COSEL

TEST DATA OF MGFS304815

Regulated DC Power Supply
December 25, 2010

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COSEL CO.,LTD.

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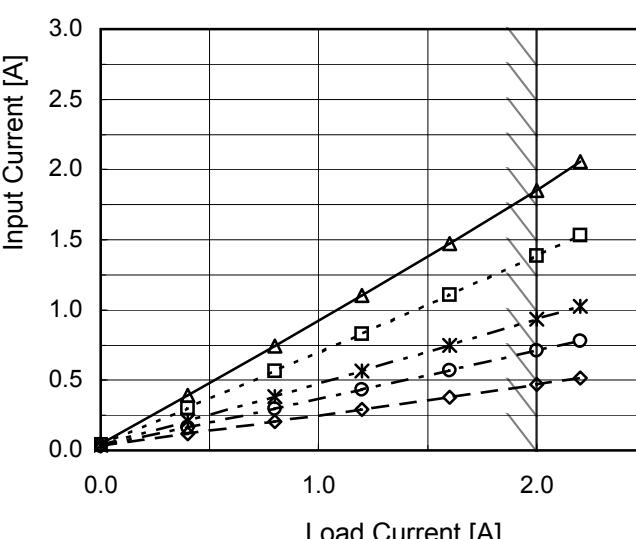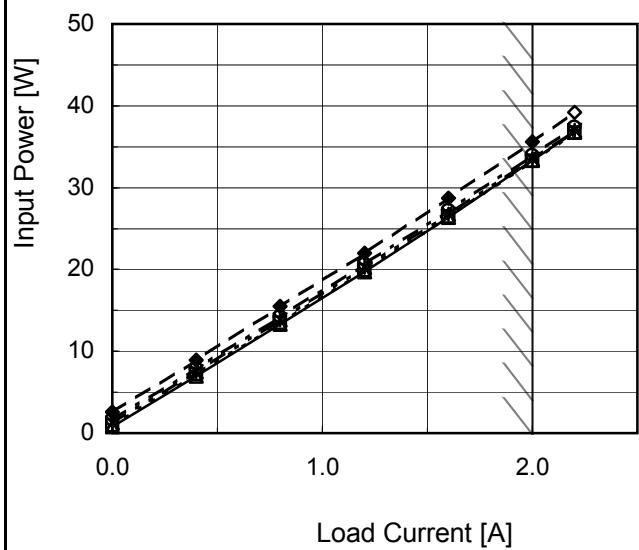
Model	MGFS304815
Item	Input Current (by Input Voltage)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

——△—— Load 100%
---日--- Load 50%
—·-○-·— Load 0%

Input Current [A] vs Input Voltage [V]

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	0.000	0.000	0.000
10.0	0.000	0.000	0.000
15.0	0.002	0.000	0.002
16.0	0.002	0.002	0.002
16.5	0.002	0.002	0.002
17.0	0.046	0.971	2.006
17.5	0.045	0.943	1.902
18.0	0.045	0.918	1.848
24.0	0.041	0.692	1.384
36.0	0.036	0.472	0.930
48.0	0.033	0.363	0.707
76.0	0.033	0.246	0.468
80.0	0.033	0.236	0.448
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MGFS304815
Item	Input Current (by Load Current)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—△—	Input Volt.	18V
---□---	Input Volt.	24V
—··✳··—	Input Volt.	36V
—·○—··	Input Volt.	48V
——◇——	Input Volt.	76V

Input Current [A] vs Load Current [A]

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

2.Values

Load Current	Input Current [A]				
	Input Volt.	Input Volt.	Input Volt.	Input Volt.	Input Volt.
[A]	18[V]	24[V]	36[V]	48[V]	76[V]
0.0	0.045	0.040	0.036	0.034	0.033
0.4	0.390	0.299	0.209	0.164	0.117
0.8	0.741	0.564	0.385	0.297	0.203
1.2	1.105	0.831	0.564	0.431	0.290
1.6	1.472	1.107	0.746	0.568	0.378
2.0	1.852	1.386	0.934	0.709	0.468
2.2	2.054	1.533	1.028	0.781	0.516
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS304815
Item	Input Power (by Load Current)
Object	

Temperature　　25°C
Testing Circuitry　Figure A

1.Graph

	Input Volt.	18V
	Input Volt.	24V
	Input Volt.	36V
	Input Volt.	48V
	Input Volt.	76V

2.Values

Load Current [A]

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

Load Current	Input Power [W]				
	Input Volt.	Input Volt.	Input Volt.	Input Volt.	Input Volt.
[A]	18[V]	24[V]	36[V]	48[V]	76[V]
0.0	0.81	0.97	1.29	1.62	2.55
0.4	6.98	7.16	7.51	7.88	8.94
0.8	13.30	13.46	13.84	14.27	15.47
1.2	19.75	19.88	20.26	20.69	22.01
1.6	26.38	26.45	26.78	27.25	28.70
2.0	33.30	33.22	33.48	33.96	35.60
2.2	36.80	36.67	37.00	37.42	39.20
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS304815
Item	Efficiency (by Input Voltage)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Load 50%
Load 100%

Efficiency [%]

Input Voltage [V]

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

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
17	91.2	89.9
18	91.2	90.3
24	90.3	90.5
30	89.4	90.2
36	88.3	89.8
48	86.3	88.6
60	83.9	87.0
76	80.5	84.6
80	79.6	84.0

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Model	MGFS304815
Item	Efficiency (by Load Current)
Object	————————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—————△—————	Input Volt.	18V
– – –⊟– – –	Input Volt.	24V
—··—✳··—·	Input Volt.	36V
—··—○—··—	Input Volt.	48V
– –◇– –	Input Volt.	76V

Efficiency [%] vs Load Current [A]

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]	Input Volt. 48[V]	Input Volt. 76[V]
0.0	-	-	-	-	-
0.4	86.2	84.0	80.1	76.3	67.3
0.8	90.5	89.4	87.0	84.4	77.8
1.2	91.5	90.9	89.2	87.3	82.1
1.6	91.3	91.1	90.0	88.4	83.9
2.0	90.4	90.6	89.9	88.7	84.6
2.2	90.0	90.3	89.5	88.5	84.5
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS304815
Item	Line Regulation
Object	+15V2A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

--- ⊟ --- Load 50%

——— △ ——— Load 100%

Output Voltage [V] vs Input Voltage [V]

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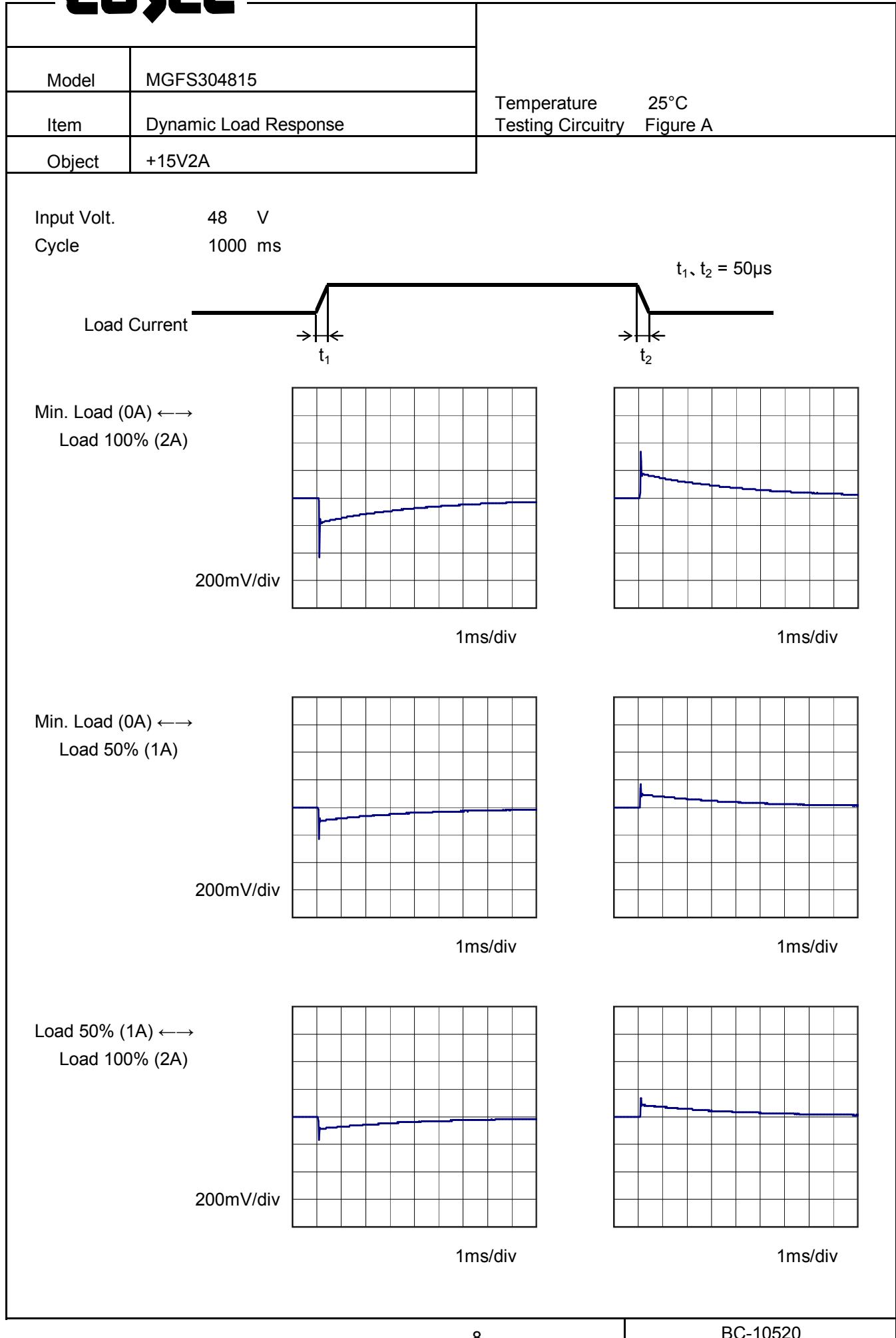
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
17	15.065	15.064
18	15.065	15.064
24	15.065	15.064
30	15.065	15.063
36	15.065	15.063
48	15.064	15.063
60	15.064	15.062
76	15.063	15.062
80	15.063	15.061

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Model	MGFS304815
Item	Load Regulation
Object	+15V2A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

——△——	Input Volt.	18V
- - -⊟- - -	Input Volt.	24V
—··✳··—·	Input Volt.	36V
—·—○—·—	Input Volt.	48V
—— ◇ ——	Input Volt.	76V

Output Voltage [V] vs Load Current [A]

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	15.068	15.067	15.067	15.067	15.066
0.4	15.068	15.067	15.066	15.066	15.065
0.8	15.067	15.066	15.066	15.065	15.064
1.2	15.066	15.066	15.065	15.064	15.064
1.6	15.065	15.065	15.064	15.064	15.063
2.0	15.065	15.064	15.064	15.063	15.062
2.2	15.064	15.064	15.063	15.063	15.062
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS304815
Item	Dynamic Load Response
Object	+15V2A

Temperature	25°C
Testing Circuitry	Figure A

Input Volt.   48   V
Cycle   1000   ms

t_1、t_2 = 50µs

Load Current

t_1 t_2

Min. Load (0A) ←→
    Load 100% (2A)

200mV/div

1ms/div   1ms/div

Min. Load (0A) ←→
    Load 50% (1A)

200mV/div

1ms/div   1ms/div

Load 50% (1A) ←→
    Load 100% (2A)

200mV/div

1ms/div   1ms/div

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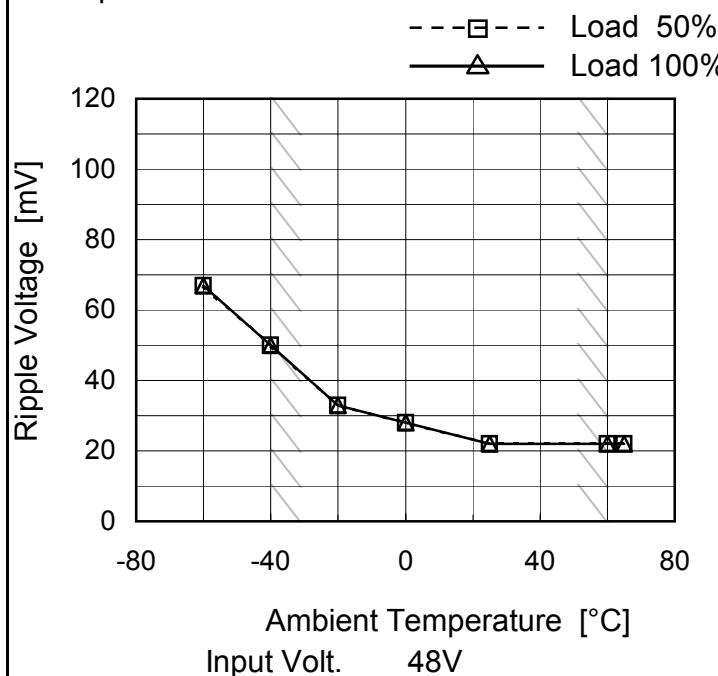
Model	MGFS304815
Item	Ripple Voltage (by Load Current)
Object	+15V2A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

—△— Input Volt. 18V
—·○—·· Input Volt. 76V

Ripple Voltage [mV] vs Load Current [A]

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.0	26	42
0.4	24	42
0.8	24	42
1.2	24	42
1.6	22	42
2.0	22	42
2.2	22	42
--	-	-
--	-	-
--	-	-
--	-	-

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

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Model	MGFS304815
Item	Ripple-Noise
Object	+15V2A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

——△—— Input Volt.   18V
—·—○—·— Input Volt.   76V

Ripple Voltage [mV]

150

120

90

60

30

0

0.0   1.0   2.0

Load Current [A]

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	30	45
0.4	25	45
0.8	25	45
1.2	25	45
1.6	25	45
2.0	25	45
2.2	25	45
--	-	-
--	-	-
--	-	-
--	-	-

Ripple
Noise[mVp-p]

Fig.Complex Ripple Noise Wave Form

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参考資料

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Model	MGFS304815		
Item	Ripple Voltage (by Ambient Temp.)	Testing Circuitry	Figure B
Object	+15V2A		

1.Graph

- - -☐- - - Load 50%
———△——— Load 100%

Ambient Temperature [°C]
Input Volt.   48V

Measured by 100 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
 ambient temperature.
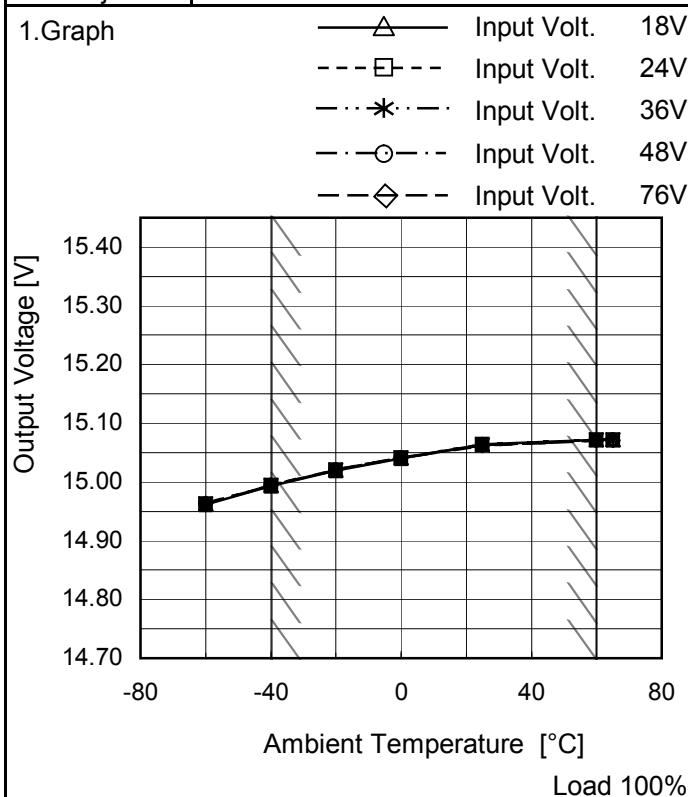
2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	67	67
-40	50	50
-20	33	33
0	28	28
25	22	22
60	22	22
65	22	22
--	-	-
--	-	-
--	-	-
--	-	-

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Model	MGFS304815
Item	Ambient Temperature Drift
Object	+15V2A

Testing Circuitry   Figure A

1.Graph

—△—	Input Volt.	18V
- - -⊟- - -	Input Volt.	24V
—··✳··—·	Input Volt.	36V
—·—○—·—	Input Volt.	48V
— —◇— —	Input Volt.	76V

Ambient Temperature [°C]

Load 100%

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]
-60	14.962	14.962	14.963	14.963	14.963
-40	14.994	14.994	14.994	14.994	14.995
-20	15.020	15.020	15.021	15.021	15.021
0	15.041	15.041	15.041	15.041	15.041
25	15.064	15.064	15.063	15.062	15.062
60	15.071	15.071	15.071	15.071	15.070
65	15.072	15.072	15.072	15.071	15.070
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS304815		
Item	Output Voltage Accuracy	Testing Circuitry	Figure A
Object	+15V2A		

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 - 60°C
    Input Voltage : 18 - 76V
    Load Current   : 0 - 2A

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

* Output Voltage Accuracy (Ration) = $\dfrac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}}$ × 100

2.Values
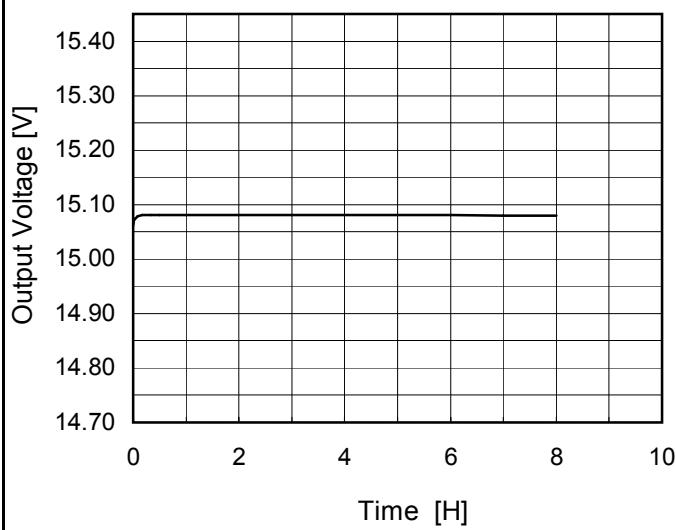
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	60	24	0	15.075	±41	±0.3
Minimum Voltage	-40	76	0	14.993		

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Model	MGFS304815
Item	Time Lapse Drift
Object	+15V2A

Temperature	25°C
Testing Circuitry	Figure A

1.Graph

Output Voltage [V]

15.40
15.30
15.20
15.10
15.00
14.90
14.80
14.70

0   2   4   6   8   10

Time [H]

Input Volt.   48V
Load   100%

2.Values
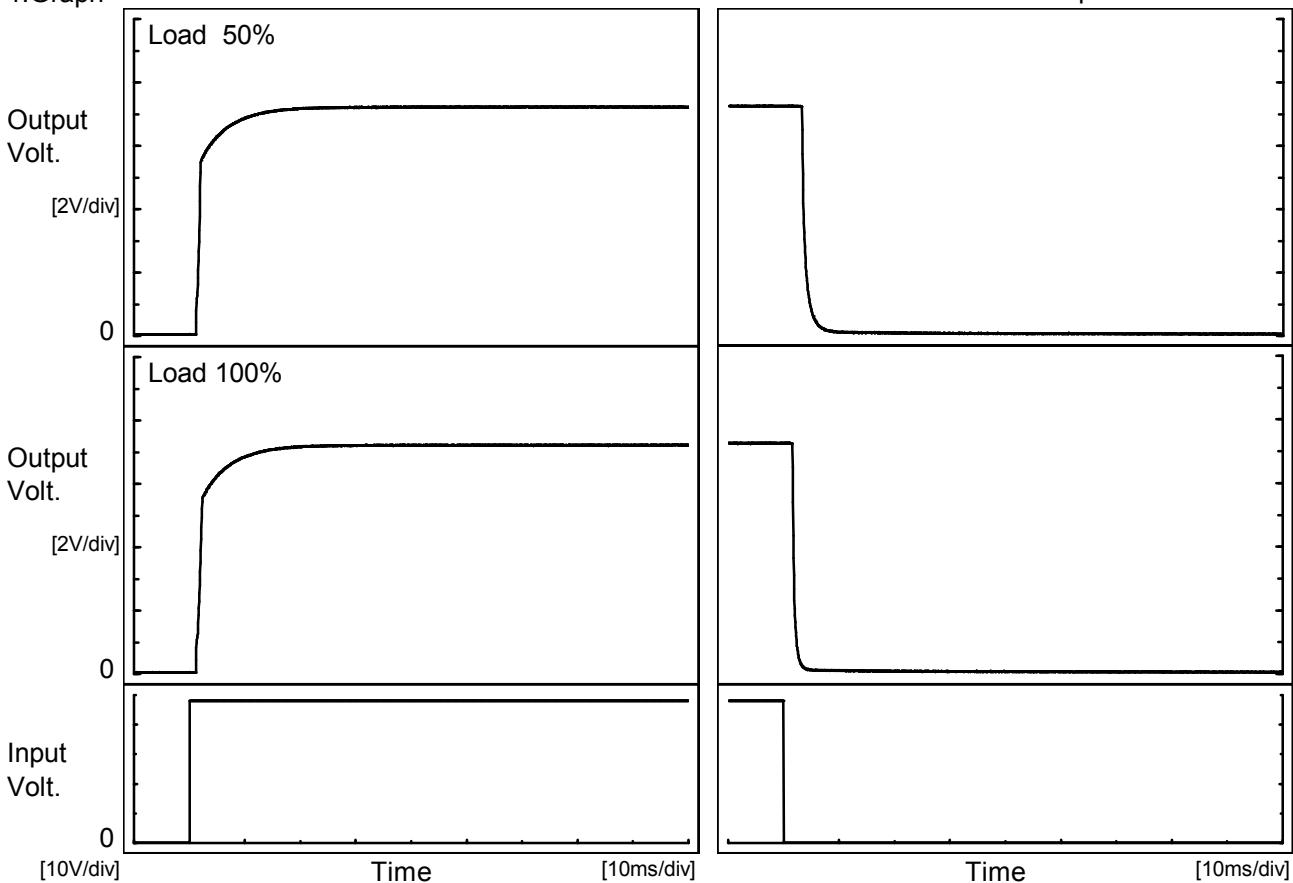
Time since start [H]	Output Voltage [V]
0.0	15.063
0.5	15.081
1.0	15.081
2.0	15.080
3.0	15.081
4.0	15.080
5.0	15.080
6.0	15.080
7.0	15.080
8.0	15.080

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参考資料

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Model	MGFS304815
Item	Rise and Fall Time
Object	+15V2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Input Volt. 48 V

Load 50%

Output Volt.

[2V/div]

0

Load 100%

Output Volt.

[2V/div]

0

Input Volt.

0

[10V/div]   Time   [10ms/div]   Time   [10ms/div]
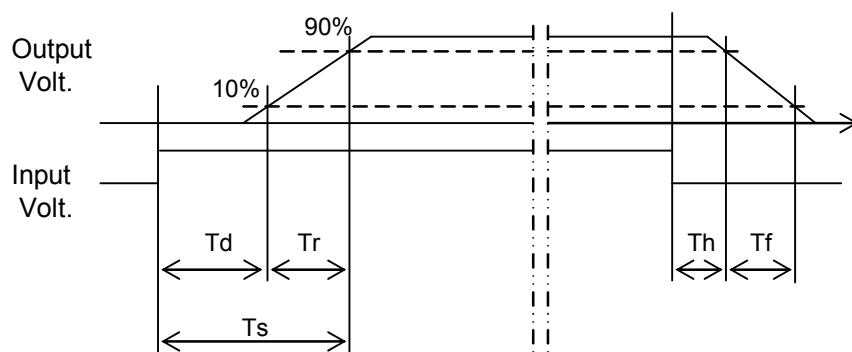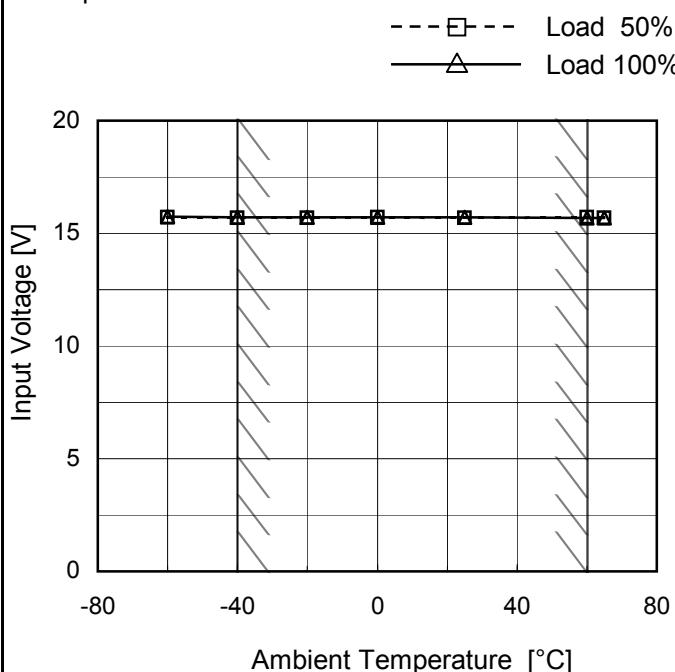
2.Values [ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	1.3	7.6	8.9	3.2	1.7
100 %	1.3	7.9	9.2	1.6	0.9

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

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Model	MGFS304815
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V2A

Testing Circuitry   Figure A

1.Graph

--- ⊟ --- Load 50%
———△——— Load 100%

Input Voltage [V] vs Ambient Temperature [°C]

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

2.Values
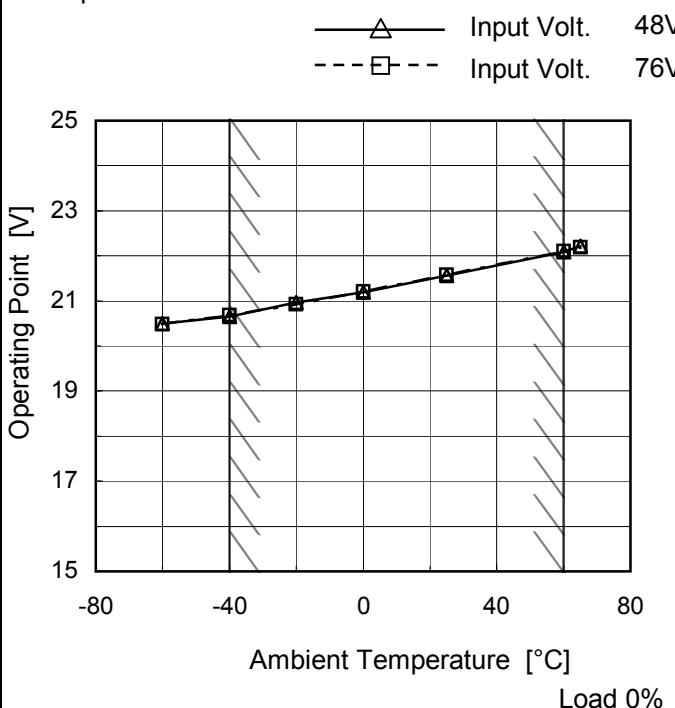
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.8	15.8
-40	15.7	15.7
-20	15.7	15.8
0	15.7	15.7
25	15.7	15.8
60	15.7	15.7
65	15.7	15.7
--	-	-
--	-	-
--	-	-
--	-	-

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Model	MGFS304815
Item	Overcurrent Protection
Object	+15V2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

——————△ Input Volt. 18V
——————□ Input Volt. 24V
——————✳ Input Volt. 36V
——————○ Input Volt. 48V
——————◇ Input Volt. 76V

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	2.622	2.777	2.900	2.858	2.623
14.3	-	-	-	-	-
13.5	-	-	-	-	-
12.0	-	-	-	-	-
10.5	-	-	-	-	-
9.0	-	-	-	-	-
7.5	-	-	-	-	-
6.0	-	-	-	-	-
4.5	-	-	-	-	-
3.0	-	-	-	-	-
1.5	-	-	-	-	-
0.0	-	-	-	-	-

Output Voltage [V] (y-axis: 0, 4, 8, 12, 16, 20)

Load Current [A] (x-axis: 0.0, 1.0, 2.0, 3.0)

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

Intermittent operation occurs when overcurrent protection is activated.

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Model	MGFS304815
Item	Overvoltage Protection
Object	+15V2A

Testing Circuitry   Figure A

1.Graph

Input Volt.   48V
Input Volt.   76V

Ambient Temperature [°C]

Load 0%

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]
-60	20.49	20.48
-40	20.65	20.68
-20	20.97	20.93
0	21.19	21.21
25	21.56	21.58
60	22.09	22.11
65	22.21	22.19
--	-	-
--	-	-
--	-	-
--	-	-

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Figure A

C1=22µF(Ceramic Capacitor)

Measuring board

Input pin   Output pin

+Vin   +Vout

Power Supply

-Vin   -Vout

C1

Electric DC Load

50mm

R=50Ω
C=0.01µF

Coaxial cable (1.5m,50Ω)

R

C

Osilloscope (BW:100MHz)
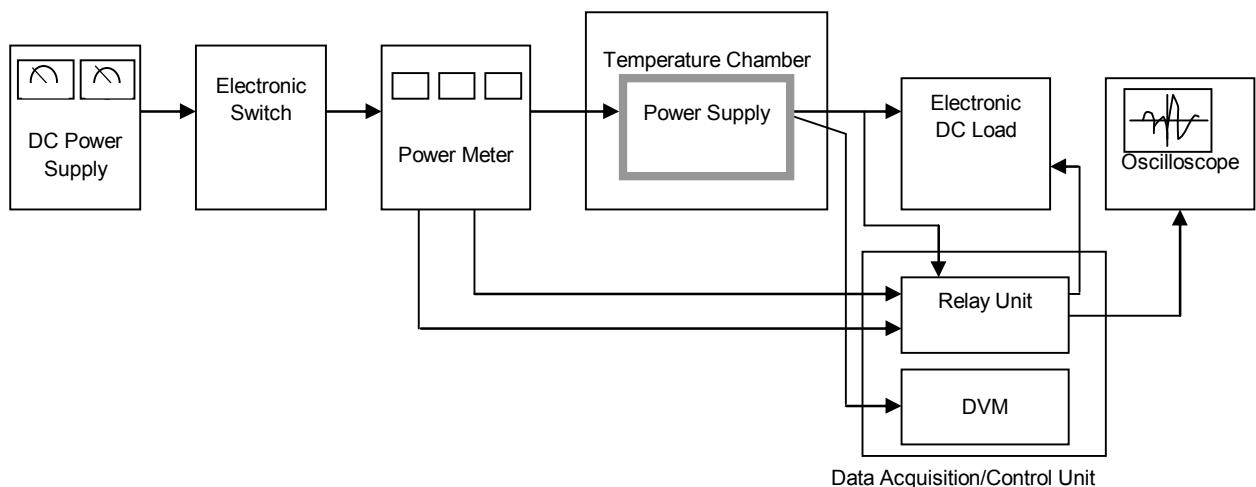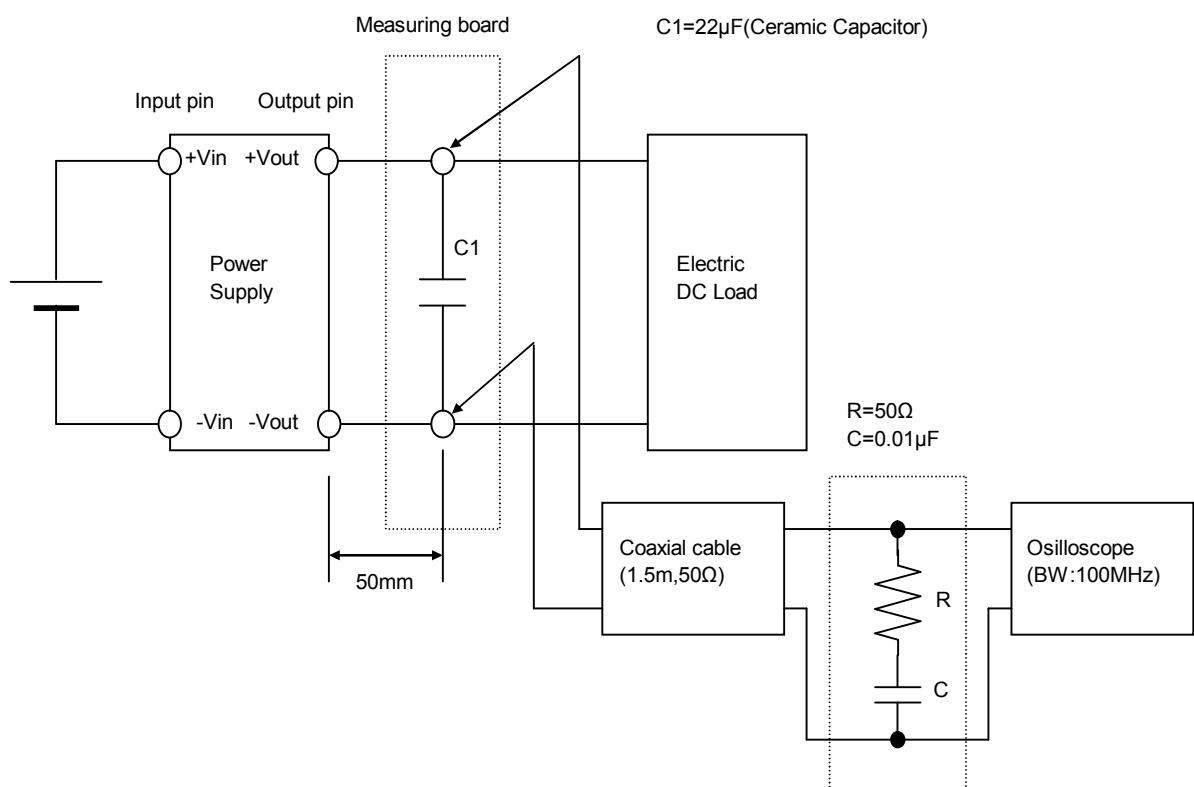
Figure B（Ripple and Ripple noise Characteristic）

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