



TEST DATA OF MMC100A-1
(100V INPUT)

Regulated DC Power Supply

Oct. 6, 1999

Approved by : *Motyo Takahashi*
Design Manager

Prepared by : *Yuichi Takahashi*
Design Engineer

コーセル株式会社

COSEL CO., LTD.



CONTENTS

1. Line Regulation	1
<small>静的入力変動</small>	
2. Efficiency (by Input Voltage)	3
<small>効率 (入力電圧特性)</small>	
3. Power Factor (by Input Voltage)	4
<small>力率 (入力電圧特性)</small>	
4. Hold-Up Time	5
<small>出力保持時間</small>	
5. Instantaneous Interruption Compensation	8
<small>瞬時停電保障</small>	
6. Load Regulation	11
<small>静的負荷変動</small>	
7. Ripple Voltage (by Load Current)	13
<small>リップル電圧 (負荷特性)</small>	
8. Ripple-Noise	16
<small>リップルノイズ</small>	
9. Overcurrent Protection	19
<small>過電流保護</small>	
10. Overvoltage Protection	21
<small>過電圧保護</small>	
11. Inrush Current	22
<small>突入電流</small>	
12. Dynamic Load Responce	23
<small>動的負荷変動</small>	
13. Rise and Fall Time	26
<small>立上り、立下り時間</small>	
14. Ambient Temperature Drift	29
<small>周囲温度変動</small>	
15. Minimum Input Voltage for Regulated Output Voltage	31
<small>最低レギュレーション電圧</small>	
16. Ripple Voltage (by Ambient Temperature)	33
<small>リップル電圧 (周囲温度特性)</small>	
17. Time Lapse Drift	35
<small>経時ドリフト</small>	
18. Output Voltage Accuracy	37
<small>定電圧精度</small>	
19. Condensation	38
<small>結露特性</small>	
20. Leakage Current	39
<small>漏洩電流</small>	
21. Conducted Emission	40
<small>雑音端子電圧</small>	
22. Figure of Testing Circuitry	41
<small>測定回路図</small>	

(Final Page 42)



COSEL																																			
Model	MMC100A-1	Temperature	25°C																																
Item	Line Regulation 静的人力変動	Testing Circuitry	Figure A																																
Object	+5.0V13A																																		
<p>1. Graph</p> <p style="text-align: right;"> □ Load 50%</p> <p style="text-align: right;"> △ Load 100%</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>75</td><td>5.089</td><td>5.075</td></tr> <tr><td>80</td><td>5.089</td><td>5.076</td></tr> <tr><td>85</td><td>5.089</td><td>5.075</td></tr> <tr><td>90</td><td>5.089</td><td>5.076</td></tr> <tr><td>100</td><td>5.089</td><td>5.075</td></tr> <tr><td>110</td><td>5.089</td><td>5.076</td></tr> <tr><td>120</td><td>5.089</td><td>5.075</td></tr> <tr><td>132</td><td>5.089</td><td>5.075</td></tr> <tr><td>140</td><td>5.089</td><td>5.076</td></tr> </tbody> </table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	5.089	5.075	80	5.089	5.076	85	5.089	5.075	90	5.089	5.076	100	5.089	5.075	110	5.089	5.076	120	5.089	5.075	132	5.089	5.075	140	5.089	5.076
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
75	5.089	5.075																																	
80	5.089	5.076																																	
85	5.089	5.075																																	
90	5.089	5.076																																	
100	5.089	5.075																																	
110	5.089	5.076																																	
120	5.089	5.075																																	
132	5.089	5.075																																	
140	5.089	5.076																																	
Object +12.0V2A																																			
<p>1. Graph</p> <p style="text-align: right;"> □ Load 50%</p> <p style="text-align: right;"> △ Load 100%</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>75</td><td>12.017</td><td>12.013</td></tr> <tr><td>80</td><td>12.016</td><td>12.012</td></tr> <tr><td>85</td><td>12.015</td><td>12.011</td></tr> <tr><td>90</td><td>12.015</td><td>12.011</td></tr> <tr><td>100</td><td>12.014</td><td>12.011</td></tr> <tr><td>110</td><td>12.014</td><td>12.010</td></tr> <tr><td>120</td><td>12.013</td><td>12.010</td></tr> <tr><td>132</td><td>12.013</td><td>12.010</td></tr> <tr><td>140</td><td>12.013</td><td>12.010</td></tr> </tbody> </table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	12.017	12.013	80	12.016	12.012	85	12.015	12.011	90	12.015	12.011	100	12.014	12.011	110	12.014	12.010	120	12.013	12.010	132	12.013	12.010	140	12.013	12.010
Input Voltage [V]	Output Voltage [V]																																		
	Load 50%	Load 100%																																	
75	12.017	12.013																																	
80	12.016	12.012																																	
85	12.015	12.011																																	
90	12.015	12.011																																	
100	12.014	12.011																																	
110	12.014	12.010																																	
120	12.013	12.010																																	
132	12.013	12.010																																	
140	12.013	12.010																																	
<p>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。</p>																																			



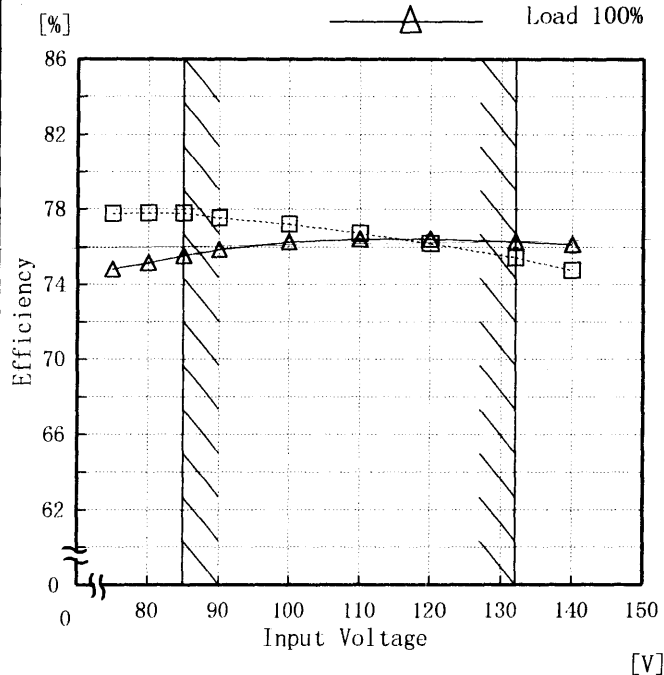
Model		MMC100A-1		Temperature		25°C																																	
Item		Line Regulation 静の入力変動		Testing Circuitry		Figure A																																	
Object		-12.0V1A																																					
<p>1. Graph</p> <p>-----□----- Load 50%</p> <p>-----△----- Load 100%</p> <p>Output Voltage [V]</p> <p>Input Voltage [V]</p> <p>Note: Slanted line shows the range of the rated input voltage.</p> <p>(注) 斜線は定格入力電圧範囲を示す。</p>				<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>75</td><td>-12.009</td><td>-12.000</td></tr> <tr><td>80</td><td>-12.010</td><td>-12.000</td></tr> <tr><td>85</td><td>-12.010</td><td>-12.000</td></tr> <tr><td>90</td><td>-12.010</td><td>-12.000</td></tr> <tr><td>100</td><td>-12.010</td><td>-11.999</td></tr> <tr><td>110</td><td>-12.010</td><td>-11.999</td></tr> <tr><td>120</td><td>-12.010</td><td>-11.999</td></tr> <tr><td>132</td><td>-12.010</td><td>-11.999</td></tr> <tr><td>140</td><td>-12.010</td><td>-11.999</td></tr> </tbody> </table>				Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	-12.009	-12.000	80	-12.010	-12.000	85	-12.010	-12.000	90	-12.010	-12.000	100	-12.010	-11.999	110	-12.010	-11.999	120	-12.010	-11.999	132	-12.010	-11.999	140	-12.010	-11.999
Input Voltage [V]	Output Voltage [V]																																						
	Load 50%	Load 100%																																					
75	-12.009	-12.000																																					
80	-12.010	-12.000																																					
85	-12.010	-12.000																																					
90	-12.010	-12.000																																					
100	-12.010	-11.999																																					
110	-12.010	-11.999																																					
120	-12.010	-11.999																																					
132	-12.010	-11.999																																					
140	-12.010	-11.999																																					



Model	MMC100A-1
Item	Efficiency (by Input Voltage) 効率 (入力電圧特性)
Object	_____

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	77.8	74.8
80	77.8	75.1
85	77.8	75.5
90	77.6	75.9
100	77.2	76.3
110	76.7	76.4
120	76.2	76.4
132	75.4	76.3
140	74.8	76.1

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。

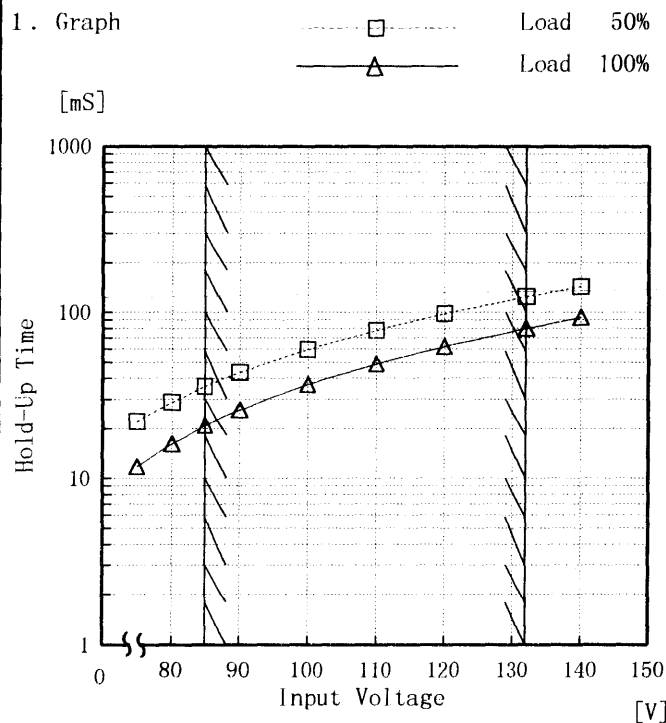


Model		MMC100A-1		Temperature	25°C																																
Item		Power Factor (by Input Voltage) 力率 (入力電圧特性)		Testing Circuitry	Figure A																																
Object																																					
1. Graph			2. Values																																		
<p>Legend: □ Load 50% △ Load 100%</p>			<table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Power Factor</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>75</td><td>0.52</td><td>0.58</td></tr> <tr><td>80</td><td>0.51</td><td>0.57</td></tr> <tr><td>85</td><td>0.50</td><td>0.56</td></tr> <tr><td>90</td><td>0.50</td><td>0.55</td></tr> <tr><td>100</td><td>0.48</td><td>0.53</td></tr> <tr><td>110</td><td>0.47</td><td>0.52</td></tr> <tr><td>120</td><td>0.46</td><td>0.51</td></tr> <tr><td>132</td><td>0.45</td><td>0.49</td></tr> <tr><td>140</td><td>0.44</td><td>0.49</td></tr> </tbody> </table>			Input Voltage [V]	Power Factor		Load 50%	Load 100%	75	0.52	0.58	80	0.51	0.57	85	0.50	0.56	90	0.50	0.55	100	0.48	0.53	110	0.47	0.52	120	0.46	0.51	132	0.45	0.49	140	0.44	0.49
Input Voltage [V]	Power Factor																																				
	Load 50%	Load 100%																																			
75	0.52	0.58																																			
80	0.51	0.57																																			
85	0.50	0.56																																			
90	0.50	0.55																																			
100	0.48	0.53																																			
110	0.47	0.52																																			
120	0.46	0.51																																			
132	0.45	0.49																																			
140	0.44	0.49																																			
<p>Note: Slanted line shows the range of the rated input voltage.</p> <p>(注)斜線は定格入力電圧範囲を示す。</p>																																					



Model	MMC100A-1
Item	Hold-Up Time 出力保持時間
Object	+5.0V 13A

Temperature 25°C
Testing Circuitry Figure A



2. Values

Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
75	22	12
80	29	16
85	36	21
90	43	26
100	60	37
110	78	49
120	98	62
132	124	80
140	143	93

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。

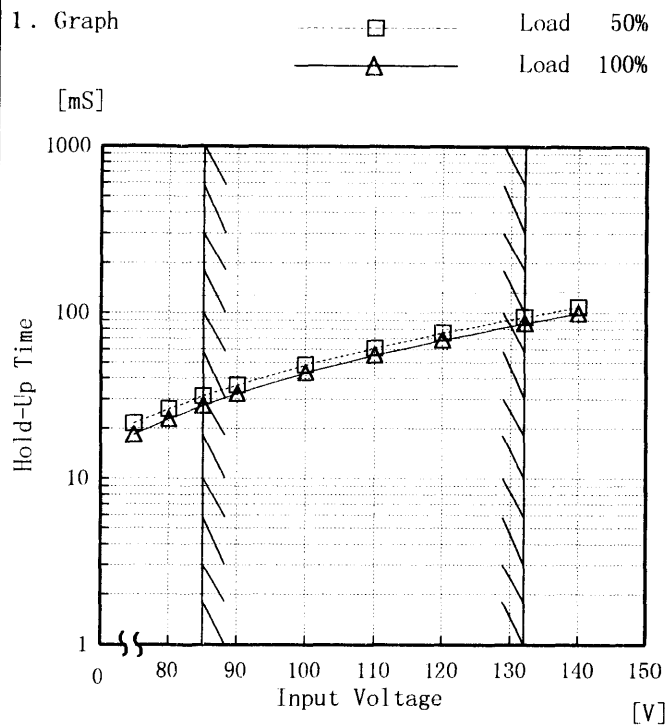
(注) 斜線は定格入力電圧範囲を示す。



<p>Model MMC100A-1</p>		<p>Temperature 25°C Testing Circuitry Figure A</p>																																
Item	Hold-Up Time 出力保持時間																																	
Object	+12.0V2A																																	
<p>1. Graph</p> <p> □ Load 50% △ Load 100% </p> <p>Hold-Up Time [mS]</p> <p>Input Voltage [V]</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Hold-Up Time [mS]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>75</td><td>27</td><td>21</td></tr> <tr><td>80</td><td>32</td><td>26</td></tr> <tr><td>85</td><td>37</td><td>30</td></tr> <tr><td>90</td><td>43</td><td>35</td></tr> <tr><td>100</td><td>55</td><td>46</td></tr> <tr><td>110</td><td>69</td><td>59</td></tr> <tr><td>120</td><td>84</td><td>72</td></tr> <tr><td>132</td><td>104</td><td>90</td></tr> <tr><td>140</td><td>119</td><td>102</td></tr> </tbody> </table>	Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	75	27	21	80	32	26	85	37	30	90	43	35	100	55	46	110	69	59	120	84	72	132	104	90	140	119	102
Input Voltage [V]	Hold-Up Time [mS]																																	
	Load 50%	Load 100%																																
75	27	21																																
80	32	26																																
85	37	30																																
90	43	35																																
100	55	46																																
110	69	59																																
120	84	72																																
132	104	90																																
140	119	102																																
<p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</p> <p>Note: Slanted line shows the range of the rated input voltage.</p> <p>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。</p> <p>(注) 斜線は定格入力電圧範囲を示す。</p>																																		



Model	MMC100A-1		Temperature	25°C
Item	Hold-Up Time	出力保持時間	Testing Circuitry	Figure A
Object	-12.0V1A			



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

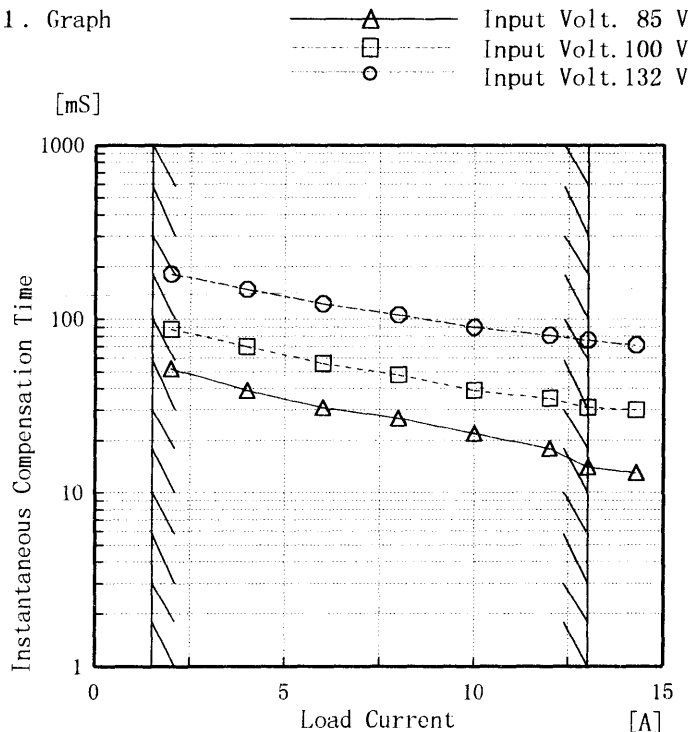
Input Voltage [V]	Hold-Up Time [mS]	
	Load 50%	Load 100%
75	22	18
80	26	23
85	31	27
90	37	32
100	48	43
110	61	56
120	76	69
132	95	87
140	108	99



Model	MMC100A-1
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+5.0V13A

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 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

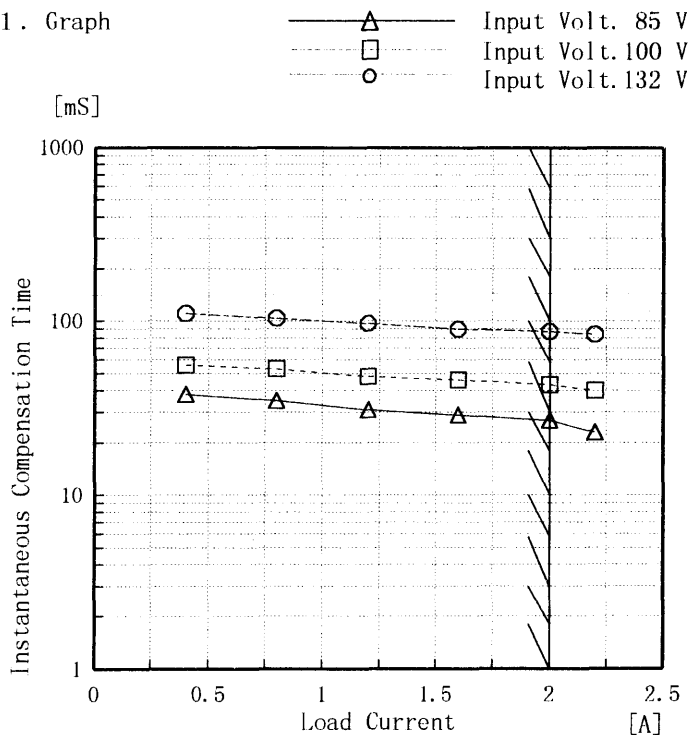
Load Current [A]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	—	—	—
2.0	52	88	182
4.0	39	70	148
6.0	31	56	123
8.0	27	48	106
10.0	22	39	90
12.0	18	35	81
13.0	14	31	76
14.3	13	30	71
—	—	—	—
—	—	—	—



Model	MMC100A-1
Item	Instantaneous Interruption Compensation 瞬時停電保障
Object	+12.0V2A

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 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]	Time [mS]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	—	—	—
0.4	38	56	111
0.8	35	53	104
1.2	31	48	97
1.6	29	46	90
2.0	27	43	87
2.2	23	40	84
—	—	—	—
—	—	—	—
—	—	—	—
—	—	—	—



Model		MMC100A-1		Temperature		25°C																																																				
Item		Instantaneous Interruption Compensation 瞬時停電保障		Testing Circuitry		Figure A																																																				
Object		-12.0V1A																																																								
1. Graph				2. Values																																																						
<p> —△— Input Volt. 85 V - - -□- - - Input Volt. 100 V - - -○- - - Input Volt. 132 V </p>				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Time [mS]</th> </tr> <tr> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>0.2</td><td>31</td><td>48</td><td>98</td></tr> <tr><td>0.4</td><td>29</td><td>47</td><td>94</td></tr> <tr><td>0.6</td><td>28</td><td>45</td><td>90</td></tr> <tr><td>0.8</td><td>22</td><td>39</td><td>85</td></tr> <tr><td>1.0</td><td>22</td><td>39</td><td>84</td></tr> <tr><td>1.1</td><td>22</td><td>39</td><td>84</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>				Load Current [A]	Time [mS]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	0.0	—	—	—	0.2	31	48	98	0.4	29	47	94	0.6	28	45	90	0.8	22	39	85	1.0	22	39	84	1.1	22	39	84	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Time [mS]																																																									
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																							
0.0	—	—	—																																																							
0.2	31	48	98																																																							
0.4	29	47	94																																																							
0.6	28	45	90																																																							
0.8	22	39	85																																																							
1.0	22	39	84																																																							
1.1	22	39	84																																																							
—	—	—	—																																																							
—	—	—	—																																																							
—	—	—	—																																																							
—	—	—	—																																																							
<p>This duration covers from Shut-off of input voltage to the moment when output voltage descends to the rated range of voltage accuracy.</p> <p>Note: Slanted line shows the range of the rated load current.</p>																																																										
<p>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。</p> <p>(注)斜線は定格負荷電流範囲を示す。</p>																																																										

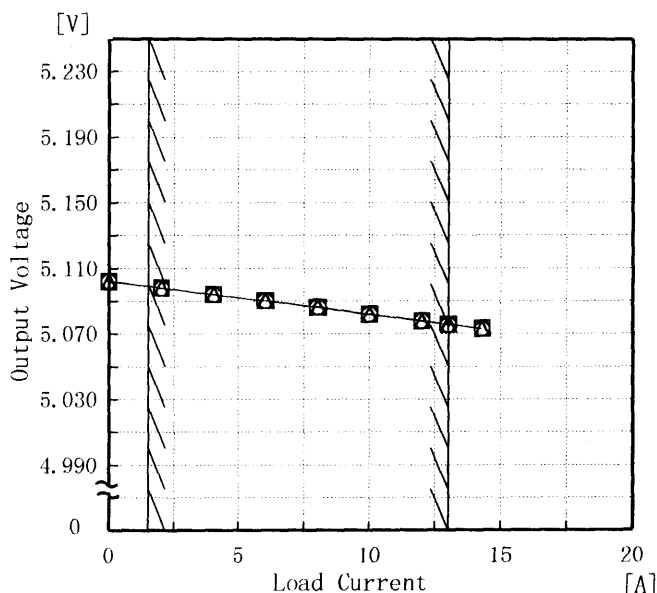


Model	MMC100A-1
Item	Load Regulation 静的負荷変動
Object	+5.0V13A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

- △— Input Volt. 85 V
- - -□- - - Input Volt. 100 V
- - -○- - - Input Volt. 132 V



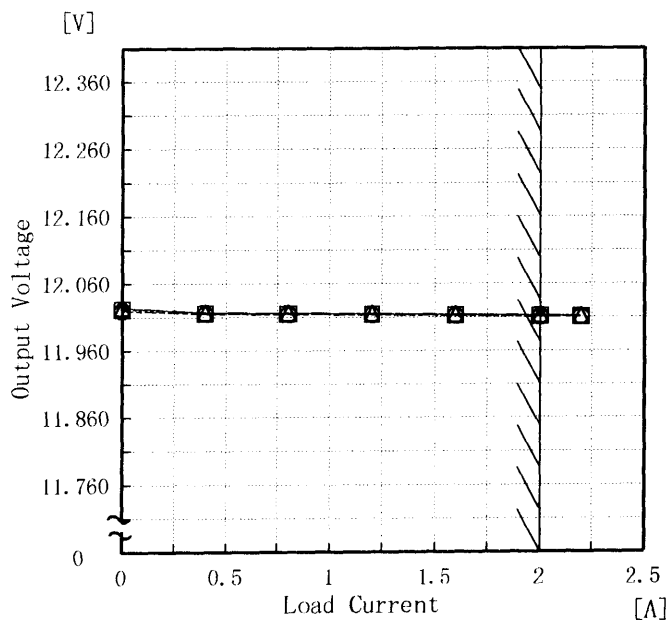
2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	5.102	5.102	5.102
2.0	5.098	5.098	5.098
4.0	5.094	5.094	5.094
6.0	5.090	5.090	5.090
8.0	5.086	5.086	5.086
10.0	5.082	5.082	5.082
12.0	5.078	5.078	5.078
13.0	5.076	5.076	5.076
14.3	5.073	5.073	5.073
—	—	—	—

Object	+12.0V2A
--------	----------

1. Graph

- △— Input Volt. 85 V
- - -□- - - Input Volt. 100 V
- - -○- - - Input Volt. 132 V



2. Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
0.0	12.024	12.022	12.020
0.4	12.017	12.016	12.015
0.8	12.017	12.015	12.014
1.2	12.016	12.014	12.013
1.6	12.014	12.013	12.012
2.0	12.013	12.012	12.011
2.2	12.012	12.011	12.010
—	—	—	—
—	—	—	—
—	—	—	—

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。



Model		MMC100A-1		Temperature		25°C																																																
Item		Load Regulation 静的負荷変動		Testing Circuitry		Figure A																																																
Object		-12.0V1A																																																				
<p>1. Graph</p> <p> Input Volt. 85 V Input Volt. 100 V Input Volt. 132 V </p> <p>Output Voltage [V]</p> <p>Load Current [A]</p>				<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>-12.023</td><td>-12.024</td><td>-12.025</td></tr> <tr><td>0.2</td><td>-12.016</td><td>-12.017</td><td>-12.017</td></tr> <tr><td>0.4</td><td>-12.012</td><td>-12.012</td><td>-12.013</td></tr> <tr><td>0.6</td><td>-12.008</td><td>-12.009</td><td>-12.009</td></tr> <tr><td>0.8</td><td>-12.005</td><td>-12.005</td><td>-12.005</td></tr> <tr><td>1.0</td><td>-12.001</td><td>-12.001</td><td>-12.001</td></tr> <tr><td>1.1</td><td>-11.999</td><td>-11.999</td><td>-11.999</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> <tr><td>--</td><td>--</td><td>--</td><td>--</td></tr> </tbody> </table>				Load Current [A]	Output Voltage [V]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	0.0	-12.023	-12.024	-12.025	0.2	-12.016	-12.017	-12.017	0.4	-12.012	-12.012	-12.013	0.6	-12.008	-12.009	-12.009	0.8	-12.005	-12.005	-12.005	1.0	-12.001	-12.001	-12.001	1.1	-11.999	-11.999	-11.999	--	--	--	--	--	--	--	--	--	--	--	--
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																			
0.0	-12.023	-12.024	-12.025																																																			
0.2	-12.016	-12.017	-12.017																																																			
0.4	-12.012	-12.012	-12.013																																																			
0.6	-12.008	-12.009	-12.009																																																			
0.8	-12.005	-12.005	-12.005																																																			
1.0	-12.001	-12.001	-12.001																																																			
1.1	-11.999	-11.999	-11.999																																																			
--	--	--	--																																																			
--	--	--	--																																																			
--	--	--	--																																																			
<p>Note: Slanted line shows the range of the rated load current.</p> <p>(注)斜線は定格負荷電流範囲を示す。</p>																																																						



Model		MMC100A-1		Temperature		25°C																																							
Item		Ripple Voltage (by Load Current) リップル電圧(負荷特性)		Testing Circuitry		Figure A																																							
Object		+5.0V 13A																																											
1. Graph				2. Values																																									
<p> Δ Input Volt. 85V \circ Input Volt. 132V </p>				<table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Output Voltage [mV]</th> </tr> <tr> <th>Input Volt. 85 [V]</th> <th>Input Volt. 132 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>10</td><td>10</td></tr> <tr><td>2.6</td><td>20</td><td>20</td></tr> <tr><td>5.2</td><td>20</td><td>20</td></tr> <tr><td>7.8</td><td>25</td><td>20</td></tr> <tr><td>10.4</td><td>25</td><td>20</td></tr> <tr><td>13.0</td><td>25</td><td>20</td></tr> <tr><td>14.3</td><td>25</td><td>20</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>				Load Current [A]	Ripple Output Voltage [mV]		Input Volt. 85 [V]	Input Volt. 132 [V]	0.0	10	10	2.6	20	20	5.2	20	20	7.8	25	20	10.4	25	20	13.0	25	20	14.3	25	20	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple Output Voltage [mV]																																												
	Input Volt. 85 [V]	Input Volt. 132 [V]																																											
0.0	10	10																																											
2.6	20	20																																											
5.2	20	20																																											
7.8	25	20																																											
10.4	25	20																																											
13.0	25	20																																											
14.3	25	20																																											
—	—	—																																											
—	—	—																																											
—	—	—																																											
—	—	—																																											
<p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>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。</p> <p>T1: Due to AC Input Line 入力商用周期 T2: Due to Switching スイッチング周期</p> <p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>																																													



COSEL																																									
Model	MMC100A-1	Temperature	25°C																																						
Item	Ripple Voltage (by Load Current) リップル電圧(負荷特性)	Testing Circuitry	Figure A																																						
Object	+12.0V2A																																								
<p>1. Graph</p> <p>—△— Input Volt. 85V - - -○- - - Input Volt. 132V</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Output Voltage [mV]</th> </tr> <tr> <th>Input Volt. 85 [V]</th> <th>Input Volt. 132 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>10</td><td>10</td></tr> <tr><td>0.4</td><td>15</td><td>10</td></tr> <tr><td>0.8</td><td>15</td><td>15</td></tr> <tr><td>1.2</td><td>15</td><td>15</td></tr> <tr><td>1.6</td><td>15</td><td>15</td></tr> <tr><td>2.0</td><td>15</td><td>15</td></tr> <tr><td>2.2</td><td>25</td><td>15</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>		Load Current [A]	Ripple Output Voltage [mV]		Input Volt. 85 [V]	Input Volt. 132 [V]	0.0	10	10	0.4	15	10	0.8	15	15	1.2	15	15	1.6	15	15	2.0	15	15	2.2	25	15	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple Output Voltage [mV]																																								
	Input Volt. 85 [V]	Input Volt. 132 [V]																																							
0.0	10	10																																							
0.4	15	10																																							
0.8	15	15																																							
1.2	15	15																																							
1.6	15	15																																							
2.0	15	15																																							
2.2	25	15																																							
—	—	—																																							
—	—	—																																							
—	—	—																																							
—	—	—																																							
<p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>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。</p> <p>T1: Due to AC Input Line 入力商用周期 T2: Due to Switching スイッチング周期</p> <p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>																																									



COSEL																																									
Model	MMC100A-1	Temperature	25°C																																						
Item	Ripple Voltage (by Load Current) リップル電圧(負荷特性)	Testing Circuitry	Figure A																																						
Object	-12.0V1A																																								
<p>1. Graph</p> <p>[mV]</p> <p>—△— Input Volt. 85V</p> <p>---○--- Input Volt. 132V</p> <p>Ripple Voltage is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>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。</p> <p>T1: Due to AC Input Line 入力商用周期 T2: Due to Switching スイッチング周期</p> <p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>		<p>2.Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple Output Voltage [mV]</th> </tr> <tr> <th>Input Volt. 85 [V]</th> <th>Input Volt. 132 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>10</td><td>10</td></tr> <tr><td>0.2</td><td>10</td><td>10</td></tr> <tr><td>0.4</td><td>10</td><td>10</td></tr> <tr><td>0.6</td><td>10</td><td>10</td></tr> <tr><td>0.8</td><td>10</td><td>10</td></tr> <tr><td>1.0</td><td>10</td><td>10</td></tr> <tr><td>1.1</td><td>10</td><td>10</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>		Load Current [A]	Ripple Output 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	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple Output 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																																							
—	—	—																																							
—	—	—																																							
—	—	—																																							
—	—	—																																							



COSEL																																									
Model	MMC100A-1	Temperature	25°C																																						
Item	Ripple-Noise リップルノイズ	Testing Circuitry	Figure A																																						
Object	+5.0V13A																																								
<p>1. Graph</p> <p>[mV]</p> <p>-----□----- Input Volt. 85V</p> <p>-----△----- Input Volt. 132V</p> <p>Ripple-Noise is shown as p-p in the figure below. Note: Slanted line shows the range of the rated load current.</p> <p>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。</p> <p>T1: Due to AC Input Line 入力商用周期 T2: Due to Switching スイッチング周期</p> <p>Fig. Complex Ripple Wave Form 図 リップル波形詳細図</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple-Noise [mV]</th> </tr> <tr> <th>Input Volt. 85 [V]</th> <th>Input Volt. 132 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>30</td><td>40</td></tr> <tr><td>2.6</td><td>40</td><td>40</td></tr> <tr><td>5.2</td><td>40</td><td>40</td></tr> <tr><td>7.8</td><td>40</td><td>40</td></tr> <tr><td>10.4</td><td>40</td><td>40</td></tr> <tr><td>13.0</td><td>40</td><td>40</td></tr> <tr><td>14.3</td><td>40</td><td>40</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 85 [V]	Input Volt. 132 [V]	0.0	30	40	2.6	40	40	5.2	40	40	7.8	40	40	10.4	40	40	13.0	40	40	14.3	40	40	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple-Noise [mV]																																								
	Input Volt. 85 [V]	Input Volt. 132 [V]																																							
0.0	30	40																																							
2.6	40	40																																							
5.2	40	40																																							
7.8	40	40																																							
10.4	40	40																																							
13.0	40	40																																							
14.3	40	40																																							
—	—	—																																							
—	—	—																																							
—	—	—																																							
—	—	—																																							



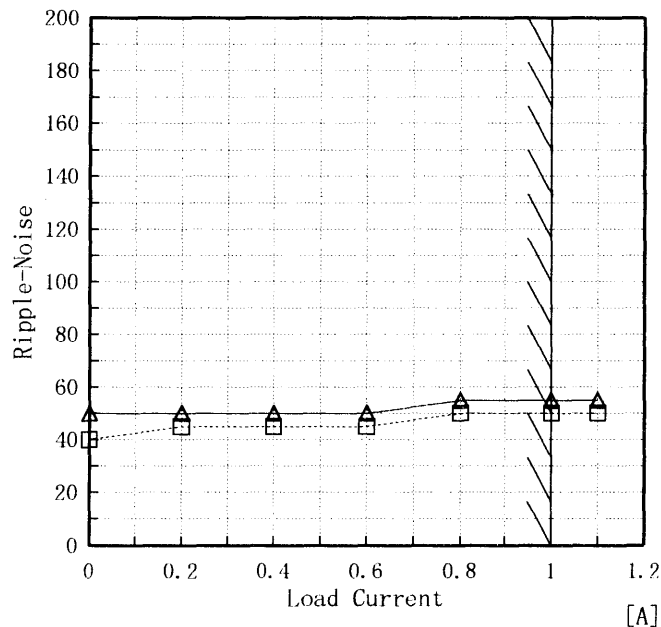
<p>Model MMC100A-1</p> <p>Item Ripple-Noise リップルノイズ</p> <p>Object +12.0V2A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																					
<p>1. Graph</p> <p>[mV]</p> <p>-----□----- Input Volt. 85V</p> <p>-----△----- Input Volt. 132V</p> <p>Ripple-Noise [mV]</p> <p>Load Current [A]</p>	<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Load Current [A]</th> <th colspan="2">Ripple-Noise [mV]</th> </tr> <tr> <th>Input Volt. 85 [V]</th> <th>Input Volt. 132 [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>30</td><td>40</td></tr> <tr><td>0.4</td><td>40</td><td>50</td></tr> <tr><td>0.8</td><td>40</td><td>50</td></tr> <tr><td>1.2</td><td>40</td><td>50</td></tr> <tr><td>1.6</td><td>45</td><td>60</td></tr> <tr><td>2.0</td><td>45</td><td>60</td></tr> <tr><td>2.2</td><td>50</td><td>60</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Load Current [A]	Ripple-Noise [mV]		Input Volt. 85 [V]	Input Volt. 132 [V]	0.0	30	40	0.4	40	50	0.8	40	50	1.2	40	50	1.6	45	60	2.0	45	60	2.2	50	60	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple-Noise [mV]																																						
	Input Volt. 85 [V]	Input Volt. 132 [V]																																					
0.0	30	40																																					
0.4	40	50																																					
0.8	40	50																																					
1.2	40	50																																					
1.6	45	60																																					
2.0	45	60																																					
2.2	50	60																																					
—	—	—																																					
—	—	—																																					
—	—	—																																					
—	—	—																																					
<p>Ripple-Noise is shown as p-p in the figure below.</p> <p>Note: Slanted line shows the range of the rated load current.</p> <p>リップルノイズは、下図 p-p 値で示される。</p> <p>(注)斜線は定格負荷電流範囲を示す。</p> <p>T1: Due to AC Input Line 入力商用周期</p> <p>T2: Due to Switching スイッチング周期</p> <p>Fig. Complex Ripple Wave Form</p> <p>図 リップル波形詳細図</p>																																							



Model	MMC100A-1
Item	Ripple-Noise リップルノイズ
Object	-12.0V1A

Temperature 25°C
Testing Circuitry Figure A

1. Graph
 [mV]
 □----- Input Volt. 85V
 △----- Input Volt. 132V



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	40	50
0.2	45	50
0.4	45	50
0.6	45	50
0.8	50	55
1.0	50	55
1.1	50	55
—	—	—
—	—	—
—	—	—
—	—	—

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
 スイッチング周期

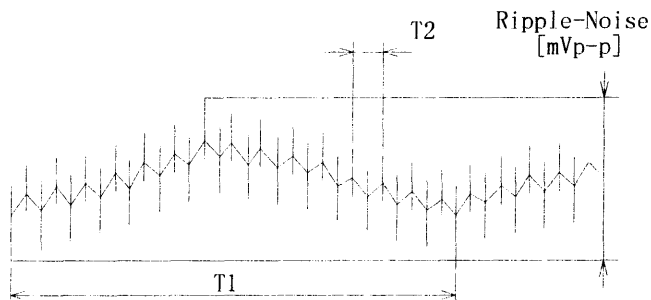


Fig. Complex Ripple Wave Form
 図 リップル波形詳細図



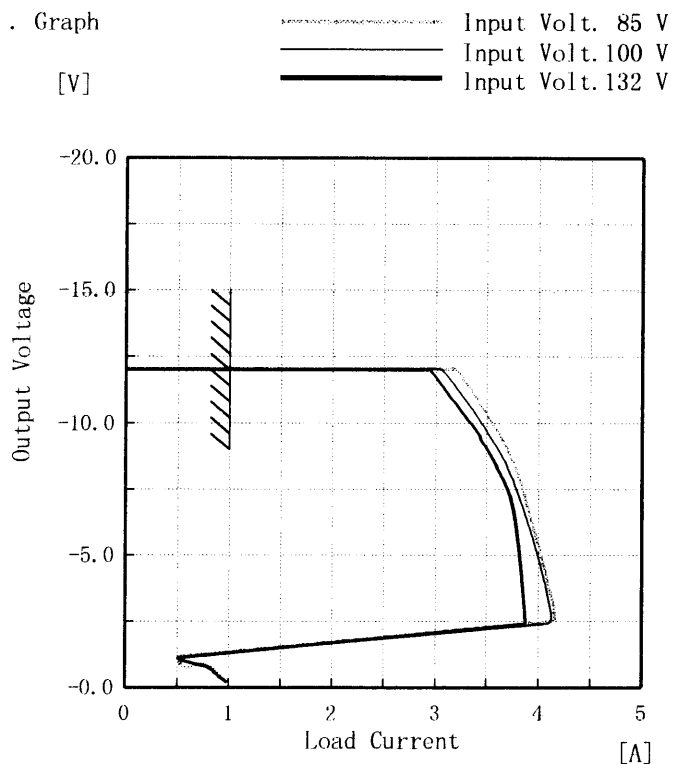
<p>Model MMC100A-1</p> <p>Item Overcurrent Protection 過電流保護</p> <p>Object +5.0V13A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																																																							
<p>1. Graph</p> <p>[V]</p> <p>Input Volt. 85 V Input Volt. 100 V Input Volt. 132 V</p> <p>Output Voltage [V]</p> <p>Load Current [A]</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> </thead> <tbody> <tr><td>5.00</td><td>19.08</td><td>18.51</td><td>17.90</td></tr> <tr><td>4.75</td><td>18.84</td><td>18.30</td><td>17.77</td></tr> <tr><td>4.50</td><td>18.64</td><td>18.15</td><td>17.60</td></tr> <tr><td>4.00</td><td>18.18</td><td>17.75</td><td>17.24</td></tr> <tr><td>3.50</td><td>17.97</td><td>17.62</td><td>17.10</td></tr> <tr><td>3.00</td><td>18.53</td><td>18.19</td><td>16.95</td></tr> <tr><td>2.50</td><td>18.78</td><td>17.67</td><td>16.30</td></tr> <tr><td>2.00</td><td>17.69</td><td>16.85</td><td>15.86</td></tr> <tr><td>1.50</td><td>16.78</td><td>16.19</td><td>15.55</td></tr> <tr><td>1.00</td><td>16.00</td><td>15.72</td><td>15.26</td></tr> <tr><td>0.50</td><td>15.70</td><td>15.66</td><td>15.93</td></tr> <tr><td>0.00</td><td>16.01</td><td>16.37</td><td>16.38</td></tr> </tbody> </table>	Output Voltage [V]	Load Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	5.00	19.08	18.51	17.90	4.75	18.84	18.30	17.77	4.50	18.64	18.15	17.60	4.00	18.18	17.75	17.24	3.50	17.97	17.62	17.10	3.00	18.53	18.19	16.95	2.50	18.78	17.67	16.30	2.00	17.69	16.85	15.86	1.50	16.78	16.19	15.55	1.00	16.00	15.72	15.26	0.50	15.70	15.66	15.93	0.00	16.01	16.37	16.38
Output Voltage [V]	Load Current [A]																																																								
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																						
5.00	19.08	18.51	17.90																																																						
4.75	18.84	18.30	17.77																																																						
4.50	18.64	18.15	17.60																																																						
4.00	18.18	17.75	17.24																																																						
3.50	17.97	17.62	17.10																																																						
3.00	18.53	18.19	16.95																																																						
2.50	18.78	17.67	16.30																																																						
2.00	17.69	16.85	15.86																																																						
1.50	16.78	16.19	15.55																																																						
1.00	16.00	15.72	15.26																																																						
0.50	15.70	15.66	15.93																																																						
0.00	16.01	16.37	16.38																																																						
<p>Object +12.0V2A</p> <p>1. Graph</p> <p>[V]</p> <p>Input Volt. 85 V Input Volt. 100 V Input Volt. 132 V</p> <p>Output Voltage [V]</p> <p>Load Current [A]</p> <p>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。</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th> <th colspan="3">Load Current [A]</th> </tr> <tr> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> </thead> <tbody> <tr><td>12.00</td><td>-</td><td>-</td><td>-</td></tr> <tr><td>11.40</td><td>4.44</td><td>4.35</td><td>4.25</td></tr> <tr><td>10.80</td><td>4.58</td><td>4.50</td><td>4.36</td></tr> <tr><td>9.60</td><td>4.85</td><td>4.76</td><td>4.41</td></tr> <tr><td>8.40</td><td>5.03</td><td>4.76</td><td>4.40</td></tr> <tr><td>7.20</td><td>4.93</td><td>4.71</td><td>4.43</td></tr> <tr><td>6.00</td><td>4.85</td><td>4.68</td><td>4.47</td></tr> <tr><td>4.80</td><td>4.81</td><td>4.70</td><td>4.58</td></tr> <tr><td>3.60</td><td>4.81</td><td>4.76</td><td>4.65</td></tr> <tr><td>2.40</td><td>4.92</td><td>4.81</td><td>4.98</td></tr> <tr><td>1.20</td><td>5.18</td><td>5.29</td><td>5.35</td></tr> <tr><td>0.00</td><td>5.76</td><td>5.76</td><td>5.57</td></tr> </tbody> </table>	Output Voltage [V]	Load Current [A]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	12.00	-	-	-	11.40	4.44	4.35	4.25	10.80	4.58	4.50	4.36	9.60	4.85	4.76	4.41	8.40	5.03	4.76	4.40	7.20	4.93	4.71	4.43	6.00	4.85	4.68	4.47	4.80	4.81	4.70	4.58	3.60	4.81	4.76	4.65	2.40	4.92	4.81	4.98	1.20	5.18	5.29	5.35	0.00	5.76	5.76	5.57
Output Voltage [V]	Load Current [A]																																																								
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																						
12.00	-	-	-																																																						
11.40	4.44	4.35	4.25																																																						
10.80	4.58	4.50	4.36																																																						
9.60	4.85	4.76	4.41																																																						
8.40	5.03	4.76	4.40																																																						
7.20	4.93	4.71	4.43																																																						
6.00	4.85	4.68	4.47																																																						
4.80	4.81	4.70	4.58																																																						
3.60	4.81	4.76	4.65																																																						
2.40	4.92	4.81	4.98																																																						
1.20	5.18	5.29	5.35																																																						
0.00	5.76	5.76	5.57																																																						



Model	MMC100A-1
Item	Overcurrent Protection 過電流保護
Object	-12.0V1A

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]
-12.00	-	-	-
-11.40	3.32	3.20	3.06
-10.80	3.41	3.29	3.17
-9.60	3.61	3.50	3.40
-8.40	3.76	3.69	3.58
-7.20	3.86	3.80	3.72
-6.00	3.95	3.91	3.78
-4.80	4.04	4.00	3.81
-3.60	4.11	4.08	3.84
-2.40	4.15	4.10	3.87
-1.20	4.15	4.10	3.87
0.00	0.98	0.99	0.98

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

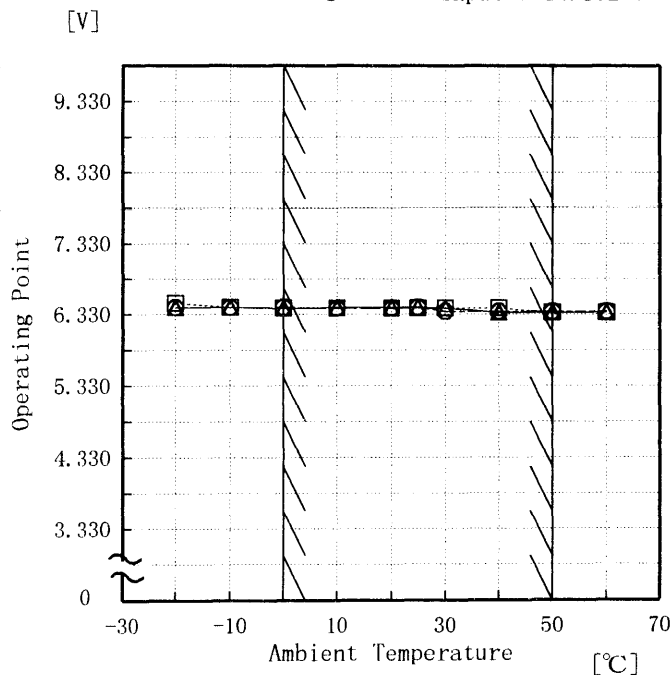
(注)斜線は定格負荷電流範囲を示す。



Model	MMC100A-1
Item	Overvoltage Protection 過電圧保護
Object	+5.0V13A

Testing Circuitry Figure A

1. Graph
- △— Input Volt. 85 V
 - - -□- - - Input Volt. 100 V
 - - -○- - - Input Volt. 132 V



Load 0%

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

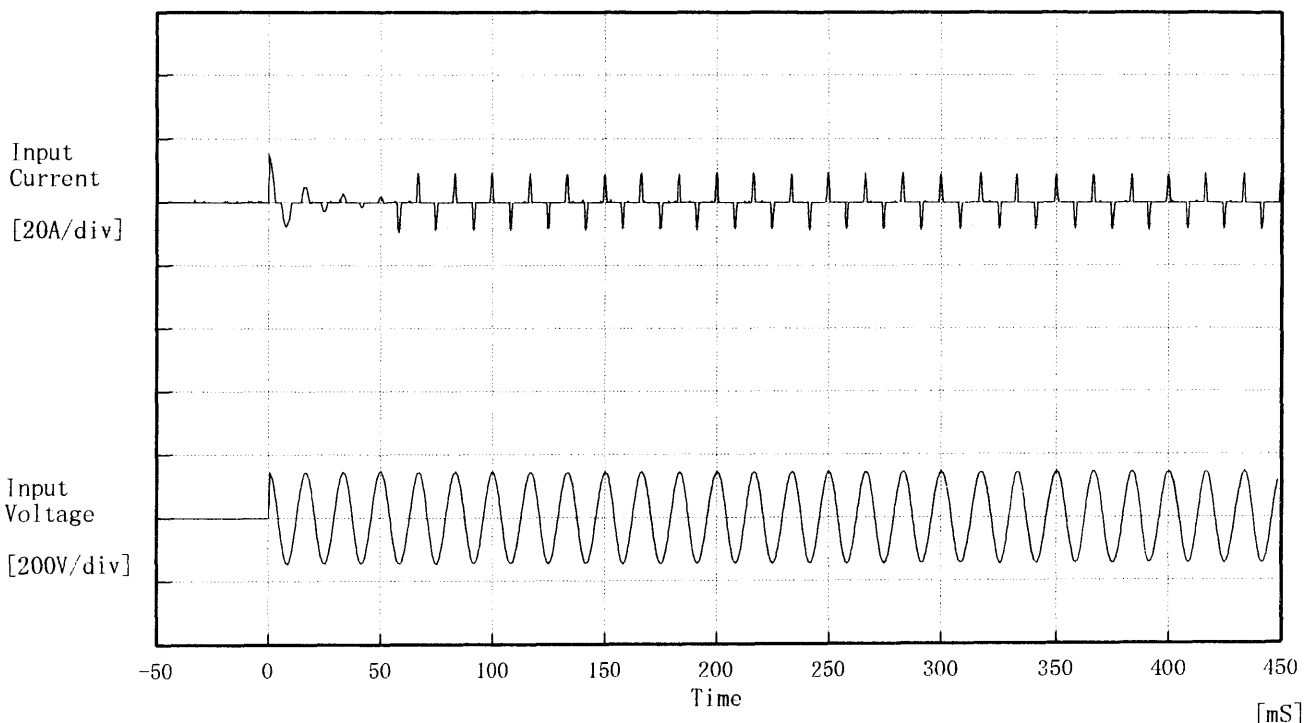
(注)斜線は定格周囲温度範囲を示す。

2. Values

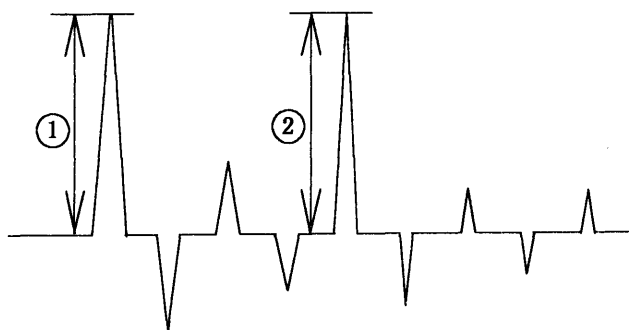
Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
-20	6.43	6.49	6.43
-10	6.43	6.43	6.43
0	6.42	6.42	6.43
10	6.43	6.42	6.42
20	6.43	6.42	6.42
25	6.43	6.42	6.43
30	6.42	6.42	6.37
40	6.36	6.42	6.37
50	6.36	6.36	6.37
60	6.36	6.36	6.37
—	—	—	—

COSEL

Model		MMC100A-1	
Item		Inrush Current 突入電流	
Object		Temperature 25°C Testing Circuitry Figure A	



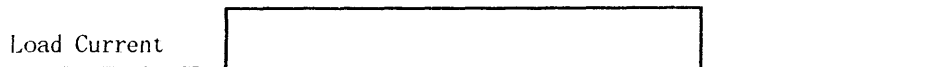
Input Voltage 100 V
 Frequency 60 Hz
 Load 100 %
 Inrush Current
 ① 14.77 [A]
 ② 9.63 [A]



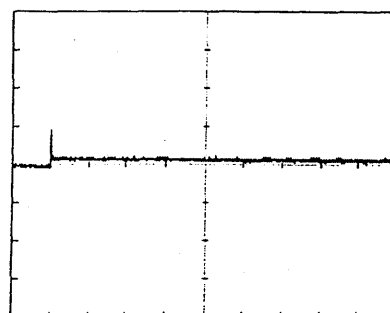
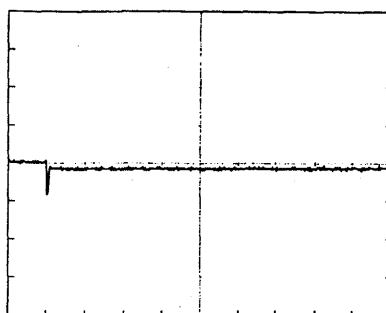
COSEL

Model	MMC100A-1	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+5.0V13A		

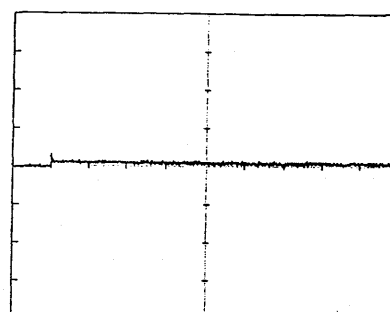
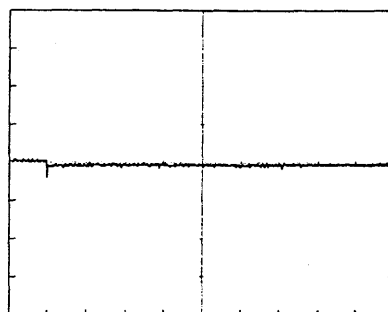
Input Volt. 100 V
Cycle 200 mS



Min Load ↔
Load 100 %



Min Load ↔
Load 50 %



100 mV/div

10 mS/div



Model		MMC100A-1	Temperature		25°C
Item		Dynamic Load Responce 動的負荷変動	Testing Circuitry		Figure A
Object		+12.0V2A			

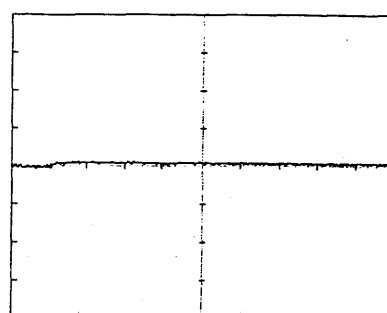
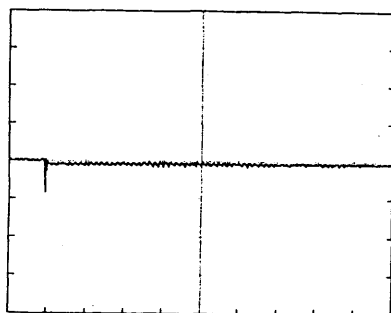
Input Volt. 100 V

Cycle 200 mS

Load Current

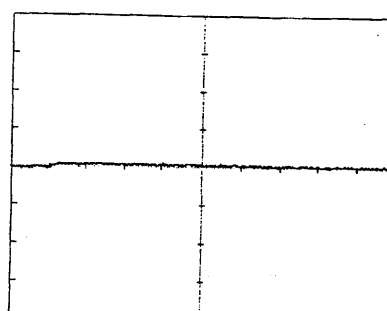
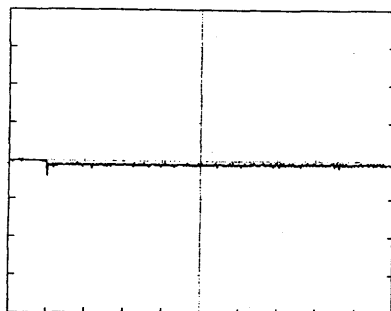
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



100 mV/div

10 mS/div

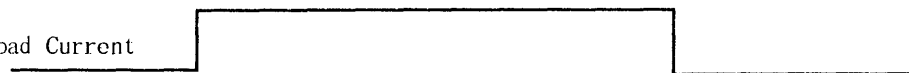
COSEL

Model	MMC100A-1	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	12.0V1A		

Input Volt. 100 V

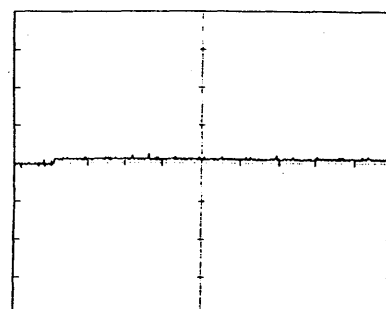
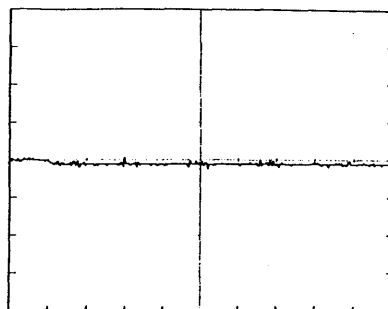
Cycle 200 mS

Load Current



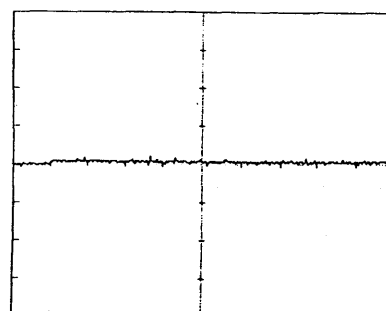
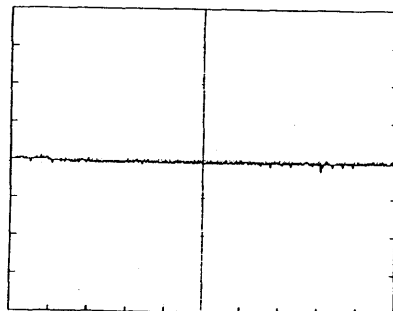
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



100 mV/div

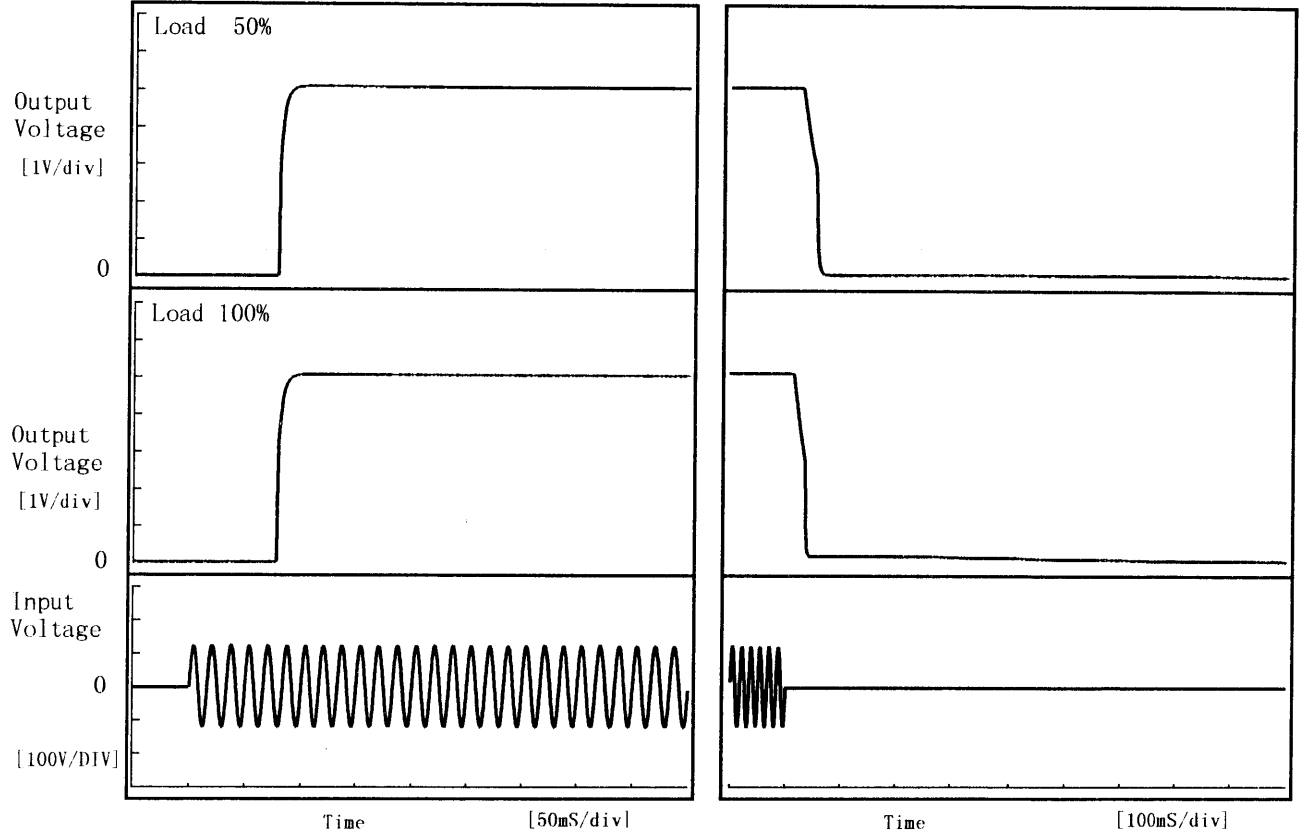
10 mS/div



Model	MMC100A-1	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+5.0V 13A		

1. Graph

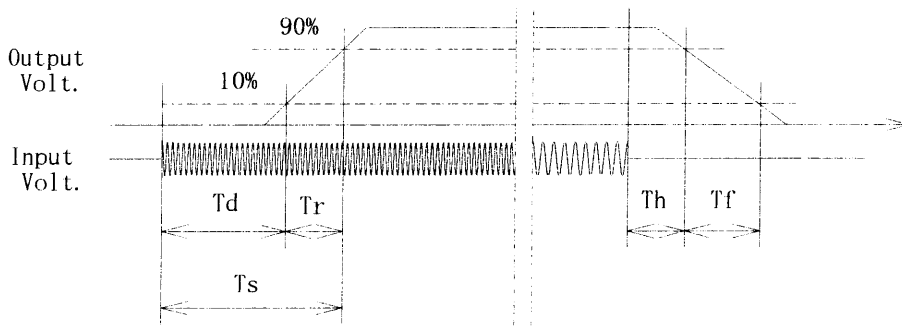
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	77.5	6.0	83.5	36.0	24.0
100 %	77.5	6.0	83.5	20.5	19.5

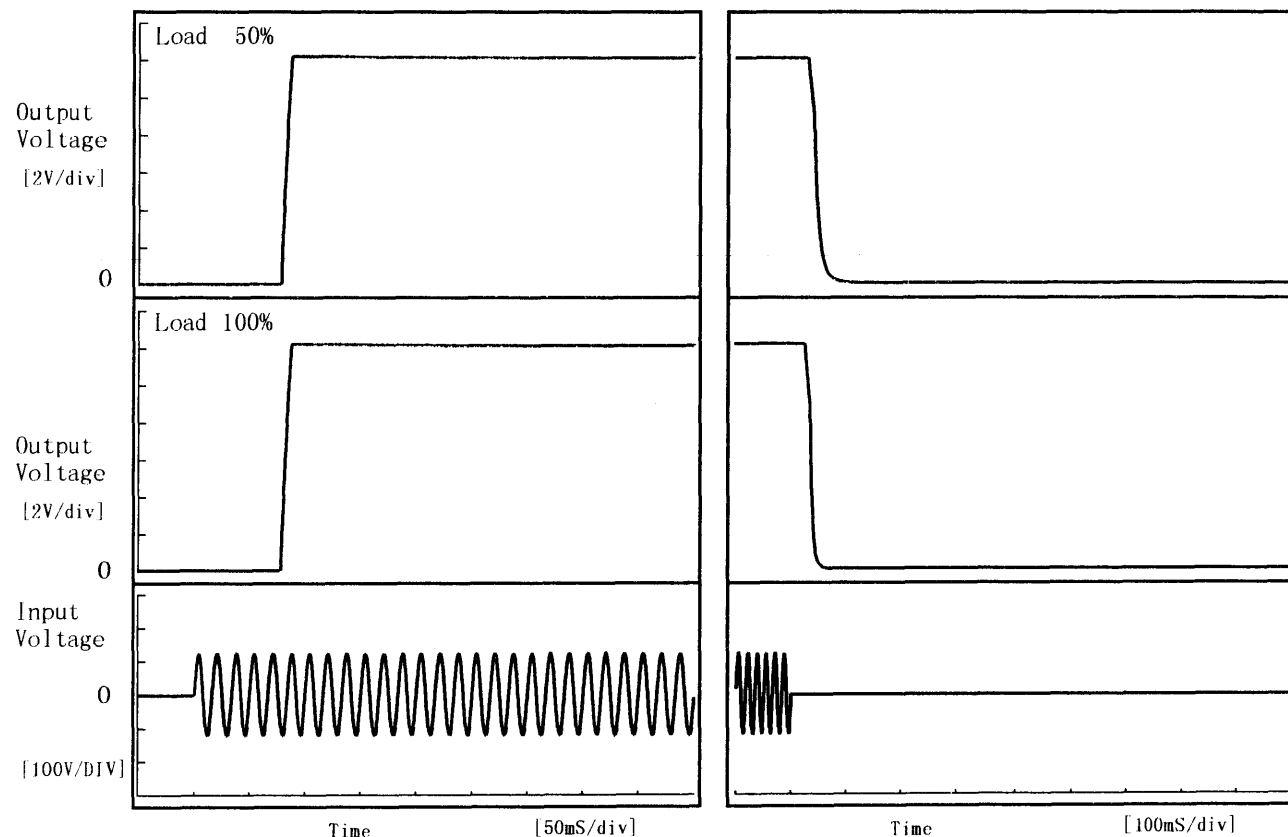


COSEL

Model	MMC100A-1	Temperature	25°C
Item	Rise and Fall Time 立ち上り、立下り時間	Testing Circuitry	Figure A
Object	+12.0V2A		

1. Graph

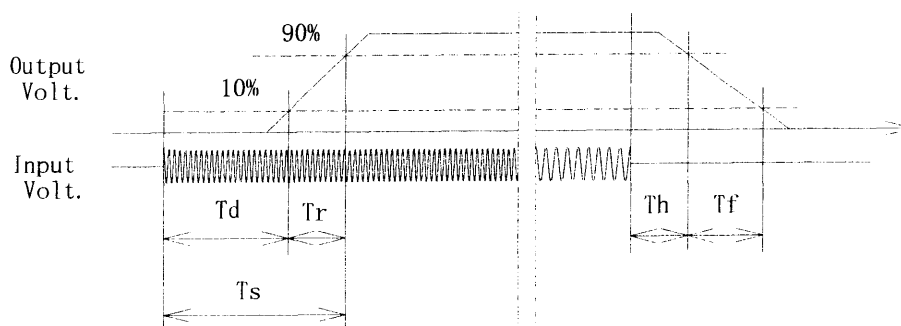
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	77.5	7.8	85.3	37.0	25.5
100 %	77.5	7.8	85.3	30.5	16.0

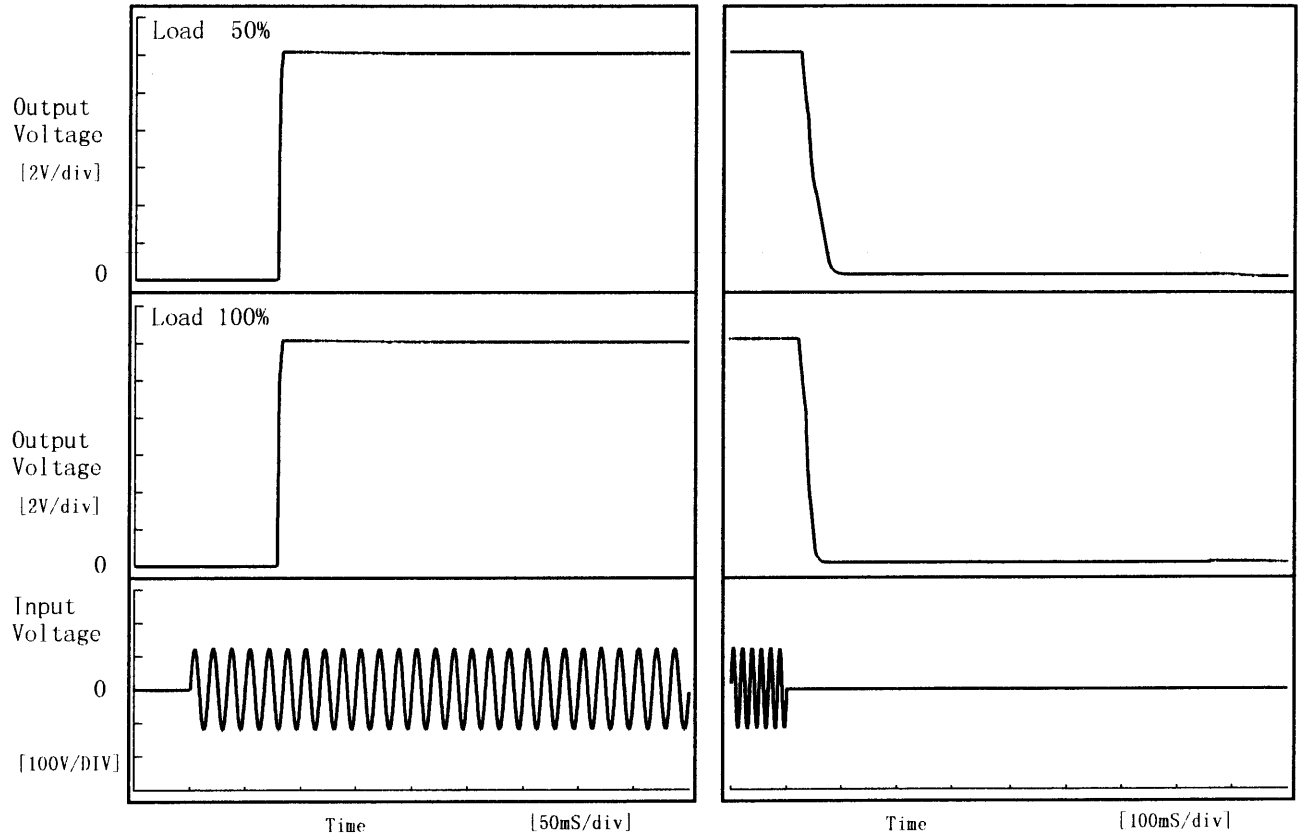




Model	MMC100A-1	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	-12.0V1A		

1. Graph

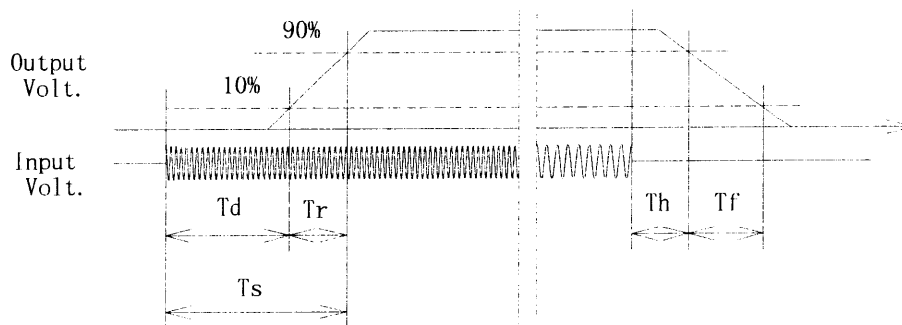
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	77.8	2.3	80.0	31.5	52.3
100 %	77.8	2.8	80.5	27.5	26.3



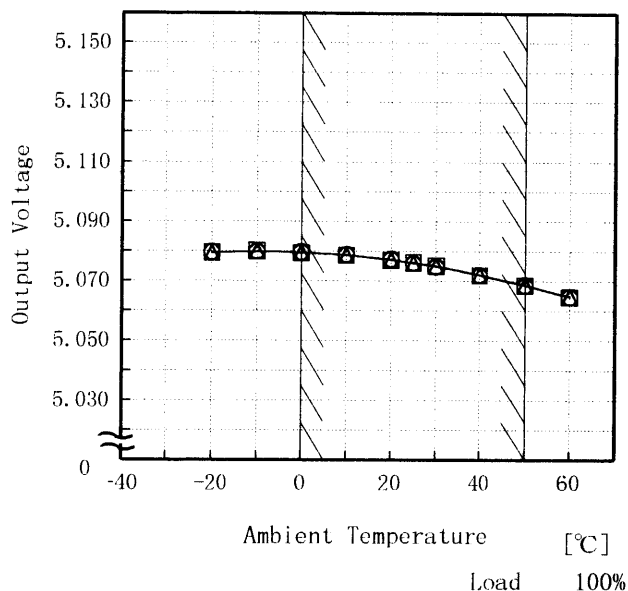


Model	MMC100A-1
Item	Ambient Temperature Drift 周囲温度変動
Object	+5.0V13A

Testing Circuitry Figure A

1. Graph

—△— Input Volt. 85V
 - - -□- - - Input Volt. 100V
 - - -○- - - Input Volt. 132V



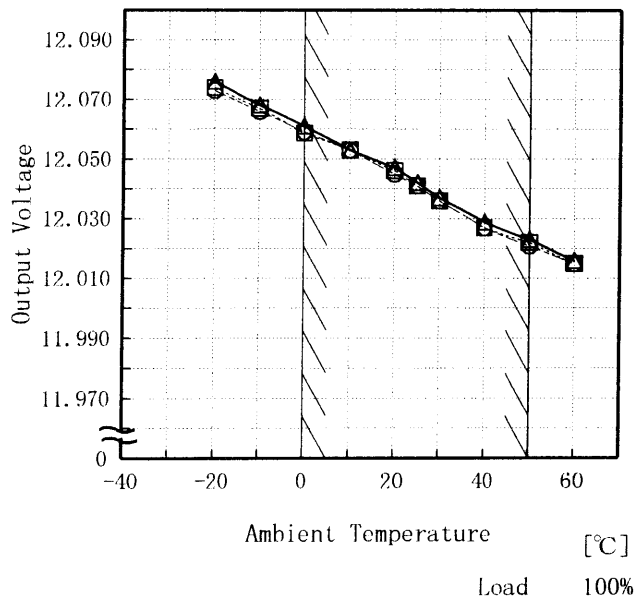
2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	5.079	5.080	5.080
-10	5.080	5.080	5.080
0	5.080	5.079	5.080
10	5.079	5.079	5.079
20	5.077	5.077	5.077
25	5.076	5.076	5.076
30	5.075	5.075	5.075
40	5.072	5.072	5.072
50	5.069	5.069	5.069
60	5.065	5.065	5.065
--	--	--	--

Object	+12.0V2A
--------	----------

1. Graph

—△— Input Volt. 85V
 - - -□- - - Input Volt. 100V
 - - -○- - - Input Volt. 132V



2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	12.076	12.074	12.073
-10	12.068	12.067	12.066
0	12.061	12.059	12.059
10	12.053	12.053	12.053
20	12.047	12.046	12.045
25	12.042	12.041	12.041
30	12.037	12.036	12.036
40	12.029	12.027	12.027
50	12.023	12.022	12.021
60	12.016	12.015	12.015
--	--	--	--

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。



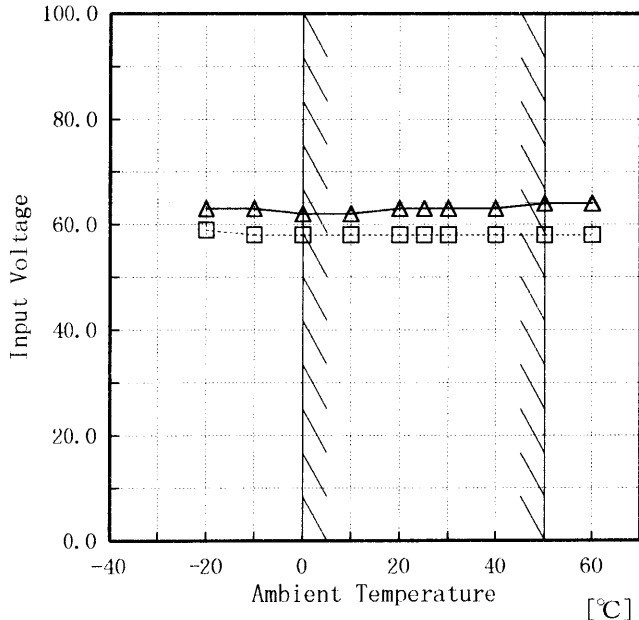
Model		MMC100A-1		Testing Circuitry Figure A																																																				
Item		Ambient Temperature Drift 周囲温度変動																																																						
Object		-12.0V1A																																																						
1. Graph		<p> <input type="checkbox"/> —△— Input Volt. 85V <input type="checkbox"/> - - - □ - - - Input Volt. 100V <input type="checkbox"/> - - - ○ - - - Input Volt. 132V </p>		2. Values																																																				
<p>Output Voltage [V]</p> <p>Ambient Temperature [°C]</p> <p>Load 100%</p>		<table border="1"> <thead> <tr> <th rowspan="2">Ambient Temperature [°C]</th> <th colspan="3">Output Voltage [V]</th> </tr> <tr> <th>Input Volt. 85[V]</th> <th>Input Volt. 100[V]</th> <th>Input Volt. 132[V]</th> </tr> </thead> <tbody> <tr><td>-20</td><td>-12.031</td><td>-12.031</td><td>-12.031</td></tr> <tr><td>-10</td><td>-12.024</td><td>-12.024</td><td>-12.024</td></tr> <tr><td>0</td><td>-12.017</td><td>-12.017</td><td>-12.017</td></tr> <tr><td>10</td><td>-12.011</td><td>-12.011</td><td>-12.011</td></tr> <tr><td>20</td><td>-12.005</td><td>-12.005</td><td>-12.005</td></tr> <tr><td>25</td><td>-12.002</td><td>-12.002</td><td>-12.002</td></tr> <tr><td>30</td><td>-11.999</td><td>-11.999</td><td>-11.999</td></tr> <tr><td>40</td><td>-11.993</td><td>-11.993</td><td>-11.993</td></tr> <tr><td>50</td><td>-11.987</td><td>-11.987</td><td>-11.987</td></tr> <tr><td>60</td><td>-11.982</td><td>-11.982</td><td>-11.982</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]	-20	-12.031	-12.031	-12.031	-10	-12.024	-12.024	-12.024	0	-12.017	-12.017	-12.017	10	-12.011	-12.011	-12.011	20	-12.005	-12.005	-12.005	25	-12.002	-12.002	-12.002	30	-11.999	-11.999	-11.999	40	-11.993	-11.993	-11.993	50	-11.987	-11.987	-11.987	60	-11.982	-11.982	-11.982	—	—	—	—		
Ambient Temperature [°C]	Output Voltage [V]																																																							
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																					
-20	-12.031	-12.031	-12.031																																																					
-10	-12.024	-12.024	-12.024																																																					
0	-12.017	-12.017	-12.017																																																					
10	-12.011	-12.011	-12.011																																																					
20	-12.005	-12.005	-12.005																																																					
25	-12.002	-12.002	-12.002																																																					
30	-11.999	-11.999	-11.999																																																					
40	-11.993	-11.993	-11.993																																																					
50	-11.987	-11.987	-11.987																																																					
60	-11.982	-11.982	-11.982																																																					
—	—	—	—																																																					
<p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注)斜線は定格周囲温度範囲を示す。</p>																																																								



Model	MMC100A-1
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+5.0V13A

Testing Circuitry Figure A

1. Graph
 [V]
 □ Load 50%
 △ Load 100%

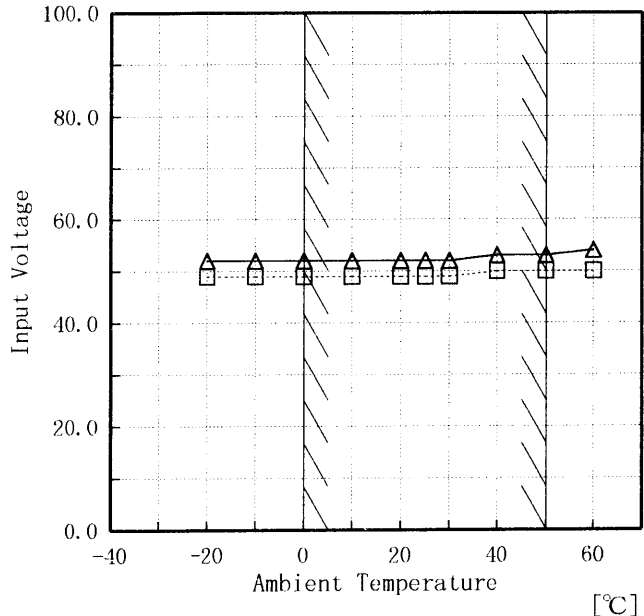


2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	59	63
-10	58	63
0	58	62
10	58	62
20	58	63
25	58	63
30	58	63
40	58	63
50	58	64
60	58	64
—	—	—

Object	+12.0V2A
--------	----------

[V]
 □ Load 50%
 △ Load 100%



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	49	52
-10	49	52
0	49	52
10	49	52
20	49	52
25	49	52
30	49	52
40	50	53
50	50	53
60	50	54
—	—	—

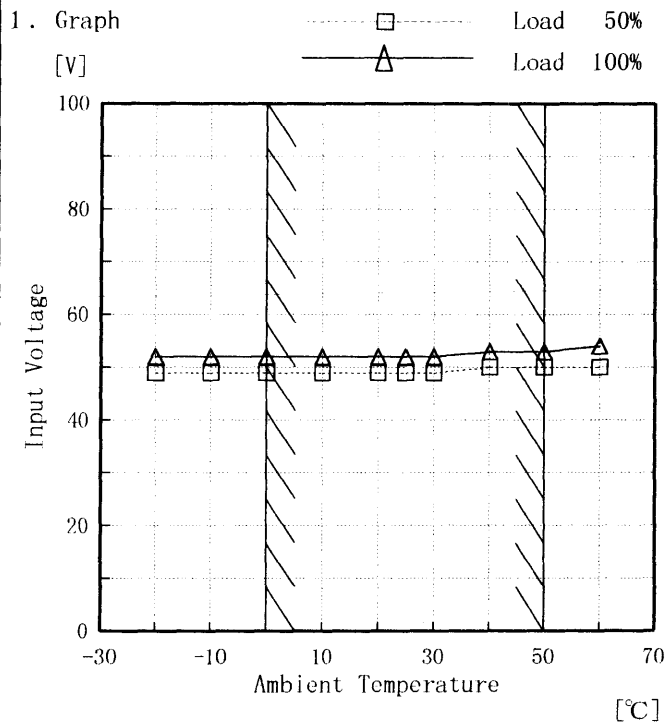
Note: Slanted line shows the range of the rated ambient temperature.

(注)斜線は定格周囲温度範囲を示す。



Model	MMC100A-1
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	-12.0V1A

Testing Circuitry Figure A



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	49	52
-10	49	52
0	49	52
10	49	52
20	49	52
25	49	52
30	49	52
40	50	53
50	50	53
60	50	54
—	—	—

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

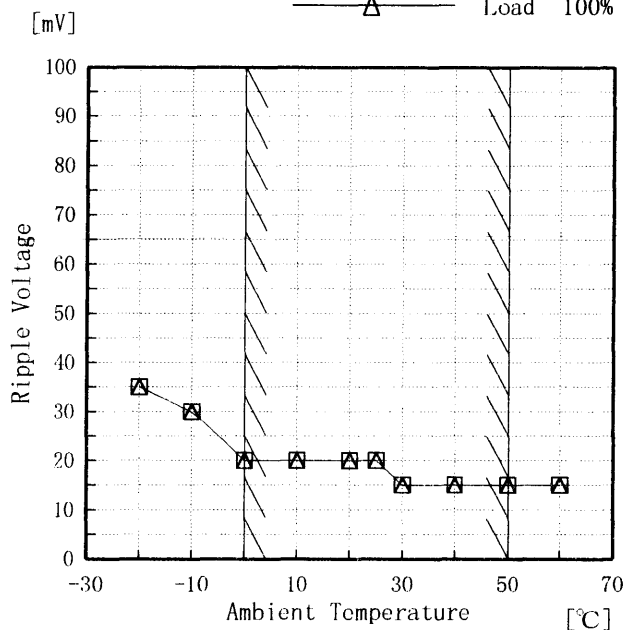
(注)斜線は定格周囲温度範囲を示す。



Model	MMC100A-1
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+5.0V13A

Testing Circuitry Figure A

1. Graph
 -----□----- Load 50%
 -----△----- Load 100%



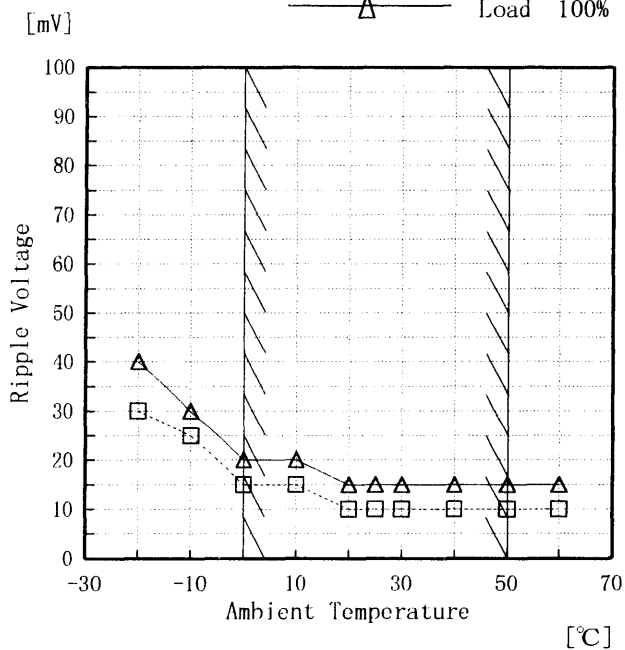
Input Volt. 100 V

2. Values

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

Object	+12.0V2A
--------	----------

1. Graph
 -----□----- Load 50%
 -----△----- Load 100%



Input Volt. 100 V

2. Values

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

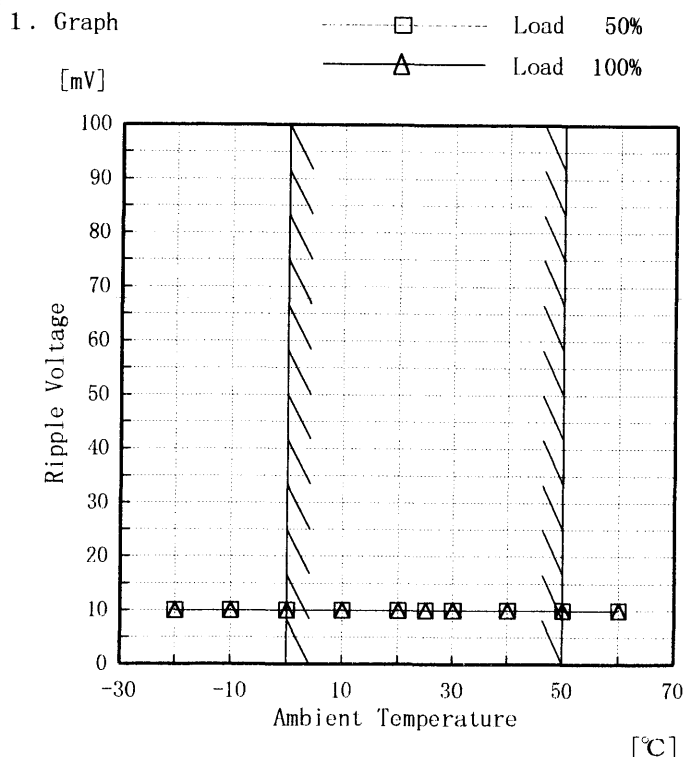
Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。



Model	MMC100A-1
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	-12.0V1A

Testing Circuitry Figure A



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

(注) 斜線は定格周囲温度範囲を示す。

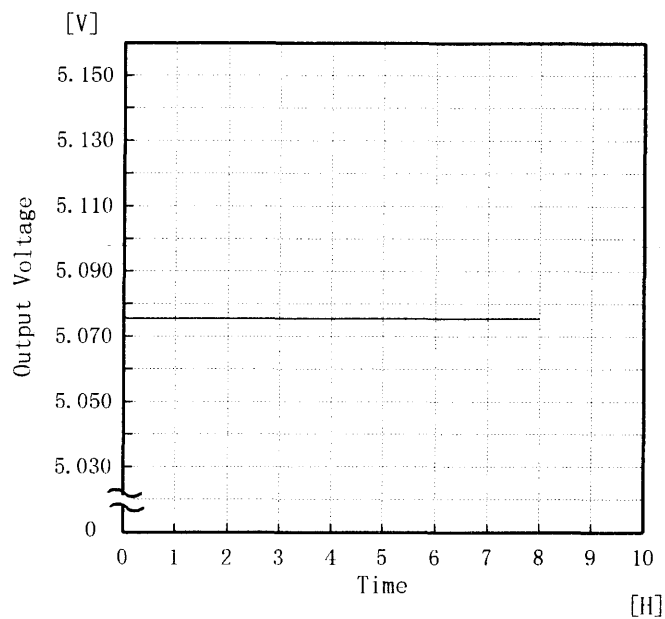
2. Values

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



Model	MMC100A-1	Temperature	25°C
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A
Object	+5.0V13A		

1. Graph

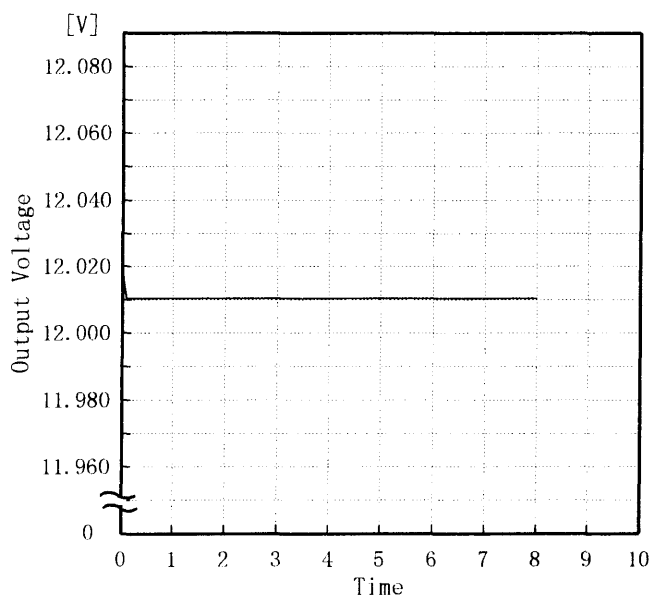


2. Values

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

Object	+12.0V2A
--------	----------

1. Graph



2. Values

Time since start [H]	Output Voltage [V]
0.0	12.030
0.5	12.010
1.0	12.010
2.0	12.010
3.0	12.010
4.0	12.010
5.0	12.010
6.0	12.010
7.0	12.010
8.0	12.010



COSEL																								
Model	MMC100A-1																							
Item	Time Lapse Drift 経時ドリフト	Temperature 25°C Testing Circuitry Figure A																						
Object	-12.0V1A																							
<p>1. Graph</p> <p>[V]</p> <p style="text-align: center;">Time [H]</p> <p style="text-align: center;">Input Volt. 100V Load 100%</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th>Time since start [H]</th> <th>Output Voltage [V]</th> </tr> </thead> <tbody> <tr><td>0.0</td><td>-12.008</td></tr> <tr><td>0.5</td><td>-11.999</td></tr> <tr><td>1.0</td><td>-11.999</td></tr> <tr><td>2.0</td><td>-11.999</td></tr> <tr><td>3.0</td><td>-11.999</td></tr> <tr><td>4.0</td><td>-11.999</td></tr> <tr><td>5.0</td><td>-11.999</td></tr> <tr><td>6.0</td><td>-11.999</td></tr> <tr><td>7.0</td><td>-11.999</td></tr> <tr><td>8.0</td><td>-11.999</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	-12.008	0.5	-11.999	1.0	-11.999	2.0	-11.999	3.0	-11.999	4.0	-11.999	5.0	-11.999	6.0	-11.999	7.0	-11.999	8.0	-11.999
Time since start [H]	Output Voltage [V]																							
0.0	-12.008																							
0.5	-11.999																							
1.0	-11.999																							
2.0	-11.999																							
3.0	-11.999																							
4.0	-11.999																							
5.0	-11.999																							
6.0	-11.999																							
7.0	-11.999																							
8.0	-11.999																							



Model		MMC100A-1	Testing Circuitry	Figure A
Item		Output Voltage Accuracy 定電圧精度		

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 : 85~132 V

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

* Output Voltage Accuracy = $\pm(\text{Maximum of Output Voltage} - \text{Minimum of Output Voltage}) / 2$

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

1. 定電圧精度

周囲温度、入力電圧、負荷電流を下記仕様内で、任意に変動させたときの出力電圧の変動をいう。

周囲温度 0~50 °C

入力電圧 85~132 V

負荷電流 (AVR 1) : 1.5~13 A (AVR 2) : 0~2 A (AVR 3) : 0~1 A

* 定電圧精度(変動値) = $\pm(\text{出力電圧の最高値} - \text{出力電圧の最低値}) / 2$

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

2. Values

Object		+5.0V13A				
Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	0	132	1.5	5.102	±18	±0.4
Minimum Voltage	50	132	13.0	5.067		

Object		+12.0V2A				
Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	0	85	0	12.069	±55	±0.5
Minimum Voltage	50	132	2	11.960		

Object		-12.0V1A				
Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	0	132	0	-12.044	±30	±0.3
Minimum Voltage	50	132	1	-11.985		



COSEL		
Model	MMC100A-1	
Item	Condensation 結露特性	Testing Circuitry Figure A

1. Condensation test

Testing procedure is as follows.

- ① Keeping and cooling the unit in a tank at -10°C 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°C 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°C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°C、湿度40%RHの状態におき結露させ、その電気的特性の測定を行い、異常のないことを確認する。

2. Values

Object	+5.0V13A
--------	----------

Item	Data	Testing Conditions
Output Voltage [V]	5.075	Input Volt.: 100V, Load Current:13A
Line Regulation [mV]	1	Input Volt.: 85~132V, Load Current:13A
Load Regulation [mV]	18	Input Volt.: 100V, Load Current:1.5~13A

Object	+12.0V2A
--------	----------

Item	Data	Testing Conditions
Output Voltage [V]	12.011	Input Volt.: 100V, Load Current:2A
Line Regulation [mV]	1	Input Volt.: 85~132V, Load Current:2A
Load Regulation [mV]	10	Input Volt.: 100V, Load Current:0~2A

Object	-12.0V1A
--------	----------

Item	Data	Testing Conditions
Output Voltage [V]	-11.999	Input Volt.: 100V, Load Current:1A
Line Regulation [mV]	1	Input Volt.: 85~132V, Load Current:1A
Load Regulation [mV]	23	Input Volt.: 100V, Load Current:0~1A



Model		MMC100A-1	Temperature 25°C Testing Circuitry Figure B
Item		Leakage Current 漏洩電流	
Object		_____	

1. Results

Standards	Leakage Current [mA]		
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]
(A) DENTORI	0.13	0.15	0.21
(B) IEC60950	0.13	0.15	0.20

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 of 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。



Model		MMC100A-1	Testing Circuitry Figure D
Item		Conducted Emission 雑音端子電圧	
Object		_____	

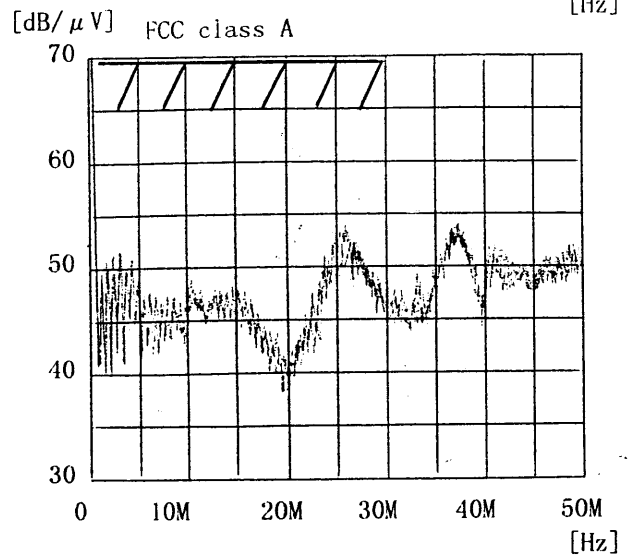
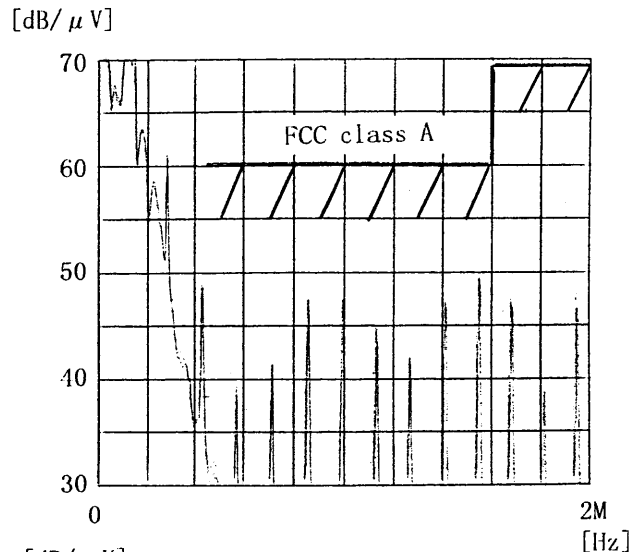
1. Graph

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



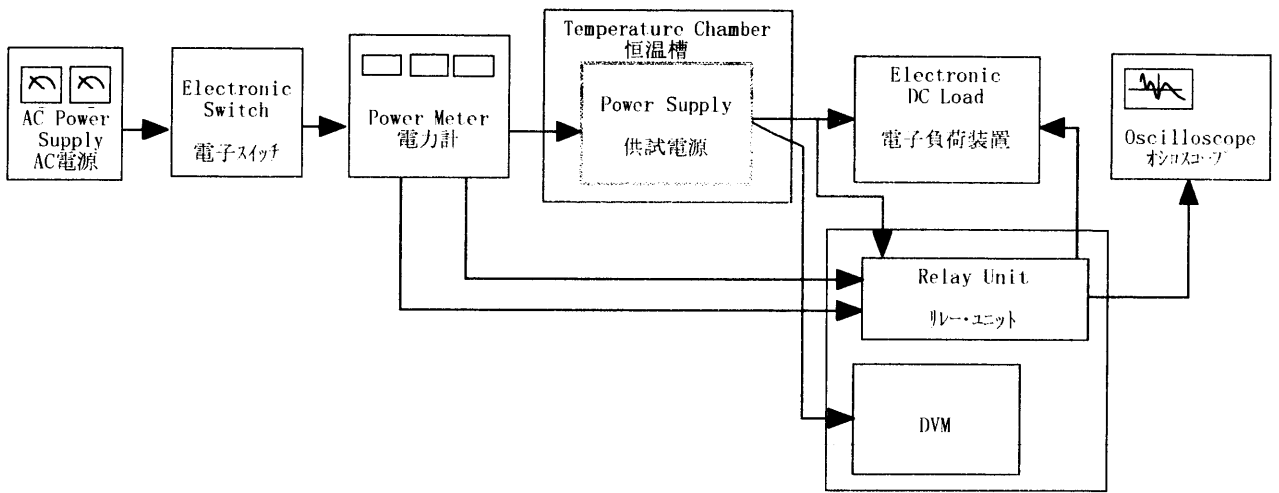


Figure A

Data Acquisition/Control Unit
データ集録システム

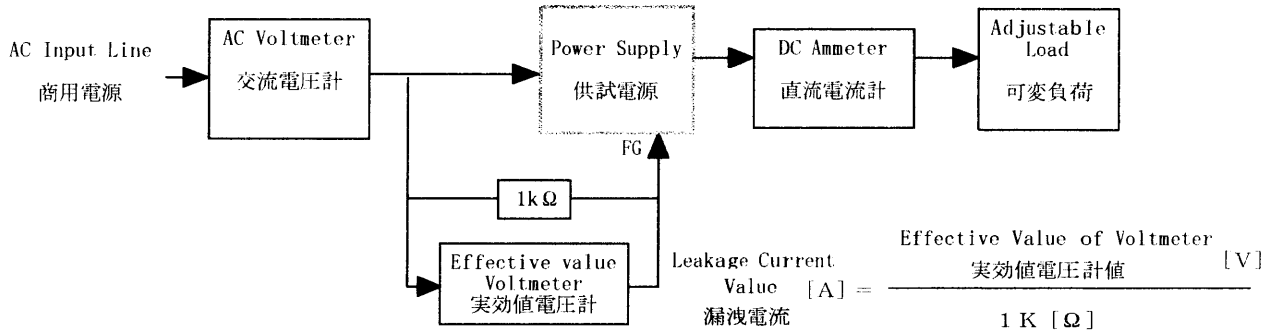


Figure B (DENTORI)

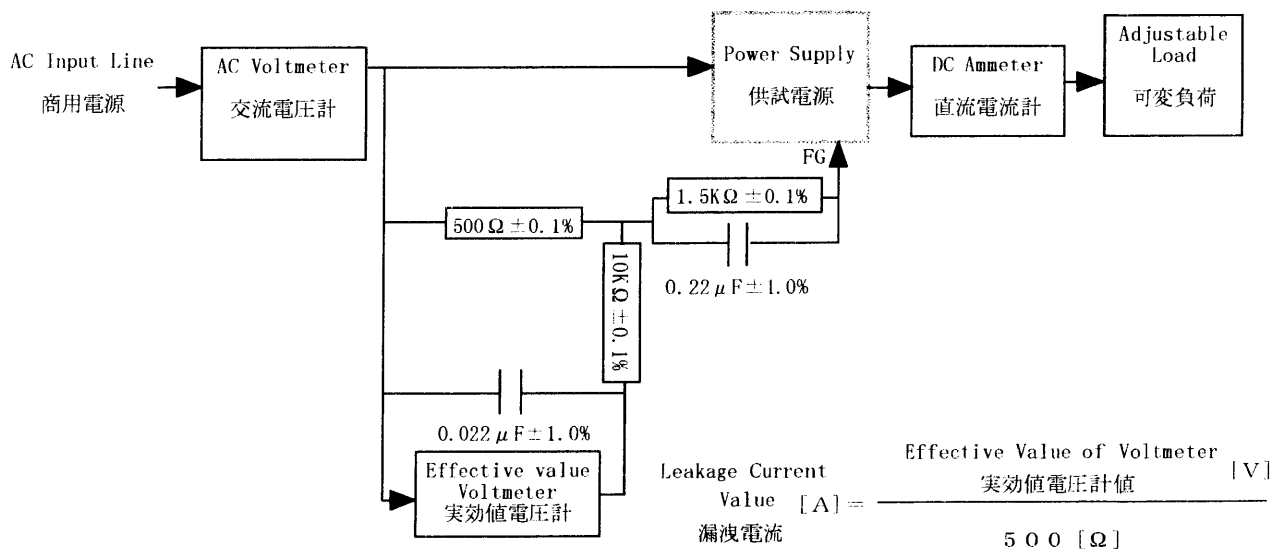


Figure B (IEC 60950)

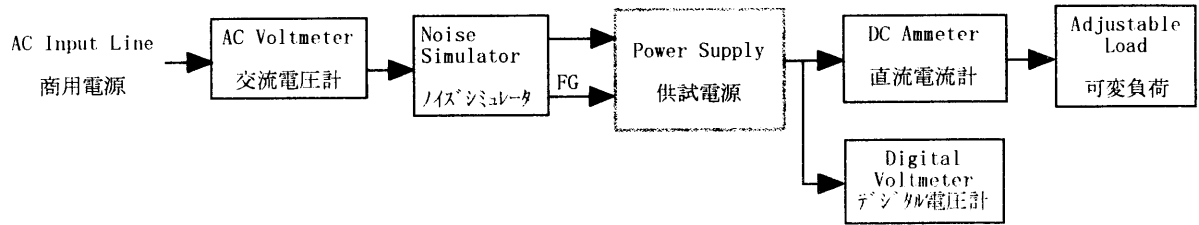


Figure C

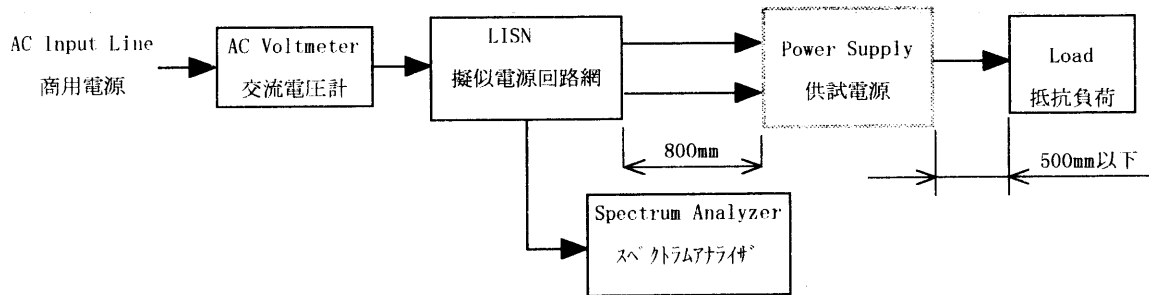


Figure D

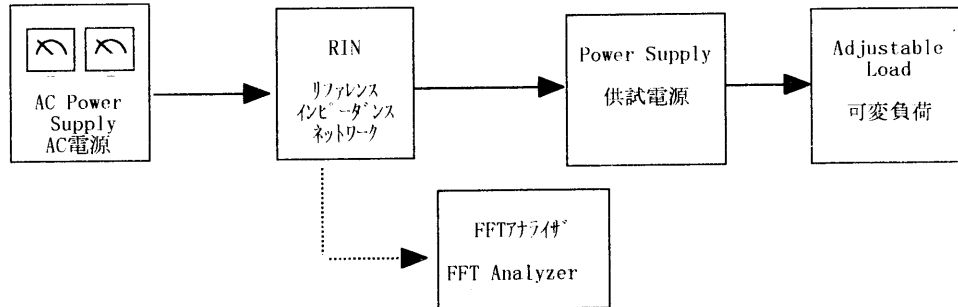


Figure E