参考資料

COSEL

TEST DATA OF MGS102415

Regulated DC Power Supply
July 21, 2016

Approved by : Takayuki Fukuda
Takayuki Fukuda — Design Manager

Prepared by : Ryosuke Nakao
Ryosuke Nakao — Design Engineer

COSEL CO.,LTD.

COSEL

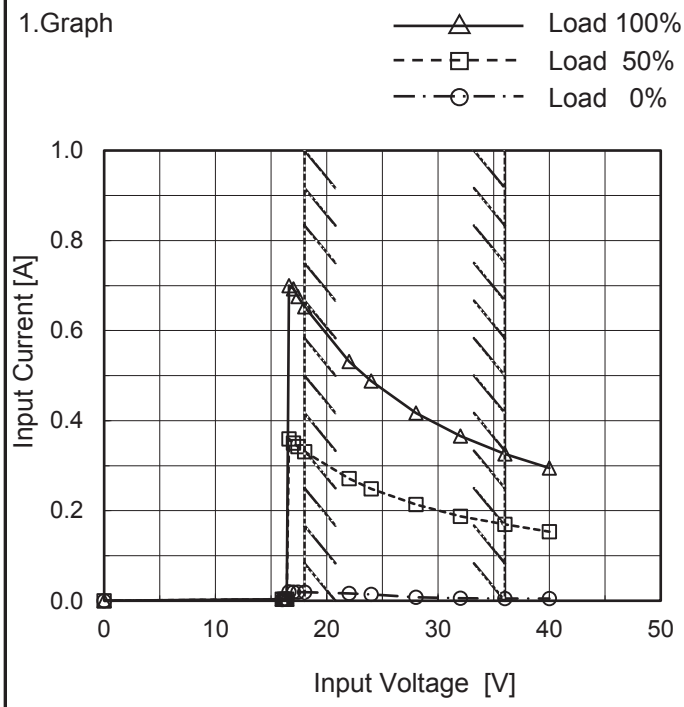
CONTENTS

COSEL

Model	MGS102415
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

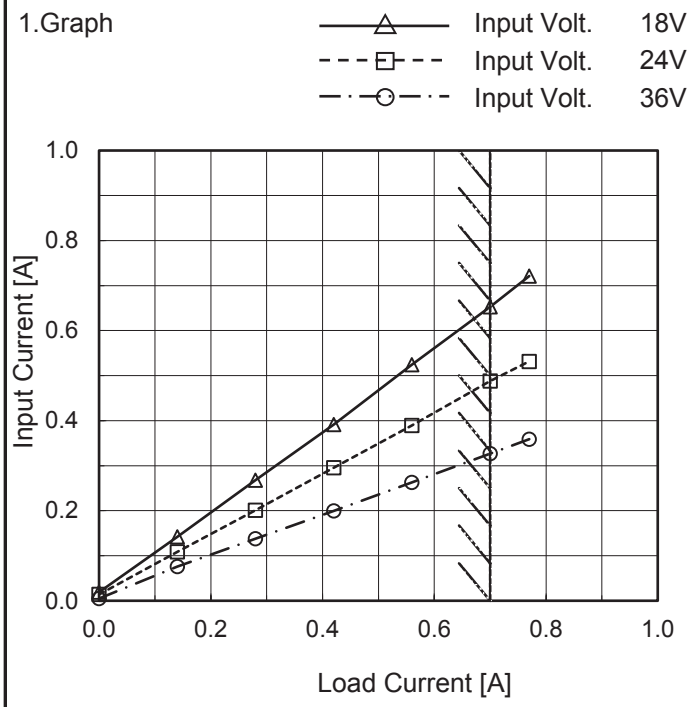
Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
16.0	0.003	0.004	0.003
16.2	0.004	0.003	0.003
16.4	0.004	0.004	0.004
16.6	0.020	0.360	0.700
17.0	0.019	0.351	0.692
17.4	0.019	0.343	0.676
18.0	0.019	0.331	0.653
22.0	0.016	0.271	0.531
24.0	0.014	0.248	0.488
28.0	0.008	0.214	0.417
32.0	0.006	0.187	0.366
36.0	0.005	0.170	0.326
40.0	0.005	0.154	0.295
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGS102415
Item	Input Current (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

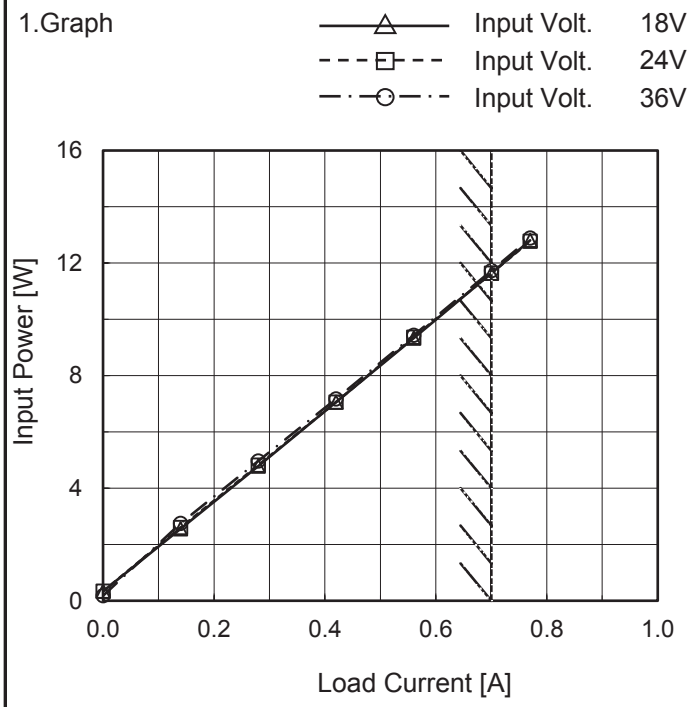
Load Current [A]	Input Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.019	0.014	0.005
0.14	0.142	0.109	0.076
0.28	0.268	0.201	0.138
0.42	0.392	0.295	0.199
0.56	0.524	0.390	0.263
0.70	0.653	0.488	0.326
0.77	0.721	0.532	0.359
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGS102415
Item	Input Power (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

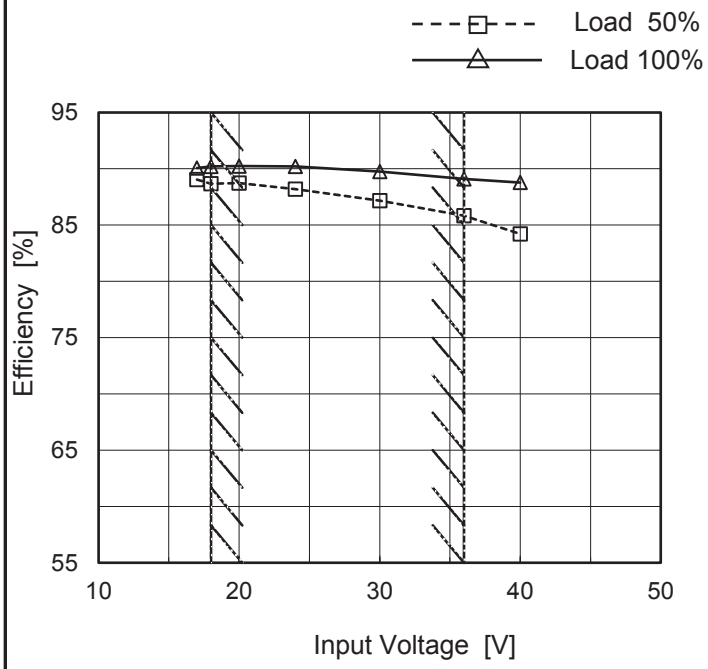
Load Current [A]	Input Power [W]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	0.33	0.33	0.18
0.14	2.56	2.60	2.74
0.28	4.78	4.82	4.97
0.42	7.06	7.05	7.17
0.56	9.33	9.36	9.44
0.70	11.64	11.64	11.72
0.77	12.81	12.78	12.89
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGS102415
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

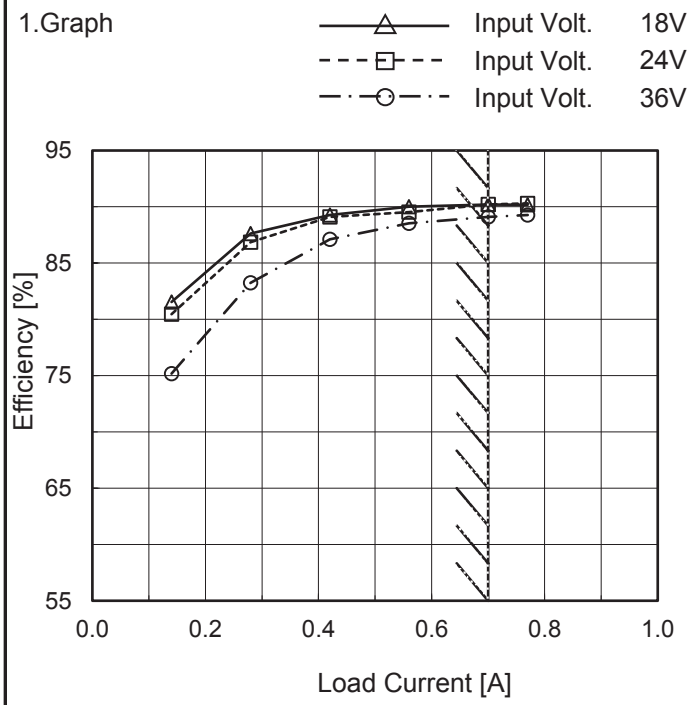
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	89.0	90.1
18	88.7	90.2
20	88.7	90.2
24	88.2	90.2
30	87.2	89.8
36	85.8	89.1
40	84.2	88.8
--	-	-
--	-	-

COSEL

Model	MGS102415
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

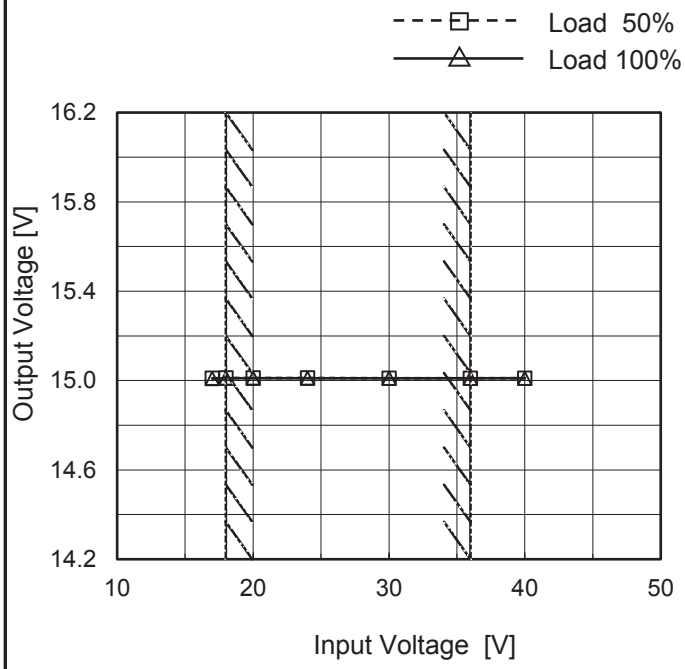
Load Current [A]	Efficiency [%]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	-	-	-
0.14	81.5	80.5	75.2
0.28	87.6	86.9	83.2
0.42	89.3	89.1	87.1
0.56	90.0	89.5	88.5
0.70	90.2	90.2	89.1
0.77	90.2	90.3	89.3
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGS102415
Item	Line Regulation
Object	+15V0.7A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

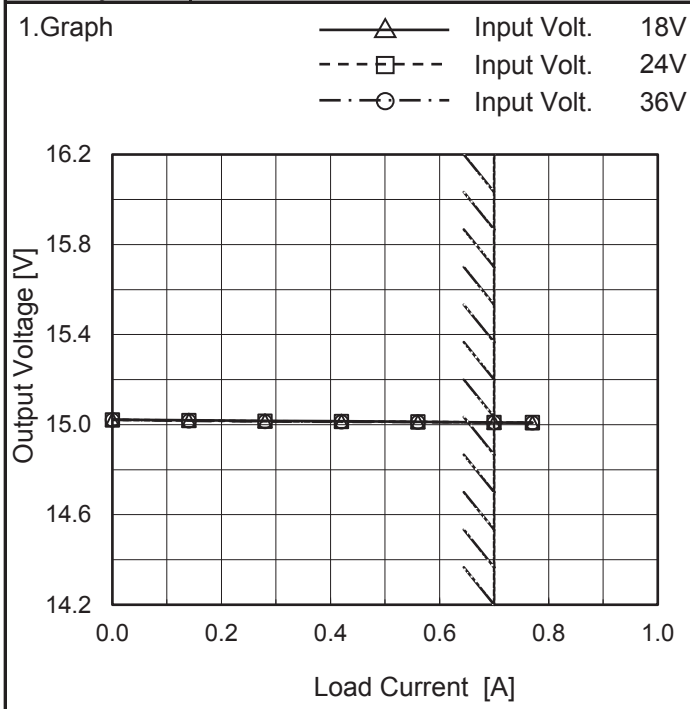
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.011	15.009
18	15.011	15.010
20	15.011	15.010
24	15.011	15.010
30	15.011	15.010
36	15.011	15.010
40	15.011	15.010
--	-	-
--	-	-

COSEL

Model	MGS102415
Item	Load Regulation
Object	+15V0.7A

Temperature 25°C
Testing Circuitry Figure A

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]
0.00	15.022	15.022	15.022
0.14	15.019	15.018	15.018
0.28	15.017	15.016	15.014
0.42	15.015	15.015	15.013
0.56	15.013	15.012	15.011
0.70	15.010	15.010	15.010
0.77	15.008	15.009	15.008
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MGS102415
Item	Dynamic Load Response
Object	+15V0.7A

Temperature 25°C
Testing Circuitry Figure A

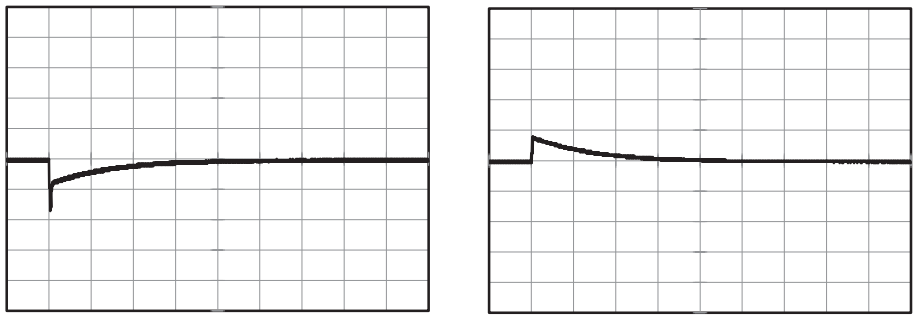
Input Volt. 24 V
Cycle 100 ms

t1,t2 = 100 μ s

Load Current

t1 t2

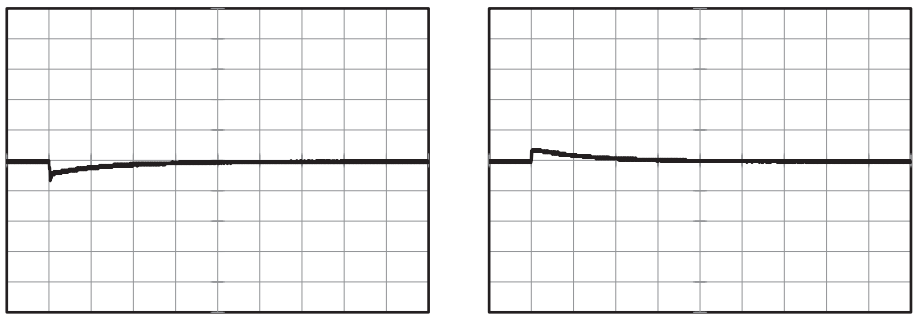
Min.Load (0A)←→
Load 100% (0.7A)



500 mV/div

2 ms/div 2 ms/div

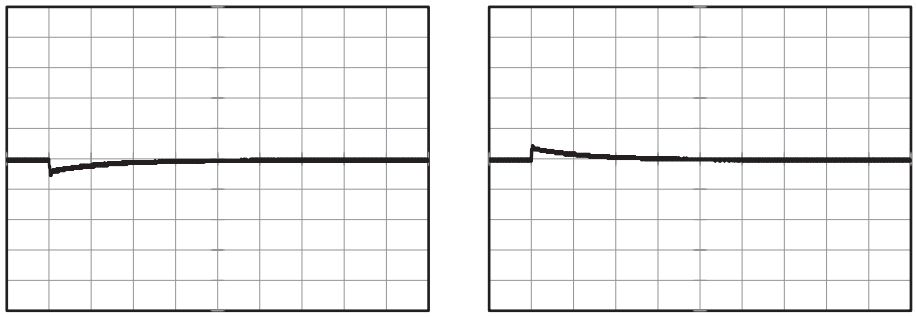
Min.Load (0A)←→
Load 50% (0.35A)



500 mV/div

2 ms/div 2 ms/div

Load 50% (0.35A)←→
Load 100% (0.7A)



500 mV/div

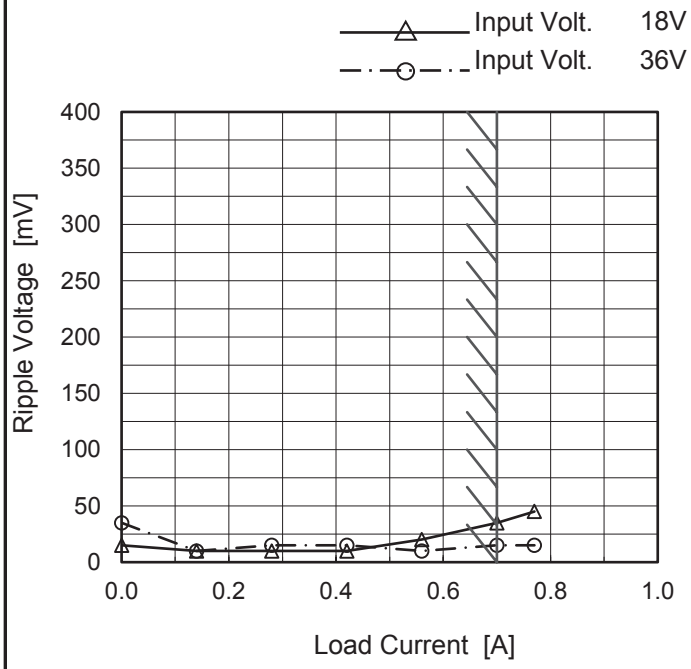
2 ms/div 2 ms/div

COSEL

Model	MGS102415
Item	Ripple Voltage (by Load Current)
Object	+15V0.7A

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]

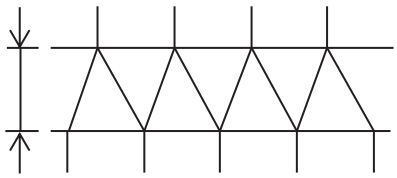


Fig.Complex Ripple Wave Form

2.Values

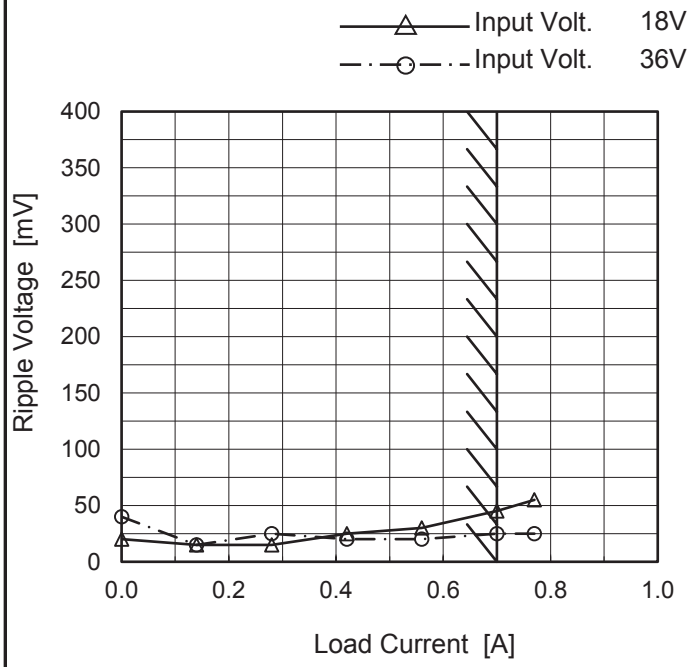
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	15	35
0.14	10	10
0.28	10	15
0.42	10	15
0.56	20	10
0.70	35	15
0.77	45	15
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGS102415
Item	Ripple-Noise
Object	+15V0.7A

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]

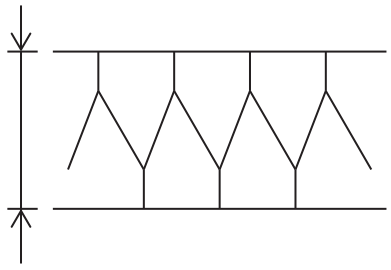


Fig.Complex Ripple Noise Wave Form

2.Values

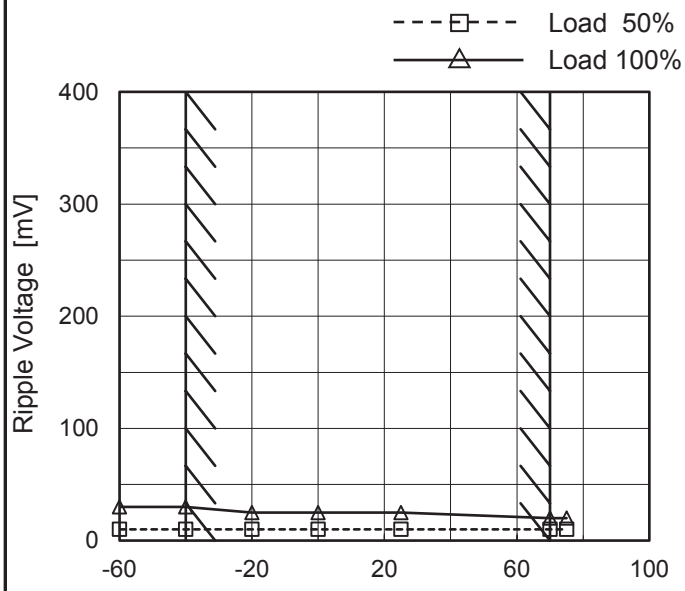
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	20	40
0.14	15	15
0.28	15	25
0.42	25	20
0.56	30	20
0.70	45	25
0.77	55	25
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGS102415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.7A

Testing Circuitry Figure B

1.Graph



Input Volt. 24V

Measured by 100 MHz Oscilloscope.

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

2.Values

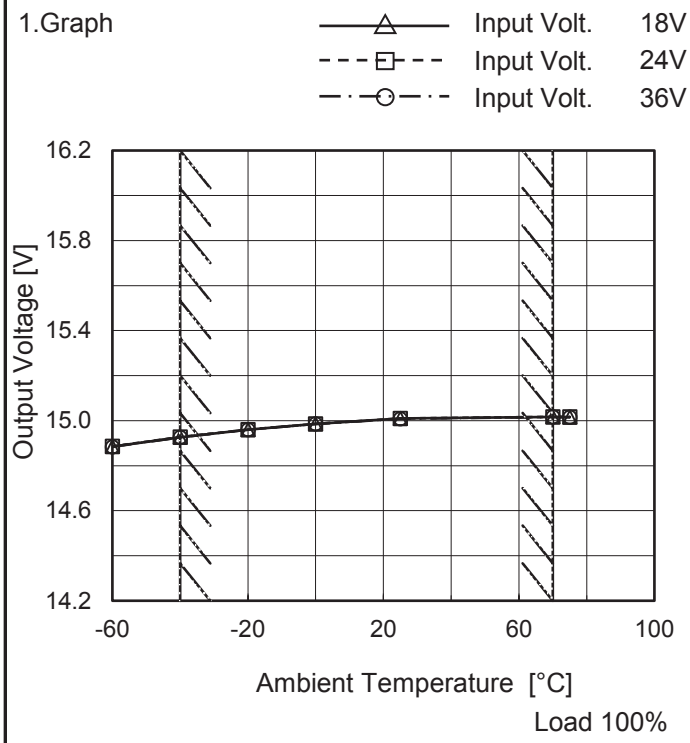
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	10	30
-40	10	30
-20	10	25
0	10	25
25	10	25
70	10	20
75	10	20
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGS102415
Item	Ambient Temperature Drift
Object	+15V0.7A

Testing Circuitry Figure A

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	14.885	14.886	14.884
-40	14.926	14.927	14.926
-20	14.959	14.960	14.960
0	14.985	14.986	14.986
25	15.010	15.010	15.009
70	15.017	15.017	15.016
75	15.016	15.017	15.016
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model	MGS102415	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V0.7A	

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 - 70°C
Input Voltage : 18 - 36V
Load Current : 0 - 0.7A

* 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

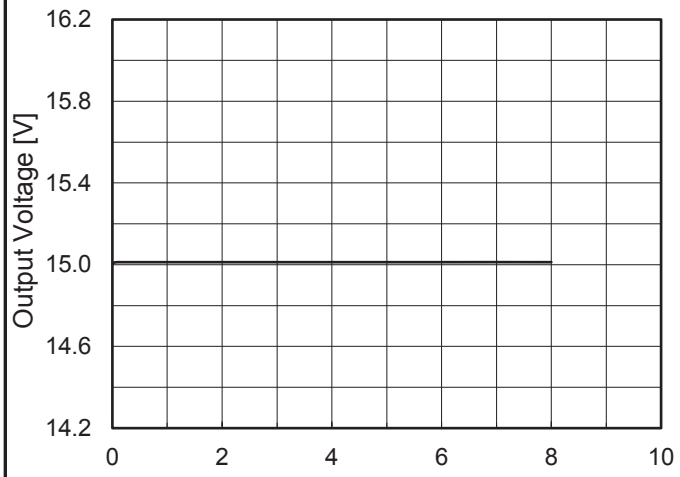
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	70	36	0	15.030	±52	±0.3
Minimum Voltage	-40	18	0.7	14.926		

COSEL

Model	MGS102415
Item	Time Lapse Drift
Object	+15V0.7A

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	15.003
0.5	15.012
1.0	15.012
2.0	15.013
3.0	15.013
4.0	15.012
5.0	15.012
6.0	15.012
7.0	15.013
8.0	15.012

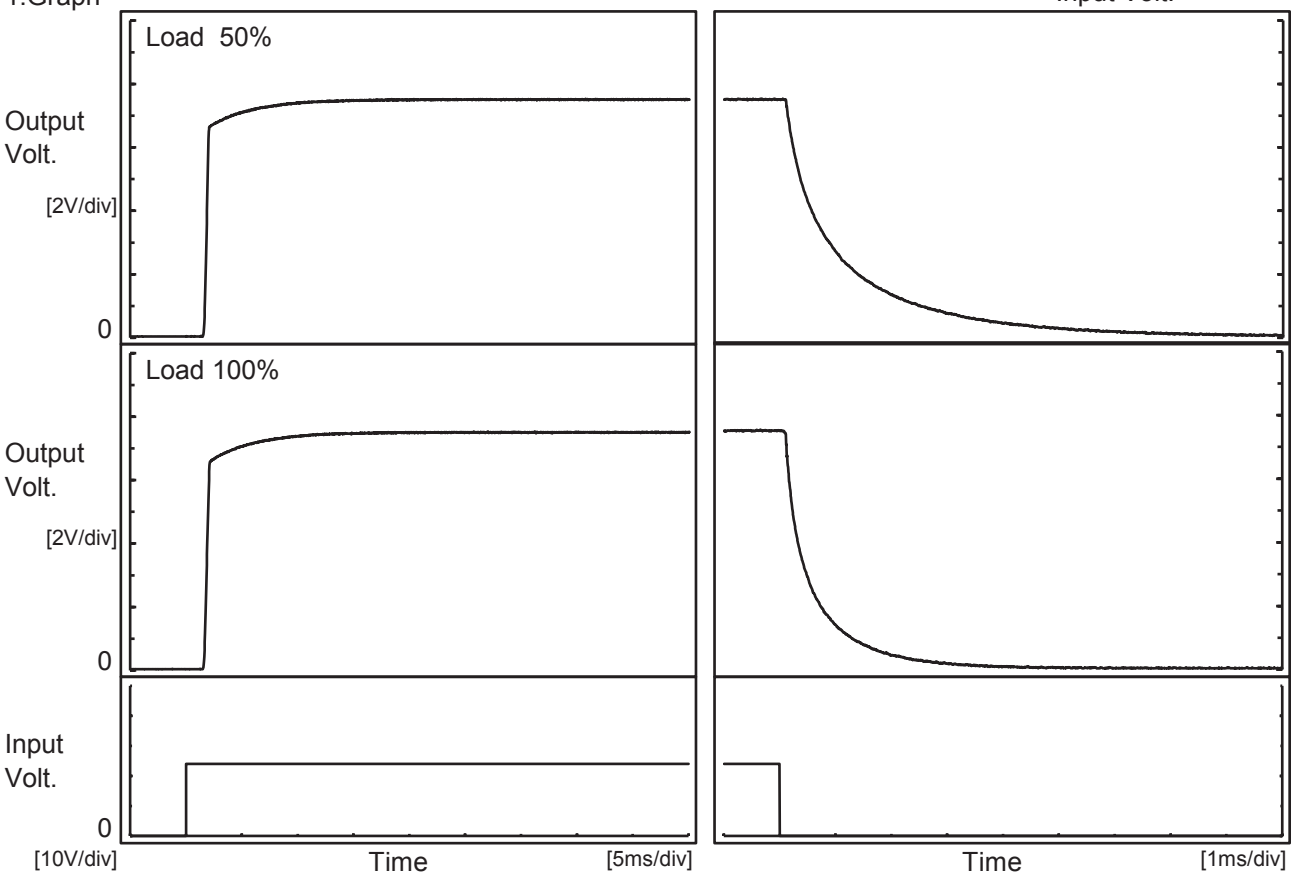
COSEL

Model	MGS102415
Item	Rise and Fall Time
Object	+15V0.7A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

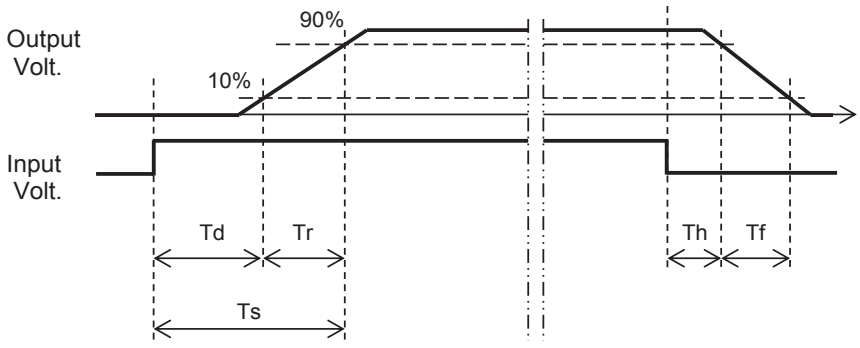
Input Volt. 24 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.7	1.1	2.8	0.2	2.8
100 %	1.7	1.4	3.1	0.1	1.4

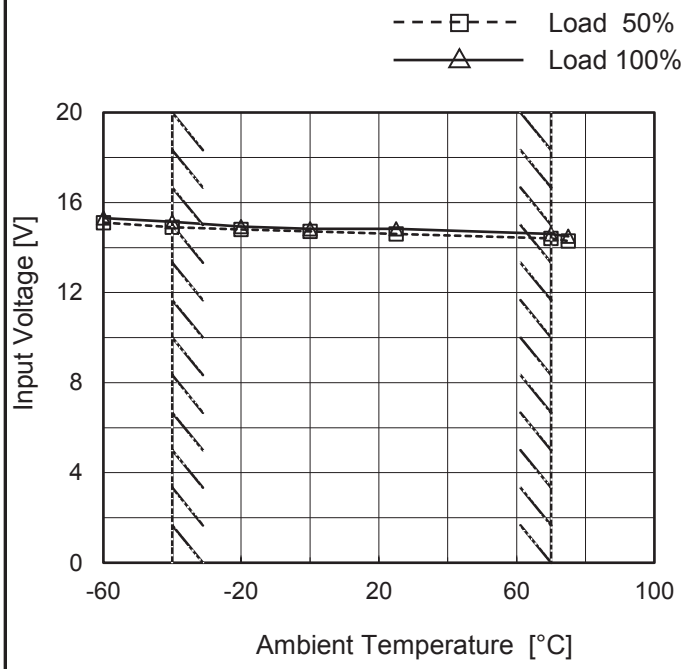


COSEL

Model	MGS102415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.7A

Testing Circuitry Figure A

1.Graph



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

2.Values

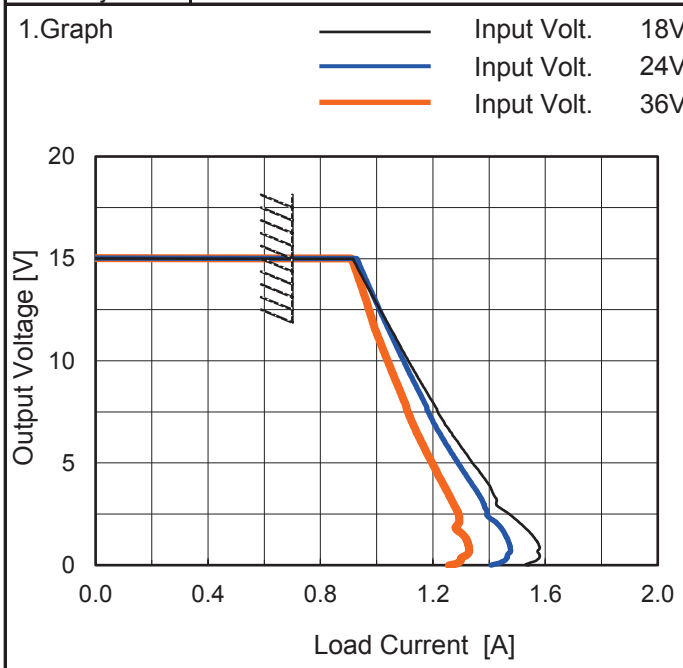
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.2	15.4
-40	15.0	15.2
-20	14.9	15.0
0	14.8	14.9
25	14.7	14.9
70	14.5	14.7
75	14.3	14.5
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MGS102415
Item	Overcurrent Protection
Object	+15V0.7A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

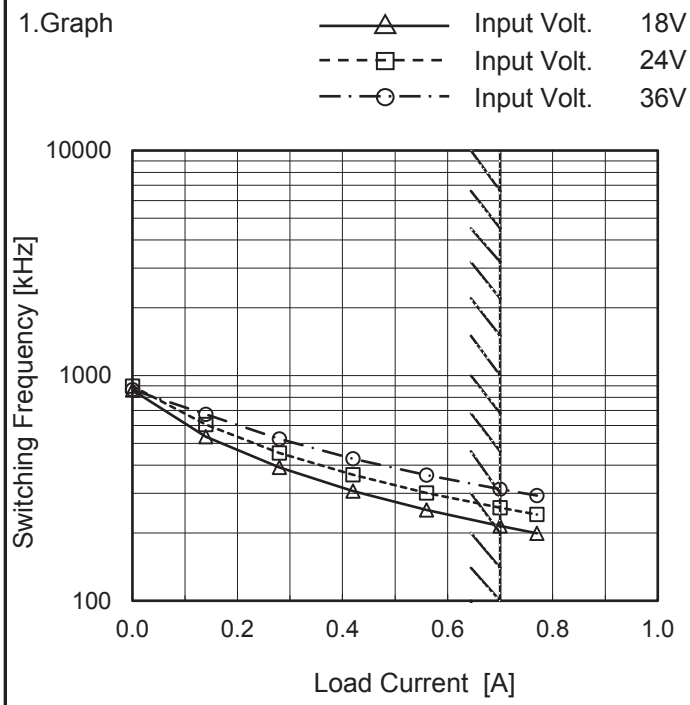
Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
15.0	0.70	0.70	0.70
14.3	0.94	0.95	0.93
13.5	0.97	0.98	0.95
12.0	1.03	1.03	0.98
10.5	1.09	1.08	1.02
9.0	1.15	1.13	1.07
7.5	1.22	1.18	1.11
6.0	1.29	1.24	1.16
4.5	1.37	1.31	1.21
3.0	1.43	1.38	1.27
1.5	1.55	1.46	1.30
0.0	1.54	1.41	1.26

COSEL

Model	MGS102415
Item	Switching Frequency (by Load Current)
Object	+15V0.7A

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]
0.00	863	898	865
0.14	536	606	673
0.28	391	454	524
0.42	307	363	428
0.56	253	302	362
0.70	215	259	314
0.77	199	242	293
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

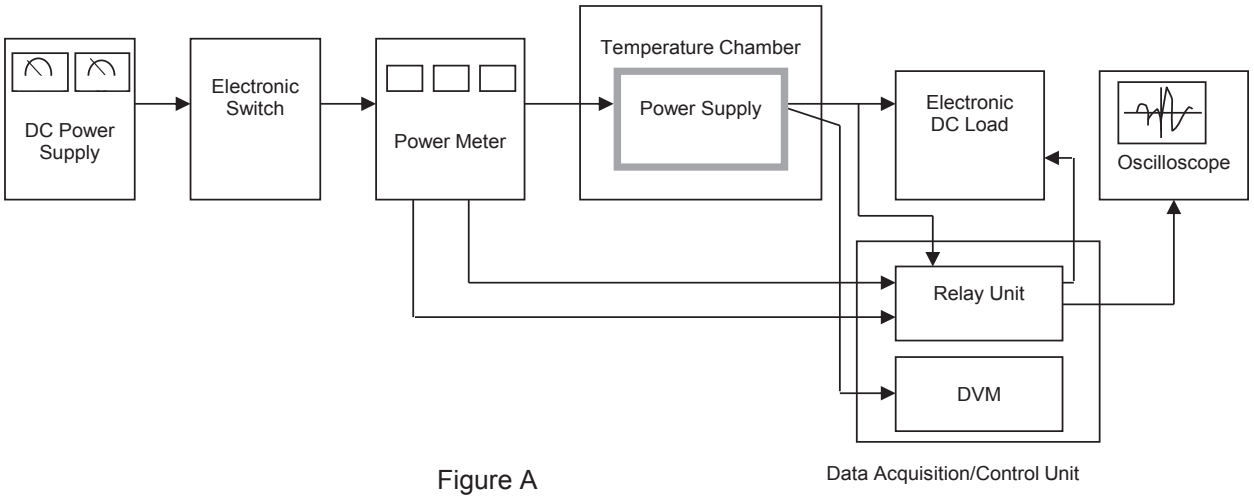


Figure A

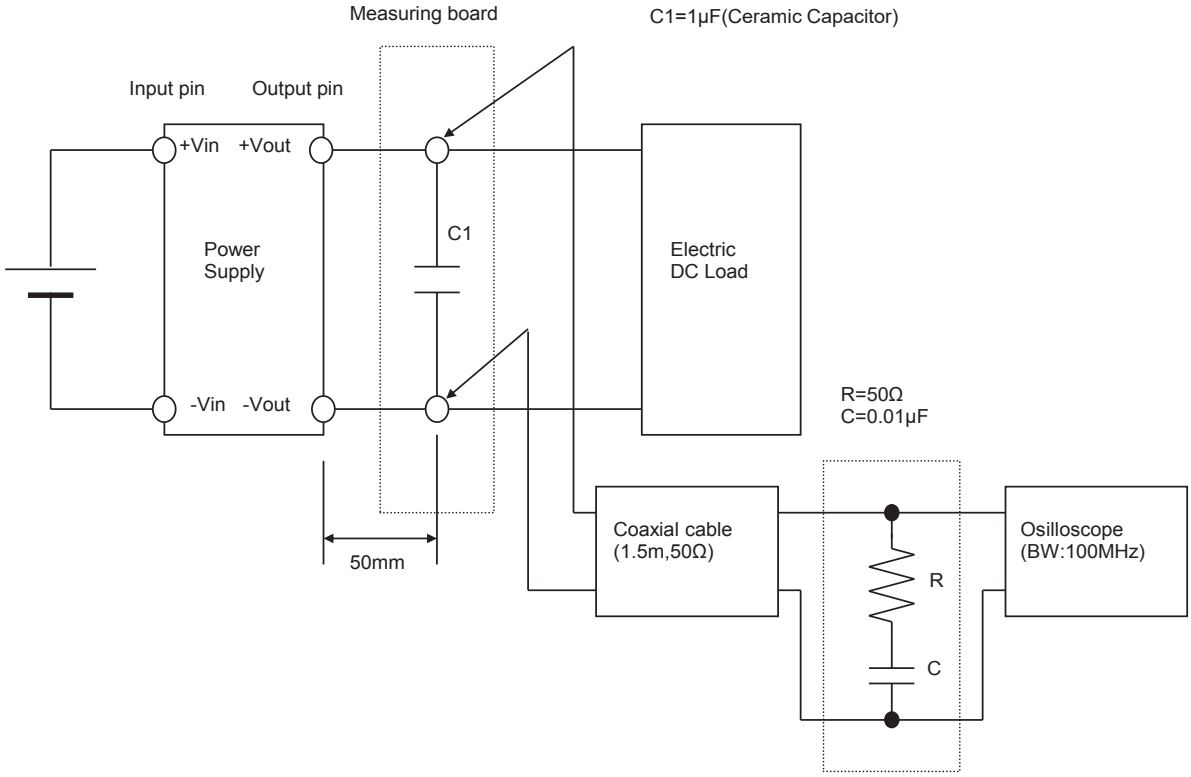


Figure B（Ripple and Ripple noise Characteristic）