COSEL

参考資料

TEST DATA OF GT3.5W-15

Regulated DC Power Supply
October 26, 2010

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COSEL CO.,LTD.

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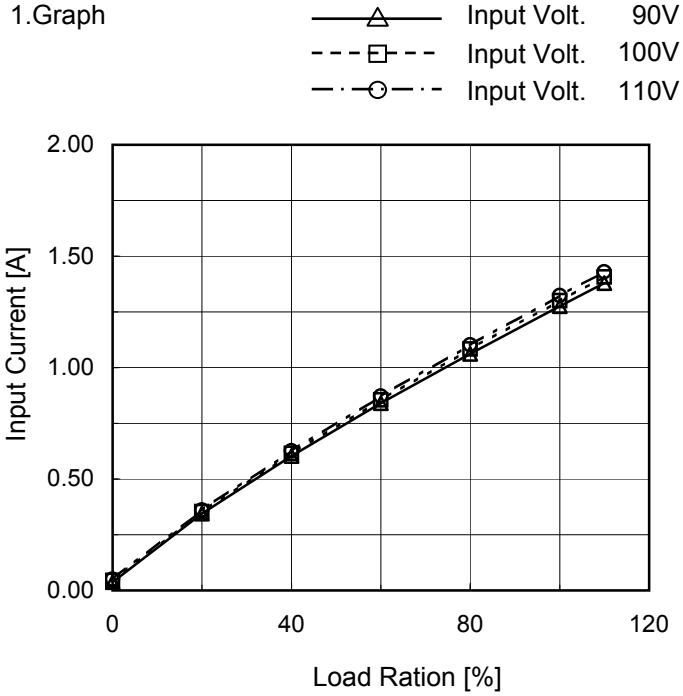
Model	GT3.5W-15
Item	Input Current (by Load Current)
Object	――――――

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	0.037	0.044	0.051
20	0.345	0.353	0.361
40	0.603	0.615	0.627
60	0.840	0.855	0.872
80	1.062	1.083	1.102
100	1.276	1.300	1.323
110	1.380	1.406	1.430
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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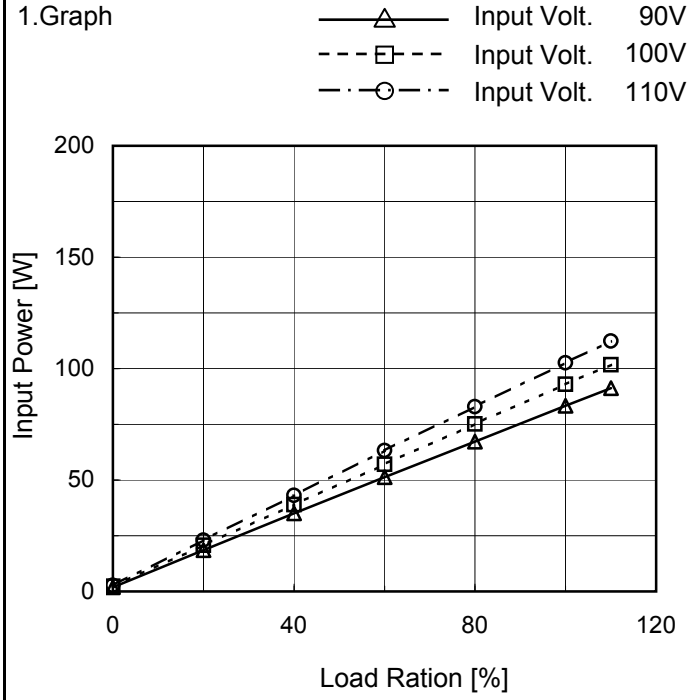
Model	GT3.5W-15
Item	Input Power (by Load Current)
Object	――――――

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	1.9	2.3	2.7
20	18.5	20.7	23.0
40	35.0	39.0	43.1
60	51.3	57.1	63.2
80	67.3	75.1	82.9
100	83.3	92.9	102.6
110	91.2	101.7	112.3
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

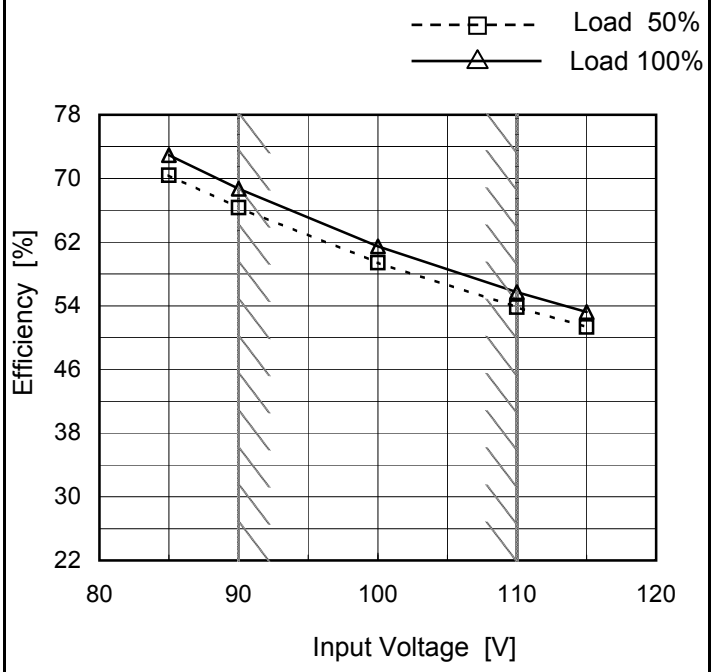
BC-10222

COSEL

Model	GT3.5W-15
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	70.4	72.9
90	66.3	68.7
100	59.4	61.5
110	53.8	55.7
115	51.3	53.2
--	-	-
--	-	-
--	-	-
--	-	-

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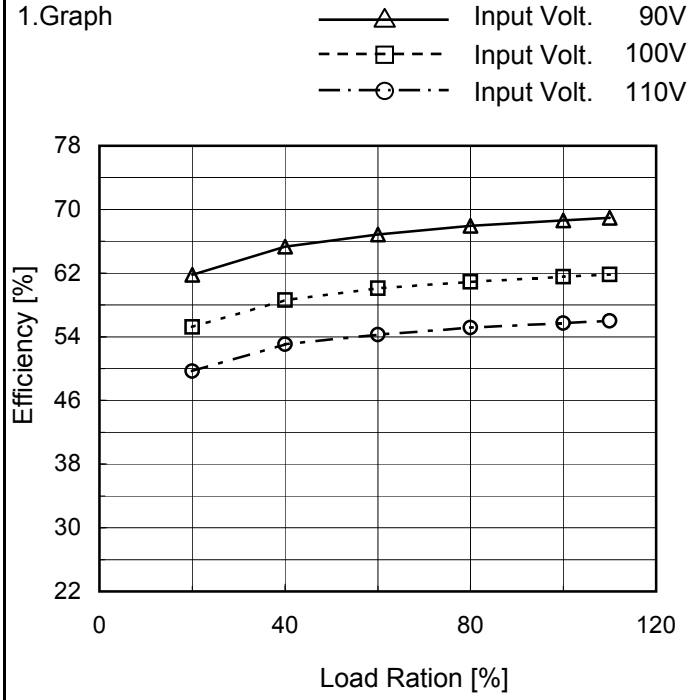
COSEL

Model	GT3.5W-15
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	61.8	55.2	49.7
40	65.3	58.6	53.0
60	66.9	60.1	54.3
80	68.0	60.9	55.2
100	68.6	61.5	55.7
110	69.0	61.8	56.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

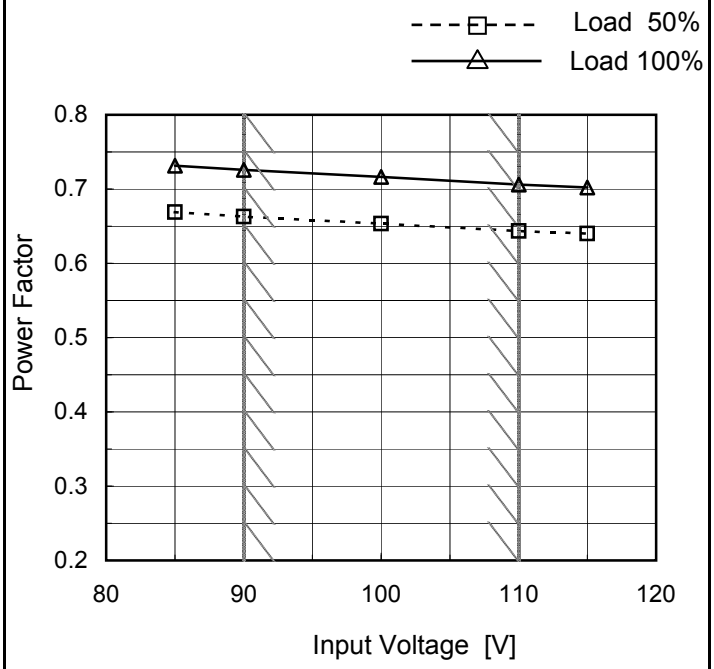
BC-10222

COSEL

Model	GT3.5W-15
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	0.669	0.731
90	0.663	0.726
100	0.654	0.716
110	0.644	0.706
115	0.640	0.702
--	-	-
--	-	-
--	-	-
--	-	-

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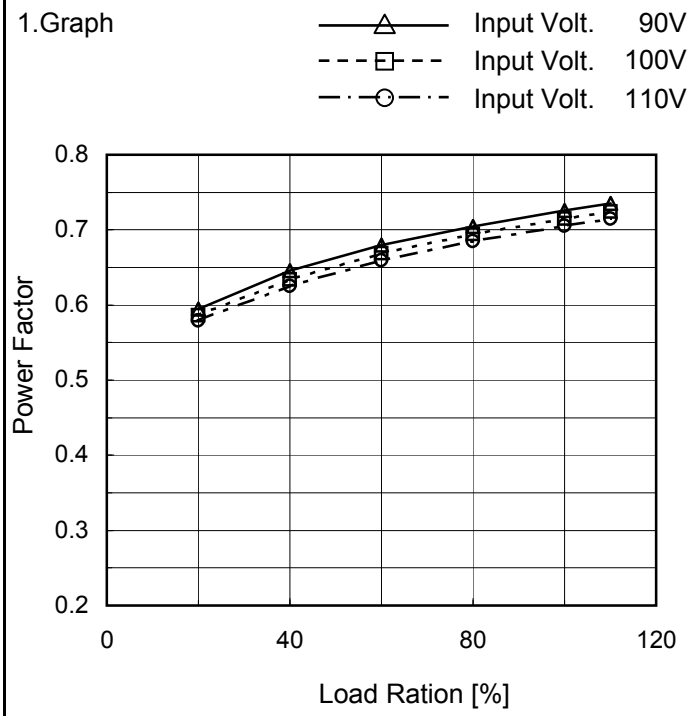
COSEL

Model	GT3.5W-15
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	0.595	0.586	0.579
40	0.646	0.634	0.626
60	0.679	0.669	0.660
80	0.705	0.694	0.685
100	0.726	0.715	0.706
110	0.735	0.724	0.714
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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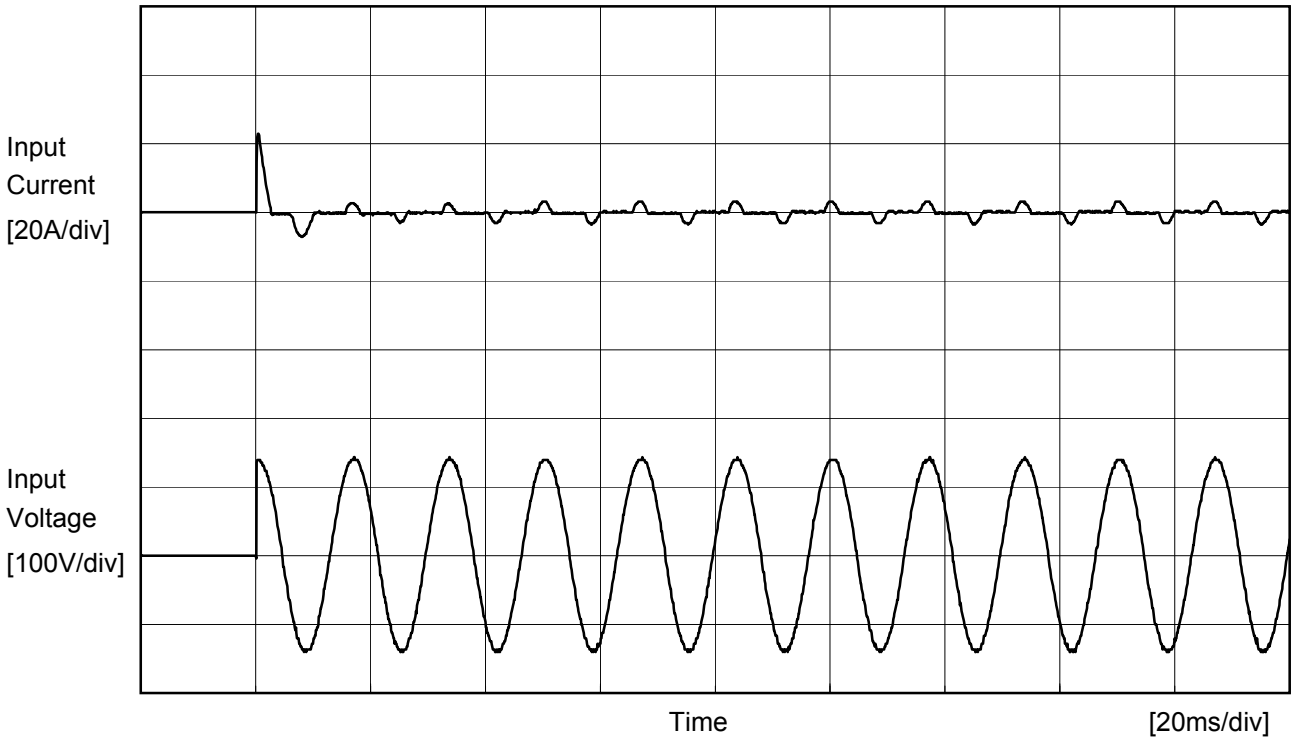
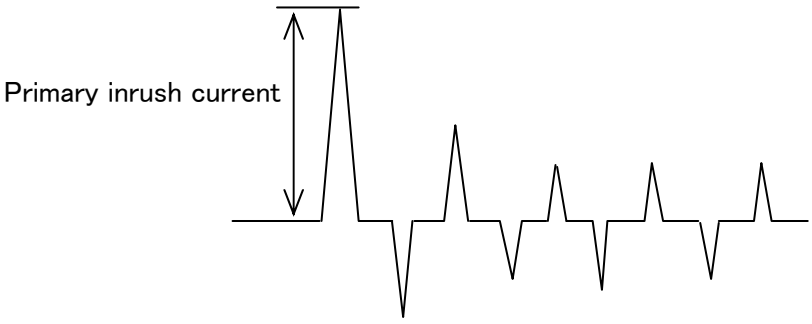
COSEL

Model	GT3.5W-15	Temperature 25°C
Item	Inrush Current	Testing Circuitry Figure A
Object	――――――	



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	22.9 A

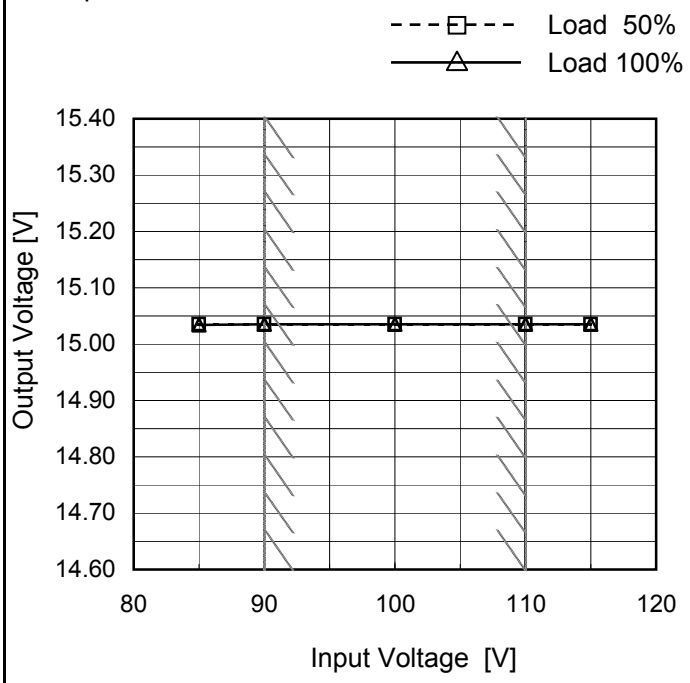


COSEL

Model	GT3.5W-15
Item	Line Regulation
Object	+15V1.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

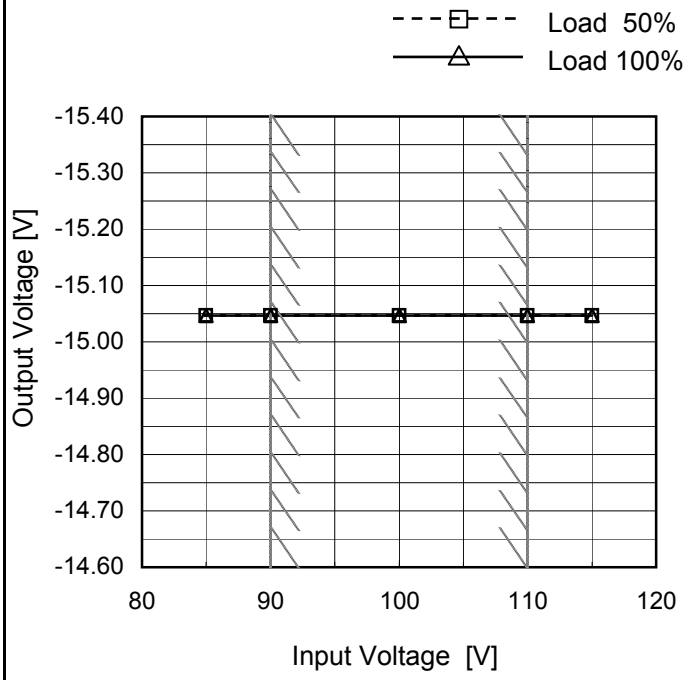


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	15.035	15.035
90	15.035	15.035
100	15.035	15.035
110	15.036	15.036
115	15.036	15.036
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V1.9A

1.Graph



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

2.Values

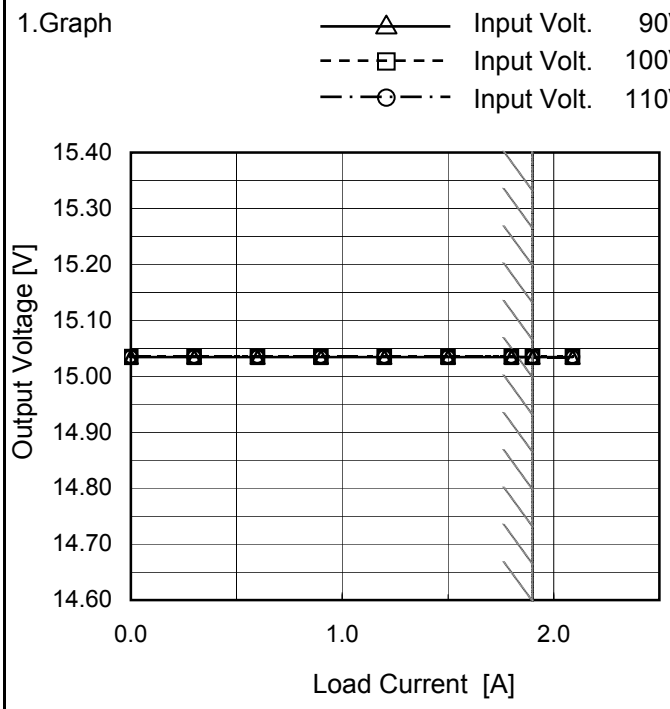
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	-15.046	-15.046
90	-15.046	-15.046
100	-15.047	-15.047
110	-15.047	-15.047
115	-15.047	-15.047
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3.5W-15
Item	Load Regulation
Object	+15V1.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

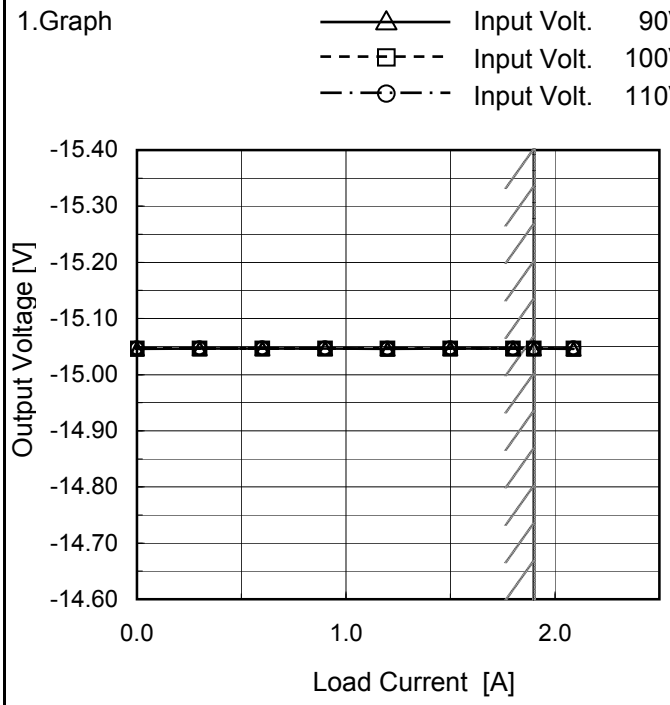


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	15.035	15.035	15.035
0.30	15.035	15.035	15.035
0.60	15.035	15.035	15.035
0.90	15.035	15.035	15.035
1.20	15.035	15.035	15.035
1.50	15.035	15.035	15.035
1.80	15.035	15.035	15.035
1.90	15.035	15.035	15.035
2.09	15.035	15.035	15.035
--	-	-	-
--	-	-	-

Object	-15V1.9A

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	-15.046	-15.047	-15.047
0.30	-15.046	-15.047	-15.047
0.60	-15.046	-15.047	-15.047
0.90	-15.046	-15.047	-15.047
1.20	-15.046	-15.047	-15.047
1.50	-15.046	-15.047	-15.047
1.80	-15.046	-15.047	-15.047
1.90	-15.046	-15.047	-15.047
2.09	-15.046	-15.047	-15.047
--	-	-	-
--	-	-	-

参考資料

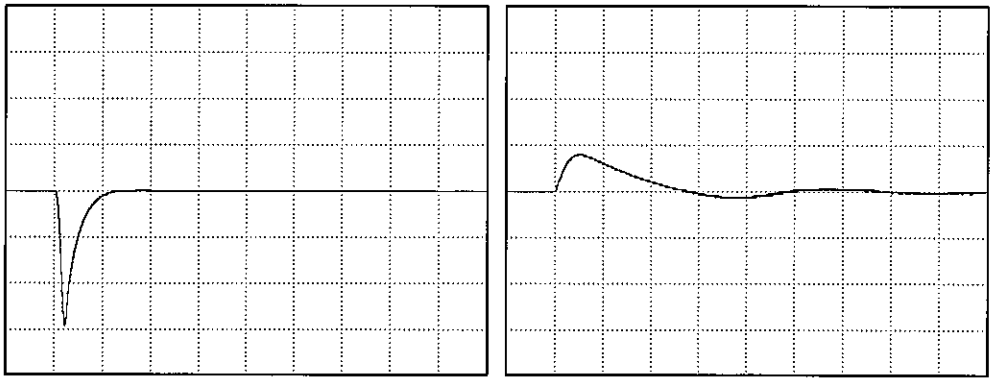
COSEL

Model	GT3.5W-15	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	+15V1.9A		

Input Volt. 100 V
Cycle 1000 ms

Load Current

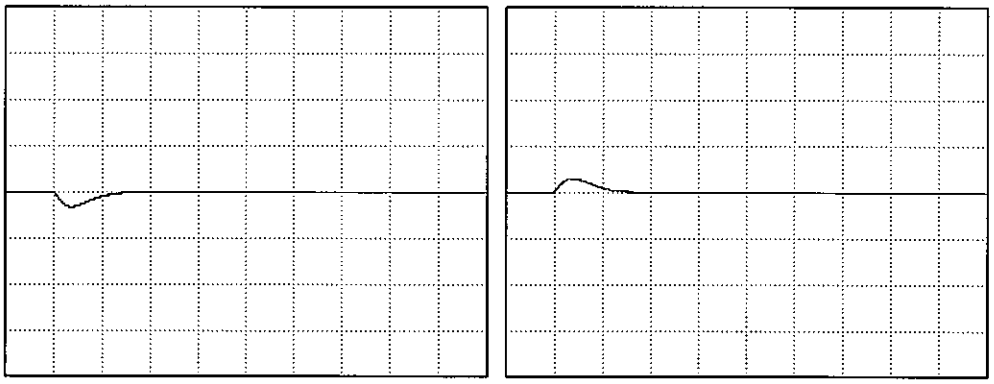
Min. Load (0A) ←→
Load 100% (1.9A)



50 mV/div

100 μs/div 100 μs/div

Load 50% (0.95A) ←→
Load 100% (1.9A)



50 mV/div

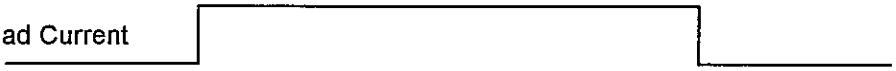
100 μs/div 100 μs/div

COSEL

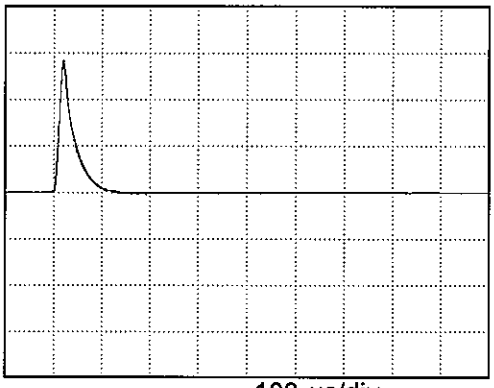
Model	GT3.5W-15	Temperature	25°C
Item	Dynamic Load Response	Testing Circuitry	Figure A
Object	-15V1.9A		

Input Volt. 100 V
Cycle 1000 ms

Load Current

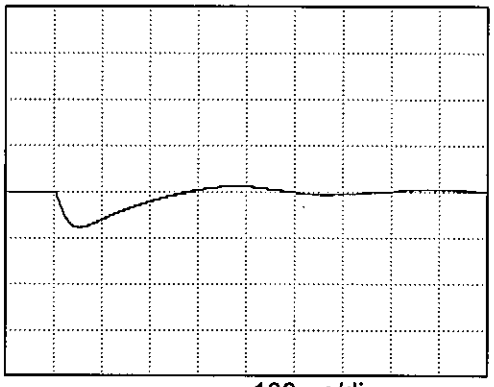


Min. Load (0A) ⟷
Load 100% (1.9A)



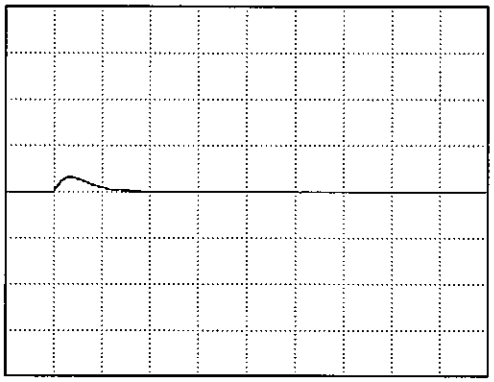
50 mV/div

100 μs/div



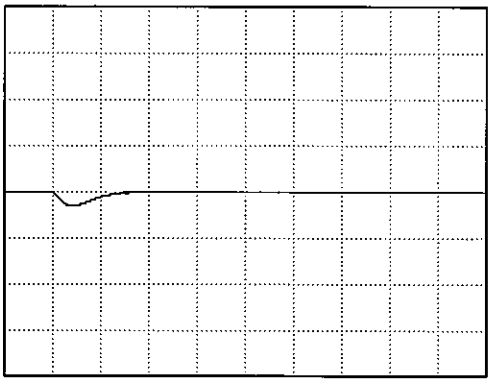
100 μs/div

Load 50% (0.95A) ⟷
Load 100% (1.9A)



50 mV/div

100 μs/div



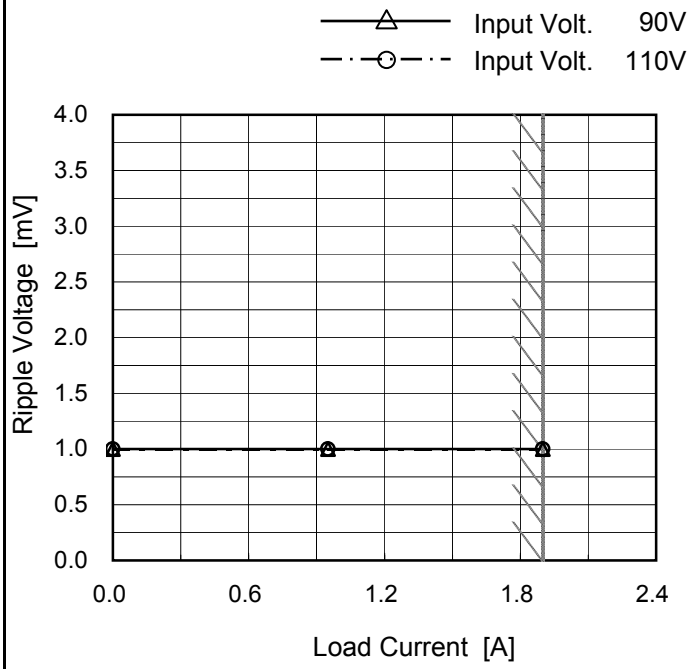
100 μs/div

COSEL

Model	GT3.5W-15
Item	Ripple Voltage (by Load Current)
Object	+15V1.9A

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	1.0	1.0
0.95	1.0	1.0
1.90	1.0	1.0
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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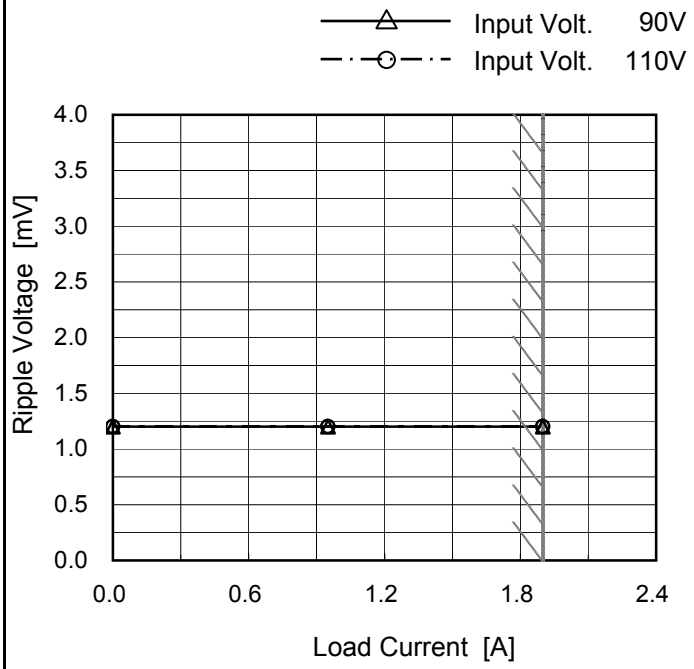
COSEL

Model	GT3.5W-15
Item	Ripple Voltage (by Load Current)
Object	-15V1.9A

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	1.2	1.2
0.95	1.2	1.2
1.90	1.2	1.2
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

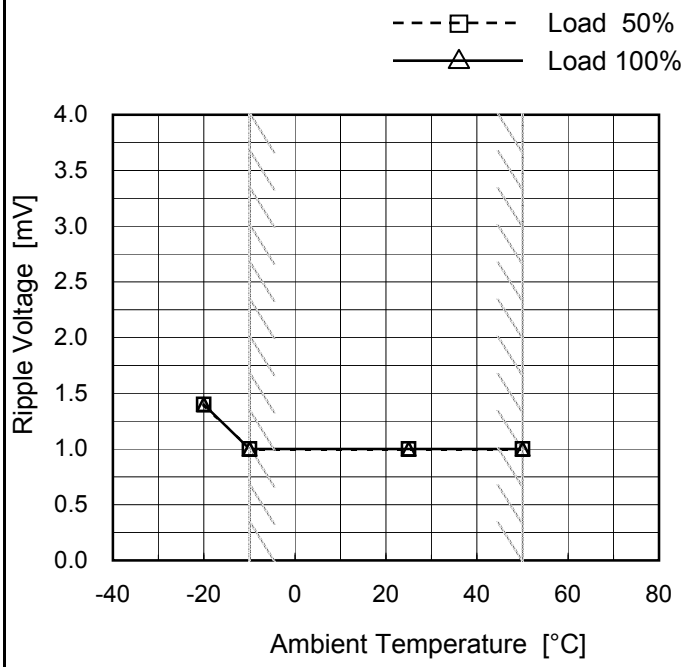
COSEL

Model	GT3.5W-15
Item	Ripple Voltage (by Ambient Temp.)

Testing Circuitry Figure A

Object +15V1.9A

1.Graph



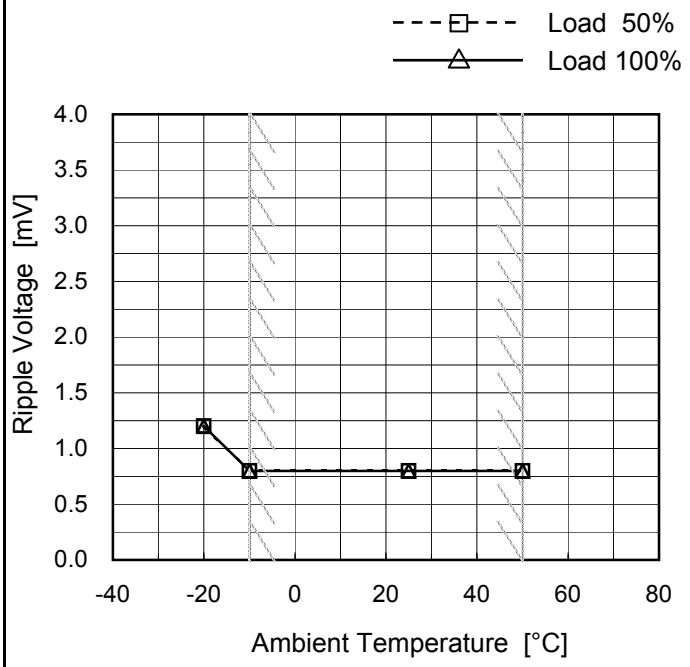
Input Volt. 100V

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	1.4	1.4
-10	1.0	1.0
25	1.0	1.0
50	1.0	1.0
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

Object -15V1.9A

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
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

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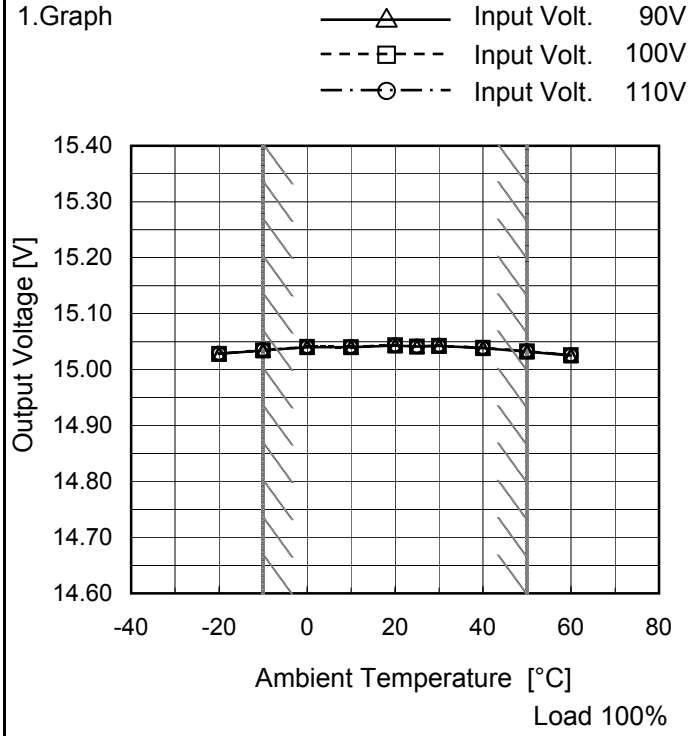
Model	GT3.5W-15
Item	Ambient Temperature Drift
Object	+15V1.9A

Testing Circuitry Figure A

1.Graph

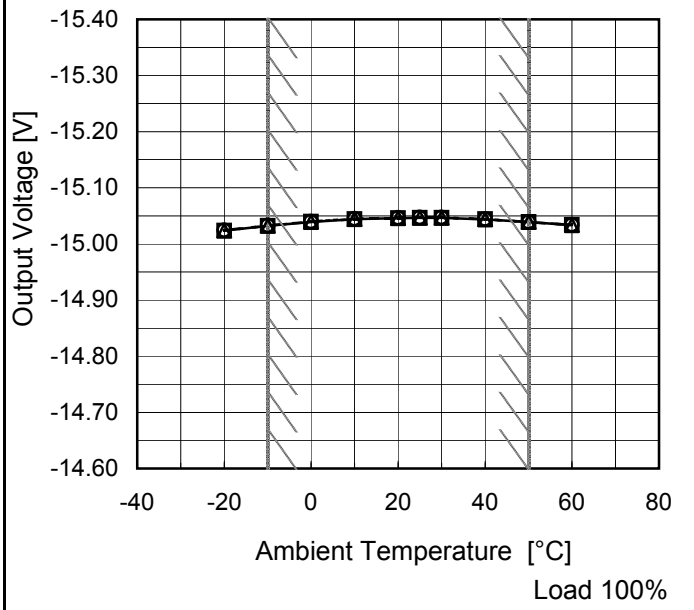


2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
-20	15.028	15.028	15.028
-10	15.034	15.034	15.035
0	15.040	15.041	15.041
10	15.040	15.040	15.041
20	15.043	15.043	15.044
25	15.041	15.041	15.041
30	15.042	15.042	15.043
40	15.039	15.039	15.039
50	15.032	15.032	15.033
60	15.025	15.026	15.026
--	-	-	-

Object	-15V1.9A

1.Graph



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	-15.024	-15.024	-15.024
-10	-15.032	-15.032	-15.033
0	-15.039	-15.039	-15.040
10	-15.044	-15.044	-15.045
20	-15.046	-15.046	-15.046
25	-15.046	-15.047	-15.047
30	-15.046	-15.047	-15.047
40	-15.044	-15.044	-15.044
50	-15.039	-15.039	-15.039
60	-15.033	-15.034	-15.034
--	-	-	-

COSEL

Model	GT3.5W-15	
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 - 1.9A (AVR 2) : 0 - 1.9A

* 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	+15V1.9A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	20	110	0	15.044	±6	±0.1
Minimum Voltage	50	90	1.9	15.032		

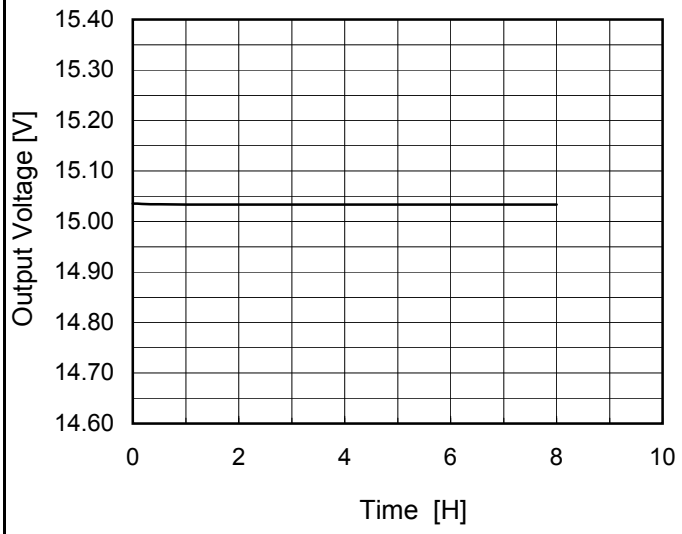
Object	-15V1.9A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	30	110	0	-15.047	±8	±0.1
Minimum Voltage	-10	90	0	-15.032		

COSEL

Model	GT3.5W-15
Item	Time Lapse Drift
Object	+15V1.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



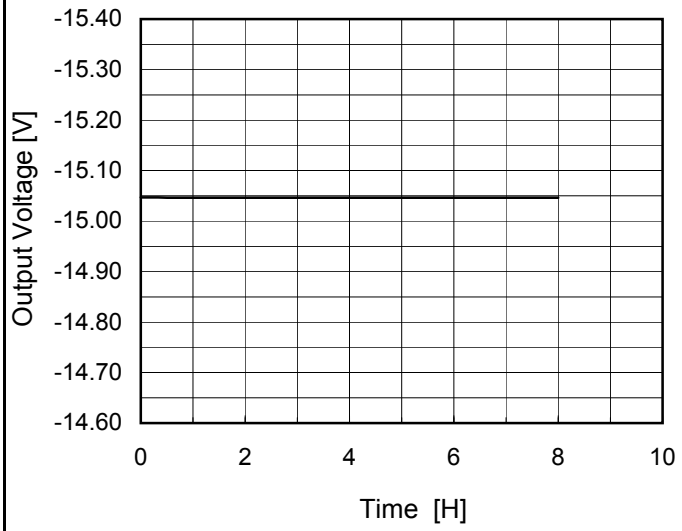
Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	15.035
0.5	15.034
1.0	15.034
2.0	15.034
3.0	15.033
4.0	15.033
5.0	15.033
6.0	15.033
7.0	15.033
8.0	15.033

Object	-15V1.9A

1.Graph



Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-15.047
0.5	-15.046
1.0	-15.046
2.0	-15.046
3.0	-15.046
4.0	-15.046
5.0	-15.046
6.0	-15.046
7.0	-15.046
8.0	-15.046

BC-10222

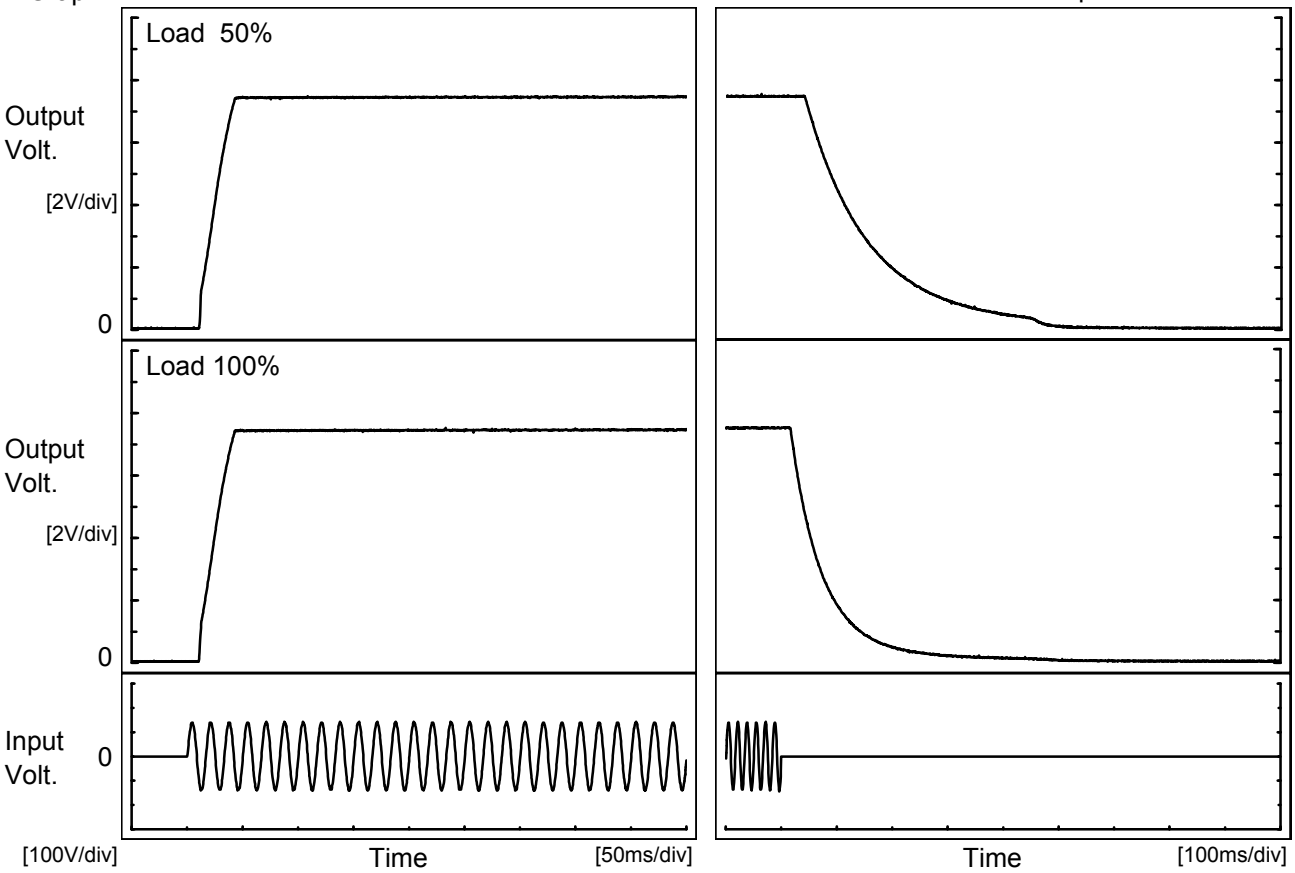
COSEL

Model	GT3.5W-15
Item	Rise and Fall Time
Object	+15V1.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

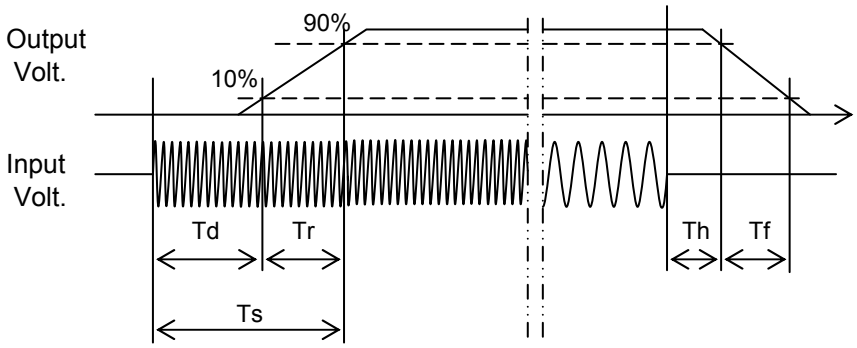
Input Volt. 100 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	12.3	26.5	38.8	52.0	278.5
100 %	12.0	26.5	38.5	22.5	138.5



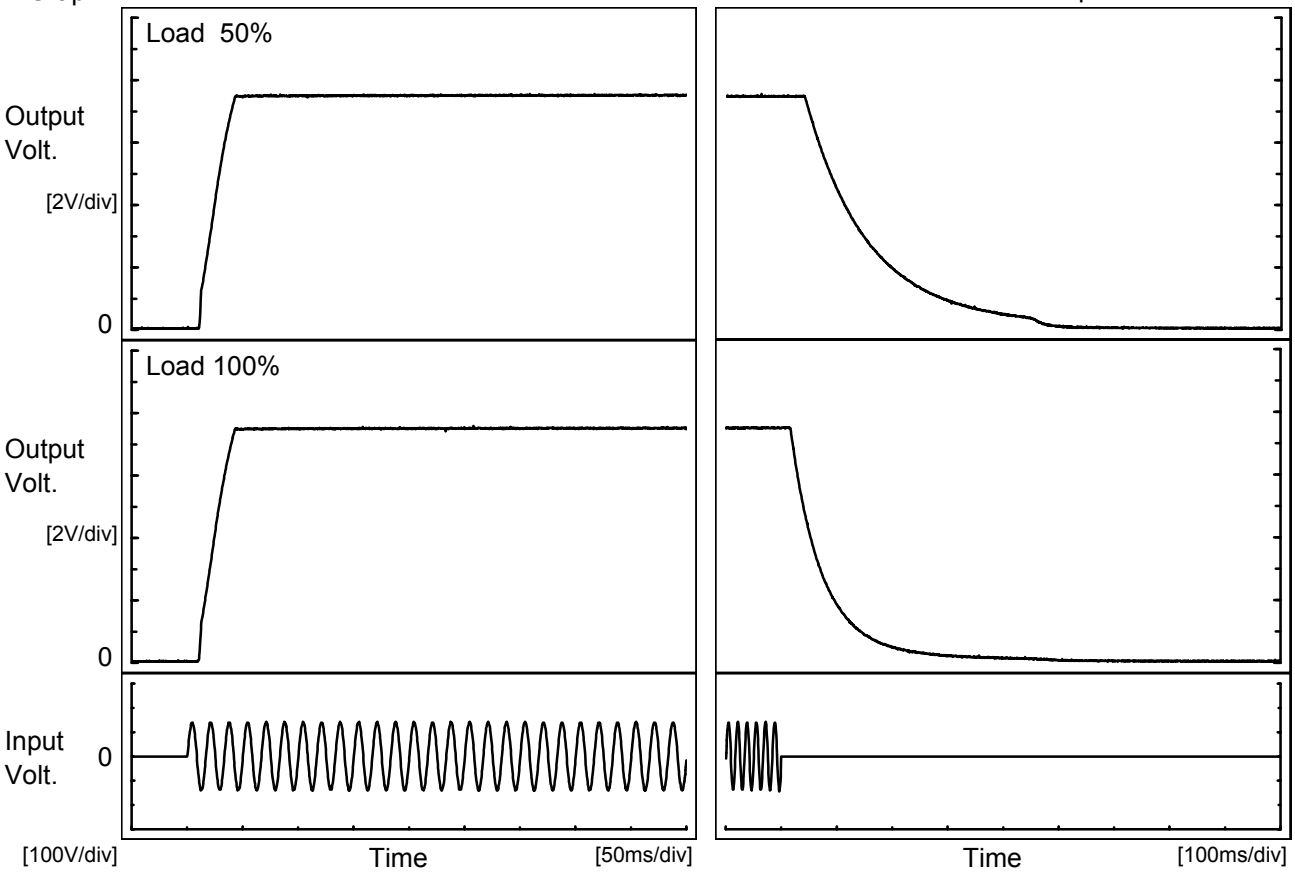
COSEL

Model	GT3.5W-15
Item	Rise and Fall Time
Object	-15V1.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

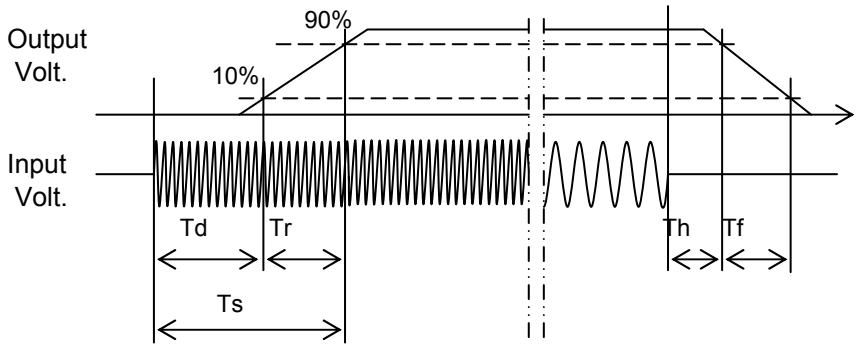
Input Volt. 100 V



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	12.3	26.5	38.8	53.0	272.5
100 %	12.0	26.5	38.5	22.0	137.5



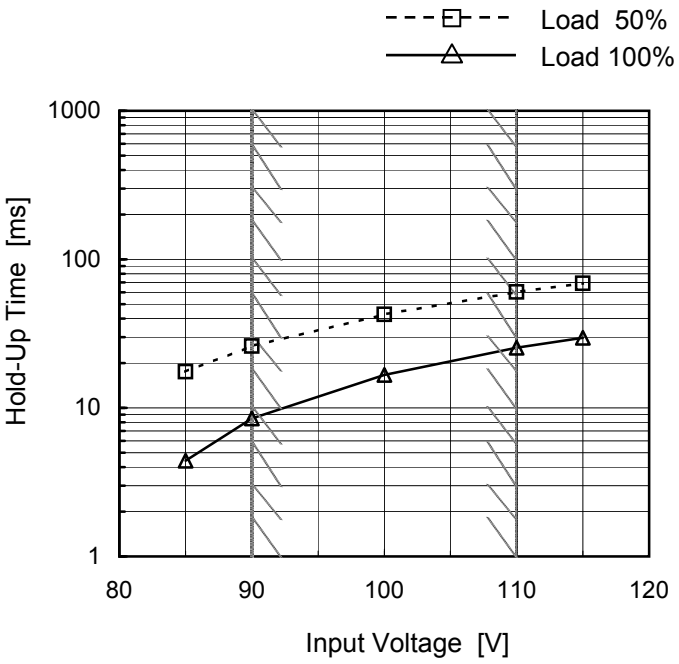
BC-10222

COSEL

Model	GT3.5W-15
Item	Hold-Up Time
Object	+15V1.9A

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

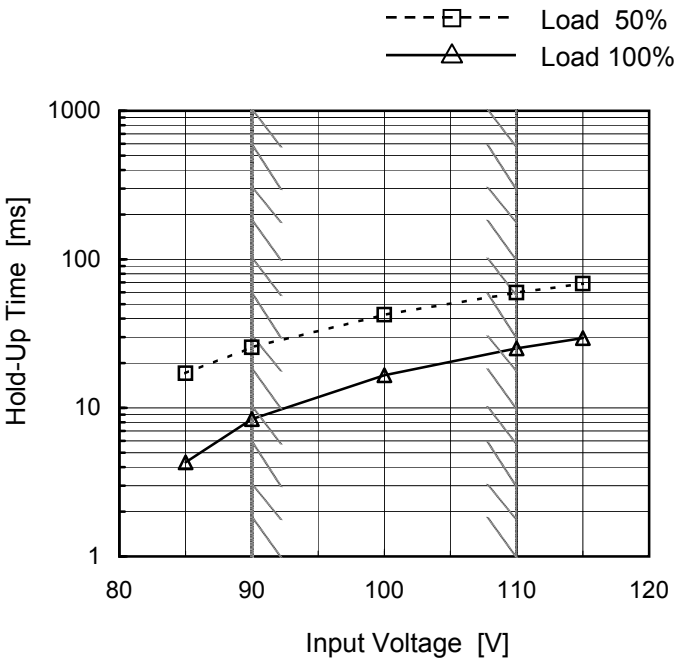
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	18	4
90	26	9
100	43	17
110	60	25
115	69	30
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3.5W-15
Item	Hold-Up Time
Object	-15V1.9A

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	4
90	26	8
100	42	17
110	60	25
115	69	30
--	-	-
--	-	-
--	-	-
--	-	-

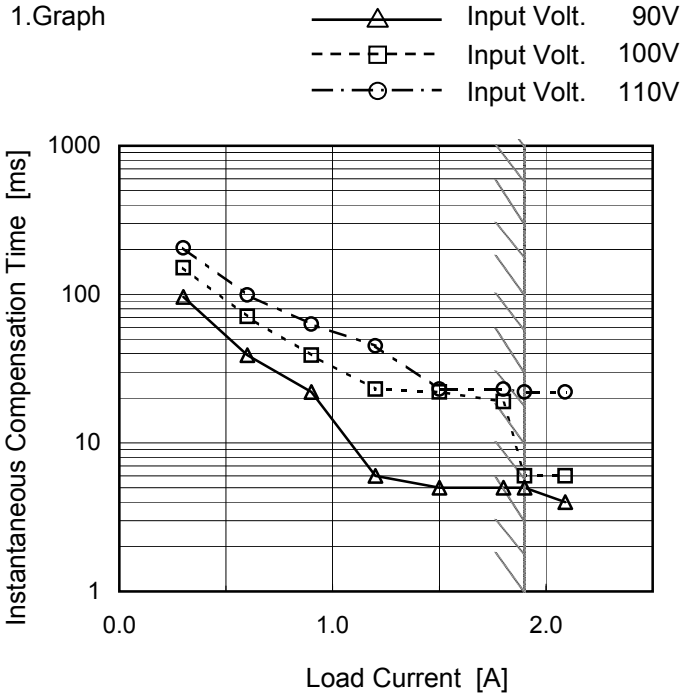
BC-10222

COSEL

Model	GT3.5W-15
Item	Instantaneous Interruption Compensation
Object	+15V1.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

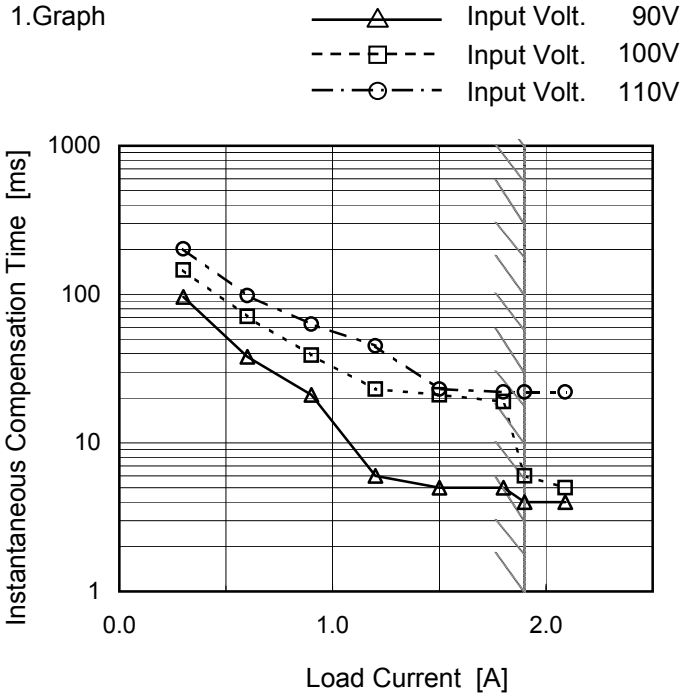
Load Current [A]	Time [ms]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.30	96	151	205
0.60	39	71	99
0.90	22	39	63
1.20	6	23	45
1.50	5	22	23
1.80	5	19	23
1.90	5	6	22
2.09	4	6	22
--	-	-	-
--	-	-	-

COSEL

Model	GT3.5W-15
Item	Instantaneous Interruption Compensation
Object	-15V1.9A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

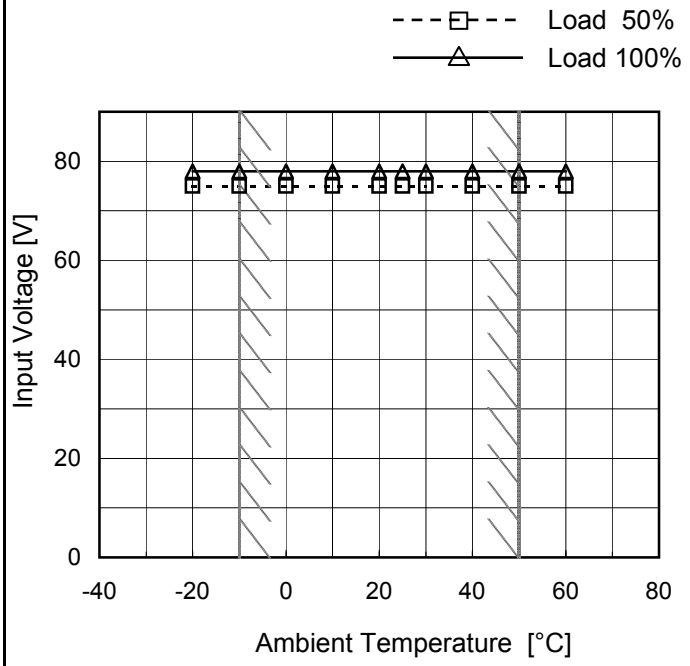
Load Current [A]	Time [ms]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.30	96	146	202
0.60	38	71	98
0.90	21	39	63
1.20	6	23	45
1.50	5	21	23
1.80	5	19	22
1.90	4	6	22
2.09	4	5	22
--	-	-	-
--	-	-	-

COSEL

Model	GT3.5W-15
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V1.9A

Testing Circuitry Figure A

1.Graph

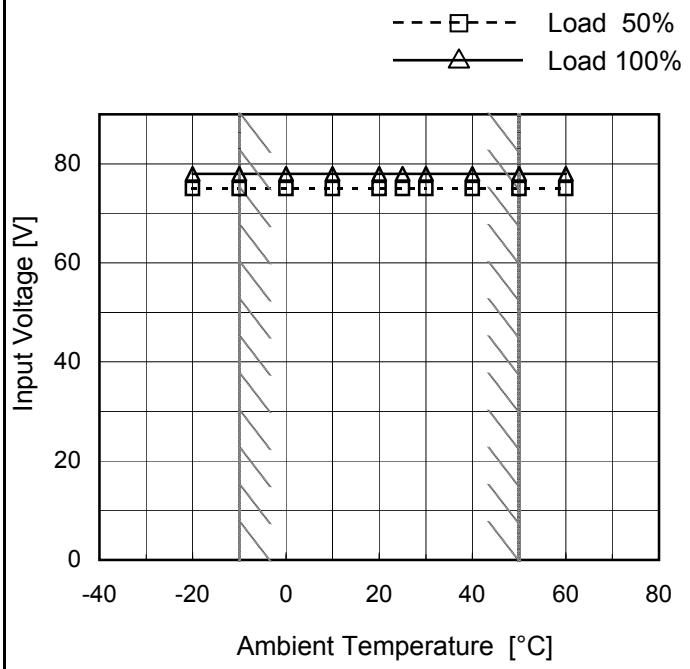


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	75	78
-10	75	78
0	75	78
10	75	78
20	75	78
25	75	78
30	75	78
40	75	78
50	75	78
60	75	78
--	-	-

Object	-15V1.9A

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	75	78
-10	75	78
0	75	78
10	75	78
20	75	78
25	75	78
30	75	78
40	75	78
50	75	78
60	75	78
--	-	-

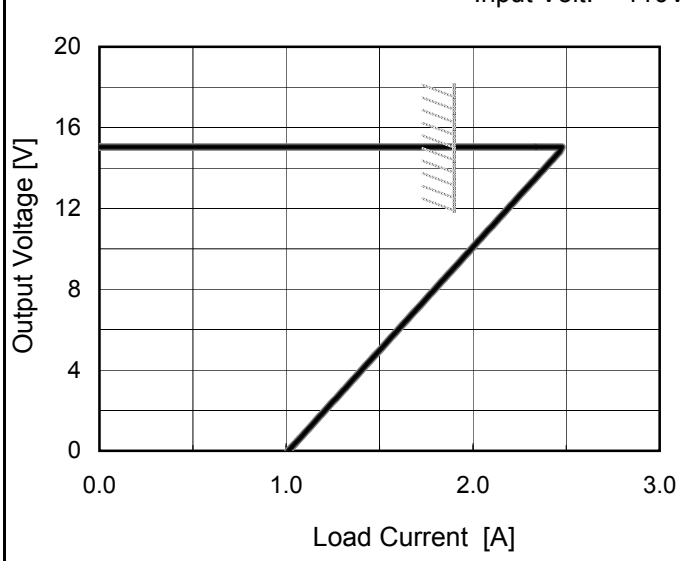
COSEL

Model	GT3.5W-15
Item	Overcurrent Protection

Temperature 25°C
Testing Circuitry Figure A

Object +15V1.9A

1.Graph

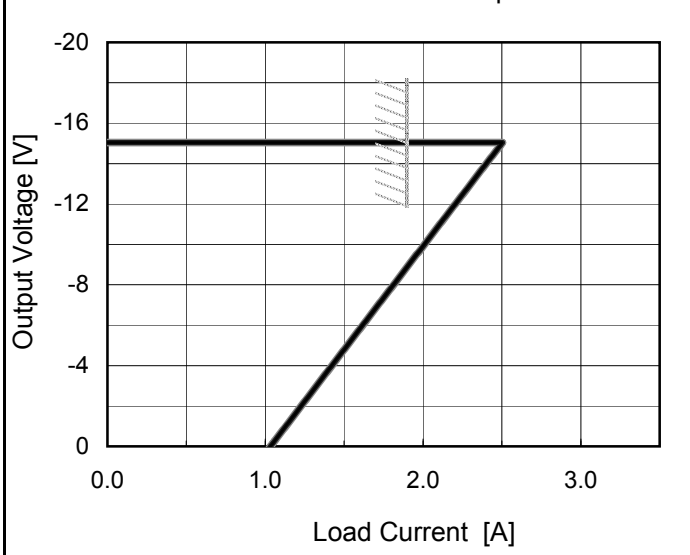


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
15.0	2.48	2.48	2.48
14.3	2.41	2.41	2.41
13.5	2.33	2.33	2.33
12.0	2.19	2.19	2.19
10.5	2.04	2.04	2.04
9.0	1.89	1.89	1.89
7.5	1.76	1.76	1.76
6.0	1.61	1.61	1.61
4.5	1.46	1.46	1.46
3.0	1.32	1.32	1.32
1.5	1.17	1.17	1.17
0.0	1.01	1.01	1.01

Object -15V1.9A

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]
-15.00	2.50	2.50	2.50
-14.25	2.43	2.43	2.43
-13.50	2.35	2.35	2.35
-12.00	2.21	2.21	2.21
-10.50	2.07	2.07	2.07
-9.00	1.92	1.92	1.92
-7.50	1.77	1.77	1.77
-6.00	1.63	1.63	1.63
-4.50	1.48	1.48	1.48
-3.00	1.33	1.33	1.33
-1.50	1.18	1.18	1.18
0.00	1.02	1.02	1.02

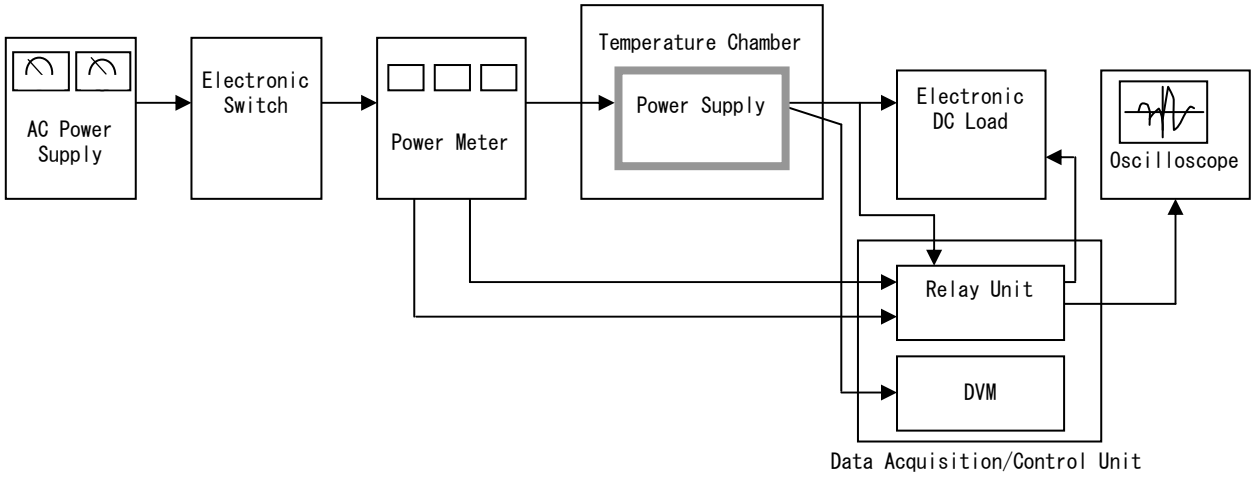

AC Power Supply
Electronic Switch
Power Meter
Temperature Chamber
Power Supply
Electronic DC Load
Oscilloscope
Relay Unit
DVM
Data Acquisition/Control Unit

Figure A