

TEST DATA OF GT2-15

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		GT2-15		Temperature 25°C																																																				
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																				
Object																																																								
1.Graph		<div><div>—△—</div>Input Volt. 90V</div> <div><div>---□---</div>Input Volt. 100V</div> <div><div>-·-○-·-</div>Input Volt. 110V</div> <div>Input Current [A]</div> <div>Load Current [A]</div>		2.Values																																																				
		<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>0.016</td><td>0.017</td><td>0.018</td></tr><tr><td>0.20</td><td>0.095</td><td>0.098</td><td>0.100</td></tr><tr><td>0.40</td><td>0.165</td><td>0.168</td><td>0.172</td></tr><tr><td>0.60</td><td>0.229</td><td>0.233</td><td>0.238</td></tr><tr><td>0.80</td><td>0.289</td><td>0.295</td><td>0.300</td></tr><tr><td>1.00</td><td>0.347</td><td>0.354</td><td>0.360</td></tr><tr><td>1.20</td><td>0.403</td><td>0.411</td><td>0.418</td></tr><tr><td>1.32</td><td>0.436</td><td>0.444</td><td>0.452</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	0.016	0.017	0.018	0.20	0.095	0.098	0.100	0.40	0.165	0.168	0.172	0.60	0.229	0.233	0.238	0.80	0.289	0.295	0.300	1.00	0.347	0.354	0.360	1.20	0.403	0.411	0.418	1.32	0.436	0.444	0.452	--	-	-	-	--	-	-	-	--	-	-	-		
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Model	GT2-15
Item	Efficiency (by Input Voltage)
Object	_____

1.Graph

□

Load 50%

△

Load 100%

Input Voltage [V]	Efficiency [%] (Load 50%)	Efficiency [%] (Load 100%)
85	68.1	71.2
90	64.1	66.9
100	57.4	59.9
110	51.9	54.3
115	49.6	51.9

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

Temperature	25°C
Testing Circuitry	Figure A

2.Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	68.1	71.2
90	64.1	66.9
100	57.4	59.9
110	51.9	54.3
115	49.6	51.9
--	-	-
--	-	-
--	-	-
--	-	-

- 3 -

BC-10189

Model

GT2-15

Item

Efficiency (by Load Current)

Object

1.Graph

—△—

Input Volt.

90V

---□---

Input Volt.

100V

---○---

Input Volt.

110V

Efficiency [%]

Load Current [A]

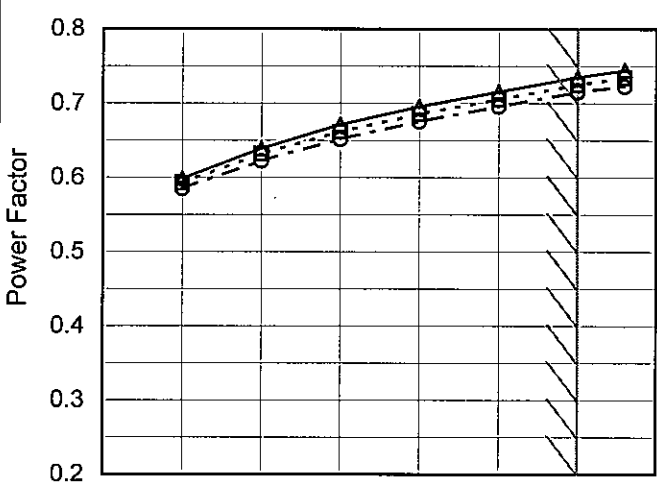
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Efficiency [%]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.20	55.6	49.1	44.7
0.40	61.9	54.8	49.8
0.60	64.0	57.4	52.0
0.80	65.5	58.6	53.2
1.00	66.5	59.6	53.8
1.20	66.9	59.9	54.3
1.32	67.4	60.4	54.6
--	-	-	-
--	-	-	-
--	-	-	-

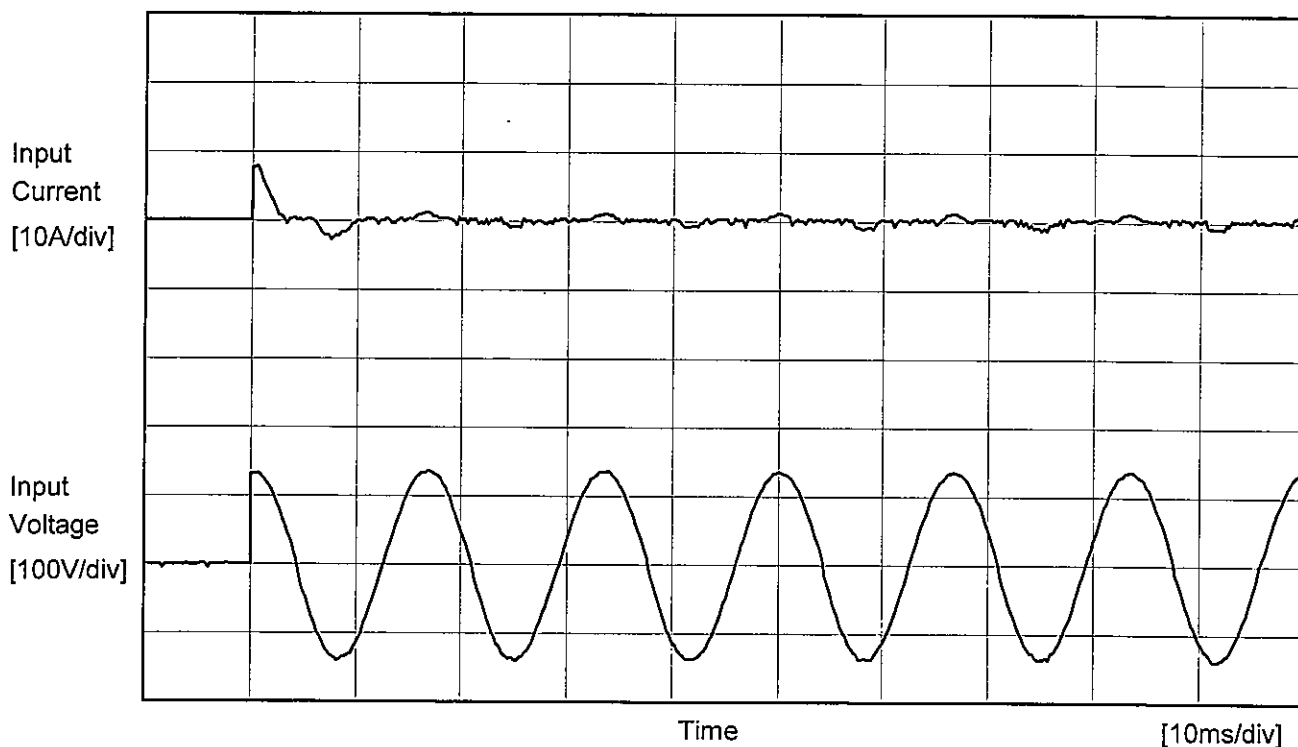


Model	GT2-15																																
Item	Power Factor (by Input Voltage)		Temperature 25°C																														
Object			Testing Circuitry Figure A																														
1.Graph		2.Values																															
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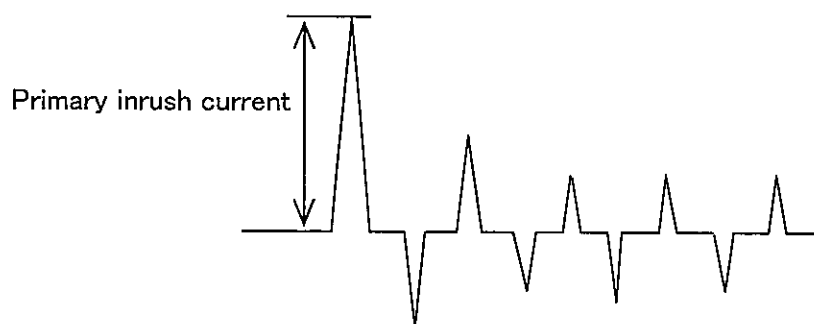
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Model		GT2-15	Temperature 25°C Testing Circuitry Figure A
Item		Inrush Current	
Object		_____	



Input Voltage 100 V
Frequency 60 Hz
Load 100 %

Primary inrush current 8.0 A





Model	GT2-15																																
Item	Line Regulation	Temperature	25°C																														
Object	+15V1.2A	Testing Circuitry	Figure A																														
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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>Output Voltage [V] Load 50%</th><th>Output Voltage [V] Load 100%</th></tr></thead><tbody><tr><td>85</td><td>15.046</td><td>15.046</td></tr><tr><td>90</td><td>15.046</td><td>15.046</td></tr><tr><td>100</td><td>15.046</td><td>15.046</td></tr><tr><td>110</td><td>15.046</td><td>15.047</td></tr><tr><td>115</td><td>15.046</td><td>15.046</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]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%	85	15.046	15.046	90	15.046	15.046	100	15.046	15.046	110	15.046	15.047	115	15.046	15.046	--	-	-	--	-	-	--	-	-	--	-	-		
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Note: Slanted line shows the range of the rated input voltage.																																	

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Model

GT2-15

Item

Load Regulation

Object

+15V1.2A

Temperature

25°C

Testing Circuitry

Figure A

1.Graph

—△—

Input Volt.

90V

---□---

Input Volt.

100V

---○---

Input Volt.

110V

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	15.046	15.046	15.046
0.20	15.046	15.046	15.046
0.40	15.045	15.046	15.046
0.60	15.046	15.046	15.046
0.80	15.045	15.046	15.046
1.00	15.046	15.046	15.046
1.20	15.046	15.046	15.046
1.32	15.046	15.046	15.046
--	-	-	-
--	-	-	-
--	-	-	-

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

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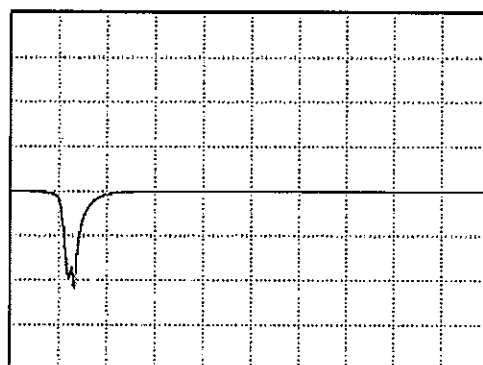
Model	GT2-15	Temperature Testing Circuitry	25°C Figure A
Item	Dynamic Load Response		
Object	+15V1.2A		

Input Volt. 100 V
Cycle 1000 ms

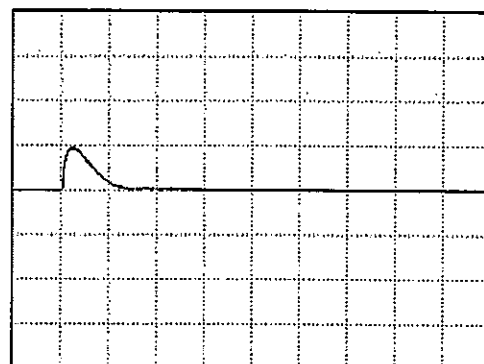
Load Current

Min. Load (0A) ←→
Load 100% (1.2A)

50 mV/div



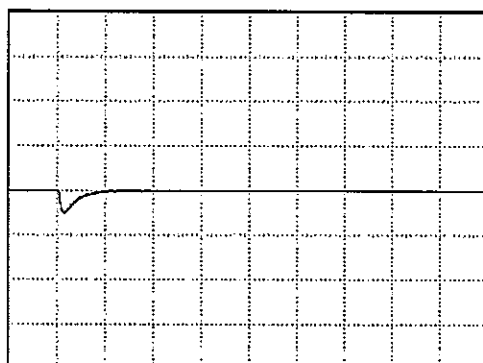
100 μs/div



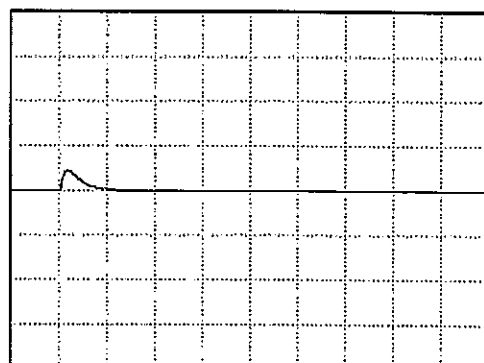
100 μs/div

Load 50% (0.6A) ←→
Load 100% (1.2A)

50 mV/div



100 μs/div



100 μs/div

Model	GT2-15																																											
Item	Ripple Voltage (by Load Current)	Temperature	25°C																																									
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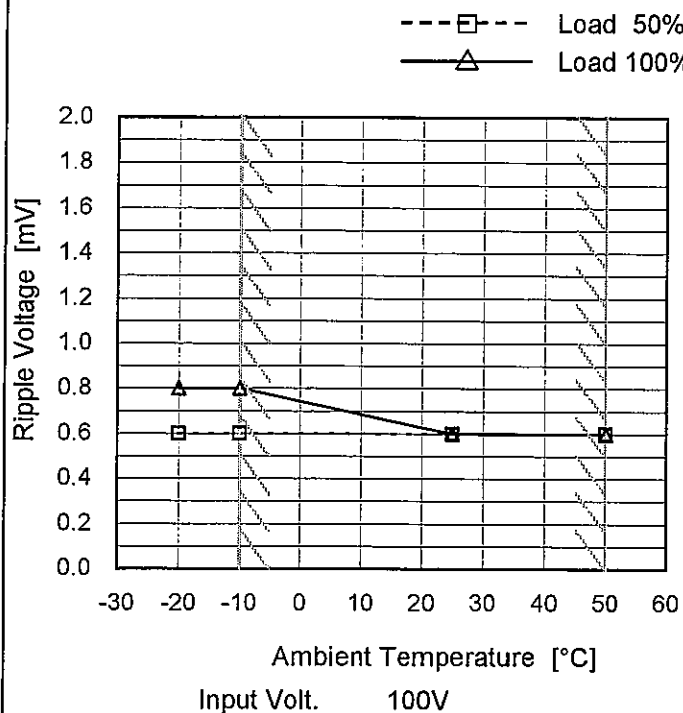
Model GT2-15

Item Ripple Voltage (by Ambient Temp.)

Object +15V1.2A

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	0.6	0.8
-10	0.6	0.8
25	0.6	0.6
50	0.6	0.6
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Model GT2-15

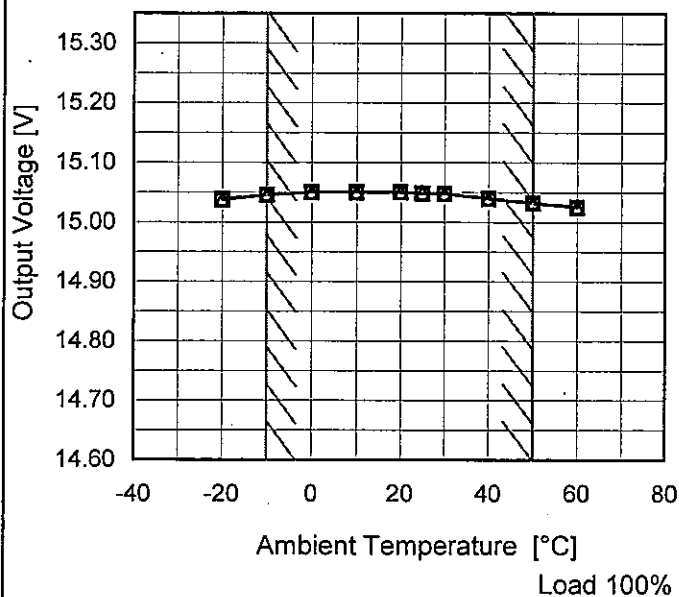
Item Ambient Temperature Drift

Object +15V1.2A

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	15.038	15.038	15.038
-10	15.046	15.046	15.046
0	15.050	15.050	15.051
10	15.050	15.050	15.051
20	15.050	15.050	15.051
25	15.048	15.049	15.049
30	15.048	15.048	15.048
40	15.040	15.040	15.040
50	15.032	15.032	15.033
60	15.025	15.025	15.026
--	-	-	-



		Testing Circuitry Figure A
Model	GT2-15	
Item	Output Voltage Accuracy	
Object	+15V1.2A	

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 - 1.2A

* 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	20	100	0	15.051	±10	±0.1
Minimum Voltage	50	100	1.2	15.032		

COSEL

Model

GT2-15

Item

Time Lapse Drift

Object

+15V1.2A

Temperature

25°C

Testing Circuitry

Figure A

1.Graph

Output Voltage [V]

15.40

15.30

15.20

15.10

15.00

14.90

14.80

14.70

0

2

4

6

8

10

Time [H]

Input Volt.100V

Load100%

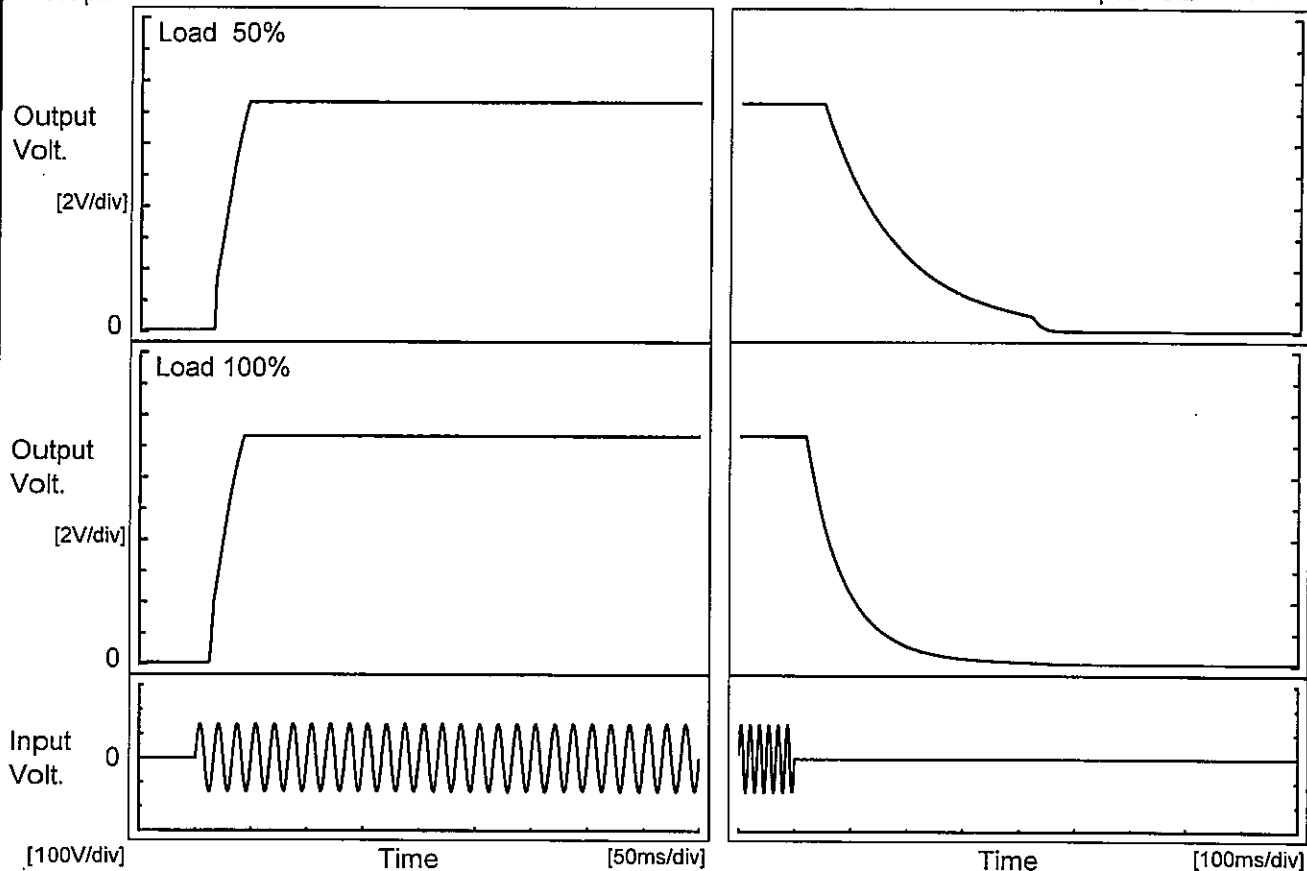
2.Values

Time since start [H]	Output Voltage [V]
0.0	15.113
0.5	15.117
1.0	15.118
2.0	15.118
3.0	15.118
4.0	15.118
5.0	15.118
6.0	15.118
7.0	15.118
8.0	15.118

COSEL

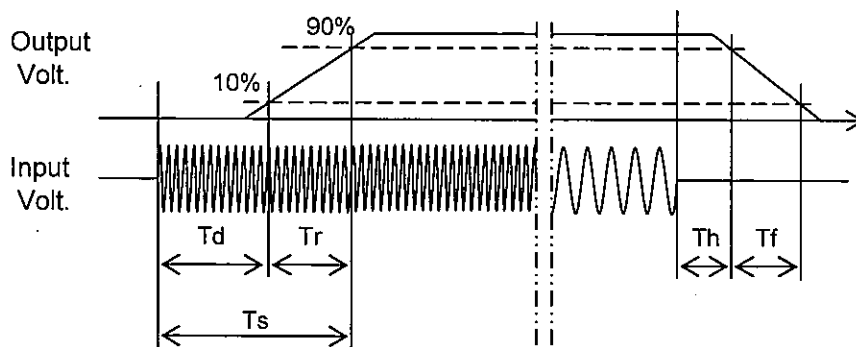
Model	GT2-15	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+15V1.2A		

1. Graph



2. Values

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	17.0	25.5	42.5	58.5	305.5
100 %	14.3	25.0	39.3	24.5	156.5



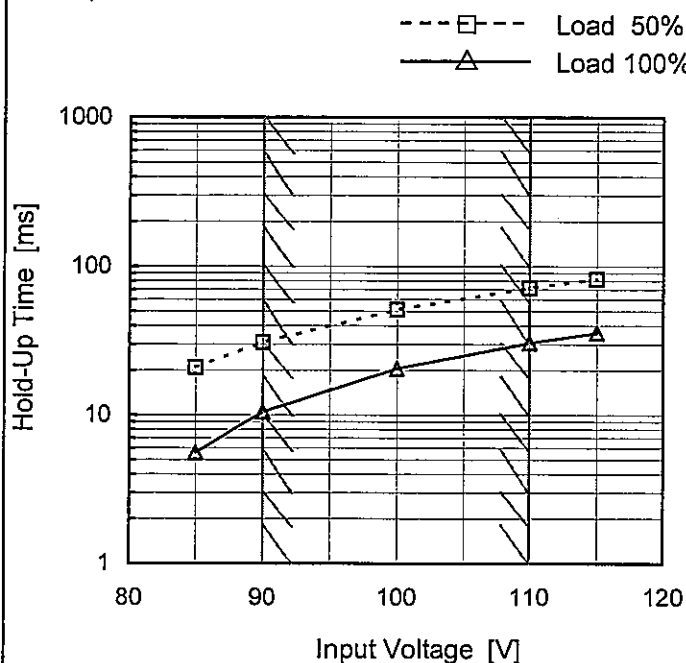
Model GT2-15

Item Hold-Up Time

Object +15V1.2A

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	21	6
90	31	11
100	51	21
110	72	31
115	82	36
--	-	-
--	-	-
--	-	-
--	-	-

LOREL

Model	GT2-15
Item	Instantaneous Interruption Compensation
Object	+15V1.2A

1.Graph

—△—

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.

Temperature

25°C

Testing Circuitry

Figure A

2.Values

Load Current [A]	Time [ms]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.20	138	180	272
0.40	63	100	120
0.60	38	60	96
0.80	28	46	50
1.00	28	29	42
1.20	12	29	42
1.32	4	29	35
--	-	-	-
--	-	-	-
--	-	-	-

Model

GT2-15

Item

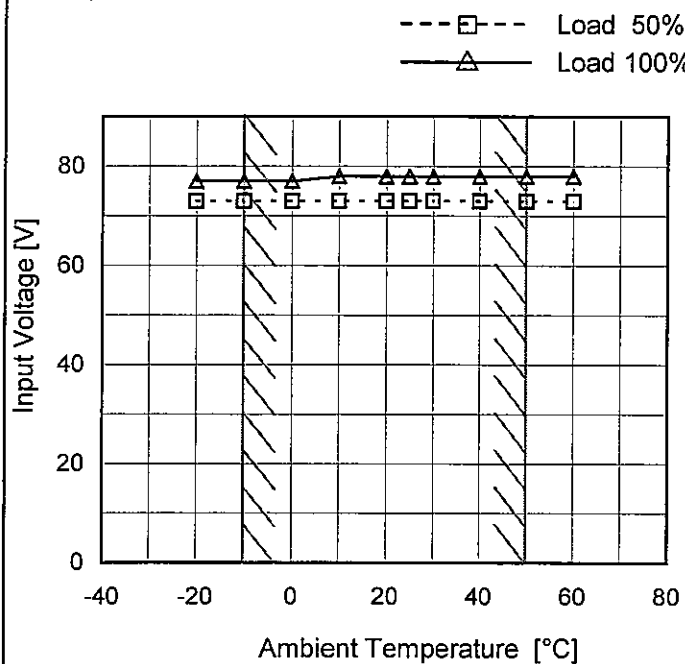
Minimum Input Voltage
for Regulated Output Voltage

Object

+15V1.2A

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	73	77
-10	73	77
0	73	77
10	73	78
20	73	78
25	73	78
30	73	78
40	73	78
50	73	78
60	73	78
--	-	-

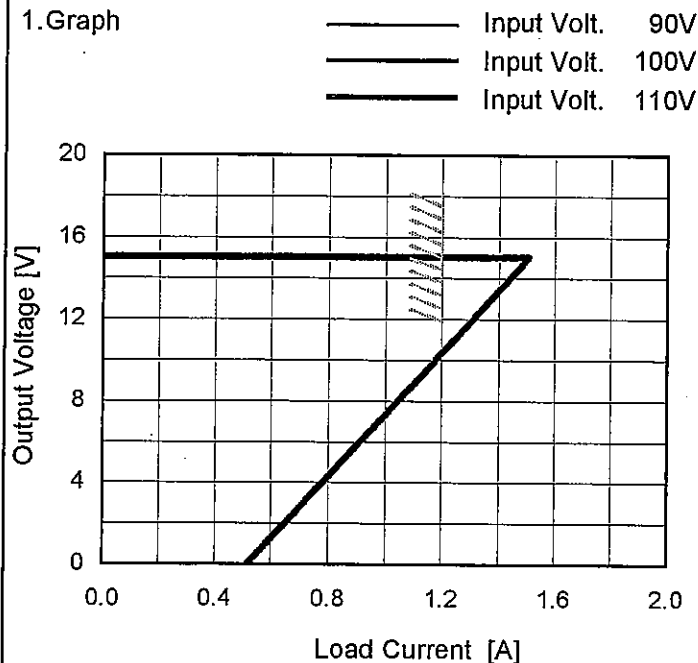
Model GT2-15

Item Overcurrent Protection

Object +15V1.2A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
15.0	1.51	1.51	1.51
14.3	1.46	1.45	1.45
13.5	1.42	1.42	1.42
12.0	1.32	1.31	1.31
10.5	1.22	1.21	1.21
9.0	1.12	1.12	1.11
7.5	1.02	1.02	1.02
6.0	0.92	0.92	0.91
4.5	0.82	0.82	0.82
3.0	0.72	0.72	0.72
1.5	0.62	0.62	0.62
0.0	0.52	0.52	0.52

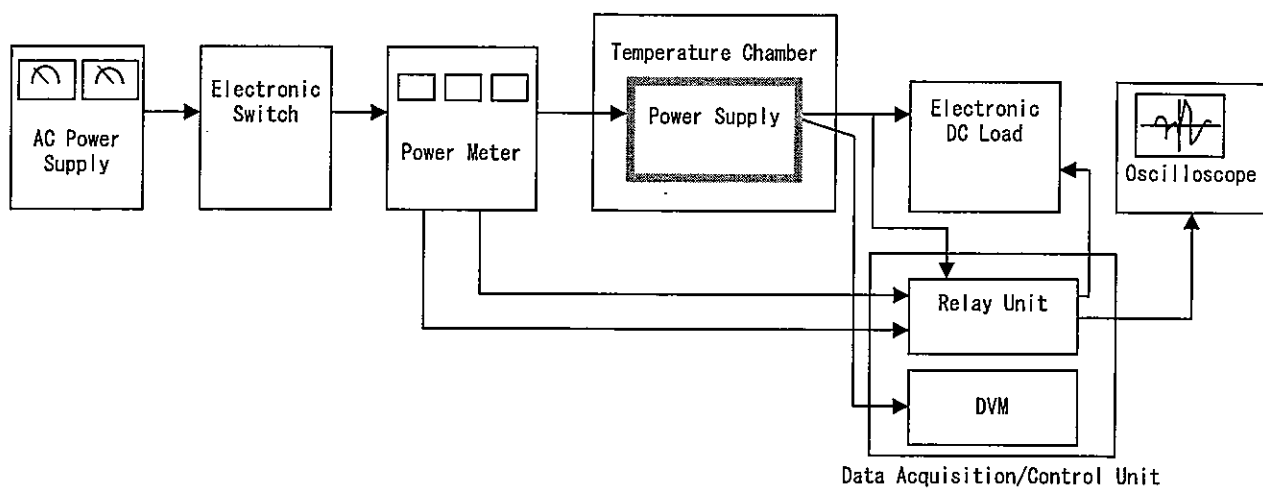


Figure A