COSEL

参考資料

TEST DATA OF MGFW304815

Regulated DC Power Supply
November 25, 2010

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COSEL CO.,LTD.

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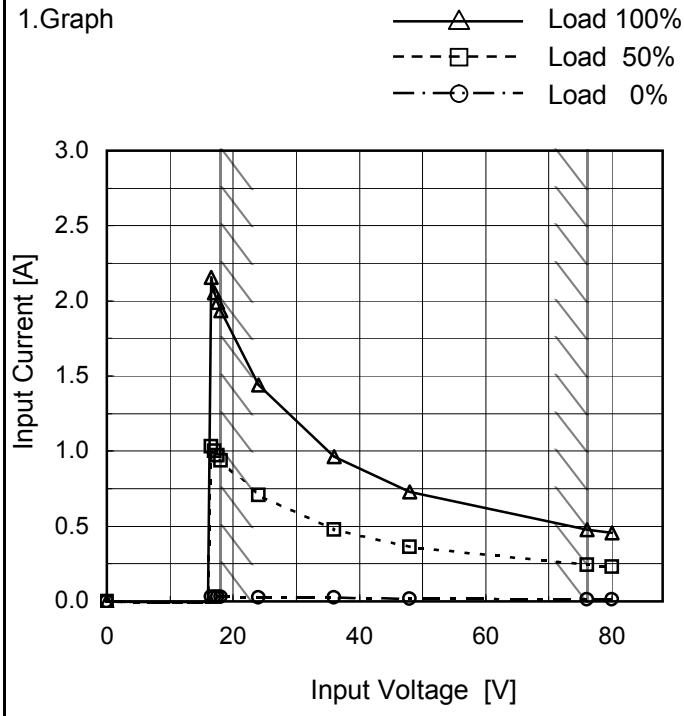
Model	MGFW304815
Item	Input Current (by Input Voltage)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Note: Slanted line shows the range of the rated input voltage.

2.Values

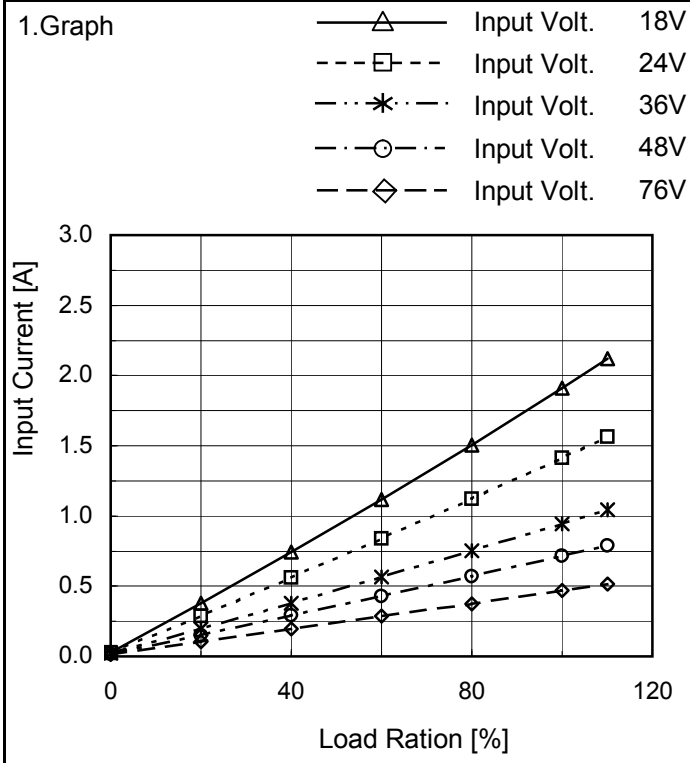
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
5.0	-0.003	-0.003	-0.003
10.0	-0.003	-0.003	-0.003
15.0	-0.002	-0.002	-0.002
16.0	-0.002	-0.002	-0.002
16.5	0.029	1.033	2.155
17.0	0.029	1.001	2.054
17.5	0.028	0.970	1.990
18.0	0.028	0.937	1.936
24.0	0.026	0.707	1.439
36.0	0.024	0.478	0.964
48.0	0.017	0.364	0.729
76.0	0.014	0.242	0.477
80.0	0.014	0.232	0.456
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGFW304815
Item	Input Current (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

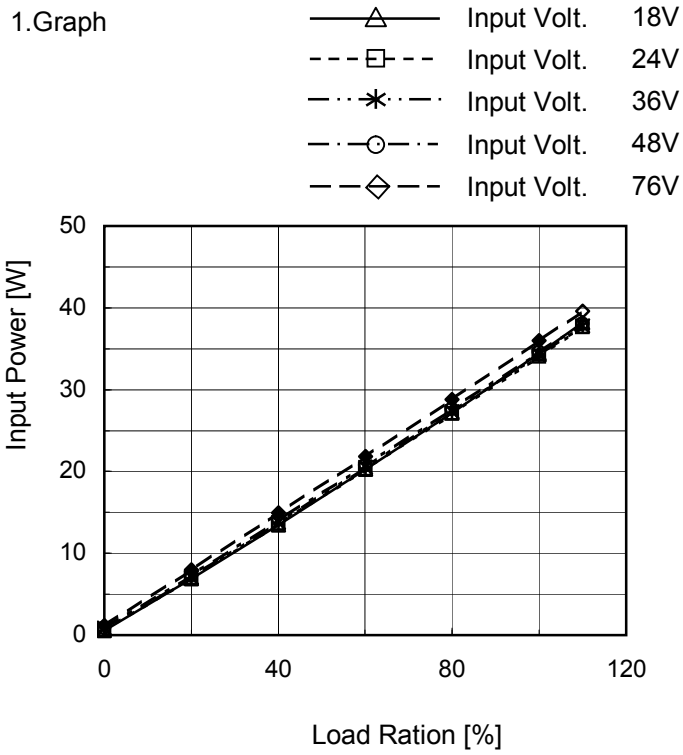
Load Ration [%]	Input Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.028	0.026	0.022	0.017	0.015
20	0.380	0.288	0.194	0.150	0.104
40	0.743	0.560	0.380	0.291	0.195
60	1.118	0.837	0.565	0.430	0.285
80	1.504	1.121	0.752	0.571	0.376
100	1.911	1.413	0.944	0.714	0.469
110	2.122	1.563	1.042	0.788	0.517
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW304815
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

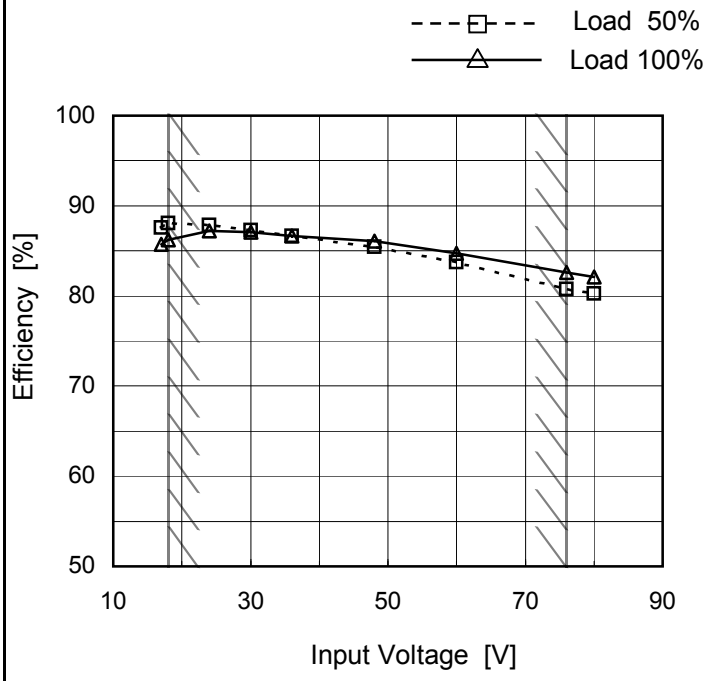
Load Ration [%]	Input Power [W]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.53	0.65	0.84	0.83	1.15
20	6.90	6.99	7.07	7.30	7.98
40	13.48	13.58	13.79	14.06	14.93
60	20.24	20.23	20.48	20.77	21.83
80	27.13	27.11	27.29	27.62	28.76
100	34.40	34.07	34.30	34.55	36.00
110	38.20	37.63	37.80	38.06	39.60
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW304815
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

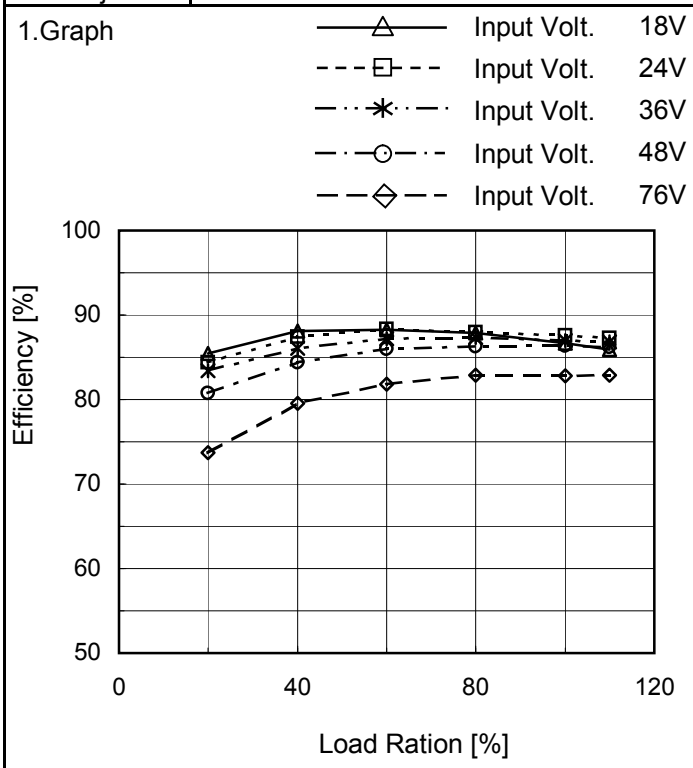
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	87.5	85.7
18	88.1	86.2
24	87.8	87.2
30	87.3	87.1
36	86.7	86.7
48	85.5	86.1
60	83.7	84.7
76	80.8	82.6
80	80.3	82.1

COSEL

Model	MGFW304815
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

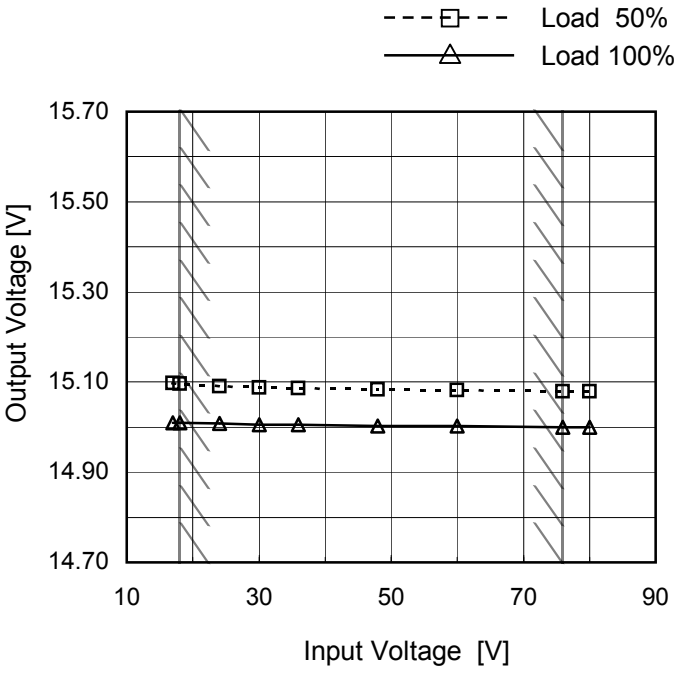
Load Ration [%]	Efficiency [%]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	-	-	-	-	-
20	85.4	84.4	83.4	80.7	73.7
40	88.1	87.4	86.1	84.4	79.6
60	88.2	88.3	87.2	86.0	81.8
80	87.9	87.9	87.4	86.3	82.9
100	86.7	87.6	87.0	86.3	82.8
110	85.9	87.2	86.8	86.2	82.9
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW304815
Item	Line Regulation
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



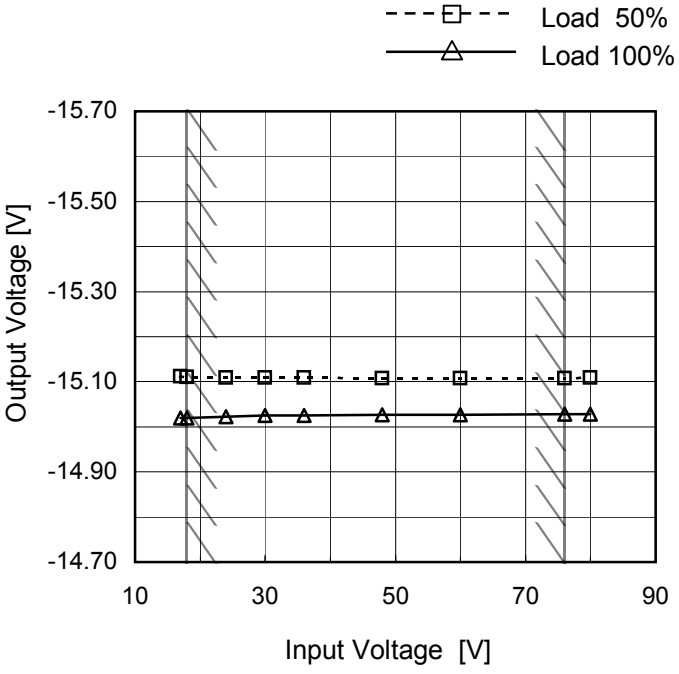
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.098	15.010
18	15.097	15.010
24	15.091	15.008
30	15.088	15.006
36	15.086	15.005
48	15.084	15.003
60	15.082	15.002
76	15.080	15.000
80	15.080	15.000

-15V: Rated output current

Object	-15V1A

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	-15.111	-15.020
18	-15.111	-15.020
24	-15.109	-15.023
30	-15.109	-15.025
36	-15.108	-15.026
48	-15.108	-15.027
60	-15.108	-15.027
76	-15.108	-15.028
80	-15.108	-15.028

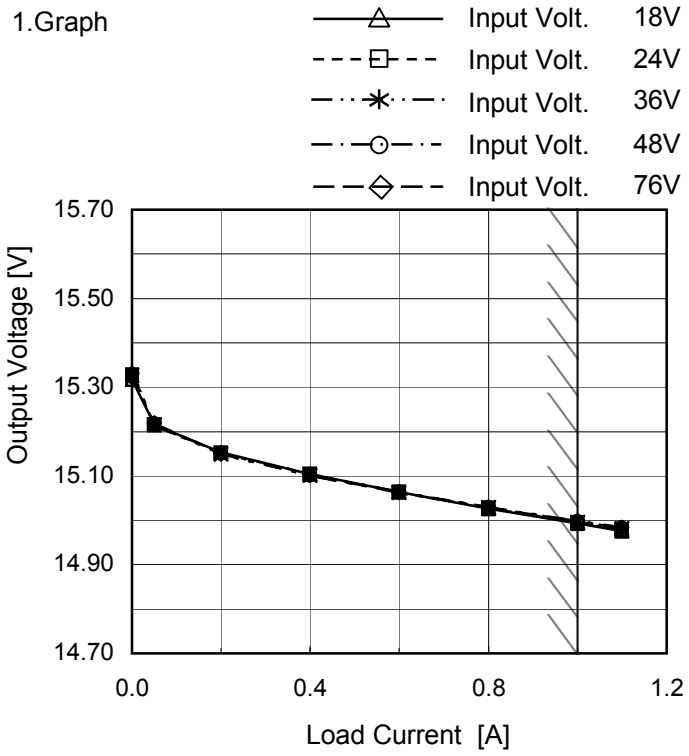
+15V: Rated output current

COSEL

Model	MGFW304815
Item	Load Regulation
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



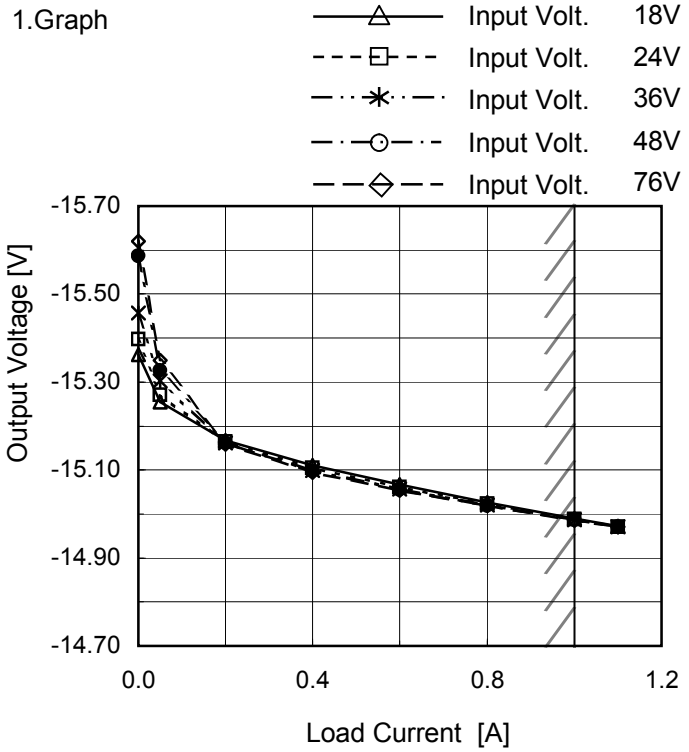
2.Values

Load Current [A]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	15.318	15.327	15.326	15.324	15.330
0.05	15.215	15.215	15.215	15.218	15.219
0.20	15.154	15.152	15.149	15.150	15.151
0.40	15.104	15.104	15.101	15.102	15.101
0.60	15.063	15.063	15.063	15.064	15.063
0.80	15.026	15.028	15.029	15.029	15.030
1.00	14.993	14.994	14.996	14.998	14.999
1.10	14.975	14.979	14.982	14.983	14.985
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

-15V: Rated output current

Object	-15V1A

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]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	-15.362	-15.398	-15.456	-15.587	-15.620
0.05	-15.255	-15.270	-15.303	-15.327	-15.349
0.20	-15.168	-15.164	-15.161	-15.161	-15.159
0.40	-15.111	-15.105	-15.099	-15.098	-15.095
0.60	-15.066	-15.061	-15.057	-15.056	-15.053
0.80	-15.026	-15.023	-15.020	-15.019	-15.018
1.00	-14.990	-14.988	-14.987	-14.987	-14.986
1.10	-14.972	-14.971	-14.971	-14.971	-14.971
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

+15V: Rated output current

COSEL

Model	MGFW304815
Item	Dynamic Load Response
Object	+15V1A

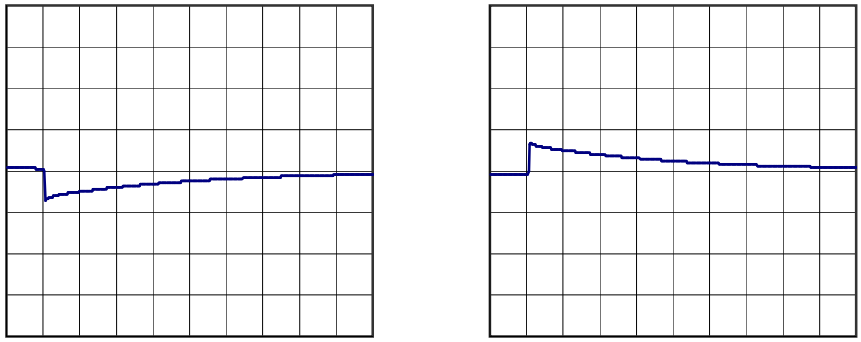
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Other output current rated
Cycle 1000 ms

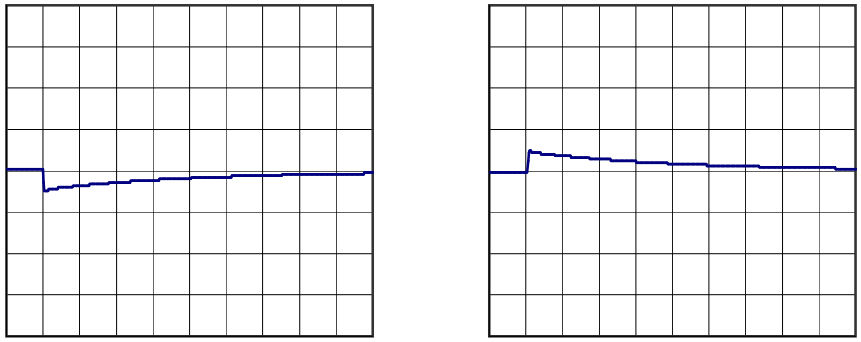
t_1、t_2 = 50μs

Load Current

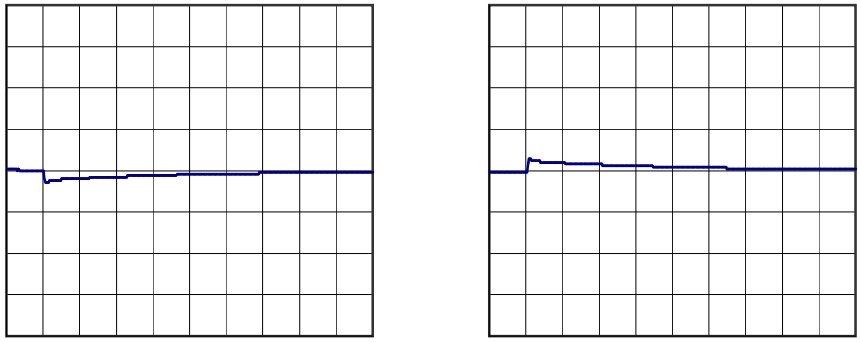
Min. Load (0A) ⟷ Load 100% (1A)



Min. Load (0A) ⟷ Load 50% (0.5A)



Load 50% (0.5A) ⟷ Load 100% (1A)



COSEL

Model	MGFW304815
Item	Dynamic Load Response
Object	-15V1A

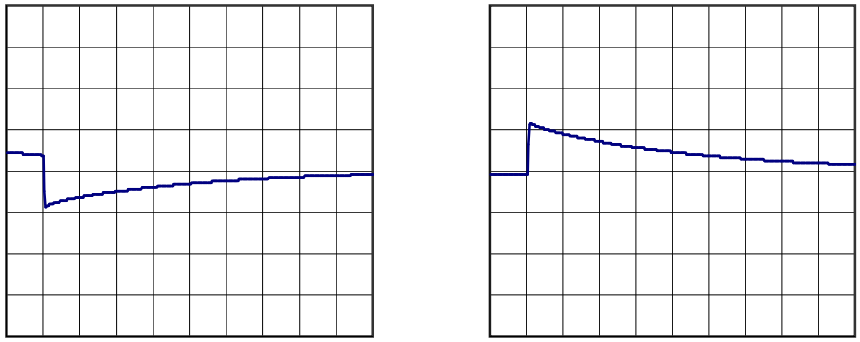
Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Other output current rated
Cycle 1000 ms

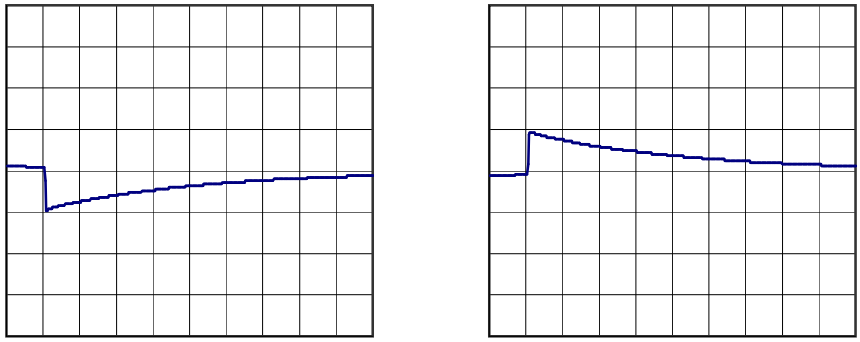
t_1、t_2 = 50μs

Load Current

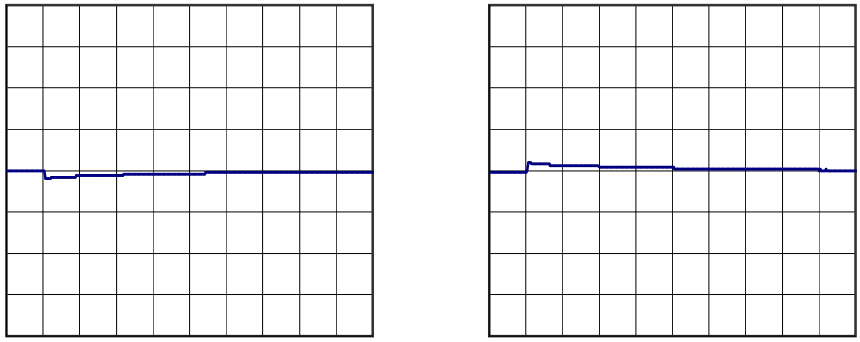
Min. Load (0A) ⟷ Load 100% (1A)



Min. Load (0A) ⟷ Load 50% (0.5A)



Load 50% (0.5A) ⟷ Load 100% (1A)

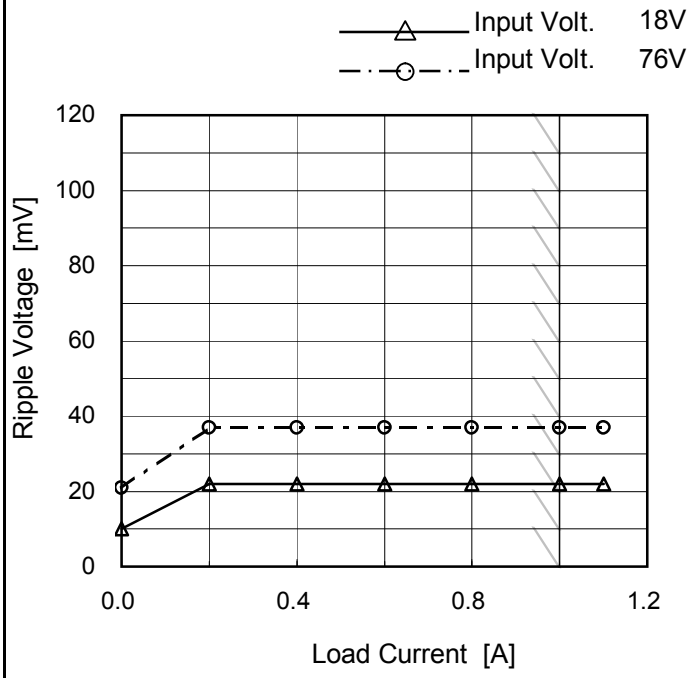


COSEL

Model	MGFW304815
Item	Ripple Voltage (by Load Current)
Object	+15V1A

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]

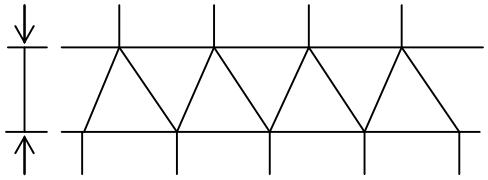


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.0	10	21
0.2	22	37
0.4	22	37
0.6	22	37
0.8	22	37
1.0	22	37
1.1	22	37
--	-	-
--	-	-
--	-	-
--	-	-

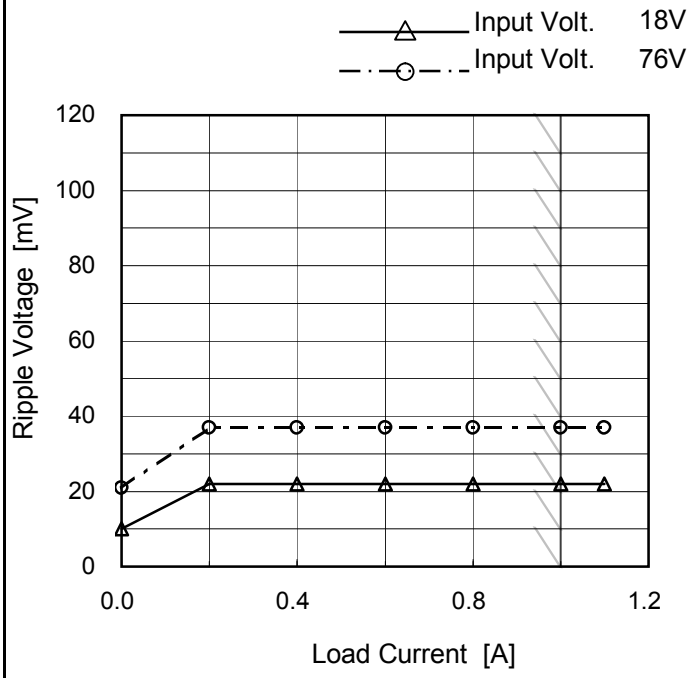
-15V: Rated output current

COSEL

Model	MGFW304815
Item	Ripple Voltage (by Load Current)
Object	-15V1A

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.

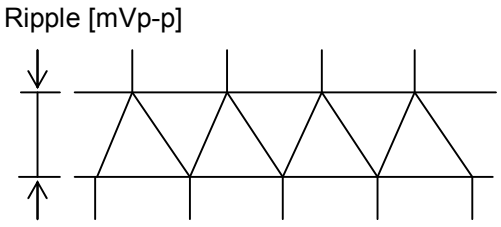


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.0	12	20
0.2	9	17
0.4	9	17
0.6	9	17
0.8	7	15
1.0	7	15
1.1	7	15
--	-	-
--	-	-
--	-	-
--	-	-

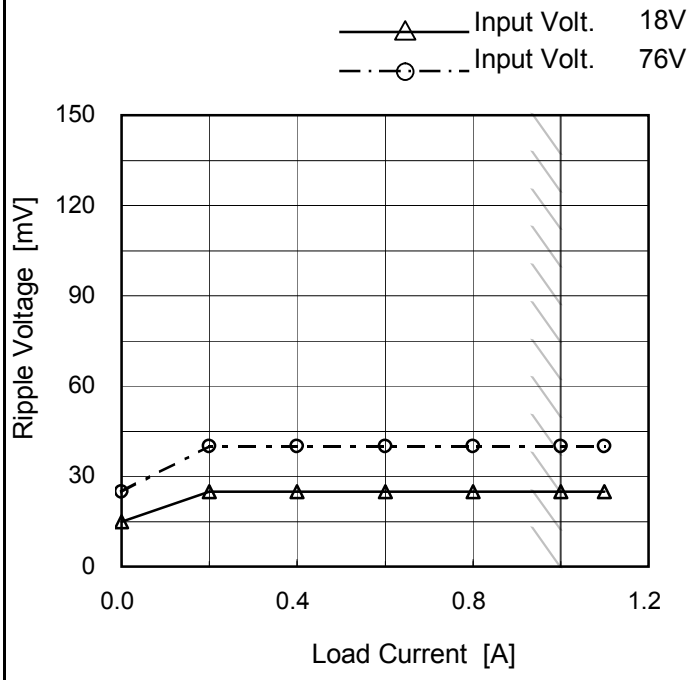
+15V: Rated output current

COSEL

Model	MGFW304815
Item	Ripple-Noise
Object	+15V1A

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.

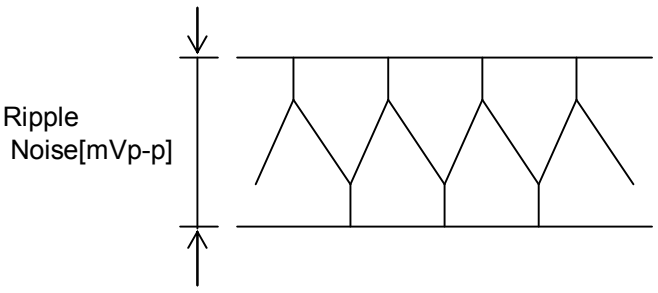


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.0	15	25
0.2	25	40
0.4	25	40
0.6	25	40
0.8	25	40
1.0	25	40
1.1	25	40
--	-	-
--	-	-
--	-	-
--	-	-

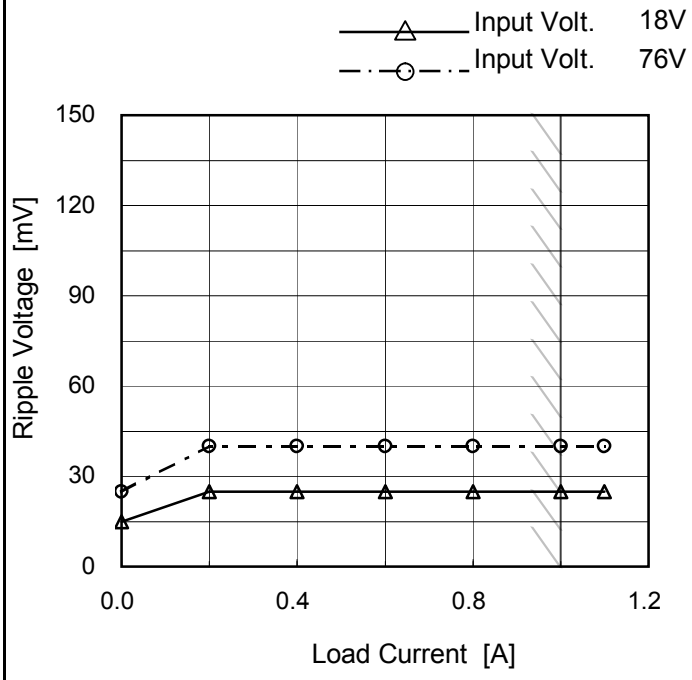
-15V: Rated output current

COSEL

Model	MGFW304815
Item	Ripple-Noise
Object	-15V1A

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.

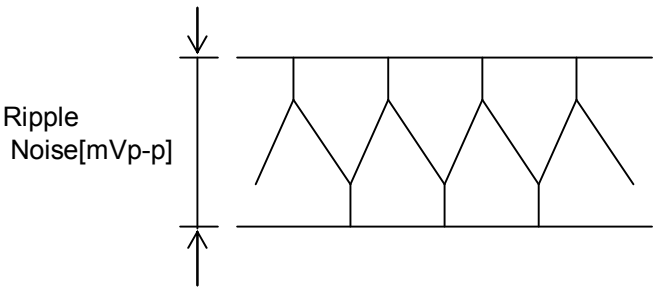


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.0	15	25
0.2	15	20
0.4	15	20
0.6	15	20
0.8	10	20
1.0	10	20
1.1	10	20
--	-	-
--	-	-
--	-	-
--	-	-

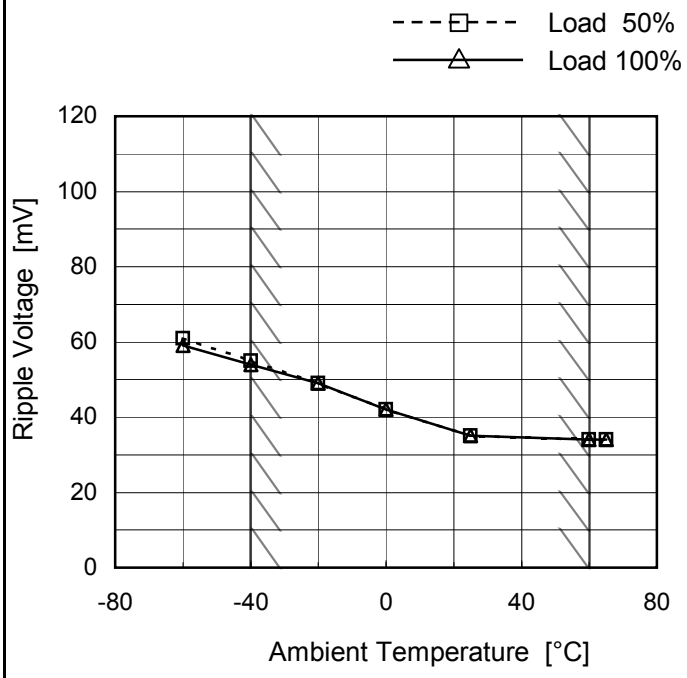
+15V: Rated output current

COSEL

Model	MGFW304815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V1A

Testing Circuitry Figure A

1.Graph



Input Volt. 48V

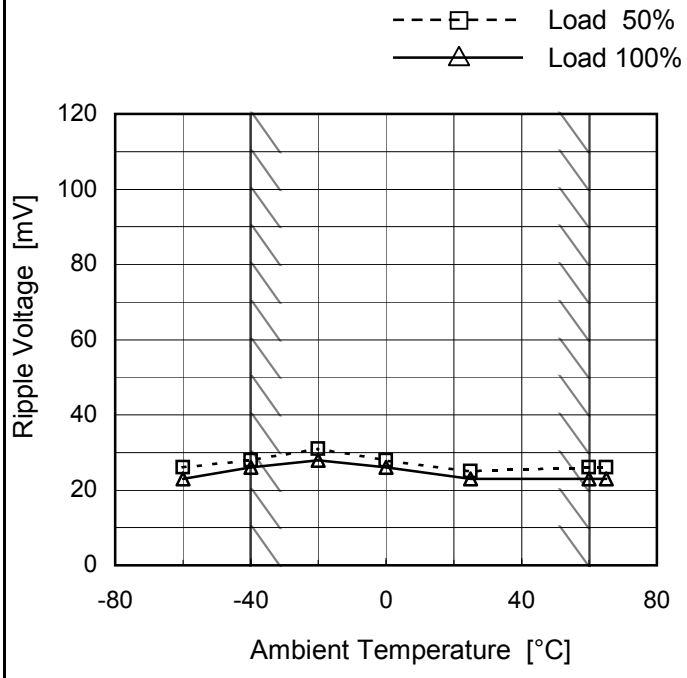
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	61	59
-40	55	54
-20	49	49
0	42	42
25	35	35
60	34	34
65	34	34
--	-	-
--	-	-
--	-	-
--	-	-

-15V: Rated output current

Object	-15V1A

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	26	23
-40	28	26
-20	31	28
0	28	26
25	25	23
60	26	23
65	26	23
--	-	-
--	-	-
--	-	-
--	-	-

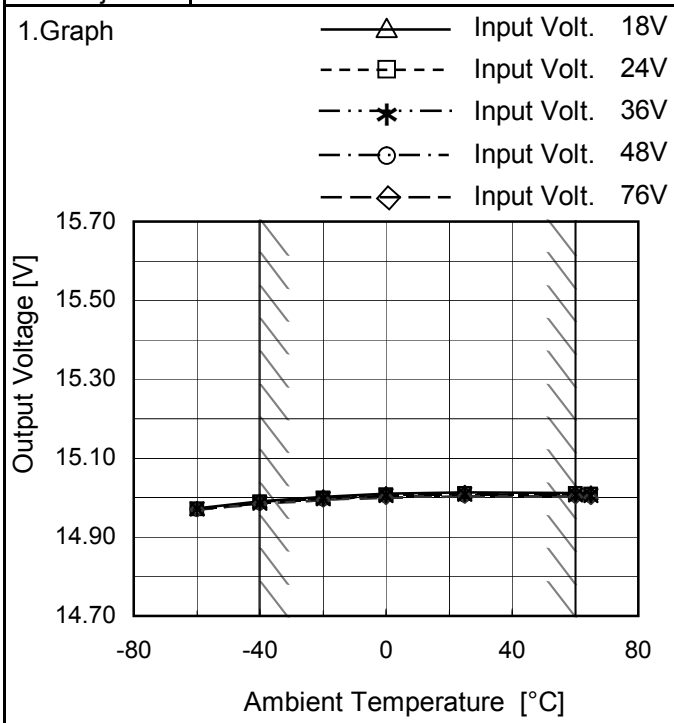
+15V: Rated output current

COSEL

Model	MGFW304815
Item	Ambient Temperature Drift
Object	+15V1A

Testing Circuitry Figure A

1.Graph



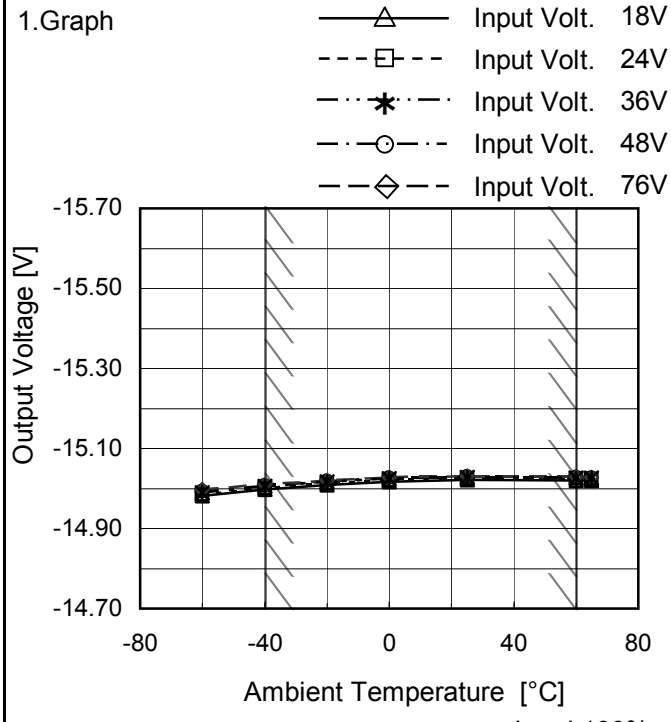
Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	14.973	14.972	14.970	14.970	14.969
-40	14.990	14.988	14.986	14.985	14.984
-20	15.002	14.999	14.997	14.996	14.994
0	15.010	15.008	15.005	15.003	15.001
25	15.014	15.011	15.008	15.006	15.003
60	15.012	15.010	15.007	15.005	15.002
65	15.011	15.008	15.006	15.004	15.001
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Object	-15V1A

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. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	-14.981	-14.986	-14.990	-14.993	-14.997
-40	-14.997	-15.001	-15.006	-15.008	-15.011
-20	-15.009	-15.013	-15.016	-15.018	-15.021
0	-15.017	-15.021	-15.024	-15.026	-15.028
25	-15.021	-15.025	-15.028	-15.029	-15.030
60	-15.021	-15.024	-15.027	-15.028	-15.029
65	-15.020	-15.023	-15.026	-15.027	-15.028
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW304815
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 : 18 - 76V
Load Current (AVR 1) : 0 - 1A (AVR 2) : 0 - 1A

* Other Output : Rated Load

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

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

2.Values

Object	+15V1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	76	0	15.633	±325	±2.2
Minimum Voltage	-40	76	1	14.984		

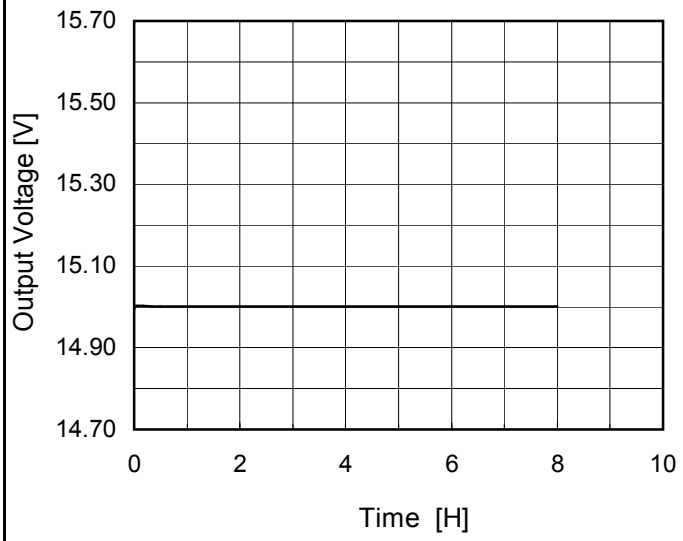
Object	-15V1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	36	0	-15.366	±185	±1.2
Minimum Voltage	-40	18	1	-14.997		

COSEL

Model	MGFW304815
Item	Time Lapse Drift
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



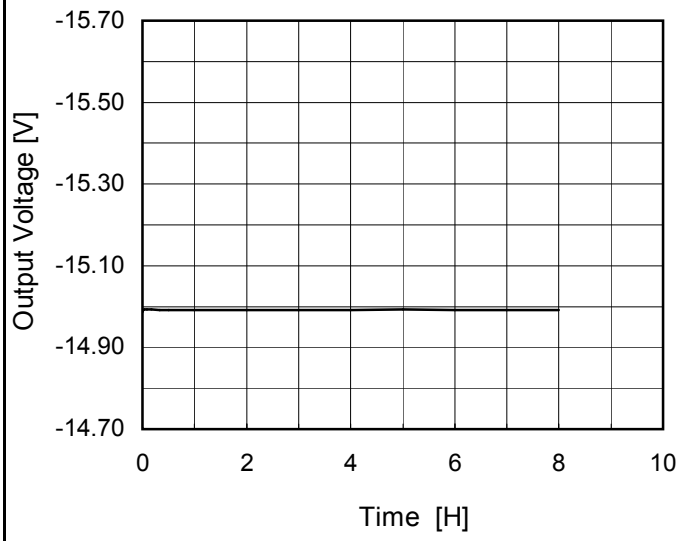
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.994
0.5	15.001
1.0	15.001
2.0	15.002
3.0	15.001
4.0	15.002
5.0	15.001
6.0	15.001
7.0	15.001
8.0	15.001

Object	-15V1A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-14.987
0.5	-14.992
1.0	-14.992
2.0	-14.992
3.0	-14.992
4.0	-14.992
5.0	-14.992
6.0	-14.992
7.0	-14.992
8.0	-14.992

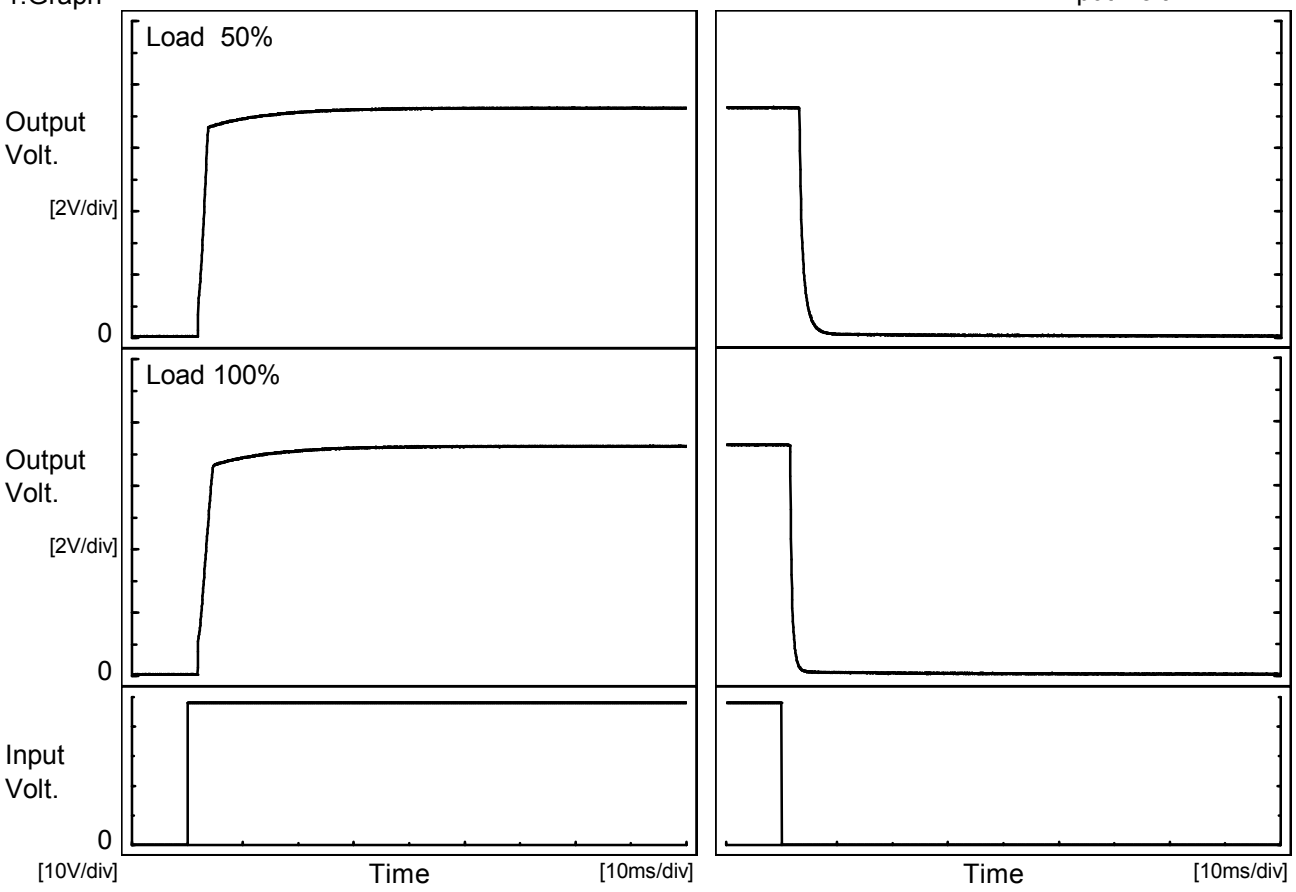
COSEL

Model	MGFW304815
Item	Rise and Fall Time
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

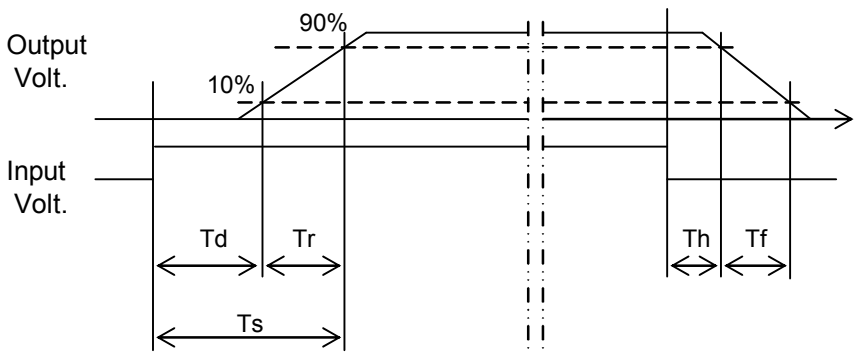
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.0	4.4	6.4	3.1	1.7
100 %	2.0	5.4	7.4	1.6	0.9



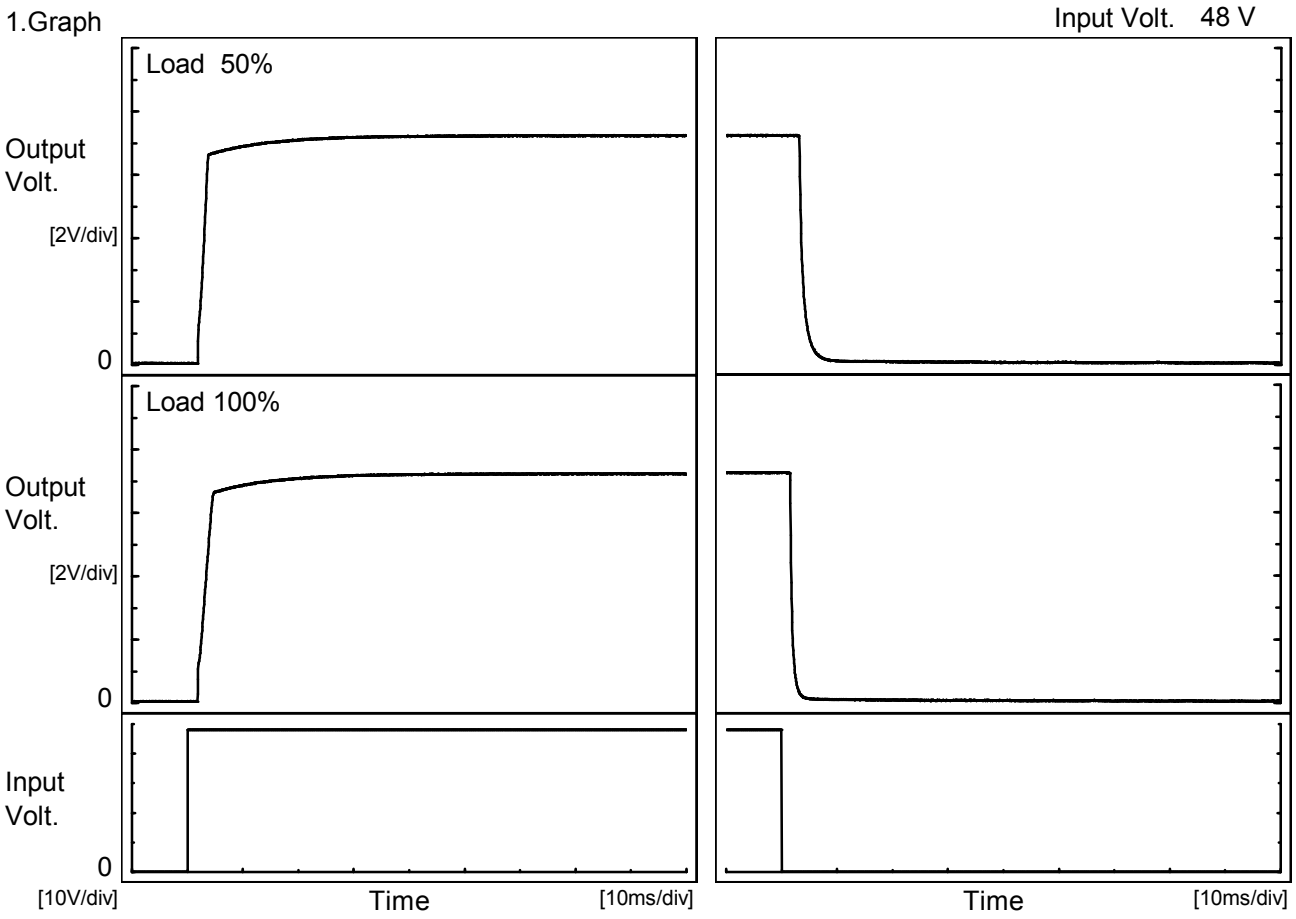
BC-10535

COSEL

Model	MGFW304815
Item	Rise and Fall Time
Object	-15V1A

Temperature 25°C
Testing Circuitry Figure A

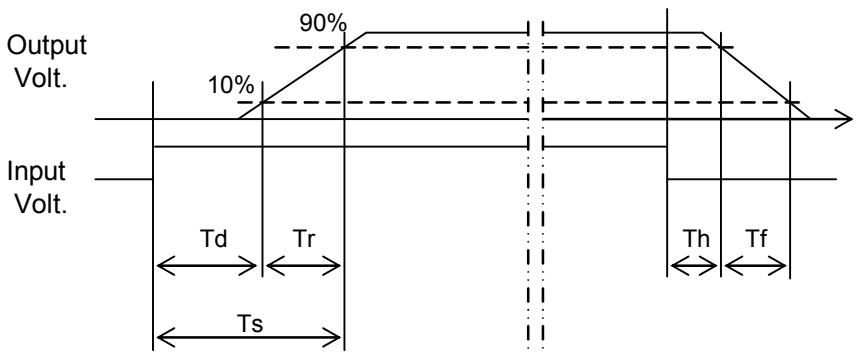
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.0	4.8	6.8	3.1	1.8
100 %	2.0	5.9	7.9	1.6	1.0

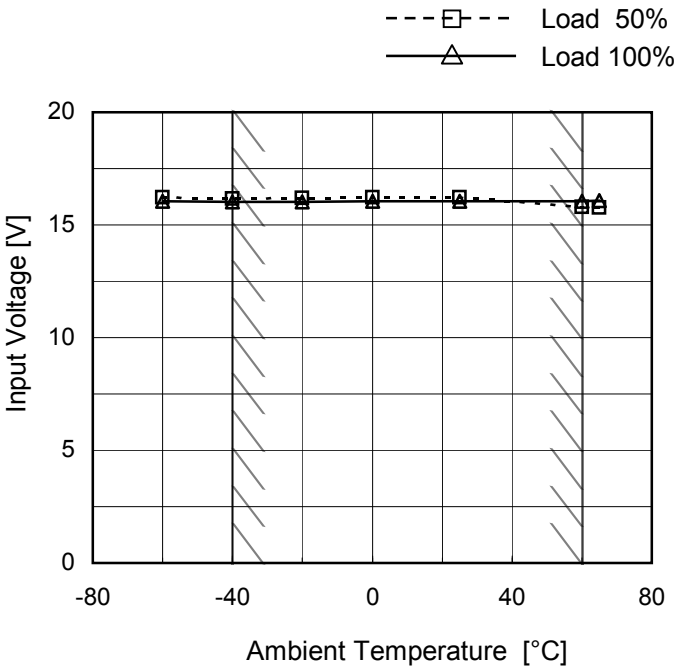


COSEL

Model	MGFW304815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V1A

Testing Circuitry Figure A

1.Graph

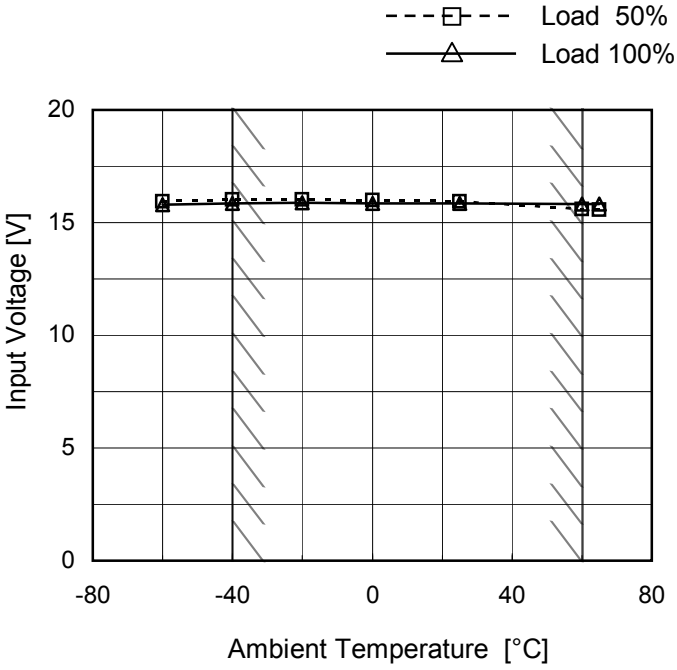


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	16.3	16.1
-40	16.2	16.1
-20	16.2	16.1
0	16.3	16.1
25	16.3	16.1
60	15.8	16.1
65	15.8	16.1
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V1A

1.Graph



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	16.0	15.8
-40	16.1	15.9
-20	16.1	15.9
0	16.0	15.9
25	16.0	15.9
60	15.6	15.9
65	15.6	15.9
--	-	-
--	-	-
--	-	-
--	-	-

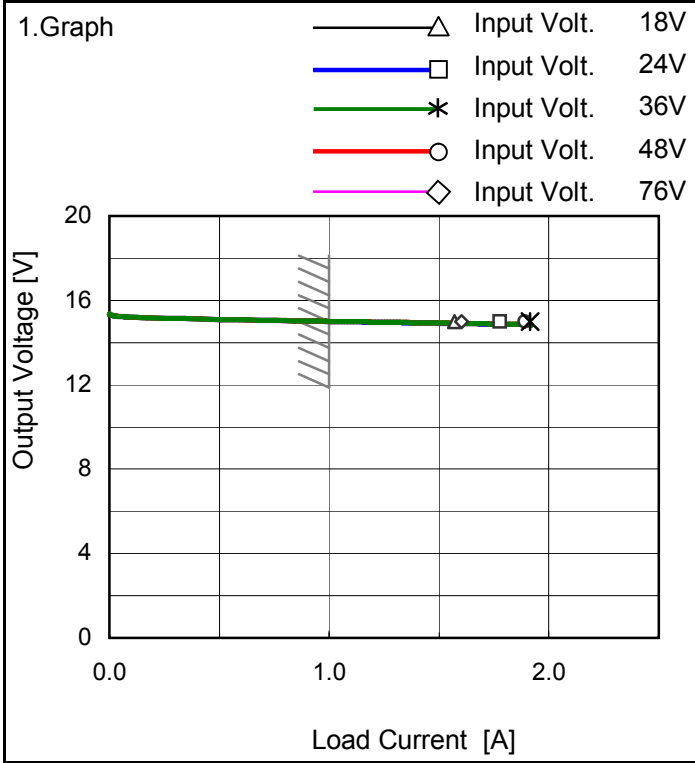
Note: Slanted line shows the range of the rated ambient temperature.

COSEL

Model	MGFW304815
Item	Overcurrent Protection
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

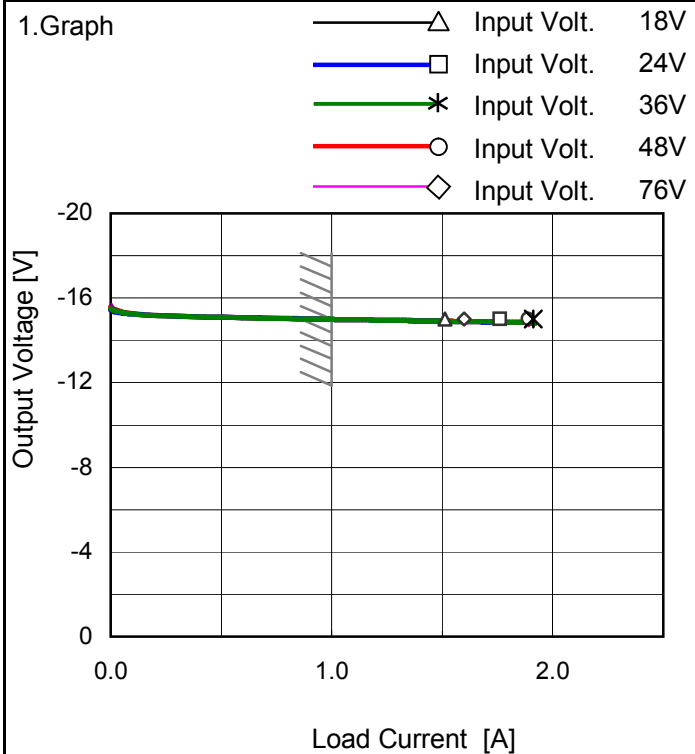


2.Values

Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
15.0	1.570	1.777	1.915	1.890	1.601
14.3	-	-	-	-	-
13.5	-	-	-	-	-
12.0	-	-	-	-	-
10.5	-	-	-	-	-
9.0	-	-	-	-	-
7.5	-	-	-	-	-
6.0	-	-	-	-	-
4.5	-	-	-	-	-
3.0	-	-	-	-	-
1.5	-	-	-	-	-
0.0	-	-	-	-	-

Object	-15V1A

1.Graph



Note: Slanted line shows the range of the rated load current.
Intermittent operation occurs when overcurrent protection is activated.

2.Values

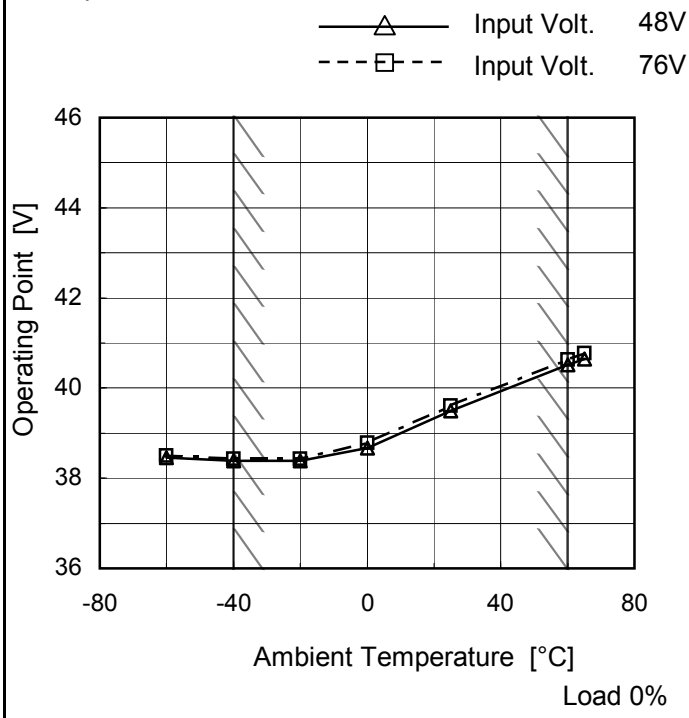
Output Voltage [V]	Load Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-15.0	1.512	1.761	1.911	1.888	1.600
-14.3	-	-	-	-	-
-13.5	-	-	-	-	-
-12.0	-	-	-	-	-
-10.5	-	-	-	-	-
-9.0	-	-	-	-	-
-7.5	-	-	-	-	-
-6.0	-	-	-	-	-
-4.5	-	-	-	-	-
-3.0	-	-	-	-	-
-1.5	-	-	-	-	-
0.0	-	-	-	-	-

COSEL

Model	MGFW304815
Item	Overvoltage Protection
Object	+30V1A

Testing Circuitry Figure A

1.Graph



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

Measured as a single output(+30V).

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 48[V]	Input Volt. 76[V]
-60	38.46	38.50
-40	38.39	38.43
-20	38.39	38.43
0	38.67	38.79
25	39.50	39.61
60	40.52	40.63
65	40.65	40.77
--	-	-
--	-	-
--	-	-
--	-	-

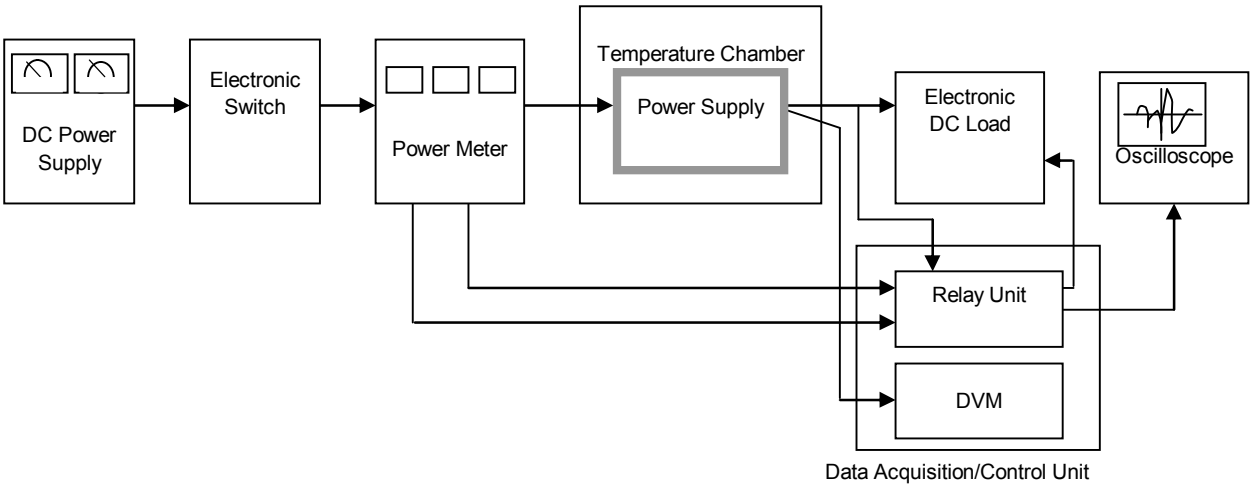


Figure A

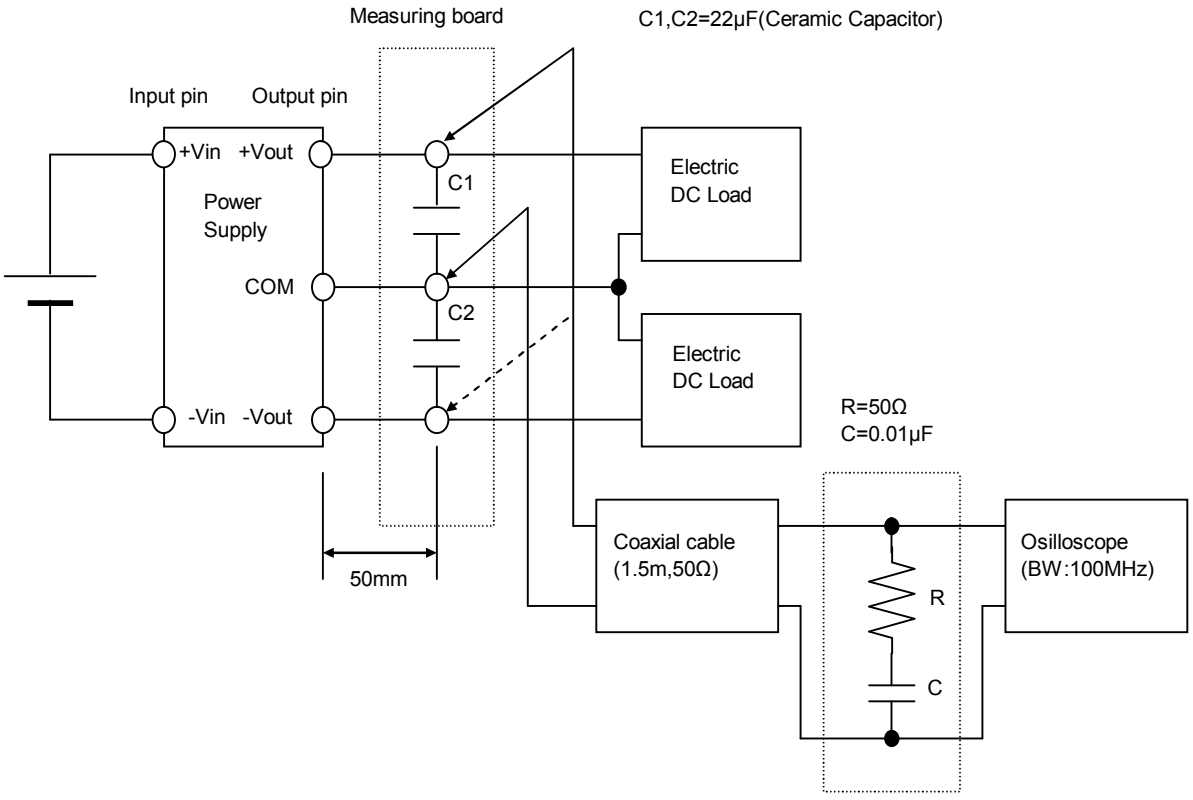


Figure B（Ripple and Ripple noise Characteristic）