COSEL

参考資料

TEST DATA OF GT3W-15

Regulated DC Power Supply
November 1, 2010

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Satoshi Kinoshita Design Engineer

COSEL CO.,LTD.

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CONTENTS

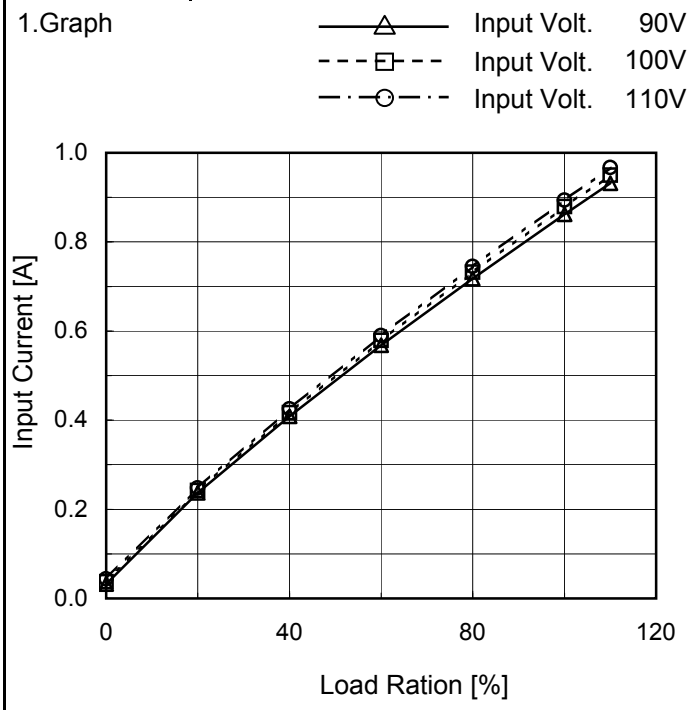
(Final Page 26)

COSEL

Model	GT3W-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	0.032	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
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

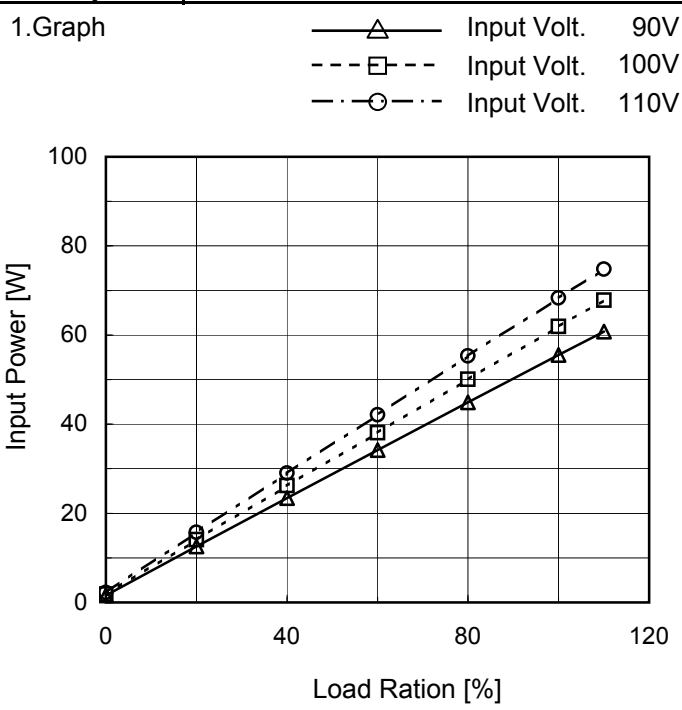
BC-10220

COSEL

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

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

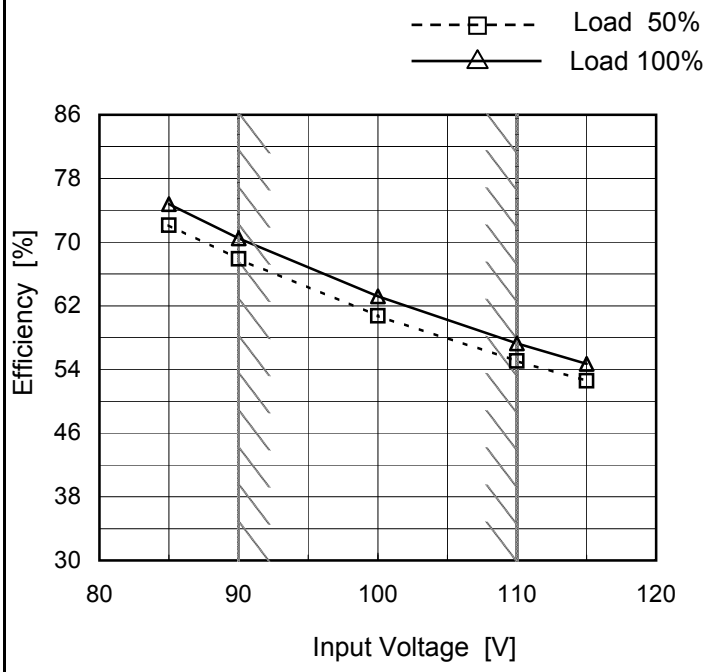
Load Ration [%]	Input Power [W]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0	1.60	1.90	2.20
20	12.60	14.10	15.70
40	23.40	26.20	29.00
60	34.20	38.10	42.10
80	44.90	50.10	55.30
100	55.50	61.90	68.30
110	60.80	67.80	74.80
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GT3W-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

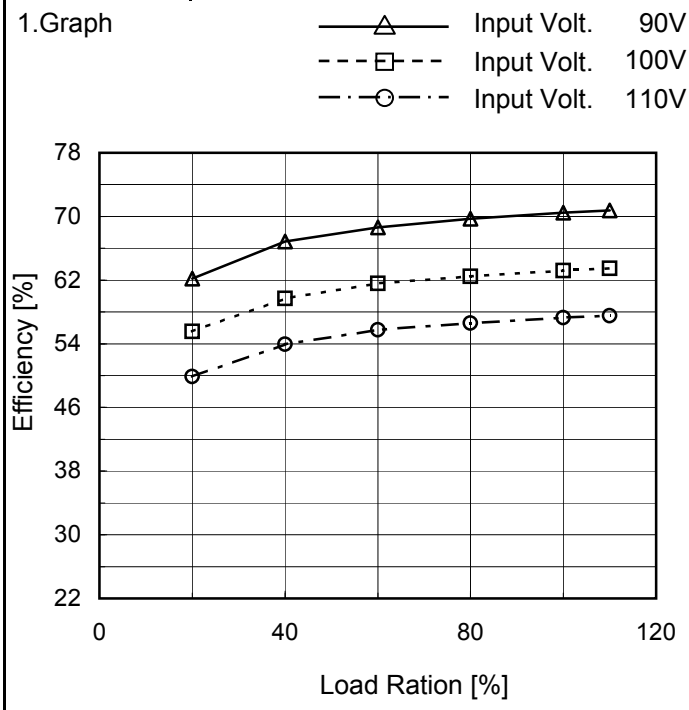
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
85	72.1	74.8
90	67.9	70.5
100	60.7	63.2
110	55.1	57.3
115	52.6	54.7
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3W-15
Item	Efficiency (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

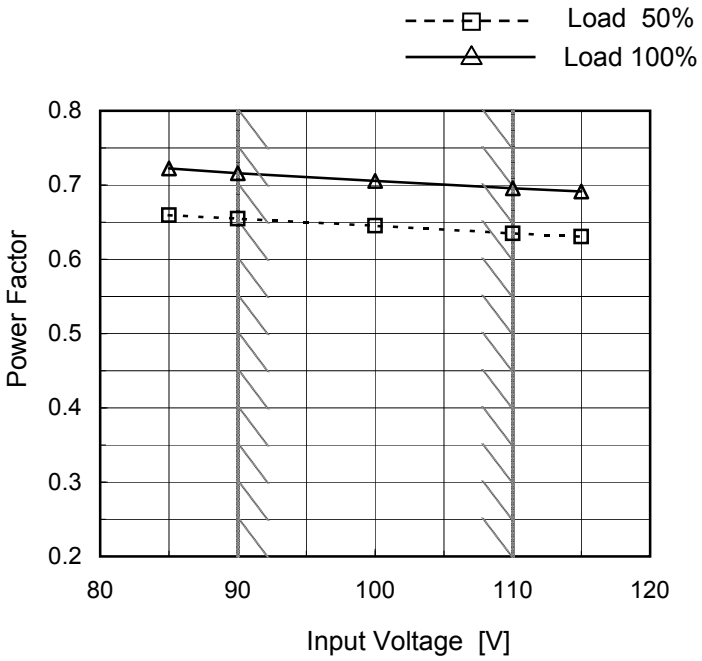
Load Ration [%]	Efficiency [%]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0	-	-	-
20	62.2	55.5	49.9
40	66.8	59.7	53.9
60	68.6	61.6	55.7
80	69.7	62.5	56.6
100	70.5	63.2	57.3
110	70.8	63.5	57.5
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	GT3W-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	0.659	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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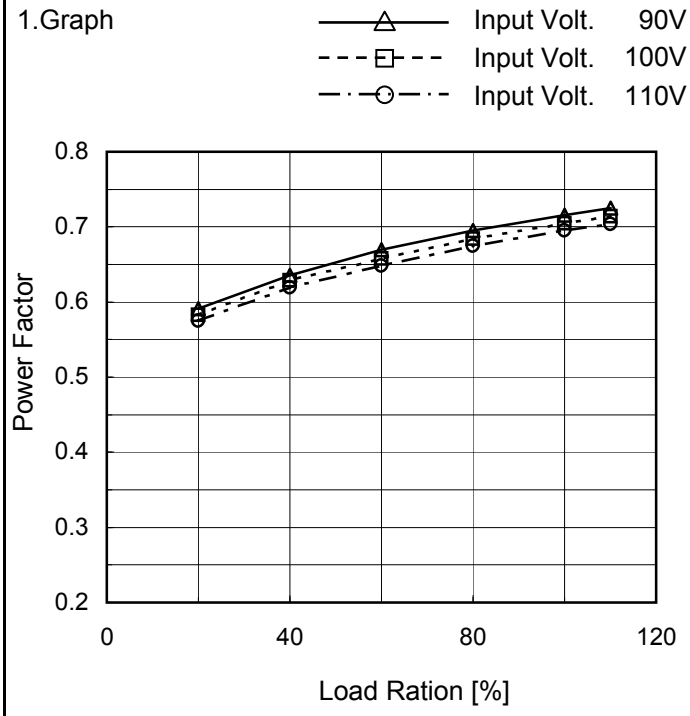
Model	GT3W-15
Item	Power Factor (by Load Current)
Object	————————

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	0.592	0.583	0.575
40	0.636	0.628	0.620
60	0.669	0.658	0.649
80	0.695	0.684	0.674
100	0.715	0.704	0.695
110	0.725	0.714	0.704
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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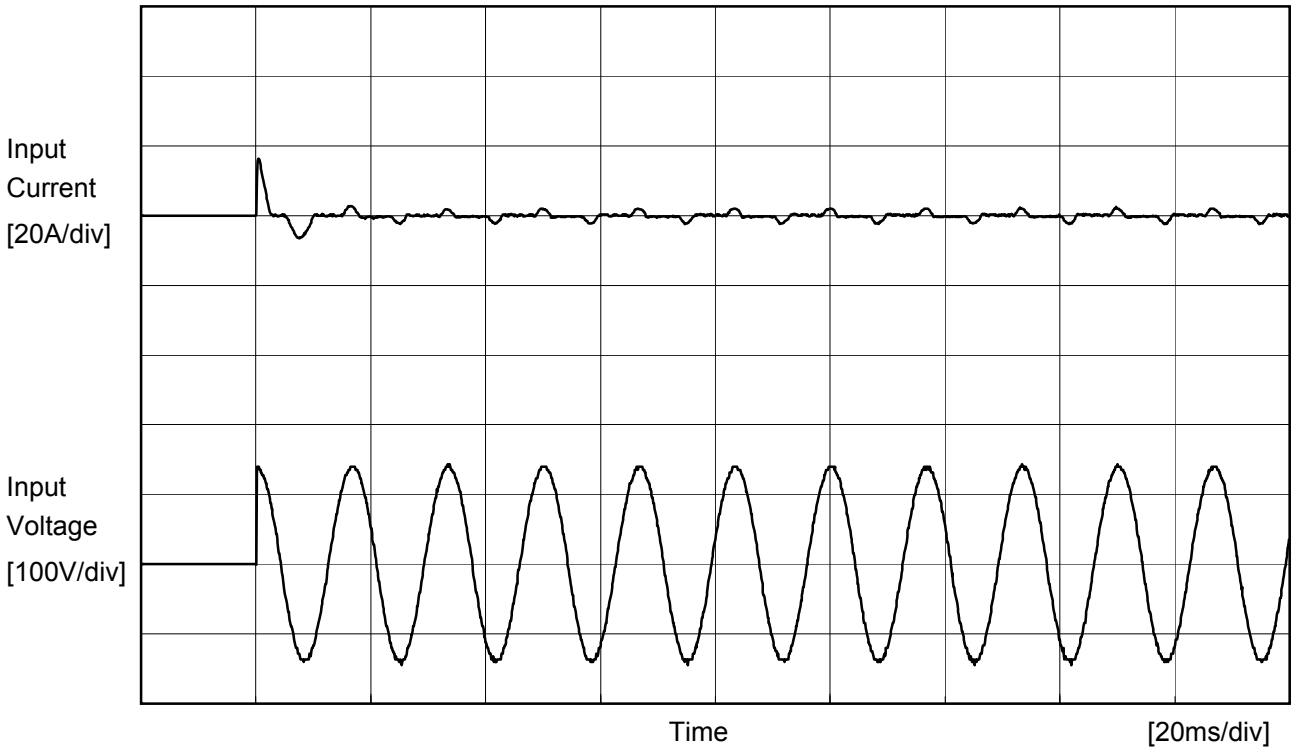
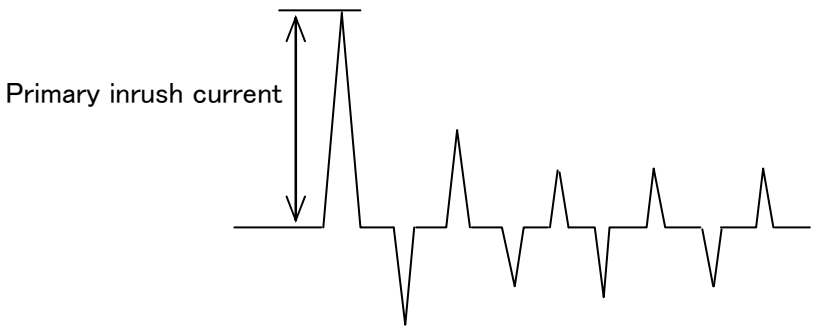
Model	GT3W-15
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	16.5 A



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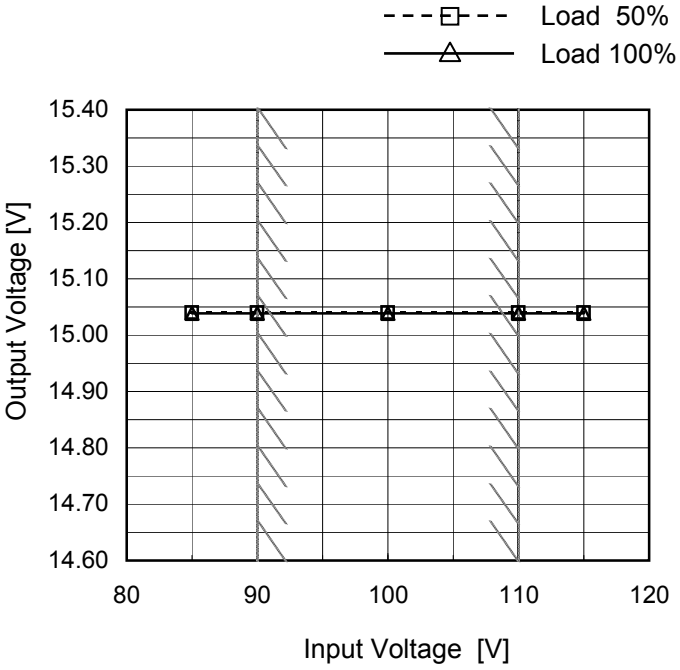
Model	GT3W-15
Item	Line Regulation
Object	+15V1.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

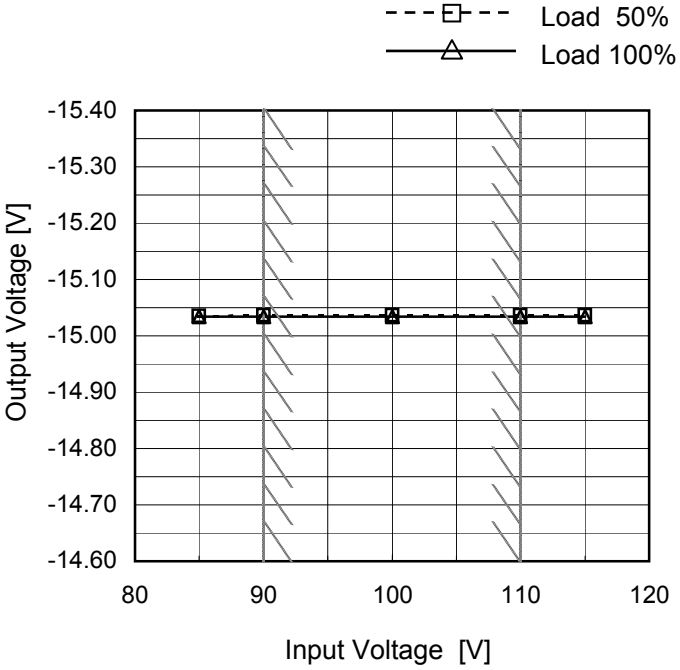


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	15.040	15.039
90	15.040	15.039
100	15.040	15.039
110	15.040	15.039
115	15.040	15.039
--	-	-
--	-	-
--	-	-
--	-	-

Object	-15V1.3A

1.Graph



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

2.Values

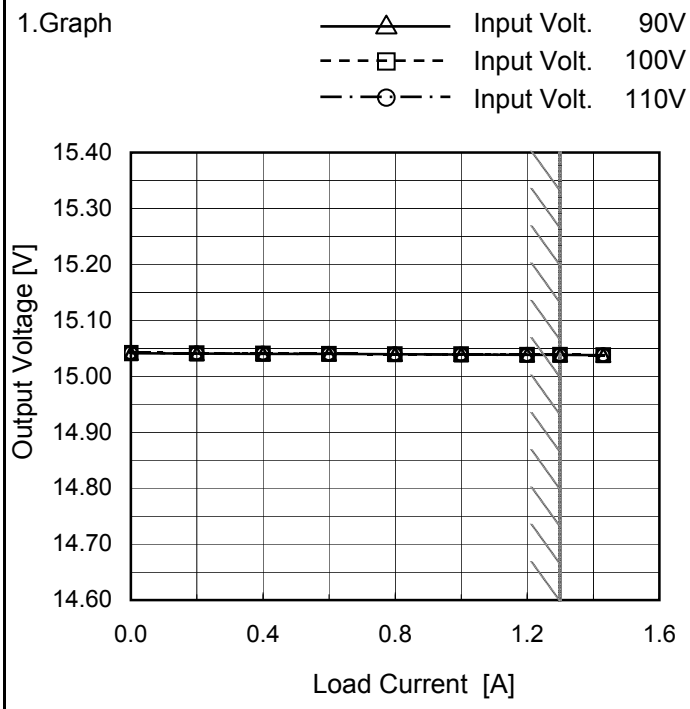
Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
85	-15.036	-15.034
90	-15.036	-15.034
100	-15.036	-15.034
110	-15.036	-15.034
115	-15.036	-15.034
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3W-15
Item	Load Regulation
Object	+15V1.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

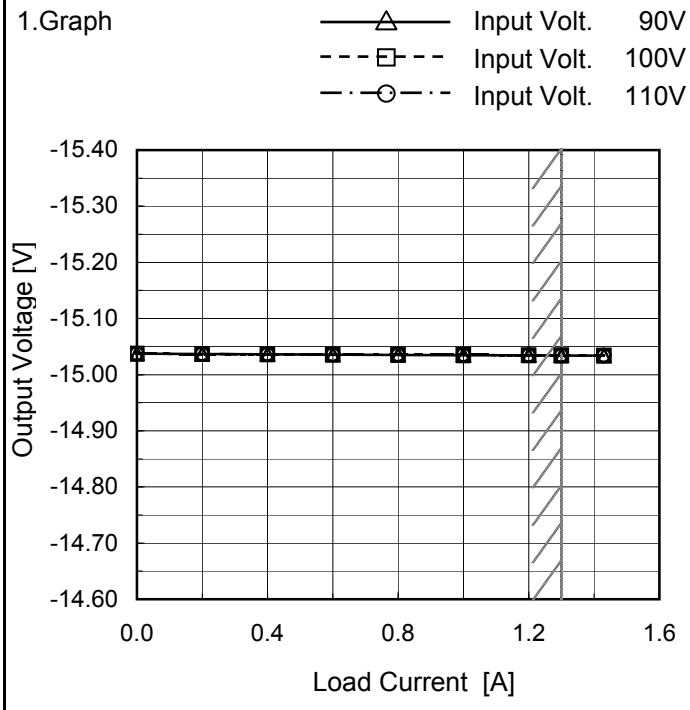


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	15.041	15.042	15.042
0.20	15.041	15.041	15.041
0.40	15.040	15.041	15.041
0.60	15.040	15.040	15.040
0.80	15.039	15.040	15.040
1.00	15.039	15.039	15.039
1.20	15.038	15.039	15.039
1.30	15.038	15.038	15.038
1.43	15.038	15.038	15.038
--	-	-	-
--	-	-	-

Object	-15V1.3A

1.Graph



2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-15.037	-15.037	-15.037
0.20	-15.037	-15.037	-15.037
0.40	-15.036	-15.036	-15.036
0.60	-15.036	-15.036	-15.036
0.80	-15.035	-15.036	-15.035
1.00	-15.035	-15.035	-15.035
1.20	-15.034	-15.035	-15.034
1.30	-15.034	-15.034	-15.034
1.43	-15.034	-15.034	-15.034
--	-	-	-
--	-	-	-

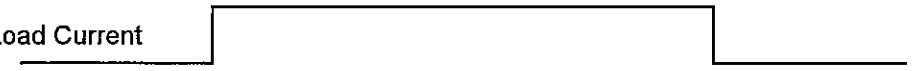
Note: Slanted line shows the range of the rated load current.

COSEL

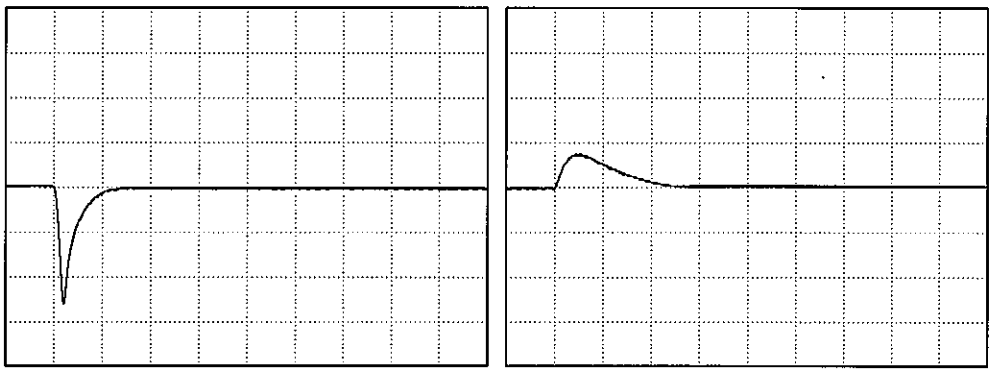
Model	GT3W-15		
Item	Dynamic Load Response	Temperature Testing Circuitry	25°C Figure A
Object	+15V1.3A		

Input Volt. 100 V
Cycle 1000 ms

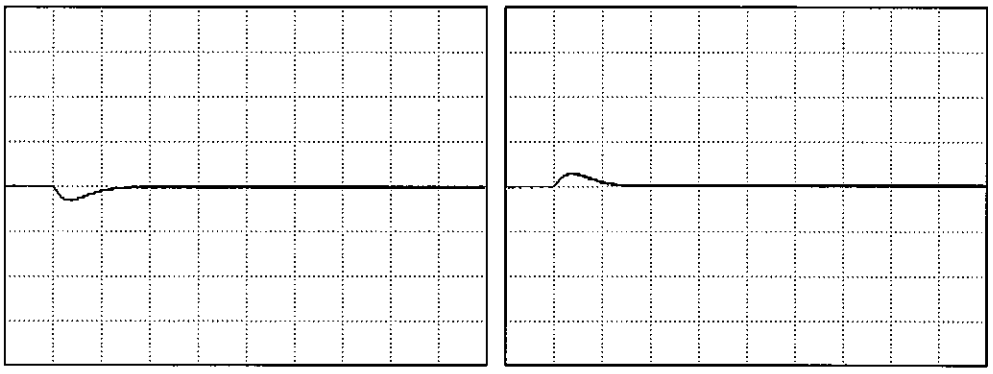
Load Current



Min. Load (0A) ⟷
Load 100% (1.3A)



Load 50% (0.65A) ⟷
Load 100% (1.3A)



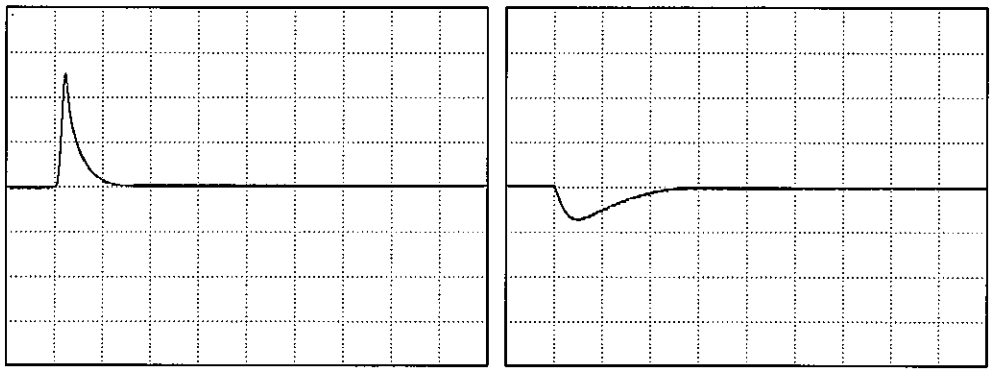
COSEL

Model	GT3W-15		
Item	Dynamic Load Response	Temperature	25°C
		Testing Circuitry	Figure A
Object	-15V1.3A		

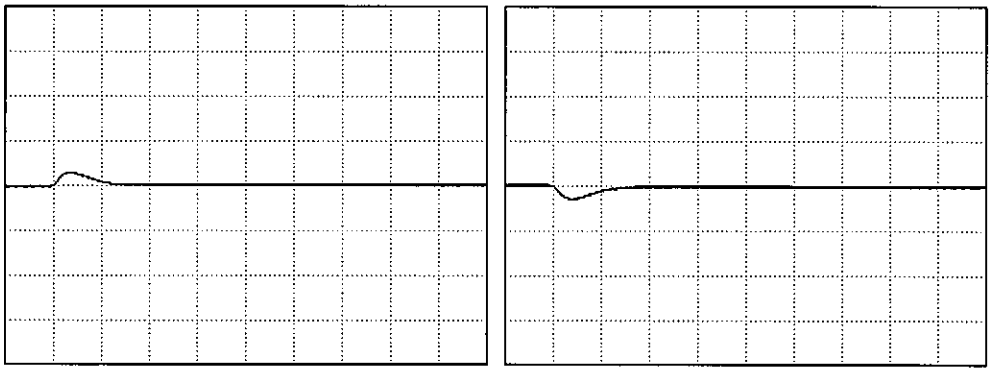
Input Volt. 100 V
Cycle 1000 ms

Load Current

Min. Load (0A) ⟷
Load 100% (1.3A)



Load 50% (0.65A) ⟷
Load 100% (1.3A)

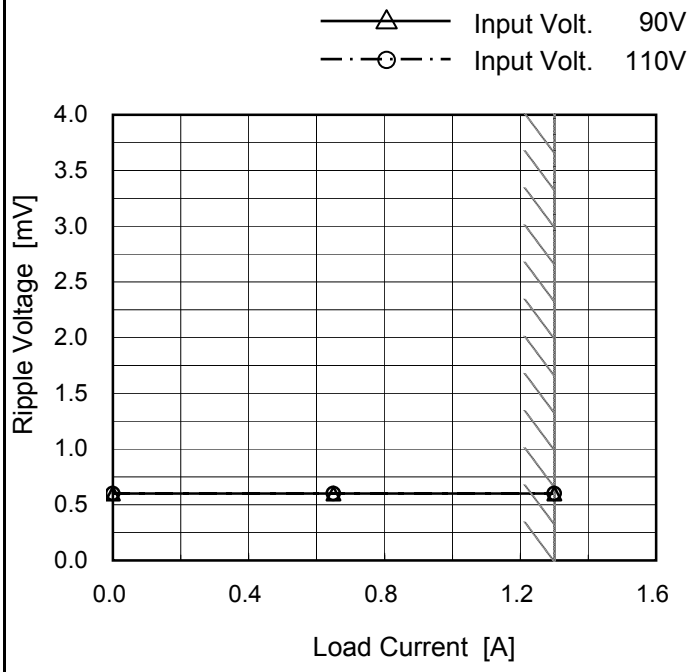


COSEL

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

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

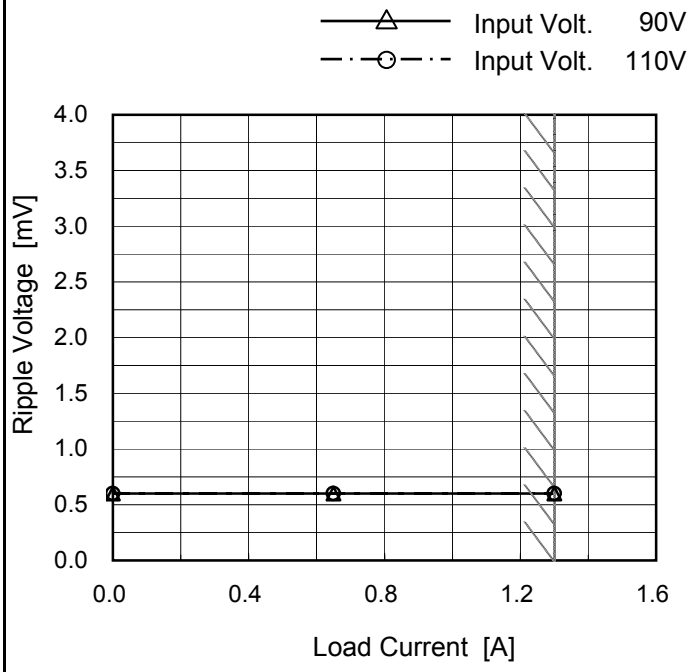
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 90 [V]	Input Volt. 110 [V]
0.00	0.6	0.6
0.65	0.6	0.6
1.30	0.6	0.6
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3W-15
Item	Ripple Voltage (by Load Current)
Object	-15V1.3A

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

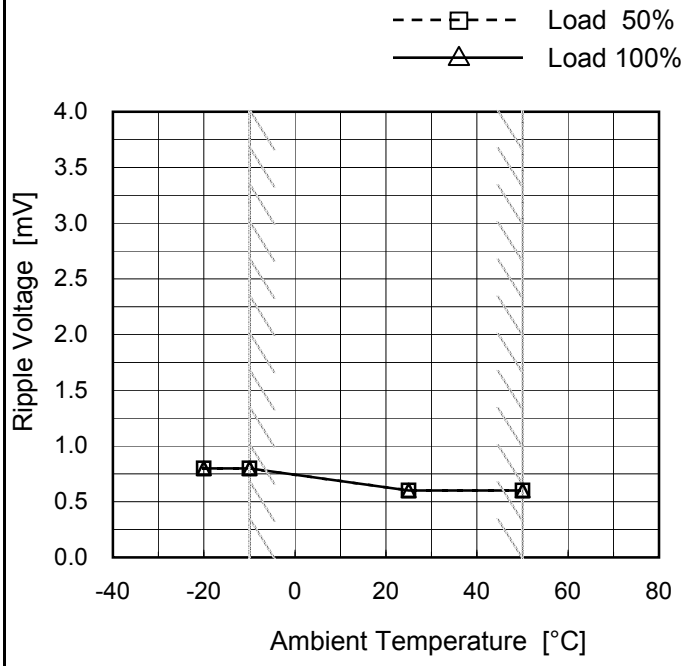
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 90 [V]	Input Volt. 110 [V]
0.00	0.6	0.6
0.65	0.6	0.6
1.30	0.6	0.6
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

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

Testing Circuitry Figure A

1.Graph



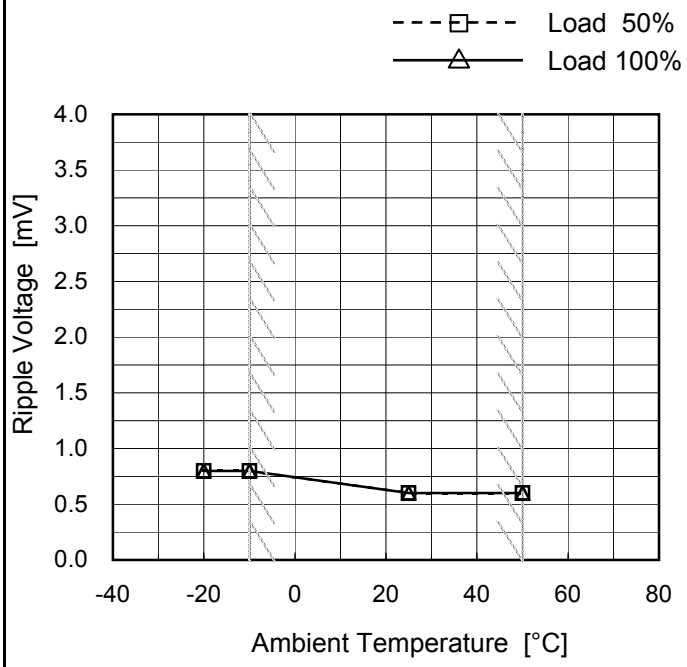
Input Volt. 100V

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

Object	-15V1.3A

1.Graph



Input Volt. 100V

Measured by 20 MHz Oscilloscope.

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

2.Values

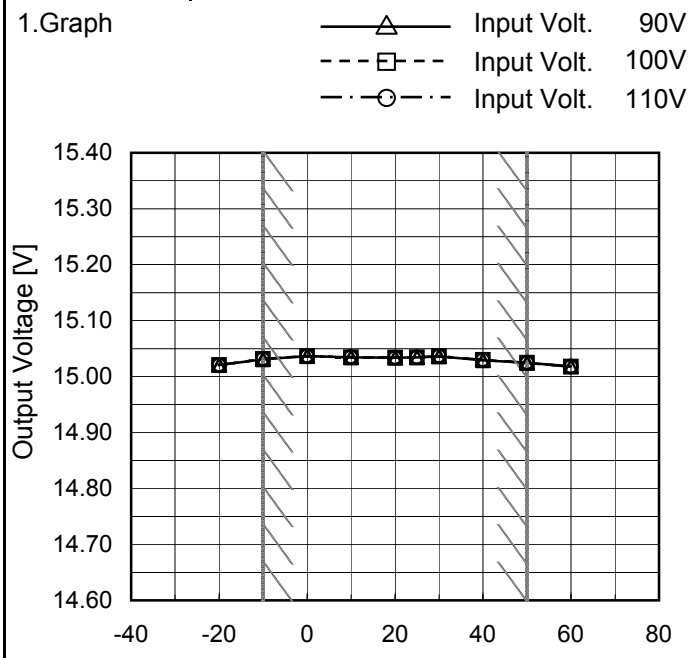
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	0.8	0.8
-10	0.8	0.8
25	0.6	0.6
50	0.6	0.6
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3W-15
Item	Ambient Temperature Drift
Object	+15V1.3A

Testing Circuitry Figure A

1.Graph

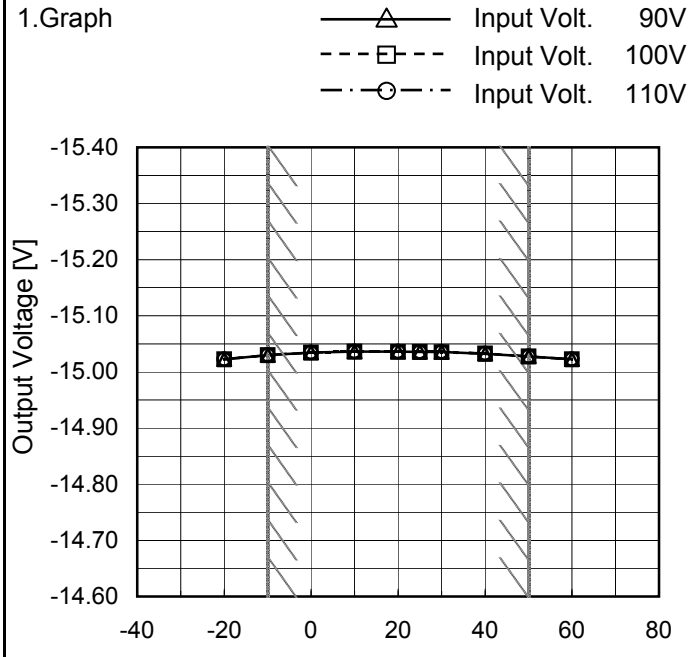


2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
-20	15.021	15.021	15.021
-10	15.031	15.031	15.031
0	15.037	15.037	15.037
10	15.035	15.035	15.035
20	15.034	15.034	15.034
25	15.034	15.034	15.034
30	15.036	15.036	15.036
40	15.029	15.030	15.030
50	15.025	15.025	15.025
60	15.018	15.018	15.018
--	-	-	-

Object	-15V1.3A

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	-15.023	-15.023	-15.023
-10	-15.030	-15.030	-15.030
0	-15.034	-15.034	-15.035
10	-15.036	-15.036	-15.036
20	-15.036	-15.036	-15.036
25	-15.036	-15.036	-15.036
30	-15.035	-15.035	-15.036
40	-15.033	-15.033	-15.033
50	-15.027	-15.027	-15.028
60	-15.022	-15.022	-15.022
--	-	-	-

COSEL

Model	GT3W-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 - 1.3A (AVR 2) : 0 - 1.3A

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

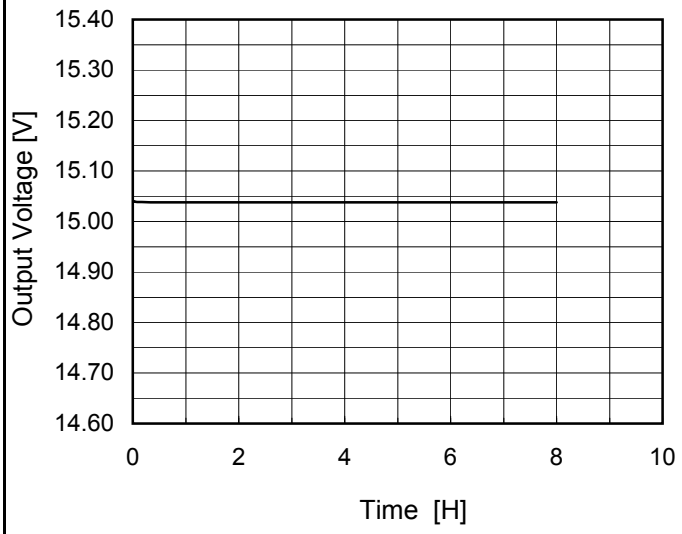
Object	-15V1.3A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	10	110	0	-15.039	±7	±0.1
Minimum Voltage	50	100	1.3	-15.026		

COSEL

Model	GT3W-15
Item	Time Lapse Drift
Object	+15V1.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



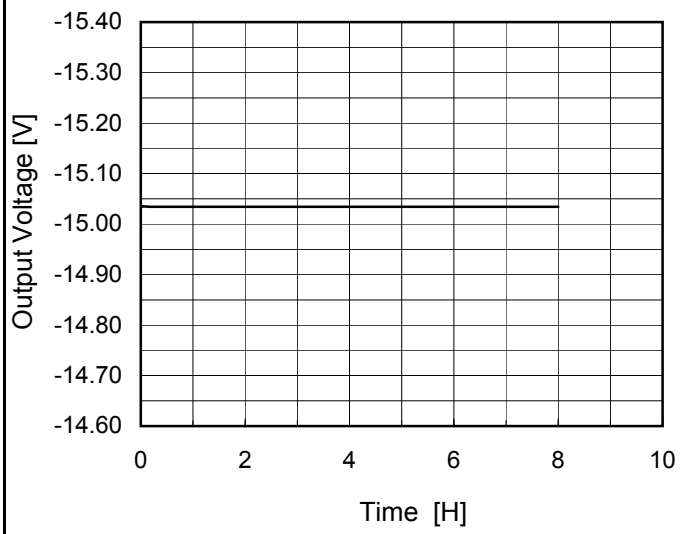
Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	15.041
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

Object	-15V1.3A

1.Graph



Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	-15.036
0.5	-15.034
1.0	-15.034
2.0	-15.034
3.0	-15.034
4.0	-15.034
5.0	-15.034
6.0	-15.034
7.0	-15.034
8.0	-15.034

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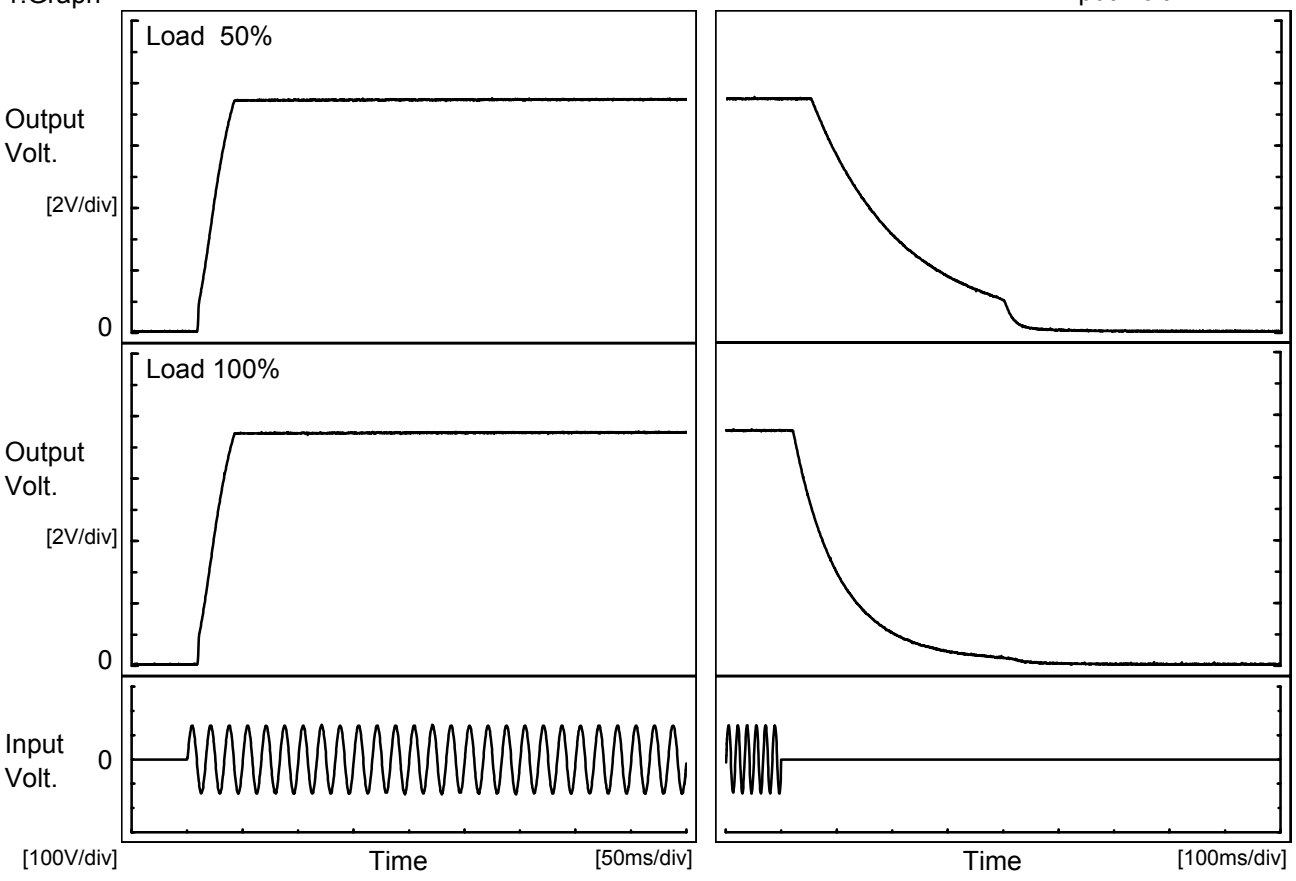
Model	GT3W-15
Item	Rise and Fall Time
Object	+15V1.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

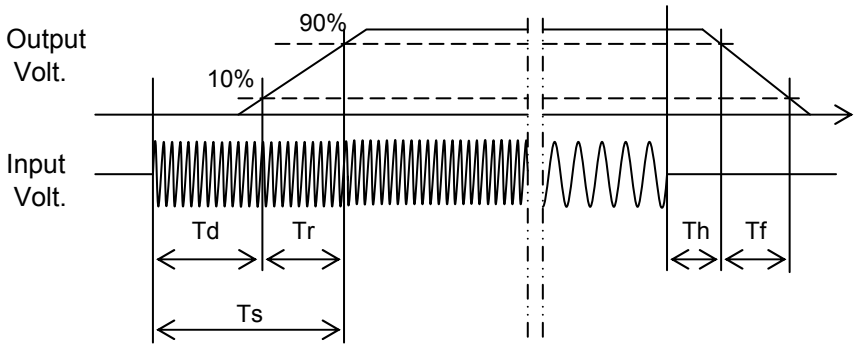
Input Volt. 100 V



2.Values

[ms]

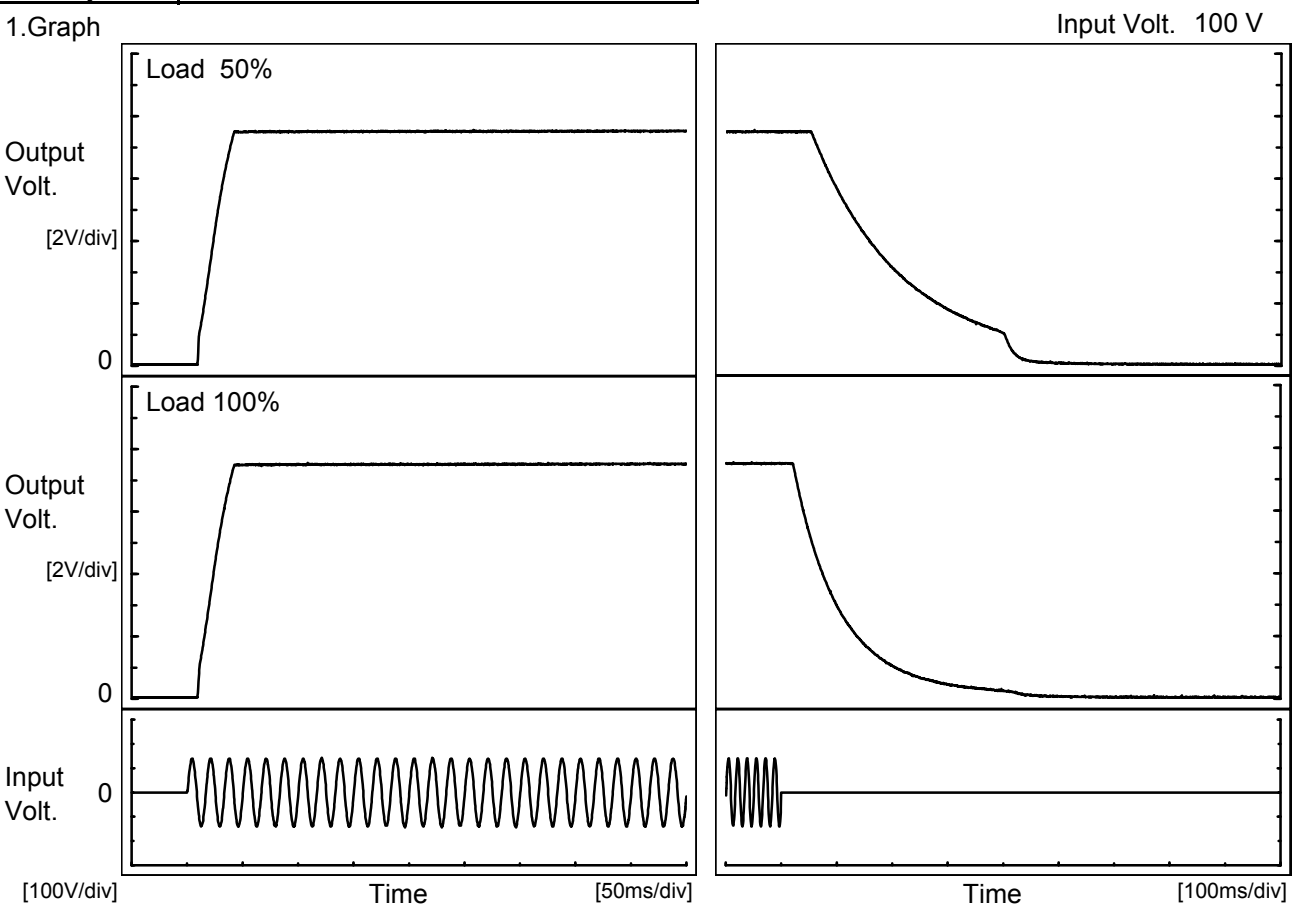
Load \ Time	Td	Tr	Ts	Th	Tf
50 %	10.3	27.5	37.8	69.5	336.5
100 %	10.5	27.3	37.8	29.5	203.0



COSEL

Model	GT3W-15	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	-15V1.3A	

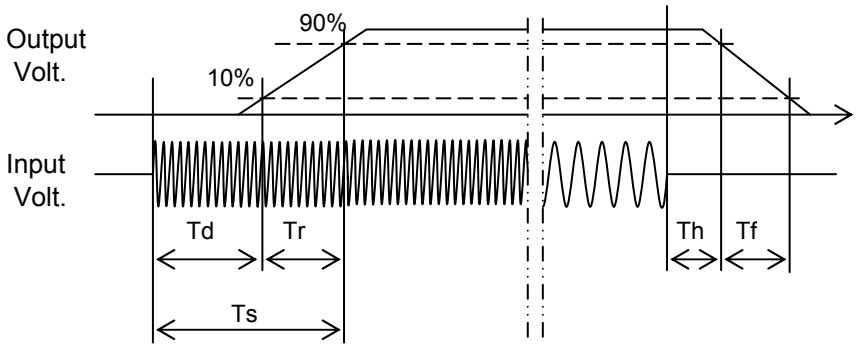
1.Graph



2.Values

[ms]

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

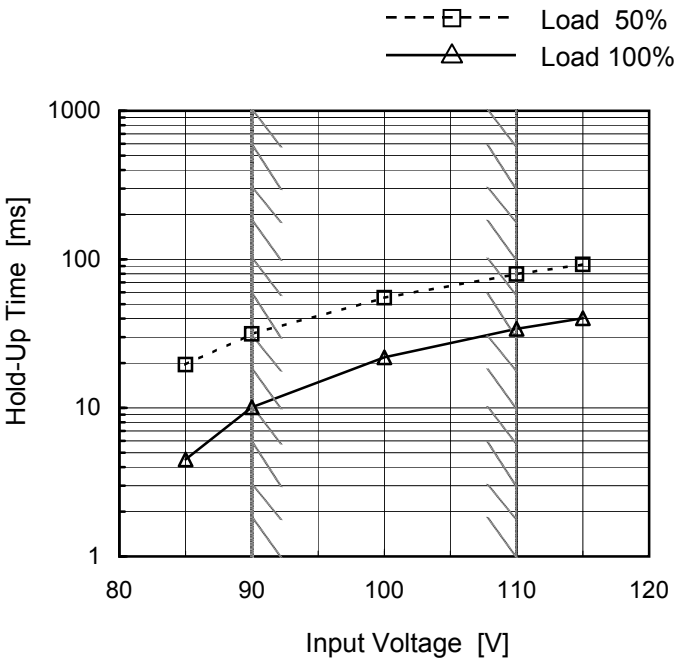


COSEL

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

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

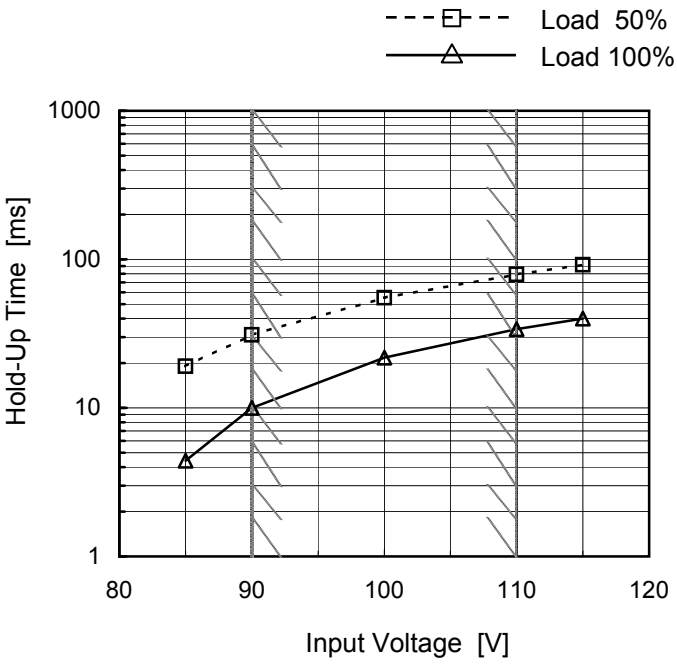
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	20	5
90	31	10
100	55	22
110	80	34
115	92	40
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

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

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

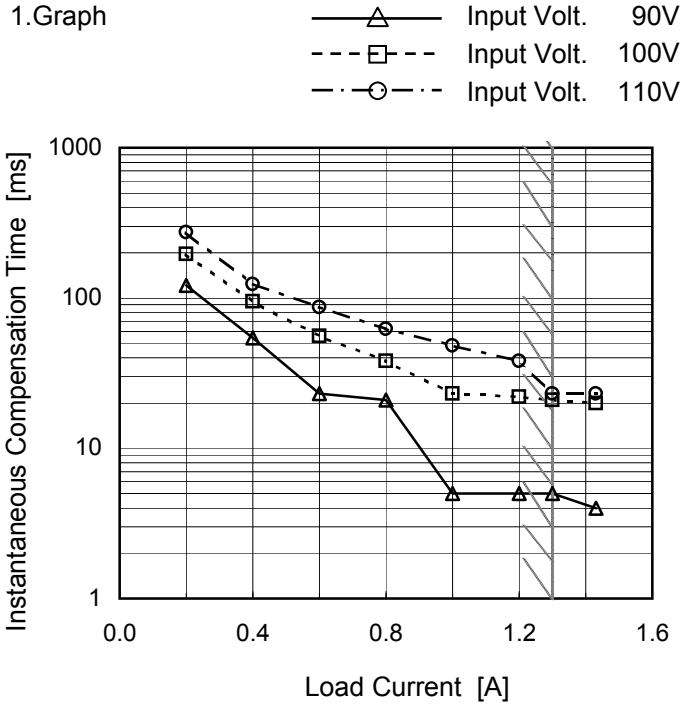
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
85	19	4
90	31	10
100	55	22
110	79	34
115	92	40
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	GT3W-15
Item	Instantaneous Interruption Compensation
Object	+15V1.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

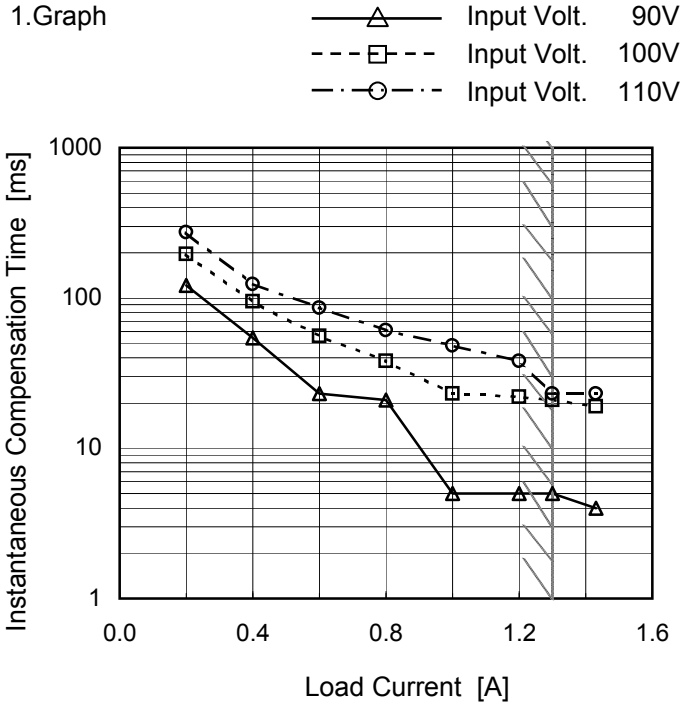
Load Current [A]	Time [ms] Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
0.00	-	-	-
0.20	121	196	274
0.40	54	95	124
0.60	23	56	87
0.80	21	38	62
1.00	5	23	48
1.20	5	22	38
1.30	5	21	23
1.43	4	20	23
--	-	-	-
--	-	-	-

COSEL

Model	GT3W-15
Item	Instantaneous Interruption Compensation
Object	-15V1.3A

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	-	-	-
0.20	121	196	273
0.40	54	95	124
0.60	23	56	86
0.80	21	38	61
1.00	5	23	48
1.20	5	22	38
1.30	5	21	23
1.43	4	19	23
--	-	-	-
--	-	-	-

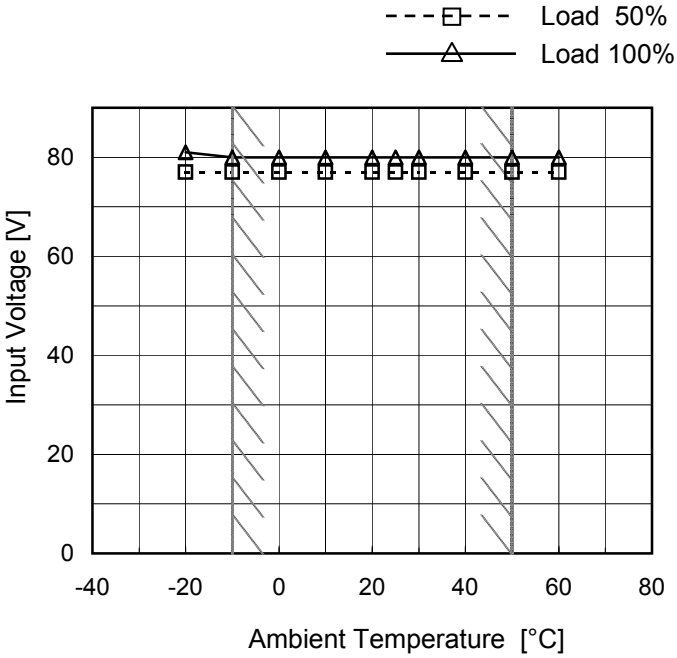
COSEL

Model	GT3W-15
Item	Minimum Input Voltage for Regulated Output Voltage

Testing Circuitry Figure A

Object +15V1.3A

1.Graph

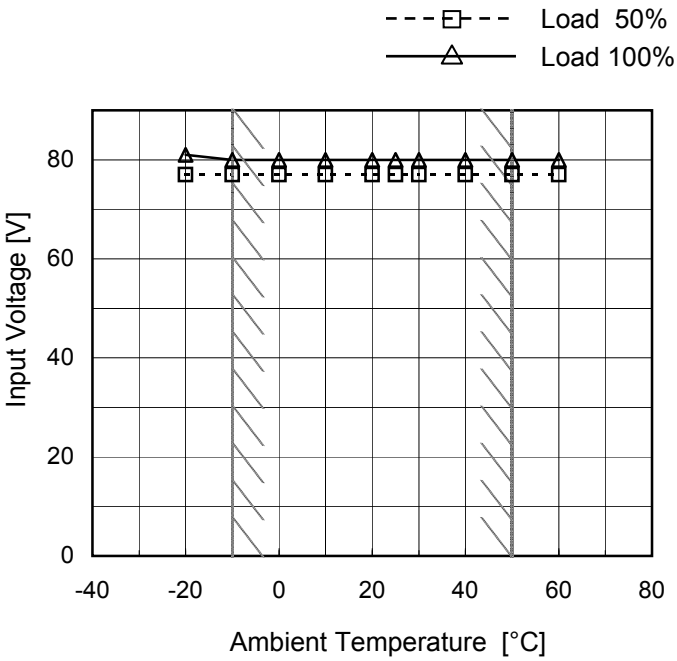


2.Values

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
--	-	-

Object -15V1.3A

1.Graph



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

2.Values

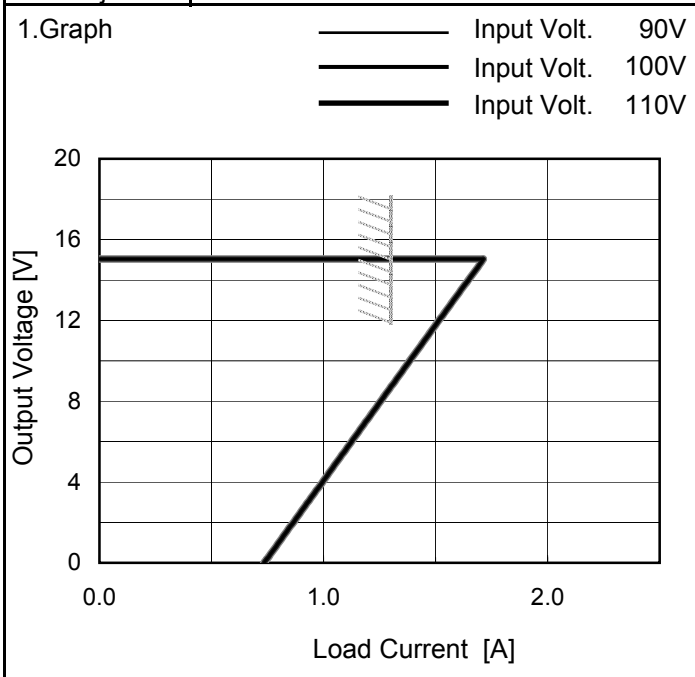
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	77	81
-10	77	80
0	77	80
10	77	80
20	77	80
25	77	80
30	77	80
40	77	80
50	77	80
60	77	80
--	-	-

COSEL

Model	GT3W-15
Item	Overcurrent Protection
Object	+15V1.3A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

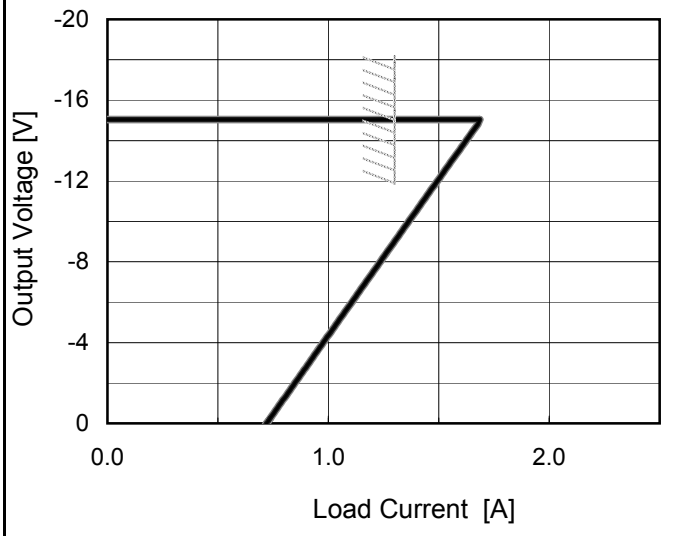


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 90[V]	Input Volt. 100[V]	Input Volt. 110[V]
15.0	1.71	1.71	1.71
14.3	1.66	1.66	1.66
13.5	1.61	1.61	1.61
12.0	1.52	1.52	1.52
10.5	1.42	1.42	1.42
9.0	1.33	1.33	1.33
7.5	1.23	1.23	1.23
6.0	1.13	1.13	1.13
4.5	1.03	1.03	1.03
3.0	0.94	0.94	0.94
1.5	0.84	0.84	0.84
0.0	0.73	0.73	0.73

Object	-15V1.3A

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	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

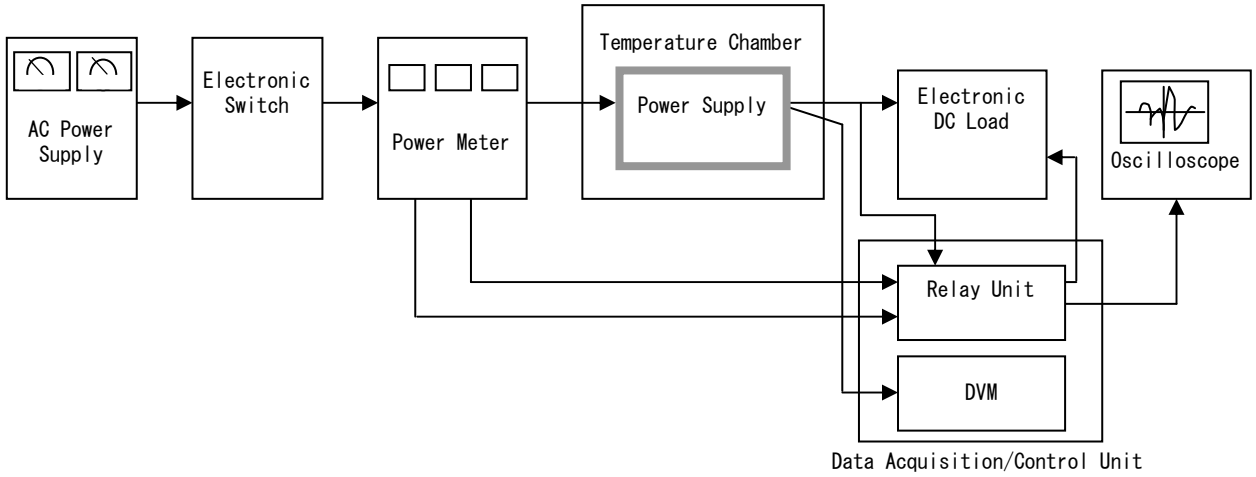

AC Power Supply
Electronic Switch
Power Meter
Temperature Chamber
Power Supply
Electronic DC Load
Oscilloscope
Relay Unit
DVM
Data Acquisition/Control Unit

Figure A