参考資料

COSEL

TEST DATA OF LCC30A-4
(100V INPUT)

Regulated DC Power Supply
Jul. 16, 2002

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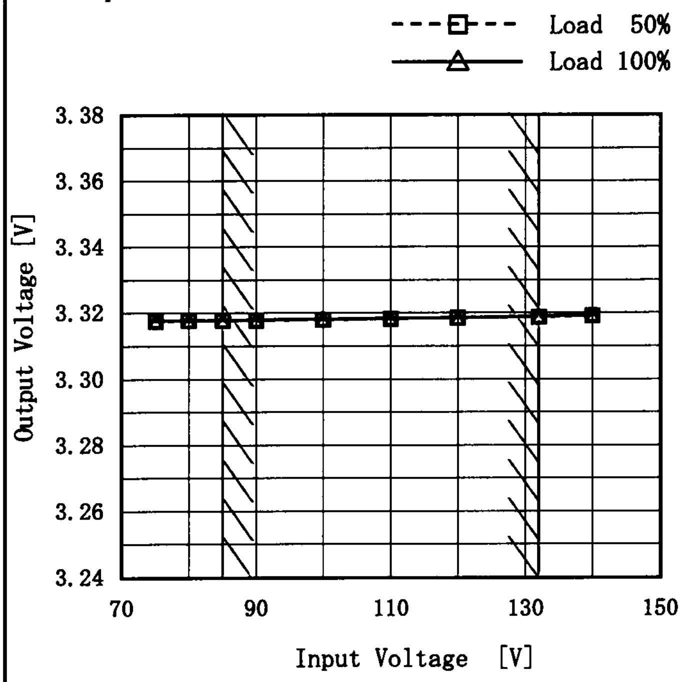
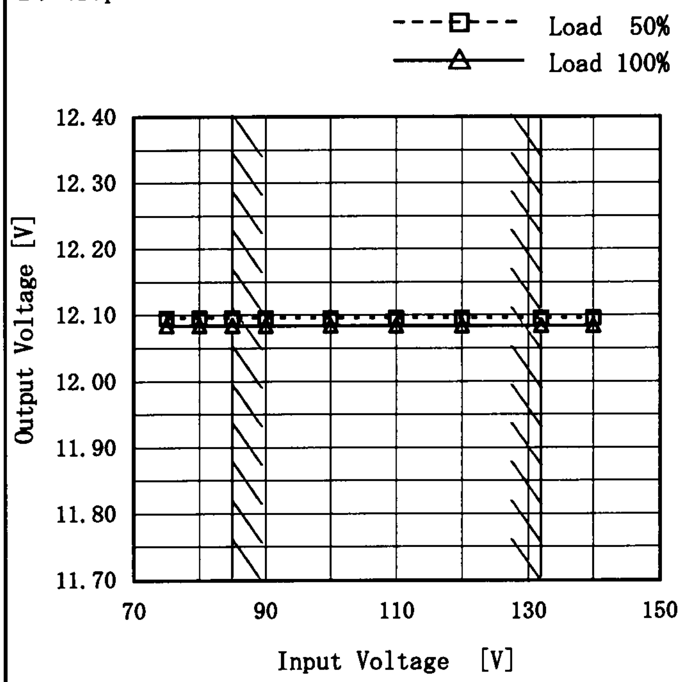


2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	3.318	3.318
80	3.318	3.318
85	3.318	3.318
90	3.318	3.318
100	3.318	3.318
110	3.318	3.318
120	3.319	3.319
132	3.319	3.319
140	3.319	3.319

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	12.096	12.084
80	12.096	12.084
85	12.096	12.084
90	12.096	12.084
100	12.096	12.084
110	12.096	12.084
120	12.095	12.084
132	12.095	12.084
140	12.095	12.084

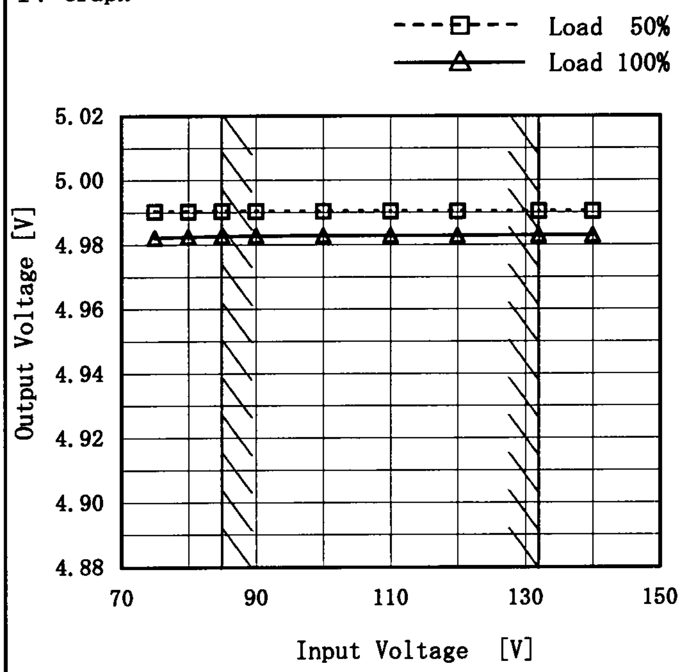
BC−3434

COSEL

Model	LCC30A-4
Item	Line Regulation 静的入力変動
Object	+5V0.5A

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。

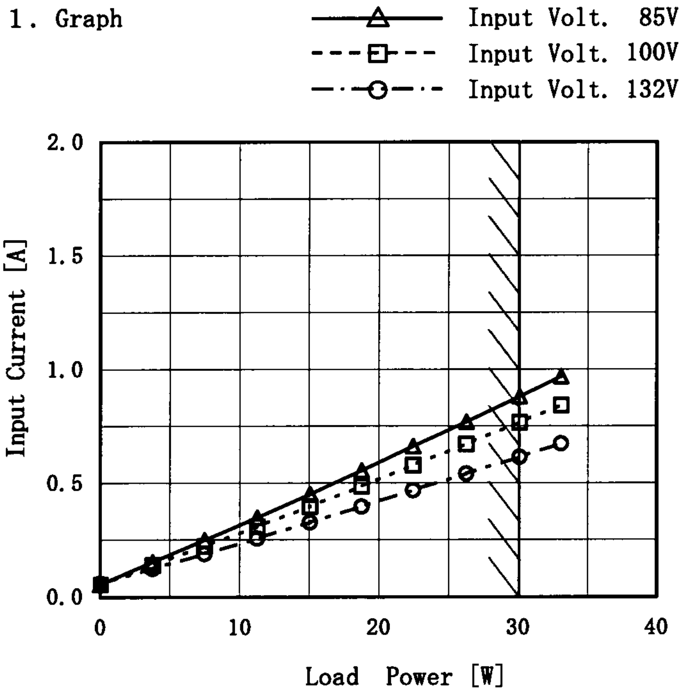
2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	4.990	4.982
80	4.990	4.983
85	4.990	4.983
90	4.990	4.983
100	4.990	4.983
110	4.990	4.983
120	4.990	4.983
132	4.990	4.983
140	4.990	4.983

COSEL

Model	LCC30A-4		
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

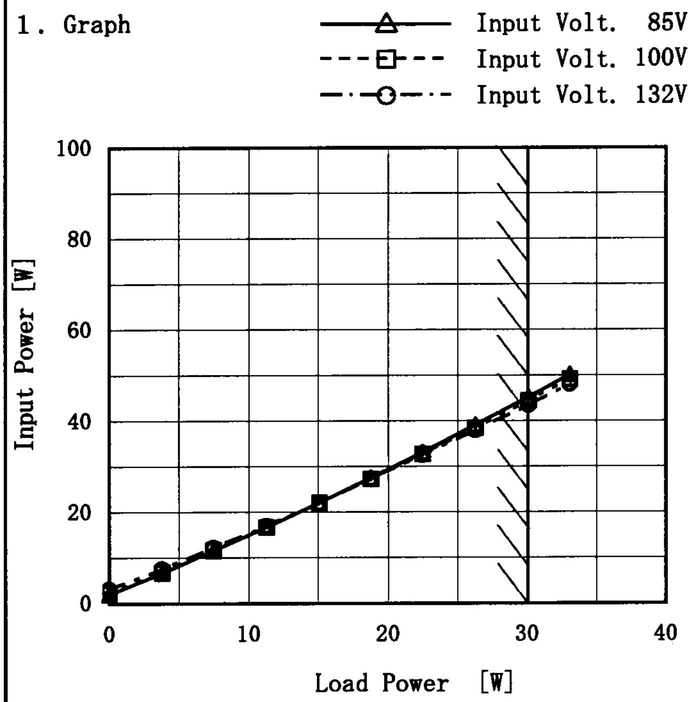
Load Power [W]	Input Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	0.055	0.055	0.058
3.8	0.153	0.140	0.124
7.5	0.249	0.223	0.189
11.3	0.348	0.309	0.257
15.1	0.451	0.397	0.326
18.8	0.555	0.486	0.396
22.5	0.661	0.579	0.467
26.3	0.769	0.671	0.540
30.1	0.880	0.765	0.613
33.1	0.969	0.841	0.673
―	―	―	―

COSEL

Model	LCC30A-4
Item	Input Power (by Load Power) 入力電力（負荷特性）
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	1.98	2.28	3.07
3.8	6.60	6.81	7.50
7.5	11.52	11.65	12.14
11.3	16.65	16.65	16.98
15.1	22.00	22.00	21.99
18.8	27.50	27.20	27.20
22.5	33.10	32.70	32.50
26.3	39.10	38.40	37.90
30.1	45.20	44.40	43.40
33.1	50.20	49.10	48.00
—	—	—	—

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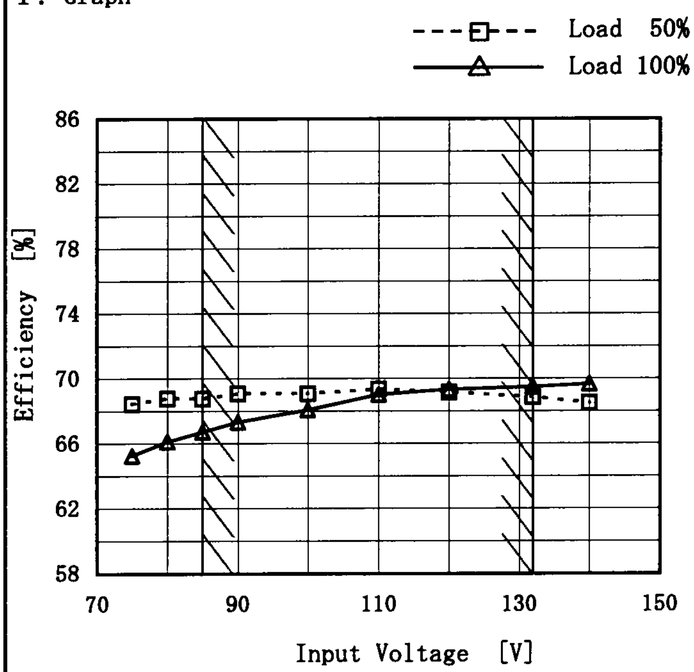
Model	LCC30A-4		
Item	Efficiency (by Input Voltage) 効率（入力電圧特性）	Temperature Testing Circuitry	25℃ Figure A
Object	――――――――――		

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

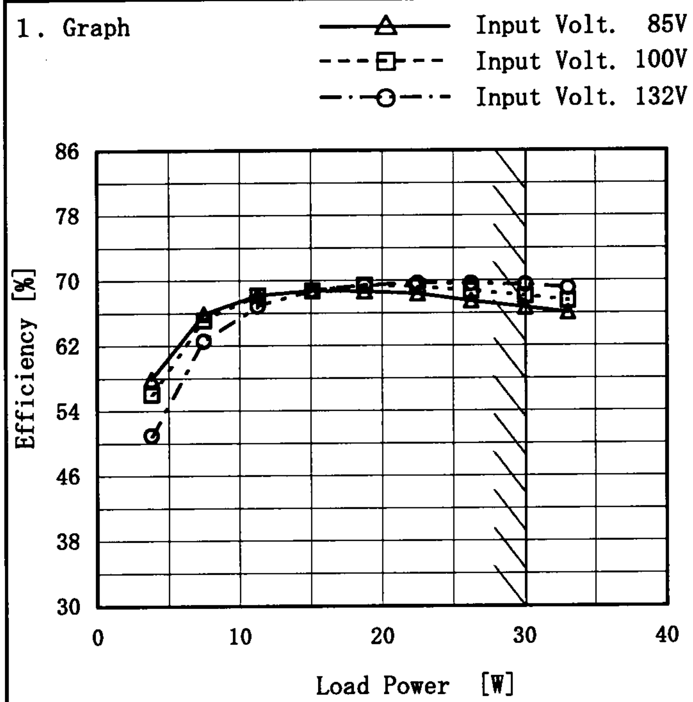
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	68.4	65.3
80	68.8	66.1
85	68.8	66.7
90	69.1	67.3
100	69.1	68.1
110	69.3	69.0
120	69.2	69.3
132	68.9	69.5
140	68.5	69.7

COSEL

Model	LCC30A-4
Item	Efficiency (by Load Power) 効率 (負荷特性)
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	—	—	—
3.8	57.9	56.0	51.0
7.5	65.9	65.1	62.5
11.3	68.2	68.2	66.9
15.1	68.7	68.8	68.8
18.8	68.7	69.4	69.4
22.5	68.4	69.2	69.7
26.3	67.5	68.7	69.6
30.1	66.7	68.1	69.5
33.1	66.0	67.5	69.1
—	—	—	—

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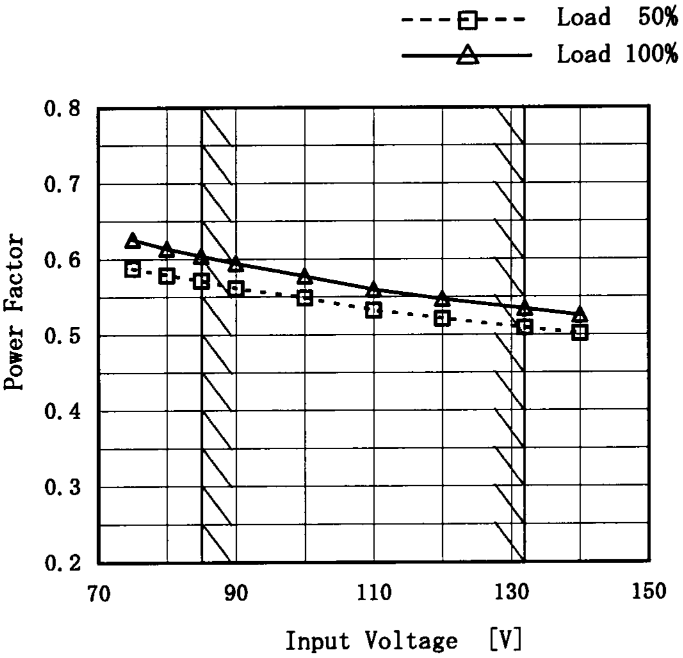
COSEL

Model	LCC30A-4
Item	Power Factor (by Input Voltage) 力率（入力電圧特性）
Object	————

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

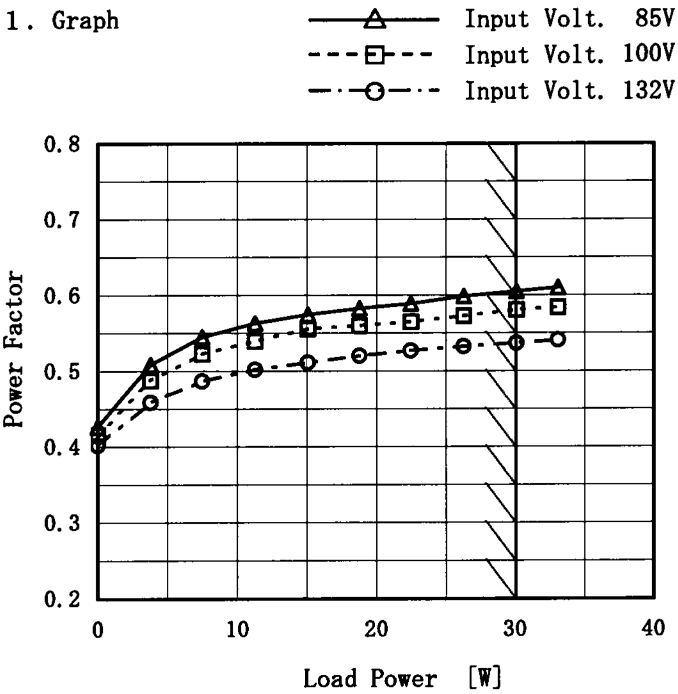
Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.588	0.626
80	0.579	0.614
85	0.571	0.604
90	0.562	0.594
100	0.549	0.578
110	0.532	0.560
120	0.521	0.547
132	0.509	0.534
140	0.502	0.525

COSEL

Model	LCC30A-4
Item	Power Factor (by Load Power) 力率（負荷特性）
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	0.427	0.416	0.402
3.8	0.508	0.487	0.459
7.5	0.545	0.523	0.487
11.3	0.563	0.540	0.502
15.1	0.574	0.556	0.511
18.8	0.583	0.560	0.520
22.5	0.589	0.565	0.527
26.3	0.599	0.572	0.532
30.1	0.605	0.580	0.536
33.1	0.610	0.584	0.541
—	—	—	—

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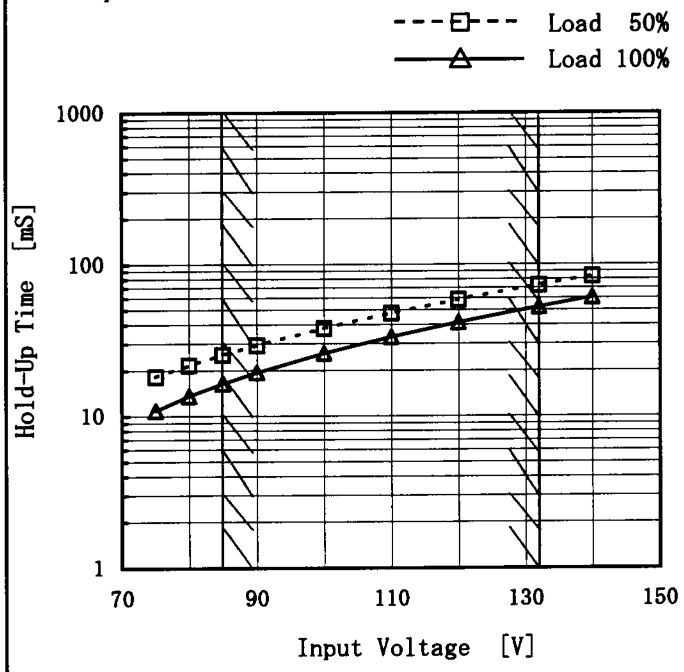
Model	LCC30A-4
Item	Hold-Up Time 出力保持時間
Object	+3.3V4A

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%	Load 100%
75	18	11
80	22	14
85	25	16
90	29	19
100	38	26
110	48	33
120	59	42
132	73	52
140	83	60

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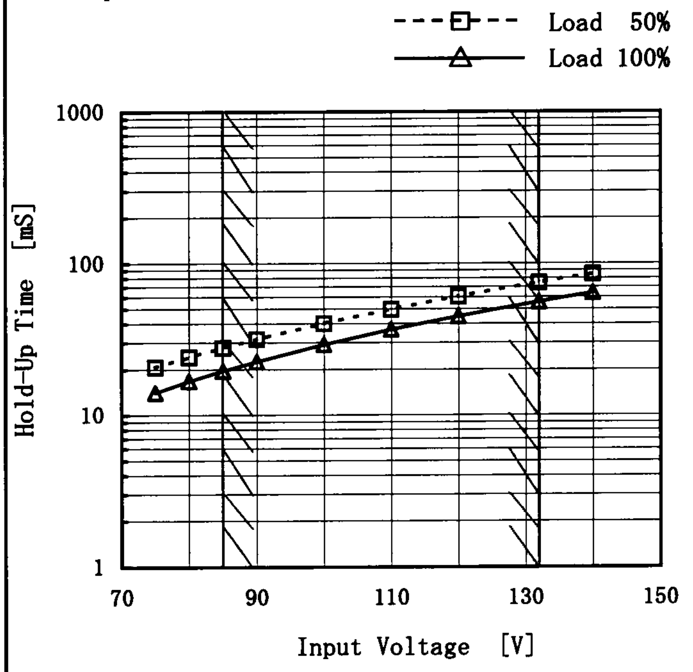
Model	LCC30A-4
Item	Hold-Up Time 出力保持時間
Object	+12V1.2A

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%	Load 100%
75	21	14
80	24	17
85	28	20
90	32	23
100	40	29
110	50	37
120	60	45
132	75	56
140	85	64

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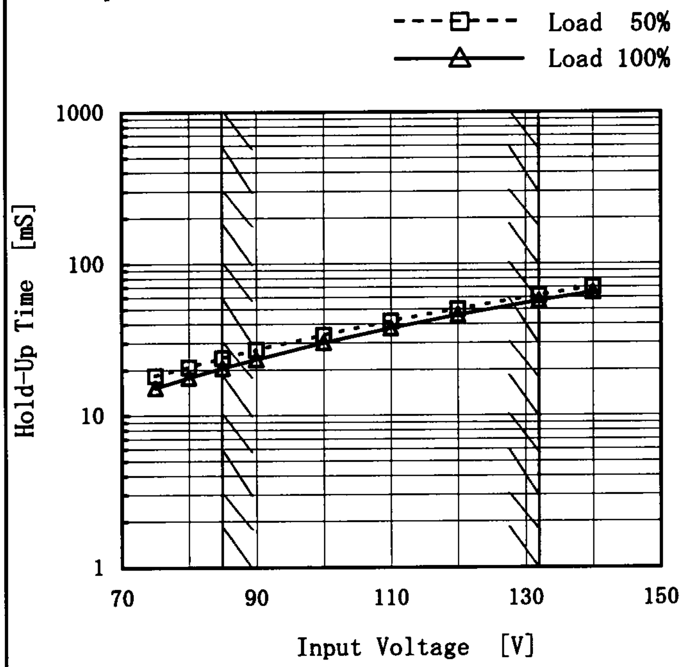
Model	LCC30A-4
Item	Hold-Up Time 出力保持時間
Object	+5V0.5A

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

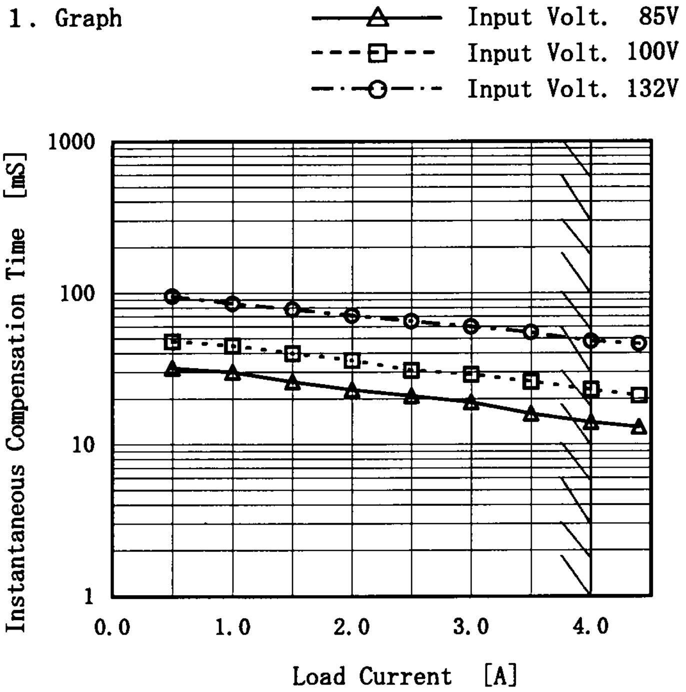
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
75	18	15
80	21	18
85	24	21
90	27	24
100	34	30
110	42	38
120	50	46
132	62	57
140	70	65

COSEL

Model	LCC30A-4
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+3.3V4A

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	—	—	—
0.50	32	48	95
1.00	30	45	85
1.50	26	40	78
2.00	23	36	71
2.50	21	31	65
3.00	19	29	60
3.50	16	26	55
4.00	14	23	48
4.40	13	21	46
—	—	—	—

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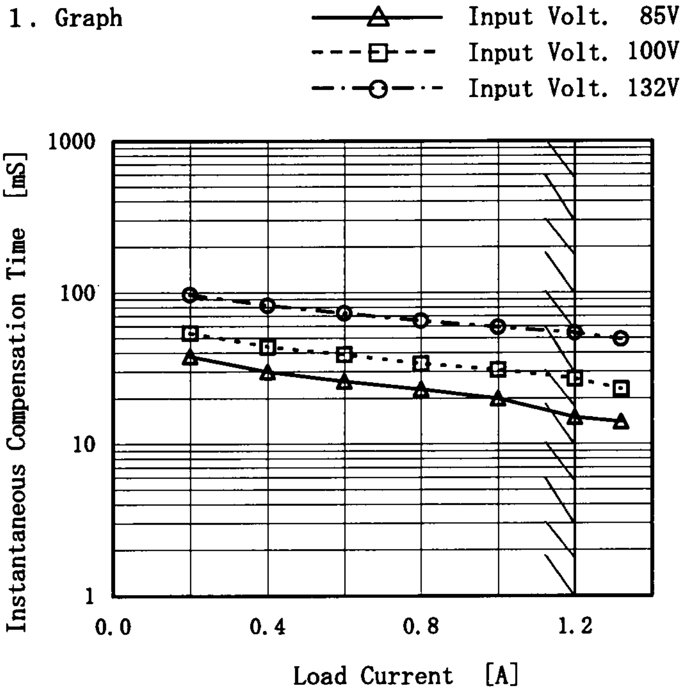
COSEL

Model	LCC30A-4
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+12V1.2A

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

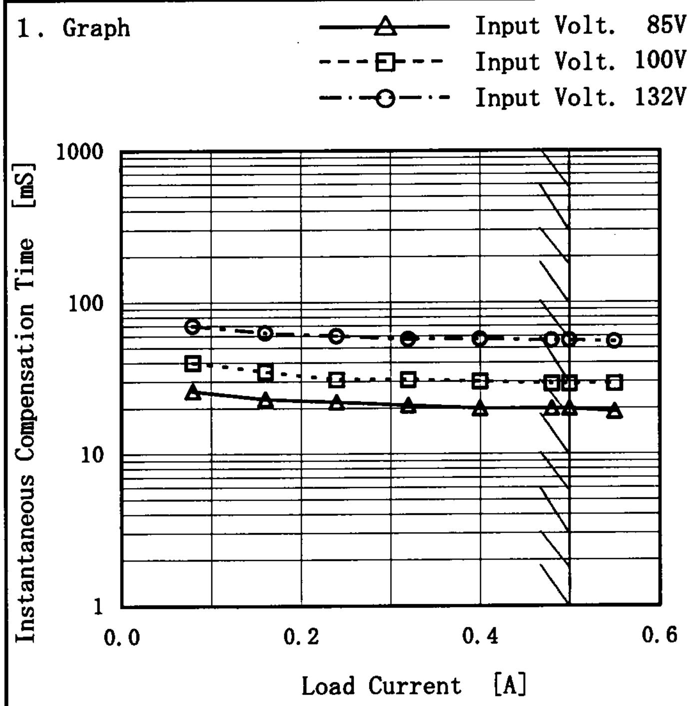
Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
0.20	38	54	97
0.40	30	44	82
0.60	26	39	73
0.80	23	34	65
1.00	20	31	59
1.20	15	27	54
1.32	14	23	49
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	LCC30A-4
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+5V0.5A

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。

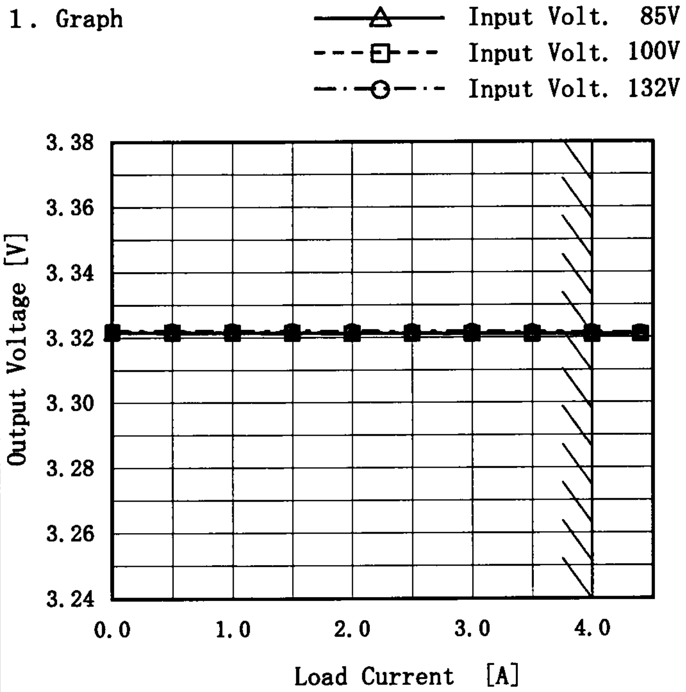
2. Values

Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
0.08	26	40	70
0.16	23	35	63
0.24	22	31	60
0.32	21	31	57
0.40	20	30	57
0.48	20	29	56
0.50	20	29	56
0.55	19	29	55
—	—	—	—
—	—	—	—

COSEL

Model	LCC30A-4		
Item	Load Regulation 静的負荷変動	Temperature	25℃
		Testing Circuitry	Figure A
Object	+3.3V4A		

1. Graph

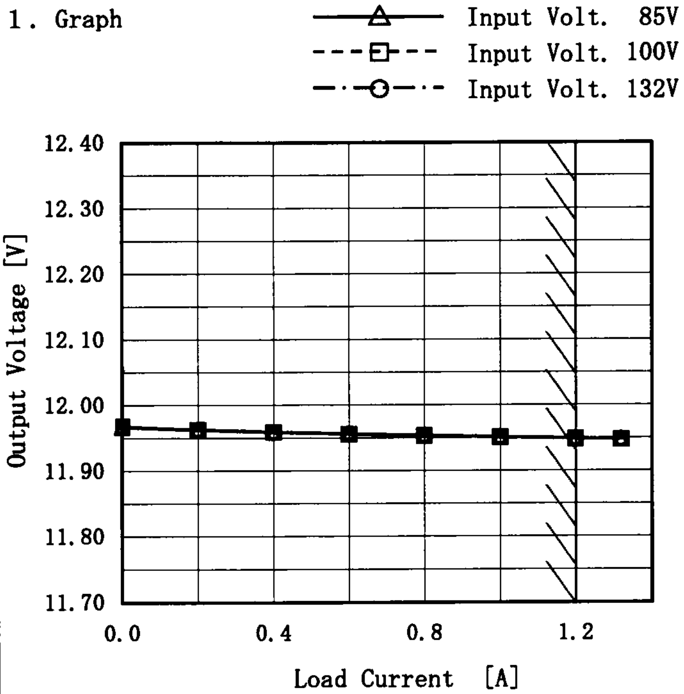


2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	3.322	3.322	3.322
0.50	3.321	3.322	3.322
1.00	3.321	3.322	3.322
1.50	3.321	3.321	3.322
2.00	3.321	3.321	3.322
2.50	3.321	3.321	3.322
3.00	3.321	3.321	3.322
3.50	3.321	3.321	3.322
4.00	3.321	3.321	3.321
4.40	3.321	3.321	3.321
—	—	—	—

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	11.967	11.968	11.968
0.20	11.963	11.963	11.962
0.40	11.959	11.959	11.959
0.60	11.956	11.956	11.956
0.80	11.954	11.953	11.953
1.00	11.951	11.951	11.950
1.20	11.949	11.949	11.948
1.32	11.948	11.948	11.947
—	—	—	—
—	—	—	—
—	—	—	—

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

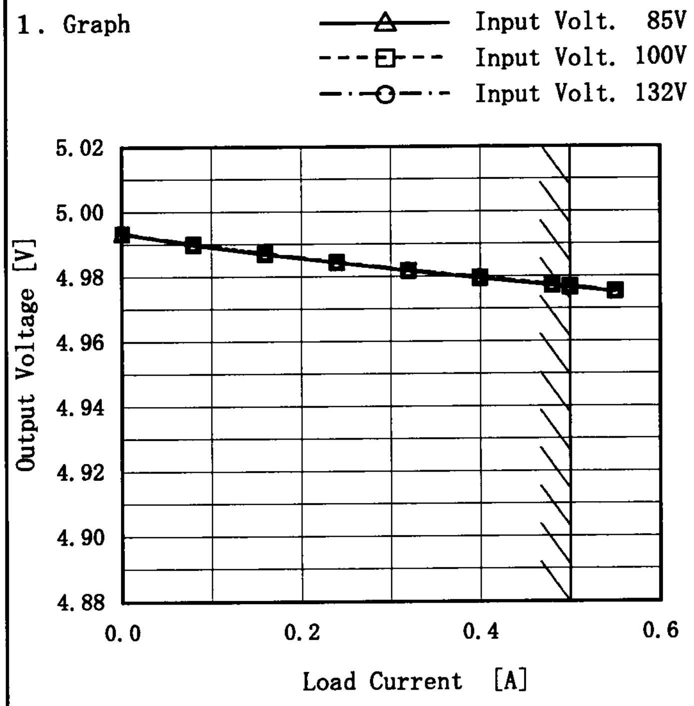
(注) 斜線は定格負荷電流範囲を示す。

COSEL

Model	LCC30A-4
Item	Load Regulation 静的負荷変動
Object	+5V0.5A

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。

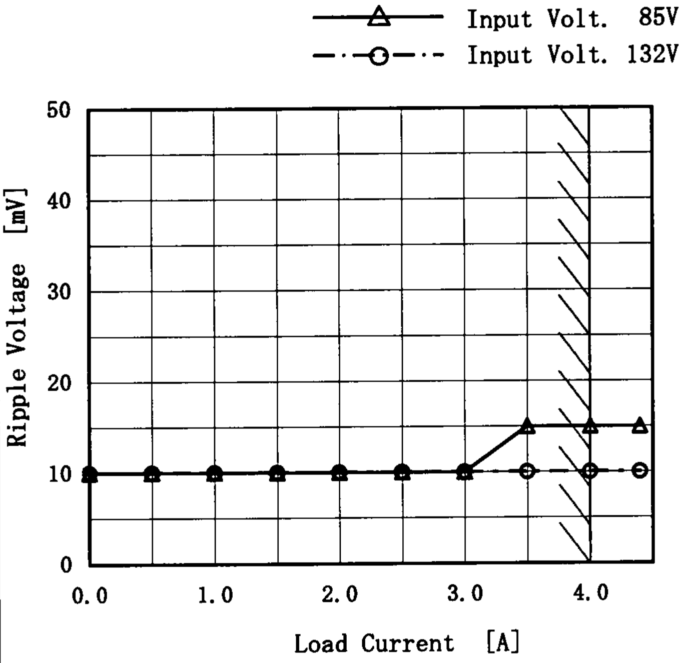
2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	4.993	4.993	4.994
0.08	4.990	4.990	4.990
0.16	4.987	4.987	4.987
0.24	4.984	4.984	4.985
0.32	4.982	4.982	4.982
0.40	4.979	4.980	4.980
0.48	4.977	4.977	4.977
0.50	4.977	4.977	4.977
0.55	4.975	4.976	4.976
—	—	—	—

COSEL

Model	LCC30A-4		
Item	Ripple Voltage (by Load Current) リップル電圧（負荷特性）	Temperature Testing Circuitry	25℃ Figure A
Object	+3.3V4A		

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

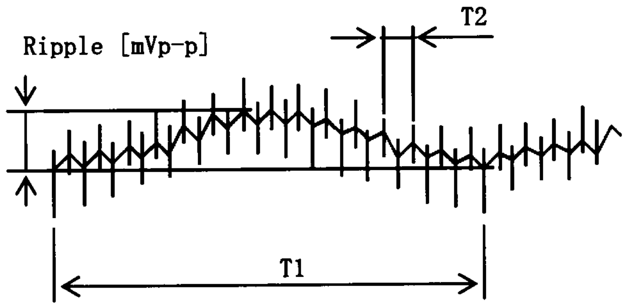


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

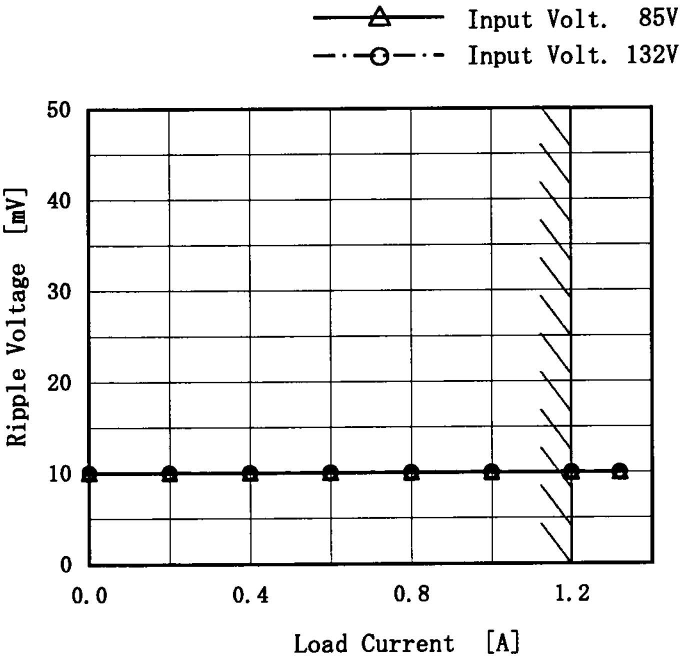
Load Current [A]	Ripple Voltage [mV] Input Volt. 85 [V]	Ripple Voltage [mV] Input Volt. 132 [V]
0.00	10	10
0.50	10	10
1.00	10	10
1.50	10	10
2.00	10	10
2.50	10	10
3.00	10	10
3.50	15	10
4.00	15	10
4.40	15	10
—	—	—

COSEL

Model	LCC30A-4
Item	Ripple Voltage (by Load Current) リップル電圧（負荷特性）
Object	+12V1.2A

Temperature 25℃
Testing Circuitry Figure A

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

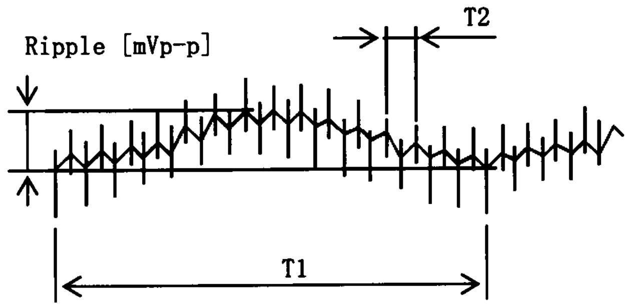


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2．Values

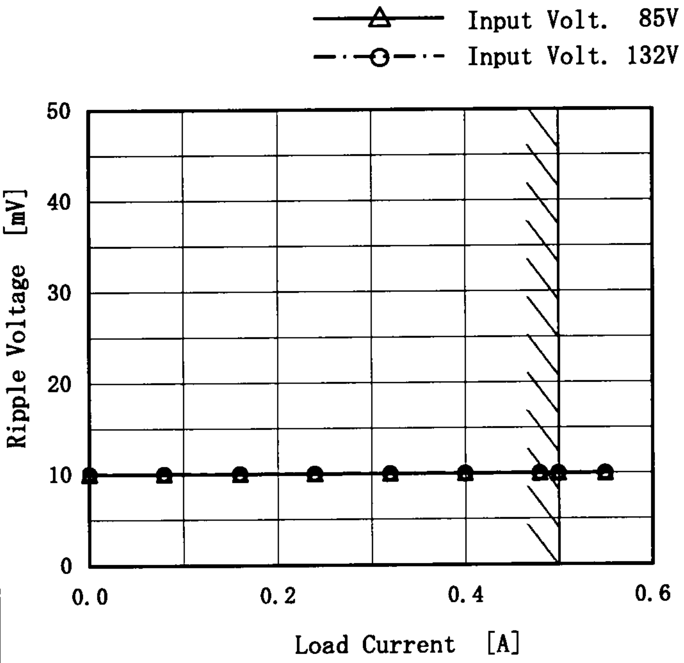
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	10	10
0.20	10	10
0.40	10	10
0.60	10	10
0.80	10	10
1.00	10	10
1.20	10	10
1.32	10	10
—	—	—
—	—	—
—	—	—

COSEL

Model	LCC30A-4
Item	Ripple Voltage (by Load Current) リップル電圧（負荷特性）
Object	+5V0.5A

Temperature 25℃
Testing Circuitry Figure A

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

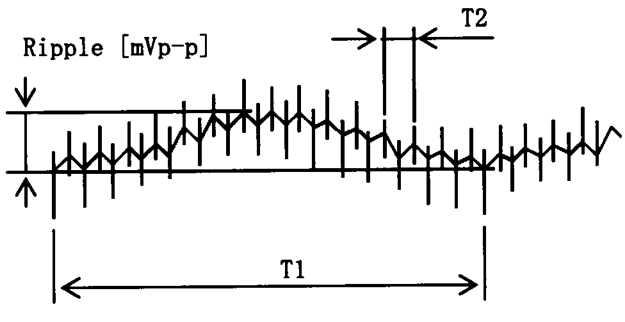


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

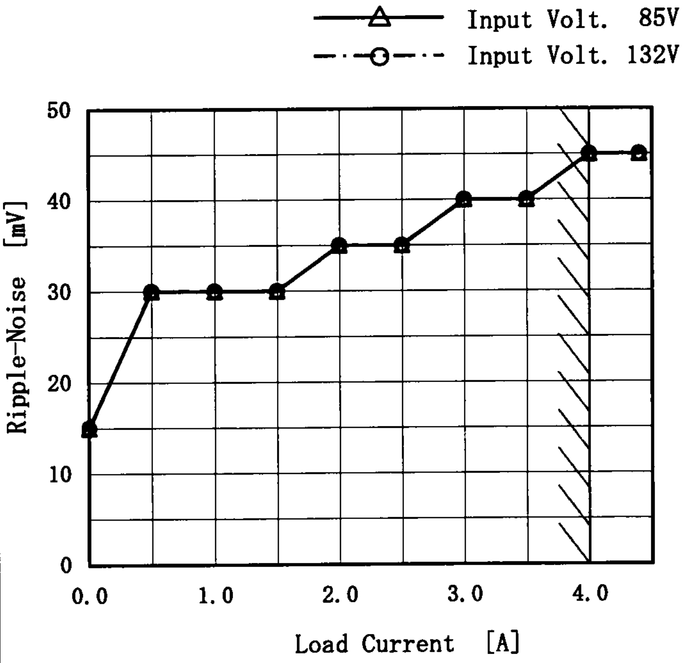
2．Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	10	10
0.08	10	10
0.16	10	10
0.24	10	10
0.32	10	10
0.40	10	10
0.48	10	10
0.50	10	10
0.55	10	10
—	—	—
—	—	—

COSEL

Model	LCC30A-4			
Item	Ripple-Noise リップルノイズ		Temperature Testing Circuitry	25℃ Figure A
Object	+3.3V4A			

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

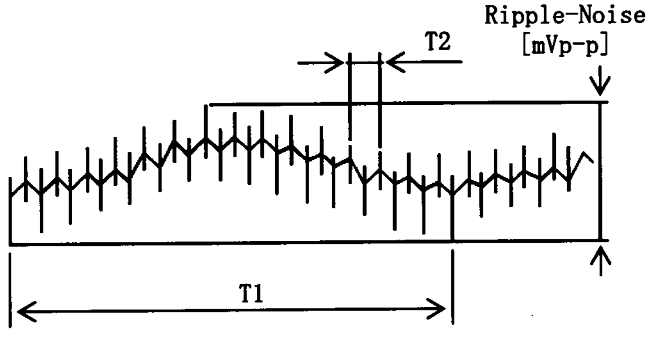


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

2. Values

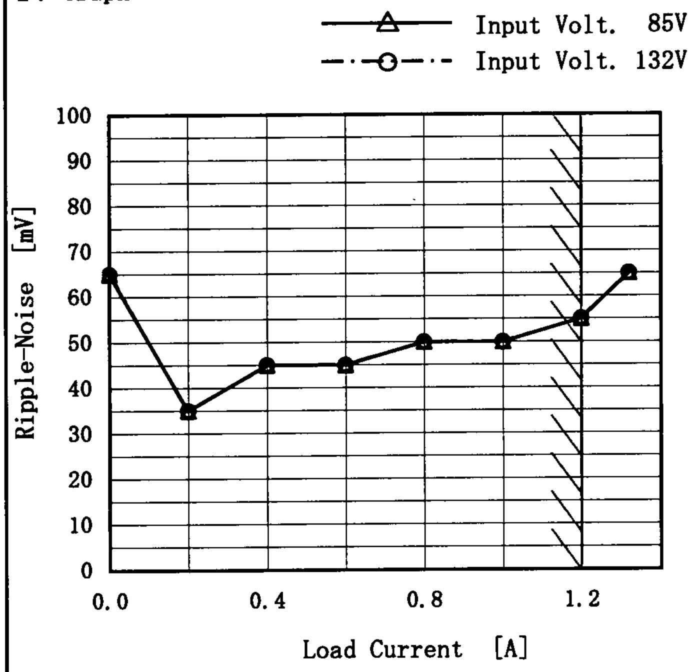
Load Current [A]	Ripple-Noise [mV] Input Volt. 85 [V]	Ripple-Noise [mV] Input Volt. 132 [V]
0.00	15	15
0.50	30	30
1.00	30	30
1.50	30	30
2.00	35	35
2.50	35	35
3.00	40	40
3.50	40	40
4.00	45	45
4.40	45	45
—	—	—

COSEL

Model	LCC30A-4
Item	Ripple-Noise リップルノイズ
Object	+12V1.2A

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

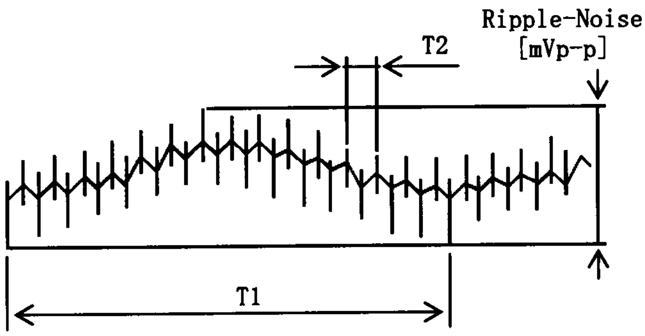


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

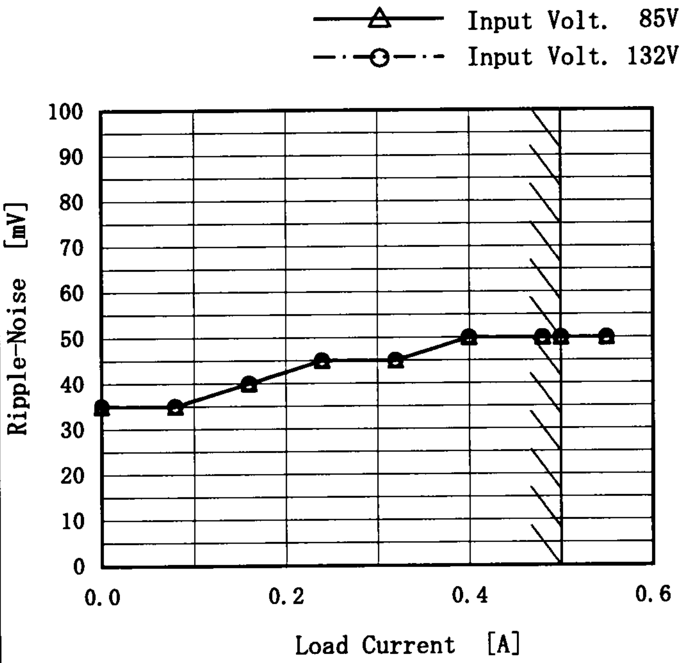
2. Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 85 [V]	Ripple-Noise [mV] Input Volt. 132 [V]
0.00	65	65
0.20	35	35
0.40	45	45
0.60	45	45
0.80	50	50
1.00	50	50
1.20	55	55
1.32	65	65
—	—	—
—	—	—
—	—	—

COSEL

Model	LCC30A-4	
Item	Ripple-Noise リップルノイズ	Temperature 25℃ Testing Circuitry Figure A
Object	+5V0.5A	

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

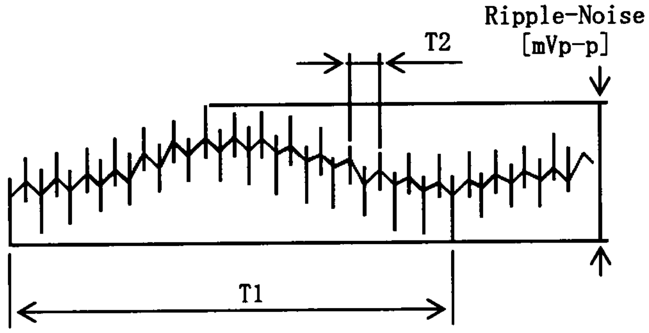


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

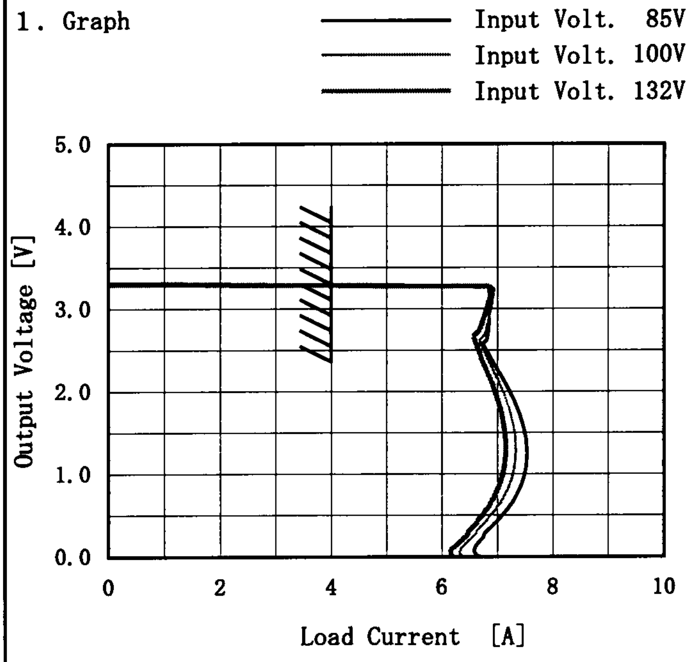
2. Values

Load Current [A]	Ripple-Noise [mV] Input Volt. 85 [V]	Ripple-Noise [mV] Input Volt. 132 [V]
0.00	35	35
0.08	35	35
0.16	40	40
0.24	45	45
0.32	45	45
0.40	50	50
0.48	50	50
0.50	50	50
0.55	50	50
—	—	—
—	—	—

COSEL

Model	LCC30A-4		
Item	Overcurrent Protection 過電流保護	Temperature	25℃
		Testing Circuitry	Figure A
Object	+3.3V4A		

1. Graph

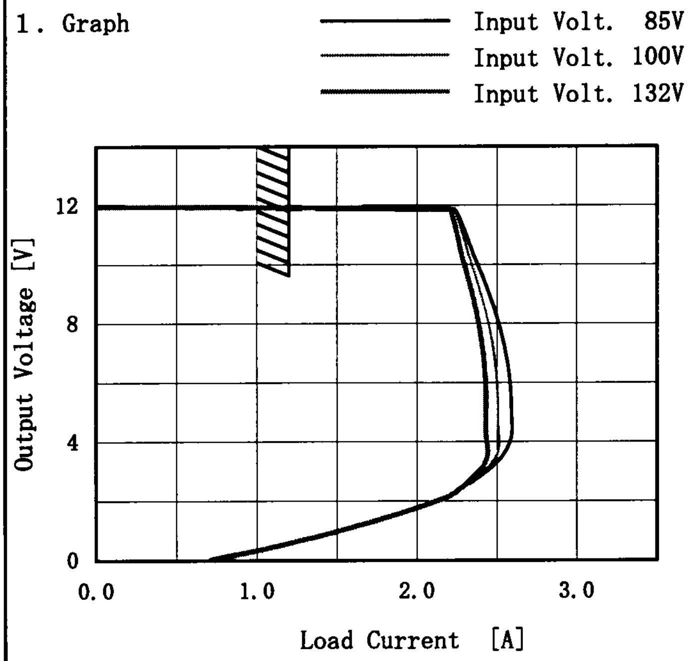


2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
3.30	4.44	4.43	4.44
3.14	6.86	6.92	6.87
2.97	6.86	6.88	6.80
2.64	6.81	6.68	6.57
2.31	6.97	6.90	6.76
1.98	7.24	7.12	6.96
1.65	7.44	7.26	7.10
1.32	7.53	7.33	7.15
0.99	7.49	7.27	7.10
0.66	7.28	7.06	6.87
0.33	6.86	6.63	6.48
0.00	6.76	6.54	6.21

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

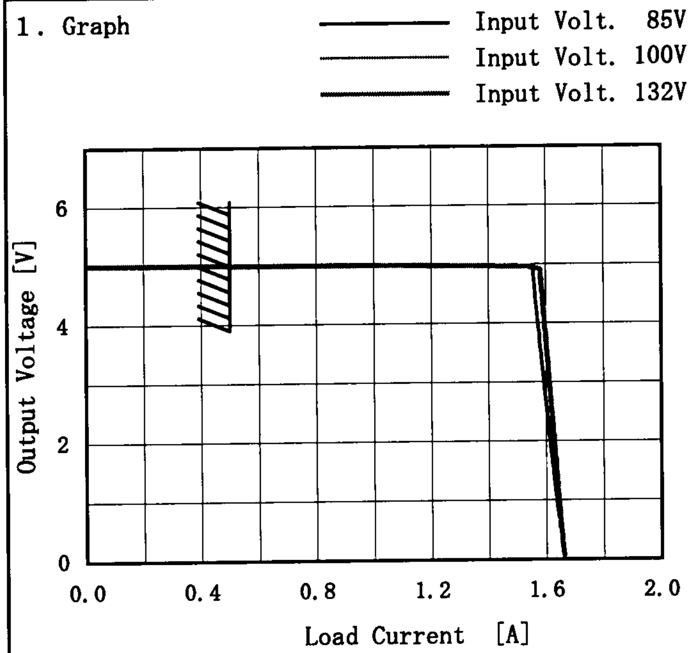
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.00	2.24	2.24	2.21
11.40	2.28	2.27	2.24
10.80	2.32	2.30	2.26
9.60	2.41	2.37	2.32
8.40	2.49	2.43	2.37
7.20	2.55	2.48	2.41
6.00	2.58	2.50	2.43
4.80	2.59	2.51	2.43
3.60	2.54	2.50	2.44
2.40	2.28	2.29	2.27
1.20	1.62	1.63	1.63
0.00	0.71	0.75	0.76

COSEL

Model	LCC30A-4
Item	Overcurrent Protection 過電流保護
Object	+5V0.5A

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

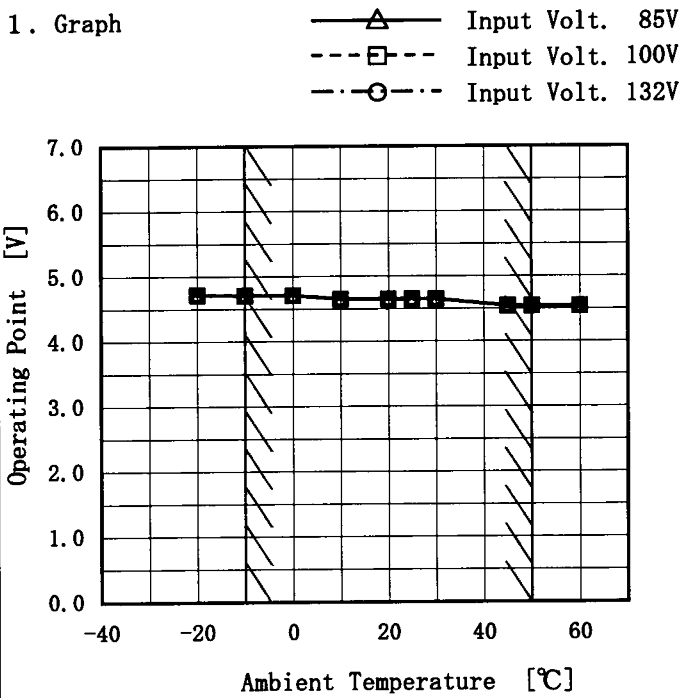
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
5.00	0.98	0.98	0.98
4.75	1.56	1.58	1.58
4.50	1.56	1.59	1.59
4.00	1.57	1.59	1.60
3.50	1.58	1.60	1.60
3.00	1.59	1.61	1.61
2.50	1.60	1.62	1.62
2.00	1.61	1.63	1.63
1.50	1.63	1.63	1.64
1.00	1.64	1.64	1.64
0.50	1.65	1.65	1.65
0.00	1.66	1.66	1.66

COSEL

Model	LCC30A-4
Item	Overvoltage Protection 過電圧保護
Object	+3.3V4A

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	4.72	4.72	4.72
-10	4.71	4.71	4.71
0	4.71	4.71	4.71
10	4.65	4.65	4.65
20	4.65	4.65	4.65
25	4.65	4.65	4.65
30	4.65	4.65	4.65
45	4.54	4.54	4.54
50	4.54	4.54	4.54
60	4.54	4.54	4.54
—	—	—	—

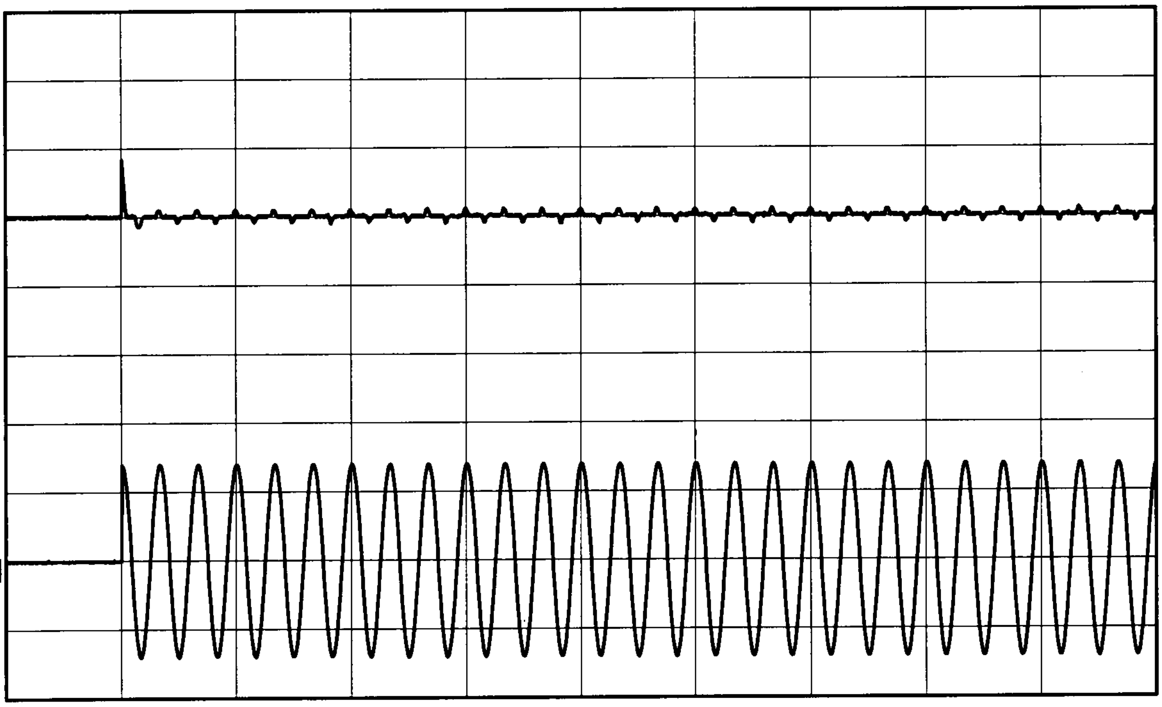
COSEL

Model	LCC30A-4
Item	Inrush Current 突入電流
Object	――――

Temperature	25℃
Testing Circuitry	Figure A

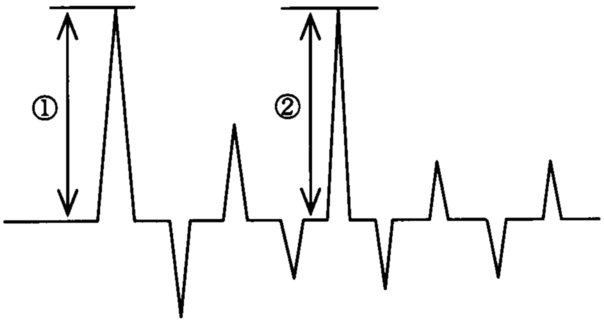
Input Current [20A/div]

Input Voltage [100V/div]



Time [50mS/div]

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



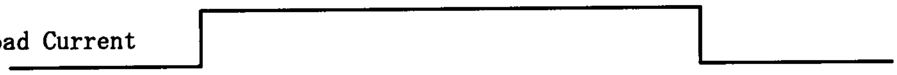
COSEL

Model	LCC30A-4
Item	Dynamic Load Response 動的負荷変動
Object	+3.3V4A

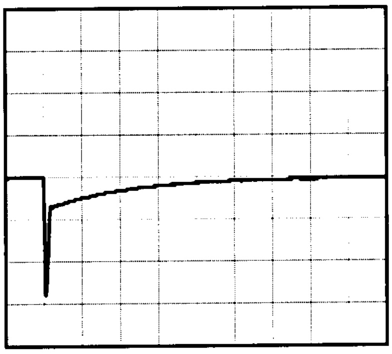
Temperature 25℃
Testing Circuitry Figure A

Input Volt. AC100 V
Cycle 200 ms

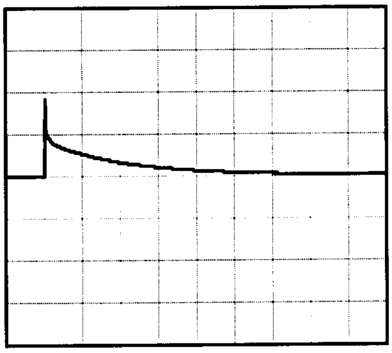
Load Current



Min. Load (0A) ←→
Load 100% (4A)

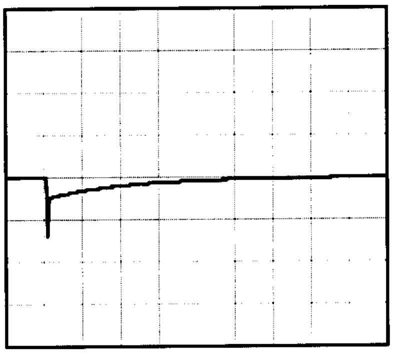


100 mV/div
10 ms/div

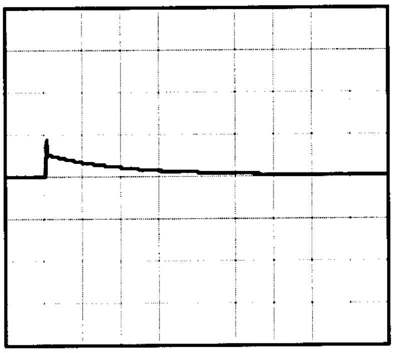


10 ms/div

Min. Load (0A) ←→
Load 50% (2A)



100 mV/div
10 ms/div



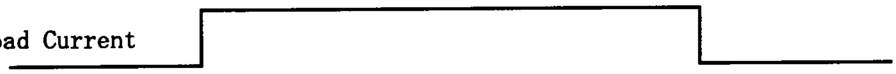
10 ms/div

Model	LCC30A-4	Temperature	25℃
Item	Dynamic Load Response 動的負荷変動	Testing Circuitry	Figure A
Object	+12V1.2A		

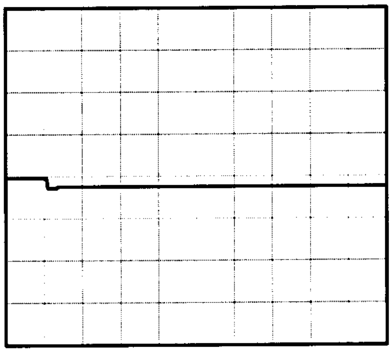
Input Volt. AC100 V

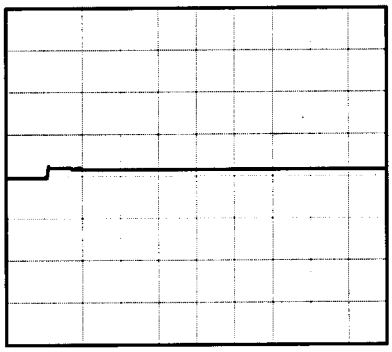
Cycle 200 ms

Load Current



Min. Load (0A) ←→ Load 100% (1.2A)



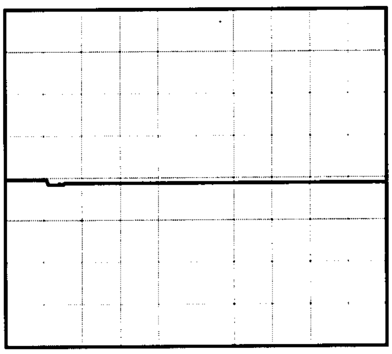


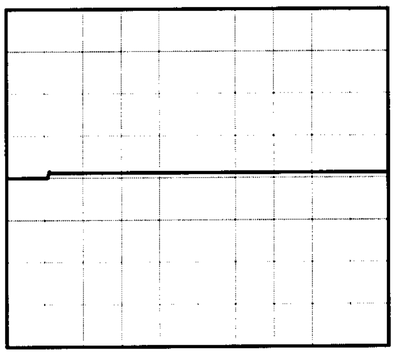
100 mV/div

10 ms/div

10 ms/div

Min. Load (0A) ←→ Load 50% (0.6A)





100 mV/div

10 ms/div

10 ms/div

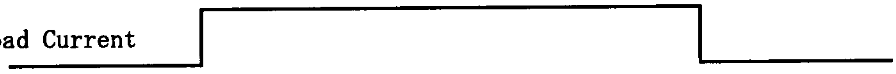
COSEL

Model	LCC30A-4	Temperature	25℃
Item	Dynamic Load Response 動的負荷変動	Testing Circuitry	Figure A
Object	+5V0.5A		

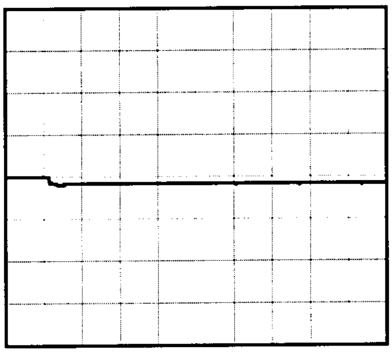
Input Volt. AC100 V

Cycle 200 ms

Load Current

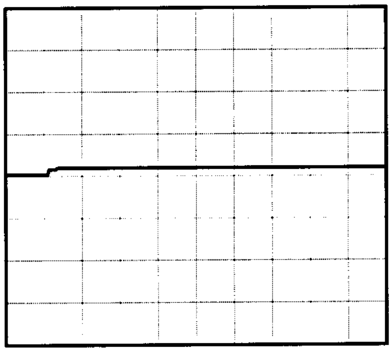


Min. Load (0A) ←→ Load 100% (0.5A)



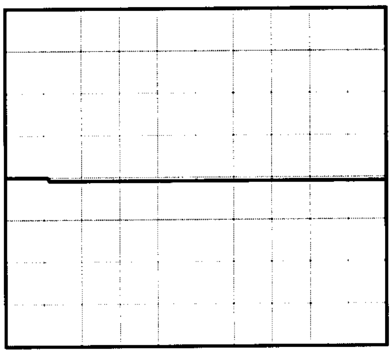
100 mV/div

10 ms/div



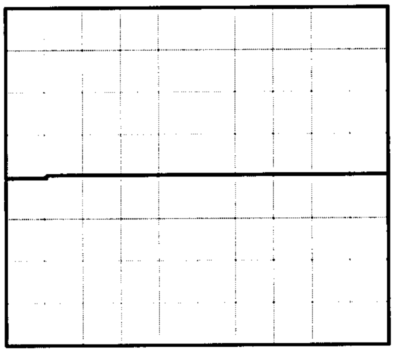
10 ms/div

Min. Load (0A) ←→ Load 50% (0.25A)



100 mV/div

10 ms/div



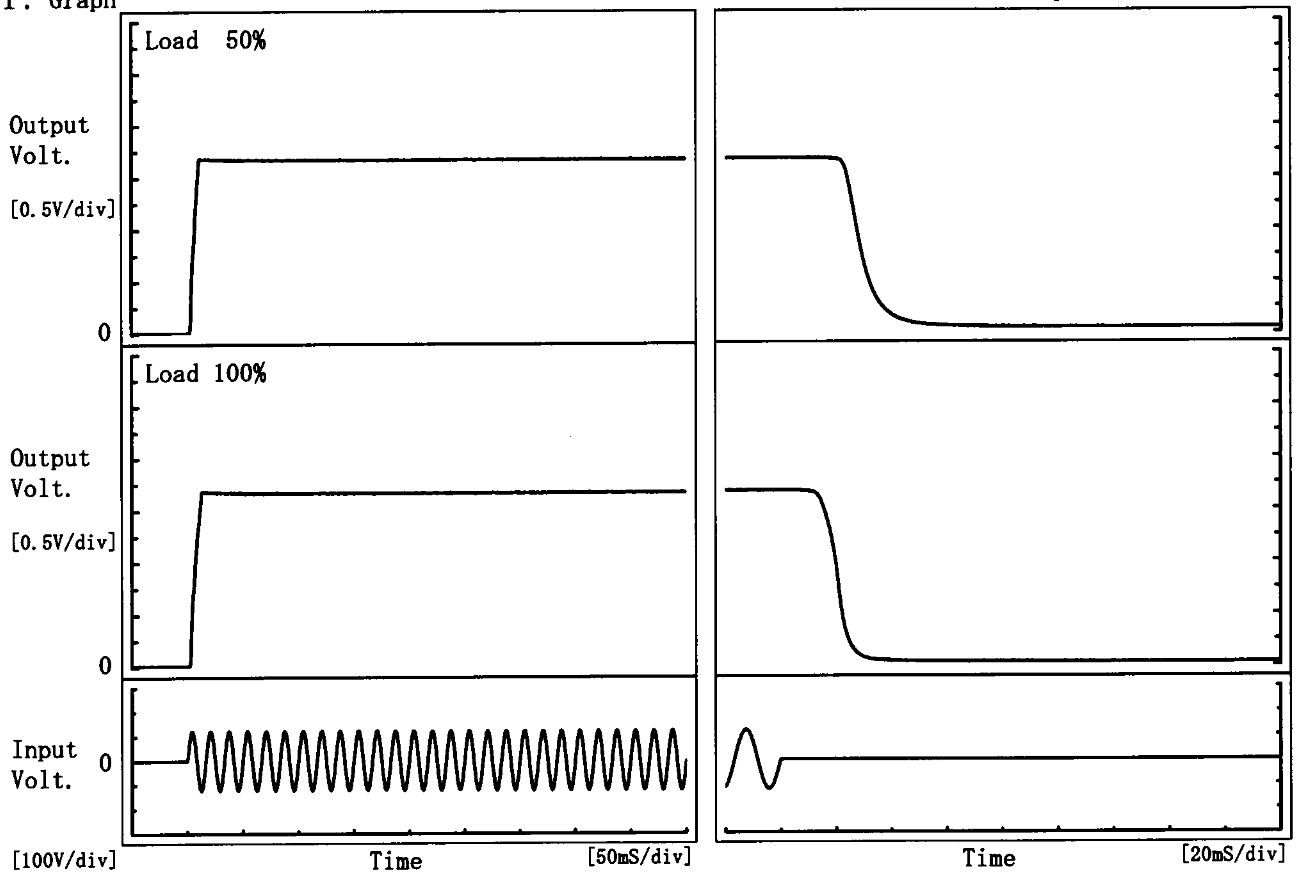
10 ms/div

COSEL

Model	LCC30A-4		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+3.3V4A		

1．Graph

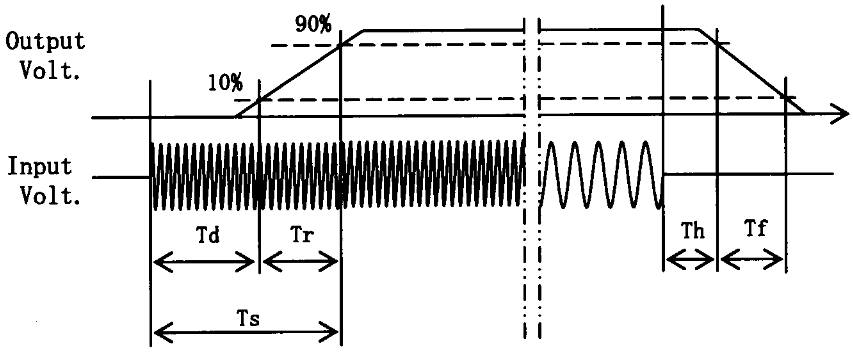
Input Volt. 85 V



2．Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	3.3	6.5	9.8	23.7	16.0
100 %	3.3	8.5	11.8	15.6	10.2



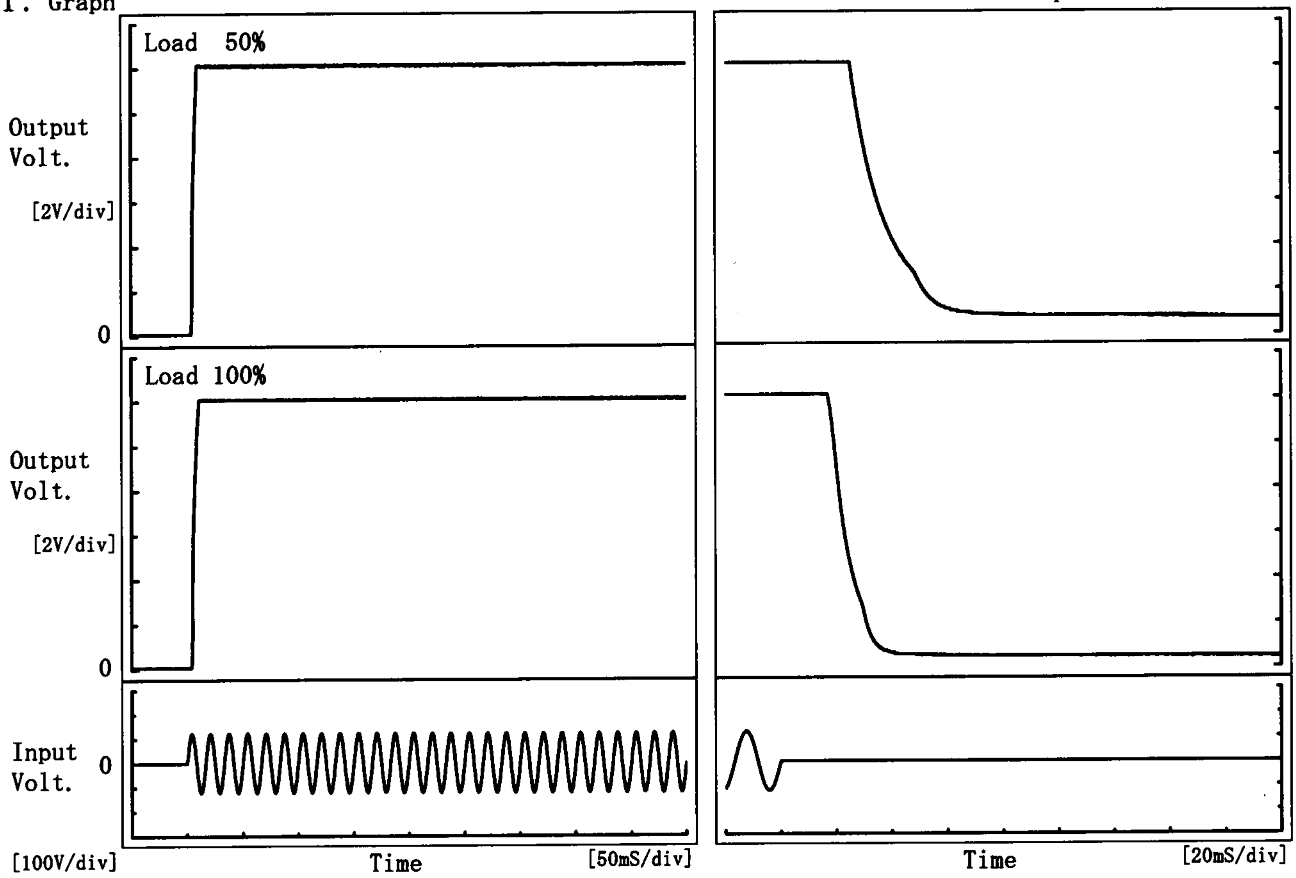
COSEL

Model	LCC30A-4
Item	Rise and Fall Time 立上り、立下り時間
Object	+12V1.2A

Temperature 25℃
Testing Circuitry Figure A

1. Graph

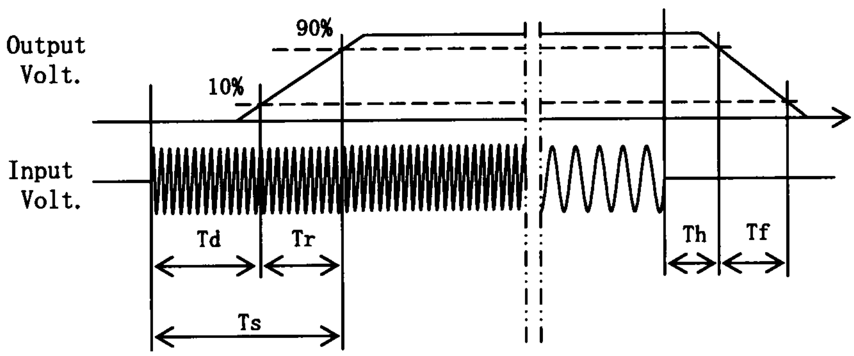
Input Volt. 85 V



2. Values

[mS]

Time / Load	T d	T r	T s	T h	T f
50 %	4.8	4.0	8.8	26.2	31.0
100 %	4.8	5.0	9.8	18.3	14.8

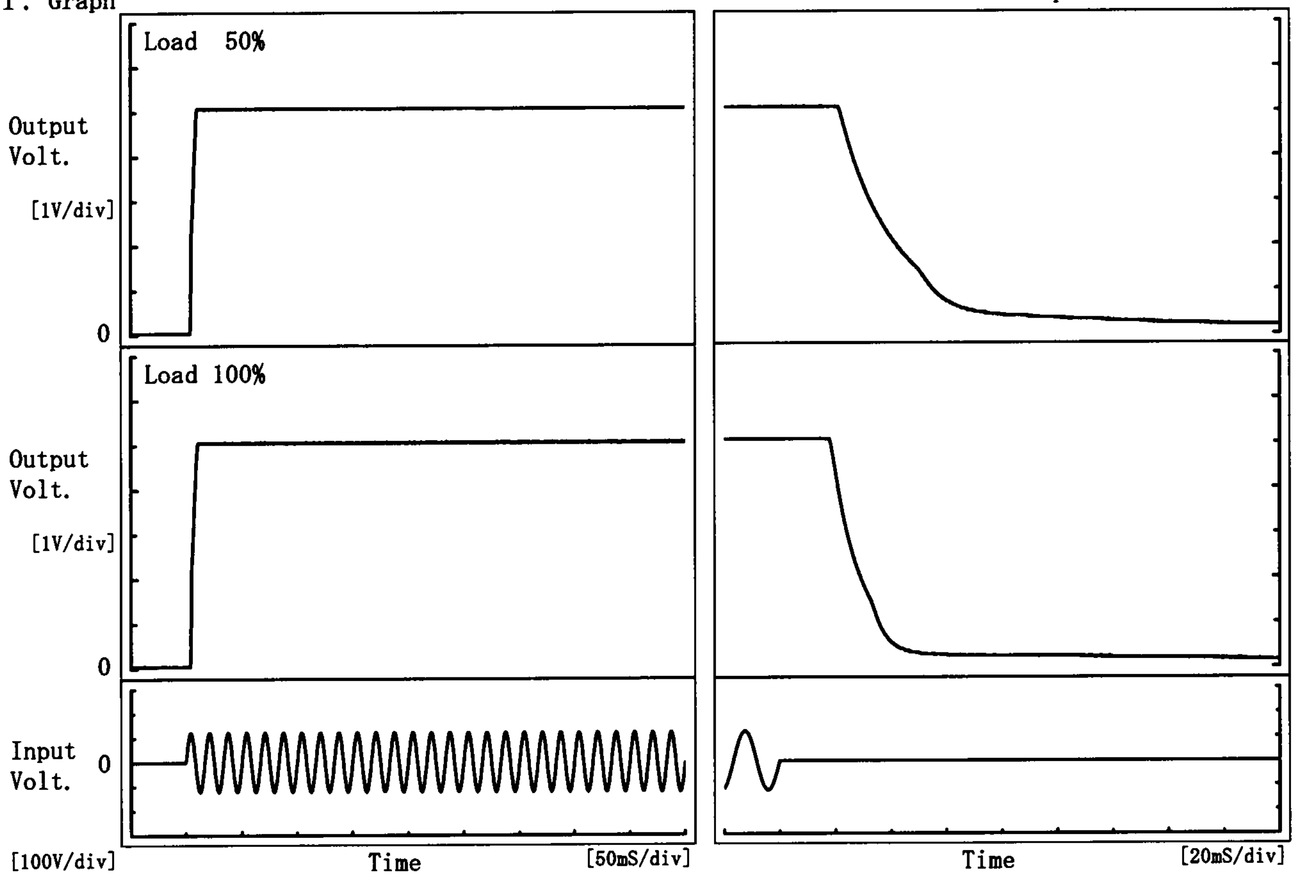


COSEL

Model	LCC30A-4		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+5V0.5A		

1. Graph

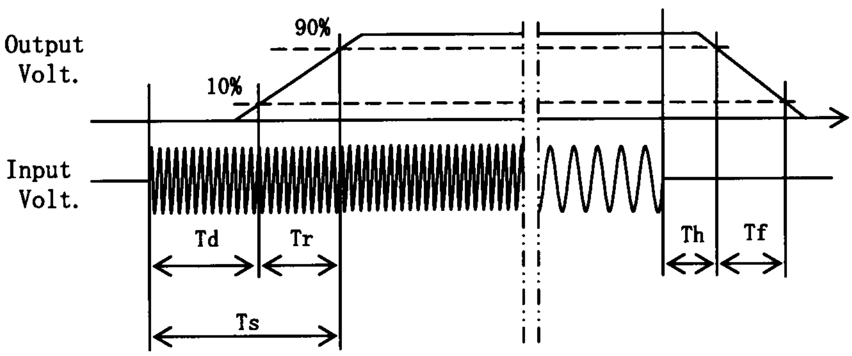
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	4.3	4.8	9.0	23.3	44.0
100 %	4.3	5.0	9.3	19.4	20.8



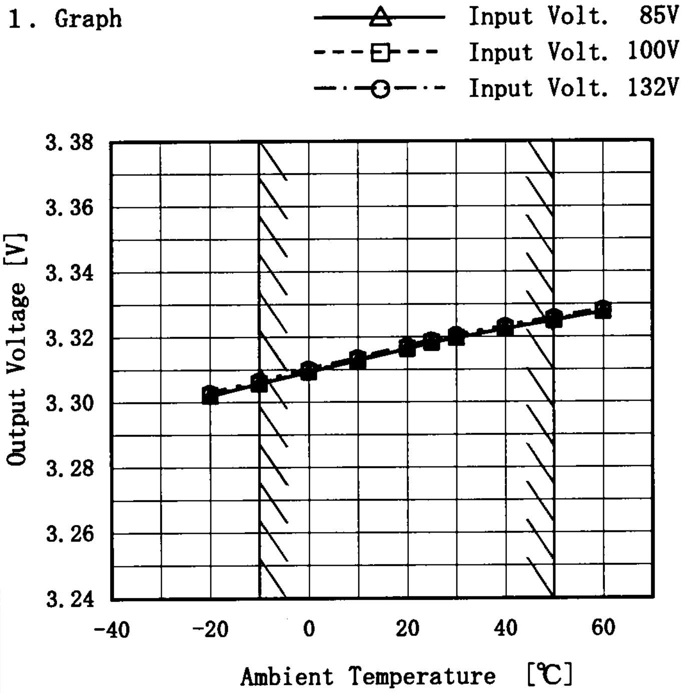
COSEL

Model	LCC30A-4
Item	Ambient Temperature Drift 周囲温度変動

Testing Circuitry Figure A

Object	+3.3V4A

1. Graph



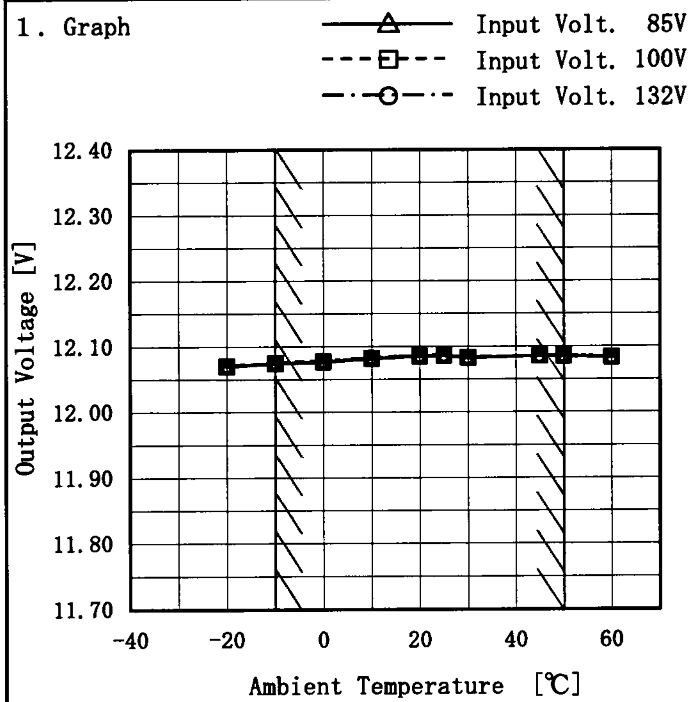
Load 100%

2. Values

Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	3.302	3.302	3.303
-10	3.306	3.306	3.307
0	3.309	3.310	3.310
10	3.313	3.313	3.314
20	3.316	3.317	3.317
25	3.318	3.318	3.319
30	3.320	3.320	3.321
40	3.322	3.323	3.323
50	3.325	3.325	3.326
60	3.328	3.328	3.328
—	—	—	—

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	12.070	12.071	12.071
-10	12.074	12.075	12.075
0	12.076	12.078	12.078
10	12.082	12.082	12.083
20	12.085	12.085	12.086
25	12.086	12.086	12.087
30	12.083	12.083	12.083
45	12.086	12.086	12.086
50	12.085	12.086	12.086
60	12.084	12.084	12.083
—	—	—	—

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

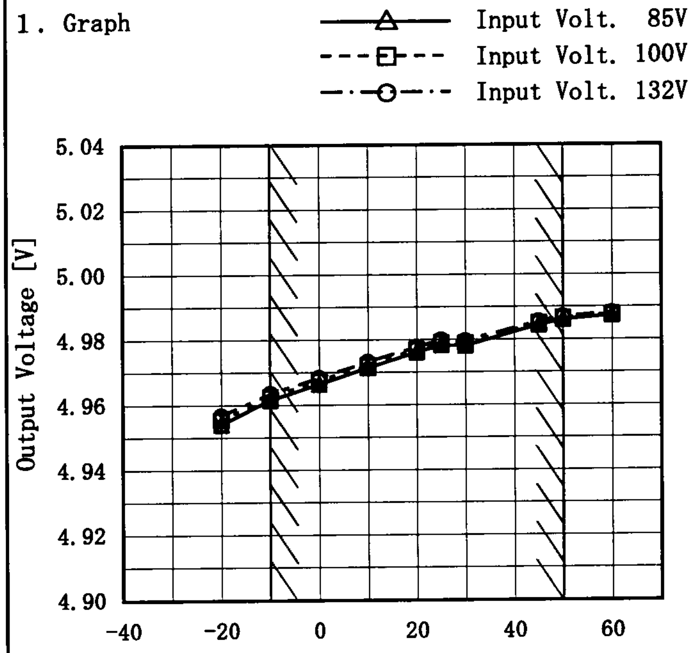
(注) 斜線は定格周囲温度範囲を示す。

COSEL

Model	LCC30A-4
Item	Ambient Temperature Drift 周囲温度変動
Object	+5V0.5A

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

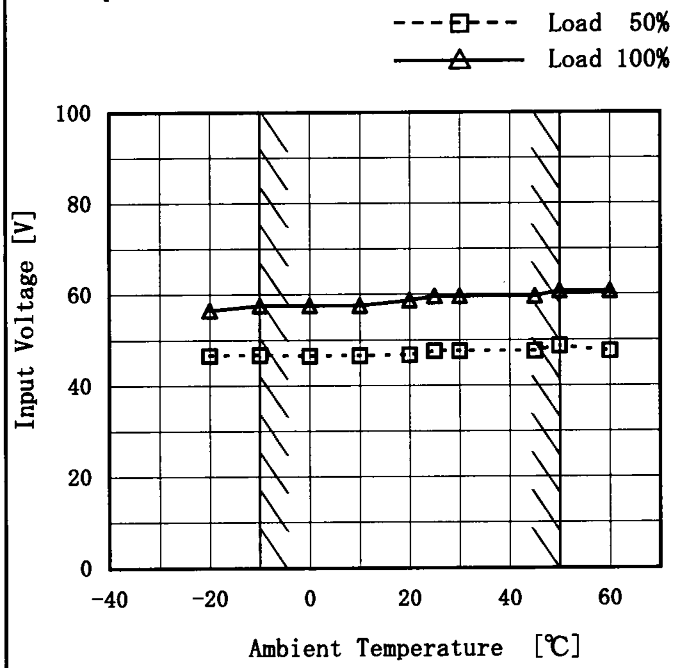
Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	4.954	4.956	4.957
-10	4.962	4.963	4.964
0	4.966	4.968	4.968
10	4.971	4.972	4.973
20	4.976	4.977	4.978
25	4.978	4.979	4.980
30	4.978	4.979	4.980
45	4.984	4.985	4.986
50	4.986	4.987	4.987
60	4.987	4.988	4.988
--	—	—	—

COSEL

Model	LCC30A-4
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+3.3V4A

Testing Circuitry　Figure A

1. Graph

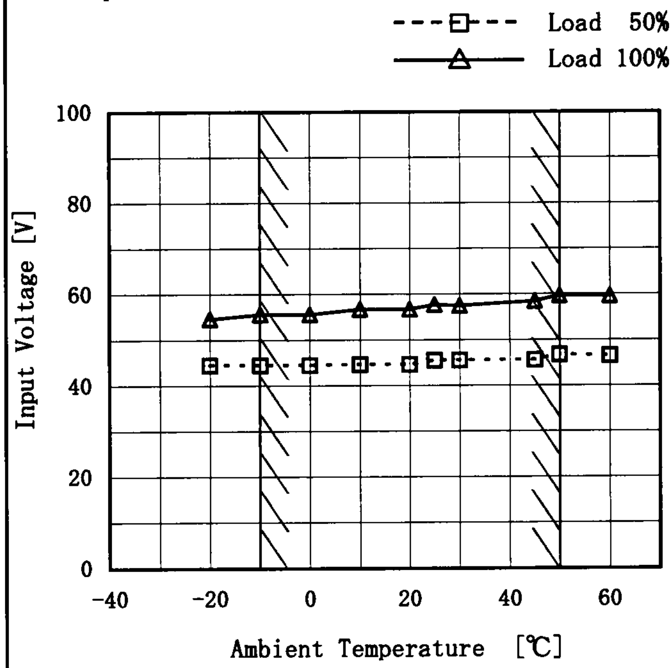


2. Values

Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	47	57
-10	47	58
0	47	58
10	47	58
20	47	59
25	48	60
30	48	60
45	48	60
50	49	61
60	48	61
—	—	—

Object	+12V1.2A

1. Graph



2. Values

Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	45	55
-10	45	56
0	45	56
10	45	57
20	45	57
25	46	58
30	46	58
45	46	59
50	47	60
60	47	60
—	—	—

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

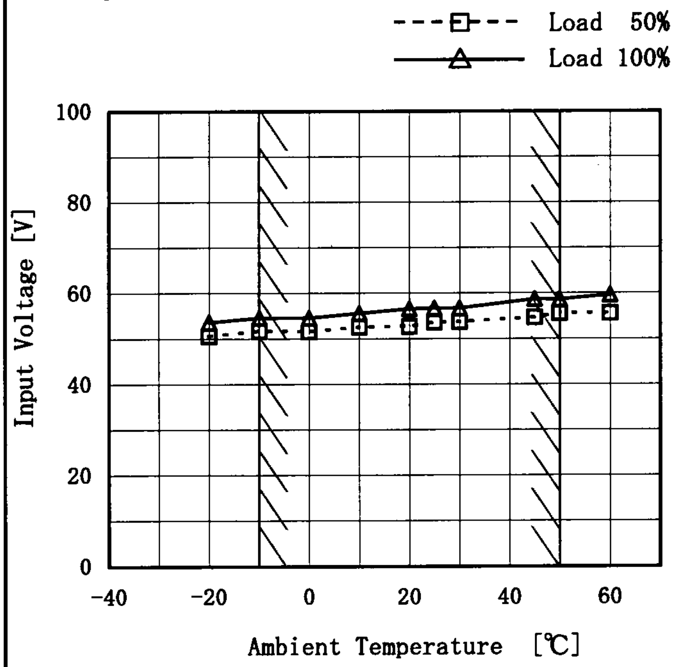
(注) 斜線は定格周囲温度範囲を示す。

COSEL

Model	LCC30A-4
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+5V0.5A

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

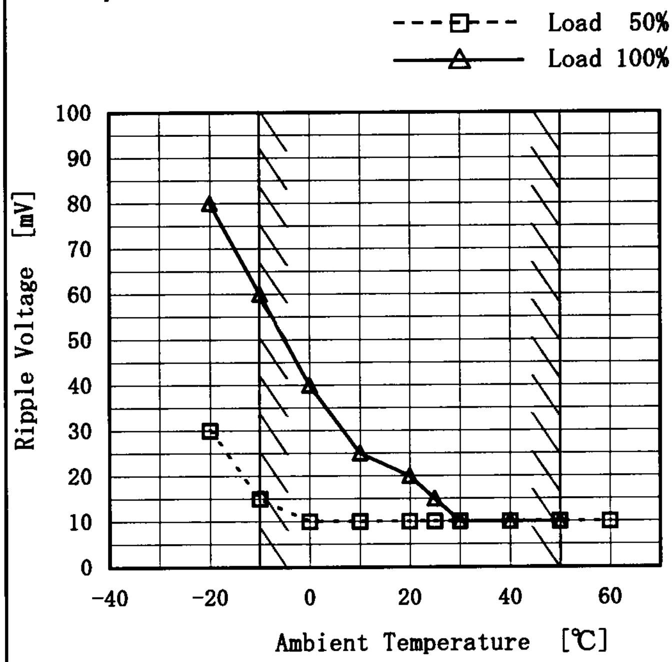
Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	51	54
-10	52	55
0	52	55
10	53	56
20	53	57
25	54	57
30	54	57
45	55	59
50	56	59
60	56	60
—	—	—

COSEL

Model	LCC30A-4
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	+3.3V4A

Testing Circuitry Figure A

1. Graph



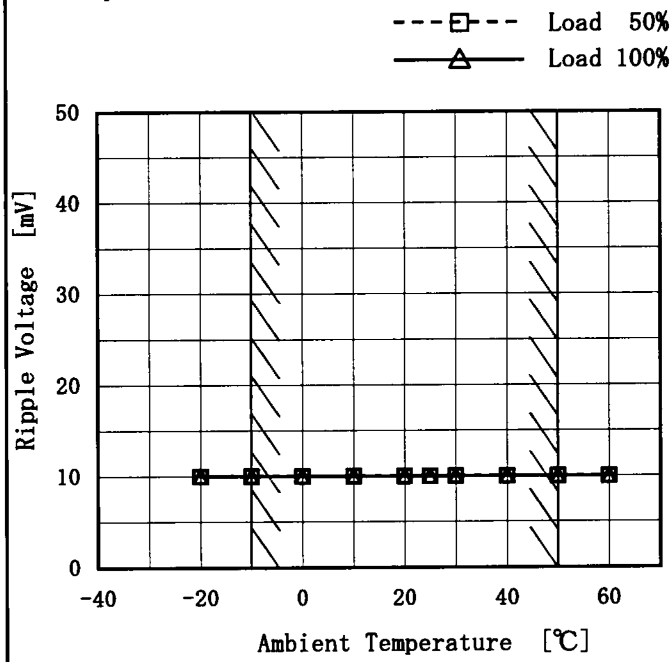
Input Volt. 100V

2. Values

Ambient Temperature [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	30	80
-10	15	60
0	10	40
10	10	25
20	10	20
25	10	15
30	10	10
40	10	10
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

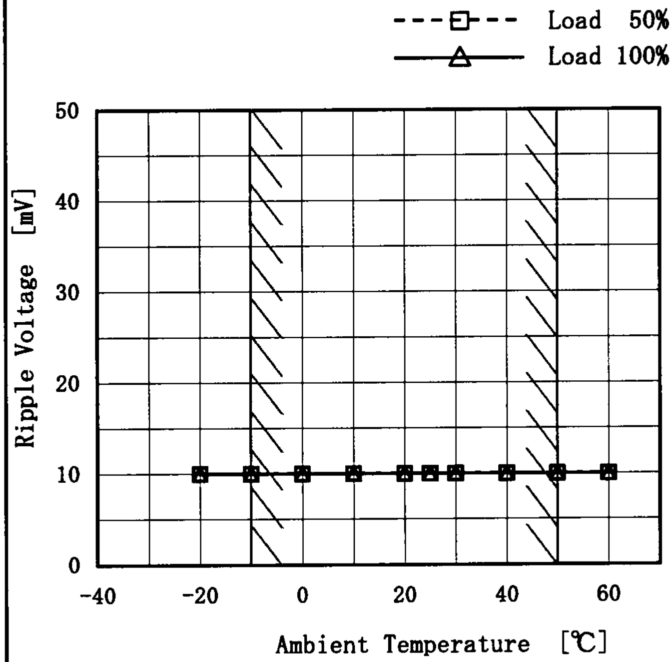
Ambient Temperature [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	10	10
-10	10	10
0	10	10
10	10	10
20	10	10
25	10	10
30	10	10
40	10	10
50	10	10
60	10	10
—	—	—

COSEL

Model	LCC30A-4
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	+5V0.5A

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

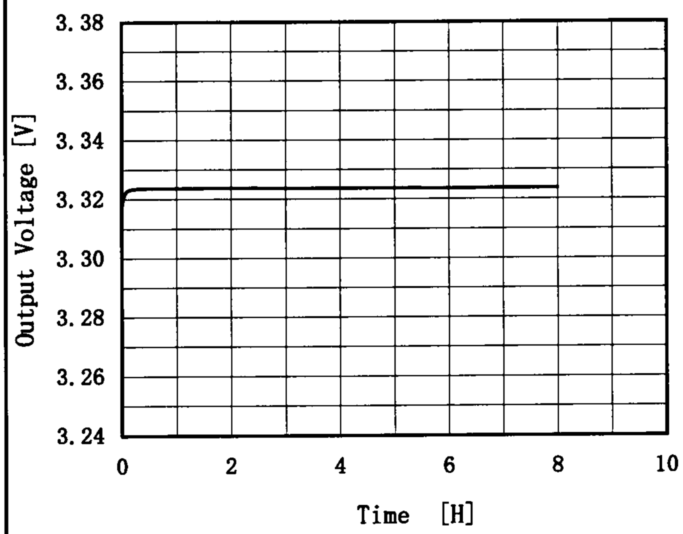
Ambient Temperature [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	10	10
-10	10	10
0	10	10
10	10	10
20	10	10
25	10	10
30	10	10
40	10	10
50	10	10
60	10	10
—	—	—

COSEL

Model	LCC30A-4
Item	Time Lapse Drift 経時ドリフト
Object	+3.3V4A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



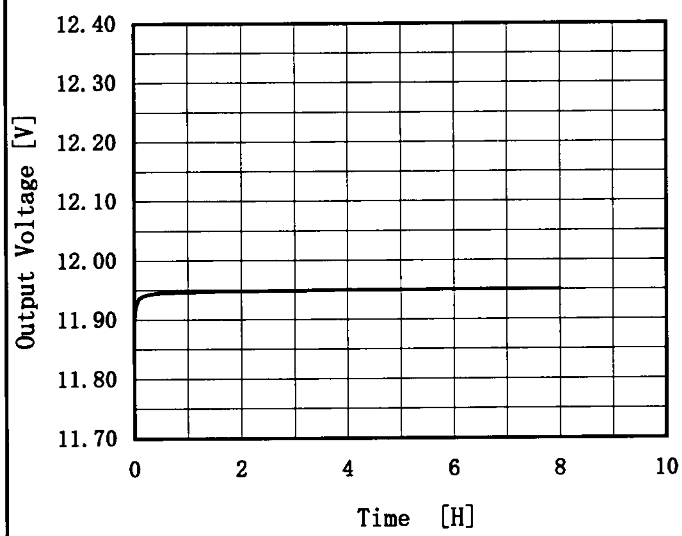
Input Volt. 100V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	3.317
0.5	3.324
1.0	3.324
2.0	3.324
3.0	3.324
4.0	3.324
5.0	3.324
6.0	3.324
7.0	3.324
8.0	3.324

Object	+12V1.2A

1. Graph



Input Volt. 100V
Load 100%

2. Values

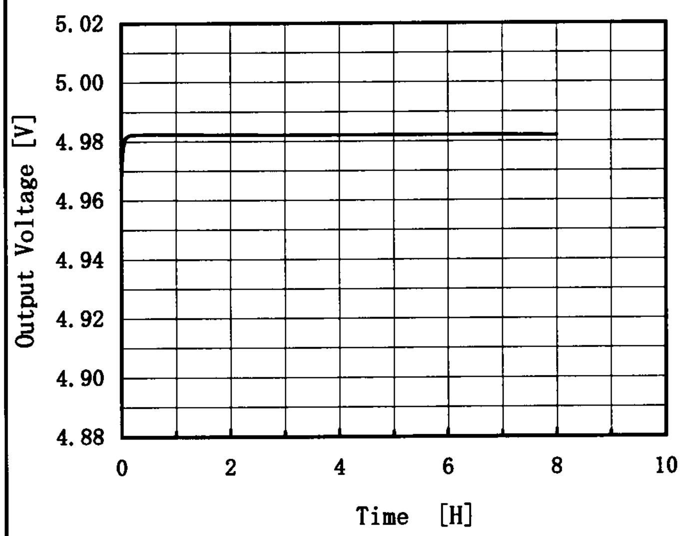
Time since start [H]	Output Voltage [V]
0.0	11.900
0.5	11.945
1.0	11.947
2.0	11.948
3.0	11.949
4.0	11.950
5.0	11.950
6.0	11.951
7.0	11.951
8.0	11.951

COSEL

Model	LCC30A-4
Item	Time Lapse Drift 経時ドリフト
Object	+5V0.5A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



Input Volt. 100V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	4.967
0.5	4.983
1.0	4.982
2.0	4.982
3.0	4.982
4.0	4.982
5.0	4.982
6.0	4.982
7.0	4.982
8.0	4.982

COSEL

Model	LCC30A-4	
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 ～ 4A (AVR 2) : 0～1.2A (AVR 3) : 0～0.5A

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

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

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 ～ 4A (AVR 2) : 0～1.2A (AVR 3) : 0～0.5A

* 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

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

2．Values

Object	+3.3V4A					
Item	Temperature [℃]	Input Voltage[V]	Output Current[A]	Output Voltage[V]	Output Voltage Accuracy Value [mV]	Output Voltage Accuracy Ration [%]
Maximum Voltage	50	85	0	3.310	±17	±0.5
Minimum Voltage	-10	85	4	3.277		

Object	+12V1.2A					
Item	Temperature [℃]	Input Voltage[V]	Output Current[A]	Output Voltage[V]	Output Voltage Accuracy Value [mV]	Output Voltage Accuracy Ration [%]
Maximum Voltage	50	85	0	12.112	±14	±0.1
Minimum Voltage	50	85	1.2	12.085		

Object	+5V0.5A					
Item	Temperature [℃]	Input Voltage[V]	Output Current[A]	Output Voltage[V]	Output Voltage Accuracy Value [mV]	Output Voltage Accuracy Ration [%]
Maximum Voltage	50	132	0	5.007	±10	±0.2
Minimum Voltage	50	85	0.5	4.987		

COSEL

Model	LCC30A-4	
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　+3.3V4A

Item	Data	Testing Conditions
Output Voltage [V]	3.29	Input Volt.:100V, Load Current.:4A
Line Regulation [mV]	1	Input Volt.:85～132V, Load Current.:4A
Load Regulation [mV]	2	Input Volt.:100V, Load Current.:0～4A

Object　+12V1.2A

Item	Data	Testing Conditions
Output Voltage [V]	12.08	Input Volt.:100V, Load Current.:1.2A
Line Regulation [mV]	1	Input Volt.:85～132V, Load Current.:1.2A
Load Regulation [mV]	17	Input Volt.:100V, Load Current.:0～1.2A

Object　+5V0.5A

Item	Data	Testing Conditions
Output Voltage [V]	5.00	Input Volt.:100V, Load Current.:0.5A
Line Regulation [mV]	2	Input Volt.:85～132V, Load Current.:0.5A
Load Regulation [mV]	12	Input Volt.:100V, Load Current.:0～0.5A

COSEL

Model	LCC30A-4			
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	0.06	0.07
(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-4
Item	Line Noise Tolerance 入力雑音耐量
Object	+3.3V4A

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-4
Item	Line Noise Tolerance 入力雑音耐量
Object	+5V0.5A

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-4		
Item	Conducted Emission 雑音端子電圧	Temperature Testing Circuitry	25℃ Figure D
Object	――――――――		

1 . Graph

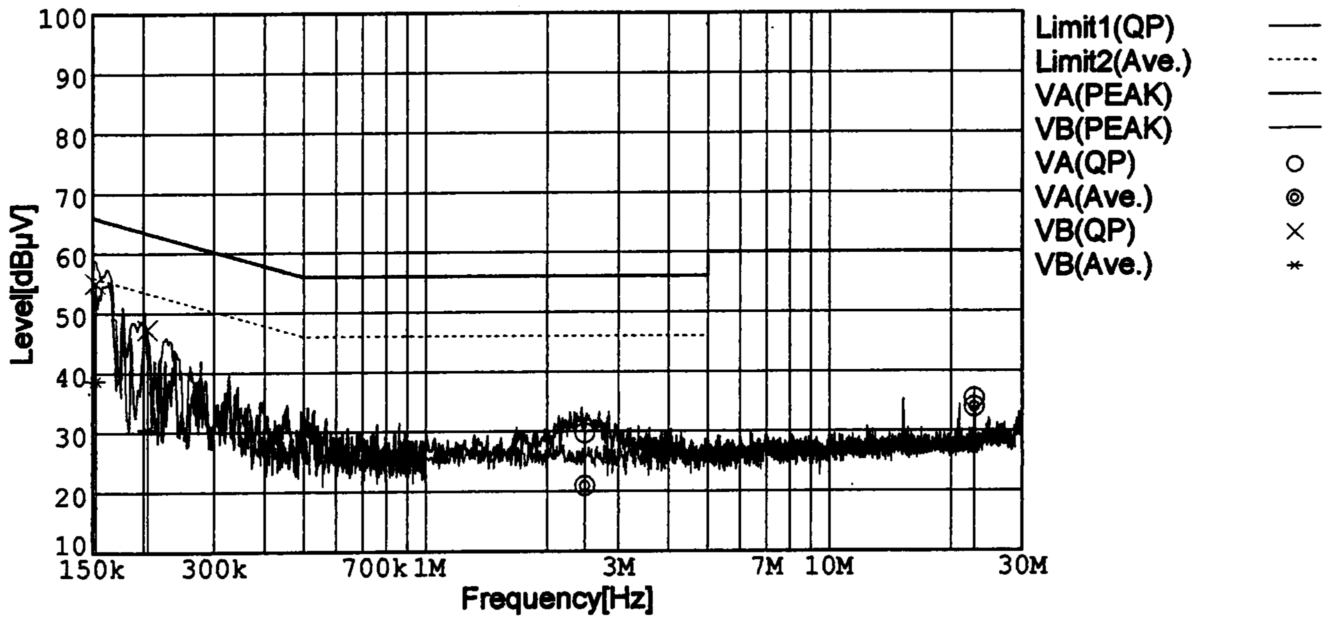
Remarks

Input Volt. 100V (VCCI Class B)

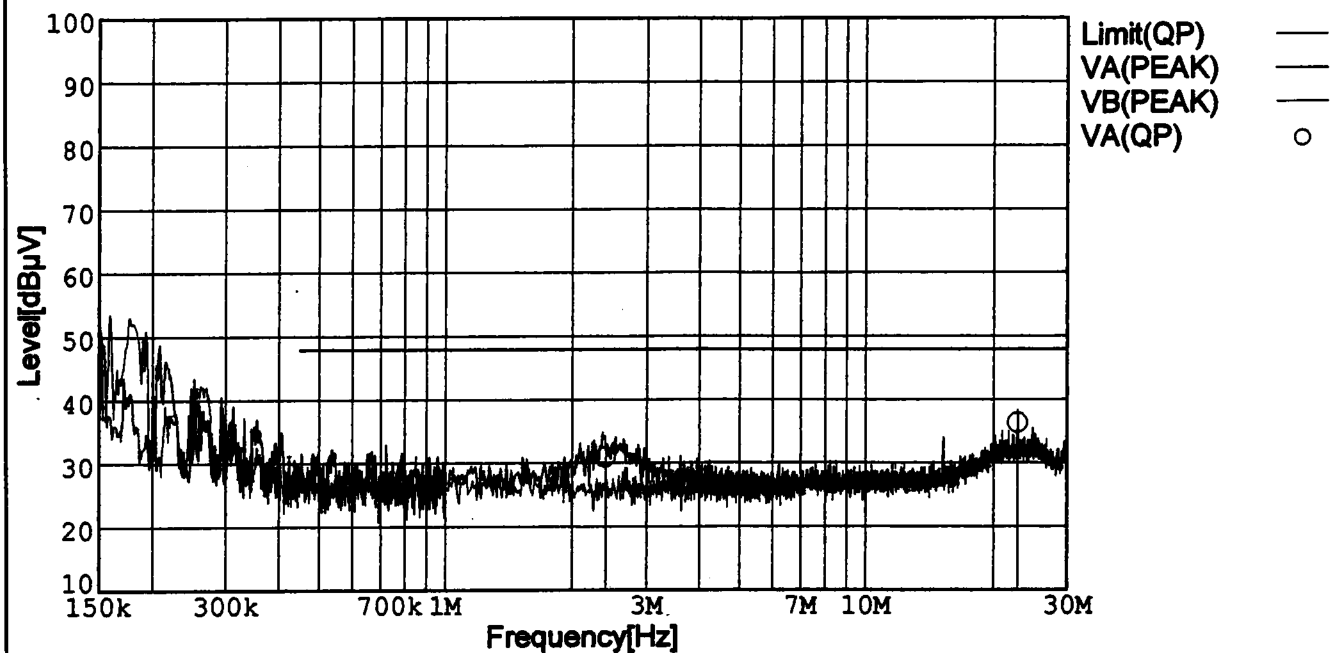
120V (FCC Class B)

Load 100%

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



Limit: [FCC Part15] Class B

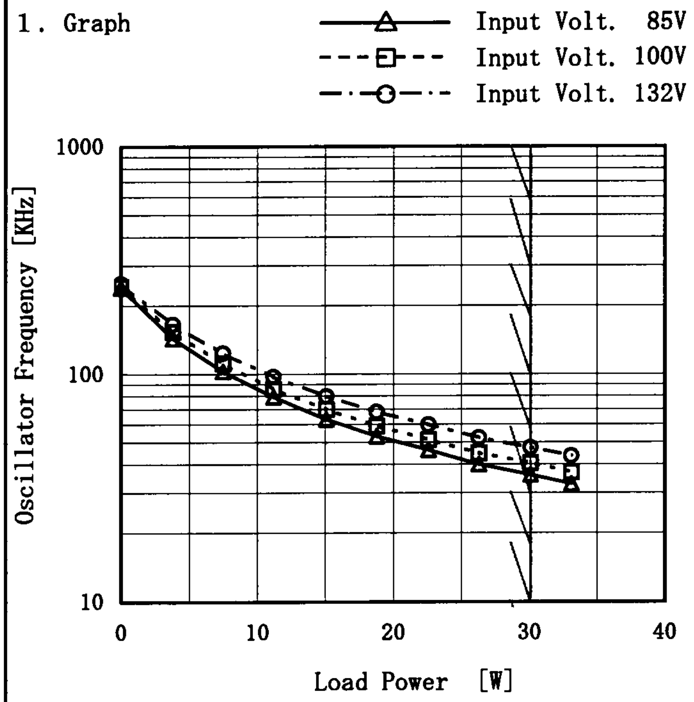


COSEL

Model	LCC30A-4
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) 斜線は定格負荷電力範囲を示す。

2. Values

Load Power [W]	Oscillator Frequency [KHz] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	239	243	250
3.8	144	153	166
7.5	103	112	124
11.2	79	86	97
15.1	63	70	80
18.8	53	59	68
22.6	46	51	60
26.3	40	45	52
30.1	36	41	47
33.1	33	37	44
—	—	—	—

BC−3434

COSEL

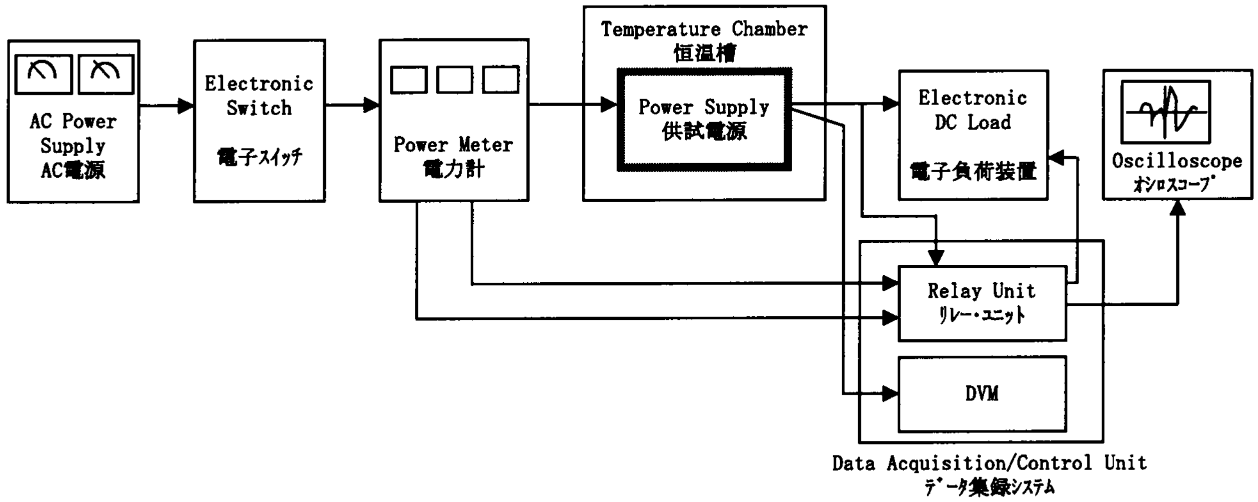
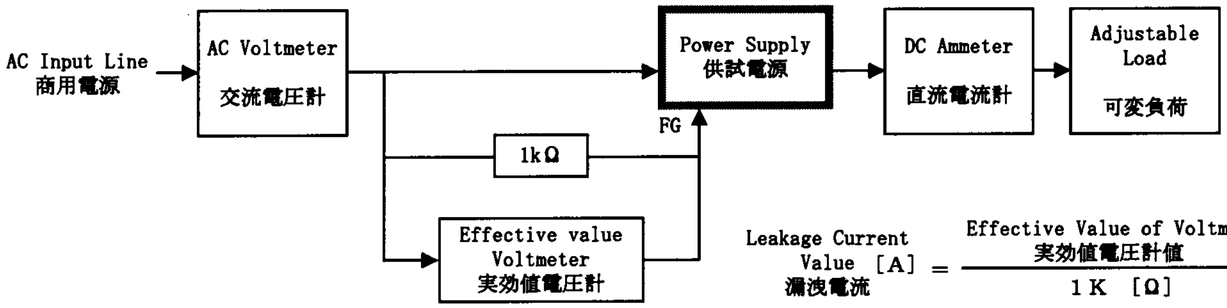
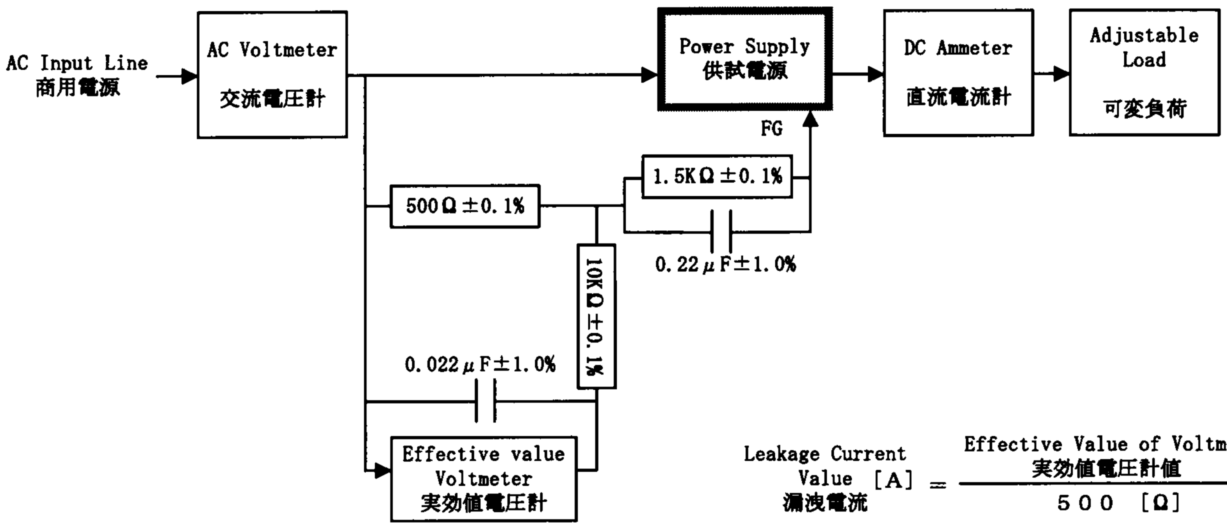


Figure A



$$\text{Leakage Current Value [A] 漏洩電流} = \frac{\text{Effective Value of Voltmeter 実効値電圧計値 [V]}}{1\text{K} \ [\Omega]}$$

Figure B (DEN-AN)



$$\text{Leakage Current Value [A] 漏洩電流} = \frac{\text{Effective Value of Voltmeter 実効値電圧計値 [V]}}{500 \ [\Omega]}$$

Figure B (IEC60950)

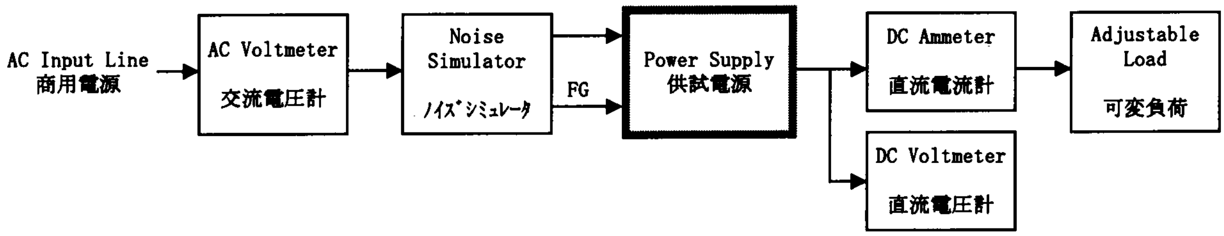


Figure C

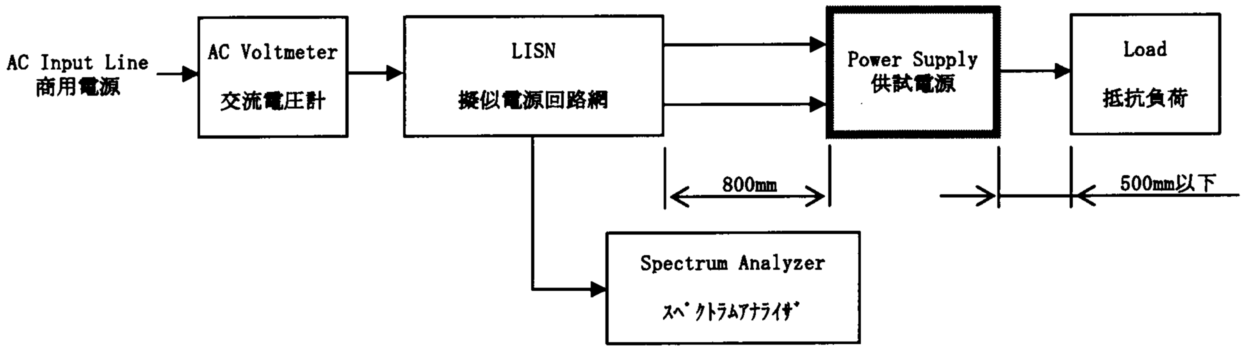


Figure D