COSEL

参考資料

TEST DATA OF MGFW154815

Regulated DC Power Supply
September 8, 2010

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COSEL CO.,LTD.

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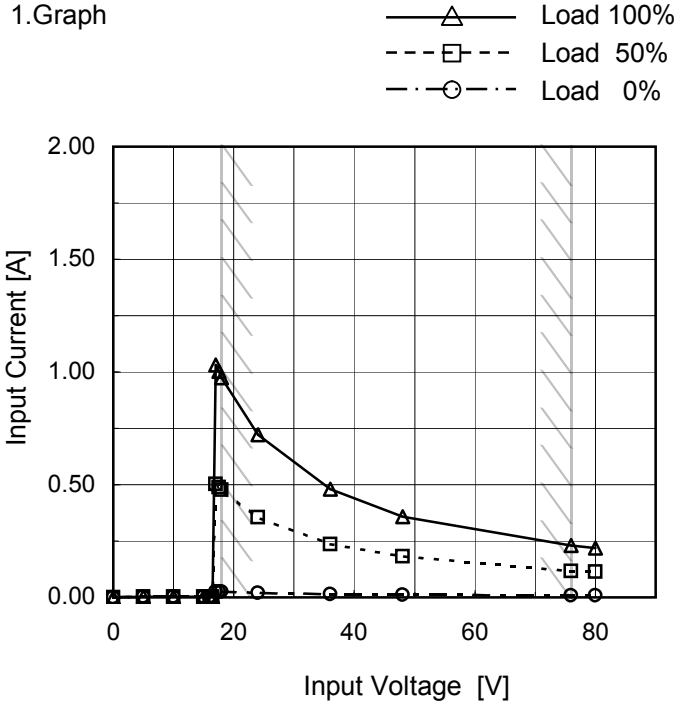
COSEL

Model	MGFW154815
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	0.002	0.002	0.002
10.0	0.002	0.002	0.002
15.0	0.002	0.003	0.002
16.0	0.003	0.003	0.002
16.5	0.003	0.002	0.002
17.0	0.026	0.502	1.032
17.5	0.026	0.489	1.002
18.0	0.026	0.477	0.974
24.0	0.019	0.355	0.723
36.0	0.015	0.237	0.480
48.0	0.011	0.183	0.357
76.0	0.008	0.118	0.231
80.0	0.008	0.113	0.220
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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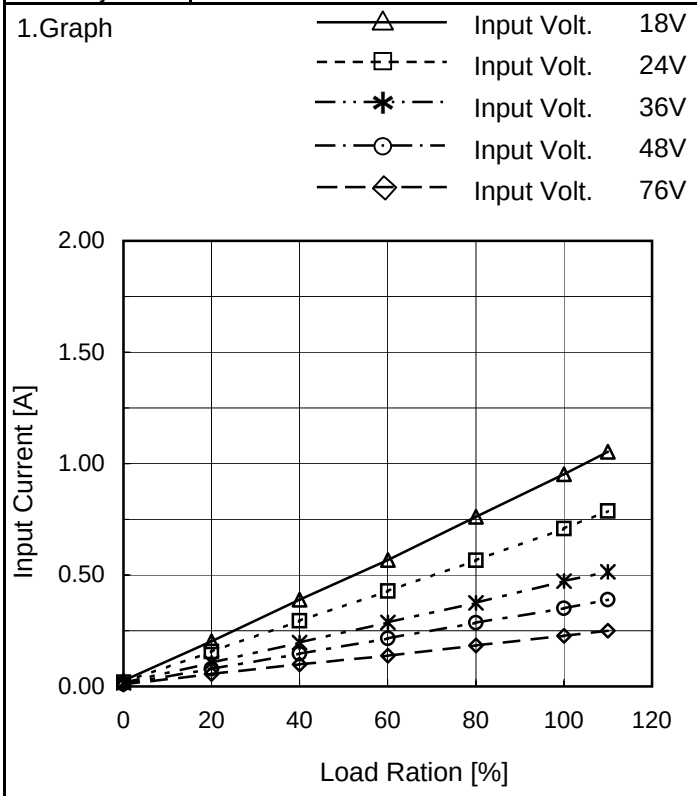
COSEL

Model	MGFW154815
Item	Input Current (by Load Current)
Object	――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

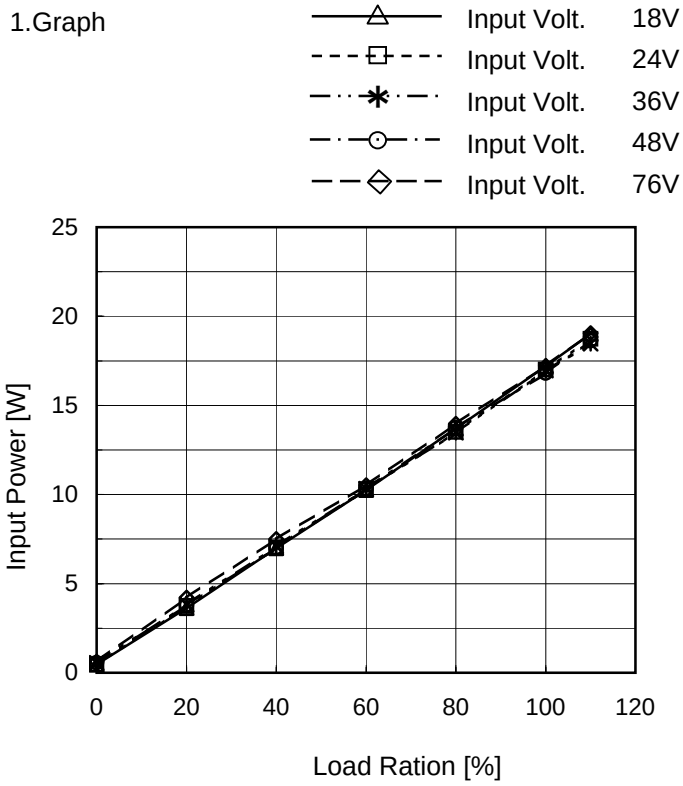
Load Ration [%]	Input Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.026	0.019	0.016	0.012	0.008
20	0.203	0.156	0.106	0.079	0.056
40	0.389	0.294	0.197	0.146	0.099
60	0.568	0.429	0.287	0.215	0.139
80	0.761	0.566	0.375	0.287	0.184
100	0.953	0.708	0.472	0.351	0.227
110	1.053	0.787	0.515	0.389	0.251
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW154815
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	0.47	0.45	0.56	0.56	0.64
20	3.63	3.74	3.83	3.79	4.23
40	6.99	7.03	7.09	7.00	7.51
60	10.25	10.29	10.32	10.33	10.53
80	13.69	13.50	13.47	13.74	13.98
100	17.20	17.02	16.96	16.82	17.22
110	19.01	18.73	18.47	18.62	19.06
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

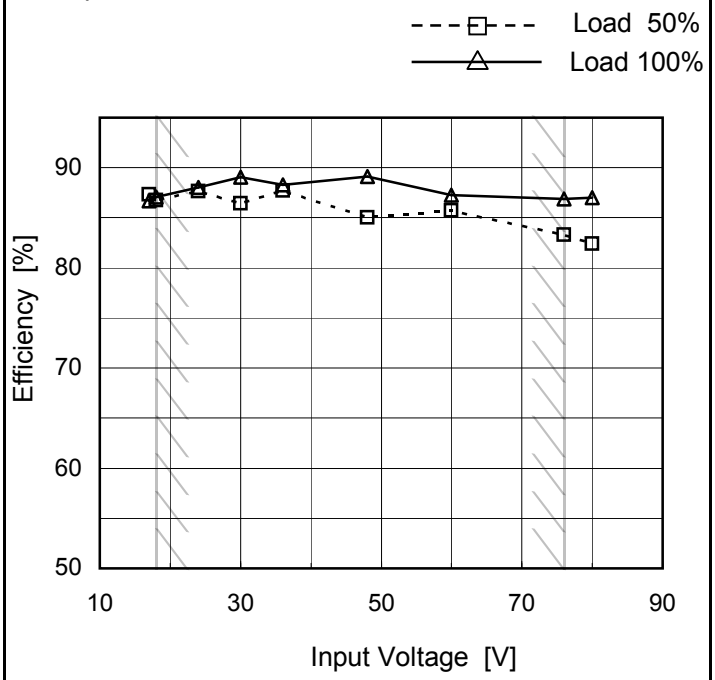
BC-10473

COSEL

Model	MGFW154815
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

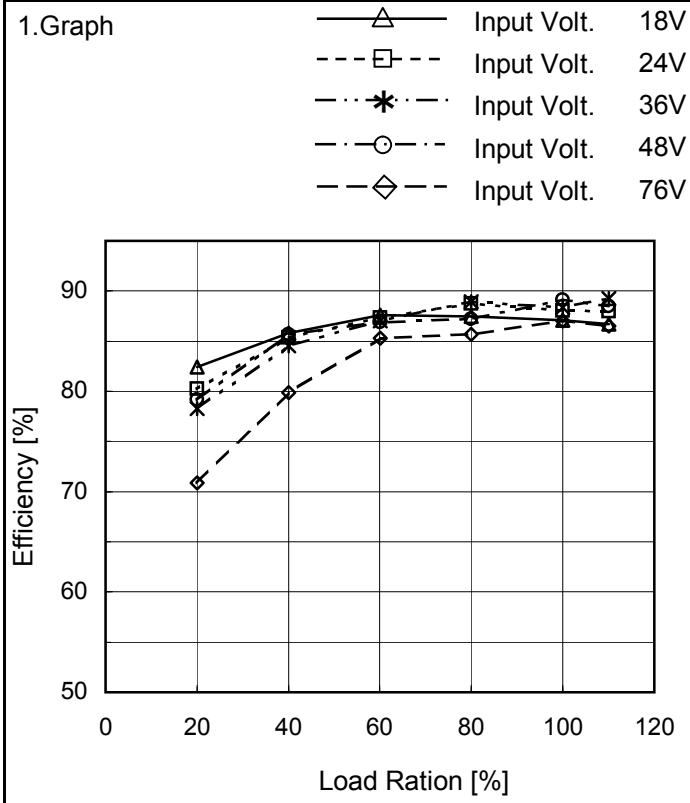
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	87.3	86.7
18	86.8	87.1
24	87.6	88.0
30	86.4	89.0
36	87.7	88.3
48	85.0	89.1
60	85.7	87.3
76	83.3	86.9
80	82.4	87.0

COSEL

Model	MGFW154815
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	82.4	80.3	78.3	79.2	70.9
40	85.8	85.4	84.6	85.7	79.9
60	87.6	87.3	87.0	86.9	85.3
80	87.5	88.8	89.0	87.2	85.7
100	87.1	88.1	88.4	89.1	87.0
110	86.7	88.0	89.3	88.5	86.5
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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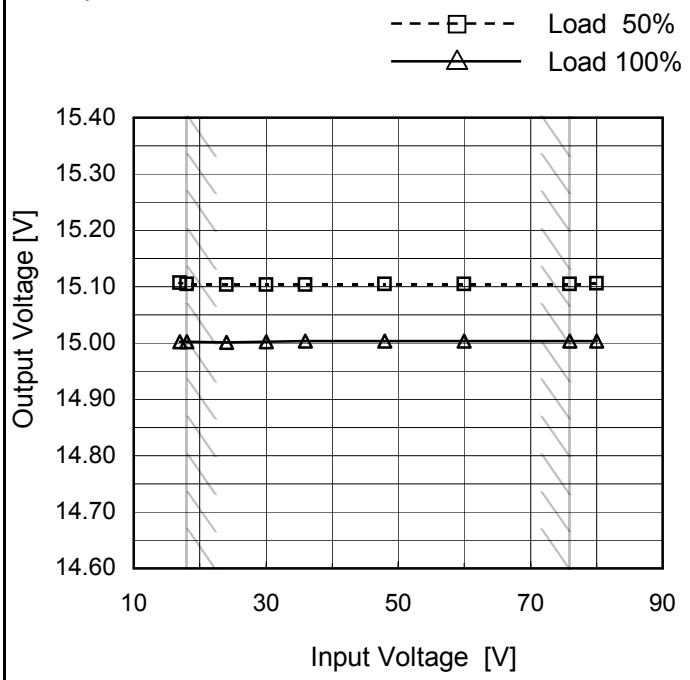
COSEL

Model	MGFW154815
Item	Line Regulation
Object	+15V0.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



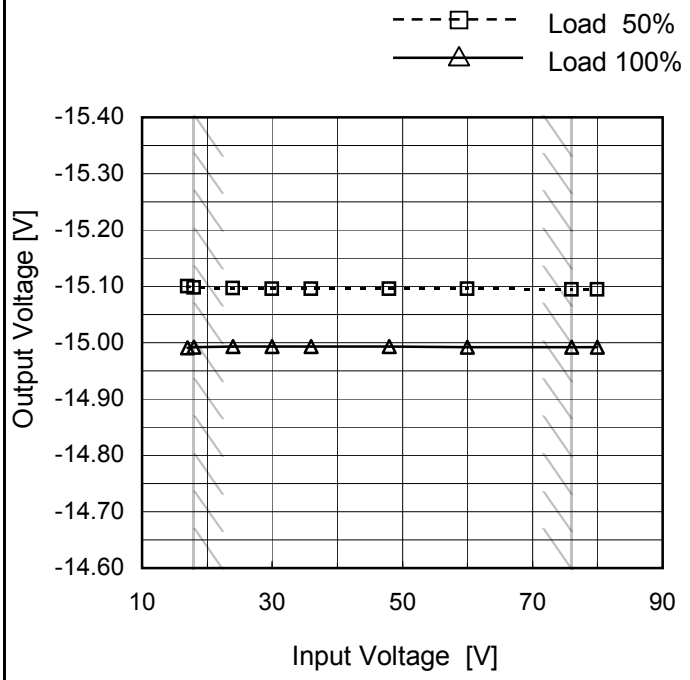
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.106	15.003
18	15.104	15.002
24	15.103	15.002
30	15.103	15.002
36	15.104	15.003
48	15.104	15.003
60	15.105	15.003
76	15.105	15.004
80	15.105	15.003

-15V: Rated output current

Object	-15V0.5A

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	-15.100	-14.991
18	-15.098	-14.992
24	-15.096	-14.993
30	-15.096	-14.993
36	-15.096	-14.993
48	-15.095	-14.993
60	-15.095	-14.993
76	-15.095	-14.992
80	-15.095	-14.992

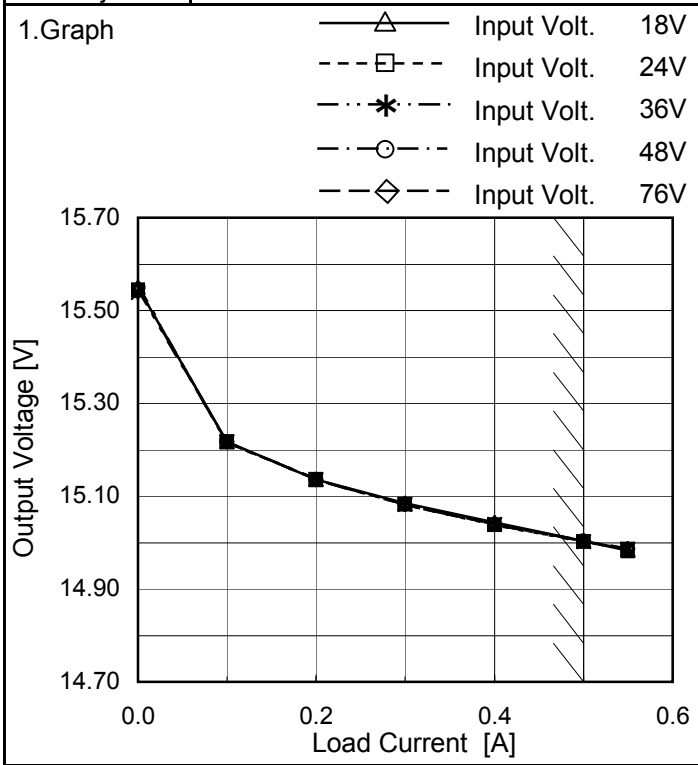
+15V: Rated output current

COSEL

Model	MGFW154815
Item	Load Regulation
Object	+15V0.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



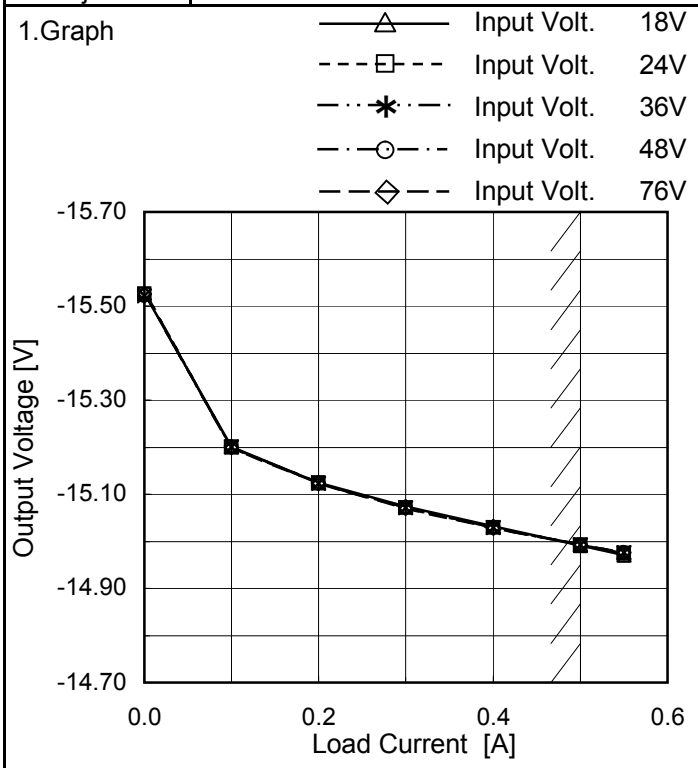
2.Values

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]
0.000	15.550	15.544	15.539	15.541	15.548
0.100	15.217	15.217	15.217	15.217	15.217
0.200	15.136	15.136	15.136	15.136	15.137
0.300	15.085	15.081	15.082	15.082	15.083
0.400	15.043	15.039	15.039	15.039	15.040
0.500	15.003	15.002	15.003	15.003	15.003
0.550	14.983	14.985	14.986	14.986	14.987
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

-15V: Rated output current

Object	-15V0.5A

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]
0.000	-15.527	-15.526	-15.522	-15.521	-15.525
0.100	-15.200	-15.201	-15.201	-15.200	-15.199
0.200	-15.124	-15.124	-15.124	-15.124	-15.123
0.300	-15.074	-15.071	-15.071	-15.071	-15.070
0.400	-15.032	-15.029	-15.029	-15.029	-15.028
0.500	-14.991	-14.993	-14.993	-14.992	-14.992
0.550	-14.971	-14.975	-14.976	-14.976	-14.976
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

+15V: Rated output current

COSEL

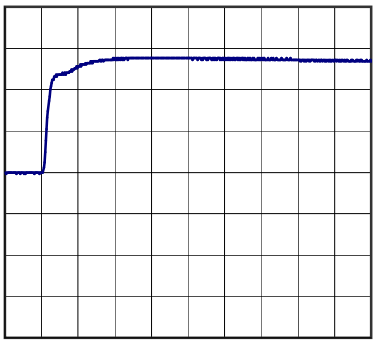
Model	MGFW154815	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	+15V0.5A	

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

t_1、t_2 = 50μs

Load Current

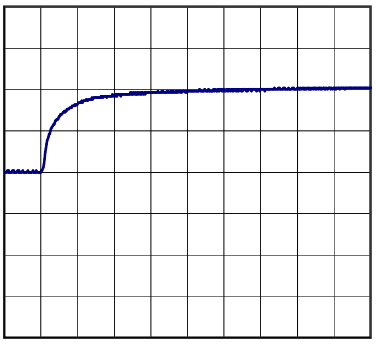
Min. Load (0A) ←→
Load 100% (0.5A)



200mV/div

200μs/div 200μs/div

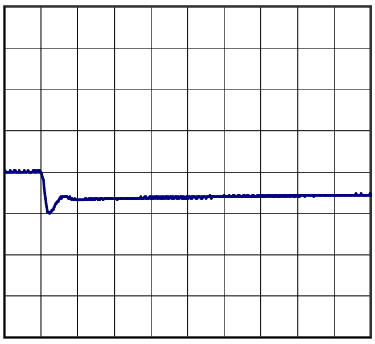
Min. Load (0A) ←→
Load 50% (0.25A)

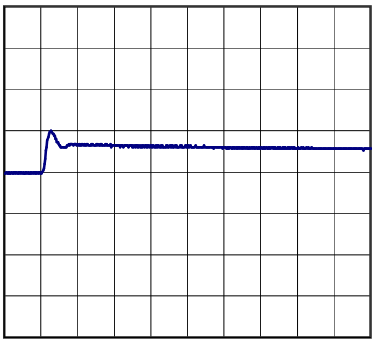


200mV/div

200μs/div 200μs/div

Load 50% (0.25A) ←→
Load 100% (0.5A)





200mV/div

200μs/div 200μs/div

COSEL

Model	MGFW154815	Temperature 25°C
Item	Dynamic Load Response	Testing Circuitry Figure A
Object	-15V0.5A	

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

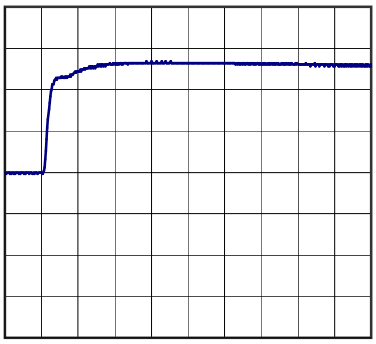
t_1、t_2 = 50μs

Load Current

Min. Load (0A) ←→
Load 100% (0.5A)

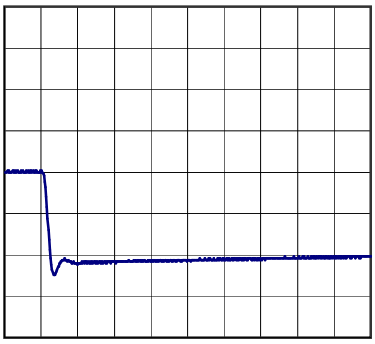
200mV/div

200μs/div



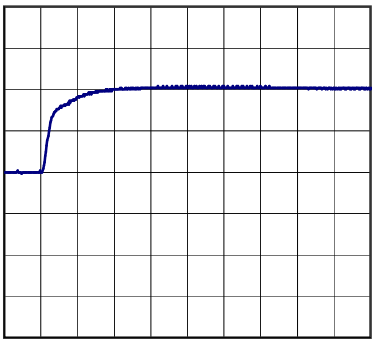
200μs/div

Min. Load (0A) ←→
Load 50% (0.25A)



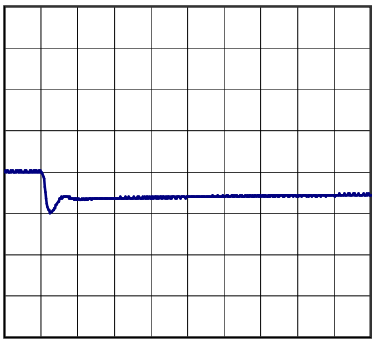
200mV/div

200μs/div



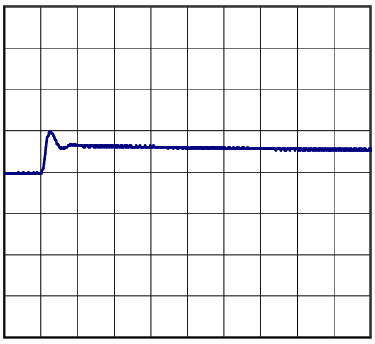
200μs/div

Load 50% (0.25A) ←→
Load 100% (0.5A)



200mV/div

200μs/div



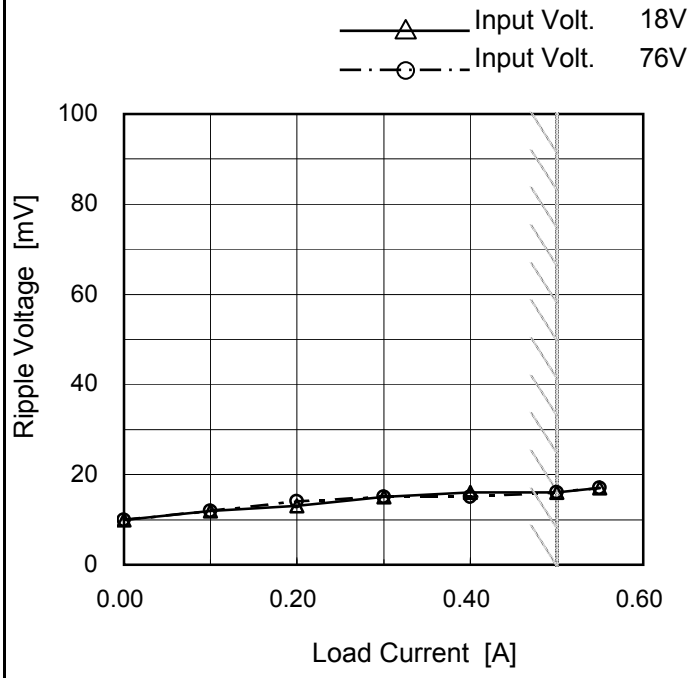
200μs/div

COSEL

Model	MGFW154815
Item	Ripple Voltage (by Load Current)
Object	+15V0.5A

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]

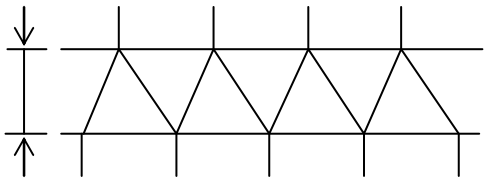


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.00	10	10
0.10	12	12
0.20	13	14
0.30	15	15
0.40	16	15
0.50	16	16
0.55	17	17
--	-	-
--	-	-
--	-	-
--	-	-

−15V: Rated output current

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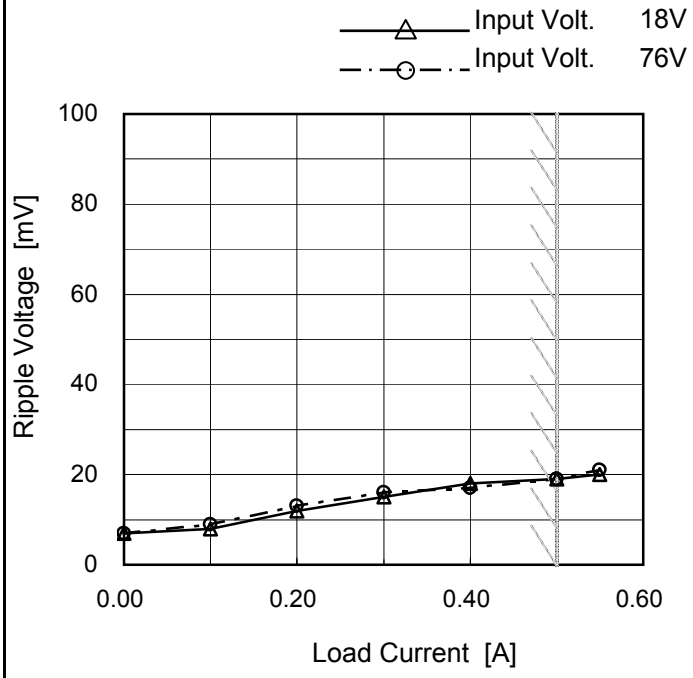
Model	MGFW154815
Item	Ripple Voltage (by Load Current)
Object	-15V0.5A

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]

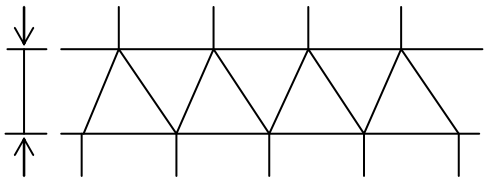


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.00	7	7
0.10	8	9
0.20	12	13
0.30	15	16
0.40	18	17
0.50	19	19
0.55	20	21
--	-	-
--	-	-
--	-	-
--	-	-

+15V: Rated output current

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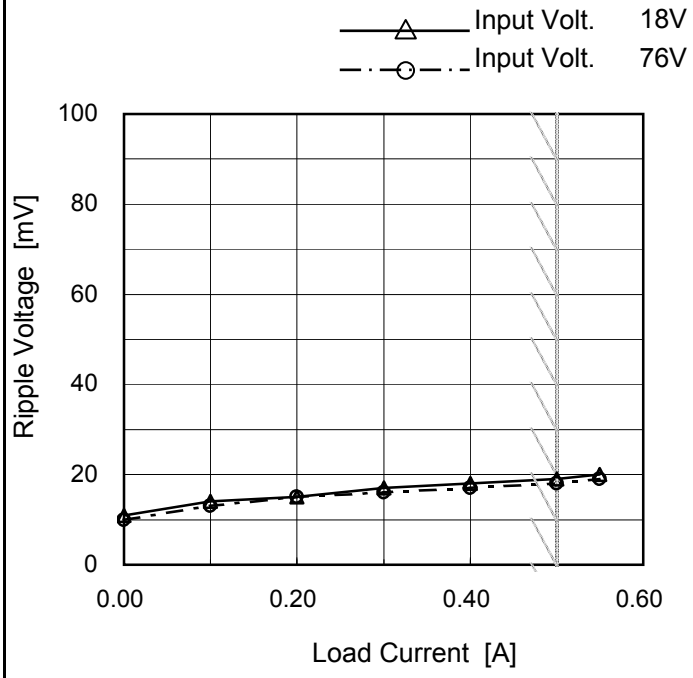
COSEL

Model	MGFW154815
Item	Ripple-Noise
Object	+15V0.5A

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.

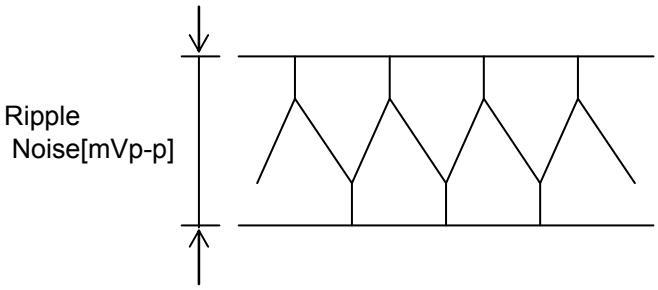


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.00	11	10
0.10	14	13
0.20	15	15
0.30	17	16
0.40	18	17
0.50	19	18
0.55	20	19
--	-	-
--	-	-
--	-	-
--	-	-

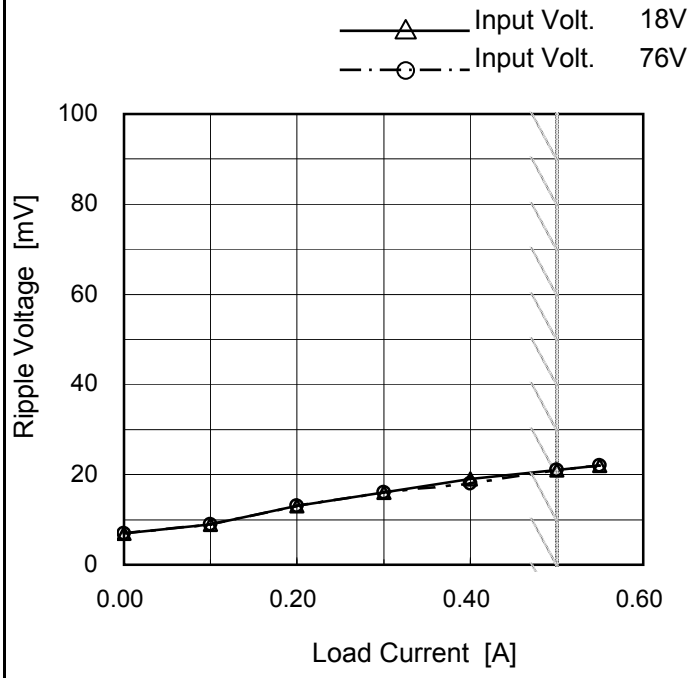
−15V: Rated output current

COSEL

Model	MGFW154815
Item	Ripple-Noise
Object	-15V0.5A

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.

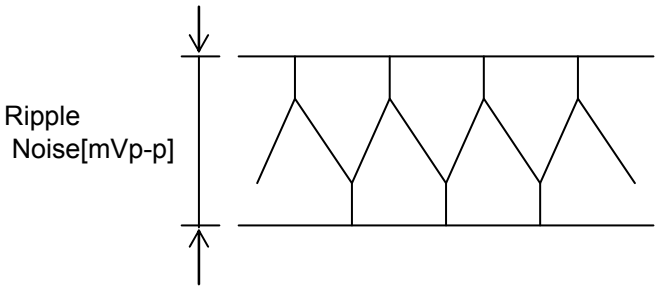


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.00	7	7
0.10	9	9
0.20	13	13
0.30	16	16
0.40	19	18
0.50	21	21
0.55	22	22
--	-	-
--	-	-
--	-	-
--	-	-

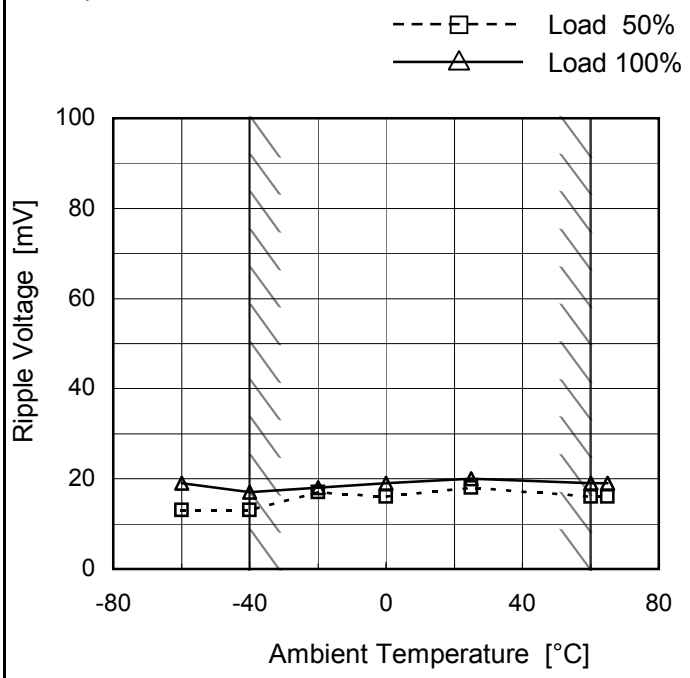
+15V: Rated output current

COSEL

Model	MGFW154815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.5A

Testing Circuitry Figure B

1.Graph



Input Volt. 48V

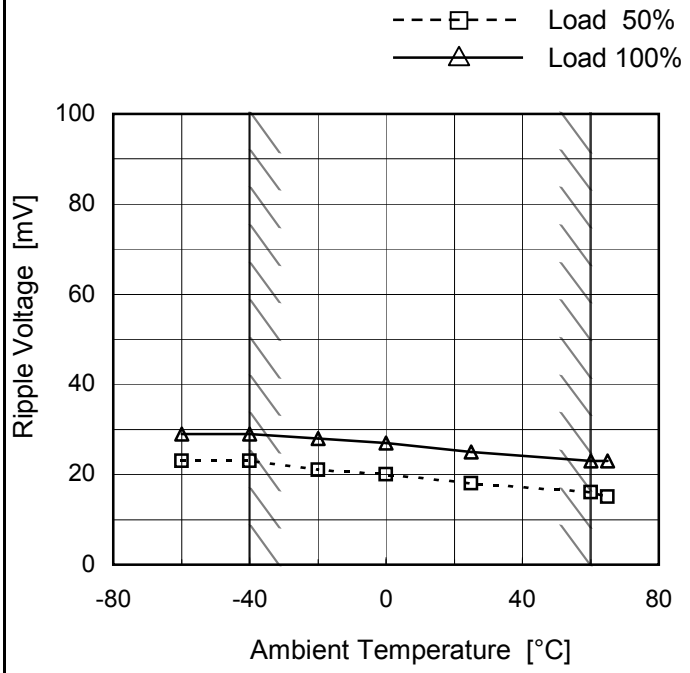
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	13	19
-40	13	17
-20	17	18
0	16	19
25	18	20
60	16	19
65	16	19
--	-	-
--	-	-
--	-	-
--	-	-

-15V: Rated output current

Object	-15V0.5A

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	23	29
-40	23	29
-20	21	28
0	20	27
25	18	25
60	16	23
65	15	23
--	-	-
--	-	-
--	-	-
--	-	-

+15V: Rated output current

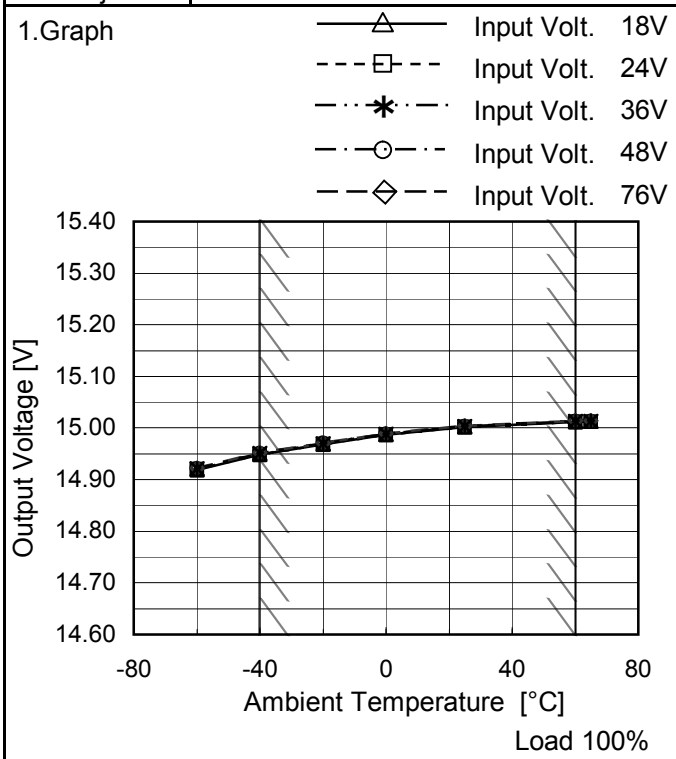
COSEL

Model	MGFW154815
Item	Ambient Temperature Drift

Testing Circuitry Figure A

Object +15V0.5A

1.Graph

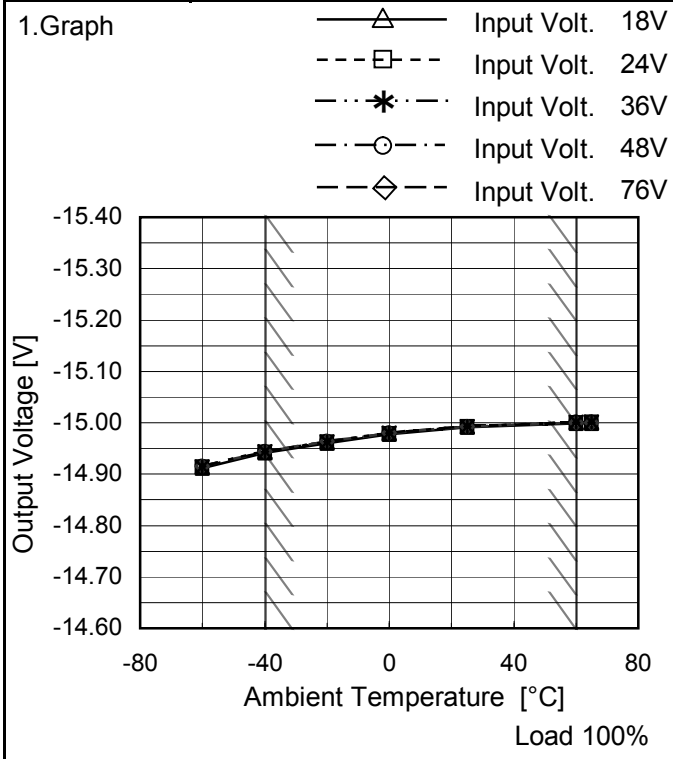


2.Values

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	14.918	14.920	14.921	14.921	14.922
-40	14.948	14.949	14.951	14.951	14.952
-20	14.969	14.969	14.970	14.971	14.971
0	14.987	14.987	14.988	14.989	14.989
25	15.002	15.002	15.003	15.003	15.004
60	15.012	15.012	15.013	15.013	15.014
65	15.013	15.012	15.013	15.014	15.015
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Object -15V0.5A

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]	Input Volt. 48[V]	Input Volt. 76[V]
-60	-14.912	-14.914	-14.914	-14.915	-14.915
-40	-14.941	-14.943	-14.944	-14.944	-14.944
-20	-14.961	-14.963	-14.963	-14.963	-14.963
0	-14.978	-14.979	-14.980	-14.980	-14.980
25	-14.991	-14.993	-14.993	-14.993	-14.993
60	-14.999	-15.000	-15.001	-15.001	-15.000
65	-14.999	-15.001	-15.001	-15.001	-15.000
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	MGFW154815
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 - 0.5A (AVR 2) : 0 - 0.5A

* 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	+15V0.5A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	76	0	15.580	±316	±2.1
Minimum Voltage	-40	18	0.5	14.948		

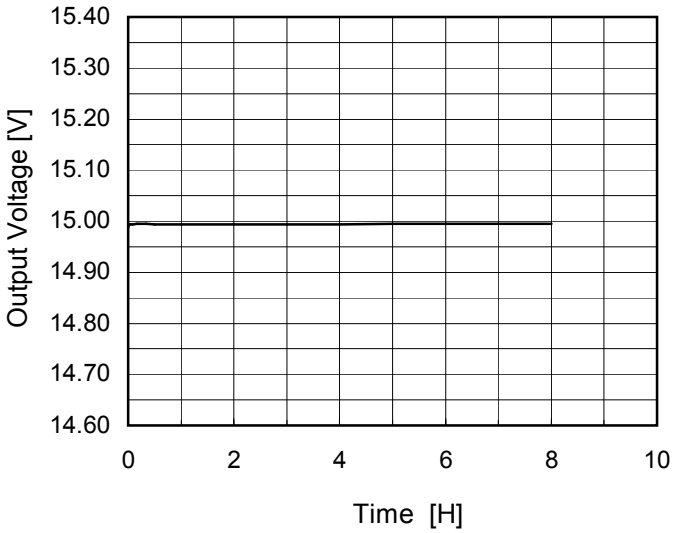
Object	-15V0.5A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	18	0	-15.561	±310	±2.1
Minimum Voltage	-40	18	0.5	-14.941		

COSEL

Model	MGFW154815
Item	Time Lapse Drift
Object	+15V0.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



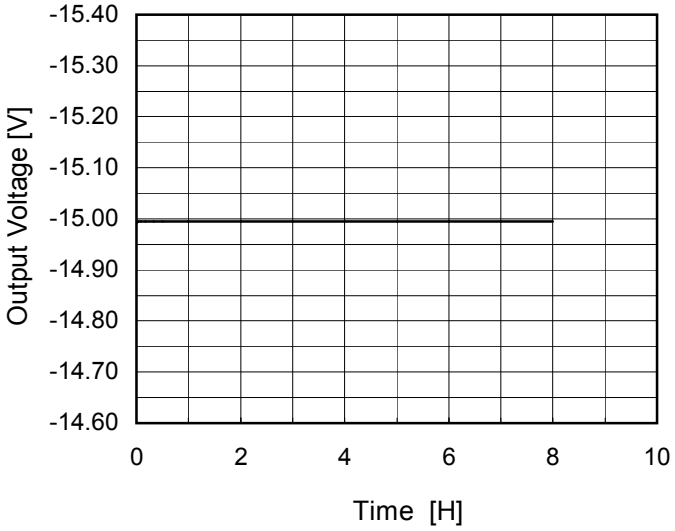
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.991
0.5	14.998
1.0	14.998
2.0	14.998
3.0	14.998
4.0	14.998
5.0	14.999
6.0	14.999
7.0	14.999
8.0	14.999

Object	-15V0.5A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-14.995
0.5	-14.999
1.0	-14.999
2.0	-14.999
3.0	-14.999
4.0	-14.999
5.0	-14.999
6.0	-15.000
7.0	-15.000
8.0	-15.000

BC-10473

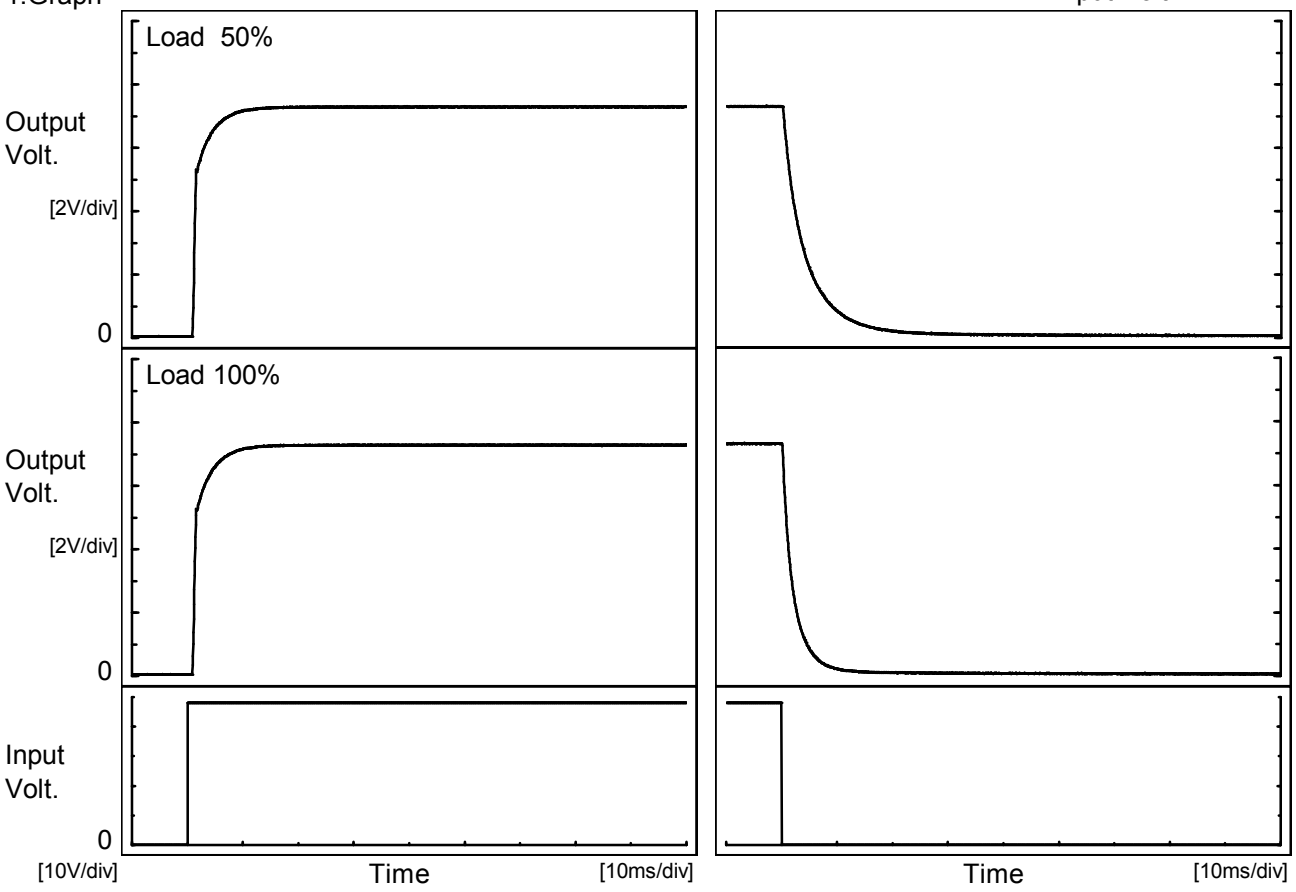
COSEL

Model	MGFW154815
Item	Rise and Fall Time
Object	+15V0.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

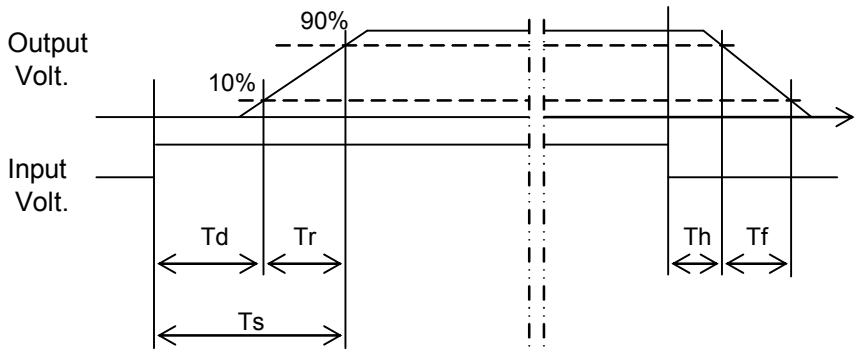
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.1	4.8	5.9	0.4	10.0
100 %	1.1	4.9	6.0	0.3	4.9



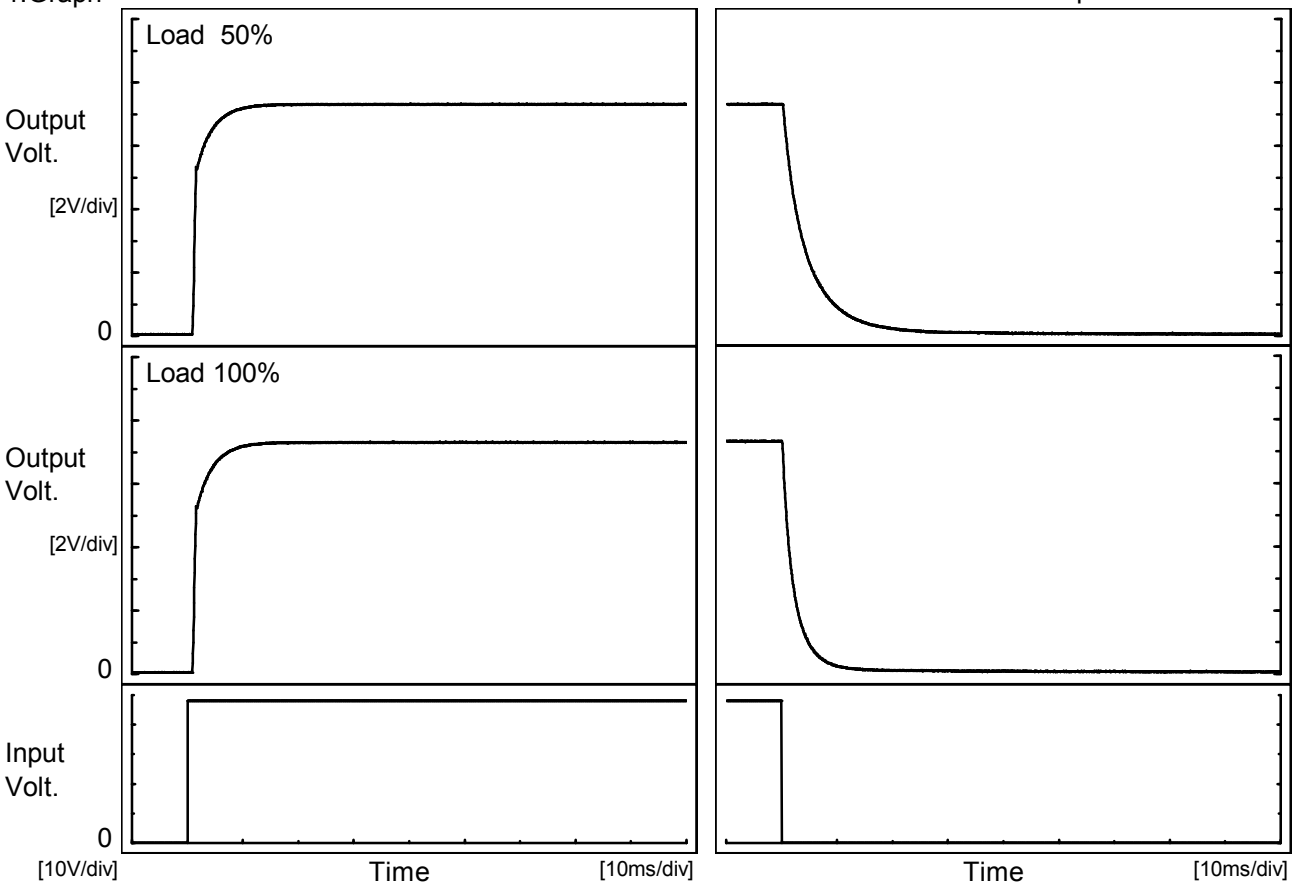
BC-10473

COSEL

Model	MGFW154815	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	-15V0.5A	

1.Graph

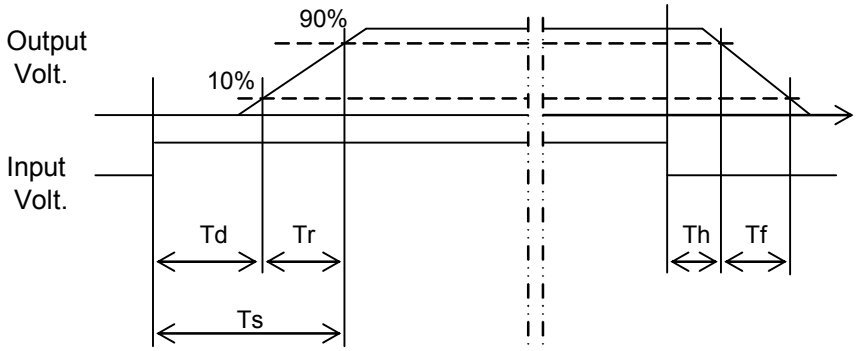
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.1	4.7	5.8	0.4	10.3
100 %	1.1	4.8	5.9	0.3	5.3



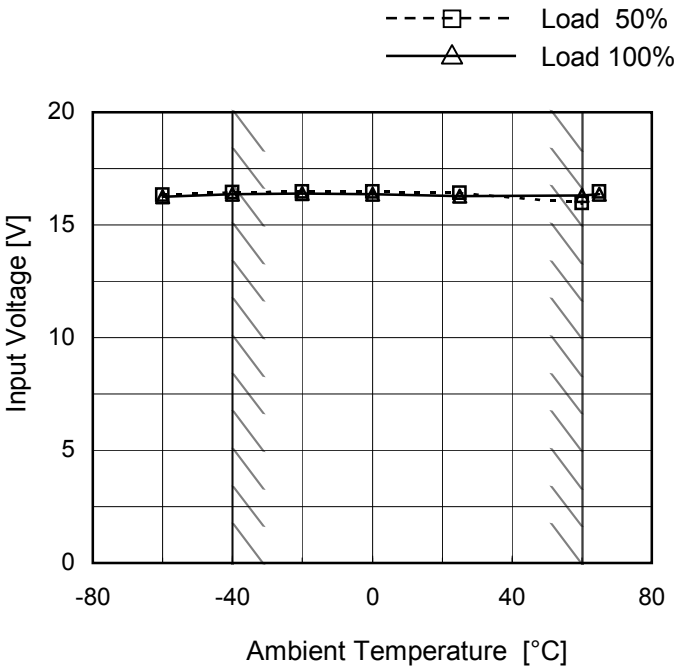
COSEL

Model	MGFW154815
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object: +15V0.5A

1.Graph

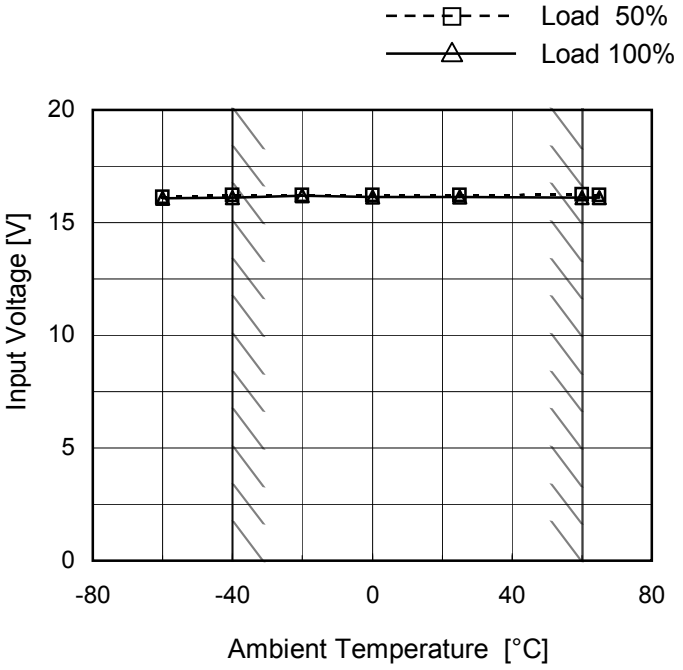


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	16.4	16.3
-40	16.5	16.4
-20	16.5	16.4
0	16.5	16.4
25	16.5	16.3
60	16.0	16.4
65	16.5	16.4
--	-	-
--	-	-
--	-	-
--	-	-

Object: -15V0.5A

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	16.2	16.1
-40	16.3	16.1
-20	16.3	16.2
0	16.3	16.2
25	16.3	16.2
60	16.3	16.2
65	16.3	16.2
--	-	-
--	-	-
--	-	-
--	-	-

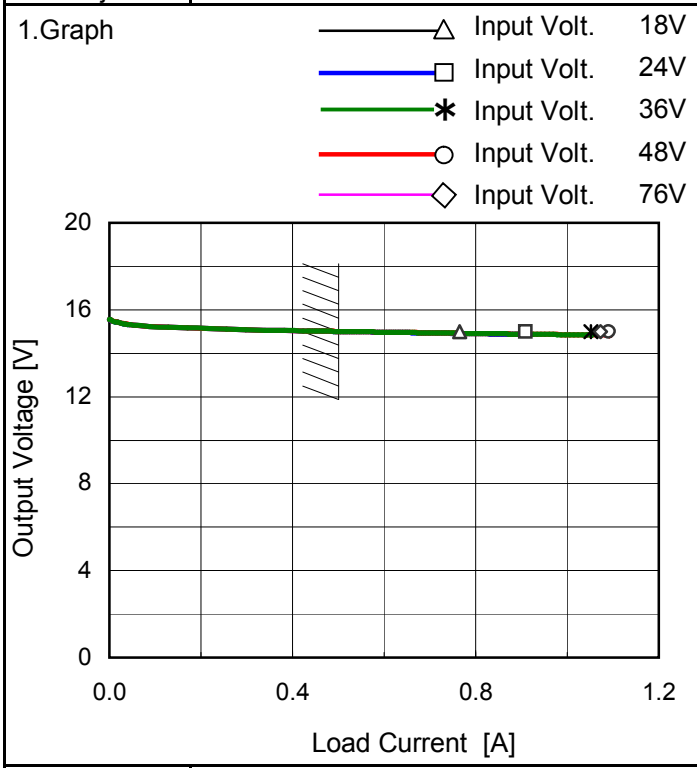
COSEL

Model	MGFW154815
Item	Overcurrent Protection

Temperature 25°C
Testing Circuitry Figure A

Object +15V0.5A

1.Graph



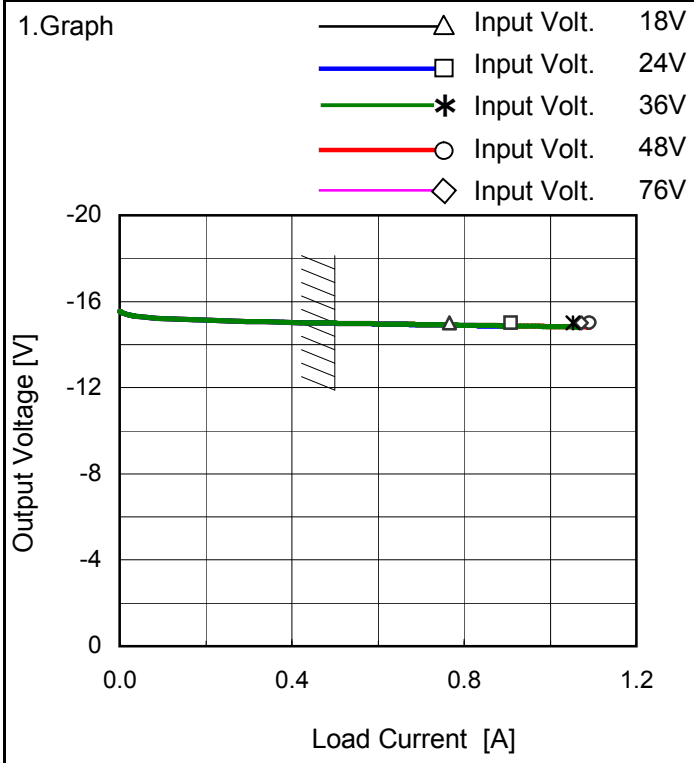
2.Values

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	0.765	0.909	1.052	1.091	1.073
14.3	-	-	-	-	-
13.5	-	-	-	-	-
12.0	-	-	-	-	-
10.5	-	-	-	-	-
9.0	-	-	-	-	-
7.5	-	-	-	-	-
6.0	-	-	-	-	-
4.5	-	-	-	-	-
3.0	-	-	-	-	-
1.5	-	-	-	-	-
0.0	-	-	-	-	-

-15V: Rated output current

Object -15V0.5A

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	0.765	0.909	1.052	1.091	1.073
-14.3	-	-	-	-	-
-13.5	-	-	-	-	-
-12.0	-	-	-	-	-
-10.5	-	-	-	-	-
-9.0	-	-	-	-	-
-7.5	-	-	-	-	-
-6.0	-	-	-	-	-
-4.5	-	-	-	-	-
-3.0	-	-	-	-	-
-1.5	-	-	-	-	-
0.0	-	-	-	-	-

+15V: Rated output current

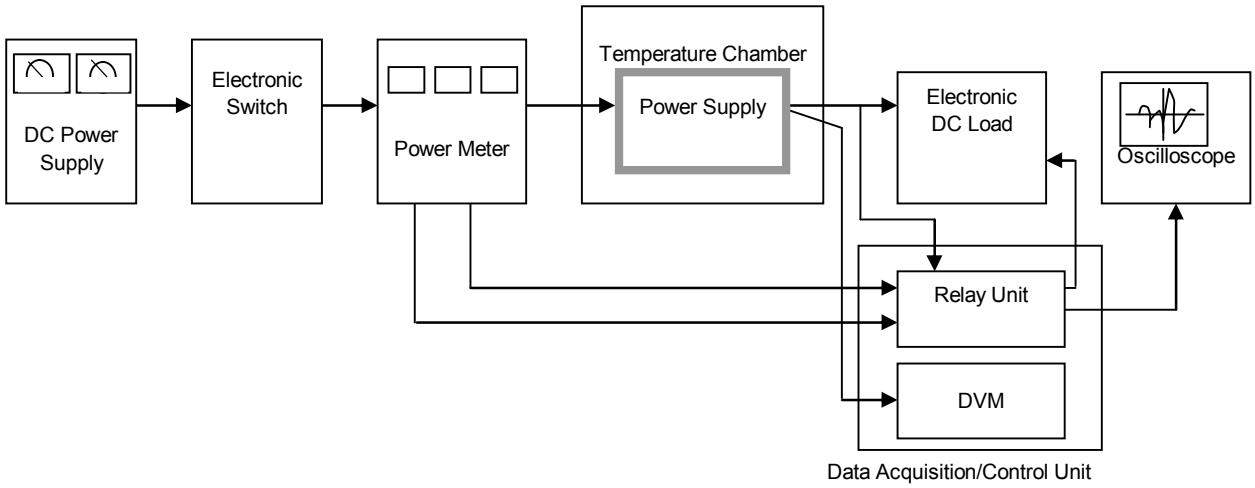


Figure A

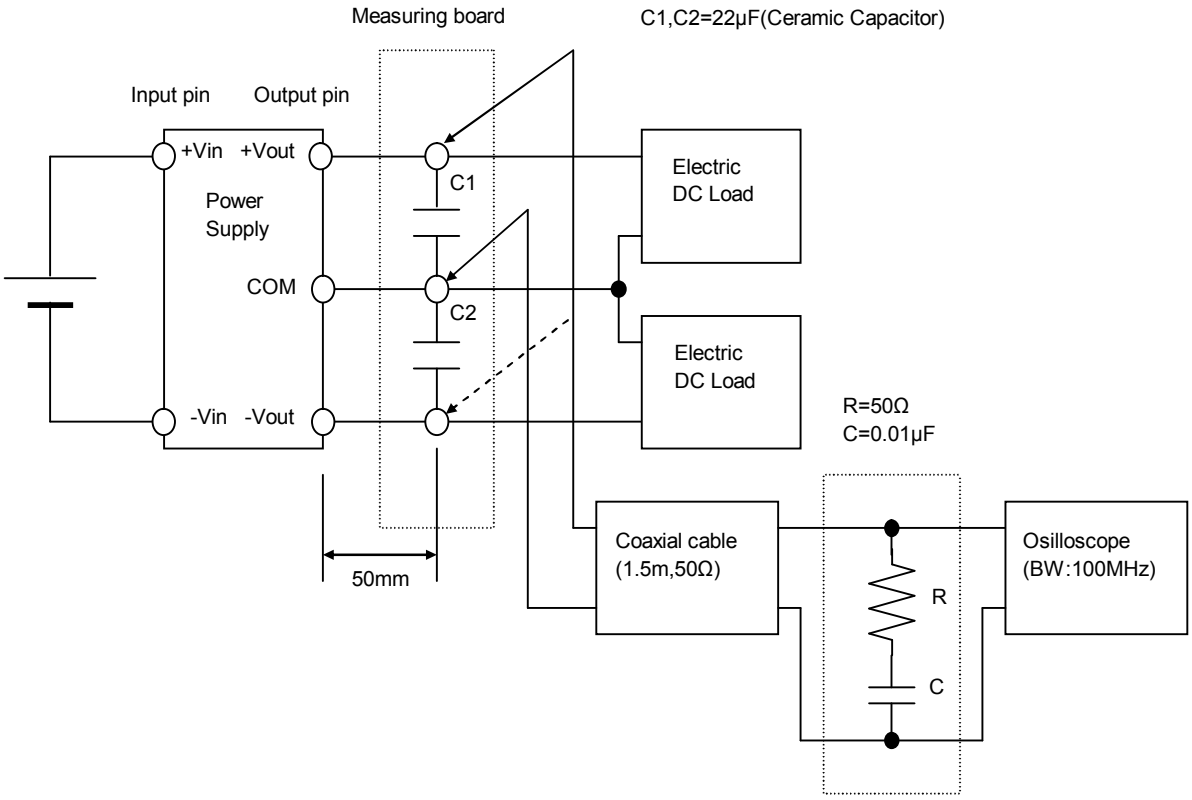


Figure B（Ripple and Ripple noise Characteristic）