COSEL

TEST DATA OF STMGFW152405

Regulated DC Power Supply
January 22, 2013

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COSEL CO.,LTD.

CONTENTS

(Final Page 20)

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Model	STMGFW152405
Item	Input Current (by Input Voltage)
Object	————————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

————△———— Load 100%
- - -☐- - - Load 50%
—·—O—·· Load 0%

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
2.0	0.000	0.001	0.000
4.0	0.002	0.002	0.002
6.0	0.003	0.003	0.003
7.0	0.003	0.003	0.003
8.0	0.003	0.003	0.003
8.1	0.003	0.003	0.003
8.3	0.044	1.117	0.855
8.5	0.043	1.090	2.486
9.0	0.041	1.026	2.110
12.0	0.032	0.763	1.559
18.0	0.022	0.506	1.026
24.0	0.016	0.390	0.768
36.0	0.012	0.262	0.511
40.0	0.012	0.237	0.506
--	-	-	-
--	-	-	-
--	-	-	-

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COSEL

Model	STMGFW152405
Item	Input Current (by Load Current)
Object	———————

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

—△—	Input Volt.	9V
---☐---	Input Volt.	12V
—··✳··—	Input Volt.	18V
—·—○—·—	Input Volt.	24V
——◇——	Input Volt.	36V

2.Values

Load Ration [%]	Input Current [A]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	0.041	0.032	0.022	0.016	0.012
20	0.443	0.326	0.222	0.167	0.123
40	0.837	0.627	0.422	0.315	0.219
60	1.250	0.933	0.619	0.462	0.319
80	1.671	1.236	0.820	0.611	0.417
100	2.110	1.559	1.026	0.768	0.511
110	2.350	1.710	1.123	0.844	0.566
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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COSEL

Model	STMGFW152405
Item	Input Power (by Load Current)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

— △ — Input Volt. 9V
--- ☐ --- Input Volt. 12V
—··✳··— Input Volt. 18V
—·—○—·· Input Volt. 24V
——◇—— Input Volt. 36V

2.Values

Load Ration [%]	Input Power [W]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	0.38	0.38	0.41	0.38	0.44
20	3.95	3.88	4.00	4.00	4.42
40	7.47	7.51	7.55	7.53	7.87
60	11.20	11.12	11.13	11.04	11.47
80	15.00	14.78	14.71	14.64	14.99
100	18.99	18.56	18.37	18.38	18.36
110	21.05	20.48	20.21	20.20	20.33
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	STMGFW152405
Item	Efficiency (by Input Voltage)
Object	

Temperature　　　25°C
Testing Circuitry　Figure A

1.Graph

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

Input Voltage [V]

Efficiency [%]

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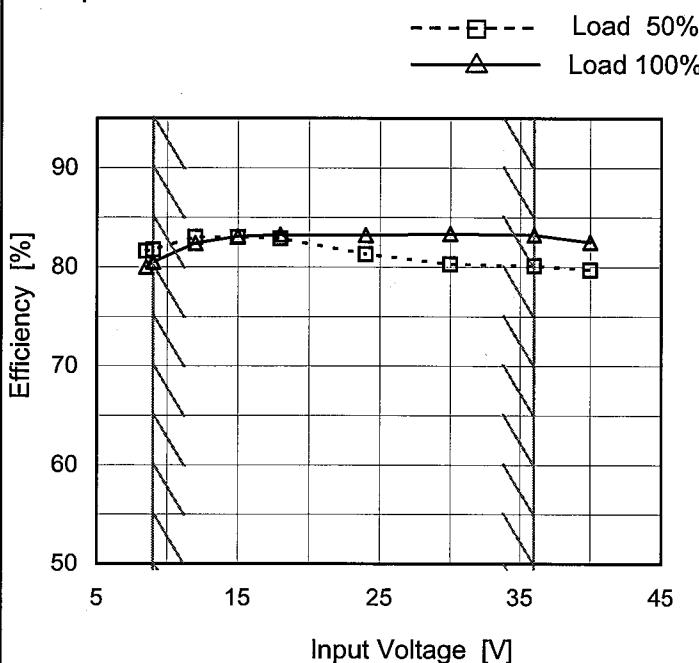
2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
8.5	81.6	80.0
9.0	81.7	80.5
12.0	83.0	82.4
15.0	83.0	83.1
18.0	82.9	83.3
24.0	81.3	83.2
30.0	80.3	83.4
36.0	80.1	83.3
40.0	79.7	82.5

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Model	STMGFW152405
Item	Efficiency (by Load Current)
Object	

Temperature 25°C
Testing Circuitry Figure A

1.Graph

—△—	Input Volt.	9V
- - -⊟- - -	Input Volt.	12V
—··✳··—·	Input Volt.	18V
—·—○—··	Input Volt.	24V
——◇——	Input Volt.	36V

2.Values

Load Ration [%]	Efficiency [%]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	-	-	-	-	-
20	77.4	78.7	76.4	76.4	69.2
40	81.8	81.4	80.9	81.2	77.7
60	81.9	82.5	82.4	83.1	79.9
80	81.5	82.7	83.1	83.5	81.6
100	80.5	82.4	83.2	83.2	83.3
110	79.9	82.1	83.2	83.2	82.7
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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Model	STMGFW152405
Item	Line Regulation
Object	+5V1.5A

1.Graph

- - -□- - - Load 50%
———△——— Load 100%

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8.5	5.149	5.087
9.0	5.148	5.086
12.0	5.141	5.085
15.0	5.139	5.084
18.0	5.139	5.084
24.0	5.138	5.083
30.0	5.138	5.083
36.0	5.138	5.082
40.0	5.138	5.082

Object	-5V1.5A

1.Graph

- - -□- - - Load 50%
———△——— Load 100%

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
8.5	-5.150	-5.079
9.0	-5.149	-5.080
12.0	-5.144	-5.082
15.0	-5.142	-5.083
18.0	-5.143	-5.084
24.0	-5.143	-5.084
30.0	-5.144	-5.085
36.0	-5.144	-5.085
40.0	-5.144	-5.085

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

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Model	STMGFW152405
Item	Load Regulation
Object	+5V1.5A
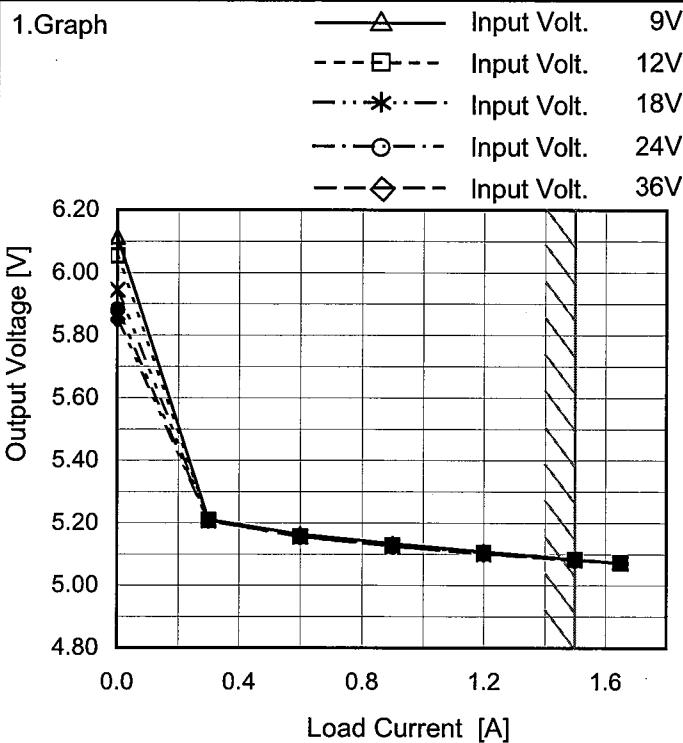
Temperature   25°C
Testing Circuitry   Figure A

1.Graph

——△——	Input Volt.	9V
- - -◻- - -	Input Volt.	12V
— ··✳··— ·	Input Volt.	18V
—·—⊙—··	Input Volt.	24V
— —◇— —	Input Volt.	36V

2.Values

Load Current [A]	Output Voltage [V]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	6.114	6.054	5.946	5.882	5.851
0.30	5.211	5.209	5.208	5.208	5.207
0.60	5.164	5.157	5.156	5.156	5.155
0.90	5.135	5.129	5.125	5.125	5.125
1.20	5.109	5.105	5.102	5.101	5.101
1.50	5.084	5.083	5.082	5.081	5.081
1.65	5.072	5.072	5.072	5.073	5.072
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

Object	-5V1.5A

1.Graph

——△——	Input Volt.	9V
- - -◻- - -	Input Volt.	12V
— ··✳··— ·	Input Volt.	18V
—·—⊙—··	Input Volt.	24V
— —◇— —	Input Volt.	36V

2.Values
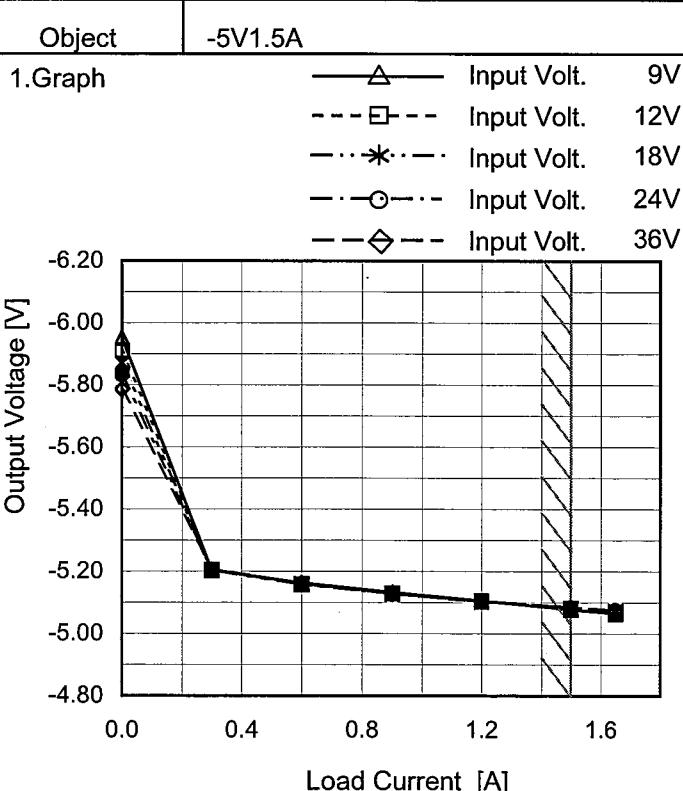
Load Current [A]	Output Voltage [V]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	-5.952	-5.910	-5.871	-5.834	-5.787
0.30	-5.204	-5.203	-5.204	-5.205	-5.206
0.60	-5.163	-5.157	-5.158	-5.159	-5.160
0.90	-5.133	-5.129	-5.127	-5.128	-5.129
1.20	-5.106	-5.105	-5.103	-5.104	-5.105
1.50	-5.079	-5.081	-5.082	-5.083	-5.084
1.65	-5.065	-5.069	-5.072	-5.074	-5.075
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-
--	-	-	-	-	-

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

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Model	STMGFW152405
Item	Ripple Voltage (by Load Current)
Object	+5V1.5A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

—△— Input Volt.   9V
— · —O— · · — Input Volt.   36V

Ripple Voltage [mV] vs Load Current [A]

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. 9 [V]	Input Volt. 36 [V]
0.00	10	10
0.30	10	10
0.60	10	10
0.90	10	10
1.20	10	10
1.50	10	10
1.65	10	10
--	-	-
--	-	-
--	-	-
--	-	-

-5V: Rated output current

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Model	STMGFW152405
Item	Ripple Voltage (by Load Current)
Object	-5V1.5A

Temperature   25°C
Testing Circuitry   Figure B

1.Graph

——△—— Input Volt.   9V
—·—○—·— Input Volt.   36V

Ripple Voltage [mV] vs Load Current [A]

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. 9 [V]	Input Volt. 36 [V]
0.00	10	10
0.30	10	10
0.60	10	10
0.90	10	10
1.20	10	10
1.50	10	10
1.65	10	10
--	-	-
--	-	-
--	-	-
--	-	-

+5V: Rated output current

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Model	STMGFW152405
Item	Ripple-Noise
Object	+5V1.5A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

———△——— Input Volt. 9V
— · —○— · · Input Volt. 36V

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. 9 [V]	Input Volt. 36 [V]
0.00	20	20
0.30	20	20
0.60	20	20
0.90	20	20
1.20	20	20
1.50	20	20
1.65	20	20
--	-	-
--	-	-
--	-	-
--	-	-

-5V: Rated output current

Ripple
Noise[mVp-p]

Fig.Complex Ripple Noise Wave Form

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Model	STMGFW152405
Item	Ripple-Noise
Object	-5V1.5A

Temperature 25°C
Testing Circuitry Figure B

1.Graph

—△— Input Volt. 9V
— ·—O— ·· Input Volt. 36V

Ripple-Noise [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.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 9 [V]	Input Volt. 36 [V]
0.00	20	20
0.30	20	20
0.60	20	20
0.90	20	20
1.20	20	20
1.50	20	20
1.65	20	20
--	-	-
--	-	-
--	-	-
--	-	-

+5V: Rated output current

Ripple
Noise[mVp-p]

Fig.Complex Ripple Noise Wave Form

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Model	STMGFW152405
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V1.5A
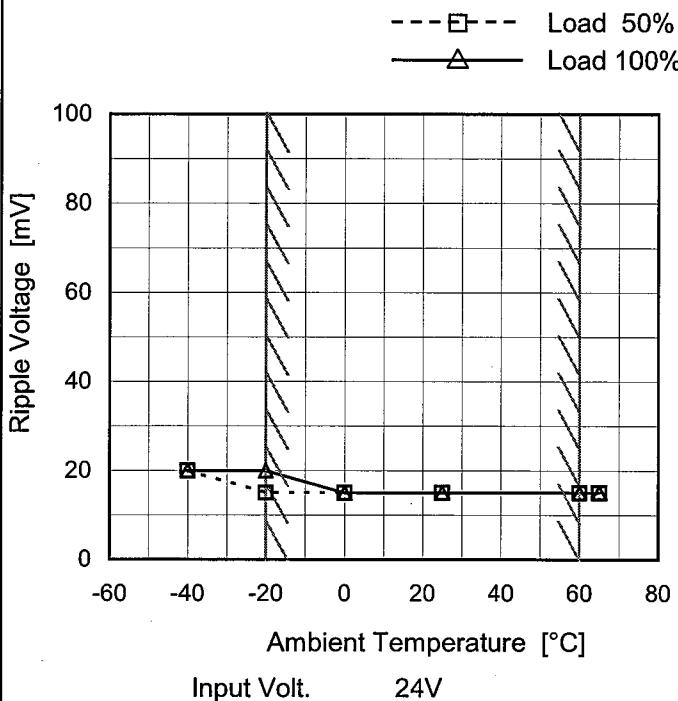
Testing Circuitry   Figure B

1.Graph

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

Ambient Temperature [°C]

Input Volt.   24V

2.Values

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

-5V: Rated output current

Object	-5V1.5A

1.Graph

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

Ambient Temperature [°C]

Input Volt.   24V

Measured by 100 MHz Oscilloscope.

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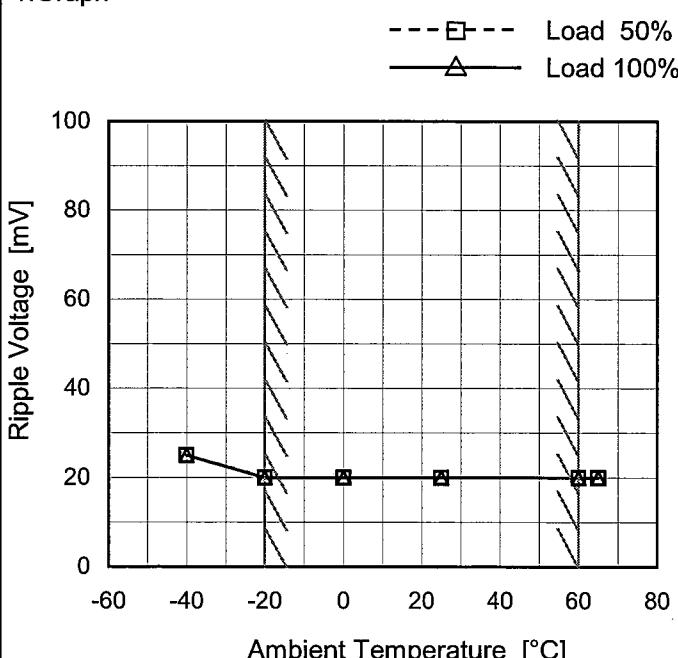
2.Values

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

+5V: Rated output current

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Model	STMGFW152405
Item	Ambient Temperature Drift
Object	+5V1.5A

Testing Circuitry   Figure A

1.Graph

——△—— Input Volt.   9V
– – –☐– – – Input Volt.   12V
— ··—✳··—· Input Volt.   18V
—·—○—·· Input Volt.   24V
——◇—— Input Volt.   36V

Ambient Temperature [°C]

Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-40	5.059	5.059	5.059	5.059	5.059
-20	5.070	5.069	5.069	5.069	5.068
0	5.078	5.077	5.076	5.076	5.075
10	5.081	5.080	5.079	5.079	5.078
25	5.084	5.083	5.082	5.082	5.081
30	5.085	5.084	5.083	5.083	5.082
40	5.087	5.085	5.084	5.084	5.083
50	5.088	5.086	5.085	5.085	5.084
60	5.089	5.087	5.086	5.086	5.085
65	5.089	5.087	5.086	5.086	5.085
--	-	-	-	-	-

Object	-5V1.5A

1.Graph

——△—— Input Volt.   9V
– – –☐– – – Input Volt.   12V
— ··—✳··—· Input Volt.   18V
—·—○—·· Input Volt.   24V
——◇—— Input Volt.   36V

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. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-40	-5.054	-5.057	-5.059	-5.060	-5.061
-20	-5.064	-5.067	-5.069	-5.070	-5.071
0	-5.072	-5.074	-5.076	-5.077	-5.078
10	-5.075	-5.077	-5.079	-5.080	-5.081
25	-5.078	-5.080	-5.082	-5.083	-5.084
30	-5.079	-5.081	-5.083	-5.084	-5.085
40	-5.080	-5.082	-5.084	-5.085	-5.086
50	-5.081	-5.083	-5.085	-5.086	-5.087
60	-5.082	-5.084	-5.086	-5.087	-5.087
65	-5.083	-5.085	-5.086	-5.087	-5.088
--	-	-	-	-	-

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Model	STMGFW152405
Item	Output Voltage Accuracy

Testing Circuitry   Figure A

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 : -20 - 60°C

Input Voltage : 9 - 36V

Load Current (AVR 1) : 0 - 1.5A   (AVR 2) : 0 - 1.5A

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

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

2.Values

Object	+5V1.5A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	9	0	6.113	±523	±10.5
Minimum Voltage	-20	36	1.5	5.068		

Object	-5V1.5A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	0	9	0	-5.958	±447	±8.9
Minimum Voltage	-20	9	1.5	-5.064		

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Model	STMGFW152405
Item	Time Lapse Drift
Object	+5V1.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

Time [H]
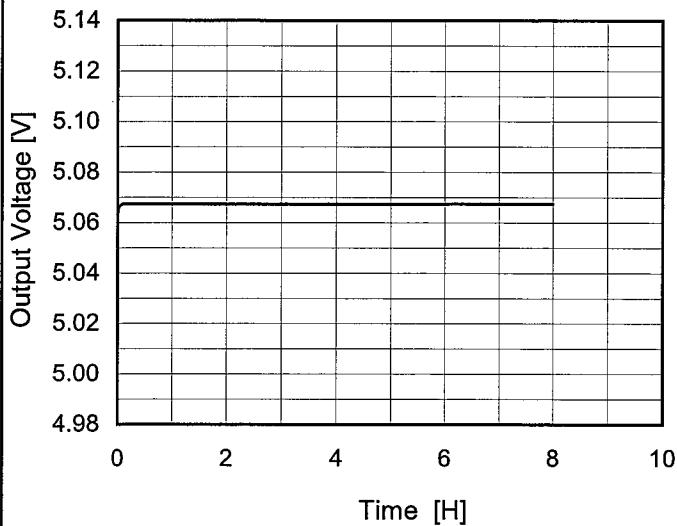
Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	5.063
0.5	5.067
1.0	5.067
2.0	5.067
3.0	5.067
4.0	5.067
5.0	5.067
6.0	5.068
7.0	5.068
8.0	5.068

Object	-5V1.5A

1.Graph

Time [H]
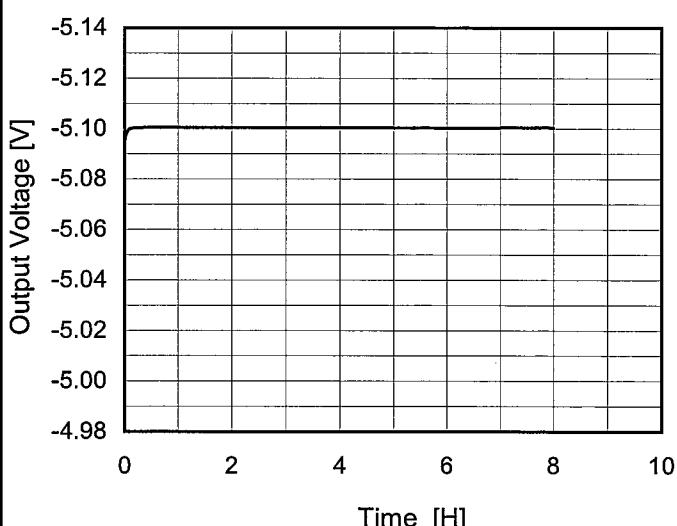
Input Volt. 24V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-5.095
0.5	-5.100
1.0	-5.100
2.0	-5.100
3.0	-5.100
4.0	-5.100
5.0	-5.100
6.0	-5.100
7.0	-5.100
8.0	-5.100

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Model	STMGFW152405
Item	Rise and Fall Time
Object	+5V1.5A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Input Volt.   24 V

Load 50%

Output
Volt.

[1V/div]

0

Load 100%

Output
Volt.

[1V/div]

0

Input
Volt.

0

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

2.Values

[ms]
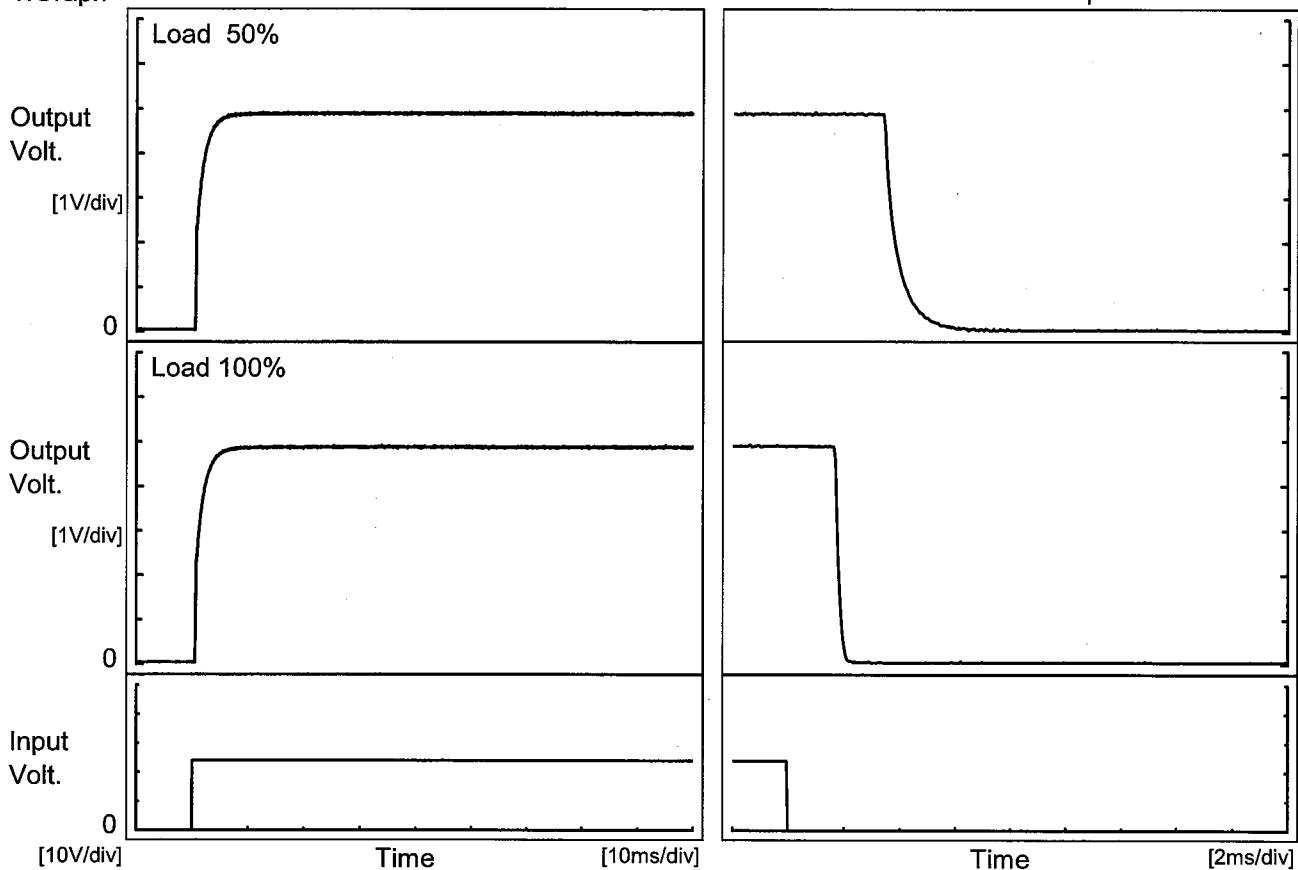
Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.6	3.1	3.7	3.5	1.1
100 %	0.6	3.1	3.7	1.7	0.3
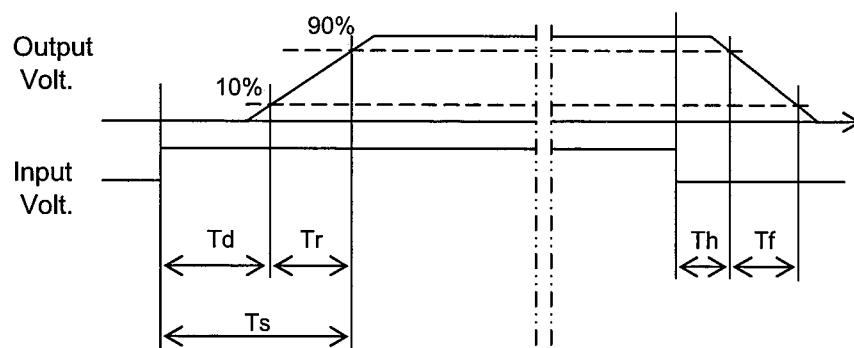
Output
Volt.

90%

10%

Input
Volt.

Td   Tr

Ts

Th   Tf

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Model	STMGFW152405
Item	Rise and Fall Time
Object	-5V1.5A

Temperature   25°C
Testing Circuitry   Figure A

1.Graph

Input Volt.   24 V

Load 50%

Output
Volt.

[1V/div]

0

Load 100%

Output
Volt.

[1V/div]

0

Input
Volt.

0

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

2.Values

[ms]
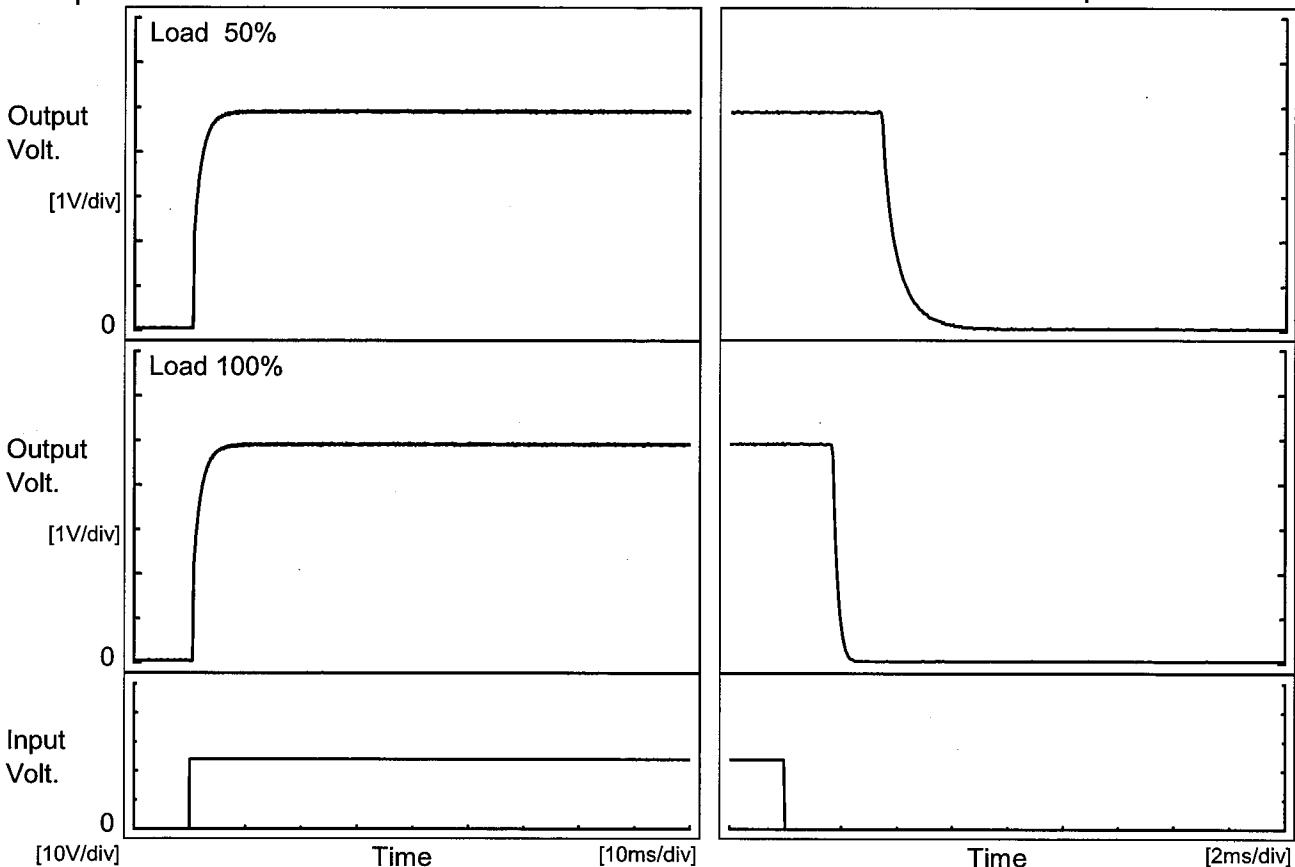
Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.6	3.1	3.7	3.5	1.2
100 %	0.6	3.1	3.7	1.7	0.3

Output
Volt.

90%

10%

Input
Volt.

Td   Tr   Th   Tf

Ts

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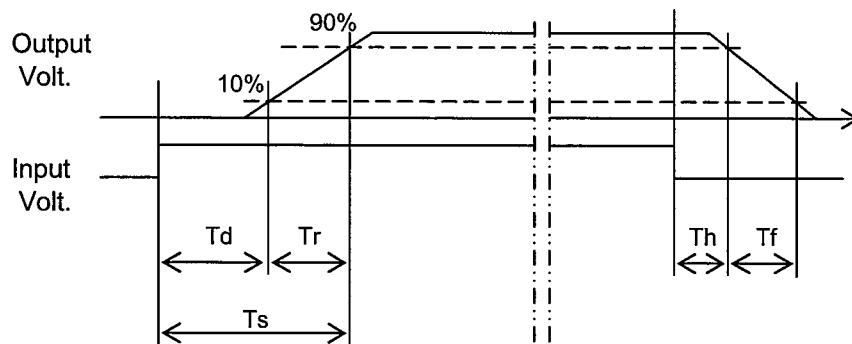
Model	STMGFW152405
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V1.5A
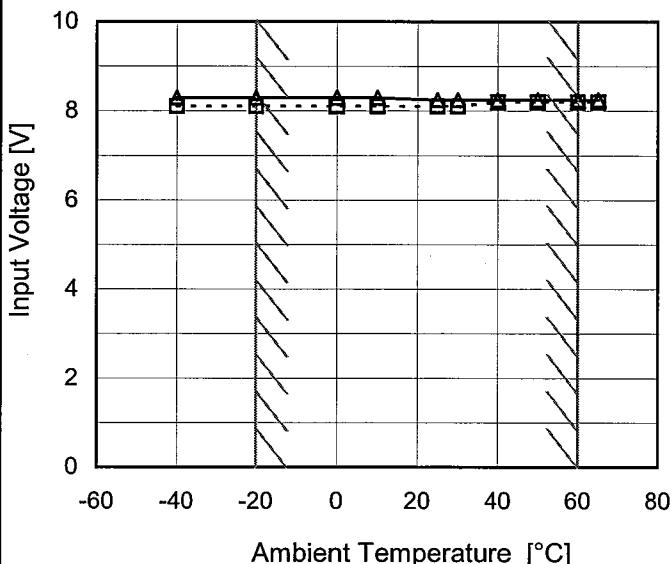
Testing Circuitry   Figure A

1.Graph

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

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	8.1	8.3
-20	8.1	8.3
0	8.1	8.3
10	8.1	8.3
25	8.1	8.3
30	8.1	8.3
40	8.2	8.3
50	8.2	8.3
60	8.2	8.3
65	8.2	8.3
--	-	-

Object	-5V1.5A

1.Graph
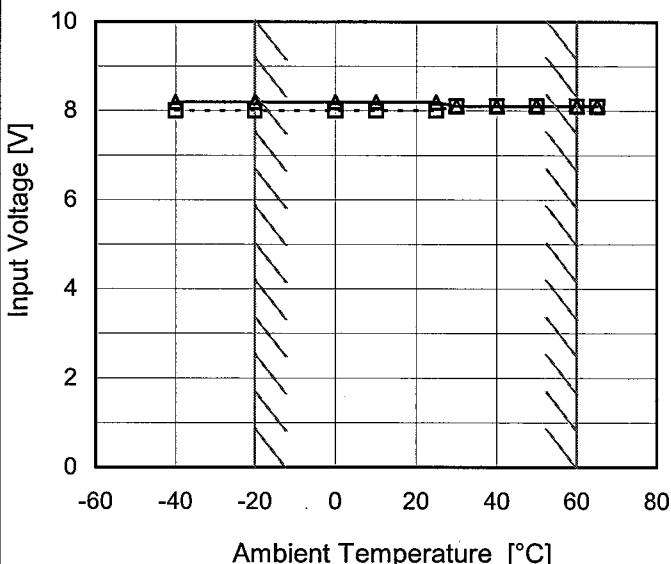
- - -☐- - - Load 50%
———△——— Load 100%

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-40	8.0	8.2
-20	8.0	8.2
0	8.0	8.2
10	8.0	8.2
25	8.0	8.2
30	8.1	8.1
40	8.1	8.1
50	8.1	8.1
60	8.1	8.1
65	8.1	8.1
--	-	-

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

BC - 10726

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Model	STMGFW152405
Item	Overcurrent Protection
Object	+5V1.5A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

———△ Input Volt. 9V
———□ Input Volt. 12V
———✳ Input Volt. 18V
———○ Input Volt. 24V
———◇ Input Volt. 36V

Output Voltage [V] vs Load Current [A]

2.Values

Output Voltage [V]	Load Current [A]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
5.00	2.314	2.710	3.065	3.042	2.532
4.75	-	-	-	-	-
4.50	-	-	-	-	-
4.00	-	-	-	-	-
3.50	-	-	-	-	-
3.00	-	-	-	-	-
2.50	-	-	-	-	-
2.00	-	-	-	-	-
1.50	-	-	-	-	-
1.00	-	-	-	-	-
0.50	-	-	-	-	-
0.00	-	-	-	-	-

Object	-5V1.5A

1.Graph

———△ Input Volt. 9V
———□ Input Volt. 12V
———✳ Input Volt. 18V
———○ Input Volt. 24V
———◇ Input Volt. 36V

Output Voltage [V] vs Load Current [A]

2.Values

Output Voltage [V]	Load Current [A]				
	Input Volt. 9[V]	Input Volt. 12[V]	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-5.00	2.295	2.721	3.074	3.050	2.526
-4.75	-	-	-	-	-
-4.50	-	-	-	-	-
-4.00	-	-	-	-	-
-3.50	-	-	-	-	-
-3.00	-	-	-	-	-
-2.50	-	-	-	-	-
-2.00	-	-	-	-	-
-1.50	-	-	-	-	-
-1.00	-	-	-	-	-
-0.50	-	-	-	-	-
0.00	-	-	-	-	-

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

Intermittent operation occurs when overcurrent protection is activated.

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Figure A

Figure B (Ripple and Ripple noise Characteristic)

BC - 10726