

TEST DATA OF GT2-12

Regulated DC Power Supply
April 12, 2010

Approved by : Eiyoshi Wakamatsu
Eiyoshi Wakamatsu Design Manager

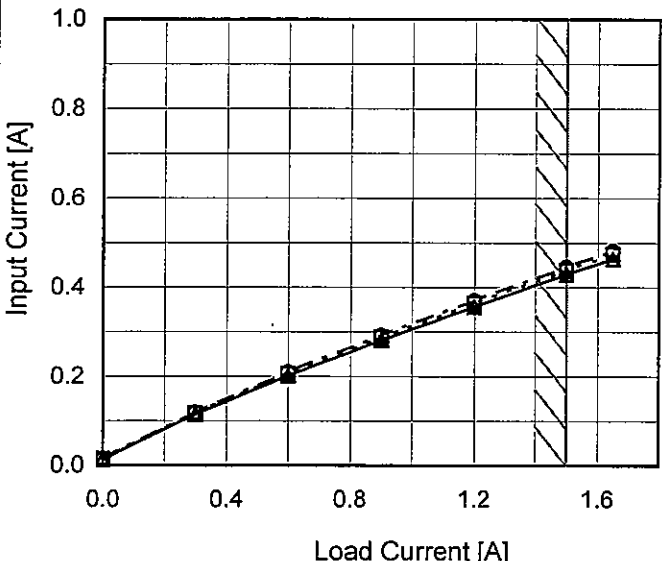
Prepared by : Satoshi Kinoshita
Satoshi Kinoshita Design Engineer

COSEL CO.,LTD.

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Model		GT2-12																																																				
Item		Input Current (by Load Current)																																																				
Object																																																						
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>Note: Slanted line shows the range of the rated load current.</p>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</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>0.014</td><td>0.014</td><td>0.015</td></tr><tr><td>0.30</td><td>0.115</td><td>0.117</td><td>0.119</td></tr><tr><td>0.60</td><td>0.202</td><td>0.206</td><td>0.210</td></tr><tr><td>0.90</td><td>0.282</td><td>0.287</td><td>0.292</td></tr><tr><td>1.20</td><td>0.357</td><td>0.364</td><td>0.371</td></tr><tr><td>1.50</td><td>0.430</td><td>0.438</td><td>0.446</td></tr><tr><td>1.65</td><td>0.465</td><td>0.474</td><td>0.482</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></table>		Load Current [A]	Input Current [A]			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	0.00	0.014	0.014	0.015	0.30	0.115	0.117	0.119	0.60	0.202	0.206	0.210	0.90	0.282	0.287	0.292	1.20	0.357	0.364	0.371	1.50	0.430	0.438	0.446	1.65	0.465	0.474	0.482	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model		GT2-12	
Item		Input Power (by Load Current)	
Object			
1.Graph		2.Values	

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Model

GT2-12

Item

Efficiency (by Input Voltage)

Object

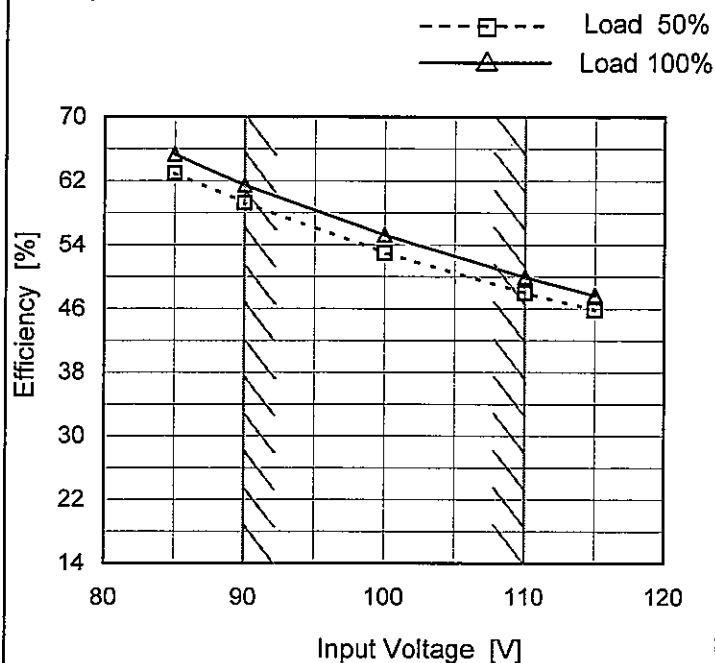
Temperature

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	63.0	65.3
90	59.3	61.5
100	53.0	55.2
110	48.0	50.0
115	45.8	47.7
--	-	-
--	-	-
--	-	-
--	-	-

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Model GT2-12

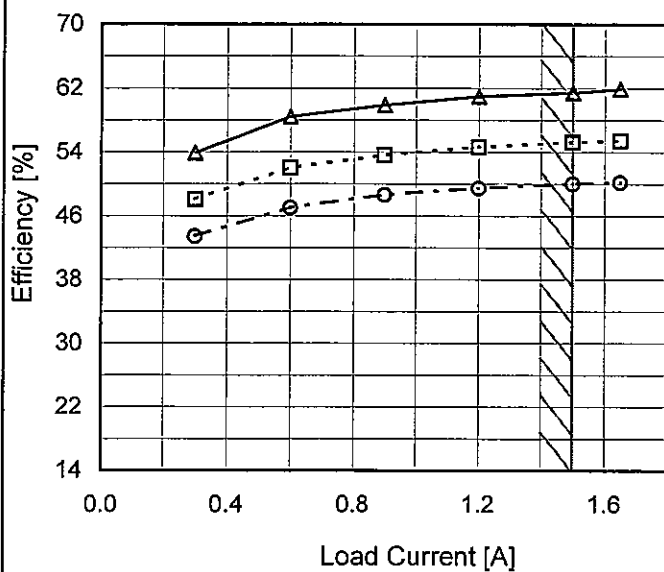
Item Efficiency (by Load Current)

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	-	-	-
0.30	53.9	48.1	43.5
0.60	58.4	52.0	47.0
0.90	59.9	53.6	48.6
1.20	61.0	54.6	49.5
1.50	61.5	55.2	50.0
1.65	61.9	55.4	50.2
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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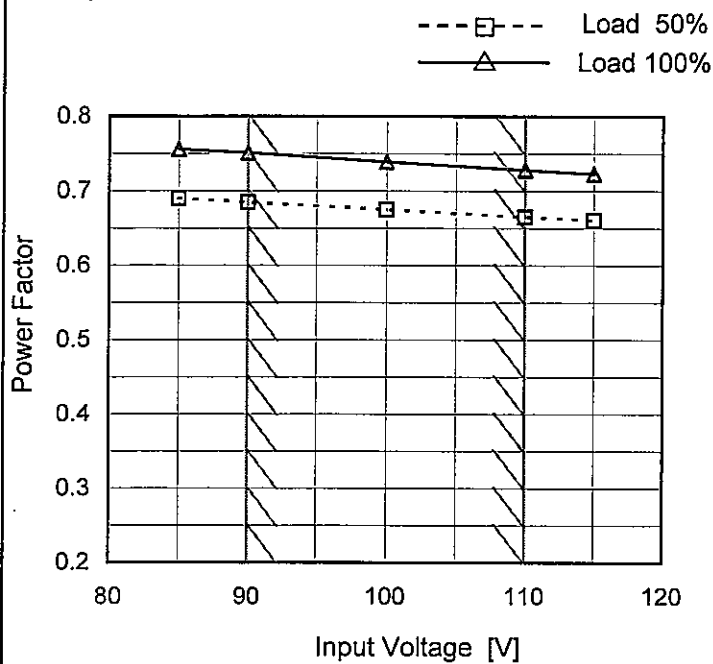
Model GT2-12

Item Power Factor (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

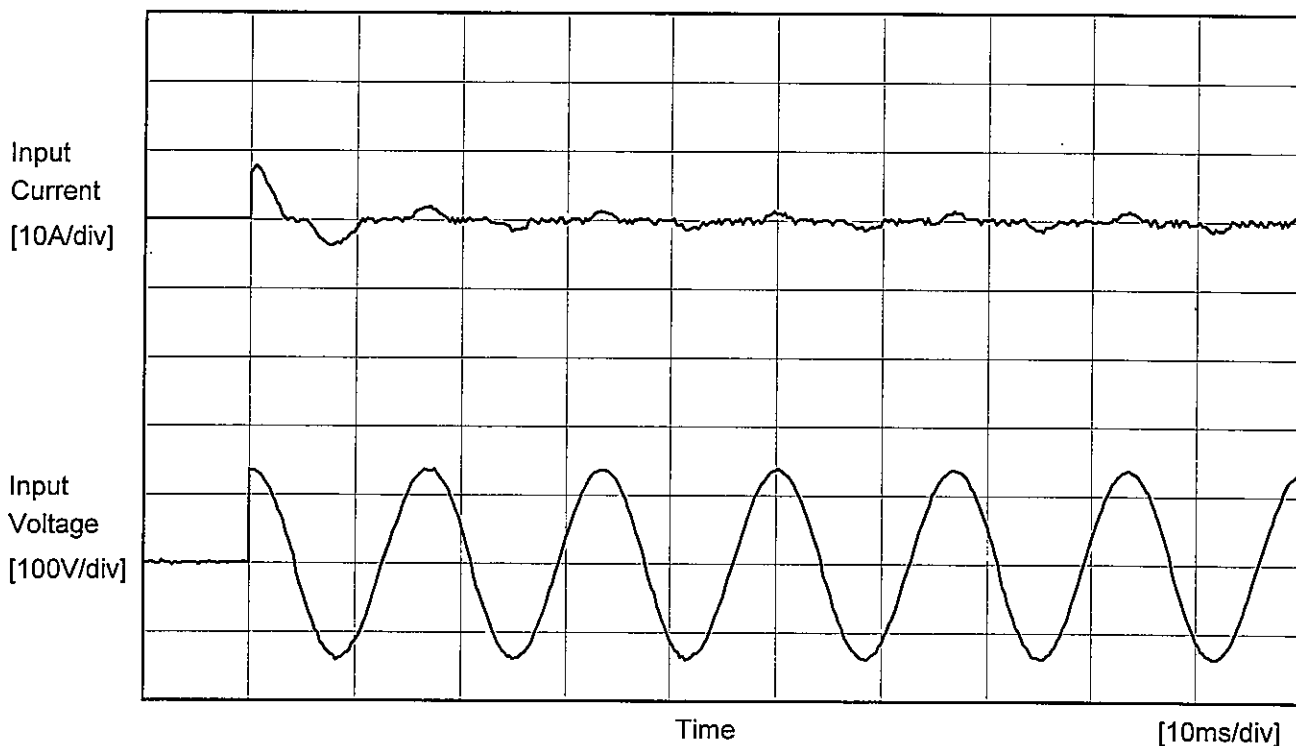
Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
85	0.690	0.756
90	0.685	0.751
100	0.675	0.739
110	0.665	0.729
115	0.661	0.723
--	-	-
--	-	-
--	-	-
--	-	-

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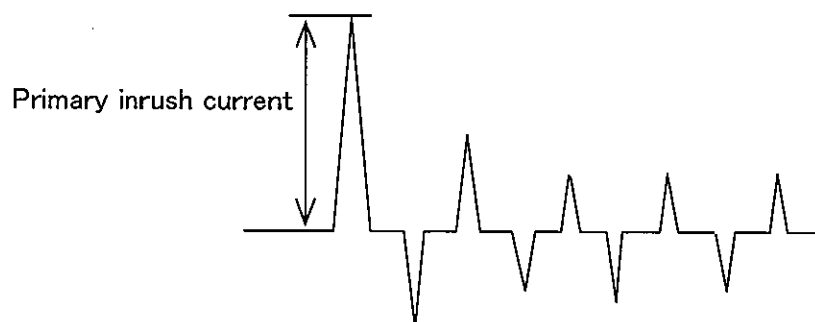
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Item	Power Factor (by Load Current)	Temperature	25°C																																																			
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Note: Slanted line shows the range of the rated load current.																																																						

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Model		GT2-12	Temperature 25°C Testing Circuitry Figure A
Item		Inrush Current	
Object		_____	



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	7.9 A





Model

GT2-12

Item

Line Regulation

Object

+12V1.5A

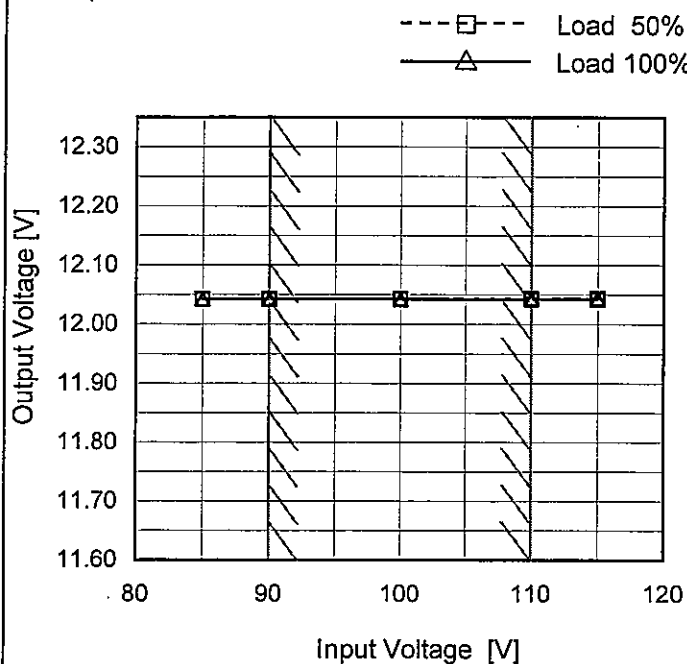
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	12.043	12.043
90	12.043	12.043
100	12.043	12.043
110	12.043	12.043
115	12.043	12.043
--	-	-
--	-	-
--	-	-
--	-	-



Model	GT2-12																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+12V1.5A	Testing Circuitry	Figure A																																																			
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<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>Output Voltage [V]</p><p>Load Current [A]</p><p>Note: Slanted line shows the range of the rated load current.</p></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>0.00</td><td>12.043</td><td>12.043</td><td>12.043</td></tr><tr><td>0.30</td><td>12.043</td><td>12.043</td><td>12.043</td></tr><tr><td>0.60</td><td>12.043</td><td>12.043</td><td>12.043</td></tr><tr><td>0.90</td><td>12.043</td><td>12.043</td><td>12.043</td></tr><tr><td>1.20</td><td>12.043</td><td>12.043</td><td>12.043</td></tr><tr><td>1.50</td><td>12.043</td><td>12.043</td><td>12.043</td></tr><tr><td>1.65</td><td>12.043</td><td>12.043</td><td>12.043</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></table>		Load Current [A]	Output Voltage [V]			Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]	0.00	12.043	12.043	12.043	0.30	12.043	12.043	12.043	0.60	12.043	12.043	12.043	0.90	12.043	12.043	12.043	1.20	12.043	12.043	12.043	1.50	12.043	12.043	12.043	1.65	12.043	12.043	12.043	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
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Model	GT2-12	Temperature Testing Circuitry	25°C Figure A
Item	Dynamic Load Response		
Object	+12V1.5A		

Input Volt. 100 V
Cycle 1000 ms

Load Current

Min. Load (0A) ←→
Load 100% (1.5A)

50 mV/div

100 μ s/div

100 μ s/div

Load 50% (0.75A) ←→
Load 100% (1.5A)

50 mV/div

100 μ s/div

100 μ s/div

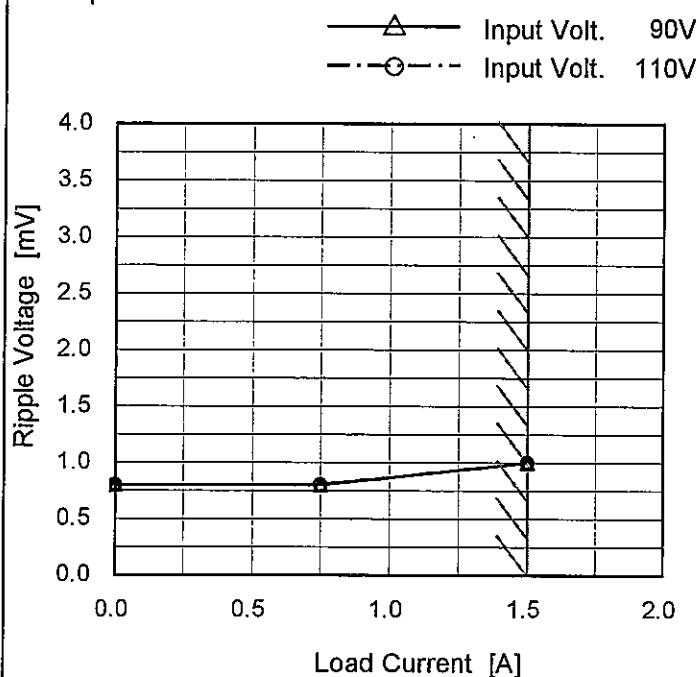
Model GT2-12

Item Ripple Voltage (by Load Current)

Object +12V1.5A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



Measured by 20 MHz Oscilloscope.

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

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 90 [V]	Input Volt. 110 [V]
0.00	0.8	0.8
0.75	0.8	0.8
1.50	1.0	1.0
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

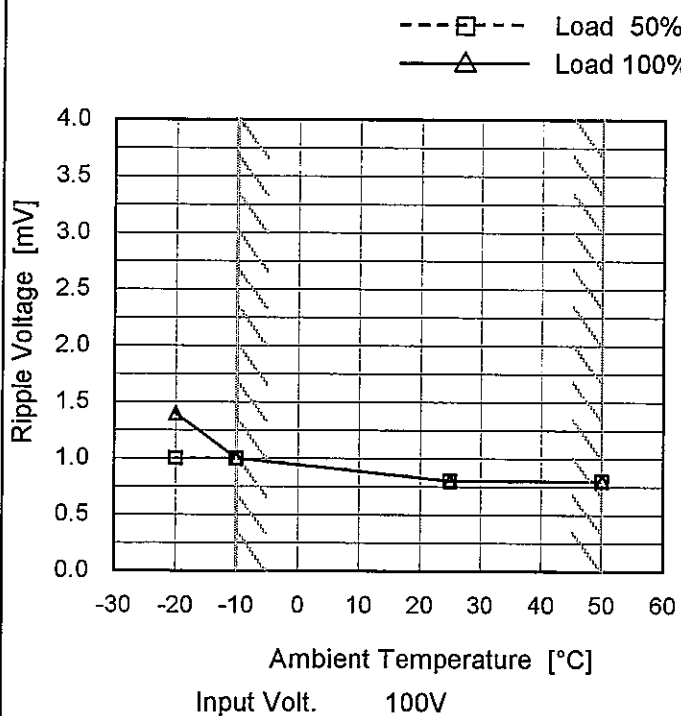
Model GT2-12

Item Ripple Voltage (by Ambient Temp.)

Object +12V1.5A

Testing Circuitry Figure A

1. Graph



Measured by 20 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%
-20	1.0	1.4
-10	1.0	1.0
25	0.8	0.8
50	0.8	0.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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Model

GT2-12

Item

Ambient Temperature Drift

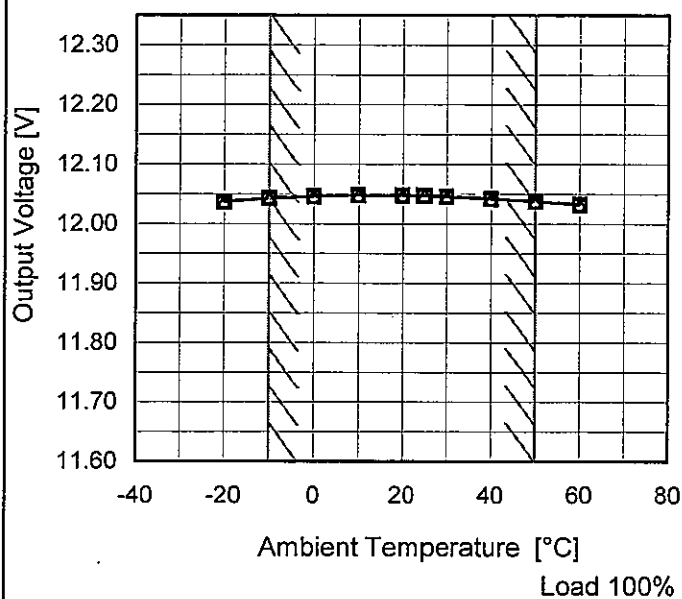
Object

+12V1.5A

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	12.037	12.037	12.037
-10	12.043	12.043	12.043
0	12.046	12.046	12.046
10	12.048	12.048	12.048
20	12.048	12.048	12.049
25	12.047	12.048	12.048
30	12.046	12.046	12.046
40	12.042	12.042	12.043
50	12.038	12.038	12.038
60	12.033	12.033	12.033
--	-	-	-

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		Testing Circuitry Figure A
Model	GT2-12	
Item	Output Voltage Accuracy	
Object	+12V1.5A	

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 - 1.5A

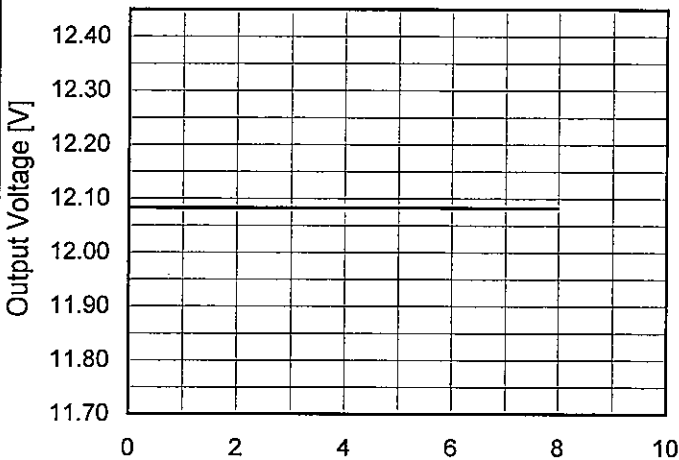
* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

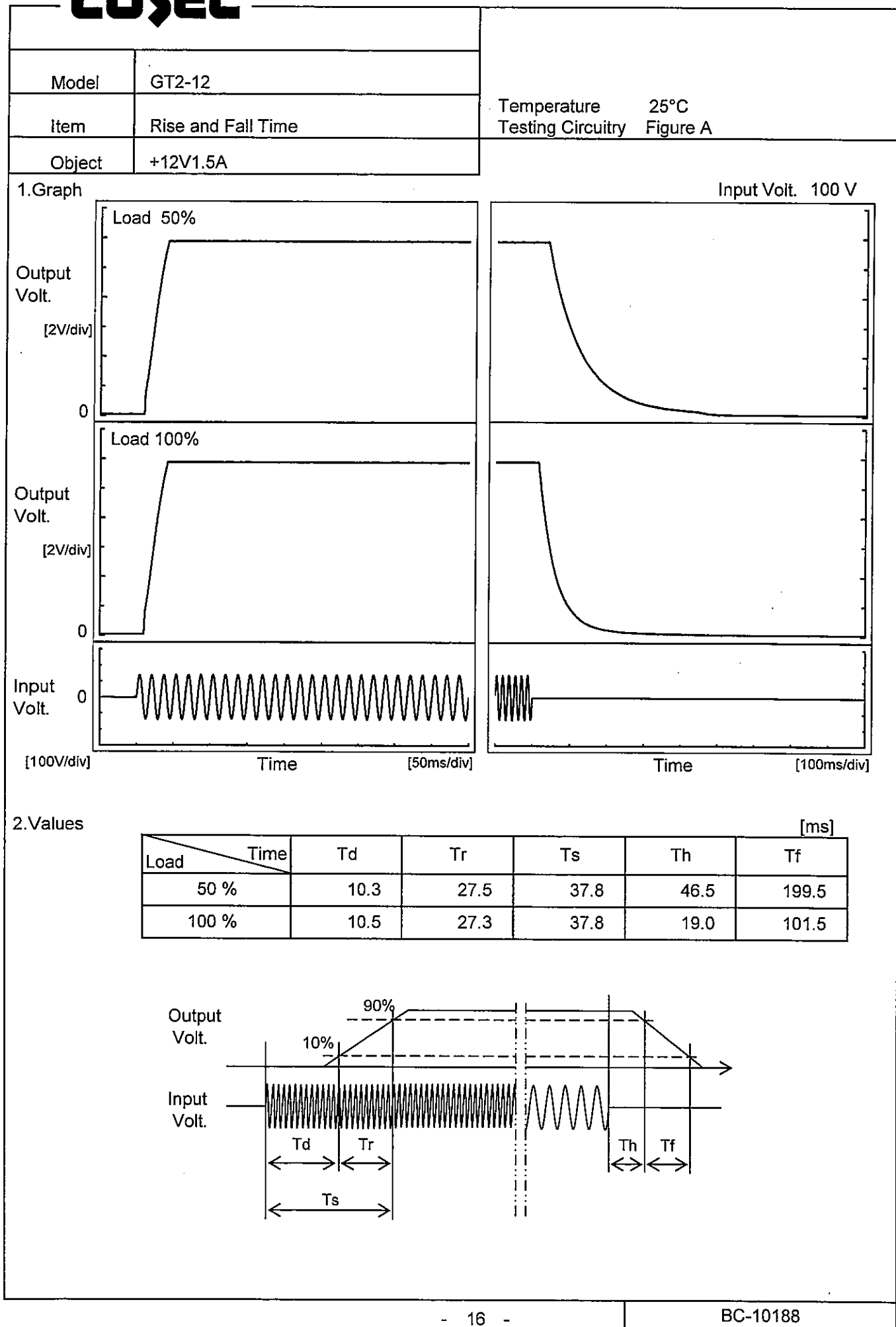
2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ratio [%]
Maximum Voltage	20	110	1.5	12.049	±6	±0.1
Minimum Voltage	50	90	1.5	12.038		

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Model	GT2-12																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+12V1.5A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><p>Input Volt. 100V Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>12.083</td></tr><tr><td>0.5</td><td>12.083</td></tr><tr><td>1.0</td><td>12.083</td></tr><tr><td>2.0</td><td>12.083</td></tr><tr><td>3.0</td><td>12.083</td></tr><tr><td>4.0</td><td>12.083</td></tr><tr><td>5.0</td><td>12.083</td></tr><tr><td>6.0</td><td>12.083</td></tr><tr><td>7.0</td><td>12.083</td></tr><tr><td>8.0</td><td>12.083</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	12.083	0.5	12.083	1.0	12.083	2.0	12.083	3.0	12.083	4.0	12.083	5.0	12.083	6.0	12.083	7.0	12.083	8.0	12.083
Time since start [H]	Output Voltage [V]																								
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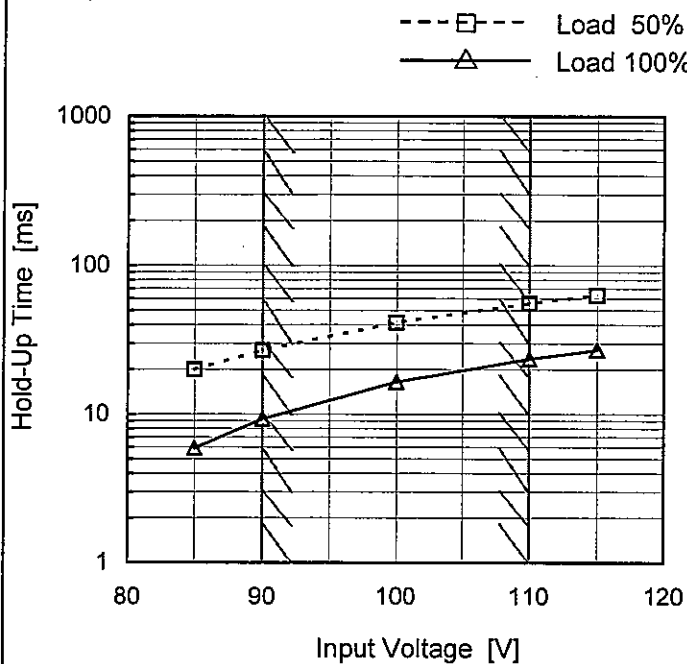
Model GT2-12

Item Hold-Up Time

Object +12V1.5A

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

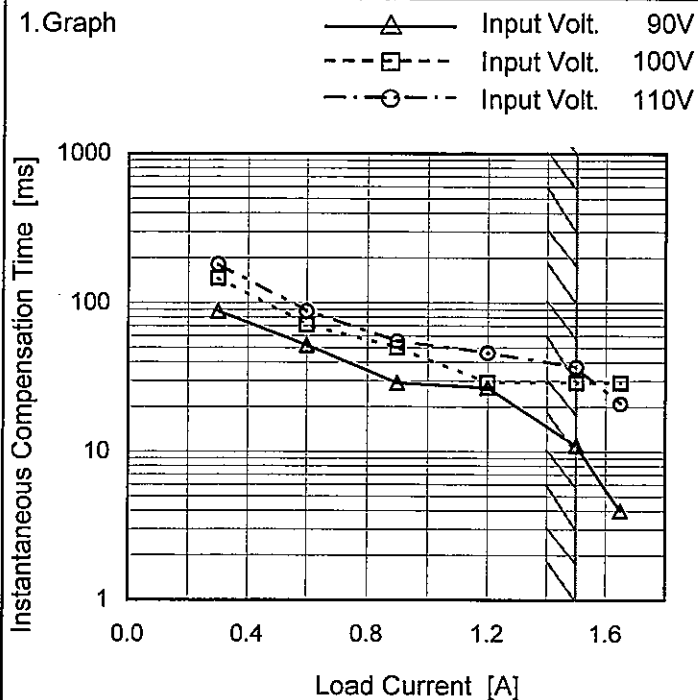
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	20	6
90	27	9
100	41	17
110	56	24
115	63	27
--	-	-
--	-	-
--	-	-
--	-	-

Model GT2-12

Item Instantaneous Interruption Compensation

Object +12V1.5A

Temperature 25°C
Testing Circuitry Figure A



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

2.Values

Load Current [A]	Time [ms]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.30	88	146	181
0.60	52	71	88
0.90	29	50	55
1.20	27	29	46
1.50	11	29	37
1.65	4	29	21
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model

GT2-12

Item

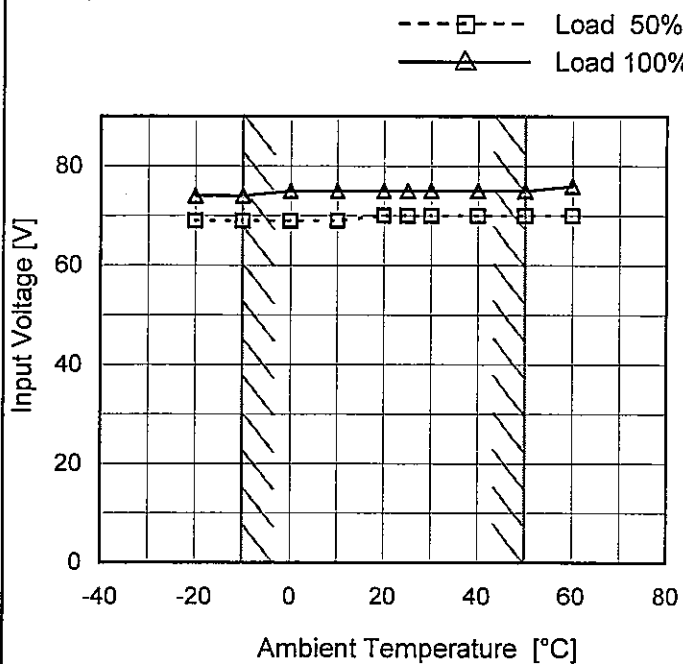
Minimum Input Voltage
for Regulated Output Voltage

Object

+12V1.5A

Testing Circuitry Figure A

1. Graph



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	69	74
-10	69	74
0	69	75
10	69	75
20	70	75
25	70	75
30	70	75
40	70	75
50	70	75
60	70	76
—	-	-

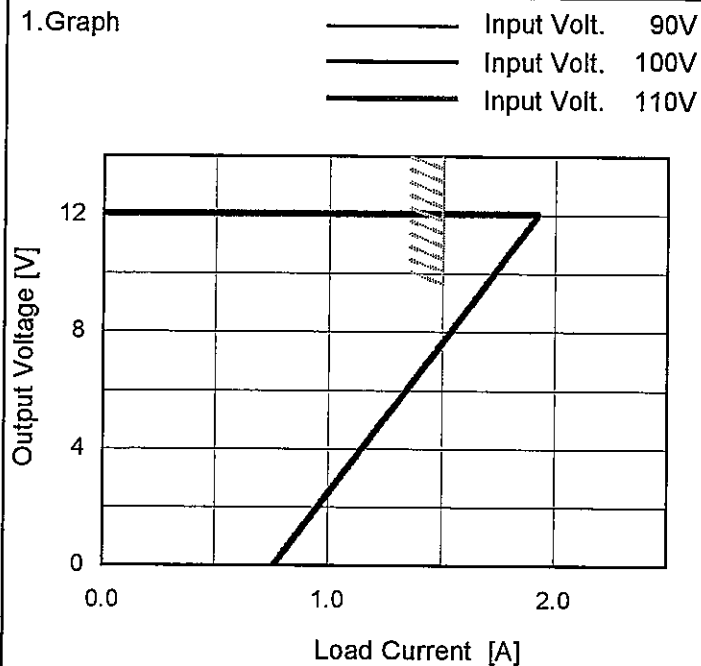
Model GT2-12

Item Overcurrent Protection

Object +12V1.5A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



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]
12.0	1.92	1.92	1.92
11.4	1.86	1.87	1.87
10.8	1.82	1.81	1.81
9.6	1.70	1.70	1.70
8.4	1.58	1.58	1.58
7.2	1.47	1.46	1.46
6.0	1.35	1.35	1.35
4.8	1.23	1.24	1.24
3.6	1.12	1.12	1.11
2.4	1.00	0.99	0.99
1.2	0.88	0.88	0.88
0.0	0.76	0.76	0.76

COSEL

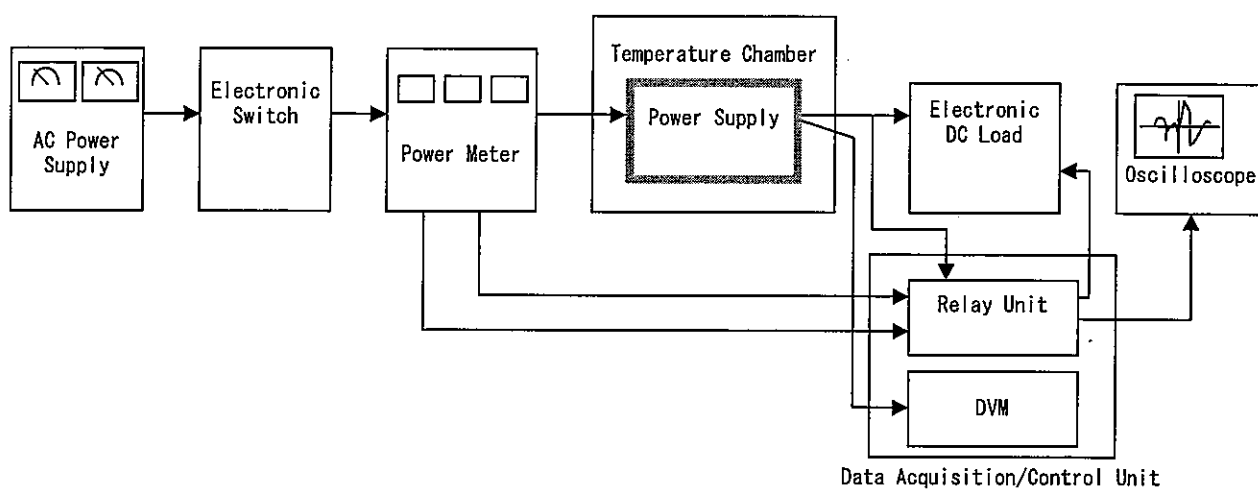


Figure A