COSEL

参考資料

TEST DATA OF GT3.5W-12

Regulated DC Power Supply
October 26, 2010

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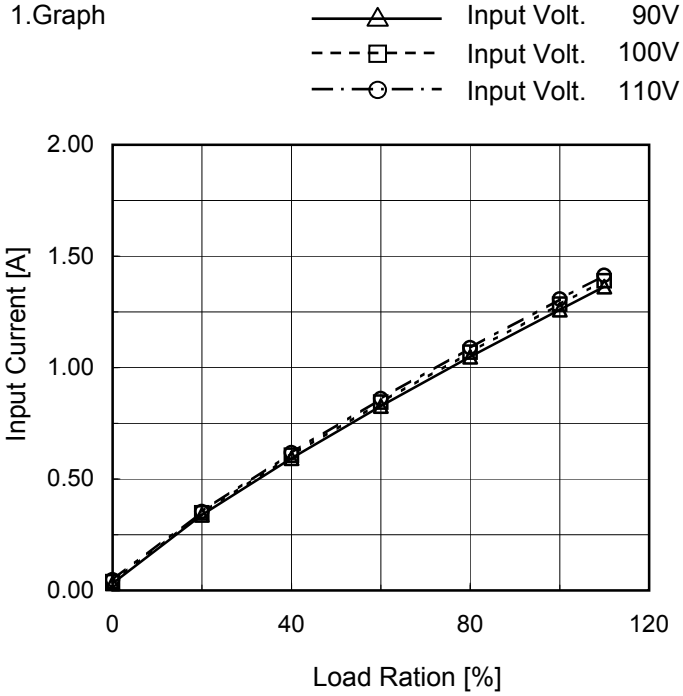
Model	GT3.5W-12
Item	Input Current (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Current [A]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0	0.032	0.039	0.047
20	0.339	0.347	0.354
40	0.594	0.606	0.618
60	0.828	0.845	0.860
80	1.049	1.069	1.089
100	1.260	1.285	1.308
110	1.363	1.389	1.414
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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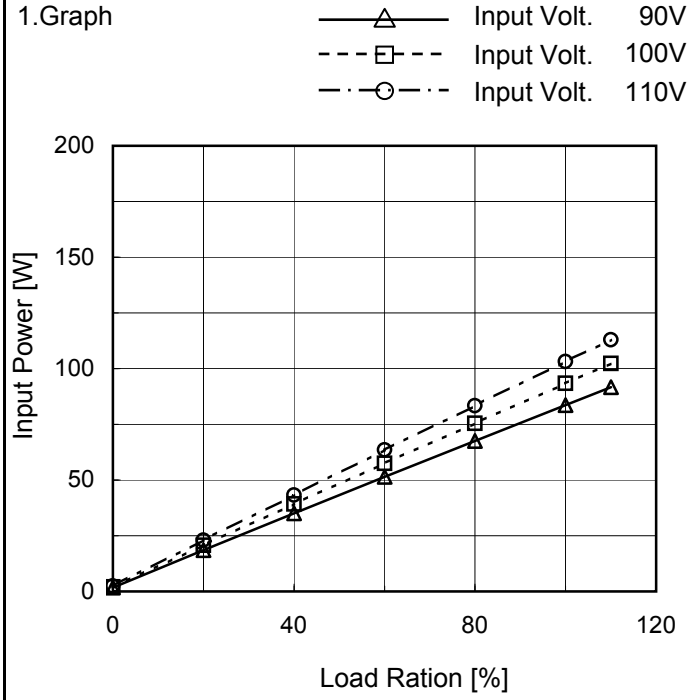
Model	GT3.5W-12
Item	Input Power (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Power [W]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0	1.7	2.0	2.4
20	18.5	20.7	23.0
40	35.1	39.2	43.3
60	51.5	57.4	63.5
80	67.6	75.5	83.3
100	83.6	93.4	103.1
110	91.7	102.3	113.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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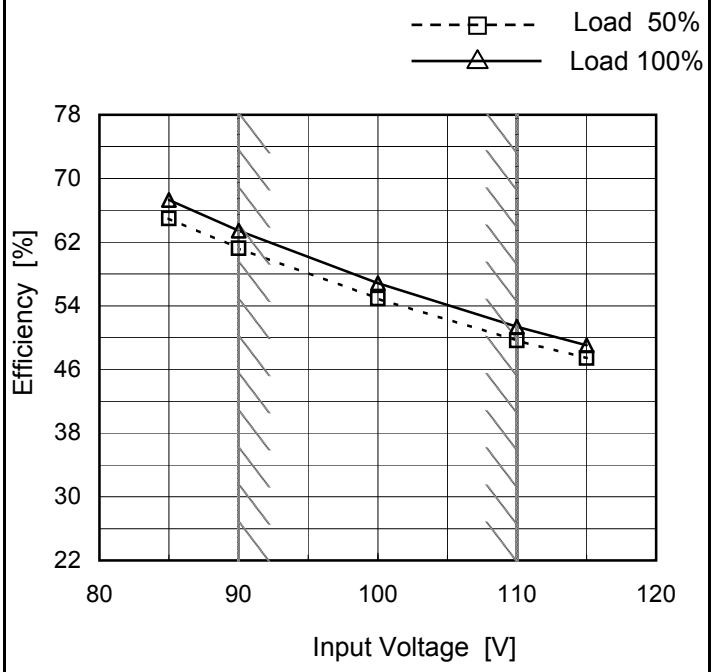
COSEL

Model	GT3.5W-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	65.0	67.3
90	61.2	63.4
100	54.9	56.8
110	49.7	51.4
115	47.4	49.0
--	-	-
--	-	-
--	-	-
--	-	-

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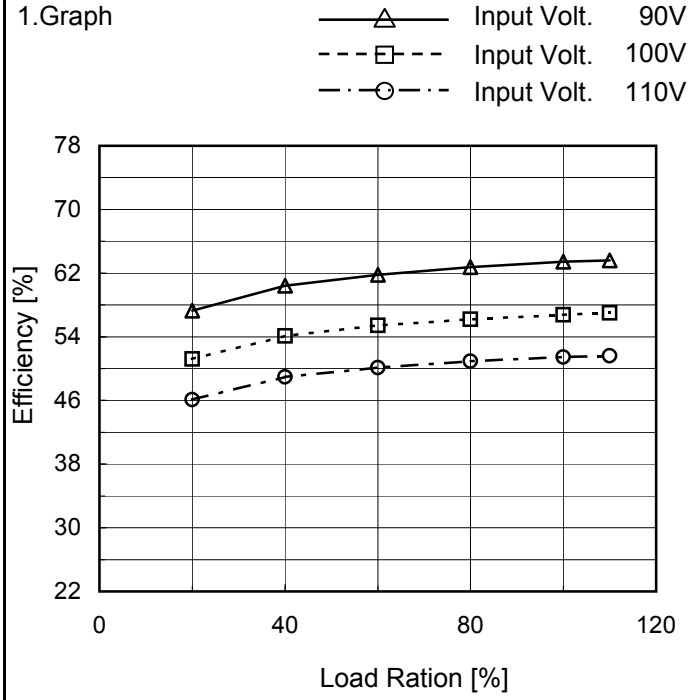
COSEL

Model	GT3.5W-12
Item	Efficiency (by Load Current)
Object	――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Efficiency [%]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0	-	-	-
20	57.3	51.2	46.1
40	60.4	54.1	49.0
60	61.8	55.4	50.1
80	62.8	56.2	50.9
100	63.4	56.8	51.4
110	63.6	57.0	51.6
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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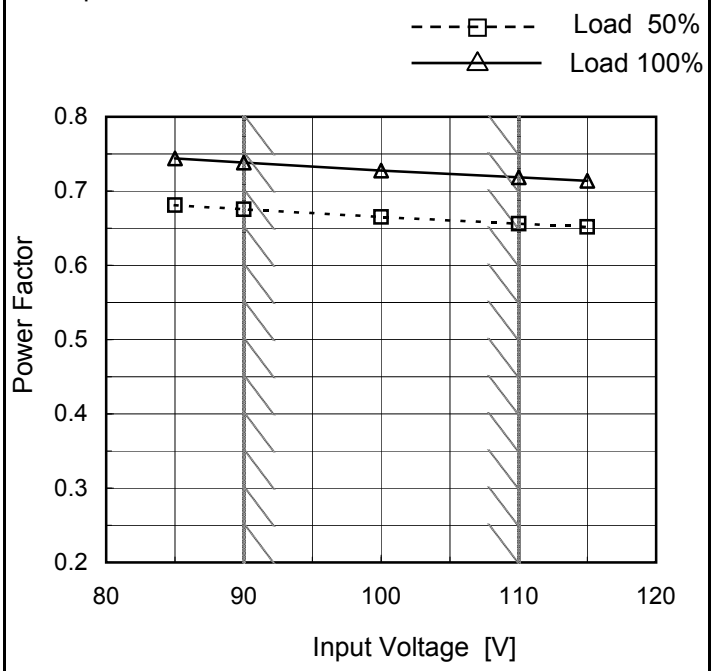
COSEL

Model	GT3.5W-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	0.681	0.744
90	0.676	0.739
100	0.665	0.728
110	0.656	0.719
115	0.652	0.714
--	-	-
--	-	-
--	-	-
--	-	-

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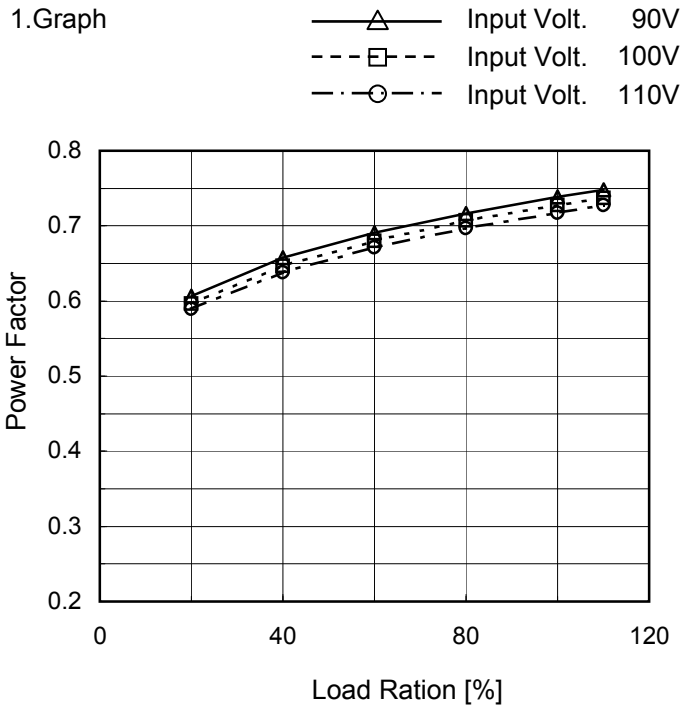
COSEL

Model	GT3.5W-12
Item	Power Factor (by Load Current)
Object	――――――――

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Power Factor		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0	-	-	-
20	0.607	0.597	0.590
40	0.657	0.647	0.638
60	0.691	0.680	0.671
80	0.717	0.707	0.696
100	0.739	0.727	0.717
110	0.748	0.737	0.727
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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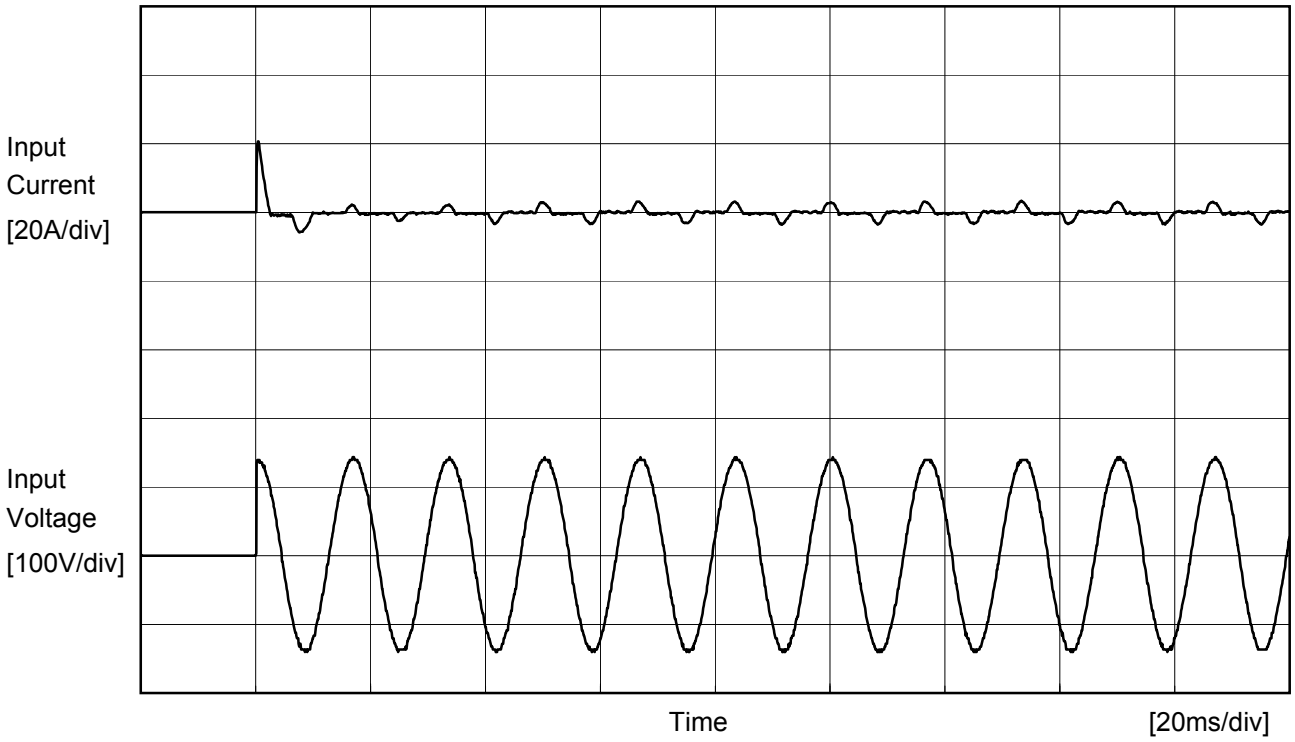
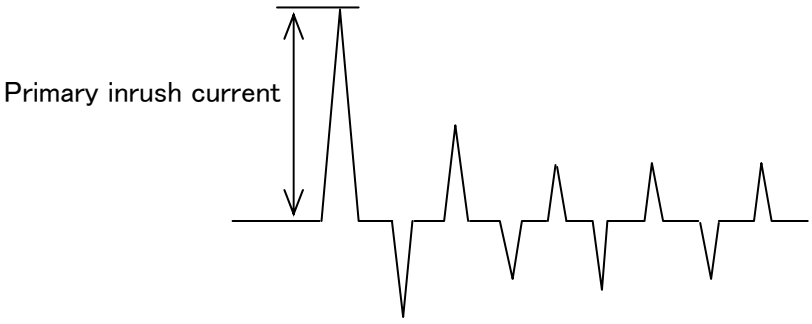
Model	GT3.5W-12	Temperature 25°C
Item	Inrush Current	Testing Circuitry Figure A
Object	――――――	



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	20.7 A

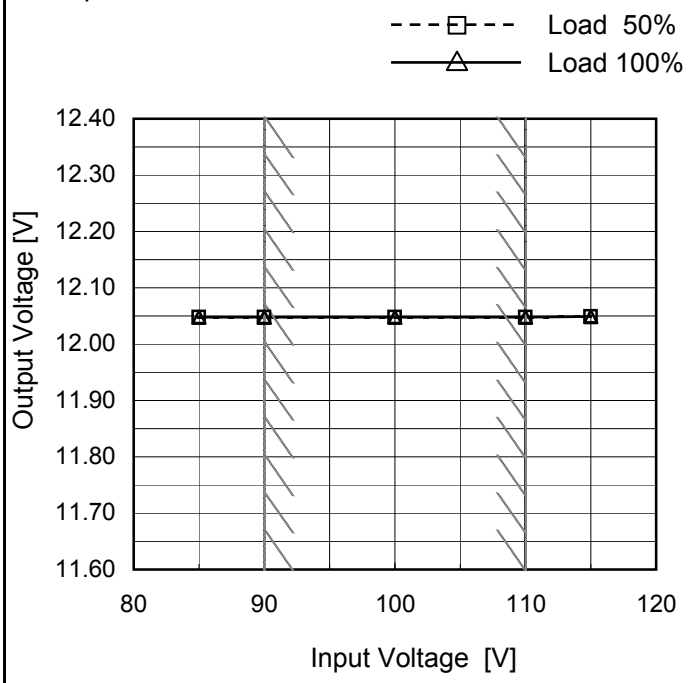


COSEL

Model	GT3.5W-12
Item	Line Regulation
Object	+12V2.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

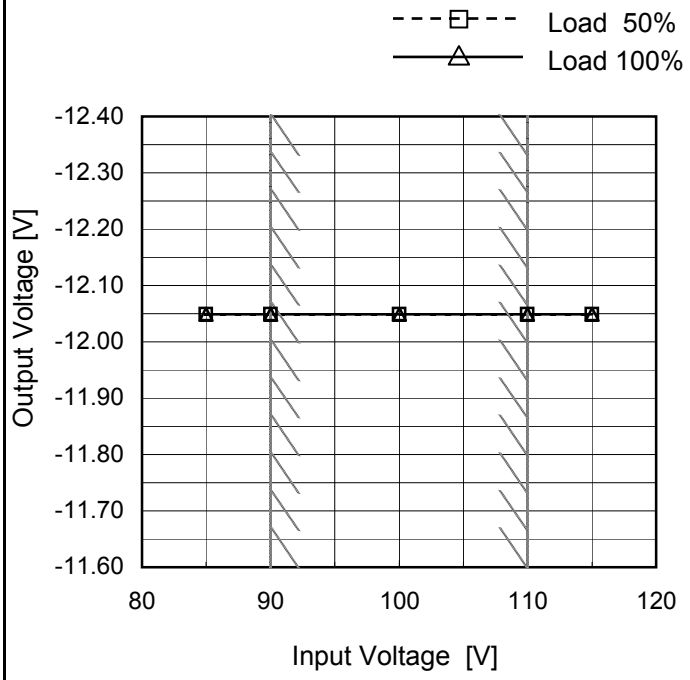


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	12.048	12.048
90	12.048	12.048
100	12.048	12.048
110	12.048	12.048
115	12.048	12.048
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V2.2A

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	-12.049	-12.049
90	-12.049	-12.049
100	-12.049	-12.049
110	-12.049	-12.049
115	-12.049	-12.049
--	-	-
--	-	-
--	-	-
--	-	-

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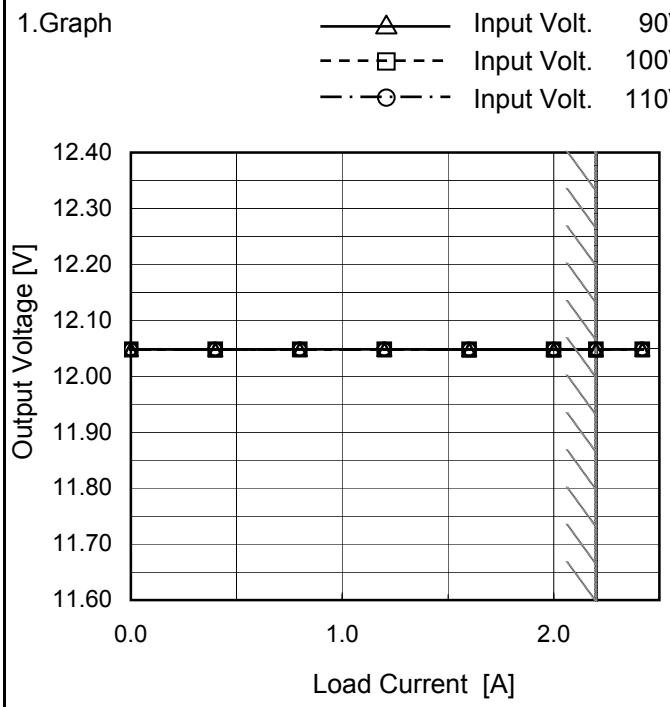
COSEL

Model	GT3.5W-12
Item	Load Regulation
Object	+12V2.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

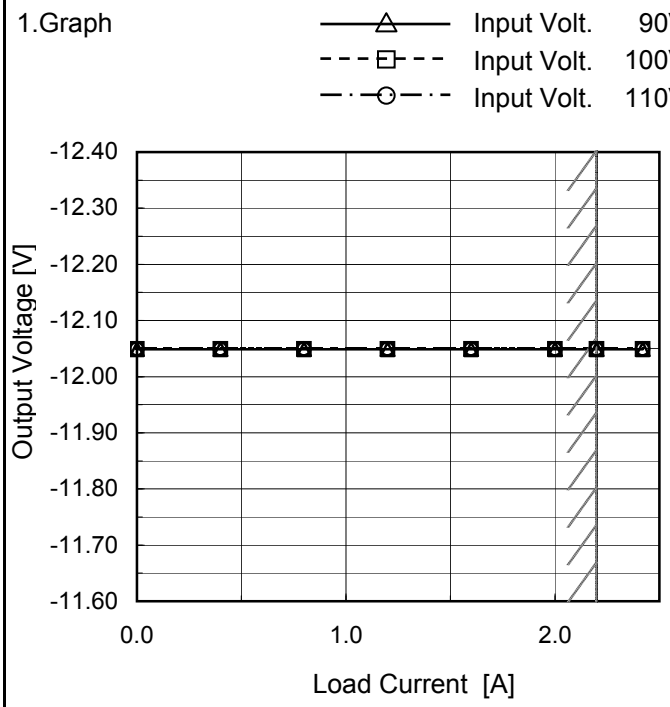


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	12.048	12.048	12.048
0.40	12.048	12.048	12.048
0.80	12.048	12.048	12.048
1.20	12.048	12.048	12.048
1.60	12.048	12.048	12.048
2.00	12.048	12.048	12.048
2.20	12.048	12.048	12.048
2.42	12.048	12.048	12.048
--	-	-	-
--	-	-	-
--	-	-	-

Object	-12V2.2A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-12.049	-12.049	-12.049
0.40	-12.049	-12.049	-12.049
0.80	-12.049	-12.049	-12.049
1.20	-12.049	-12.049	-12.049
1.60	-12.049	-12.049	-12.049
2.00	-12.049	-12.049	-12.049
2.20	-12.049	-12.049	-12.049
2.42	-12.049	-12.049	-12.049
--	-	-	-
--	-	-	-
--	-	-	-

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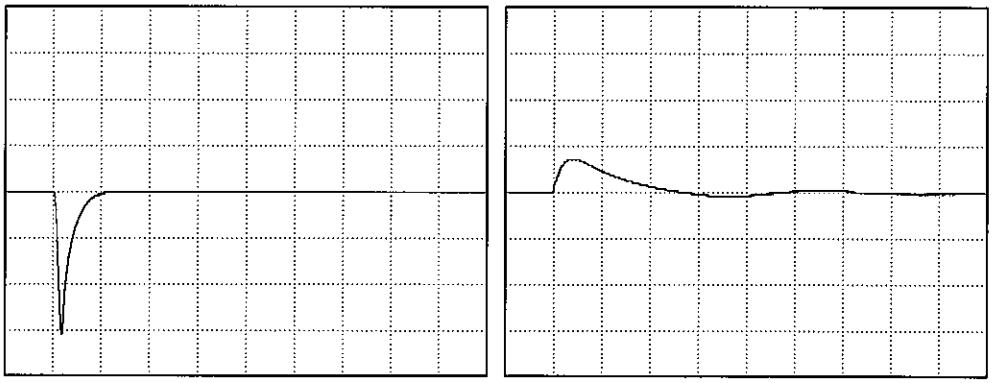
Model	GT3.5W-12		
Item	Dynamic Load Response	Temperature	25°C
		Testing Circuitry	Figure A
Object	+12V2.2A		

Input Volt. 100 V
Cycle 1000 ms

Load Current

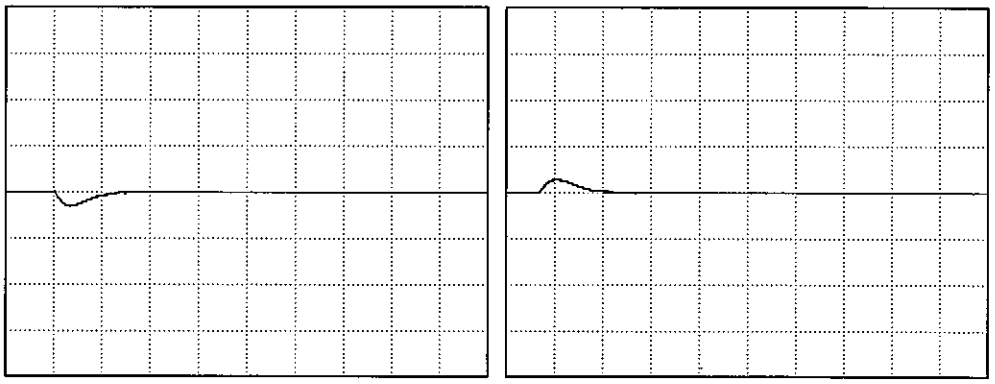
Min. Load (0A) ⟷
Load 100% (2.2A)



50 mV/div

100 μs/div 100 μs/div

Load 50% (1.1A) ⟷
Load 100% (2.2A)



50 mV/div

100 μs/div 100 μs/div

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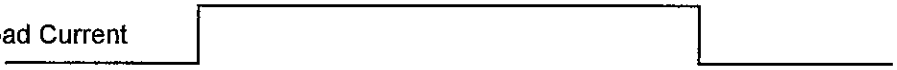
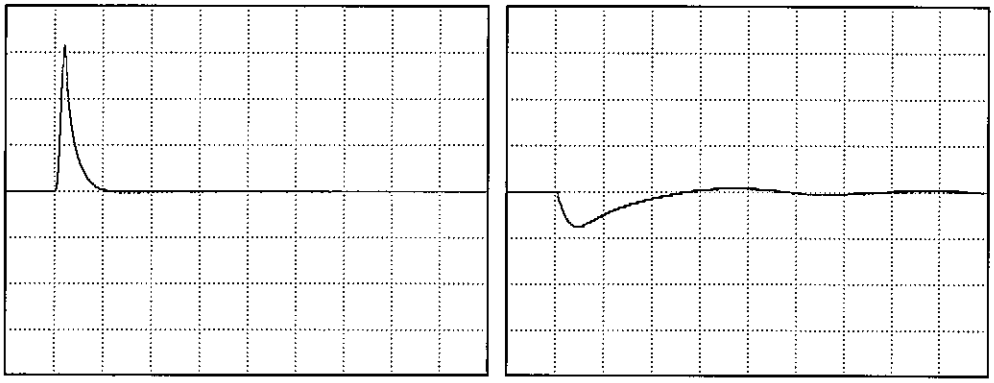
Model	GT3.5W-12	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	-12V2.2A		

Input Volt. 100 V
Cycle 1000 ms

Load Current



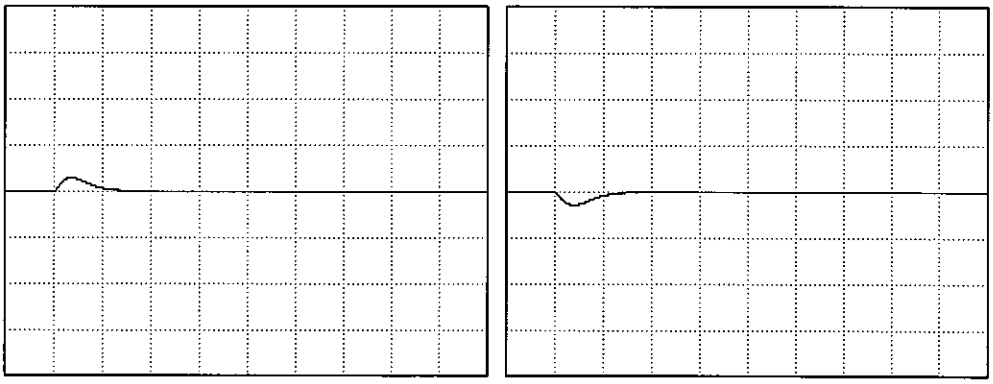
Min. Load (0A) ⟷
Load 100% (2.2A)



50 mV/div

100 μs/div 100 μs/div

Load 50% (1.1A) ⟷
Load 100% (2.2A)



50 mV/div

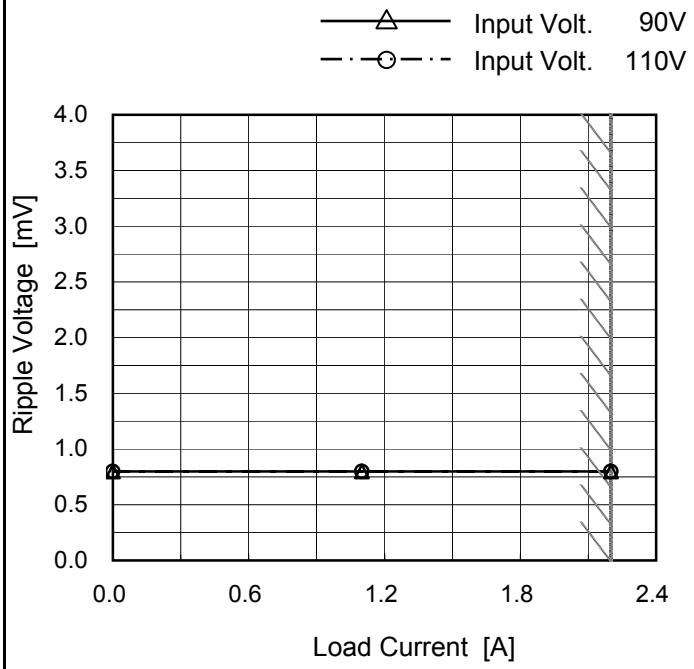
100 μs/div 100 μs/div

COSEL

Model	GT3.5W-12
Item	Ripple Voltage (by Load Current)
Object	+12V2.2A

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]
0.0	0.8	0.8
1.1	0.8	0.8
2.2	0.8	0.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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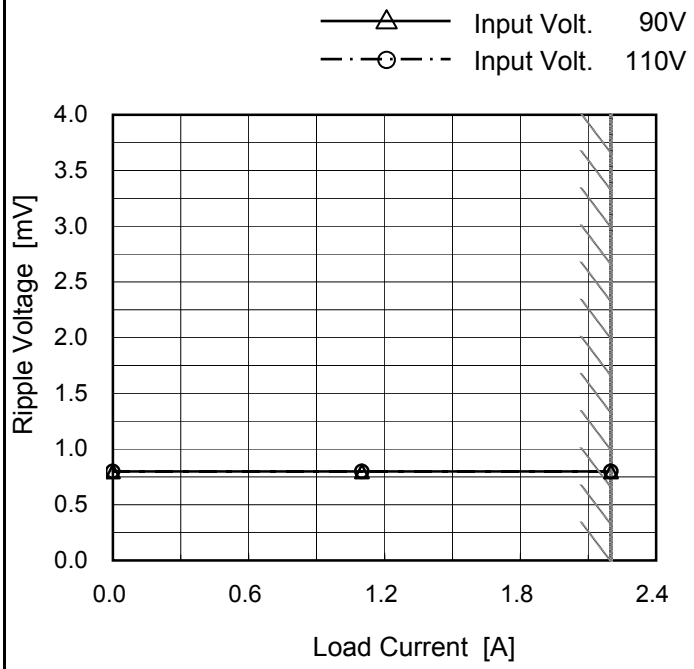
Model	GT3.5W-12
Item	Ripple Voltage (by Load Current)
Object	-12V2.2A

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

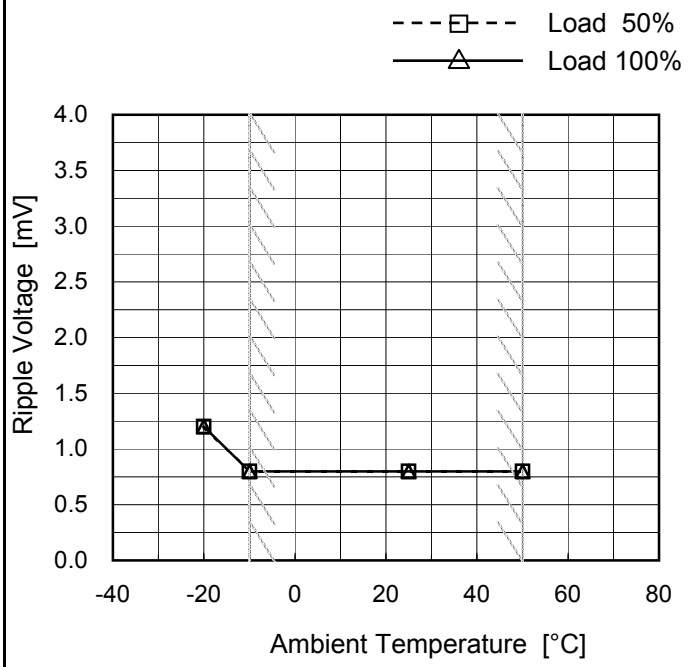
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 90 [V]	Input Volt. 110 [V]
0.0	0.8	0.8
1.1	0.8	0.8
2.2	0.8	0.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3.5W-12
Item	Ripple Voltage (by Ambient Temp.)
Object	+12V2.2A

Testing Circuitry Figure A

1.Graph



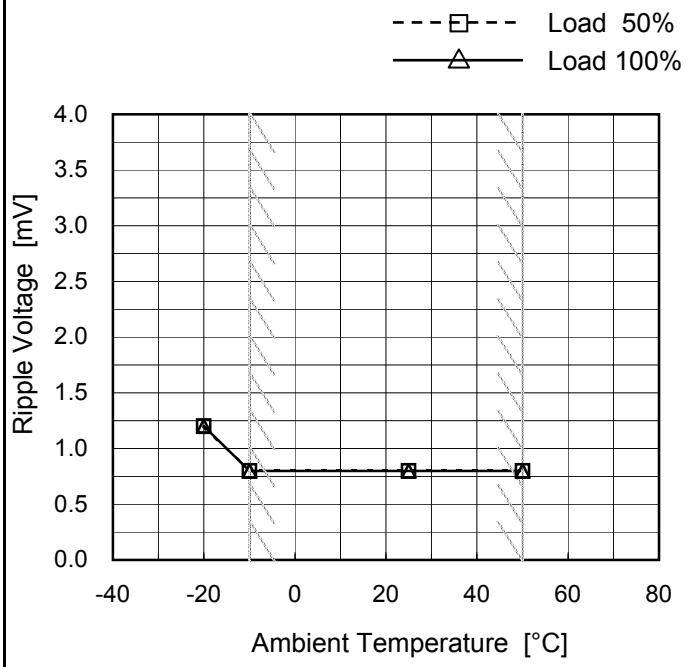
Input Volt. 100V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	1.2	1.2
-10	0.8	0.8
25	0.8	0.8
50	0.8	0.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Object	-12V2.2A

1.Graph



Input Volt. 100V

Measured by 20 MHz Oscilloscope.

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

2.Values

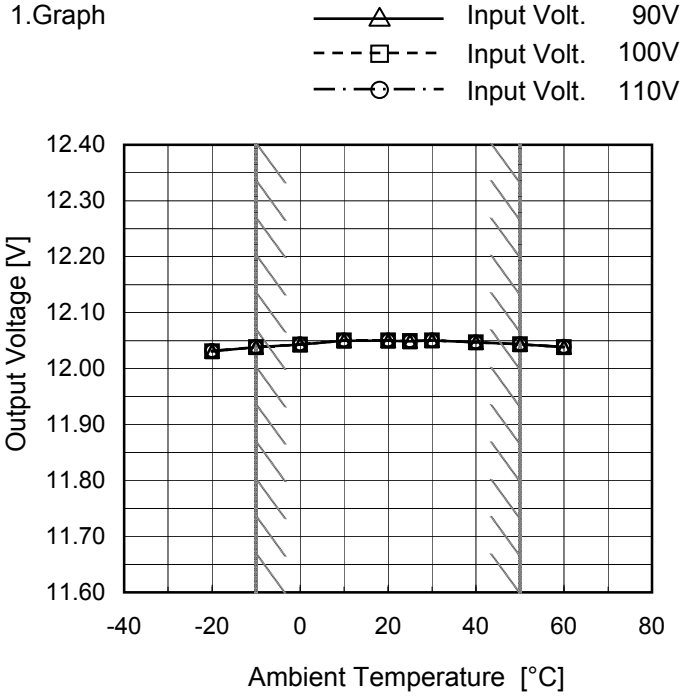
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	1.2	1.2
-10	0.8	0.8
25	0.8	0.8
50	0.8	0.8
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3.5W-12
Item	Ambient Temperature Drift
Object	+12V2.2A

Testing Circuitry Figure A

1.Graph



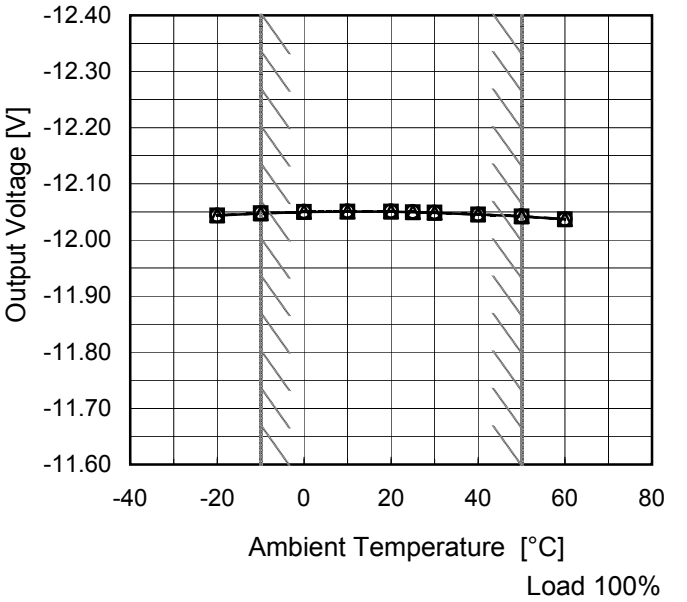
Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
-20	12.031	12.031	12.031
-10	12.038	12.038	12.039
0	12.043	12.043	12.044
10	12.050	12.050	12.050
20	12.050	12.050	12.050
25	12.049	12.049	12.049
30	12.050	12.051	12.051
40	12.047	12.047	12.047
50	12.043	12.044	12.044
60	12.038	12.038	12.039
--	-	-	-

Object	-12V2.2A

1.Graph



Load 100%

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	-12.043	-12.044	-12.044
-10	-12.047	-12.048	-12.048
0	-12.050	-12.050	-12.050
10	-12.050	-12.051	-12.051
20	-12.050	-12.051	-12.051
25	-12.049	-12.050	-12.050
30	-12.048	-12.049	-12.049
40	-12.045	-12.045	-12.046
50	-12.042	-12.042	-12.042
60	-12.037	-12.037	-12.037
--	-	-	-

COSEL

Model	GT3.5W-12	
Item	Output Voltage Accuracy	Testing Circuitry Figure A

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 - 2.2A (AVR 2) : 0 - 2.2A

* Output Voltage Accuracy = ±(Maximum of Output Voltage - Minimum of Output Voltage) / 2

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

2.Values

Object	+12V2.2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	30	110	2.2	12.051	±7	±0.1
Minimum Voltage	-10	90	0	12.037		

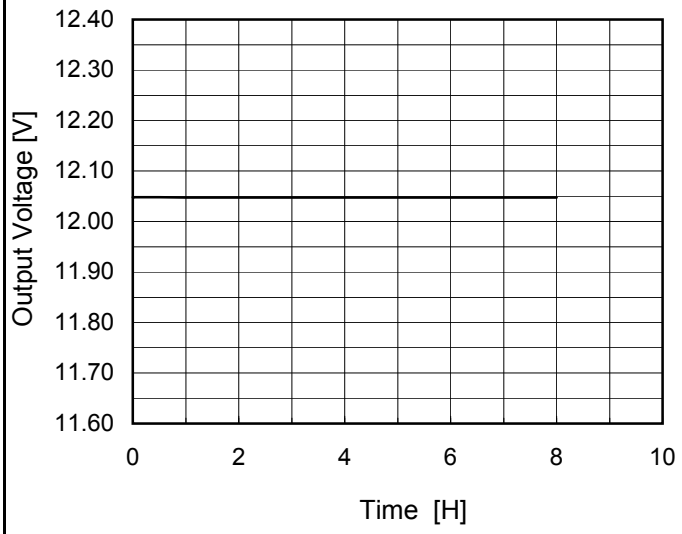
Object	-12V2.2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	20	110	0	-12.051	±5	±0.1
Minimum Voltage	50	90	2.2	-12.042		

COSEL

Model	GT3.5W-12
Item	Time Lapse Drift
Object	+12V2.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



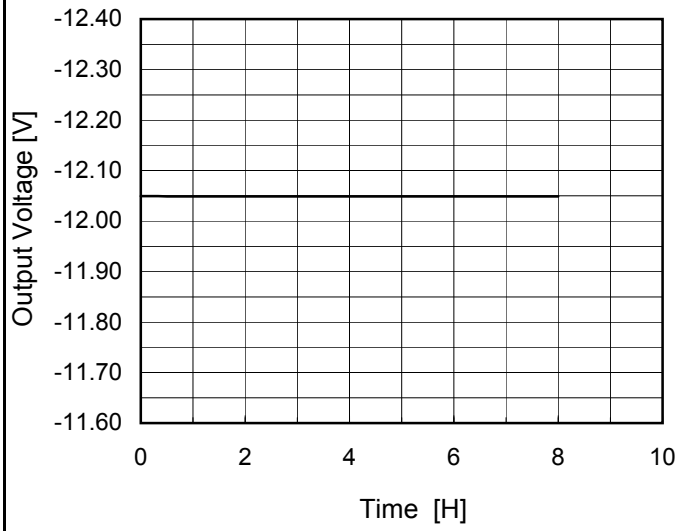
Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	12.048
0.5	12.048
1.0	12.048
2.0	12.048
3.0	12.048
4.0	12.048
5.0	12.048
6.0	12.048
7.0	12.048
8.0	12.048

Object	-12V2.2A

1.Graph



Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.049
0.5	-12.049
1.0	-12.049
2.0	-12.049
3.0	-12.049
4.0	-12.049
5.0	-12.049
6.0	-12.049
7.0	-12.049
8.0	-12.049

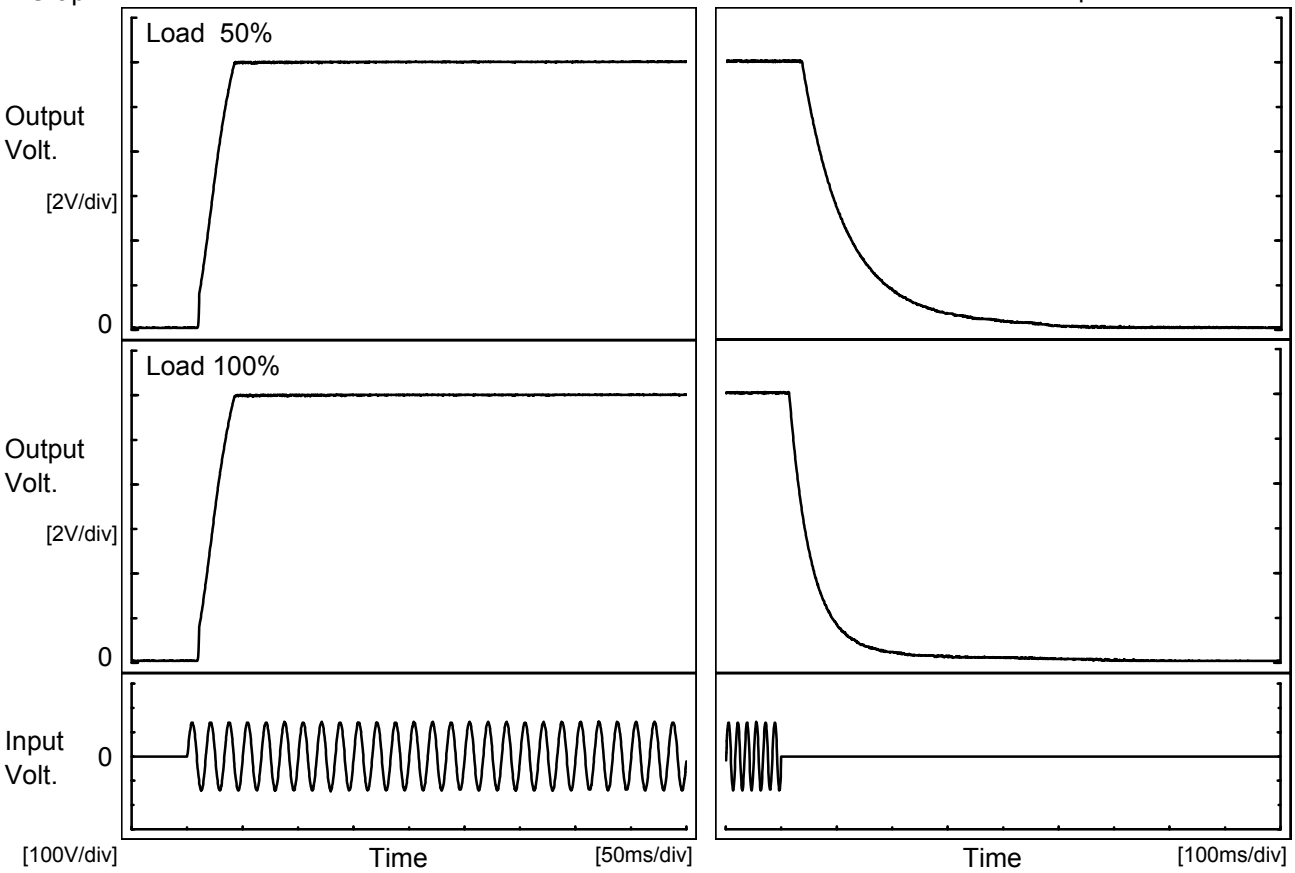
COSEL

Model	GT3.5W-12
Item	Rise and Fall Time
Object	+12V2.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

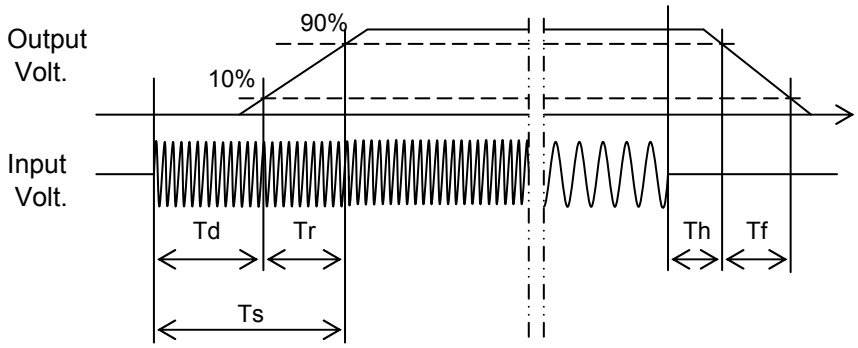
Input Volt. 100 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	11.0	27.0	38.0	44.0	189.0
100 %	10.8	27.3	38.1	18.0	99.0



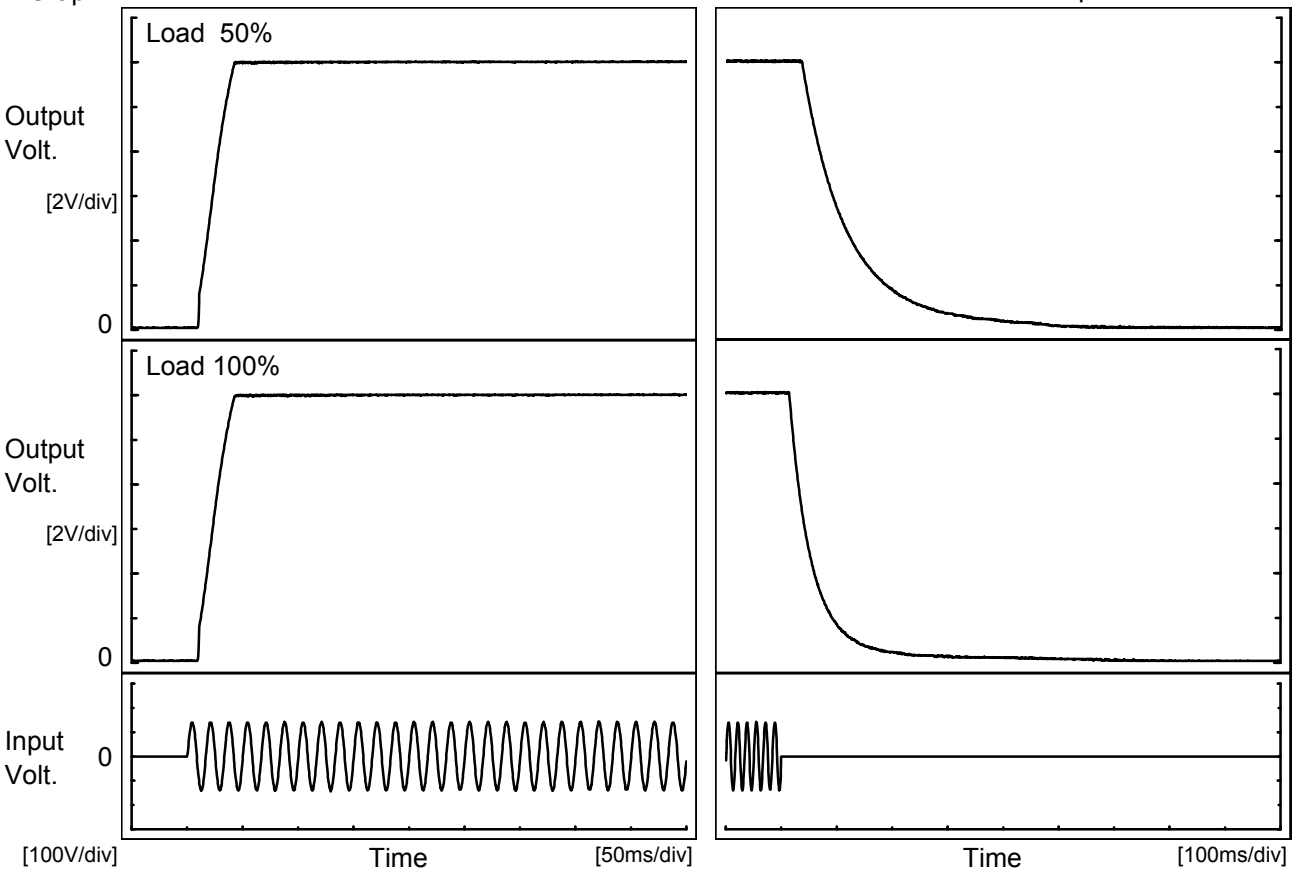
COSEL

Model	GT3.5W-12
Item	Rise and Fall Time
Object	-12V2.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

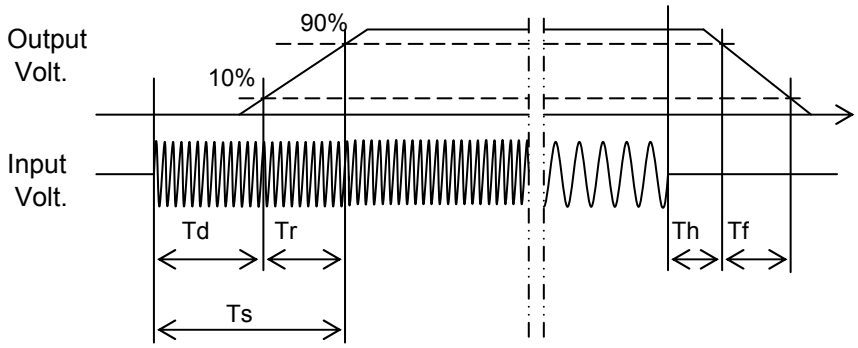
Input Volt. 100 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	10.8	27.3	38.1	45.0	194.0
100 %	11.0	26.8	37.8	18.5	96.5



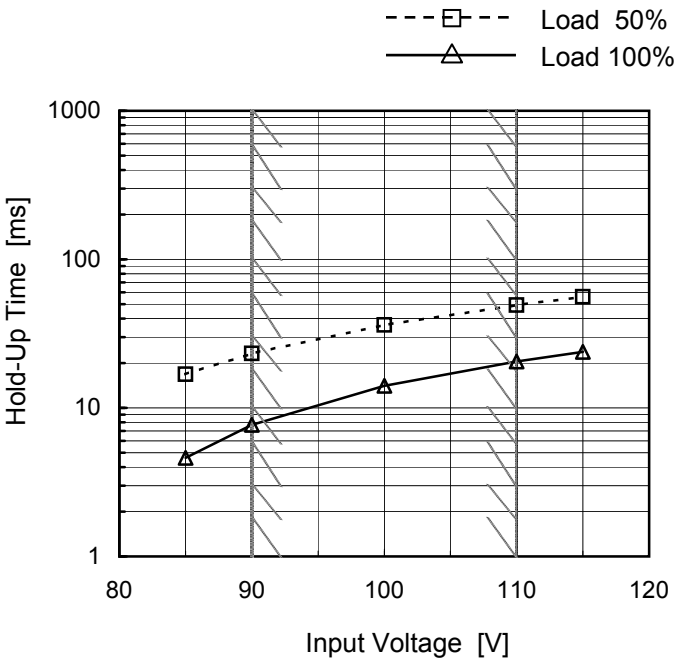
BC-10221

COSEL

Model	GT3.5W-12
Item	Hold-Up Time
Object	+12V2.2A

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

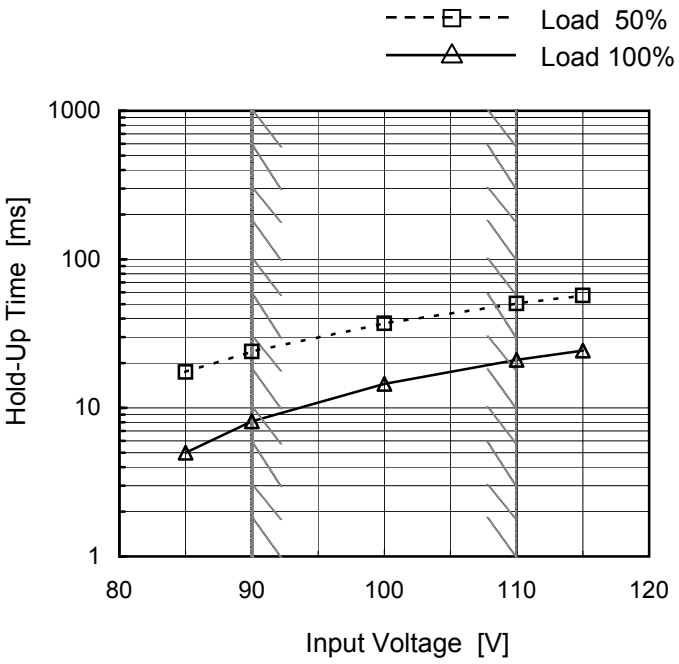
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	17	5
90	23	8
100	36	14
110	49	21
115	56	24
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3.5W-12
Item	Hold-Up Time
Object	-12V2.2A

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	17	5
90	24	8
100	37	15
110	50	21
115	57	24
--	-	-
--	-	-
--	-	-
--	-	-

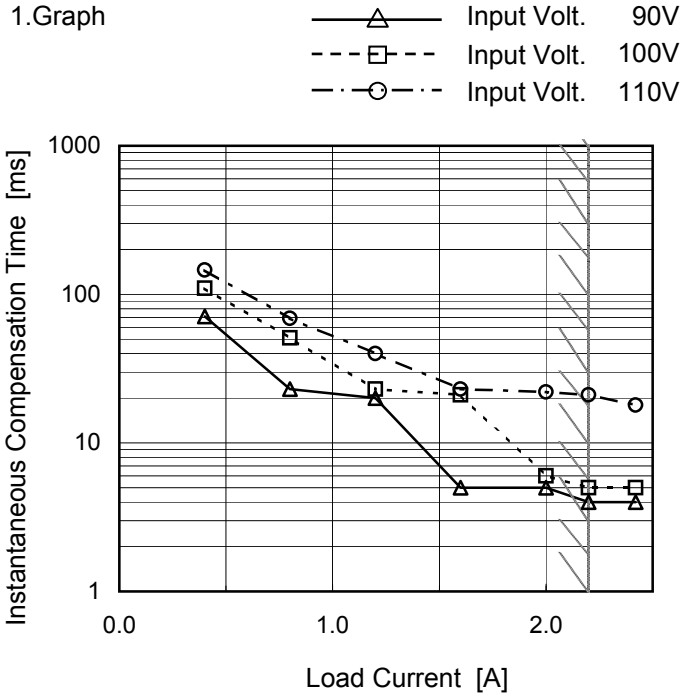
BC-10221

COSEL

Model	GT3.5W-12
Item	Instantaneous Interruption Compensation
Object	+12V2.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

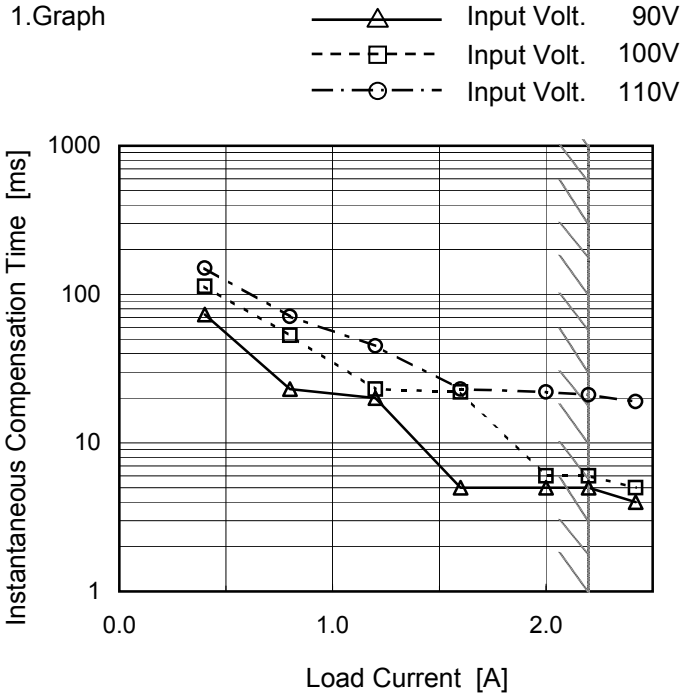
Load Current [A]	Time [ms]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.40	71	110	146
0.80	23	51	69
1.20	20	23	40
1.60	5	21	23
2.00	5	6	22
2.20	4	5	21
2.42	4	5	18
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GT3.5W-12
Item	Instantaneous Interruption Compensation
Object	-12V2.2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

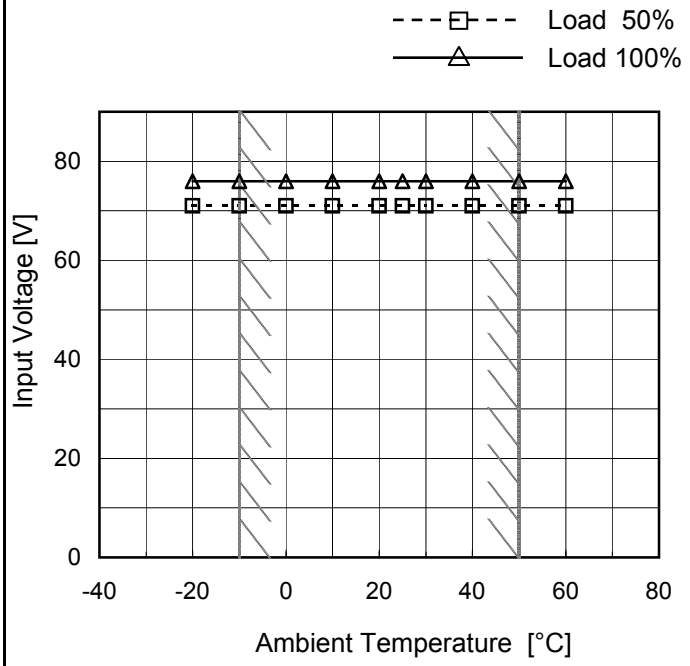
Load Current [A]	Time [ms]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.40	73	113	150
0.80	23	53	71
1.20	20	23	45
1.60	5	22	23
2.00	5	6	22
2.20	5	6	21
2.42	4	5	19
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GT3.5W-12
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+12V2.2A

Testing Circuitry Figure A

1.Graph

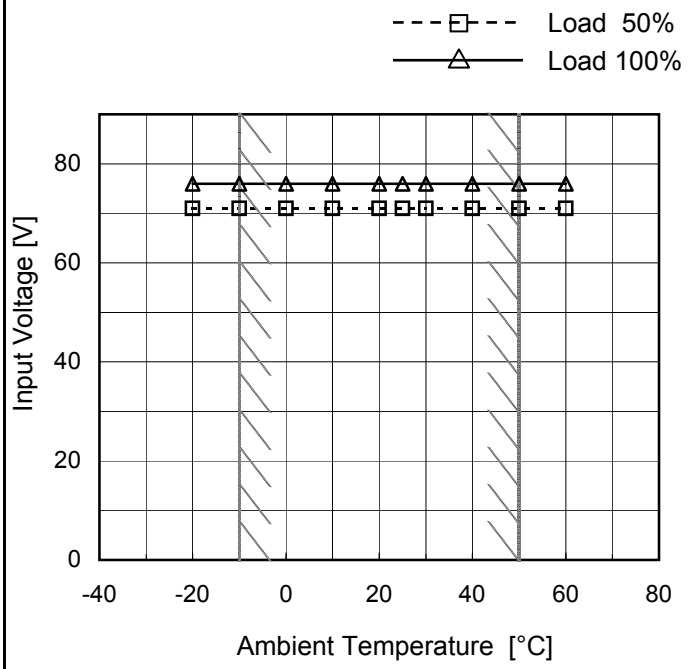


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	71	76
-10	71	76
0	71	76
10	71	76
20	71	76
25	71	76
30	71	76
40	71	76
50	71	76
60	71	76
--	-	-

Object	-12V2.2A

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	71	76
-10	71	76
0	71	76
10	71	76
20	71	76
25	71	76
30	71	76
40	71	76
50	71	76
60	71	76
--	-	-

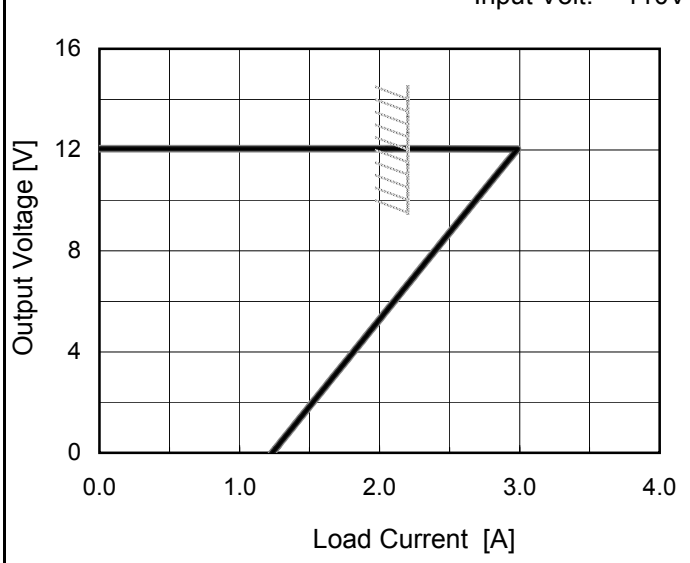
COSEL

Model	GT3.5W-12
Item	Overcurrent Protection

Temperature 25°C
Testing Circuitry Figure A

Object +12V2.2A

1.Graph

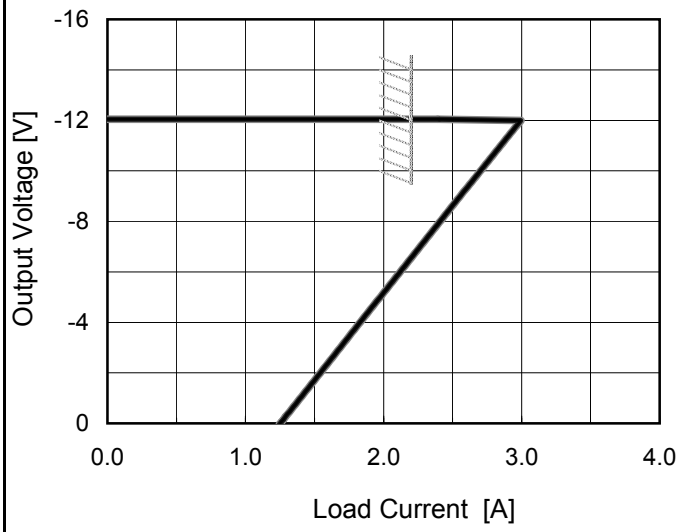


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
12.0	2.99	2.99	2.99
11.4	2.90	2.90	2.90
10.8	2.81	2.81	2.81
9.6	2.64	2.64	2.64
8.4	2.47	2.47	2.47
7.2	2.29	2.29	2.29
6.0	2.11	2.11	2.11
4.8	1.93	1.93	1.93
3.6	1.76	1.76	1.76
2.4	1.60	1.60	1.60
1.2	1.42	1.42	1.42
0.0	1.23	1.23	1.23

Object -12V2.2A

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	2.99	2.99	2.99
-11.4	2.90	2.90	2.90
-10.8	2.82	2.82	2.82
-9.6	2.65	2.65	2.65
-8.4	2.48	2.48	2.48
-7.2	2.30	2.30	2.30
-6.0	2.12	2.12	2.12
-4.8	1.95	1.95	1.95
-3.6	1.79	1.79	1.79
-2.4	1.61	1.61	1.61
-1.2	1.44	1.44	1.44
0.0	1.25	1.25	1.25

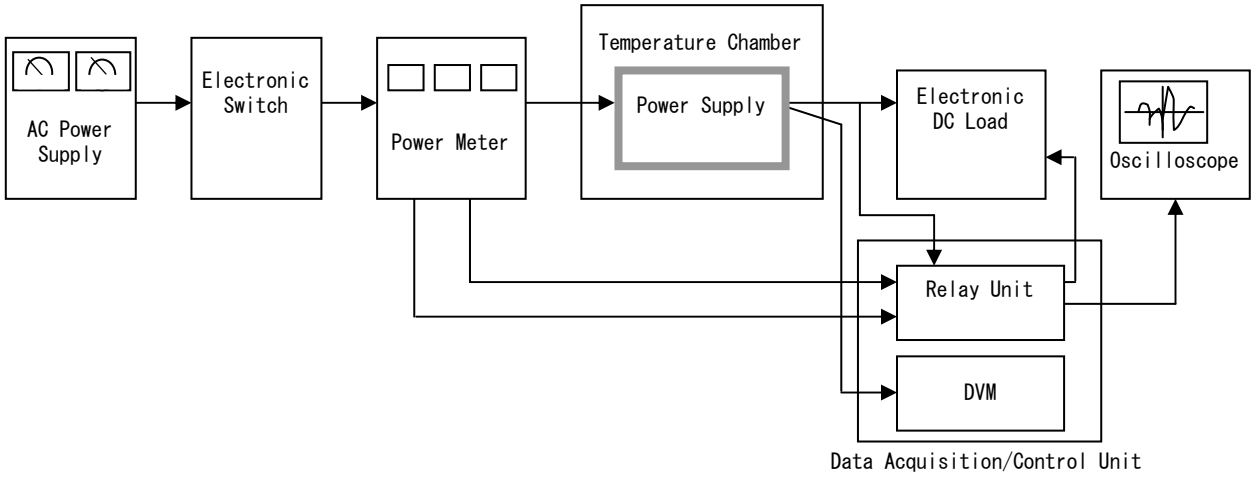

AC Power Supply
Electronic Switch
Power Meter
Temperature Chamber
Power Supply
Electronic DC Load
Oscilloscope
Relay Unit
DVM
Data Acquisition/Control Unit

Figure A