参考資料

COSEL

TEST DATA OF LCC30A-1

(100V INPUT)

Regulated DC Power Supply

Apr. 30, 2002

Approved by : Tetsuo Sugimori

Design Manager Tetsuo Sugimori

Prepared by : Takashi Yamamine

Design Engineer Takashi Yamamine

コーセル株式会社

COSEL CO.,LTD.

COSEL

CONTENTS

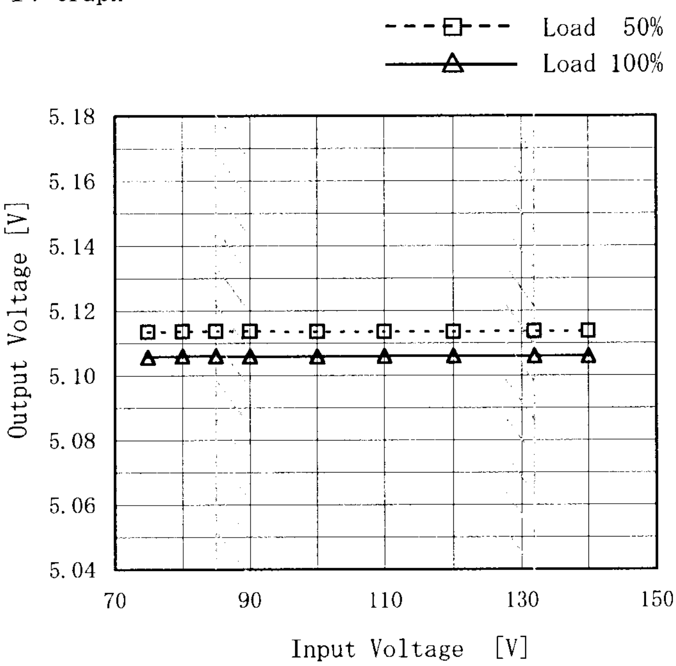
(Final Page 49)

COSEL

Model	LCC30A-1
Item	Line Regulation 静的入力変動
Object	+5V3A

Temperature	25℃
Testing Circuitry	Figure A

1．Graph

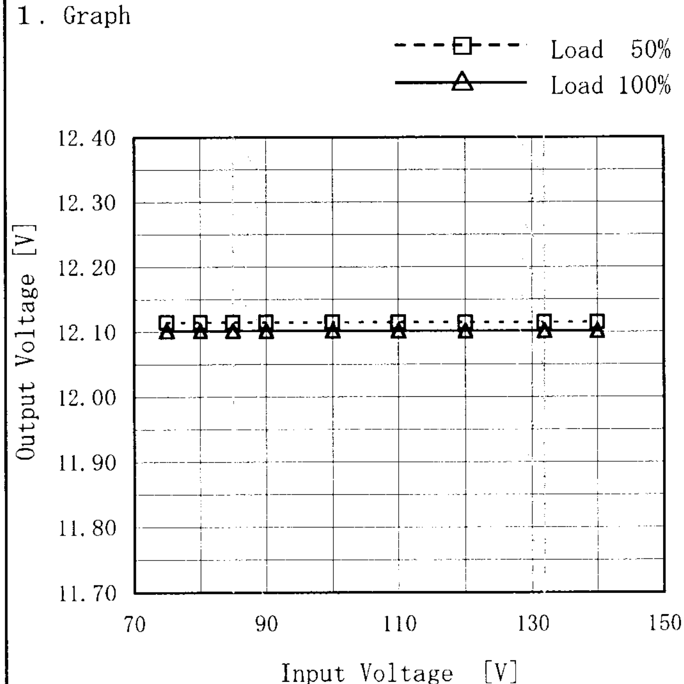


2．Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	5.114	5.106
80	5.114	5.106
85	5.114	5.106
90	5.114	5.106
100	5.114	5.106
110	5.114	5.106
120	5.114	5.106
132	5.114	5.106
140	5.114	5.106

Object	+12V1.2A

1．Graph



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

(注) 斜線は定格入力電圧範囲を示す。

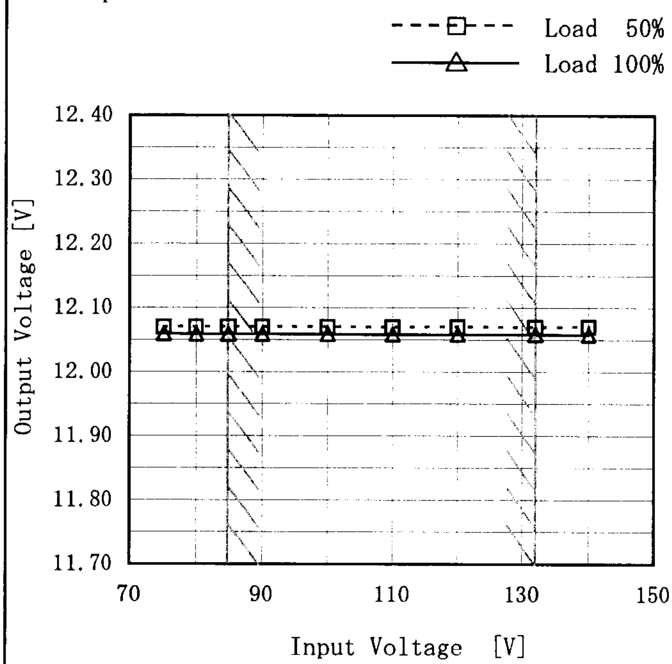
2．Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	12.115	12.102
80	12.114	12.101
85	12.114	12.101
90	12.114	12.101
100	12.114	12.101
110	12.114	12.101
120	12.114	12.101
132	12.114	12.101
140	12.114	12.101

Model	LCC30A-1
Item	Line Regulation 静的入力変動
Object	+12V0.3A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

(注) 斜線は定格入力電圧範囲を示す。

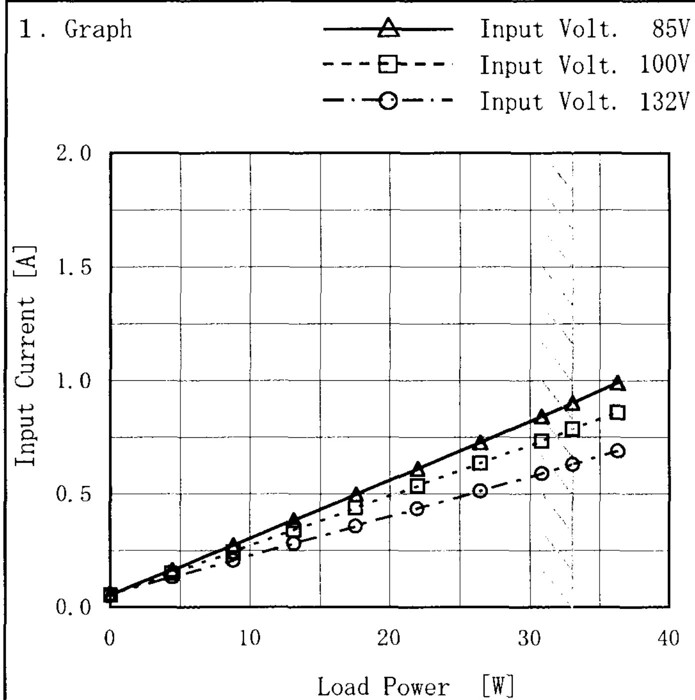
2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	12.070	12.059
80	12.070	12.059
85	12.070	12.059
90	12.070	12.059
100	12.070	12.059
110	12.070	12.058
120	12.070	12.058
132	12.070	12.058
140	12.070	12.058

COSEL

Model	LCC30A-1		
Item	Input Current (by Load Power) 入力電流（負荷特性）	Temperature Testing Circuitry	25℃ Figure A
Object	――――――――		

1．Graph



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

（注）斜線は定格負荷電力範囲を示す。

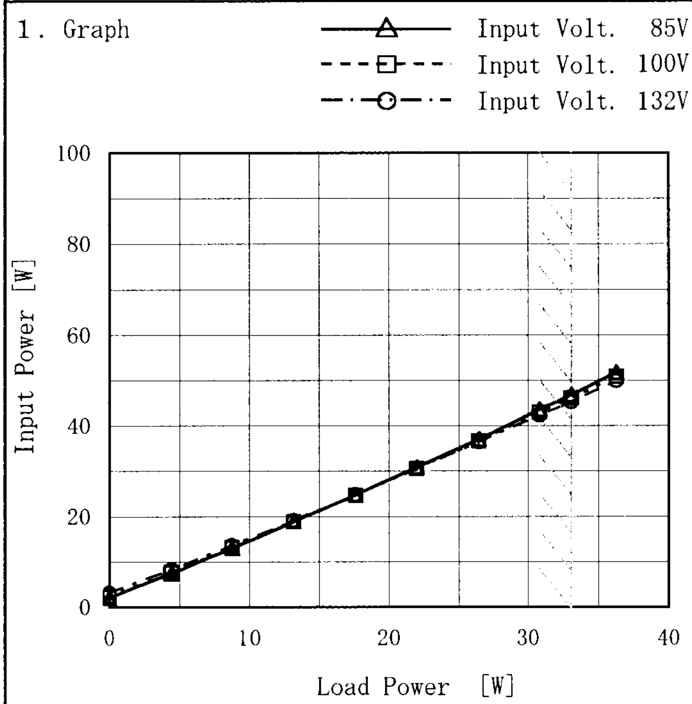
2．Values

Load Power [W]	Input Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	0.055	0.055	0.058
4.4	0.165	0.150	0.133
8.8	0.273	0.244	0.206
13.2	0.384	0.340	0.281
17.6	0.497	0.437	0.357
22.0	0.611	0.536	0.434
26.4	0.726	0.635	0.512
30.8	0.842	0.734	0.591
33.0	0.901	0.785	0.631
36.3	0.989	0.860	0.690
―	―	―	―

COSEL

Model	LCC30A-1		
Item	Input Power (by Load Power) 入力電力 (負荷特性)	Temperature Testing Circuitry	25℃ Figure A
Object	――――――――		

1 . Graph



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

(注) 斜線は定格負荷電力範囲を示す。

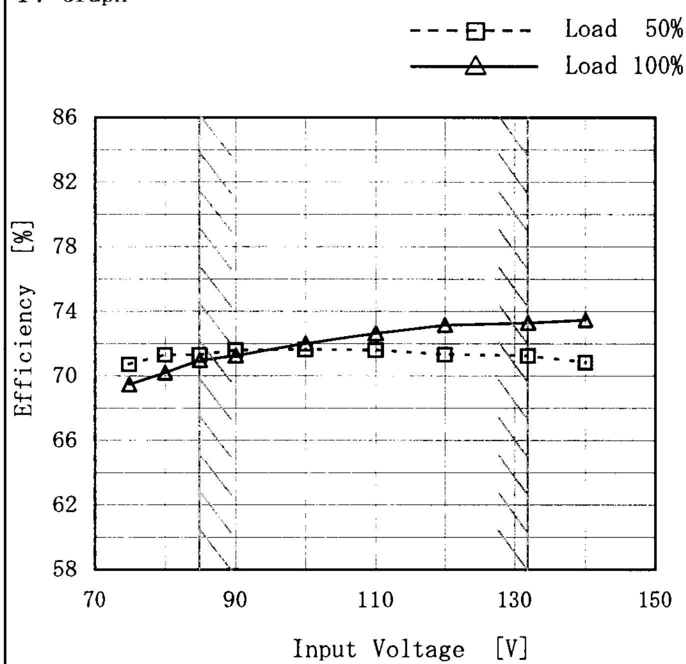
2 . Values

Load Power [W]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	2.07	2.34	3.15
4.4	7.44	7.65	8.34
8.8	13.05	13.15	13.67
13.2	18.90	18.81	19.14
17.6	24.80	24.70	24.78
22.0	30.90	30.60	30.60
26.4	37.10	36.70	36.40
30.8	43.60	43.00	42.30
33.0	46.80	46.10	45.30
36.3	51.80	50.80	49.90
—	—	—	—

COSEL

Model	LCC30A-1		
Item	Efficiency (by Input Voltage) 効率（入力電圧特性）	Temperature Testing Circuitry	25℃ Figure A
Object	――――――――		

1．Graph



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

（注）斜線は定格入力電圧範囲を示す。

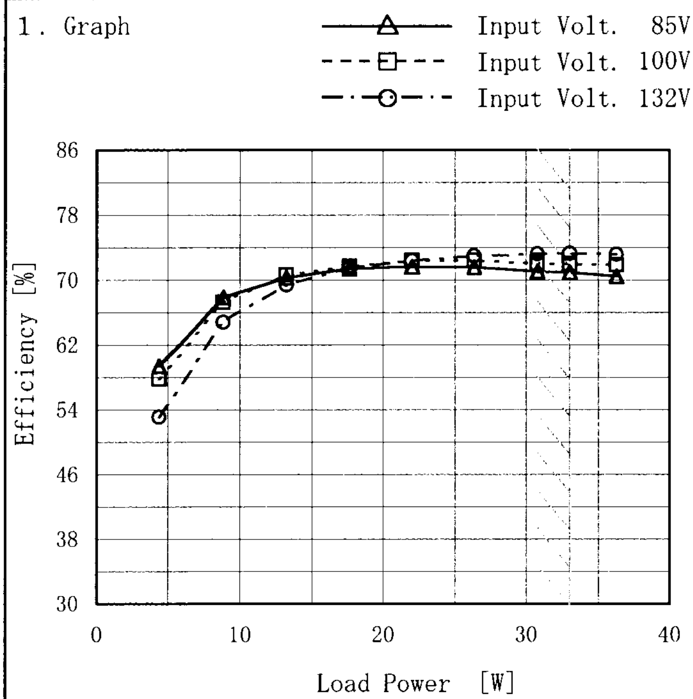
2．Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	70.7	69.5
80	71.3	70.2
85	71.3	71.0
90	71.6	71.3
100	71.6	72.0
110	71.6	72.6
120	71.3	73.2
132	71.2	73.3
140	70.8	73.5

COSEL

Model	LCC30A-1		
Item	Efficiency (by Load Power) 効率（負荷特性）	Temperature Testing Circuitry	25℃ Figure A
Object	————————		

1．Graph



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

（注）斜線は定格負荷電力範囲を示す。

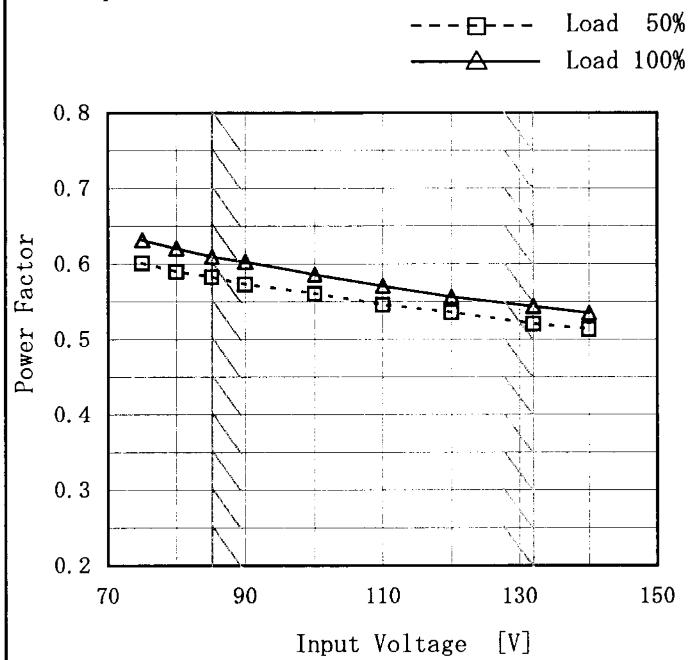
2．Values

Load Power [W]	Efficiency [%]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	—	—	—
4.4	59.4	57.9	53.1
8.8	67.9	67.3	64.8
13.2	70.3	70.6	69.4
17.6	71.4	71.7	71.5
22.0	71.7	72.4	72.4
26.4	71.6	72.4	73.0
30.8	71.1	72.0	73.2
33.0	70.9	72.0	73.3
36.3	70.5	71.9	73.2
—	—	—	—

COSEL

Model	LCC30A-1	
Item	Power Factor (by Input Voltage) 力率（入力電圧特性）	Temperature 25℃ Testing Circuitry Figure A
Object		

1．Graph



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

(注) 斜線は定格入力電圧範囲を示す。

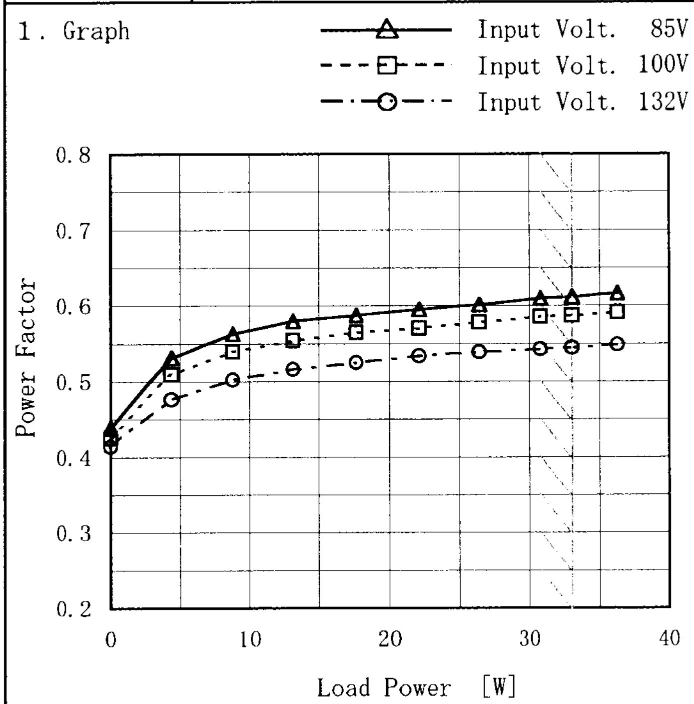
2．Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.601	0.631
80	0.590	0.621
85	0.583	0.609
90	0.573	0.603
100	0.560	0.586
110	0.546	0.571
120	0.536	0.556
132	0.521	0.544
140	0.513	0.535

COSEL

Model	LCC30A-1		
Item	Power Factor (by Load Power) 力率 (負荷特性)	Temperature Testing Circuitry	25℃ Figure A
Object	――――――		

1. Graph



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

(注) 斜線は定格負荷電力範囲を示す。

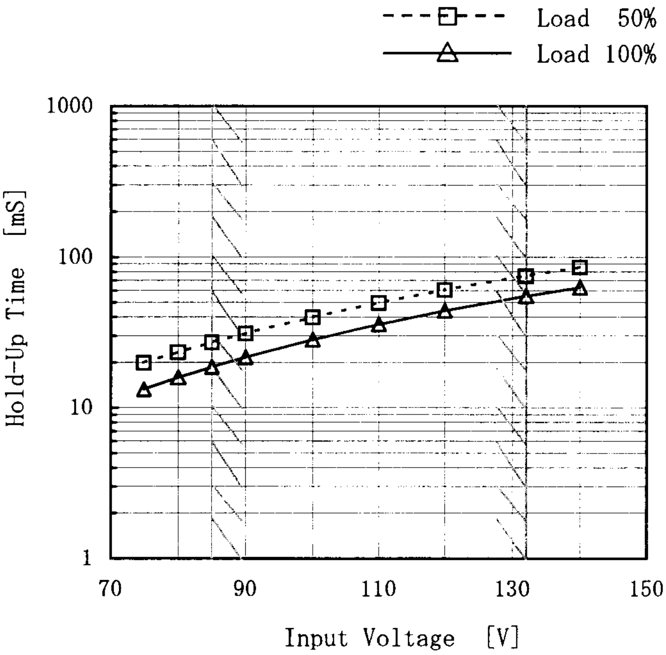
2. Values

Load Power [W]	Power Factor		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	0.439	0.425	0.414
4.4	0.531	0.509	0.477
8.8	0.563	0.540	0.503
13.2	0.580	0.554	0.516
17.6	0.588	0.565	0.525
22.0	0.595	0.571	0.534
26.4	0.601	0.578	0.539
30.8	0.610	0.586	0.543
33.0	0.612	0.587	0.544
36.3	0.617	0.591	0.548
—	—	—	—

COSEL

Model	LCC30A-1		
Item	Hold-Up Time 出力保持時間	Temperature Testing Circuitry	25℃ Figure A
Object	+5V3A		

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.

出力保持時間とは、入力電圧断から出力電圧が定電圧精度の範囲を保持しているところまでの時間。
（注）斜線は定格入力電圧範囲を示す。

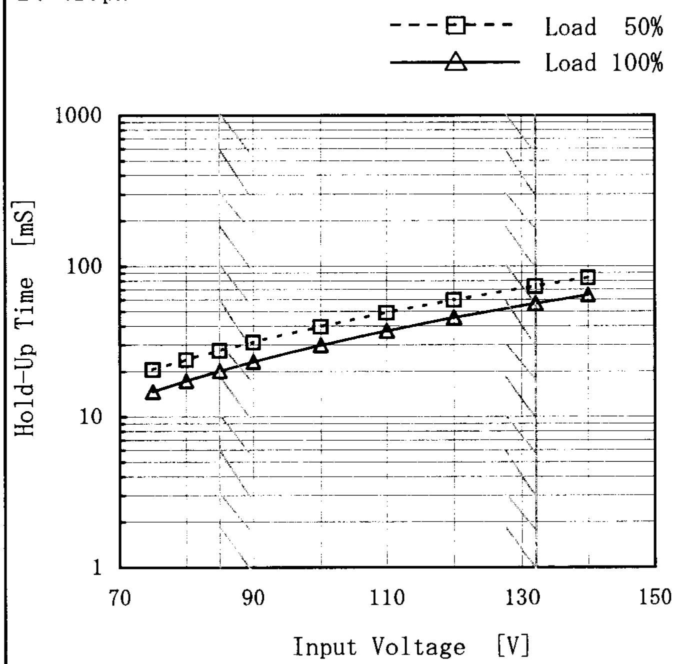
2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
75	20	13
80	23	16
85	27	19
90	31	22
100	40	28
110	50	36
120	60	44
132	75	55
140	85	63

COSEL

Model	LCC30A-1		
Item	Hold-Up Time 出力保持時間	Temperature Testing Circuitry	25℃ Figure A
Object	+12V1.2A		

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.

出力保持時間とは、入力電圧断から出力電圧が定電圧精度の範囲を保持しているところまでの時間。
（注）斜線は定格入力電圧範囲を示す。

2 . Values

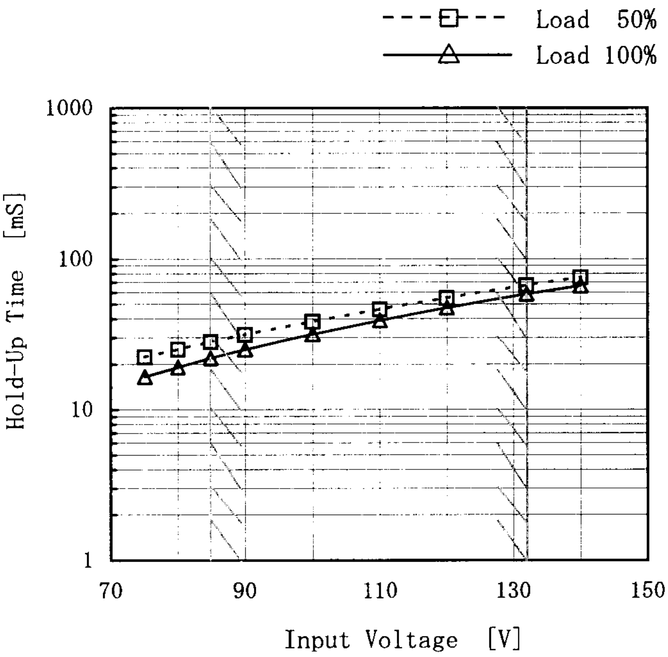
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
75	21	15
80	24	17
85	28	20
90	31	23
100	40	30
110	49	37
120	60	46
132	74	57
140	84	65

COSEL

Model	LCC30A-1
Item	Hold-Up Time 出力保持時間
Object	+12V0.3A

Temperature 25℃
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.

出力保持時間とは、入力電圧断から出力電圧が定電圧精度の範囲を保持しているところまでの時間。
（注）斜線は定格入力電圧範囲を示す。

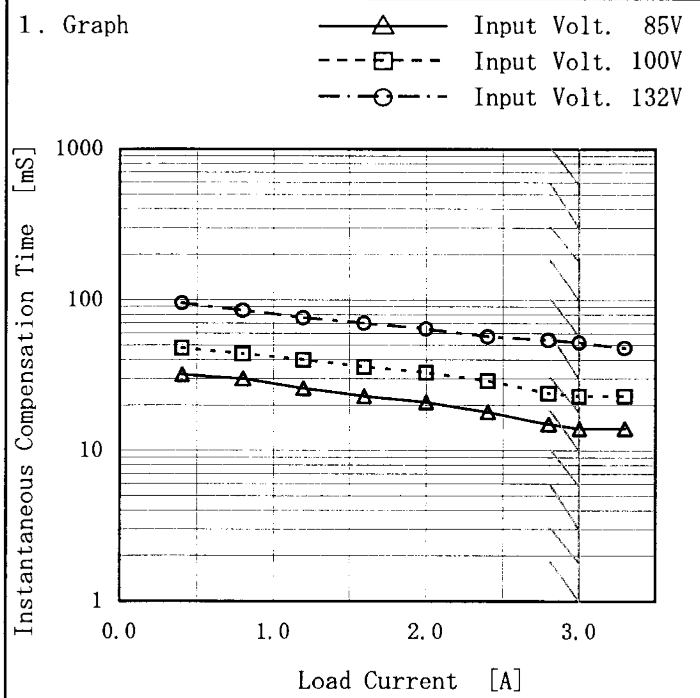
2. Values

Input Voltage [V]	Hold-Up Time [mS] Load 50%	Hold-Up Time [mS] Load 100%
75	22	17
80	25	19
85	28	22
90	31	25
100	38	32
110	46	39
120	55	47
132	67	58
140	75	66

COSEL

Model	LCC30A-1		
Item	Instantaneous Interruption Compensation 瞬時停電保障	Temperature Testing Circuitry	25℃ Figure A
Object	+5V3A		

1. Graph



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

(注) 斜線は定格負荷電流範囲を示す。

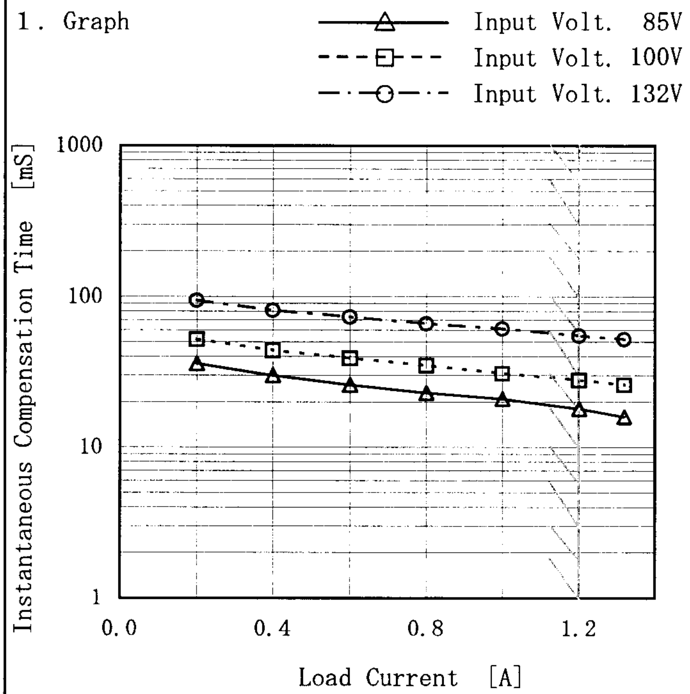
2. Values

Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
0.40	32	48	95
0.80	30	44	85
1.20	26	40	76
1.60	23	36	70
2.00	21	33	64
2.40	18	29	57
2.80	15	24	54
3.00	14	23	52
3.30	14	23	48
—	—	—	—

COSEL

Model	LCC30A-1	
Item	Instantaneous Interruption Compensation 瞬時停電保障	Temperature 25℃ Testing Circuitry Figure A
Object	+12V1.2A	

1. Graph



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

(注) 斜線は定格負荷電流範囲を示す。

2. Values

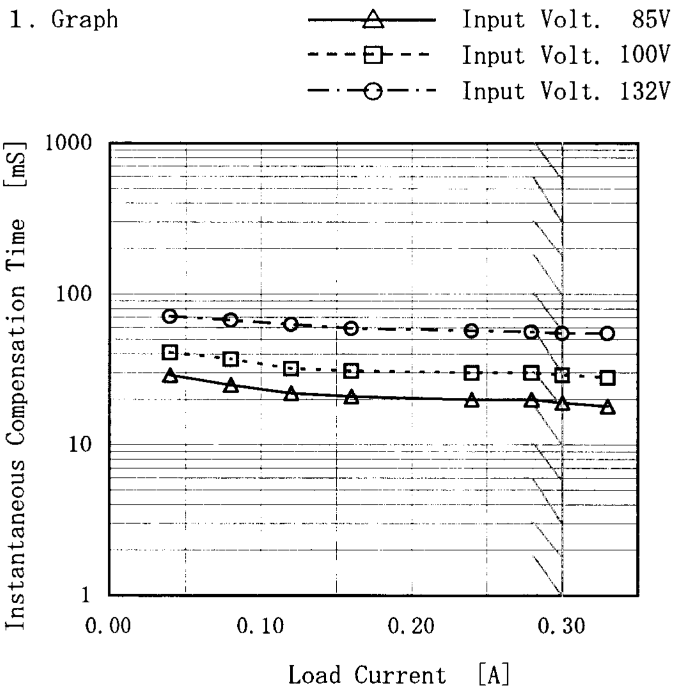
Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
0.20	36	52	94
0.40	30	44	81
0.60	26	39	73
0.80	23	35	66
1.00	21	31	61
1.20	18	28	55
1.32	16	26	52
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	LCC30A-1
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+12V0.3A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

(注) 斜線は定格負荷電流範囲を示す。

2. Values

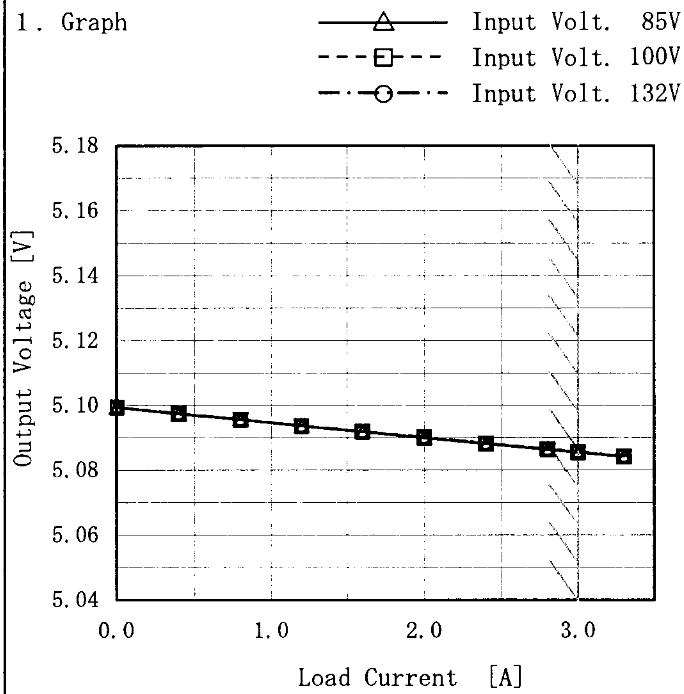
Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
0.04	29	41	71
0.08	25	37	67
0.12	22	32	63
0.16	21	31	59
0.24	20	30	57
0.28	20	30	56
0.30	19	29	55
0.33	18	28	55
—	—	—	—
—	—	—	—

COSEL

Model	LCC30A-1
Item	Load Regulation 静的負荷変動
Object	+5V3A

Temperature 25℃
Testing Circuitry Figure A

1. Graph

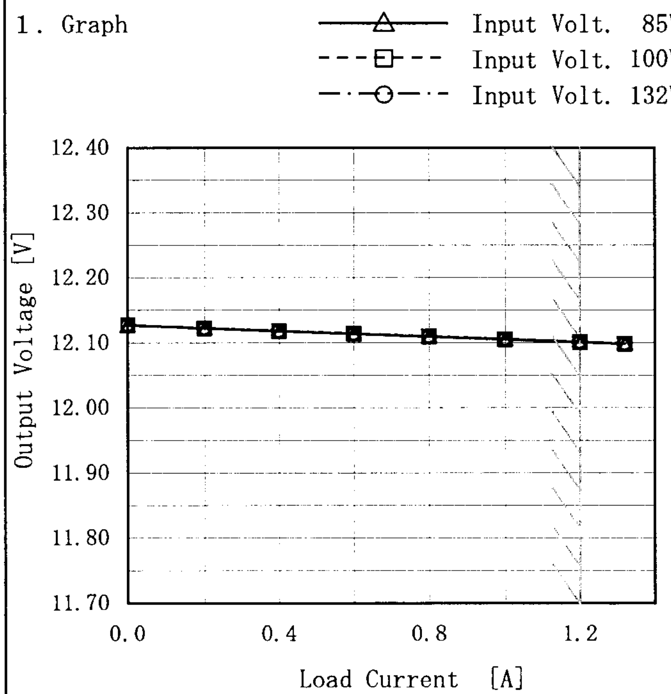


2. Values

Load Current [A]	Output Voltage [V] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	5.100	5.100	5.100
0.40	5.097	5.097	5.098
0.80	5.096	5.096	5.096
1.20	5.094	5.094	5.094
1.60	5.092	5.092	5.092
2.00	5.090	5.090	5.090
2.40	5.088	5.088	5.088
2.80	5.086	5.087	5.087
3.00	5.086	5.086	5.086
3.30	5.084	5.084	5.084
—	—	—	—

Object	+12V1.2A

1. Graph



2. Values

Load Current [A]	Output Voltage [V] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	12.127	12.127	12.127
0.20	12.122	12.123	12.122
0.40	12.118	12.118	12.118
0.60	12.114	12.114	12.114
0.80	12.109	12.109	12.110
1.00	12.105	12.105	12.105
1.20	12.101	12.101	12.101
1.32	12.098	12.098	12.098
—	—	—	—
—	—	—	—
—	—	—	—

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

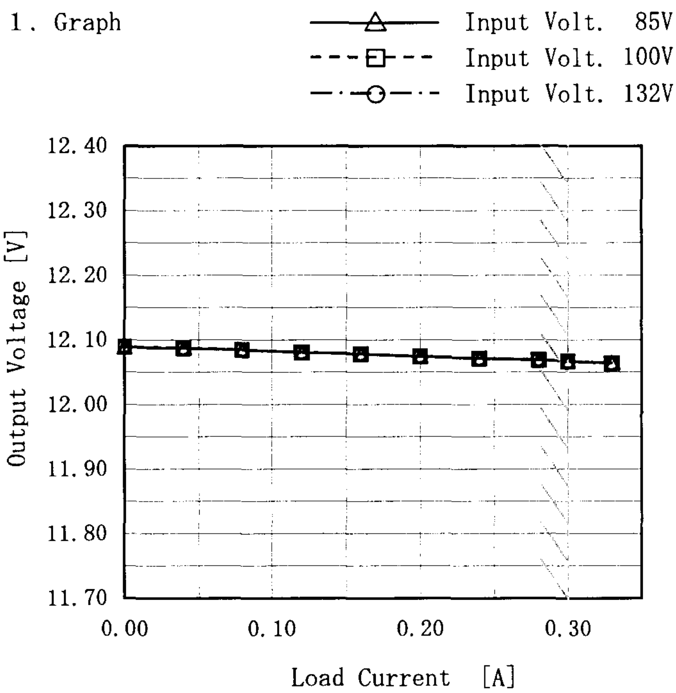
(注) 斜線は定格負荷電流範囲を示す。

COSEL

Model	LCC30A-1
Item	Load Regulation 静的負荷変動
Object	+12V0.3A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

(注) 斜線は定格負荷電流範囲を示す。

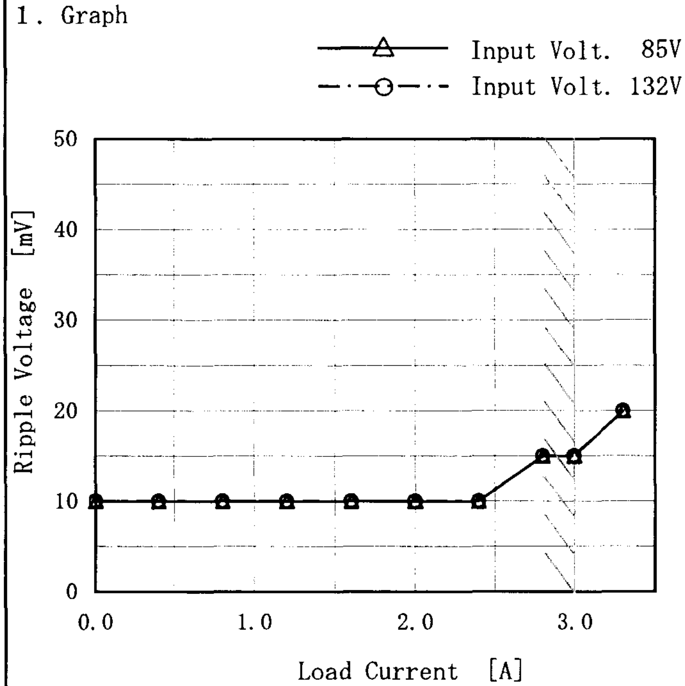
2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	12.089	12.090	12.089
0.04	12.087	12.088	12.087
0.08	12.085	12.085	12.085
0.12	12.081	12.081	12.081
0.16	12.078	12.078	12.078
0.20	12.074	12.074	12.074
0.24	12.072	12.072	12.071
0.28	12.069	12.069	12.069
0.30	12.067	12.067	12.066
0.33	12.064	12.064	12.064

COSEL

Model	LCC30A-1		
Item	Ripple Voltage (by Load Current) リップル電圧（負荷特性）	Temperature Testing Circuitry	25℃ Figure A
Object	+5V3A		

1. Graph



Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

リップル電圧は、下図p－p値で示される。
（注）斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line
入力商用周期
T2: Due to Switching
ｽｲｯﾁﾝｸﾞ周期

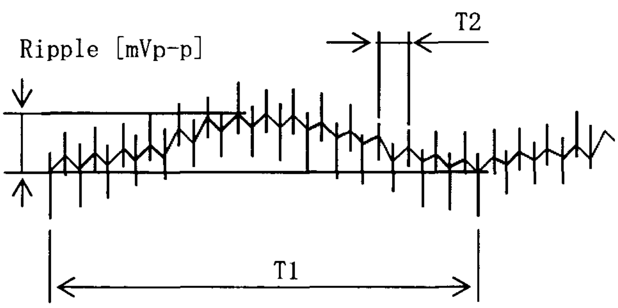


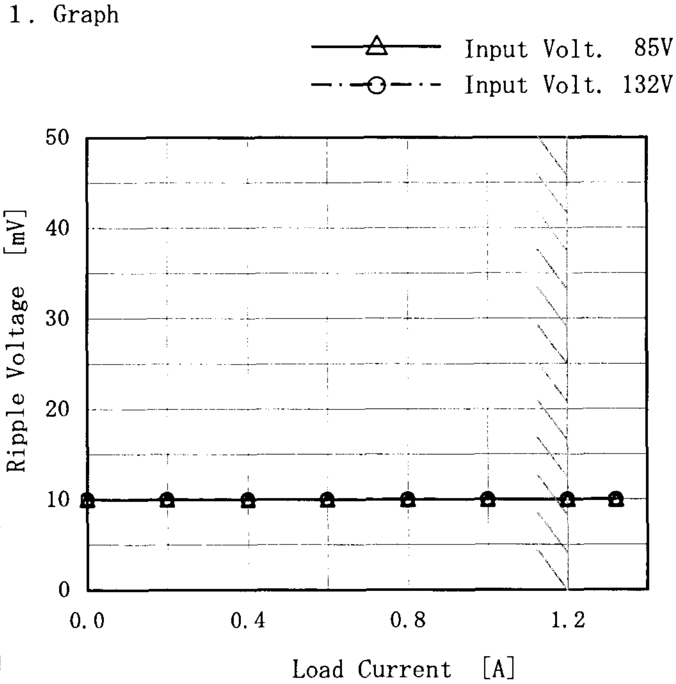
Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	10	10
0.40	10	10
0.80	10	10
1.20	10	10
1.60	10	10
2.00	10	10
2.40	10	10
2.80	15	15
3.00	15	15
3.30	20	20
—	—	—

Model	LCC30A-1		
Item	Ripple Voltage (by Load Current) リップル電圧（負荷特性）	Temperature Testing Circuitry	25℃ Figure A
Object	+12V1.2A		

1．Graph



Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

リップル電圧は、下図ｐ－ｐ値で示される。
（注）斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line
入力商用周期
T2: Due to Switching
ｽｲｯﾁﾝｸﾞ周期

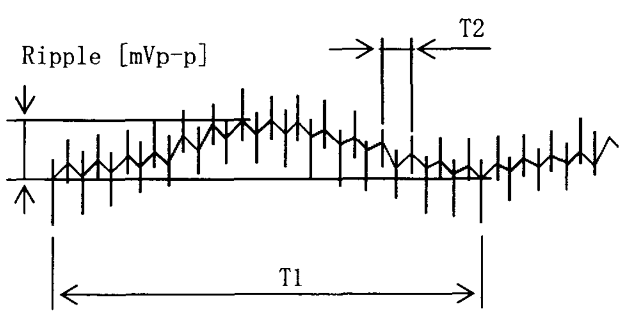


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

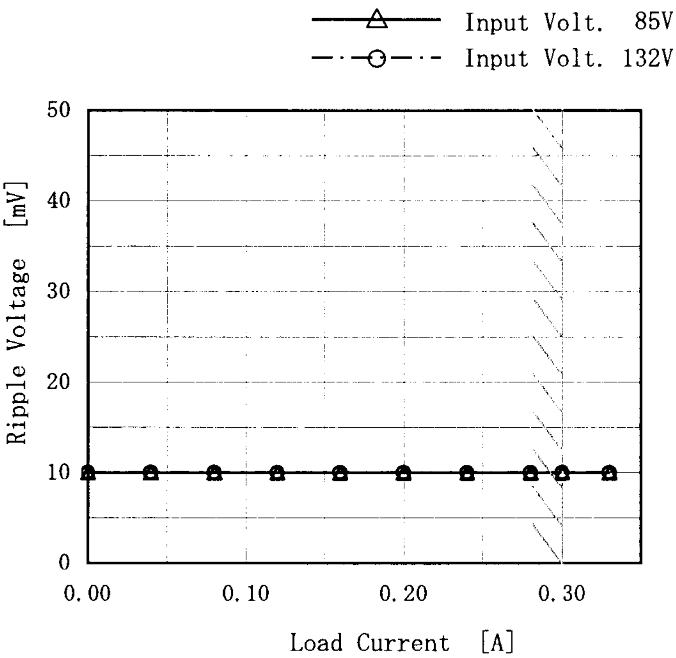
2．Values

Load Current [A]	Ripple Voltage [mV] Input Volt. 85 [V]	Ripple Voltage [mV] Input Volt. 132 [V]
0.00	10	10
0.20	10	10
0.40	10	10
0.60	10	10
0.80	10	10
1.00	10	10
1.20	10	10
1.32	10	10
—	—	—
—	—	—
—	—	—

COSEL

Model	LCC30A-1		
Item	Ripple Voltage (by Load Current) リップル電圧（負荷特性）	Temperature Testing Circuitry	25℃ Figure A
Object	+12V0.3A		

1．Graph



Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

リップル電圧は、下図ｐ－ｐ値で示される。
（注）斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line
入力商用周期
T2: Due to Switching
ｽｲｯﾁﾝｸﾞ周期

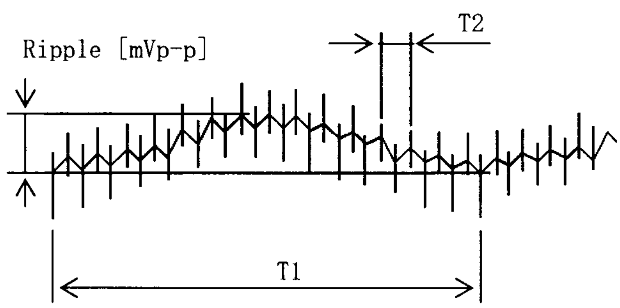


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

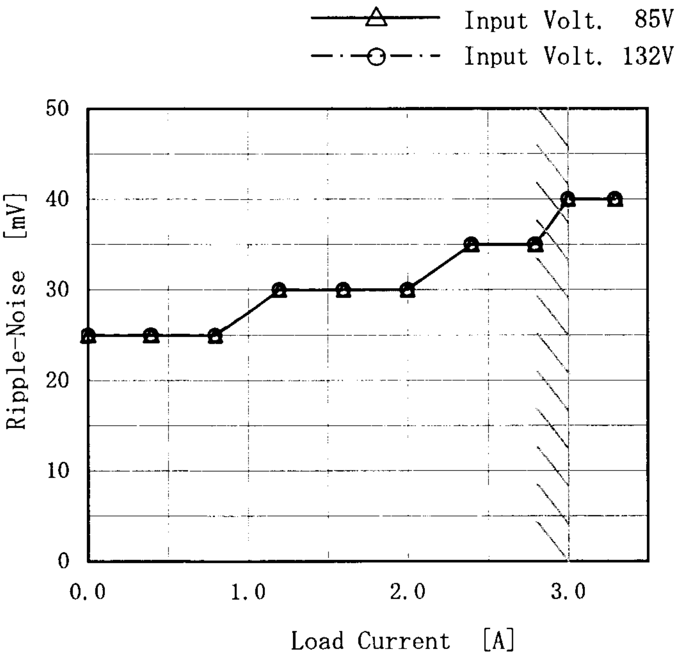
2．Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	10	10
0.04	10	10
0.08	10	10
0.12	10	10
0.16	10	10
0.20	10	10
0.24	10	10
0.28	10	10
0.30	10	10
0.33	10	10
—	—	—

Model	LCC30A-1
Item	Ripple-Noise リップルノイズ
Object	+5V3A

Temperature 25℃
Testing Circuitry Figure A

1．Graph



Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

リップルノイズは、下図ｐ－ｐ値で示される。
（注）斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line
入力商用周期
T2: Due to Switching
ｽｲｯﾁﾝｸﾞ周期

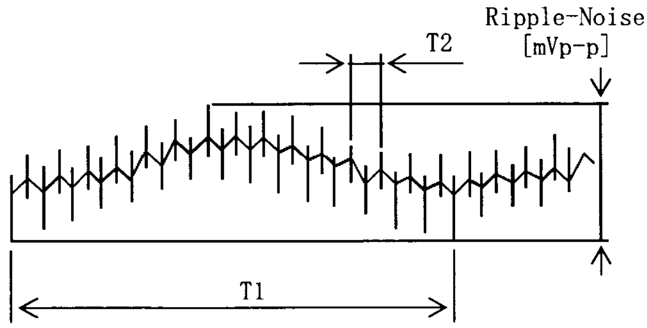


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

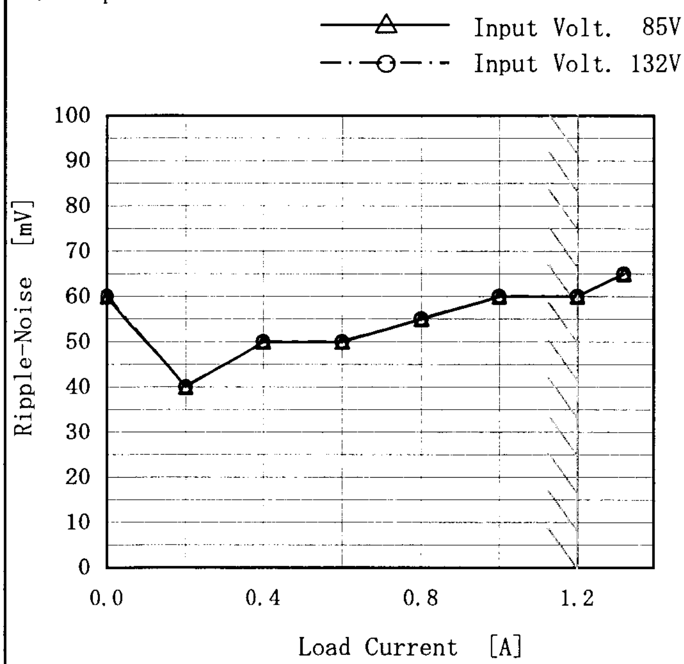
2．Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 85 [V]	Ripple-Noise [mV] Input Volt. 132 [V]
0.00	25	25
0.40	25	25
0.80	25	25
1.20	30	30
1.60	30	30
2.00	30	30
2.40	35	35
2.80	35	35
3.00	40	40
3.30	40	40
—	—	—

COSEL

Model	LCC30A-1		
Item	Ripple-Noise リップルノイズ	Temperature Testing Circuitry	25℃ Figure A
Object	+12V1.2A		

1. Graph



Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

リップルノイズは、下図p－p値で示される。
(注) 斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line
入力商用周期
T2: Due to Switching
ｽｲｯﾁﾝｸﾞ周期

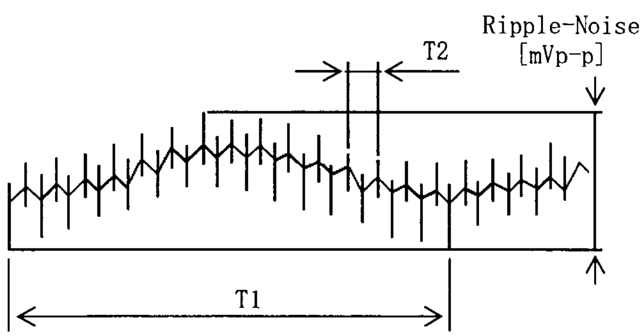


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

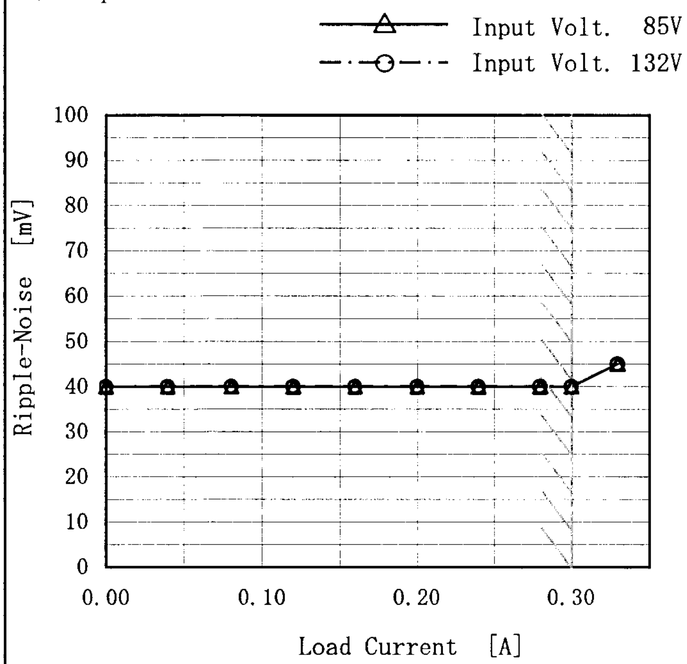
2. Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 85 [V]	Ripple-Noise [mV] Input Volt. 132 [V]
0.00	60	60
0.20	40	40
0.40	50	50
0.60	50	50
0.80	55	55
1.00	60	60
1.20	60	60
1.32	65	65
—	—	—
—	—	—
—	—	—

COSEL

Model	LCC30A-1		
Item	Ripple-Noise リップルノイズ	Temperature Testing Circuitry	25℃ Figure A
Object	+12V0.3A		

1. Graph



Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

リップルノイズは、下図ｐ－ｐ値で示される。
（注）斜線は定格負荷電流範囲を示す。

T1: Due to AC Input Line
入力商用周期
T2: Due to Switching
ｽｲｯﾁﾝｸﾞ周期

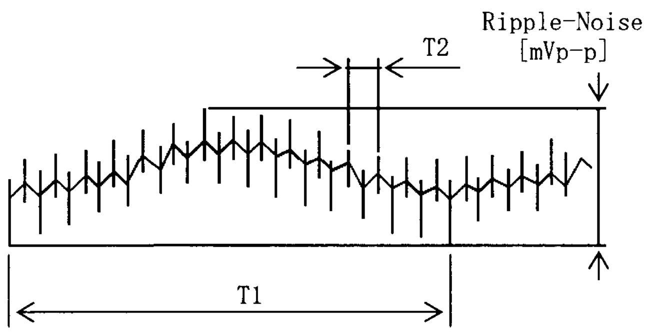


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

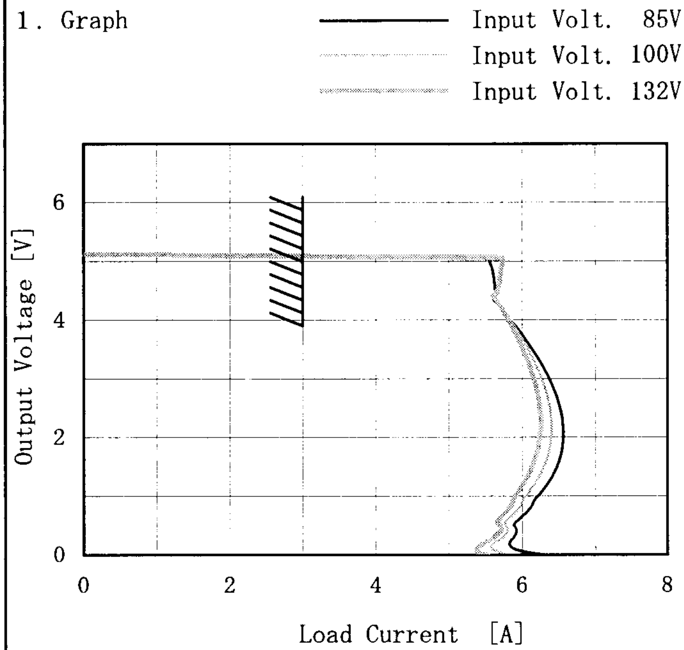
2. Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 85 [V]	Ripple-Noise [mV] Input Volt. 132 [V]
0.00	40	40
0.04	40	40
0.08	40	40
0.12	40	40
0.16	40	40
0.20	40	40
0.24	40	40
0.28	40	40
0.30	40	40
0.33	45	45
—	—	—

COSEL

Model	LCC30A-1		
Item	Overcurrent Protection 過電流保護	Temperature	25℃
		Testing Circuitry	Figure A
Object	+5V3A		

1. Graph

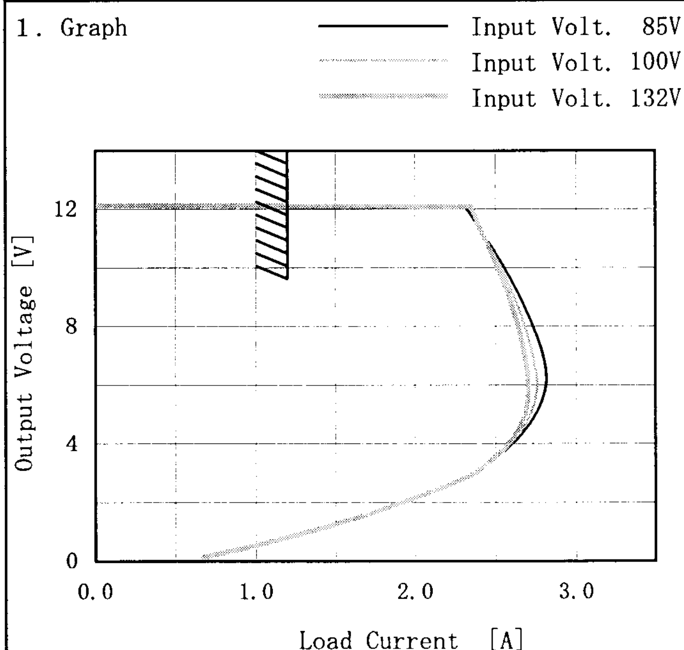


2. Values

Output Voltage [V]	Load Current [A] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
5.00	5.56	5.71	5.73
4.75	5.62	5.71	5.71
4.50	5.64	5.69	5.67
4.00	5.86	5.85	5.82
3.50	6.14	6.08	6.01
3.00	6.36	6.27	6.17
2.50	6.51	6.37	6.24
2.00	6.55	6.39	6.24
1.50	6.47	6.30	6.14
1.00	6.23	6.05	5.92
0.50	5.89	5.78	5.69
0.00	6.38	5.74	5.55

Object	+12V1.2A

1. Graph



Note: Slanted line shows the range of the rated load current.
(注) 斜線は定格負荷電流範囲を示す。

2. Values

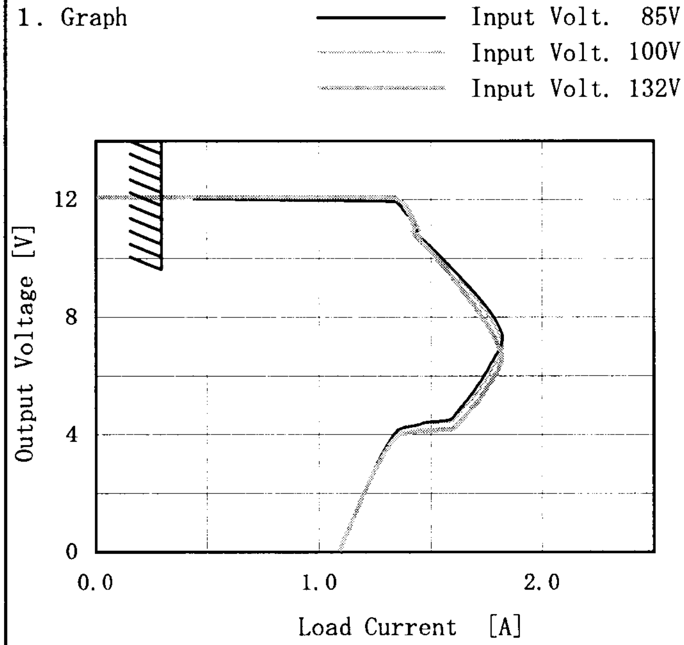
Output Voltage [V]	Load Current [A] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.00	2.33	2.36	2.36
11.40	2.40	2.41	2.40
10.80	2.47	2.47	2.45
9.60	2.60	2.57	2.54
8.40	2.70	2.66	2.62
7.20	2.79	2.72	2.67
6.00	2.81	2.76	2.70
4.80	2.73	2.70	2.67
3.60	2.52	2.52	2.51
2.40	2.09	2.12	2.13
1.20	1.45	1.46	1.47
0.00	0.69	0.65	0.66

COSEL

Model	LCC30A-1
Item	Overcurrent Protection 過電流保護
Object	+12V0.3A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Note: Slanted line shows the range of the rated load current.
(注) 斜線は定格負荷電流範囲を示す。

2. Values

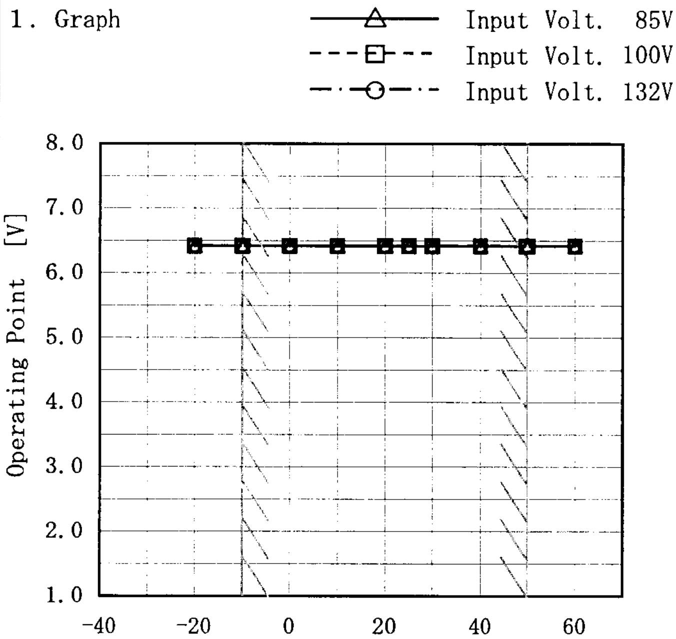
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.00	1.35	1.39	1.38
11.40	1.40	1.42	1.41
10.80	1.43	1.45	1.43
9.60	1.60	1.60	1.57
8.40	1.74	1.73	1.70
7.20	1.82	1.81	1.79
6.00	1.74	1.76	1.79
4.80	1.62	1.64	1.67
3.60	1.31	1.31	1.32
2.40	1.22	1.22	1.23
1.20	1.15	1.15	1.15
0.00	1.09	1.09	1.09

COSEL

Model	LCC30A-1
Item	Overvoltage Protection 過電圧保護
Object	+5V3A

Testing Circuitry　Figure A

1. Graph



Load 0%

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

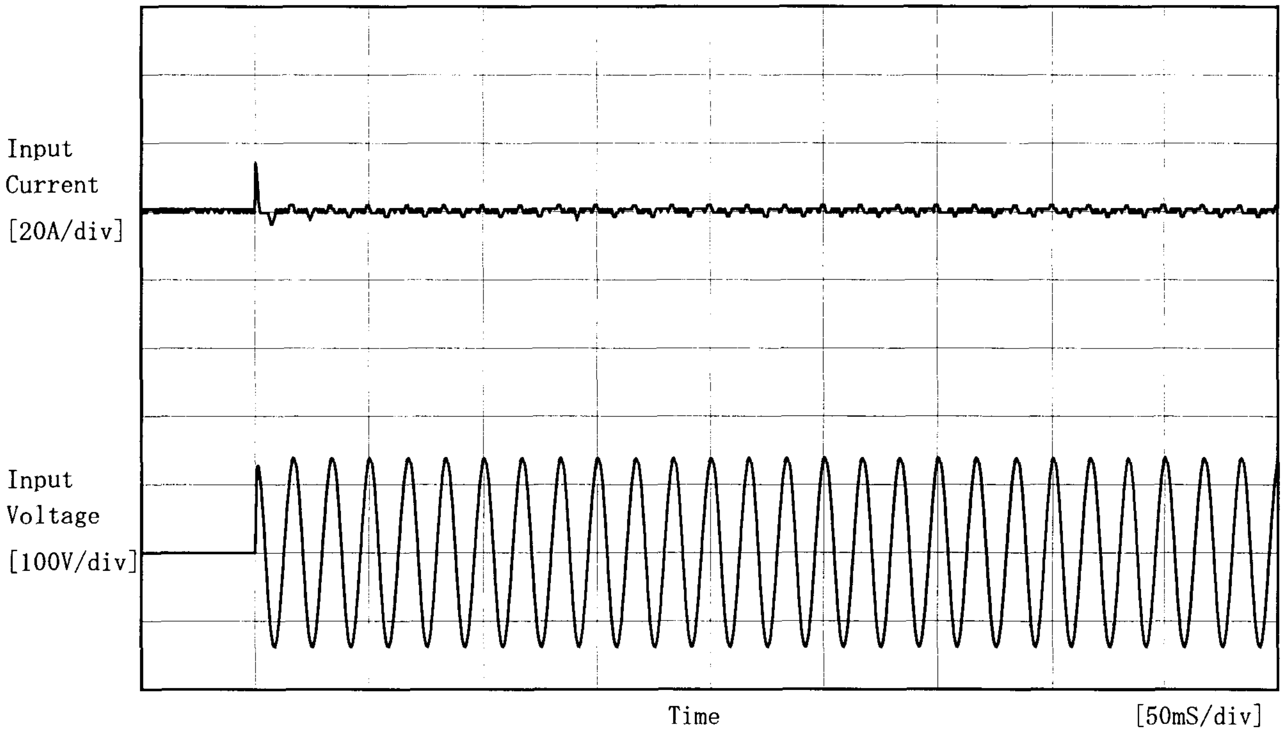
(注) 斜線は定格周囲温度範囲を示す。

2. Values

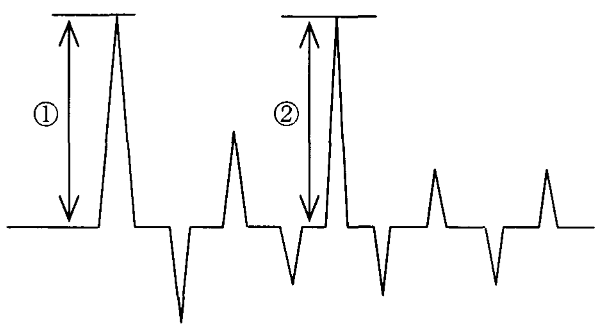
Ambient Temperature [℃]	Operating Point [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	6.42	6.42	6.42
-10	6.42	6.42	6.42
0	6.42	6.42	6.42
10	6.42	6.42	6.42
20	6.42	6.42	6.42
25	6.42	6.42	6.42
30	6.42	6.42	6.42
40	6.42	6.42	6.42
50	6.42	6.42	6.42
60	6.42	6.42	6.42
--	—	—	—

COSEL

Model	LCC30A-1		
Item	Inrush Current 突入電流	Temperature Testing Circuitry	25℃ Figure A
Object	――――――		



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Inrush Current	
①	14.3 [A]
②	2.6 [A]



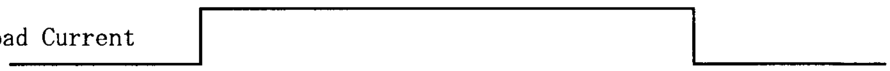
COSEL

Model	LCC30A-1		
Item	Dynamic Load Response 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+5V3A		

Input Volt. AC100 V

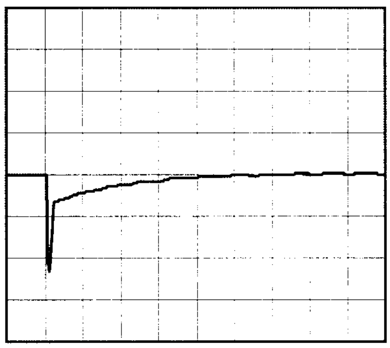
Cycle 200 ms

Load Current

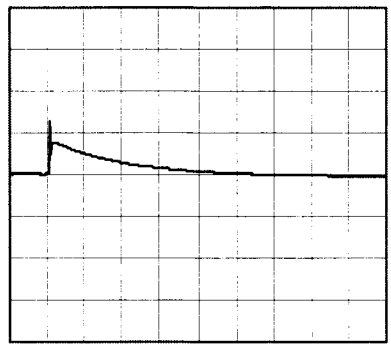


Min. Load (0A) ←→
Load 100% (3A)

100 mV/div



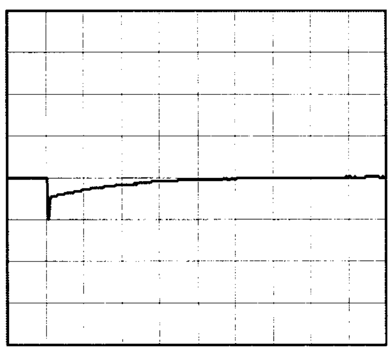
10 ms/div



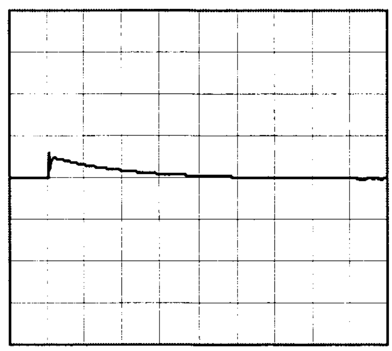
10 ms/div

Min. Load (0A) ←→
Load 50% (1.5A)

100 mV/div



10 ms/div



10 ms/div

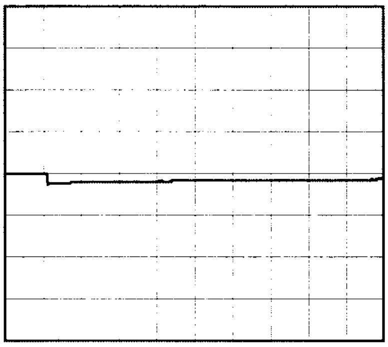
Model	LCC30A-1		
Item	Dynamic Load Response 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+12V1.2A		

Input Volt. AC100 V

Cycle 200 ms

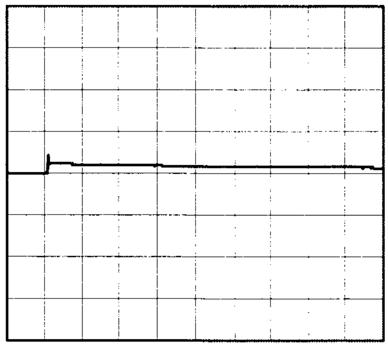
Load Current

Min. Load (0A) ←→ Load 100% (1.2A)



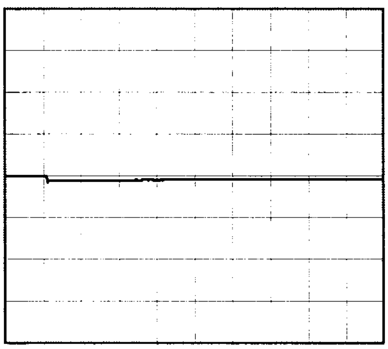
100 mV/div

10 ms/div



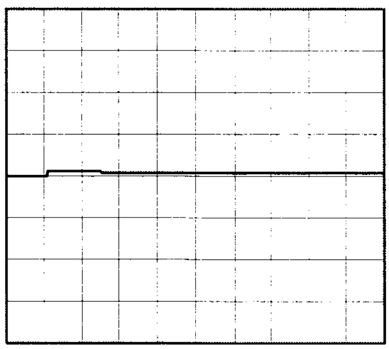
10 ms/div

Min. Load (0A) ←→ Load 50% (0.6A)



100 mV/div

10 ms/div



10 ms/div

COSEL

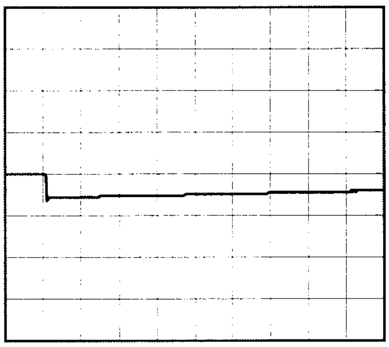
Model	LCC30A-1		
Item	Dynamic Load Response 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+12V0.3A		

Input Volt. AC100 V

Cycle 200 ms

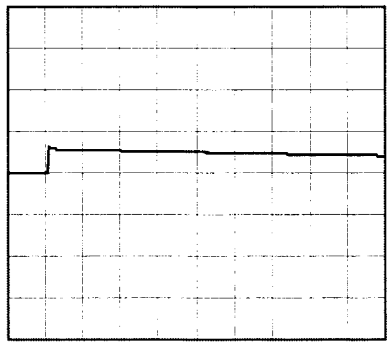
Load Current

Min. Load (0A) ←→
Load 100% (0.3A)



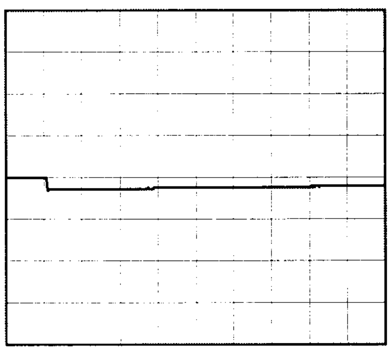
100 mV/div

10 ms/div



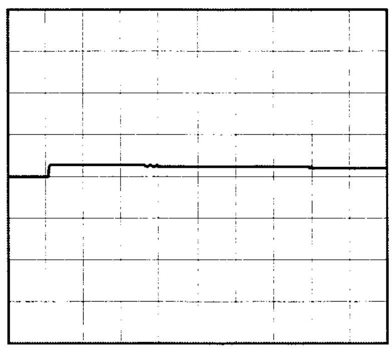
10 ms/div

Min. Load (0A) ←→
Load 50% (0.15A)



100 mV/div

10 ms/div



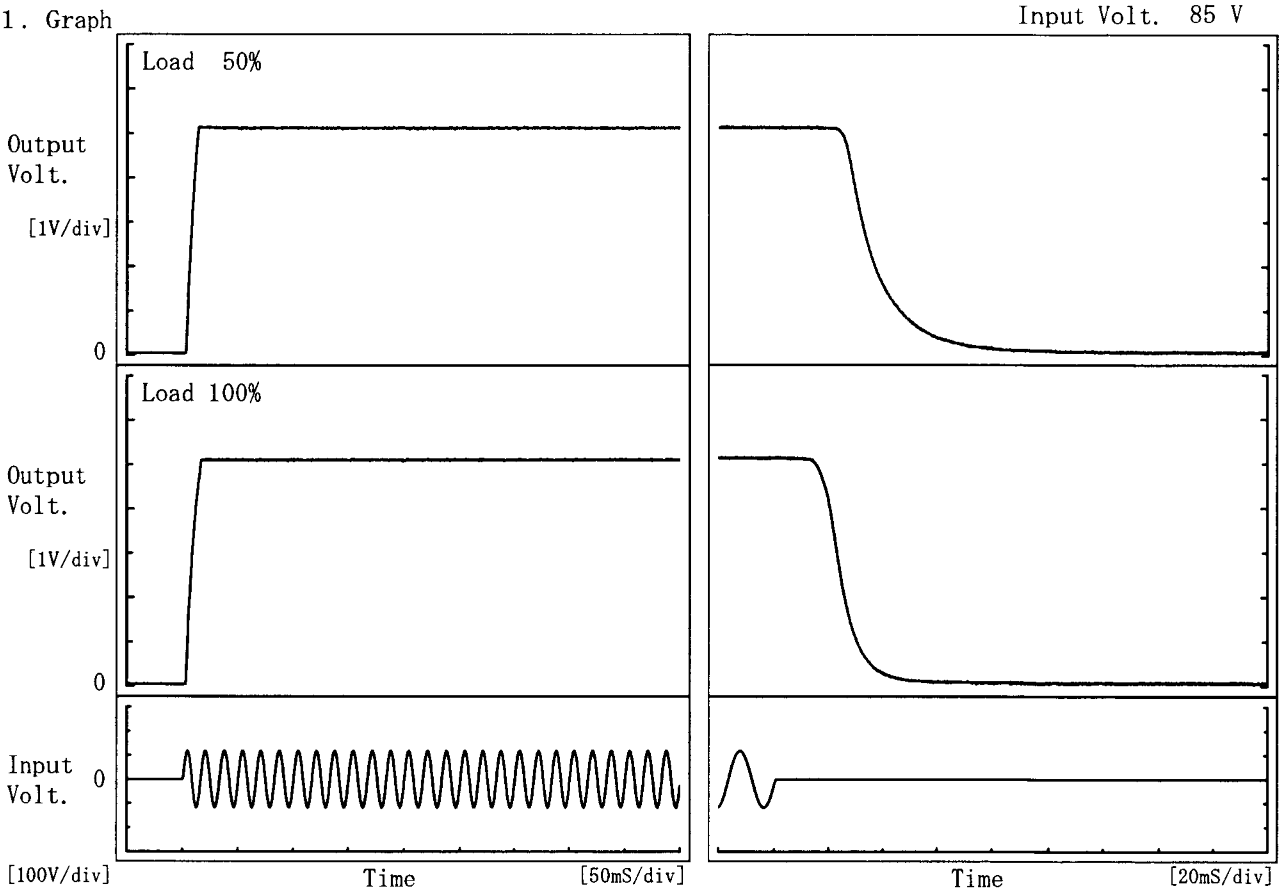
10 ms/div

COSEL

Model	LCC30A-1		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+5V3A		

1. Graph

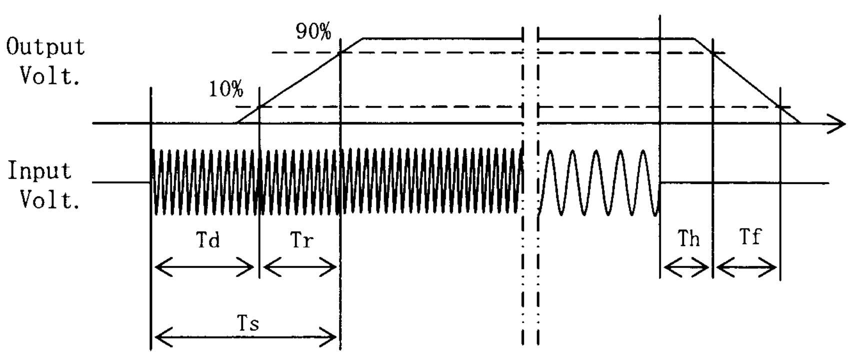
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	4.0	9.0	13.0	26.9	28.6
100 %	3.8	11.3	15.0	18.5	16.6

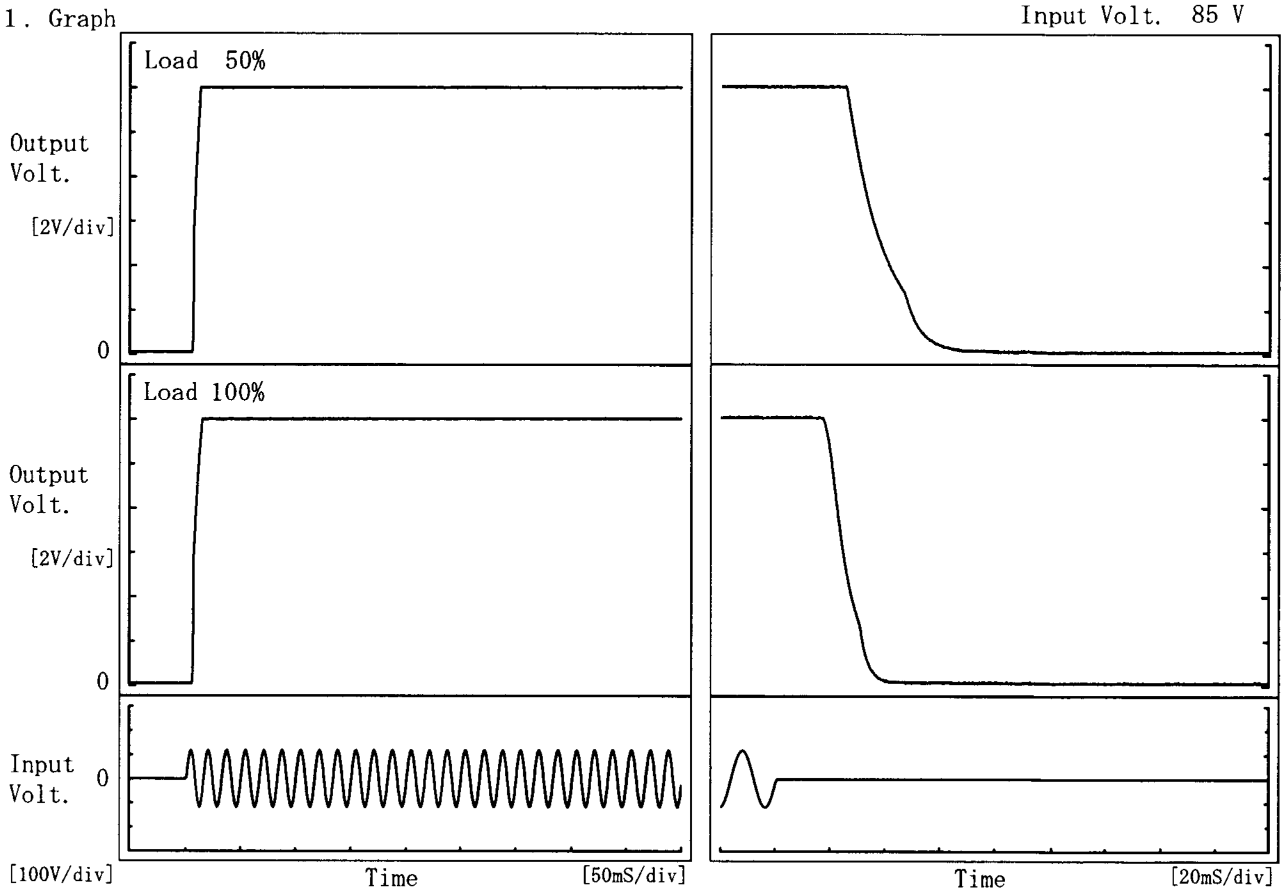


COSEL

Model	LCC30A-1		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+12V1.2A		

1. Graph

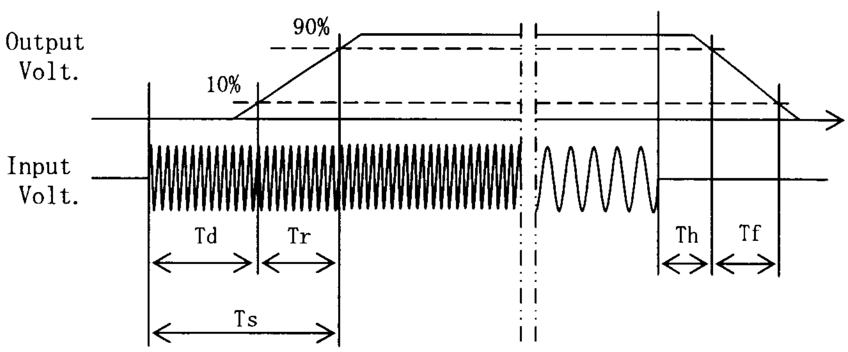
Input Volt. 85 V



2. Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	6.3	6.0	12.3	27.4	24.6
100 %	6.3	7.5	13.8	19.8	13.5



COSEL

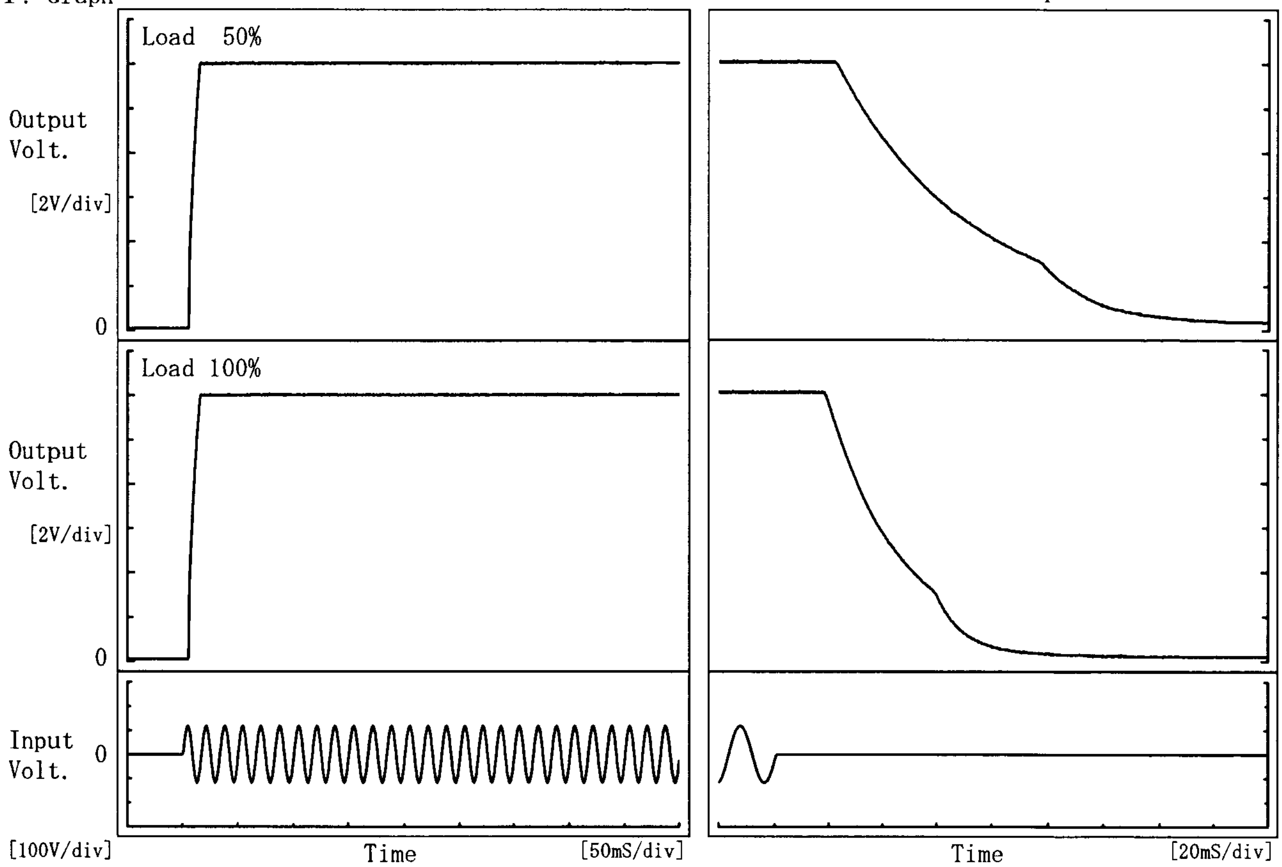
Model	LCC30A-1
Item	Rise and Fall Time 立上り、立下り時間
Object	+12V0.3A

Temperature 25℃

Testing Circuitry Figure A

1. Graph

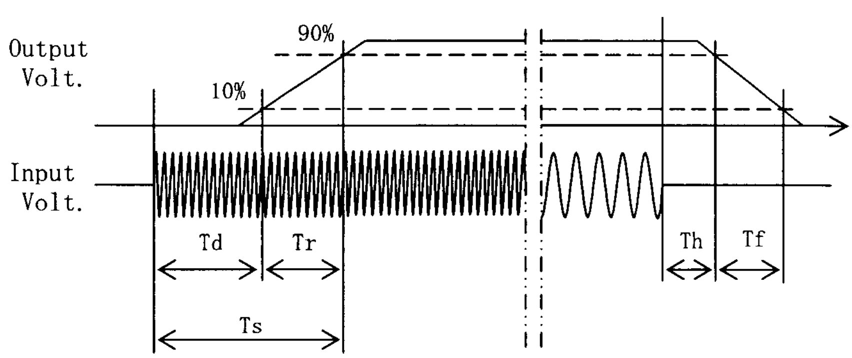
Input Volt. 85 V



2. Values

[mS]

Time / Load	T d	T r	T s	T h	T f
50 %	5.8	8.0	13.8	27.8	88.9
100 %	5.8	8.5	14.3	21.7	48.1



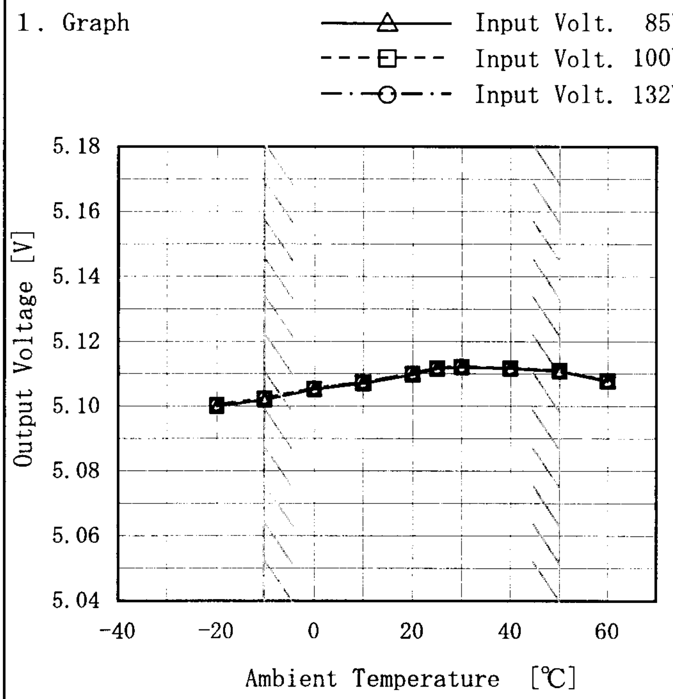
参考資料

COSEL

Model	LCC30A-1
Item	Ambient Temperature Drift 周囲温度変動
Object	+5V3A

Testing Circuitry Figure A

1. Graph



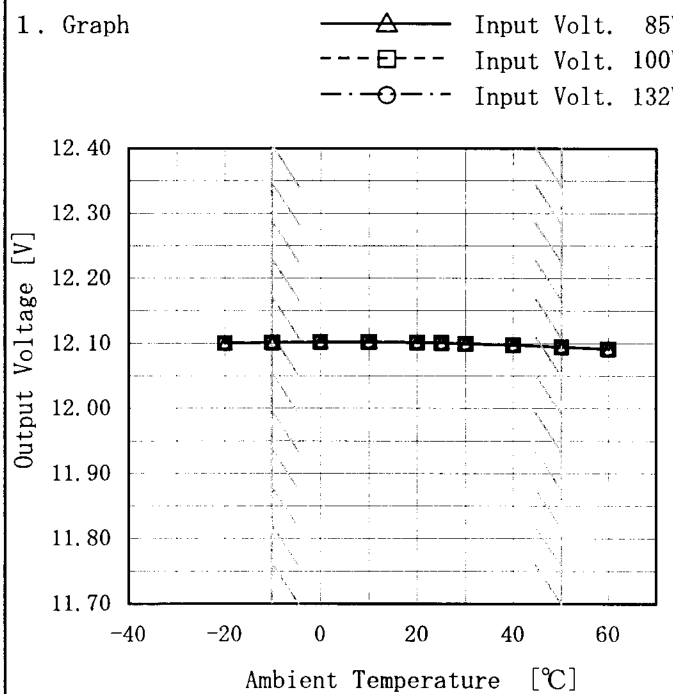
Load 100%

2. Values

Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	5.100	5.100	5.100
-10	5.102	5.102	5.103
0	5.105	5.105	5.106
10	5.107	5.107	5.107
20	5.110	5.110	5.110
25	5.112	5.112	5.112
30	5.112	5.112	5.112
40	5.112	5.112	5.112
50	5.111	5.111	5.111
60	5.108	5.108	5.108
—	—	—	—

Object	+12V1.2A

1. Graph



Load 100%

2. Values

Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	12.100	12.100	12.100
-10	12.101	12.101	12.101
0	12.102	12.102	12.102
10	12.102	12.102	12.102
20	12.102	12.101	12.101
25	12.101	12.101	12.101
30	12.100	12.099	12.099
40	12.097	12.097	12.097
50	12.095	12.095	12.094
60	12.091	12.091	12.091
—	—	—	—

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

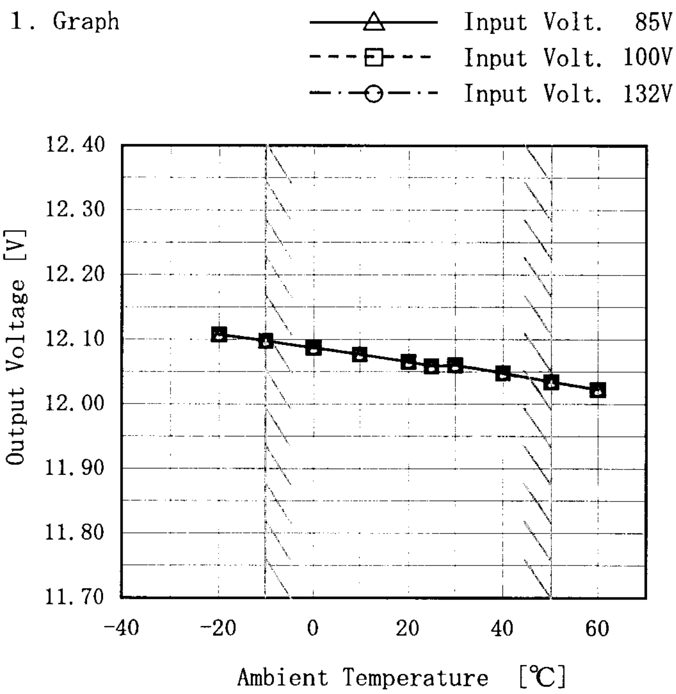
(注) 斜線は定格周囲温度範囲を示す。

COSEL

Model	LCC30A-1
Item	Ambient Temperature Drift 周囲温度変動
Object	+12V0.3A

Testing Circuitry Figure A

1．Graph



Load 100%

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

（注）斜線は定格周囲温度範囲を示す。

2．Values

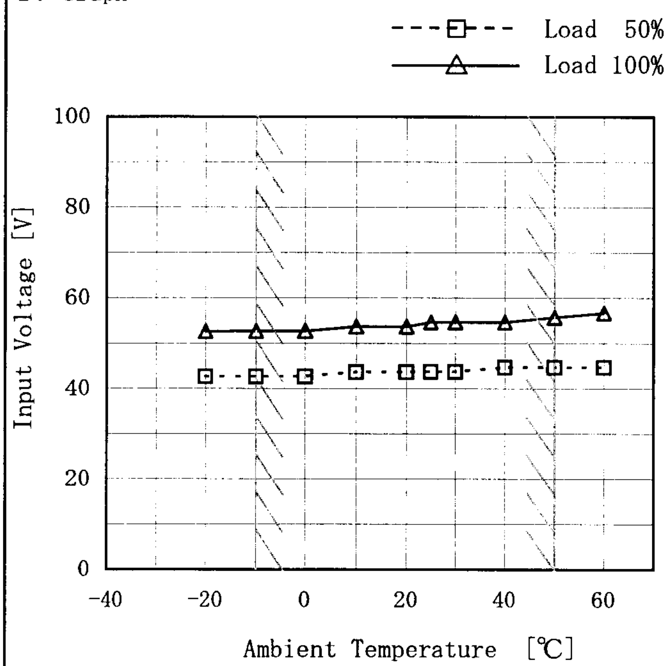
Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	12.108	12.107	12.107
-10	12.098	12.098	12.098
0	12.087	12.087	12.087
10	12.077	12.077	12.077
20	12.066	12.066	12.065
25	12.059	12.059	12.059
30	12.061	12.061	12.060
40	12.049	12.048	12.048
50	12.035	12.034	12.034
60	12.023	12.023	12.022
—	—	—	—

COSEL

Model	LCC30A-1
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+5V3A

Testing Circuitry　Figure A

1. Graph

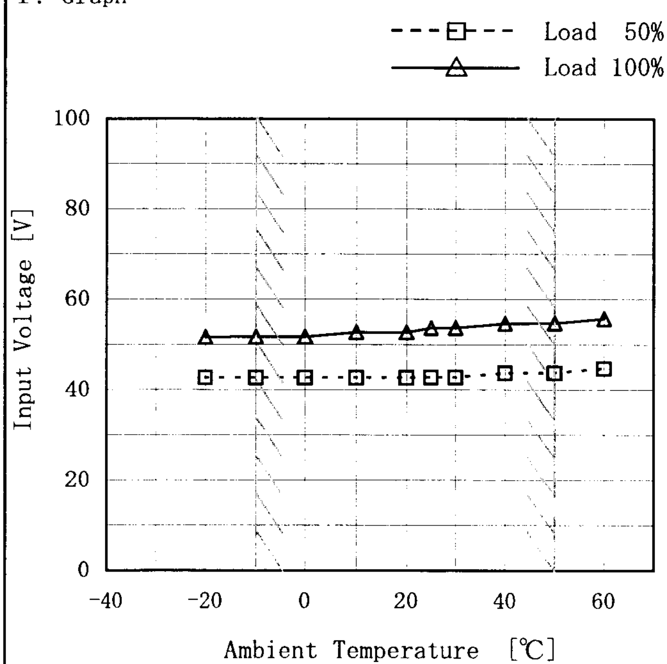


2. Values

Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	43	53
-10	43	53
0	43	53
10	44	54
20	44	54
25	44	55
30	44	55
40	45	55
50	45	56
60	45	57
--	—	—

Object	+12V1.2A

1. Graph



2. Values

Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	43	52
-10	43	52
0	43	52
10	43	53
20	43	53
25	43	54
30	43	54
40	44	55
50	44	55
60	45	56
--	—	—

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

(注) 斜線は定格周囲温度範囲を示す。

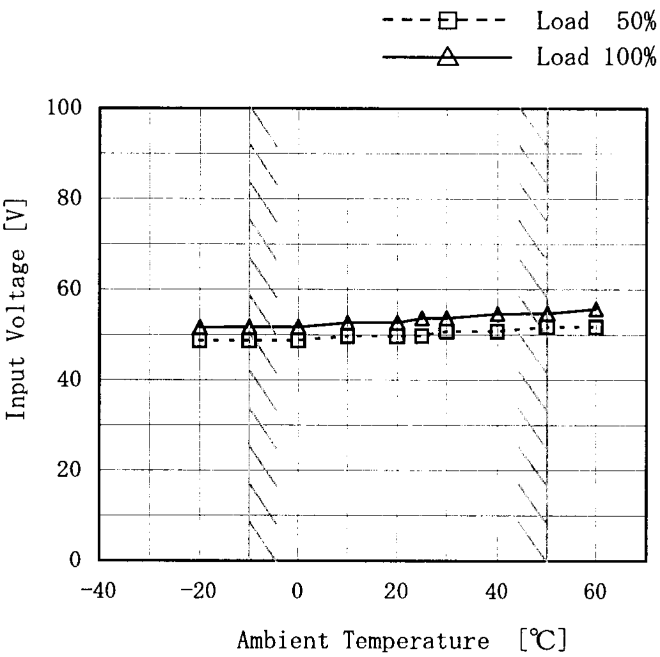
BC－3431

COSEL

Model	LCC30A-1
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+12V0.3A

Testing Circuitry　Figure A

1. Graph



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

(注) 斜線は定格周囲温度範囲を示す。

2. Values

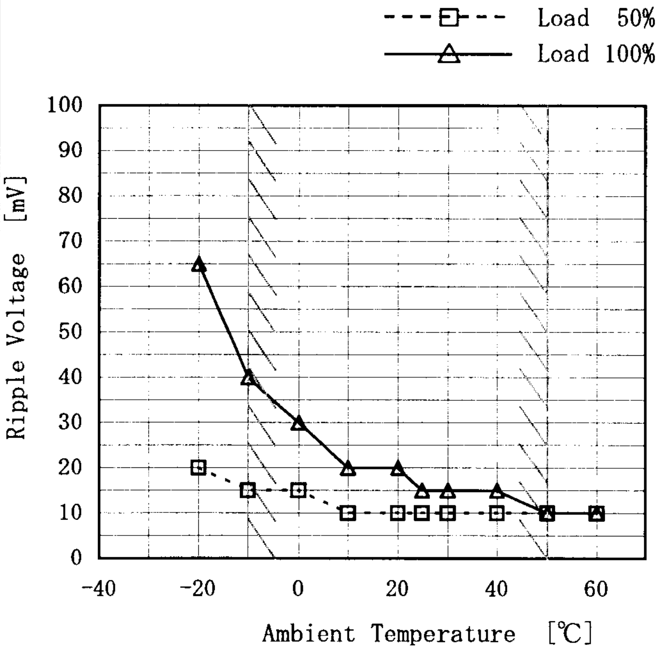
Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	49	52
-10	49	52
0	49	52
10	50	53
20	50	53
25	50	54
30	51	54
40	51	55
50	52	55
60	52	56
—	—	—

Model	LCC30A-1
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）

Testing Circuitry　Figure A

Object	+5V3A

1．Graph



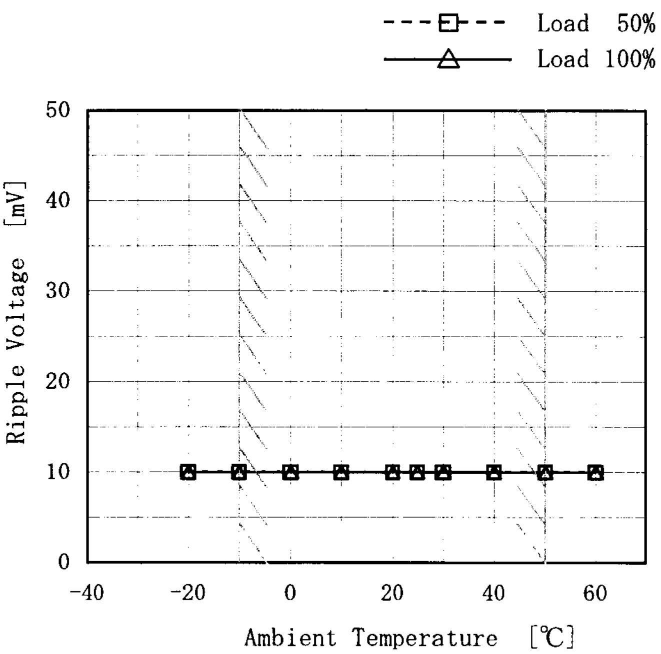
Input Volt.　100V

2．Values

Ambient Temperature [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	20	65
-10	15	40
0	15	30
10	10	20
20	10	20
25	10	15
30	10	15
40	10	15
50	10	10
60	10	10
--	—	—

Object	+12V1.2A

1．Graph



Input Volt.　100V

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

(注) 斜線は定格周囲温度範囲を示す。

2．Values

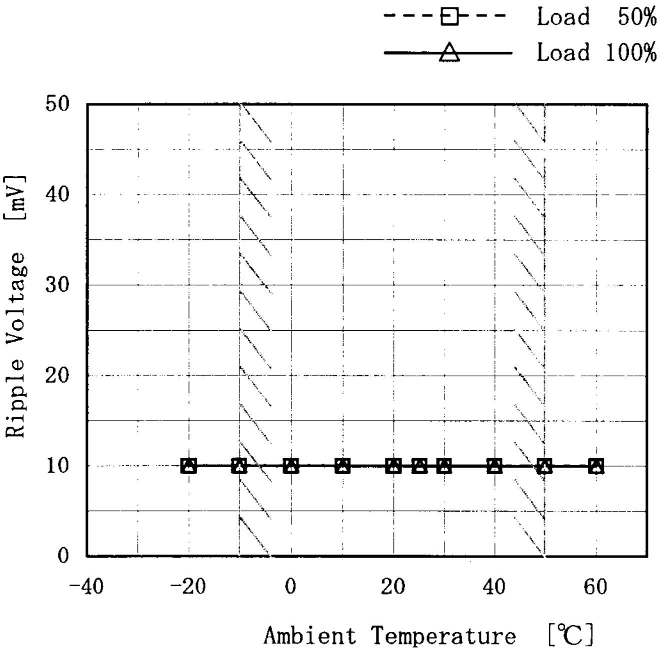
Ambient Temperature [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	10	10
-10	10	10
0	10	10
10	10	10
20	10	10
25	10	10
30	10	10
40	10	10
50	10	10
60	10	10
--	—	—

COSEL

Model	LCC30A-1
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+12V0.3A

Testing Circuitry Figure A

1. Graph



Input Volt. 100V

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

(注) 斜線は定格周囲温度範囲を示す。

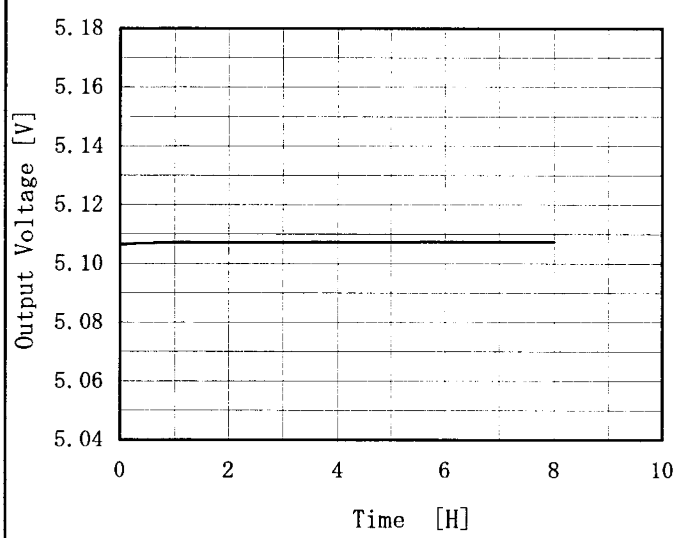
2. Values

Ambient Temperature [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	10	10
-10	10	10
0	10	10
10	10	10
20	10	10
25	10	10
30	10	10
40	10	10
50	10	10
60	10	10
—	—	—

COSEL

Model	LCC30A-1		
Item	Time Lapse Drift 経時ドリフト	Temperature Testing Circuitry	25℃ Figure A
Object	+5V3A		

1．Graph



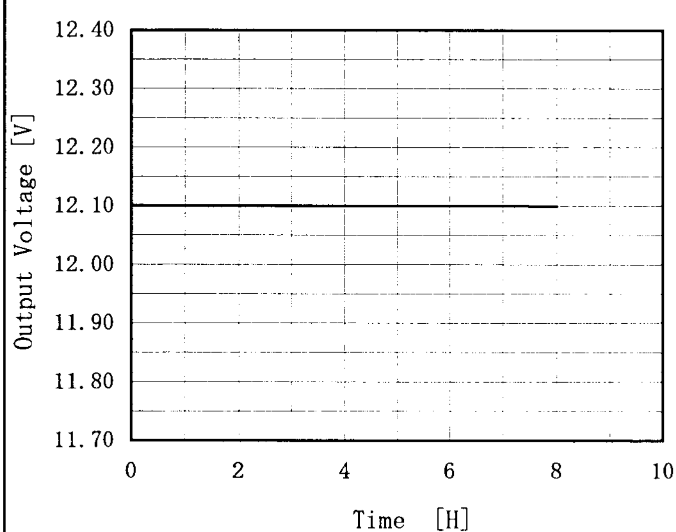
Input Volt. 100V
Load 100%

2．Values

Time since start [H]	Output Voltage [V]
0.0	5.107
0.5	5.107
1.0	5.107
2.0	5.107
3.0	5.107
4.0	5.107
5.0	5.107
6.0	5.107
7.0	5.108
8.0	5.107

Object	+12V1.2A

1．Graph



Input Volt. 100V
Load 100%

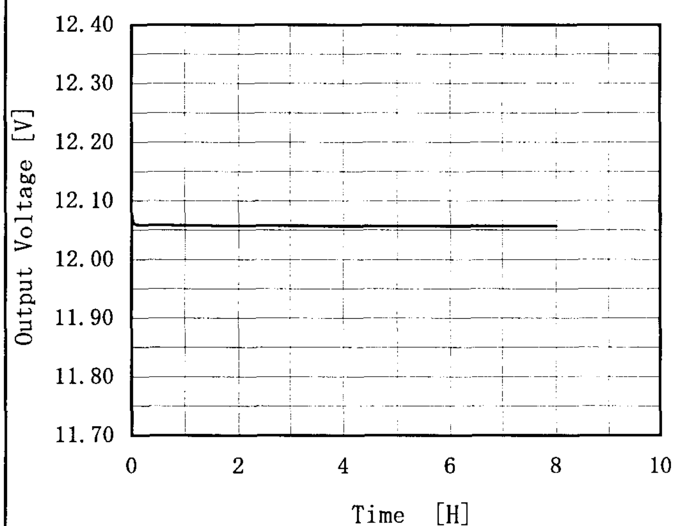
2．Values

Time since start [H]	Output Voltage [V]
0.0	12.102
0.5	12.100
1.0	12.100
2.0	12.100
3.0	12.100
4.0	12.100
5.0	12.100
6.0	12.100
7.0	12.100
8.0	12.100

COSEL

Model	LCC30A-1		
Item	Time Lapse Drift 経時ドリフト	Temperature Testing Circuitry	25℃ Figure A
Object	+12V0.3A		

1. Graph



Input Volt. 100V

Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	12.077
0.5	12.059
1.0	12.059
2.0	12.058
3.0	12.058
4.0	12.057
5.0	12.058
6.0	12.057
7.0	12.057
8.0	12.057

COSEL

Model	LCC30A-1
Item	Output Voltage Accuracy 定電圧精度

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℃
Input Voltage　　　: 85 ～ 132V
Load Current (AVR 1) : 0 ～ 3A　　(AVR 2) : 0～1.2A　　(AVR 3) : 0～0.3A

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

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

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

周囲温度　　　　: -10 ～ 50℃
入力電圧　　　　: 85 ～ 132V
負荷電流 (AVR 1) : 0 ～ 3A　　(AVR 2) : 0～1.2A　　(AVR 3) : 0～0.3A

* 定電圧精度(変動値) ＝ ±(出力電圧の最高値－出力電圧の最低値)／2

* 定電圧精度(変動率) $= \dfrac{\text{変動値}}{\text{定格出力電圧}} \times 100$

2．Values

Object	+5V3A					
Item	Temperature [℃]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	100	0	5.128	±12	±0.2
Minimum Voltage	-10	85	3	5.104		

Object	+12V1.2A					
Item	Temperature [℃]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	100	0	12.127	±17	±0.1
Minimum Voltage	50	132	1.2	12.093		

Object	+12V0.3A					
Item	Temperature [℃]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	85	0	12.120	±47	±0.4
Minimum Voltage	50	132	0.3	12.026		

COSEL

Model	LCC30A-1	
Item	Condense 結露特性	Testing Circuitry　Figure A

1．Condensation test

Testing procedure is as follows.

① Keeping and cooling the unit in a tank at -10℃ for an hour with the input off.

② Taking it out of the tank and dewing itself in a room where the temperature is 25℃ and the humidity is 40%RH.

③ Testing electrical characteristics of the unit to confirm there be no fault.

1．結露特性試験

入力を切った状態で、恒温槽で－１０℃に冷却しておき、約１時間後に恒温槽から取り出し、室温２５℃、湿度４０%RHの状態におき結露させ、その電気的特性の測定を行い異常のないことを確認する。

2．Values

Object　+5V3A

Item	Data	Testing Conditions
Output Voltage [V]	5.106	Input Volt.:100V, Load Current.:3A
Line Regulation [mV]	1	Input Volt.:85～132V, Load Current.:3A
Load Regulation [mV]	14	Input Volt.:100V, Load Current.:0～3A

Object　+12V1.2A

Item	Data	Testing Conditions
Output Voltage [V]	12.101	Input Volt.:100V, Load Current.:1.2A
Line Regulation [mV]	1	Input Volt.:85～132V, Load Current.:1.2A
Load Regulation [mV]	26	Input Volt.:100V, Load Current.:0～1.2A

Object　+5V0.5A

Item	Data	Testing Conditions
Output Voltage [V]	12.059	Input Volt.:100V, Load Current.:0.5A
Line Regulation [mV]	1	Input Volt.:85～132V, Load Current.:0.5A
Load Regulation [mV]	23	Input Volt.:100V, Load Current.:0～0.5A

COSEL

Model	LCC30A-1		
Item	Leakage Current 漏洩電流	Temperature Testing Circuitry	25℃ Figure B
Object	――――――――		

1．Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DEN-AN	0.06	0.07	0.09
(B) IEC60950	0.06	0.07	0.08

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 230 [V]	Input Volt. 264 [V]
(B) IEC60950	―	―	―

2．Condition

Leakage current value is concluded after measuring both phases of AC input and by choosing the larger one.

交流入力の両相について測定し、その大きい方を漏洩電流測定値とする。

COSEL

Model	LCC30A-1
Item	Line Noise Tolerance 入力雑音耐量
Object	+5V3A

Temperature 25℃
Testing Circuitry Figure C

1．Conditions

・Input Voltage : 100 V
・Pulse Voltage : 2000 V
・Pulse Cycle : 10 mS
・Pulse Input Duration : 1 min. or more
・Load : 100 %

2．Results

Pulse Width [nS]	MODE	POLARITY	No protection failure should occur 保護回路の誤動作がない	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON	+	OK	no fluctuation
		−	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		−	OK	no fluctuation
1000	COMMON	+	OK	no fluctuation
		−	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		−	OK	no fluctuation

Object	+12V1.2A

1．Conditions

・Input Voltage : 100 V
・Pulse Voltage : 2000 V
・Pulse Cycle : 10 mS
・Pulse Input Duration : 1 min. or more
・Load : 100 %

2．Results

Pulse Width [nS]	MODE	POLARITY	No protection failure should occur 保護回路の誤動作がない	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON	+	OK	no fluctuation
		−	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		−	OK	no fluctuation
1000	COMMON	+	OK	no fluctuation
		−	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		−	OK	no fluctuation

COSEL

Model	LCC30A-1
Item	Line Noise Tolerance 入力雑音耐量
Object	+12V0.3A

Temperature 25℃
Testing Circuitry Figure C

1. Conditions

- Input Voltage : 100 V
- Pulse Voltage : 2000 V
- Pulse Cycle : 10 mS
- Pulse Input Duration : 1 min. or more
- Load : 100 %

2. Results

Pulse Width [nS]	MODE	POLARITY	No protection failure should occur 保護回路の誤動作がない	DC-like Regulation of Output Voltage 出力電圧の直流的変動
50	COMMON	+	OK	no fluctuation
		−	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		−	OK	no fluctuation
1000	COMMON	+	OK	no fluctuation
		−	OK	no fluctuation
	NORMAL	+	OK	no fluctuation
		−	OK	no fluctuation

COSEL

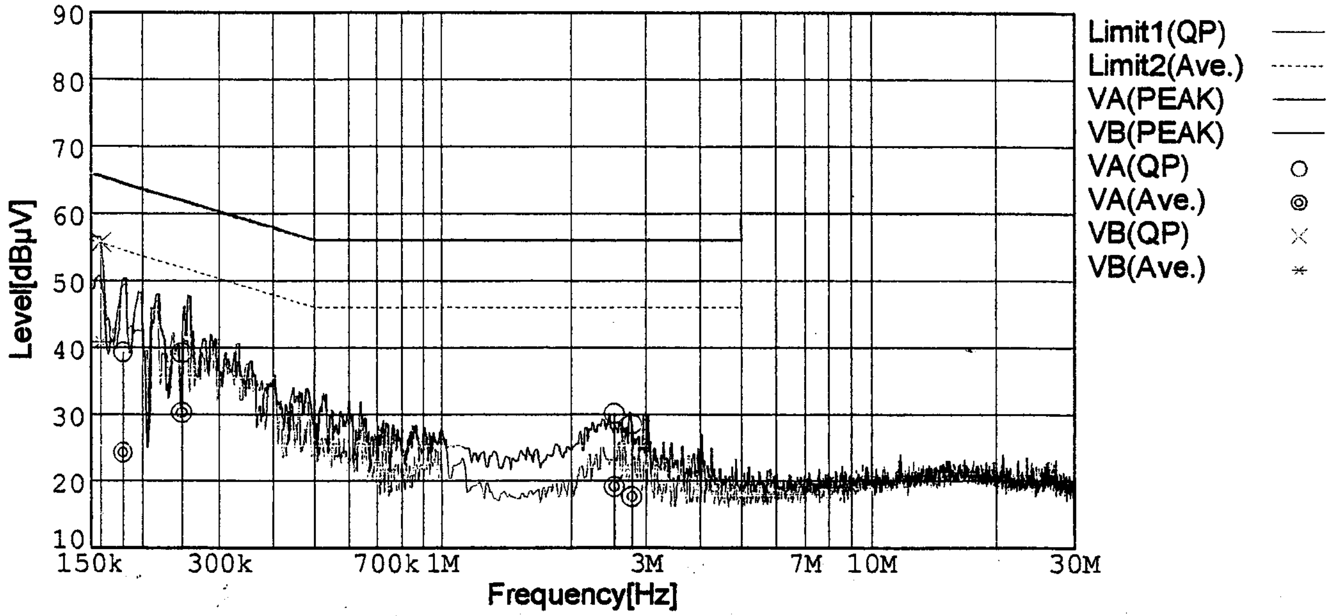
Model	LCC30A-1		
Item	Conducted Emission 雑音端子電圧	Temperature Testing Circuitry	25℃ Figure D
Object	――――――――――		

1. Graph

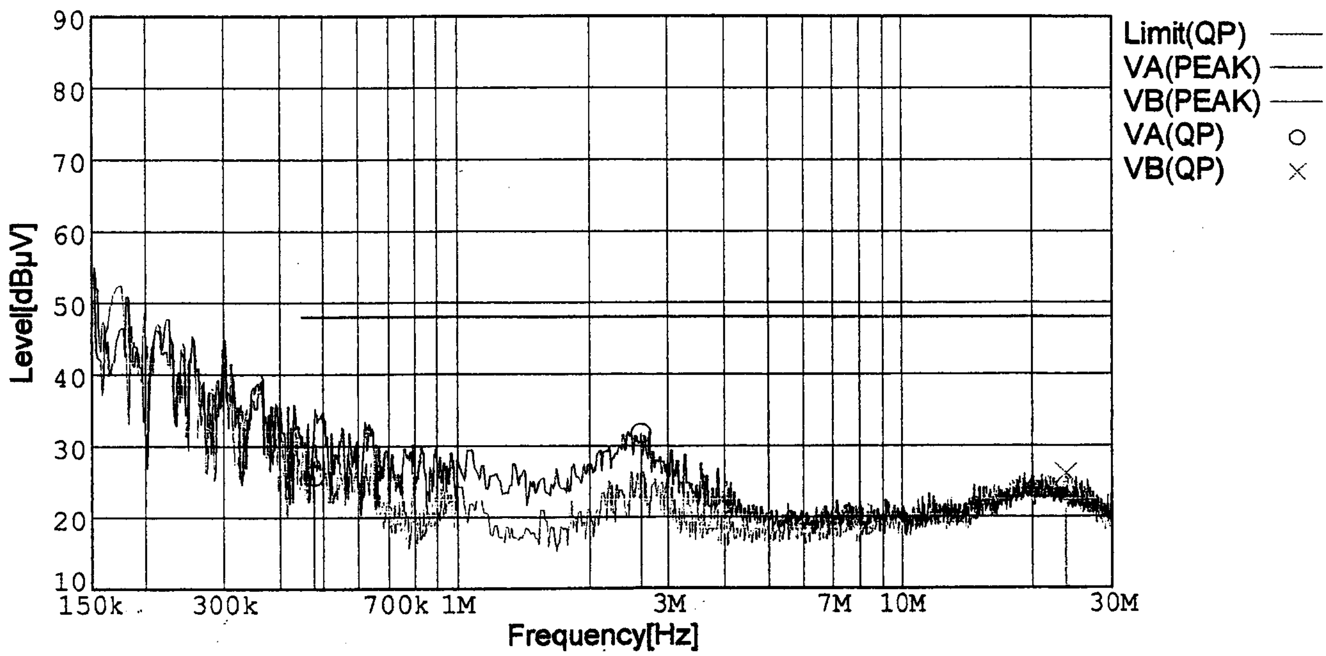
Remarks

Input Volt.	100V (VCCI Class B)
	120V (FCC Class B)
Load	100%

Limit1: [VCCI] Class B(QP)
Limit2: [VCCI] Class B(Ave.)



Limit: [FCC Part15] Class B

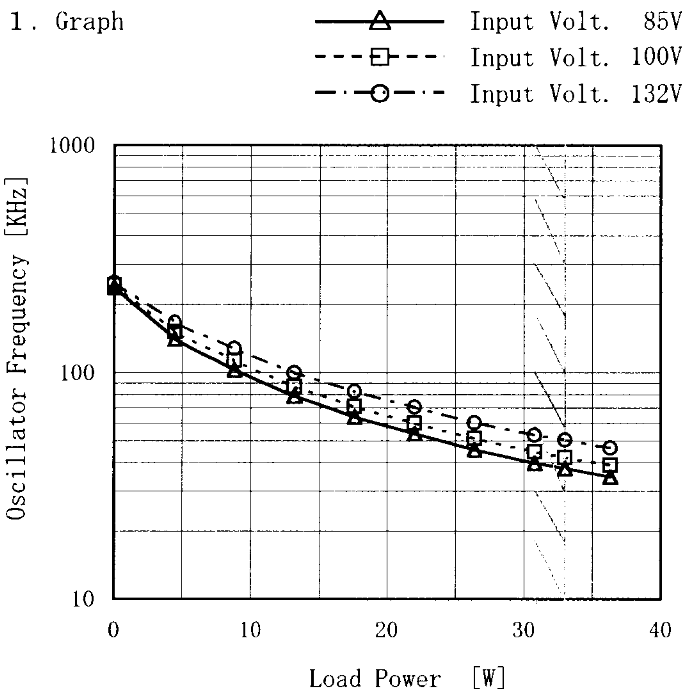


COSEL

Model	LCC30A-1
Item	Oscillator Frequency 発振周波数
Object	————————

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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

(注) 斜線は定格負電力荷範囲を示す。

2. Values

Load Power [W]	Oscillator Frequency [KHz]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	238	244	250
4.4	141	152	167
8.8	103	114	128
13.2	79	87	100
17.6	64	71	83
22.0	54	60	70
26.4	46	51	60
30.8	40	45	53
33.0	38	42	51
36.3	35	39	47
—	—	—	—

COSEL

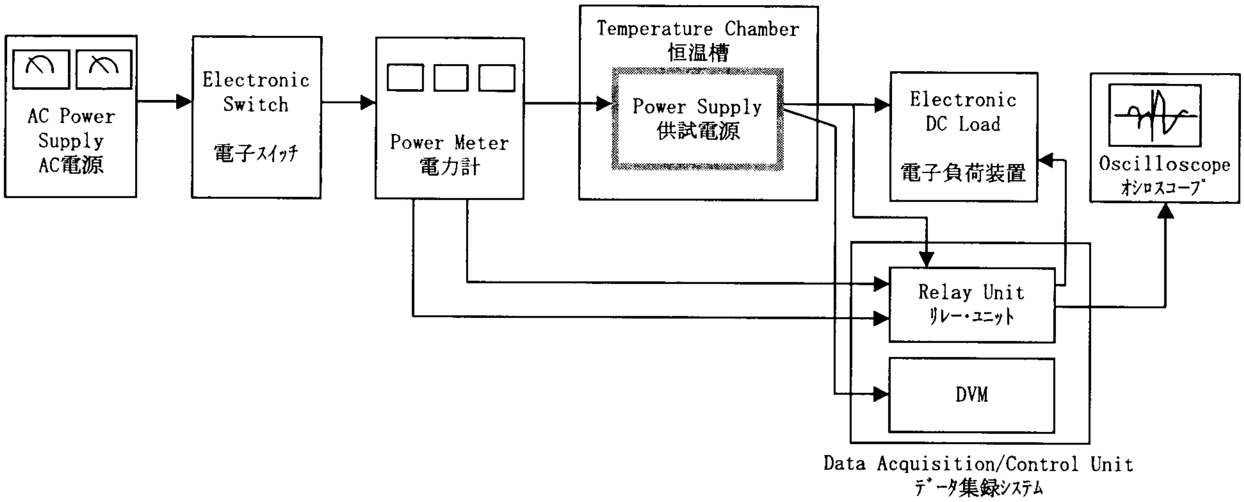
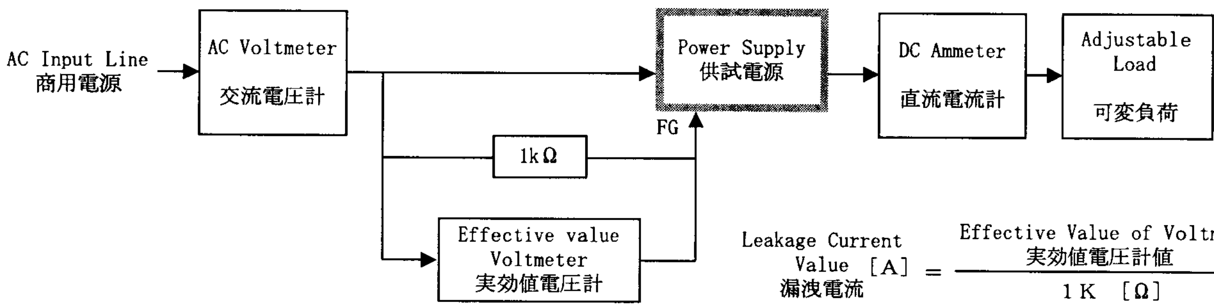
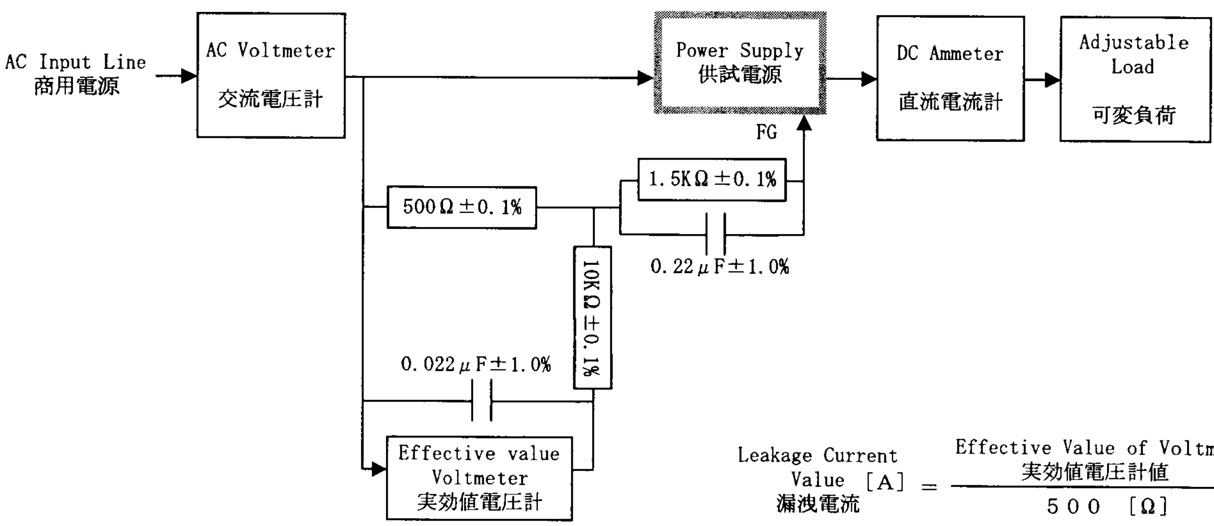


Figure A



Leakage Current Value [A] 漏洩電流 = Effective Value of Voltmeter 実効値電圧計値 [V] / 1K [Ω]

Figure B (DEN-AN)



Leakage Current Value [A] 漏洩電流 = Effective Value of Voltmeter 実効値電圧計値 [V] / 500 [Ω]

Figure B (IEC60950)

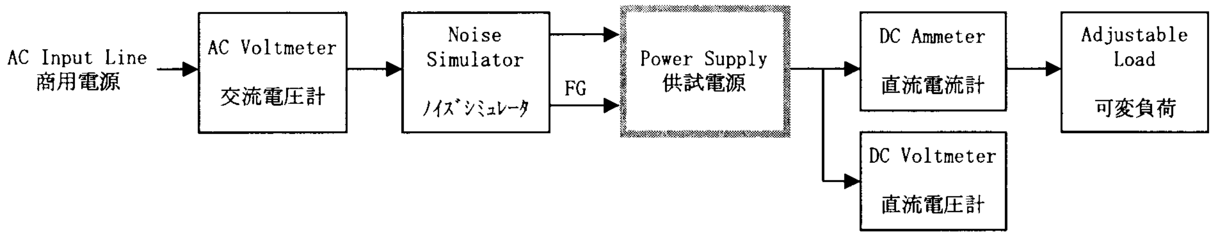


Figure C

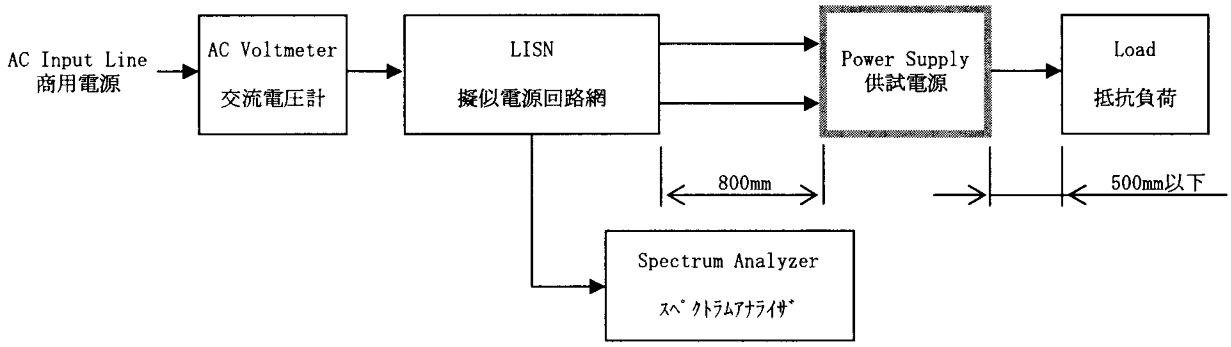


Figure D