COSEL

参考資料

TEST DATA OF MGW1R52415

Regulated DC Power Supply
October 29, 2016

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COSEL CO.,LTD.

参考資料

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CONTENTS

1.Input Current (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・ 1
2.Input Ratio (by Load Ratio) ・・・・・・・・・・・・・・・・・・・・・・・・・・ 2
3.Input Power (by Load Ratio) ・・・・・・・・・・・・・・・・・・・・・・・・・・ 3
4.Efficiency (by Input Voltage) ・・・・・・・・・・・・・・・・・・・・・・・・・ 4
5.Efficiency (by Load Ratio) ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 5
6.Line Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 6
7.Load Regulation ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 7
8.Dynamic Load Response ・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 8
9.Ripple Voltage (by Load Current) ・・・・・・・・・・・・・・・・・・・・・・・ 10
10.Ripple-Noise ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 12
11.Ripple Voltage (by Ambient Temperature) ・・・・・・・・・・・・・・・・・・・ 14
12.Ambient Temperature Drift ・・・・・・・・・・・・・・・・・・・・・・・・・・ 15
13.Output Voltage Accuracy ・・・・・・・・・・・・・・・・・・・・・・・・・・・ 16
14.Time Lapse Drift ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 17
15.Rise and Fall Time ・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 18
16.Minimum Input Voltage for Regulated Output Voltage ・・・・・・・・・・・・・ 20
17.Overcurrent Protection ・・・・・・・・・・・・・・・・・・・・・・・・・・・・ 21
18.Switching Frequency (by Load Current) ・・・・・・・・・・・・・・・・・・・・ 22
19.Figure of Testing Circuitry ・・・・・・・・・・・・・・・・・・・・・・・・・・ 23

(Final Page 23)

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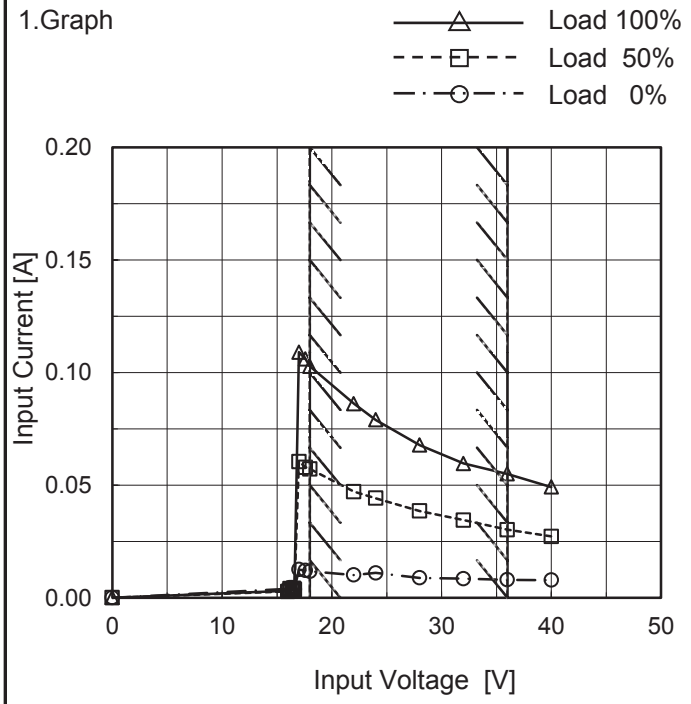
Model	MGW1R52415
Item	Input Current (by Input Voltage)
Object	――――――――

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
16.0	0.004	0.003	0.003
16.2	0.005	0.004	0.003
16.4	0.005	0.003	0.004
16.5	0.004	0.004	0.003
16.6	0.004	0.004	0.003
17.0	0.013	0.061	0.109
17.6	0.012	0.058	0.106
18.0	0.012	0.057	0.103
22.0	0.010	0.047	0.086
24.0	0.011	0.044	0.079
28.0	0.009	0.039	0.068
32.0	0.009	0.035	0.060
36.0	0.008	0.030	0.055
40.0	0.008	0.027	0.049
--	-	-	-
--	-	-	-
--	-	-	-

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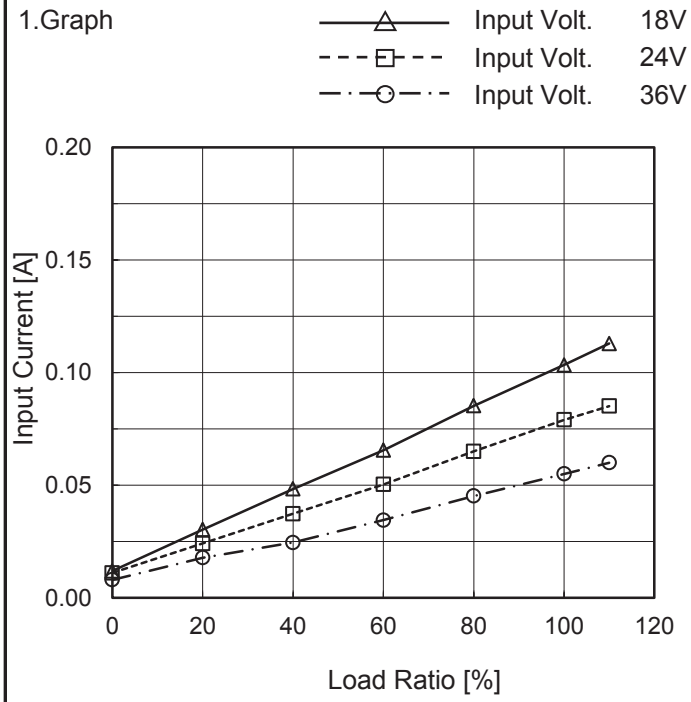
COSEL

Model	MGW1R52415
Item	Input Current (by Load Ratio)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

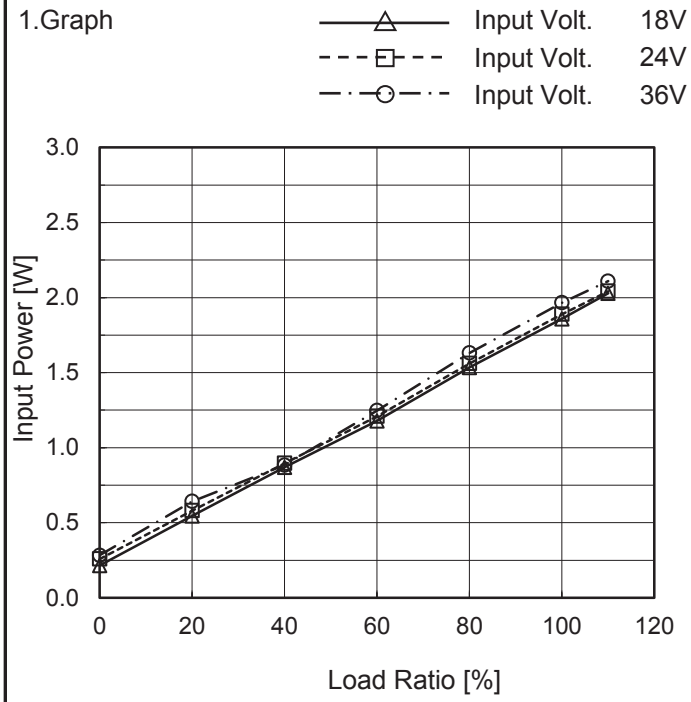
Load Ratio [%]	Input Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	0.012	0.011	0.008
20	0.030	0.024	0.018
40	0.048	0.037	0.025
60	0.066	0.050	0.035
80	0.085	0.065	0.045
100	0.103	0.079	0.055
110	0.113	0.085	0.060
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGW1R52415
Item	Input Power (by Load Ratio)
Object	――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

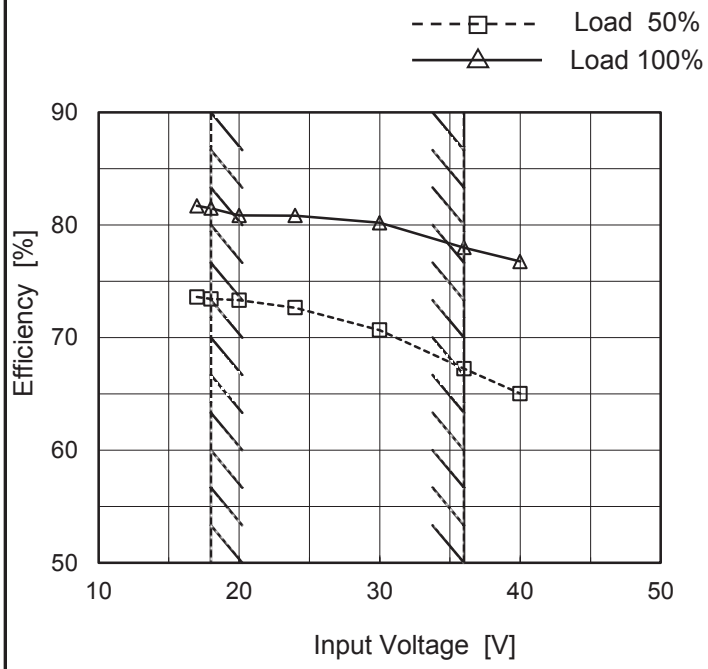
Load Ratio [%]	Input Power [W]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	0.21	0.26	0.28
20	0.54	0.58	0.64
40	0.87	0.90	0.88
60	1.18	1.21	1.25
80	1.53	1.56	1.63
100	1.86	1.89	1.97
110	2.03	2.04	2.11
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGW1R52415
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%
17	73.6	81.7
18	73.4	81.5
20	73.3	80.9
24	72.7	80.8
30	70.7	80.2
36	67.2	78.0
40	65.0	76.8
--	-	-
--	-	-

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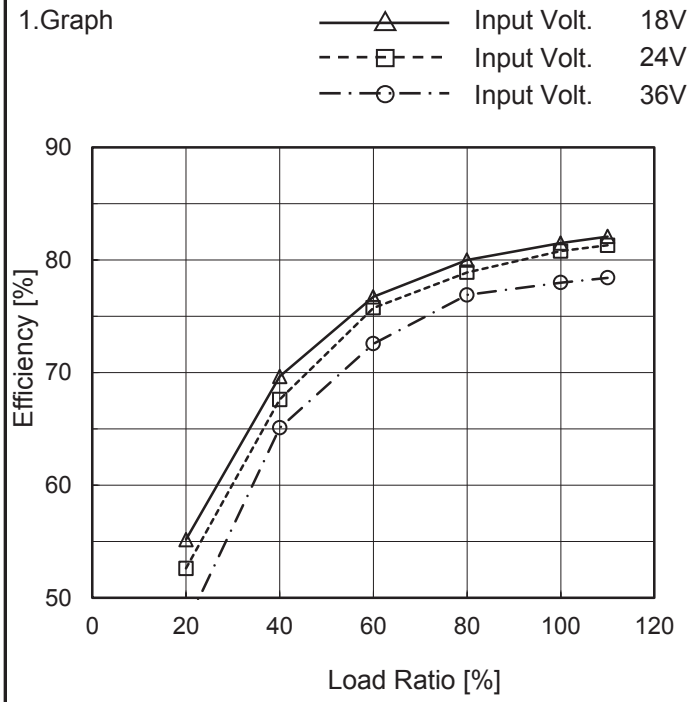
COSEL

Model	MGW1R52415
Item	Efficiency (by Load Ratio)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ratio [%]	Efficiency [%]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	-	-	-
20	55.2	52.6	47.5
40	69.7	67.6	65.1
60	76.7	75.7	72.6
80	80.0	78.9	76.9
100	81.5	80.8	78.0
110	82.1	81.3	78.4
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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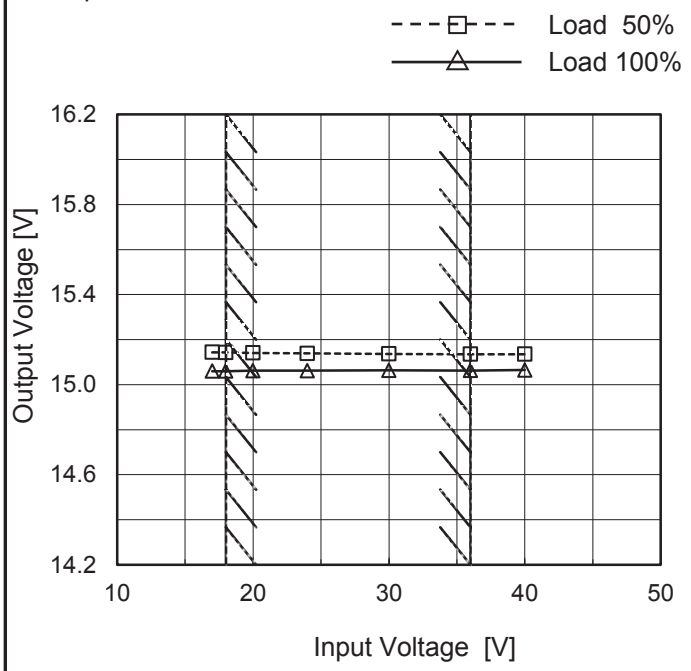
Model	MGW1R52415
Item	Line Regulation
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



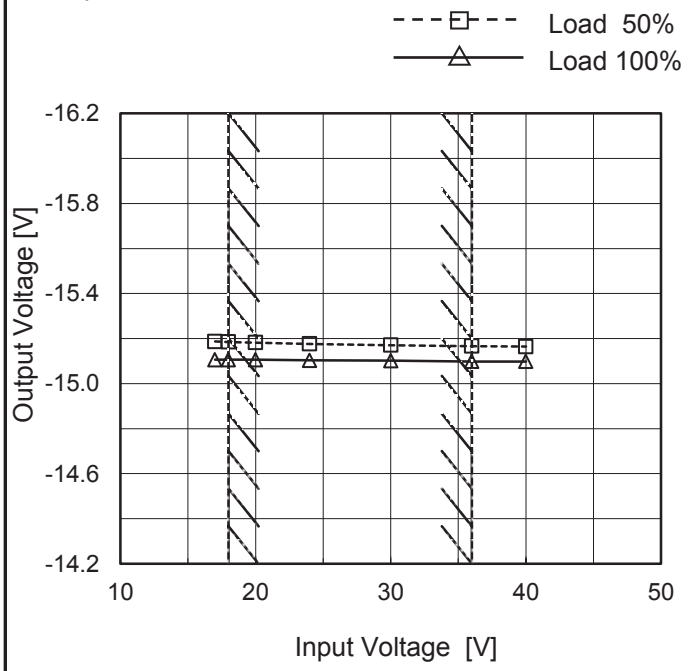
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.143	15.060
18	15.143	15.060
20	15.141	15.062
24	15.139	15.062
30	15.137	15.064
36	15.135	15.063
40	15.135	15.065
--	-	-
--	-	-

-15V: Rated Load Current

Object	-15V0.05A

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%
17	-15.187	-15.106
18	-15.185	-15.106
20	-15.182	-15.106
24	-15.176	-15.103
30	-15.170	-15.102
36	-15.166	-15.098
40	-15.164	-15.098
--	-	-
--	-	-

+15V: Rated Load Current

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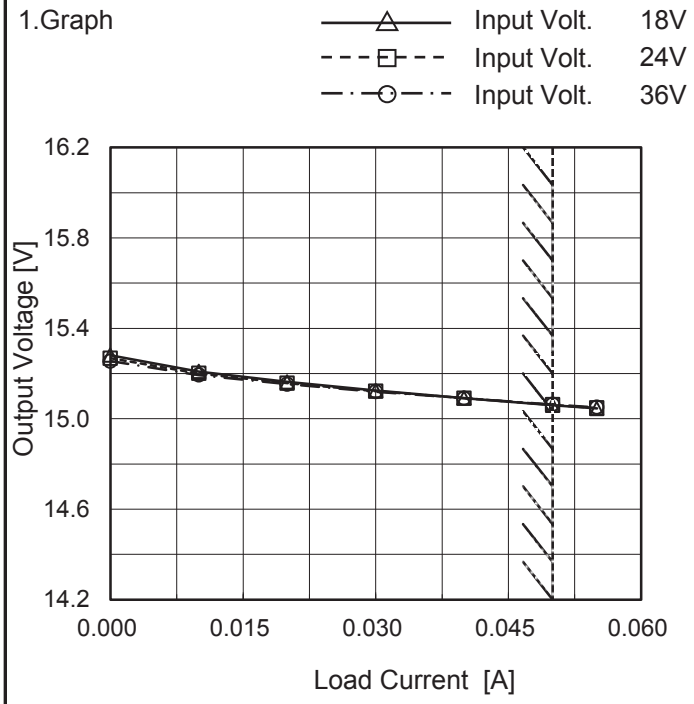
COSEL

Model	MGW1R52415
Item	Load Regulation
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



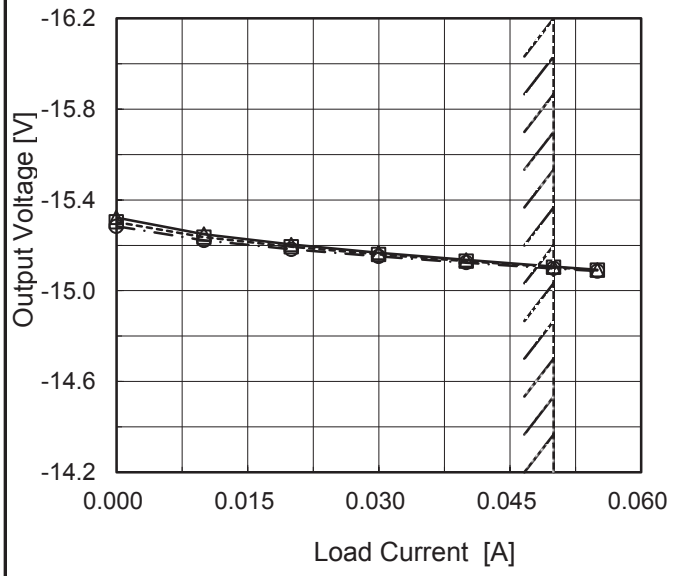
2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.000	15.282	15.267	15.255
0.010	15.209	15.201	15.193
0.020	15.163	15.157	15.153
0.030	15.125	15.122	15.120
0.040	15.092	15.091	15.091
0.050	15.060	15.062	15.063
0.055	15.045	15.048	15.051
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

-15V: Rated Load Current

Object	-15V0.05A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.000	-15.322	-15.303	-15.284
0.010	-15.249	-15.236	-15.221
0.020	-15.204	-15.194	-15.182
0.030	-15.168	-15.160	-15.151
0.040	-15.136	-15.130	-15.124
0.050	-15.106	-15.103	-15.098
0.055	-15.092	-15.090	-15.086
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

+15V: Rated Load Current

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COSEL

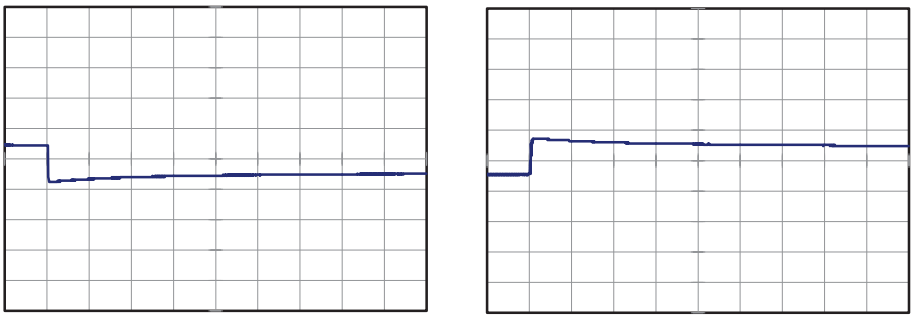
Model	MGW1R52415	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+15V0.05A	

Input Volt. 24 V

-15V:rated load current.

Cycle 100 ms

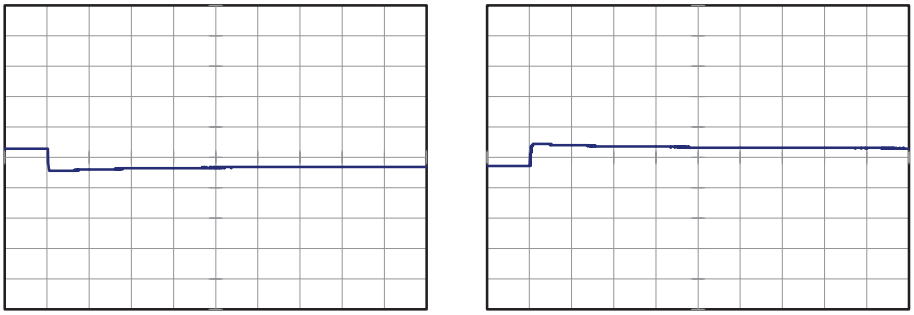
Min.Load (0A)←→
Load 100% (0.05A)



200 mV/div

4 ms/div 4 ms/div

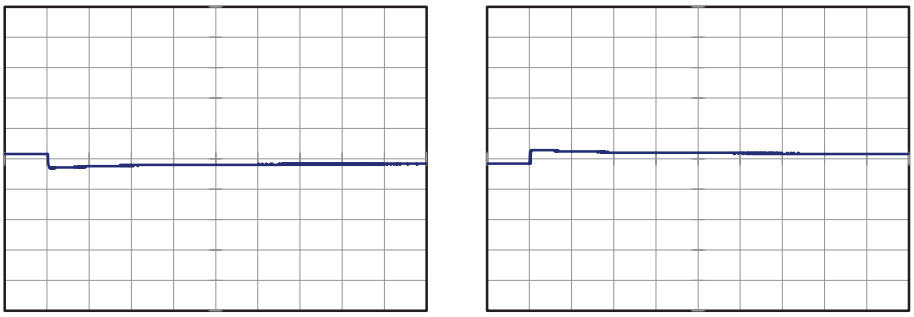
Min.Load (0A)←→
Load 50% (0.025A)



200 mV/div

4 ms/div 4 ms/div

Load 50% (0.025A)←→
Load 100% (0.05A)



200 mV/div

4 ms/div 4 ms/div

COSEL

Model	MGW1R52415	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	-15V0.05A	

Input Volt. 24 V

+15V:rated load current.

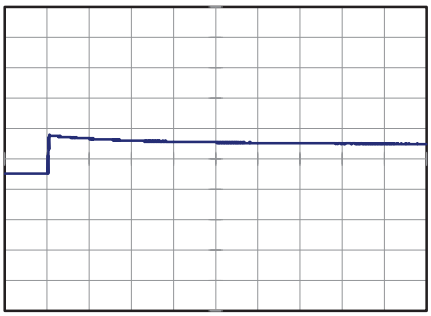
Cycle 100 ms

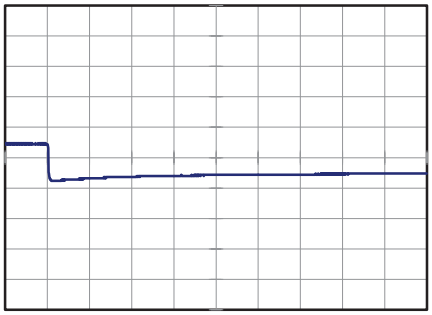
t1,t2 = 100 μ s

Load Current

t1 t2

Min.Load (0A)←→
Load 100% (0.05A)

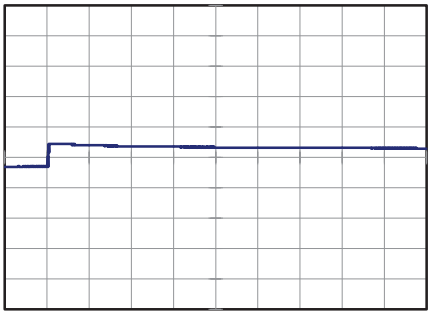


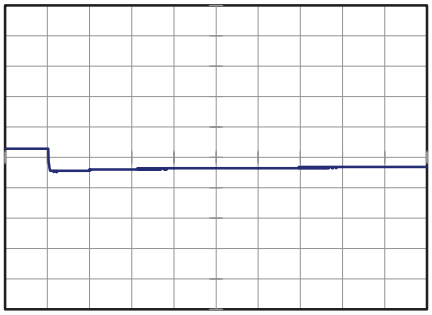


200 mV/div

4 ms/div 4 ms/div

Min.Load (0A)←→
Load 50% (0.025A)

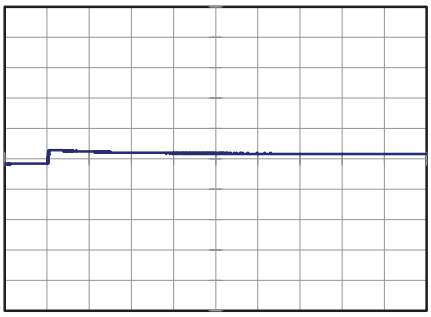


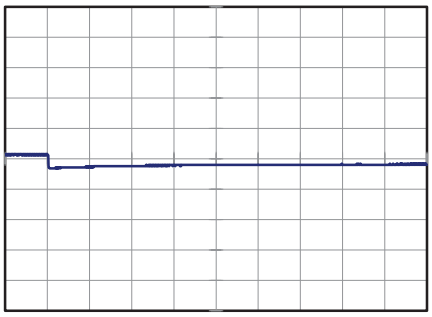


200 mV/div

4 ms/div 4 ms/div

Load 50% (0.025A)←→
Load 100% (0.05A)





200 mV/div

4 ms/div 4 ms/div

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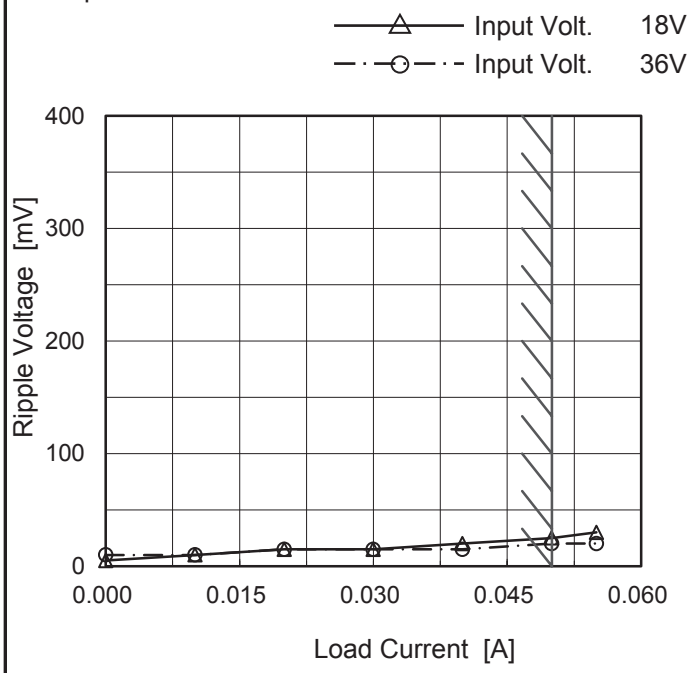
Model	MGW1R52415
Item	Ripple Voltage (by Load Current)
Object	+15V0.05A

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]

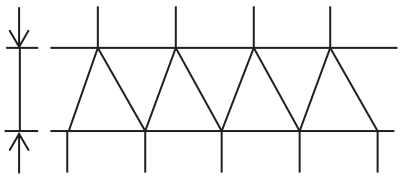


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.000	5	10
0.010	10	10
0.020	15	15
0.030	15	15
0.040	20	15
0.050	25	20
0.055	30	20
--	-	-
--	-	-
--	-	-
--	-	-

-15V: Rated Load Current

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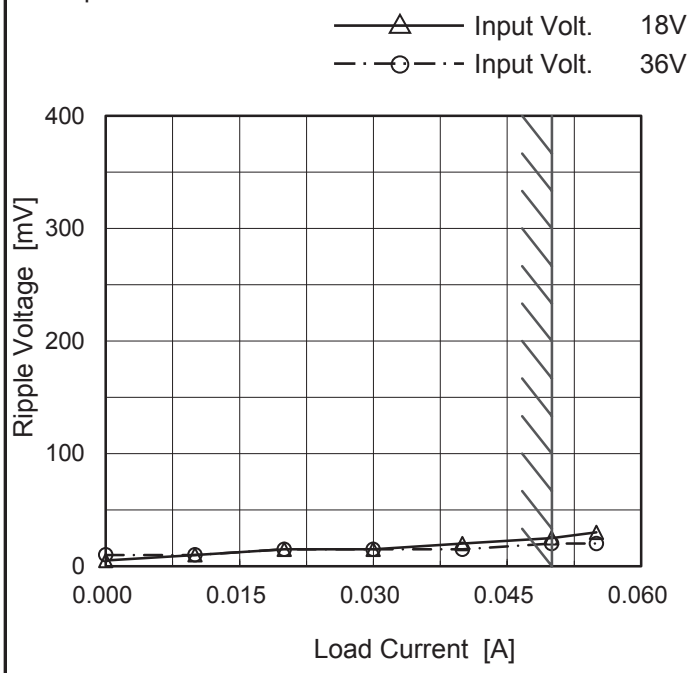
Model	MGW1R52415
Item	Ripple Voltage (by Load Current)
Object	-15V0.05A

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]

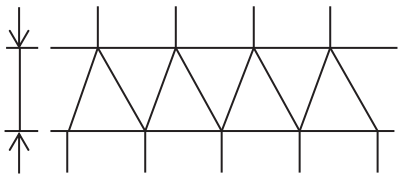


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.000	5	10
0.010	10	10
0.020	15	15
0.030	15	15
0.040	20	15
0.050	25	20
0.055	30	20
--	-	-
--	-	-
--	-	-
--	-	-

+15V: Rated Load Current

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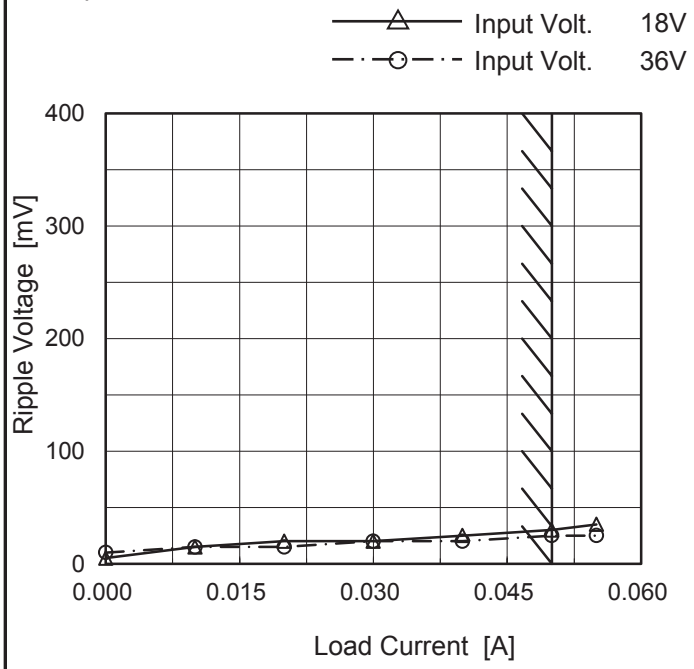
COSEL

Model	MGW1R52415
Item	Ripple-Noise
Object	+15V0.05A

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]

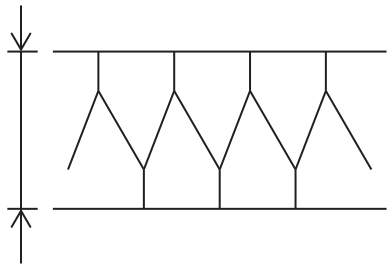


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.000	5	10
0.010	15	15
0.020	20	15
0.030	20	20
0.040	25	20
0.050	30	25
0.055	35	25
--	-	-
--	-	-
--	-	-
--	-	-

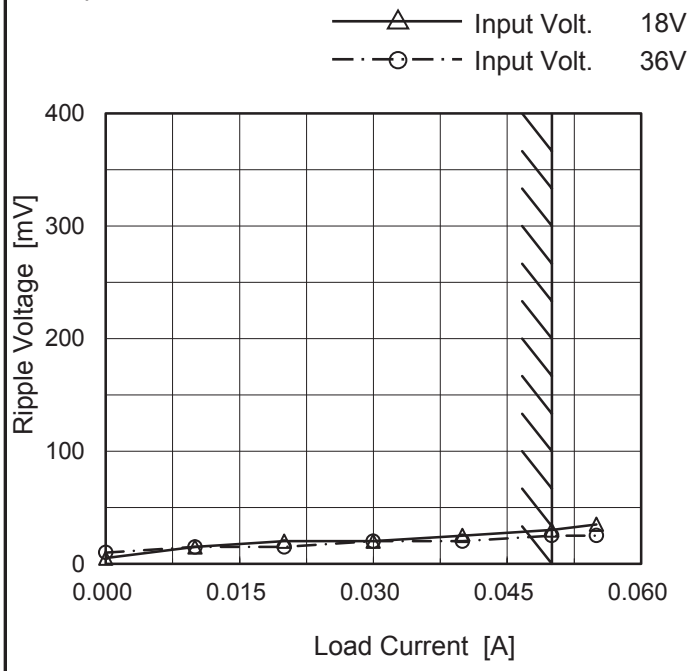
-15V: Rated Load Current

COSEL

Model	MGW1R52415
Item	Ripple-Noise
Object	-15V0.05A

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]

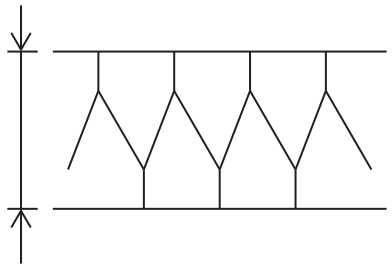


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.000	5	10
0.010	15	15
0.020	20	15
0.030	20	20
0.040	25	20
0.050	30	25
0.055	35	25
--	-	-
--	-	-
--	-	-
--	-	-

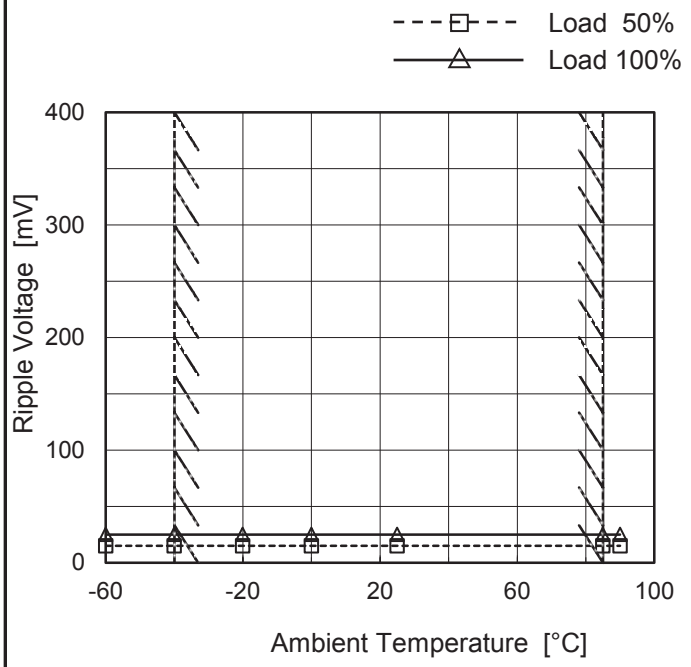
+15V: Rated Load Current

COSEL

Model	MGW1R52415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.05A

Testing Circuitry Figure B

1.Graph



Input Volt. 24V

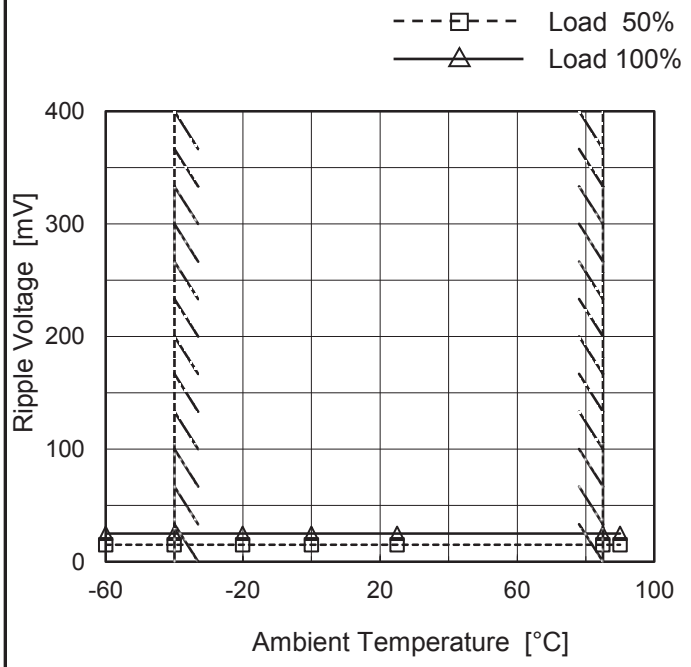
2.Values

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
--	-	-
--	-	-
--	-	-
--	-	-

-15V: Rated Load Current

Object	-15V0.05A

1.Graph



Input Volt. 24V

Measured by 100 MHz Oscilloscope.

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

2.Values

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

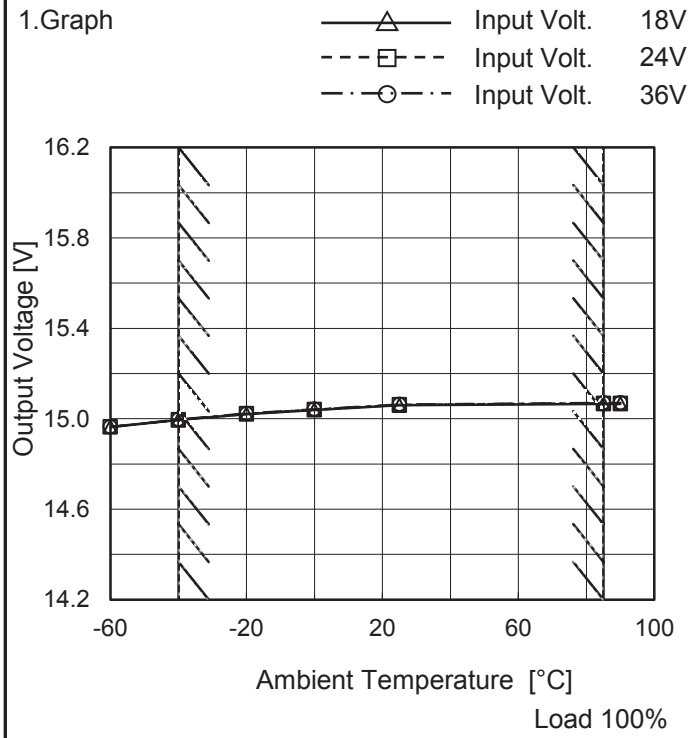
+15V: Rated Load Current

COSEL

Model	MGW1R52415
Item	Ambient Temperature Drift
Object	+15V0.05A

Testing Circuitry Figure A

1.Graph



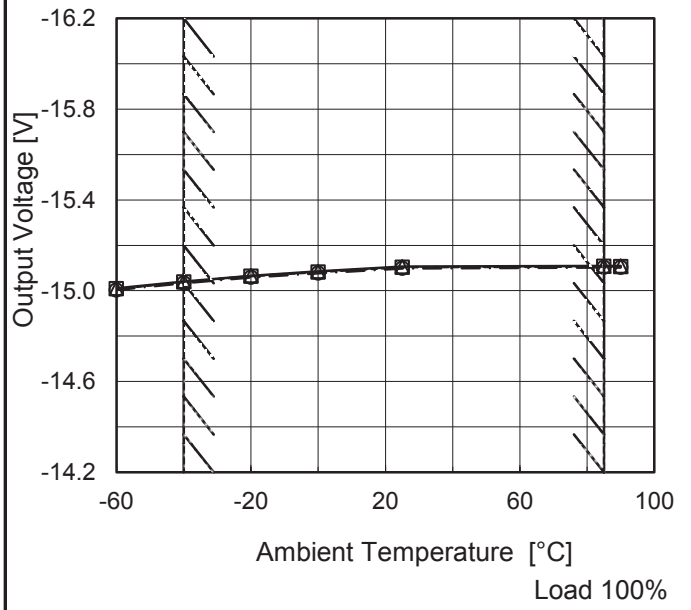
2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	14.964	14.964	14.964
-40	14.995	14.995	14.997
-20	15.021	15.022	15.023
0	15.040	15.040	15.042
25	15.060	15.062	15.063
85	15.066	15.068	15.071
90	15.066	15.068	15.070
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

-15V: Rated Load Current

Object	-15V0.05A

1.Graph



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	-15.010	-15.008	-15.003
-40	-15.040	-15.038	-15.033
-20	-15.066	-15.064	-15.059
0	-15.085	-15.082	-15.077
25	-15.106	-15.103	-15.098
85	-15.109	-15.107	-15.103
90	-15.109	-15.106	-15.102
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

+15V: Rated Load Current

BC-10959

COSEL

Model	MGW1R52415	
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 : 18 - 36V

Load Current (AVR 1) : 0 - 0.05A (AVR 2) : 0 - 0.05A

* 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	+15V0.05A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	18	0	15.313	±250	±1.7
Minimum Voltage	-40	18	0.05	14.814		

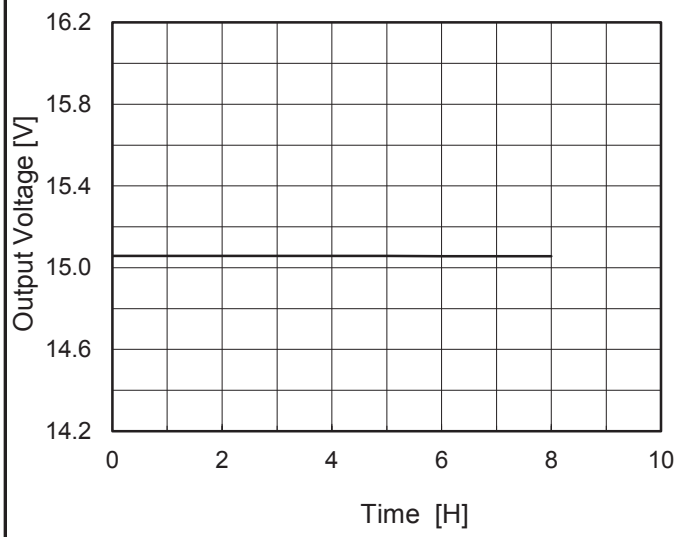
Object	-15V0.05A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	85	18	0	-15.350	±245	±1.6
Minimum Voltage	-40	18	0.05	-14.860		

COSEL

Model	MGW1R52415
Item	Time Lapse Drift
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 24V
Load 100%

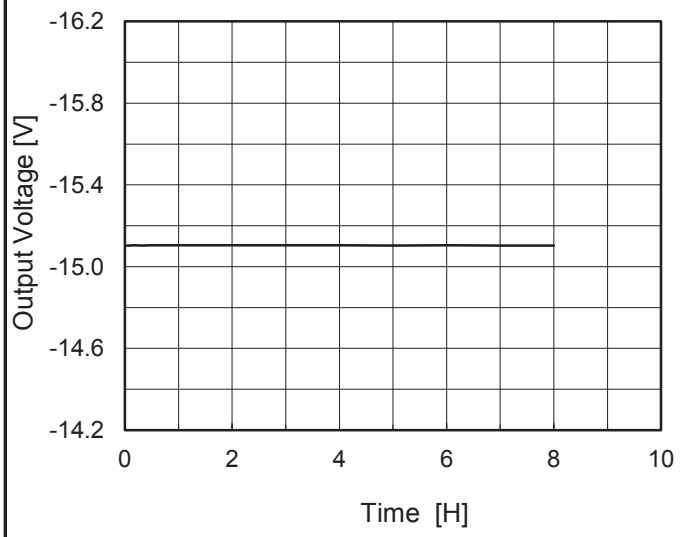
2.Values

Time since start [H]	Output Voltage [V]
0.0	15.056
0.5	15.058
1.0	15.058
2.0	15.058
3.0	15.057
4.0	15.057
5.0	15.057
6.0	15.057
7.0	15.057
8.0	15.057

-15V: Rated Load Current

Object	-15V0.05A

1.Graph



Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-15.101
0.5	-15.104
1.0	-15.104
2.0	-15.104
3.0	-15.104
4.0	-15.104
5.0	-15.104
6.0	-15.104
7.0	-15.104
8.0	-15.104

+15V: Rated Load Current

BC-10959

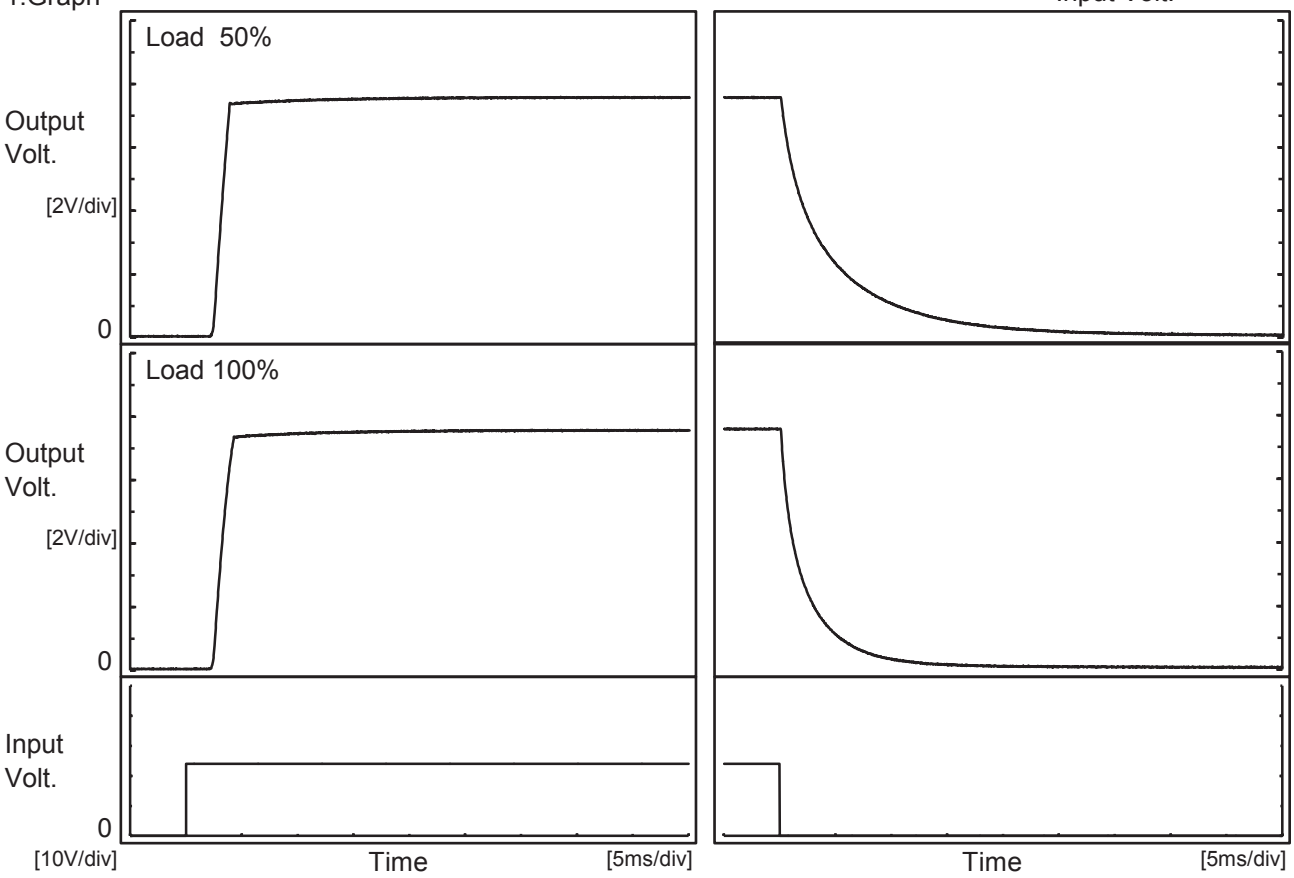
COSEL

Model	MGW1R52415
Item	Rise and Fall Time
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

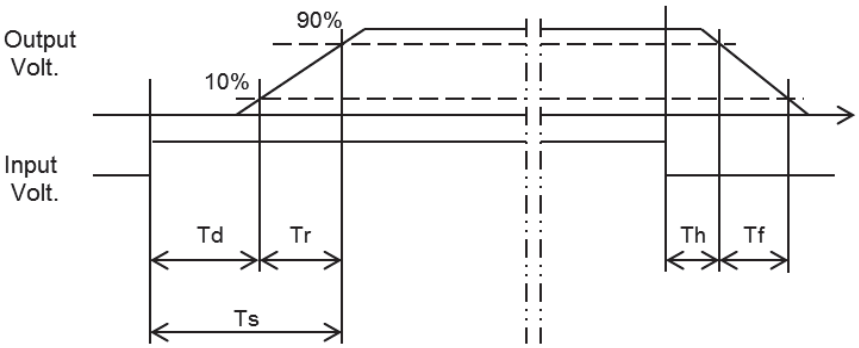
Input Volt. 24 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.6	1.2	3.8	0.4	12.0
100 %	2.6	1.5	4.1	0.2	6.1



BC-10959

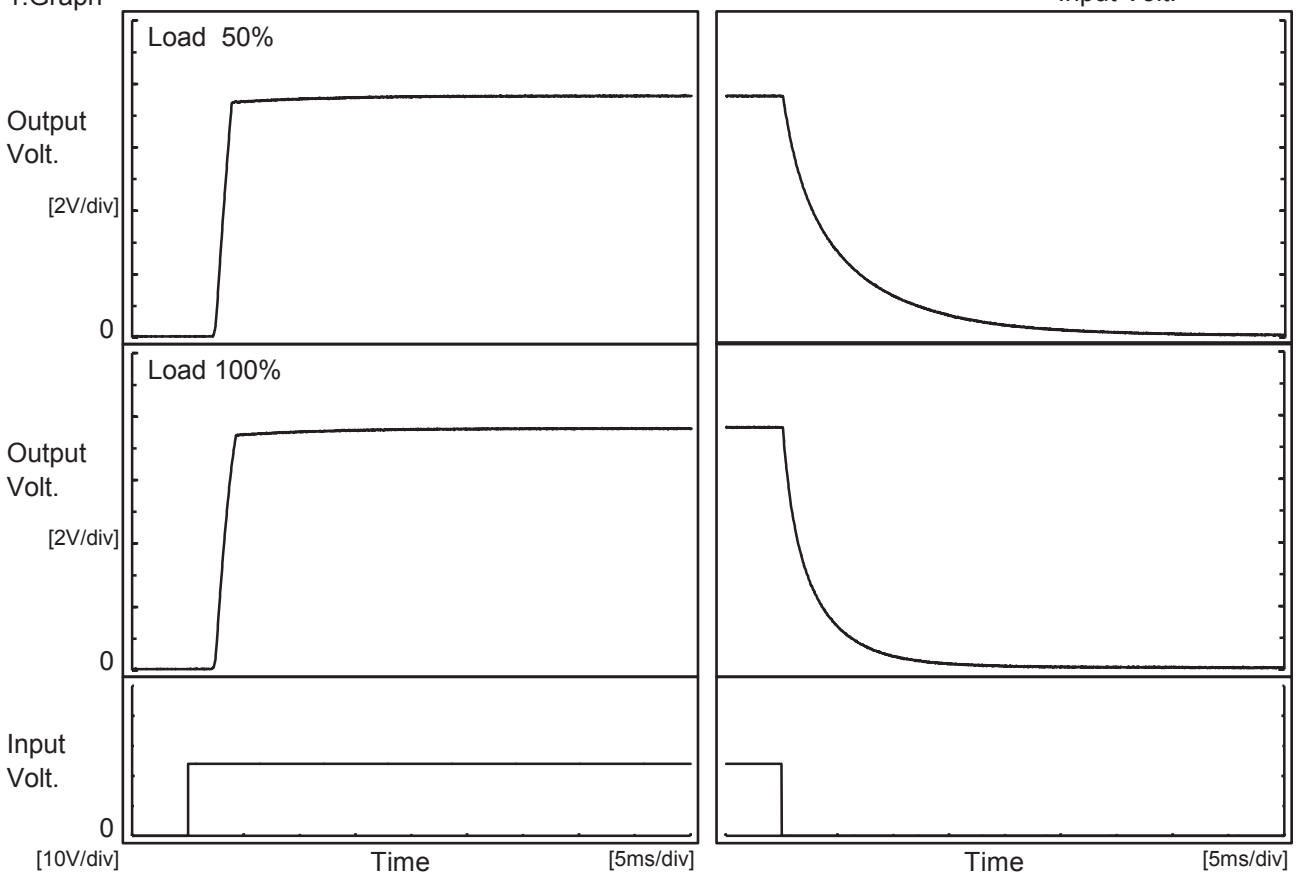
COSEL

Model	MGW1R52415
Item	Rise and Fall Time
Object	-15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

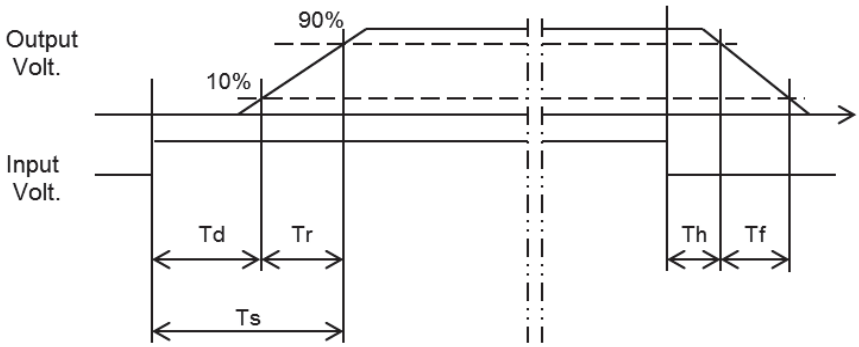
Input Volt. 24 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.6	1.2	3.8	0.5	13.8
100 %	2.6	1.5	4.1	0.3	6.9



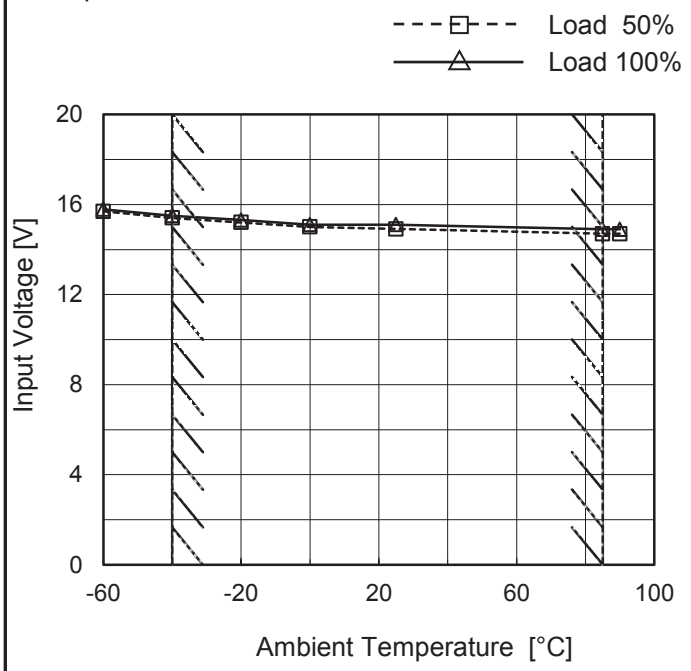
BC-10959

COSEL

Model	MGW1R52415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.05A

Testing Circuitry Figure A

1.Graph

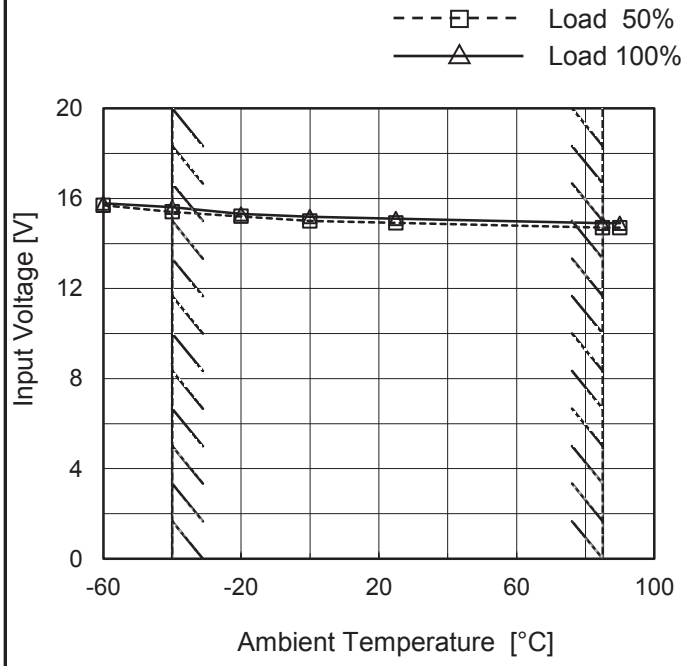


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.7	15.8
-40	15.4	15.5
-20	15.2	15.4
0	15.0	15.1
25	15.0	15.1
85	14.7	14.9
90	14.7	14.9
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V0.05A

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	15.7	15.8
-40	15.4	15.6
-20	15.2	15.4
0	15.0	15.2
25	15.0	15.1
85	14.7	14.9
90	14.7	14.9
--	-	-
--	-	-
--	-	-
--	-	-

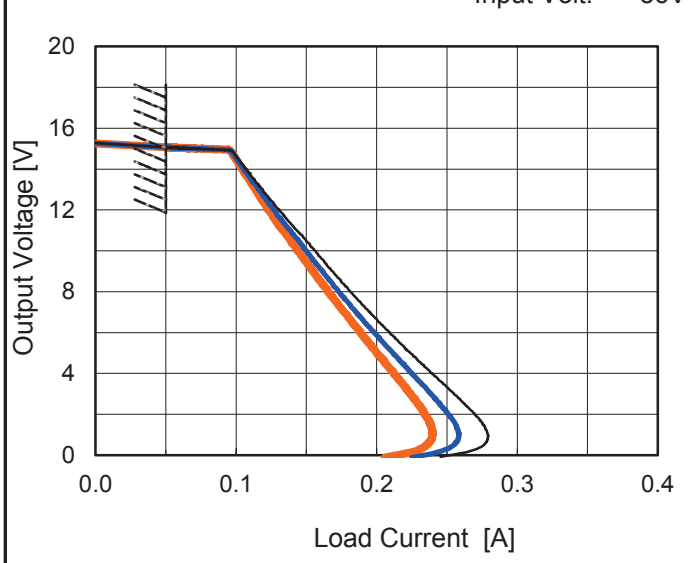
BC-10959

COSEL

Model	MGW1R52415
Item	Overcurrent Protection
Object	+15V0.05A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



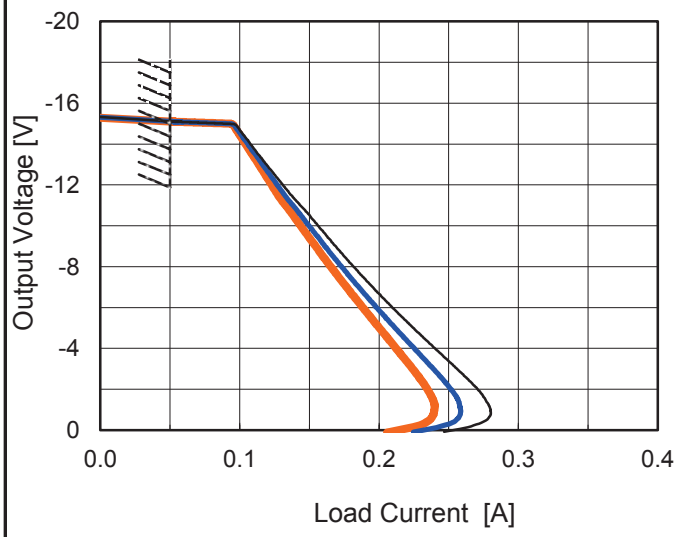
2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
14.25	0.10	0.10	0.10
13.50	0.11	0.11	0.11
12.00	0.13	0.13	0.12
10.50	0.15	0.14	0.14
9.00	0.17	0.16	0.16
7.50	0.19	0.18	0.17
6.00	0.21	0.20	0.19
4.50	0.23	0.22	0.21
3.00	0.25	0.24	0.22
1.50	0.28	0.26	0.24
0.00	0.25	0.22	0.21
--	-	-	-

-15V: Rated Load Current

Object	-15V0.05A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-14.25	0.11	0.10	0.10
-13.50	0.11	0.11	0.11
-12.00	0.13	0.13	0.12
-10.50	0.15	0.14	0.14
-9.00	0.17	0.16	0.15
-7.50	0.19	0.18	0.17
-6.00	0.21	0.20	0.19
-4.50	0.23	0.22	0.21
-3.00	0.26	0.24	0.22
-1.50	0.28	0.26	0.24
0.00	0.25	0.22	0.21
--	-	-	-

+15V: Rated Load Current

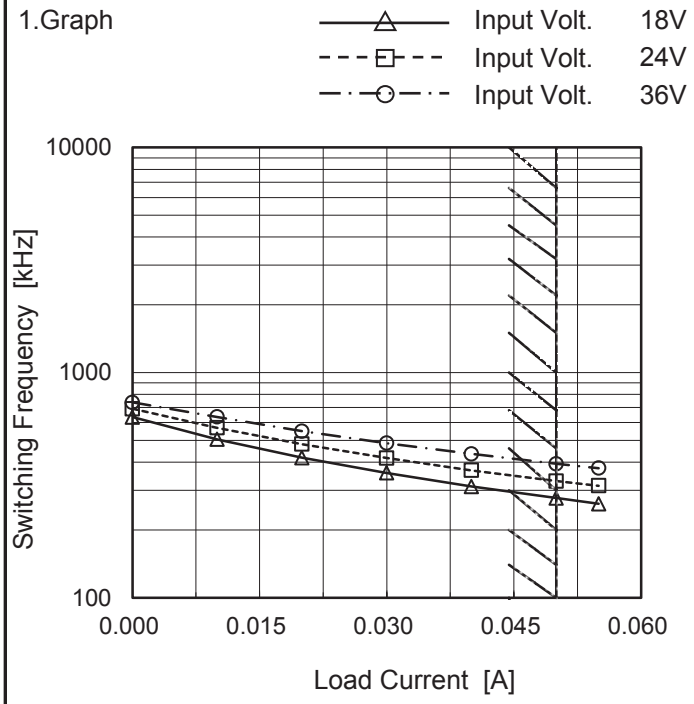
BC-10959

COSEL

Model	MGW1R52415
Item	Switching Frequency (by Load Current)
Object	+/-15V0.05A

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. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.000	634	691	737
0.010	505	568	635
0.020	419	481	550
0.030	358	418	486
0.040	312	368	435
0.050	277	330	393
0.055	261	314	376
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

BC-10959

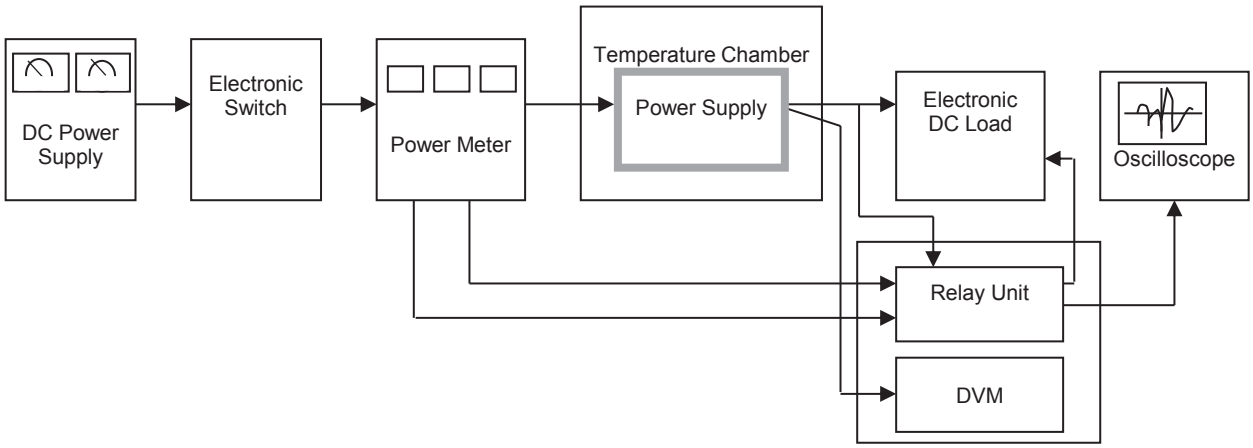


Figure A

Data Acquisition/Control Unit

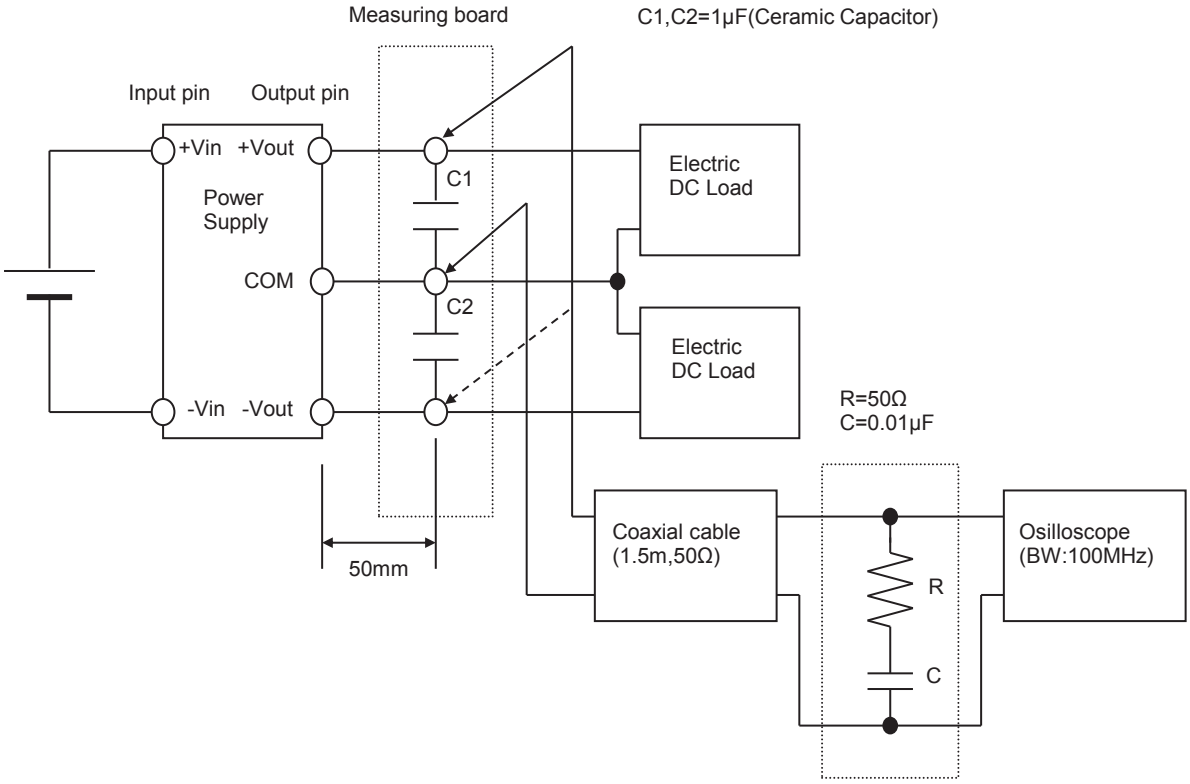


Figure B（Ripple and Ripple noise Characteristic）