参考資料

COSEL

TEST DATA OF CHS4004815

Regulated DC Power Supply
January 25, 2019

Approved by : Takayuki Fukuda
Takayuki Fukuda — Design Manager

Prepared by : Tatsuya Nakagawa
Tatsuya Nakagawa — Design Engineer

COSEL CO.,LTD.

COSEL

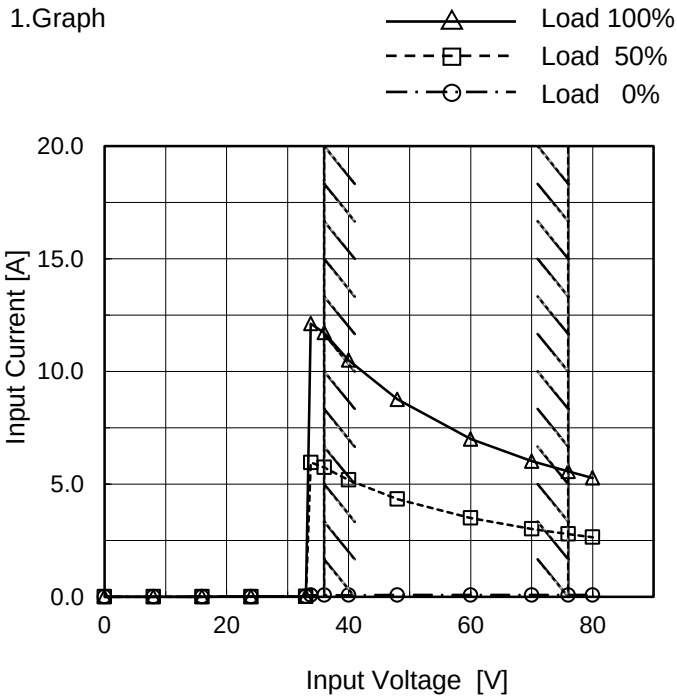
CONTENTS

COSEL

Model	CHS4004815
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
8.0	0.000	0.000	0.000
16.0	0.000	0.000	0.000
24.0	0.005	0.005	0.005
33.0	0.014	0.014	0.014
34.4	0.073	5.961	12.124
36.0	0.073	5.742	11.727
40.0	0.074	5.187	10.504
48.0	0.078	4.339	8.760
60.0	0.081	3.498	7.000
70.0	0.081	3.011	6.019
76.0	0.081	2.783	5.566
80.0	0.081	2.647	5.276
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

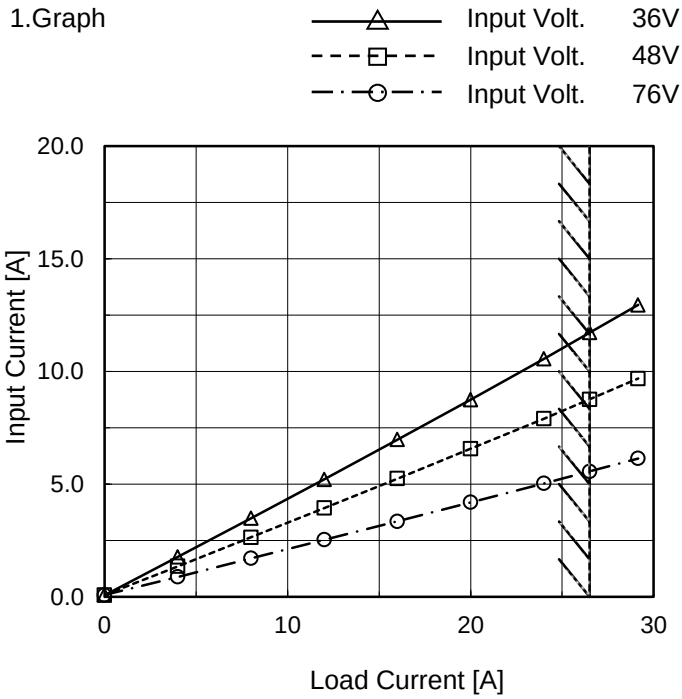
BC - 11304

COSEL

Model	CHS4004815
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

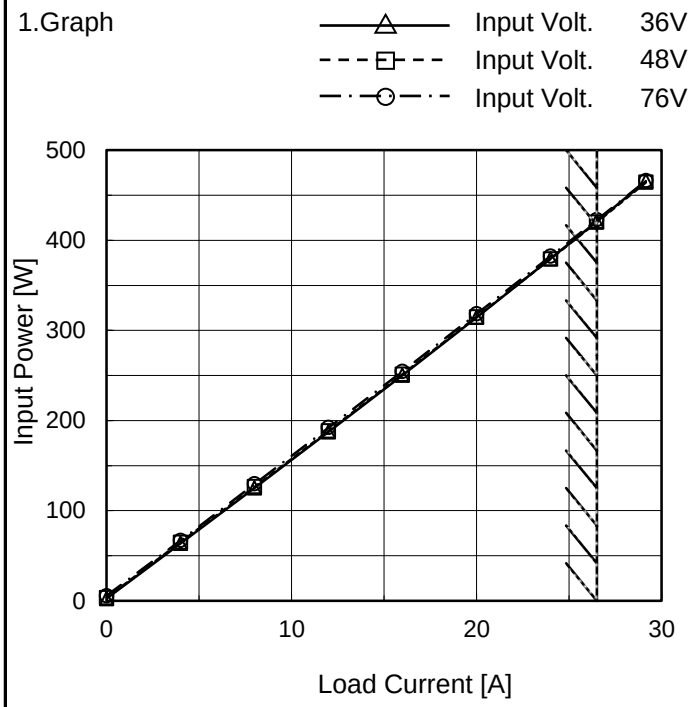
Load Current [A]	Input Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.073	0.078	0.081
4.00	1.768	1.352	0.880
8.00	3.482	2.637	1.708
12.00	5.212	3.936	2.531
16.00	6.976	5.246	3.351
20.00	8.748	6.570	4.194
24.00	10.560	7.900	5.032
26.50	11.727	8.760	5.566
29.15	12.952	9.687	6.141
--	-	-	-
--	-	-	-

COSEL

Model	CHS4004815
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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	2.3	3.2	5.6
4.00	63.6	64.8	66.9
8.00	125.3	126.5	129.7
12.00	187.5	188.5	192.2
16.00	250.4	251.4	254.6
20.00	314.4	315.0	318.3
24.00	379.7	379.2	382.3
26.50	421.0	420.2	422.7
29.15	465.8	464.3	466.2
--	-	-	-
--	-	-	-

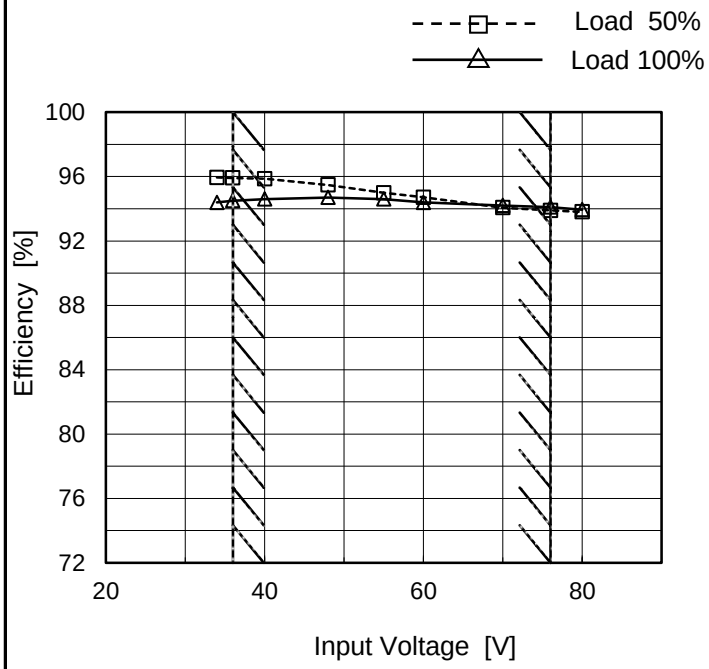
BC - 11304

COSEL

Model	CHS4004815
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

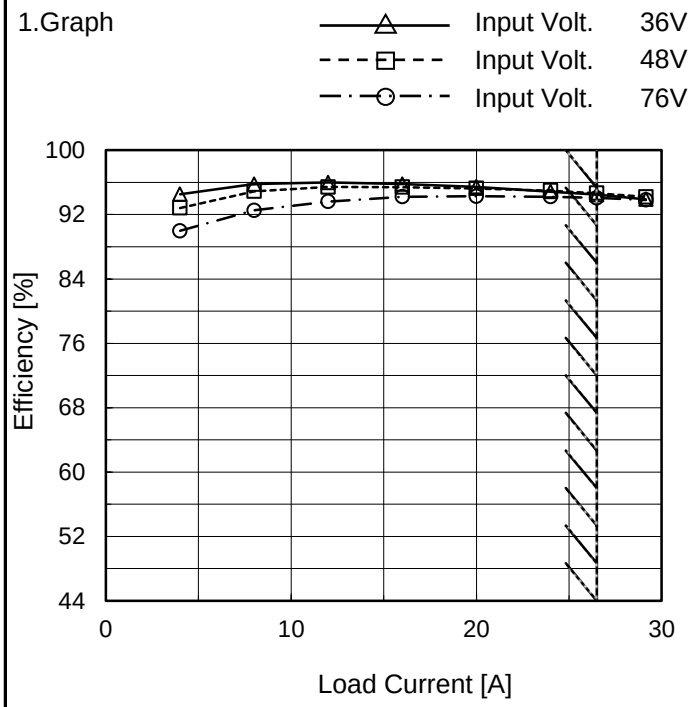
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
34	95.9	94.4
36	95.9	94.5
40	95.9	94.6
48	95.5	94.7
55	95.0	94.6
60	94.7	94.4
70	94.1	94.2
76	93.9	94.1
80	93.8	93.9

COSEL

Model	CHS4004815
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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	-	-	-
4.00	94.5	92.8	90.0
8.00	95.8	94.9	92.5
12.00	96.0	95.4	93.6
16.00	95.8	95.4	94.2
20.00	95.5	95.2	94.3
24.00	94.9	95.0	94.2
26.50	94.5	94.7	94.1
29.15	93.9	94.2	93.8
--	-	-	-
--	-	-	-

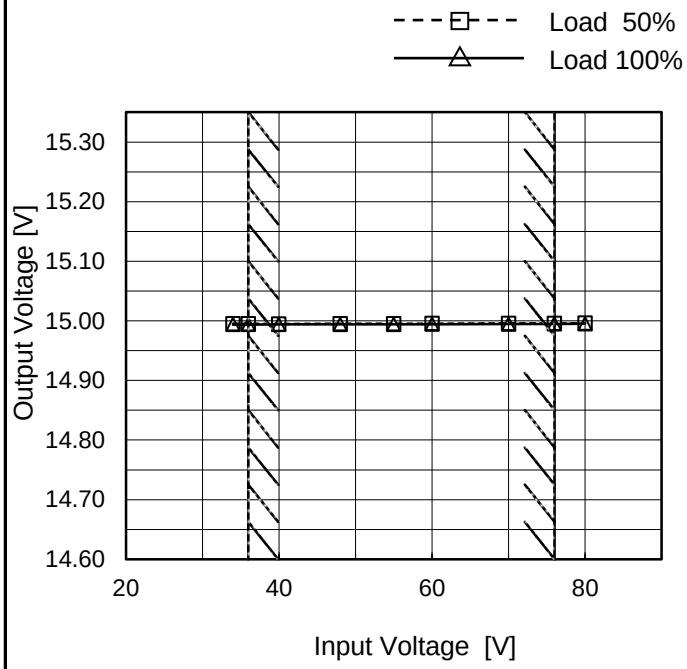
BC - 11304

COSEL

Model	CHS4004815
Item	Line Regulation
Object	+15V26.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

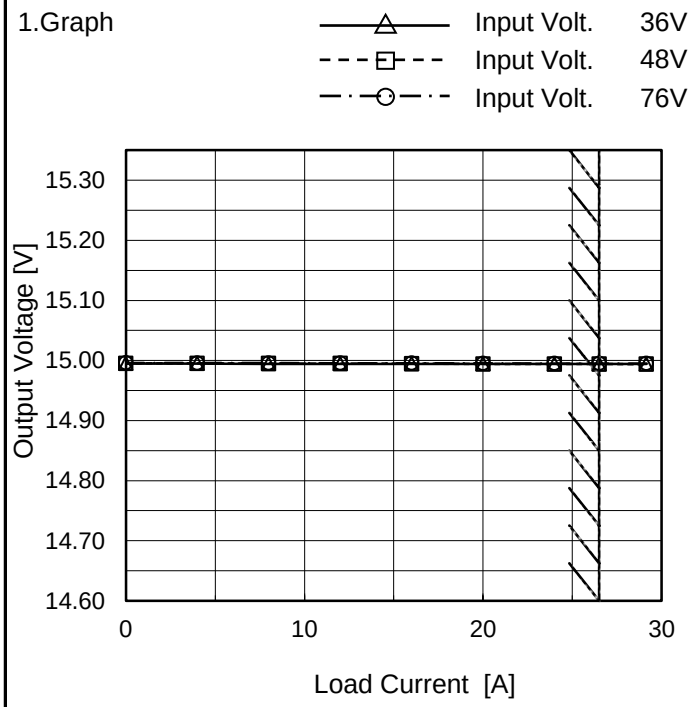
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
34	14.995	14.994
36	14.995	14.994
40	14.995	14.994
48	14.995	14.994
55	14.995	14.994
60	14.995	14.994
70	14.996	14.995
76	14.996	14.995
80	14.996	14.995

COSEL

Model	CHS4004815
Item	Load Regulation
Object	+15V26.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

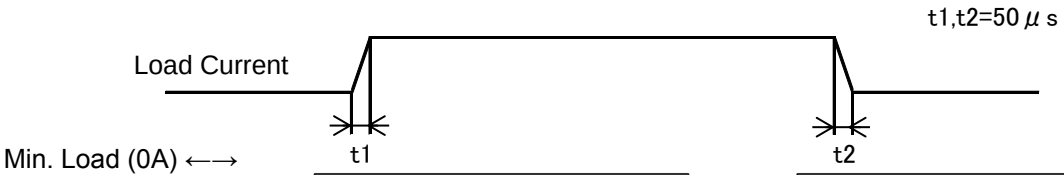
2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	14.995	14.995	14.996
4.00	14.995	14.995	14.996
8.00	14.995	14.995	14.996
12.00	14.995	14.995	14.996
16.00	14.995	14.995	14.996
20.00	14.994	14.994	14.995
24.00	14.994	14.994	14.995
26.50	14.994	14.994	14.995
29.15	14.994	14.994	14.995
--	-	-	-
--	-	-	-

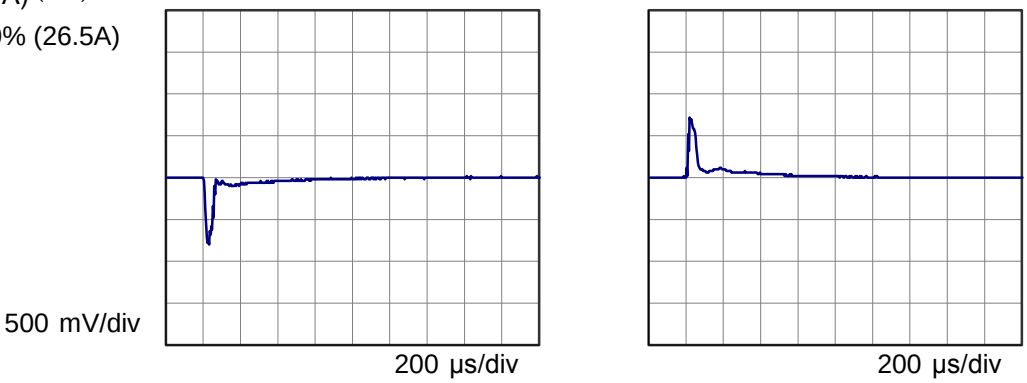
COSEL

Model	CHS4004815		
Item	Dynamic Load Response	Temperature Testing Circuitry	25℃ Figure A
Object	+15V26.5A		

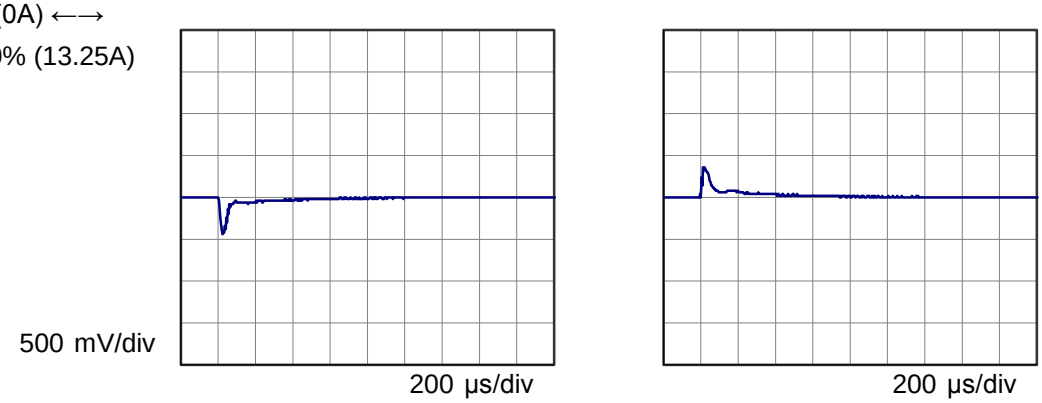
Input Volt. 48 V
Cycle 5 ms



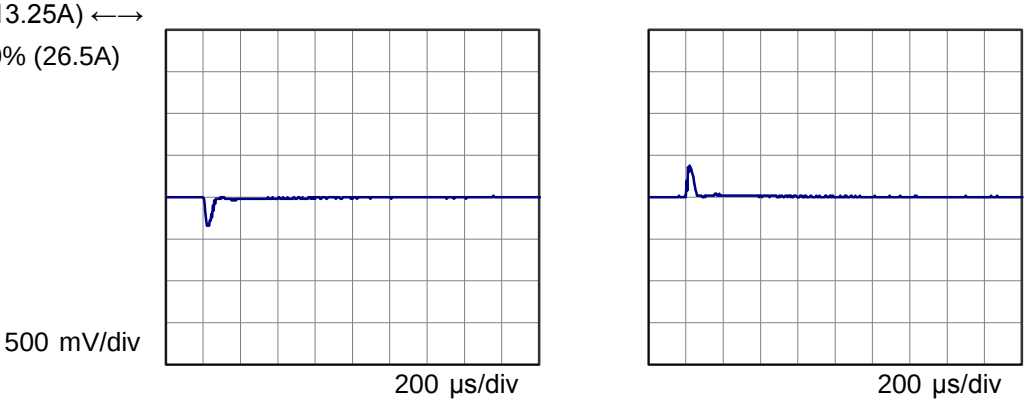
Min. Load (0A) ←→
Load 100% (26.5A)



Min. Load (0A) ←→
Load 50% (13.25A)



Load 50% (13.25A) ←→
Load 100% (26.5A)

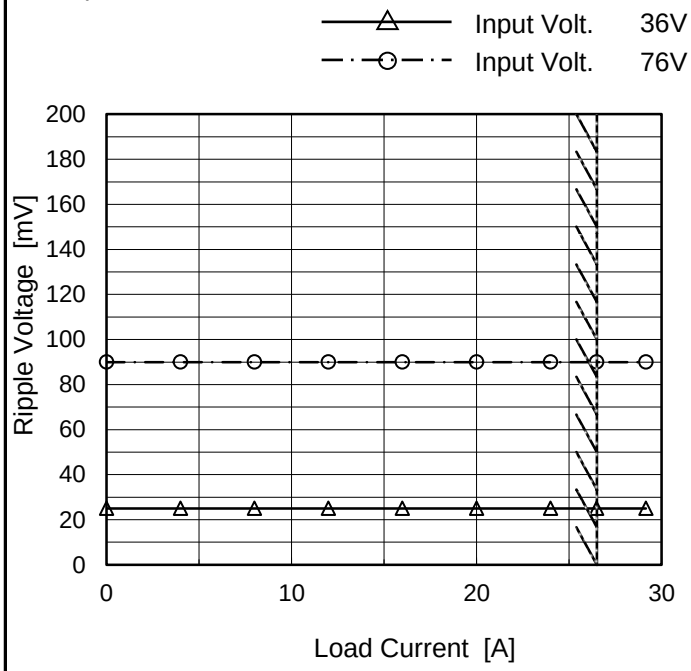


COSEL

Model	CHS4004815
Item	Ripple Voltage (by Load Current)
Object	+15V26.5A

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]

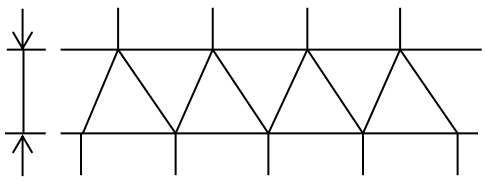


Fig.Complex Ripple Wave Form

2.Values

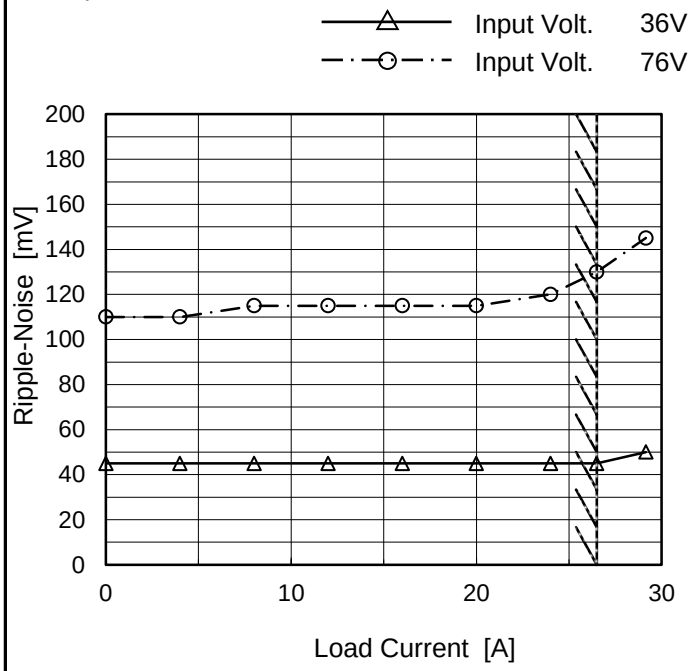
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	25	90
4.00	25	90
8.00	25	90
12.00	25	90
16.00	25	90
20.00	25	90
24.00	25	90
26.50	25	90
29.15	25	90
--	-	-
--	-	-

COSEL

Model	CHS4004815
Item	Ripple-Noise
Object	+15V26.5A

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.

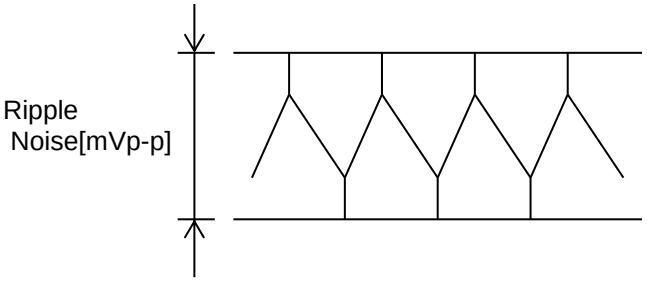


Fig.Complex Ripple Noise Wave Form

2.Values

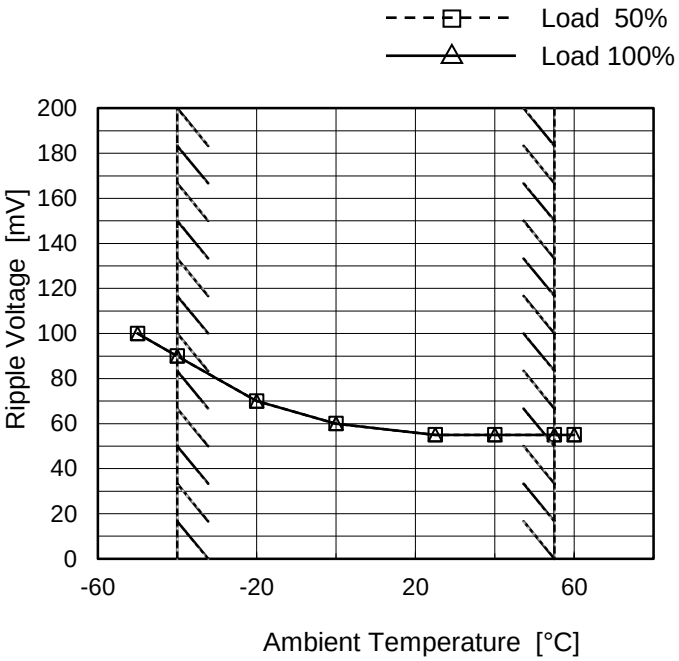
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 36 [V]	Input Volt. 76 [V]
0.00	45	110
4.00	45	110
8.00	45	115
12.00	45	115
16.00	45	115
20.00	45	115
24.00	45	120
26.50	45	130
29.15	50	145
--	-	-
--	-	-

COSEL

Model	CHS4004815
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V26.5A

Testing Circuitry Figure B

1.Graph



Input Volt. 48 V

Measured by 100 MHz Oscilloscope.

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

Ripple [mVp-p]

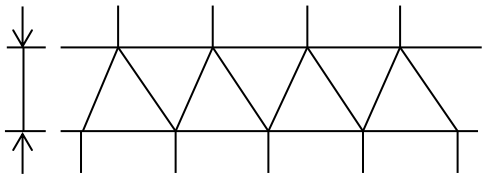


Fig.Complex Ripple Wave Form

2.Values

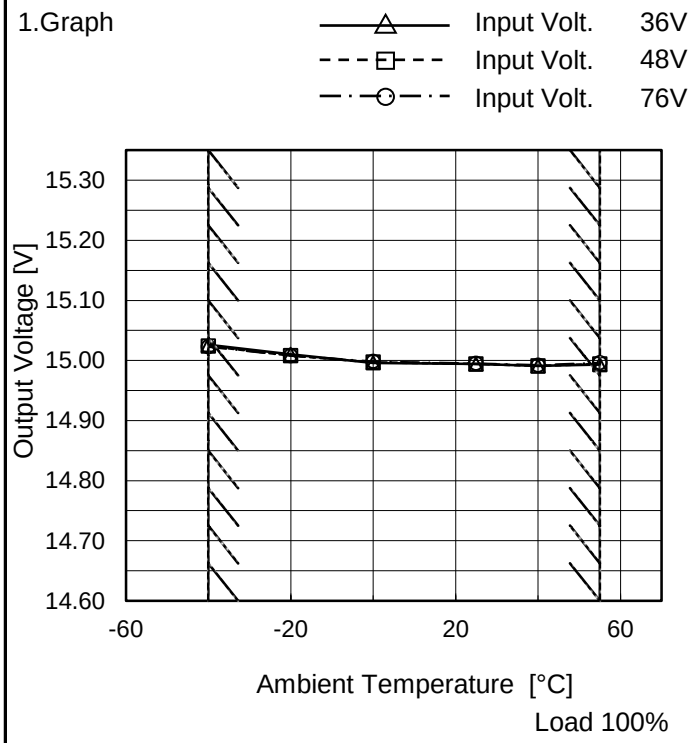
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-50	100	100
-40	90	90
-20	70	70
0	60	60
25	55	55
40	55	55
55	55	55
60	55	55
--	-	-
--	-	-
--	-	-

COSEL

Model	CHS4004815
Item	Ambient Temperature Drift
Object	+15V26.5A

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. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-40	15.026	15.024	15.023
-20	15.010	15.008	15.008
0	14.996	14.997	14.998
25	14.994	14.994	14.995
40	14.991	14.991	14.992
55	14.993	14.994	14.996
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model	CHS4004815	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+15V26.5A	

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 : 36 - 76V
Load Current : 0 - 26.5A

* 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

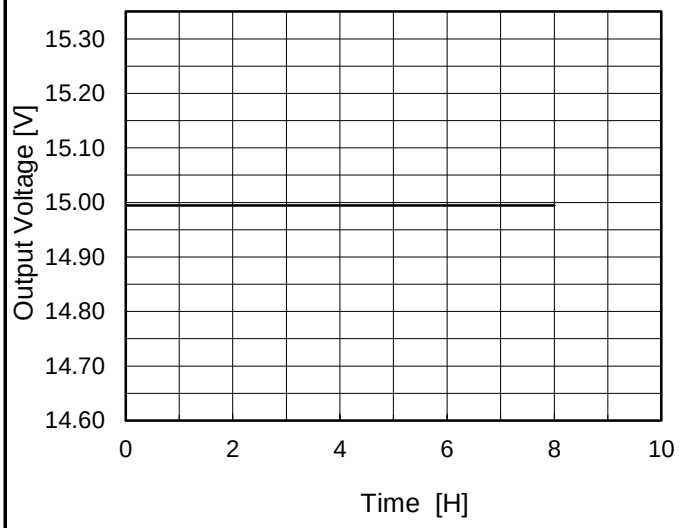
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	-40	36	0	15.027	±18	±0.1
Minimum Voltage	40	36	26.5	14.991		

COSEL

Model	CHS4004815
Item	Time Lapse Drift
Object	+15V26.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 48V
Load 100%

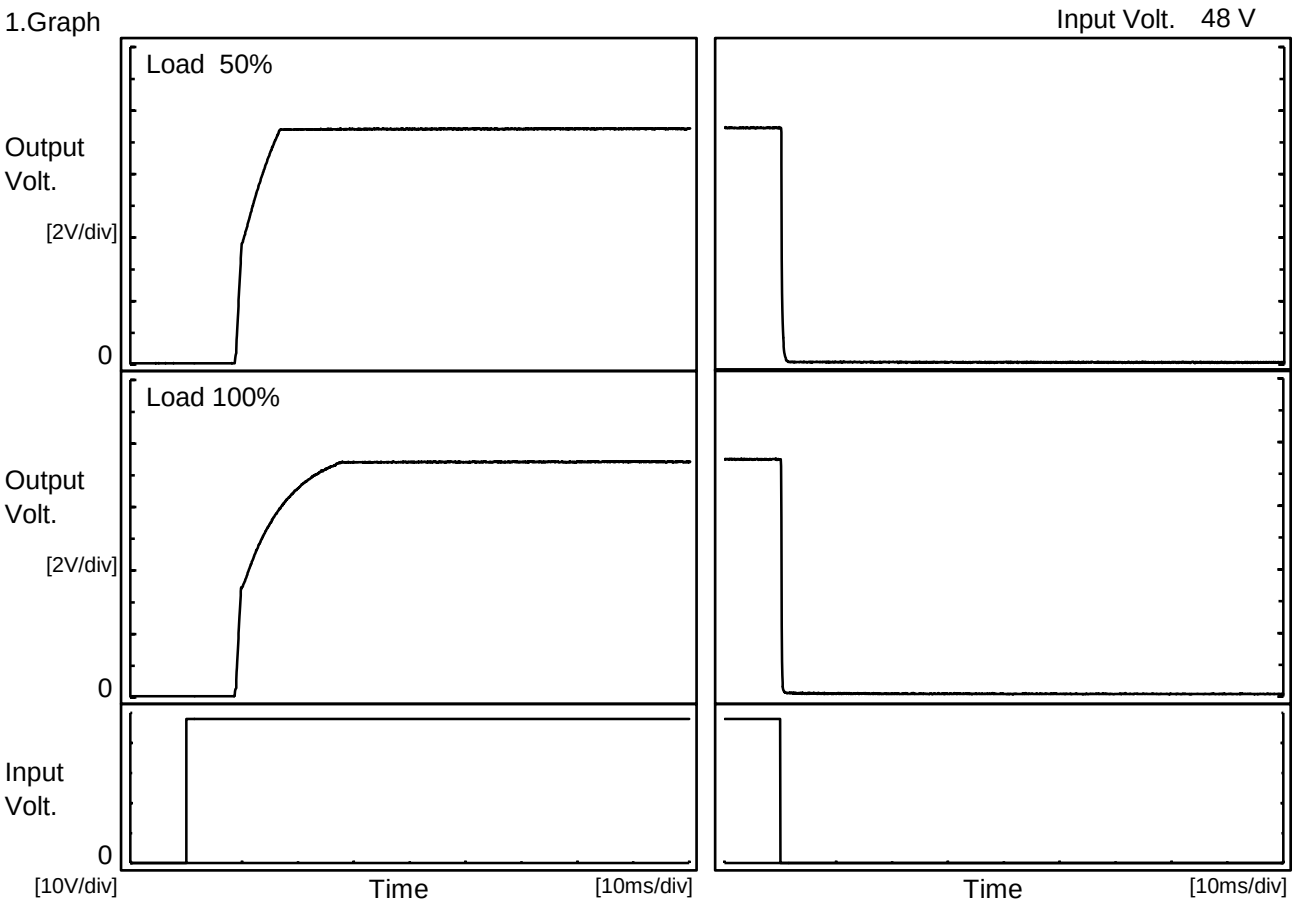
2.Values

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

COSEL

Model	CHS4004815	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+15V26.5A	

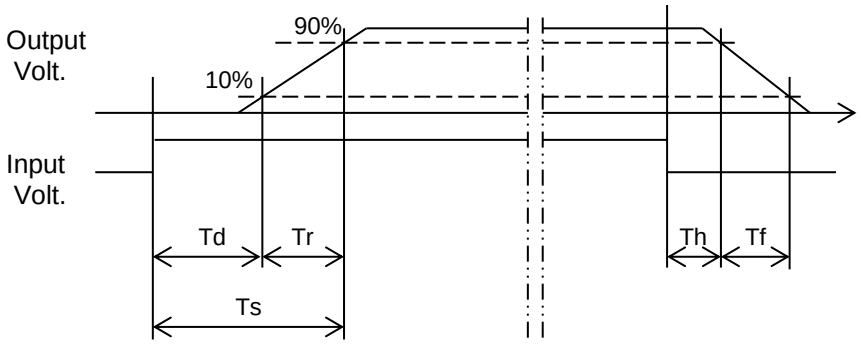
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	9.0	6.3	15.3	0.2	0.4
100 %	9.0	12.2	21.2	0.2	0.2

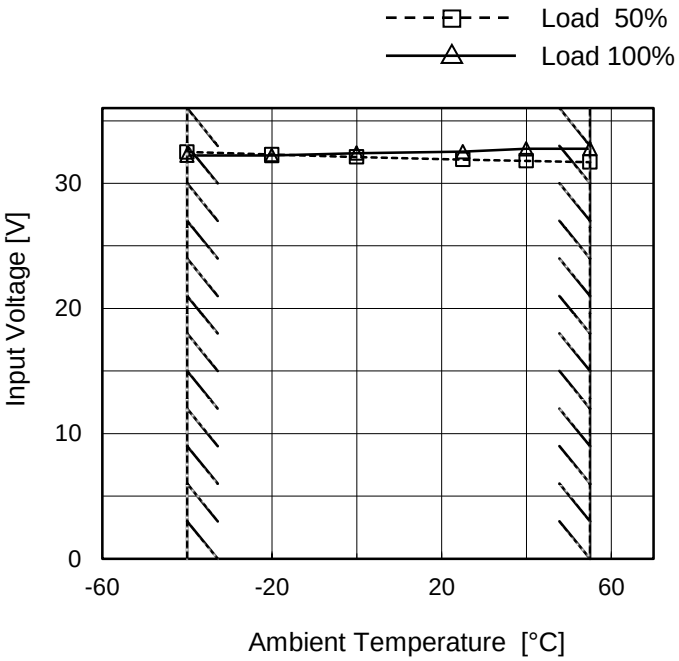


COSEL

Model	CHS4004815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V26.5A

Testing Circuitry Figure A

1.Graph



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

2.Values

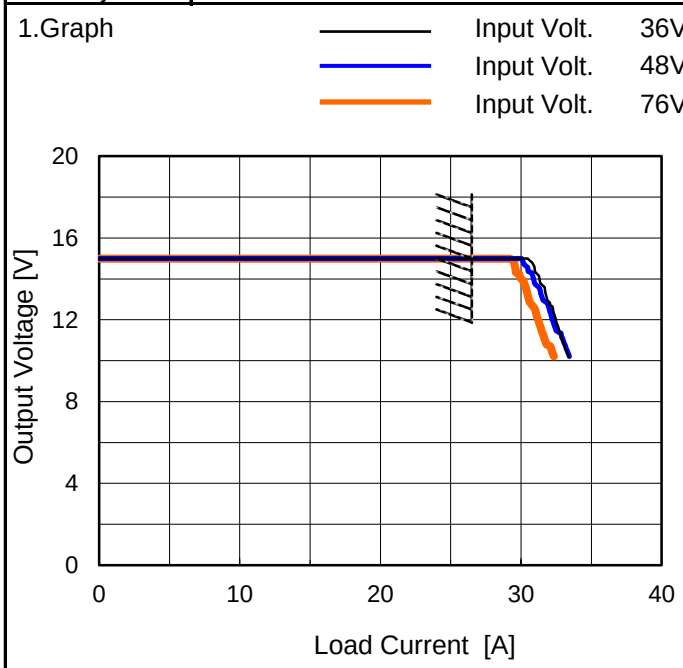
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	32.5	32.3
-20	32.3	32.3
0	32.1	32.5
25	31.9	32.6
40	31.8	32.8
55	31.7	32.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	CHS4004815
Item	Overcurrent Protection
Object	+15V26.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

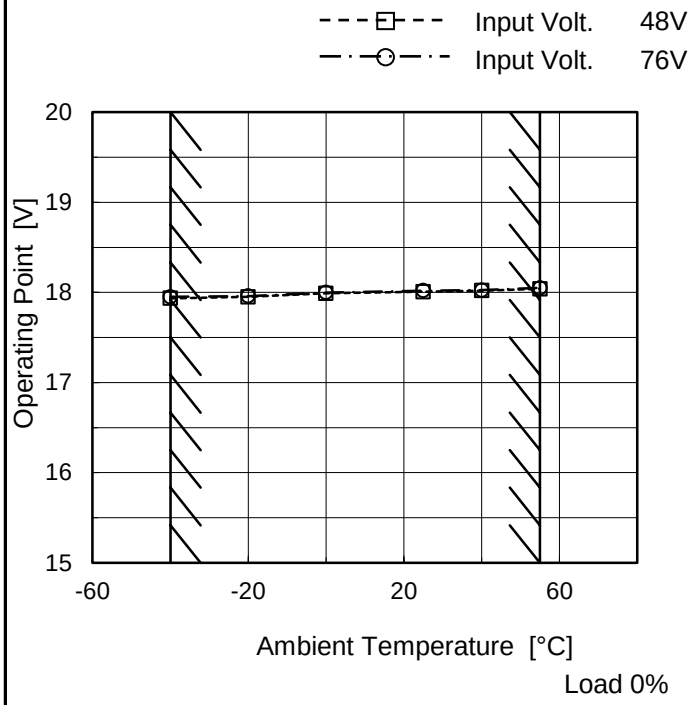
Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
14.3	31.02	30.78	29.89
13.5	31.68	31.30	30.31
12.0	32.49	32.21	31.20
10.5	33.20	33.24	32.21
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	CHS4004815
Item	Overvoltage Protection
Object	+15V26.5A

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. 48[V]	Input Volt. 76[V]
-40	17.94	17.95
-20	17.95	17.96
0	17.99	18.00
25	18.01	18.02
40	18.02	18.03
55	18.04	18.05
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

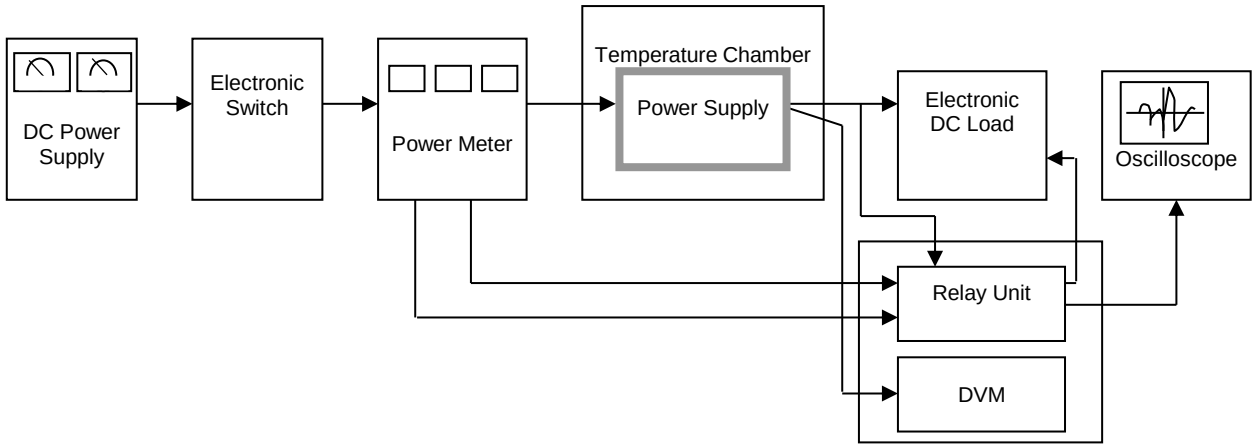


Figure A

Data Acquisition/Control Unit

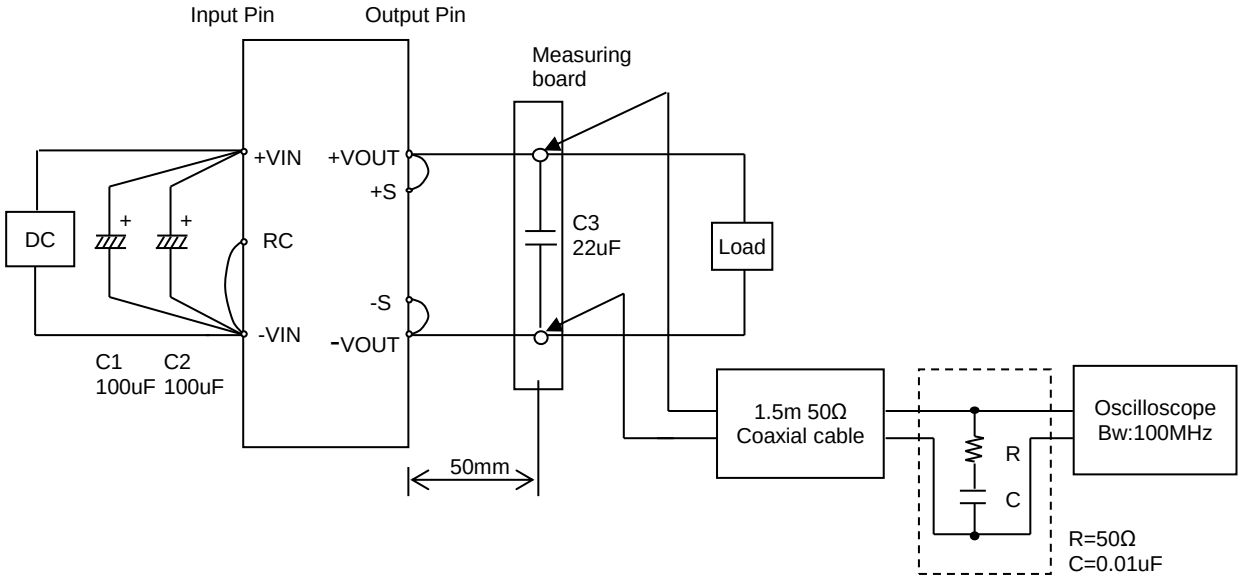


Figure B