COSEL

参考資料

TEST DATA OF MMC100B-1

Regulated DC Power Supply
April 5, 2011

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Hironobu Shimizu — Design Engineer

COSEL CO.,LTD.

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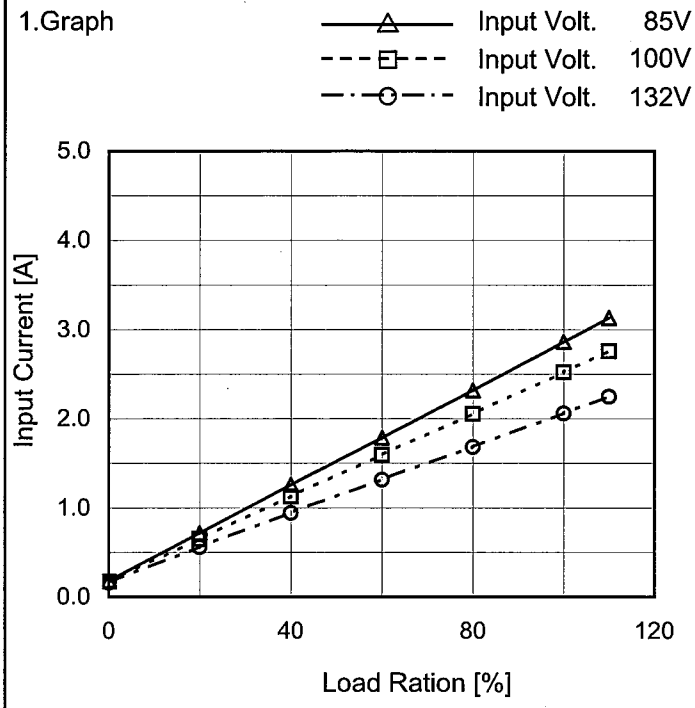
Model	MMC100B-1
Item	Input Current (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0	0.184	0.172	0.163
20	0.718	0.651	0.562
40	1.260	1.127	0.945
60	1.790	1.594	1.318
80	2.320	2.054	1.686
100	2.862	2.522	2.060
110	3.132	2.758	2.247
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

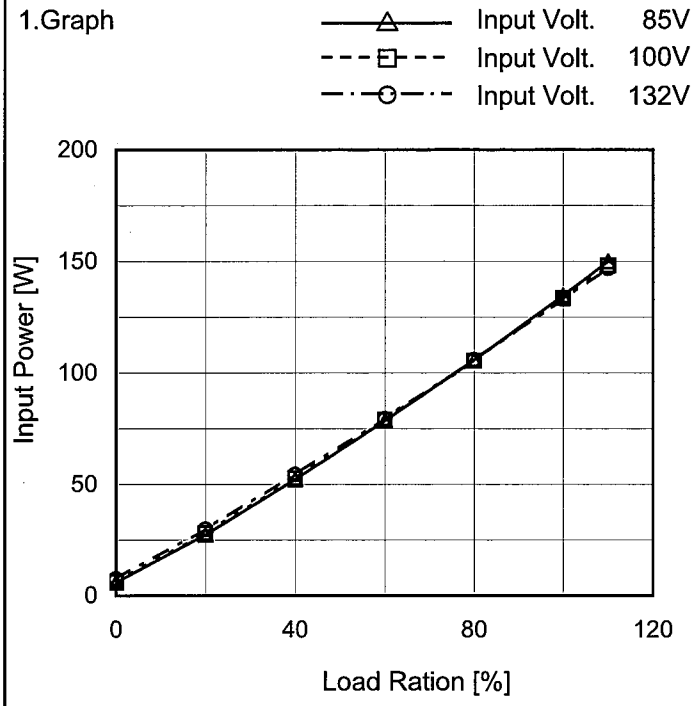
BC-10556

COSEL

Model	MMC100B-1
Item	Input Power (by Load Current)
Object	————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Input Power [W]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0	6.0	6.3	7.6
20	27.5	28.1	29.9
40	52.3	52.8	54.4
60	78.6	78.9	79.4
80	105.9	105.5	105.9
100	134.7	133.5	133.2
110	150.0	148.2	147.0
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

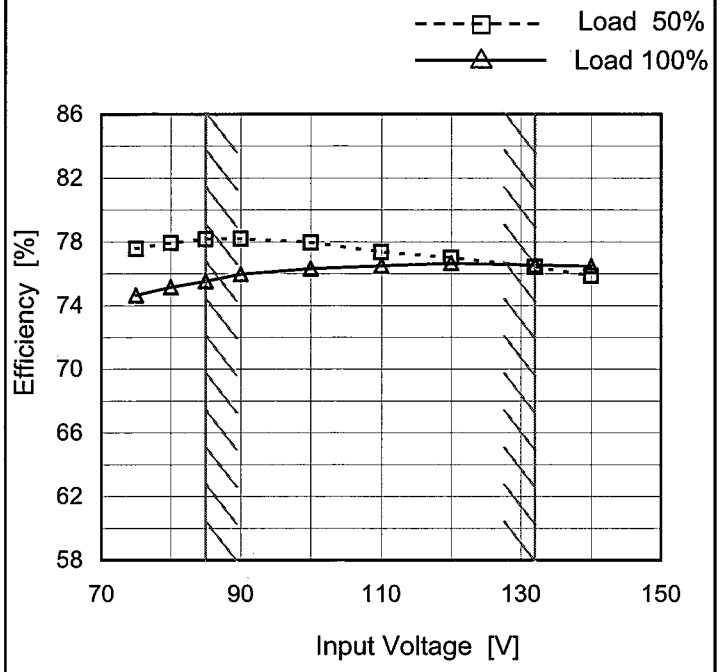
BC-10556

COSEL

Model	MMC100B-1
Item	Efficiency (by Input Voltage)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

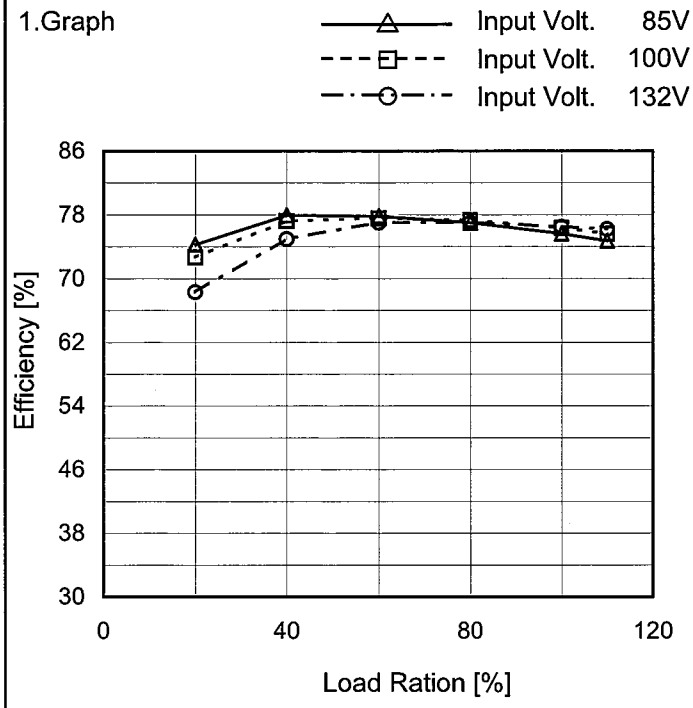
Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	77.6	74.7
80	77.9	75.2
85	78.2	75.5
90	78.2	76.0
100	77.9	76.3
110	77.4	76.5
120	77.0	76.7
132	76.4	76.5
140	75.9	76.5

COSEL

Model	MMC100B-1
Item	Efficiency (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Efficiency [%]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0	-	-	-
20	74.3	72.7	68.3
40	78.0	77.2	75.0
60	77.8	77.5	77.0
80	77.0	77.3	77.0
100	75.7	76.3	76.5
110	74.7	75.6	76.2
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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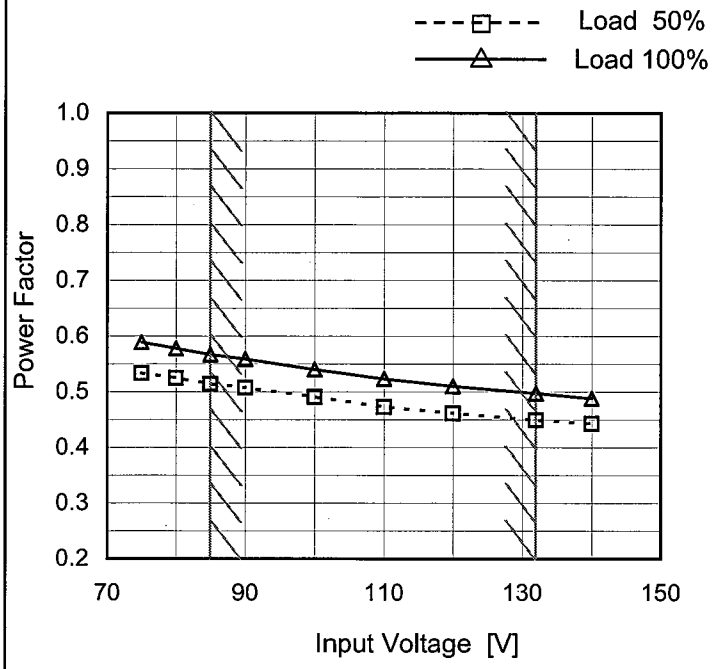
COSEL

Model	MMC100B-1
Item	Power Factor (by Input Voltage)
Object	———————————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Power Factor	
	Load 50%	Load 100%
75	0.533	0.589
80	0.524	0.578
85	0.515	0.567
90	0.507	0.559
100	0.491	0.540
110	0.473	0.524
120	0.461	0.510
132	0.449	0.498
140	0.443	0.489

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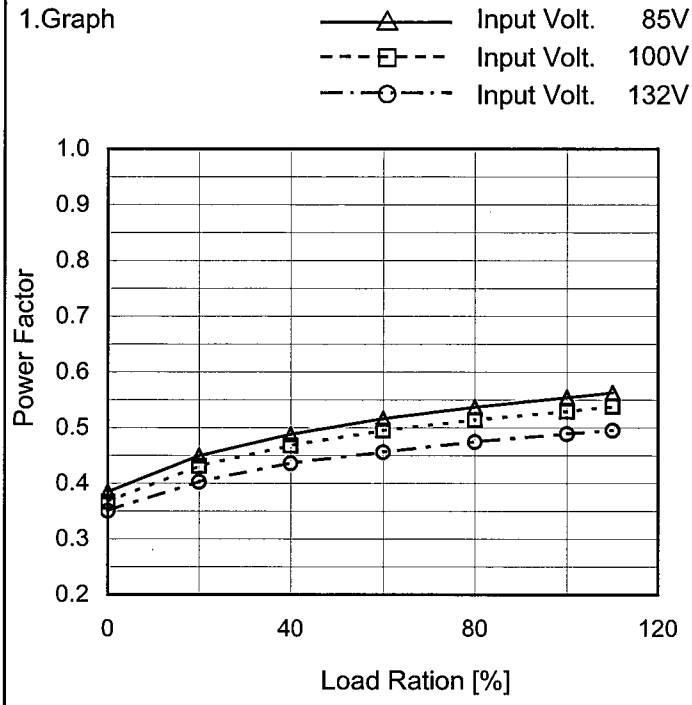
Model	MMC100B-1
Item	Power Factor (by Load Current)
Object	———————

Temperature 25°C
Testing Circuitry Figure A

1.Graph



2.Values

Load Ration [%]	Power Factor		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0	0.385	0.367	0.351
20	0.450	0.431	0.403
40	0.488	0.468	0.436
60	0.516	0.495	0.456
80	0.537	0.514	0.475
100	0.555	0.530	0.489
110	0.563	0.538	0.495
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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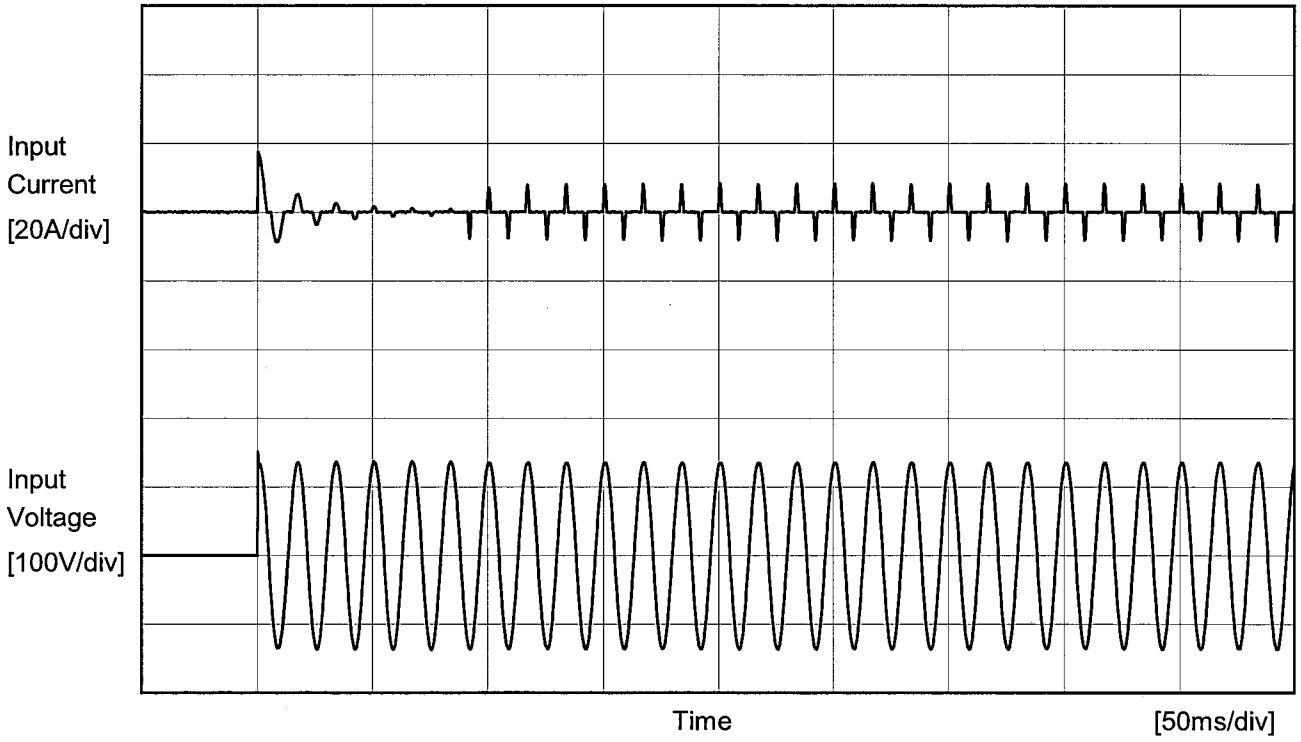
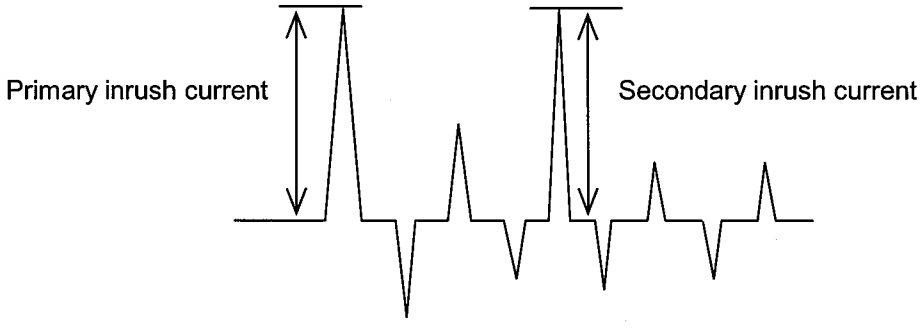
Model	MMC100B-1
Item	Inrush Current
Object	————————

Temperature 25°C
Testing Circuitry Figure A



Input Voltage	100 V
Frequency	60 Hz
Load	100 %
Primary inrush current	17.5 A
Secondary inrush current	8.3 A



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Model	MMC100B-1	
Item	Leakage Current	Temperature 25°C Testing Circuitry Figure B
Object	———————	

1.Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A)DEN-AN	0.15	0.18	0.22
(B)IEC60950-1	0.15	0.19	0.25

Standards	Leakage Current [mA]		
	Input Volt. 170 [V]	Input Volt. 230 [V]	Input Volt. 264 [V]
(B)IEC60950-1	-	-	-

2.Condition

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

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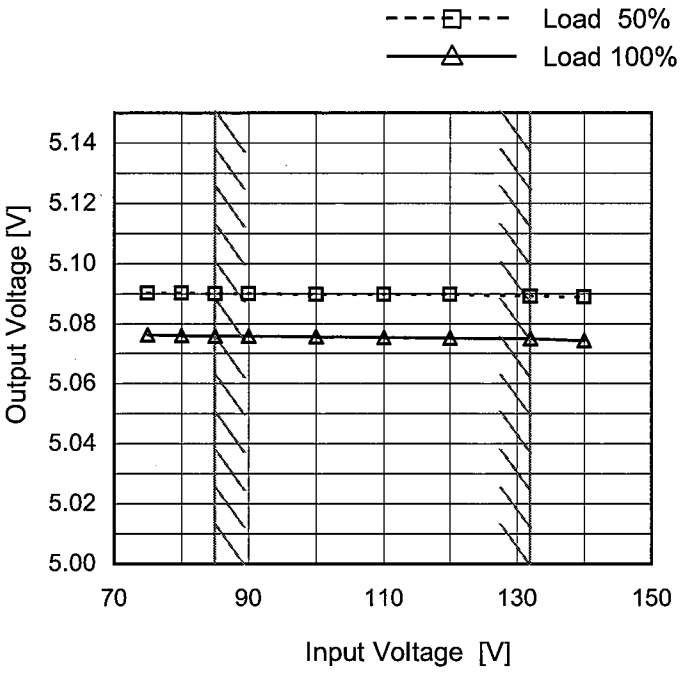
Model	MMC100B-1
Item	Line Regulation
Object	+5V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

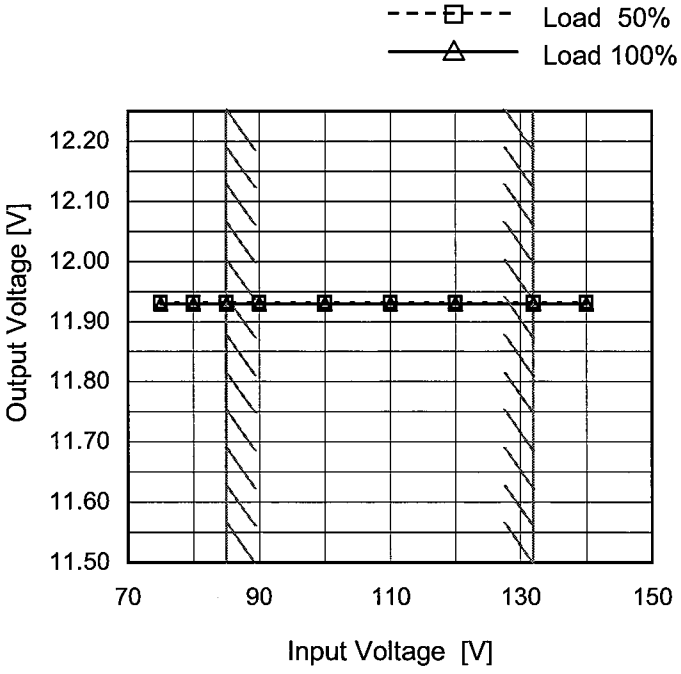


2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	5.090	5.076
80	5.090	5.076
85	5.090	5.076
90	5.090	5.076
100	5.090	5.076
110	5.090	5.075
120	5.090	5.075
132	5.089	5.075
140	5.089	5.074

Object	+12V2A

1.Graph



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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	11.931	11.929
80	11.931	11.929
85	11.931	11.929
90	11.931	11.929
100	11.931	11.929
110	11.931	11.929
120	11.931	11.929
132	11.931	11.929
140	11.931	11.929

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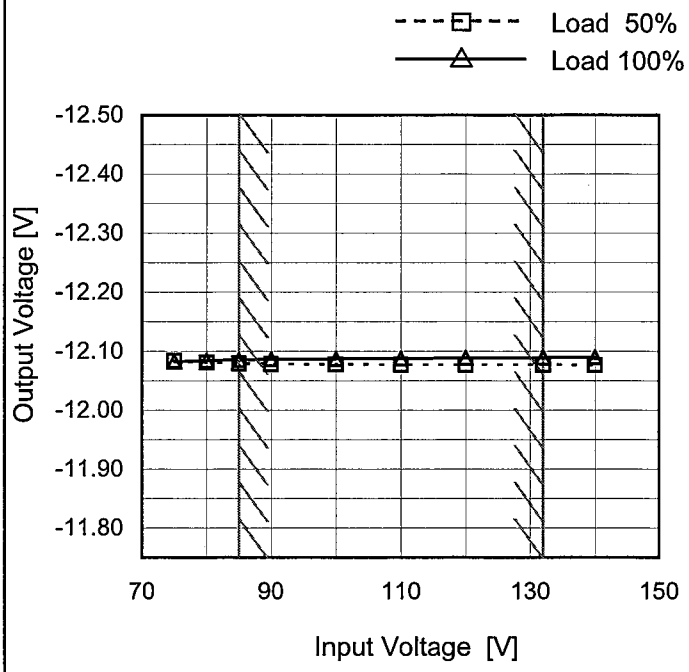
Model	MMC100B-1
Item	Line Regulation
Object	-12V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	-12.083	-12.083
80	-12.081	-12.085
85	-12.079	-12.086
90	-12.078	-12.087
100	-12.078	-12.087
110	-12.077	-12.088
120	-12.077	-12.089
132	-12.077	-12.089
140	-12.077	-12.090

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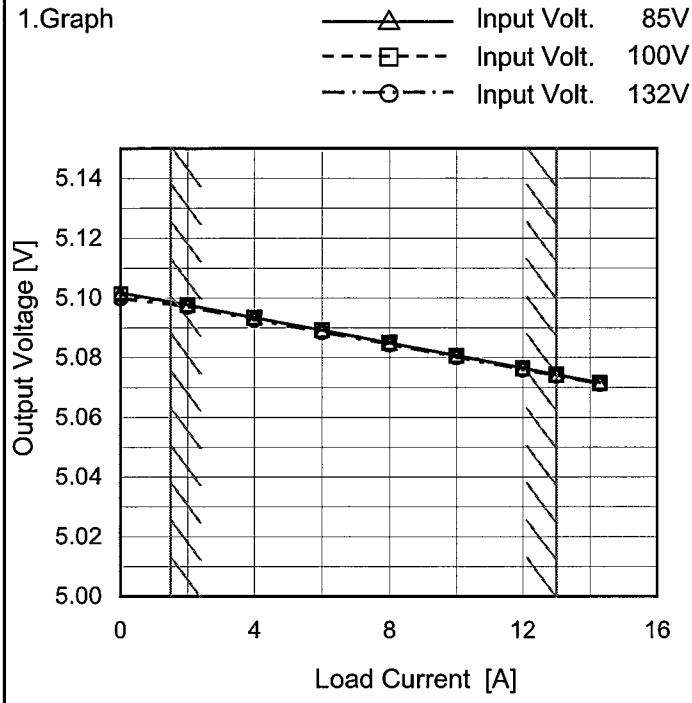
Model	MMC100B-1
Item	Load Regulation
Object	+5V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

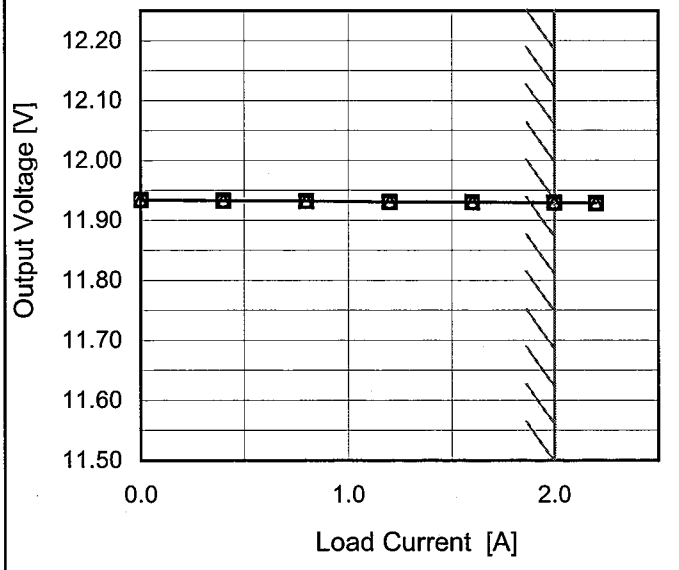


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	5.102	5.101	5.100
2.0	5.098	5.098	5.097
4.0	5.094	5.093	5.093
6.0	5.089	5.089	5.089
8.0	5.085	5.085	5.084
10.0	5.081	5.081	5.080
12.0	5.077	5.076	5.076
13.0	5.074	5.074	5.074
14.3	5.072	5.072	5.071
--	-	-	-
--	-	-	-

Object	+12V2A

1.Graph



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

2.Values

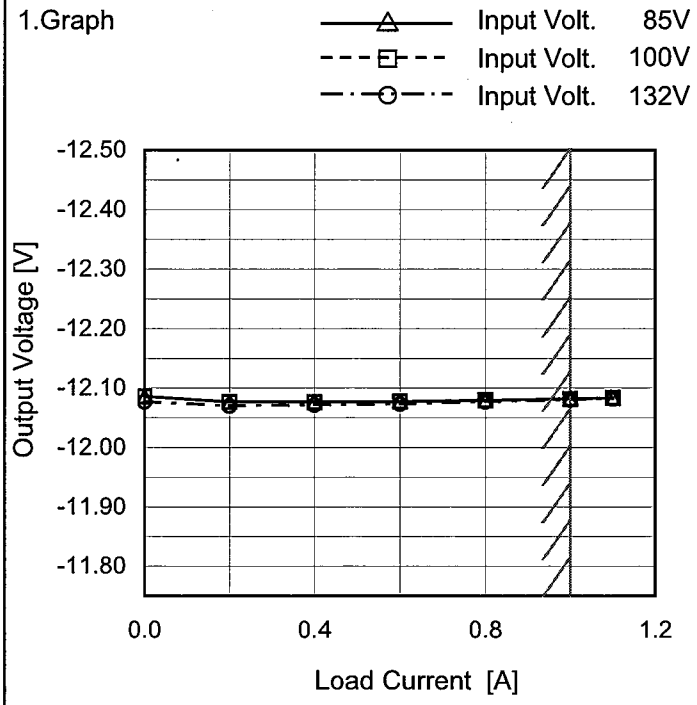
Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	11.934	11.934	11.934
0.4	11.933	11.933	11.933
0.8	11.932	11.932	11.932
1.2	11.931	11.931	11.931
1.6	11.930	11.930	11.930
2.0	11.929	11.929	11.929
2.2	11.929	11.929	11.929
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MMC100B-1
Item	Load Regulation
Object	-12V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	-12.086	-12.086	-12.077
0.2	-12.077	-12.077	-12.070
0.4	-12.077	-12.076	-12.072
0.6	-12.078	-12.078	-12.074
0.8	-12.080	-12.080	-12.077
1.0	-12.082	-12.081	-12.080
1.1	-12.083	-12.084	-12.082
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

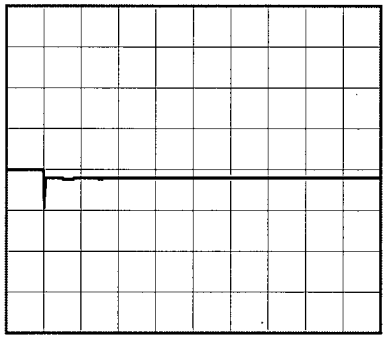
COSEL

Model	MMC100B-1		
Item	Dynamic Load Response	Temperature Testing Circuitry	25˚C Figure A
Object	+5V13A		

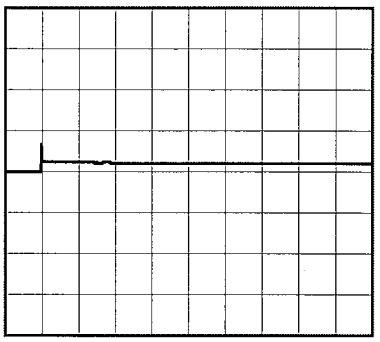
Input Volt. 100 V
Cycle 200 ms

Response. t1=t2=50us. Typ

Min. Load 11.54% (1.5A) ⟷
Load 100% (13A)

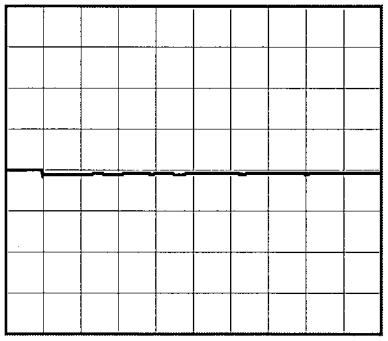


100 mV/div
10 ms/div

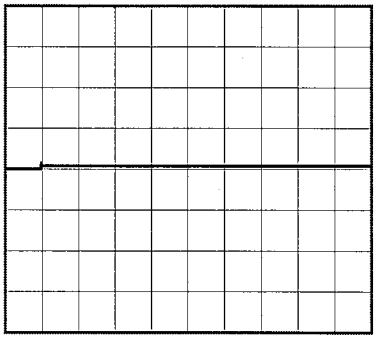


10 ms/div

Min. Load 11.54% (1.5A) ⟷
Load 50% (6.5A)



100 mV/div
10 ms/div



10 ms/div

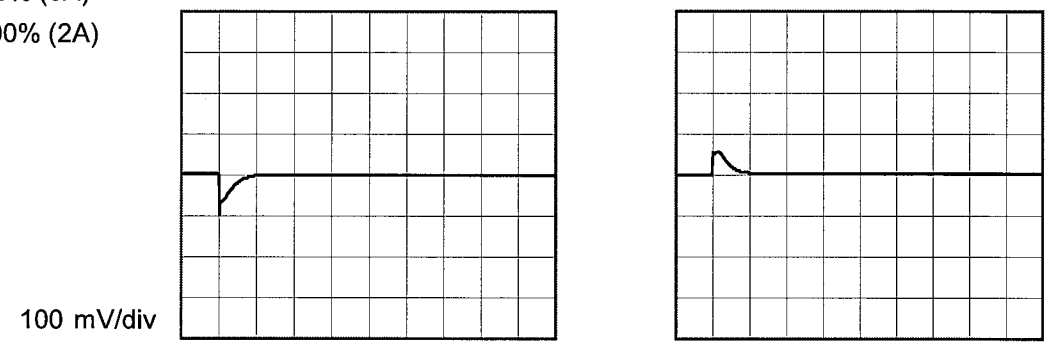
COSEL

Model	MMC100B-1		
Item	Dynamic Load Response	Temperature	25°C
		Testing Circuitry	Figure A
Object	+12V2A		

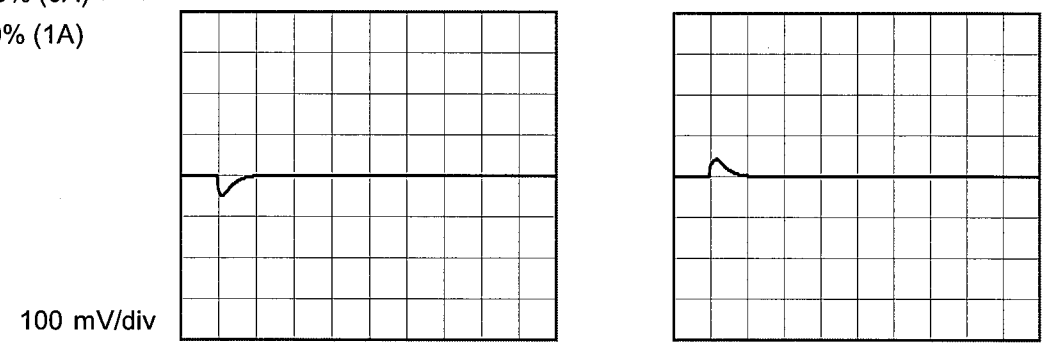
Input Volt. 100 V
Cycle 200 ms

Response. t1=t2=50us. Typ

Min. Load 0% (0A) ⟷
Load 100% (2A)



Min. Load 0% (0A) ⟷
Load 50% (1A)



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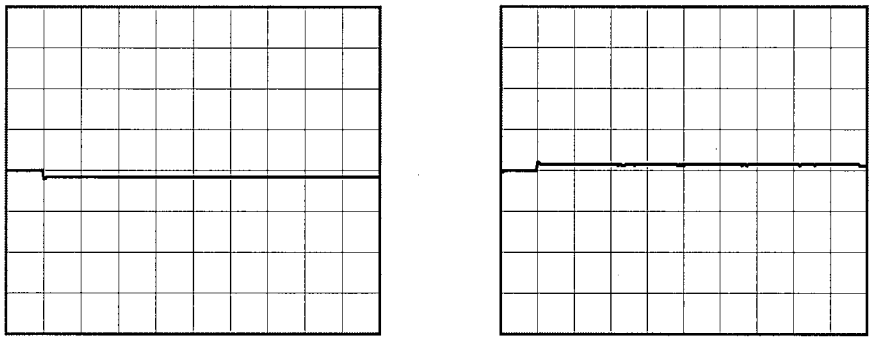
Model	MMC100B-1		
Item	Dynamic Load Response	Temperature Testing Circuitry	25°C Figure A
Object	-12V1A		

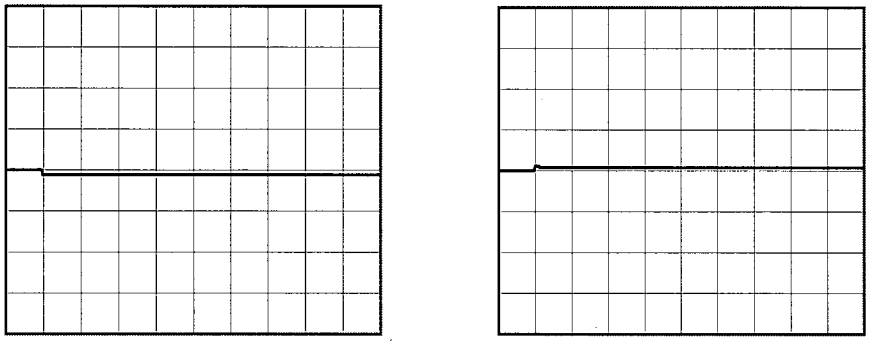
Input Volt. 100 V
Cycle 200 ms

Response. t1=t2=50us. Typ

Min. Load 0% (0A) ⟷
Load 100% (1A)



Min. Load 0% (0A) ⟷
Load 50% (0.5A)

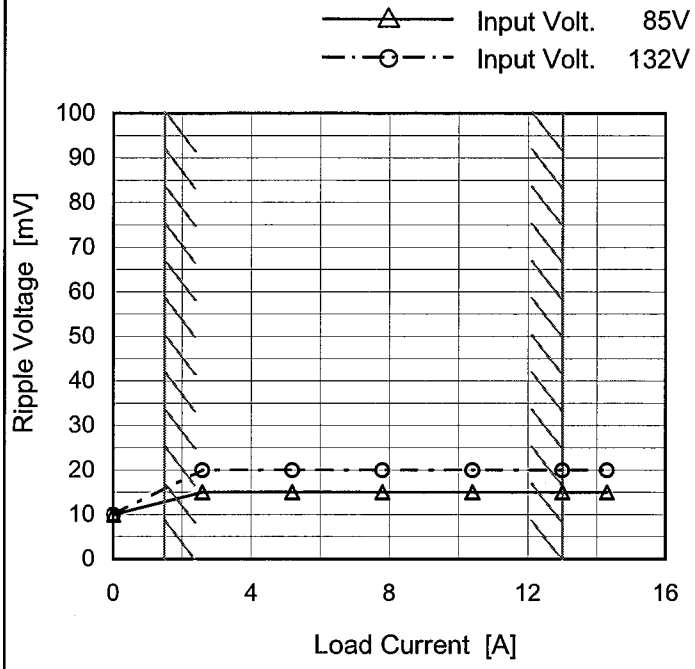


COSEL

Model	MMC100B-1
Item	Ripple Voltage (by Load Current)
Object	+5V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

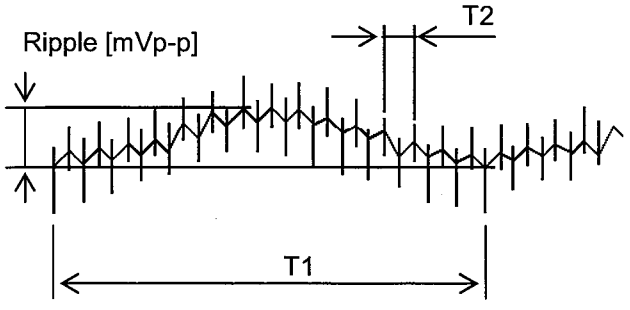


Fig. Complex Ripple Wave Form

2.Values

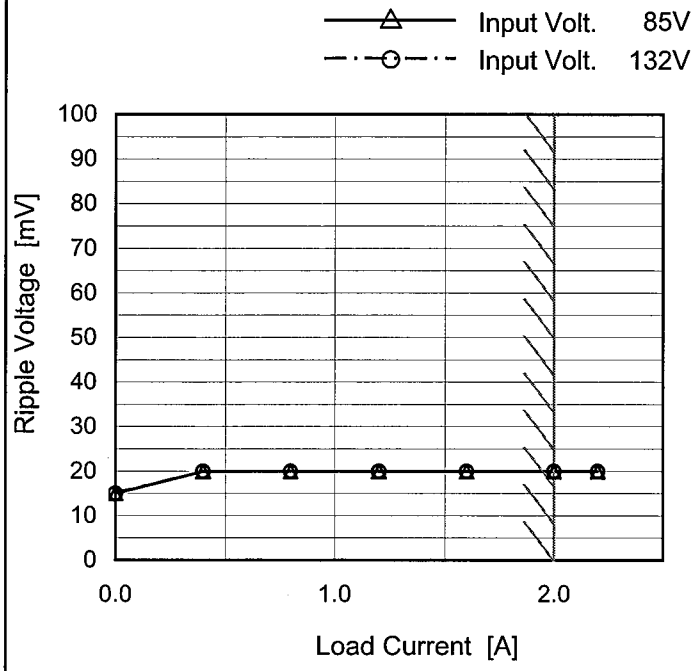
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	10	10
2.6	15	20
5.2	15	20
7.8	15	20
10.4	15	20
13.0	15	20
14.3	15	20
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MMC100B-1
Item	Ripple Voltage (by Load Current)
Object	+12V2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

T1: Due to AC Input Line
T2: Due to Switching

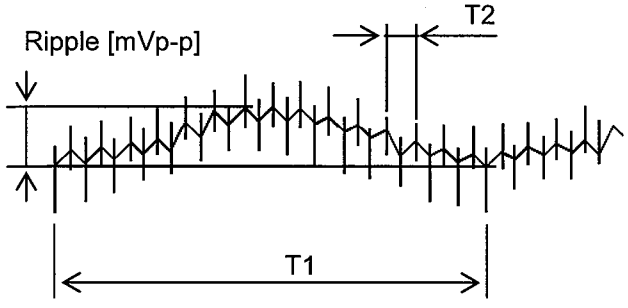


Fig. Complex Ripple Wave Form

2.Values

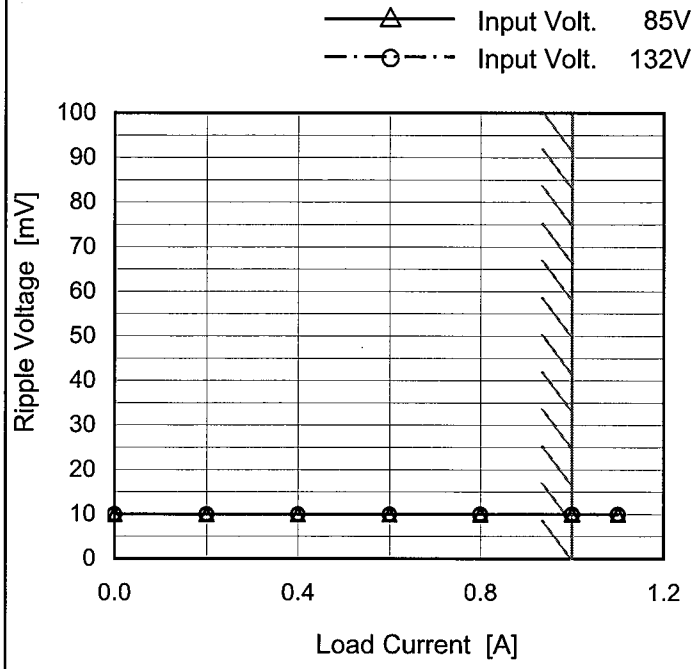
Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	15	15
0.4	20	20
0.8	20	20
1.2	20	20
1.6	20	20
2.0	20	20
2.2	20	20
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	MMC100B-1
Item	Ripple Voltage (by Load Current)
Object	-12V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	10	10
0.2	10	10
0.4	10	10
0.6	10	10
0.8	10	10
1.0	10	10
1.1	10	10
--	-	-
--	-	-
--	-	-
--	-	-

T1: Due to AC Input Line
T2: Due to Switching

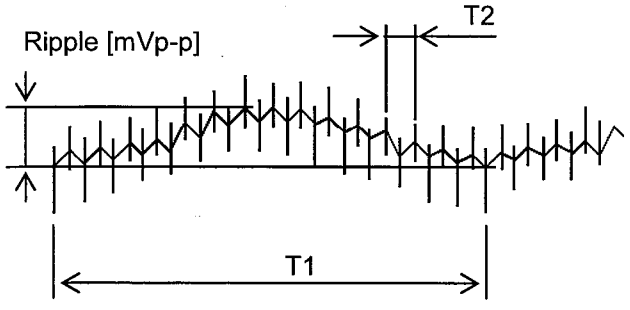


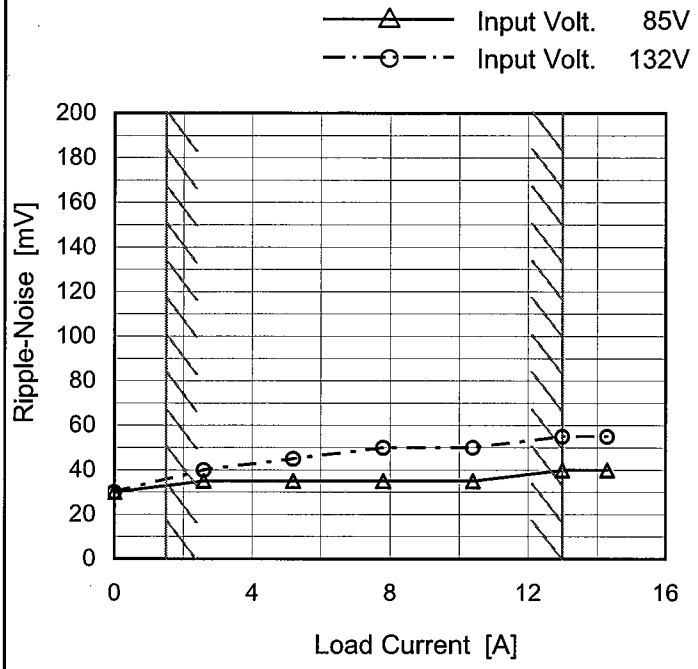
Fig. Complex Ripple Wave Form

COSEL

Model	MMC100B-1
Item	Ripple-Noise
Object	+5V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	30	30
2.6	35	40
5.2	35	45
7.8	35	50
10.4	35	50
13.0	40	55
14.3	40	55
--	-	-
--	-	-
--	-	-
--	-	-

T1: Due to AC Input Line
T2: Due to Switching

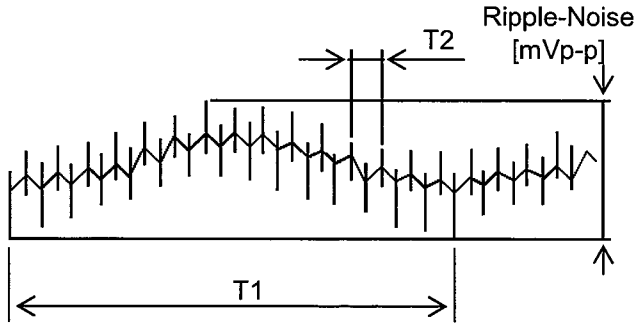


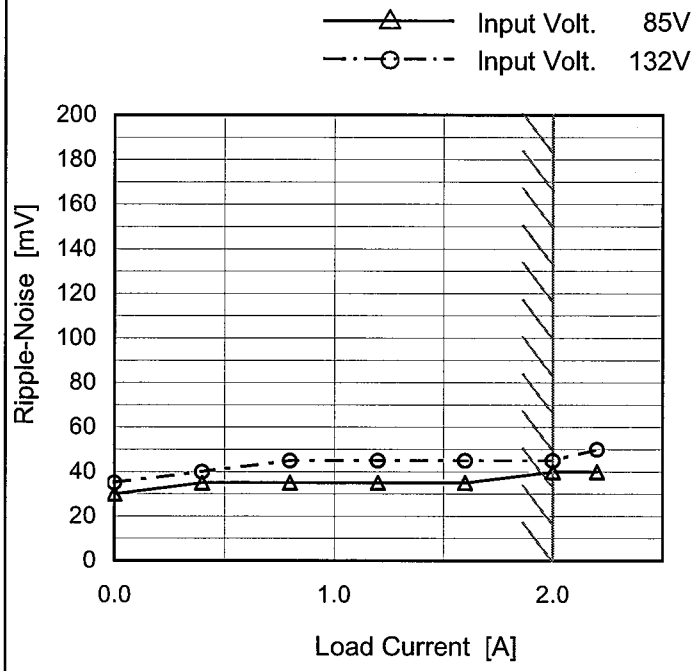
Fig. Complex Ripple Wave Form

COSEL

Model	MMC100B-1
Item	Ripple-Noise
Object	+12V2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	30	35
0.4	35	40
0.8	35	45
1.2	35	45
1.6	35	45
2.0	40	45
2.2	40	50
--	-	-
--	-	-
--	-	-
--	-	-

T1: Due to AC Input Line
T2: Due to Switching

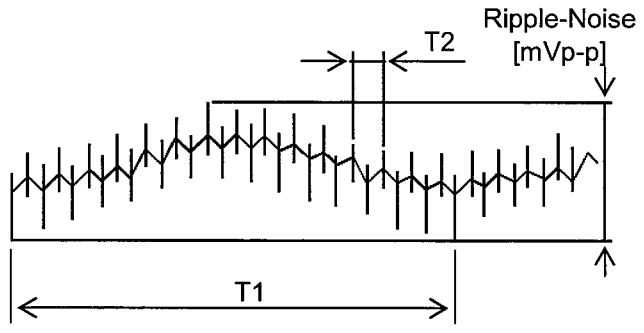


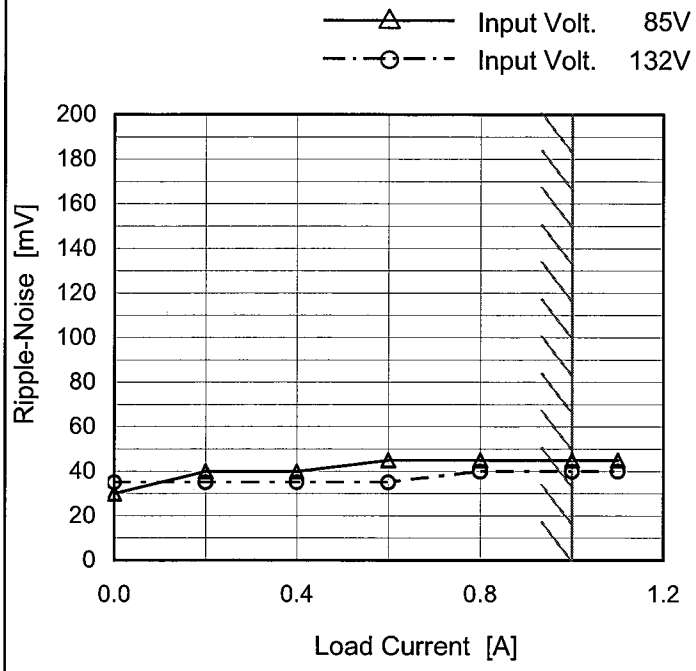
Fig. Complex Ripple Wave Form

COSEL

Model	MMC100B-1
Item	Ripple-Noise
Object	-12V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Measured by 20 MHz Oscilloscope.
Ripple-Noise is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

2.Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	30	35
0.2	40	35
0.4	40	35
0.6	45	35
0.8	45	40
1.0	45	40
1.1	45	40
--	-	-
--	-	-
--	-	-
--	-	-

T1: Due to AC Input Line
T2: Due to Switching

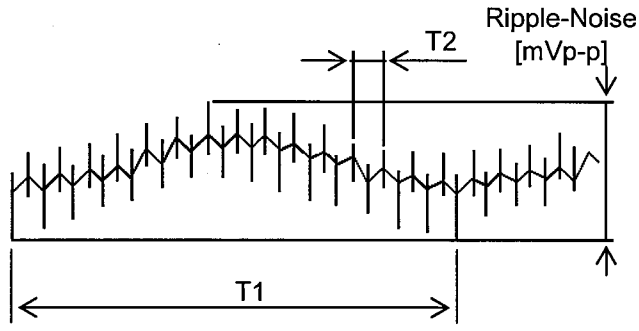


Fig. Complex Ripple Wave Form

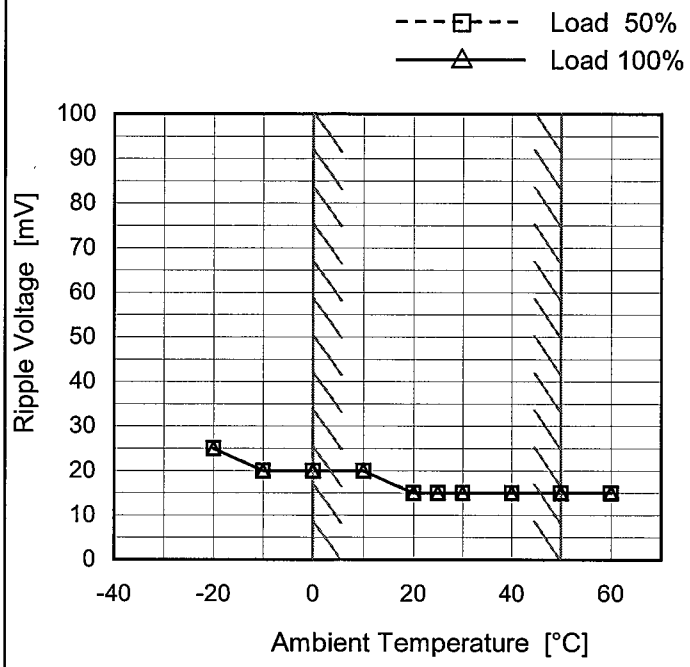
BC-10556

COSEL

Model	MMC100B-1
Item	Ripple Voltage (by Ambient Temp.)
Object	+5V13A

Testing Circuitry Figure A

1.Graph



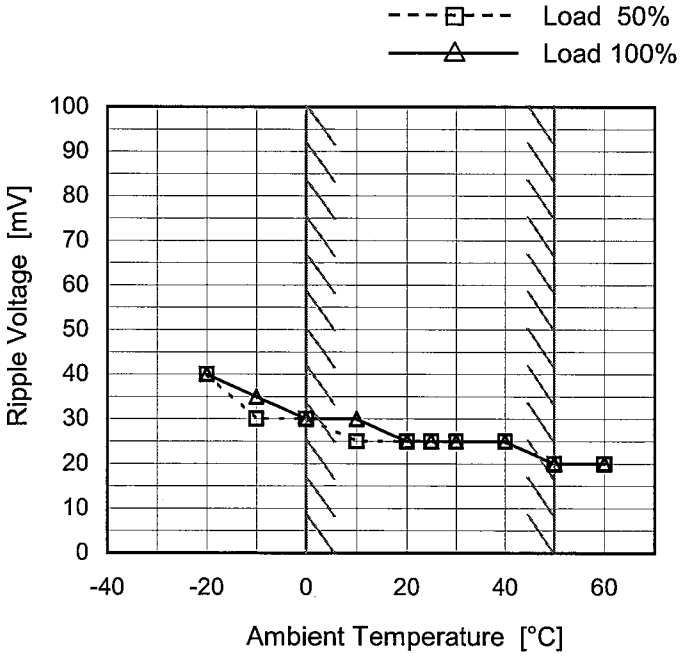
Input Volt. 100V

2.Values

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

Object	+12V2A

1.Graph



Input Volt. 100V

Measured by 20 MHz Oscilloscope.

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

2.Values

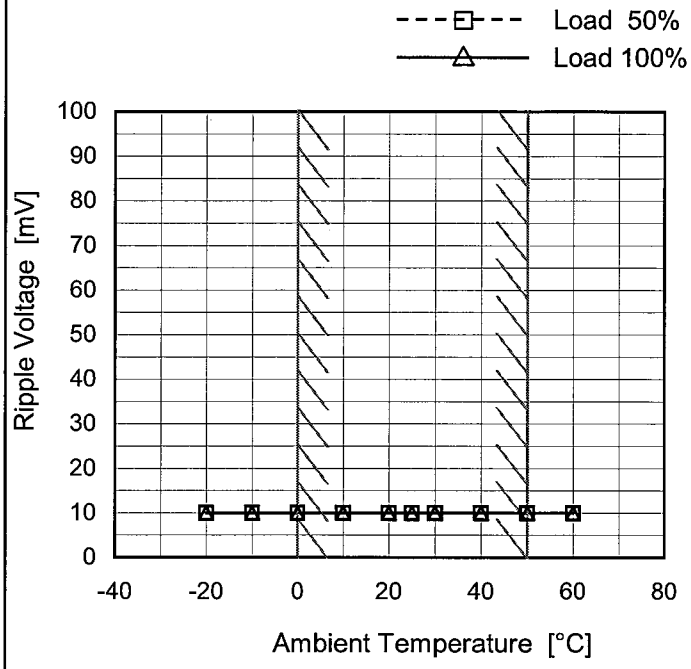
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	40	40
-10	30	35
0	30	30
10	25	30
20	25	25
25	25	25
30	25	25
40	25	25
50	20	20
60	20	20
--	-	-

COSEL

Model	MMC100B-1
Item	Ripple Voltage (by Ambient Temp.)
Object	-12V1A

Testing Circuitry Figure A

1.Graph



Input Volt. 100V

Measured by 20 MHz Oscilloscope.

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

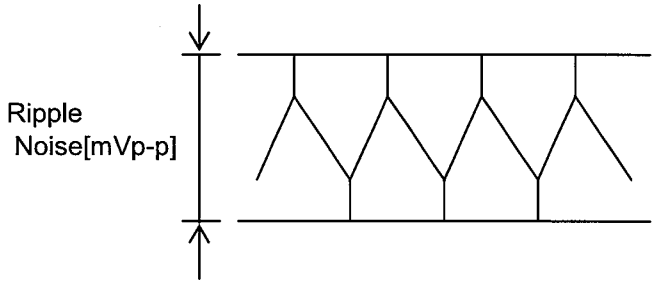


Fig.Complex Ripple Noise Wave Form

2.Values

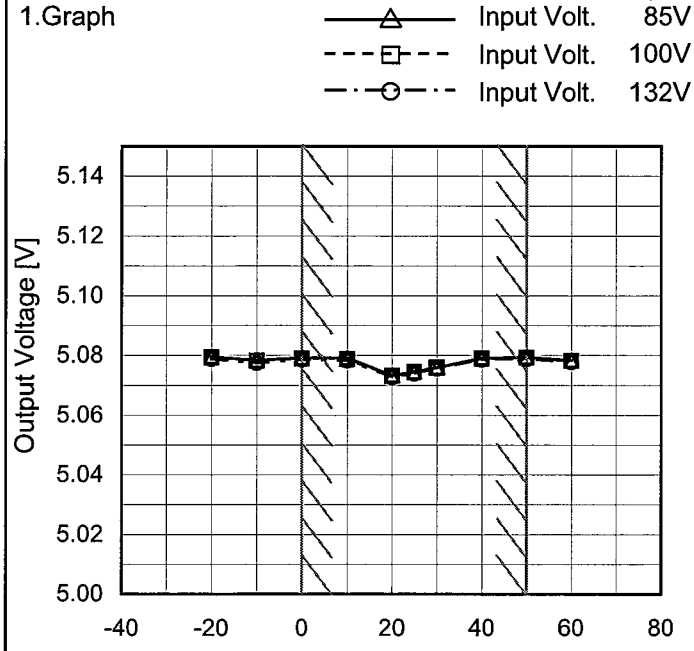
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	10	10
-10	10	10
0	10	10
10	10	10
20	10	10
25	10	10
30	10	10
40	10	10
50	10	10
60	10	10
--	-	-

COSEL

Model	MMC100B-1
Item	Ambient Temperature Drift
Object	+5V13A

Testing Circuitry Figure A

1.Graph



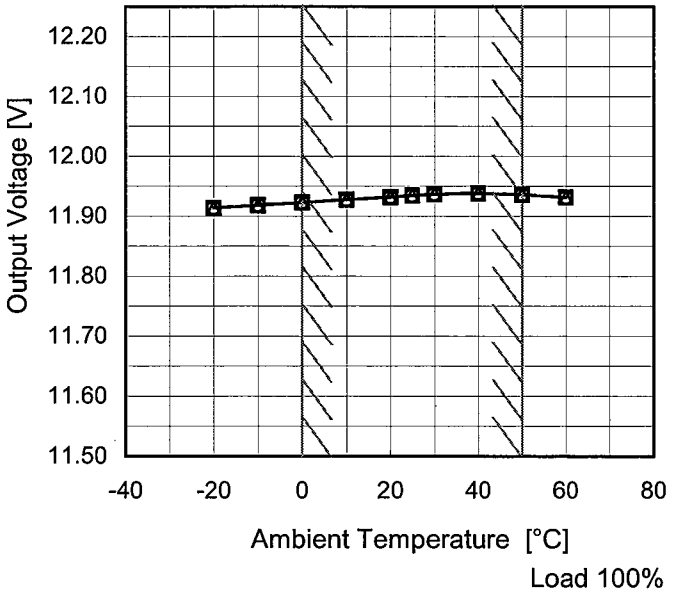
Load 100%

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	5.080	5.079	5.079
-10	5.078	5.078	5.078
0	5.079	5.079	5.079
10	5.079	5.079	5.078
20	5.073	5.073	5.073
25	5.075	5.075	5.074
30	5.076	5.076	5.076
40	5.079	5.079	5.079
50	5.079	5.079	5.079
60	5.078	5.078	5.078
--	-	-	-

Object	+12V2A

1.Graph



Load 100%

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

2.Values

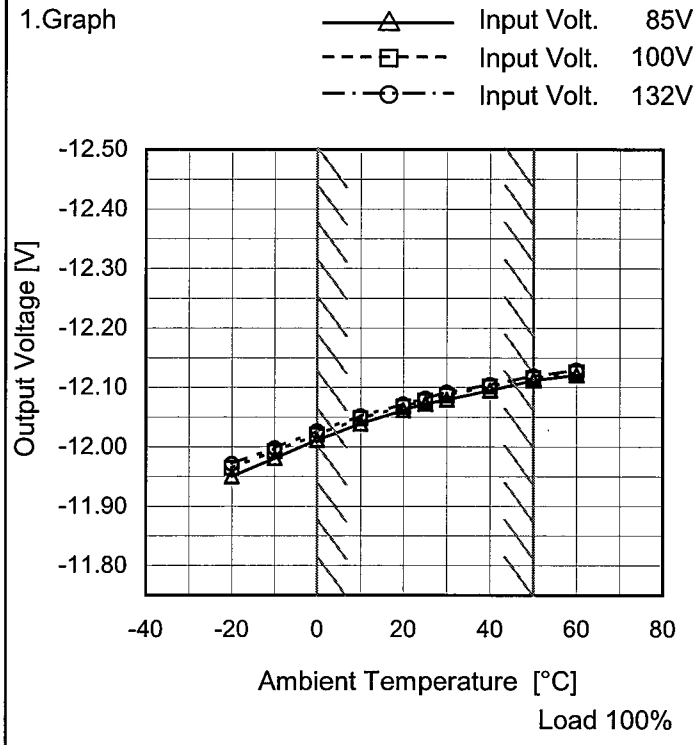
Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	11.914	11.914	11.914
-10	11.918	11.918	11.919
0	11.923	11.923	11.923
10	11.927	11.927	11.927
20	11.932	11.932	11.932
25	11.934	11.935	11.935
30	11.937	11.937	11.937
40	11.938	11.938	11.938
50	11.936	11.936	11.936
60	11.932	11.932	11.931
--	-	-	-

COSEL

Model	MMC100B-1
Item	Ambient Temperature Drift
Object	-12V1A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	-11.951	-11.965	-11.971
-10	-11.981	-11.993	-11.998
0	-12.012	-12.020	-12.026
10	-12.040	-12.048	-12.052
20	-12.062	-12.068	-12.072
25	-12.073	-12.078	-12.082
30	-12.080	-12.087	-12.092
40	-12.096	-12.102	-12.105
50	-12.112	-12.116	-12.119
60	-12.121	-12.126	-12.129
--	-	-	-

COSEL

Model	MMC100B-1	
Item	Output Voltage Accuracy	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 : 0 - 50°C

Input Voltage : 85 - 132V

Load Current (AVR 1) : 1.5 - 13A (AVR 2) : 0 - 2A (AVR 3) : 0 - 1A

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

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

2.Values

Object	+5V13A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	50	132	1.5	5.106	±17	±0.3
Minimum Voltage	20	132	13	5.073		

Object	+12V2A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	40	132	0	11.944	±12	±0.1
Minimum Voltage	0	85	2	11.921		

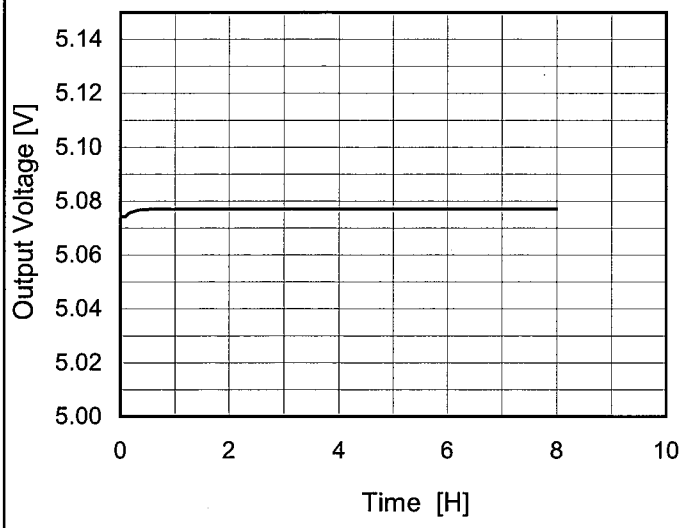
Object	-12V1A					
Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	50	132	1	-12.119	±69	±0.6
Minimum Voltage	0	85	1	-11.982		

COSEL

Model	MMC100B-1
Item	Time Lapse Drift
Object	+5V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



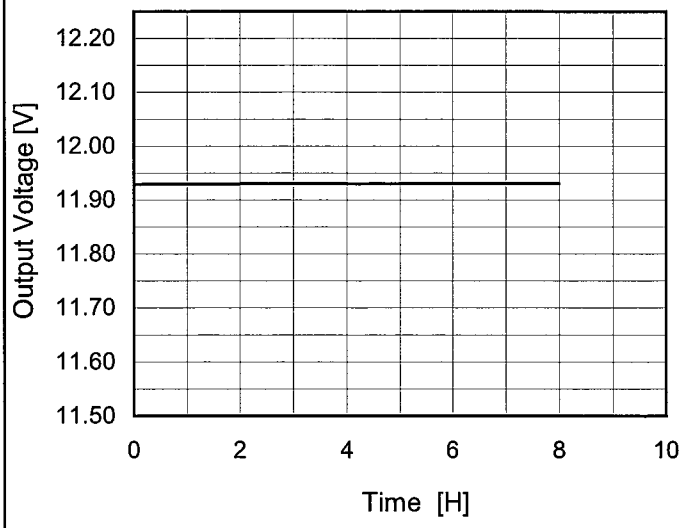
Input Volt. 100V
Load 100%

2.Values

Time since start [H]	Output Voltage [V]
0.0	5.075
0.5	5.077
1.0	5.077
2.0	5.077
3.0	5.077
4.0	5.077
5.0	5.077
6.0	5.077
7.0	5.077
8.0	5.077

Object	+12V2A

1.Graph



Input Volt. 100V
Load 100%

2.Values

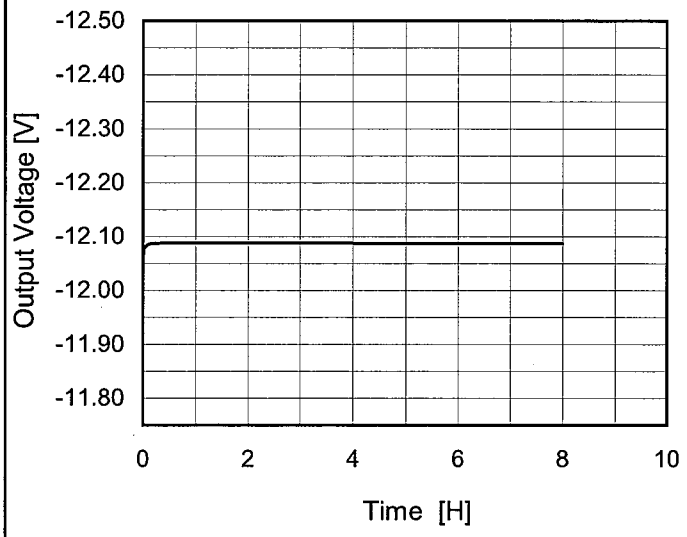
Time since start [H]	Output Voltage [V]
0.0	11.929
0.5	11.930
1.0	11.930
2.0	11.930
3.0	11.930
4.0	11.930
5.0	11.931
6.0	11.931
7.0	11.931
8.0	11.931

COSEL

Model	MMC100B-1
Item	Time Lapse Drift
Object	-12V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



Input Volt. 100V
Load 100%

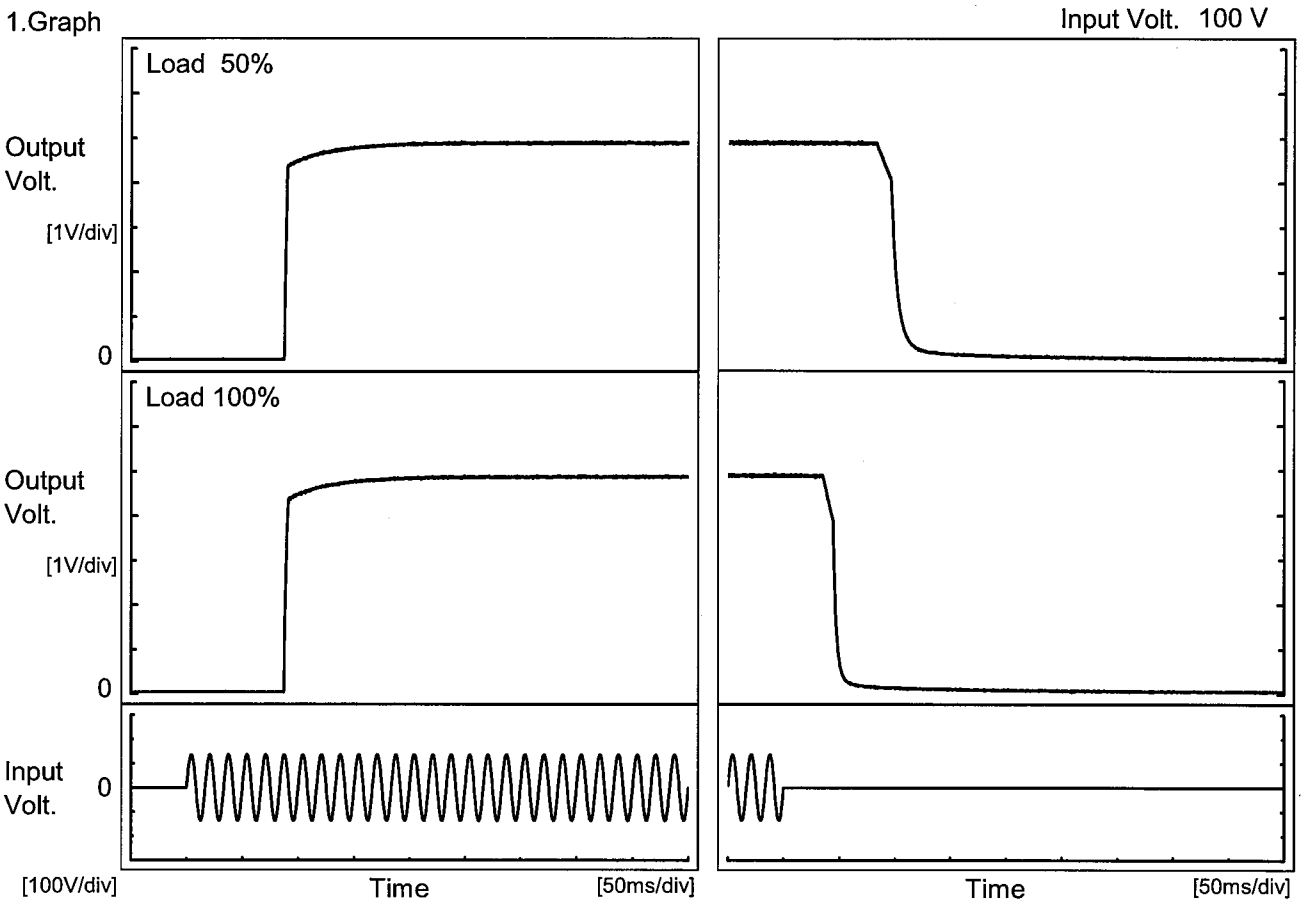
2.Values

Time since start [H]	Output Voltage [V]
0.0	-12.055
0.5	-12.088
1.0	-12.088
2.0	-12.088
3.0	-12.088
4.0	-12.088
5.0	-12.088
6.0	-12.088
7.0	-12.088
8.0	-12.088

COSEL

Model	MMC100B-1		
Item	Rise and Fall Time	Temperature Testing Circuitry	25°C Figure A
Object	+5V13A		

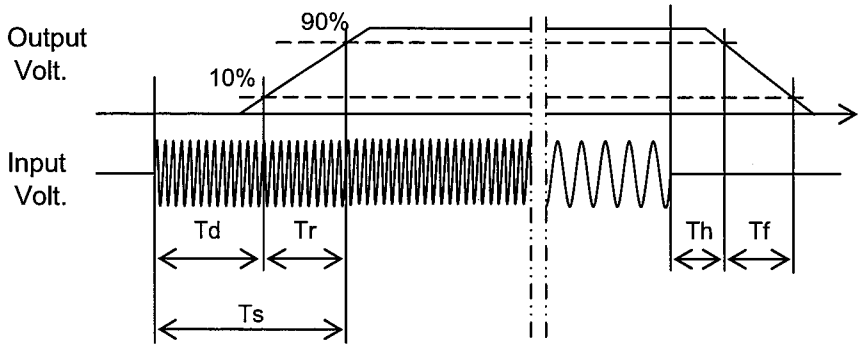
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	87.8	16.0	103.8	88.0	22.3
100 %	87.5	16.0	103.5	38.3	13.3

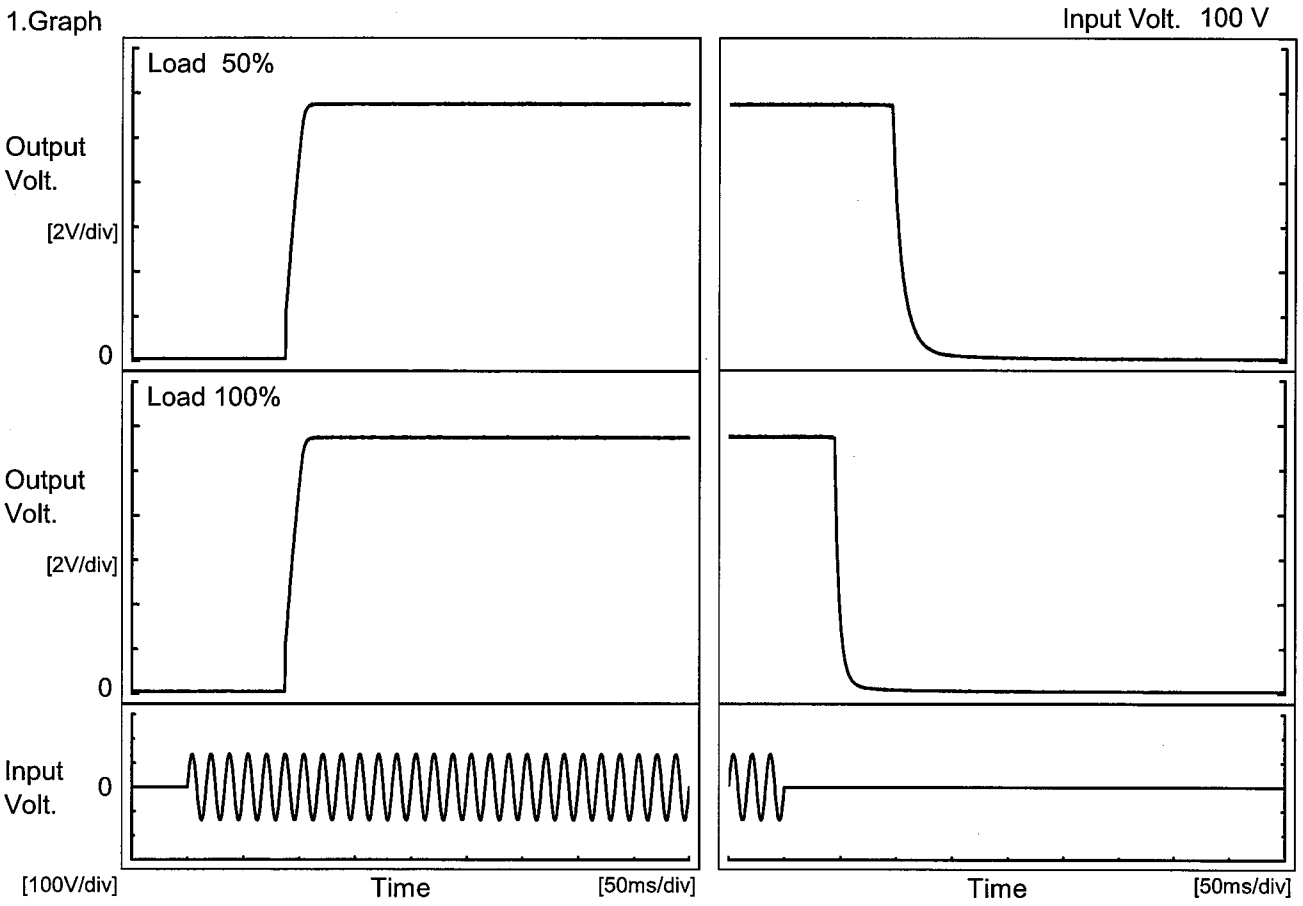


COSEL

Model	MMC100B-1
Item	Rise and Fall Time
Object	+12V2A

Temperature 25°C
Testing Circuitry Figure A

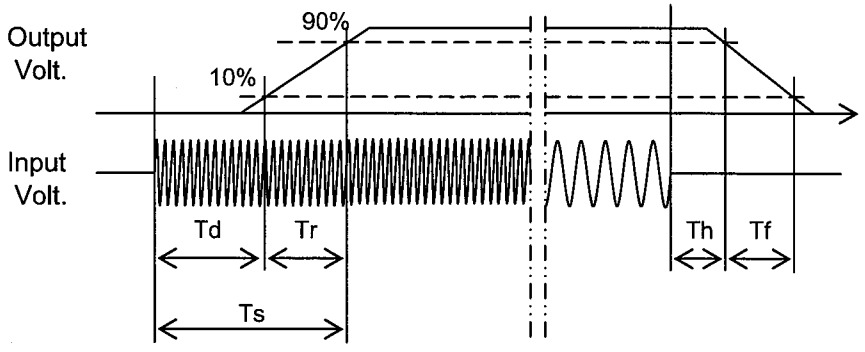
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	87.5	16.0	103.5	96.3	20.3
100 %	87.5	16.3	103.8	44.8	10.3



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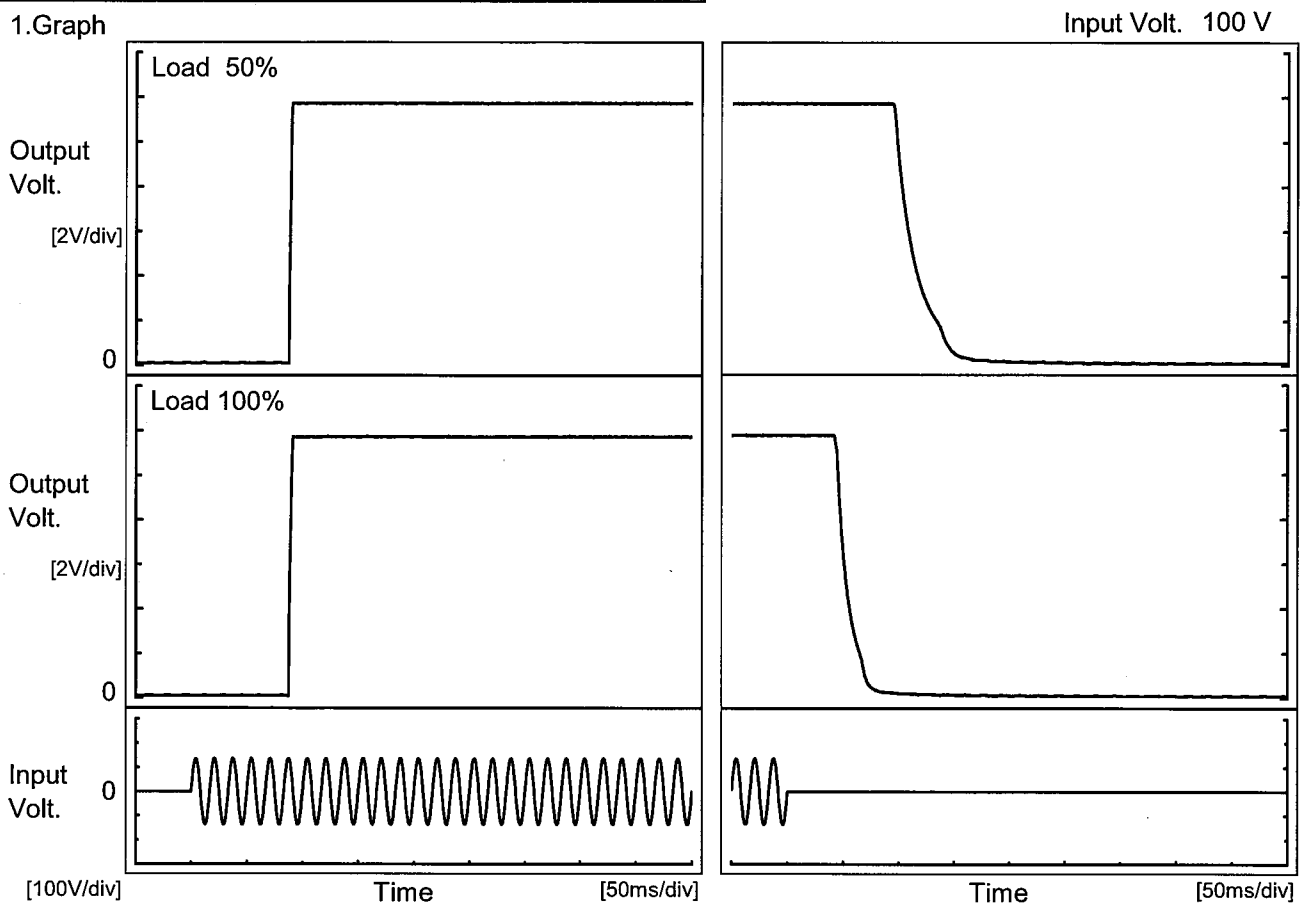
COSEL

Model	MMC100B-1	
Item	Rise and Fall Time	Temperature 25°C Testing Circuitry Figure A
Object	-12V1A	

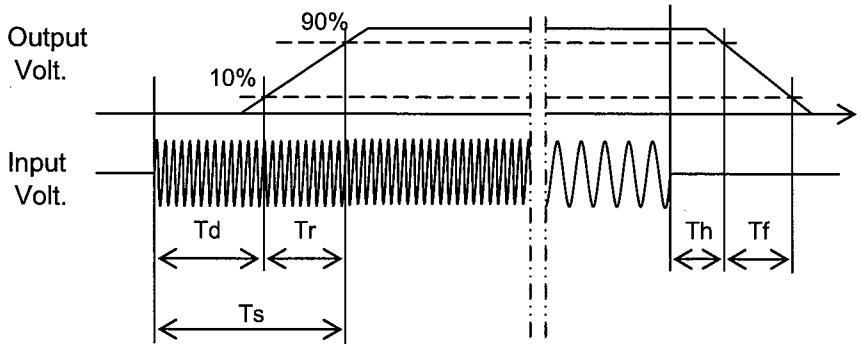
1.Graph



2.Values

[ms]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	88.0	2.3	90.3	96.5	43.0
100 %	88.0	2.8	90.8	44.5	23.8

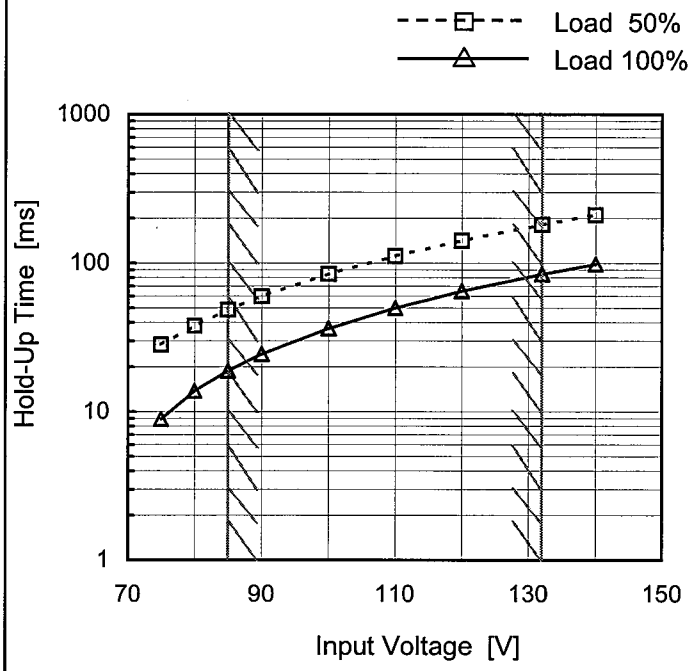


COSEL

Model	MMC100B-1
Item	Hold-Up Time
Object	+5V13A

Temperature 25°C
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.

2.Values

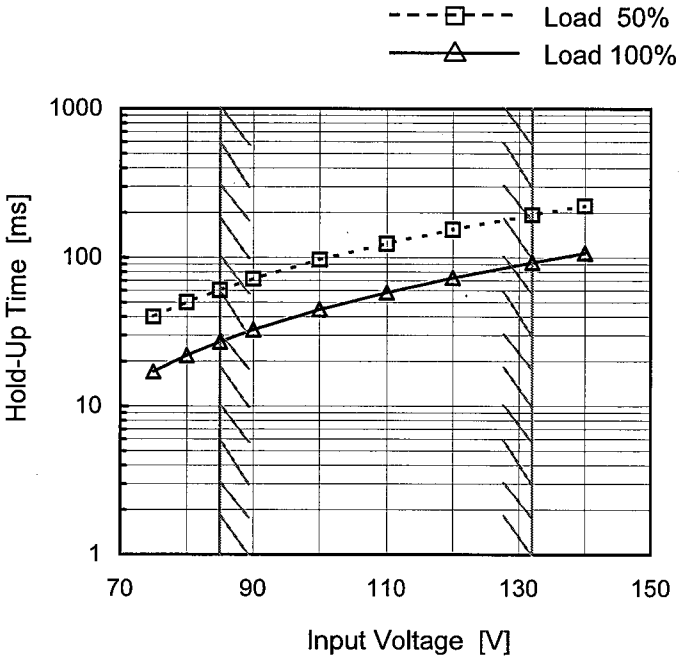
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	28	9
80	38	14
85	48	19
90	60	24
100	84	36
110	112	50
120	141	65
132	181	84
140	210	99

COSEL

Model	MMC100B-1
Item	Hold-Up Time
Object	+12V2A

Temperature 25°C
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.

2.Values

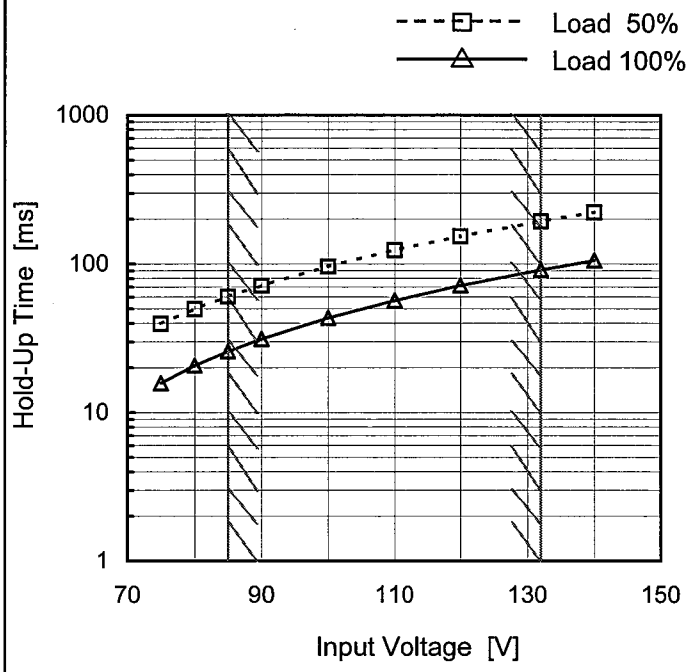
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	40	17
80	50	22
85	60	27
90	72	33
100	96	45
110	124	58
120	154	73
132	194	93
140	223	107

COSEL

Model	MMC100B-1
Item	Hold-Up Time
Object	-12V1A

Temperature 25°C
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.

2.Values

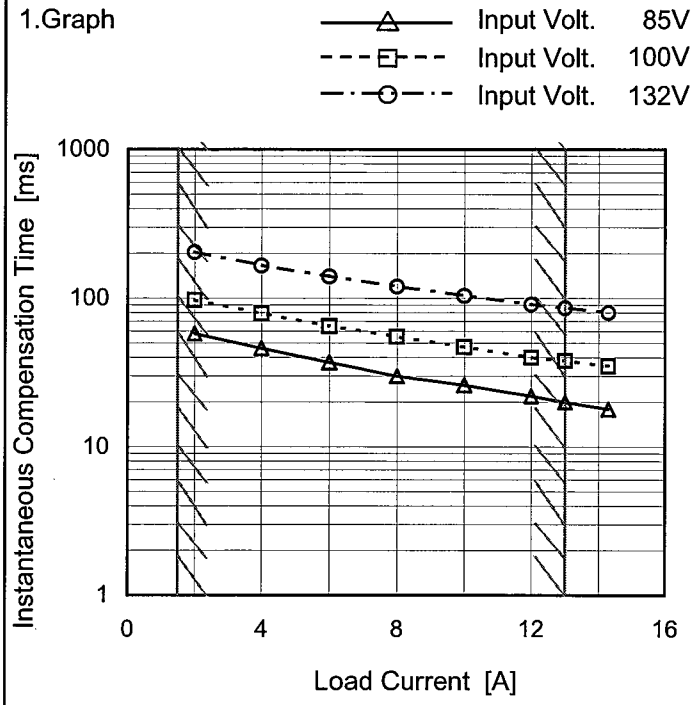
Input Voltage [V]	Hold-Up Time [ms]	
	Load 50%	Load 100%
75	40	16
80	50	21
85	60	26
90	72	31
100	96	43
110	124	57
120	154	72
132	193	92
140	222	106

COSEL

Model	MMC100B-1
Item	Instantaneous Interruption Compensation
Object	+5V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

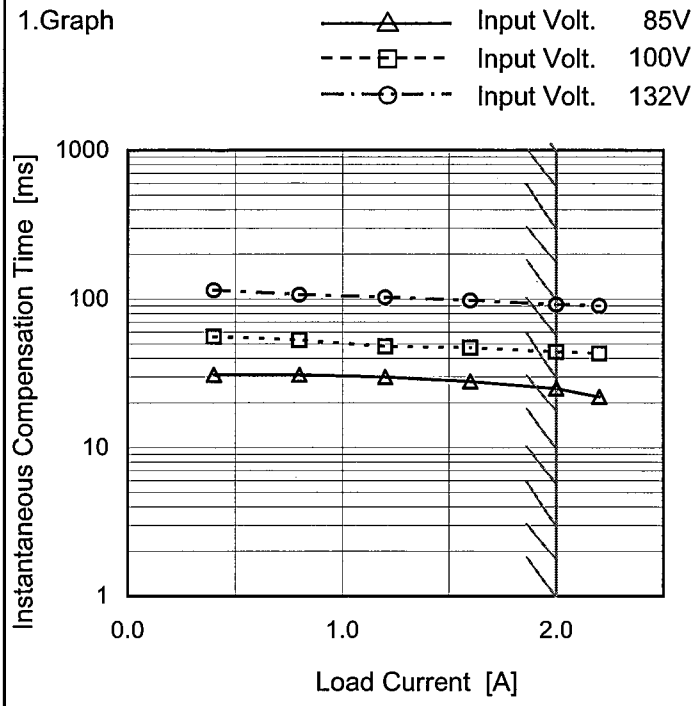
Load Current [A]	Time [ms]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	-	-	-
2.0	58	97	204
4.0	46	79	166
6.0	37	65	140
8.0	30	55	120
10.0	26	47	104
12.0	22	40	91
13.0	20	38	86
14.3	18	35	80
--	-	-	-
--	-	-	-

COSEL

Model	MMC100B-1
Item	Instantaneous Interruption Compensation
Object	+12V2A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

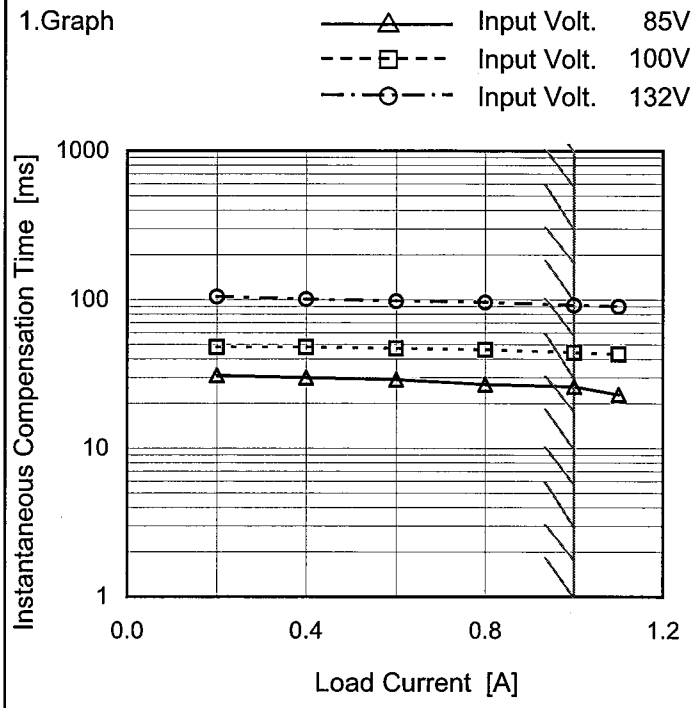
Load Current [A]	Time [ms]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	-	-	-
0.4	31	56	115
0.8	31	53	107
1.2	30	48	103
1.6	28	47	98
2.0	25	44	92
2.2	22	43	90
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MMC100B-1
Item	Instantaneous Interruption Compensation
Object	-12V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

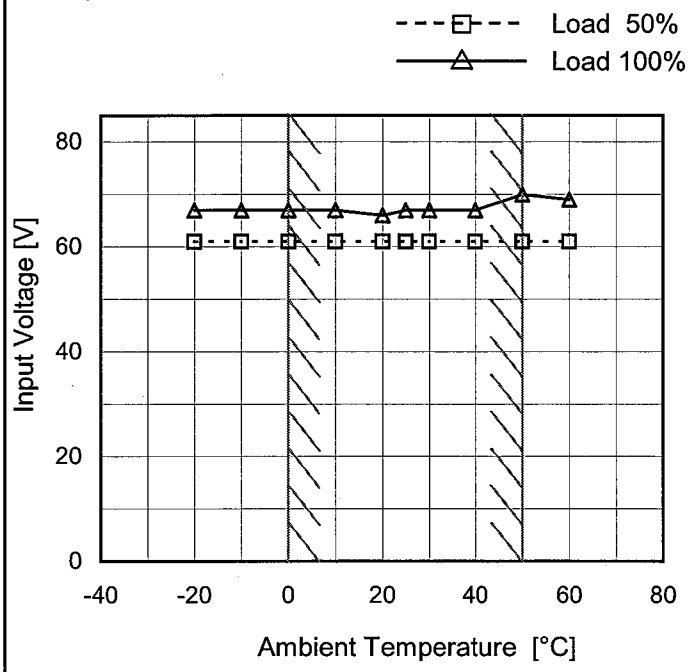
Load Current [A]	Time [ms]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	-	-	-
0.2	31	48	105
0.4	30	48	101
0.6	29	47	98
0.8	27	46	96
1.0	26	44	92
1.1	23	43	90
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

COSEL

Model	MMC100B-1
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+5V13A

Testing Circuitry Figure A

1.Graph

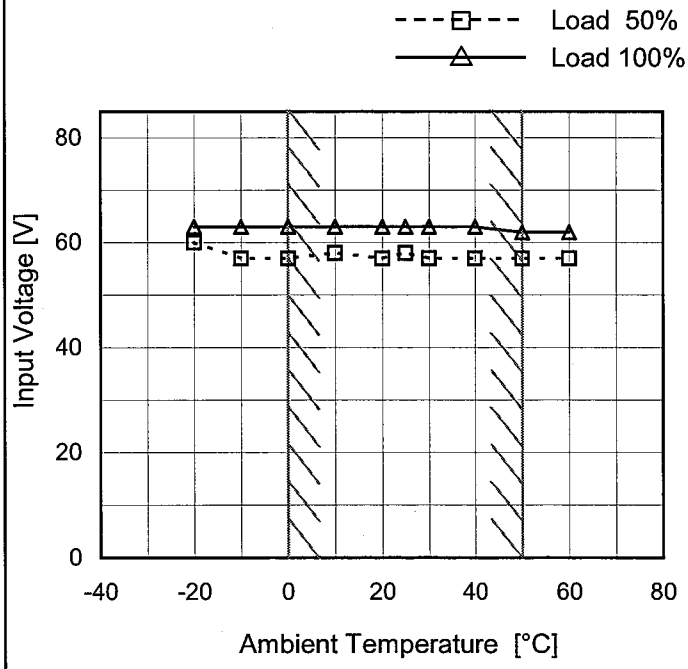


2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	61	67
-10	61	67
0	61	67
10	61	67
20	61	66
25	61	67
30	61	67
40	61	67
50	61	70
60	61	69
--	-	-

Object	+12V2A

1.Graph



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

2.Values

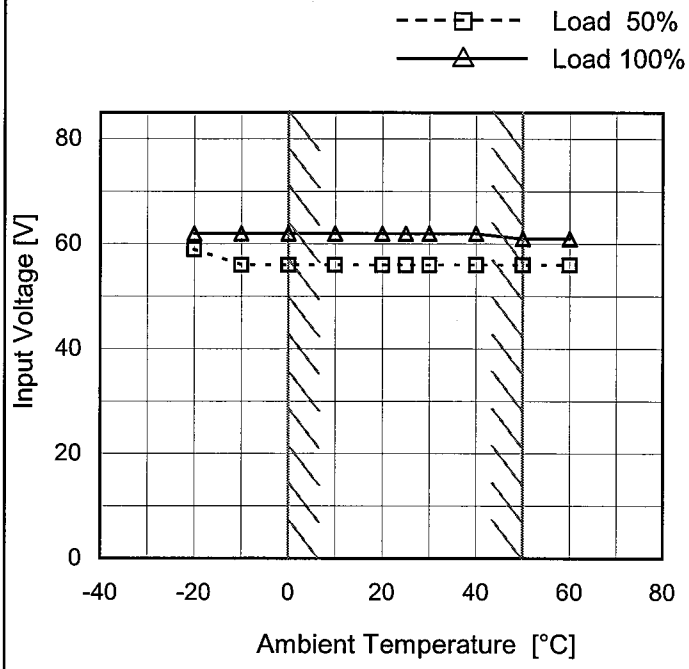
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	60	63
-10	57	63
0	57	63
10	58	63
20	57	63
25	58	63
30	57	63
40	57	63
50	57	62
60	57	62
--	-	-

COSEL

Model	MMC100B-1
Item	Minimum Input Voltage for Regulated Output Voltage
Object	-12V1A

Testing Circuitry Figure A

1.Graph



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

2.Values

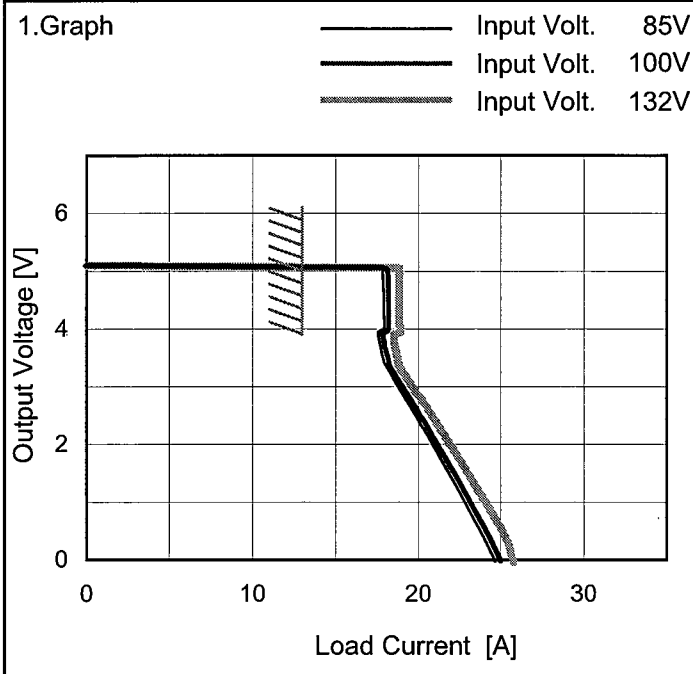
Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	59	62
-10	56	62
0	56	62
10	56	62
20	56	62
25	56	62
30	56	62
40	56	62
50	56	61
60	56	61
--	-	-

COSEL

Model	MMC100B-1
Item	Overcurrent Protection
Object	+5V13A

Temperature 25°C
Testing Circuitry Figure A

1.Graph

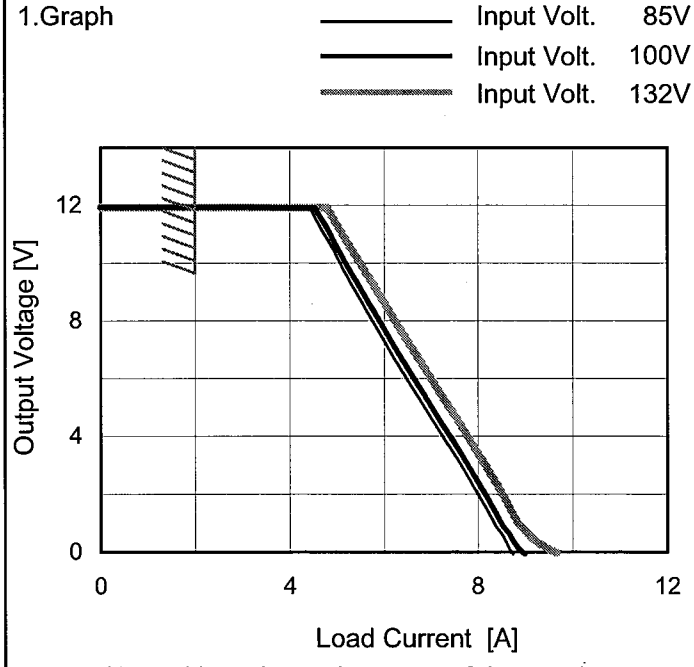


2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
4.75	17.88	18.20	18.86
4.50	17.92	18.21	18.84
4.00	17.93	18.21	18.90
3.50	17.83	18.19	18.74
3.00	18.77	19.01	19.58
2.50	19.78	20.09	20.79
2.00	20.85	21.13	21.92
1.50	21.79	22.17	22.96
1.00	22.81	23.13	24.08
0.50	23.73	24.12	25.05
0.00	24.68	24.99	25.80
--	-	-	-

Object	+12V2A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
11.40	4.60	4.72	4.97
10.80	4.80	4.91	5.18
9.60	5.18	5.31	5.61
8.40	5.58	5.72	6.08
7.20	6.03	6.18	6.52
6.00	6.46	6.61	6.96
4.80	6.90	7.05	7.46
3.60	7.39	7.54	7.91
2.40	7.83	7.98	8.34
1.20	8.24	8.42	8.78
0.00	8.75	8.99	9.67
--	-	-	-

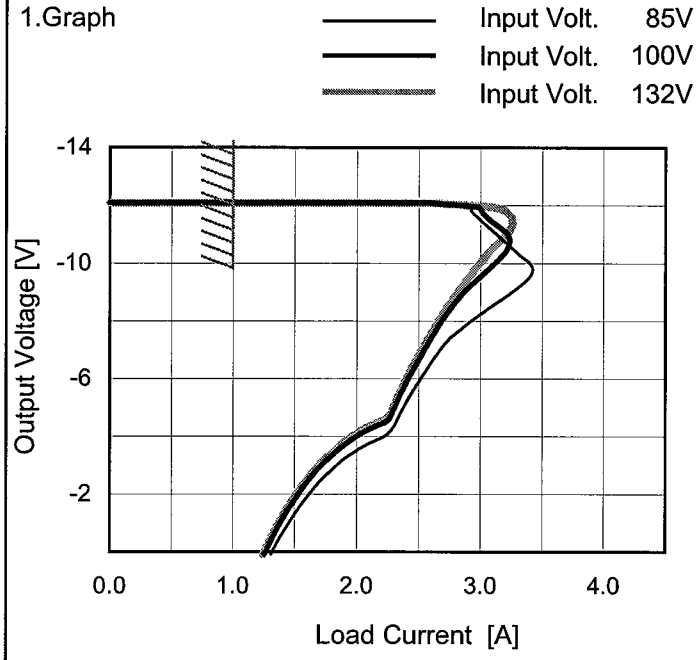
BC-10556

COSEL

Model	MMC100B-1
Item	Overcurrent Protection
Object	-12V1A

Temperature 25°C
Testing Circuitry Figure A

1.Graph



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

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-11.40	3.02	3.12	3.26
-10.80	2.67	2.61	2.63
-9.60	3.42	3.03	2.93
-8.40	3.06	2.76	2.72
-7.20	2.71	2.57	2.55
-6.00	2.53	2.42	2.40
-4.80	2.36	2.29	2.28
-3.60	2.06	1.89	1.86
-2.40	1.71	1.61	1.59
-1.20	1.49	1.42	1.41
0.00	1.31	1.26	1.25
--	-	-	-

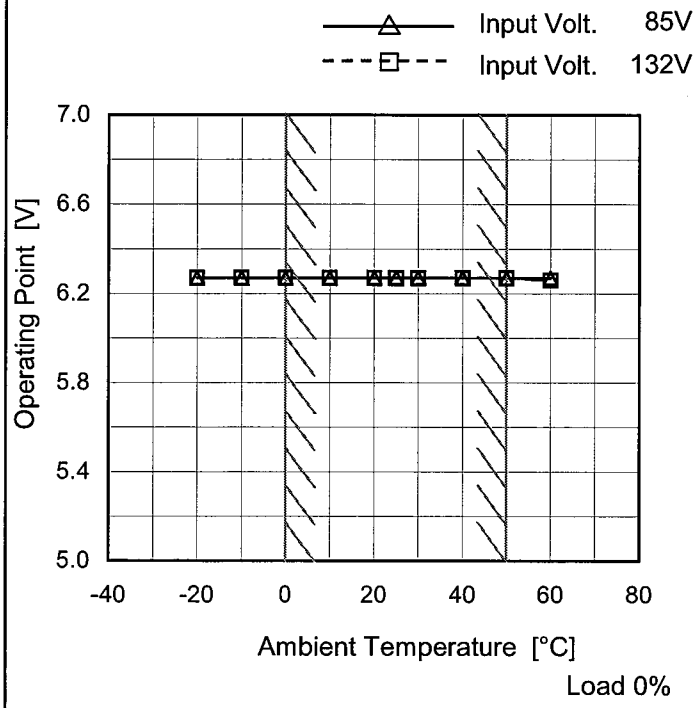
BC-10556

COSEL

Model	MMC100B-1
Item	Overvoltage Protection
Object	+5V13A

Testing Circuitry Figure A

1.Graph



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

2.Values

Ambient Temperature [°C]	Operating Point [V]	
	Input Volt. 85[V]	Input Volt. 132[V]
-20	6.27	6.27
-10	6.27	6.27
0	6.27	6.27
10	6.27	6.27
20	6.27	6.27
25	6.27	6.27
30	6.27	6.27
40	6.27	6.27
50	6.27	6.27
60	6.27	6.26
--	-	-

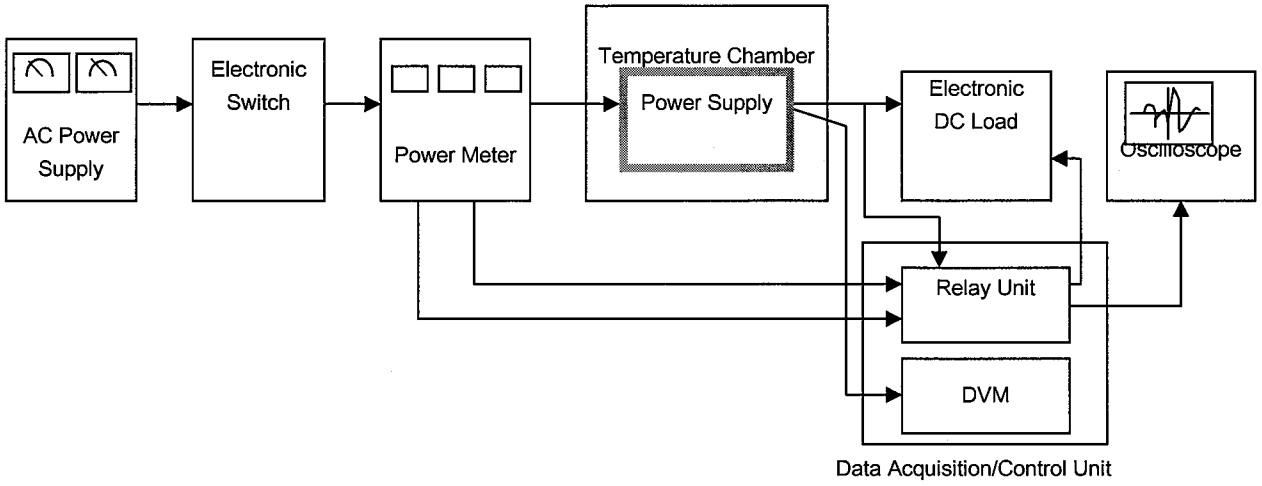


Figure A

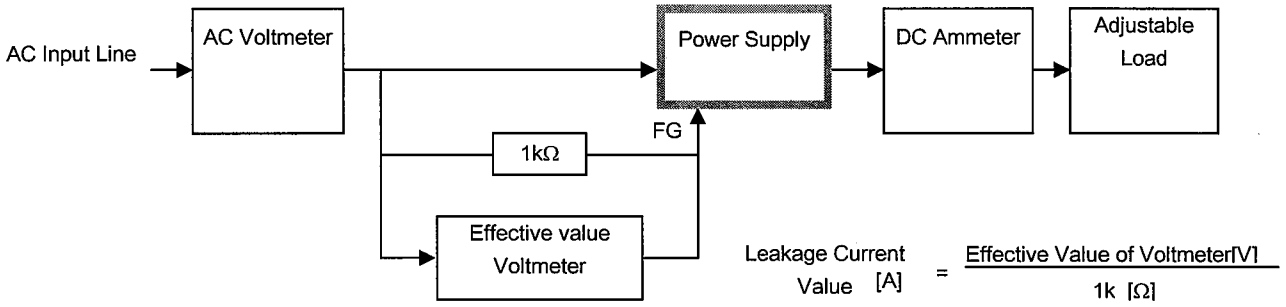


Figure B (DEN-AN)

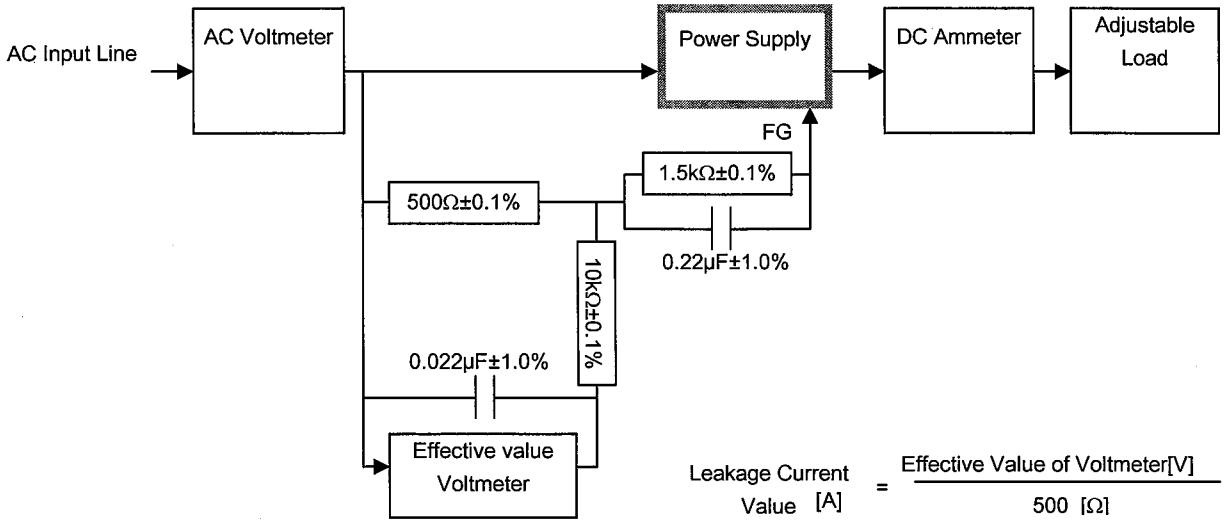


Figure B (IEC60950-1)