TEST DATA OF MGFS6483R3

Regulated DC Power Supply
December 6, 2016

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COSEL CO.,LTD.

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Model	MGFS6483R3
Item	Input Current (by Input Voltage)
Object	

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

     △   Load 100%
     ☐   Load 50%
     ○   Load 0%

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	0.003	0.004
16.2	0.003	0.004	0.003
16.4	0.003	0.003	0.004
16.6	0.011	0.200	0.404
16.8	0.010	0.200	0.402
17.0	0.011	0.196	0.394
18.0	0.010	0.185	0.370
18.2	0.011	0.183	0.367
24.0	0.009	0.139	0.274
36.0	0.007	0.094	0.182
48.0	0.005	0.070	0.137
60.0	0.005	0.058	0.110
76.0	0.002	0.046	0.087
80.0	0.003	0.044	0.084
--	-	-	-
--	-	-	-
--	-	-	-

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Model	MGFS6483R3
Item	Input Current (by Load Current)
Object	
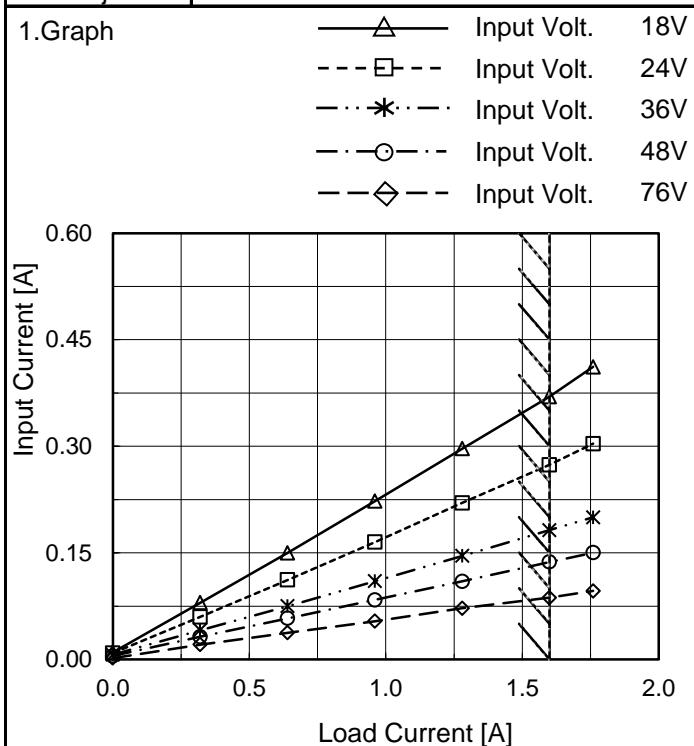
Temperature 25°C
Testing Circuitry Figure A

1.Graph

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

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]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.010	0.009	0.007	0.005	0.002
0.32	0.080	0.060	0.041	0.032	0.021
0.64	0.150	0.112	0.075	0.058	0.038
0.96	0.223	0.165	0.110	0.084	0.054
1.28	0.297	0.220	0.146	0.110	0.072
1.60	0.370	0.274	0.182	0.137	0.087
1.76	0.412	0.304	0.200	0.150	0.097
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS6483R3
Item	Input Power (by Load Current)
Object	
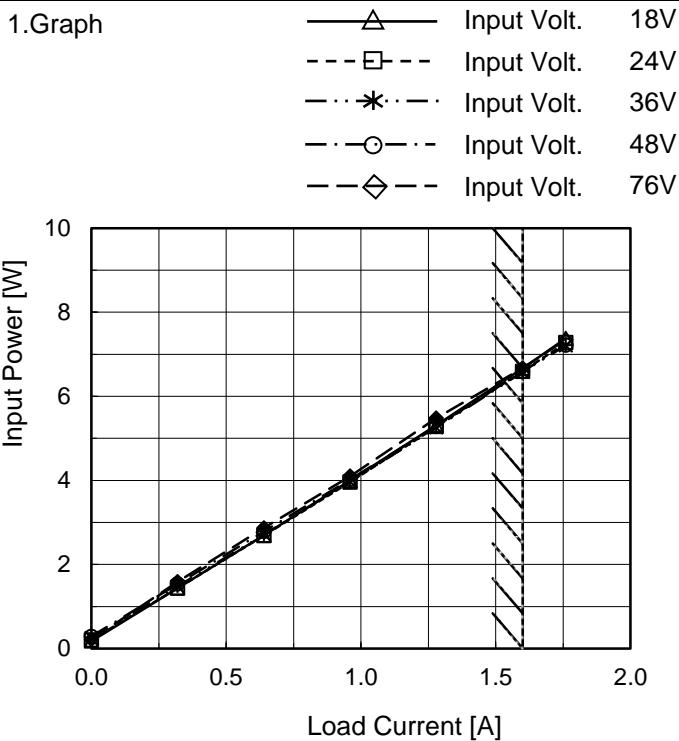
Temperature　　　25°C
Testing Circuitry　　Figure A

1.Graph

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

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]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	0.18	0.20	0.25	0.29	0.22
0.32	1.44	1.44	1.48	1.54	1.59
0.64	2.69	2.69	2.71	2.78	2.87
0.96	3.99	3.96	3.97	4.02	4.10
1.28	5.31	5.28	5.25	5.29	5.48
1.60	6.66	6.59	6.58	6.59	6.67
1.76	7.38	7.27	7.21	7.22	7.35
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS6483R3
Item	Efficiency (by Input Voltage)
Object	
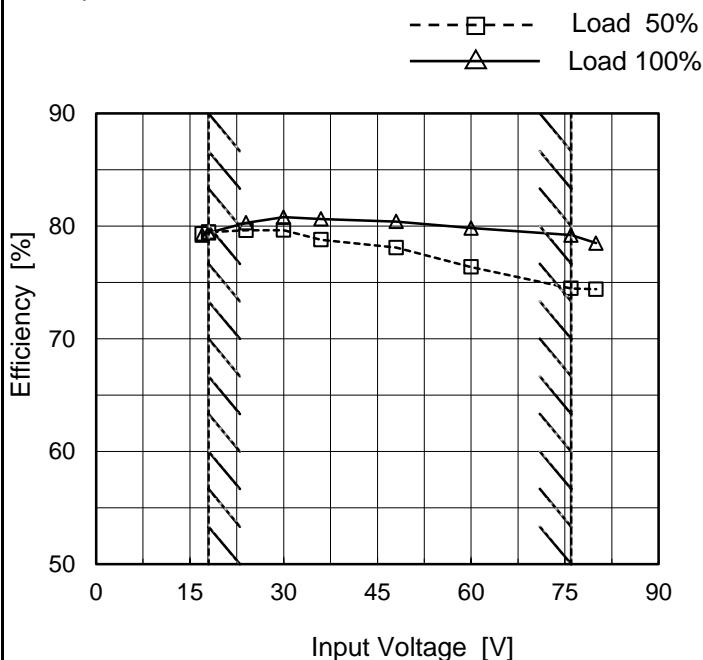
Temperature 25°C
Testing Circuitry Figure A

1.Graph

--- ⊟ --- Load 50%
——— △ ——— Load 100%

Efficiency [%] vs 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	79.3	79.2
18	79.5	79.4
24	79.6	80.3
30	79.7	80.8
36	78.8	80.6
48	78.1	80.4
60	76.4	79.8
76	74.5	79.2
80	74.4	78.5

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Model	MGFS6483R3
Item	Efficiency (by Load Current)
Object	
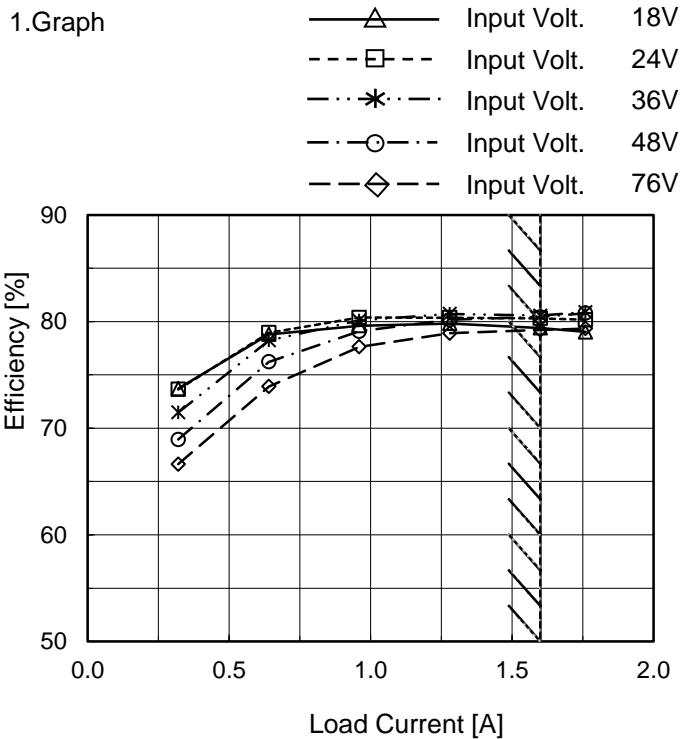
Temperature 25°C
Testing Circuitry Figure A

1.Graph

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

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]
0.00	-	-	-	-	-
0.32	73.7	73.6	71.5	68.9	66.6
0.64	78.8	78.9	78.2	76.2	73.9
0.96	79.6	80.4	80.1	79.1	77.6
1.28	79.8	80.4	80.7	80.2	78.9
1.60	79.4	80.3	80.6	80.4	79.2
1.76	79.0	80.2	80.9	80.8	79.3
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS6483R3
Item	Line Regulation
Object	+3.3V1.6A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

- - - ⊟ - - -   Load 50%
———△———   Load 100%

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	3.309	3.307
18	3.309	3.308
24	3.309	3.308
30	3.309	3.308
36	3.309	3.308
48	3.309	3.308
60	3.309	3.308
76	3.309	3.308
80	3.309	3.308

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Model	MGFS6483R3
Item	Load Regulation
Object	+3.3V1.6A
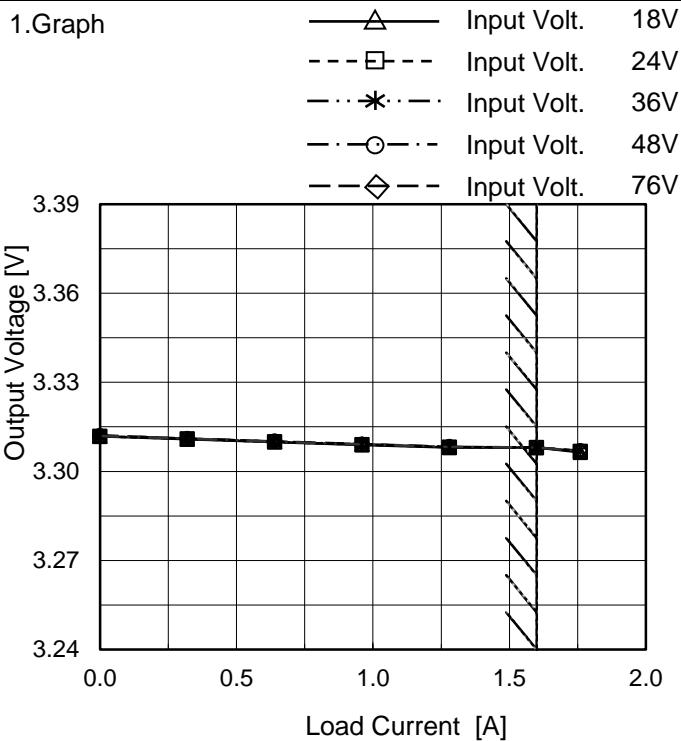
Temperature 25°C
Testing Circuitry Figure A

1.Graph

Symbol	Input Volt.	
——△——	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]
0.00	3.312	3.312	3.312	3.312	3.312
0.32	3.311	3.311	3.311	3.311	3.311
0.64	3.310	3.310	3.310	3.310	3.310
0.96	3.309	3.309	3.309	3.309	3.309
1.28	3.308	3.308	3.308	3.308	3.308
1.60	3.308	3.308	3.308	3.308	3.308
1.76	3.306	3.307	3.307	3.307	3.307
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS6483R3
Item	Dynamic Load Response
Object	+3.3V1.6A

Temperature 25°C
Testing Circuitry Figure A

Input Volt. 48 V
Cycle 100 ms

t1,t2 = 100 μs

Load Current

t1   t2

Min.Load (0A)←→
Load 100% (1.6A)

200 mV/div

100 μs/div   100 μs/div

Min.Load (0A)←→
Load 50% (0.8A)

200 mV/div

100 μs/div   100 μs/div

Load 50% (0.8A)←→
Load 100% (1.6A)

200 mV/div

100 μs/div   100 μs/div

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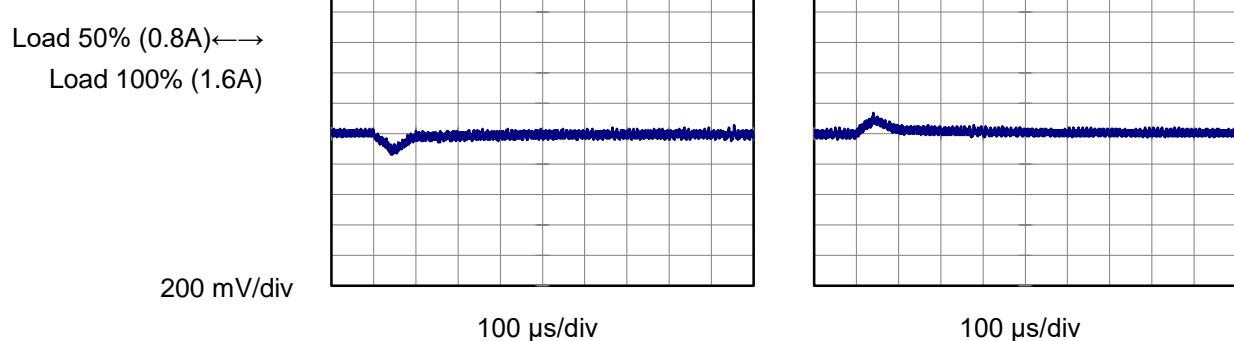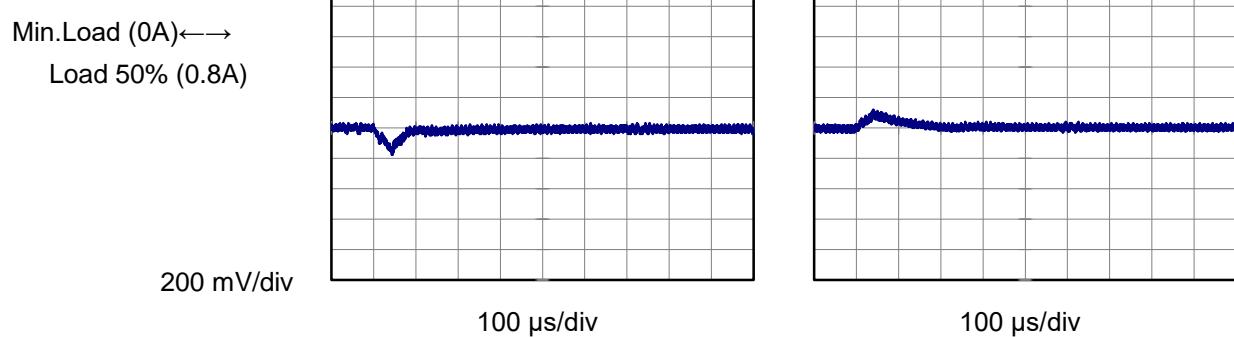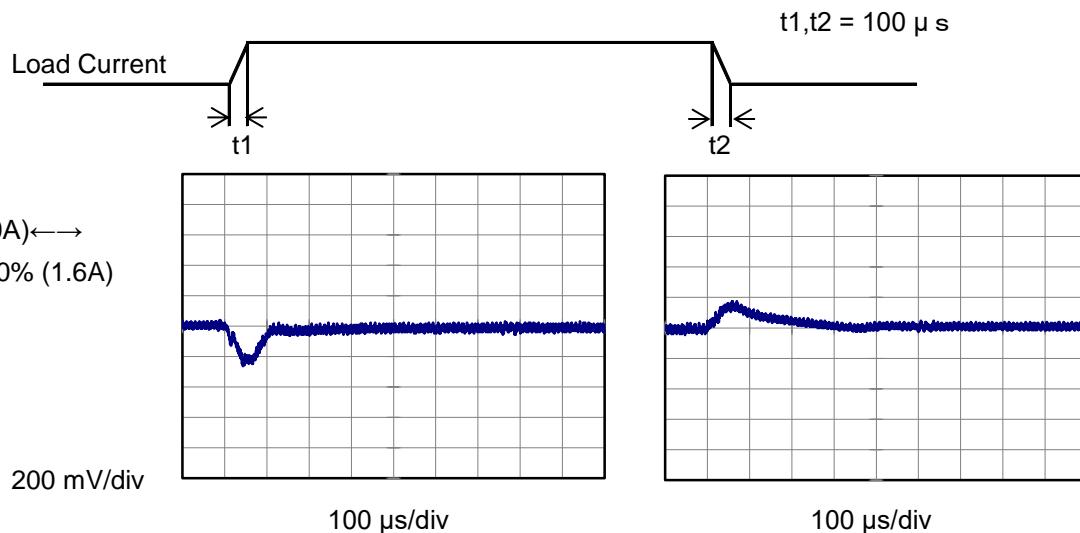
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| Model	MGFS6483R3
Item	Ripple Voltage (by Load Current)
Object	+3.3V1.6A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

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

Ripple Voltage [mV] vs Load Current [A]
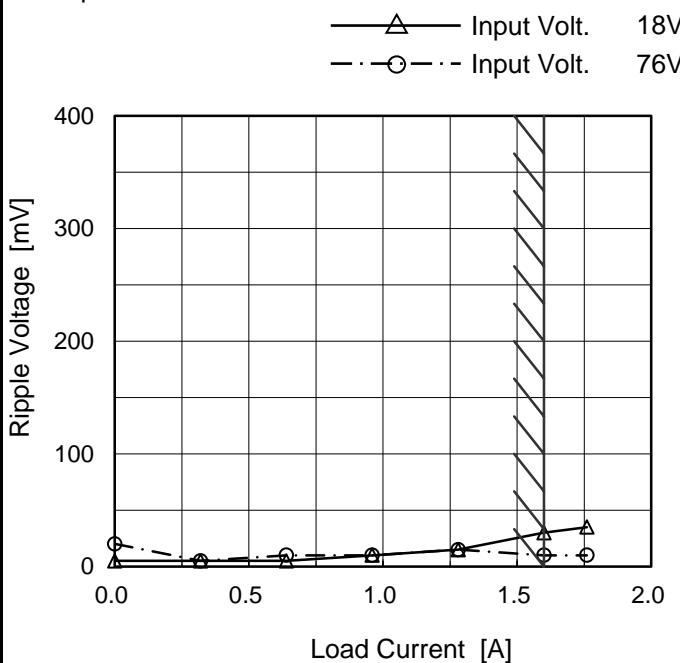
2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 76 [V]
0.00	5	20
0.32	5	5
0.64	5	10
0.96	10	10
1.28	15	15
1.60	30	10
1.76	35	10
--	-	-
--	-	-
--	-	-
--	-	-

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]
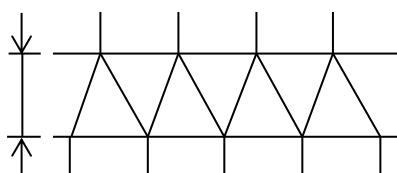
Fig.Complex Ripple Wave Form

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Model	MGFS6483R3
Item	Ripple-Noise
Object	+3.3V1.6A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

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


Ripple Voltage [mV] vs Load Current [A]

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. 76 [V]
0.00	10	25
0.32	5	10
0.64	10	10
0.96	15	15
1.28	20	20
1.60	30	20
1.76	35	15
--	-	-
--	-	-
--	-	-
--	-	-

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Model	MGFS6483R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V1.6A

Testing Circuitry   Figure B

1.Graph

--- ⊟ --- Load 50%
——— △ ——— Load 100%

Ambient Temperature [°C]

Input Volt.   48V
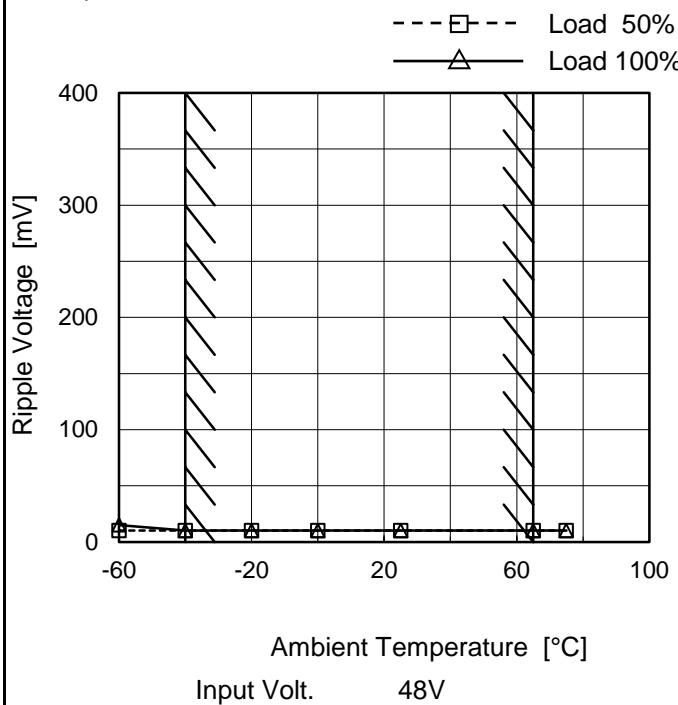
Measured by 100 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
      ambient temperature.

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	10	15
-40	10	10
-20	10	10
0	10	10
25	10	10
65	10	10
75	10	10
--	-	-
--	-	-
--	-	-
--	-	-

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Model	MGFS6483R3
Item	Ambient Temperature Drift
Object	+3.3V1.6A

Testing Circuitry   Figure A

1.Graph

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

2.Values

Ambient Temperature [°C]

Load 100%

Note: Slanted line shows the range of the rated ambient temperature.
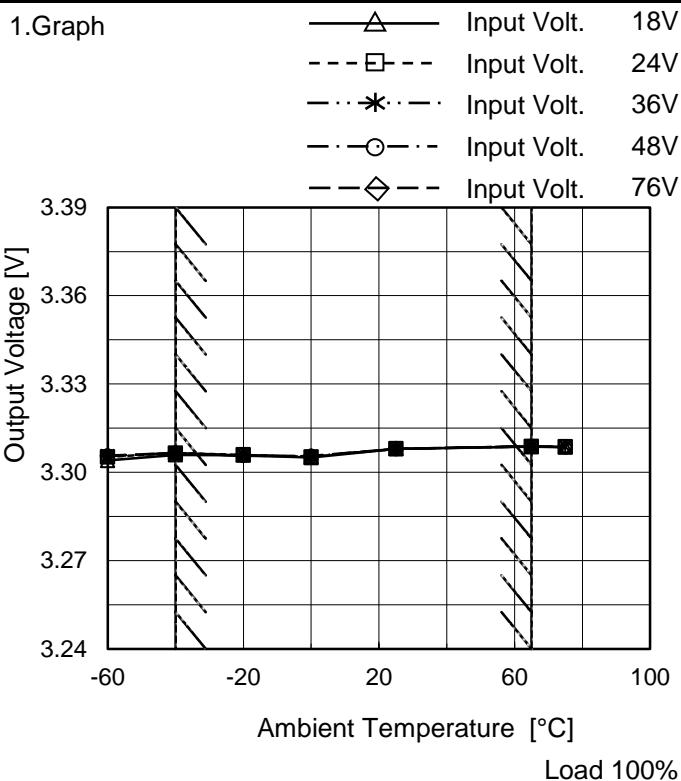
Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
-60	3.304	3.305	3.306	3.306	3.306
-40	3.306	3.307	3.307	3.307	3.307
-20	3.306	3.306	3.306	3.306	3.306
0	3.305	3.305	3.305	3.305	3.306
25	3.308	3.308	3.308	3.308	3.308
65	3.309	3.309	3.309	3.309	3.309
75	3.309	3.309	3.309	3.309	3.309
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	MGFS6483R3		
Item	Output Voltage Accuracy	Testing Circuitry	Figure A
Object	+3.3V1.6A		

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 - 65°C
          Input Voltage : 18 - 76V
          Load Current   : 0 - 1.6A

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

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

2.Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	65	18	0	3.314	±5	±0.2
Minimum Voltage	0	18	1.6	3.305		

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Model	MGFS6483R3

Item	Time Lapse Drift

Object	+3.3V1.6A

Temperature 25°C
Testing Circuitry Figure A

1.Graph
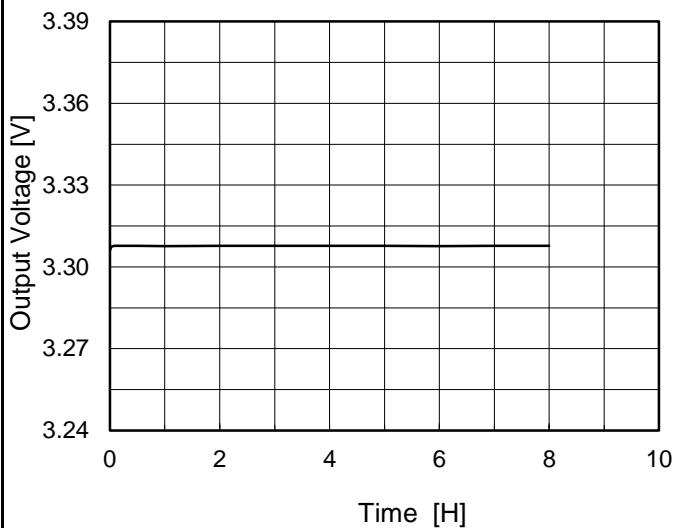
Input Volt. 48V
Load   100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	3.306
0.5	3.308
1.0	3.308
2.0	3.308
3.0	3.308
4.0	3.308
5.0	3.308
6.0	3.308
7.0	3.308
8.0	3.308

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Model	MGFS6483R3		
Item	Rise and Fall Time	Temperature 25°C	
		Testing Circuitry Figure A	
Object	+3.3V1.6A		

1.Graph

Input Volt. 48 V

Load 50%

Output Volt.

[0.5V/div]

0

Load 100%

Output Volt.

[0.5V/div]

0

Input Volt.

0

[10V/div]   Time   [5ms/div]   Time   [5ms/div]
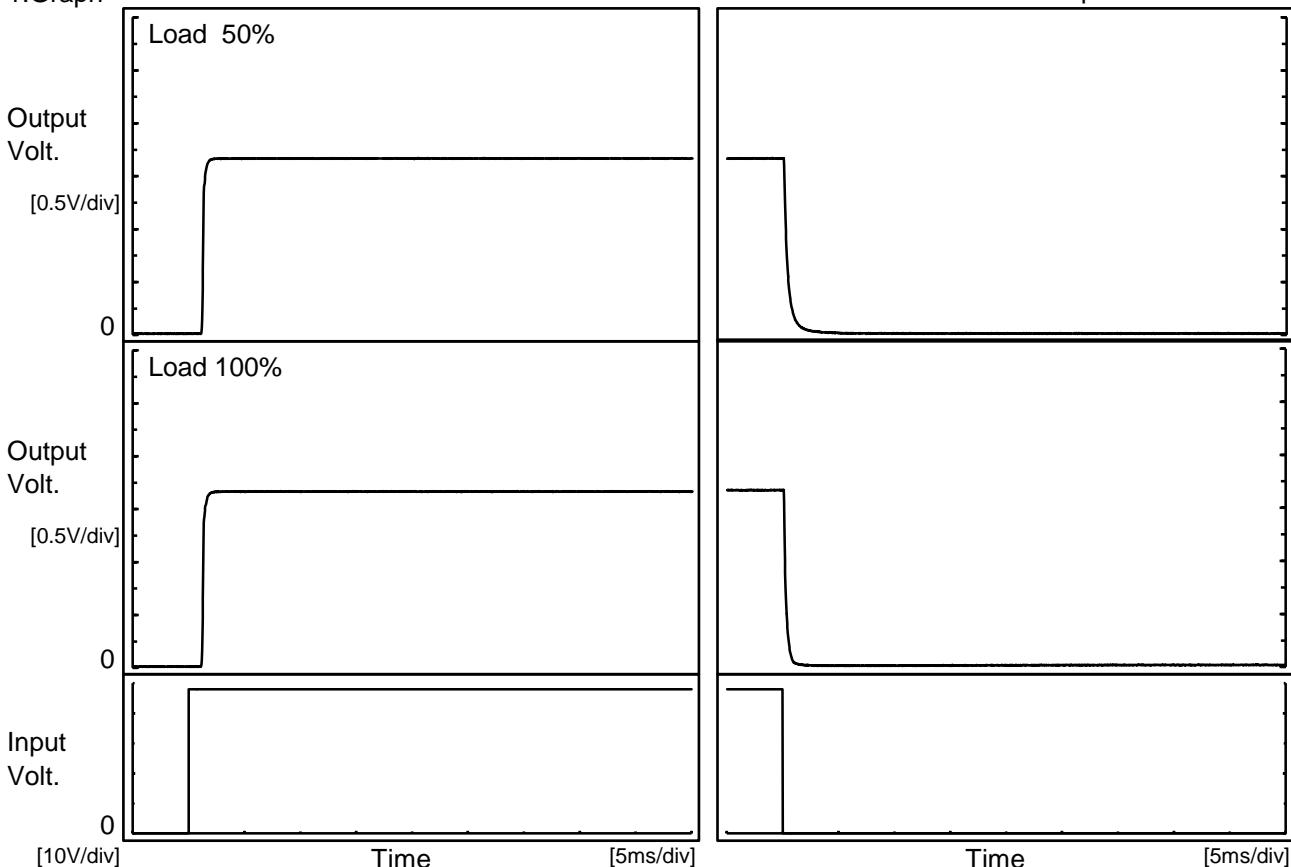
2.Values

[ms]

Load ╲ Time	Td	Tr	Ts	Th	Tf
50 %	1.2	0.3	1.5	0.1	0.9
100 %	1.2	0.3	1.5	0.1	0.5

Output Volt.

90%

10%

Input Volt.

Td   Tr   Th   Tf

Ts

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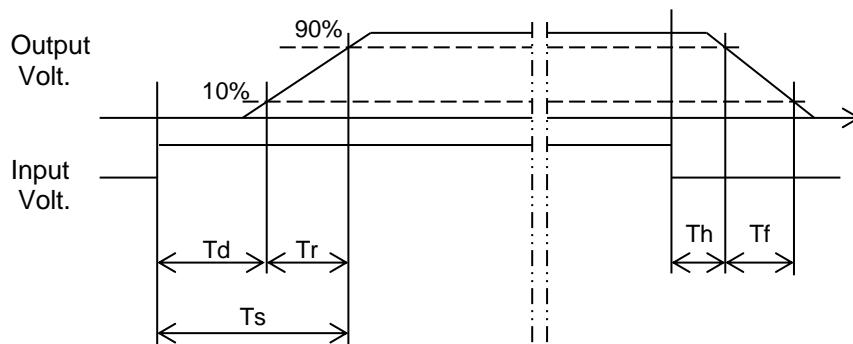
Model	MGFS6483R3
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+3.3V1.6A
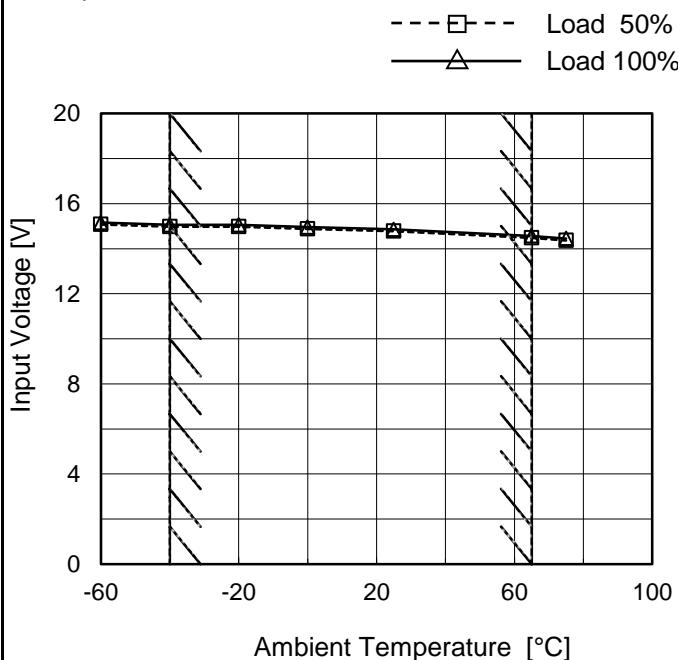
Testing Circuitry   Figure A

1.Graph

--☐-- Load 50%
——△—— Load 100%

Ambient Temperature [°C]

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	15.1	15.2
-40	15.0	15.1
-20	15.0	15.1
0	14.9	15.0
25	14.8	14.9
65	14.5	14.6
75	14.4	14.5
--	-	-
--	-	-
--	-	-
--	-	-

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

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Model	MGFS6483R3
Item	Overcurrent Protection
Object	+3.3V1.6A
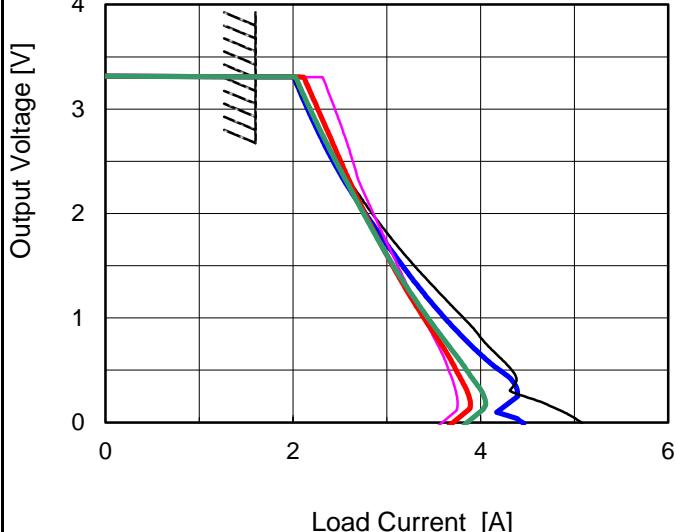
Temperature 25°C
Testing Circuitry Figure A

1.Graph

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

Load Current [A]

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]	Input Volt. 48[V]	Input Volt. 76[V]
3.14	2.092	2.091	2.112	2.197	2.390
2.97	2.179	2.168	2.190	2.273	2.456
2.64	2.377	2.347	2.375	2.435	2.589
2.31	2.600	2.549	2.566	2.600	2.701
1.98	2.851	2.785	2.756	2.772	2.864
1.65	3.148	3.040	2.971	2.960	3.037
1.32	3.469	3.313	3.192	3.170	3.213
0.99	3.827	3.626	3.443	3.395	3.395
0.66	4.161	3.981	3.718	3.635	3.582
0.33	4.362	4.383	3.979	3.832	3.726
0.00	5.084	4.462	3.825	3.630	3.466
--	-	-	-	-	-

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Model	MGFS6483R3
Item	Switching frequency (by Load Current)
Object	+3.3V1.6A
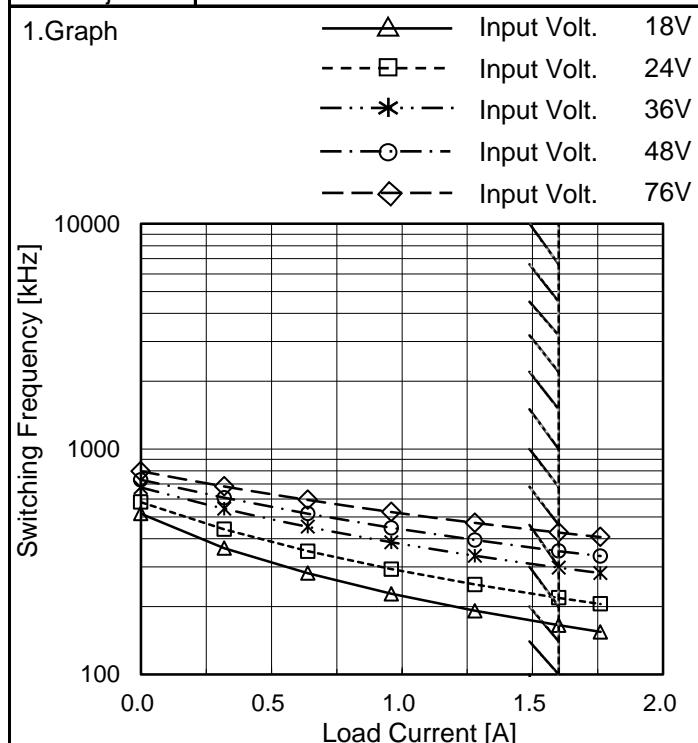
Temperature   25°C
Testing Circuitry   Figure A

1.Graph

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

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]	Input Current [A]				
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0.00	517	582	676	730	797
0.32	363	440	544	607	683
0.64	281	352	452	517	595
0.96	228	293	386	447	526
1.28	192	250	336	395	470
1.60	165	219	298	353	426
1.76	154	205	282	335	407
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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DC Power Supply → Electronic Switch → Power Meter → Temperature Chamber [Power Supply] → Electronic DC Load → Oscilloscope

Relay Unit

DVM

Data Acquisition/Control Unit

Figure A

Measuring board

C1=1μF(Ceramic Capacitor)

Input pin   Output pin

+Vin +Vout

Power Supply

C1

Electric DC Load

-Vin -Vout

50mm

R=50Ω
C=0.01μF

Coaxial cable
(1.5m,50Ω)

R

C

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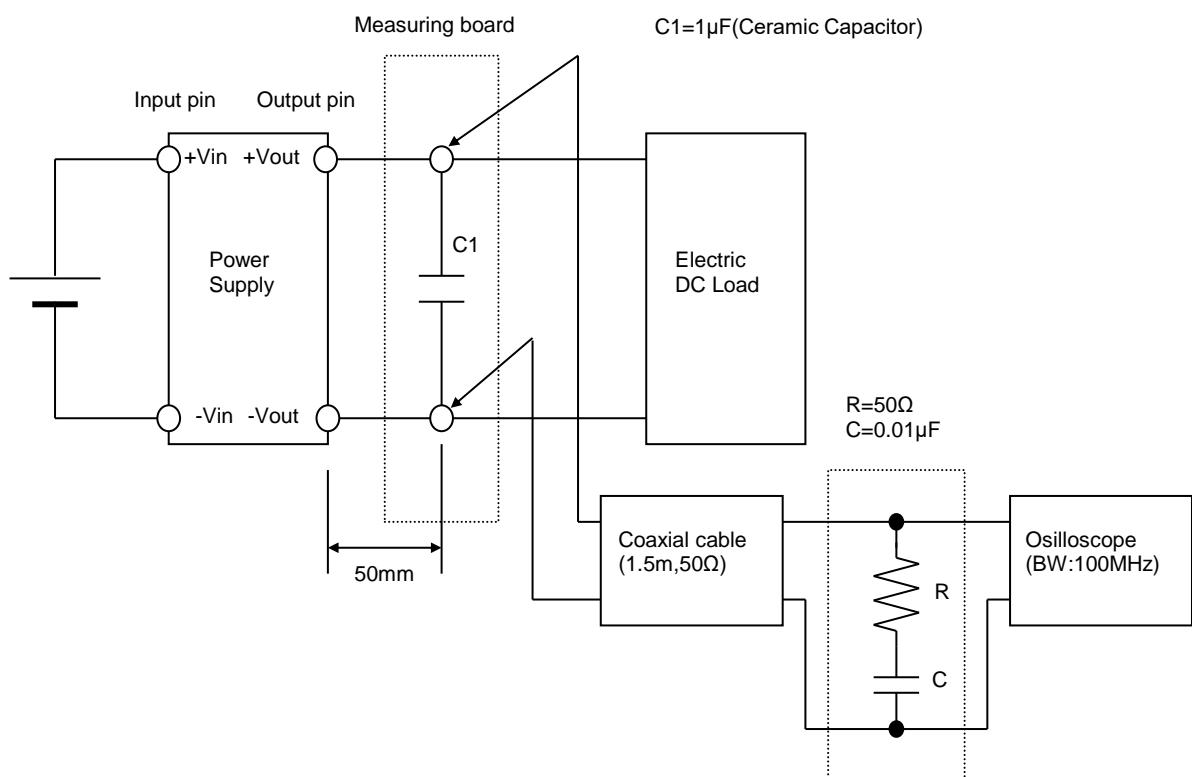
Figure B（Ripple and Ripple noise Characteristic）

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