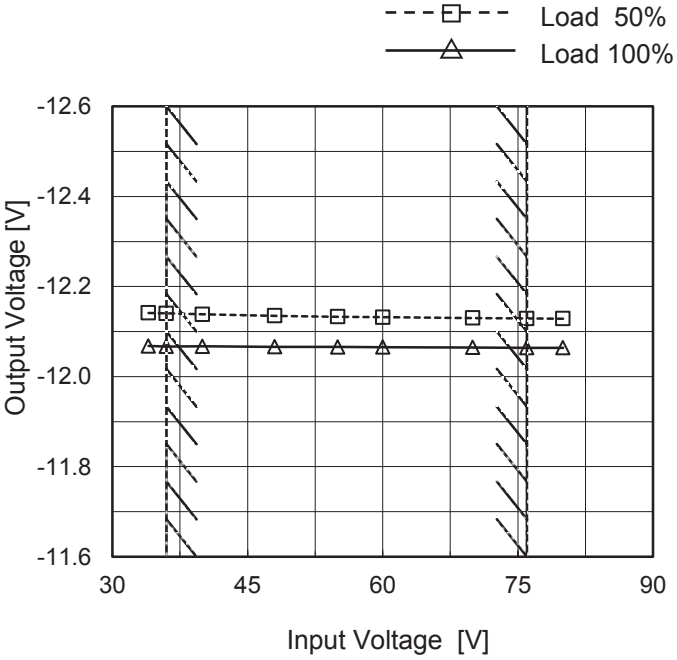
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
34	12.112	12.038
36	12.111	12.037
40	12.109	12.038
48	12.107	12.037
55	12.105	12.038
60	12.105	12.038
70	12.103	12.038
76	12.103	12.037
80	12.102	12.038

-12V: Rated Load Current

Object	-12V0.065A

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%
34	-12.141	-12.068
36	-12.140	-12.067
40	-12.138	-12.067
48	-12.135	-12.066
55	-12.133	-12.066
60	-12.132	-12.065
70	-12.130	-12.065
76	-12.129	-12.064
80	-12.129	-12.064

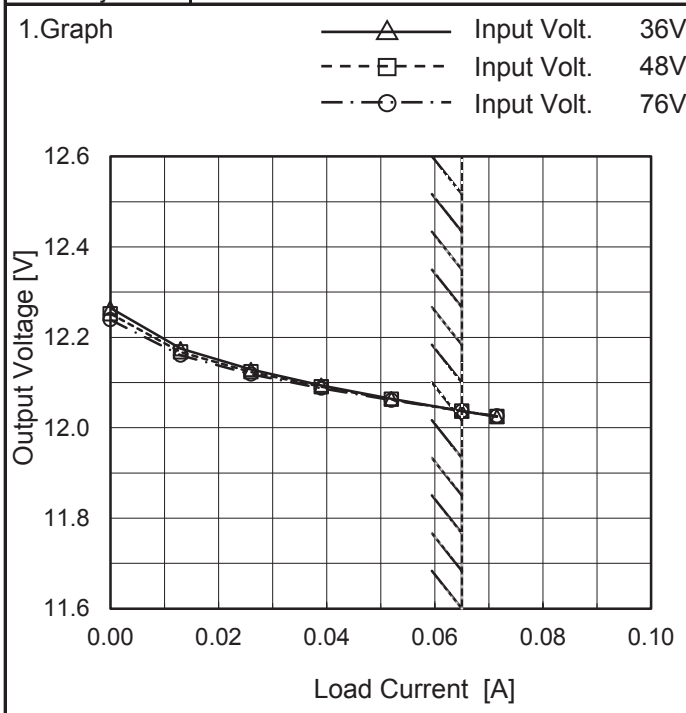
+12V: Rated Load Current

COSEL

Model	MGW1R54812
Item	Load Regulation
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



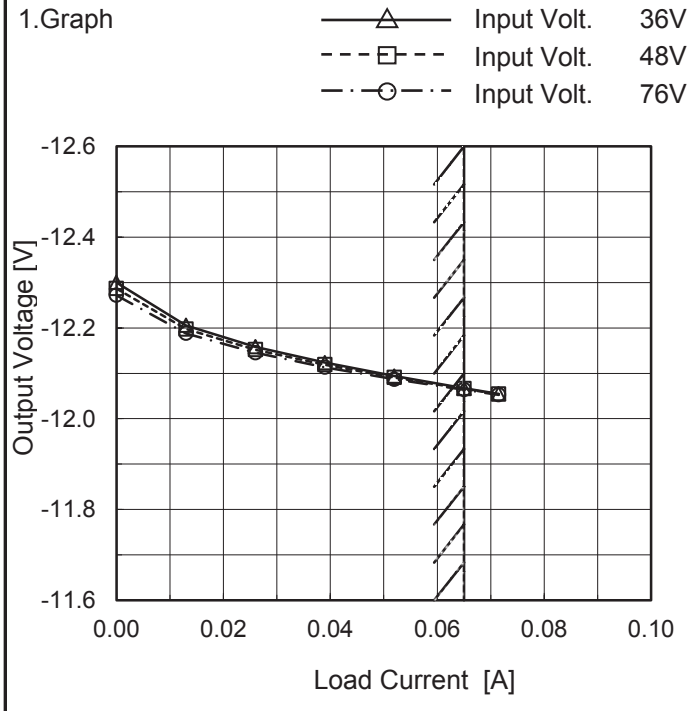
2.Values

Load Current [A]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	12.265	12.252	12.239
0.013	12.175	12.168	12.161
0.026	12.129	12.124	12.119
0.039	12.094	12.091	12.087
0.052	12.064	12.063	12.061
0.065	12.037	12.037	12.037
0.072	12.024	12.025	12.026
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

-12V: Rated Load Current

Object	-12V0.065A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	-12.300	-12.287	-12.272
0.013	-12.206	-12.197	-12.188
0.026	-12.158	-12.152	-12.145
0.039	-12.123	-12.119	-12.113
0.052	-12.094	-12.091	-12.087
0.065	-12.067	-12.066	-12.064
0.072	-12.055	-12.054	-12.053
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

+12V: Rated Load Current

BC - 10960

COSEL

Model	MGW1R54812
Item	Dynamic Load Response
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

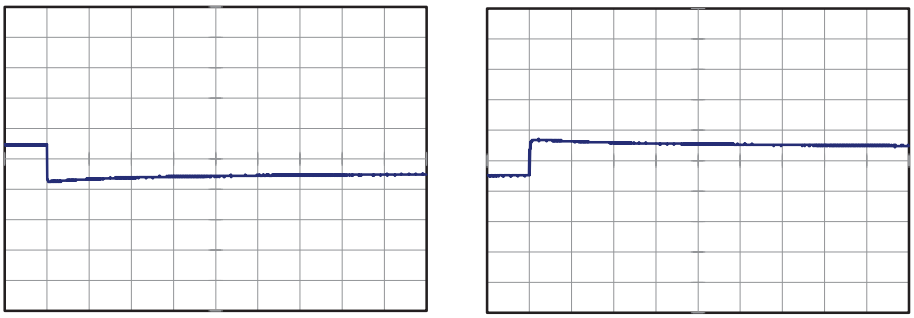
Input Volt. 48 V
-12V:rated load current.
Cycle 100 ms

t1,t2 = 100 μ s

Load Current

t1 t2

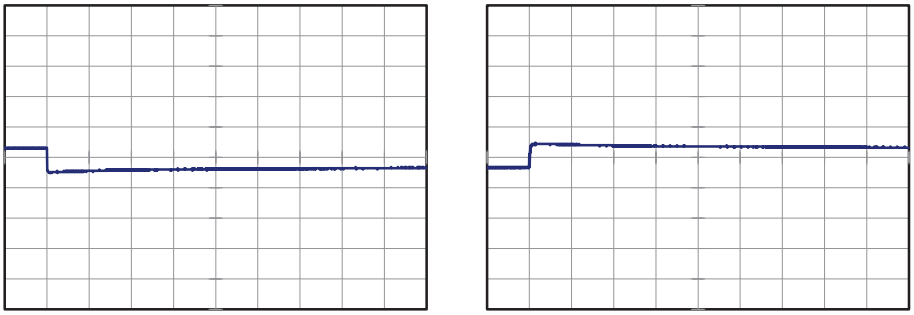
Min.Load (0A)←→
Load 100% (0.065A)



200 mV/div

4 ms/div 4 ms/div

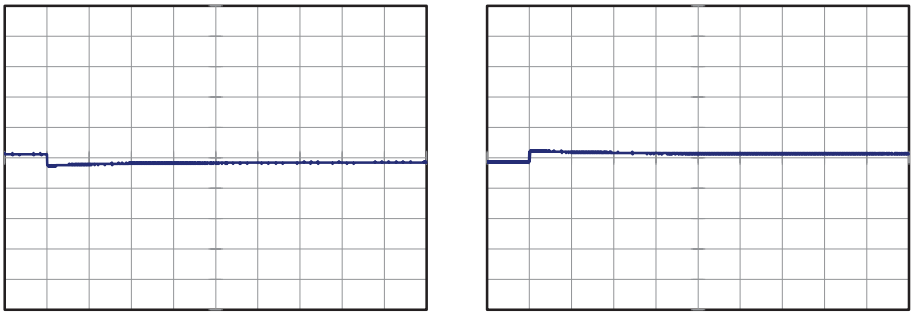
Min.Load (0A)←→
Load 50% (0.0325A)



200 mV/div

4 ms/div 4 ms/div

Load 50% (0.0325A)←→
Load 100% (0.065A)



200 mV/div

4 ms/div 4 ms/div

COSEL

Model	MGW1R54812
Item	Dynamic Load Response
Object	-12V0.065A

Temperature 25°C
Testing Circuitry Figure A

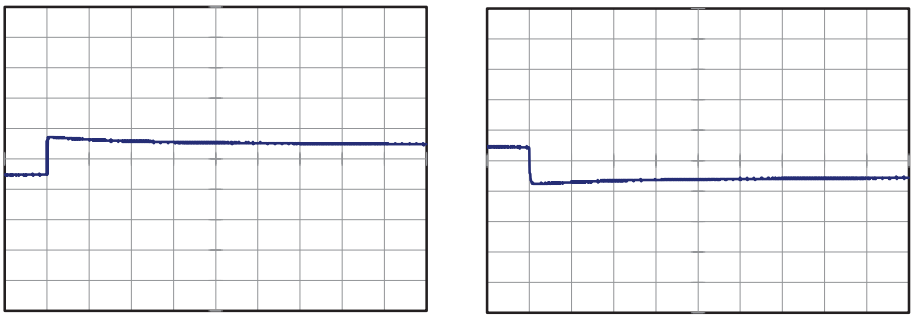
Input Volt. 48 V
+12V:rated load current.
Cycle 100 ms

t1,t2 = 100 μ s

Load Current

t1 t2

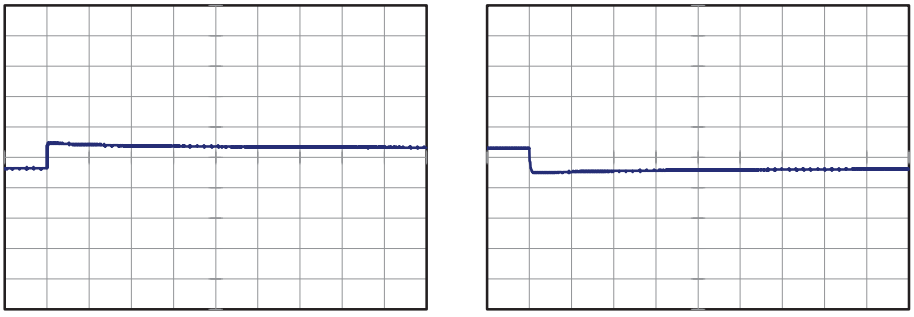
Min.Load (0A)←→
Load 100% (0.065A)



200 mV/div

4 ms/div 4 ms/div

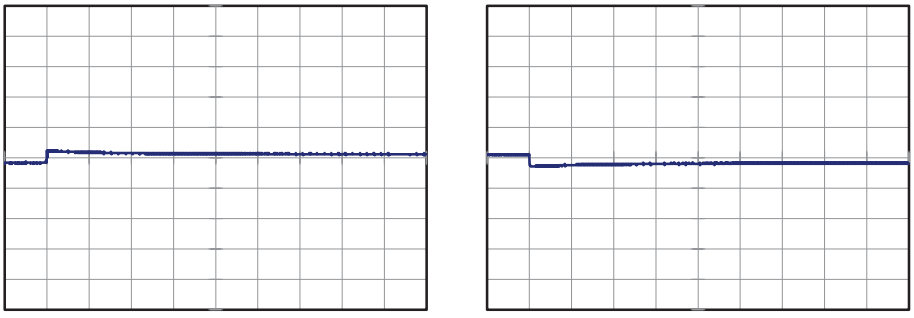
Min.Load (0A)←→
Load 50% (0.0325A)



200 mV/div

4 ms/div 4 ms/div

Load 50% (0.0325A)←→
Load 100% (0.065A)



200 mV/div

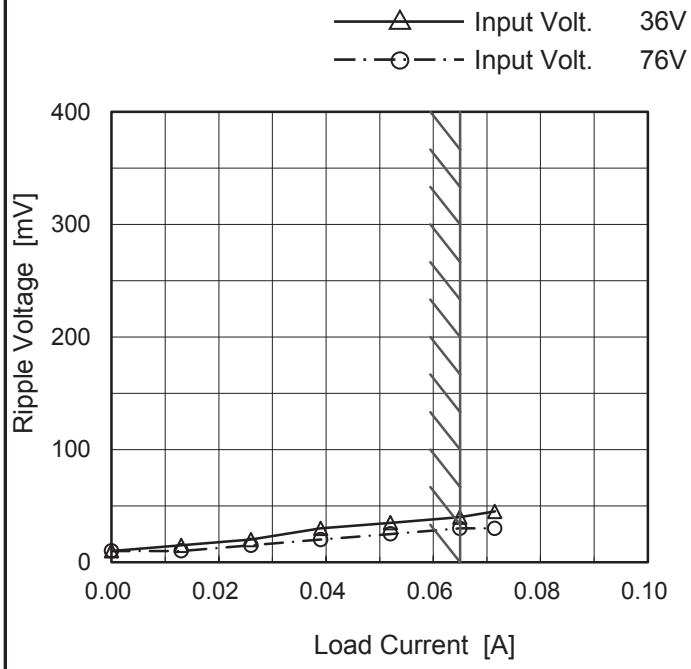
4 ms/div 4 ms/div

COSEL

Model	MGW1R54812
Item	Ripple Voltage (by Load Current)
Object	+12V0.065A

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]

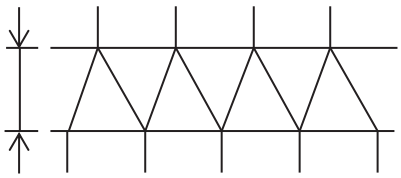


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	10	10
0.013	15	10
0.026	20	15
0.039	30	20
0.052	35	25
0.065	40	30
0.072	45	30
--	-	-
--	-	-
--	-	-
--	-	-

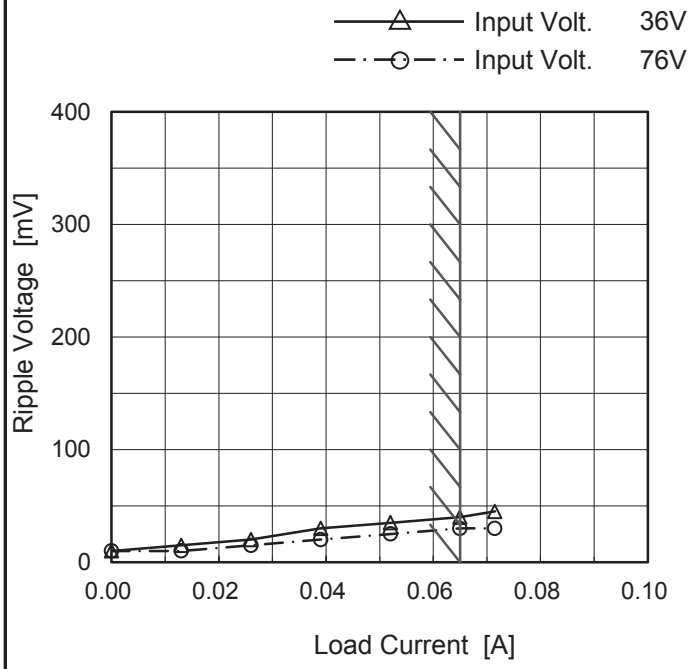
-12V: Rated Load Current

COSEL

Model	MGW1R54812
Item	Ripple Voltage (by Load Current)
Object	-12V0.065A

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]

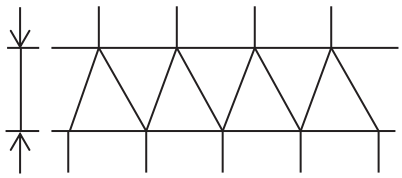


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	10	10
0.013	15	10
0.026	20	15
0.039	30	20
0.052	35	25
0.065	40	30
0.072	45	30
--	-	-
--	-	-
--	-	-
--	-	-

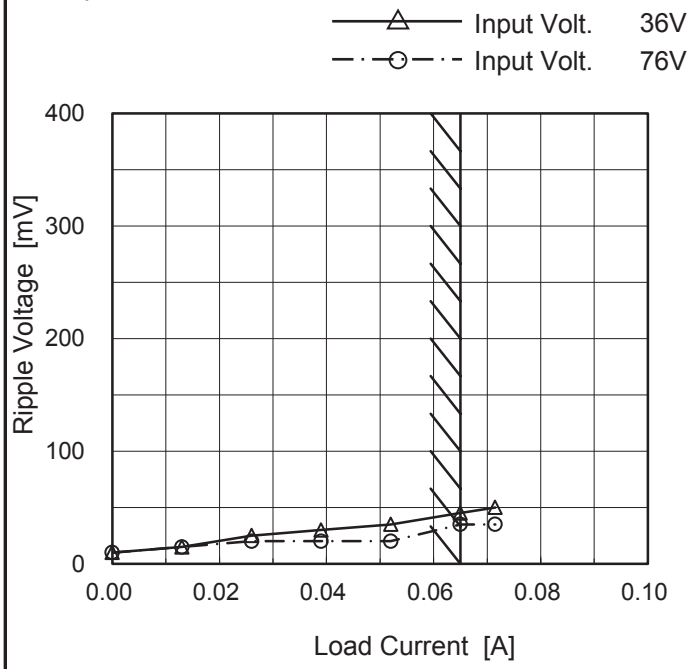
+12V: Rated Load Current

COSEL

Model	MGW1R54812
Item	Ripple-Noise
Object	+12V0.065A

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]

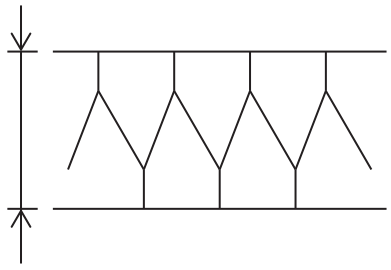


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	10	10
0.013	15	15
0.026	25	20
0.039	30	20
0.052	35	20
0.065	45	35
0.072	50	35
--	-	-
--	-	-
--	-	-
--	-	-

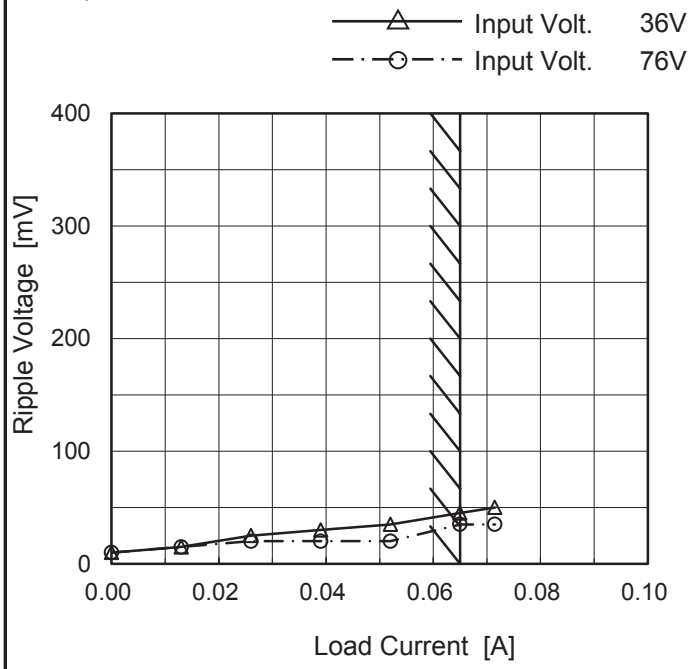
-12V: Rated Load Current

COSEL

Model	MGW1R54812
Item	Ripple-Noise
Object	-12V0.065A

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]

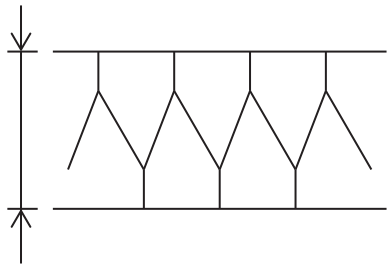


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.000	10	10
0.013	15	15
0.026	25	20
0.039	30	20
0.052	35	20
0.065	45	35
0.072	50	35
--	-	-
--	-	-
--	-	-
--	-	-

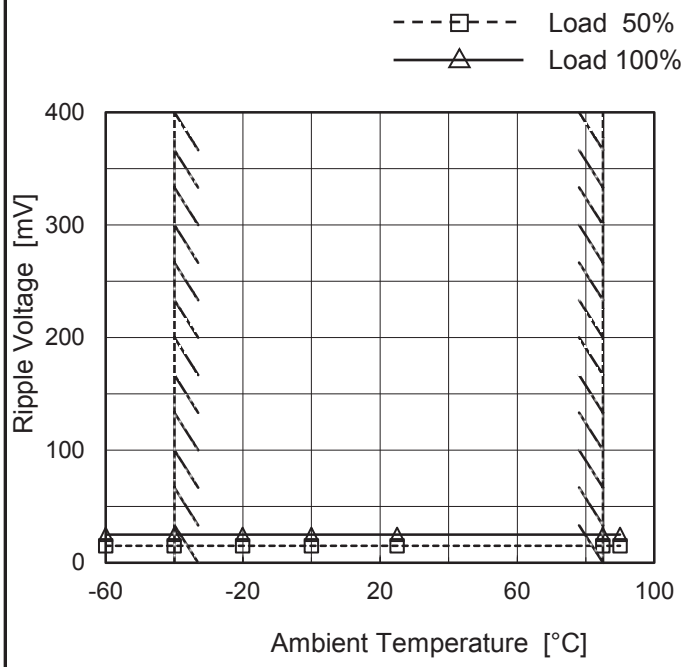
+12V: Rated Load Current

COSEL

Model	MGW1R54812
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V0.065A

Testing Circuitry Figure B

1.Graph



Input Volt. 48V

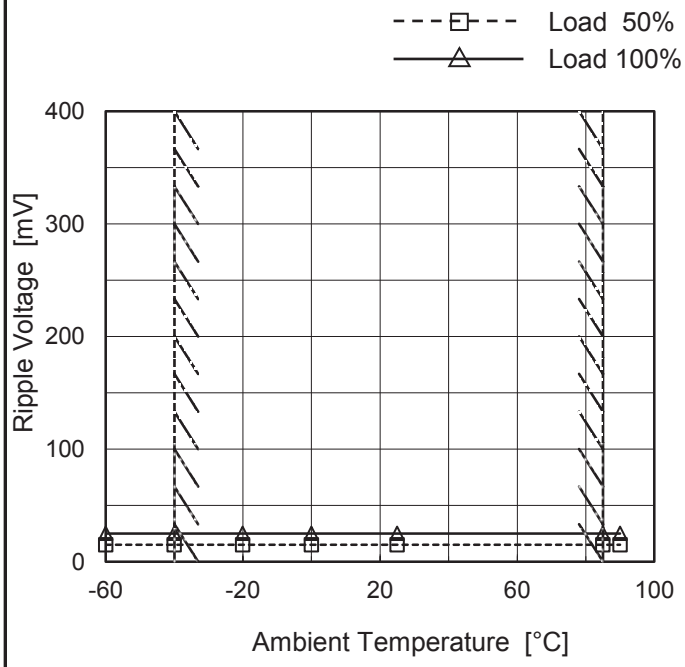
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	15	25
-40	15	25
-20	15	25
0	15	25
25	15	25
85	15	25
90	15	25
--	-	-
--	-	-
--	-	-
--	-	-

-12V: Rated Load Current

Object	-12V0.065A

1.Graph



Input Volt. 48V

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	15	25
-40	15	25
-20	15	25
0	15	25
25	15	25
85	15	25
90	15	25
--	-	-
--	-	-
--	-	-
--	-	-

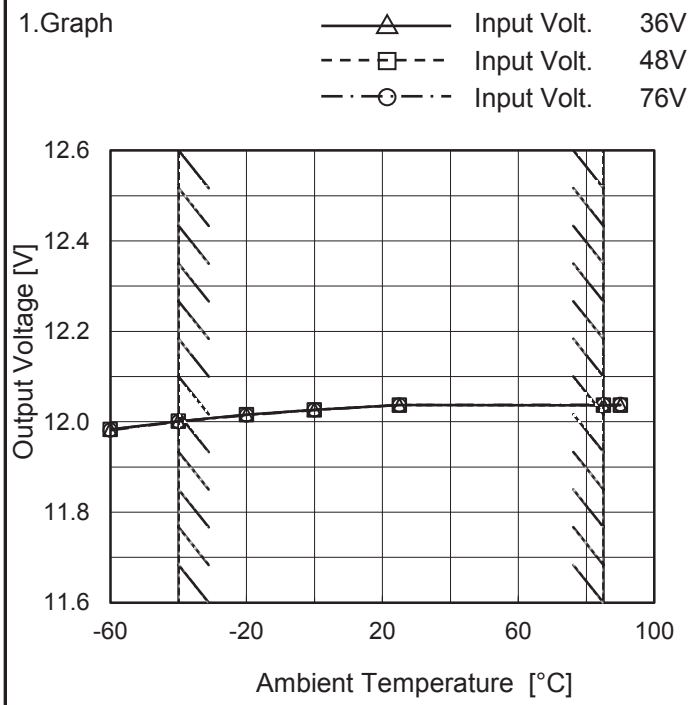
+12V: Rated Load Current

COSEL

Model	MGW1R54812
Item	Ambient Temperature Drift
Object	+12V0.065A

Testing Circuitry Figure A

1.Graph



Load 100%

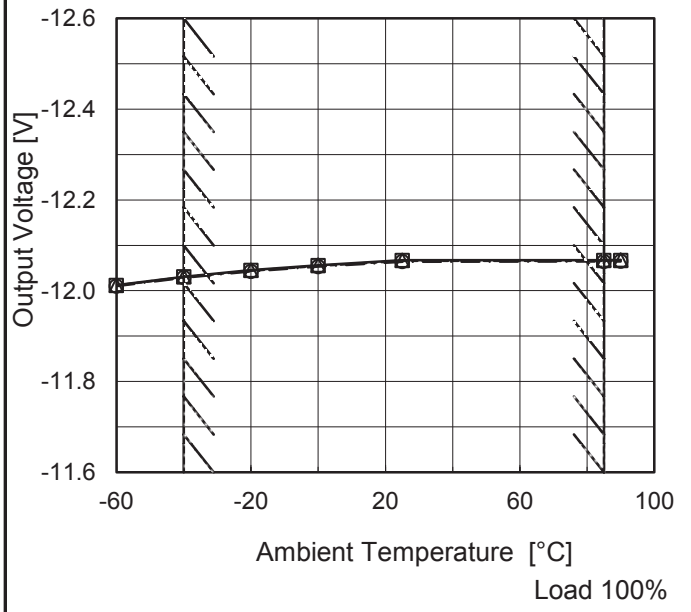
2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	11.983	11.983	11.981
-40	12.001	12.001	12.000
-20	12.016	12.015	12.015
0	12.027	12.026	12.026
25	12.037	12.037	12.037
85	12.037	12.037	12.038
90	12.037	12.037	12.038
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

-12V: Rated Load Current

Object	-12V0.065A

1.Graph



Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	-12.012	-12.011	-12.010
-40	-12.031	-12.030	-12.029
-20	-12.045	-12.044	-12.042
0	-12.056	-12.055	-12.053
25	-12.067	-12.066	-12.064
85	-12.068	-12.066	-12.064
90	-12.068	-12.067	-12.065
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

+12V: Rated Load Current

Model	MGW1R54812	
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 - 85°C
Input Voltage : 36 - 76V
Load Current (AVR 1) : 0 - 0.065A (AVR 2) : 0 - 0.065A

* 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	+12V0.065A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	36	0	12.296	±256	±2.1
Minimum Voltage	85	36	0.065	11.785		

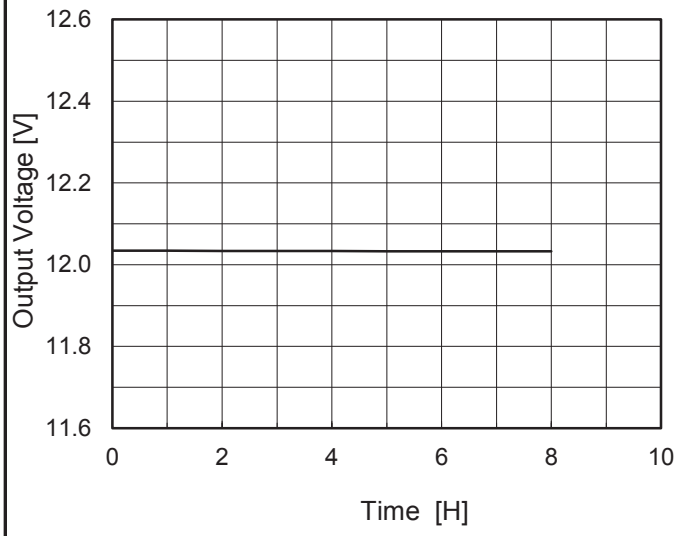
Object	-12V0.065A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	36	0	-12.329	±255	±2.1
Minimum Voltage	85	36	0.065	-11.819		

COSEL

Model	MGW1R54812
Item	Time Lapse Drift
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 48V
Load 100%

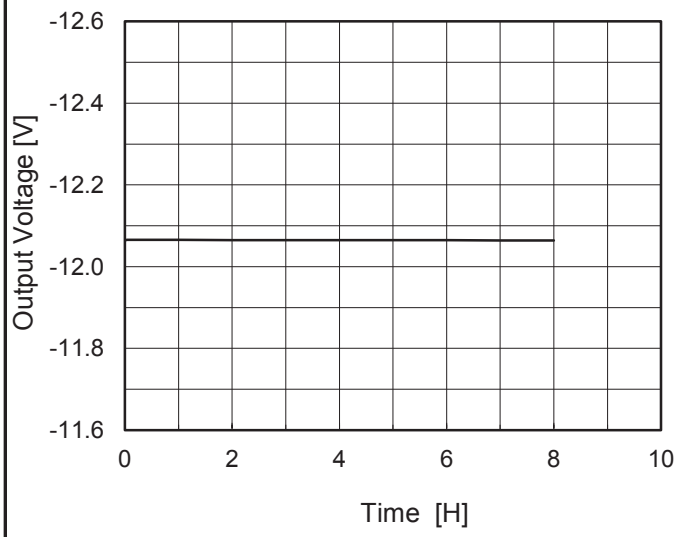
2.Values

Time since start [H]	Output Voltage [V]
0.0	12.033
0.5	12.034
1.0	12.034
2.0	12.034
3.0	12.034
4.0	12.033
5.0	12.033
6.0	12.033
7.0	12.033
8.0	12.033

-12V: Rated Load Current

Object	-12V0.065A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.064
0.5	-12.065
1.0	-12.065
2.0	-12.065
3.0	-12.065
4.0	-12.065
5.0	-12.065
6.0	-12.065
7.0	-12.064
8.0	-12.064

+12V: Rated Load Current

BC - 10960

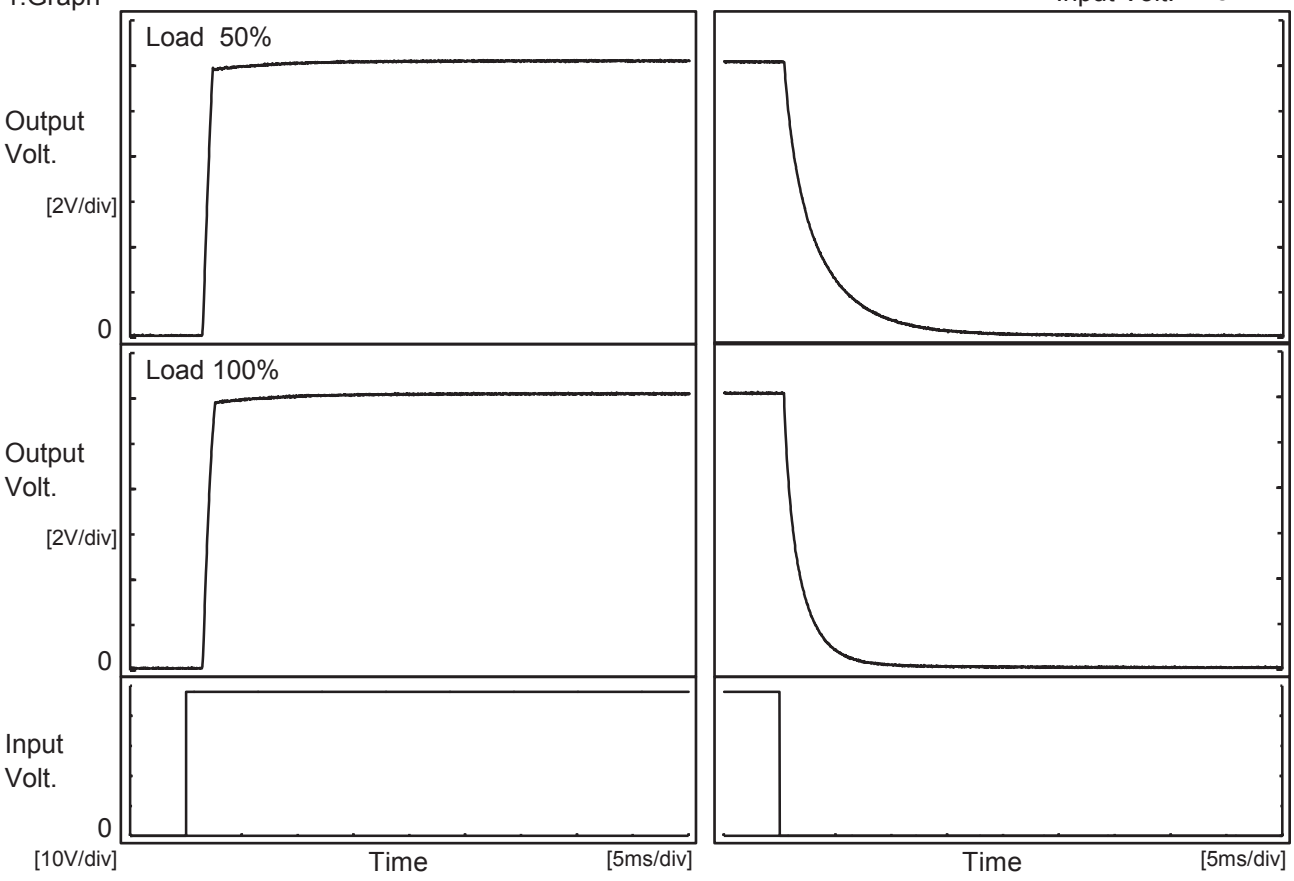
COSEL

Model	MGW1R54812
Item	Rise and Fall Time
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

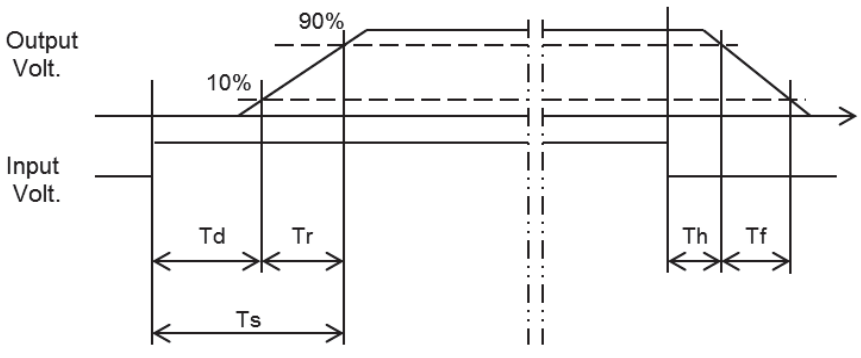
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.6	0.7	2.3	0.6	7.2
100 %	1.6	0.9	2.5	0.5	3.6



BC-10960

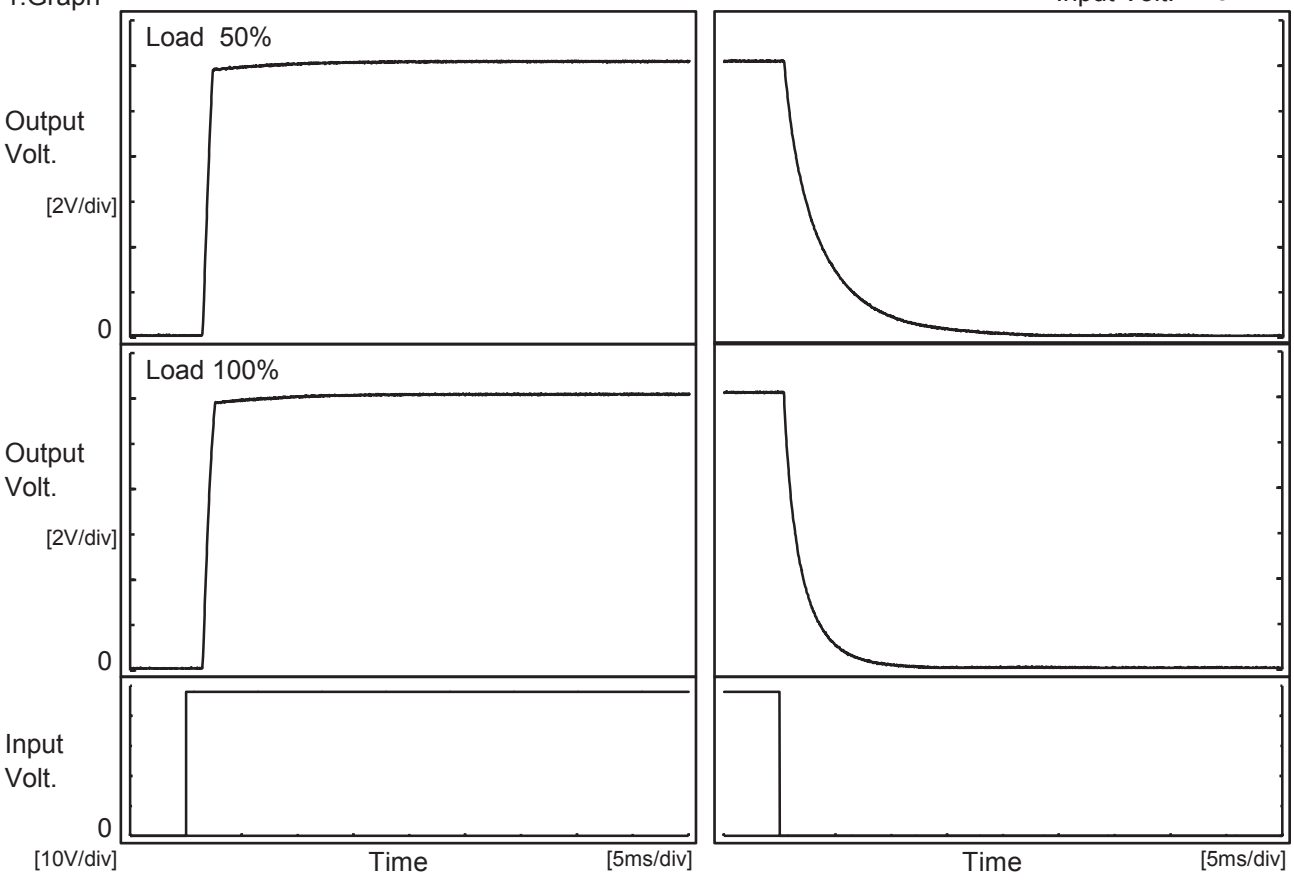
COSEL

Model	MGW1R54812
Item	Rise and Fall Time
Object	-12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

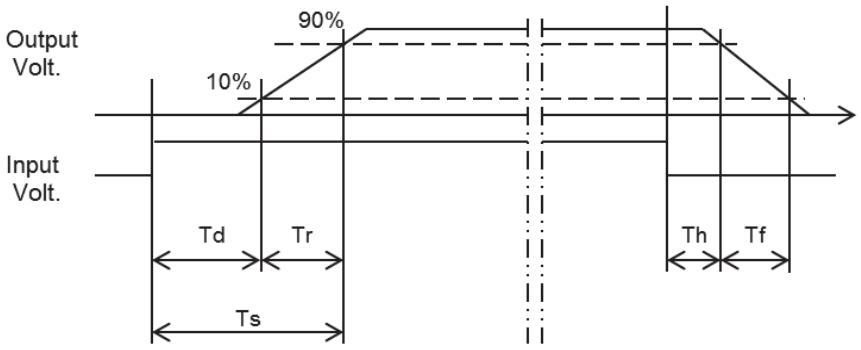
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.6	0.8	2.4	0.7	7.9
100 %	1.6	0.9	2.5	0.5	4.1

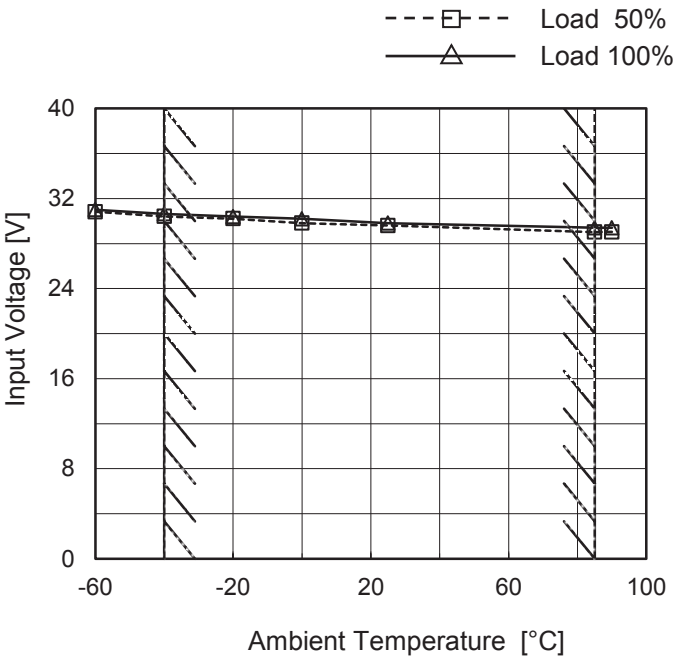


COSEL

Model	MGW1R54812
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V0.065A

Testing Circuitry Figure A

1.Graph

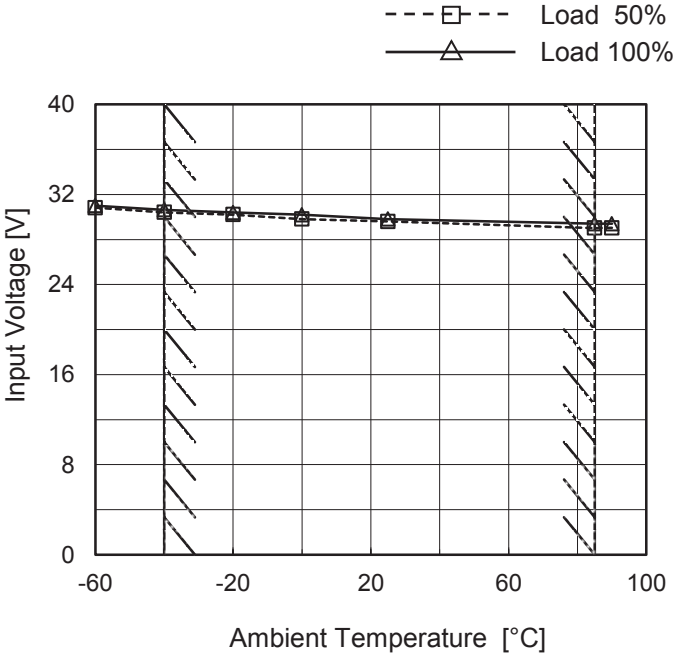


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.9	31.1
-40	30.5	30.7
-20	30.3	30.4
0	29.9	30.2
25	29.6	29.9
85	29.1	29.4
90	29.1	29.4
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V0.065A

1.Graph



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

2.Values

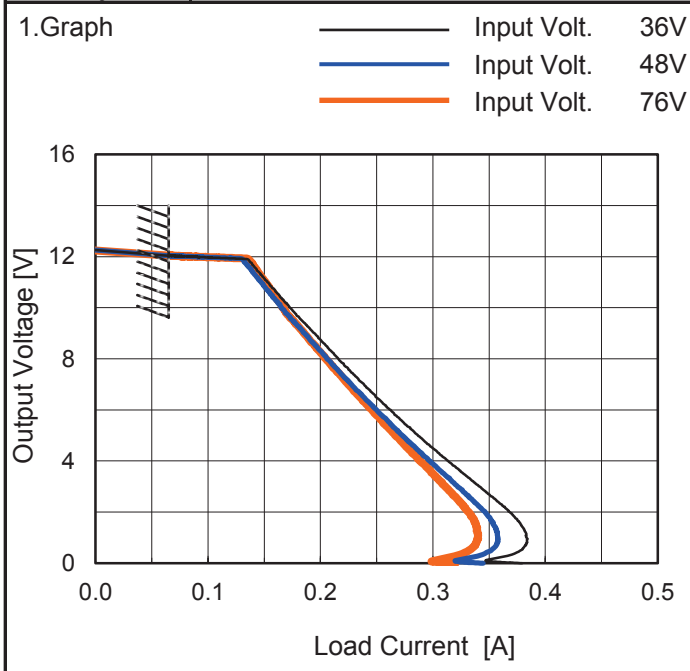
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	30.9	31.1
-40	30.5	30.7
-20	30.3	30.4
0	29.9	30.2
25	29.6	29.9
85	29.1	29.4
90	29.1	29.4
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGW1R54812
Item	Overcurrent Protection
Object	+12V0.065A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



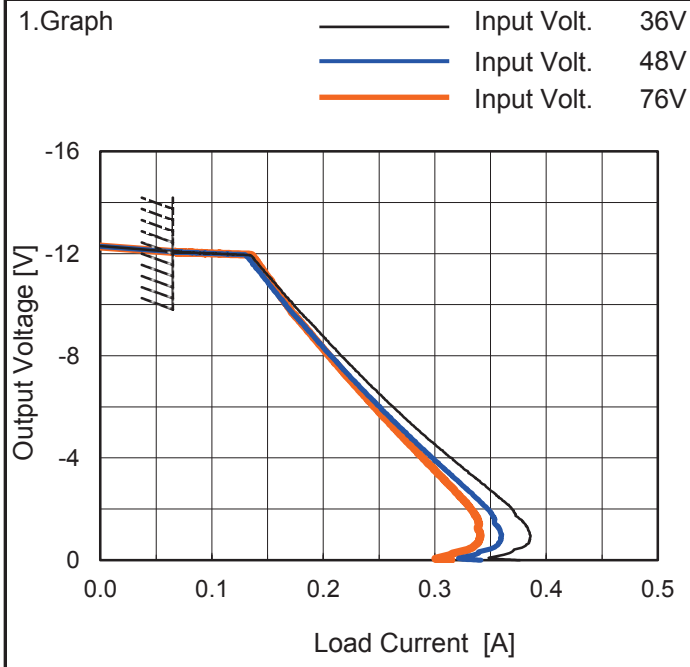
2.Values

Output Voltage [V]	Load Current [A] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
11.4	0.15	0.14	0.14
10.8	0.16	0.15	0.15
9.6	0.18	0.17	0.17
8.4	0.21	0.20	0.20
7.2	0.23	0.22	0.22
6.0	0.26	0.25	0.25
4.8	0.29	0.28	0.27
3.6	0.32	0.31	0.30
2.4	0.36	0.34	0.32
1.2	0.38	0.36	0.34
0.0	0.38	0.34	0.32
--	-	-	-

-12V: Rated Load Current

Object	-12V0.065A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A] Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-11.4	0.15	0.14	0.15
-10.8	0.16	0.15	0.15
-9.6	0.18	0.17	0.17
-8.4	0.21	0.20	0.20
-7.2	0.23	0.22	0.22
-6.0	0.26	0.25	0.25
-4.8	0.29	0.28	0.27
-3.6	0.33	0.31	0.30
-2.4	0.36	0.34	0.32
-1.2	0.38	0.36	0.34
0.0	0.38	0.34	0.31
--	-	-	-

+12V: Rated Load Current

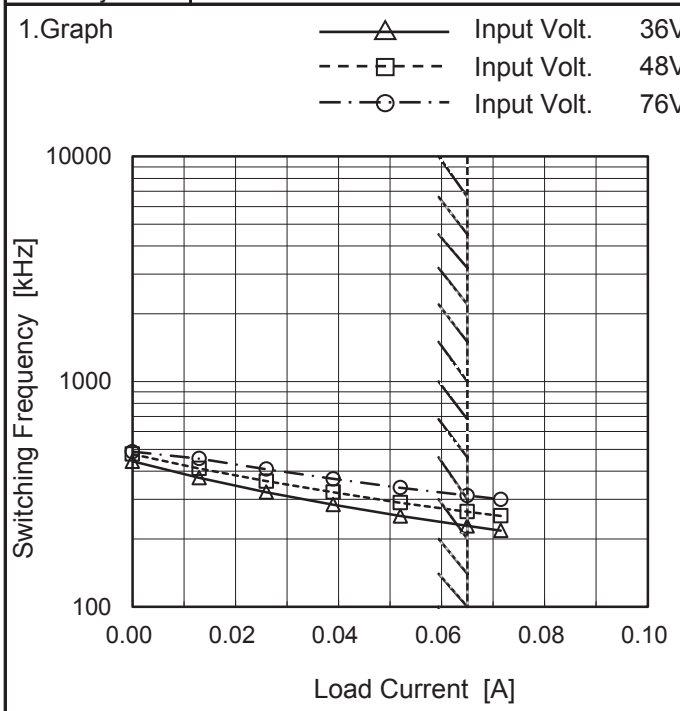
BC - 10960

COSEL

Model	MGW1R54812
Item	Switching Frequency (by Load Current)
Object	+/-12V0.065A

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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.000	443	476	488
0.013	374	411	455
0.026	323	361	408
0.039	284	323	370
0.052	253	290	338
0.065	228	264	312
0.072	218	253	300
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

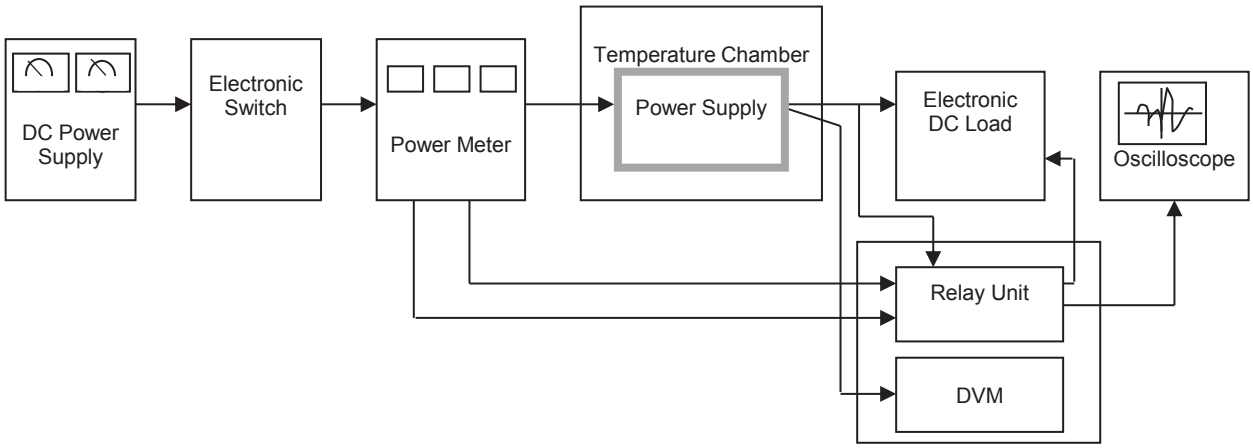


Figure A

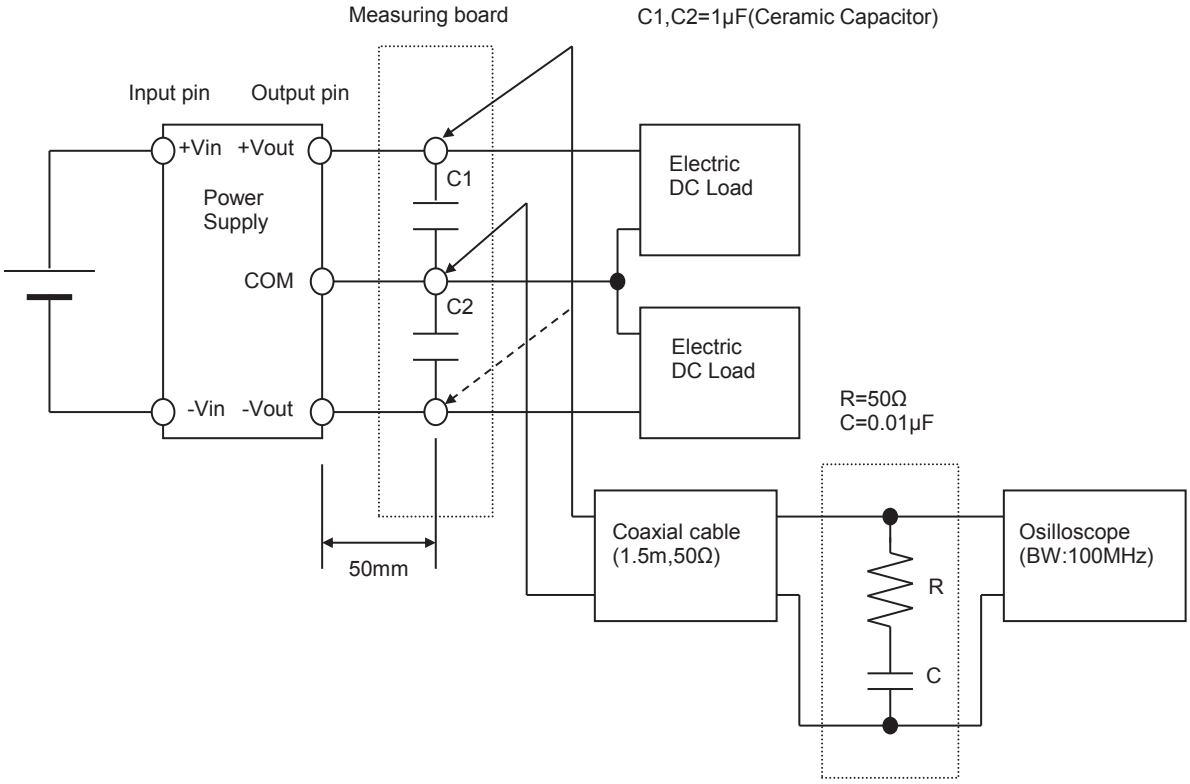


Figure B（Ripple and Ripple noise Characteristic）