

TEST DATA OF GT2.5-5

Regulated DC Power Supply
July 23, 2010

Approved by : Eiyoshi Wakamatsu
Eiyoshi Wakamatsu Design Manager

Prepared by : Satoshi Kinoshita
Satoshi Kinoshita Design Engineer

COSEL CO.,LTD.

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(Final Page 21)

COSEL

Model

GT2.5-5

Item

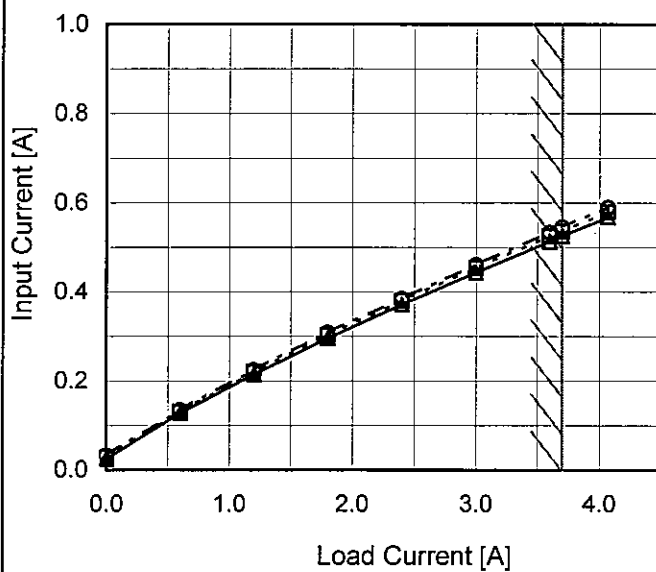
Input Current (by Load Current)

Object

Temperature
Testing Circuitry25°C
Figure A

1. Graph

—△— Input Volt. 90V
 ---□--- Input Volt. 100V
 - - -○- - - Input Volt. 110V



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

2. Values

Load Current [A]	Input Current [A]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	0.025	0.029	0.033
0.60	0.128	0.131	0.135
1.20	0.215	0.220	0.225
1.80	0.296	0.303	0.309
2.40	0.372	0.380	0.385
3.00	0.444	0.453	0.461
3.60	0.514	0.525	0.534
3.70	0.526	0.536	0.546
4.07	0.568	0.579	0.590
--	-	-	-
--	-	-	-

COSEL

Model

GT2.5-5

Item

Input Power (by Load Current)

Object

Temperature

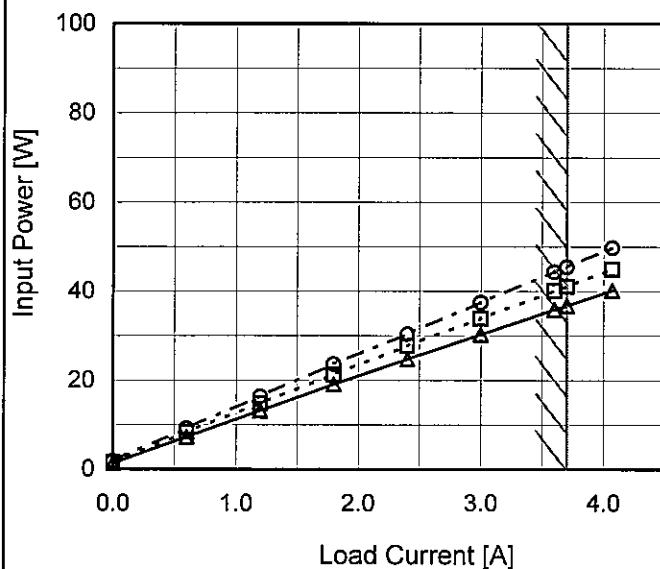
25°C

Testing Circuitry

Figure A

1. Graph

—△— Input Volt. 90V
 ---□--- Input Volt. 100V
 ---○--- Input Volt. 110V



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

2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	1.40	1.60	1.90
0.60	7.30	8.30	9.20
1.20	13.20	14.80	16.40
1.80	19.10	21.30	23.60
2.40	24.80	27.70	30.40
3.00	30.30	33.90	37.50
3.60	35.90	40.10	44.40
3.70	36.80	41.10	45.50
4.07	40.20	45.00	49.80
--	-	-	-
--	-	-	-

COSEL

Model		GT2.5-5																																	
Item		Efficiency (by Input Voltage)																																	
Object																																			
1.Graph		2.Values																																	
<div><div><div><div><div></div><div></div></div><div></div></div><div>Load 50%</div></div><div><div><div><div></div><div></div></div><div></div></div><div>Load 100%</div></div></div> <div><div><div><div><div></div><div></div></div><div></div></div><div>Efficiency [%]</div></div><div><div><div><div></div><div></div></div><div></div></div><div>Input Voltage [V]</div></div></div> <div><div><div><div></div><div></div></div><div></div></div><div>Note: Slanted line shows the range of the rated input voltage.</div></div>		<table><tr><th rowspan="2">Input Voltage [V]</th><th colspan="2">Efficiency [%]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>85</td><td>50.5</td><td>53.3</td></tr><tr><td>90</td><td>47.6</td><td>50.2</td></tr><tr><td>100</td><td>42.6</td><td>45.0</td></tr><tr><td>110</td><td>38.4</td><td>40.6</td></tr><tr><td>115</td><td>36.7</td><td>38.8</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	85	50.5	53.3	90	47.6	50.2	100	42.6	45.0	110	38.4	40.6	115	36.7	38.8	--	-	-	--	-	-	--	-	-	--	-	-
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COSEL

Model

GT2.5-5

Item

Efficiency (by Load Current)

Object

Temperature

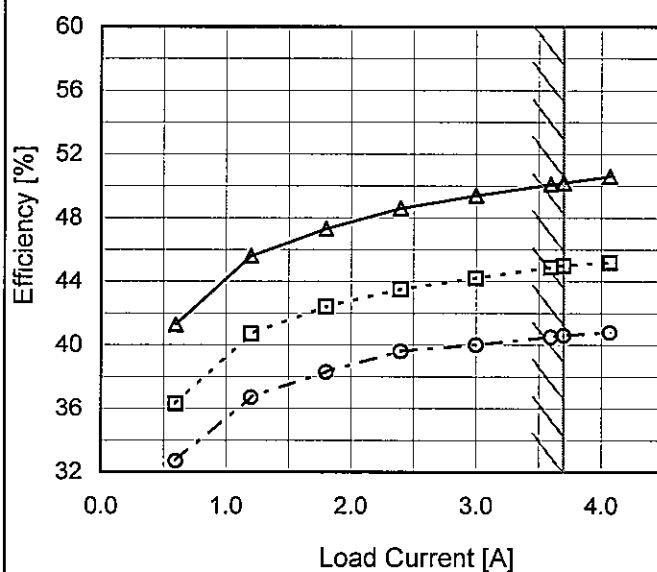
25°C

Testing Circuitry

Figure A

1. Graph

—△— Input Volt. 90V
 ---□--- Input Volt. 100V
 ---○--- Input Volt. 110V



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

2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.60	41.3	36.3	32.7
1.20	45.6	40.7	36.7
1.80	47.3	42.4	38.3
2.40	48.6	43.5	39.6
3.00	49.4	44.2	40.0
3.60	50.1	44.9	40.5
3.70	50.2	45.0	40.6
4.07	50.6	45.2	40.8
--	-	-	-
--	-	-	-

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Model	GT2.5-5																																
Item	Power Factor (by Input Voltage)	Temperature	25°C																														
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<div><div><div>---□---</div><div>Load 50%</div></div><div><div>---△---</div><div>Load 100%</div></div></div> <table><thead><tr><th>Input Voltage [V]</th><th>Load 50%</th><th>Load 100%</th></tr></thead><tbody><tr><td>85</td><td>0.724</td><td>0.787</td></tr><tr><td>90</td><td>0.717</td><td>0.780</td></tr><tr><td>100</td><td>0.706</td><td>0.768</td></tr><tr><td>110</td><td>0.699</td><td>0.758</td></tr><tr><td>115</td><td>0.693</td><td>0.755</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></tbody></table>		Input Voltage [V]	Load 50%	Load 100%	85	0.724	0.787	90	0.717	0.780	100	0.706	0.768	110	0.699	0.758	115	0.693	0.755	--	-	-	--	-	-	--	-	-	--	-	-		
Input Voltage [V]	Load 50%	Load 100%																															
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<div><div>—△—</div><div>Input Volt.</div><div>90V</div></div> <div><div>---□---</div><div>Input Volt.</div><div>100V</div></div> <div><div>---○---</div><div>Input Volt.</div><div>110V</div></div> <p>Power Factor</p> <p>Load Current [A]</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Power Factor</th></tr><tr><th>Input Volt. 90[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 110[V]</th></tr><tr><td>0.00</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.60</td><td>0.635</td><td>0.634</td><td>0.622</td></tr><tr><td>1.20</td><td>0.680</td><td>0.673</td><td>0.661</td></tr><tr><td>1.80</td><td>0.715</td><td>0.705</td><td>0.694</td></tr><tr><td>2.40</td><td>0.738</td><td>0.729</td><td>0.719</td></tr><tr><td>3.00</td><td>0.759</td><td>0.748</td><td>0.740</td></tr><tr><td>3.60</td><td>0.775</td><td>0.764</td><td>0.755</td></tr><tr><td>3.70</td><td>0.778</td><td>0.767</td><td>0.757</td></tr><tr><td>4.07</td><td>0.787</td><td>0.777</td><td>0.767</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Power Factor			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	0.00	-	-	-	0.60	0.635	0.634	0.622	1.20	0.680	0.673	0.661	1.80	0.715	0.705	0.694	2.40	0.738	0.729	0.719	3.00	0.759	0.748	0.740	3.60	0.775	0.764	0.755	3.70	0.778	0.767	0.757	4.07	0.787	0.777	0.767	--	-	-	-	--	-	-	-
Load Current [A]	Power Factor																																																					
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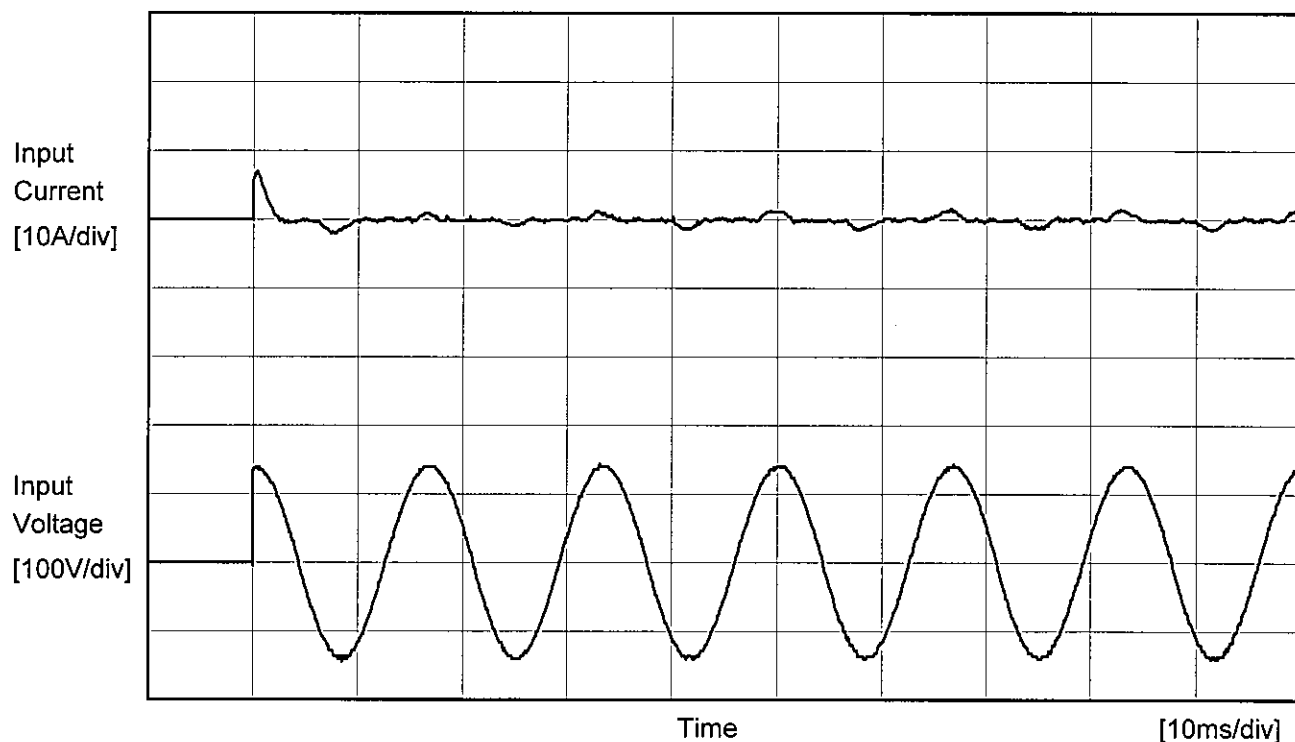
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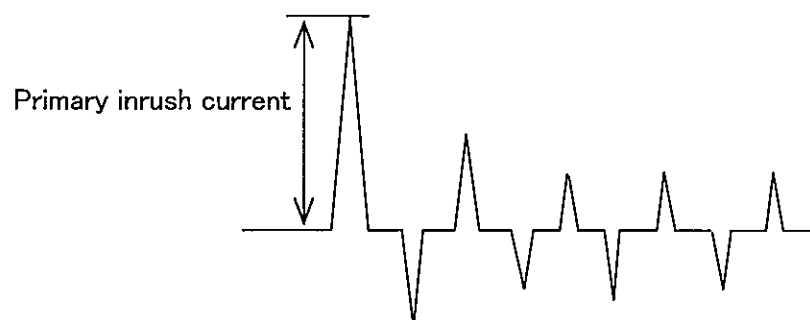
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Model	GT2.5-5	Temperature	25°C
Item	Inrush Current	Testing Circuitry	Figure A
Object	_____		



Input Voltage 100 V
 Frequency 60 Hz
 Load 100 %

Primary inrush current 7.0 A



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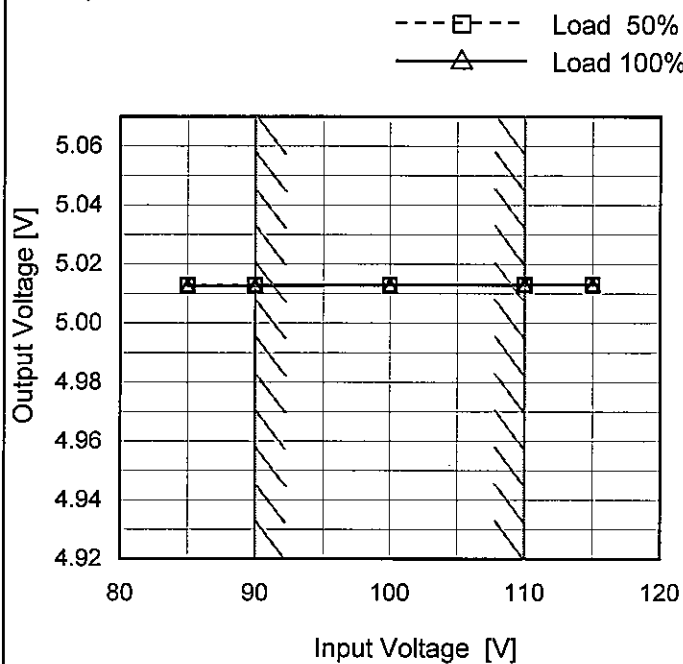
Model GT2.5-5

Item Line Regulation

Object +5V3.7A

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%
85	5.013	5.013
90	5.013	5.013
100	5.013	5.013
110	5.013	5.013
115	5.013	5.013
--	-	-
--	-	-
--	-	-
--	-	-

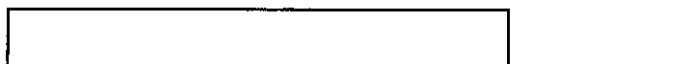
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Model	GT2.5-5	Temperature Testing Circuitry	25°C Figure A
Item	Dynamic Load Response		
Object	+5V3.7A		

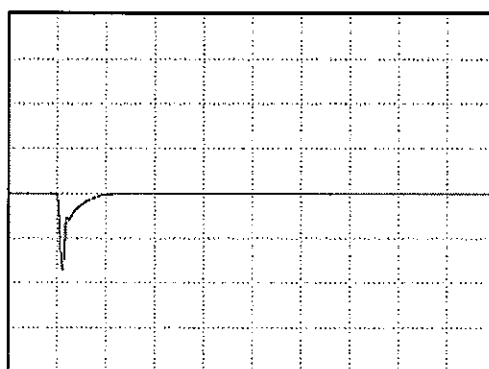
Input Volt. 100 V
Cycle 1000 ms

Load Current

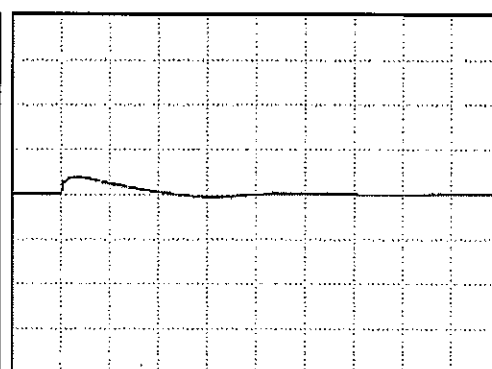


Min. Load (0A) \longleftrightarrow
Load 100% (3.7A)

50 mV/div



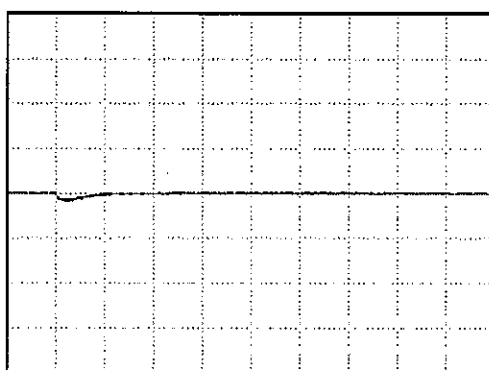
100 μ s/div



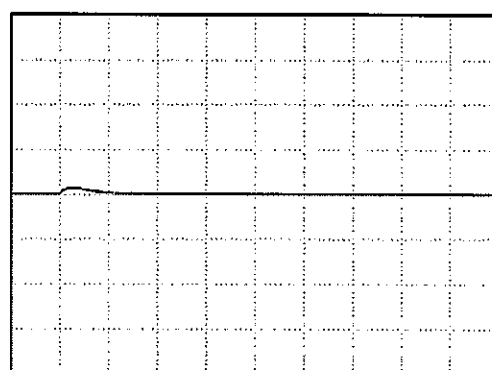
100 μ s/div

Load 50% (1.85A) \longleftrightarrow
Load 100% (3.7A)

50 mV/div



100 μ s/div



100 μ s/div

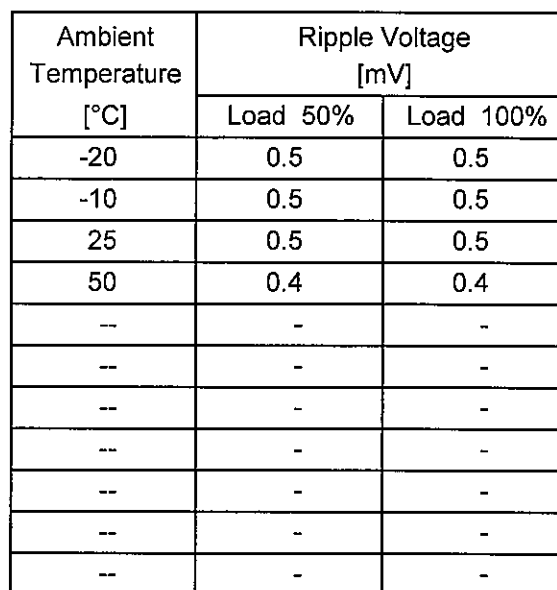
Model	GT2.5-5																																											
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																									
Object	+5V3.7A	Testing Circuitry	Figure A																																									
1.Graph		2.Values																																										
<div><div><div>—△—</div><div>Input Volt. 90V</div></div><div><div>- - -○- - -</div><div>Input Volt. 110V</div></div></div> <p>Measured by 20 MHz Oscilloscope. Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple Voltage [mV]</th></tr><tr><th>Input Volt. 90 [V]</th><th>Input Volt. 110 [V]</th></tr><tr><td>0.00</td><td>0.4</td><td>0.4</td></tr><tr><td>1.85</td><td>0.4</td><td>0.4</td></tr><tr><td>3.70</td><td>0.5</td><td>0.5</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Ripple Voltage [mV]		Input Volt. 90 [V]	Input Volt. 110 [V]	0.00	0.4	0.4	1.85	0.4	0.4	3.70	0.5	0.5	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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Testing Circuitry Figure A

2.Values



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

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Model

GT2.5-5

Item

Ambient Temperature Drift

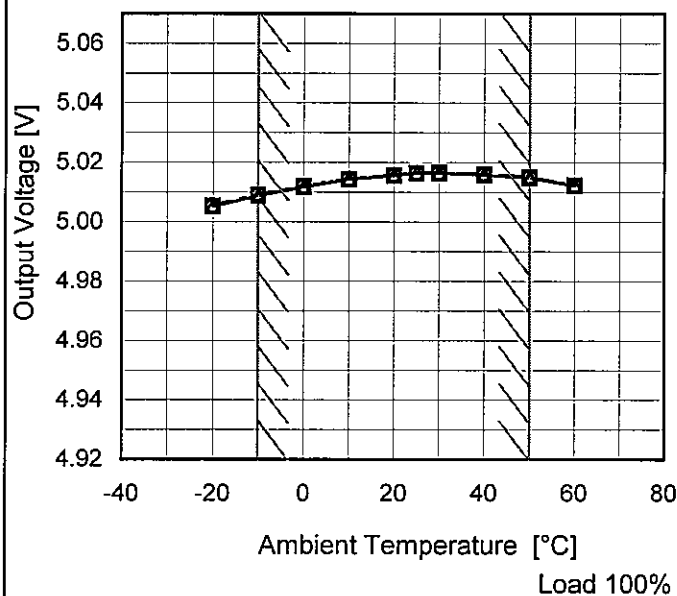
Object

+5V3.7A

Testing Circuitry Figure A

1. Graph

—△— Input Volt. 90V
 ---□--- Input Volt. 100V
 ---○--- Input Volt. 110V



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

2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
-20	5.005	5.005	5.005
-10	5.009	5.009	5.009
0	5.012	5.012	5.012
10	5.014	5.014	5.015
20	5.016	5.016	5.016
25	5.016	5.016	5.017
30	5.016	5.017	5.017
40	5.016	5.016	5.016
50	5.015	5.015	5.015
60	5.012	5.012	5.012
--	-	-	-

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		Testing Circuitry Figure A
Model	GT2.5-5	
Item	Output Voltage Accuracy	
Object	+5V3.7A	

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 : -10 - 50°C

Input Voltage : 90 - 110V

Load Current : 0 - 3.7A

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

* 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	30	110	0	5.017	±4	±0.1
Minimum Voltage	-10	90	0	5.009		

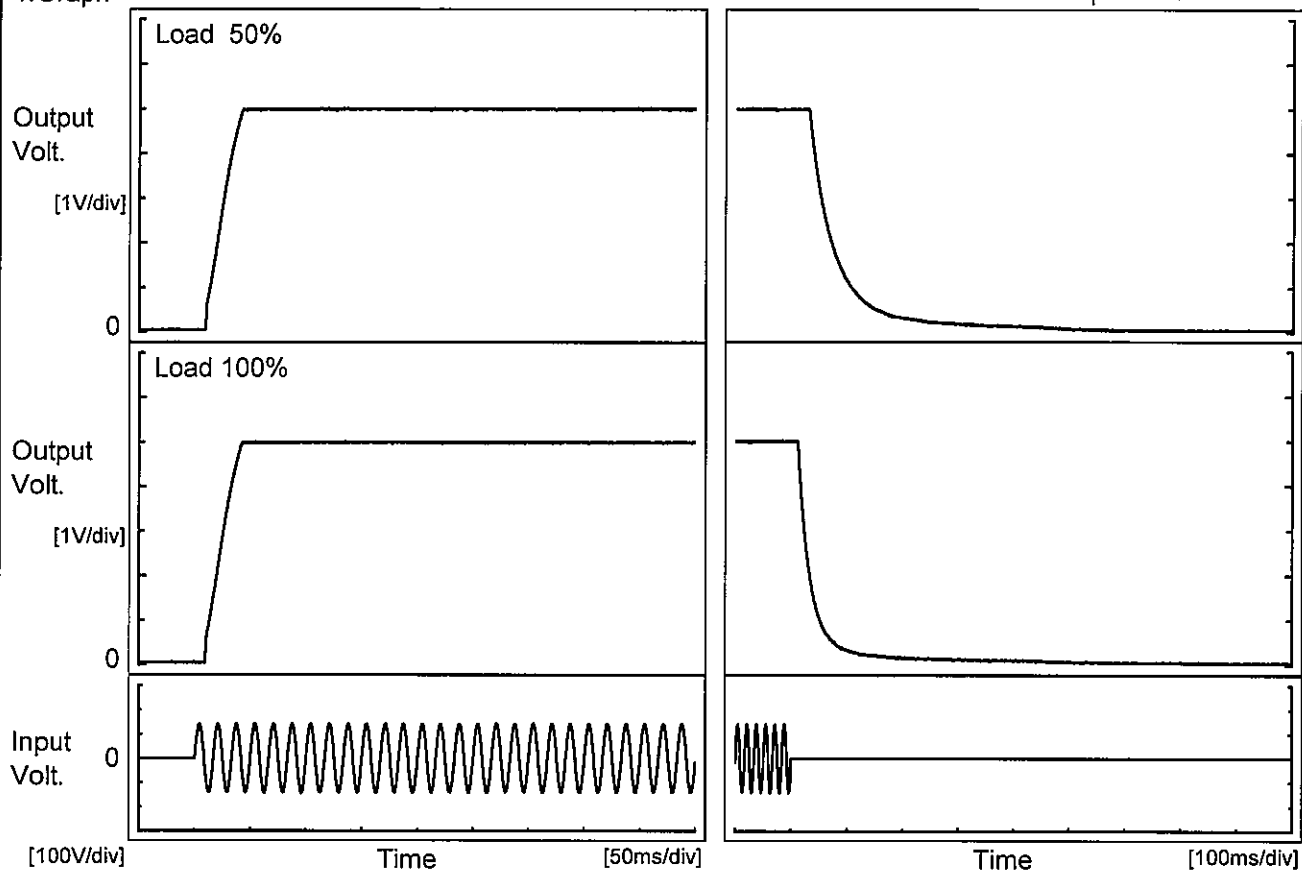
COSEL

Model	GT2.5-5	Temperature25°C Testing CircuitryFigure A																							
Item	Time Lapse Drift																								
Object	+5V3.7A																								
1.Graph		2.Values																							
<div><div><div>5.06</div><div>5.04</div><div>5.02</div><div>5.00</div><div>4.98</div><div>4.96</div><div>4.94</div><div>4.92</div></div><div><div>0</div><div>2</div><div>4</div><div>6</div><div>8</div><div>10</div></div><div><div>Time [H]</div><div>Input Volt.100V</div><div>Load100%</div></div></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>5.013</td></tr><tr><td>0.5</td><td>5.013</td></tr><tr><td>1.0</td><td>5.013</td></tr><tr><td>2.0</td><td>5.013</td></tr><tr><td>3.0</td><td>5.013</td></tr><tr><td>4.0</td><td>5.013</td></tr><tr><td>5.0</td><td>5.013</td></tr><tr><td>6.0</td><td>5.013</td></tr><tr><td>7.0</td><td>5.013</td></tr><tr><td>8.0</td><td>5.013</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	5.013	0.5	5.013	1.0	5.013	2.0	5.013	3.0	5.013	4.0	5.013	5.0	5.013	6.0	5.013	7.0	5.013	8.0	5.013
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COSEL

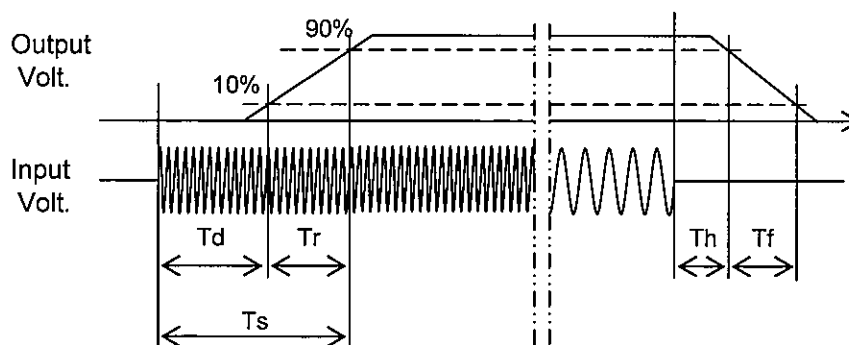
Model	GT2.5-5	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+5V3.7A		

1. Graph



2. Values

		[ms]				
Load	Time	Td	Tr	Ts	Th	Tf
50 %		10.3	27.5	37.8	34.0	113.0
100 %		10.3	27.5	37.8	14.0	59.5



COSEL

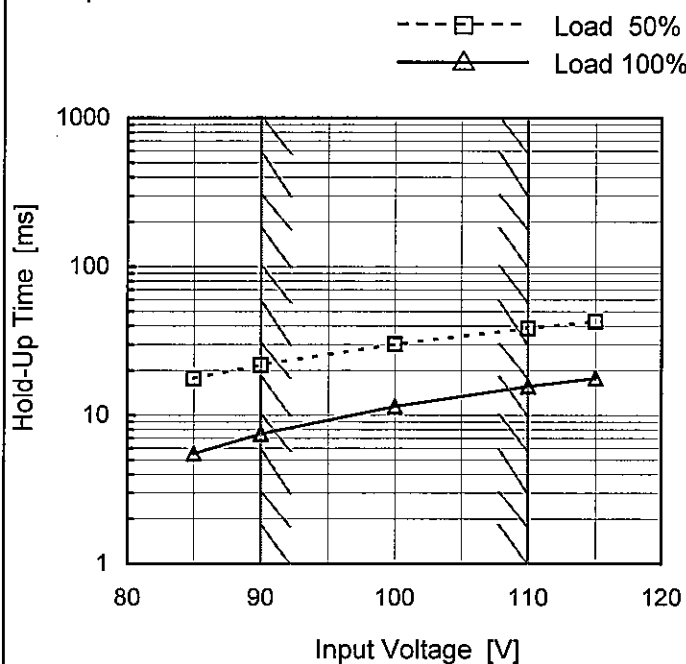
Model GT2.5-5

Item Hold-Up Time

Object +5V3.7A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.
Note: Slanted line shows the range of the rated input voltage.

2. Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	18	6
90	22	8
100	30	12
110	39	16
115	43	18
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model		GT2.5-5	
Item		Instantaneous Interruption Compensation	
Object		+5V3.7A	
1.Graph		2.Values	

—△—

Input Volt.

90V

---□---

Input Volt.

100V

-·○-

Input Volt.

110V

Instantaneous Compensation Time [ms]

Load Current [A]

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

Load Current [A]	Time [ms]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.60	81	107	132
1.20	38	50	63
1.80	23	23	40
2.40	6	22	23
3.00	5	6	21
3.60	5	5	17
3.70	5	5	6
4.07	4	5	6
--	-	-	-
--	-	-	-

Model

GT2.5-5

Item

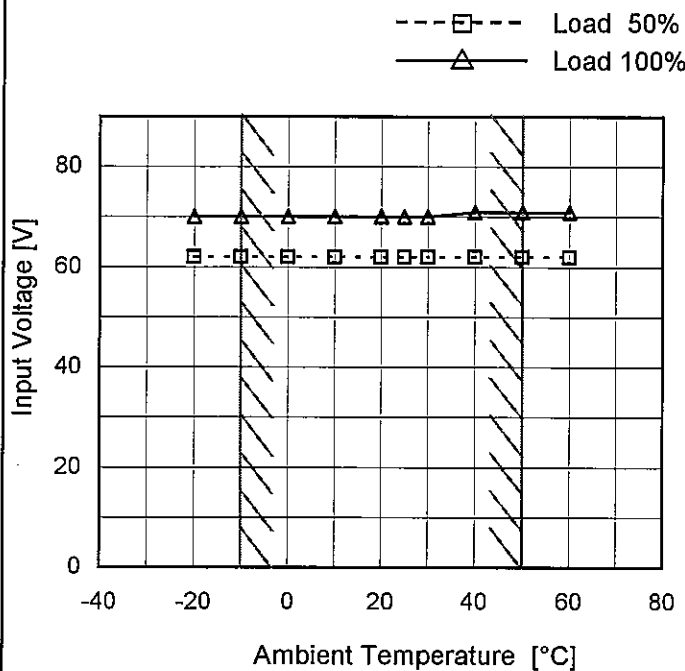
Minimum Input Voltage
for Regulated Output Voltage

Object

+5V3.7A

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%
-20	62	70
-10	62	70
0	62	70
10	62	70
20	62	70
25	62	70
30	62	70
40	62	71
50	62	71
60	62	71
--	-	-

Model GT2.5-5

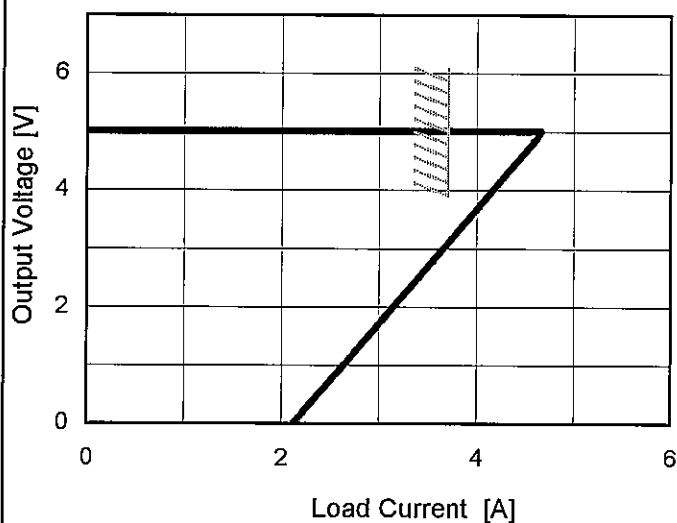
Item Overcurrent Protection

Object +5V3.7A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

— Input Volt. 90V
— Input Volt. 100V
— Input Volt. 110V



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

2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
5.00	4.66	4.66	4.66
4.75	4.64	4.61	4.61
4.50	4.44	4.42	4.61
4.00	4.23	4.21	4.20
3.50	4.07	4.05	4.05
3.00	3.76	3.75	3.75
2.50	3.51	3.49	3.49
2.00	3.18	3.17	3.17
1.50	2.93	2.92	2.92
1.00	2.65	2.65	2.65
0.50	2.43	2.43	2.43
0.00	2.09	2.12	2.12

COSEL

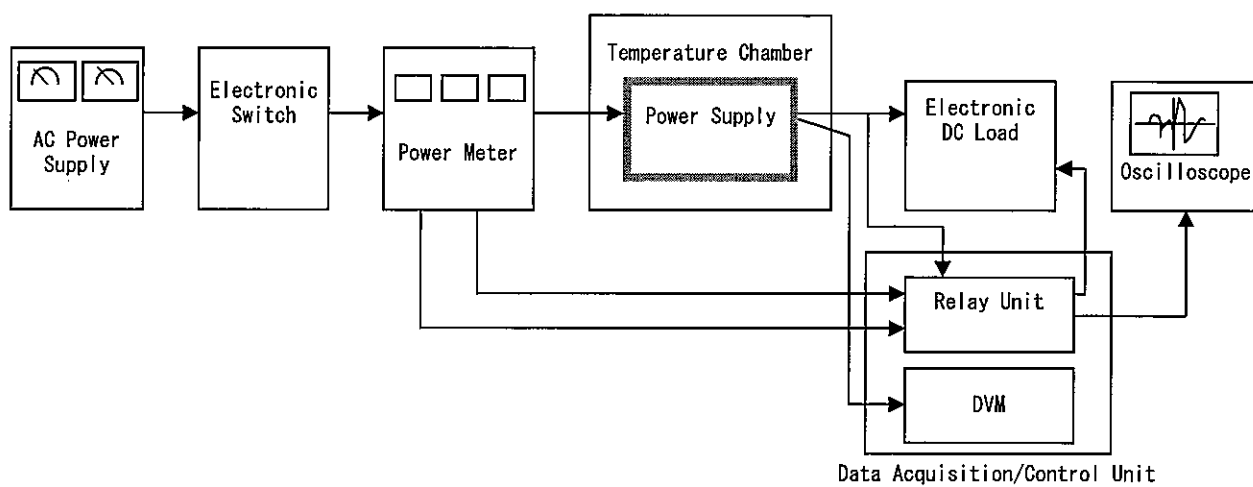


Figure A