

TEST DATA OF GT3-5

Regulated DC Power Supply
July 23, 2010

Approved by : Eiyoshi Wakamatsu
Eiyoshi Wakamatsu Design Manager

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Satoshi Kinoshita Design Engineer

COSEL CO.,LTD.

CONTENTS

1.Input Current (by Load Current)	1
2.Input Power (by Load Current)	2
3.Efficiency (by Input Voltage)	3
4.Efficiency (by Load Current)	4
5.Power Factor (by Input Voltage)	5
6.Power Factor (by Load Current)	6
7.Inrush Current	7
8.Line Regulation	8
9.Load Regulation	9
10.Dynamic Load Response	10
11.Ripple Voltage (by Load Current)	11
12.Ripple Voltage (by Ambient Temperature)	12
13.Ambient Temperature Drift	13
14.Output Voltage Accuracy	14
15.Time Lapse Drift	15
16.Rise and Fall Time	16
17.Hold-Up Time	17
18.Instantaneous Interruption Compensation	18
19.Minimum Input Voltage for Regulated Output Voltage	19
20.Overcurrent Protection	20
21.Figure of Testing Circuitry	21

(Final Page 21)

Model

GT3-5

Item

Input Current (by Load Current)

Object

1.Graph

—△—

Input Volt.

90V

---□---

Input Volt.

100V

---○---

Input Volt.

110V

Input Current [A]

1.0

0.8

0.6

0.4

0.2

0.0

0

2

4

6

Load Current [A]

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]
0.0	0.043	0.039	0.036
0.8	0.170	0.172	0.174
1.6	0.282	0.286	0.292
2.4	0.385	0.392	0.399
3.2	0.482	0.490	0.500
4.0	0.576	0.586	0.597
4.8	0.666	0.679	0.691
5.0	0.688	0.702	0.716
5.5	0.746	0.760	0.772
--	-	-	-
--	-	-	-

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Model

GT3-5

Item

Input Power (by Load Current)

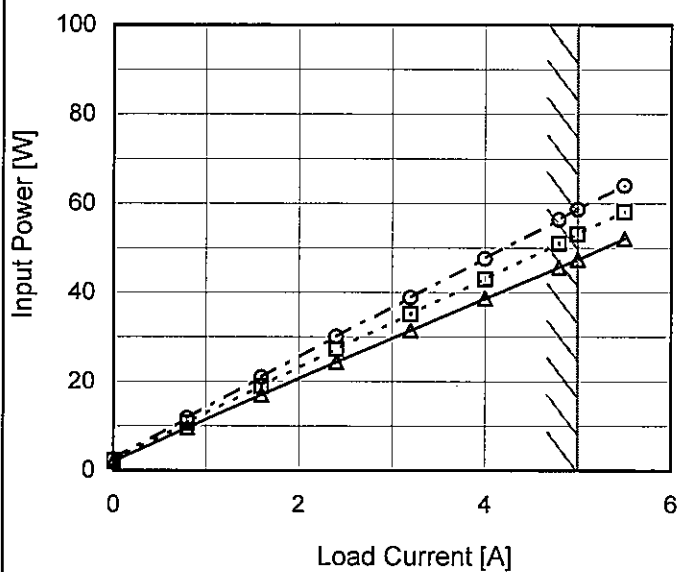
Object

Temperature
Testing Circuitry

25°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 Power [W]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.0	2.04	2.28	2.51
0.8	9.61	10.67	11.78
1.6	17.05	18.97	21.00
2.4	24.37	27.20	30.10
3.2	31.48	35.10	38.90
4.0	38.67	43.05	47.60
4.8	45.72	51.02	56.40
5.0	47.43	53.09	58.70
5.5	52.10	58.10	64.00
--	-	-	-
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Model

GT3-5

Item

Efficiency (by Input Voltage)

Object

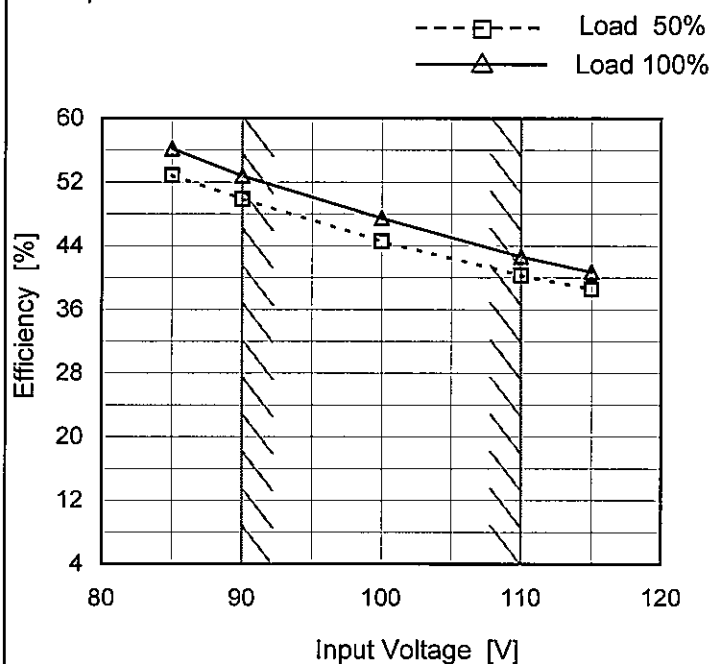
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



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

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	52.8	56.2
90	49.9	52.8
100	44.6	47.5
110	40.3	42.7
115	38.5	40.7
--	-	-
--	-	-
--	-	-
--	-	-

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Model		GT3-5		Temperature		25°C																																																		
Item		Efficiency (by Load Current)		Testing Circuitry		Figure A																																																		
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<div><div><div>Efficiency [%]</div><div><div>0.02.04.06.0</div><div>Load Current [A]</div></div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Efficiency [%]</th></tr><tr><th>Input Volt. 90[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 110[V]</th></tr><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.8</td><td>41.8</td><td>37.7</td><td>34.1</td></tr><tr><td>1.6</td><td>47.2</td><td>42.4</td><td>38.3</td></tr><tr><td>2.4</td><td>49.5</td><td>44.4</td><td>40.1</td></tr><tr><td>3.2</td><td>50.9</td><td>45.7</td><td>41.2</td></tr><tr><td>4.0</td><td>51.8</td><td>46.6</td><td>42.1</td></tr><tr><td>4.8</td><td>52.6</td><td>47.2</td><td>42.7</td></tr><tr><td>5.0</td><td>52.9</td><td>47.2</td><td>42.7</td></tr><tr><td>5.5</td><td>52.9</td><td>47.5</td><td>43.1</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]	Efficiency [%]			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	0.0	-	-	-	0.8	41.8	37.7	34.1	1.6	47.2	42.4	38.3	2.4	49.5	44.4	40.1	3.2	50.9	45.7	41.2	4.0	51.8	46.6	42.1	4.8	52.6	47.2	42.7	5.0	52.9	47.2	42.7	5.5	52.9	47.5	43.1	--	-	-	-	--	-	-	-		
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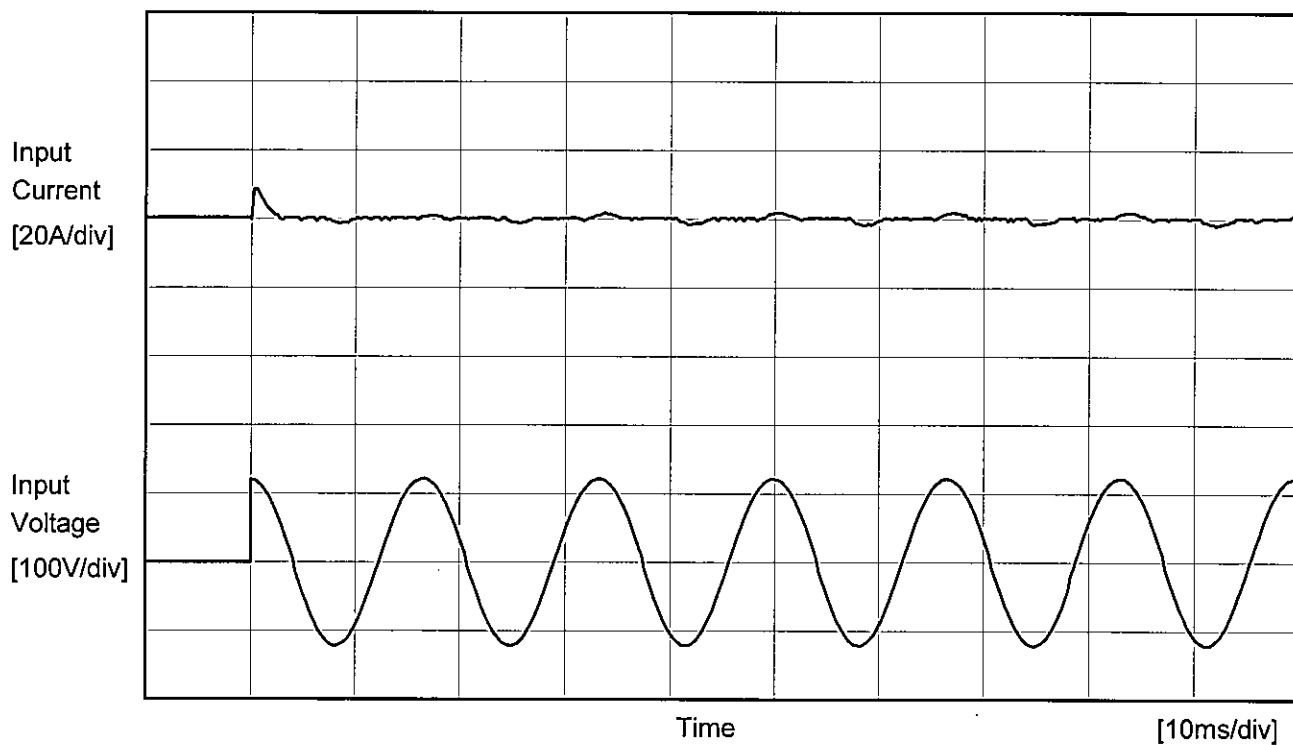
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- 6 -

BC-10195

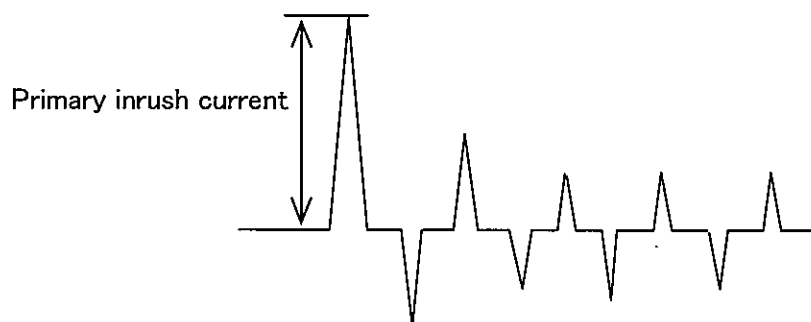
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Model	GT3-5	Temperature 25°C Testing Circuitry Figure A
Item	Inrush Current	
Object	_____	



Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current 8.7 A



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Model

GT3-5

Item

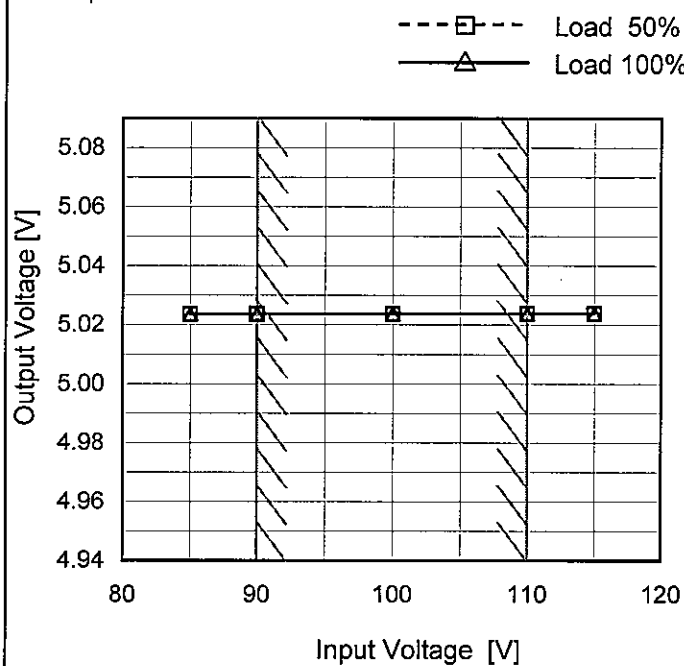
Line Regulation

Object

+5V5A

 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	5.024	5.024
90	5.024	5.024
100	5.024	5.024
110	5.024	5.024
115	5.024	5.024
--	-	-
--	-	-
--	-	-
--	-	-

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Object		+5V5A																																																		
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<div><div><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></div><div><p>Note: Slanted line shows the range of the rated load current.</p></div></div> <div><table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 90[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 110[V]</th></tr><tr><td>0.0</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>0.8</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>1.6</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>2.4</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>3.2</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>4.0</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>4.8</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>5.0</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>5.5</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table></div>		Load Current [A]	Output Voltage [V]			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	0.0	5.024	5.024	5.024	0.8	5.024	5.024	5.024	1.6	5.024	5.024	5.024	2.4	5.024	5.024	5.024	3.2	5.024	5.024	5.024	4.0	5.024	5.024	5.024	4.8	5.024	5.024	5.024	5.0	5.024	5.024	5.024	5.5	5.024	5.024	5.024	--	-	-	-	--	-	-	-
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- 9 -

BC-10195

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Model	GT3-5	Temperature Testing Circuitry	25°C Figure A
Item	Dynamic Load Response		
Object	+5V5A		

Input Volt. 100 V
Cycle 1000 ms

Load Current

Min. Load (0A) ←→
Load 100% (5A)

100 mV/div

100 μs/div

100 μs/div

Load 50% (2.5A) ←→
Load 100% (5A)

100 mV/div

100 μs/div

100 μs/div

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Model	GT3-5																																											
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																									
Object	+5V5A	Testing Circuitry	Figure A																																									
1.Graph		2.Values																																										
<div><div><div>—△— Input Volt. 90V</div><div>-·○-·- Input Volt. 110V</div></div><div>Ripple Voltage [mV]</div><div>Load Current [A]</div></div> <p>Measured by 20 MHz Oscilloscope.</p> <p>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>0.0</td><td>0.8</td><td>0.8</td></tr><tr><td>2.5</td><td>0.8</td><td>0.8</td></tr><tr><td>5.0</td><td>0.8</td><td>0.8</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><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]	0.0	0.8	0.8	2.5	0.8	0.8	5.0	0.8	0.8	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
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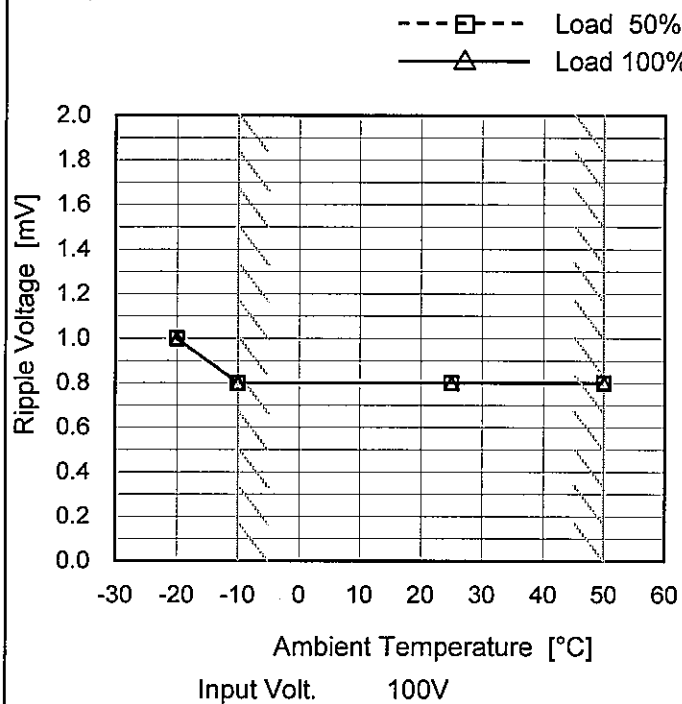
- 11 -

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Model	GT3-5
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V5A

1. Graph



Measured by 20 MHz Oscilloscope.

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

Testing Circuitry Figure A

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	1.0	1.0
-10	0.8	0.8
25	0.8	0.8
50	0.8	0.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Model		GT3-5																																																				
Item		Ambient Temperature Drift																																																				
Object		+5V5A																																																				
1.Graph		2.Values																																																				
<div><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></div> <p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 90[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 110[V]</th></tr><tr><td>-20</td><td>5.011</td><td>5.011</td><td>5.011</td></tr><tr><td>-10</td><td>5.015</td><td>5.015</td><td>5.015</td></tr><tr><td>0</td><td>5.019</td><td>5.019</td><td>5.019</td></tr><tr><td>10</td><td>5.021</td><td>5.021</td><td>5.021</td></tr><tr><td>20</td><td>5.023</td><td>5.023</td><td>5.023</td></tr><tr><td>25</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>30</td><td>5.026</td><td>5.026</td><td>5.026</td></tr><tr><td>40</td><td>5.025</td><td>5.025</td><td>5.025</td></tr><tr><td>50</td><td>5.024</td><td>5.024</td><td>5.024</td></tr><tr><td>60</td><td>5.022</td><td>5.022</td><td>5.022</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	-20	5.011	5.011	5.011	-10	5.015	5.015	5.015	0	5.019	5.019	5.019	10	5.021	5.021	5.021	20	5.023	5.023	5.023	25	5.024	5.024	5.024	30	5.026	5.026	5.026	40	5.025	5.025	5.025	50	5.024	5.024	5.024	60	5.022	5.022	5.022	--	-	-	-
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- 13 -

BC-10195

COSEL

		Testing Circuitry Figure A
Model	GT3-5	
Item	Output Voltage Accuracy	
Object	+5V5A	

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 - 5A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	30	100	0	5.026	±6	±0.1
Minimum Voltage	-10	90	0	5.015		

COSEL

Model		GT3-5	
Item		Time Lapse Drift	
Object		+5V5A	
1.Graph		2.Values	
<div><div><div><div>Output Voltage [V]</div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></di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COSEL

Model

GT3-5

Item

Rise and Fall Time

Object

+5V5A

Temperature

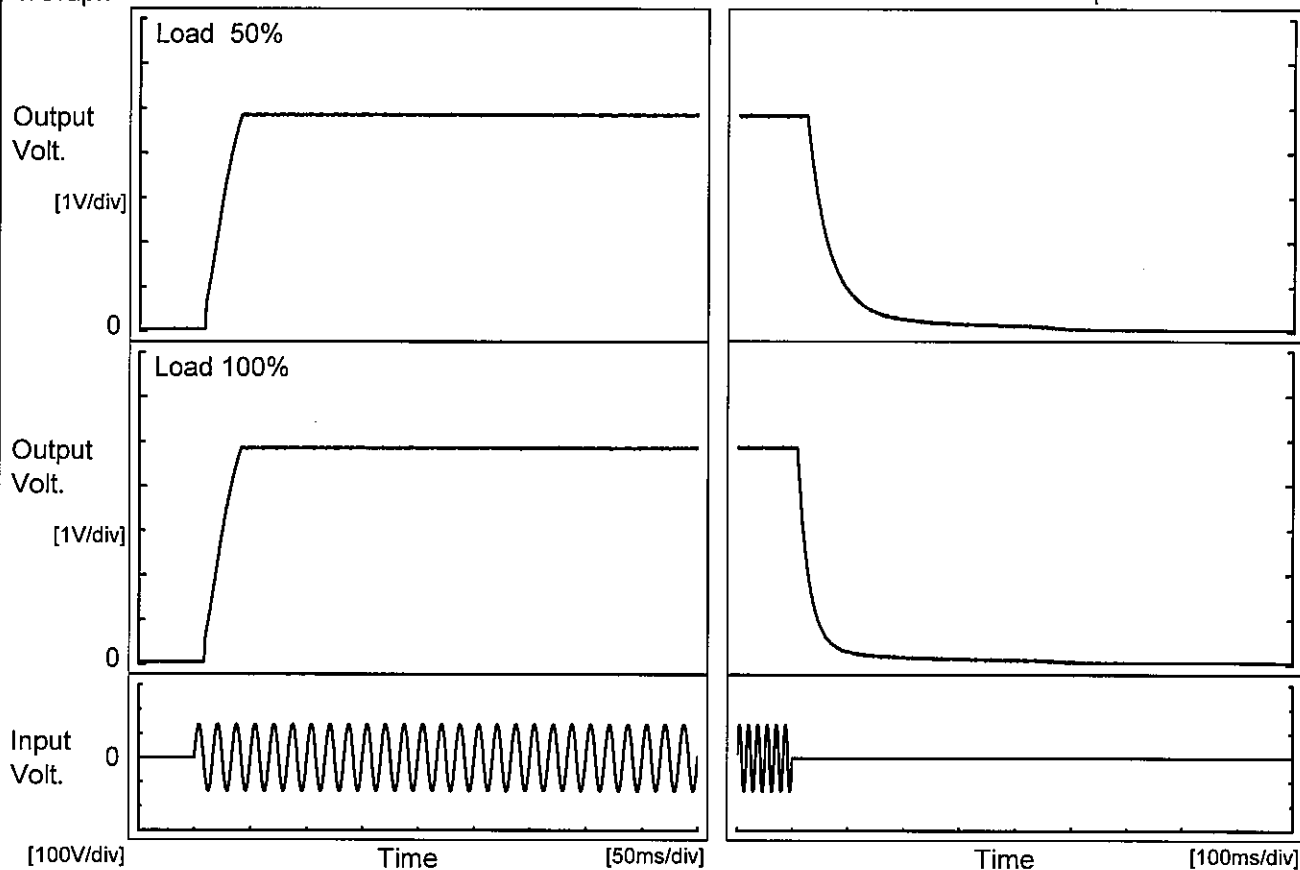
25°C

Testing Circuitry

Figure A

1. Graph

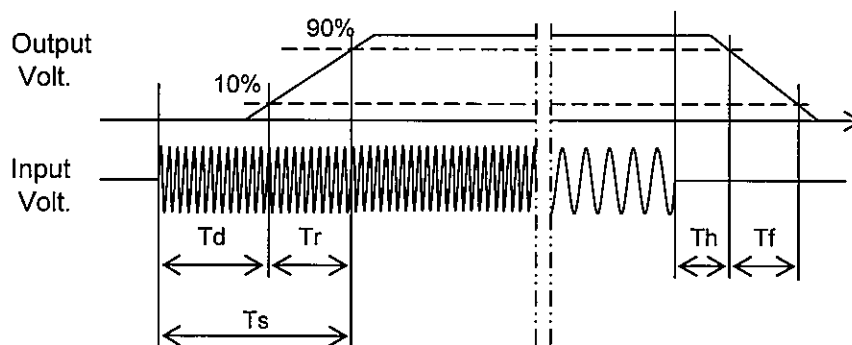
Input Volt. 100 V



2. Values

[ms]

Load \ Time	T _d	T _r	T _s	T _h	T _f
50 %	9.8	27.8	37.6	26.5	108.5
100 %	9.5	28.0	37.5	10.0	56.5



COSEL

Model

GT3-5

Item

Hold-Up Time

Object

+5V5A

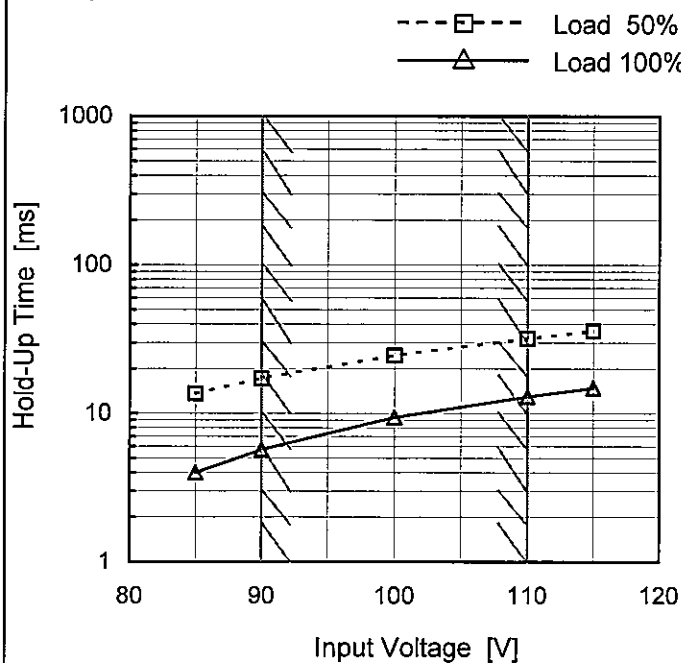
Temperature

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	14	4
90	17	6
100	25	9
110	32	13
115	36	15
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model		GT3-5																																																				
Item		Instantaneous Interruption Compensation																																																				
Object		+5V5A																																																				
1.Graph		2.Values																																																				
<div><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></div> <div><div><div>Instantaneous Compensation Time [ms]</div><div>1000</div><div>100</div><div>10</div><div>1</div></div><div><div>0</div><div>2</div><div>4</div><div>6</div></div><div><div>Load Current [A]</div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Time [ms]</th></tr><tr><th>Input Volt. 90[V]</th><th>Input Volt. 100[V]</th><th>Input Volt. 110[V]</th></tr><tr><td>0.0</td><td>-</td><td>-</td><td>-</td></tr><tr><td>0.8</td><td>66</td><td>87</td><td>107</td></tr><tr><td>1.6</td><td>23</td><td>39</td><td>55</td></tr><tr><td>2.4</td><td>6</td><td>22</td><td>23</td></tr><tr><td>3.2</td><td>5</td><td>6</td><td>22</td></tr><tr><td>4.0</td><td>5</td><td>5</td><td>19</td></tr><tr><td>4.8</td><td>4</td><td>5</td><td>5</td></tr><tr><td>5.0</td><td>4</td><td>5</td><td>5</td></tr><tr><td>5.5</td><td>4</td><td>5</td><td>5</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]	Time [ms]			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	0.0	-	-	-	0.8	66	87	107	1.6	23	39	55	2.4	6	22	23	3.2	5	6	22	4.0	5	5	19	4.8	4	5	5	5.0	4	5	5	5.5	4	5	5	--	-	-	-	--	-	-	-
Load Current [A]	Time [ms]																																																					
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]																																																			
0.0	-	-	-																																																			
0.8	66	87	107																																																			
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4.0	5	5	19																																																			
4.8	4	5	5																																																			
5.0	4	5	5																																																			
5.5	4	5	5																																																			
--	-	-	-																																																			
--	-	-	-																																																			
Note: Slanted line shows the range of the rated load current.																																																						

- 18 -

BC-10195

Model

GT3-5

Item

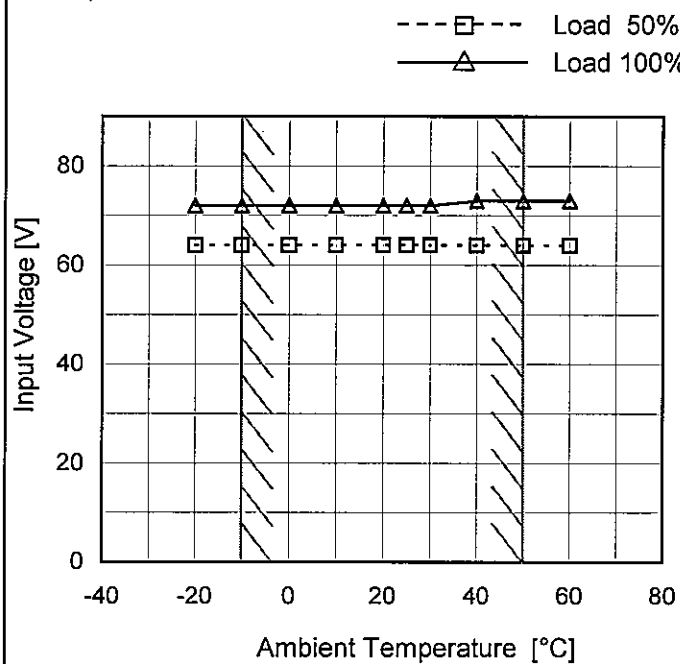
Minimum Input Voltage
for Regulated Output Voltage

Object

+5V5A

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	64	72
-10	64	72
0	64	72
10	64	72
20	64	72
25	64	72
30	64	72
40	64	73
50	64	73
60	64	73
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Model GT3-5

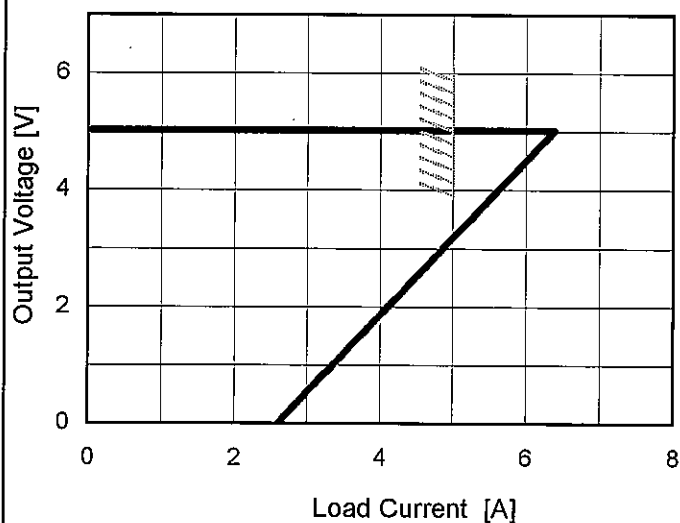
Item Overcurrent Protection

Object +5V5A

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	6.39	6.39	6.39
4.75	6.22	6.22	6.22
4.50	6.12	6.08	6.09
4.00	5.78	5.75	5.76
3.50	5.49	5.47	5.47
3.00	4.97	4.95	4.96
2.50	4.57	4.56	4.56
2.00	4.23	4.22	4.22
1.50	3.81	3.80	3.81
1.00	3.39	3.38	3.39
0.50	2.99	2.99	3.00
0.00	2.55	2.55	2.55

COSEL

