参考資料

COSEL

TEST DATA OF STMGFW304815

Regulated DC Power Supply
January 29, 2013

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COSEL CO.,LTD.

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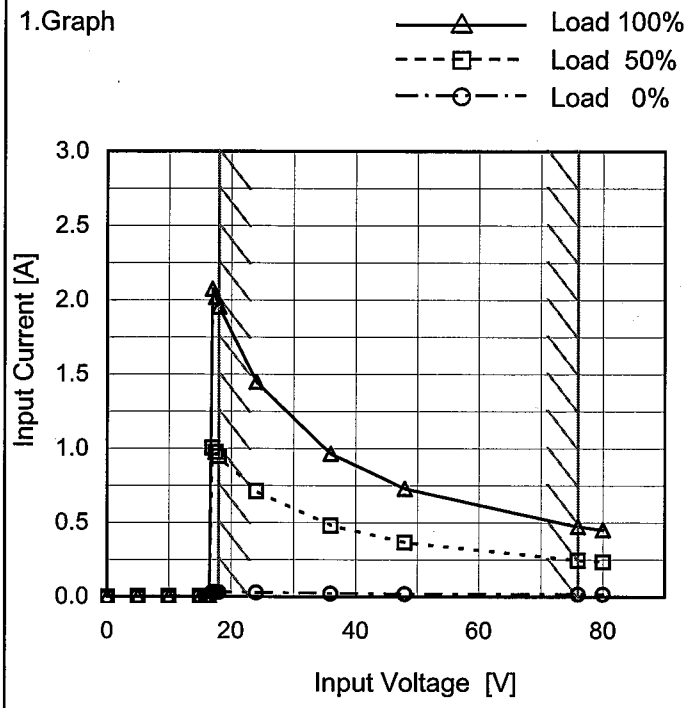

Note: Slanted line shows the range of the rated input voltage.

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	0.001	0.001
10.0	0.002	0.002	0.002
15.0	0.002	0.002	0.002
16.0	0.002	0.002	0.002
16.5	0.002	0.002	0.002
17.0	0.030	1.005	2.075
17.5	0.029	0.975	2.020
18.0	0.029	0.946	1.938
24.0	0.027	0.712	1.434
36.0	0.022	0.481	0.955
48.0	0.019	0.367	0.722
76.0	0.017	0.245	0.471
80.0	0.017	0.235	0.453
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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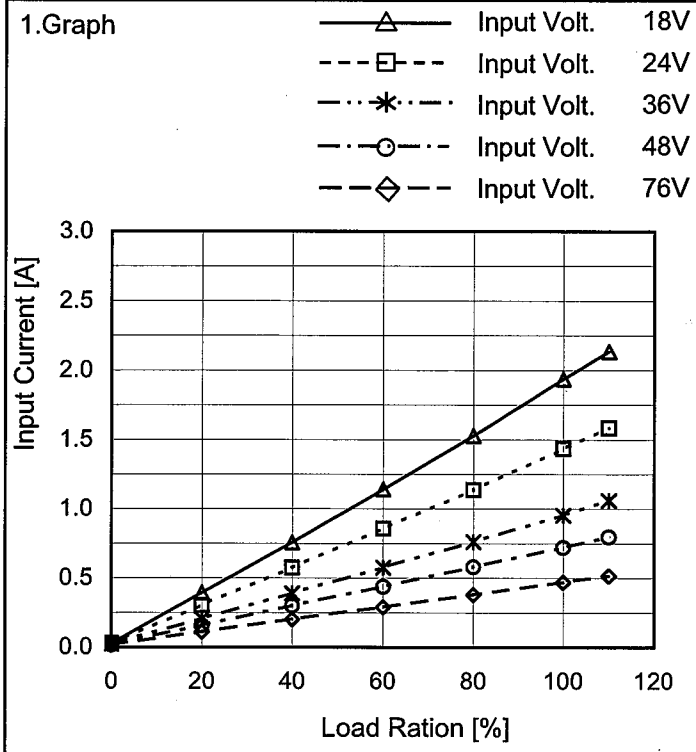
Model	STMGFW304815
Item	Input Current (by Load Current)
Object	――――――

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	0.029	0.027	0.022	0.019	0.017
20	0.395	0.301	0.206	0.158	0.110
40	0.760	0.574	0.391	0.300	0.202
60	1.140	0.857	0.576	0.438	0.291
80	1.528	1.137	0.764	0.581	0.381
100	1.938	1.434	0.955	0.722	0.471
110	2.135	1.585	1.061	0.799	0.517
--	-	-	-	-	-
--	-	-	-	-	-
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--	-	-	-	-	-

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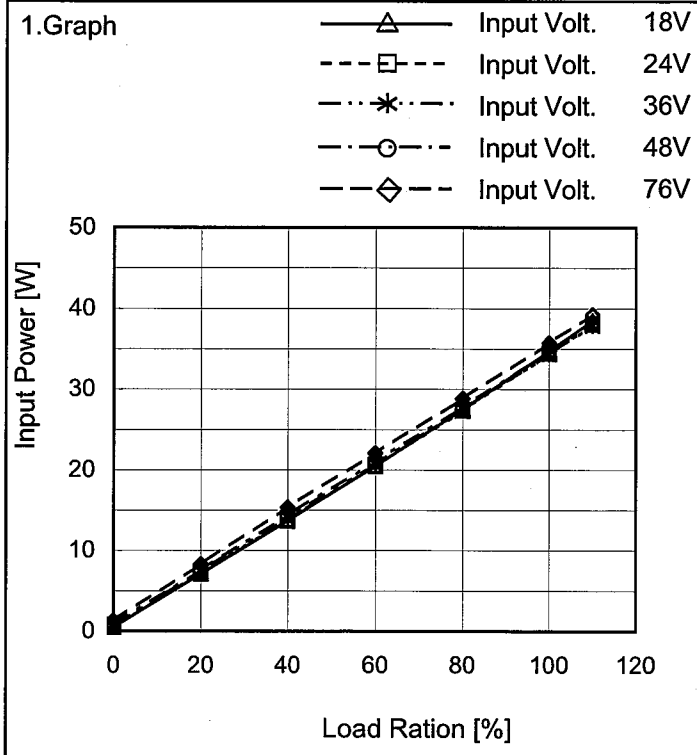
Model	STMGFW304815
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

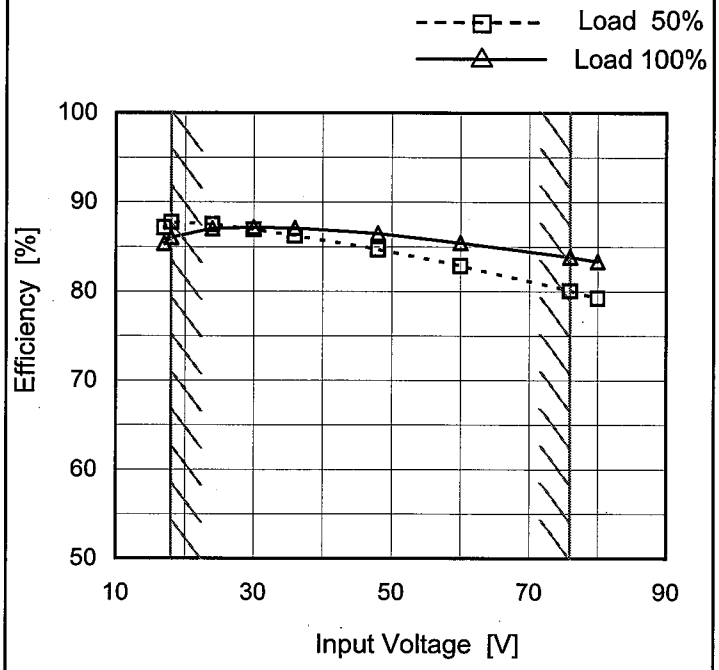
Load Ration [%]	Input Power [W]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	0.52	0.65	0.80	0.91	1.31
20	7.12	7.23	7.41	7.57	8.33
40	13.70	13.78	14.06	14.36	15.36
60	20.51	20.49	20.71	21.03	22.08
80	27.51	27.37	27.50	27.79	28.88
100	34.76	34.46	34.40	34.65	35.76
110	38.51	38.05	37.94	38.19	39.23
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

COSEL

Model	STMGFW304815
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

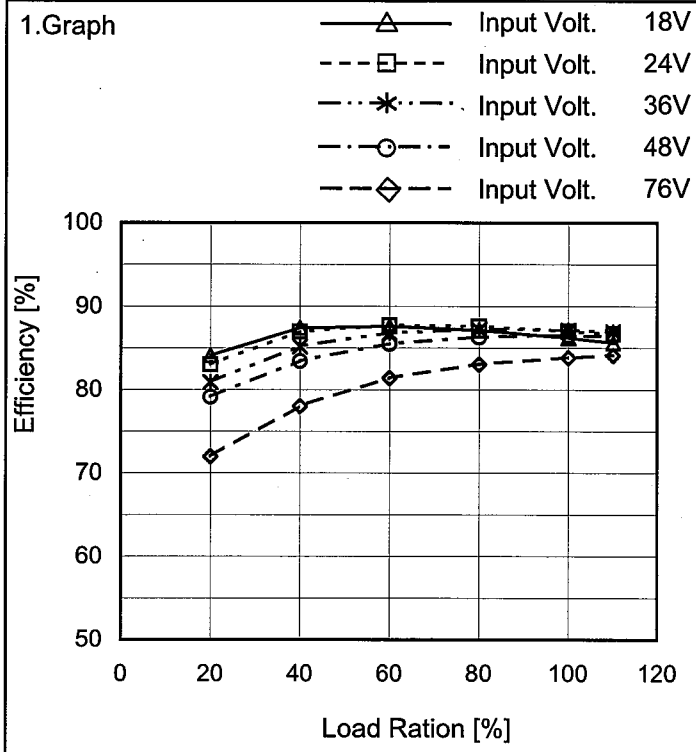
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	87.1	85.4
18	87.7	86.0
24	87.5	87.1
30	86.9	87.2
36	86.3	87.1
48	84.7	86.5
60	82.9	85.4
76	80.1	83.9
80	79.2	83.4

COSEL

Model	STMGFW304815
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	84.1	83.0	80.9	79.2	72.0
40	87.4	87.0	85.2	83.4	78.0
60	87.6	87.7	86.8	85.5	81.4
80	87.2	87.6	87.2	86.3	83.0
100	86.2	87.0	87.2	86.5	83.8
110	85.6	86.7	86.9	86.4	84.1
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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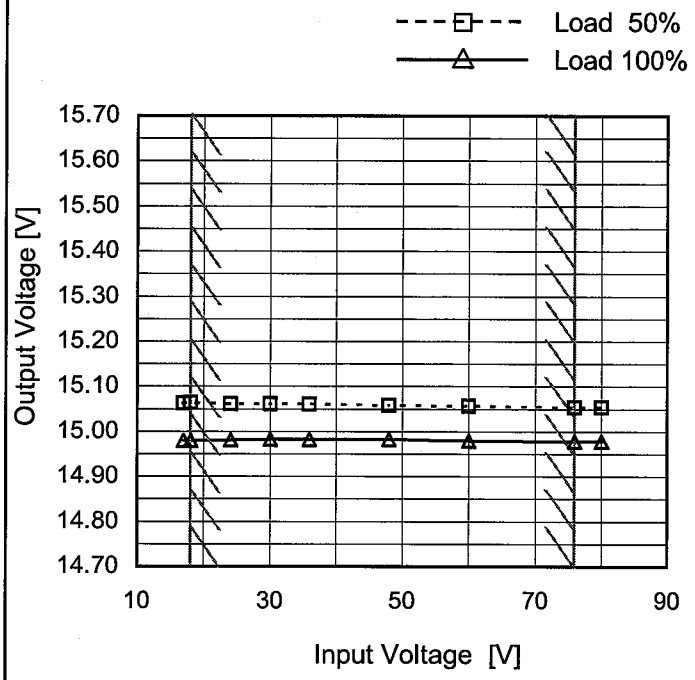
Model	STMGFW304815
Item	Line Regulation
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

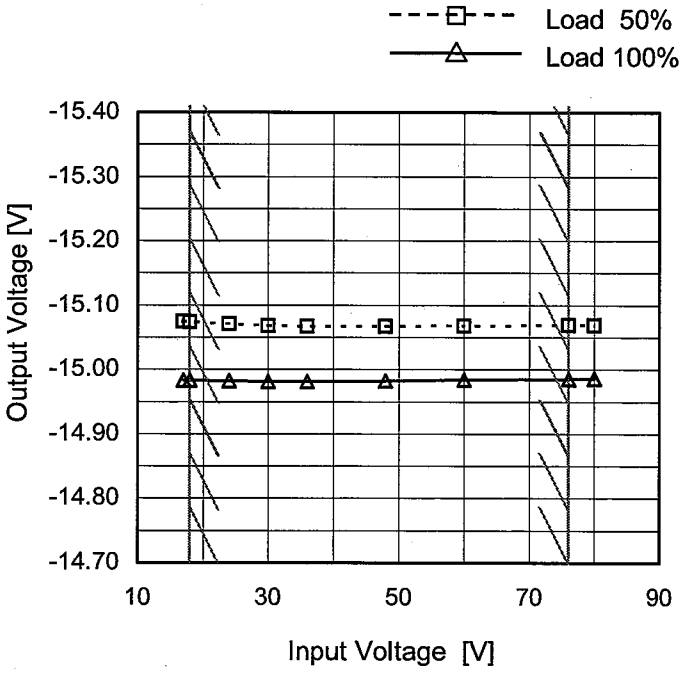


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.062	14.979
18	15.063	14.980
24	15.061	14.981
30	15.061	14.983
36	15.060	14.983
48	15.058	14.982
60	15.057	14.980
76	15.054	14.978
80	15.054	14.978

Object	-15V1A

1.Graph



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

2.Values

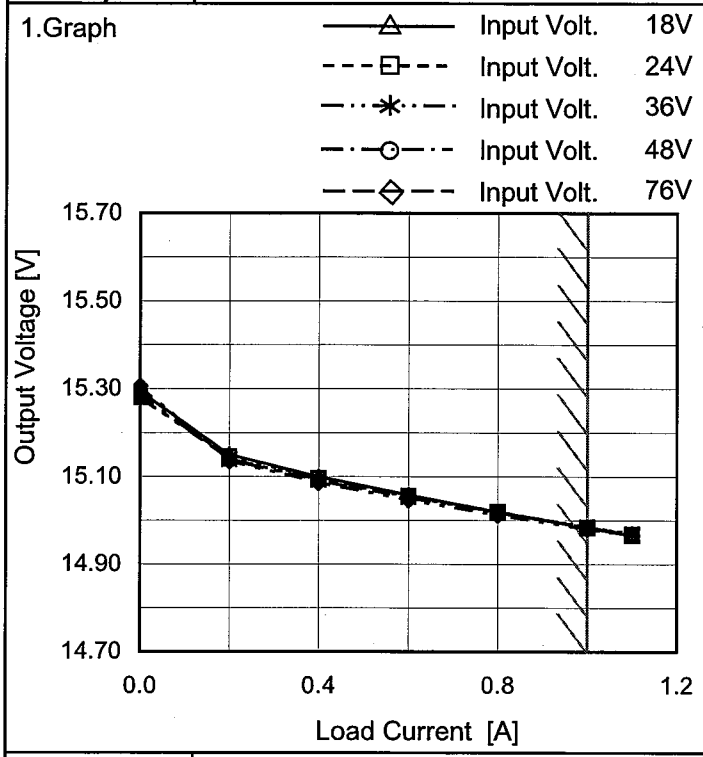
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	-15.075	-14.983
18	-15.074	-14.983
24	-15.071	-14.982
30	-15.068	-14.981
36	-15.067	-14.981
48	-15.067	-14.982
60	-15.068	-14.984
76	-15.069	-14.986
80	-15.069	-14.987

COSEL

Model	STMGFW304815
Item	Load Regulation
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

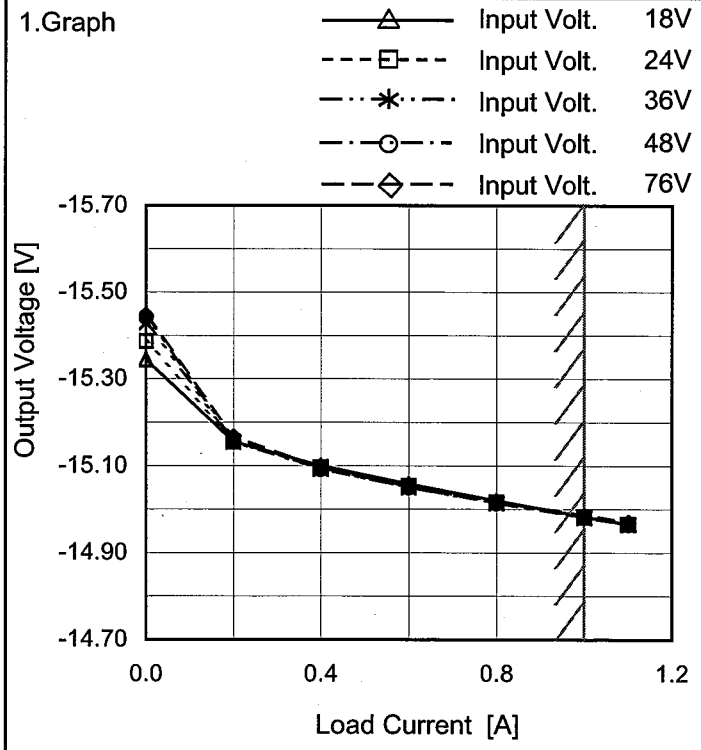


2.Values

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]
0.0	15.294	15.281	15.281	15.286	15.306
0.2	15.150	15.145	15.140	15.138	15.136
0.4	15.100	15.096	15.092	15.090	15.086
0.6	15.058	15.056	15.054	15.052	15.047
0.8	15.020	15.019	15.018	15.017	15.012
1.0	14.983	14.985	14.986	14.985	14.980
1.1	14.966	14.968	14.970	14.969	14.966
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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]
0.0	-15.344	-15.387	-15.429	-15.443	-15.447
0.2	-15.156	-15.155	-15.155	-15.159	-15.167
0.4	-15.101	-15.096	-15.092	-15.092	-15.095
0.6	-15.058	-15.054	-15.050	-15.050	-15.052
0.8	-15.020	-15.017	-15.014	-15.014	-15.017
1.0	-14.984	-14.982	-14.981	-14.982	-14.986
1.1	-14.966	-14.966	-14.966	-14.967	-14.971
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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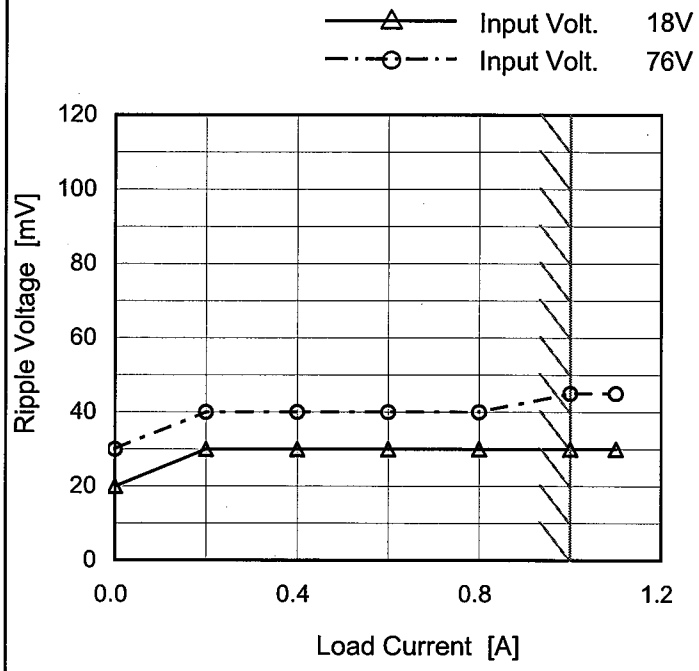
Model	STMGFW304815
Item	Ripple Voltage (by Load Current)
Object	+15V1A

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.

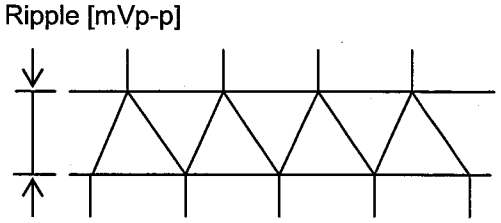


Fig.Complex Ripple Wave Form

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.0	20	30
0.2	30	40
0.4	30	40
0.6	30	40
0.8	30	40
1.0	30	45
1.1	30	45
--	-	-
--	-	-
--	-	-
--	-	-

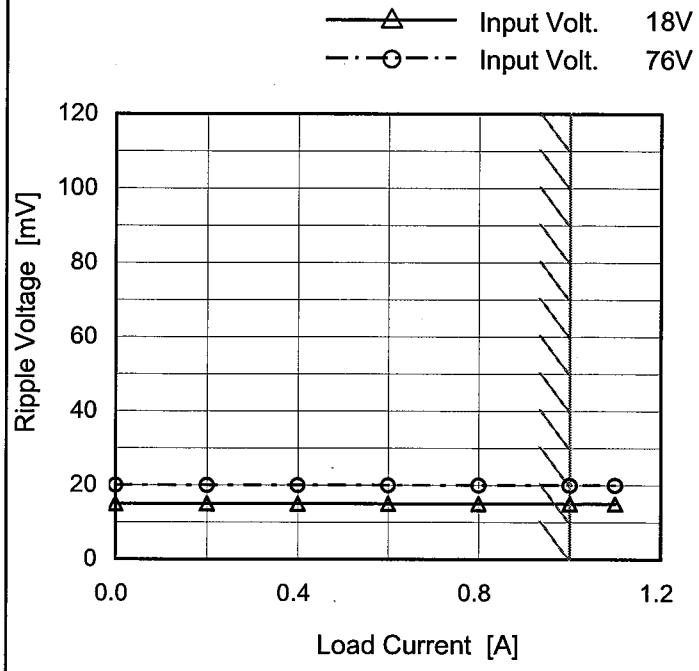
-15V: Rated output current

COSEL

Model	STMGFW304815
Item	Ripple Voltage (by Load Current)
Object	-15V1A

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.

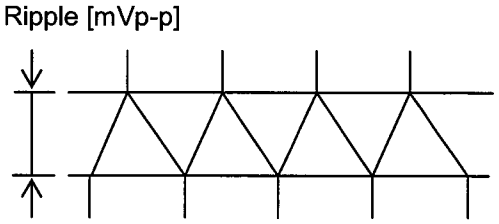


Fig.Complex Ripple Wave Form

2.Values

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

+15V: Rated output current

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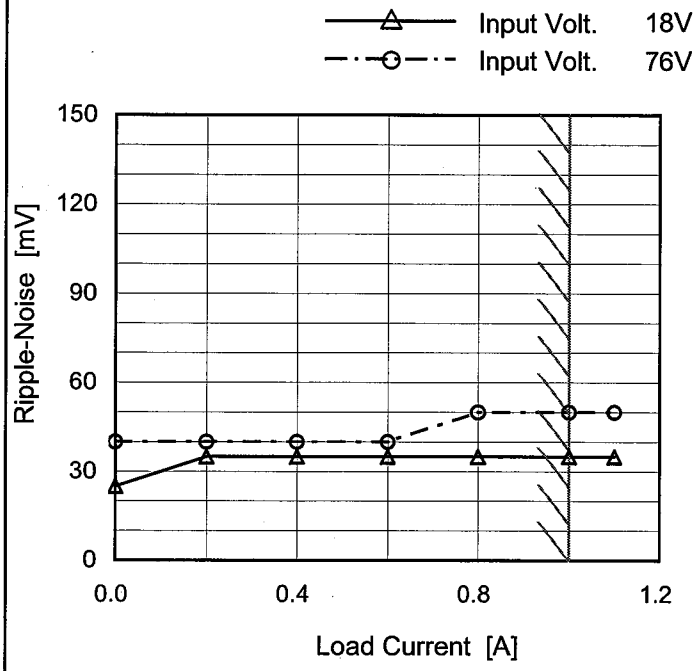
Model	STMGFW304815
Item	Ripple-Noise
Object	+15V1A

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.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.0	25	40
0.2	35	40
0.4	35	40
0.6	35	40
0.8	35	50
1.0	35	50
1.1	35	50
--	-	-
--	-	-
--	-	-
--	-	-

-15V: Rated output current

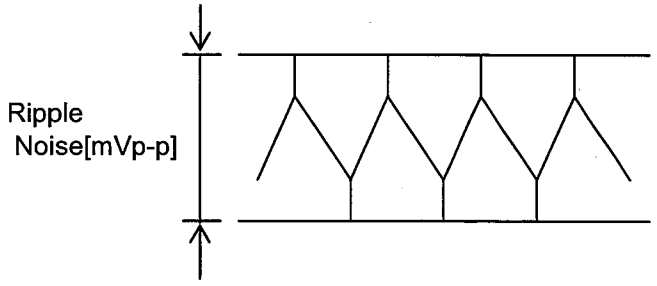


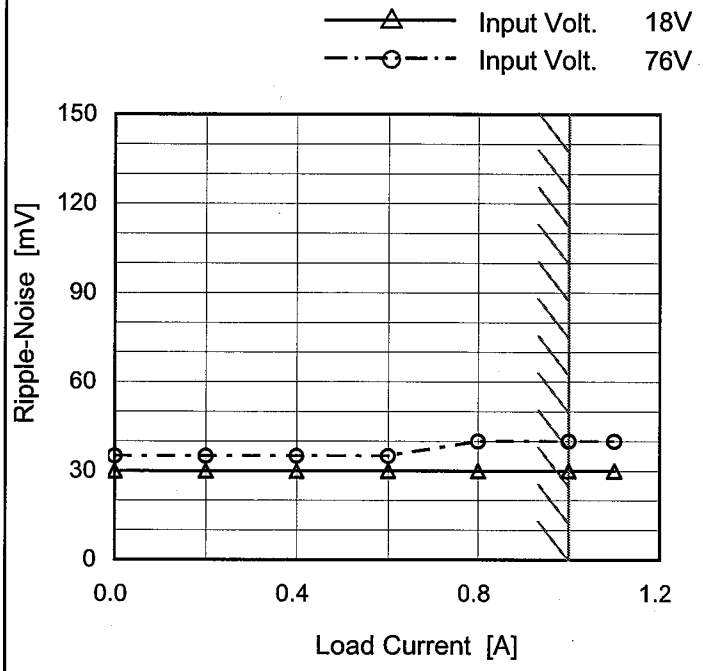
Fig.Complex Ripple Noise Wave Form

COSEL

Model	STMGFW304815
Item	Ripple-Noise
Object	-15V1A

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.

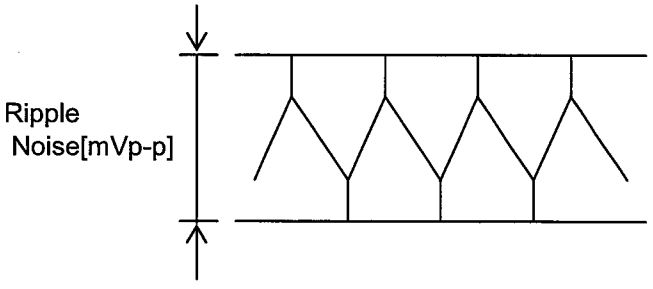


Fig.Complex Ripple Noise Wave Form

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.0	30	35
0.2	30	35
0.4	30	35
0.6	30	35
0.8	30	40
1.0	30	40
1.1	30	40
--	-	-
--	-	-
--	-	-
--	-	-

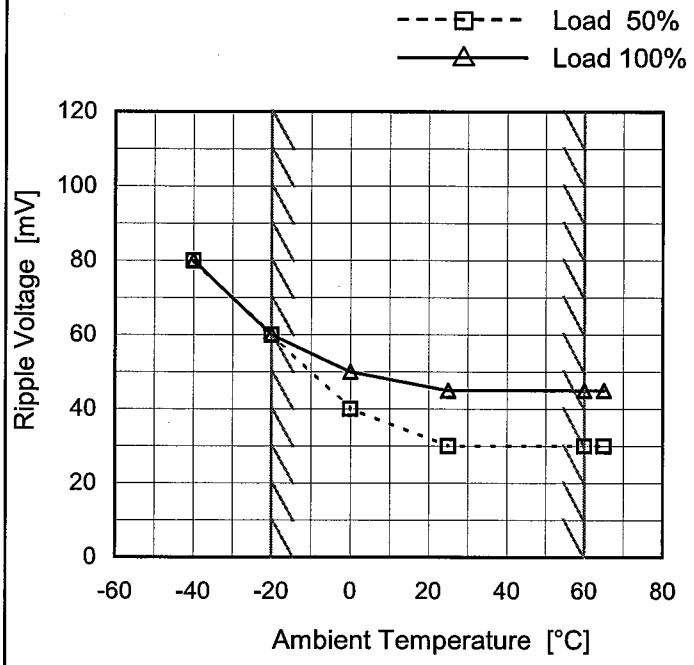
+15V: Rated output current

COSEL

Model	STMGFW304815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V1A

Testing Circuitry Figure B

1.Graph



Input Volt. 48V

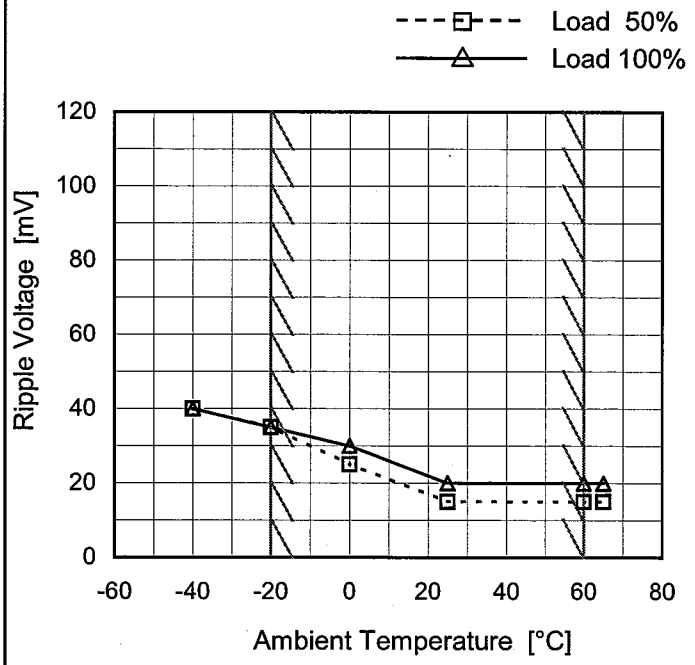
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-40	80	80
-20	60	60
0	40	50
25	30	45
60	30	45
65	30	45
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

-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%
-40	40	40
-20	35	35
0	25	30
25	15	20
60	15	20
65	15	20
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

+15V: Rated output current

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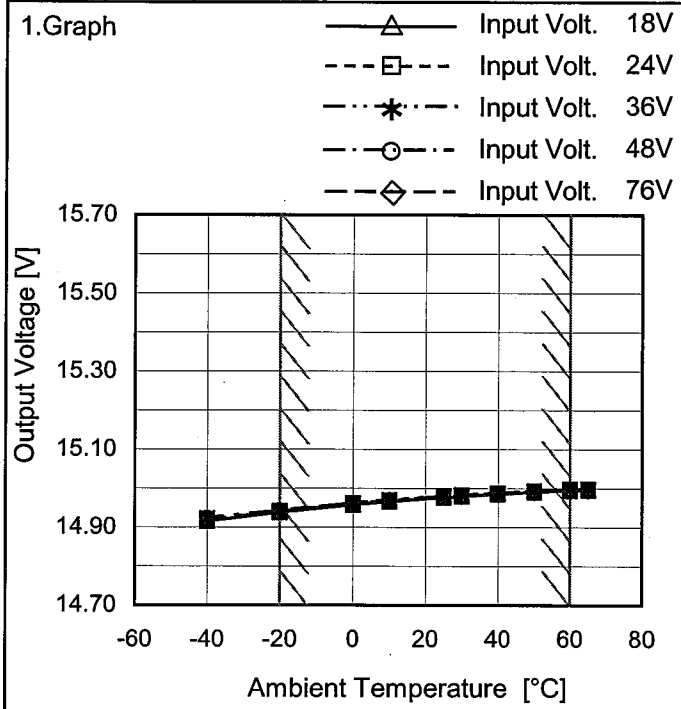
Model	STMGFW304815
Item	Ambient Temperature Drift
Object	+15V1A

Testing Circuitry Figure A

1.Graph

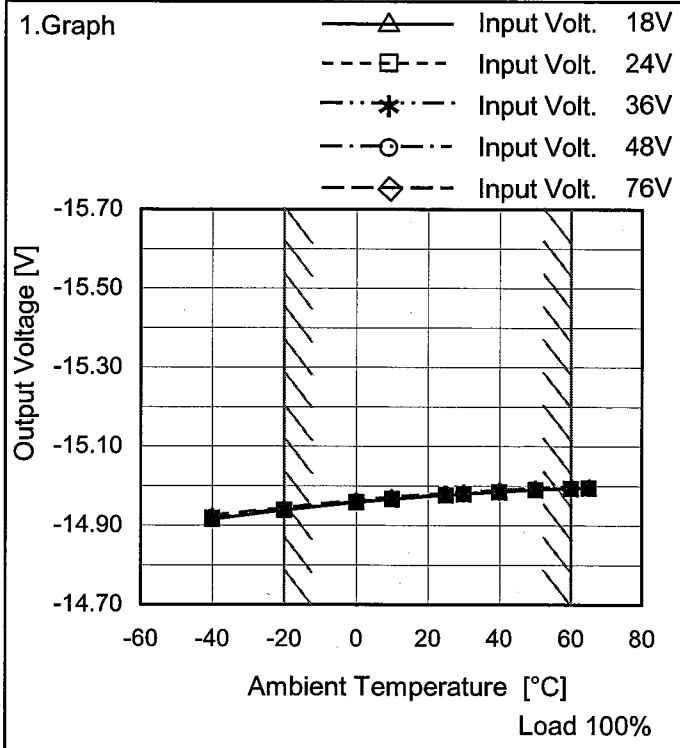


2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-40	14.916	14.919	14.923	14.924	14.921
-20	14.939	14.941	14.943	14.943	14.940
0	14.958	14.960	14.962	14.962	14.958
10	14.967	14.969	14.970	14.970	14.966
25	14.977	14.979	14.980	14.980	14.976
30	14.980	14.982	14.984	14.983	14.979
40	14.986	14.987	14.989	14.988	14.984
50	14.991	14.993	14.994	14.993	14.989
60	14.995	14.997	14.998	14.997	14.994
65	14.996	14.998	14.999	14.998	14.995
--	-	-	-	-	-

Object	-15V1A

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]
-40	-14.916	-14.917	-14.919	-14.921	-14.925
-20	-14.939	-14.939	-14.939	-14.941	-14.945
0	-14.958	-14.958	-14.959	-14.960	-14.964
10	-14.967	-14.966	-14.967	-14.968	-14.972
25	-14.977	-14.976	-14.976	-14.977	-14.981
30	-14.980	-14.979	-14.979	-14.980	-14.984
40	-14.985	-14.985	-14.984	-14.986	-14.989
50	-14.990	-14.990	-14.990	-14.991	-14.994
60	-14.994	-14.994	-14.993	-14.995	-14.998
65	-14.995	-14.995	-14.994	-14.996	-14.999
--	-	-	-	-	-

COSEL

Model	STMGFW304815	
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 : -20 - 60°C
Input Voltage : 18 - 76V
Load Current (AVR 1) : 0 - 1A (AVR 2) : 0 - 1A

* 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	15.312	±187	±1.2
Minimum Voltage	-20	18	1	14.939		

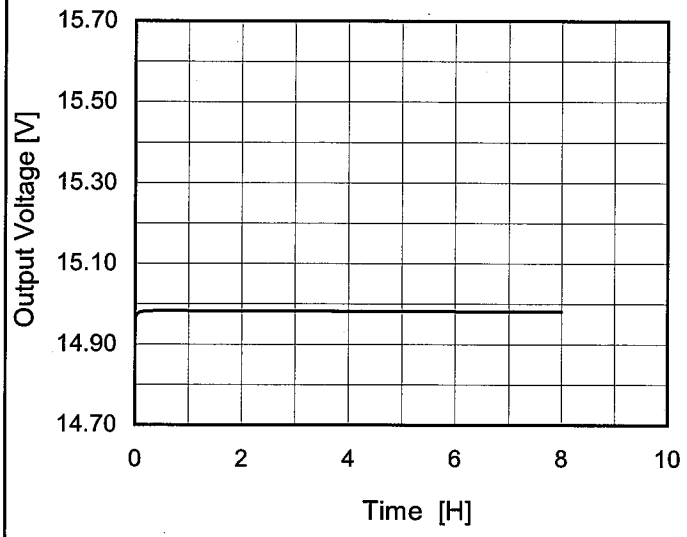
Object	-15V1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	76	0	-15.450	±256	±1.7
Minimum Voltage	-20	18	1	-14.939		

COSEL

Model	STMGFW304815
Item	Time Lapse Drift
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



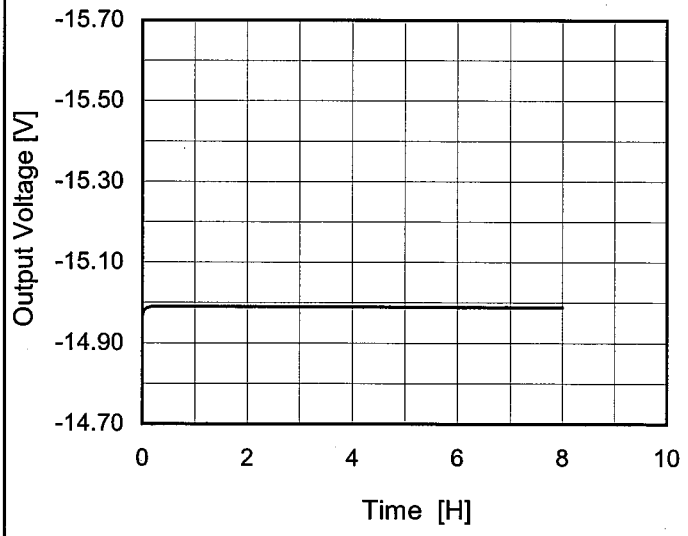
Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	14.964
0.5	14.983
1.0	14.983
2.0	14.982
3.0	14.982
4.0	14.982
5.0	14.982
6.0	14.982
7.0	14.982
8.0	14.982

Object	-15V1A

1.Graph



Input Volt. 48V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-14.971
0.5	-14.990
1.0	-14.990
2.0	-14.990
3.0	-14.990
4.0	-14.990
5.0	-14.989
6.0	-14.989
7.0	-14.989
8.0	-14.989

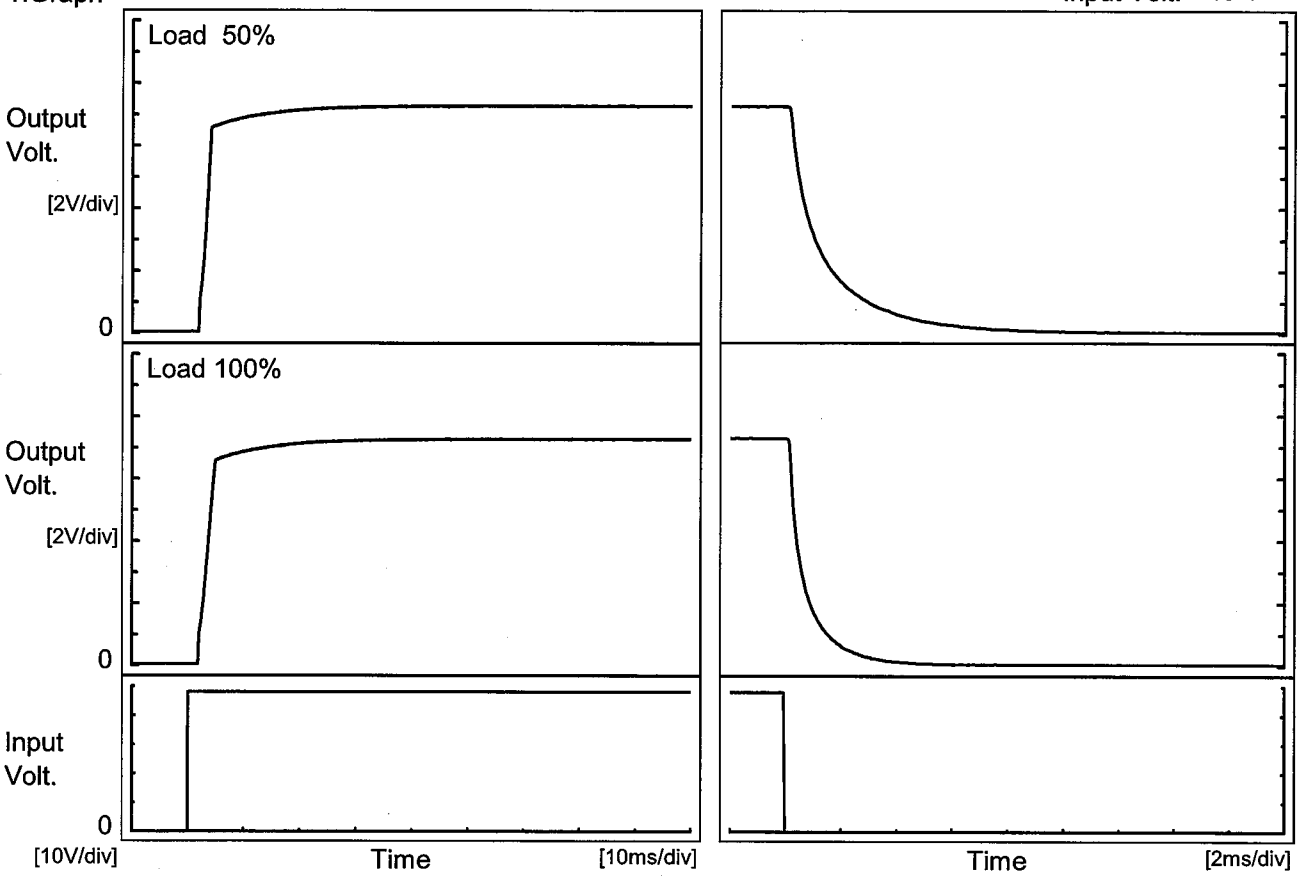
COSEL

Model	STMGFW304815
Item	Rise and Fall Time
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

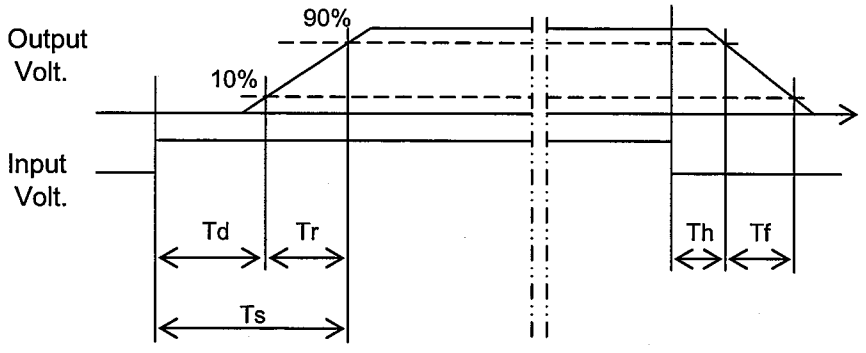
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.1	5.7	7.8	0.2	3.3
100 %	2.0	6.4	8.4	0.2	1.6



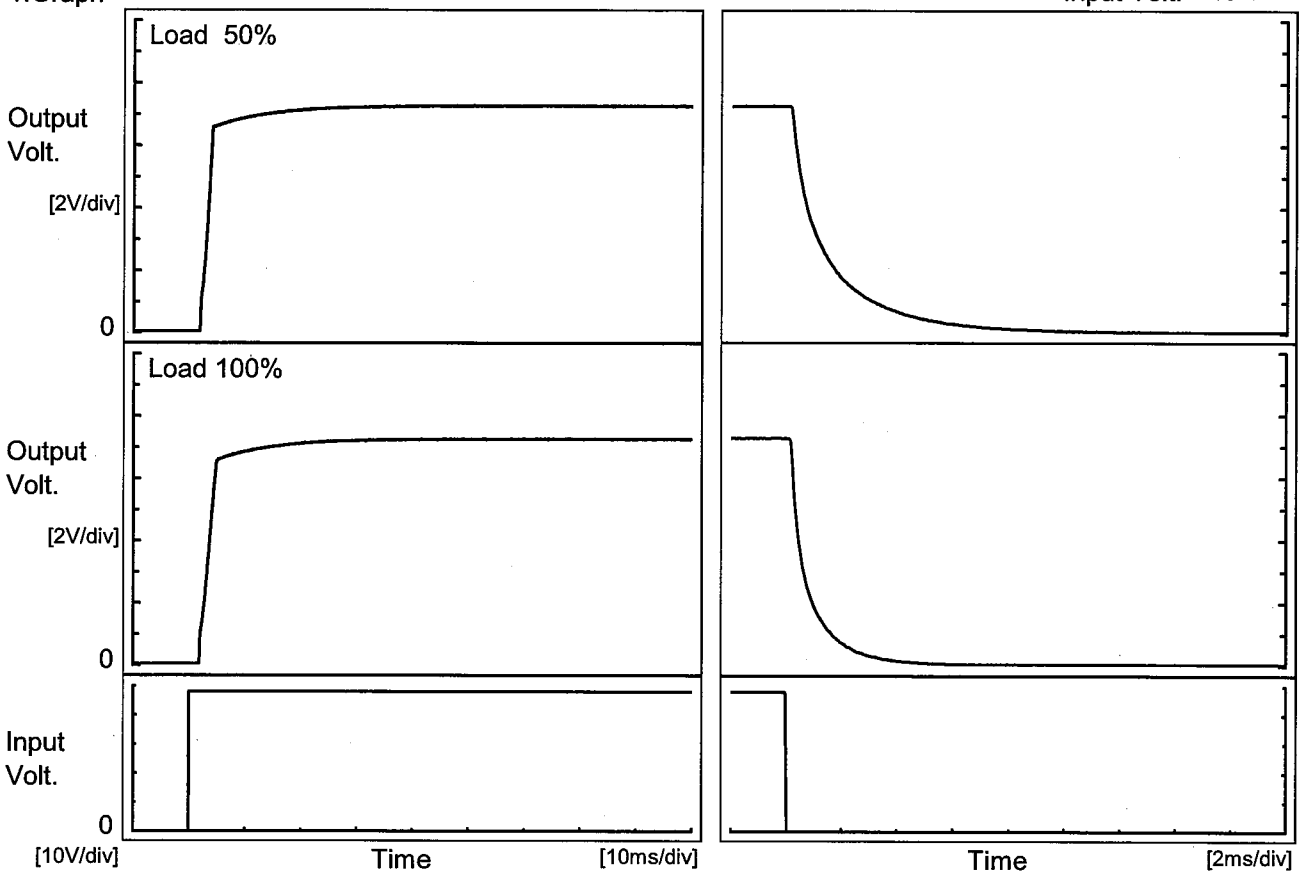
COSEL

Model	STMGFW304815
Item	Rise and Fall Time
Object	-15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

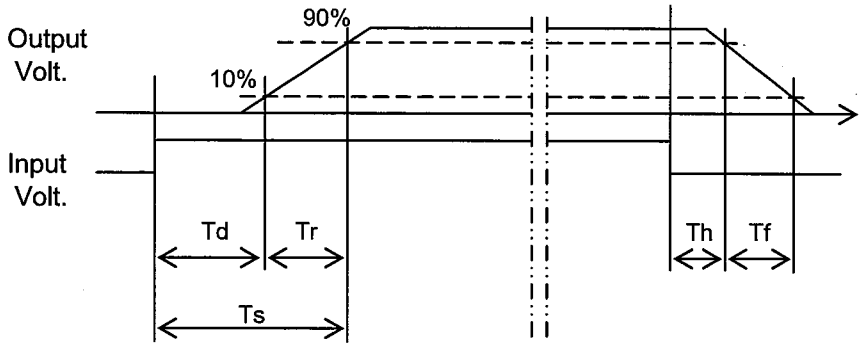
Input Volt. 48 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	2.1	5.9	8.0	0.2	3.5
100 %	2.0	6.3	8.3	0.2	1.7

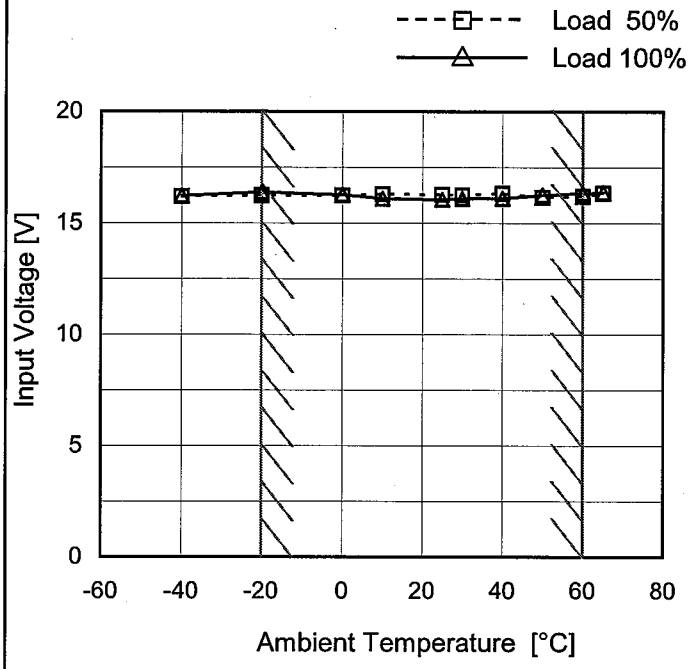


COSEL

Model	STMGFW304815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V1A

Testing Circuitry Figure A

1.Graph

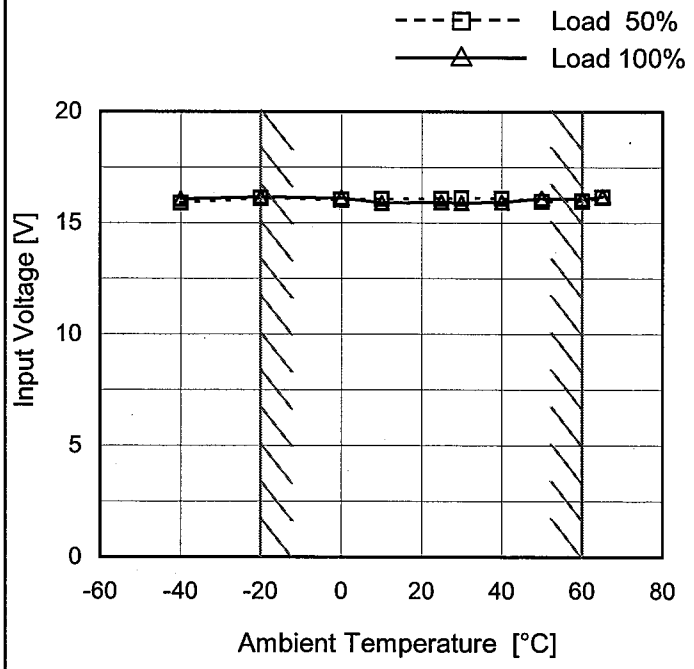


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	16.2	16.3
-20	16.3	16.4
0	16.3	16.3
10	16.3	16.2
25	16.3	16.1
30	16.3	16.1
40	16.4	16.2
50	16.2	16.3
60	16.2	16.4
65	16.4	16.4
--	-	-

Object	-15V1A

1.Graph



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

2.Values

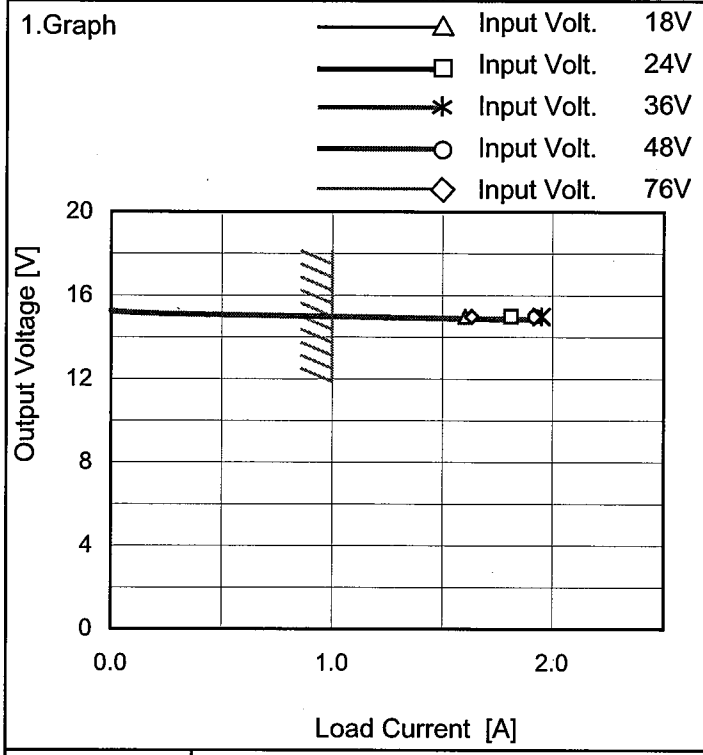
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	15.9	16.1
-20	16.1	16.2
0	16.1	16.2
10	16.1	16.0
25	16.1	16.0
30	16.2	15.9
40	16.1	16.0
50	16.0	16.2
60	16.0	16.1
65	16.2	16.2
--	-	-

COSEL

Model	STMGFW304815
Item	Overcurrent Protection
Object	+15V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

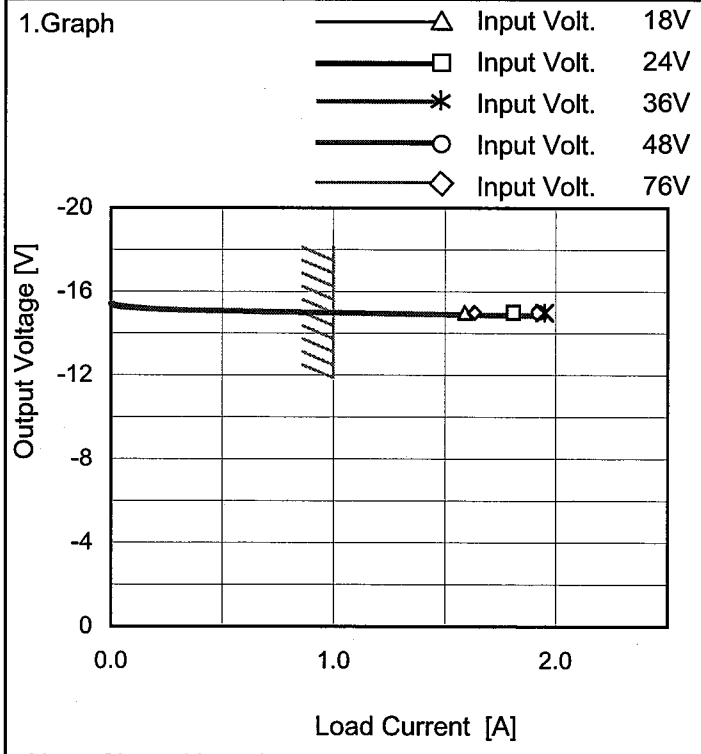


2.Values

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	1.602	1.811	1.951	1.923	1.633
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



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	1.590	1.811	1.952	1.925	1.634
-14.3	-	-	-	-	-
-13.5	-	-	-	-	-
-12.0	-	-	-	-	-
-10.5	-	-	-	-	-
-9.0	-	-	-	-	-
-7.5	-	-	-	-	-
-6.0	-	-	-	-	-
-4.5	-	-	-	-	-
-3.0	-	-	-	-	-
-1.5	-	-	-	-	-
0.0	-	-	-	-	-

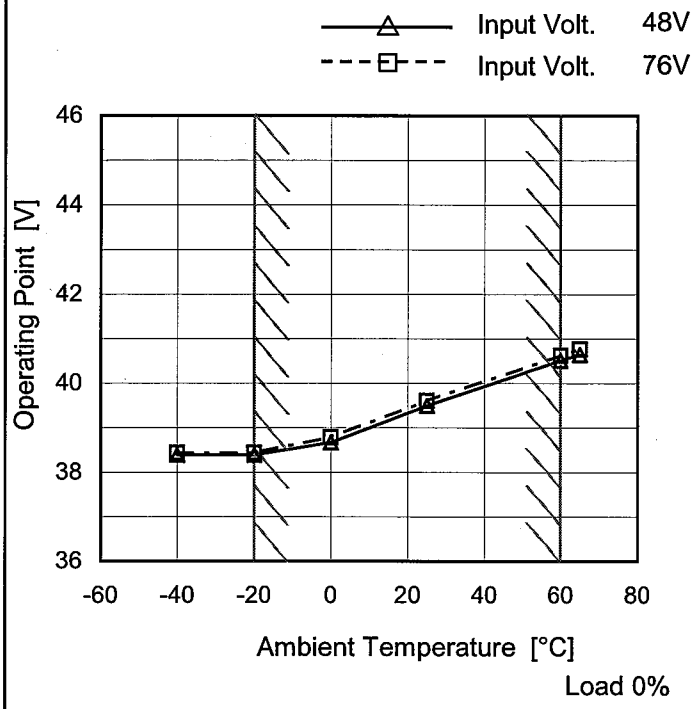
Note: Slanted line shows the range of the rated load current.
Intermittent operation occurs when overcurrent protection is activated.

COSEL

Model	STMGFW304815
Item	Overvoltage Protection
Object	+30V1A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 48[V]	Input Volt. 76[V]
-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
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

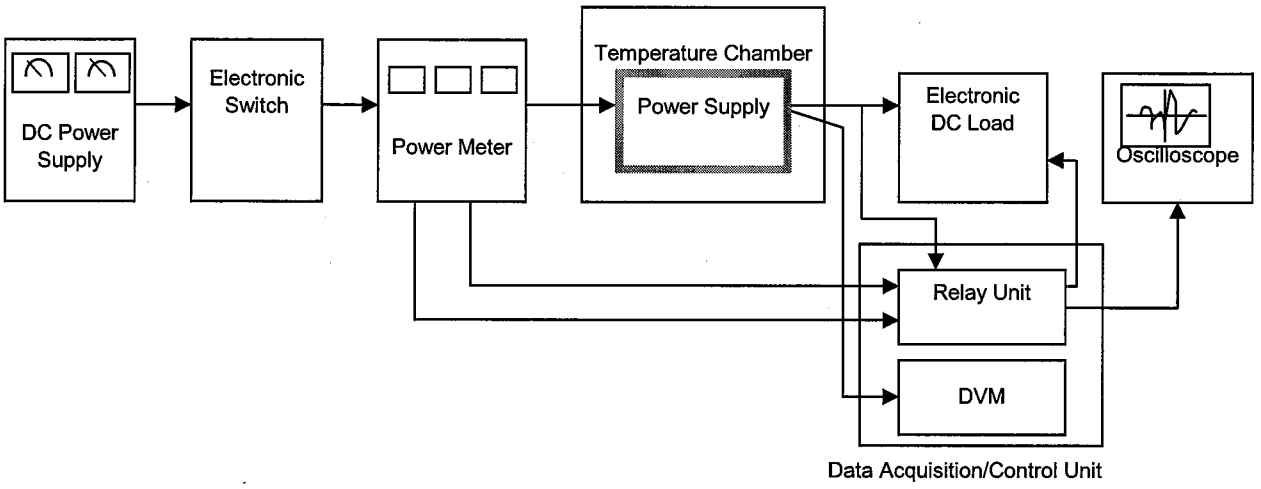


Figure A

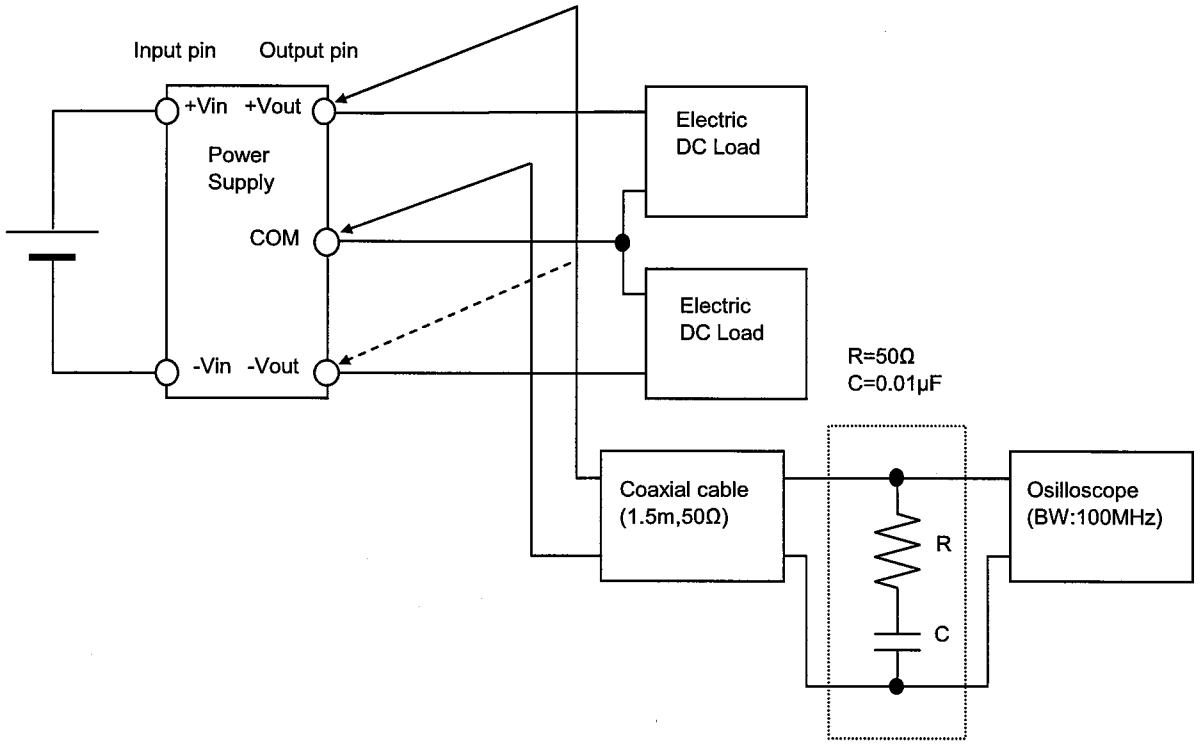


Figure B (Ripple and Ripple noise Characteristic)