参考資料

COSEL

TEST DATA OF MMC50A-2

(100V INPUT)

Regulated DC Power Supply

Date : July 7, 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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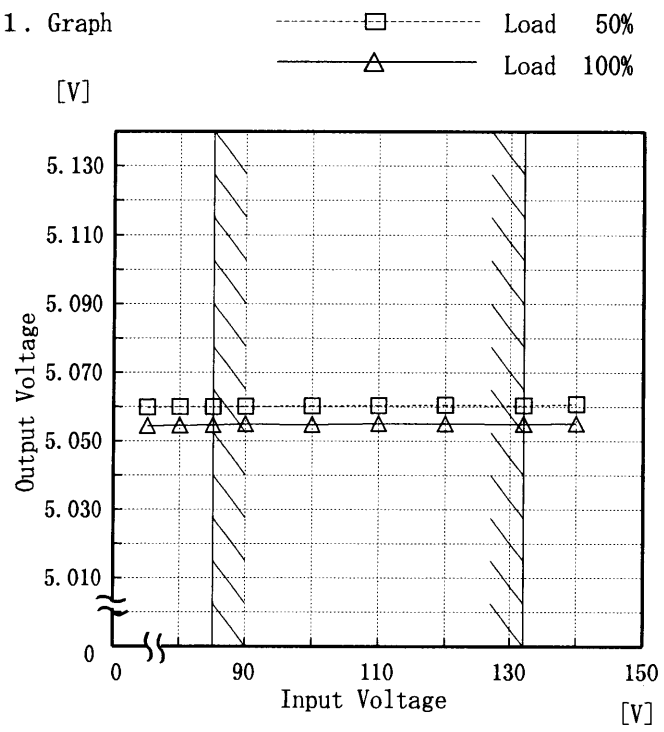
Object +5.0V5.00A

1. Graph

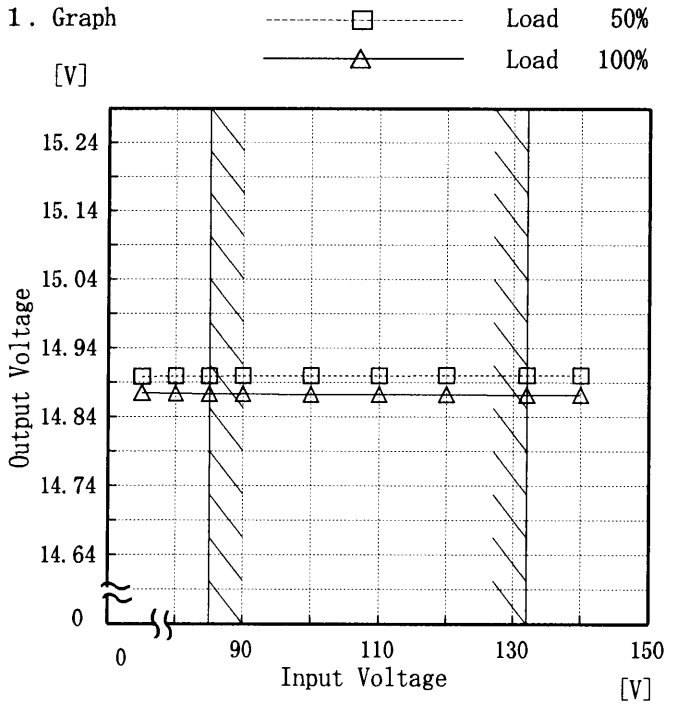


2. Values

Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
75	5.060	5.054
80	5.060	5.055
85	5.060	5.055
90	5.060	5.055
100	5.060	5.055
110	5.060	5.055
120	5.061	5.055
132	5.060	5.055
140	5.061	5.055
—	—	—
—	—	—
—	—	—

Object +15.0V1.20A

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	14.898	14.875
80	14.899	14.874
85	14.900	14.874
90	14.900	14.873
100	14.900	14.873
110	14.900	14.873
120	14.900	14.873
132	14.900	14.872
140	14.900	14.872
—	—	—
—	—	—
—	—	—

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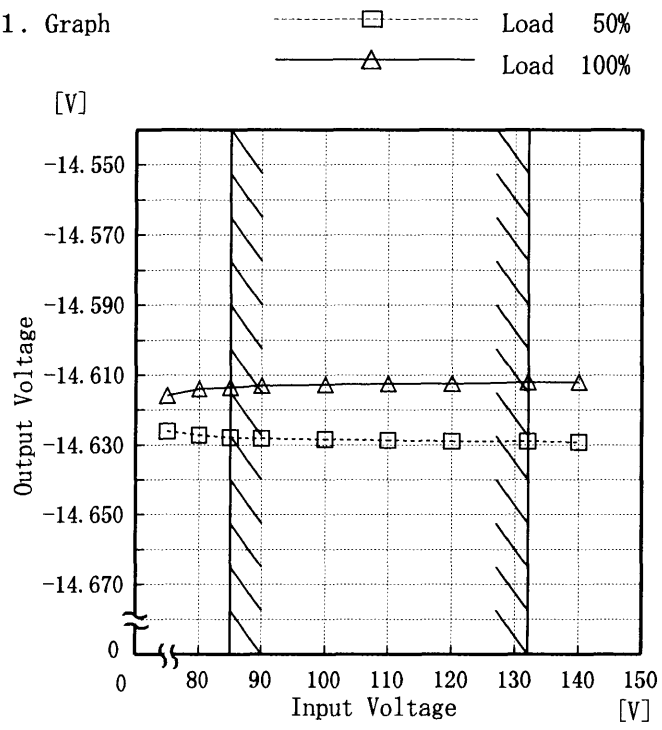
Model	MMC50A-2	Temperature	25℃
Item	Line Regulation 静的入力変動	Testing Circuitry	Figure A
Object	-15.0V0.50A		

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	-14.626	-14.616
80	-14.627	-14.614
85	-14.628	-14.614
90	-14.628	-14.613
100	-14.628	-14.613
110	-14.629	-14.612
120	-14.629	-14.612
132	-14.629	-14.612
140	-14.629	-14.612

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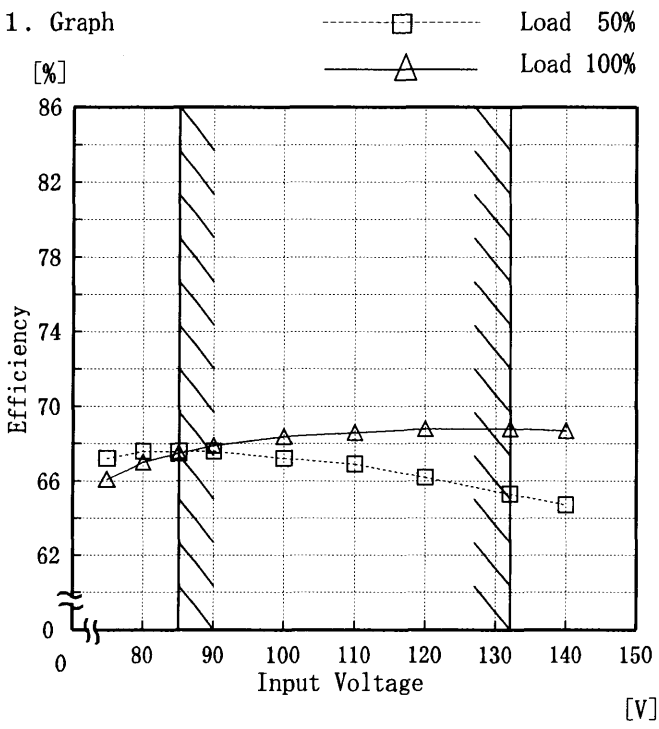
Model	MMC50A-2
Item	Efficiency 効率
Object	———————————

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	67.2	66.1
80	67.6	67.0
85	67.6	67.5
90	67.6	67.9
100	67.2	68.4
110	66.9	68.6
120	66.2	68.8
132	65.3	68.8
140	64.7	68.7

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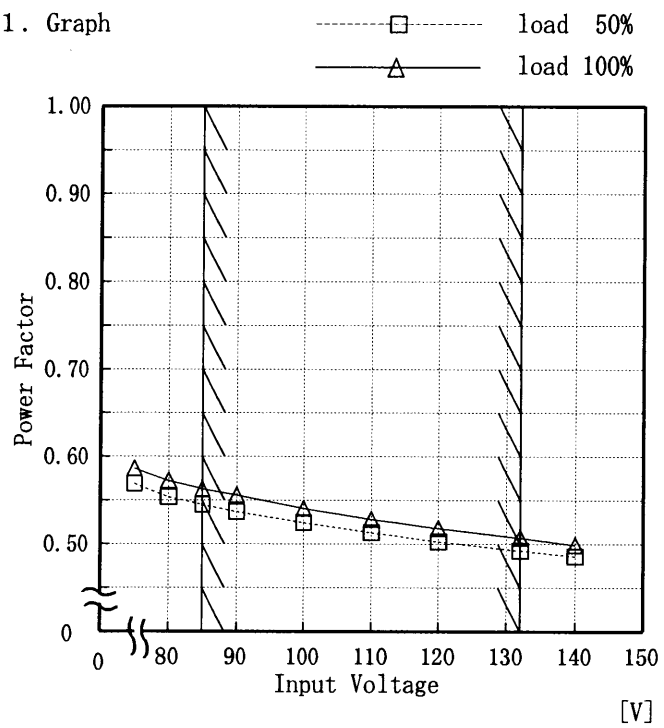
Model	MMC50A-2
Item	Power Factor (by Input Voltage) 力率（入力電圧特性）
Object	————————————

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	0.57	0.59
80	0.55	0.57
85	0.54	0.56
90	0.54	0.56
100	0.52	0.54
110	0.51	0.53
120	0.50	0.52
132	0.49	0.51
140	0.49	0.50

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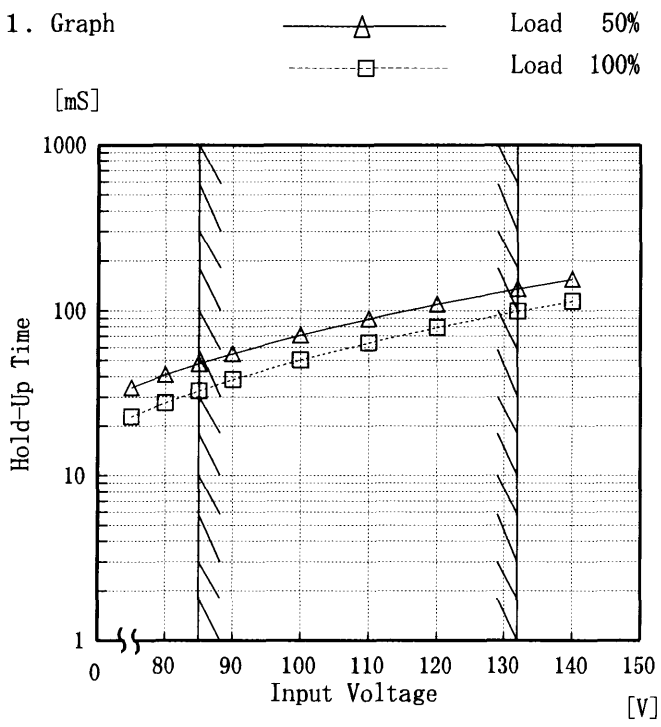
Model	MMC50A-2
Item	Hold-Up Time 出力保持時間
Object	+5.0V5.00A

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

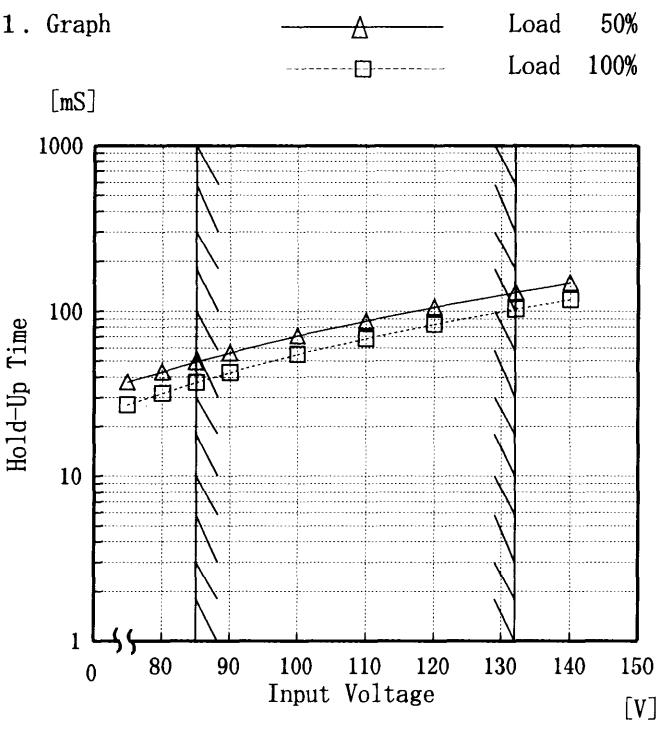
Input Voltage [V]	Load 50% Hold-Up Time [mS]	Load 100% Hold-Up Time [mS]
75	34	23
80	41	28
85	48	33
90	55	38
100	71	50
110	89	64
120	109	79
132	136	99
140	155	114

COSEL

Model	MMC50A-2
Item	Hold-Up Time　出力保持時間
Object	+15.0V1.20A

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	37	27
80	43	32
85	49	37
90	56	43
100	71	55
110	87	68
120	106	83
132	131	103
140	148	118

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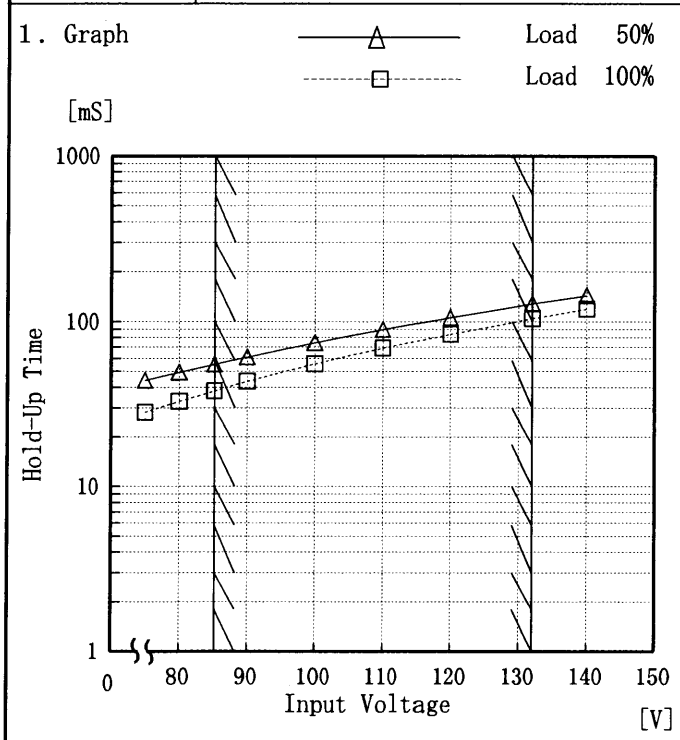
Model	MMC50A-2
Item	Hold-Up Time 出力保持時間
Object	-15.0V0.50A

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	44	28
80	49	33
85	55	38
90	61	44
100	75	56
110	90	69
120	106	84
132	128	105
140	144	119

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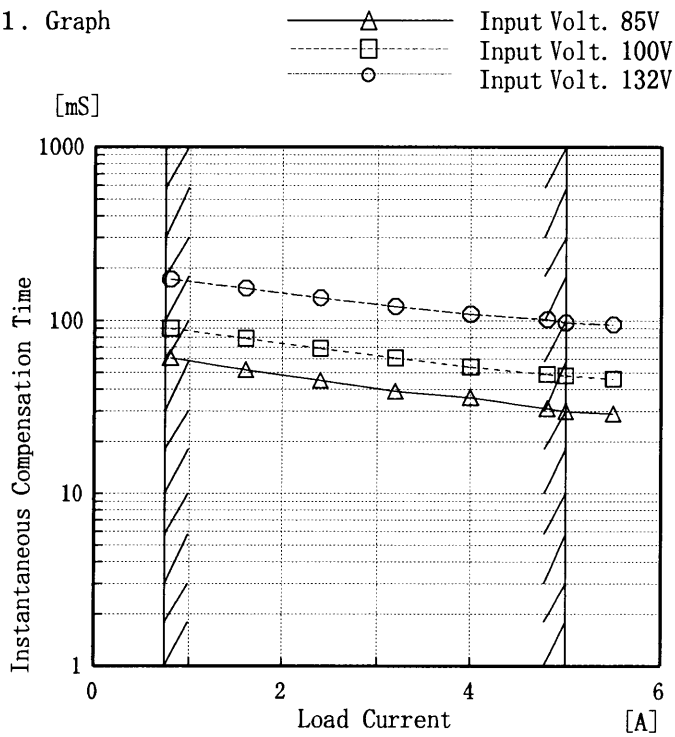
Model	MMC50A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+5.0V5.00A

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	—	—	—
0.8	61	90	173
1.6	52	79	153
2.4	45	69	135
3.2	39	61	121
4.0	36	54	109
4.8	31	49	102
5.0	30	48	97
5.5	29	46	95
—	—	—	—
—	—	—	—

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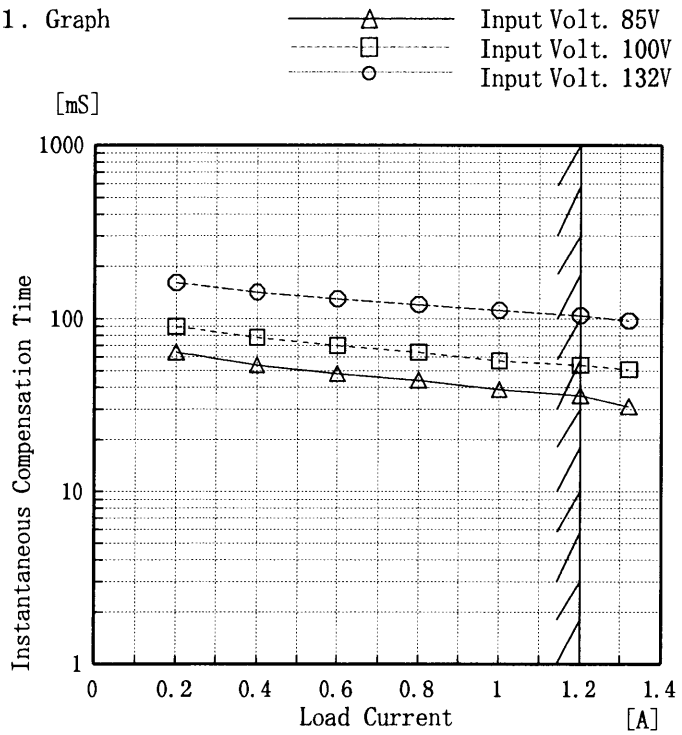
Model	MMC50A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+15.0V1.20A

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]		
0.00	—	—	—
0.20	64	90	162
0.40	54	78	142
0.60	48	70	130
0.80	44	64	121
1.00	39	57	112
1.20	36	54	104
1.32	31	51	97
—	—	—	—
—	—	—	—
—	—	—	—

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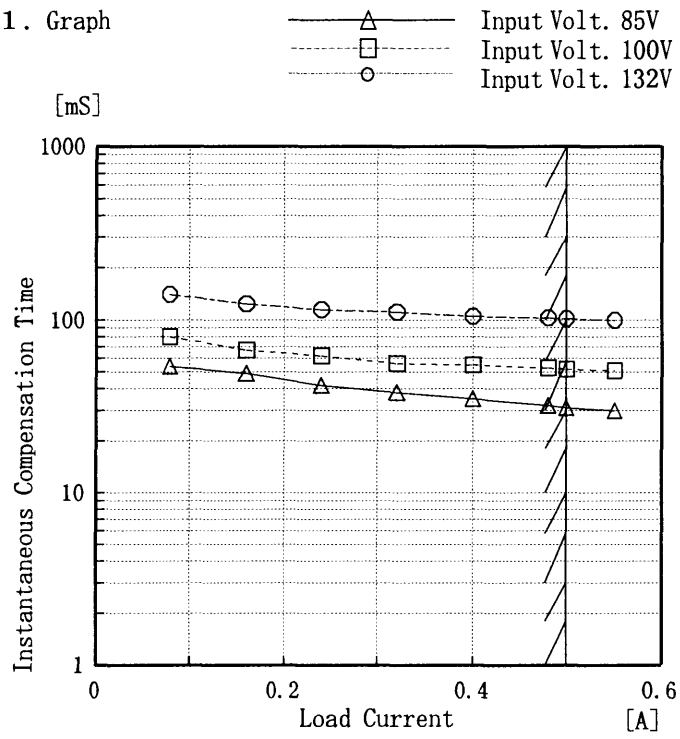
Model	MMC50A-2
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	-15.0V0.50A

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]		
0.00	—	—	—
0.08	54	80	140
0.16	49	67	124
0.24	42	62	115
0.32	38	56	111
0.40	35	55	105
0.48	32	53	103
0.50	31	52	102
0.55	30	51	100
—	—	—	—
—	—	—	—

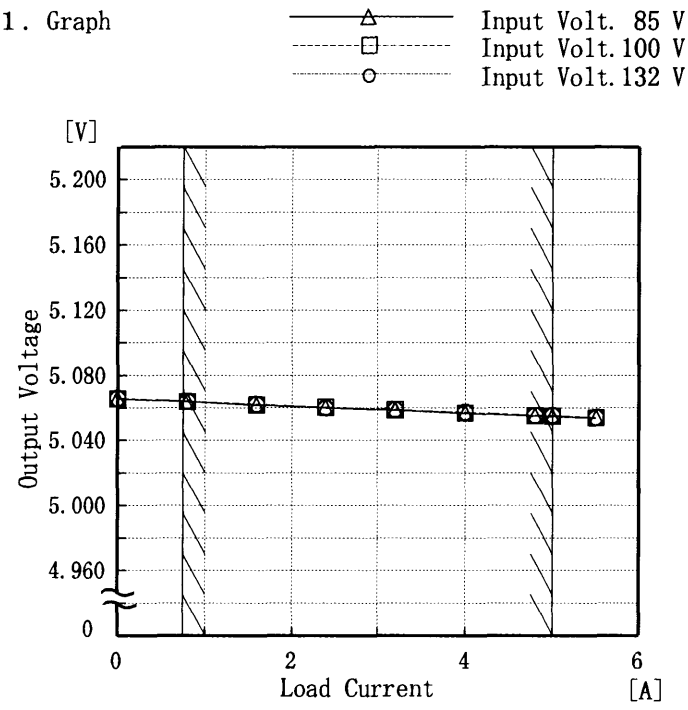
COSEL

Model	MMC50A-2
Item	Load Regulation 静的負荷変動

Temperature 25℃
Testing Circuitry Figure A

Object +5.0V5.00A

1. Graph

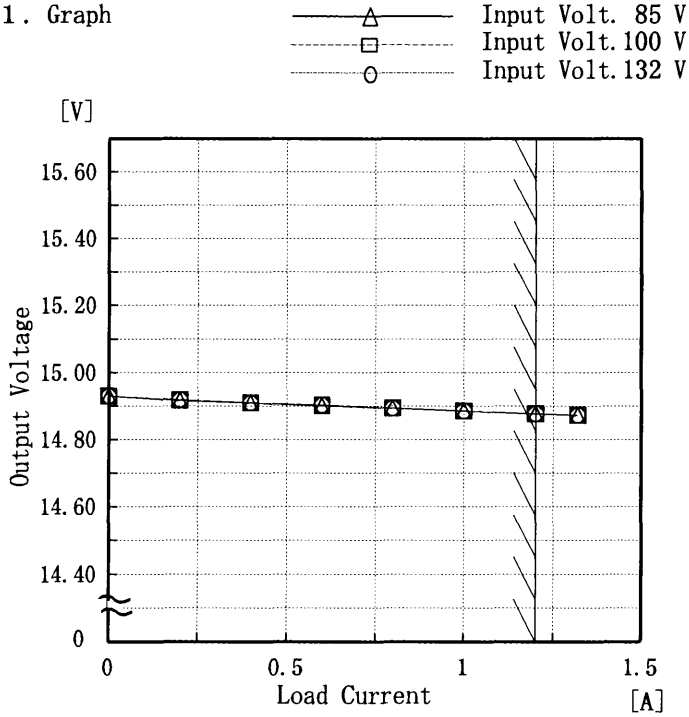


2. Values

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	5.065	5.066	5.066
0.80	5.064	5.064	5.064
1.60	5.062	5.062	5.062
2.40	5.060	5.061	5.060
3.20	5.059	5.059	5.059
4.00	5.057	5.057	5.057
4.80	5.055	5.055	5.055
5.00	5.055	5.055	5.055
5.50	5.054	5.054	5.054
—	—	—	—

Object +15.0V1.20A

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

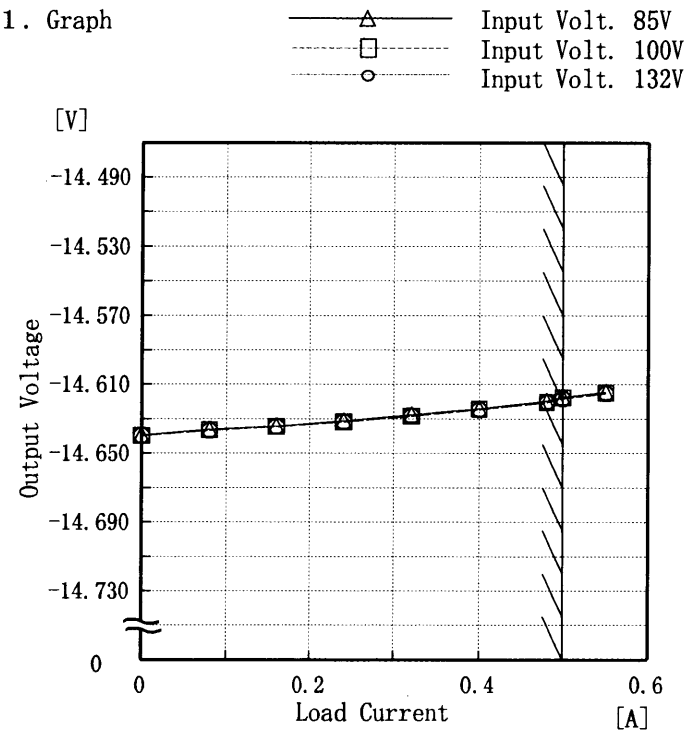
Load Current [A]	Input Volt. 85[V] Output Volt. [V]	Input Volt. 100[V] Output Volt. [V]	Input Volt. 132[V] Output Volt. [V]
0.00	14.929	14.930	14.930
0.20	14.917	14.918	14.918
0.40	14.909	14.910	14.910
0.60	14.902	14.902	14.902
0.80	14.894	14.894	14.894
1.00	14.885	14.886	14.886
1.20	14.877	14.878	14.878
1.32	14.872	14.872	14.873
—	—	—	—
—	—	—	—

COSEL

Model	MMC50A-2
Item	Load Regulation 静的負荷変動
Object	-15.0V0.50A

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。

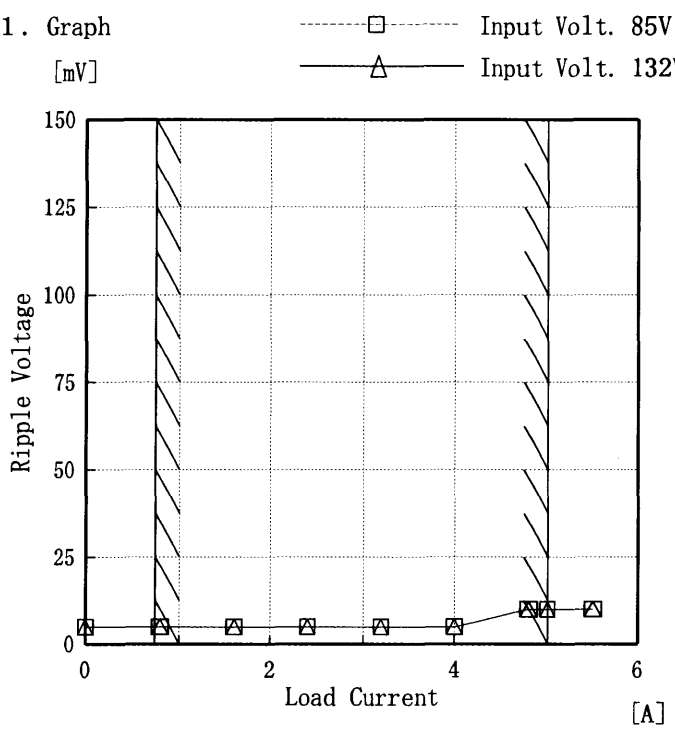
2. Values

Load Current [A]	Input Volt. 85[V] Output Volt. [V]	Input Volt. 100[V] Output Volt. [V]	Input Volt. 132[V] Output Volt. [V]
0.00	-14.639	-14.640	-14.640
0.08	-14.636	-14.637	-14.637
0.16	-14.634	-14.634	-14.635
0.24	-14.631	-14.632	-14.632
0.32	-14.628	-14.628	-14.628
0.40	-14.624	-14.624	-14.624
0.48	-14.620	-14.620	-14.620
0.50	-14.617	-14.618	-14.618
0.55	-14.614	-14.615	-14.615
—	—	—	—

COSEL

Model	MMC50A-2		
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)	Temperature Testing Circuitry	25℃ Figure A
Object	+5.0V5.00A		

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

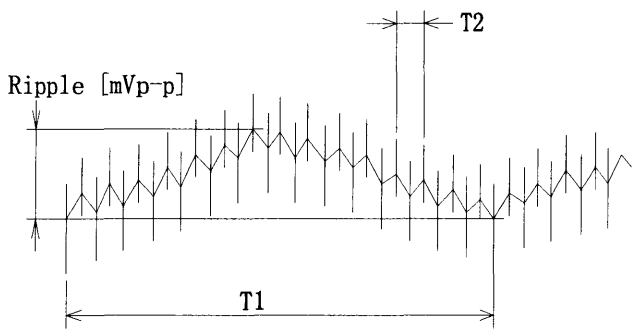


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

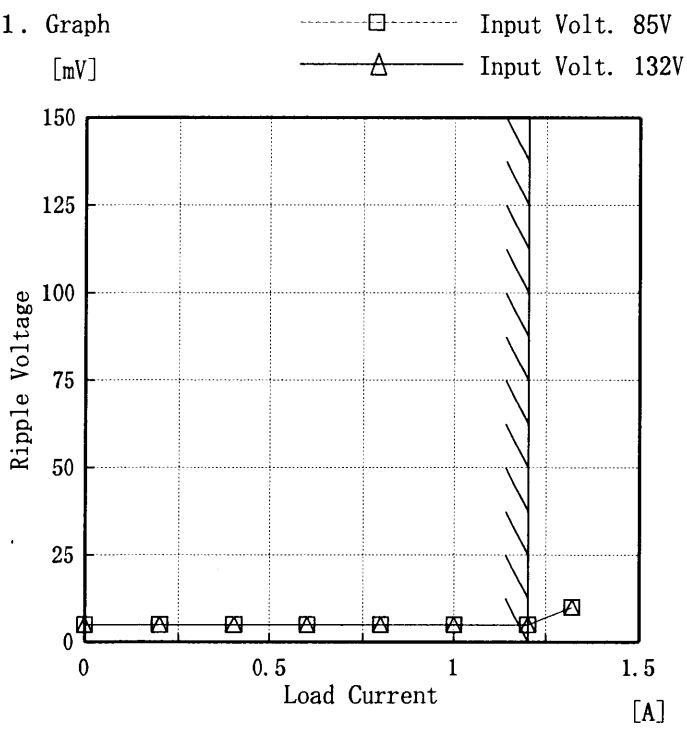
Load Current [A]	Input Volt. 85 [V] Ripple Output Volt. [mV]	Input Volt. 132 [V] Ripple Output Volt. [mV]
0.0	5	5
0.8	5	5
1.6	5	5
2.4	5	5
3.2	5	5
4.0	5	5
4.8	10	10
5.0	10	10
5.5	10	10
—	—	—
—	—	—

COSEL

Model	MMC50A-2
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+15.0V1.20A

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

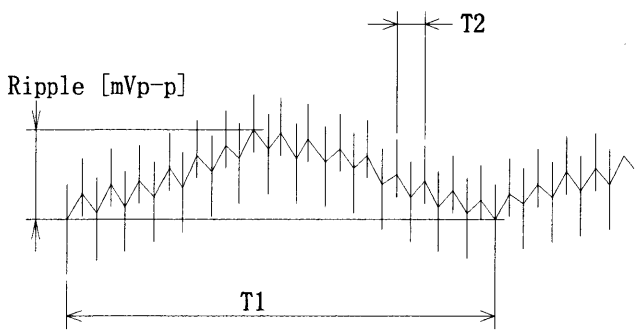


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

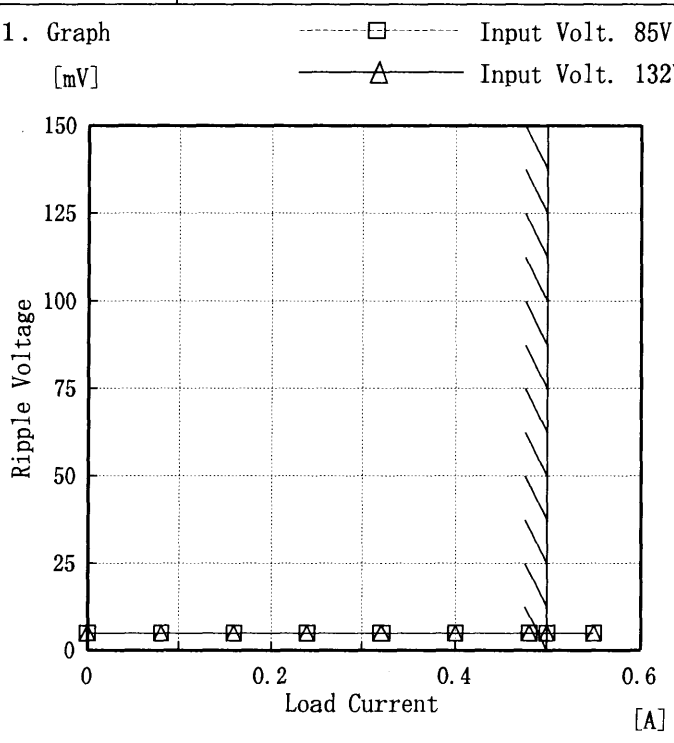
Load Current [A]	Input Volt. 85 [V] Ripple Output Volt. [mV]	Input Volt. 132 [V] Ripple Output Volt. [mV]
0.00	5	5
0.20	5	5
0.40	5	5
0.60	5	5
0.80	5	5
1.00	5	5
1.20	5	5
1.32	10	10
—	—	—
—	—	—
—	—	—

COSEL

Model	MMC50A-2
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	-15.0V0.50A

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

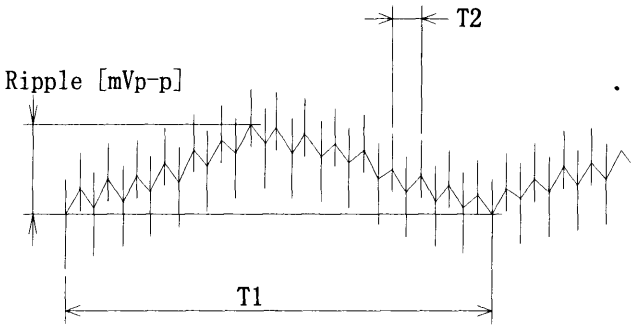


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

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
0.08	5	5
0.16	5	5
0.24	5	5
0.32	5	5
0.40	5	5
0.48	5	5
0.50	5	5
0.55	5	5
—	—	—
—	—	—

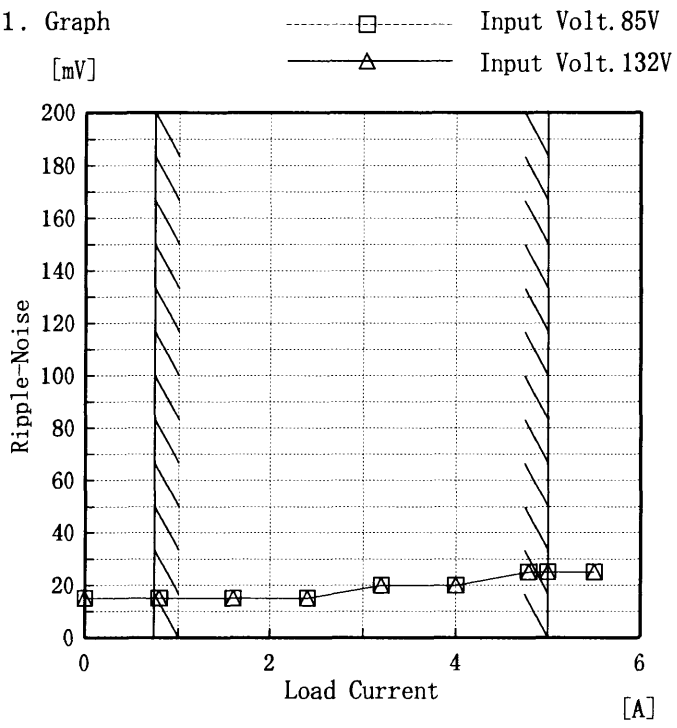
BC－3245

COSEL

Model	MMC50A-2
Item	Ripple-Noise リップルノイズ
Object	+5.0V5.00A

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

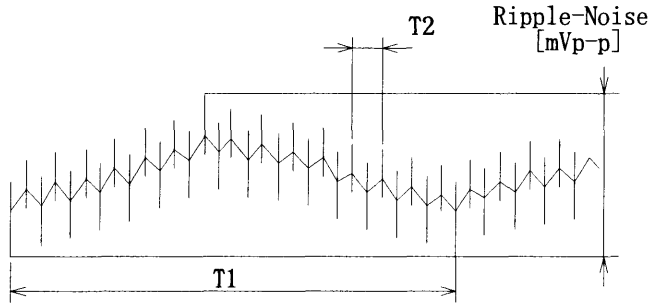


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

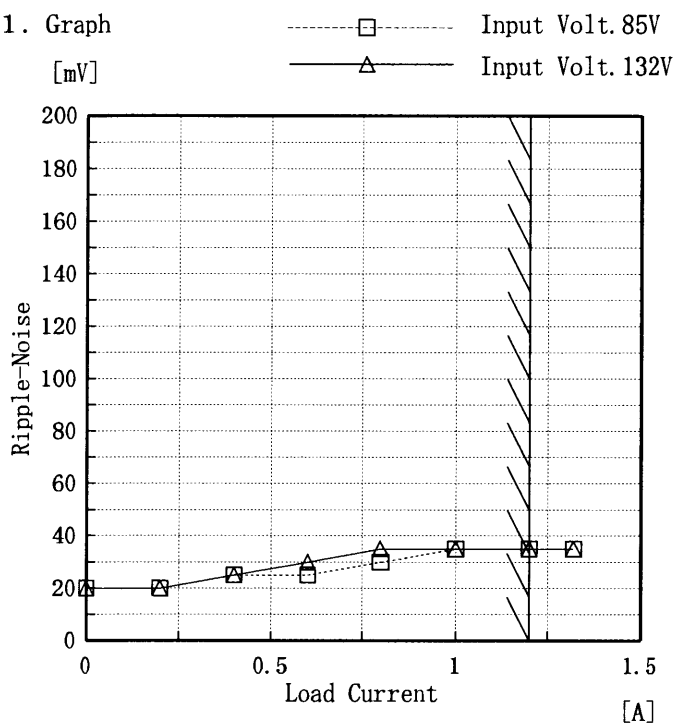
Load current [A]	Input Volt. 85 [V] Ripple-Noise [mV]	Input Volt. 132 [V] Ripple-Noise [mV]
0.00	15	15
0.80	15	15
1.60	15	15
2.40	15	15
3.20	20	20
4.00	20	20
4.80	25	25
5.00	25	25
5.50	25	25
—	—	—
—	—	—

COSEL

Model	MMC50A-2
Item	Ripple-Noise　リップルノイズ
Object	+15.0V1.20A

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

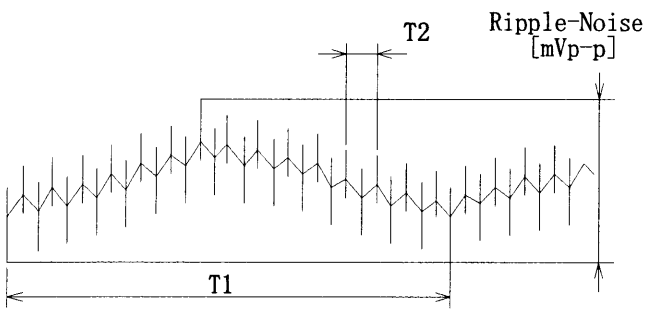


Fig. Complex Ripple Wave Form
図　リップル波形詳細図

2. Values

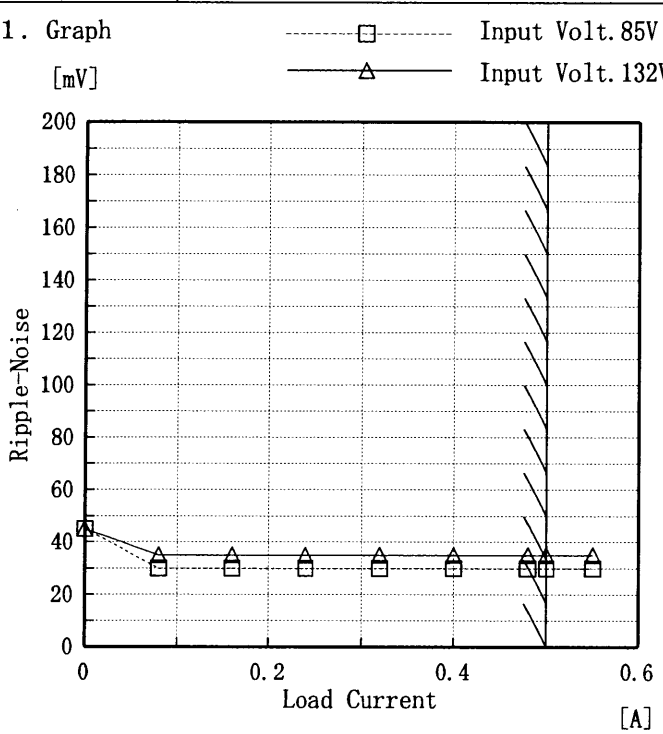
Load current [A]	Input Volt. 85 [V] Ripple-Noise [mV]	Input Volt. 132 [V] Ripple-Noise [mV]
0.00	20	20
0.20	20	20
0.40	25	25
0.60	25	30
0.80	30	35
1.00	35	35
1.20	35	35
1.32	35	35
—	—	—
—	—	—
—	—	—

COSEL

Model	MMC50A-2
Item	Ripple-Noise リップルノイズ
Object	-15.0V0.50A

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

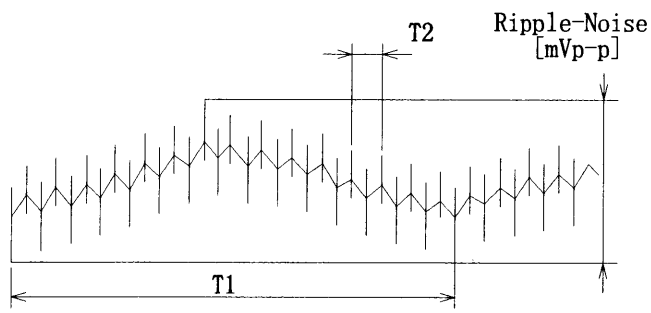


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load current [A]	Input Volt. 85 [V] Ripple-Noise [mV]	Input Volt. 132 [V] Ripple-Noise [mV]
0.00	45	45
0.08	30	35
0.16	30	35
0.24	30	35
0.32	30	35
0.40	30	35
0.48	30	35
0.50	30	35
0.55	30	35
—	—	—
—	—	—

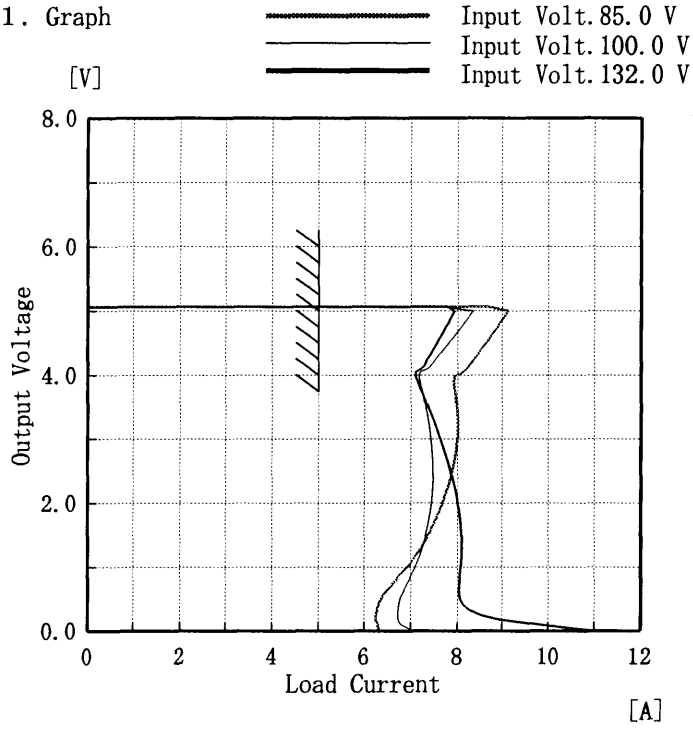
COSEL

Model	MMC50A-2
Item	Overcurrent Protection 過電流保護

Temperature 25℃
Testing Circuitry Figure A

Object +5.0V5.00A

1. Graph

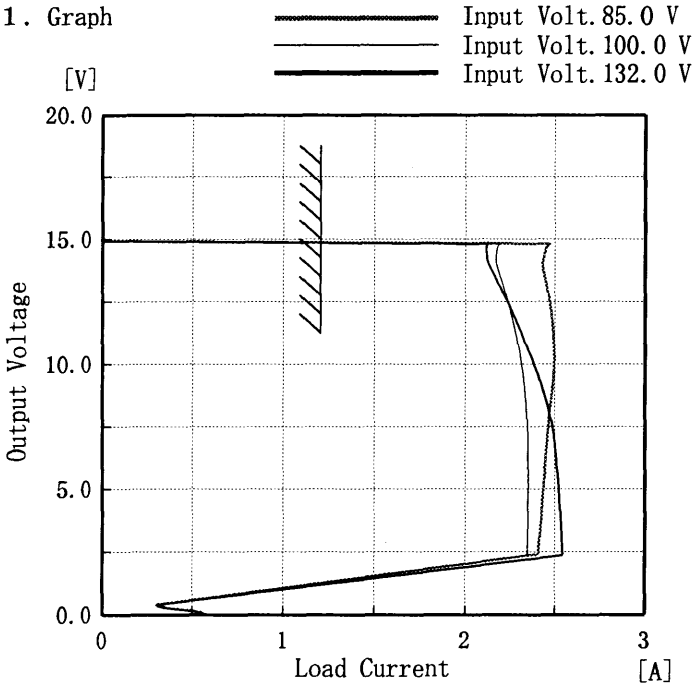


2. Values

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	8.899	8.082	7.758
4.50	8.666	7.832	7.580
4.00	8.045	7.180	7.085
3.50	7.985	7.315	7.366
3.00	7.996	7.433	7.632
2.50	7.889	7.480	7.848
2.00	7.696	7.449	7.996
1.50	7.401	7.334	8.082
1.00	6.965	7.116	8.070
0.50	6.370	6.776	8.046
0.00	6.312	7.060	10.888

Object +15.0V1.20A

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	2.436	2.170	2.119
13.50	2.444	2.194	2.164
12.00	2.481	2.255	2.266
10.50	2.497	2.301	2.352
9.00	2.488	2.334	2.428
7.50	2.465	2.350	2.484
6.00	2.449	2.354	2.509
4.50	2.433	2.354	2.526
3.00	2.416	2.351	2.538
1.50	2.409	2.352	2.542
0.00	0.572	0.569	0.574

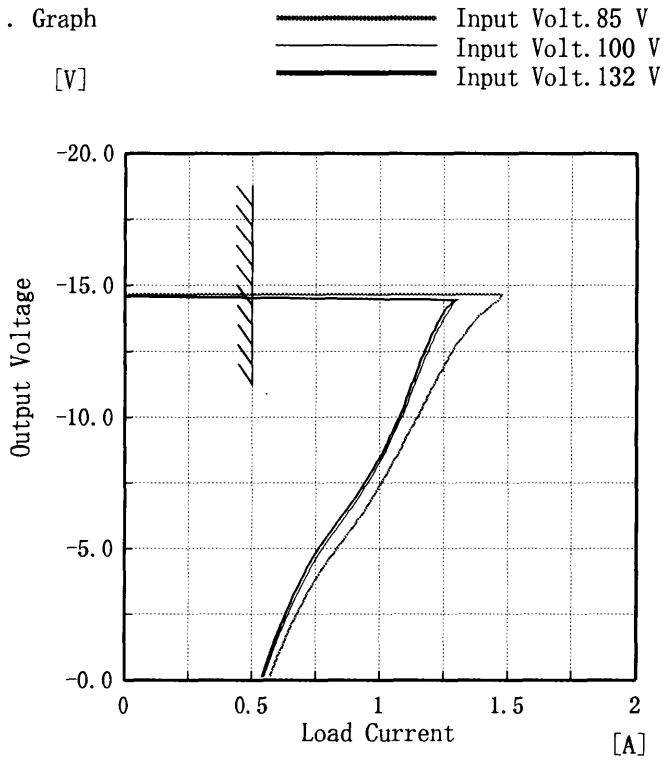
BC−3245

COSEL

Model	MMC50A-2
Item	Overcurrent Protection 過電流保護
Object	-15.0V0.50A

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

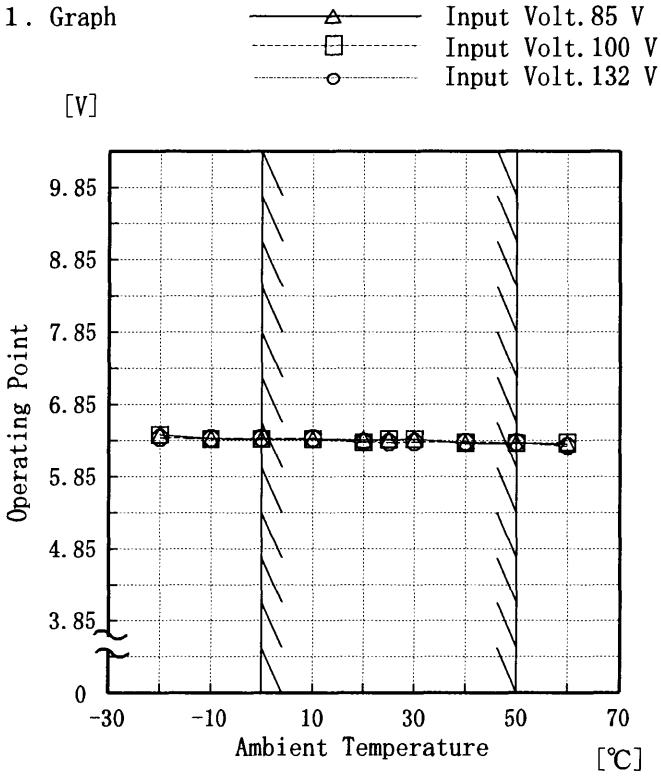
Output Voltage [V]	Input Volt. 85[V] Load Current [A]	Input Volt. 100[V] Load Current [A]	Input Volt. 132[V] Load Current [A]
-15.00	—	—	—
-14.25	1.44	1.28	1.27
-13.50	1.36	1.24	1.22
-12.00	1.26	1.17	1.16
-10.50	1.17	1.11	1.10
-9.00	1.09	1.04	1.03
-7.50	1.01	0.96	0.94
-6.00	0.91	0.85	0.83
-4.50	0.80	0.75	0.73
-3.00	0.70	0.67	0.65
-1.50	0.63	0.60	0.59
0.00	0.57	0.55	0.54

COSEL

Model	MMC50A-2
Item	Overvoltage Protection 過電圧保護
Object	5.0V5.00A

Testing Circuitry Figure A

1. Graph



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

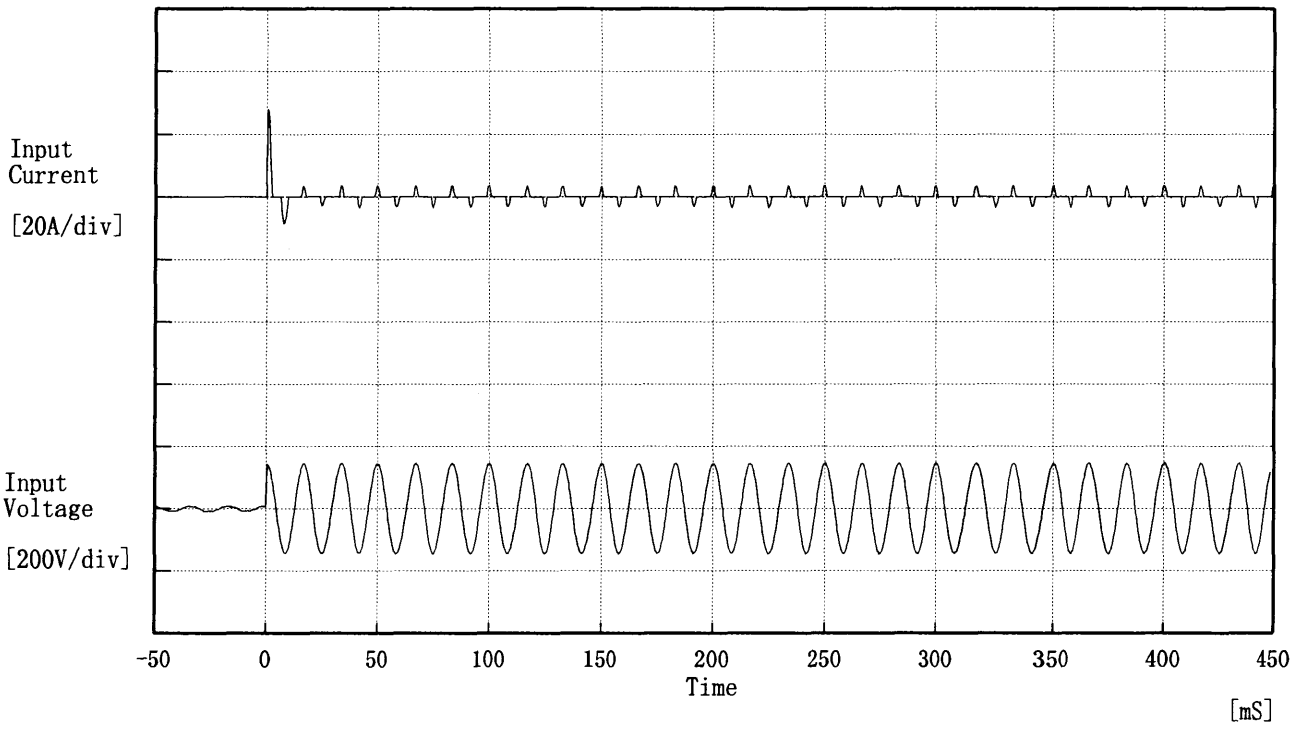
(注)斜線は定格周囲温度範囲を示す。

2. Values

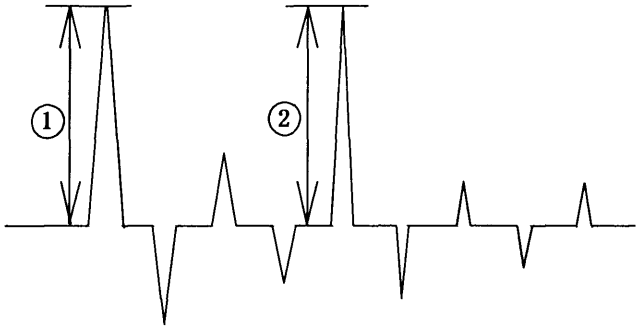
Ambient Temp. [℃]	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
	Operating Point [V]		
-20	6.43	6.43	6.39
-10	6.38	6.37	6.38
0	6.37	6.37	6.38
10	6.37	6.37	6.38
20	6.36	6.32	6.33
25	6.36	6.37	6.32
30	6.37	6.37	6.33
40	6.31	6.32	6.33
50	6.31	6.31	6.32
60	6.30	6.32	6.27
—	—	—	—

COSEL

Model	MMC50A-2		
Item	Inrush Current 突入電流	Temperature	25℃
		Testing Circuitry	Figure A
Object	————————		



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



COSEL

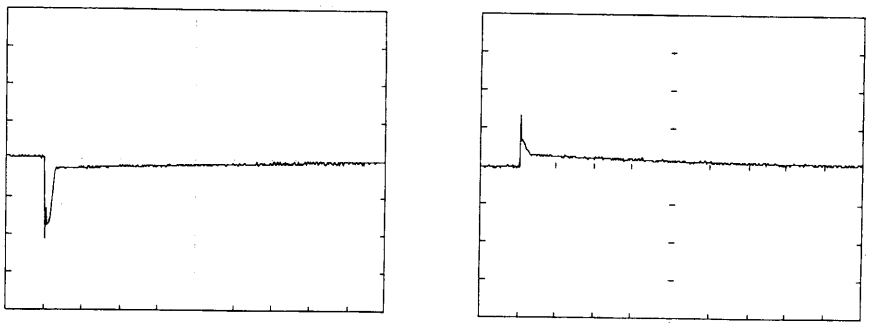
Model	MMC50A-2		
Item	Dynamic Load Responce 動的負荷変動	Temperature	25℃
Object	+5.0V5.00A	Testing Circuitry	Figure A

Input Volt. 100 V

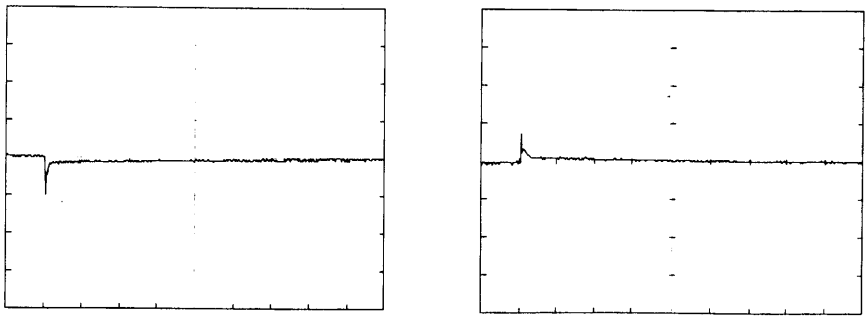
Cycle 200 mS

Load Current

Load 0% ⟷
Load 100 %



Load 0% ⟷
Load 50 %



100 mV/div

10 mS/div

COSEL

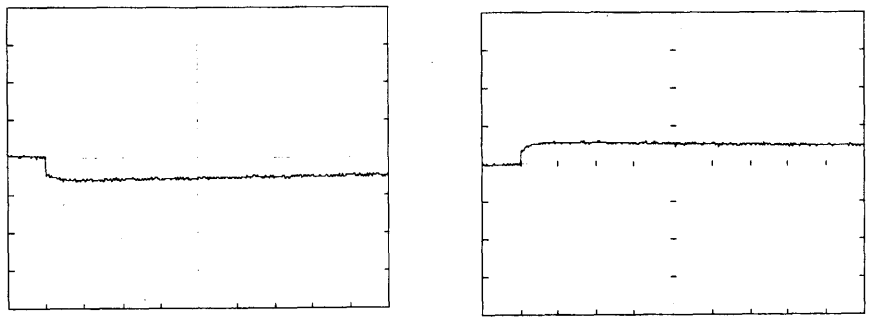
Model	MMC50A-2		
Item	Dynamic Load Responce 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+15.0V1.20A		

Input Volt. 100 V

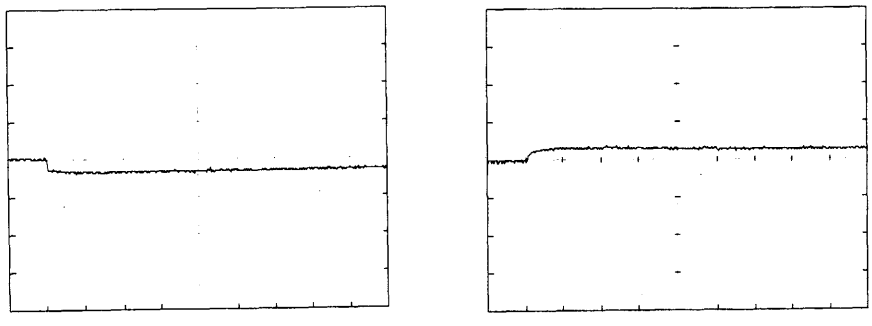
Cycle 200 mS

Load Current

Load 0% ⟷
Load 100 %



Load 0% ⟷
Load 50 %



100 mV/div

10 mS/div

COSEL

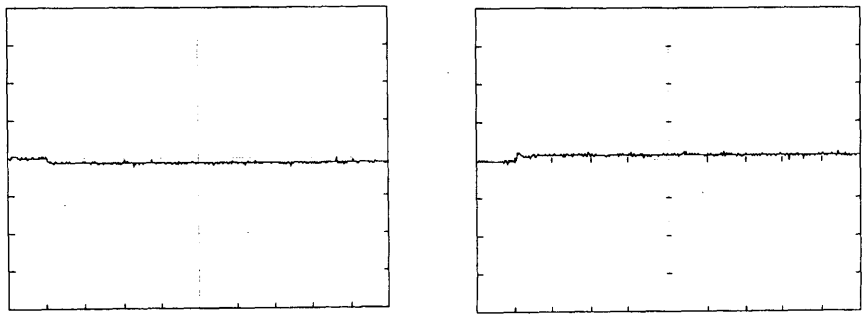
Model	MMC50A-2		
Item	Dynamic Load Responce 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	-15.0V0.50A		

Input Volt. 100 V

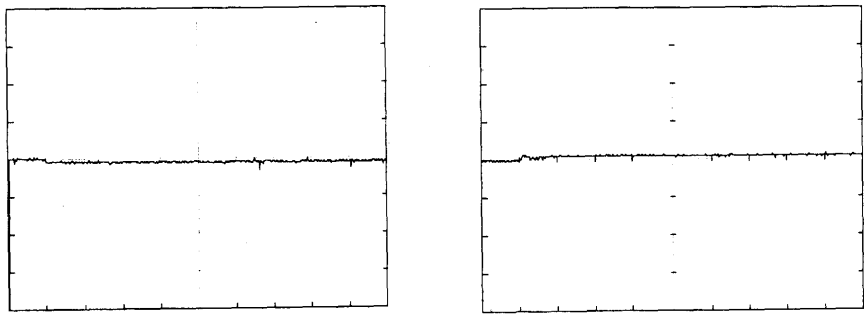
Cycle 200 mS

Load Current

Load 0% ⟷
Load 100 %



Load 0% ⟷
Load 50 %



100 mV/div

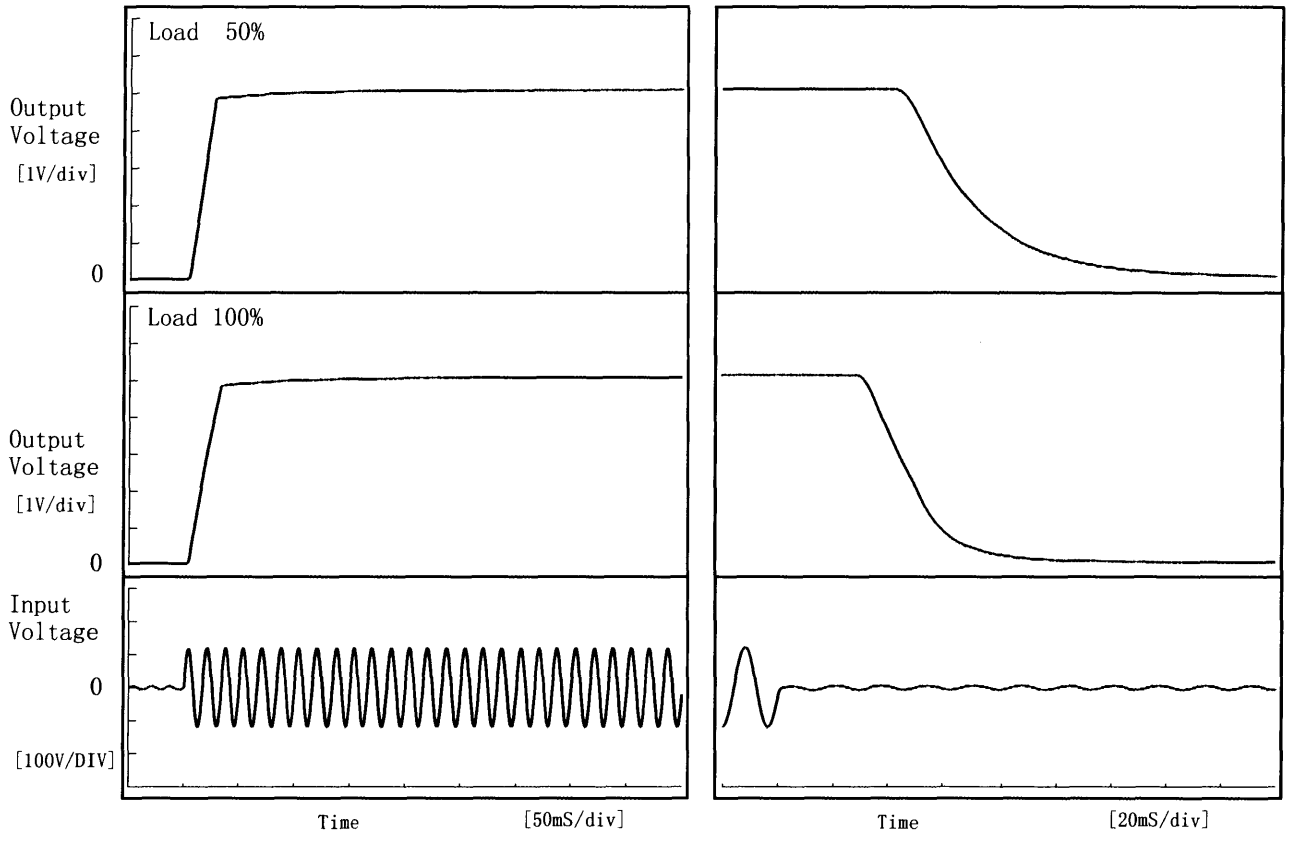
10 mS/div

COSEL

Model	MMC50A-2		
Item	Rise and Fall Time 立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	+5.0V5.00A		

1. Graph

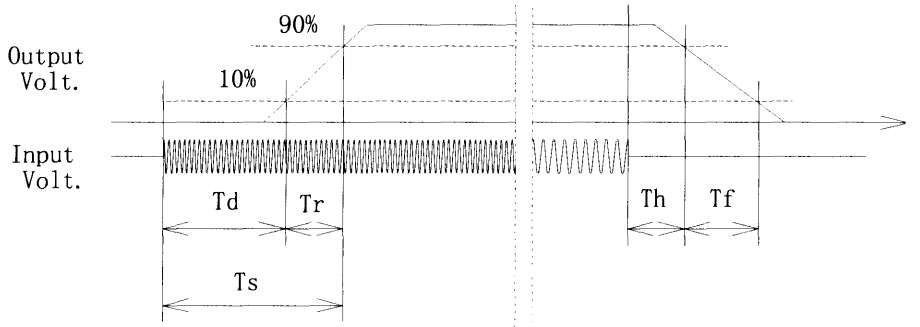
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	6.8	19.3	26.0	50.3	55.3
100 %	6.8	24.5	31.3	35.0	33.1



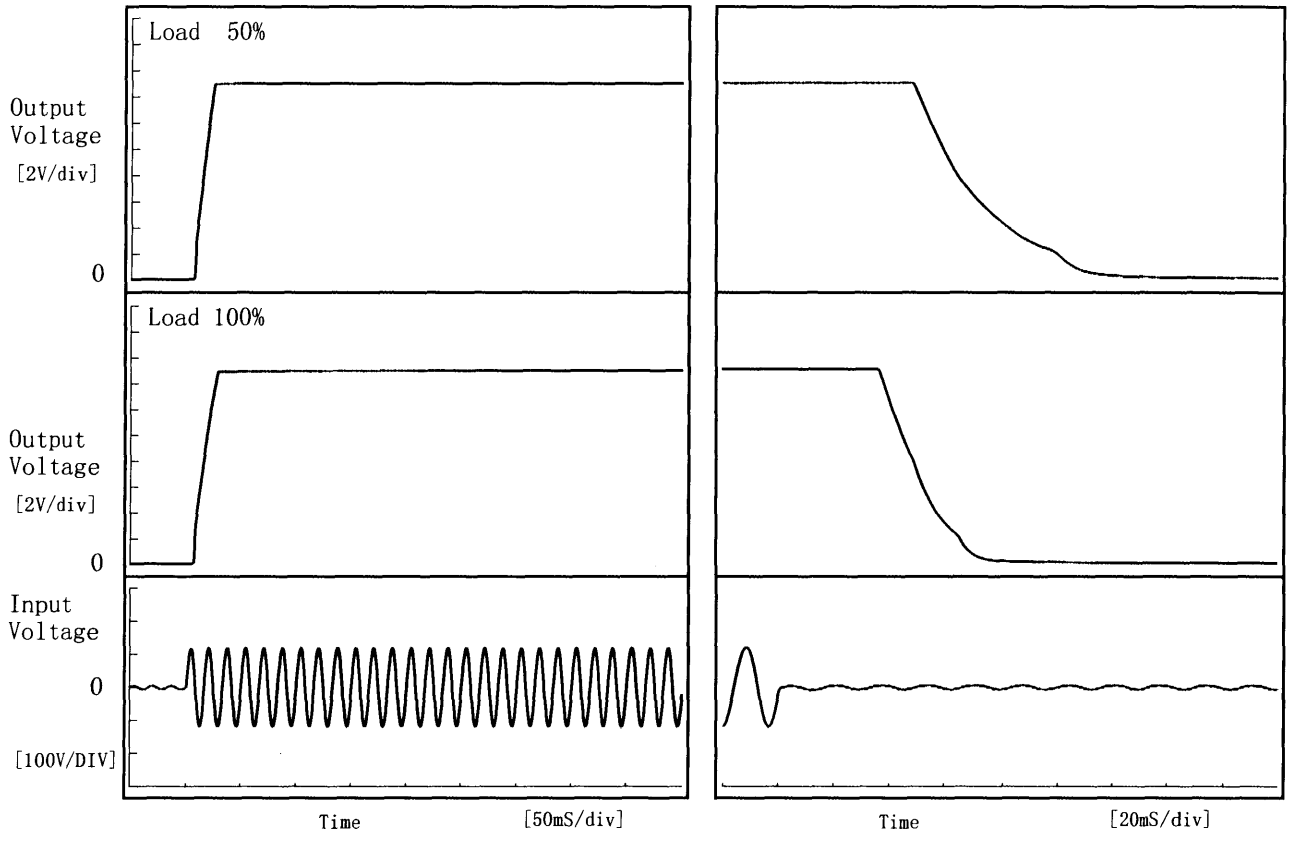
BC−3245

COSEL

Model	MMC50A-2		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+15.0V1.20A		

1. Graph

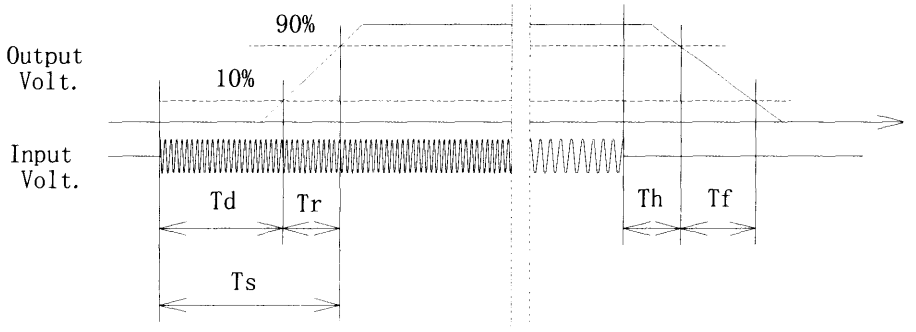
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	7.8	15.0	22.8	52.4	49.9
100 %	7.8	18.3	26.0	39.0	28.4

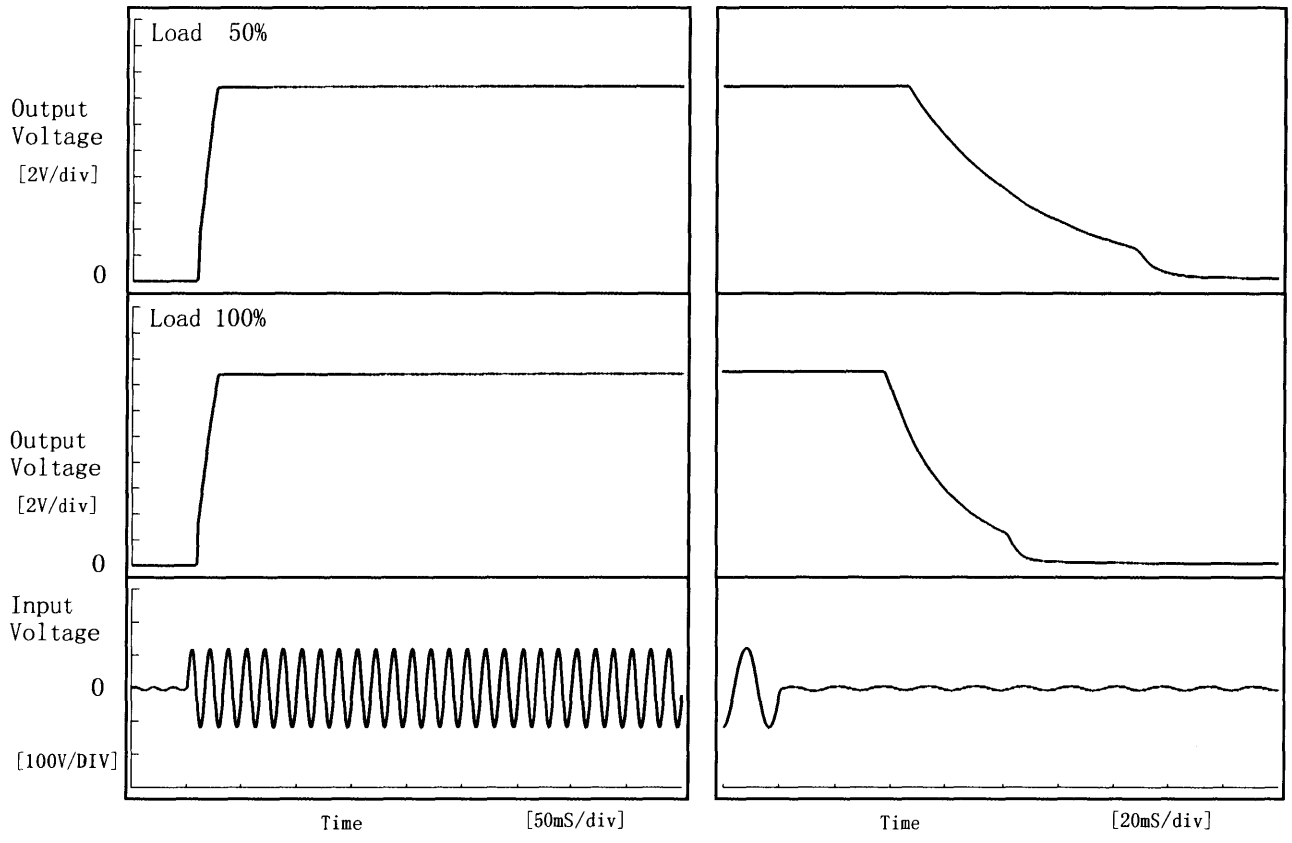


COSEL

Model	MMC50A-2		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	−15.0V0.50A		

1. Graph

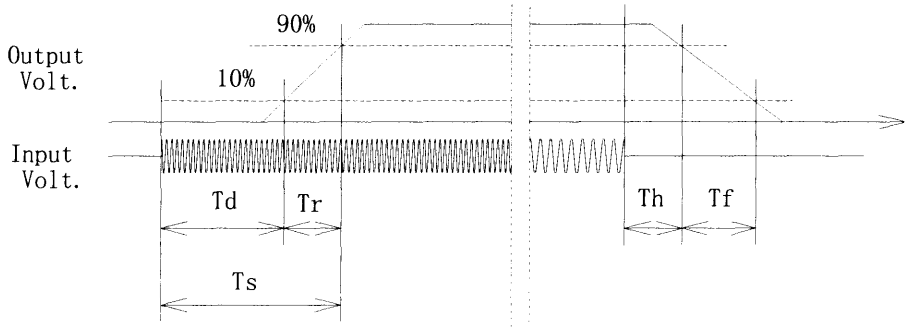
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	9.3	15.0	24.3	51.6	80.9
100 %	9.3	16.5	25.8	40.7	43.4



BC−3245

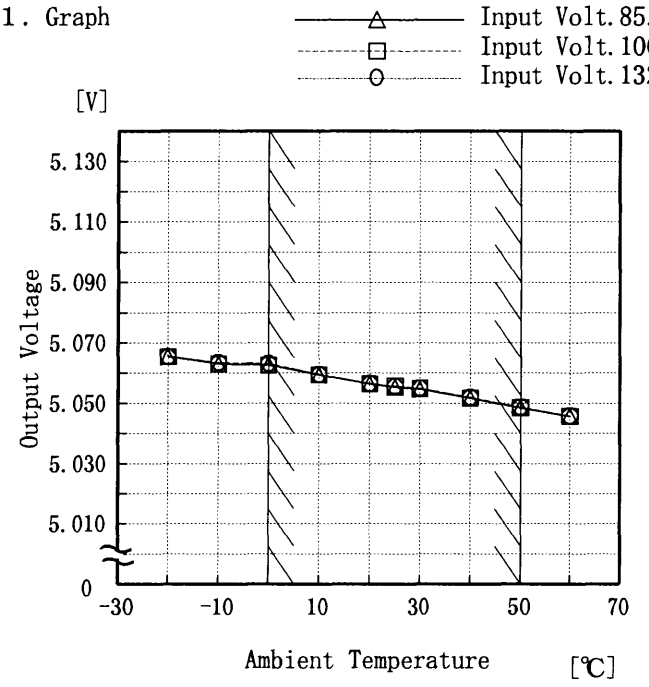
COSEL

Model	MMC50A-2
Item	Ambient Temperature Drift 周囲温度変動

Testing Circuitry Figure A

Object +5.0V5.00A

1. Graph

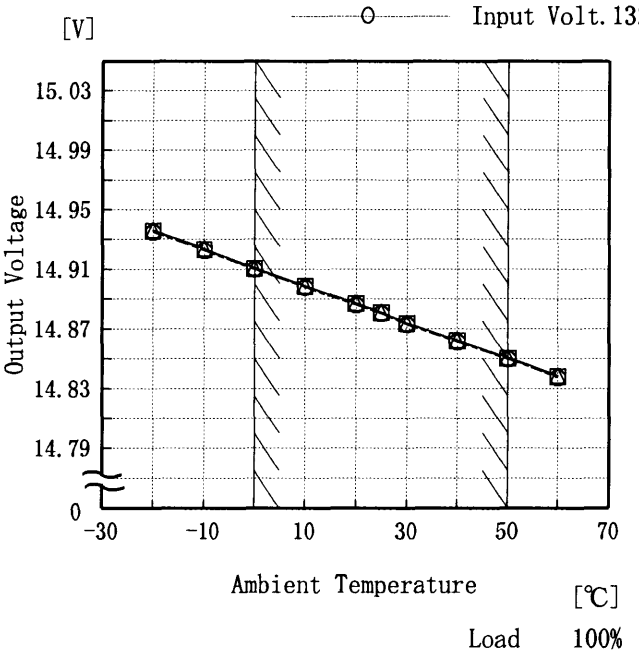


2. Values

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	5.066	5.065	5.065
-10	5.063	5.063	5.064
0	5.063	5.063	5.063
10	5.059	5.059	5.060
20	5.057	5.056	5.057
25	5.055	5.056	5.056
30	5.055	5.055	5.055
40	5.052	5.052	5.052
50	5.048	5.049	5.049
60	5.046	5.046	5.046
—	—	—	—

Object +15.0V1.20A

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	14.936	14.936	14.935
-10	14.924	14.923	14.923
0	14.911	14.910	14.910
10	14.899	14.898	14.898
20	14.887	14.887	14.886
25	14.881	14.881	14.880
30	14.874	14.873	14.873
40	14.862	14.862	14.861
50	14.851	14.850	14.850
60	14.838	14.838	14.837
—	—	—	—

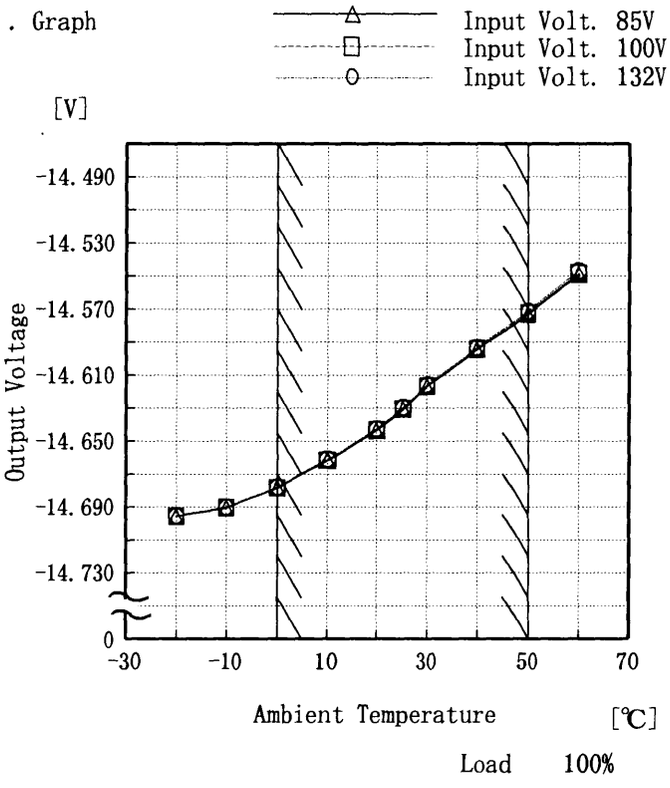
Note: Slanted line shows the range of the rated ambient temperature.
(注)斜線は定格周囲温度範囲を示す。

COSEL

Model	MMC50A-2
Item	Ambient Temperature Drift 周囲温度変動
Object	-15.0V0.50A

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	-14.696	-14.696	-14.695
-10	-14.690	-14.690	-14.690
0	-14.679	-14.678	-14.678
10	-14.662	-14.661	-14.661
20	-14.644	-14.643	-14.642
25	-14.631	-14.630	-14.630
30	-14.617	-14.616	-14.616
40	-14.595	-14.594	-14.593
50	-14.573	-14.572	-14.571
60	-14.549	-14.548	-14.547
—	—	—	—

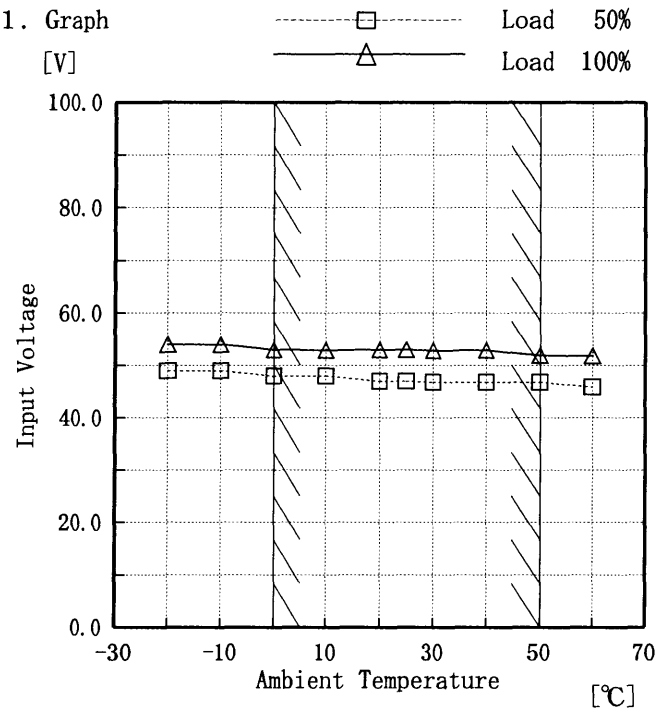
COSEL

Model	MMC50A-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 ＋5.0V5.00A

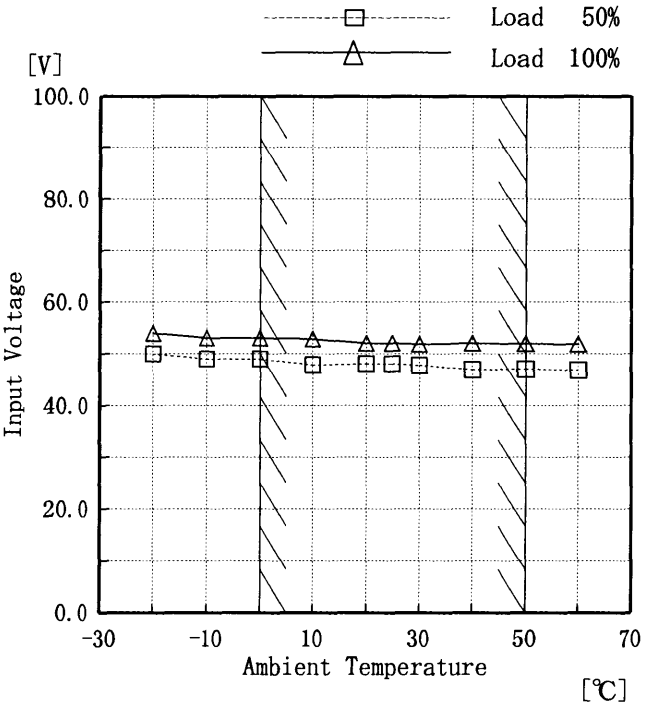
1. Graph



2. Values

Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-20	49.0	54.0
-10	49.0	54.0
0	48.0	53.0
10	48.0	52.9
20	47.0	53.0
25	47.0	53.0
30	46.8	52.8
40	46.8	52.9
50	46.8	51.8
60	45.9	51.8
—	—	—

Object ＋15.0V1.20A



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

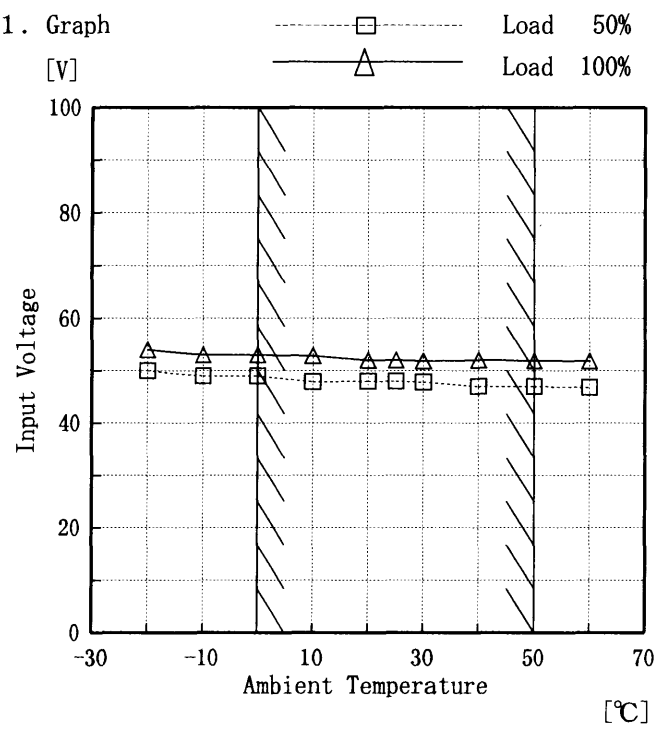
Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-20	50.0	54.0
-10	49.0	53.0
0	49.0	53.0
10	47.9	52.8
20	48.0	52.0
25	48.0	52.0
30	47.8	51.8
40	47.0	52.0
50	47.0	51.9
60	46.8	51.8
—	—	—

COSEL

Model	MMC50A-2
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	-15.0V0.50A

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	50.0	54.0
-10	49.0	53.0
0	49.0	53.0
10	47.9	52.8
20	48.0	52.0
25	48.0	52.0
30	47.8	51.8
40	47.0	52.0
50	47.0	51.9
60	46.8	51.8
—	—	—

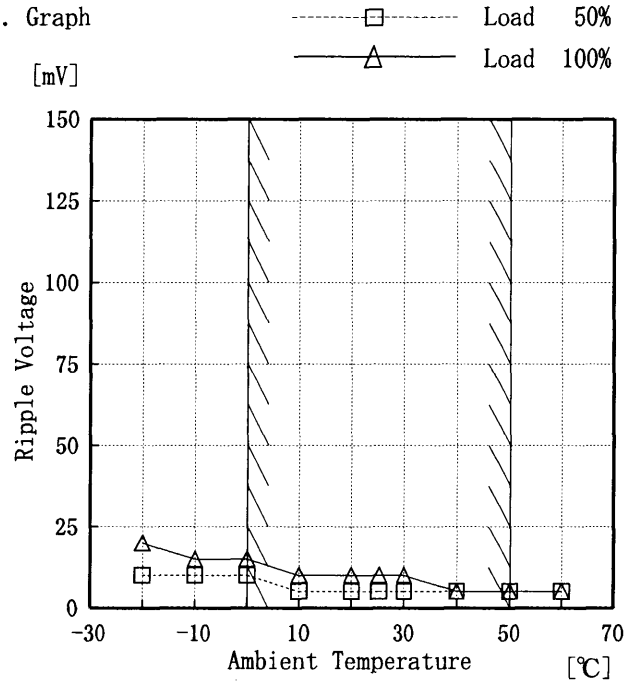
COSEL

Model	MMC50A-2
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)

Testing Circuitry Figure A

Object +5.0V5.00A

1. Graph



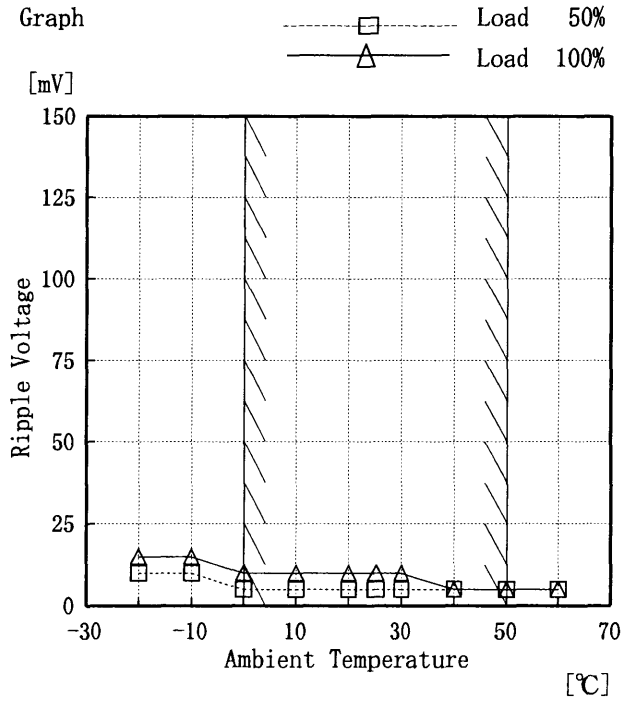
Input Volt. 85 V

2. Values

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

Object +15.0V1.20A

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

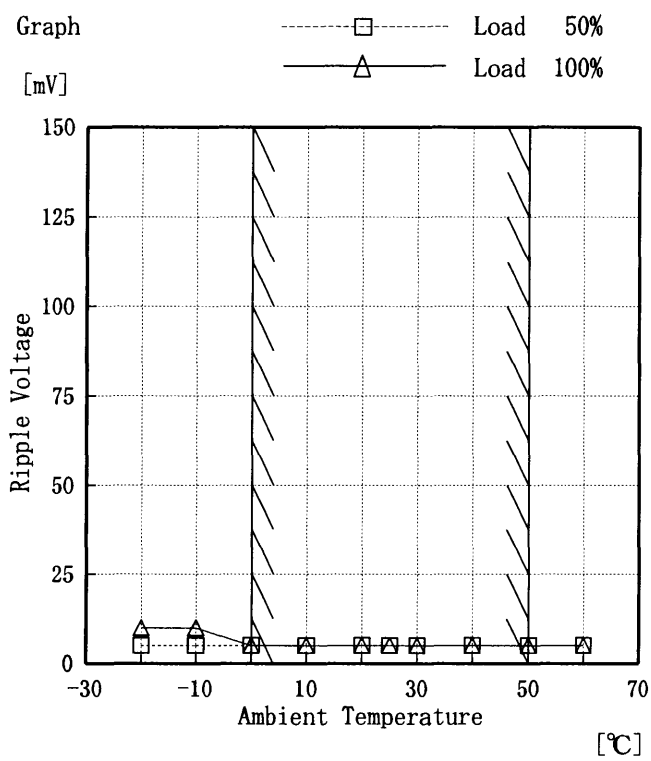
Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
-20	10	15
-10	10	15
0	5	10
10	5	10
20	5	10
25	5	10
30	5	10
40	5	5
50	5	5
60	5	5
—	—	—

COSEL

Model	MMC50A-2
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	-15.0V0.50A

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	5
10	5	5
20	5	5
25	5	5
30	5	5
40	5	5
50	5	5
60	5	5
—	—	—

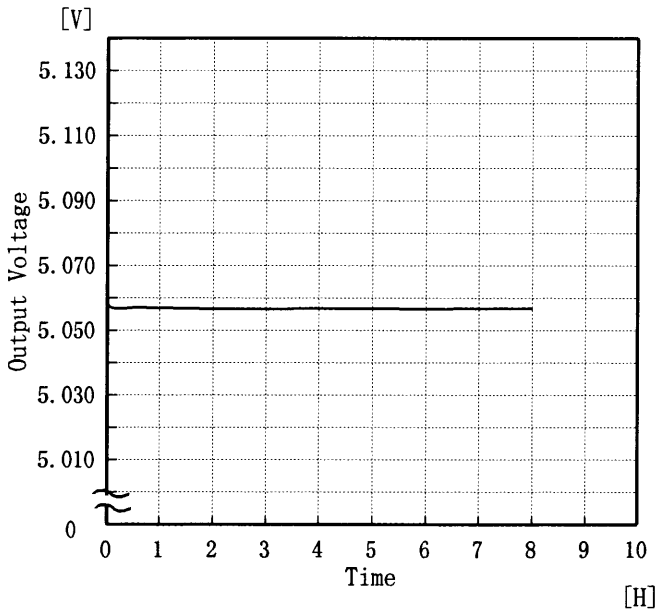
COSEL

Model	MMC50A-2
Item	Time Lapse Drift 経時ドリフト

Temperature 25 ℃
Testing Circuitry Figure A

Object +5.0V5.00A

1. Graph



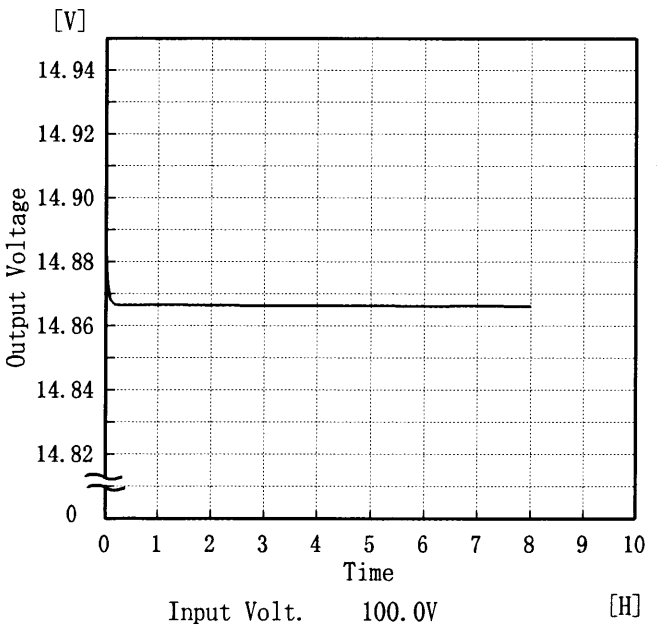
Input Volt. 100.0V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	5.059
0.5	5.057
1.0	5.057
2.0	5.057
3.0	5.057
4.0	5.057
5.0	5.057
6.0	5.057
7.0	5.057
8.0	5.057

Object +15.0V1.20A

1. Graph



Input Volt. 100.0V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	14.893
0.5	14.866
1.0	14.866
2.0	14.866
3.0	14.866
4.0	14.866
5.0	14.866
6.0	14.866
7.0	14.866
8.0	14.866

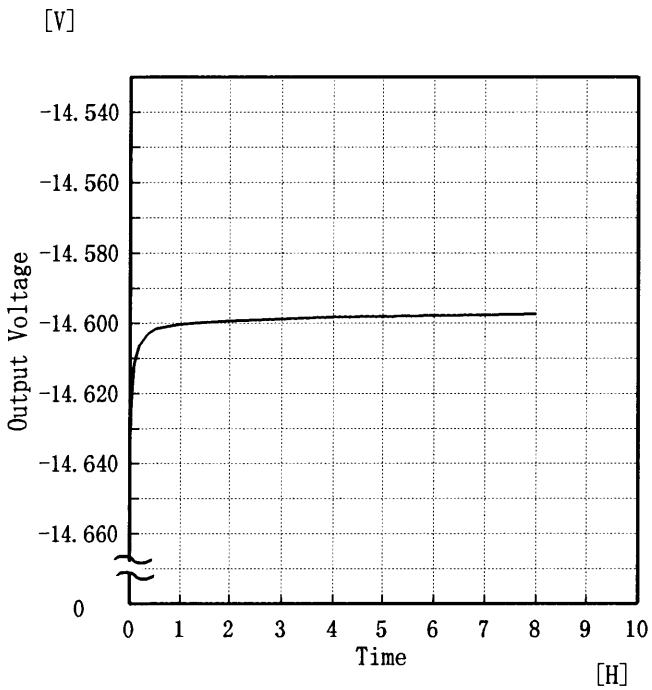
BC－3245

COSEL

Model	MMC50A-2
Item	Time Lapse Drift 経時ドリフト
Object	-15.0V0.50A

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph



Input Volt. 100V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	-14.640
0.5	-14.602
1.0	-14.600
2.0	-14.599
3.0	-14.599
4.0	-14.598
5.0	-14.598
6.0	-14.598
7.0	-14.598
8.0	-14.597

COSEL

Model	MMC50A-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 : 85.0～132.0 V

Load Current (AVR 1) : 0.75～5.00 A　(AVR 2) : 0.00～1.20 A　(AVR 3) : 0.00～0.50 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　0～50 ℃

入力電圧　85.0～132.0 V

負荷電流 (AVR 1)　0.75～5.00 A　(AVR 2) : 0.00～1.20 A　(AVR 3) : 0.00～0.50 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	+5.0V5.00A					
Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	0	132.0	0.750	5.072	±12	±0.3
Minimum Voltage	50	85.0	5.000	5.048		

Object	+15.0V1.20A					
Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	0	100.0	0.00	14.969	±65	±0.5
Minimum Voltage	50	132.0	1.20	14.840		

Object	−15.0V0.50A					
Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	0	100.0	0.00	-14.692	±72	±0.5
Minimum Voltage	50	132.0	0.50	-14.549		

COSEL

Model	MMC50A-2	
Item	Condensation 結露特性	Testing Circuitry Figure A
Object	+5.0V5.00A	

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]	5.056	Input Volt.: 100V, Load Current:5A
Line Regulation [mV]	1	Input Volt.: 85～132V, Load Current:5A
Load Regulation [mV]	9	Input Volt.: 100V, Load Current:1～5A

COSEL

Model	MMC50A-2	
Item	Condensation 結露特性	Testing Circuitry Figure A
Object	+15.0V1.20A	

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]	14.873	Input Volt.: 100V, Load Current:1.2A
Line Regulation [mV]	1	Input Volt.: 85～132V, Load Current:1.2A
Load Regulation [mV]	49	Input Volt.: 100V, Load Current:0.0～1.2A

COSEL

Model	MMC50A-2
Item	Condensation 結露特性
Object	-15.0V0.50A

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]	-14.619	Input Volt.: 100V, Load Current:0.5A
Line Regulation [mV]	1	Input Volt.: 85～132V, Load Current:0.5A
Load Regulation [mV]	21	Input Volt.: 100V, Load Current:0.0～0.5A

COSEL

Model	MMC50A-2		
Item	Leakage Current 漏洩電流	Temperature Testing Circuitry	25℃ Figure A
Object	————————		

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	0.24	0.26	0.33
(B) IEC60950	0.22	0.27	0.33

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	MMC50A-2	
Item	Conducted Emission 雑音端子電圧	Testing Circuitry Figure D
Object	————————	

1. Graph

Remarks

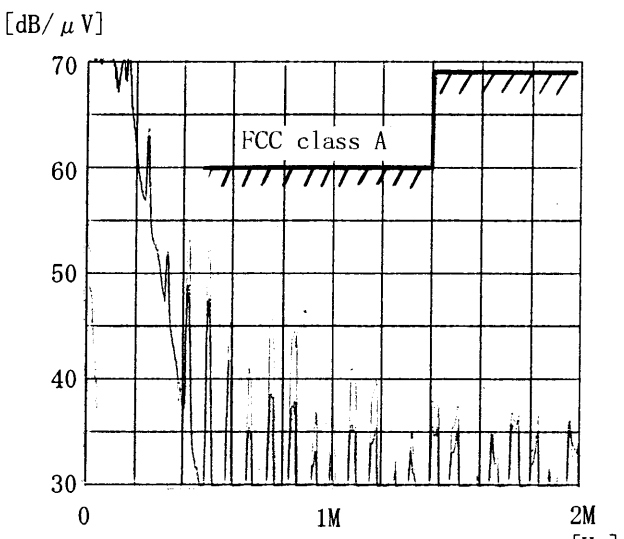
Input Volt. 120 V

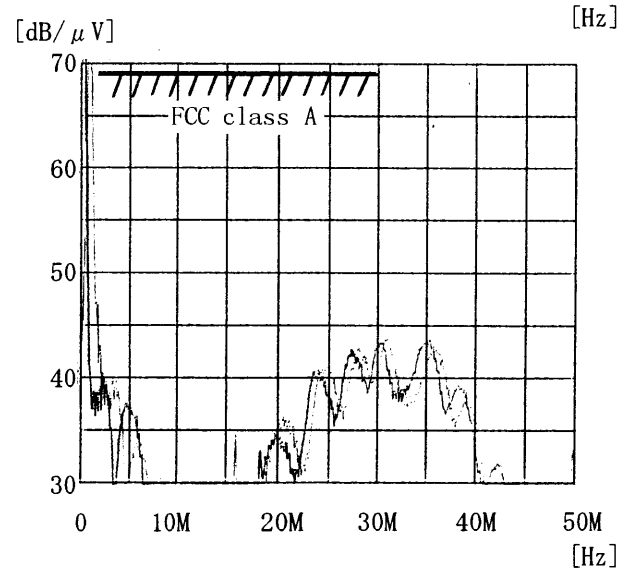
Load 100 %

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

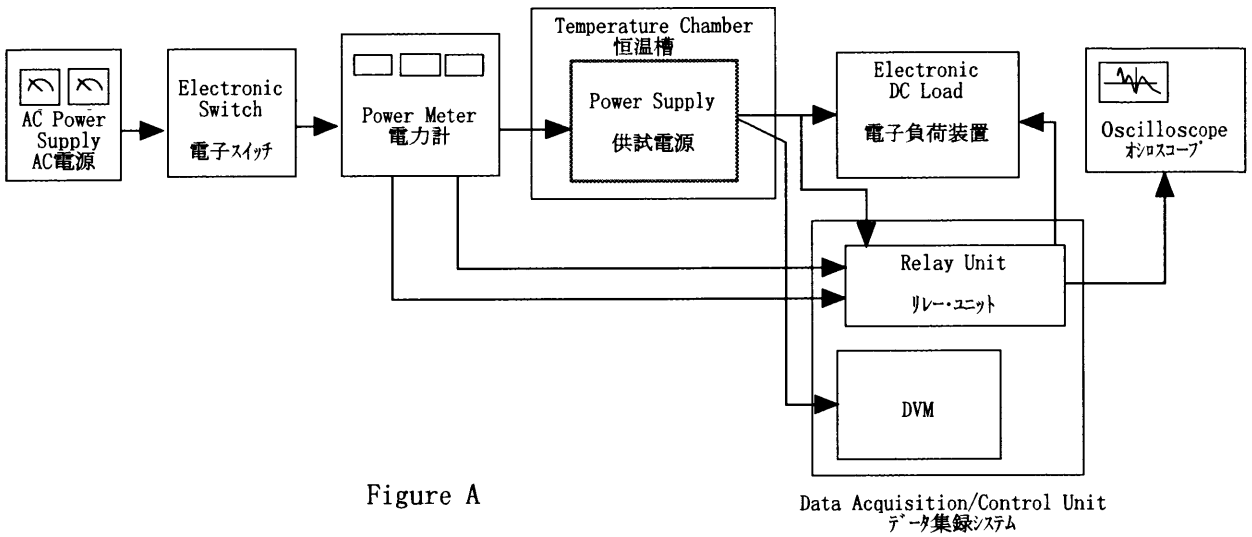


Figure A

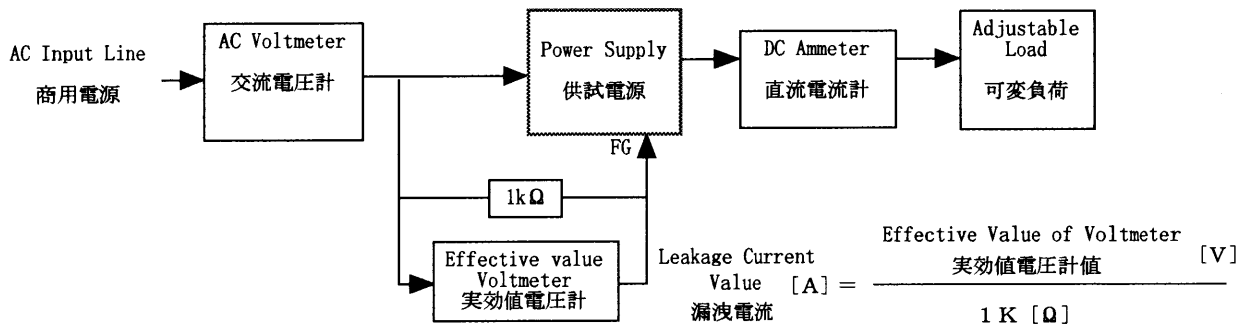


Figure B(DENTORI)

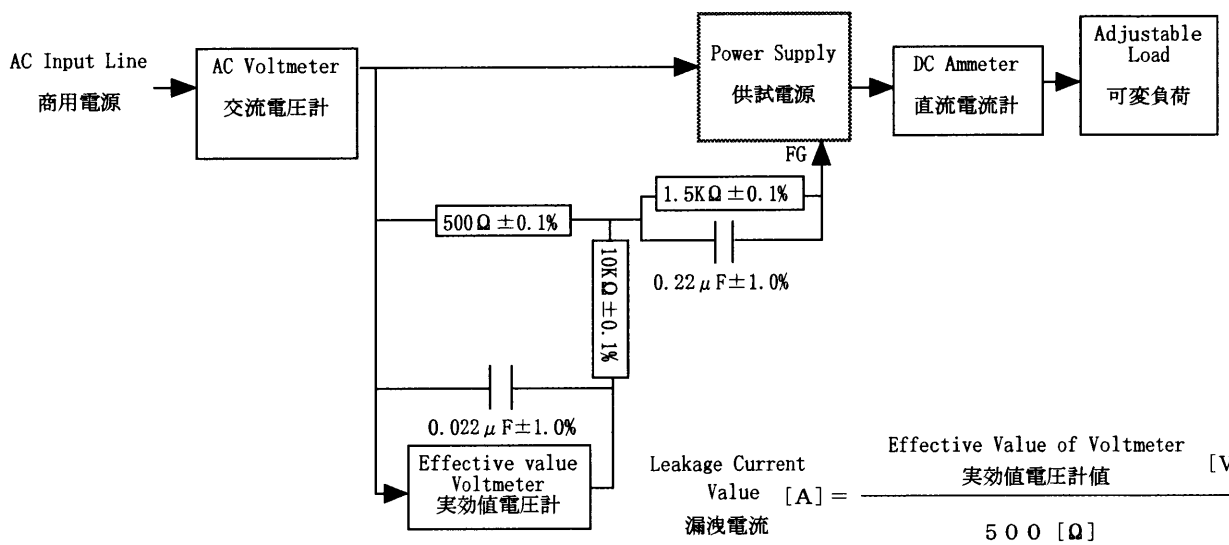


Figure B (IEC60950)

COSEL

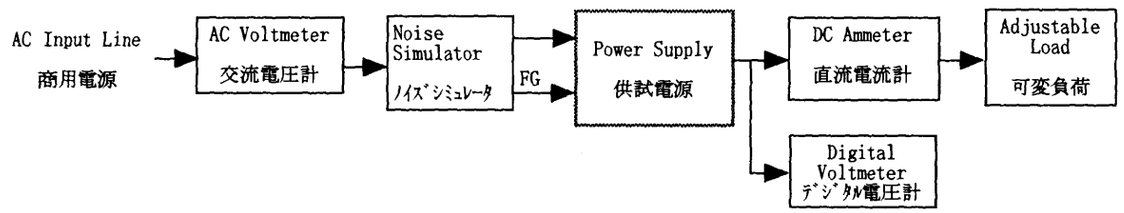


Figure C

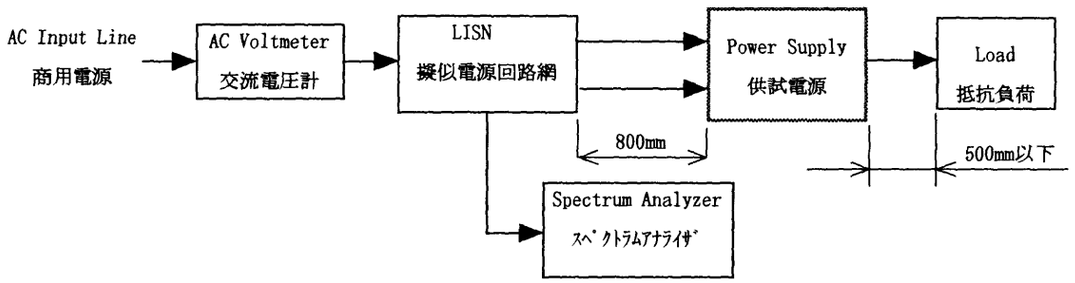


Figure D

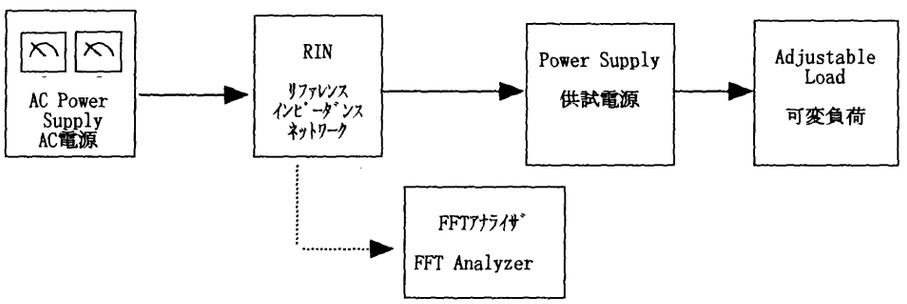


Figure E