参考資料

COSEL

TEST DATA OF LCC30A-2
(100V INPUT)

Regulated DC Power Supply
Apr.30, 2002

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COSEL CO.,LTD.

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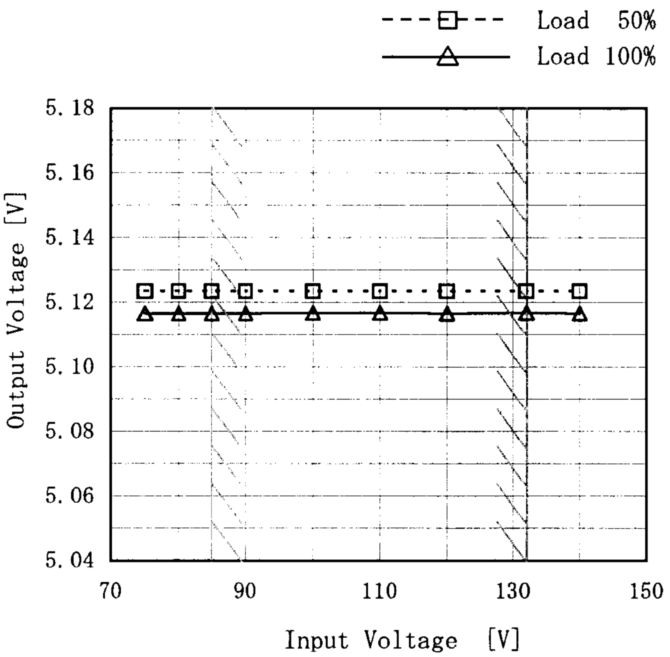
Model	LCC30A-2		
Item	Line Regulation 静的入力変動	Temperature	25℃
		Testing Circuitry	Figure A

Object: +5V3A

1．Graph

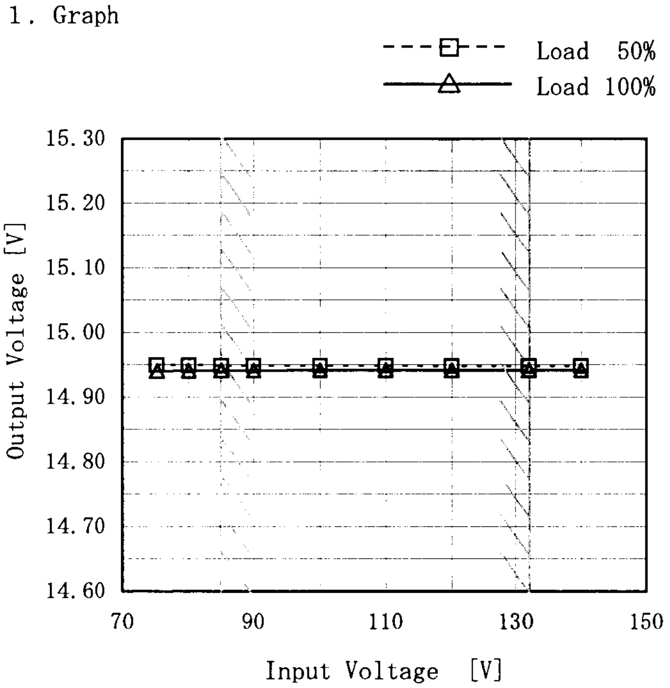


2．Values

Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%
75	5.123	5.117
80	5.123	5.117
85	5.123	5.117
90	5.123	5.117
100	5.123	5.117
110	5.123	5.117
120	5.123	5.117
132	5.123	5.117
140	5.123	5.117

Object: +15V1A

1．Graph



2．Values

Input Voltage [V]	Output Voltage [V] Load 50%	Output Voltage [V] Load 100%
75	14.950	14.940
80	14.949	14.941
85	14.949	14.941
90	14.949	14.942
100	14.949	14.942
110	14.949	14.942
120	14.949	14.942
132	14.948	14.942
140	14.948	14.942

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。

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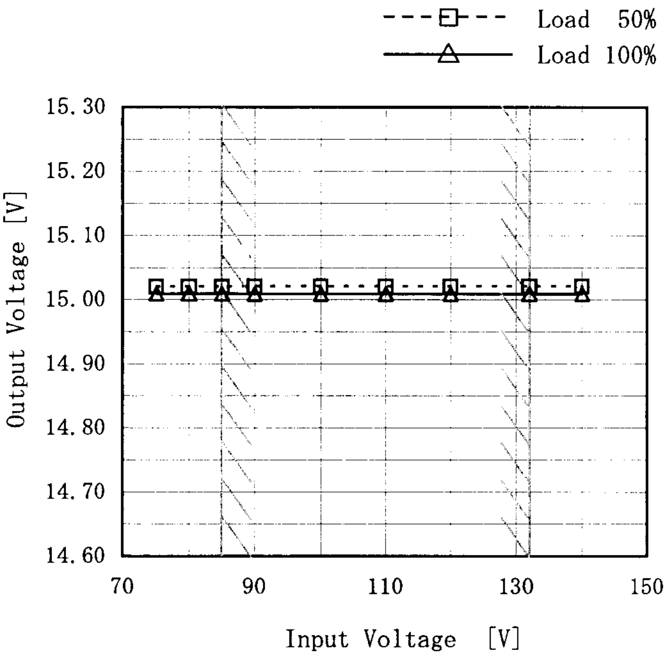
Model	LCC30A-2
Item	Line Regulation 静的入力変動
Object	+15V0.3A

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	15.021	15.010
80	15.021	15.010
85	15.021	15.009
90	15.021	15.009
100	15.021	15.009
110	15.021	15.009
120	15.021	15.009
132	15.021	15.009
140	15.021	15.009

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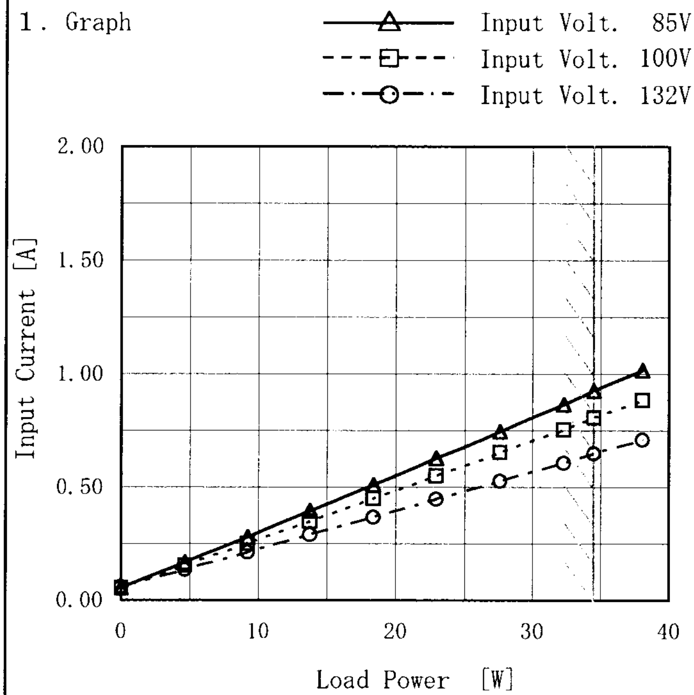
Model	LCC30A-2		
Item	Input Current (by Load Power) 入力電流（負荷特性）	Temperature Testing Circuitry	25℃ Figure A
Object	――――――――		

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
4.6	0.168	0.153	0.135
9.2	0.280	0.250	0.211
13.8	0.394	0.349	0.289
18.4	0.510	0.449	0.367
23.0	0.628	0.550	0.447
27.6	0.746	0.653	0.527
32.2	0.865	0.754	0.608
34.5	0.926	0.807	0.649
38.0	1.017	0.884	0.710
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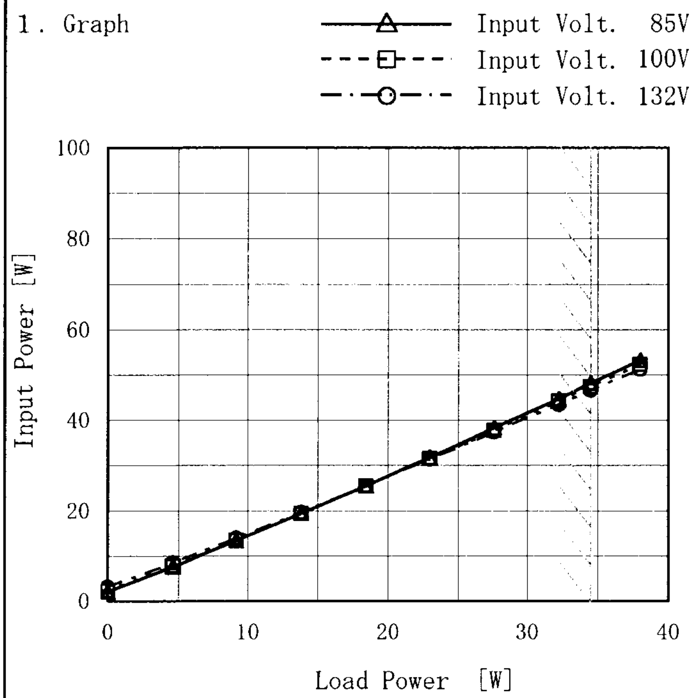
COSEL

Model	LCC30A-2
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。

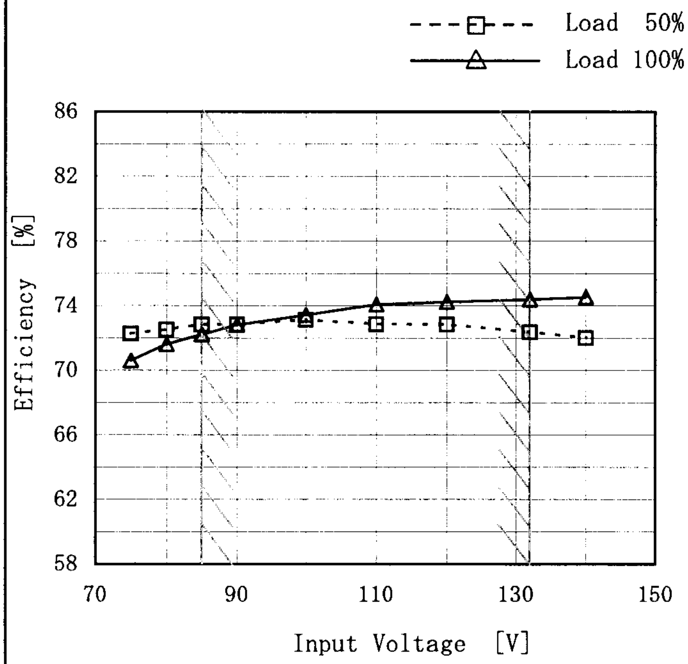
2．Values

Load Power [W]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	2.06	2.34	3.15
4.6	7.56	7.77	8.49
9.2	13.40	13.48	14.00
13.8	19.40	19.32	19.68
18.4	25.50	25.40	25.50
23.0	31.80	31.50	31.40
27.6	38.30	37.70	37.40
32.2	44.80	44.20	43.50
34.5	48.20	47.40	46.60
38.0	53.30	52.30	51.30
—	—	—	—

COSEL

Model	LCC30A-2		
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

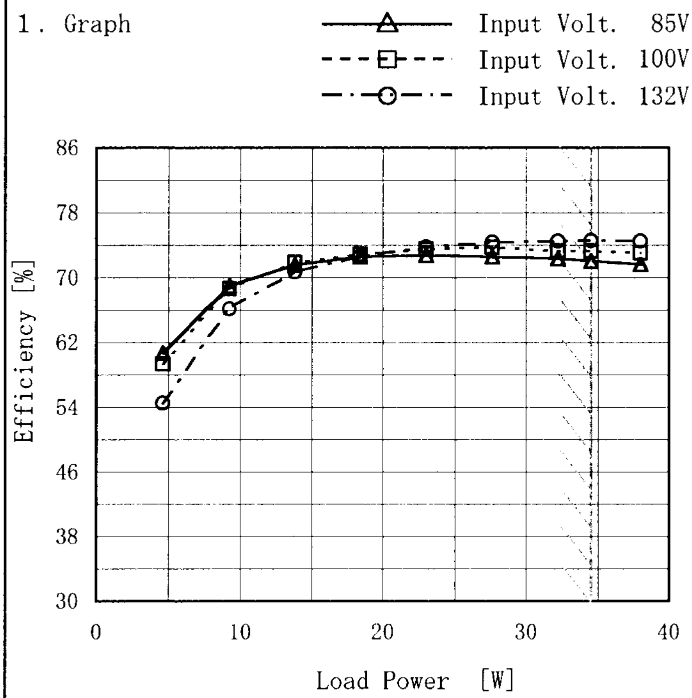
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	72.3	70.6
80	72.5	71.6
85	72.8	72.2
90	72.8	72.8
100	73.1	73.4
110	72.9	74.1
120	72.8	74.2
132	72.4	74.4
140	72.0	74.5

COSEL

Model	LCC30A-2
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。

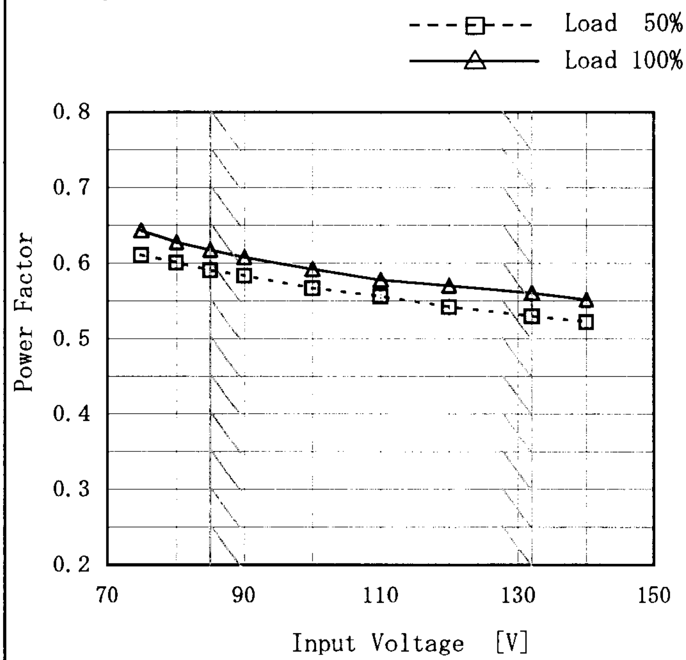
2. Values

Load Power [W]	Efficiency [%]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	—	—	—
4.6	60.7	59.3	54.5
9.2	69.0	68.6	66.2
13.8	71.6	71.9	70.7
18.4	72.6	72.9	72.6
23.0	72.8	73.5	73.8
27.6	72.6	73.8	74.4
32.2	72.3	73.3	74.5
34.5	72.1	73.3	74.6
38.0	71.7	73.1	74.5
—	—	—	—

COSEL

Model	LCC30A-2		
Item	Power Factor (by Input Voltage) 力率（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]	Power Factor	
	Load 50%	Load 100%
75	0.611	0.644
80	0.601	0.628
85	0.591	0.618
90	0.583	0.608
100	0.567	0.592
110	0.556	0.578
120	0.542	0.570
132	0.530	0.561
140	0.522	0.552

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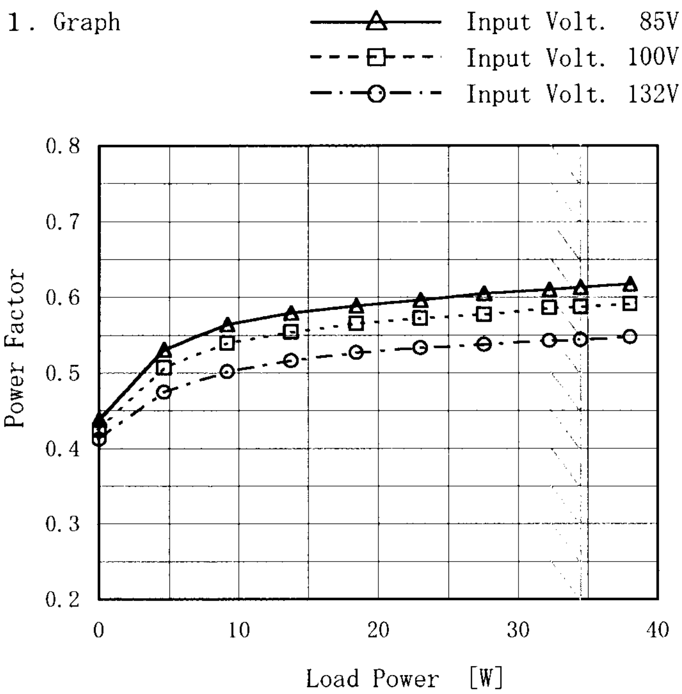
Model	LCC30A-2		
Item	Power Factor (by Load Power) 力率（負荷特性）	Temperature Testing Circuitry	25℃ Figure A
Object			

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	0.438	0.425	0.412
4.6	0.531	0.507	0.475
9.2	0.564	0.540	0.502
13.8	0.579	0.554	0.516
18.4	0.589	0.566	0.527
23.0	0.597	0.573	0.533
27.6	0.605	0.577	0.538
32.2	0.610	0.586	0.543
34.5	0.613	0.587	0.544
38.0	0.618	0.592	0.548
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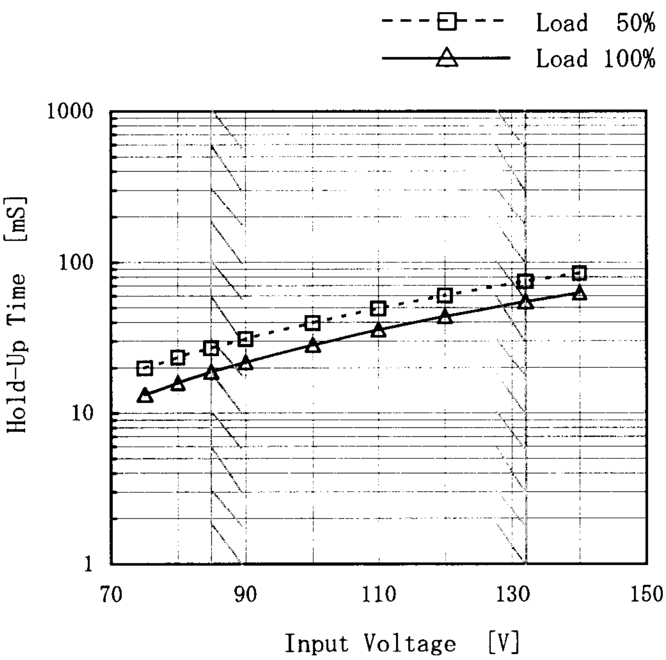
Model	LCC30A-2		
Item	Hold-Up Time 出力保持時間	Temperature Testing Circuitry	25℃ Figure A
Object	+5V3A		

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%	Hold-Up Time [mS] Load 100%
75	20	13
80	23	16
85	27	19
90	31	22
100	40	28
110	49	36
120	60	44
132	74	55
140	85	63

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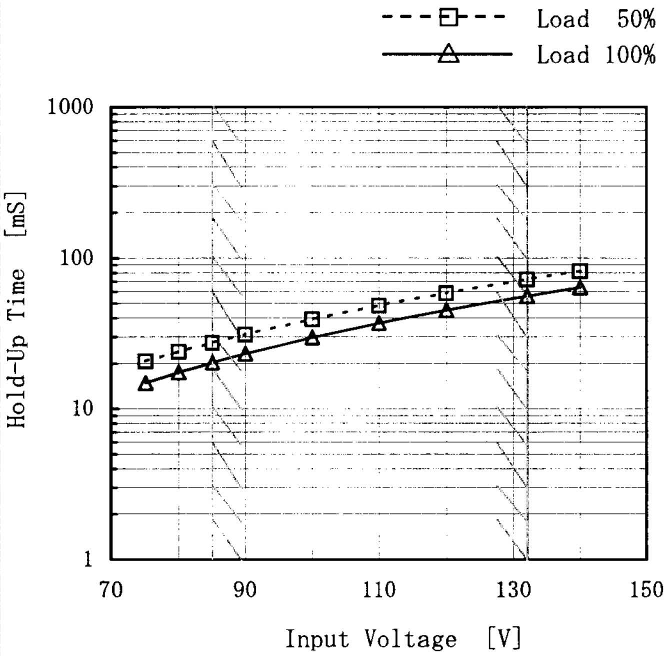
Model	LCC30A-2
Item	Hold-Up Time 出力保持時間
Object	+15V1A

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	15
80	24	17
85	27	20
90	31	23
100	39	30
110	48	37
120	59	45
132	72	56
140	82	64

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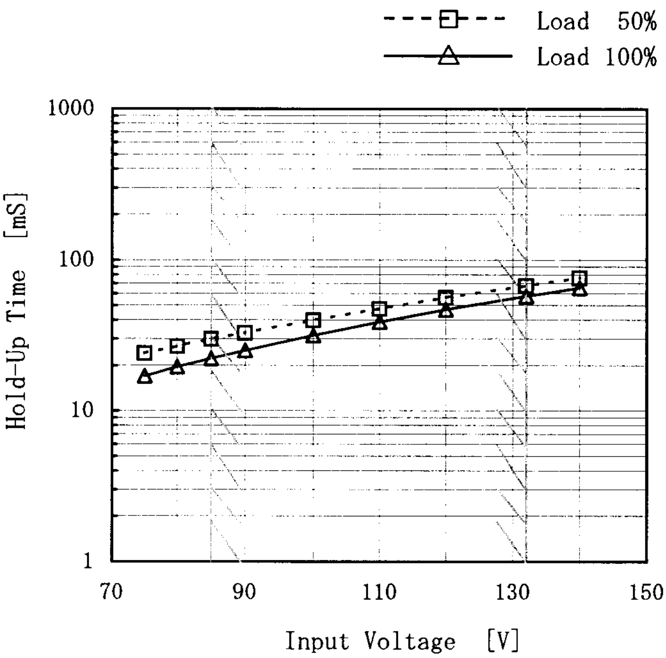
Model	LCC30A-2
Item	Hold-Up Time 出力保持時間
Object	+15V0.3A

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%	Load 100%
75	24	17
80	27	20
85	30	22
90	33	25
100	40	32
110	48	39
120	56	47
132	67	58
140	76	66

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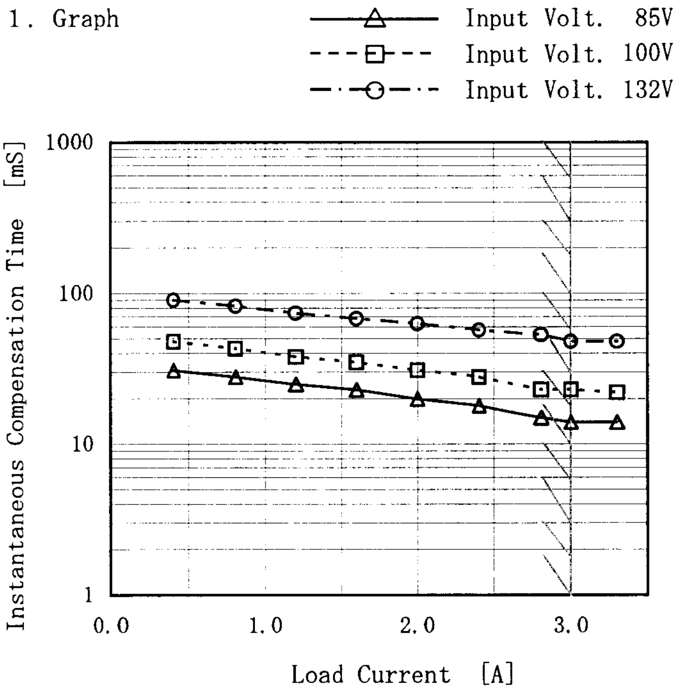
Model	LCC30A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+5V3A

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

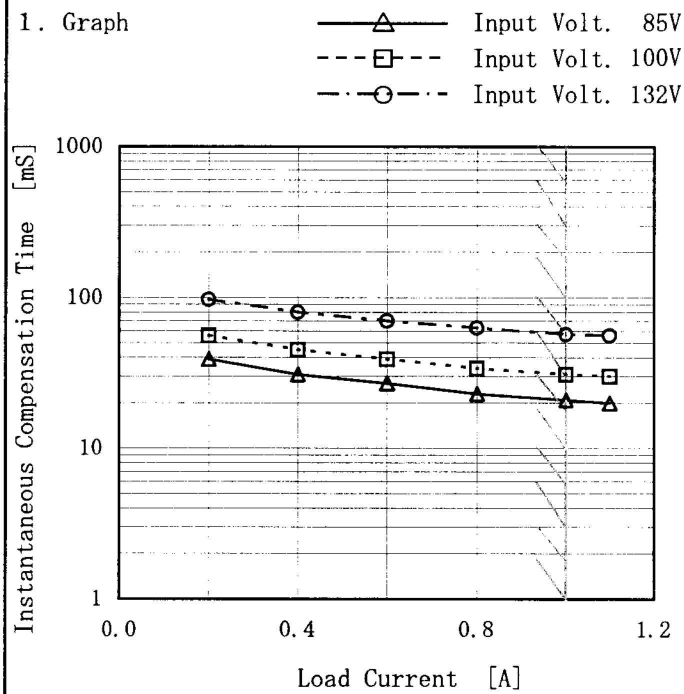
Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
0.40	31	48	90
0.80	28	43	82
1.20	25	38	74
1.60	23	35	68
2.00	20	31	63
2.40	18	28	57
2.80	15	23	53
3.00	14	23	48
3.30	14	22	48
—	—	—	—

COSEL

Model	LCC30A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+15V1A

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

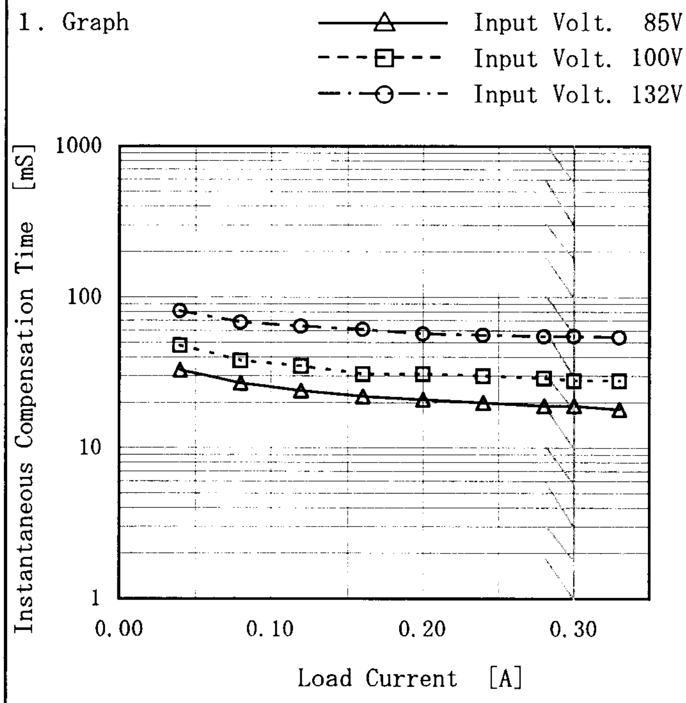
Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	—	—	—
0.20	39	56	97
0.40	31	45	80
0.60	27	39	70
0.80	23	34	63
1.00	21	31	57
1.10	20	30	56
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	LCC30A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+15V0.3A

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	33	48	81
0.08	27	38	68
0.12	24	35	64
0.16	22	31	61
0.20	21	31	57
0.24	20	30	56
0.28	19	29	55
0.30	19	28	55
0.33	18	28	54
—	—	—	—

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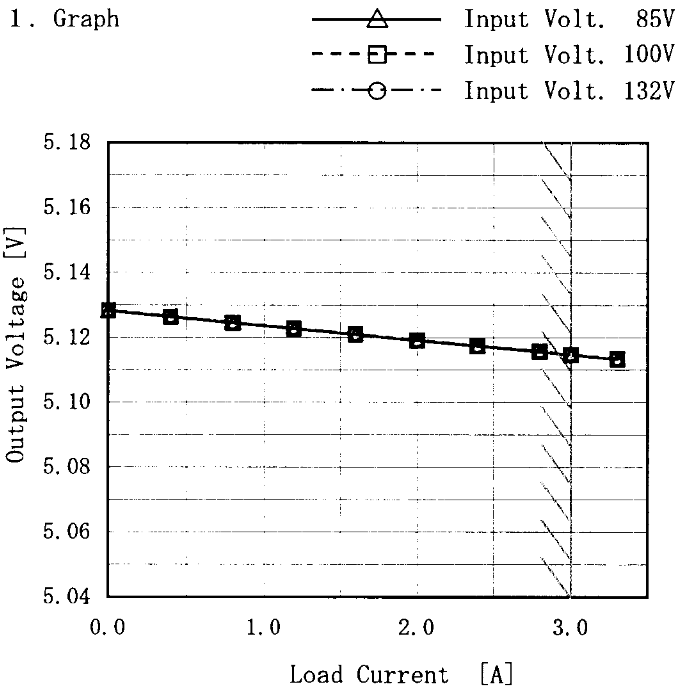
Model	LCC30A-2
Item	Load Regulation 静的負荷変動

Temperature 25℃
Testing Circuitry Figure A

Object +5V3A

1. Graph

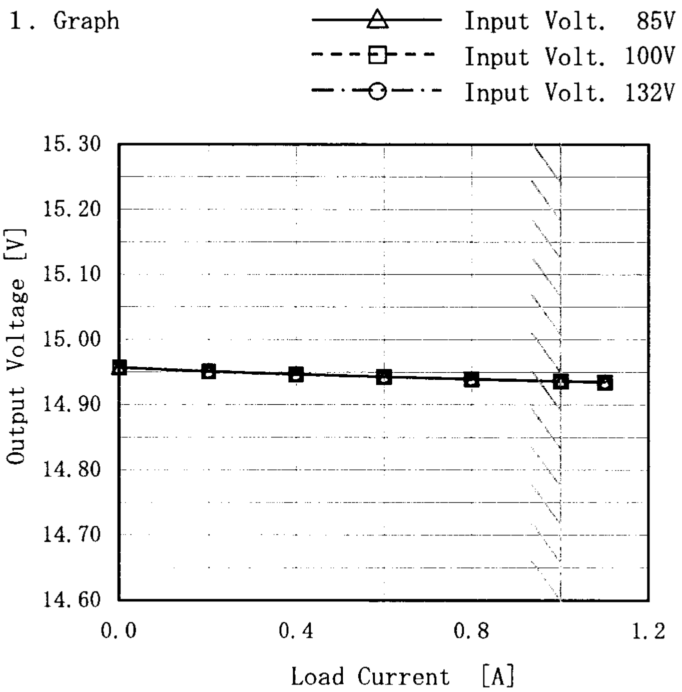


2. Values

Load Current [A]	Output Voltage [V] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	5.128	5.128	5.128
0.40	5.126	5.126	5.126
0.80	5.125	5.125	5.125
1.20	5.123	5.123	5.123
1.60	5.121	5.121	5.121
2.00	5.119	5.119	5.119
2.40	5.117	5.117	5.117
2.80	5.116	5.116	5.116
3.00	5.115	5.115	5.115
3.30	5.113	5.114	5.114
—	—	—	—

Object +15V1A

1. Graph



2. Values

Load Current [A]	Output Voltage [V] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.00	14.957	14.957	14.956
0.20	14.951	14.951	14.951
0.40	14.947	14.946	14.946
0.60	14.943	14.943	14.943
0.80	14.940	14.939	14.939
1.00	14.936	14.936	14.936
1.10	14.935	14.935	14.934
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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。

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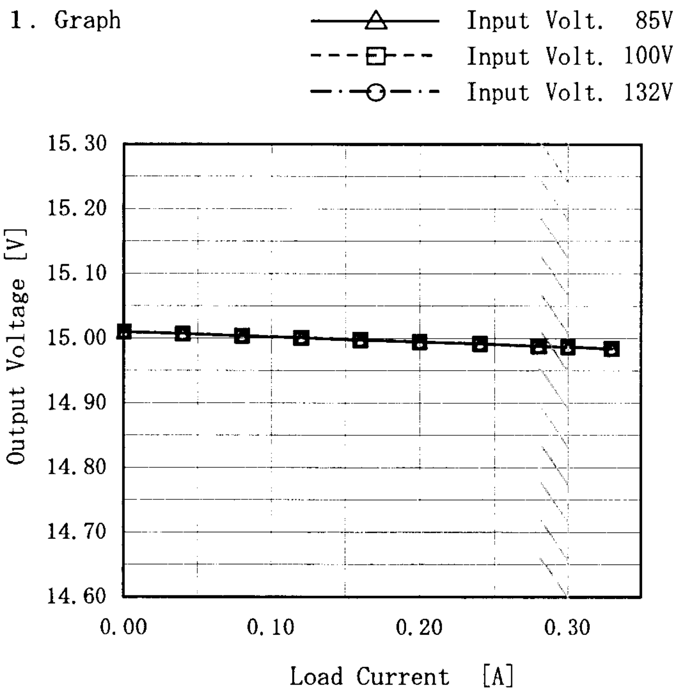
Model	LCC30A-2		
Item	Load Regulation 静的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+15V0.3A		

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	15.010	15.010	15.010
0.04	15.007	15.007	15.007
0.08	15.004	15.004	15.004
0.12	15.001	15.001	15.001
0.16	14.998	14.998	14.998
0.20	14.995	14.995	14.994
0.24	14.992	14.992	14.992
0.28	14.988	14.988	14.988
0.30	14.987	14.987	14.987
0.33	14.984	14.985	14.984

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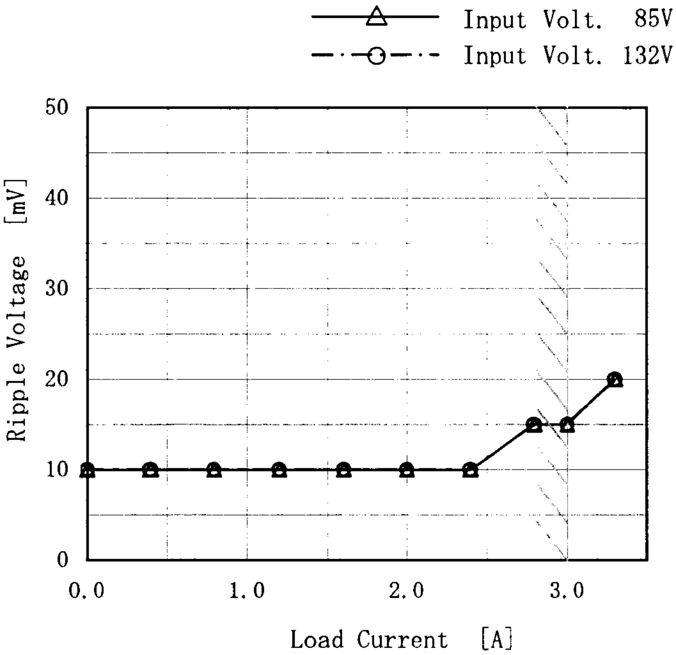
Model	LCC30A-2
Item	Ripple Voltage (by Load Current) リップル電圧（負荷特性）
Object	+5V3A

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

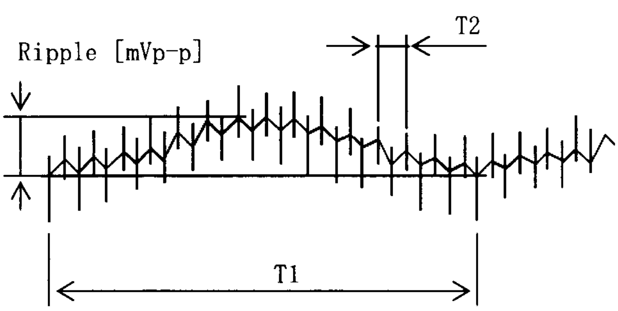


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

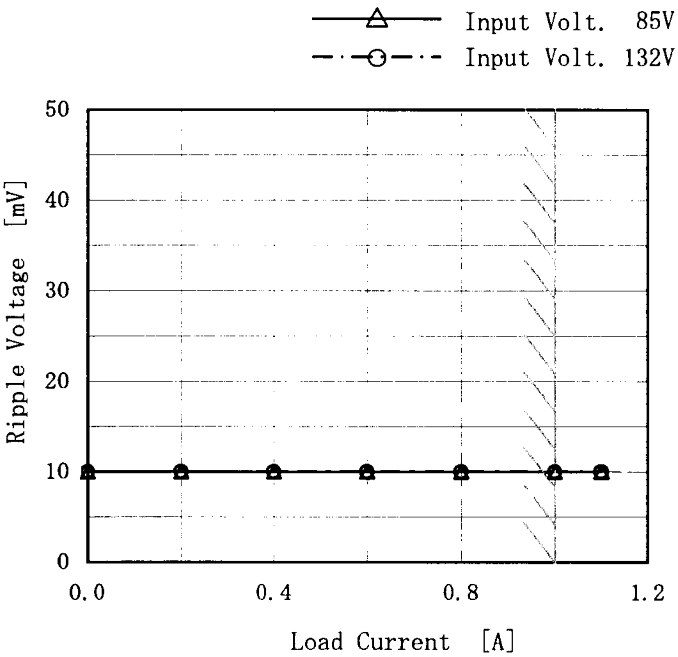
2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	10	10
0.40	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
--	—	—

COSEL

Model	LCC30A-2		
Item	Ripple Voltage (by Load Current) リップル電圧 (負荷特性)	Temperature Testing Circuitry	25℃ Figure A
Object	+15V1A		

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

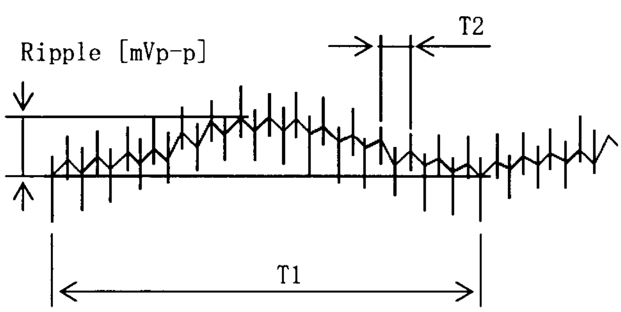


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

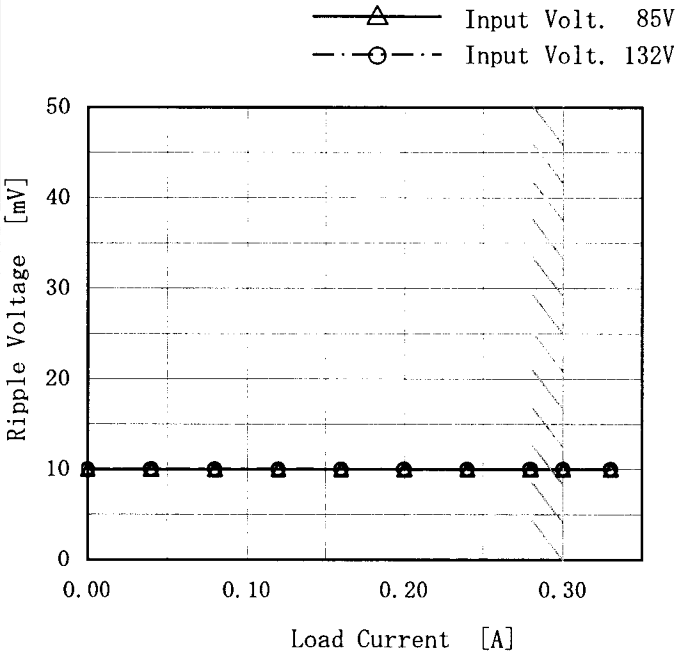
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	10	10
0.20	10	10
0.40	10	10
0.60	10	10
0.80	10	10
1.00	10	10
1.10	10	10
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	LCC30A-2
Item	Ripple Voltage (by Load Current) リップル電圧 (負荷特性)
Object	+15V0.3A

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

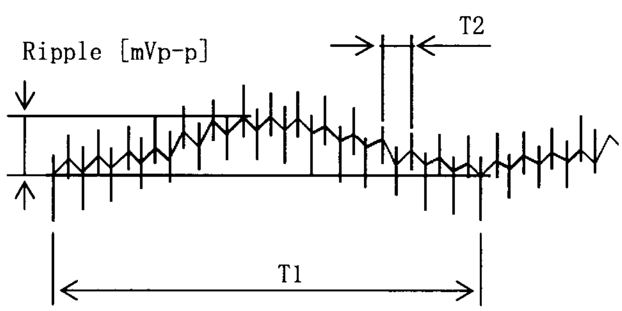


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

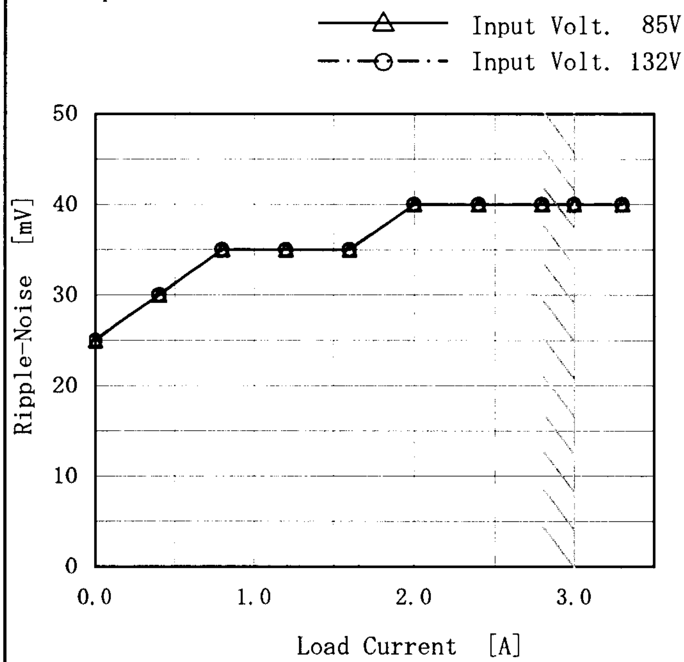
Load Current [A]	Ripple Voltage [mV] Input Volt. 85 [V]	Ripple Voltage [mV] Input Volt. 132 [V]
0.00	10	10
0.04	10	10
0.08	10	10
0.12	10	10
0.16	10	10
0.20	10	10
0.24	10	10
0.28	10	10
0.30	10	10
0.33	10	10
—	—	—

COSEL

Model	LCC30A-2
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

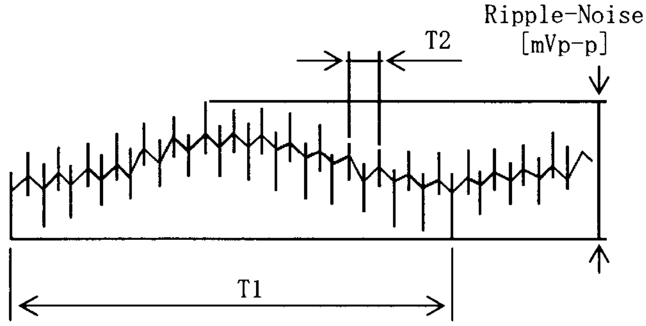


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

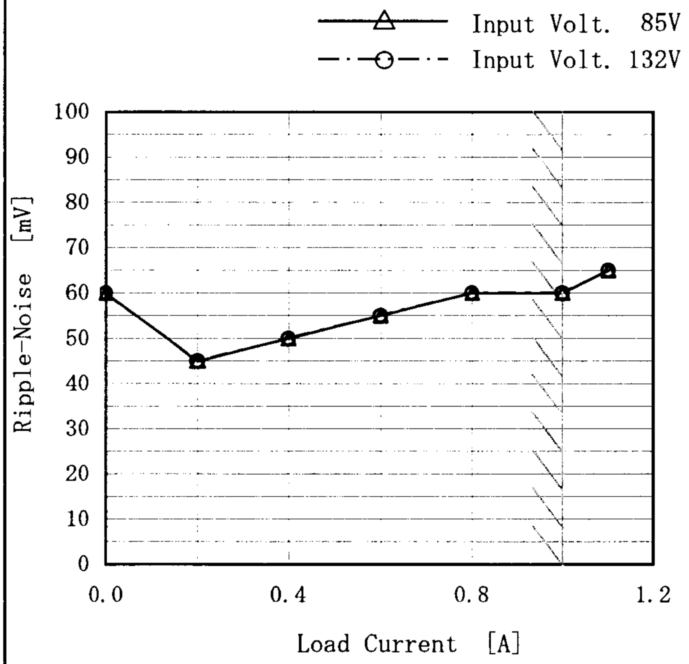
2. Values

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

COSEL

Model	LCC30A-2		
Item	Ripple-Noise リップルノイズ	Temperature Testing Circuitry	25℃ Figure A
Object	+15V1A		

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

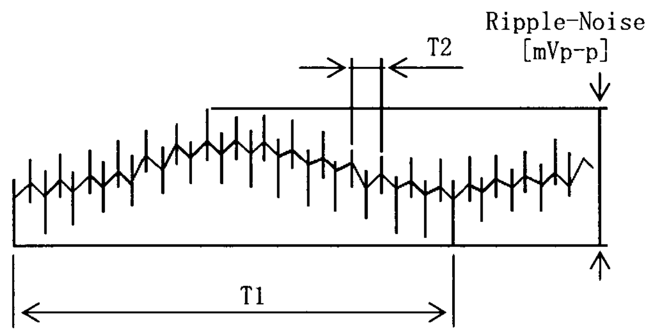


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

2．Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	60	60
0.20	45	45
0.40	50	50
0.60	55	55
0.80	60	60
1.00	60	60
1.10	65	65
—	—	—
—	—	—
—	—	—
—	—	—

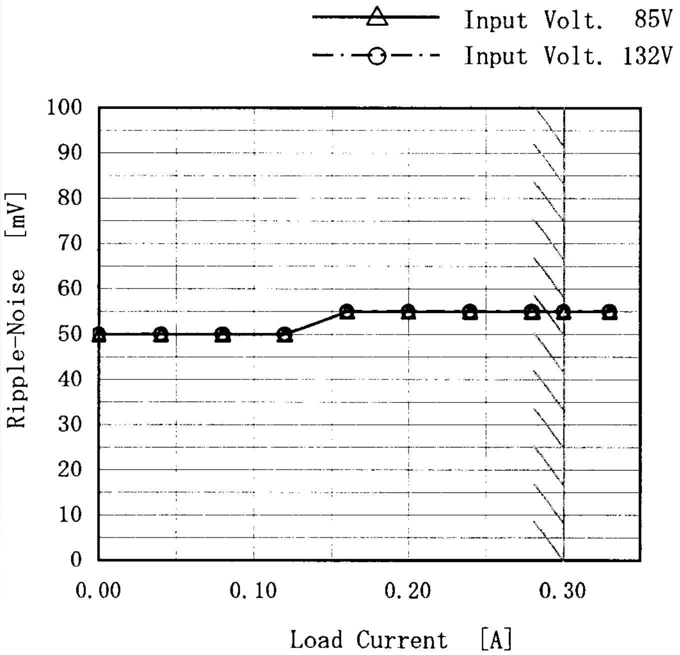
BC－３４３２

COSEL

Model	LCC30A-2
Item	Ripple-Noise リップルノイズ
Object	+15V0.3A

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

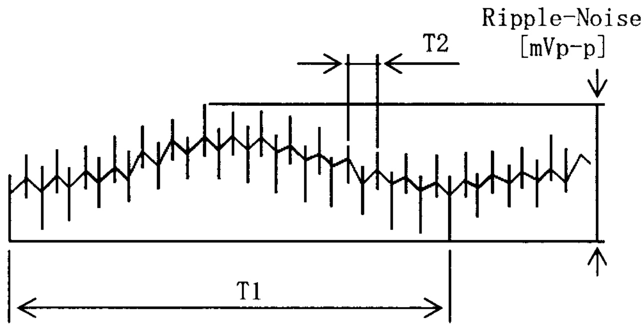


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

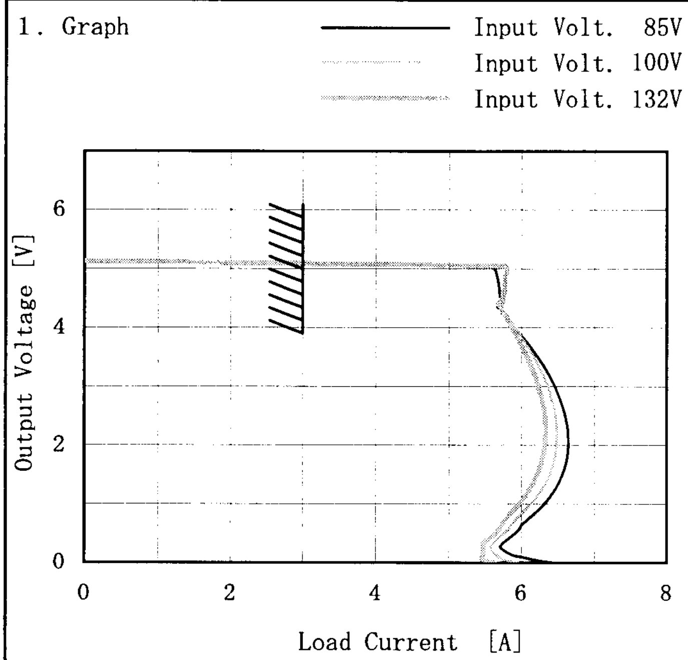
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.00	50	50
0.04	50	50
0.08	50	50
0.12	50	50
0.16	55	55
0.20	55	55
0.24	55	55
0.28	55	55
0.30	55	55
0.33	55	55
—	—	—

BC－3432

COSEL

Model	LCC30A-2		
Item	Overcurrent Protection 過電流保護	Temperature	25℃
		Testing Circuitry	Figure A
Object	+5V3A		

1. Graph

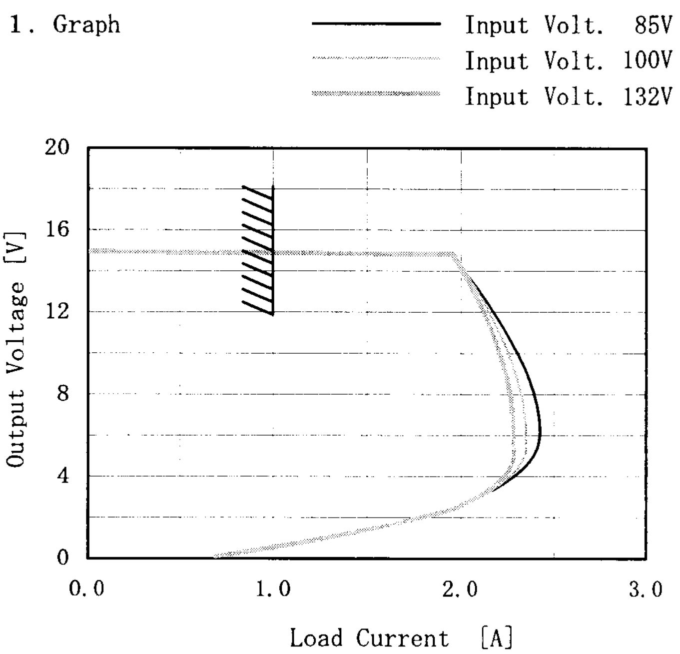


2. Values

Output Voltage [V]	Load Current [A] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
5.00	5.63	5.79	5.80
4.75	5.68	5.79	5.78
4.50	5.71	5.77	5.73
4.00	5.93	5.94	5.88
3.50	6.21	6.16	6.07
3.00	6.43	6.34	6.21
2.50	6.59	6.45	6.31
2.00	6.64	6.47	6.30
1.50	6.55	6.37	6.20
1.00	6.31	6.13	5.98
0.50	5.92	5.77	5.64
0.00	6.53	6.11	5.68

Object: +15V1A

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

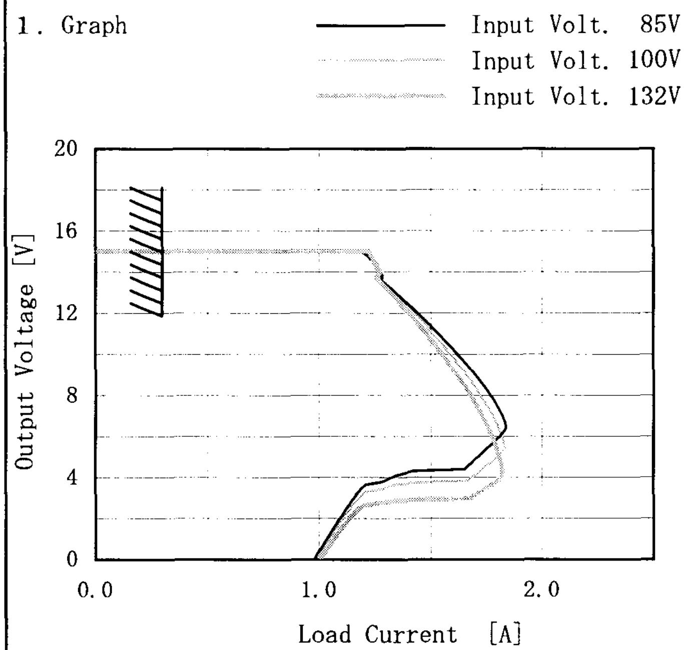
Output Voltage [V]	Load Current [A] Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
15.00	1.94	1.96	1.95
14.25	2.00	2.01	1.99
13.50	2.06	2.06	2.04
12.00	2.18	2.16	2.12
10.50	2.28	2.24	2.19
9.00	2.36	2.30	2.25
7.50	2.41	2.34	2.28
6.00	2.42	2.35	2.28
4.50	2.35	2.32	2.28
3.00	2.10	2.10	2.09
1.50	1.57	1.58	1.54
0.00	0.71	0.75	0.68

COSEL

Model	LCC30A-2
Item	Overcurrent Protection 過電流保護
Object	+15V0.3A

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

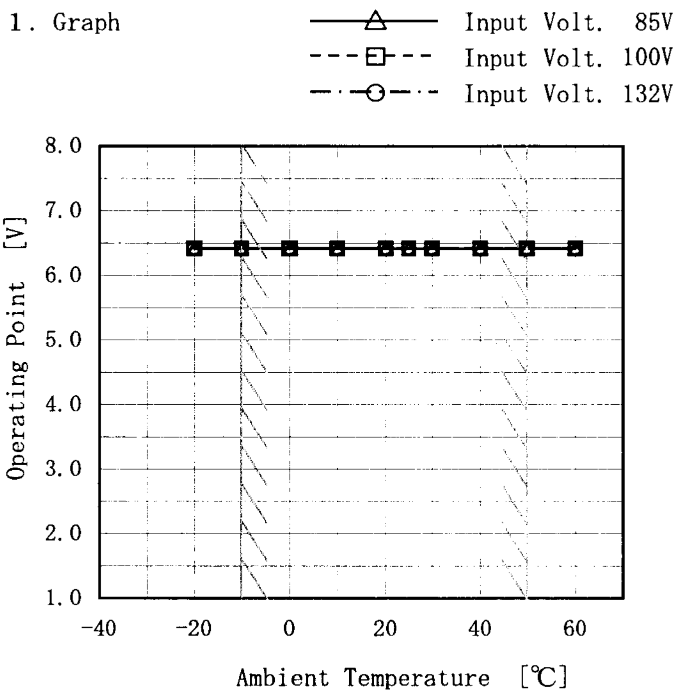
Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
15.00	1.18	1.23	1.22
14.25	1.26	1.27	1.25
13.50	1.29	1.30	1.28
12.00	1.44	1.42	1.40
10.50	1.58	1.55	1.52
9.00	1.70	1.66	1.62
7.50	1.80	1.75	1.71
6.00	1.80	1.82	1.77
4.50	1.66	1.74	1.82
3.00	1.16	1.18	1.68
1.50	1.06	1.08	1.10
0.00	0.98	0.99	1.01

COSEL

Model	LCC30A-2
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。

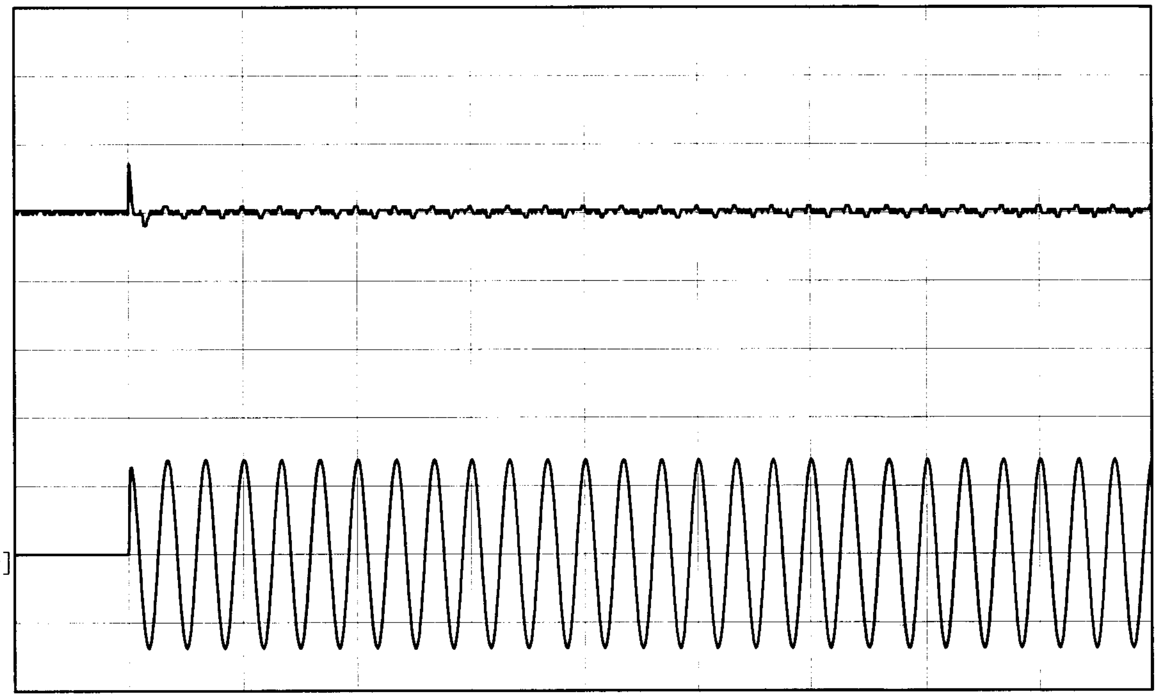
2. Values

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
—	—	—	—

Model	LCC30A-2		
Item	Inrush Current 突入電流	Temperature Testing Circuitry	25℃ Figure A
Object	————————		

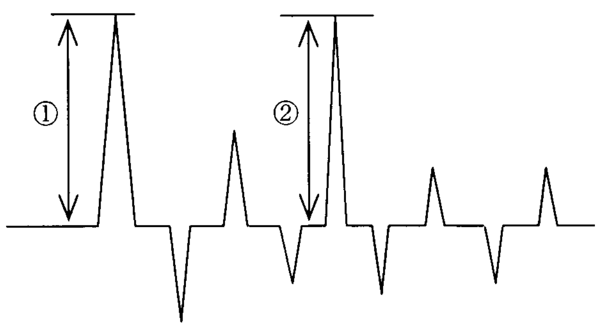
Input Current [20A/div]

Input Voltage [100V/div]



Time [50mS/div]

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



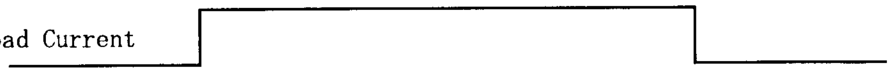
COSEL

Model	LCC30A-2	Temperature	25℃
Item	Dynamic Load Response 動的負荷変動	Testing Circuitry	Figure A
Object	+5V3A		

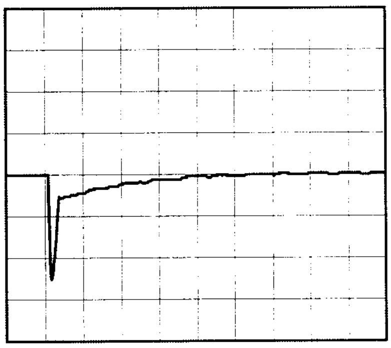
Input Volt. AC100 V

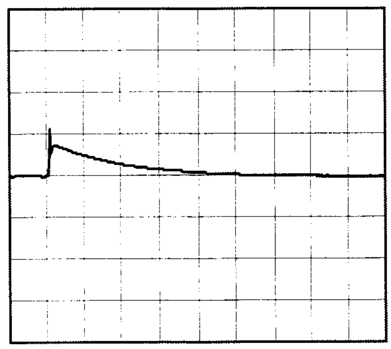
Cycle 200 ms

Load Current

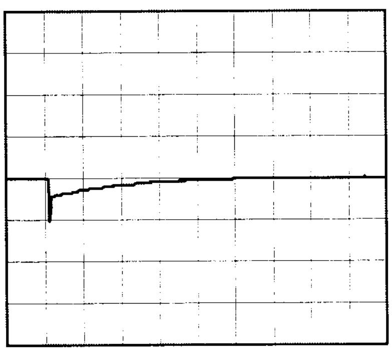


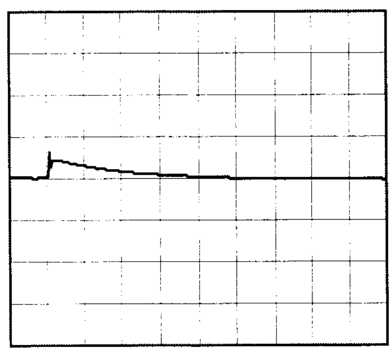
Min. Load (0A) ←→ Load 100% (3A)





Min. Load (0A) ←→ Load 50% (1.5A)





COSEL

Model	LCC30A-2
Item	Dynamic Load Response 動的負荷変動
Object	+15V1A

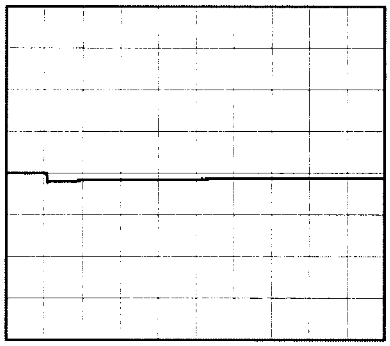
Temperature 25℃
Testing Circuitry Figure A

Input Volt. AC100 V
Cycle 200 ms

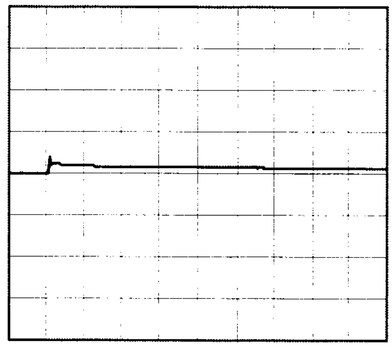
Load Current

Min. Load (0A) ←→
Load 100% (1A)

100 mV/div



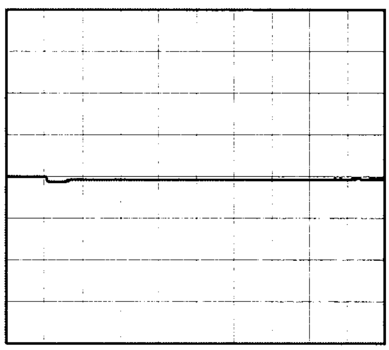
10 ms/div



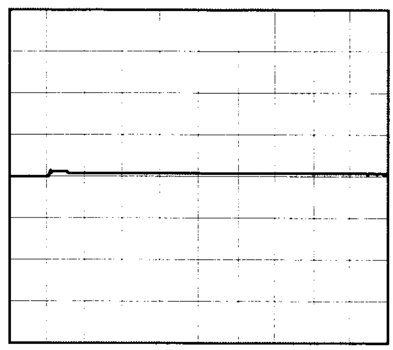
10 ms/div

Min. Load (0A) ←→
Load 50% (0.5A)

100 mV/div



10 ms/div



10 ms/div

COSEL

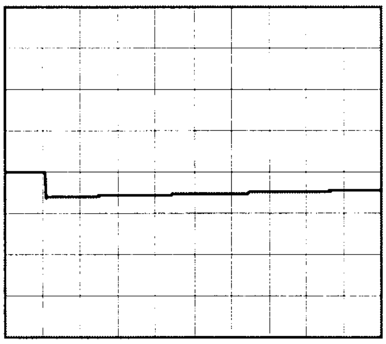
Model	LCC30A-2		
Item	Dynamic Load Response 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+15V0.3A		

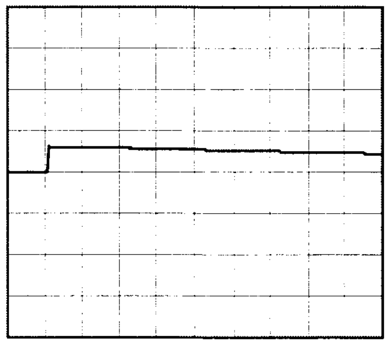
Input Volt.　AC100 V

Cycle　　　200 ms

Load Current

Min. Load (0A) ←→
Load 100% (0.3A)

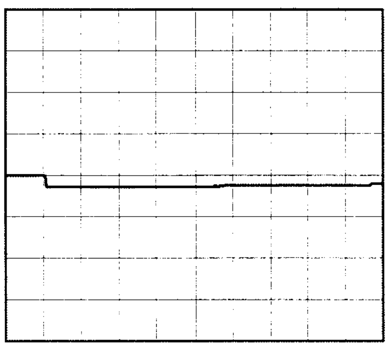


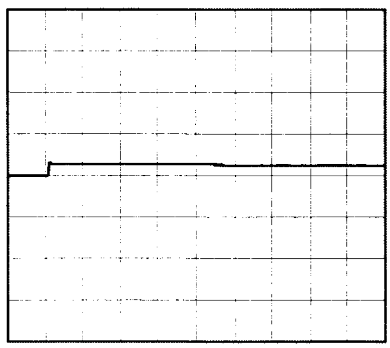


100 mV/div

10 ms/div　　10 ms/div

Min. Load (0A) ←→
Load 50% (0.15A)





100 mV/div

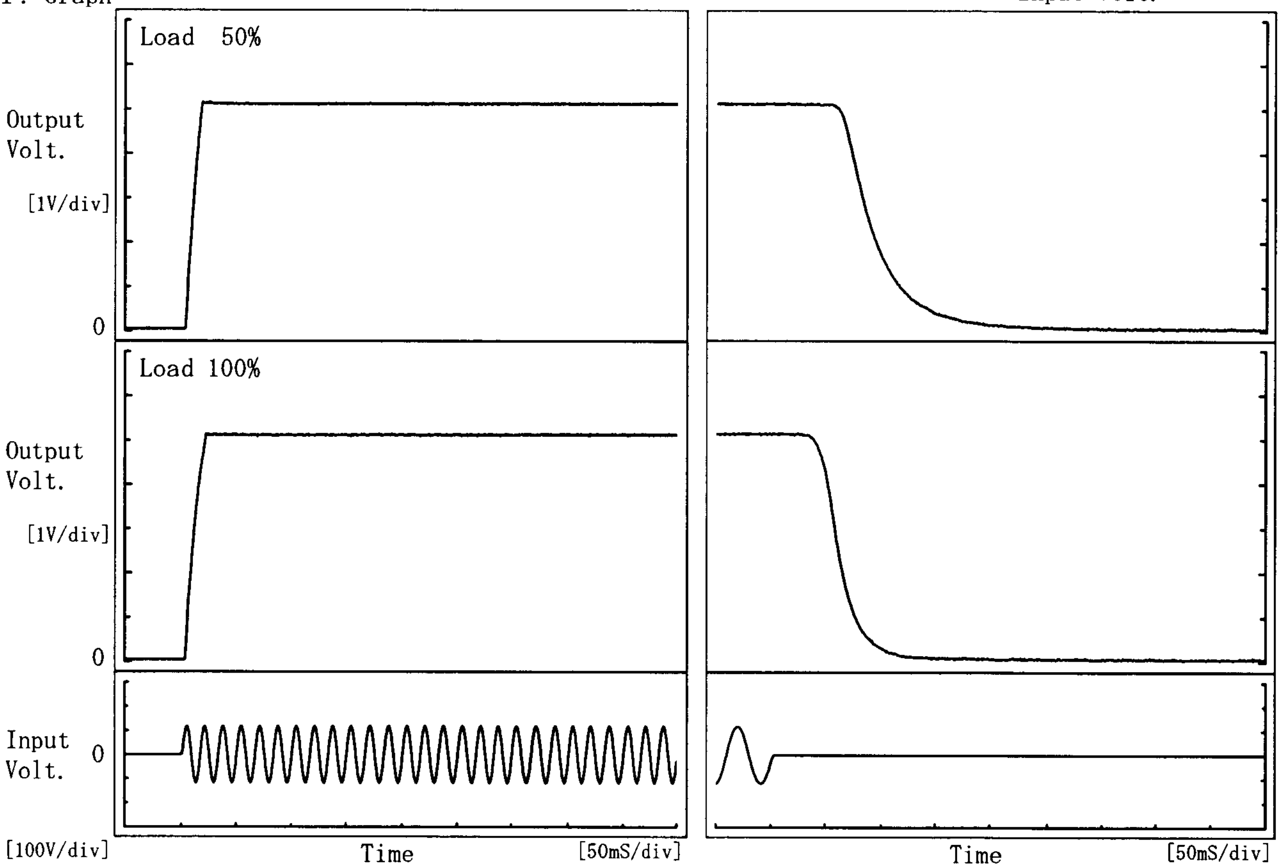
10 ms/div　　10 ms/div

COSEL

Model	LCC30A-2		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+5V3A		

1．Graph

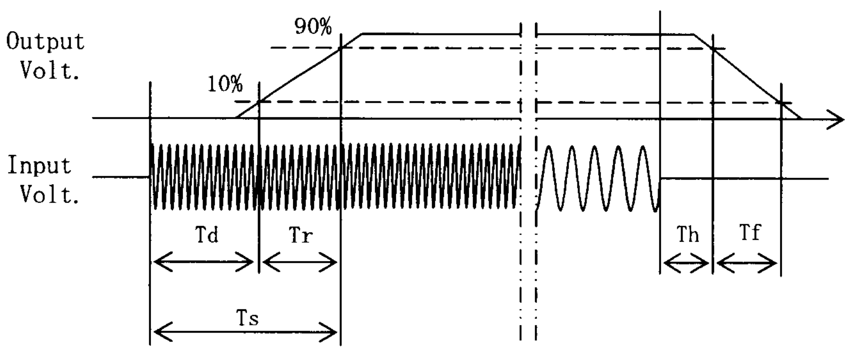
Input Volt.　85 V



2．Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	4. 3	11. 8	16. 0	27. 3	29. 3
100 %	4. 3	14. 5	18. 8	18. 8	16. 5

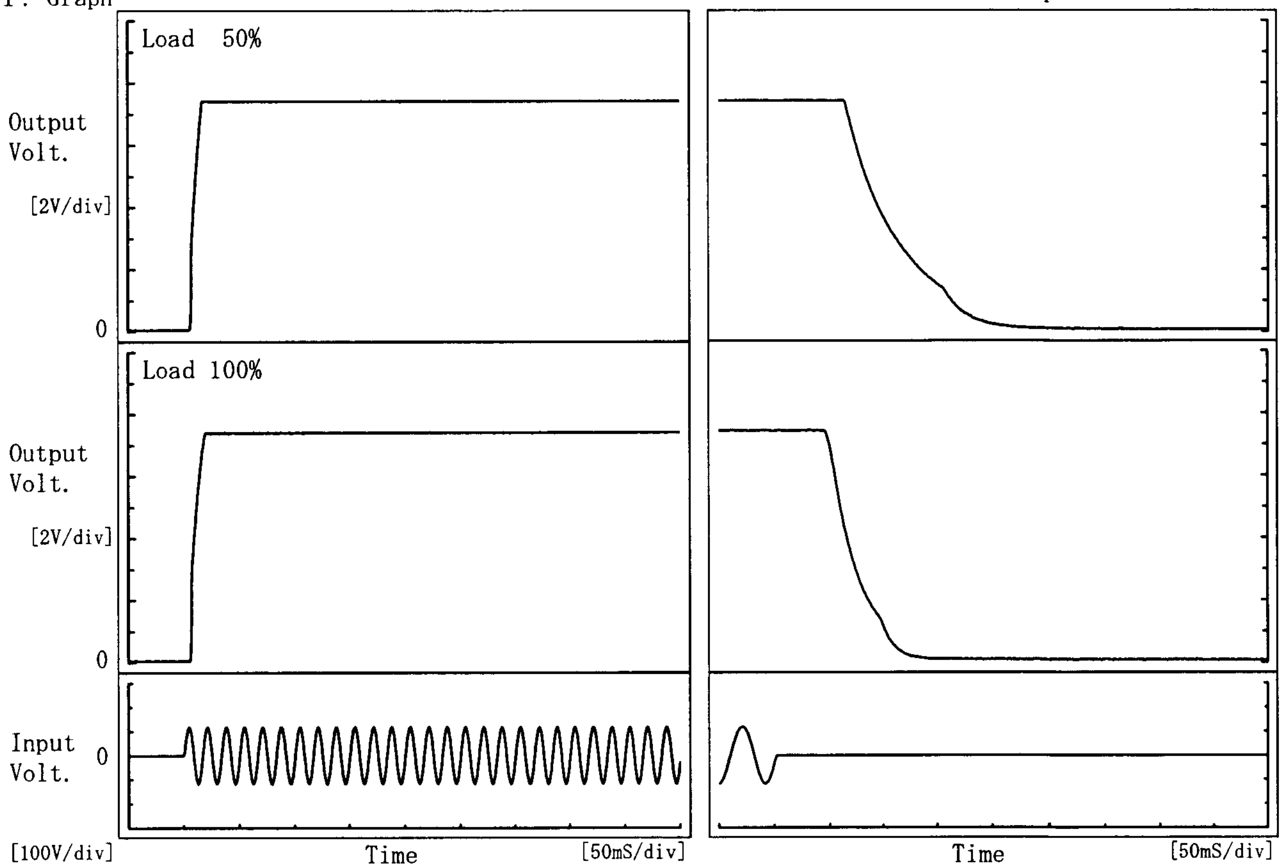


COSEL

Model	LCC30A-2		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+15V1A		

1．Graph

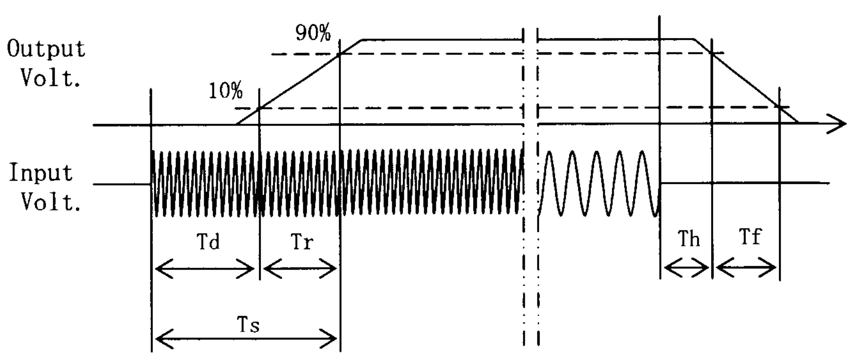
Input Volt. 85 V



2．Values

[mS]

Time \ Load	Td	Tr	Ts	Th	Tf
50 %	6.8	8.8	15.5	27.5	40.0
100 %	6.5	10.8	17.3	20.3	21.8

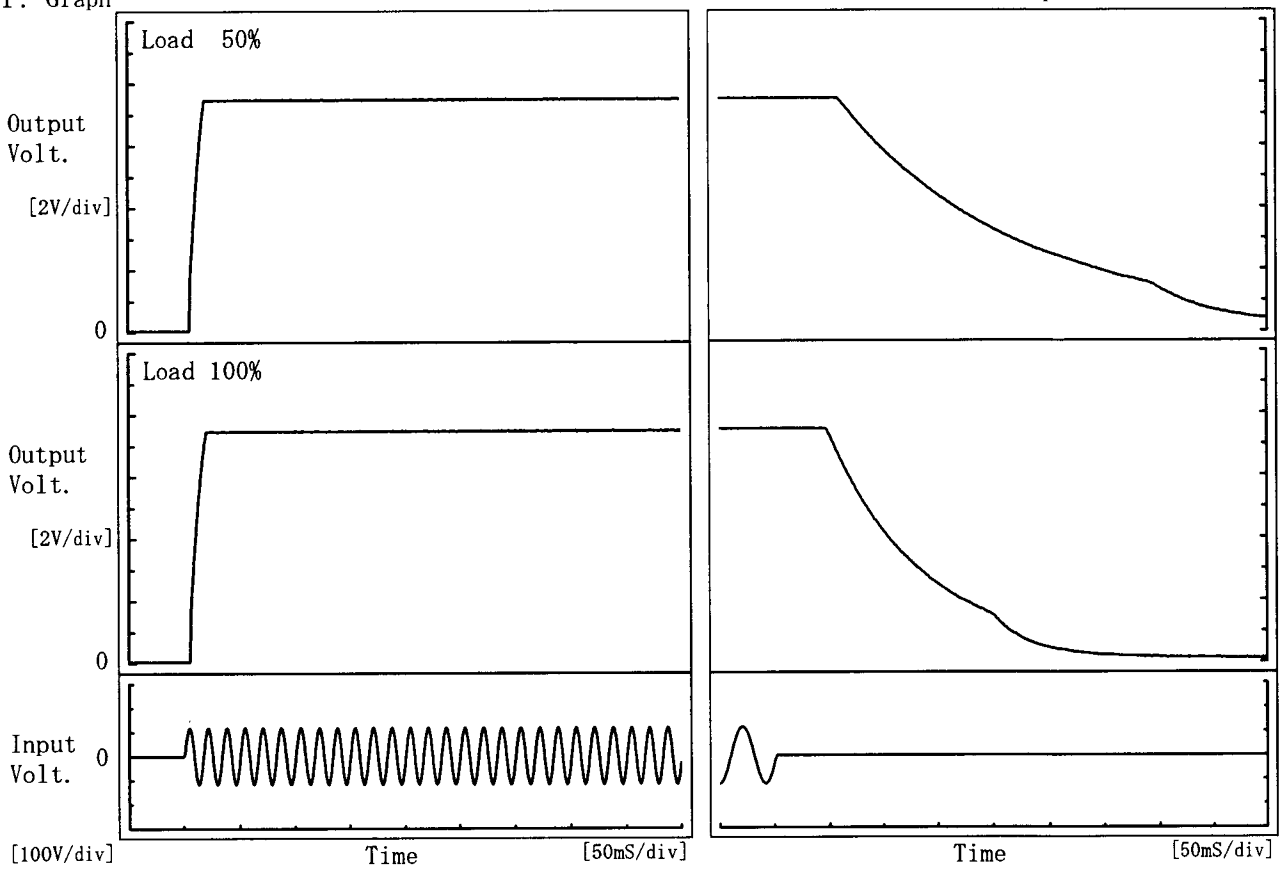


COSEL

Model	LCC30A-2	Temperature	25℃
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+15V0.3A		

1. Graph

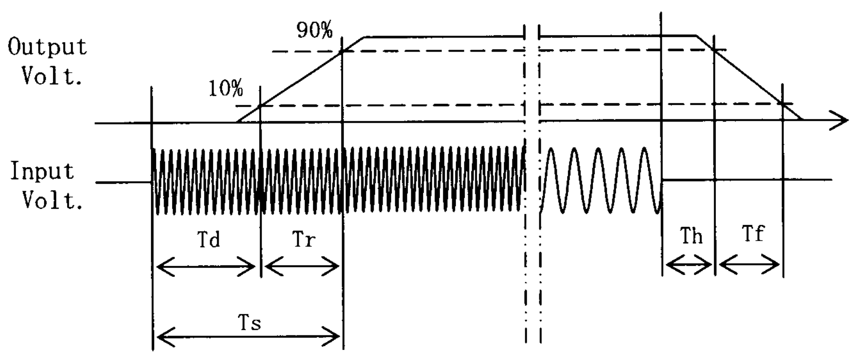
Input Volt. 85 V



2. Values

[mS]

Time / Load	T d	T r	T s	T h	T f
50 %	5.8	11.3	17.0	29.8	125.5
100 %	5.8	12.0	17.8	22.5	67.8



BC－3432

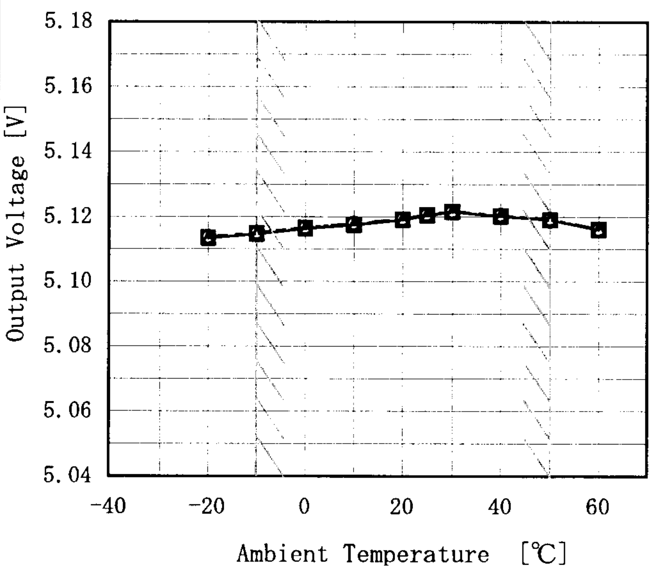
COSEL

Model	LCC30A-2
Item	Ambient Temperature Drift 周囲温度変動
Object	+5V3A

Testing Circuitry Figure A

1. Graph

Input Volt. 85V
Input Volt. 100V
Input Volt. 132V



Load 100%

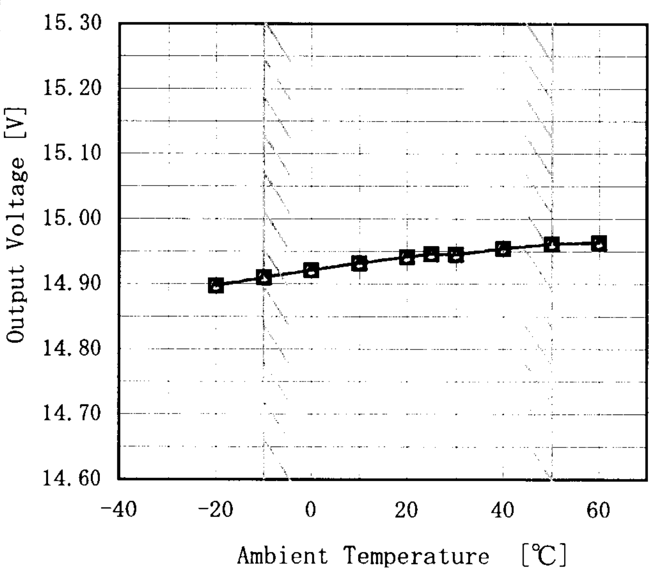
2. Values

Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	5.113	5.114	5.114
-10	5.115	5.115	5.115
0	5.116	5.117	5.117
10	5.118	5.118	5.118
20	5.119	5.119	5.119
25	5.120	5.121	5.121
30	5.122	5.122	5.122
40	5.120	5.120	5.120
50	5.119	5.119	5.119
60	5.116	5.116	5.116
—	—	—	—

Object	+15V1A

1. Graph

Input Volt. 85V
Input Volt. 100V
Input Volt. 132V



Load 100%

2. Values

Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	14.897	14.898	14.898
-10	14.910	14.910	14.911
0	14.921	14.921	14.921
10	14.932	14.932	14.932
20	14.942	14.942	14.942
25	14.946	14.946	14.946
30	14.945	14.945	14.945
40	14.954	14.955	14.955
50	14.962	14.962	14.962
60	14.963	14.964	14.964
—	—	—	—

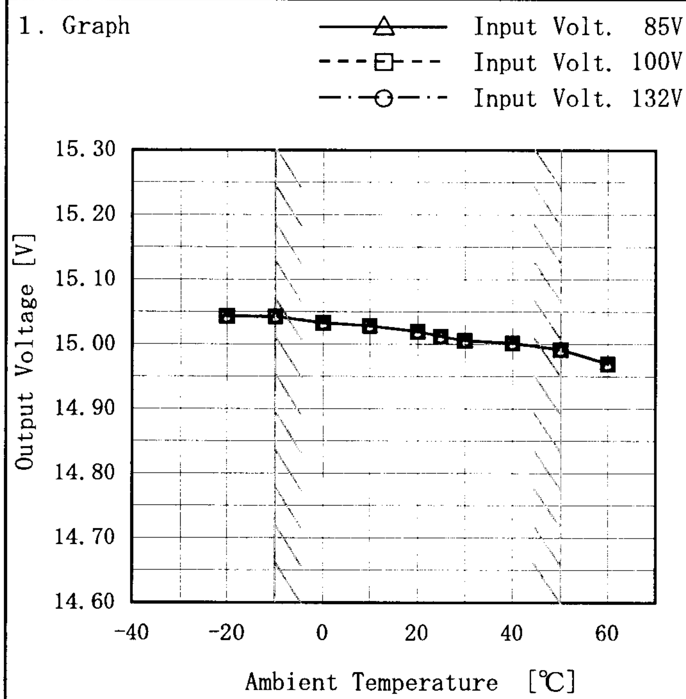
Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。

COSEL

Model	LCC30A-2	
Item	Ambient Temperature Drift 周囲温度変動	Testing Circuitry Figure A
Object	+15V0.3A	

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

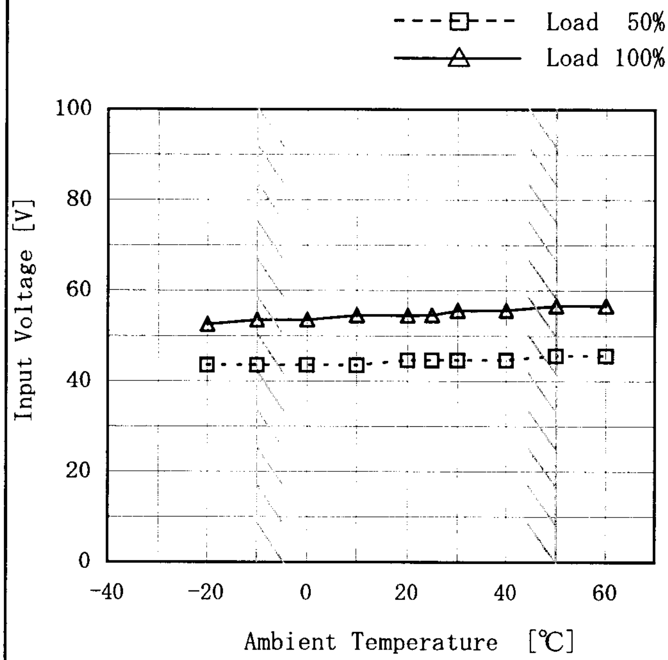
Ambient Temperature [℃]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	15.044	15.044	15.044
-10	15.043	15.043	15.043
0	15.033	15.033	15.033
10	15.029	15.029	15.029
20	15.020	15.019	15.019
25	15.012	15.012	15.012
30	15.006	15.006	15.006
40	15.002	15.002	15.002
50	14.992	14.991	14.991
60	14.970	14.970	14.969
—	—	—	—

COSEL

Model	LCC30A-2
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

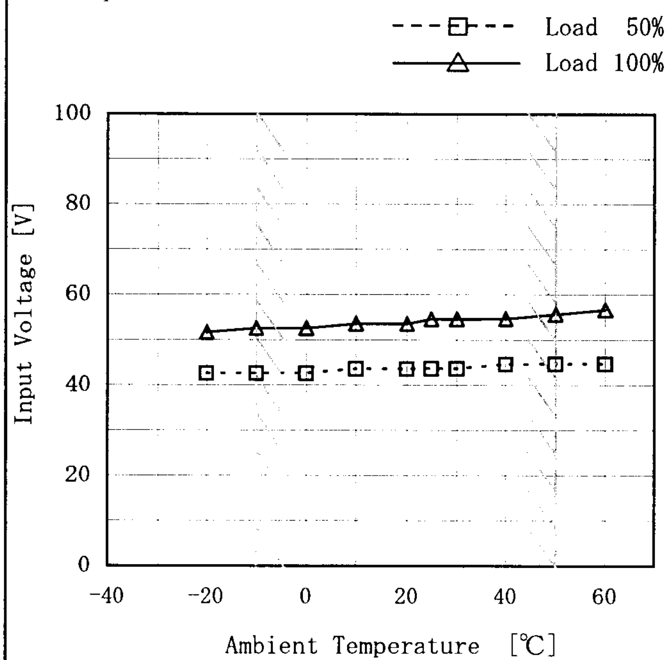


2. Values

Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	44	53
-10	44	54
0	44	54
10	44	55
20	45	55
25	45	55
30	45	56
40	45	56
50	46	57
60	46	57
—	—	—

Object	+15V1A

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

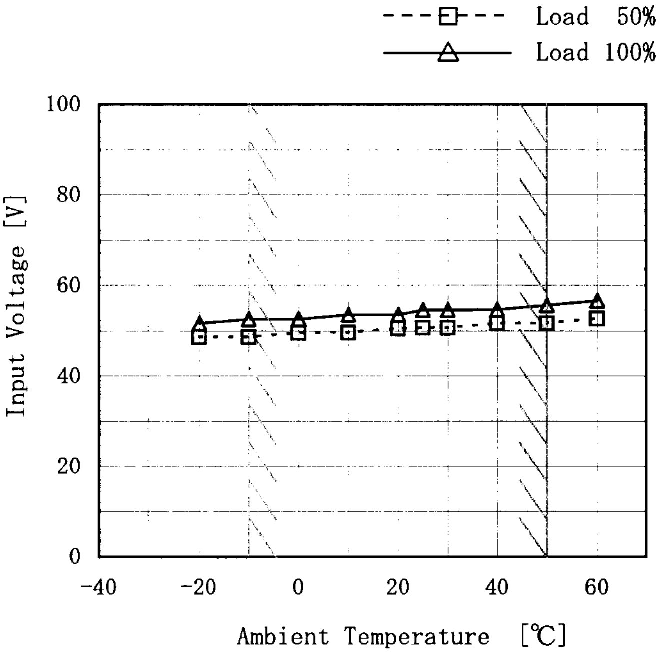
Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	43	52
-10	43	53
0	43	53
10	44	54
20	44	54
25	44	55
30	44	55
40	45	55
50	45	56
60	45	57
—	—	—

COSEL

Model	LCC30A-2
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+15V0.3A

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

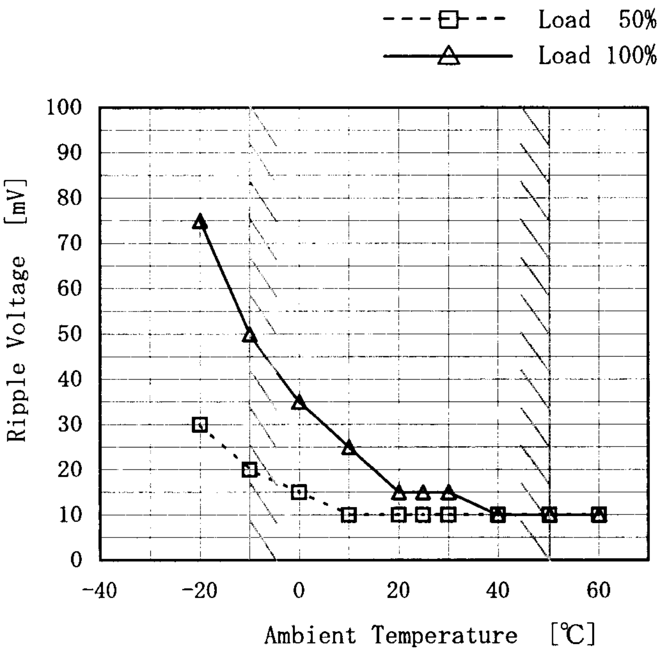
Ambient Temperature [℃]	Input Voltage [V]	
	Load 50%	Load 100%
-20	49	52
-10	49	53
0	50	53
10	50	54
20	51	54
25	51	55
30	51	55
40	52	55
50	52	56
60	53	57
—	—	—

COSEL

Model	LCC30A-2
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	+5V3A

Testing Circuitry Figure A

1. Graph



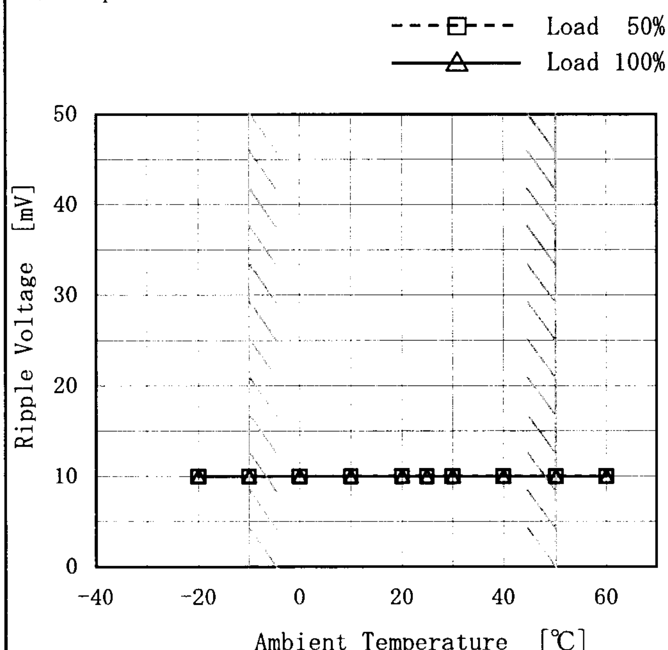
Input Volt. 100V

2. Values

Ambient Temperature [℃]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	30	75
-10	20	50
0	15	35
10	10	25
20	10	15
25	10	15
30	10	15
40	10	10
50	10	10
60	10	10
--	—	—

Object	+15V1A

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。

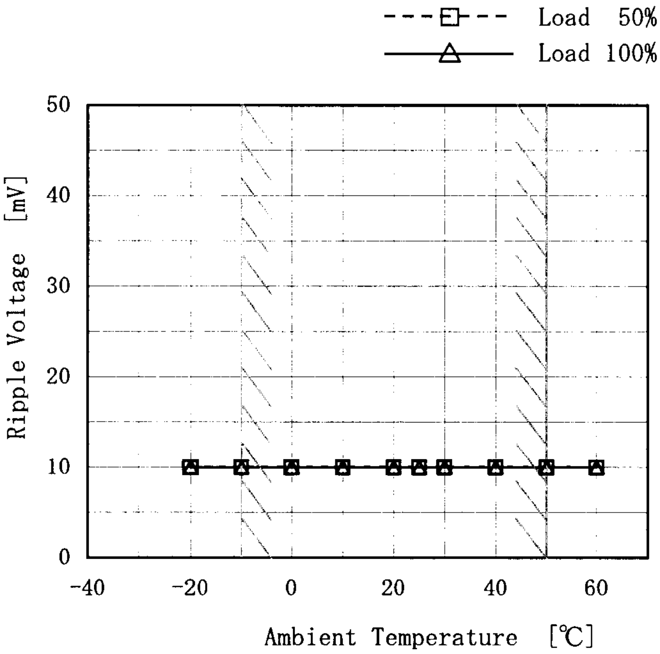
2. Values

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
--	—	—

Model	LCC30A-2
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+15V0.3A

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。

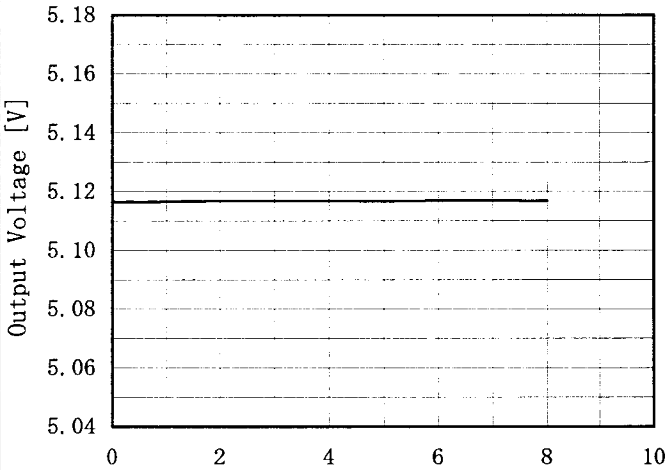
2. Values

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
—	—	—

Model	LCC30A-2
Item	Time Lapse Drift 経時ドリフト
Object	+5V3A

Temperature 25℃
Testing Circuitry Figure A

1．Graph



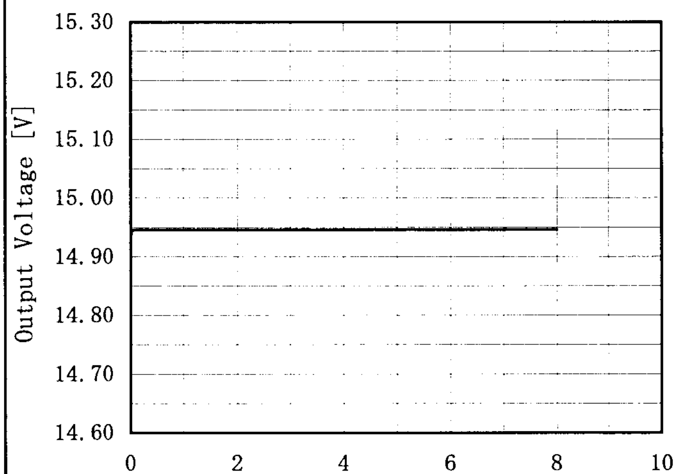
Input Volt. 100V
Load 100%

2．Values

Time since start [H]	Output Voltage [V]
0.0	5.117
0.5	5.117
1.0	5.117
2.0	5.117
3.0	5.117
4.0	5.117
5.0	5.117
6.0	5.117
7.0	5.117
8.0	5.117

Object	+15V1A

1．Graph



Input Volt. 100V
Load 100%

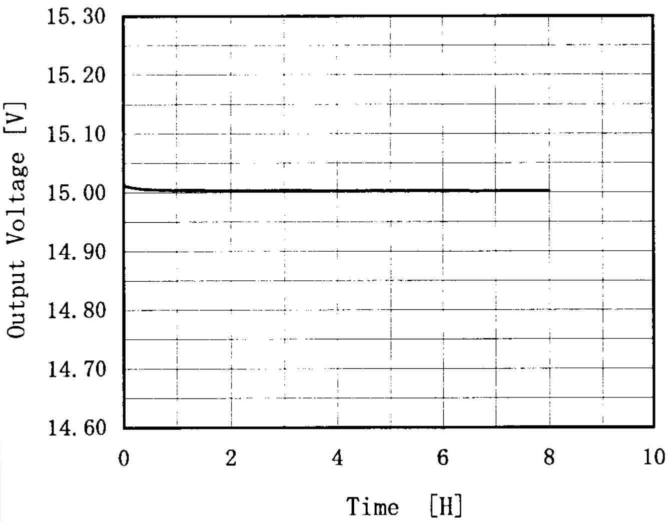
2．Values

Time since start [H]	Output Voltage [V]
0.0	14.934
0.5	14.946
1.0	14.946
2.0	14.946
3.0	14.946
4.0	14.946
5.0	14.946
6.0	14.946
7.0	14.946
8.0	14.946

COSEL

Model	LCC30A-2			
Item	Time Lapse Drift 経時ドリフト		Temperature Testing Circuitry	25℃ Figure A
Object	+15V0.3A			

1．Graph



Input Volt. 100V

Load 100%

2．Values

Time since start [H]	Output Voltage [V]
0.0	15.018
0.5	15.006
1.0	15.005
2.0	15.004
3.0	15.004
4.0	15.004
5.0	15.003
6.0	15.003
7.0	15.003
8.0	15.003

COSEL

Model	LCC30A-2	
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) : 0～1A (AVR 3) : 0～0.3A

* 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 ～ 3A (AVR 2) : 0～1A (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

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

2．Values

Object	+5V3A					
Item	Temperature [℃]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	85	0	5.135	±10	±0.2
Minimum Voltage	-10	85	3	5.116		

Object	+15V1A					
Item	Temperature [℃]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	50	132	0	14.974	±31	±0.2
Minimum Voltage	-10	85	0	14.912		

Object	+15V0.3A					
Item	Temperature [℃]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	-10	85	0	15.062	±42	±0.3
Minimum Voltage	50	132	0.3	14.979		

COSEL

Model	LCC30A-2	
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]	5.117	Input Volt.:100V, Load Current.:3A
Line Regulation [mV]	1	Input Volt.:85～132V, Load Current.:3A
Load Regulation [mV]	16	Input Volt.:100V, Load Current.:0～3A

Object	+15V1A

Item	Data	Testing Conditions
Output Voltage [V]	14.942	Input Volt.:100V, Load Current.:1A
Line Regulation [mV]	1	Input Volt.:85～132V, Load Current.:1A
Load Regulation [mV]	22	Input Volt.:100V, Load Current.:0～1A

Object	+15V0.3A

Item	Data	Testing Conditions
Output Voltage [V]	15.009	Input Volt.:100V, Load Current.:0.3A
Line Regulation [mV]	1	Input Volt.:85～132V, Load Current.:0.3A
Load Regulation [mV]	25	Input Volt.:100V, Load Current.:0～0.3A

COSEL

Model	LCC30A-2		
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	0.09

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-2		
Item	Line Noise Tolerance 入力雑音耐量	Temperature Testing Circuitry	25℃ Figure C
Object	+5V3A		

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	+15V1A

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-2		
Item	Line Noise Tolerance 入力雑音耐量	Temperature Testing Circuitry	25℃ Figure C
Object	+15V0.3A		

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

Model	LCC30A-2		
Item	Conducted Emission 雑音端子電圧	Temperature Testing Circuitry	25℃ Figure D
Object	———————		

1．Graph

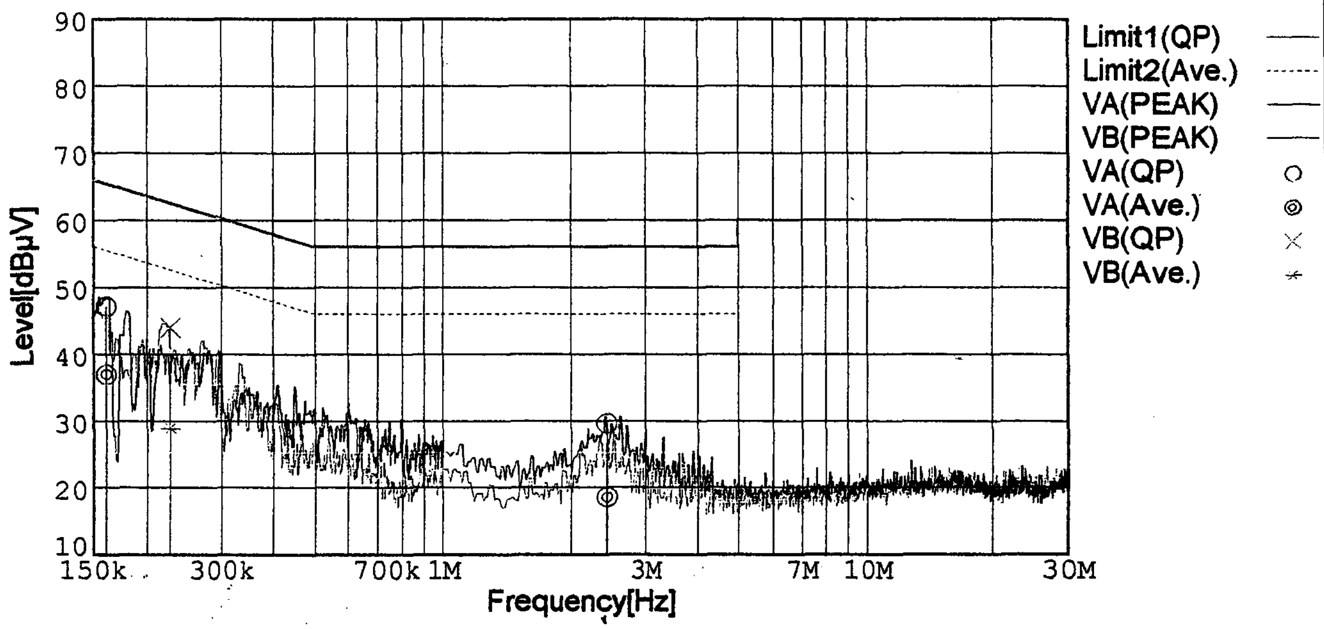
Remarks

Input Volt. 100V (VCCI Class B)

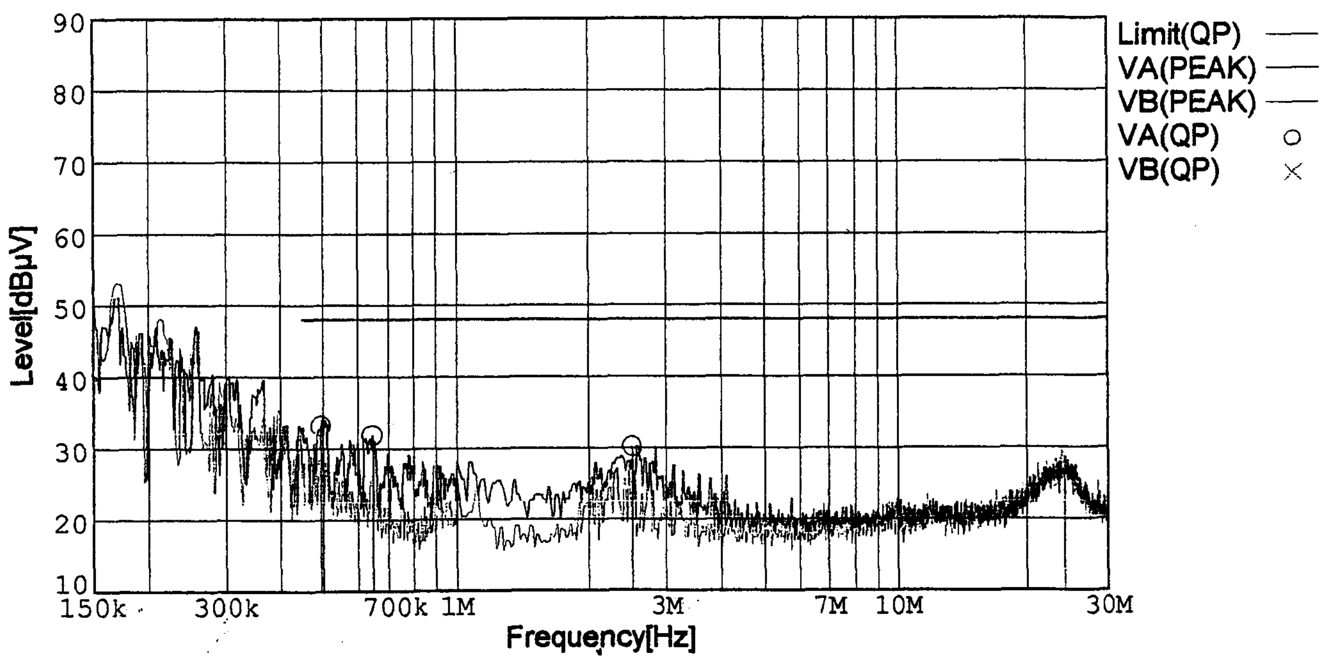
120V (FCC Class B)

Load 100%

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



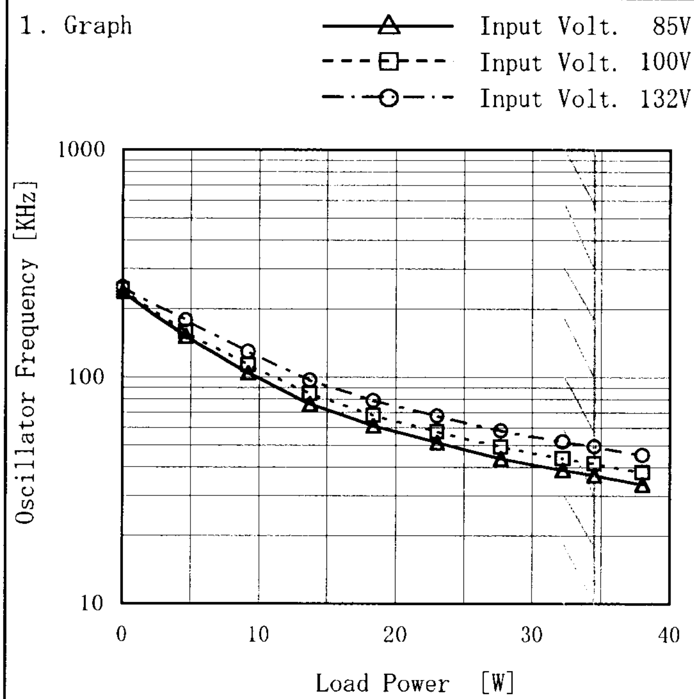
Limit: [FCC Part15] Class B



COSEL

Model	LCC30A-2		
Item	Oscillator Frequency 発振周波数	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
4.6	152	159	179
9.2	104	114	130
13.8	76	85	97
18.4	61	68	79
23.0	52	58	68
27.6	44	49	58
32.2	39	44	52
34.5	37	42	50
38.0	34	38	45
—	—	—	—

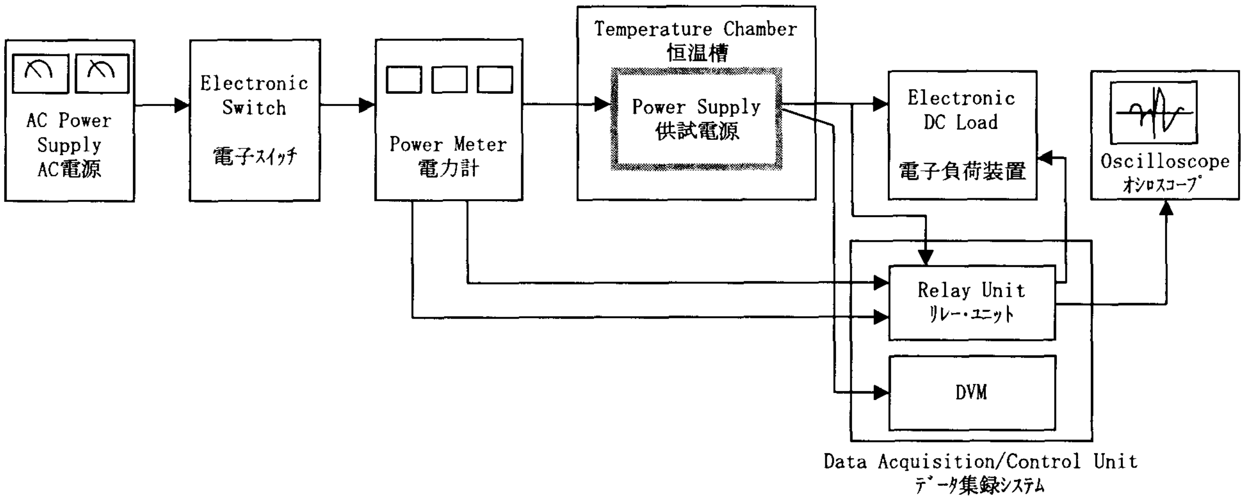
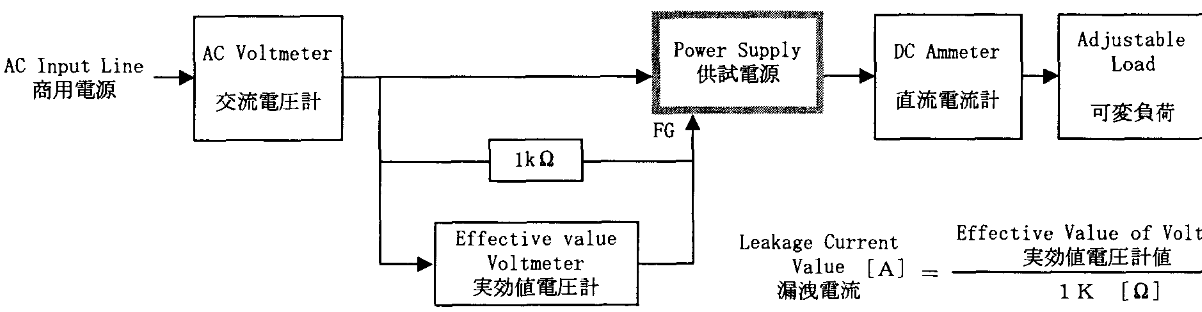
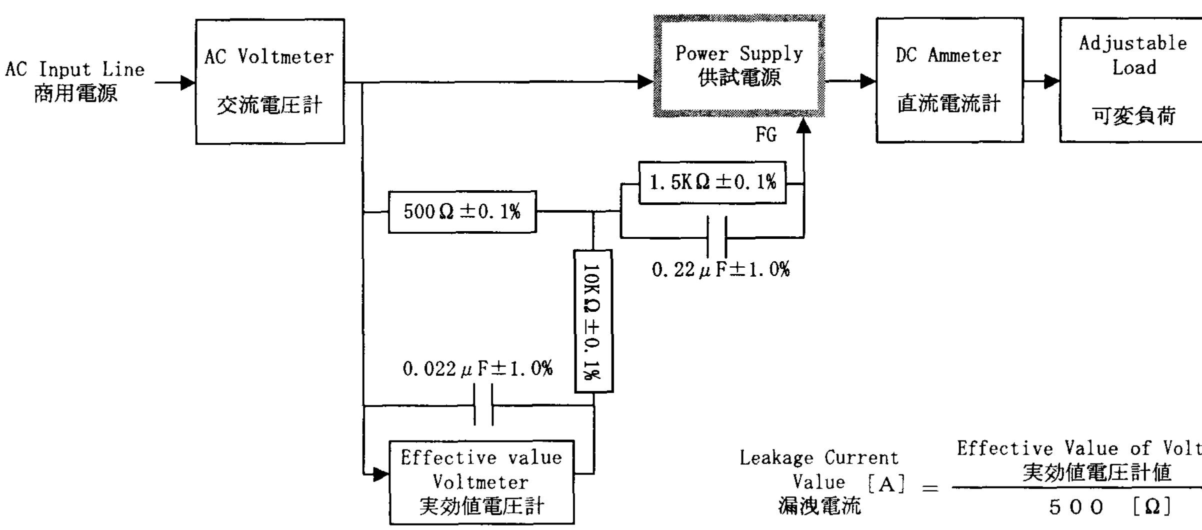


Figure A



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)

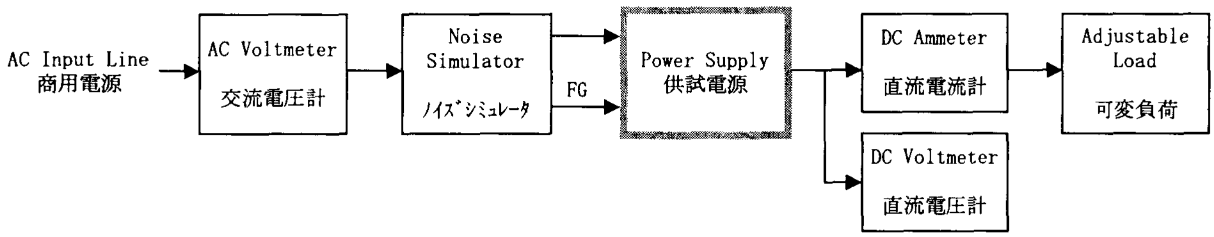


Figure C

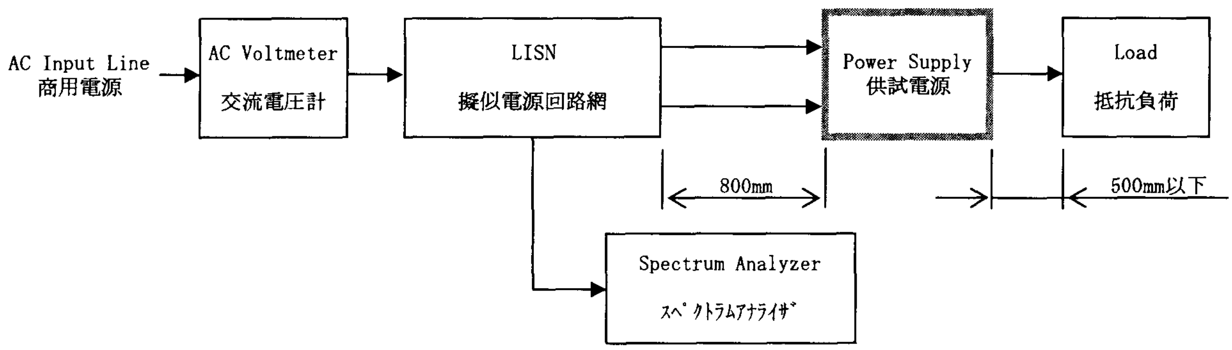


Figure D