COSEL

参考資料

TEST DATA OF DHS50B15

Regulated DC Power Supply
May 26, 2009

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COSEL CO.,LTD.

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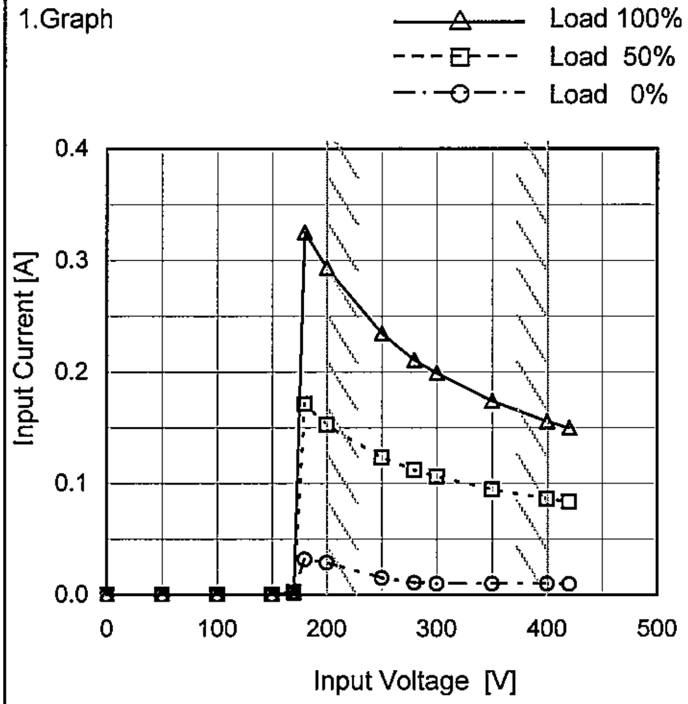
Model	DHS50B15		
Item	Input Current (by Input Voltage)	Temperature Testing Circuitry	25°C Figure A
Object	————————		

1.Graph



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

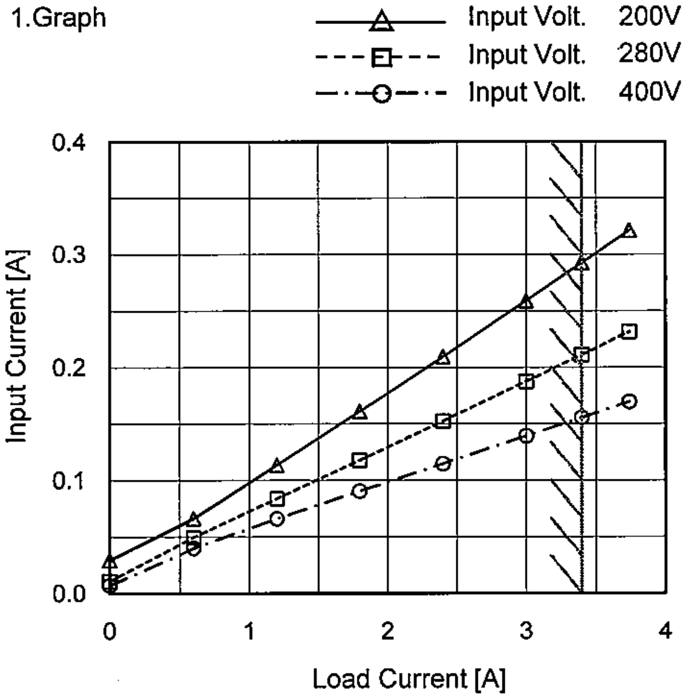
2.Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0	0.000	0.000	0.000
50	0.000	0.000	0.000
100	0.000	0.000	0.000
150	0.000	0.000	0.000
170	0.002	0.002	0.002
180	0.032	0.171	0.325
200	0.029	0.153	0.293
250	0.015	0.123	0.235
280	0.011	0.112	0.211
300	0.010	0.106	0.199
350	0.010	0.095	0.174
400	0.010	0.086	0.156
420	0.010	0.084	0.150
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model	DHS50B15
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. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.00	0.029	0.011	0.007
0.60	0.066	0.049	0.040
1.20	0.113	0.084	0.066
1.80	0.161	0.118	0.090
2.40	0.209	0.152	0.115
3.00	0.259	0.187	0.139
3.40	0.292	0.211	0.155
3.74	0.321	0.232	0.170
--	-	-	-
--	-	-	-
--	-	-	-

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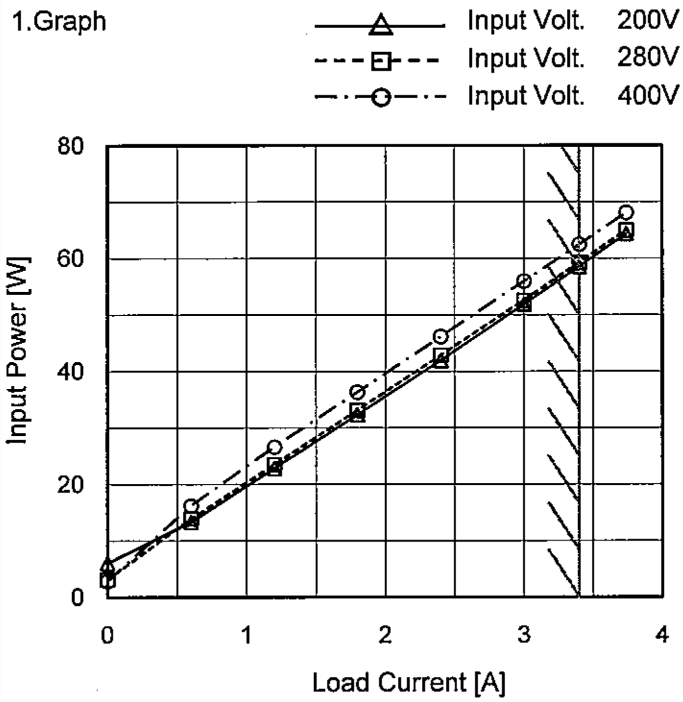
Model	DHS50B15
Item	Input Power (by Load Current)
Object	――――――――

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. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.00	6.00	3.10	2.80
0.60	13.30	13.90	16.20
1.20	22.80	23.50	26.60
1.80	32.30	33.10	36.30
2.40	41.90	42.80	46.10
3.00	51.80	52.50	55.90
3.40	58.50	59.20	62.40
3.74	64.30	64.90	68.00
--	-	-	-
--	-	-	-
--	-	-	-

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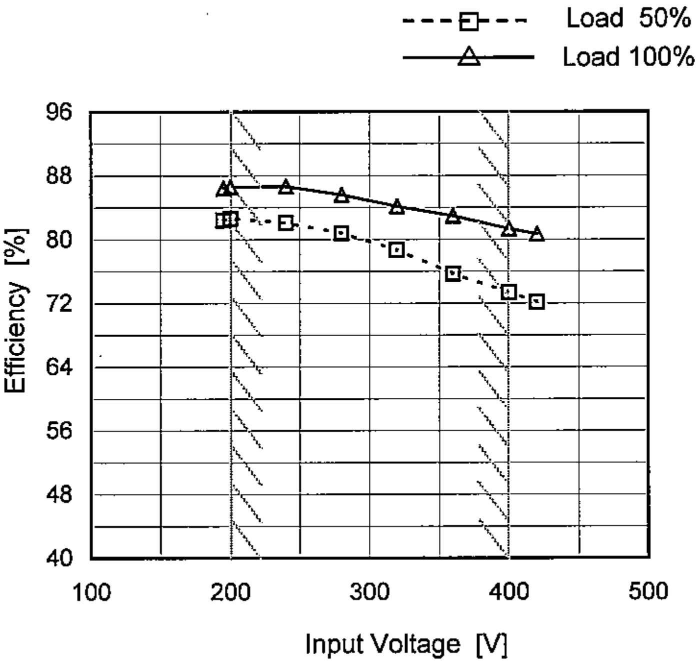
Model	DHS50B15		
Item	Efficiency (by Input Voltage)	Temperature	25°C
		Testing Circuitry	Figure A
Object			

1.Graph



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

2.Values

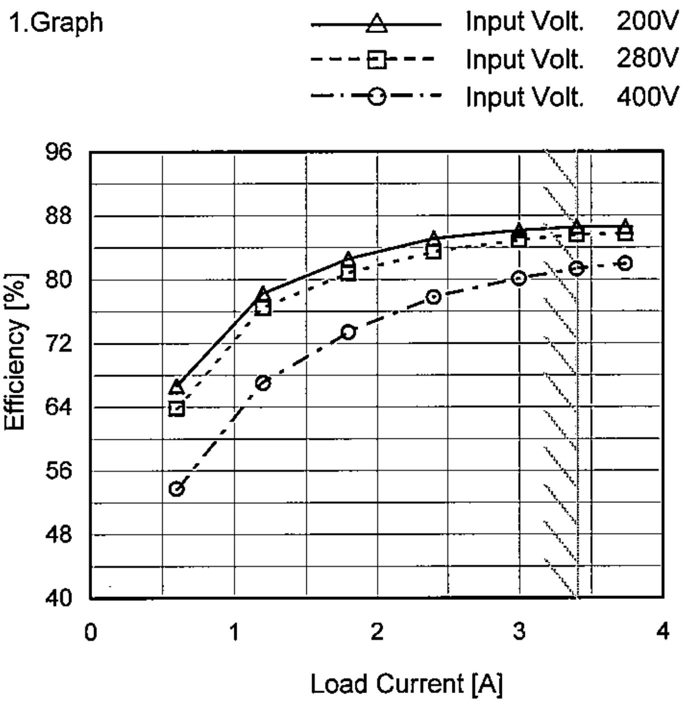
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
195	82.4	86.4
200	82.6	86.6
240	82.1	86.7
280	80.8	85.6
320	78.6	84.2
360	75.7	83.0
400	73.4	81.3
420	72.1	80.7
--	-	-

COSEL

Model	DHS50B15
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.

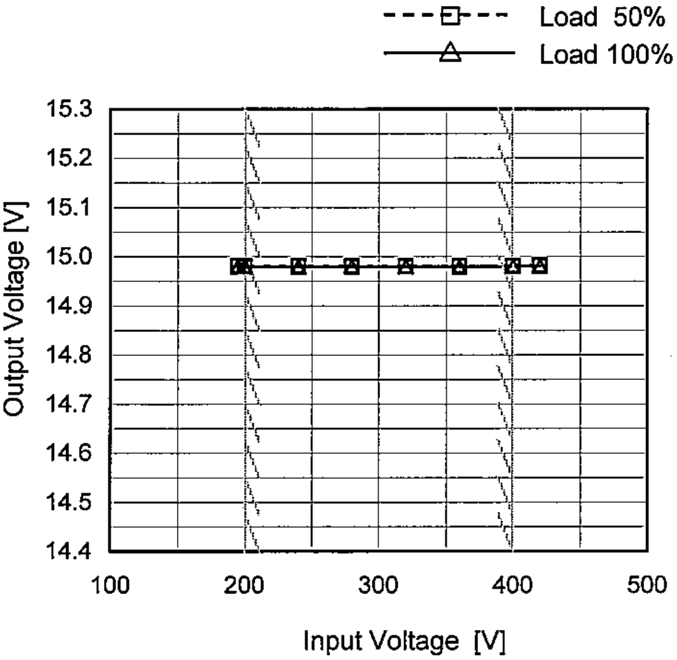
2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.00	-	-	-
0.60	66.7	63.9	53.8
1.20	78.3	76.5	67.1
1.80	82.6	80.8	73.4
2.40	85.1	83.4	77.8
3.00	86.1	84.9	80.1
3.40	86.6	85.6	81.3
3.74	86.6	85.7	82.0
--	-	-	-
--	-	-	-
--	-	-	-

Model	DHS50B15
Item	Line Regulation
Object	+15V3.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

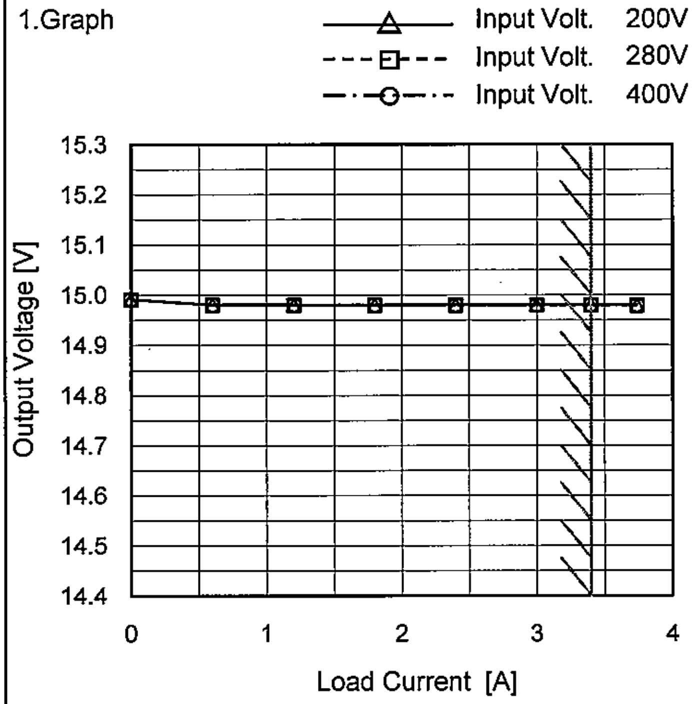
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
195	14.981	14.980
200	14.981	14.980
240	14.981	14.980
280	14.981	14.980
320	14.981	14.980
360	14.981	14.980
400	14.981	14.981
420	14.982	14.981
--	-	-

Model	DHS50B15
Item	Load Regulation
Object	+15V3.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



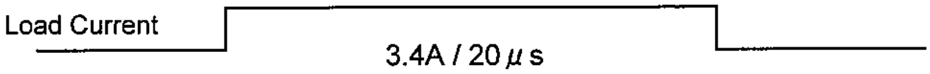
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
0.00	14.991	14.991	14.991
0.60	14.980	14.980	14.981
1.20	14.980	14.980	14.980
1.80	14.980	14.980	14.980
2.40	14.980	14.980	14.980
3.00	14.980	14.980	14.980
3.40	14.980	14.980	14.980
3.74	14.980	14.979	14.979
--	-	-	-
--	-	-	-
--	-	-	-

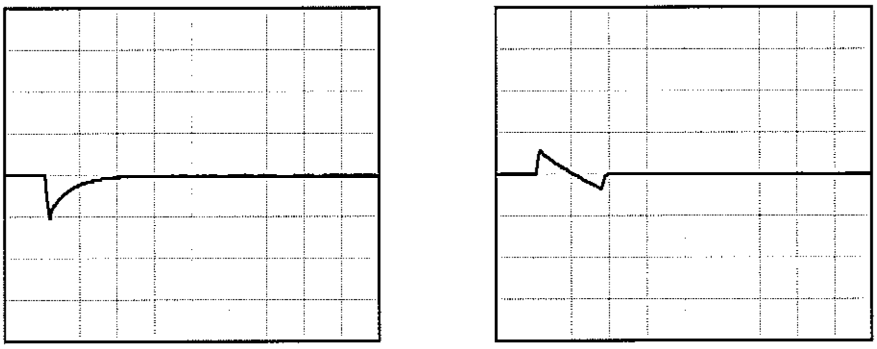
Model	DHS50B15	
Item	Dynamic Load Response	Temperature 25°C Testing Circuitry Figure A
Object	+15V3.4A	

Input Volt. 280 V
Cycle 1000 ms



Min. Load (0A) ←→
Load 100% (3.4A)

500mV/div

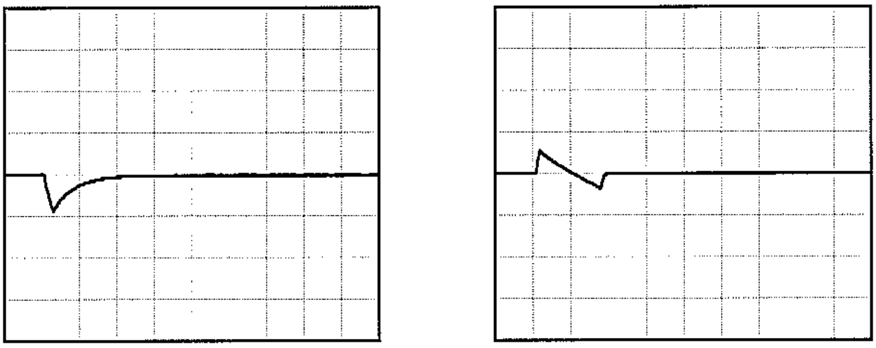


500 μ s/div

5 ms/div

Min. Load (0A) ←→
Load 50% (1.7A)

500mV/div

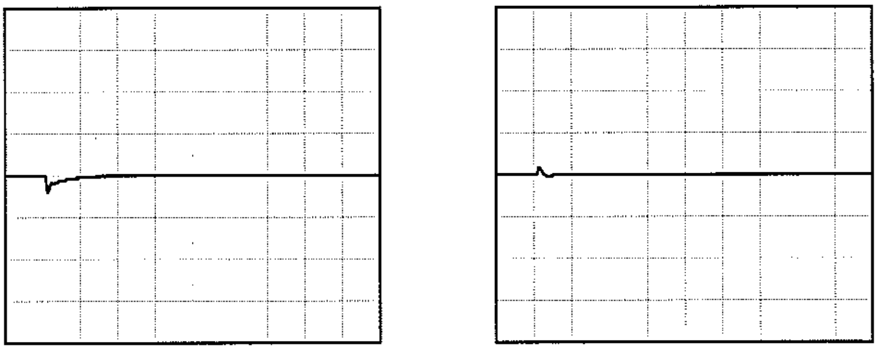


500 μ s/div

5 ms/div

Load 10% (0.34A) ←→
Load 100% (3.4A)

500mV/div



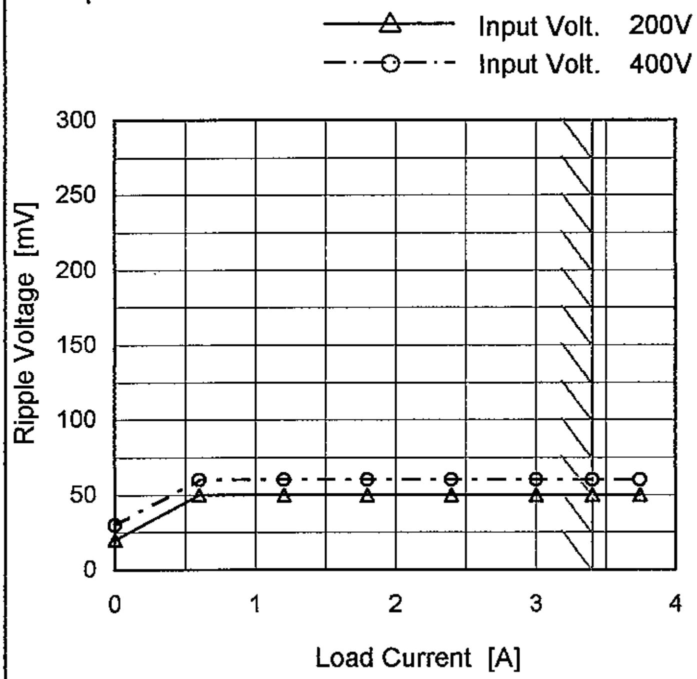
500 μ s/div

5 ms/div

Model	DHS50B15
Item	Ripple Voltage (by Load Current)
Object	+15V3.4A

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.

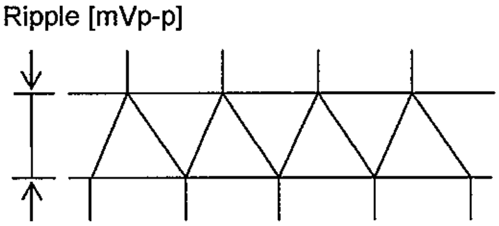


Fig.Complex Ripple Wave Form

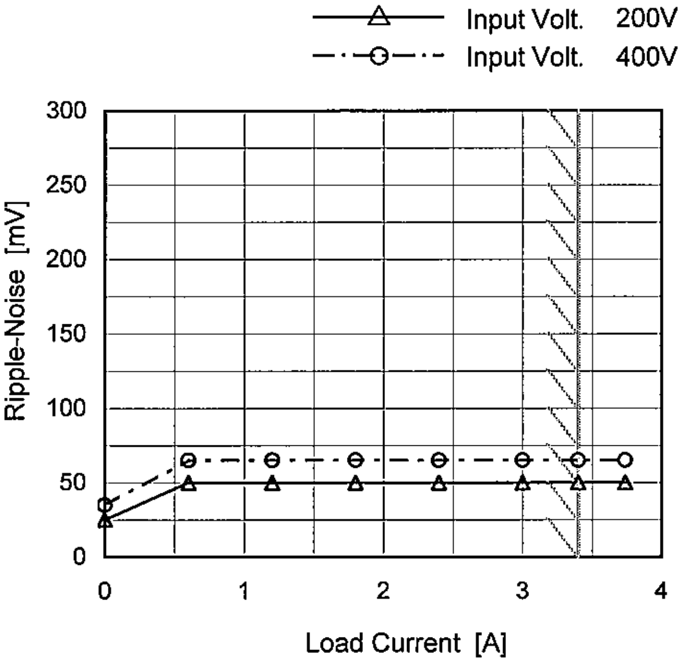
2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.00	20	30
0.60	50	60
1.20	50	60
1.80	50	60
2.40	50	60
3.00	50	60
3.40	50	60
3.74	50	60
--	-	-
--	-	-
--	-	-

Model	DHS50B15
Item	Ripple-Noise
Object	+15V3.4A

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.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 200 [V]	Input Volt. 400 [V]
0.00	25	35
0.60	50	65
1.20	50	65
1.80	50	65
2.40	50	65
3.00	50	65
3.40	50	65
3.74	50	65
--	-	-
--	-	-
--	-	-

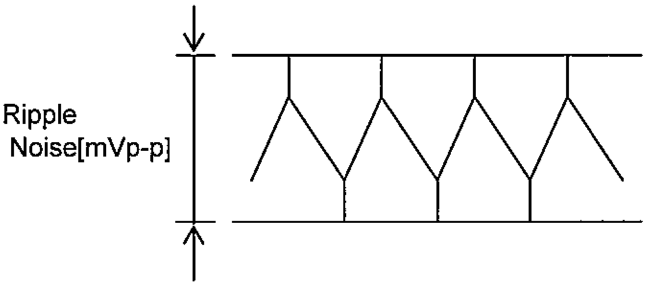
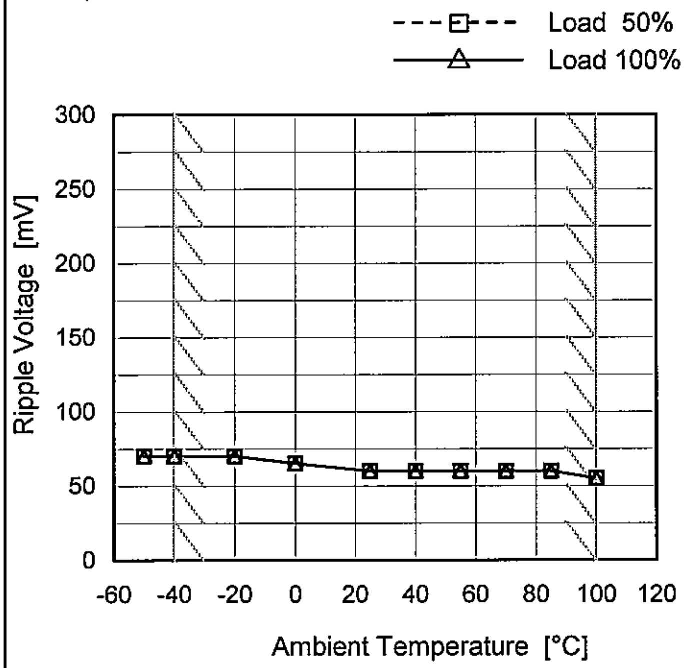


Fig.Complex Ripple Noise Wave Form

Model	DHS50B15	
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry Figure B
Object	+15V3.4A	

1.Graph



Input Volt. 280V

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%
-50	70	70
-40	70	70
-20	70	70
0	65	65
25	60	60
40	60	60
55	60	60
70	60	60
85	60	60
100	55	55
--	-	-

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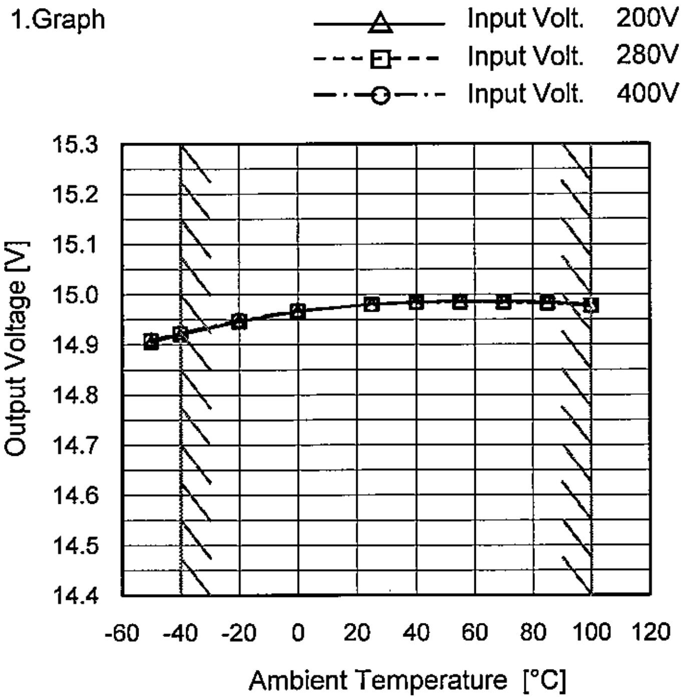
Model	DHS50B15
Item	Ambient Temperature Drift
Object	+15V3.4A

Testing Circuitry Figure A

1.Graph



Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-50	14.905	14.907	14.909
-40	14.920	14.922	14.924
-20	14.946	14.947	14.949
0	14.966	14.966	14.968
25	14.980	14.980	14.980
40	14.985	14.984	14.983
55	14.987	14.985	14.985
70	14.986	14.984	14.984
85	14.984	14.982	14.981
100	14.979	14.977	14.976
--	-	-	-

Model	DHS50B15	
Item	Output Voltage Accuracy	Testing Circuitry　Figure A
Object	+15V3.4A	

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 - 100°C
Input Voltage : 200 - 400V
Load Current : 0 - 3.4A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

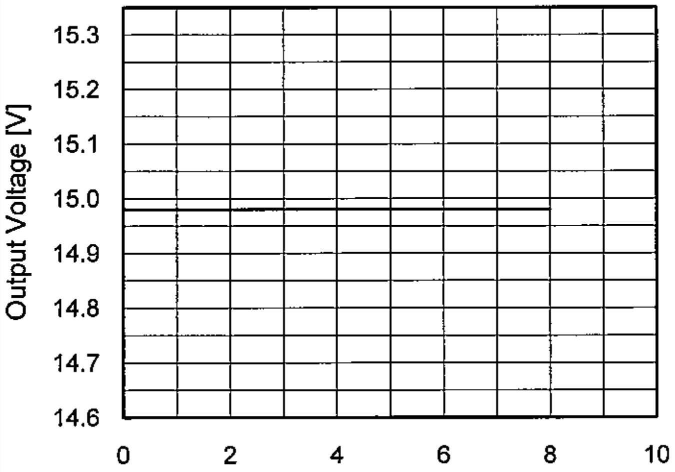
2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	70	200	0	15.004	±42	±0.3
Minimum Voltage	-40	200	3.4	14.920		

Model	DHS50B15
Item	Time Lapse Drift
Object	+15V3.4A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Time [H]

Input Volt. 280V
Load 100%

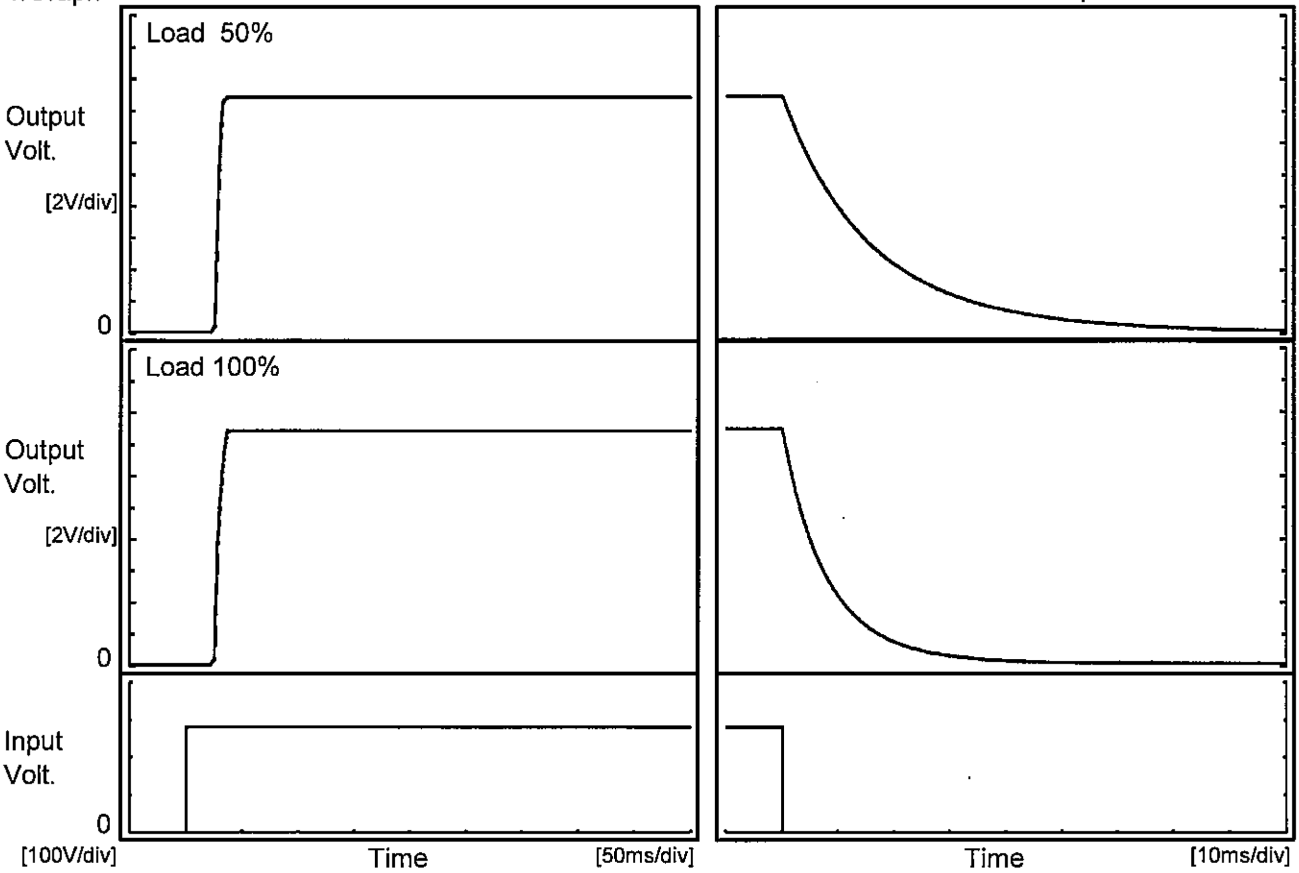
2.Values

Time since start [H]	Output Voltage [V]
0.0	14.980
0.5	14.980
1.0	14.980
2.0	14.980
3.0	14.980
4.0	14.980
5.0	14.980
6.0	14.980
7.0	14.980
8.0	14.980

Model	DHS50B15	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	+15V3.4A	

1.Graph

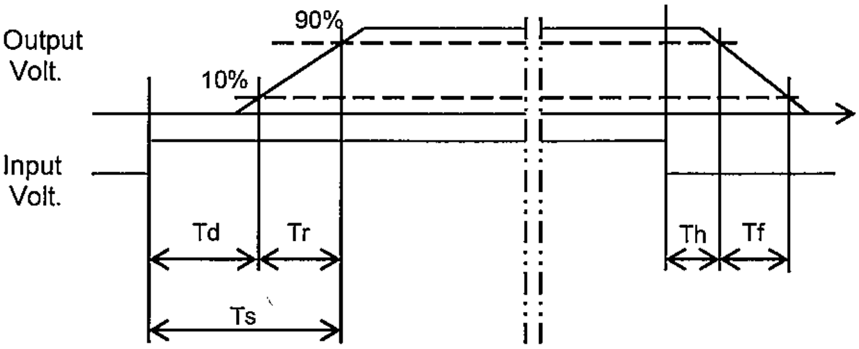
Input Volt. 280 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	26.0	5.5	31.5	1.6	37.3
100 %	26.0	8.3	34.3	0.7	19.1


Output Volt.
90%
10%
Input Volt.
Td
Tr
Ts
Th
Tf

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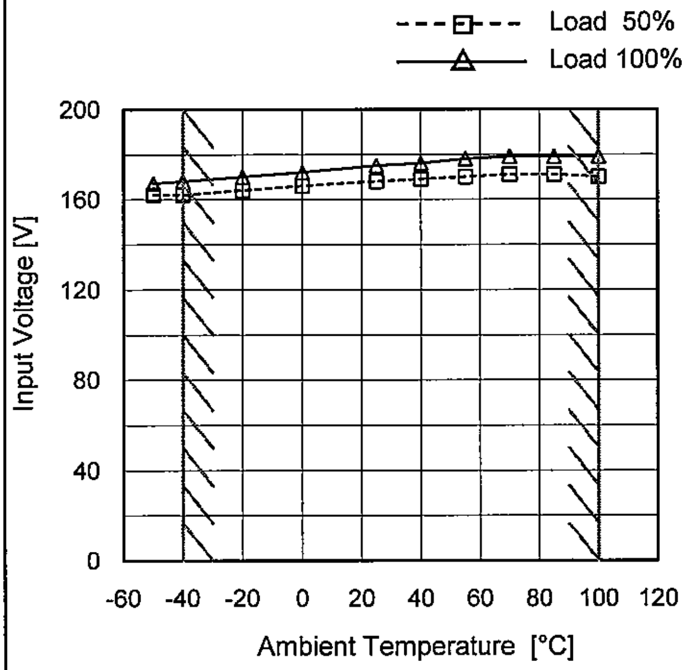
Model	DHS50B15
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V3.4A

Testing Circuitry Figure A

1.Graph



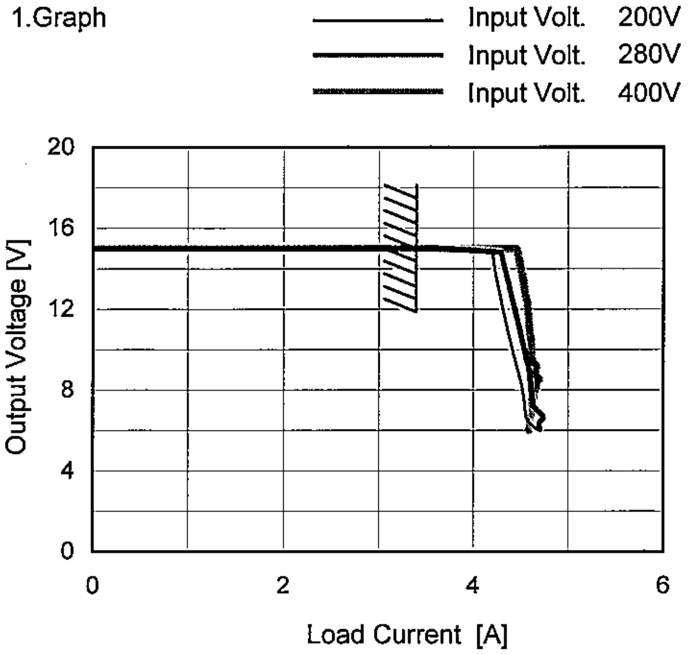
Note: Slanted line shows the range of the rated ambient temperature.

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-50	162	167
-40	162	168
-20	164	170
0	166	172
25	168	175
40	169	176
55	170	178
70	171	179
85	171	179
100	170	179
--	-	-

Model	DHS50B15	
Item	Overcurrent Protection	Temperature 25°C Testing Circuitry Figure A
Object	+15V3.4A	

1.Graph



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

Intermittent operation occurs when the output voltage is from 6V to 0V.

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
15.0	3.42	3.42	3.42
14.3	4.22	4.32	4.49
13.5	4.25	4.36	4.52
12.0	4.31	4.44	4.58
10.5	4.39	4.51	4.61
9.0	4.46	4.58	4.66
7.5	4.53	4.62	4.64
6.0	4.66	4.70	4.59
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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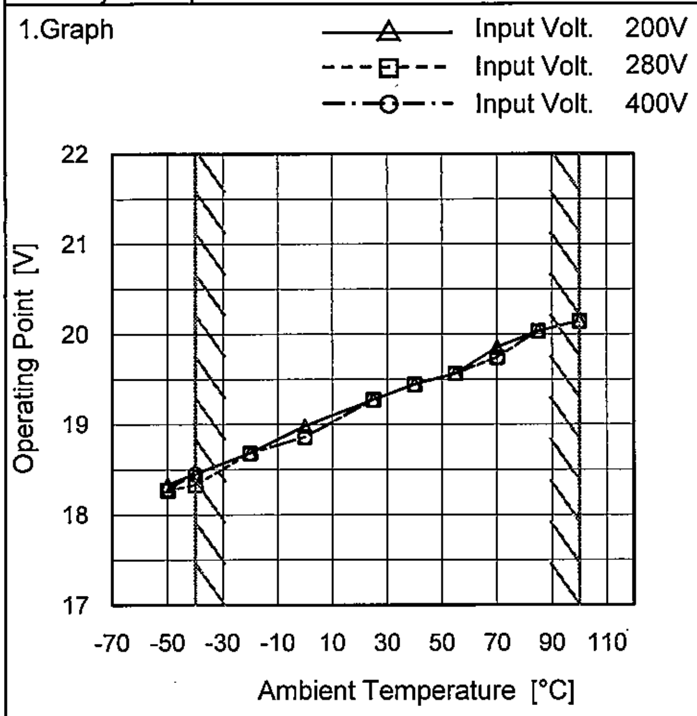
Model	DHS50B15
Item	Overvoltage Protection
Object	+15V3.4A

Testing Circuitry Figure A

1.Graph



Load 0%

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

2.Values

Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 200[V]	Input Volt. 280[V]	Input Volt. 400[V]
-50	18.33	18.27	18.28
-40	18.45	18.33	18.45
-20	18.68	18.68	18.68
0	18.98	18.86	18.86
25	19.27	19.27	19.27
40	19.44	19.44	19.44
55	19.56	19.56	19.56
70	19.85	19.74	19.74
85	20.03	20.03	20.03
100	20.14	20.14	20.14
--	-	-	-

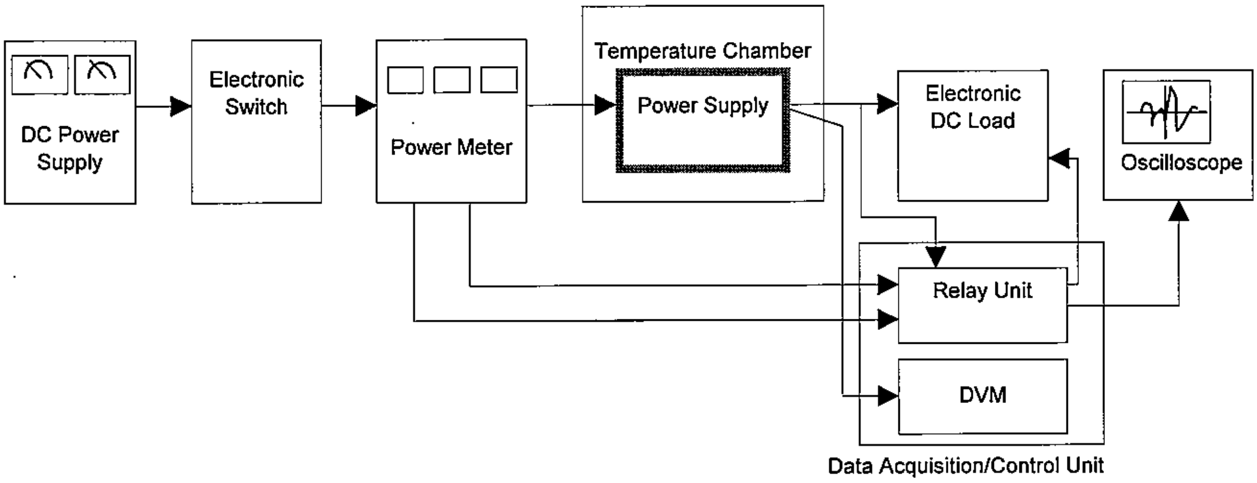
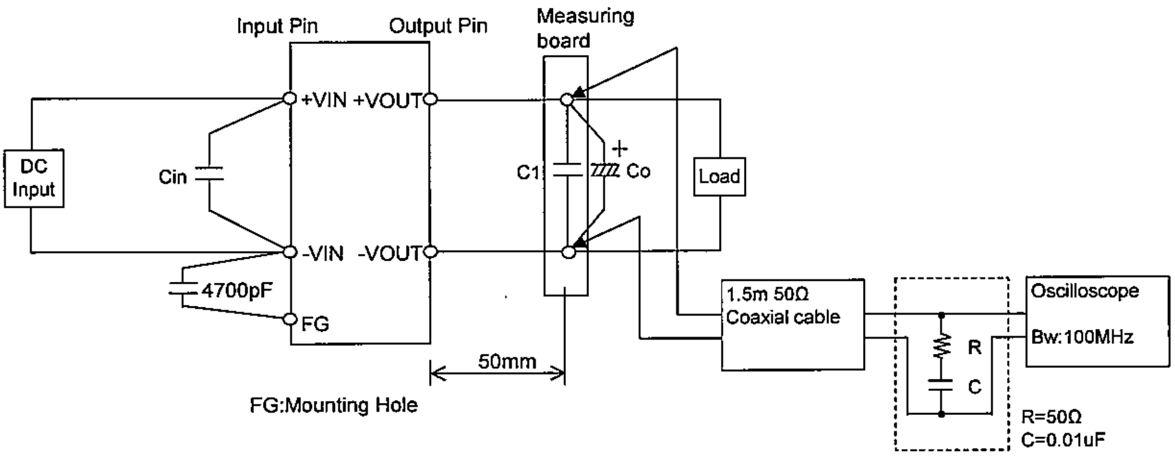

DC Power Supply
Electronic Switch
Power Meter
Temperature Chamber
Power Supply
Electronic DC Load
Oscilloscope
Relay Unit
DVM
Data Acquisition/Control Unit

Figure A


Input Pin
Output Pin
Measuring board
+VIN
+VOUT
-VIN
-VOUT
FG
DC Input
Cin
4700pF
C1
Co
+
Load
50mm
FG:Mounting Hole
1.5m 50Ω Coaxial cable
R
C
R=50Ω
C=0.01uF
Oscilloscope
Bw:100MHz

C1	:	DHS50B24	4.7uF
		DHS50B28	4.7uF
		Others	10uF
Co	:	DHS50B03	2200uF
		DHS50B05	2200uF
		DHS50B12	470uF
		DHS50B15	470uF
		DHS50B24	220uF
		DHS50B28	220uF

Figure B