

# TEST DATA OF GT3W-15

Regulated DC Power Supply  
November 1, 2010

Approved by : Eiyoshi Wakamatsu  
Eiyoshi Wakamatsu Design Manager

Prepared by : Satoshi Kinoshita  
Satoshi Kinoshita Design Engineer

**COSEL CO.,LTD.**

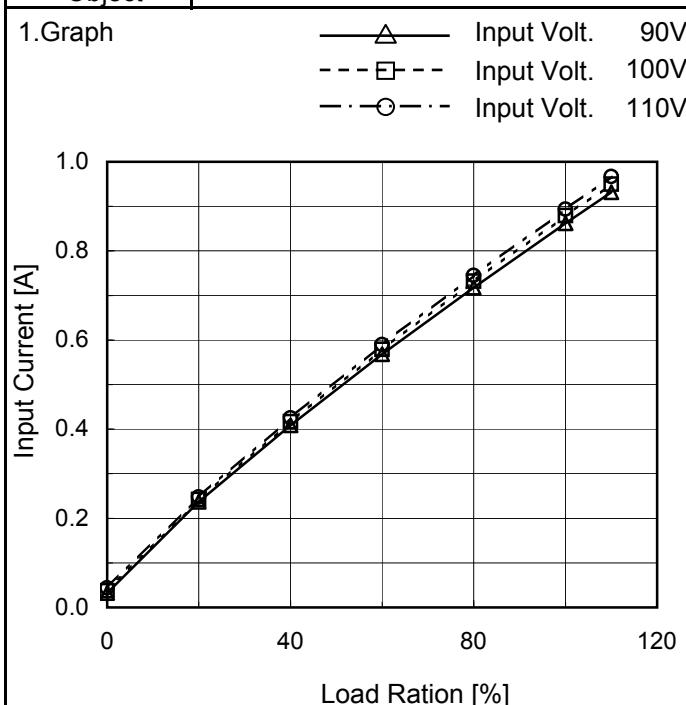
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Model	GT3W-15
Item	Input Current (by Load Current)
Object	_____


 Temperature 25°C  
 Testing Circuitry Figure A

## 2.Values

Load Ration [%]	Input Current [A]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0	0.032	0.037	0.044
20	0.237	0.242	0.248
40	0.409	0.417	0.425
60	0.568	0.579	0.590
80	0.718	0.732	0.745
100	0.862	0.879	0.894
110	0.932	0.950	0.967
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<p>Legend:</p> <ul style="list-style-type: none"> <li>— ▲ — Input Volt. 90V</li> <li>- ■ - Input Volt. 100V</li> <li>- ○ - Input Volt. 110V</li> </ul>																																																						
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**COSEL**

Model	GT3W-15	Temperature	25°C																																																				
Item	Efficiency (by Input Voltage)	Testing Circuitry	Figure A																																																				
Object	—	—	—																																																				
1.Graph			2.Values																																																				
<p>The graph plots Efficiency [%] on the y-axis (30 to 86) against Input Voltage [V] on the x-axis (80 to 120). Two data series are shown: Load 50% (dashed line with square markers) and Load 100% (solid line with triangle markers). Both series show a downward trend as input voltage increases. A slanted line on the graph indicates the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Efficiency Load 50% [%]</th> <th>Efficiency Load 100% [%]</th> </tr> </thead> <tbody> <tr> <td>85</td> <td>72.1</td> <td>74.8</td> </tr> <tr> <td>90</td> <td>67.9</td> <td>70.5</td> </tr> <tr> <td>100</td> <td>60.7</td> <td>63.2</td> </tr> <tr> <td>110</td> <td>55.1</td> <td>57.3</td> </tr> <tr> <td>115</td> <td>52.6</td> <td>54.7</td> </tr> </tbody> </table>			Input Voltage [V]	Efficiency Load 50% [%]	Efficiency Load 100% [%]	85	72.1	74.8	90	67.9	70.5	100	60.7	63.2	110	55.1	57.3	115	52.6	54.7	<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Efficiency [%]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>85</td> <td>72.1</td> <td>74.8</td> </tr> <tr> <td>90</td> <td>67.9</td> <td>70.5</td> </tr> <tr> <td>100</td> <td>60.7</td> <td>63.2</td> </tr> <tr> <td>110</td> <td>55.1</td> <td>57.3</td> </tr> <tr> <td>115</td> <td>52.6</td> <td>54.7</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table>			Input Voltage [V]	Efficiency [%]		Load 50%	Load 100%	85	72.1	74.8	90	67.9	70.5	100	60.7	63.2	110	55.1	57.3	115	52.6	54.7	--	-	-	--	-	-	--	-	-	--	-	-
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<p>Graph showing Efficiency [%] vs Load Ration [%]. The Y-axis ranges from 22 to 78 in increments of 6. The X-axis ranges from 0 to 120 in increments of 40. Three data series are plotted:</p> <ul style="list-style-type: none"> <li>Input Volt. 90V: Represented by solid triangles (▲). Efficiency starts at ~62% at 20% load and rises to ~70% at 100% load.</li> <li>Input Volt. 100V: Represented by dashed squares (□). Efficiency starts at ~55% at 20% load and rises to ~63% at 100% load.</li> <li>Input Volt. 110V: Represented by dashed circles (○). Efficiency starts at ~48% at 20% load and rises to ~55% at 100% load.</li> </ul>																																																						
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<table border="1"> <thead> <tr> <th rowspan="2">Load Ration [%]</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> </thead> <tbody> <tr> <td>0</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>20</td><td>62.2</td><td>55.5</td><td>49.9</td></tr> <tr> <td>40</td><td>66.8</td><td>59.7</td><td>53.9</td></tr> <tr> <td>60</td><td>68.6</td><td>61.6</td><td>55.7</td></tr> <tr> <td>80</td><td>69.7</td><td>62.5</td><td>56.6</td></tr> <tr> <td>100</td><td>70.5</td><td>63.2</td><td>57.3</td></tr> <tr> <td>110</td><td>70.8</td><td>63.5</td><td>57.5</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> <tr> <td>--</td><td>-</td><td>-</td><td>-</td></tr> </tbody> </table>				Load Ration [%]	Efficiency [%]			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	0	-	-	-	20	62.2	55.5	49.9	40	66.8	59.7	53.9	60	68.6	61.6	55.7	80	69.7	62.5	56.6	100	70.5	63.2	57.3	110	70.8	63.5	57.5	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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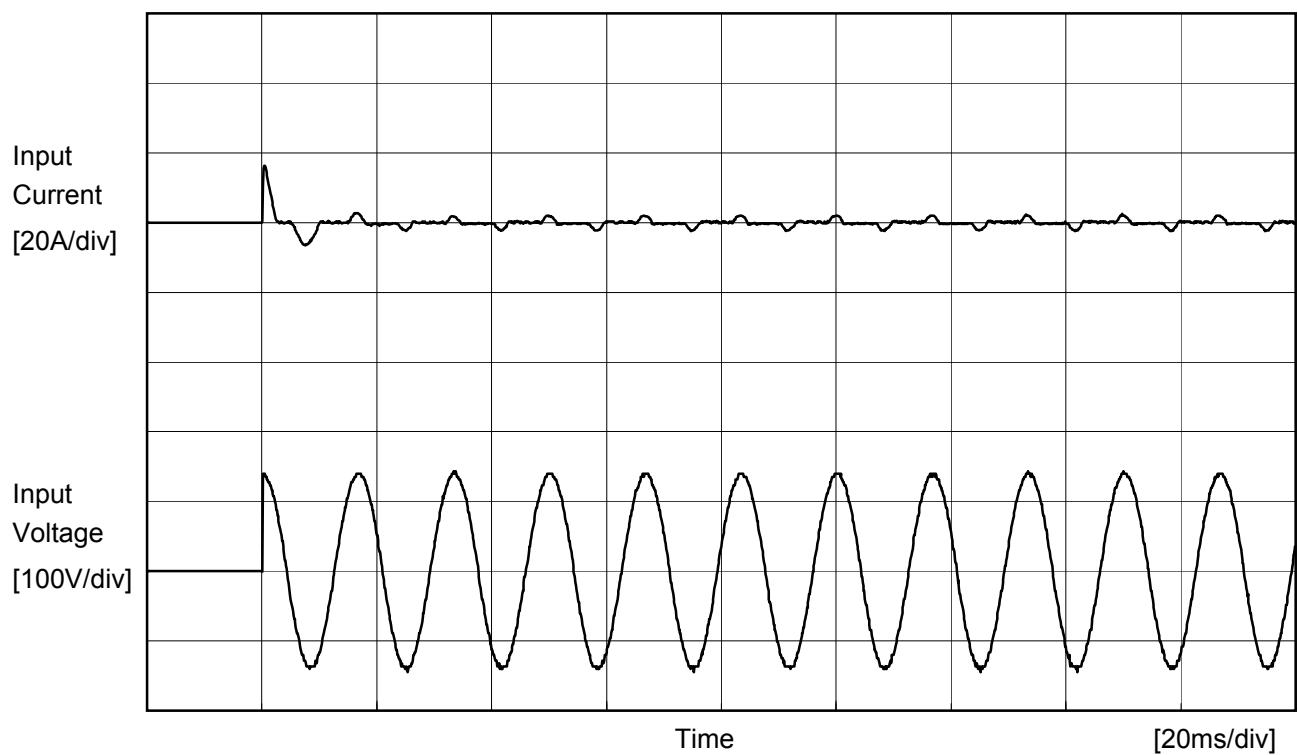
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Model	GT3W-15	
Item	Power Factor (by Input Voltage)	Temperature 25°C Testing Circuitry Figure A
Object	—	—
1.Graph		
<p>Power Factor</p> <p>Input Voltage [V]</p> <p>Legend: Load 50% (dashed line with squares), Load 100% (solid line with triangles)</p>		
<p>Note: Slanted line shows the range of the rated input voltage.</p>		
2.Values		
Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
85	0.659	0.722
90	0.655	0.716
100	0.645	0.706
110	0.635	0.696
115	0.631	0.691
--	-	-
--	-	-
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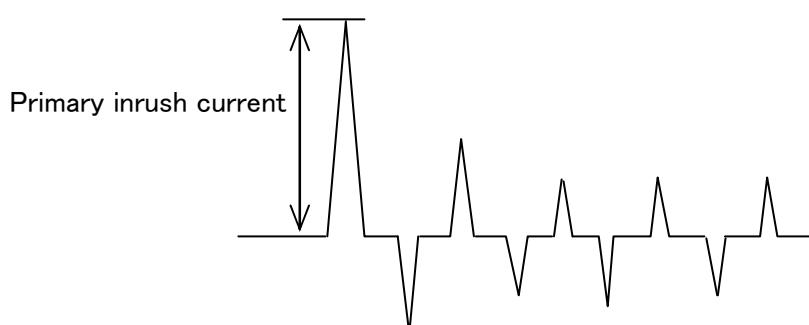
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Model	GT3W-15	Temperature Testing Circuitry 25°C Figure A
Item	Inrush Current	
Object	_____	



Input Voltage 100 V  
 Frequency 60 Hz  
 Load 100 %

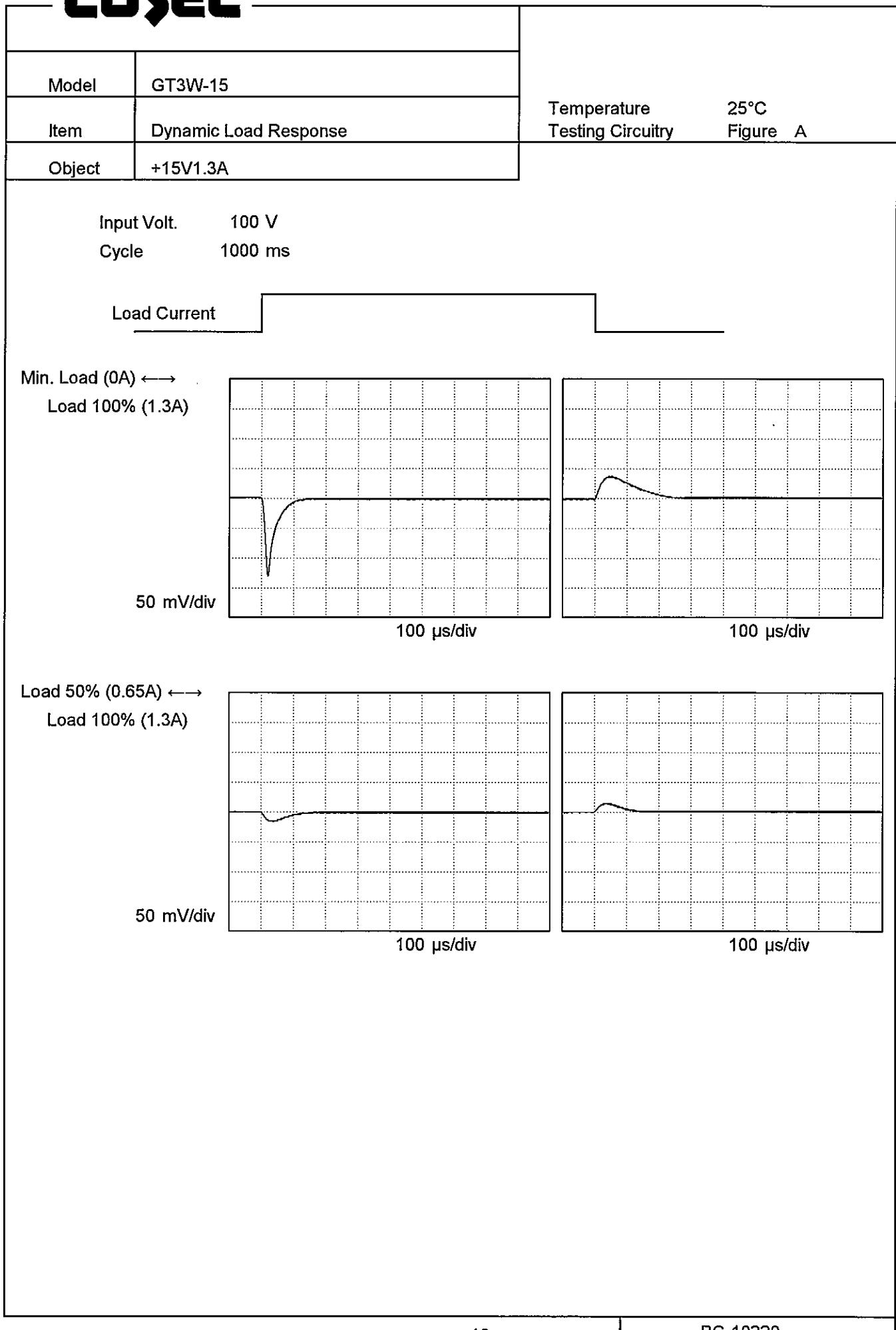
Primary inrush current 16.5 A

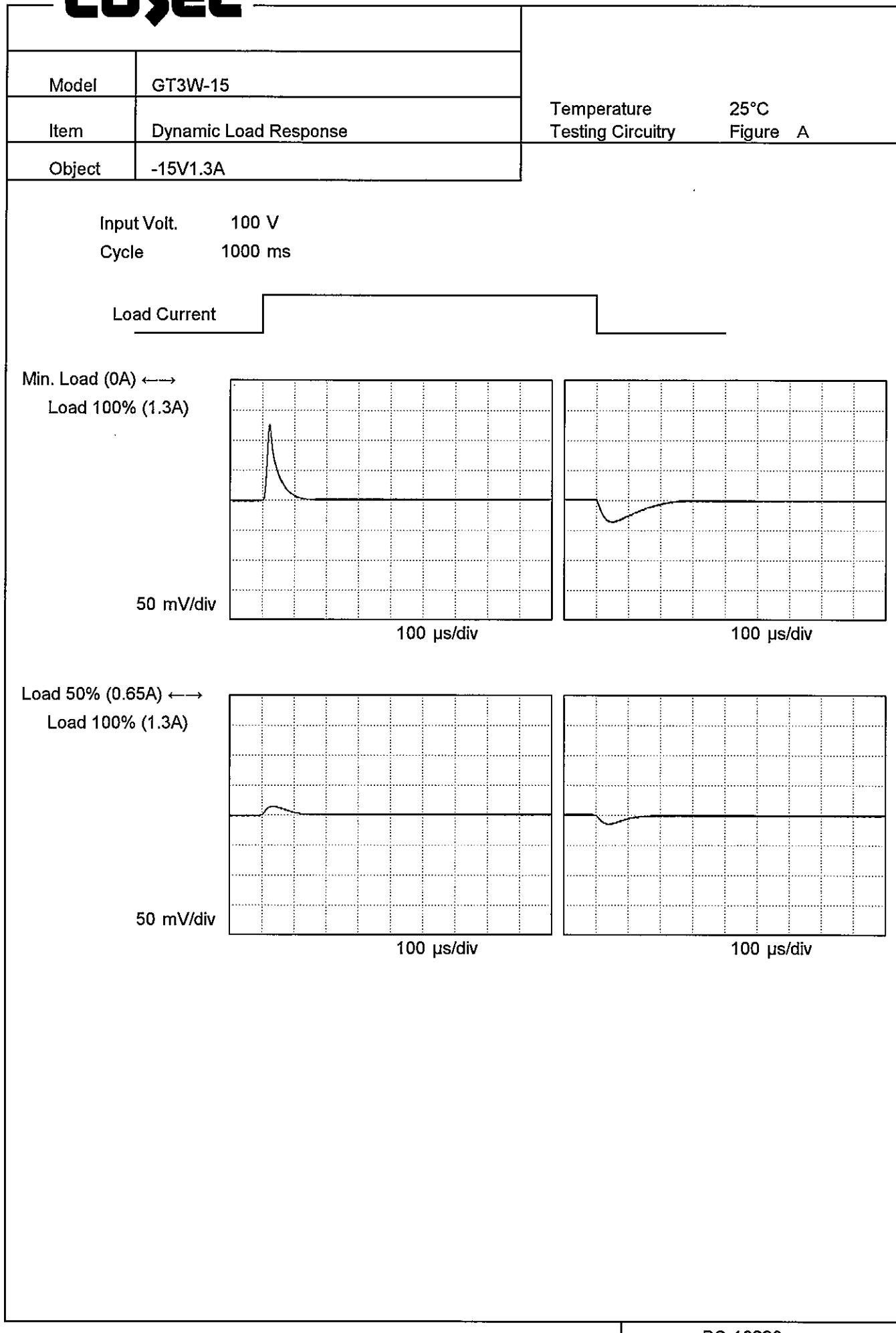


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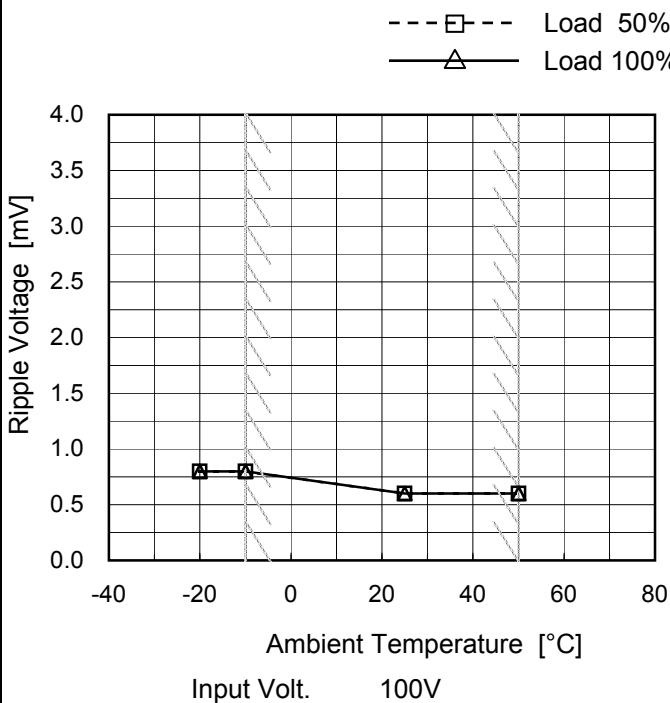
**COSSEL**

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**COSEL**

Model	GT3W-15
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V1.3A

## 1.Graph

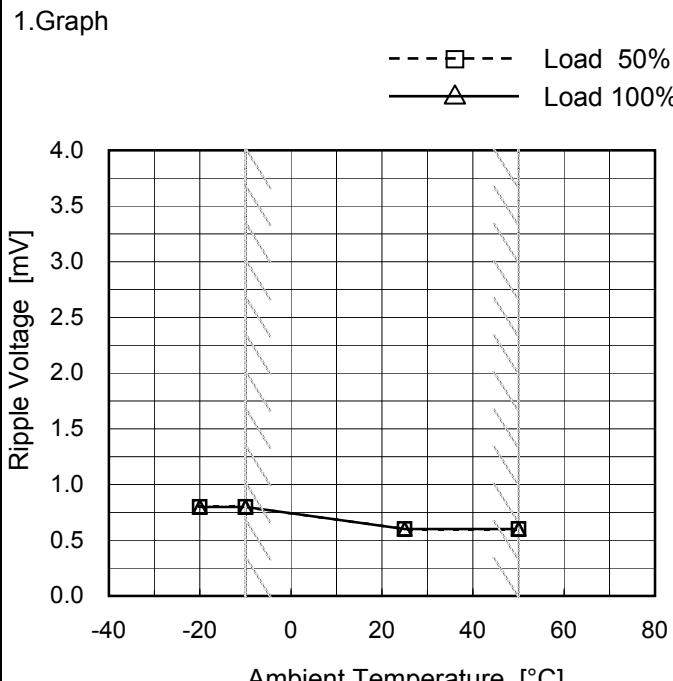


Testing Circuitry Figure A

## 2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	0.8	0.8
-10	0.8	0.8
25	0.6	0.6
50	0.6	0.6
--	-	-
--	-	-
--	-	-
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## 1.Graph



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Measured by 20 MHz Oscilloscope.

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Model	GT3W-15	Testing Circuitry Figure A																																																						
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Object	+15V1.3A																																																							
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Model	GT3W-15	Testing Circuitry Figure A
Item	Output Voltage Accuracy	

### 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 (AVR 1) : 0 - 1.3A (AVR 2) : 0 - 1.3A

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

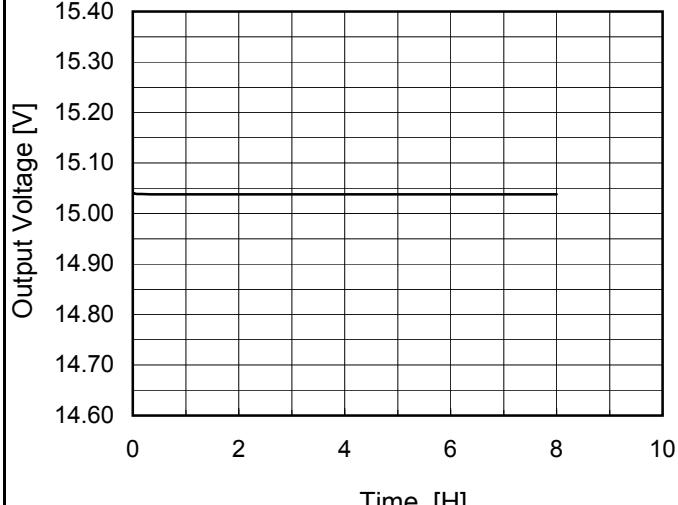
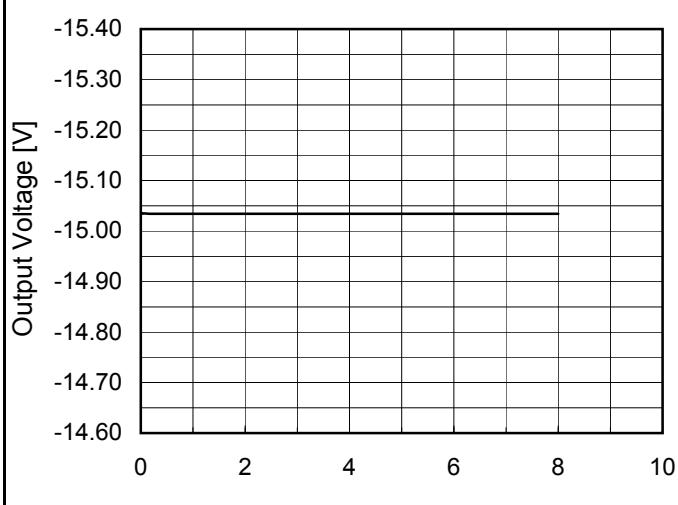
$$\text{* Output Voltage Accuracy (Ration)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

### 2. Values

Object	+15V1.3A		Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]	Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	30	110	0	15.040	$\pm 9$	$\pm 0.1$
Minimum Voltage	50	110	1.3	15.023		

Object	-15V1.3A		Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]	Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	10	110	0	-15.039	$\pm 7$	$\pm 0.1$
Minimum Voltage	50	100	1.3	-15.026		

**COSEL**

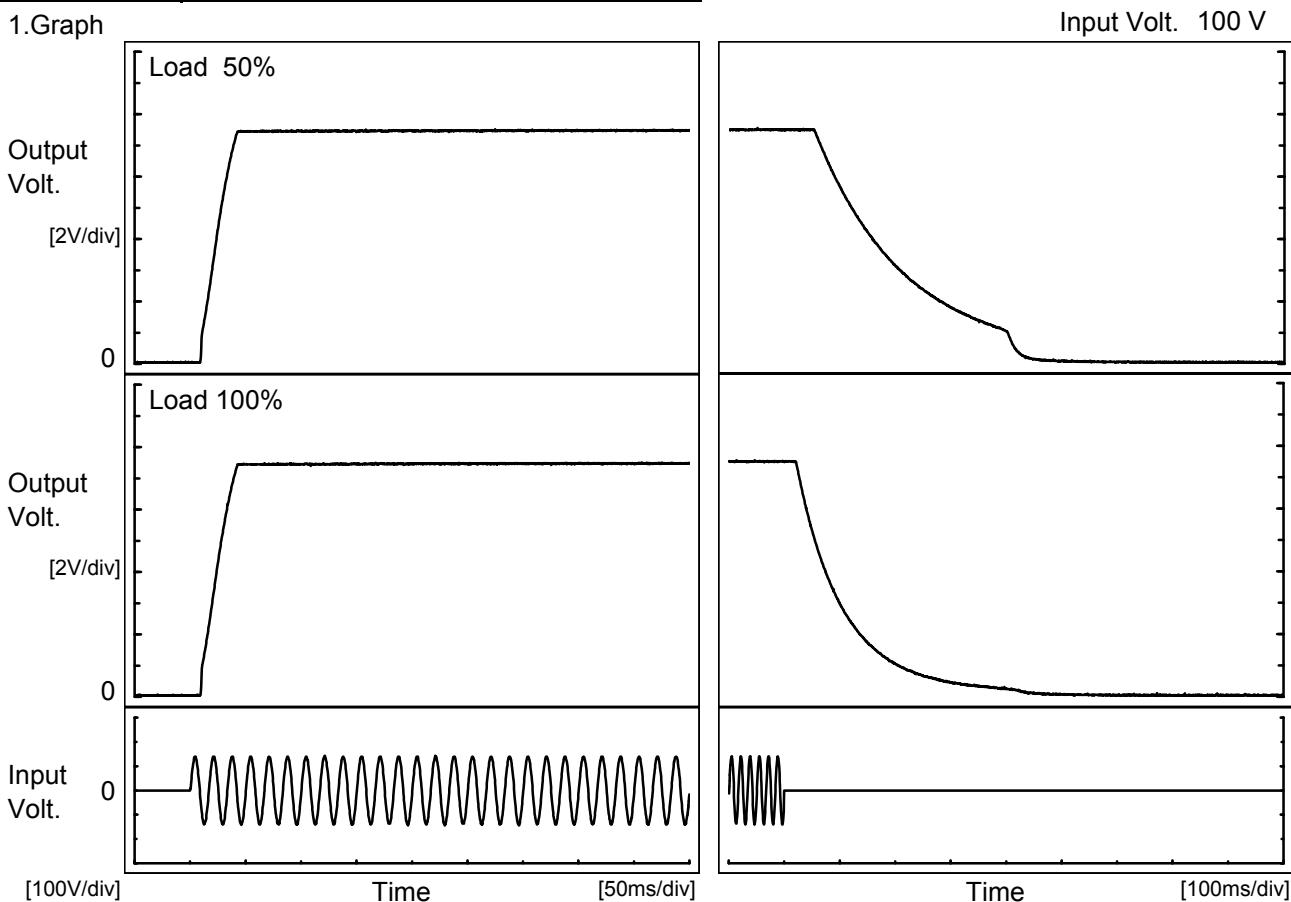
Model	GT3W-15	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+15V1.3A																								
1.Graph		2.Values																							
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 100V</p> <p>Load 100%</p>		<table border="1"> <thead> <tr> <th>Time since start [H]</th><th>Output Voltage [V]</th></tr> </thead> <tbody> <tr><td>0.0</td><td>15.041</td></tr> <tr><td>0.5</td><td>15.038</td></tr> <tr><td>1.0</td><td>15.038</td></tr> <tr><td>2.0</td><td>15.038</td></tr> <tr><td>3.0</td><td>15.038</td></tr> <tr><td>4.0</td><td>15.038</td></tr> <tr><td>5.0</td><td>15.038</td></tr> <tr><td>6.0</td><td>15.038</td></tr> <tr><td>7.0</td><td>15.038</td></tr> <tr><td>8.0</td><td>15.038</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	15.041	0.5	15.038	1.0	15.038	2.0	15.038	3.0	15.038	4.0	15.038	5.0	15.038	6.0	15.038	7.0	15.038	8.0	15.038
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**COSEL**

Model	GT3W-15
Item	Rise and Fall Time
Object	+15V1.3A

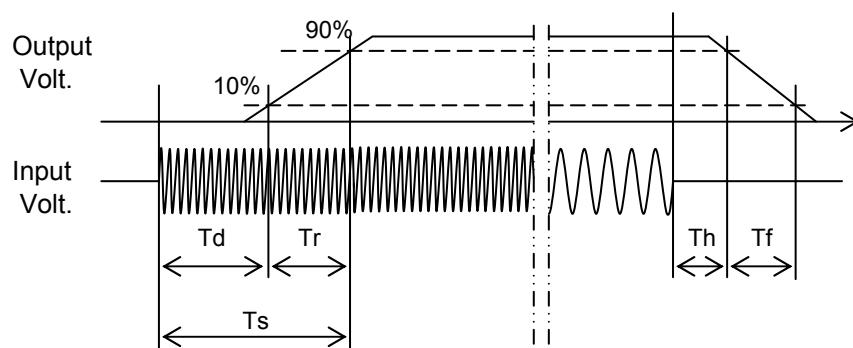
Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		10.3	27.5	37.8	69.5	336.5
100 %		10.5	27.3	37.8	29.5	203.0

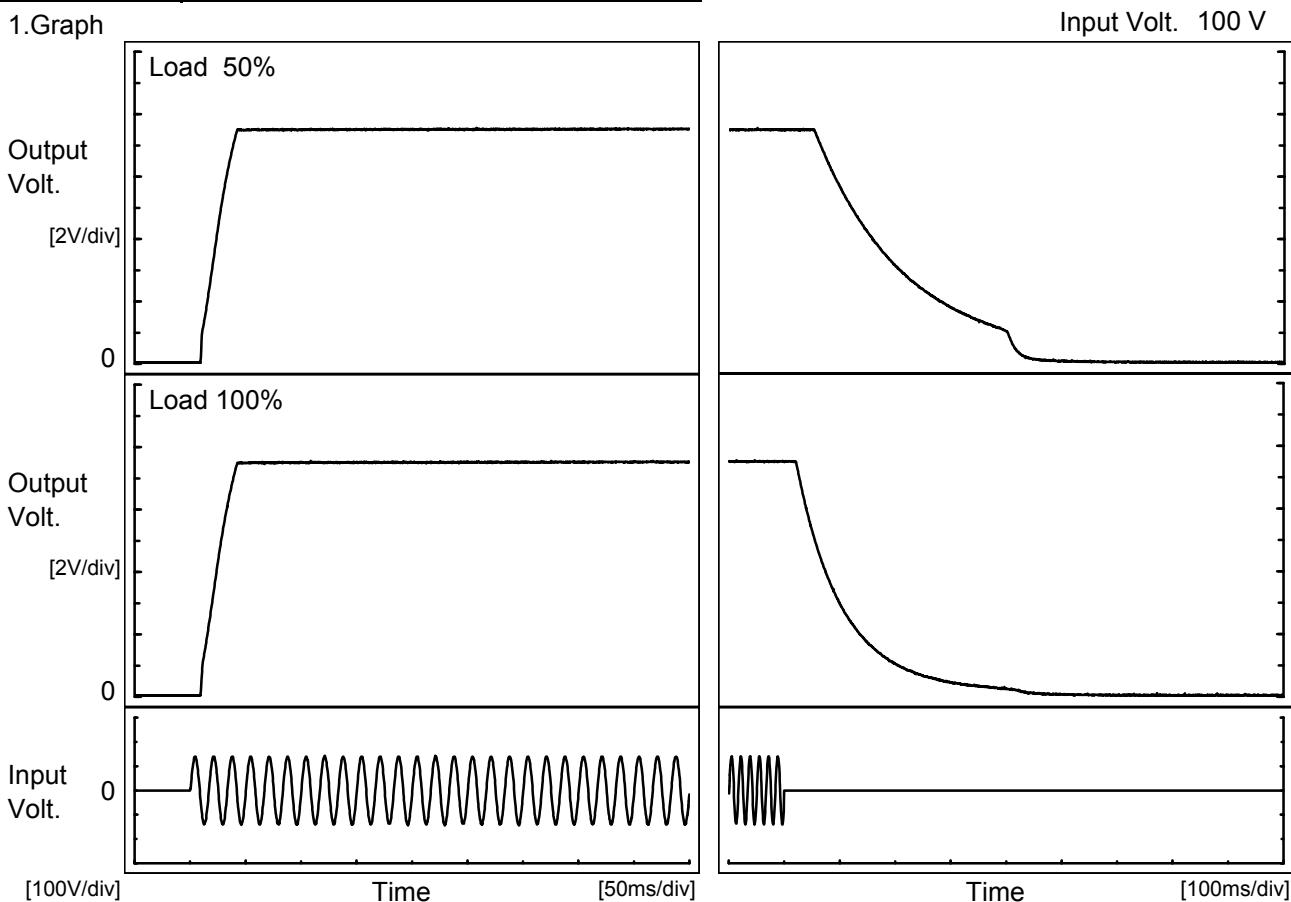


**COSEL**

Model	GT3W-15
Item	Rise and Fall Time
Object	-15V1.3A

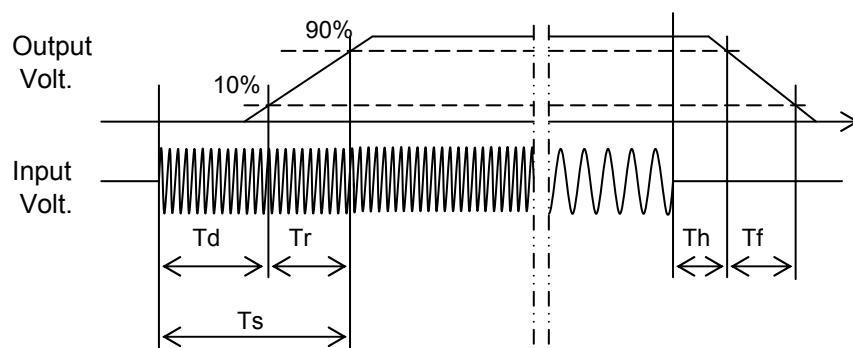
Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Load	Time	Td	Tr	Ts	Th	Tf
50 %		10.5	27.3	37.8	70.0	340.5
100 %		10.8	27.0	37.8	29.5	200.5

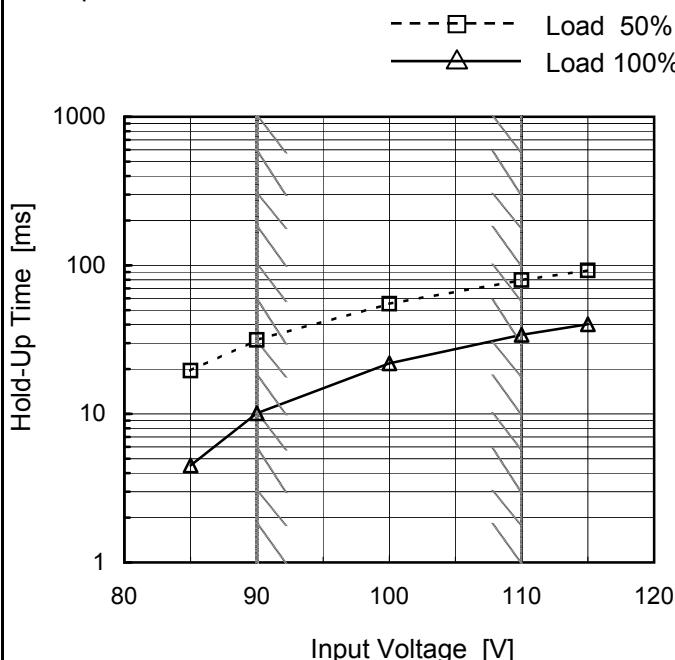


**COSEL**

Model	GT3W-15
Item	Hold-Up Time
Object	+15V1.3A

 Temperature 25°C  
 Testing Circuitry Figure A

## 1.Graph



## 2.Values

Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	20	5
90	31	10
100	55	22
110	80	34
115	92	40
--	-	-
--	-	-
--	-	-
--	-	-

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.

Model	GT3W-15	Temperature	25°C																																
Item	Hold-Up Time	Testing Circuitry	Figure A																																
Object	-15V1.3A																																		
1. Graph			2. Values																																
<p>The graph illustrates the relationship between input voltage and hold-up time for the GT3W-15 model. The Y-axis represents hold-up time in milliseconds (ms), ranging from 1 to 1000 on a logarithmic scale. The X-axis represents input voltage in Volts (V), ranging from 80 to 120. Two data series are plotted: 'Load 50%' (dashed line with square markers) and 'Load 100%' (solid line with triangle markers). Both series show an increase in hold-up time as the input voltage drops below the rated range (approximately 90V). A vertical dashed line indicates the rated input voltage range.</p>			<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Hold-Up Time [ms]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr> <td>85</td> <td>19</td> <td>4</td> </tr> <tr> <td>90</td> <td>31</td> <td>10</td> </tr> <tr> <td>100</td> <td>55</td> <td>22</td> </tr> <tr> <td>110</td> <td>79</td> <td>34</td> </tr> <tr> <td>115</td> <td>92</td> <td>40</td> </tr> <tr> <td>--</td> <td>-</td> <td>-</td> </tr> </tbody> </table>	Input Voltage [V]	Hold-Up Time [ms]		Load 50%	Load 100%	85	19	4	90	31	10	100	55	22	110	79	34	115	92	40	--	-	-	--	-	-	--	-	-	--	-	-
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Model	GT3W-15	Temperature Testing Circuitry      25°C Figure A																																																					
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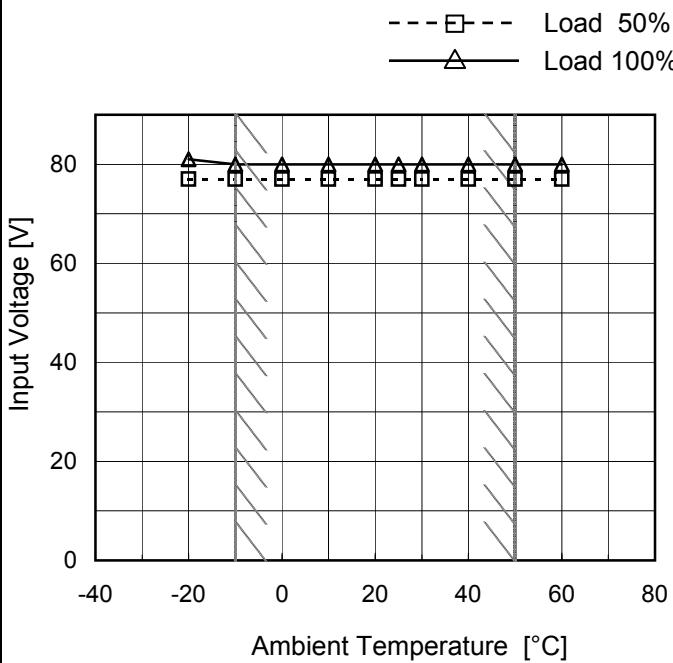
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Note:	Slanted line shows the range of the rated load current.																																																						

**COSEL**

Model	GT3W-15
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V1.3A

Testing Circuitry Figure A

## 1.Graph

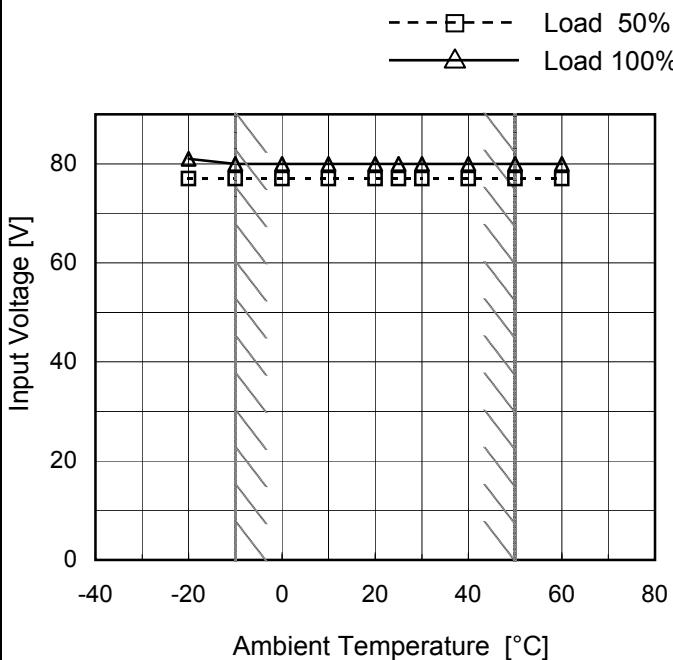


## 2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	77	81
-10	77	80
0	77	80
10	77	80
20	77	80
25	77	80
30	77	80
40	77	80
50	77	80
60	77	80
--	-	-

Object	-15V1.3A
--------	----------

## 1.Graph



## 2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	77	81
-10	77	80
0	77	80
10	77	80
20	77	80
25	77	80
30	77	80
40	77	80
50	77	80
60	77	80
--	-	-

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

**COSEL**

Model	GT3W-15	Temperature 25°C Testing Circuitry Figure A																																																									
Item	Overcurrent Protection																																																										
Object	+15V1.3A																																																										
1.Graph	<p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>Input Volt. 90V Input Volt. 100V Input Volt. 110V</p>																																																										
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Object	-15V1.3A																																																										
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2.Values	<table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 90[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 110[V]</th> </tr> </thead> <tbody> <tr><td>-15.00</td><td>1.69</td><td>1.69</td><td>1.69</td></tr> <tr><td>-14.25</td><td>1.64</td><td>1.64</td><td>1.64</td></tr> <tr><td>-13.50</td><td>1.59</td><td>1.59</td><td>1.59</td></tr> <tr><td>-12.00</td><td>1.50</td><td>1.50</td><td>1.50</td></tr> <tr><td>-10.50</td><td>1.40</td><td>1.40</td><td>1.40</td></tr> <tr><td>-9.00</td><td>1.30</td><td>1.30</td><td>1.30</td></tr> <tr><td>-7.50</td><td>1.20</td><td>1.20</td><td>1.20</td></tr> <tr><td>-6.00</td><td>1.11</td><td>1.11</td><td>1.11</td></tr> <tr><td>-4.50</td><td>1.01</td><td>1.01</td><td>1.01</td></tr> <tr><td>-3.00</td><td>0.91</td><td>0.91</td><td>0.91</td></tr> <tr><td>-1.50</td><td>0.82</td><td>0.82</td><td>0.82</td></tr> <tr><td>0.00</td><td>0.71</td><td>0.71</td><td>0.71</td></tr> </tbody> </table>				Output Voltage [V]	Load Current [A]			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	-15.00	1.69	1.69	1.69	-14.25	1.64	1.64	1.64	-13.50	1.59	1.59	1.59	-12.00	1.50	1.50	1.50	-10.50	1.40	1.40	1.40	-9.00	1.30	1.30	1.30	-7.50	1.20	1.20	1.20	-6.00	1.11	1.11	1.11	-4.50	1.01	1.01	1.01	-3.00	0.91	0.91	0.91	-1.50	0.82	0.82	0.82	0.00	0.71	0.71	0.71
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<p>Note: Slanted line shows the range of the rated load current.</p>																																																											

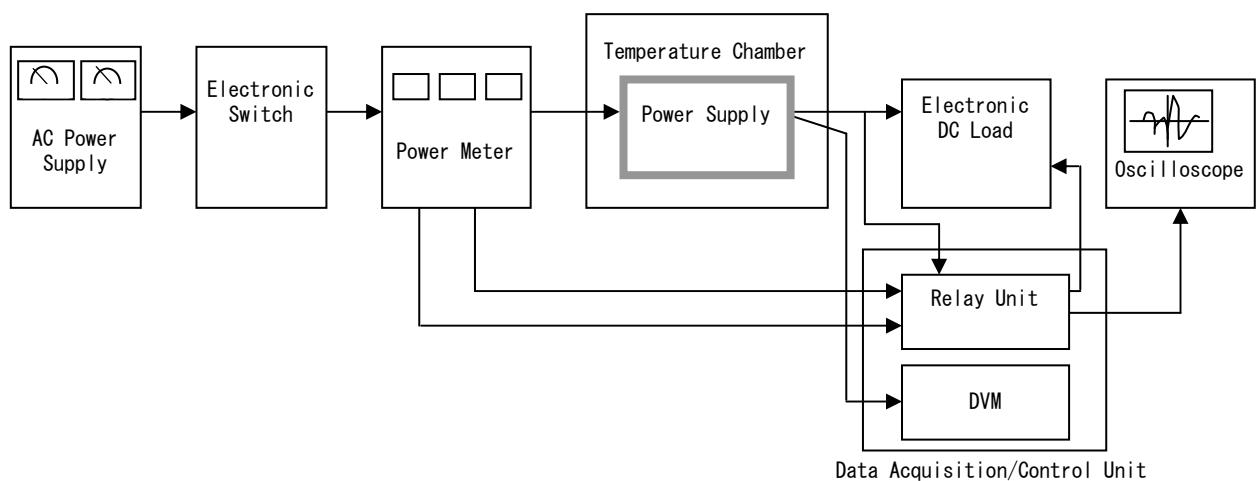


Figure A