参考資料

COSEL

TEST DATA OF MMC8A-2

(100V INPUT)

Regulated DC Power Supply

Date : Mar. 15. 1999

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Design Manager

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Design Engineer

コーセル株式会社

COSEL CO., LTD.

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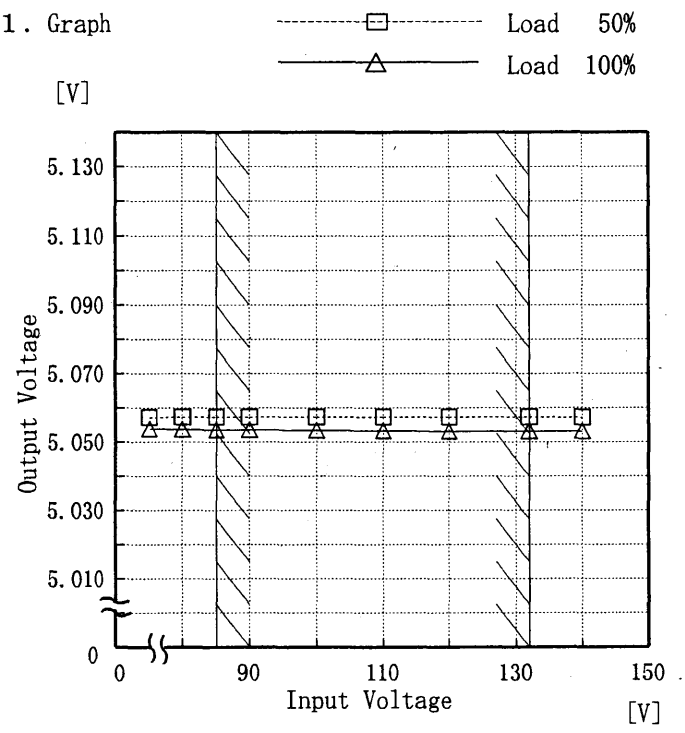
1. Graph

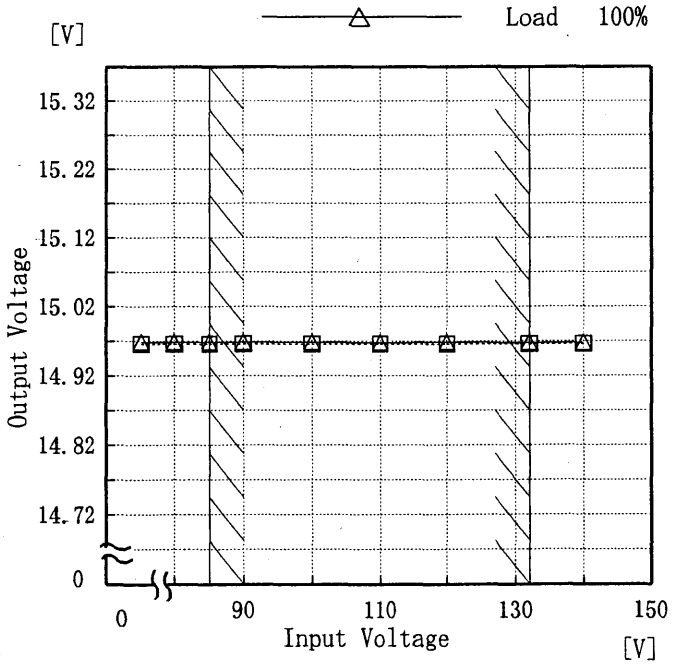


2. Values

Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
75	5.057	5.054
80	5.057	5.054
85	5.057	5.054
90	5.057	5.054
100	5.057	5.053
110	5.057	5.053
120	5.057	5.053
132	5.057	5.053
140	5.057	5.053
—	—	—
—	—	—
—	—	—

Object +15V0.1A

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]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
75	14.966	14.969
80	14.966	14.969
85	14.966	14.969
90	14.966	14.969
100	14.966	14.969
110	14.966	14.968
120	14.966	14.969
132	14.966	14.968
140	14.966	14.968
—	—	—
—	—	—
—	—	—

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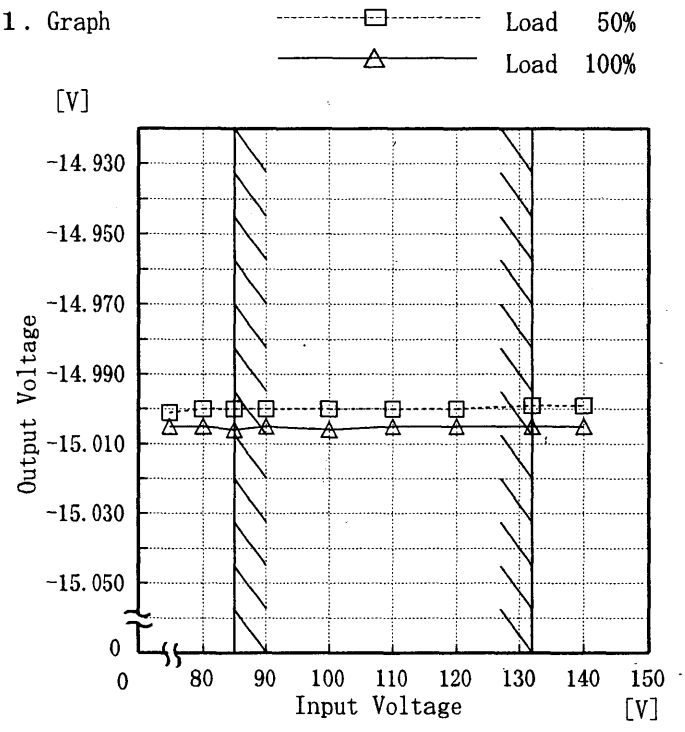
Model	MMC8A-2
Item	Line Regulation 静的入力変動
Object	-15.0V0.1A

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]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
75	-15.001	-15.005
80	-15.000	-15.005
85	-15.000	-15.006
90	-15.000	-15.005
100	-15.000	-15.006
110	-15.000	-15.005
120	-15.000	-15.005
132	-14.999	-15.005
140	-14.999	-15.005

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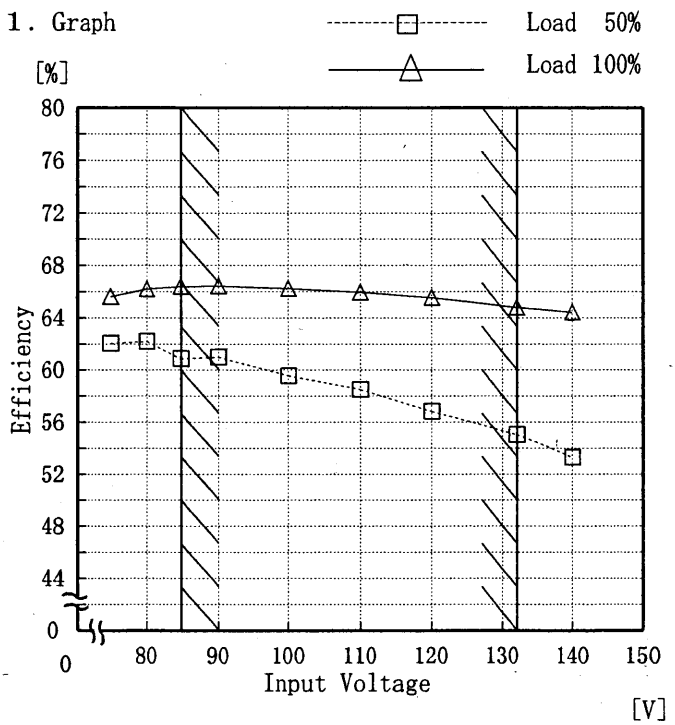
Model	MMC8A-2
Item	Efficiency 効率
Object	――――――――――

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]	Load 50% Efficiency [%]	Load 100% Efficiency [%]
75	62.0	65.6
80	62.2	66.2
85	60.9	66.4
90	61.0	66.4
100	59.6	66.2
110	58.5	66.0
120	56.9	65.6
132	55.1	64.8
140	53.3	64.4

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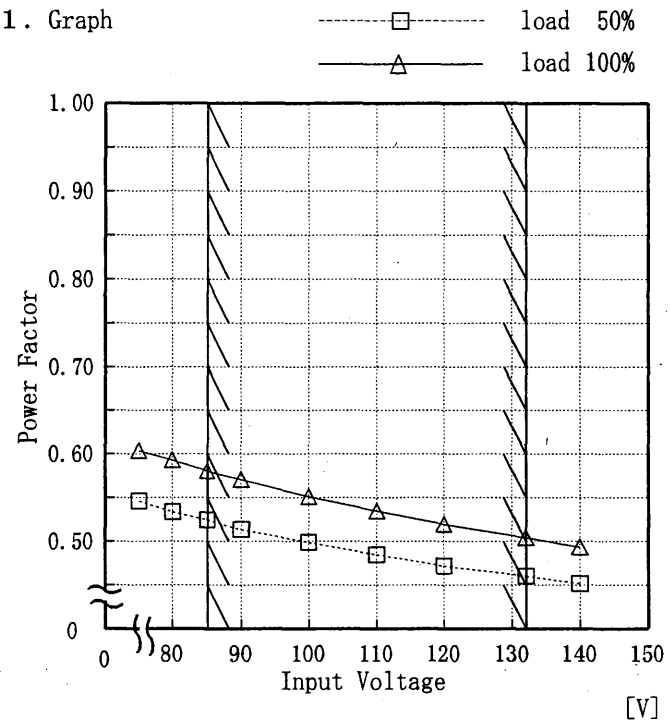
Model	MMC8A-2
Item	Power Factor (by Input Voltage) 力率（入力電圧特性）
Object	――――――――――

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]	load 50% Power Factor	load 100% Power Factor
75	0.55	0.60
80	0.53	0.59
85	0.52	0.58
90	0.51	0.57
100	0.50	0.55
110	0.48	0.53
120	0.47	0.52
132	0.46	0.50
140	0.45	0.49

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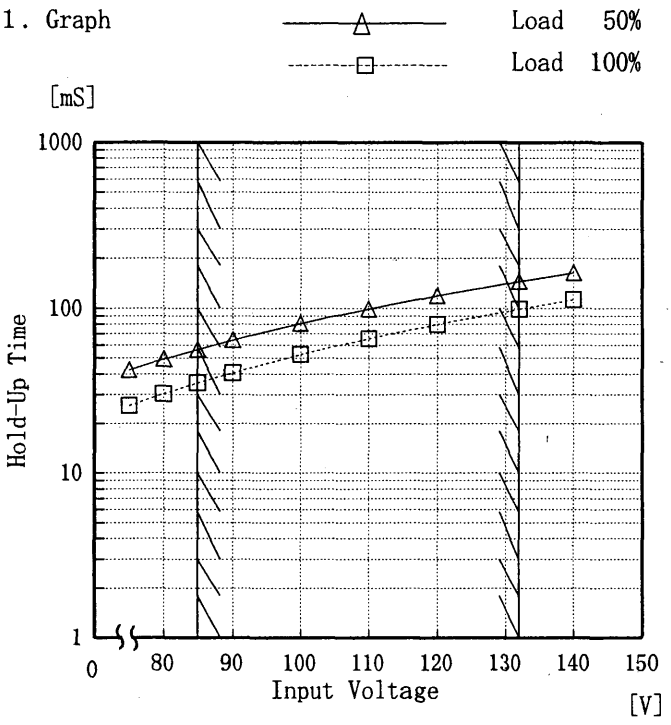
Model	MMC8A-2
Item	Hold-Up Time 出力保持時間
Object	+5.0V1.1A

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、定電圧精度の規格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

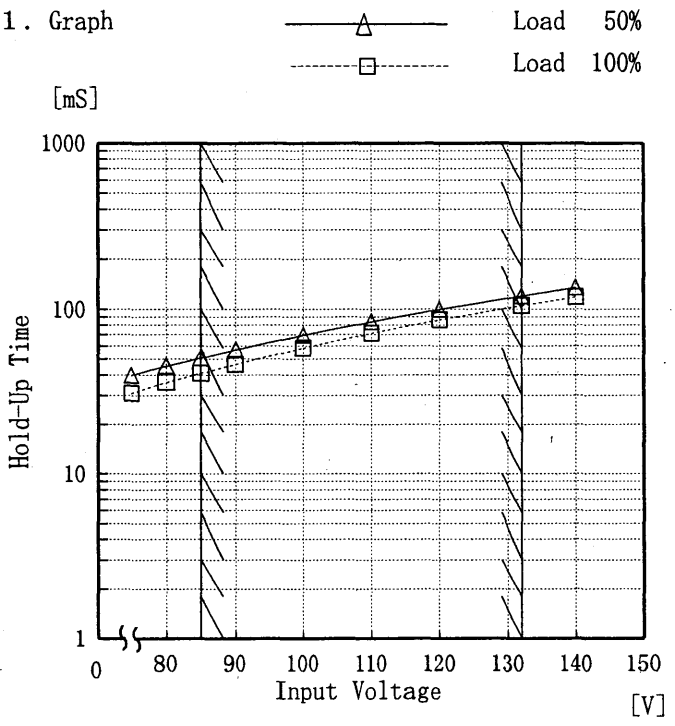
Input Voltage [V]	Load 50% Hold-Up Time [mS]	Load 100% Hold-Up Time [mS]
75	42	26
80	49	30
85	57	35
90	64	41
100	81	53
110	99	66
120	120	80
132	146	99
140	164	113

COSEL

Model	MMC8A-2
Item	Hold-Up Time 出力保持時間
Object	+15.0V0.1A

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、定電圧精度の規格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]	Load 50% Hold-Up Time [mS]	Load 100% Hold-Up Time [mS]
75	40	31
80	45	36
85	51	41
90	57	46
100	70	58
110	84	71
120	100	86
132	120	105
140	135	119

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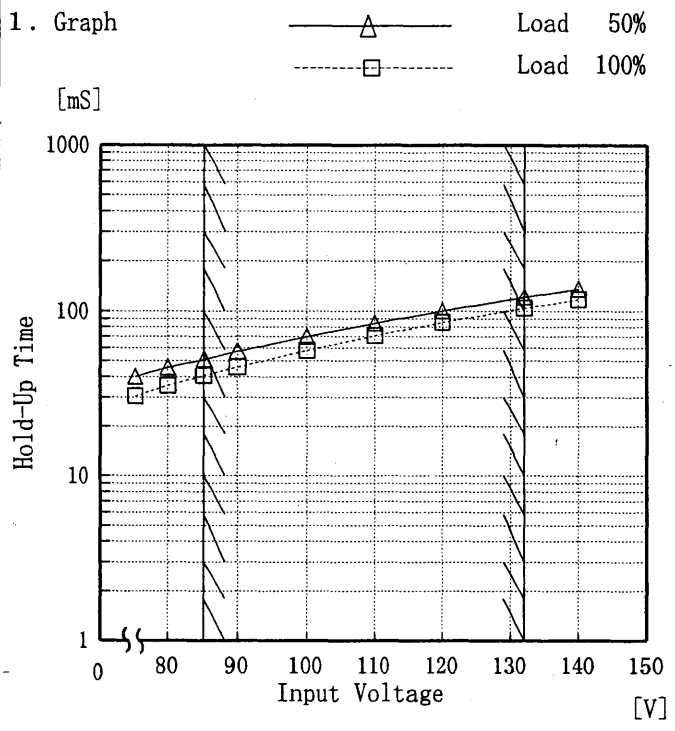
Model	MMC8A-2
Item	Hold-Up Time 出力保持時間
Object	-15.0V0.1A

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、定電圧精度の規格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]	Load 50% Hold-Up Time [mS]	Load 100% Hold-Up Time [mS]
75	40	31
80	46	35
85	51	41
90	57	46
100	70	58
110	85	71
120	101	85
132	121	105
140	136	118

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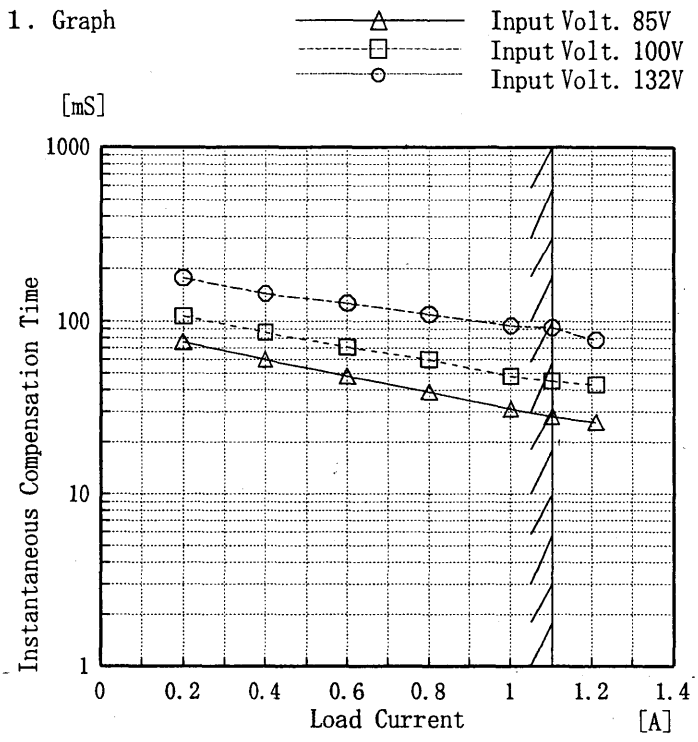
Model	MMC8A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+5.0V1.1A

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 load current.

瞬時停電保障時間とは、出力電圧が定電圧精度の規格範囲を保持している瞬時停電時間をいう。
(注)斜線は定格負荷電流範囲を示す。

2. Values

Load Current [A]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
	Time [mS]		
0.0	—	—	—
0.20	76	107	178
0.40	60	86	144
0.60	48	71	127
0.80	39	60	110
1.00	31	48	94
1.10	28	45	92
1.21	26	43	78
—	—	—	—
—	—	—	—
—	—	—	—

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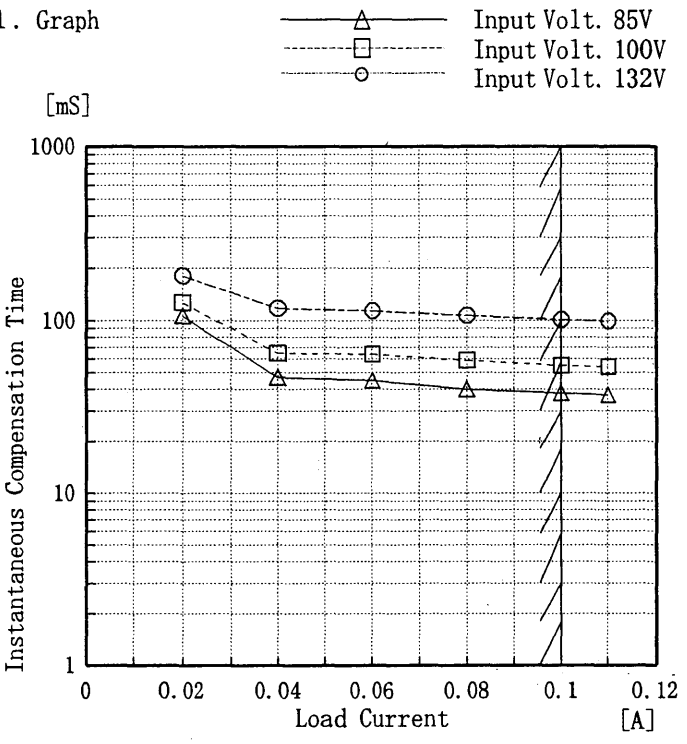
Model	MMC8A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+15.0V0.1A

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 load current.

瞬時停電保障時間とは、出力電圧が定電圧精度の規格範囲を保持している瞬時停電時間をいう。
(注)斜線は定格負荷電流範囲を示す。

2. Values

Load Current [A]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
	Time [mS]		
0.0	—	—	—
0.02	106	127	181
0.04	47	65	118
0.06	45	64	114
0.08	40	59	107
0.10	38	55	101
0.11	37	54	99
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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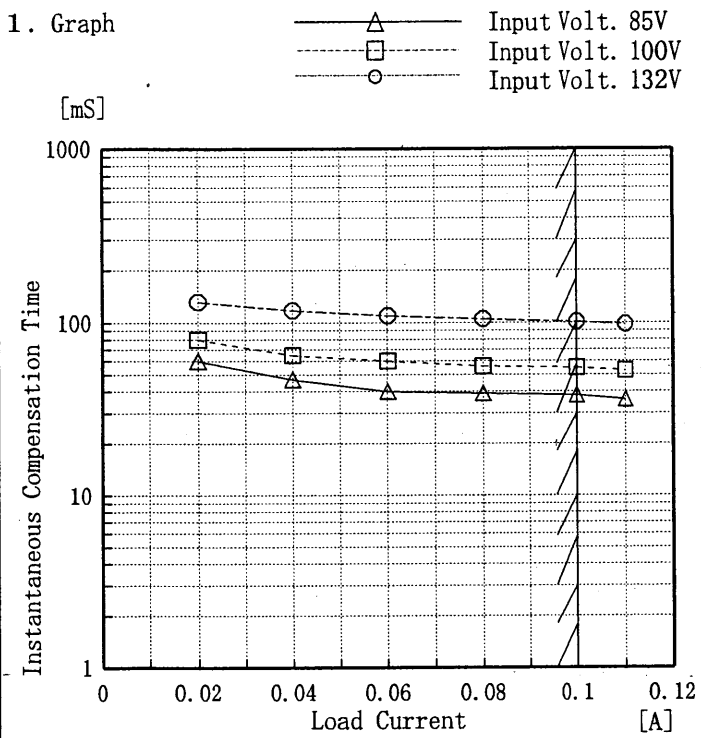
COSEL

Model	MMC8A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	-15.0V0.1A

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 load current.

瞬時停電保障時間とは、出力電圧が定電圧精度の規格範囲を保持している瞬時停電時間をいう。
(注)斜線は定格負荷電流範囲を示す。

2. Values

Load Current [A]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
	Time [mS]		
0.0	—	—	—
0.02	60	80	132
0.04	47	65	118
0.06	40	60	110
0.08	39	56	105
0.10	38	55	101
0.11	36	53	98
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—

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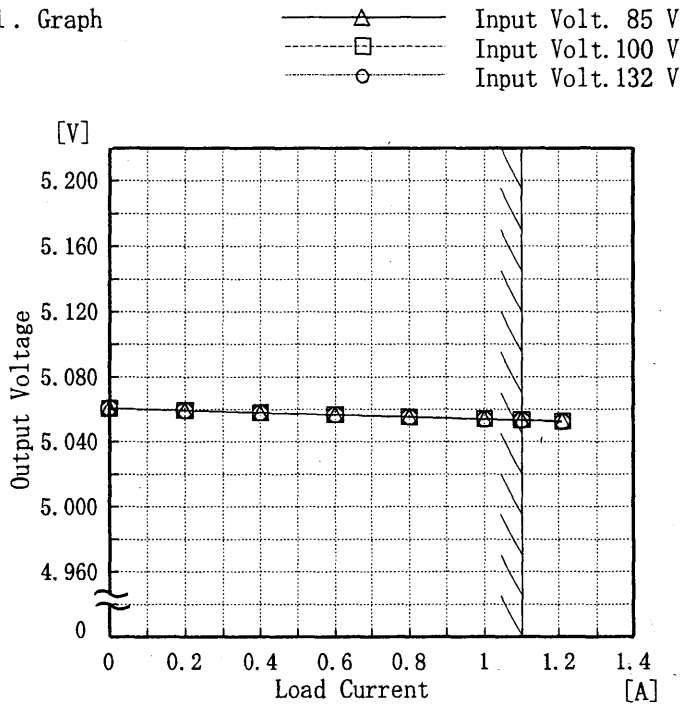
Model	MMC8A-2	Temperature	25℃
Item	Load Regulation 静的負荷変動	Testing Circuitry	Figure A

Object ＋5.0V1.1A

1. Graph

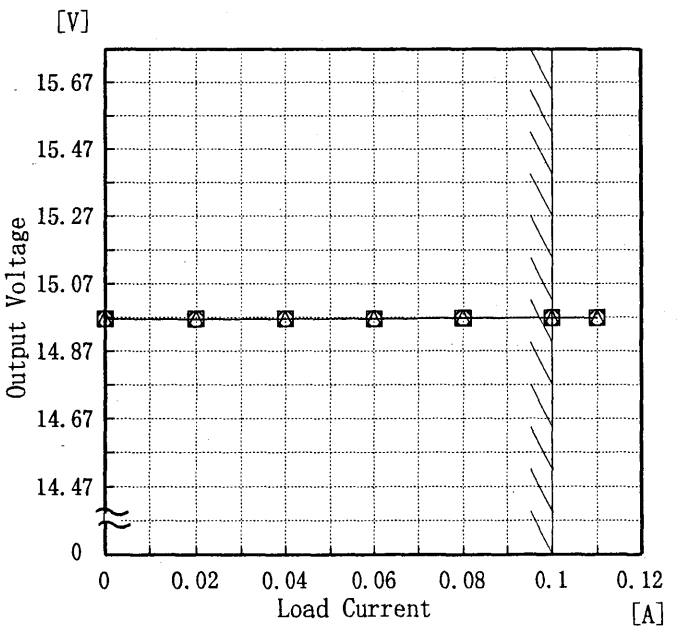


2. Values

Load Current	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
[A]	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
0.00	5.061	5.061	5.061
0.20	5.059	5.059	5.059
0.40	5.058	5.058	5.058
0.60	5.057	5.057	5.057
0.80	5.056	5.056	5.055
1.00	5.054	5.054	5.054
1.10	5.054	5.054	5.053
1.21	5.053	5.053	5.052
—	—	—	—
—	—	—	—

Object ＋15V0.1A

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。

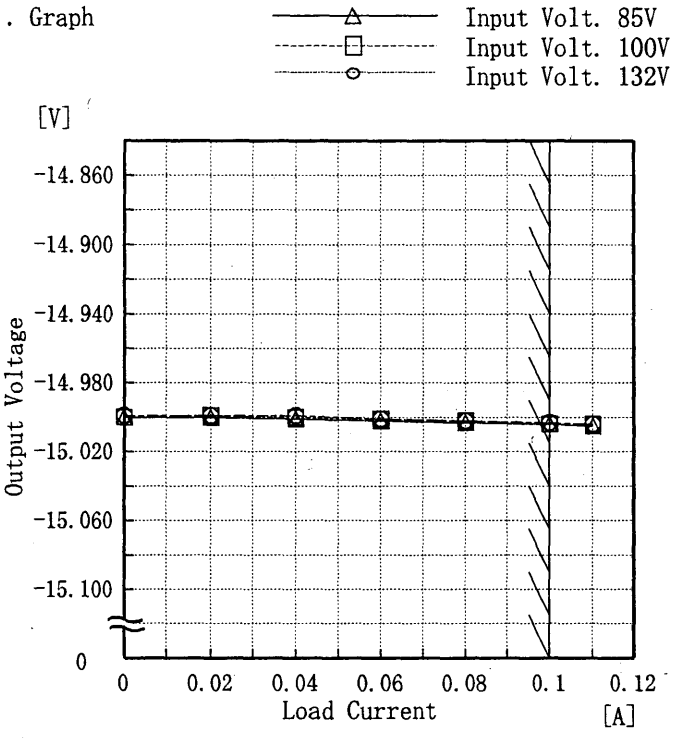
2. Values

Load Current	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
[A]	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
0.00	14.965	14.965	14.965
0.02	14.965	14.965	14.964
0.04	14.966	14.966	14.965
0.06	14.967	14.966	14.966
0.08	14.968	14.967	14.967
0.10	14.968	14.968	14.968
0.11	14.968	14.968	14.968
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	MMC8A-2	
Item	Load Regulation 静的負荷変動	Temperature 25℃ Testing Circuitry Figure A
Object	-15.0V0.1A	

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

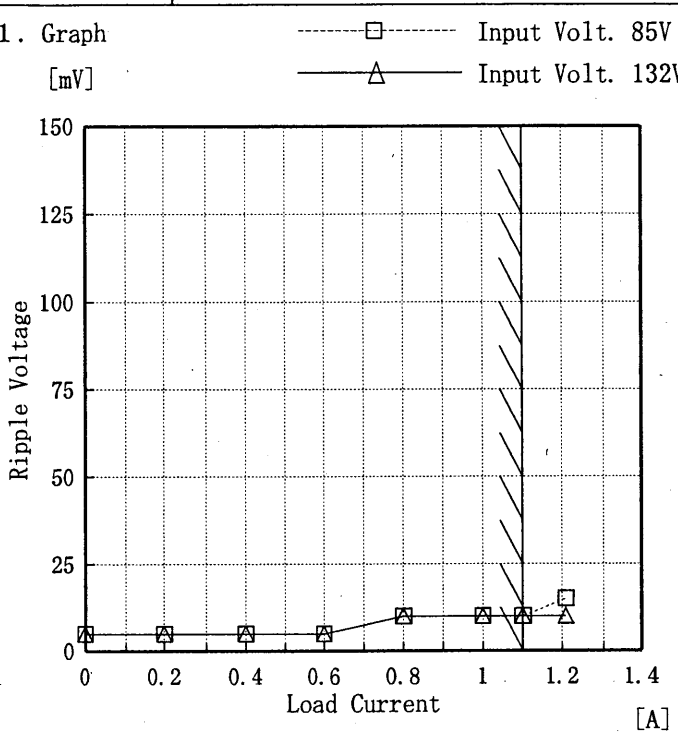
Load Current [A]	Input Volt. 85[V] Output Volt. [V]	Input Volt. 100[V] Output Volt. [V]	Input Volt. 132[V] Output Volt. [V]
0.00	-15.000	-15.000	-14.999
0.02	-15.000	-14.999	-14.999
0.04	-15.001	-15.000	-14.999
0.06	-15.002	-15.001	-15.001
0.08	-15.003	-15.002	-15.002
0.10	-15.004	-15.004	-15.003
0.11	-15.005	-15.004	-15.004
—	—	—	—
—	—	—	—
—	—	—	—

COSEL

Model	MMC8A-2
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+5.0V1.1A

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

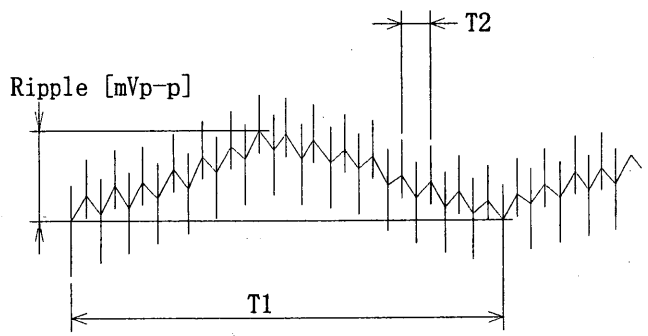


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load Current [A]	Input Volt. 85 [V] Ripple Output Volt. [mV]	Input Volt. 132 [V] Ripple Output Volt. [mV]
0.00	5	5
0.20	5	5
0.40	5	5
0.60	5	5
0.80	10	10
1.00	10	10
1.10	10	10
1.21	15	10
—	—	—
—	—	—
—	—	—

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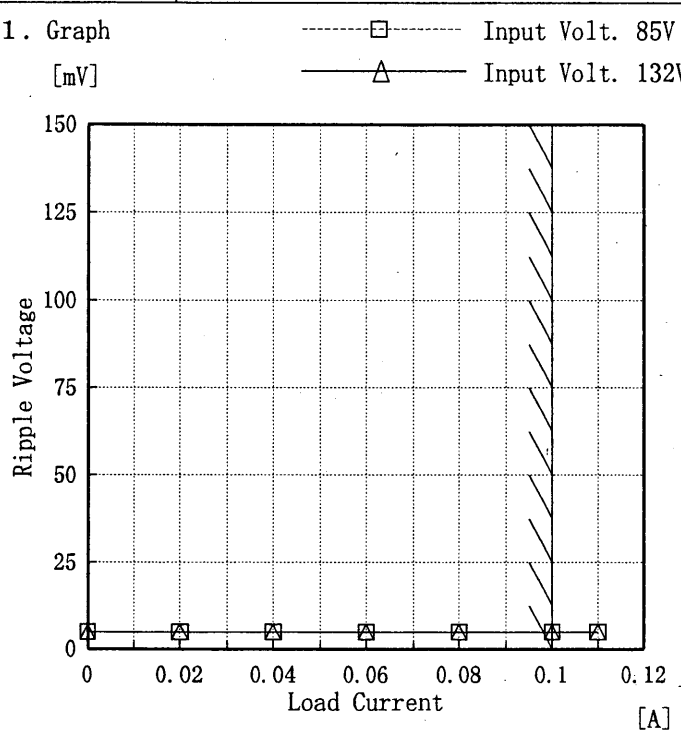
COSEL

Model	MMC8A-2
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+15.0V0.1A

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

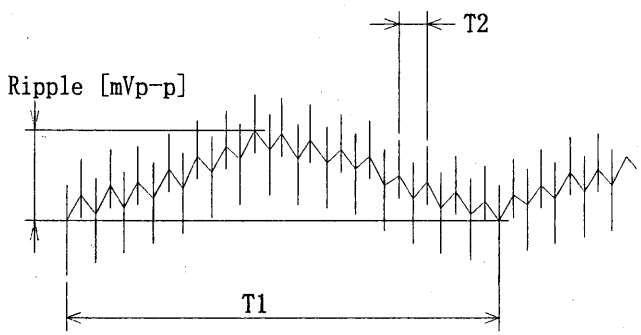


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load Current [A]	Input Volt. 85 [V] Ripple Output Volt. [mV]	Input Volt. 132 [V] Ripple Output Volt. [mV]
0.00	5	5
0.02	5	5
0.04	5	5
0.06	5	5
0.08	5	5
0.10	5	5
0.11	5	5
—	—	—
—	—	—
—	—	—
—	—	—

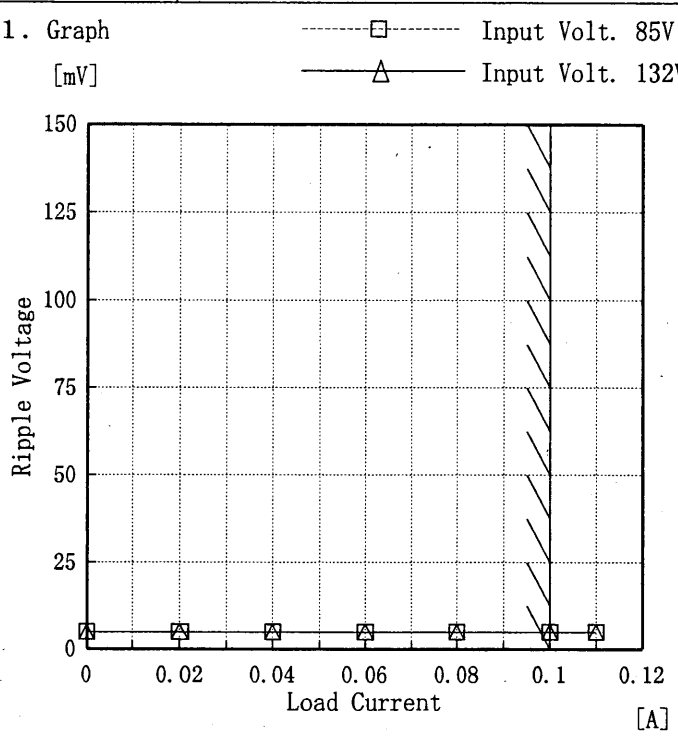
BC−3220

COSEL

Model	MMC8A-2
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	-15.0V0.1A

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

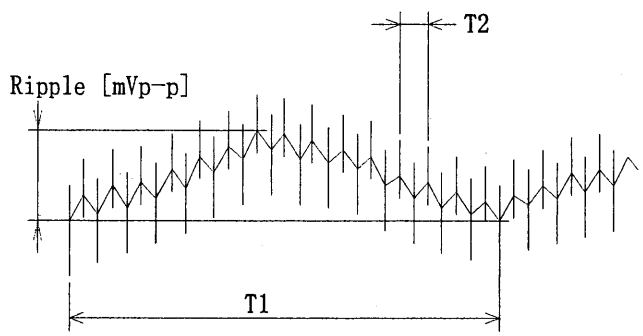


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

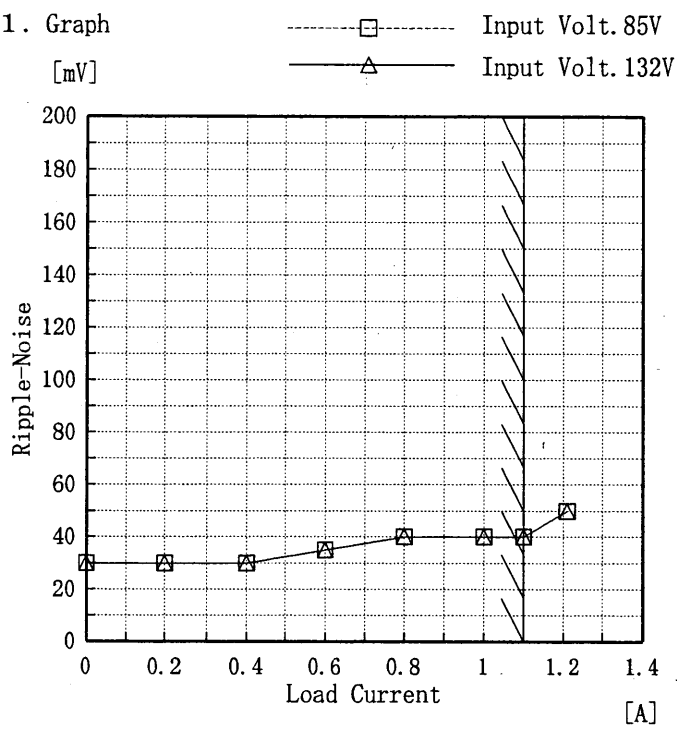
Load Current [A]	Input Volt. 85 [V] Ripple Output Volt. [mV]	Input Volt. 132 [V] Ripple Output Volt. [mV]
0.00	5	5
0.02	5	5
0.04	5	5
0.06	5	5
0.08	5	5
0.10	5	5
0.11	5	5
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	MMC8A-2
Item	Ripple-Noise リップルノイズ
Object	+5.0V1.1A

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

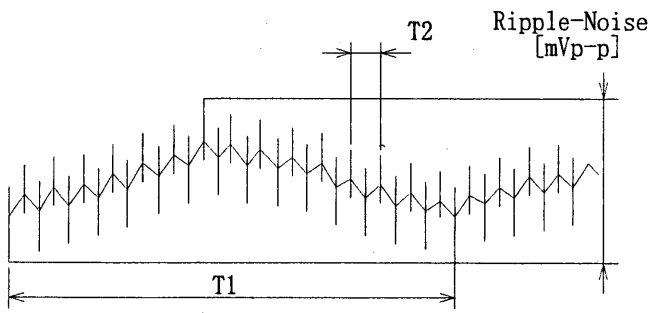


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

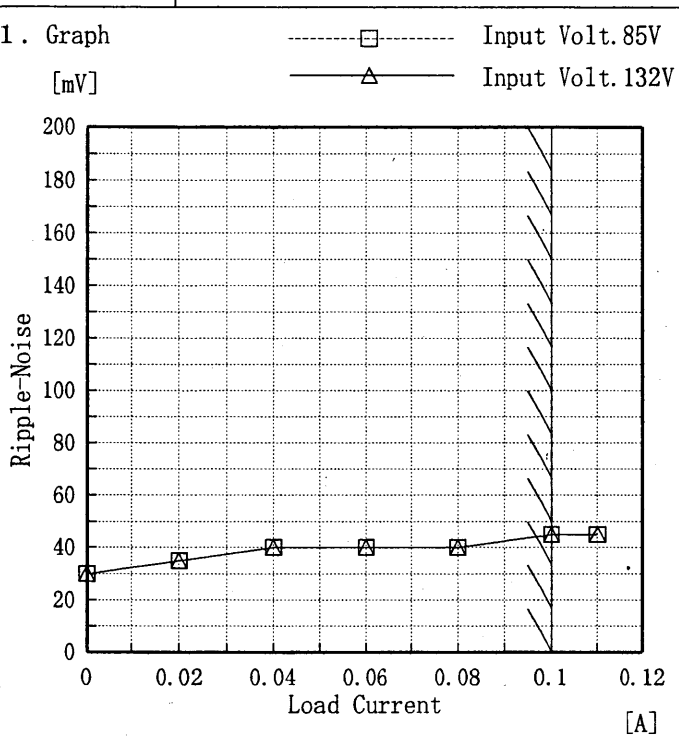
Load current [A]	Input Volt. 85 [V] Ripple-Noise [mV]	Input Volt. 132 [V] Ripple-Noise [mV]
0.00	30	30
0.20	30	30
0.40	30	30
0.60	35	35
0.80	40	40
1.00	40	40
1.10	40	40
1.21	50	50
—	—	—
—	—	—
—	—	—

COSEL

Model	MMC8A-2
Item	Ripple-Noise リップルノイズ
Object	+15.0V0.1A

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

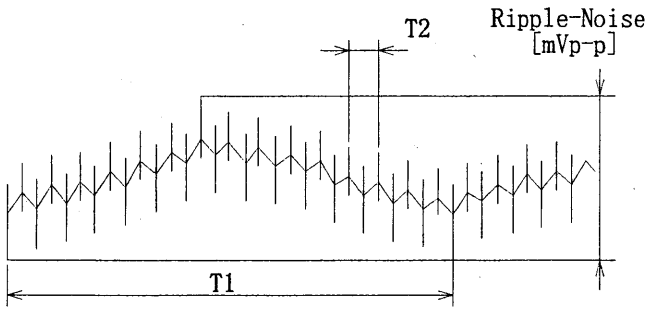


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load current [A]	Input Volt. 85 [V] Ripple-Noise [mV]	Input Volt. 132 [V] Ripple-Noise [mV]
0.00	30	30
0.02	35	35
0.04	40	40
0.06	40	40
0.08	40	40
0.10	45	45
0.11	45	45
—	—	—
—	—	—
—	—	—
—	—	—

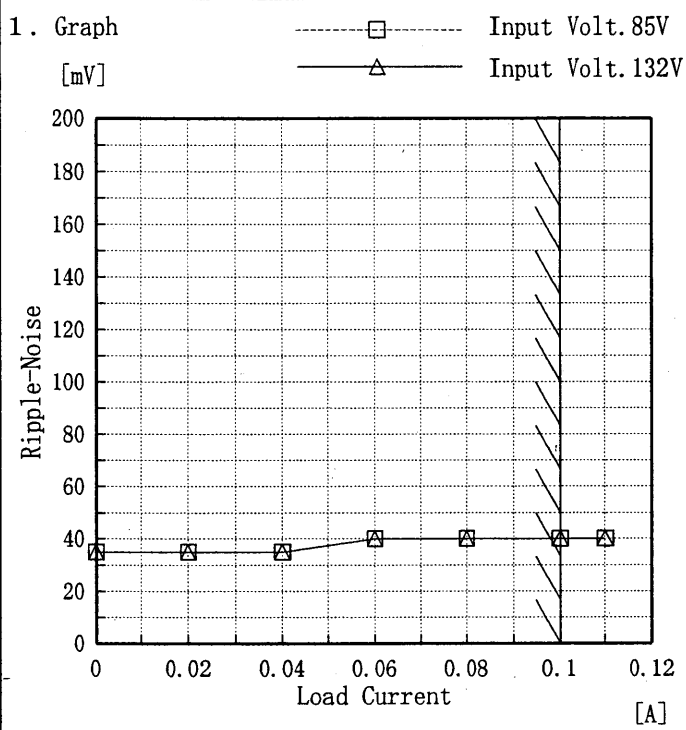
BC−3220

COSEL

Model	MMC8A-2
Item	Ripple-Noise リップルノイズ
Object	-15.0V0.1A

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

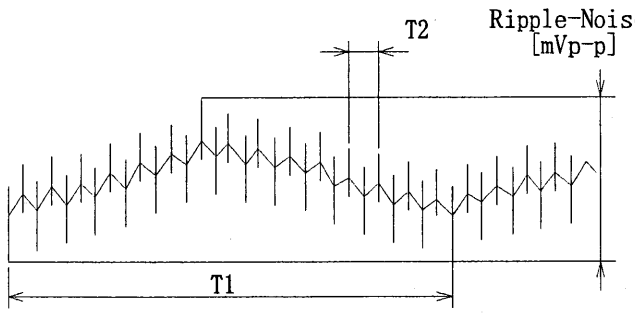


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load current [A]	Input Volt. 85 [V] Ripple-Noise [mV]	Input Volt. 132 [V] Ripple-Noise [mV]
0.00	35	35
0.02	35	35
0.04	35	35
0.06	40	40
0.08	40	40
0.10	40	40
0.11	40	40
—	—	—
—	—	—
—	—	—
—	—	—

BC−3220

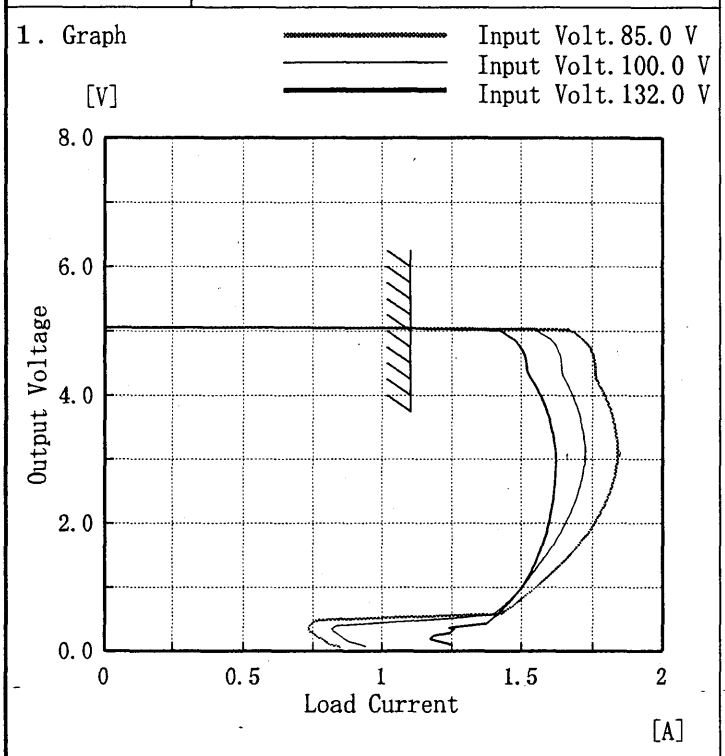
COSEL

Model	MMC8A-2
Item	Overcurrent Protection 過電流保護

Temperature 25℃
Testing Circuitry Figure A

Object +5.0V1.1A

1. Graph

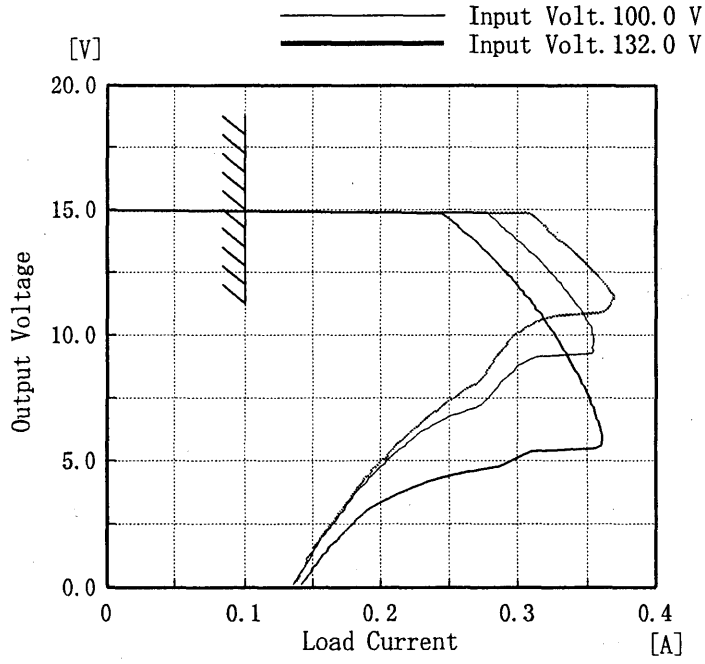


2. Values

Output Voltage [V]	Input Volt. 85.0[V] Load Current [A]	Input Volt. 100.0[V] Load Current [A]	Input Volt. 132.0[V] Load Current [A]
5.00	-	-	-
4.75	1.744	1.620	1.494
4.50	1.759	1.641	1.518
4.00	1.797	1.685	1.572
3.50	1.832	1.714	1.604
3.00	1.837	1.723	1.620
2.50	1.808	1.698	1.613
2.00	1.755	1.652	1.593
1.50	1.658	1.585	1.559
1.00	1.545	1.496	1.497
0.50	0.770	1.091	1.386
0.00	0.851	0.942	1.242

Object +15V0.1A

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

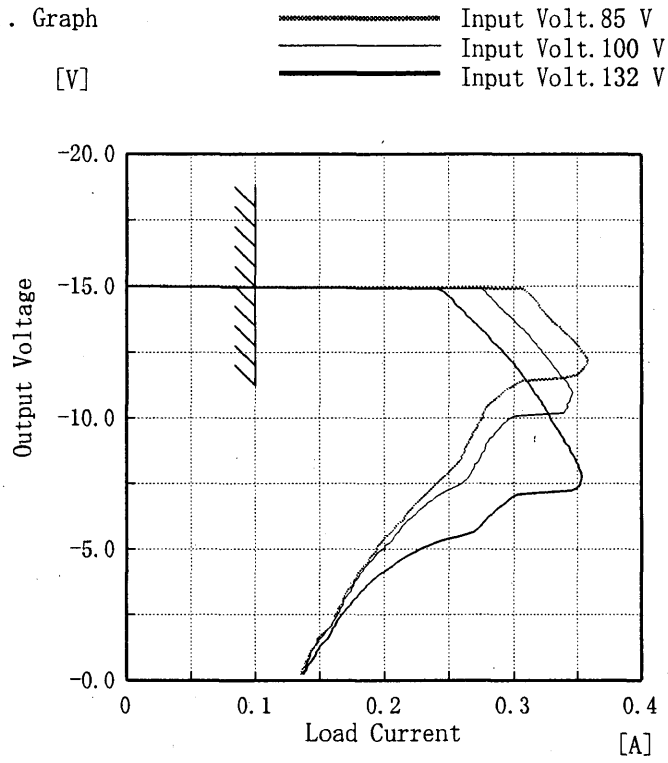
Output Voltage [V]	Input Volt. 85.0[V] Load Current [A]	Input Volt. 100.0[V] Load Current [A]	Input Volt. 132.0[V] Load Current [A]
15.00	-	-	-
14.25	0.321	0.290	0.257
13.50	0.338	0.306	0.274
12.00	0.364	0.332	0.300
10.50	0.310	0.351	0.321
9.00	0.282	0.305	0.338
7.50	0.253	0.278	0.352
6.00	0.218	0.225	0.360
4.50	0.191	0.194	0.251
3.00	0.168	0.169	0.187
1.50	0.149	0.150	0.160
0.00	0.134	0.135	0.141

COSEL

Model	MMC8A-2
Item	Overcurrent Protection 過電流保護
Object	-15.0V0.1A

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。

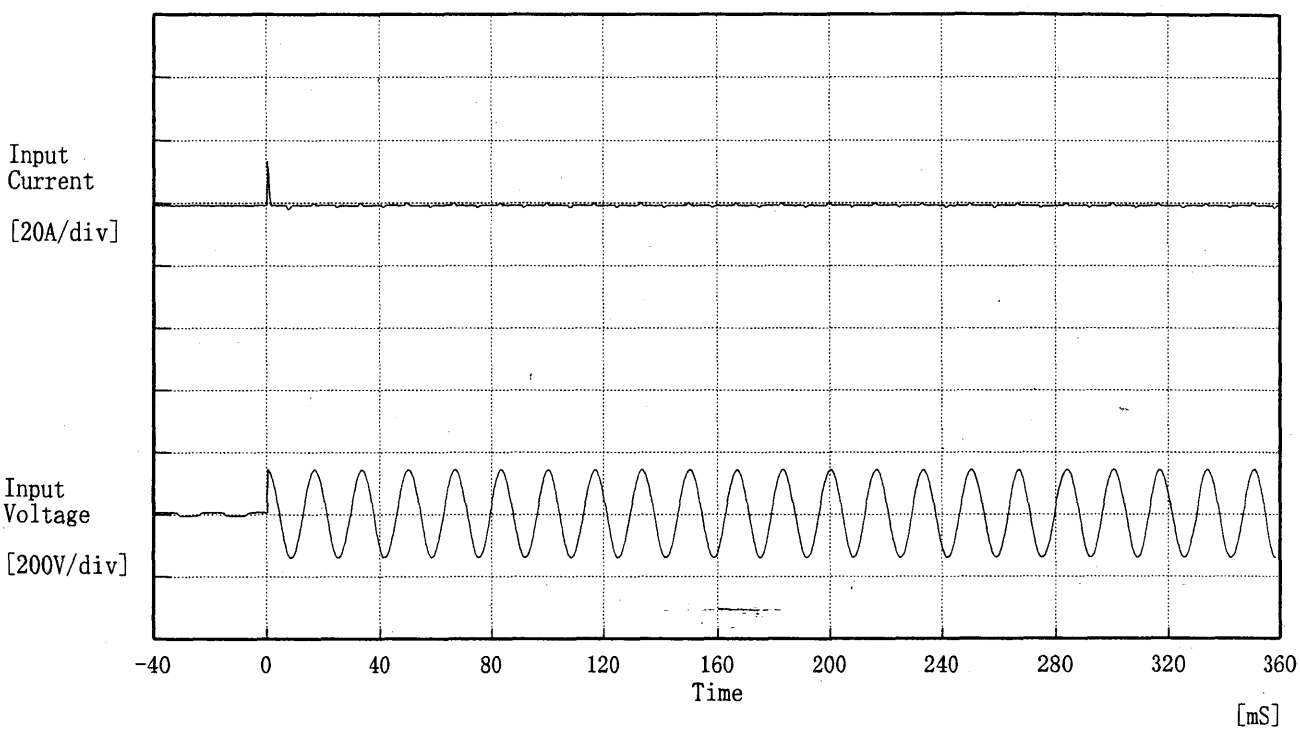
2. Values

Output Voltage [V]	Input Volt. 85[V] Load Current [A]	Input Volt. 100[V] Load Current [A]	Input Volt. 132[V] Load Current [A]
-15.00	-	-	-
-14.25	0.32	0.29	0.26
-13.50	0.34	0.30	0.27
-12.00	0.36	0.33	0.30
-10.50	0.28	0.34	0.33
-9.00	0.26	0.28	0.34
-7.50	0.24	0.26	0.35
-6.00	0.21	0.21	0.28
-4.50	0.19	0.19	0.21
-3.00	0.17	0.17	0.17
-1.50	0.15	0.15	0.15
0.00	0.14	0.14	0.14

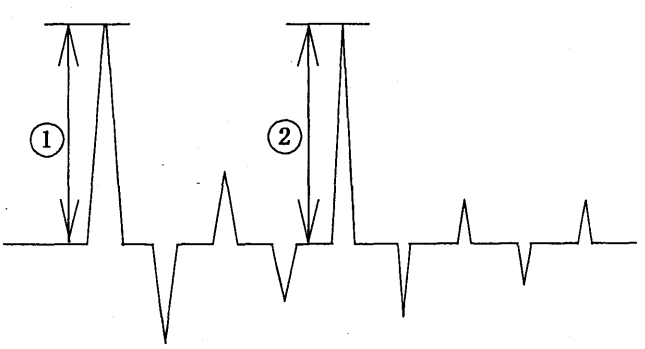
COSEL

Model	MMC8A-2
Item	Inrush Current 突入電流
Object	――――――――

Temperature 25℃
Testing Circuitry Figure A



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



COSEL

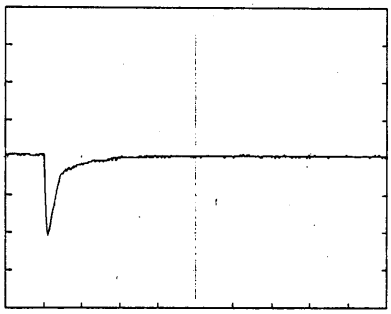
Model	MMC8A-2		
Item	Dynamic Load Responce 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+5.0V1.1A		

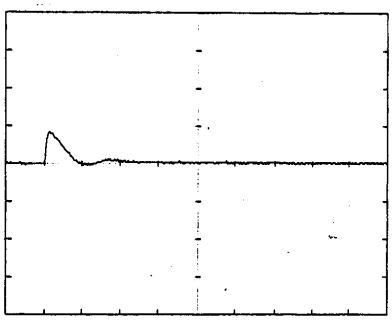
Input Volt. 100 V

Cycle 200 mS

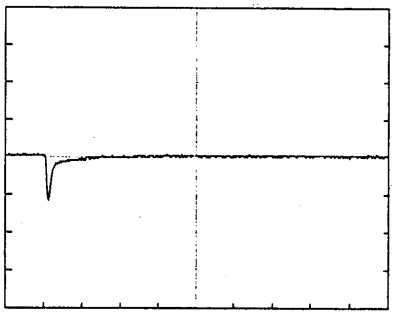
Load Current

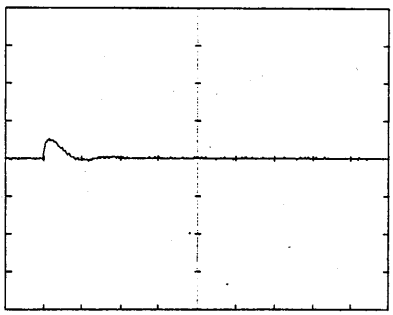
Load 0% ⟷
Load 100 %





Load 0% ⟷
Load 50 %





200 mV/div

10 mS/div

COSEL

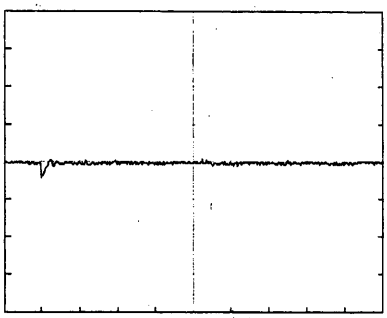
Model	MMC8A-2
Item	Dynamic Load Responce 動的負荷変動
Object	+15.0V0.1A

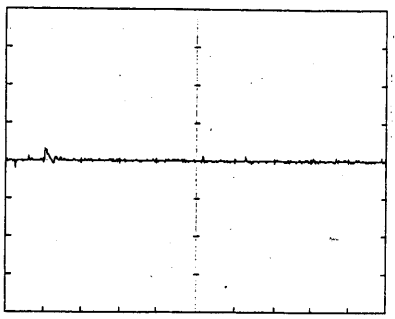
Temperature 25℃
Testing Circuitry Figure A

Input Volt. 100 V
Cycle 200 mS

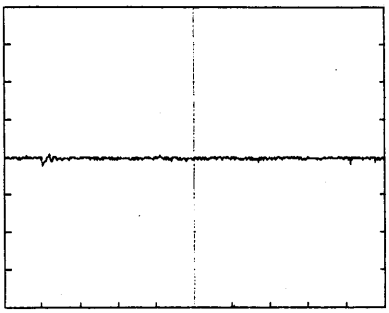
Load Current

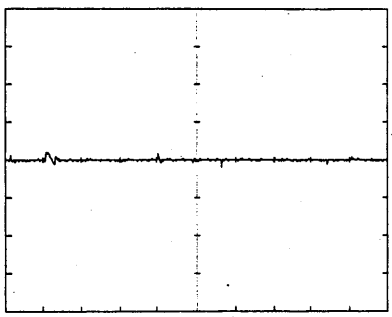
Load 0% ⟷
Load 100 %





Load 0% ⟷
Load 50 %





100 mV/div

10 mS/div

COSEL

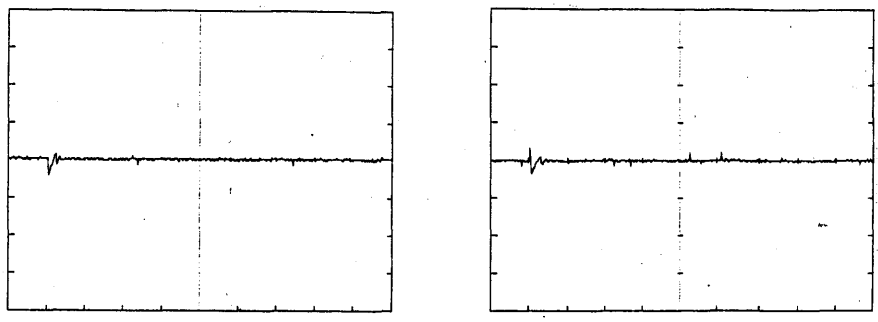
Model	MMC8A-2		
Item	Dynamic Load Responce 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	-15.0V0.1A		

Input Volt. 100 V

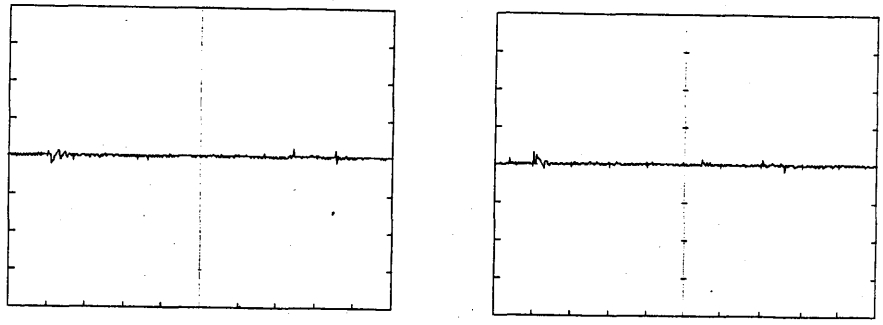
Cycle 200 mS

Load Current

Load 0% ⟷
Load 100 %



Load 0% ⟷
Load 50 %



100 mV/div

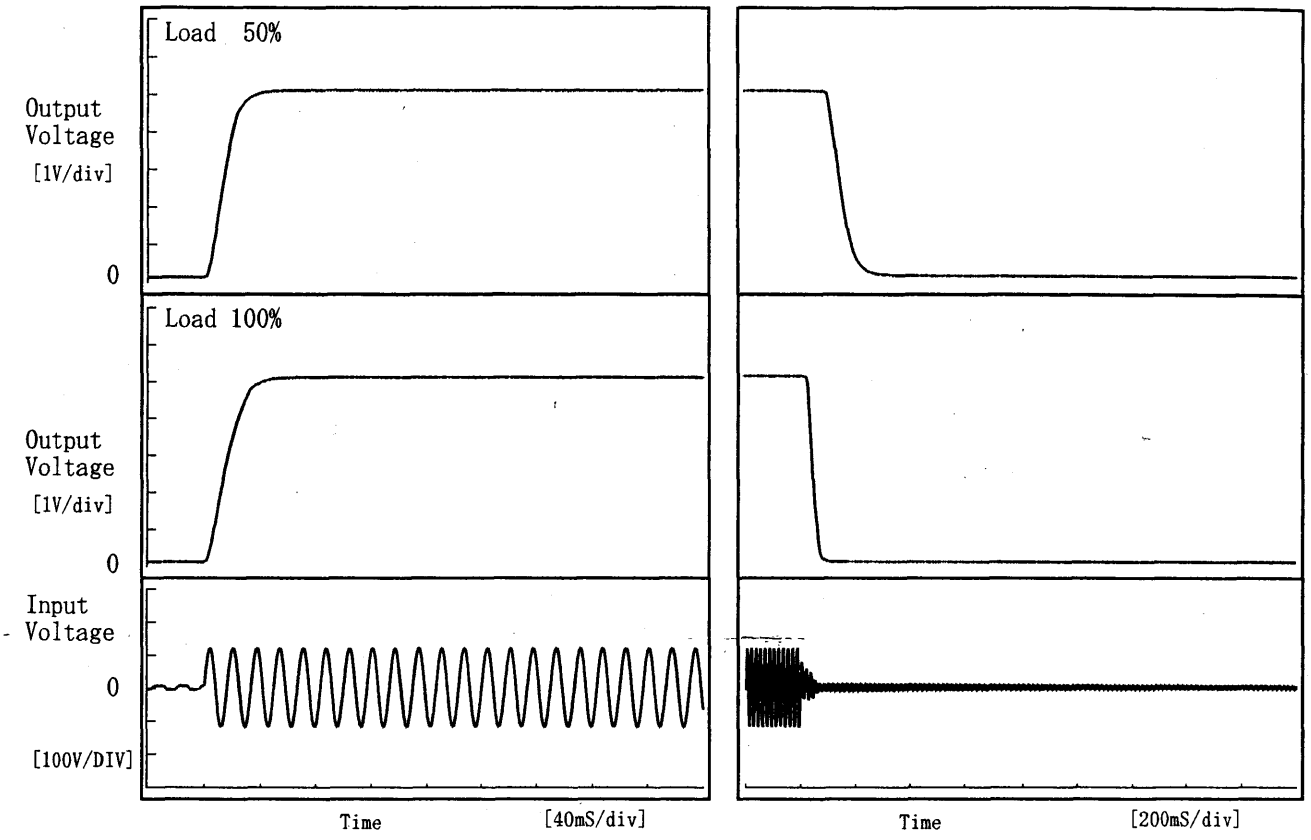
10 mS/div

COSEL

Model	MMC8A-2		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	+5.0V1.1A		

1. Graph

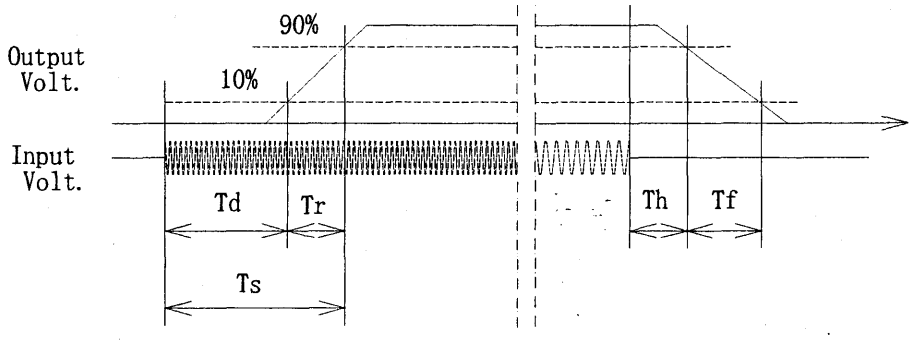
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	4.2	20.0	24.2	56.0	52.0
100 %	4.4	25.0	29.4	35.0	39.0



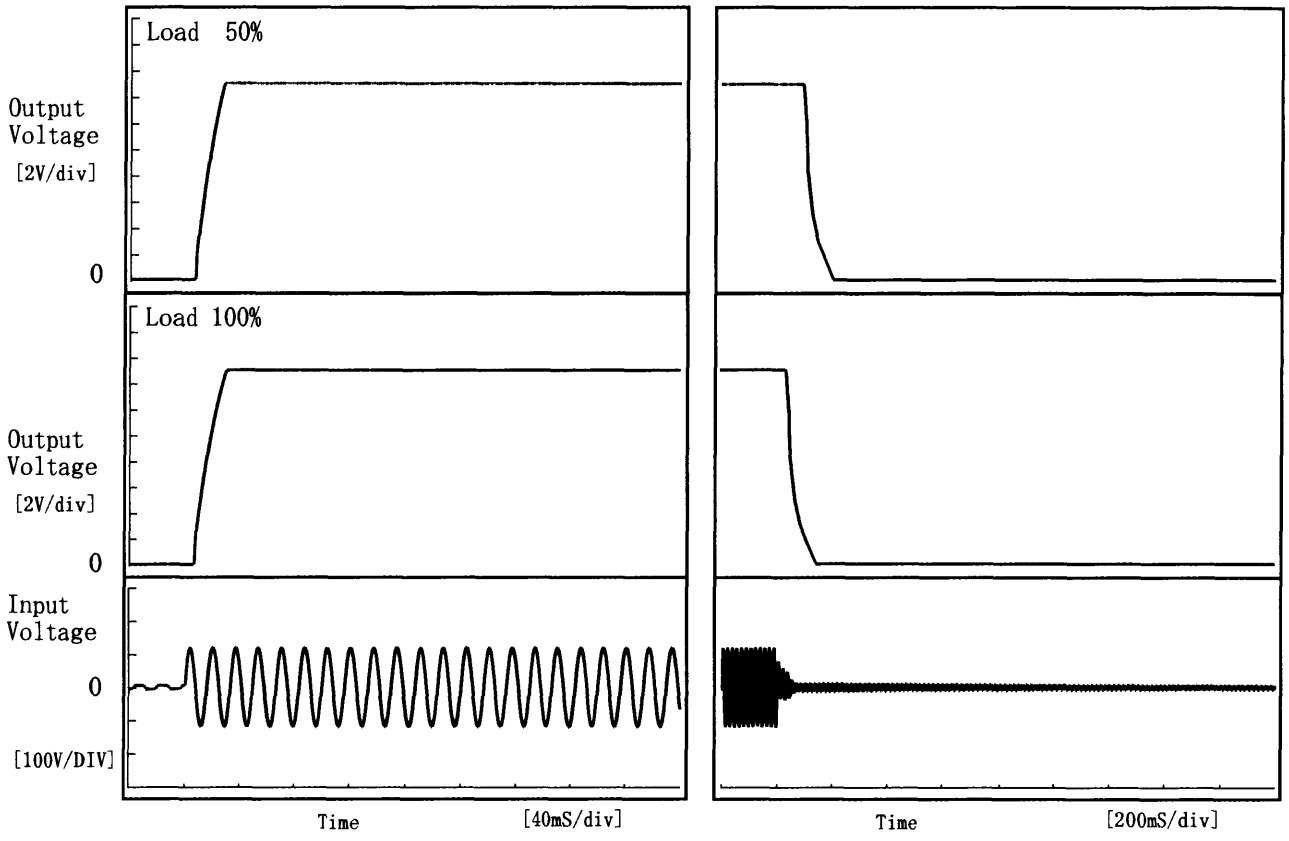
BC−3220

COSEL

Model	MMC8A-2		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	+15.0V0.1A		

1. Graph

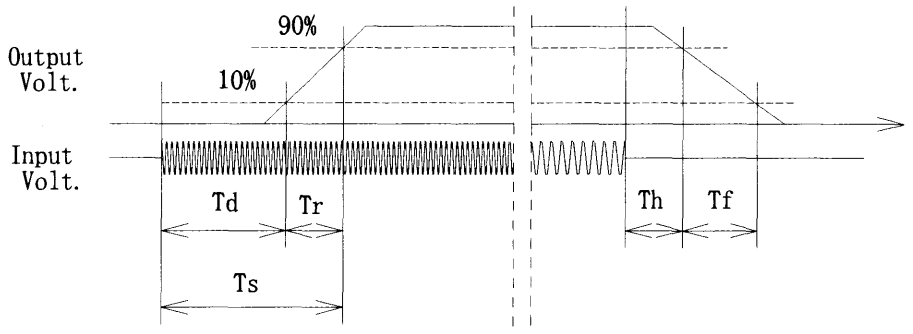
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	7.2	17.0	24.2	50.5	84.9
100 %	7.2	18.6	25.8	41.0	56.1

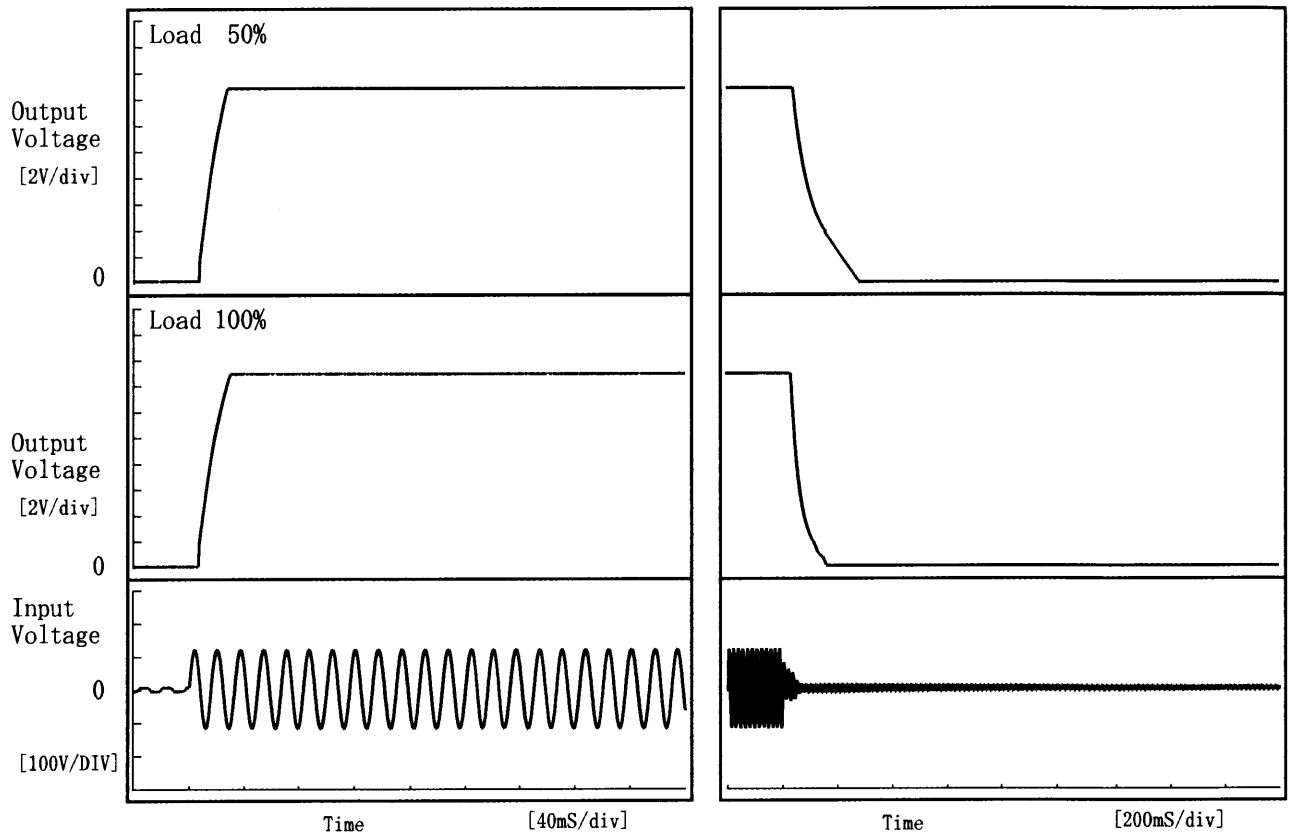


COSEL

Model	MMC8A-2		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	-15.0V0.1A		

1. Graph

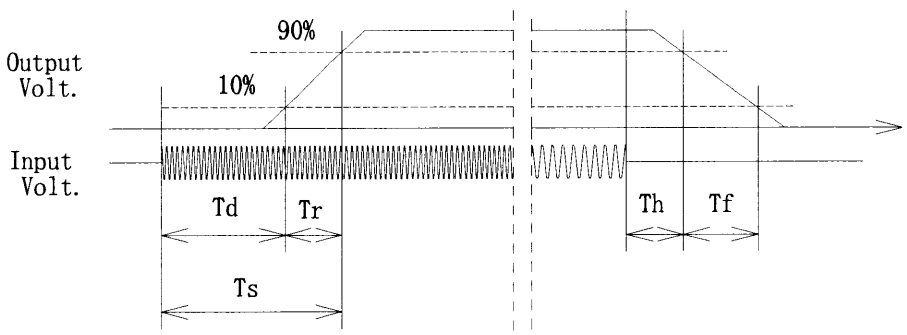
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	7.0	17.4	24.4	50.0	83.0
100 %	7.0	19.0	26.0	39.0	62.0



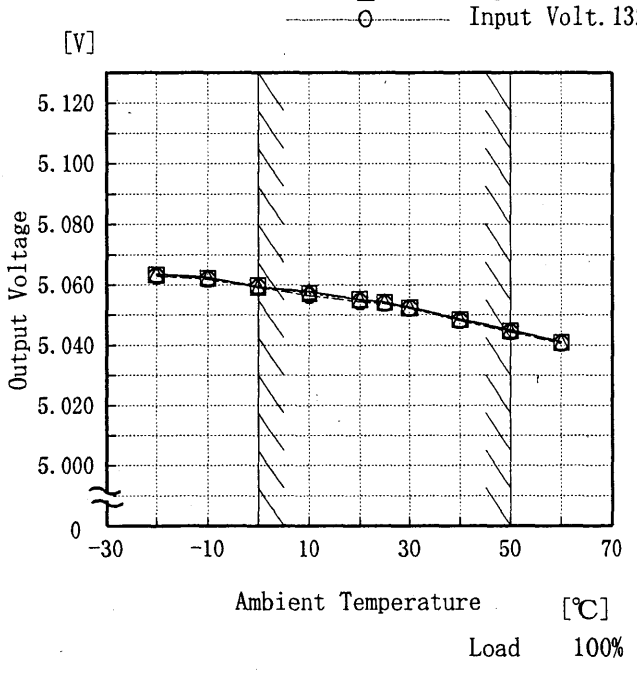
COSEL

Model	MMC8A-2
Item	Ambient Temperature Drift 周囲温度変動

Testing Circuitry Figure A

Object +5.0V1.1A

1. Graph

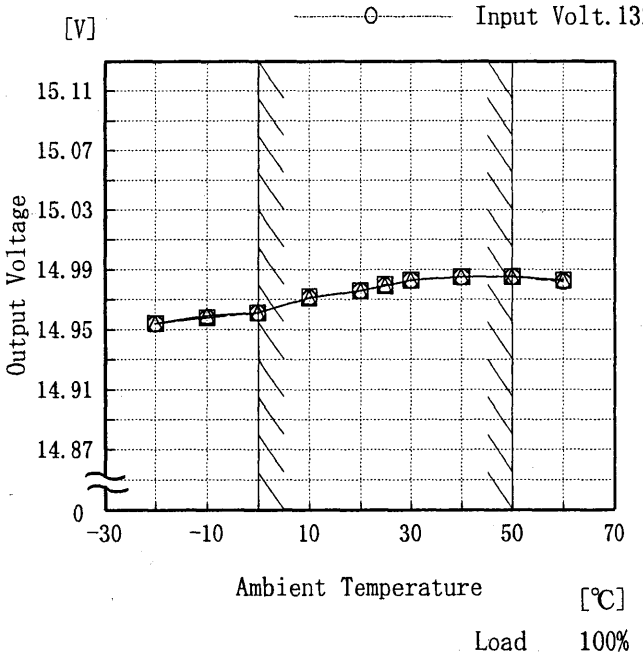


2. Values

Temperature [℃]	Input Volt. 85.0[V] Output Volt. [V]	Input Volt. 100.0[V] Output Volt. [V]	Input Volt. 132.0[V] Output Volt. [V]
-20	5.064	5.063	5.063
-10	5.063	5.062	5.062
0	5.059	5.060	5.059
10	5.058	5.057	5.057
20	5.055	5.055	5.055
25	5.054	5.054	5.054
30	5.053	5.052	5.052
40	5.049	5.049	5.048
50	5.045	5.045	5.044
60	5.041	5.041	5.041
—	—	—	—

Object +15V0.1A

1. Graph



2. Values

Temperature [℃]	Input Volt. 85.0[V] Output Volt. [V]	Input Volt. 100.0[V] Output Volt. [V]	Input Volt. 132.0[V] Output Volt. [V]
-20	14.954	14.954	14.954
-10	14.959	14.958	14.958
0	14.961	14.961	14.961
10	14.971	14.972	14.971
20	14.976	14.976	14.976
25	14.979	14.980	14.979
30	14.983	14.983	14.983
40	14.985	14.985	14.985
50	14.985	14.985	14.985
60	14.983	14.983	14.982
—	—	—	—

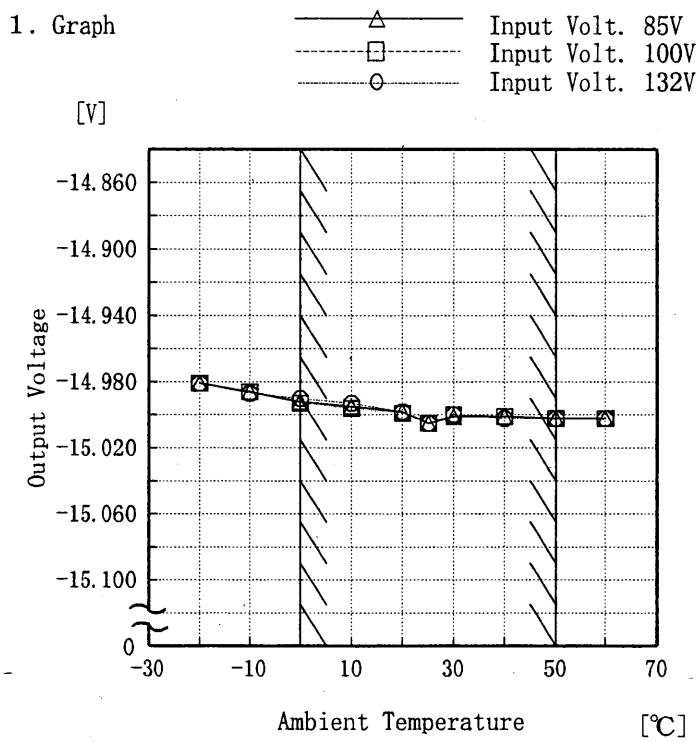
Note: Slanted line shows the range of the rated ambient temperature.
(注)斜線は定格周囲温度範囲を示す。

COSEL

Model	MMC8A-2
Item	Ambient Temperature Drift 周囲温度変動
Object	-15.0V0.1A

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

Temperature [℃]	Input Volt. 85[V] Output Volt. [V]	Input Volt. 100[V] Output Volt. [V]	Input Volt. 132[V] Output Volt. [V]
-20	-14.981	-14.981	-14.981
-10	-14.986	-14.986	-14.987
0	-14.992	-14.993	-14.990
10	-14.995	-14.996	-14.993
20	-14.998	-14.999	-14.998
25	-15.005	-15.005	-15.005
30	-15.001	-15.000	-15.000
40	-15.001	-15.001	-15.002
50	-15.002	-15.002	-15.002
60	-15.002	-15.002	-15.002
—	—	—	—

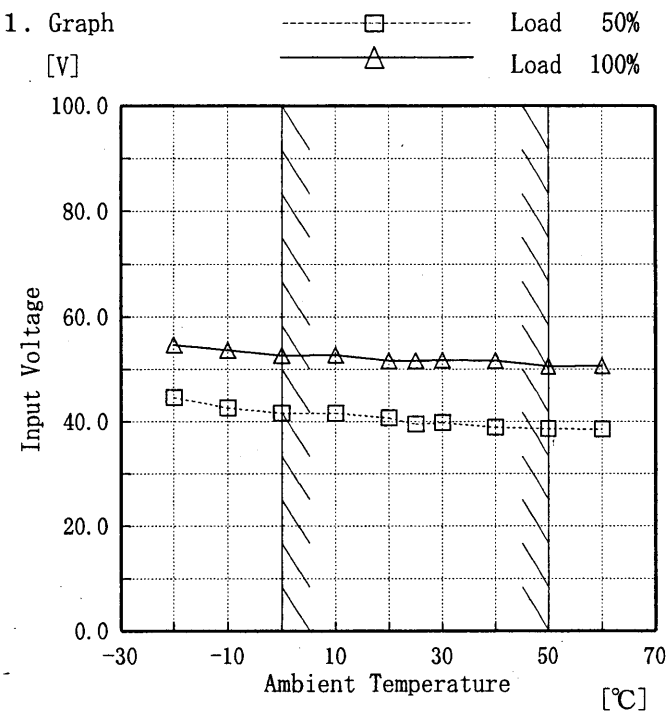
COSEL

Model	MMC8A-2
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧

Testing Circuitry Figure A

Object +5.0V1.1A

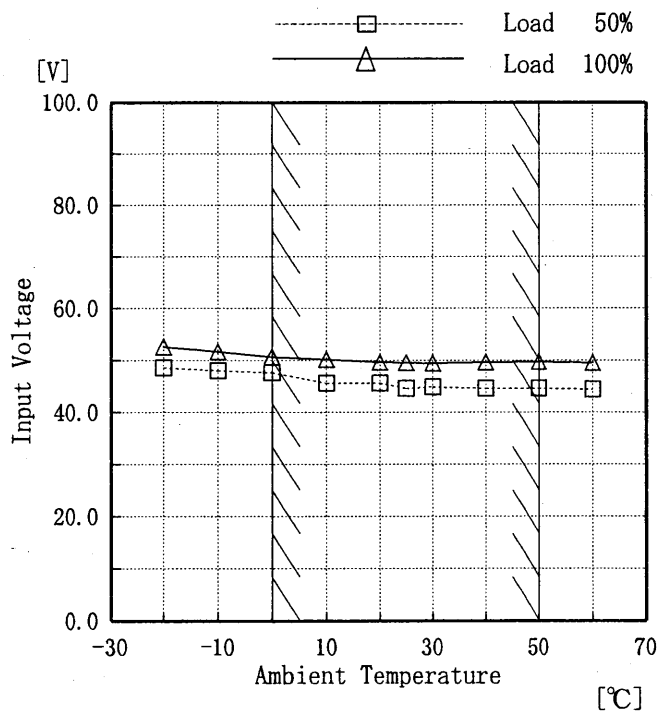
1. Graph



2. Values

Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-20	44.6	54.6
-10	42.6	53.6
0	41.6	52.6
10	41.6	52.7
20	40.7	51.6
25	39.6	51.6
30	39.8	51.7
40	38.9	51.6
50	38.6	50.5
60	38.5	50.6
—	—	—

Object +15.0V0.1A



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

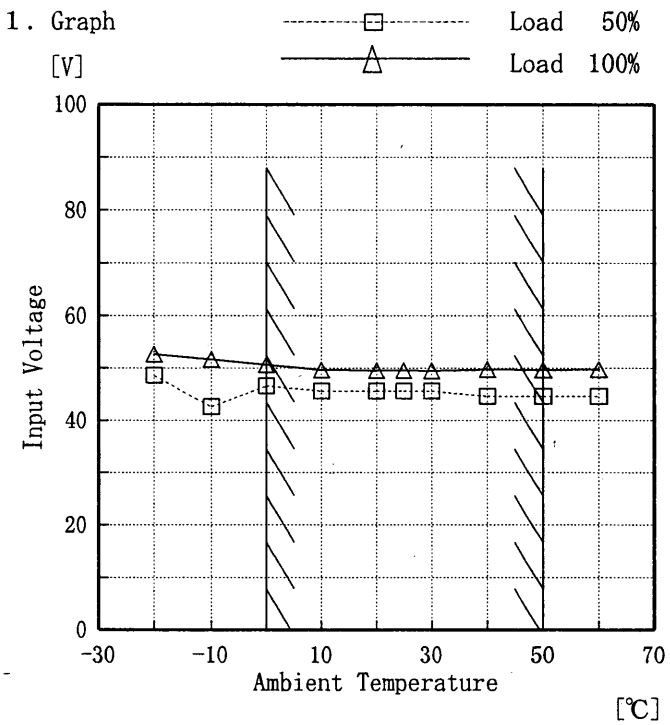
Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-20	48.6	52.6
-10	48.0	51.6
0	47.7	50.6
10	45.6	50.1
20	45.6	49.6
25	44.6	49.5
30	44.9	49.4
40	44.6	49.6
50	44.6	49.7
60	44.4	49.5
—	—	—

COSEL

Model	MMC8A-2
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	−15.0V0.1A

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 Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-20	48.6	52.6
-10	42.6	51.6
0	46.6	50.6
10	45.6	49.6
20	45.6	49.5
25	45.6	49.5
30	45.6	49.4
40	44.6	49.7
50	44.6	49.6
60	44.6	49.7
—	—	—

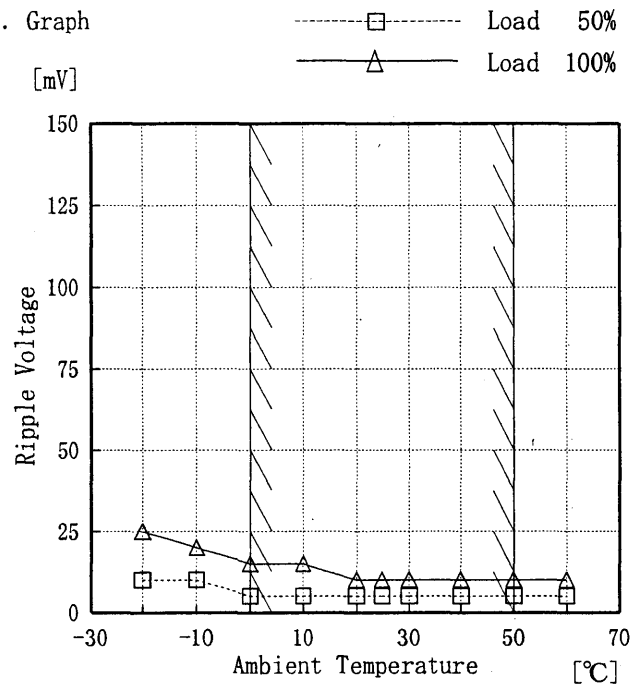
COSEL

Model	MMC8A-2
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）

Testing Circuitry Figure A

Object +5.0V1.2A

1. Graph



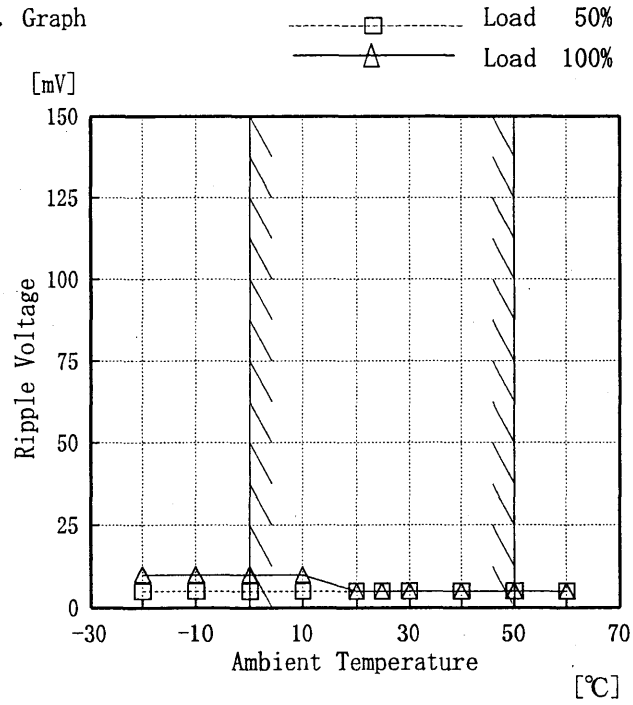
Input Volt. 85 V

2. Values

Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
-20	10	25
-10	10	20
0	5	15
10	5	15
20	5	10
25	5	10
30	5	10
40	5	10
50	5	10
60	5	10
—	—	—

Object +12.0V0.1A

1. Graph



Input Volt. 85 V

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

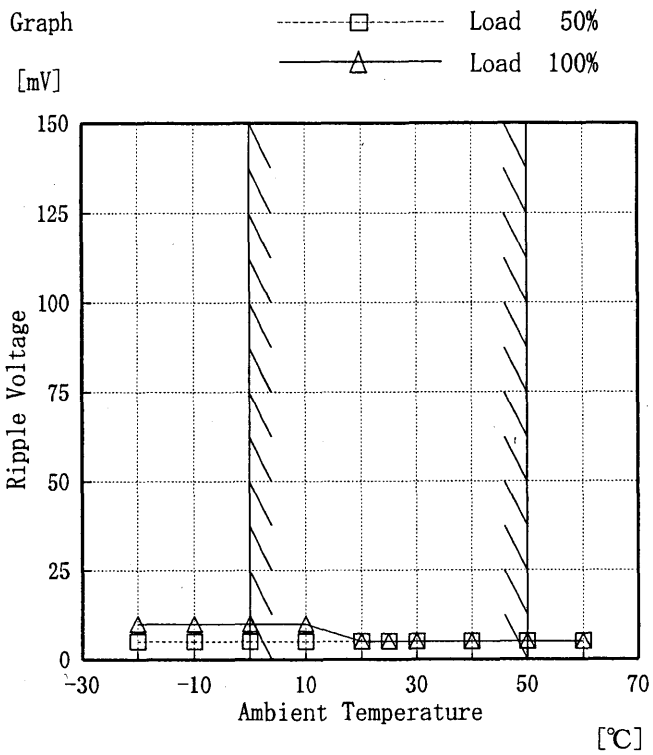
Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
-20	5	10
-10	5	10
0	5	10
10	5	10
20	5	5
25	5	5
30	5	5
40	5	5
50	5	5
60	5	5
—	—	—

COSEL

Model	MMC8A-2
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	-15.0V0.1A

Testing Circuitry Figure A

1. Graph



Input Volt. 85 V

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

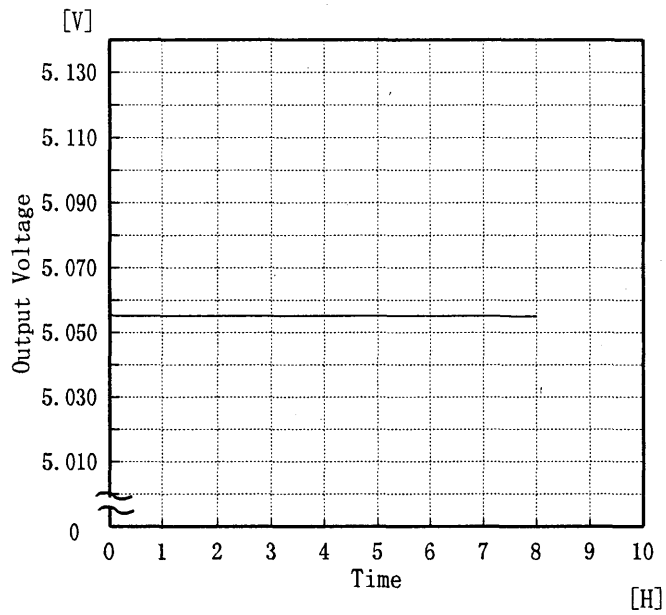
Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
-20	5	10
-10	5	10
0	5	10
10	5	10
20	5	5
25	5	5
30	5	5
40	5	5
50	5	5
60	5	5
—	—	—

COSEL

Model	MMC8A-2	Temperature	25 ℃
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A

Object +5.0V1.1A

1. Graph



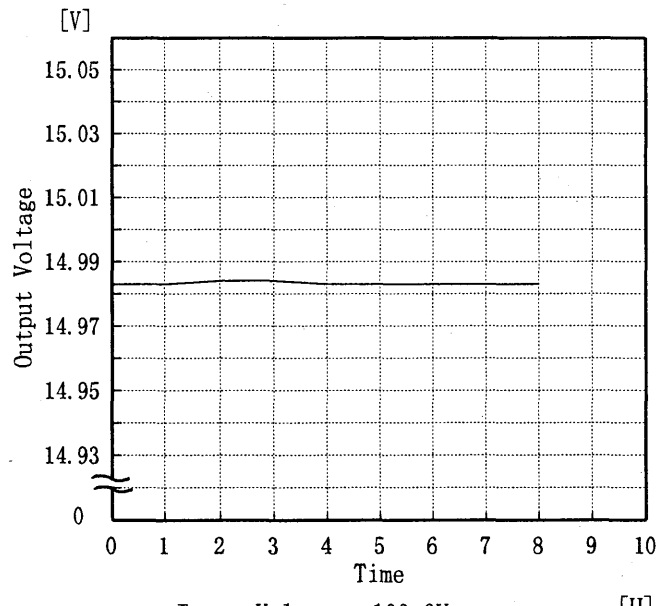
Input Volt. 100.0V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	5.057
0.5	5.055
1.0	5.055
2.0	5.055
3.0	5.055
4.0	5.055
5.0	5.055
6.0	5.055
7.0	5.055
8.0	5.055

Object +15.0V0.1A

1. Graph



Input Volt. 100.0V
Load 100%

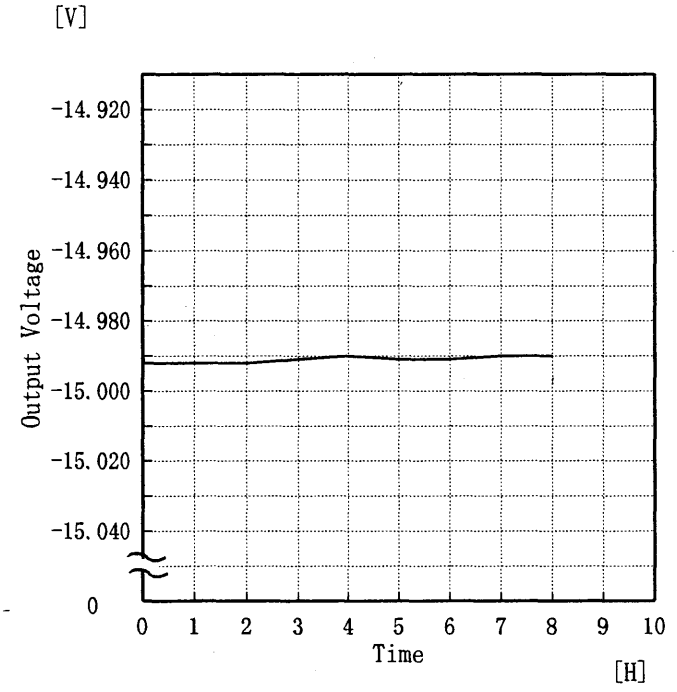
2. Values

Time since start [H]	Output Voltage [V]
0.0	14.977
0.5	14.983
1.0	14.983
2.0	14.984
3.0	14.984
4.0	14.983
5.0	14.983
6.0	14.983
7.0	14.983
8.0	14.983

COSEL

Model	MMC8A-2	Temperature	25 ℃
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A
Object	-15.0V0.1A		

1. Graph



Input Volt. 100V

Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	-14.985
0.5	-14.992
1.0	-14.992
2.0	-14.992
3.0	-14.991
4.0	-14.990
5.0	-14.991
6.0	-14.991
7.0	-14.990
8.0	-14.990

COSEL

Model	MMC8A-2	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A

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 : 0～50 ℃

Input Voltage : 132.0～85.0 V

Load Current (AVR 1) : 0.00～1.10 , (AVR 2) : 0.00～0.10 A (AVR 3) : 0.00～0.10 A

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

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

定電圧精度

周囲温度、入力電圧、負荷を下記仕様内で、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 0～50 ℃

入力電圧 132.0～85.0 V

負荷電流 (AVR 1) 0.00～1.10 A (AVR 2) : 0.00～0.10 A (AVR 3) : 0.00～0.10 A

* 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

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

Object	+5.0V1.10A					
Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	0	85.0	0.000	5.068	±12	±0.3
Minimum Voltage	50	132.0	1.100	5.044		

Object	+15V0.10A					
Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	50	85.0	0.10	14.983	±15	±0.1
Minimum Voltage	0	85.0	0.00	14.954		

Object	−15V0.10A					
Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	25	132.0	0.10	-15.006	±15	±0.1
Minimum Voltage	0	100.0	0.00	-14.977		

COSEL

Model	MMC8A-2
Item	Condensation　結露特性
Object	+5.0V1.1A

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

Item	Data	Testing Conditions
Output Voltage [V]	5.053	Input Volt.: 100V, Load Current:1.1A
Line Regulation [mV]	1	Input Volt.: 85～132V, Load Current:1.1A
Load Regulation [mV]	6	Input Volt.: 100V, Load Current:0.0～1.1A

COSEL

Model	MMC8A-2	
Item	Condensation 結露特性	Testing Circuitry Figure A
Object	+15.0V0.1A	

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

Item	Data	Testing Conditions
Output Voltage [V]	14.968	Input Volt.: 100V, Load Current:0.1A
Line Regulation [mV]	1	Input Volt.: 85～132V, Load Current:0.1A
Load Regulation [mV]	3	Input Volt.: 100V, Load Current:0.0～0.1A

COSEL

Model	MMC8A-2	
Item	Condensation 結露特性	Testing Circuitry Figure A
Object	-15.0V0.1A	

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

Item	Data	Testing Conditions
Output Voltage [V]	-15.005	Input Volt.: 100V, Load Current:0.1A
Line Regulation [mV]	1	Input Volt.: 85～132V, Load Current:0.1A
Load Regulation [mV]	4	Input Volt.: 100V, Load Current:0.0～0.1A

COSEL

Model	MMC8A-2
Item	Leakage Current 漏洩電流
Object	————————

Testing Circuitry Figure A

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	0.11	0.12	0.13
(B) UL	0.10	0.13	0.13
(C) CSA	0.11	0.13	0.14

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 220 [V]	Input Volt. 264 [V]
(D) VDE	—	—	—

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	MMC8A-2	
Item	Conducted Emission 雑音端子電圧	Testing Circuitry Figure D
Object	————————	

1. Graph

Remarks

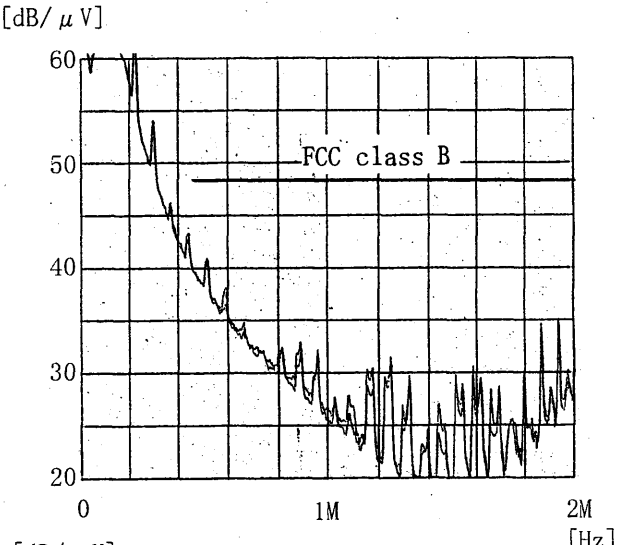
Input Volt. 120 V

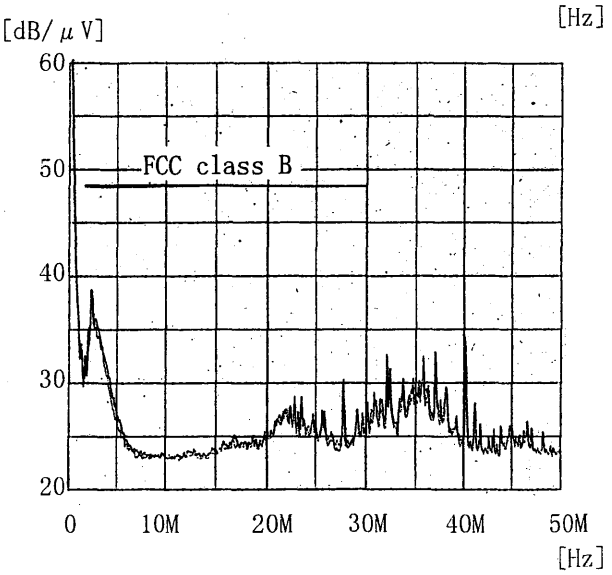
Load 100 %

Note: Slanted line shows the range of Tolerance.

(注)斜線は許容値を示す。

NO	Standards	Standards Complied	Frequency [MHz]	Tolerance [dB/μV]
1	FCC class A		0.45～1.6	60
			1.6～30	69.5
2	FCC class B	○	0.45～30	48
3	VCCI class A		0.15～0.5	79
			0.5～30	73
4	VCCI class B		0.15～0.5	66-56
			0.5～5	56
			5～30	60
5	CISPR Pub.22 class A (EN55022)		0.15～0.5	79
			0.5～30	73
6	CISPR Pub.22 class B (EN55022)		0.15～0.5	66-56
			0.5～5	56
			5～30	60





COSEL

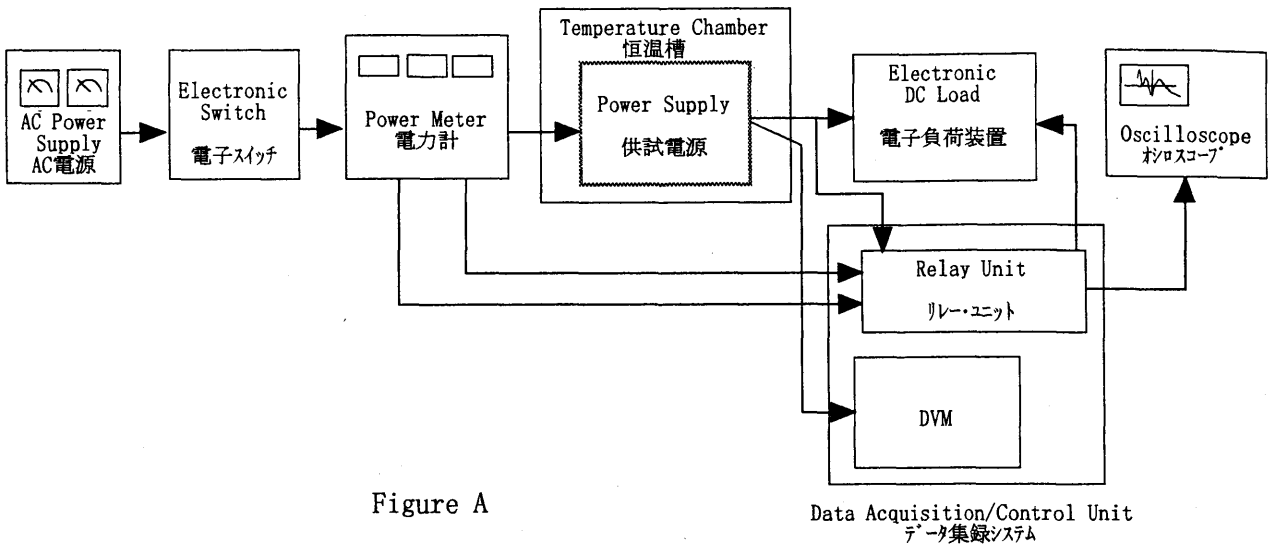


Figure A

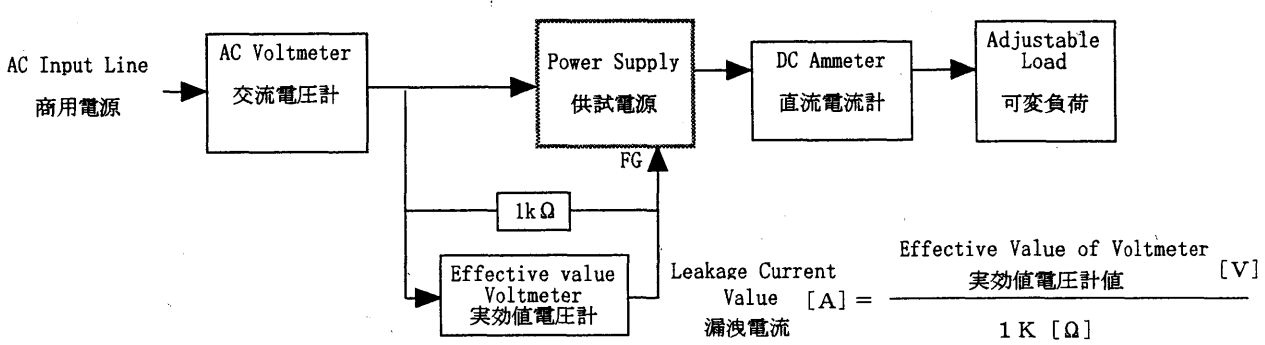


Figure B(DENTORI)

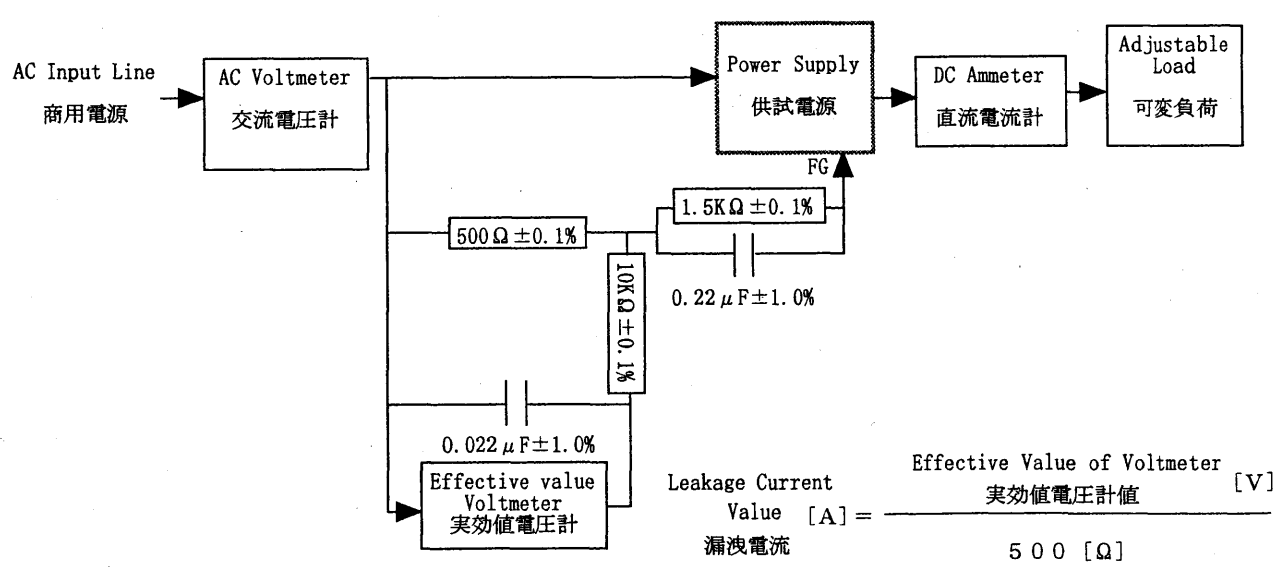


Figure B (UL, CSA, VDE)

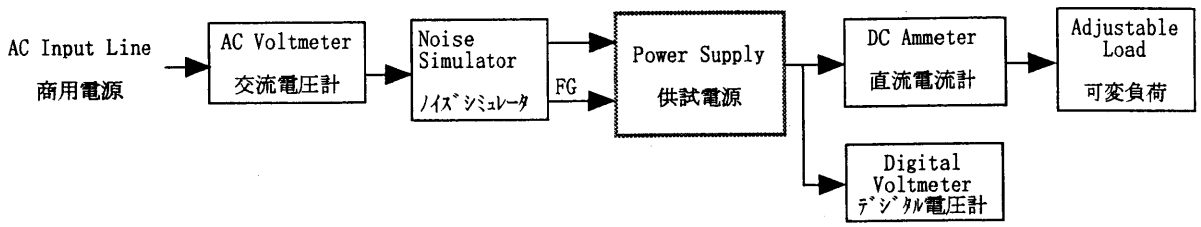


Figure C

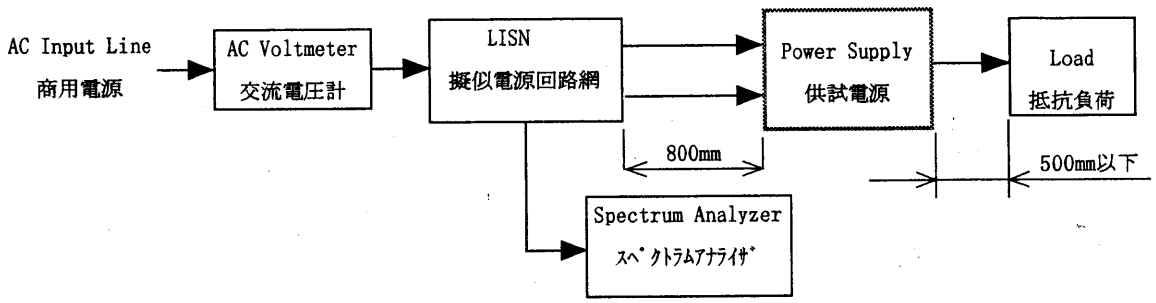


Figure D

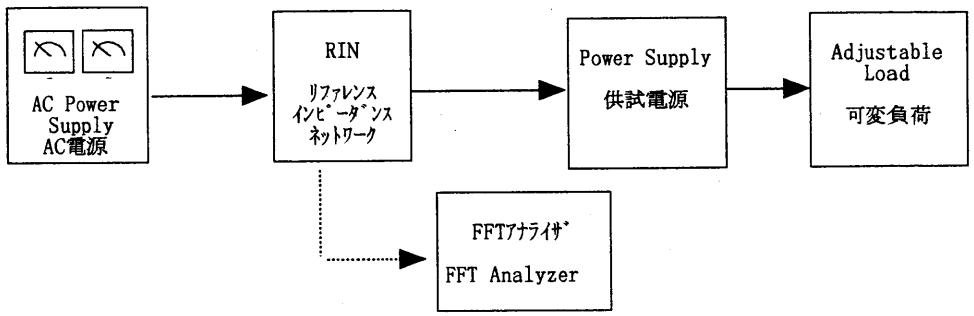


Figure E