COSEL

参考資料

TEST DATA OF CHS3002415

Regulated DC Power Supply
June 24, 2015

Approved by : Yoshimichi Hirokawa
Yoshimichi Hirokawa Design Manager

Prepared by : Tomomi Akai
Tomomi Akai Design Engineer

COSEL CO.,LTD.

COSEL

CONTENTS

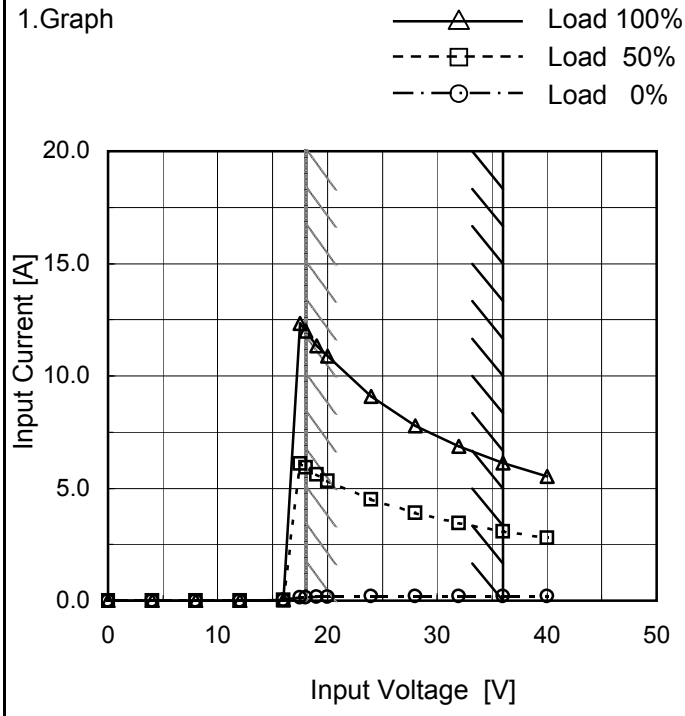
(Final Page 19)

COSEL

Model	CHS3002415
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
4.0	0.000	0.000	0.000
8.0	0.005	0.005	0.005
12.0	0.005	0.005	0.005
16.0	0.019	0.019	0.019
17.5	0.152	6.090	12.340
18.0	0.154	5.920	12.000
19.0	0.159	5.610	11.350
20.0	0.166	5.340	10.870
24.0	0.189	4.511	9.100
28.0	0.203	3.889	7.790
32.0	0.210	3.446	6.870
36.0	0.212	3.084	6.130
40.0	0.211	2.794	5.530
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

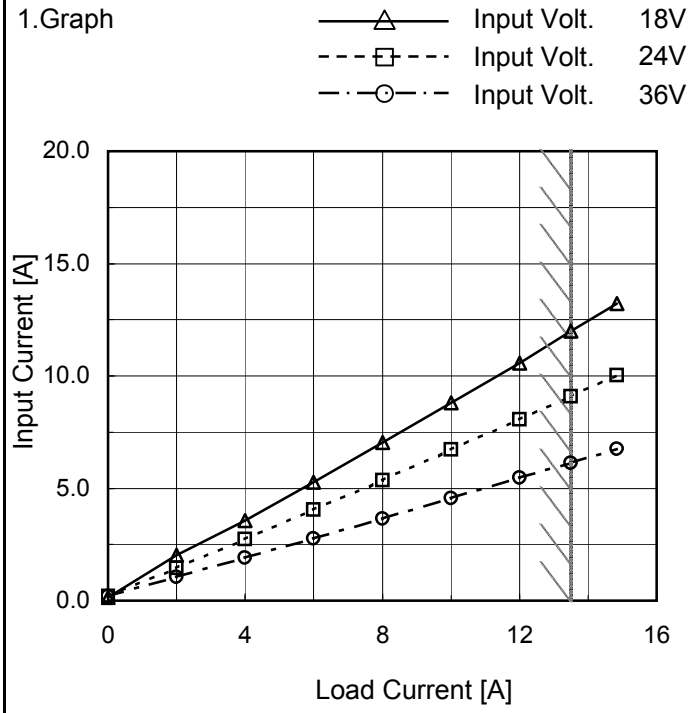
BC-10916

COSEL

Model	CHS3002415
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

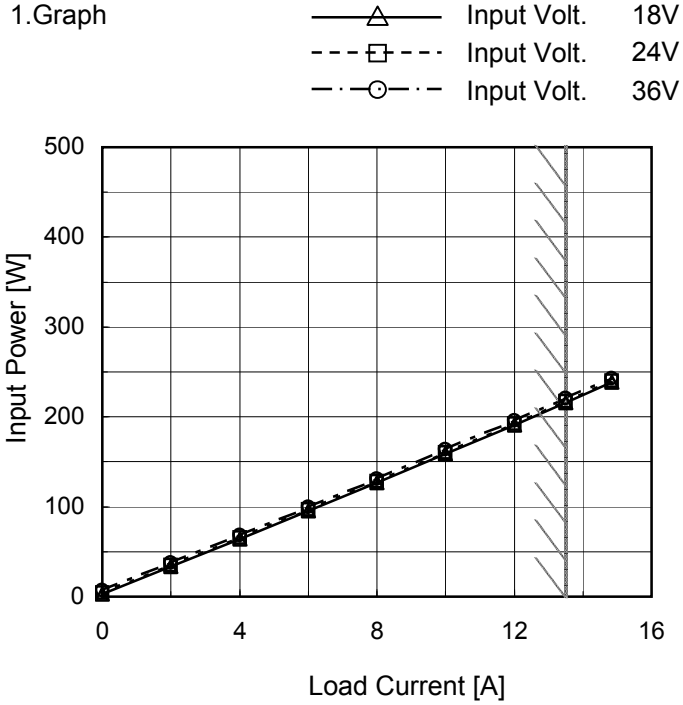
Load Current [A]	Input Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.0	0.154	0.189	0.212
2.0	2.035	1.450	1.053
4.0	3.550	2.740	1.908
6.0	5.267	4.040	2.776
8.0	7.042	5.370	3.654
10.0	8.816	6.710	4.550
12.0	10.575	8.050	5.460
13.5	12.000	9.100	6.130
14.9	13.213	10.040	6.760
--	-	-	-
--	-	-	-

COSEL

Model	CHS3002415
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

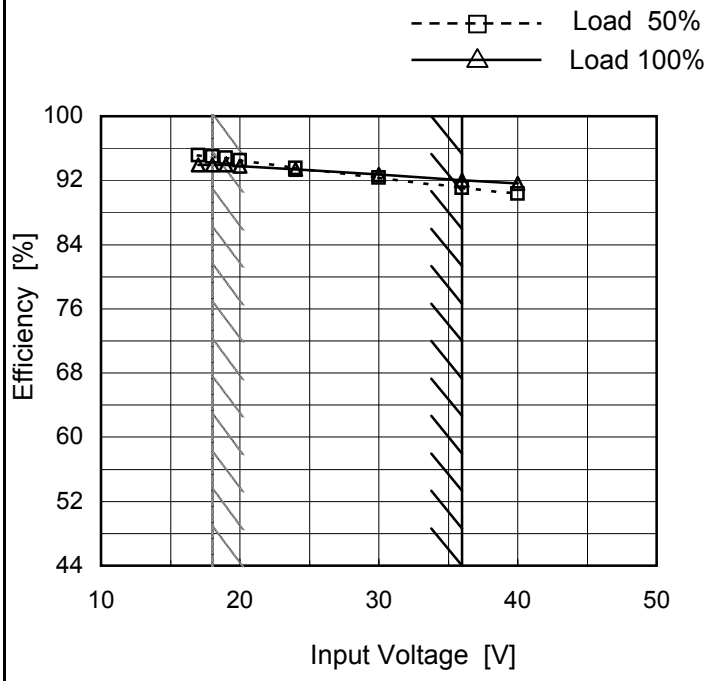
Load Current [A]	Input Power [W]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.0	2.9	4.4	7.5
2.0	33.3	34.7	37.7
4.0	64.2	65.4	68.4
6.0	95.3	96.6	99.5
8.0	126.7	128.3	131.3
10.0	158.5	160.1	163.7
12.0	191.0	192.4	196.0
13.5	216.0	217.2	220.6
14.9	238.6	239.8	242.9
--	-	-	-
--	-	-	-

COSEL

Model	CHS3002415
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

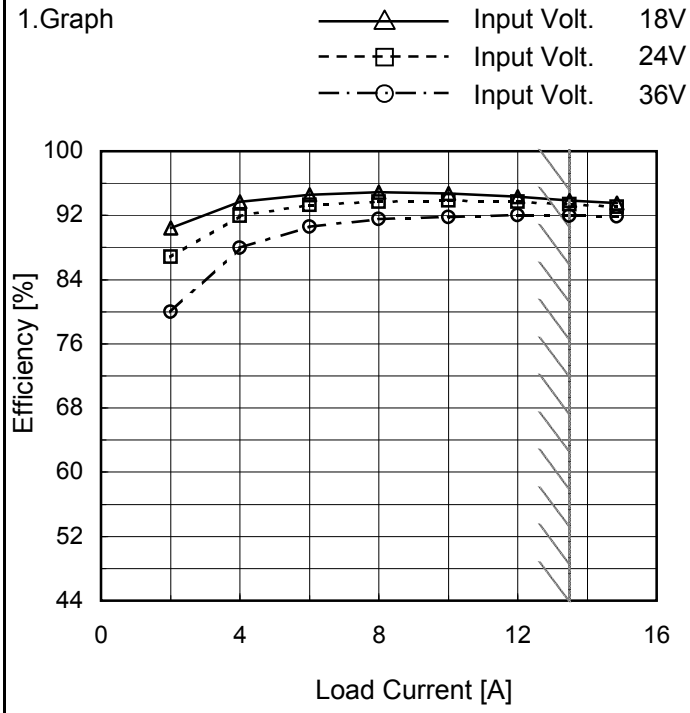
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	95.2	93.9
18	95.0	93.9
19	94.8	93.9
20	94.5	93.8
24	93.5	93.4
30	92.3	92.7
36	91.1	92.0
40	90.4	91.6
--	-	-

COSEL

Model	CHS3002415
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

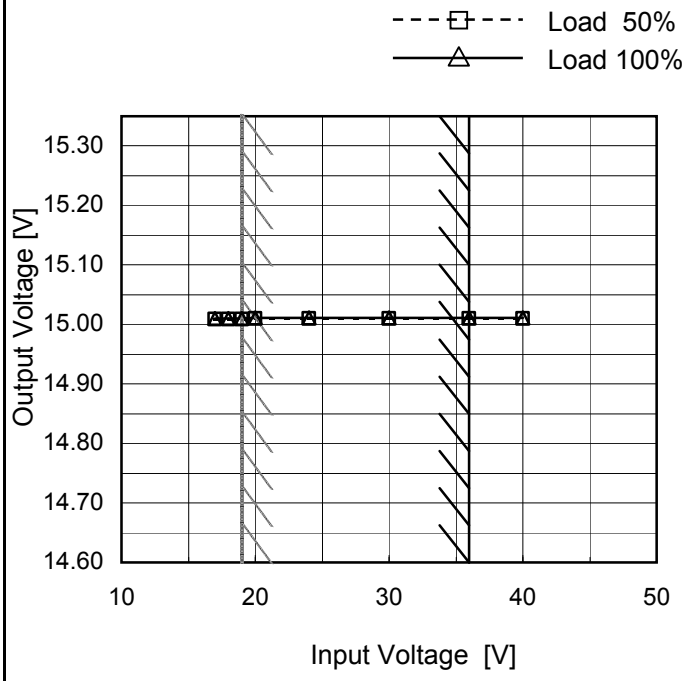
Load Current [A]	Efficiency [%]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.0	-	-	-
2.0	90.4	86.9	80.0
4.0	93.7	92.0	88.0
6.0	94.6	93.3	90.6
8.0	94.9	93.7	91.6
10.0	94.8	93.8	91.8
12.0	94.4	93.7	92.0
13.5	93.9	93.4	92.0
14.9	93.5	93.1	91.9
--	-	-	-
--	-	-	-

COSEL

Model	CHS3002415
Item	Line Regulation
Object	+15V13.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

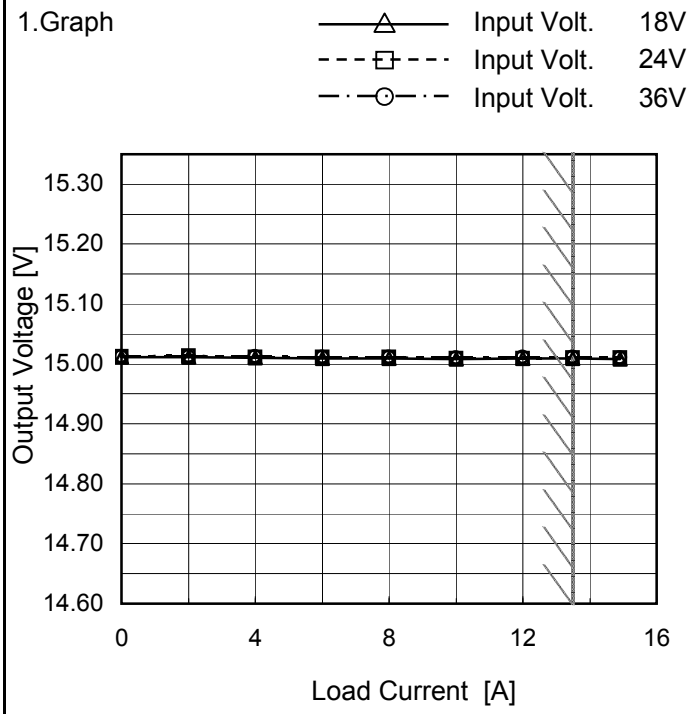
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.009	15.010
18	15.009	15.010
19	15.009	15.010
20	15.010	15.011
24	15.010	15.011
30	15.010	15.011
36	15.010	15.011
40	15.010	15.011
--	-	-

COSEL

Model	CHS3002415
Item	Load Regulation
Object	+15V13.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

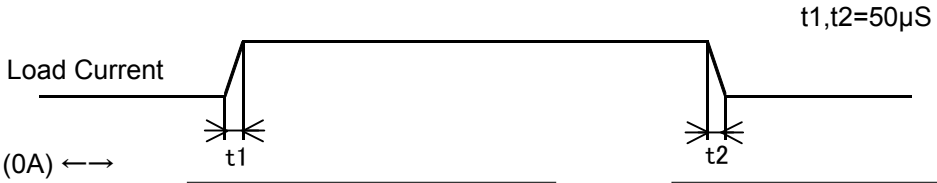
Load Current [A]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.0	15.012	15.013	15.013
2.0	15.012	15.013	15.012
4.0	15.011	15.012	15.012
6.0	15.010	15.011	15.011
8.0	15.009	15.011	15.011
10.0	15.009	15.010	15.011
12.0	15.009	15.010	15.011
13.5	15.009	15.010	15.011
14.9	15.009	15.010	15.011
--	-	-	-
--	-	-	-

BC-10916

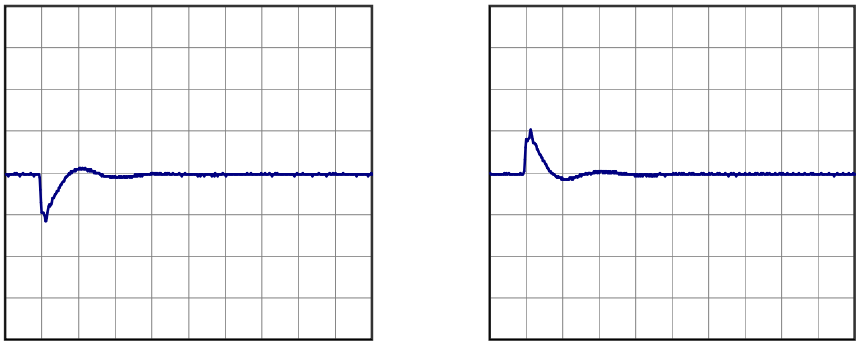
COSEL

Model	CHS3002415		
Item	Dynamic Load Response	Temperature	25℃
		Testing Circuitry	Figure A
Object	+15V13.5A		

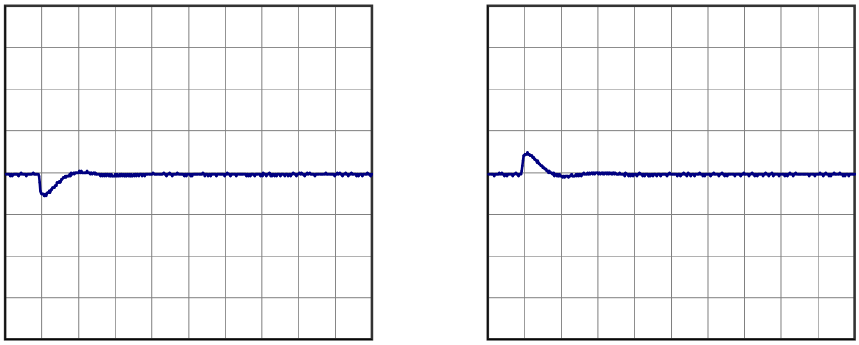
Input Volt. 24 V
Cycle 5 ms



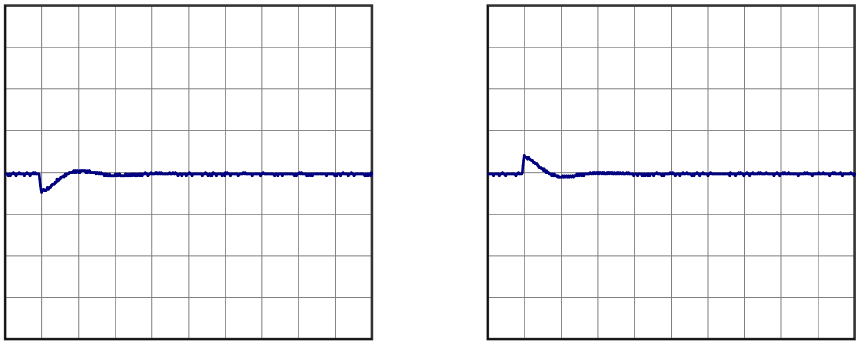
Min. Load (0A) ⟷
Load 100% (13.5A)



Min. Load (0A) ⟷
Load 50% (6.75A)



Load 50% (6.75A) ⟷
Load 100% (13.5A)

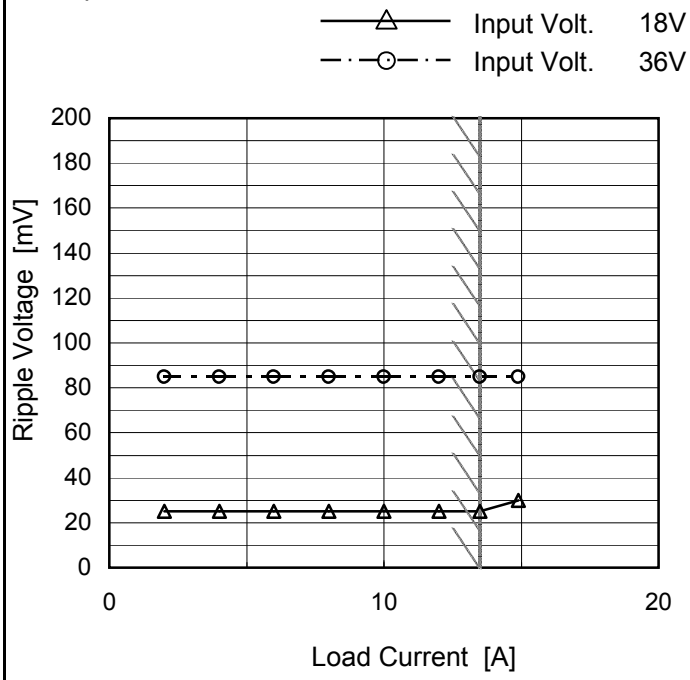


COSEL

Model	CHS3002415
Item	Ripple Voltage (by Load Current)
Object	+15V13.5A

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]

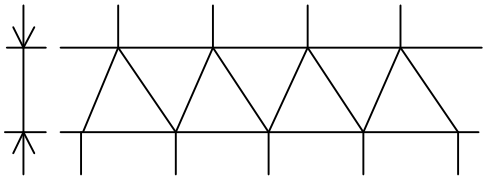


Fig.Complex Ripple Wave Form

2.Values

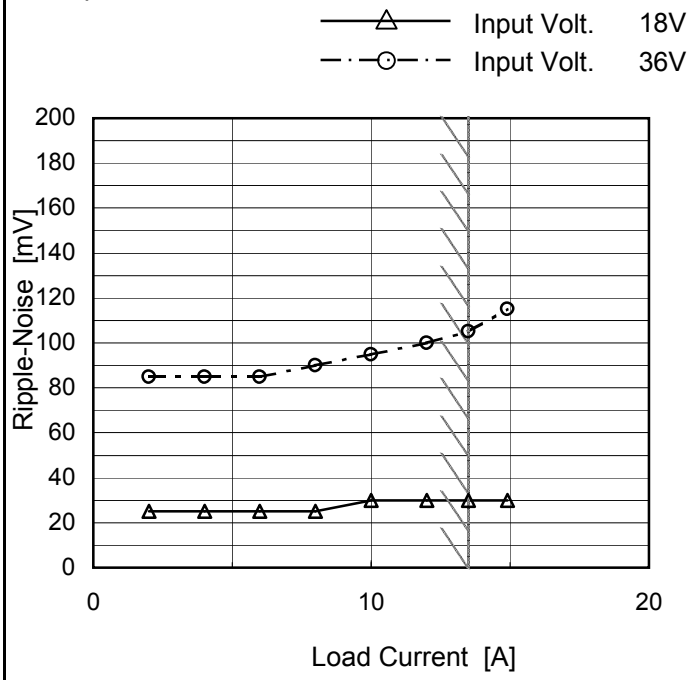
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
2.0	25	85
4.0	25	85
6.0	25	85
8.0	25	85
10.0	25	85
12.0	25	85
13.5	25	85
14.9	30	85
--	-	-
--	-	-
--	-	-

COSEL

Model	CHS3002415
Item	Ripple-Noise
Object	+15V13.5A

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.

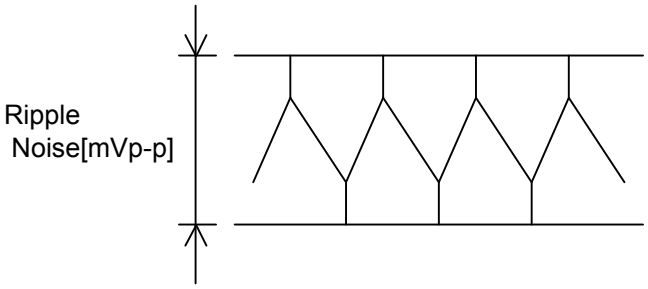


Fig.Complex Ripple Noise Wave Form

2.Values

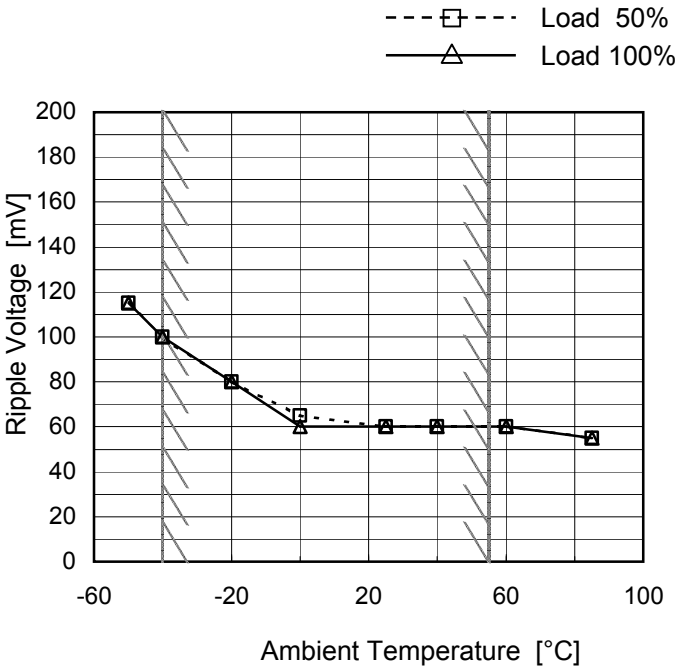
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
2.0	25	85
4.0	25	85
6.0	25	85
8.0	25	90
10.0	30	95
12.0	30	100
13.5	30	105
14.9	30	115
--	-	-
--	-	-
--	-	-

COSEL

Model	CHS3002415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V13.5A

Testing Circuitry Figure B

1.Graph



Input Volt. 24 V

Measured by 100 MHz Oscilloscope.

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

Ripple [mVp-p]

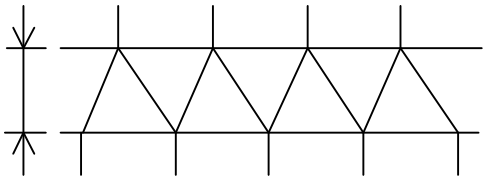


Fig.Complex Ripple Wave Form

2.Values

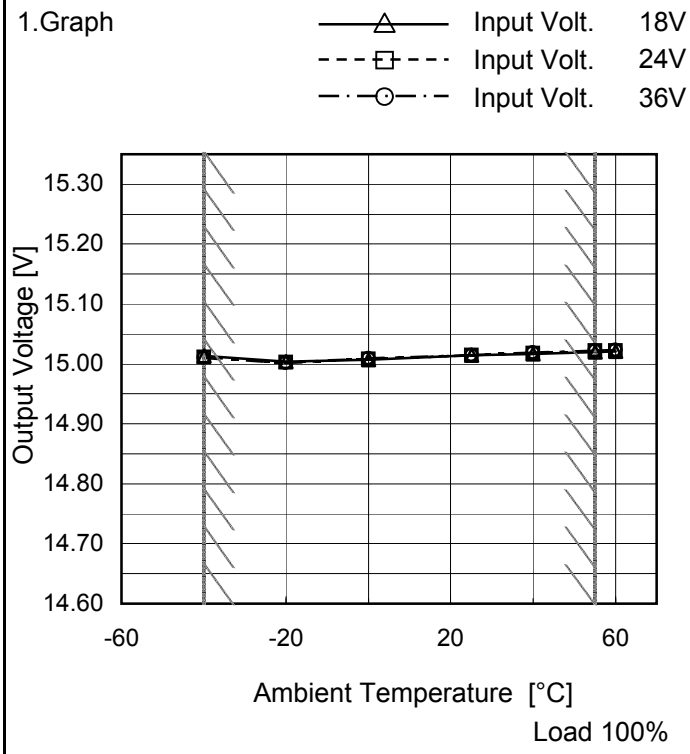
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	115	115
-40	100	100
-20	80	80
0	65	60
25	60	60
40	60	60
60	60	60
85	55	55
--	-	-
--	-	-
--	-	-

COSEL

Model	CHS3002415
Item	Ambient Temperature Drift
Object	+15V13.5A

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]
-40	15.014	15.012	15.011
-20	15.004	15.002	15.002
0	15.007	15.009	15.009
25	15.015	15.015	15.015
40	15.016	15.018	15.019
55	15.020	15.022	15.023
60	15.021	15.022	15.023
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	CHS3002415	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V13.5A	

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 - 55°C
Input Voltage : 18 - 36V
Load Current : 0 - 13.5A

* 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

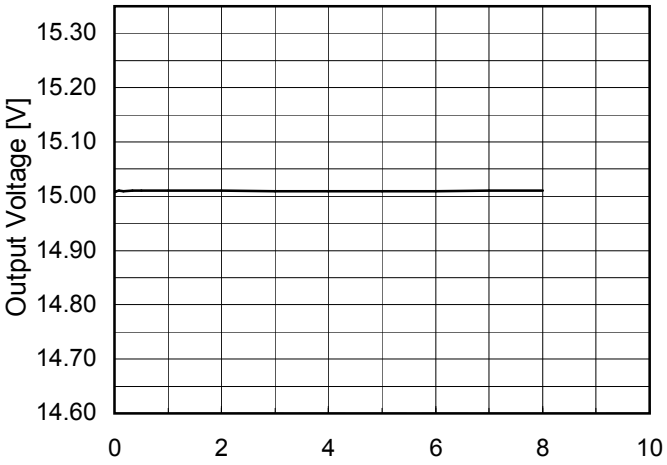
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	36	13.5	15.023	±11	±0.1
Minimum Voltage	-20	36	13.5	15.002		

COSEL

Model	CHS3002415
Item	Time Lapse Drift
Object	+15V13.5A

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	15.009
0.5	15.010
1.0	15.010
2.0	15.010
3.0	15.010
4.0	15.010
5.0	15.010
6.0	15.010
7.0	15.010
8.0	15.010

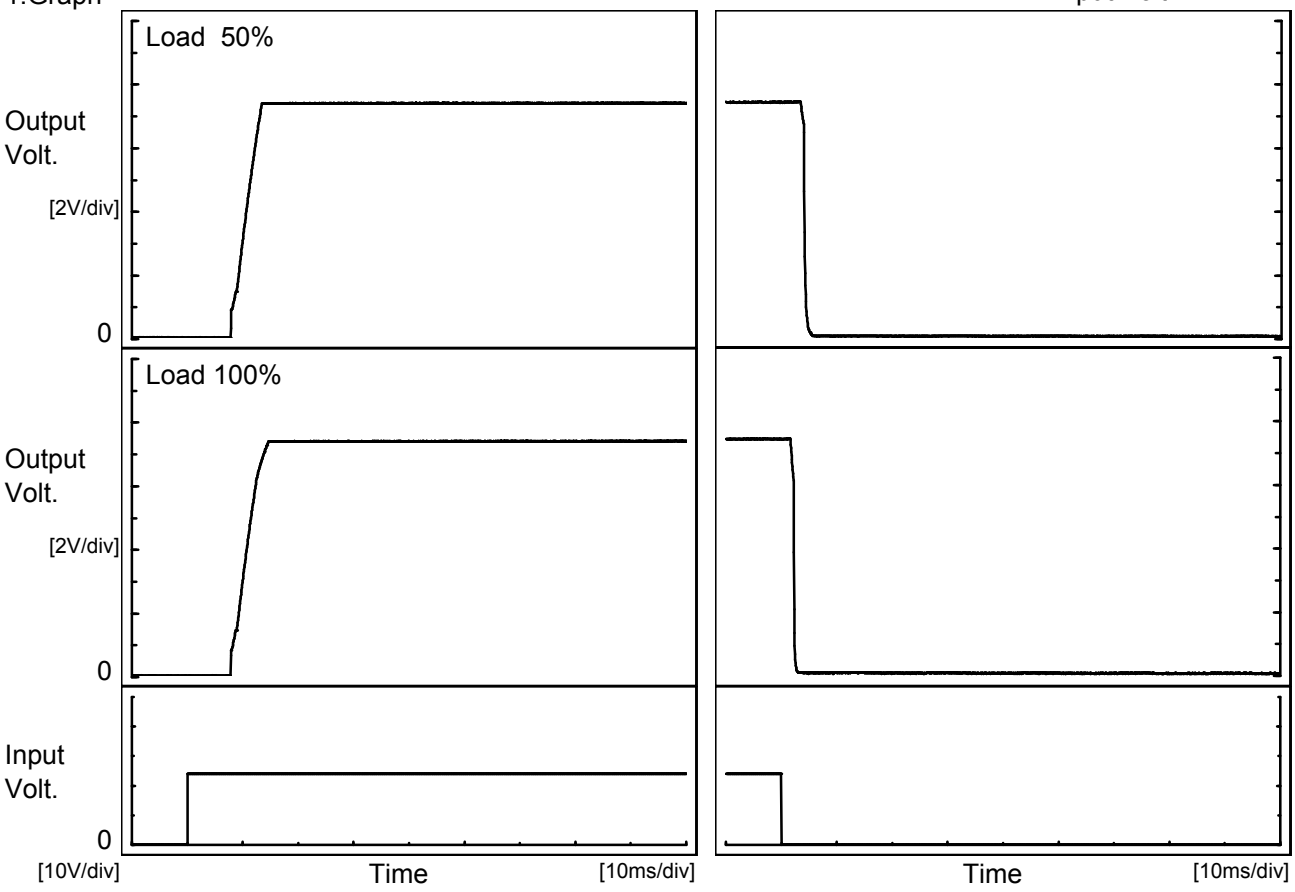
COSEL

Model	CHS3002415
Item	Rise and Fall Time
Object	+15V13.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

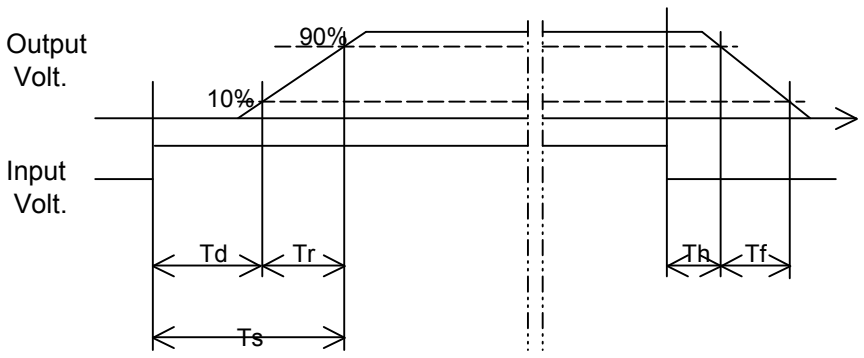
Input Volt. 24 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	7.9	5.0	12.9	4.0	0.6
100 %	7.9	5.5	13.4	1.9	0.5

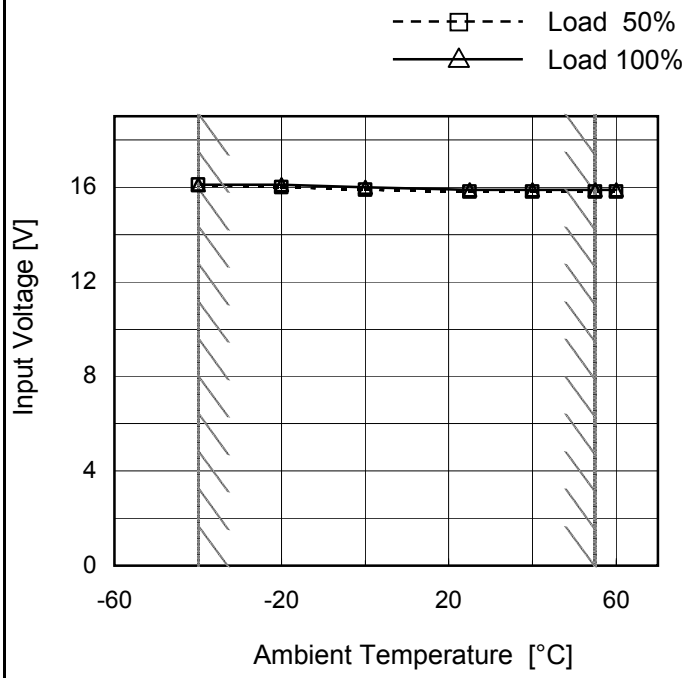


COSEL

Model	CHS3002415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V13.5A

Testing Circuitry Figure A

1.Graph



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

2.Values

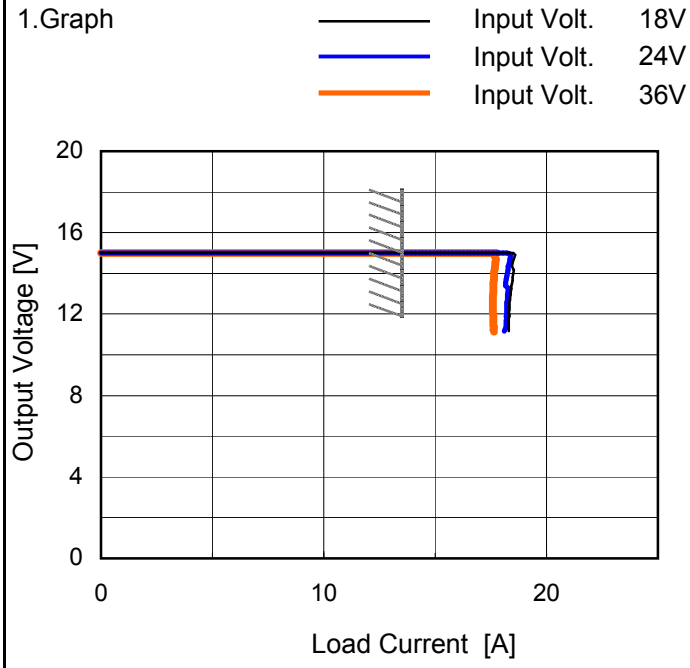
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	16.1	16.1
-20	16.0	16.1
0	15.9	16.0
25	15.8	15.9
40	15.8	15.9
55	15.8	15.9
60	15.8	15.9
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	CHS3002415
Item	Overcurrent Protection
Object	+15V13.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

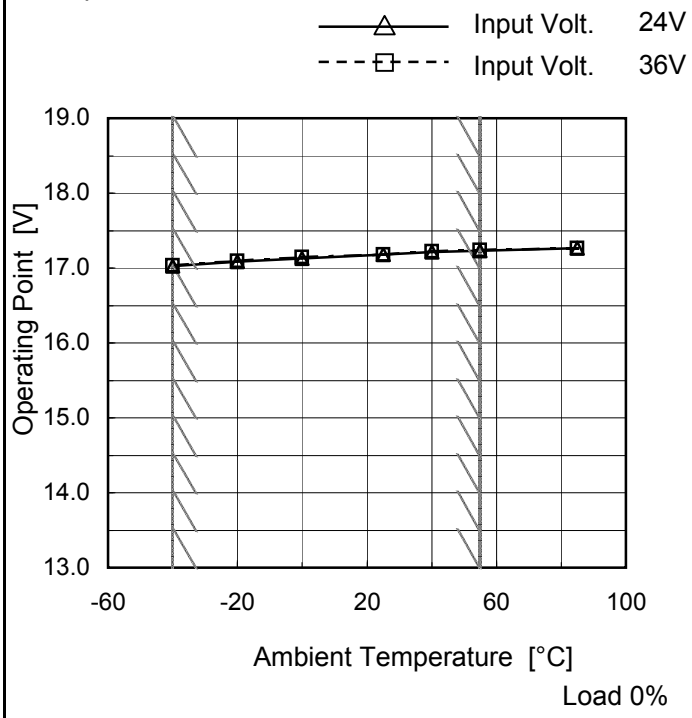
Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
14.3	18.50	18.29	17.67
13.5	18.47	18.17	17.62
12.0	18.32	18.21	17.60
10.5	18.34	18.11	17.63
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	CHS3002415
Item	Overvoltage Protection
Object	+15V13.5A

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. 24[V]	Input Volt. 36[V]
-40	17.03	17.03
-20	17.08	17.09
0	17.13	17.15
25	17.18	17.18
40	17.21	17.23
55	17.23	17.24
85	17.27	17.26
--	-	-
--	-	-
--	-	-
--	-	-

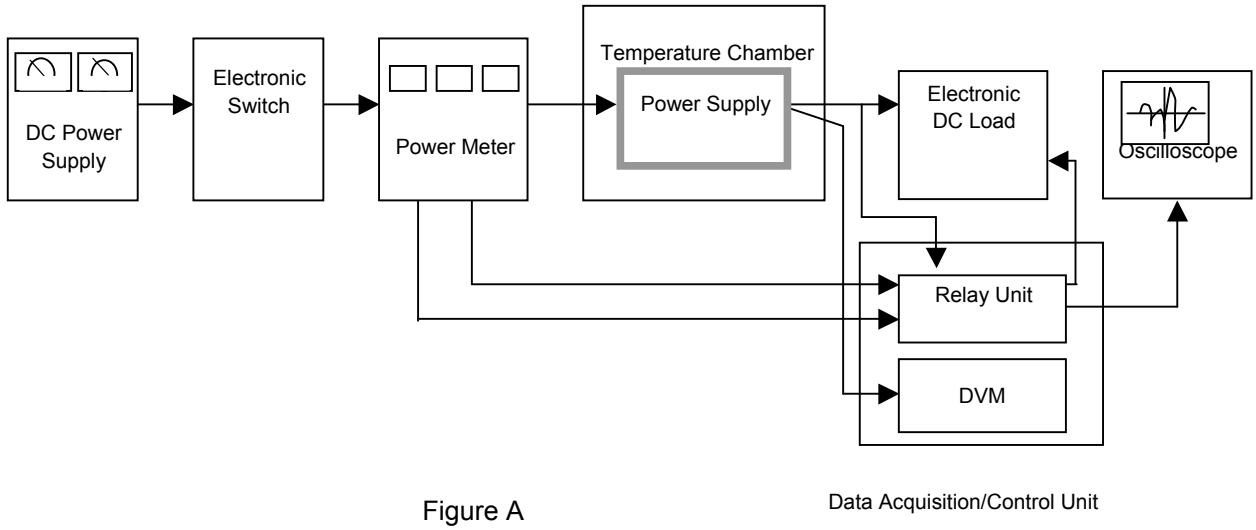


Figure A

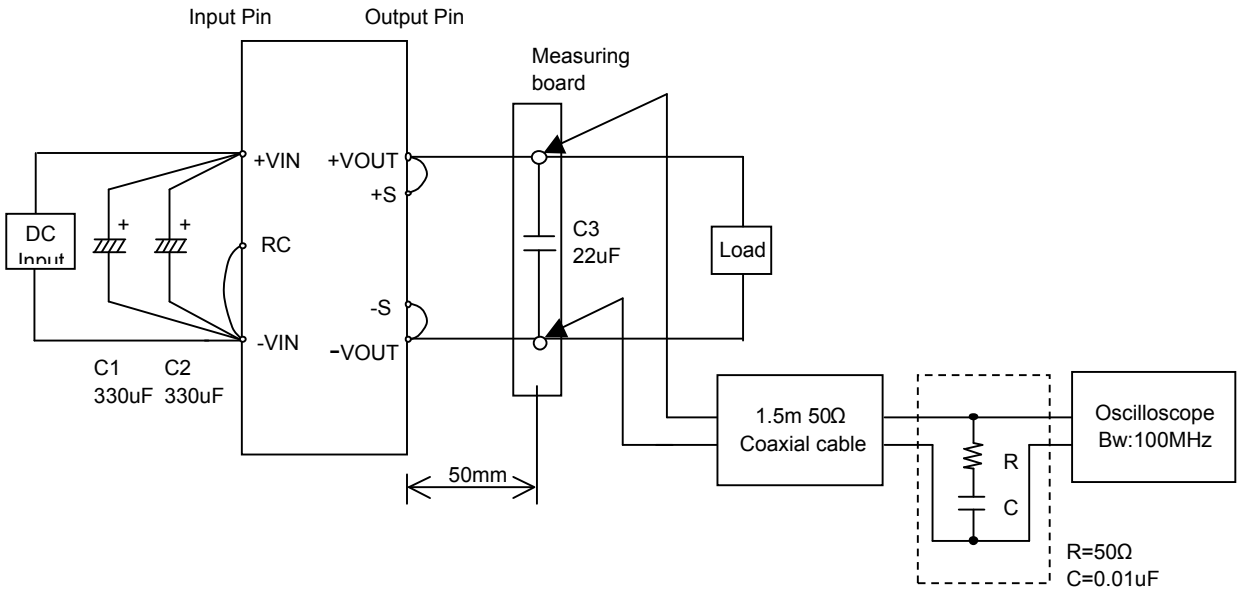


Figure B