



TEST DATA OF MMC100A-4  
(100V INPUT)

Regulated DC Power Supply

Oct. 6, 1999

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

(Final Page 42 )



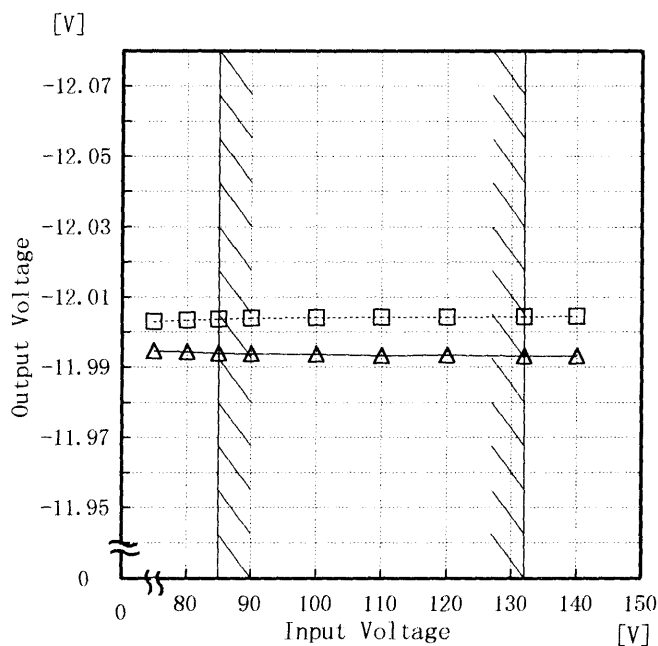
<p>Model MMC100A-4</p> <p>Item Line Regulation 静的人力変動</p> <p>Object +5.0V8A</p>		<p>Temperature 25°C</p> <p>Testing Circuitry Figure A</p>																															
<p>1. Graph</p> <p>-----□----- Load 50%</p> <p>-----△----- Load 100%</p> <p>[V]</p> <p>Output Voltage</p> <p>Input Voltage [V]</p>	<p>2. Values</p> <table border="1"> <thead> <tr> <th rowspan="2">Input Voltage [V]</th> <th colspan="2">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>75</td><td>5.082</td><td>5.074</td></tr> <tr><td>80</td><td>5.082</td><td>5.074</td></tr> <tr><td>85</td><td>5.082</td><td>5.074</td></tr> <tr><td>90</td><td>5.082</td><td>5.074</td></tr> <tr><td>100</td><td>5.082</td><td>5.074</td></tr> <tr><td>110</td><td>5.082</td><td>5.073</td></tr> <tr><td>120</td><td>5.081</td><td>5.073</td></tr> <tr><td>132</td><td>5.082</td><td>5.073</td></tr> <tr><td>140</td><td>5.081</td><td>5.073</td></tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	5.082	5.074	80	5.082	5.074	85	5.082	5.074	90	5.082	5.074	100	5.082	5.074	110	5.082	5.073	120	5.081	5.073	132	5.082	5.073	140	5.081	5.073
Input Voltage [V]	Output Voltage [V]																																
	Load 50%	Load 100%																															
75	5.082	5.074																															
80	5.082	5.074																															
85	5.082	5.074																															
90	5.082	5.074																															
100	5.082	5.074																															
110	5.082	5.073																															
120	5.081	5.073																															
132	5.082	5.073																															
140	5.081	5.073																															
<p>Object +12.0V4A</p> <p>1. Graph</p> <p>-----□----- Load 50%</p> <p>-----△----- Load 100%</p> <p>[V]</p> <p>Output Voltage</p> <p>Input Voltage [V]</p> <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>	<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>11.969</td><td>11.961</td></tr> <tr><td>80</td><td>11.969</td><td>11.960</td></tr> <tr><td>85</td><td>11.968</td><td>11.959</td></tr> <tr><td>90</td><td>11.968</td><td>11.959</td></tr> <tr><td>100</td><td>11.968</td><td>11.959</td></tr> <tr><td>110</td><td>11.968</td><td>11.959</td></tr> <tr><td>120</td><td>11.967</td><td>11.959</td></tr> <tr><td>132</td><td>11.967</td><td>11.959</td></tr> <tr><td>140</td><td>11.967</td><td>11.960</td></tr> </tbody> </table>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	75	11.969	11.961	80	11.969	11.960	85	11.968	11.959	90	11.968	11.959	100	11.968	11.959	110	11.968	11.959	120	11.967	11.959	132	11.967	11.959	140	11.967	11.960
Input Voltage [V]	Output Voltage [V]																																
	Load 50%	Load 100%																															
75	11.969	11.961																															
80	11.969	11.960																															
85	11.968	11.959																															
90	11.968	11.959																															
100	11.968	11.959																															
110	11.968	11.959																															
120	11.967	11.959																															
132	11.967	11.959																															
140	11.967	11.960																															



Model	MMC100A-4	
Item	Line Regulation 静の入力変動	Temperature 25°C Testing Circuitry Figure A
Object	-12.0V1A	

1. Graph

□ Load 50%  
 △ Load 100%



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

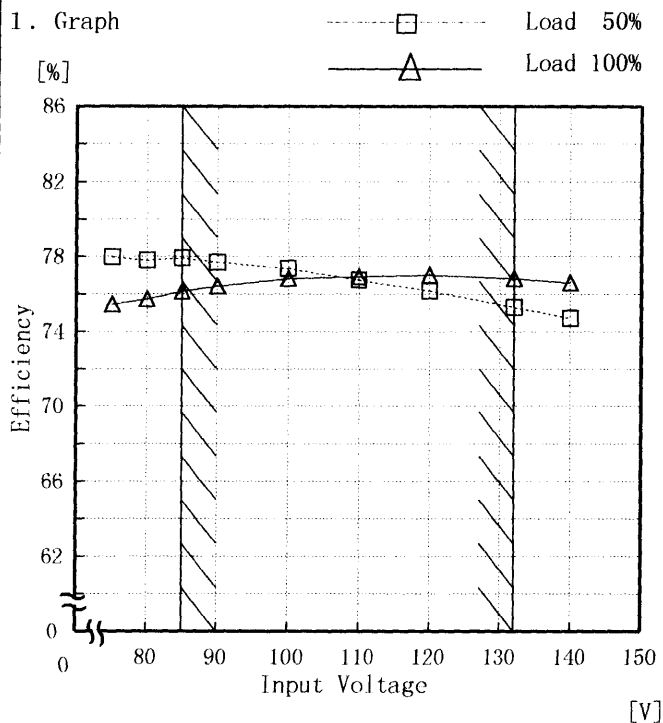
(注) 斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
75	-12.003	-11.995
80	-12.003	-11.994
85	-12.004	-11.994
90	-12.004	-11.994
100	-12.004	-11.994
110	-12.004	-11.993
120	-12.004	-11.993
132	-12.004	-11.993
140	-12.004	-11.993



Model	MMC100A-4	
Item	Efficiency (by Input Voltage) 効率 (入力電圧特性)	Temperature 25°C Testing Circuitry Figure A
Object		



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

(注) 斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
75	78.0	75.5
80	77.8	75.7
85	77.9	76.1
90	77.7	76.4
100	77.4	76.8
110	76.8	76.9
120	76.2	77.0
132	75.3	76.8
140	74.7	76.6



<b>COSEL</b>																																		
Model	MMC100A-4																																	
Item	Power Factor (by Input Voltage) 力率 (入力電圧特性)	Temperature 25°C Testing Circuitry Figure A																																
Object																																		
<p>1. Graph</p> <p style="text-align: right;"> <span style="border-bottom: 1px dashed black; padding: 0 5px;">□</span> Load 50%  <span style="border-bottom: 1px solid black; padding: 0 5px;">△</span> Load 100%                 </p> <p style="text-align: center;">Input Voltage [V]</p>		<p>2. Values</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>0.57</td></tr> <tr><td>80</td><td>0.51</td><td>0.56</td></tr> <tr><td>85</td><td>0.50</td><td>0.55</td></tr> <tr><td>90</td><td>0.49</td><td>0.54</td></tr> <tr><td>100</td><td>0.48</td><td>0.53</td></tr> <tr><td>110</td><td>0.47</td><td>0.51</td></tr> <tr><td>120</td><td>0.46</td><td>0.50</td></tr> <tr><td>132</td><td>0.44</td><td>0.49</td></tr> <tr><td>140</td><td>0.44</td><td>0.48</td></tr> </tbody> </table>	Input Voltage [V]	Power Factor		Load 50%	Load 100%	75	0.52	0.57	80	0.51	0.56	85	0.50	0.55	90	0.49	0.54	100	0.48	0.53	110	0.47	0.51	120	0.46	0.50	132	0.44	0.49	140	0.44	0.48
Input Voltage [V]	Power Factor																																	
	Load 50%	Load 100%																																
75	0.52	0.57																																
80	0.51	0.56																																
85	0.50	0.55																																
90	0.49	0.54																																
100	0.48	0.53																																
110	0.47	0.51																																
120	0.46	0.50																																
132	0.44	0.49																																
140	0.44	0.48																																
<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>																																		



<b>COSEL</b>																																		
Model	MMC100A-4	Temperature 25°C Testing Circuitry Figure A																																
Item	Hold-Up Time 出力保持時間																																	
Object	+5.0V8A																																	
<p>1. Graph</p> <p style="text-align: right;"> <span style="margin-right: 20px;">-----□----- Load 50%</span>  <span>-----△----- Load 100%</span> </p> <p style="text-align: center;">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 style="text-align: center;">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>		<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>19</td><td>13</td></tr> <tr><td>80</td><td>25</td><td>18</td></tr> <tr><td>85</td><td>31</td><td>22</td></tr> <tr><td>90</td><td>37</td><td>28</td></tr> <tr><td>100</td><td>51</td><td>39</td></tr> <tr><td>110</td><td>67</td><td>51</td></tr> <tr><td>120</td><td>85</td><td>65</td></tr> <tr><td>132</td><td>108</td><td>83</td></tr> <tr><td>140</td><td>124</td><td>97</td></tr> </tbody> </table>	Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	75	19	13	80	25	18	85	31	22	90	37	28	100	51	39	110	67	51	120	85	65	132	108	83	140	124	97
Input Voltage [V]	Hold-Up Time [mS]																																	
	Load 50%	Load 100%																																
75	19	13																																
80	25	18																																
85	31	22																																
90	37	28																																
100	51	39																																
110	67	51																																
120	85	65																																
132	108	83																																
140	124	97																																



Model		MMC100A-4		Temperature		25°C																																	
Item		Hold-Up Time 出力保持時間		Testing Circuitry		Figure A																																	
Object		+12.0V4A																																					
<p>1. Graph</p> <p>-----□----- Load 50%</p> <p>-----△----- 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>29</td><td>19</td></tr> <tr><td>80</td><td>35</td><td>24</td></tr> <tr><td>85</td><td>42</td><td>29</td></tr> <tr><td>90</td><td>49</td><td>34</td></tr> <tr><td>100</td><td>63</td><td>45</td></tr> <tr><td>110</td><td>80</td><td>58</td></tr> <tr><td>120</td><td>98</td><td>71</td></tr> <tr><td>132</td><td>122</td><td>90</td></tr> <tr><td>140</td><td>139</td><td>103</td></tr> </tbody> </table>				Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	75	29	19	80	35	24	85	42	29	90	49	34	100	63	45	110	80	58	120	98	71	132	122	90	140	139	103
Input Voltage [V]	Hold-Up Time [mS]																																						
	Load 50%	Load 100%																																					
75	29	19																																					
80	35	24																																					
85	42	29																																					
90	49	34																																					
100	63	45																																					
110	80	58																																					
120	98	71																																					
132	122	90																																					
140	139	103																																					
<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-4		Temperature	25°C																																
Item		Hold-Up Time 出力保持時間		Testing Circuitry	Figure A																																
Object		-12.0V1A																																			
1. Graph			.....□..... Load 50% ———△——— Load 100%	2. Values																																	
[mS] 1000 100 10 1 Hold-Up Time																																					
0 80 90 100 110 120 130 140 150 Input Voltage [V]			<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>21</td><td>18</td></tr> <tr><td>80</td><td>26</td><td>23</td></tr> <tr><td>85</td><td>31</td><td>28</td></tr> <tr><td>90</td><td>37</td><td>33</td></tr> <tr><td>100</td><td>49</td><td>44</td></tr> <tr><td>110</td><td>62</td><td>57</td></tr> <tr><td>120</td><td>77</td><td>71</td></tr> <tr><td>132</td><td>97</td><td>89</td></tr> <tr><td>140</td><td>111</td><td>102</td></tr> </tbody> </table>			Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	75	21	18	80	26	23	85	31	28	90	37	33	100	49	44	110	62	57	120	77	71	132	97	89	140	111	102
Input Voltage [V]	Hold-Up Time [mS]																																				
	Load 50%	Load 100%																																			
75	21	18																																			
80	26	23																																			
85	31	28																																			
90	37	33																																			
100	49	44																																			
110	62	57																																			
120	77	71																																			
132	97	89																																			
140	111	102																																			
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。																																					



Model		MMC100A-4	Temperature		25°C																																																			
Item		Instantaneous Interruption Compensation 瞬時停電保障	Testing Circuitry		Figure A																																																			
Object		+5.0V8A																																																						
1. Graph			2. Values																																																					
<p> <span style="border-bottom: 1px solid black; padding: 0 5px;">—△—</span> Input Volt. 85 V  <span style="border-bottom: 1px dashed black; padding: 0 5px;">—□—</span> Input Volt. 100 V  <span style="border-bottom: 1px dotted black; padding: 0 5px;">—○—</span> Input Volt. 132 V                 </p> <p>                     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.                 </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。                      (注)斜線は定格負荷電流範囲を示す。                 </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>1.5</td><td>35</td><td>56</td><td>126</td></tr> <tr><td>3.0</td><td>30</td><td>52</td><td>112</td></tr> <tr><td>4.5</td><td>24</td><td>46</td><td>98</td></tr> <tr><td>6.0</td><td>22</td><td>39</td><td>90</td></tr> <tr><td>7.5</td><td>20</td><td>37</td><td>81</td></tr> <tr><td>8.0</td><td>19</td><td>35</td><td>80</td></tr> <tr><td>8.8</td><td>16</td><td>31</td><td>76</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	—	—	—	1.5	35	56	126	3.0	30	52	112	4.5	24	46	98	6.0	22	39	90	7.5	20	37	81	8.0	19	35	80	8.8	16	31	76	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Time [mS]																																																							
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																					
0.0	—	—	—																																																					
1.5	35	56	126																																																					
3.0	30	52	112																																																					
4.5	24	46	98																																																					
6.0	22	39	90																																																					
7.5	20	37	81																																																					
8.0	19	35	80																																																					
8.8	16	31	76																																																					
—	—	—	—																																																					
—	—	—	—																																																					
—	—	—	—																																																					



Model		MMC100A-4		Temperature		25°C																																																				
Item		Instantaneous Interruption Compensation 瞬時停電保障		Testing Circuitry		Figure A																																																				
Object		+12.0V4A																																																								
1. Graph				2. Values																																																						
<p> <span style="border-bottom: 1px solid black; display: inline-block; width: 20px;"></span> <math>\Delta</math> Input Volt. 85 V  <span style="border-bottom: 1px dashed black; display: inline-block; width: 20px;"></span> <math>\square</math> Input Volt. 100 V  <span style="border-bottom: 1px dotted black; display: inline-block; width: 20px;"></span> <math>\circ</math> Input Volt. 132 V                 </p> <p>Instantaneous Compensation Time [mS]</p> <p>Load Current [A]</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>0.8</td><td>48</td><td>77</td><td>148</td></tr> <tr><td>1.6</td><td>39</td><td>65</td><td>127</td></tr> <tr><td>2.4</td><td>35</td><td>55</td><td>111</td></tr> <tr><td>3.2</td><td>30</td><td>48</td><td>98</td></tr> <tr><td>4.0</td><td>23</td><td>40</td><td>87</td></tr> <tr><td>4.4</td><td>22</td><td>39</td><td>82</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	—	—	—	0.8	48	77	148	1.6	39	65	127	2.4	35	55	111	3.2	30	48	98	4.0	23	40	87	4.4	22	39	82	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Time [mS]																																																									
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																							
0.0	—	—	—																																																							
0.8	48	77	148																																																							
1.6	39	65	127																																																							
2.4	35	55	111																																																							
3.2	30	48	98																																																							
4.0	23	40	87																																																							
4.4	22	39	82																																																							
—	—	—	—																																																							
—	—	—	—																																																							
—	—	—	—																																																							
—	—	—	—																																																							
<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。 (注)斜線は定格負荷電流範囲を示す。</p>																																																										



Model		MMC100A-4		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> <span style="border-bottom: 1px solid black; padding: 0 5px;">—△—</span> Input Volt. 85 V  <span style="border-bottom: 1px dashed black; padding: 0 5px;">—□—</span> Input Volt. 100 V  <span style="border-bottom: 1px dotted black; padding: 0 5px;">—○—</span> Input Volt. 132 V                 </p> <p style="text-align: center;">Instantaneous Compensation Time [mS]</p> <p style="text-align: center;">Load Current [A]</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>30</td><td>47</td><td>96</td></tr> <tr><td>0.6</td><td>28</td><td>46</td><td>93</td></tr> <tr><td>0.8</td><td>27</td><td>44</td><td>90</td></tr> <tr><td>1.0</td><td>24</td><td>39</td><td>87</td></tr> <tr><td>1.1</td><td>22</td><td>39</td><td>87</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	30	47	96	0.6	28	46	93	0.8	27	44	90	1.0	24	39	87	1.1	22	39	87	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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	30	47	96																																																							
0.6	28	46	93																																																							
0.8	27	44	90																																																							
1.0	24	39	87																																																							
1.1	22	39	87																																																							
—	—	—	—																																																							
—	—	—	—																																																							
—	—	—	—																																																							
—	—	—	—																																																							
<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-4		Temperature		25°C																																																
Item		Load Regulation 静的負荷変動		Testing Circuitry		Figure A																																																
Object		+5.0V8A																																																				
<p>1. Graph</p> <p>—△— Input Volt. 85 V          - - -□- - - Input Volt. 100 V          - - -○- - - Input Volt. 132 V</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>5.091</td><td>5.091</td><td>5.091</td></tr> <tr><td>1.5</td><td>5.087</td><td>5.087</td><td>5.087</td></tr> <tr><td>3.0</td><td>5.084</td><td>5.084</td><td>5.084</td></tr> <tr><td>4.5</td><td>5.081</td><td>5.081</td><td>5.080</td></tr> <tr><td>6.0</td><td>5.078</td><td>5.078</td><td>5.077</td></tr> <tr><td>7.5</td><td>5.075</td><td>5.074</td><td>5.074</td></tr> <tr><td>8.0</td><td>5.074</td><td>5.073</td><td>5.073</td></tr> <tr><td>8.8</td><td>5.072</td><td>5.072</td><td>5.072</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	5.091	5.091	5.091	1.5	5.087	5.087	5.087	3.0	5.084	5.084	5.084	4.5	5.081	5.081	5.080	6.0	5.078	5.078	5.077	7.5	5.075	5.074	5.074	8.0	5.074	5.073	5.073	8.8	5.072	5.072	5.072	-	-	-	-	-	-	-	-
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																			
0.0	5.091	5.091	5.091																																																			
1.5	5.087	5.087	5.087																																																			
3.0	5.084	5.084	5.084																																																			
4.5	5.081	5.081	5.080																																																			
6.0	5.078	5.078	5.077																																																			
7.5	5.075	5.074	5.074																																																			
8.0	5.074	5.073	5.073																																																			
8.8	5.072	5.072	5.072																																																			
-	-	-	-																																																			
-	-	-	-																																																			
Object		+12.0V4A																																																				
<p>1. Graph</p> <p>—△— Input Volt. 85 V          - - -□- - - Input Volt. 100 V          - - -○- - - Input Volt. 132 V</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>11.983</td><td>11.981</td><td>11.977</td></tr> <tr><td>0.8</td><td>11.975</td><td>11.974</td><td>11.973</td></tr> <tr><td>1.6</td><td>11.973</td><td>11.972</td><td>11.971</td></tr> <tr><td>2.4</td><td>11.970</td><td>11.969</td><td>11.968</td></tr> <tr><td>3.2</td><td>11.966</td><td>11.966</td><td>11.965</td></tr> <tr><td>4.0</td><td>11.963</td><td>11.962</td><td>11.962</td></tr> <tr><td>4.4</td><td>11.961</td><td>11.960</td><td>11.960</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	11.983	11.981	11.977	0.8	11.975	11.974	11.973	1.6	11.973	11.972	11.971	2.4	11.970	11.969	11.968	3.2	11.966	11.966	11.965	4.0	11.963	11.962	11.962	4.4	11.961	11.960	11.960	-	-	-	-	-	-	-	-	-	-	-	-
Load Current [A]	Output Voltage [V]																																																					
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																			
0.0	11.983	11.981	11.977																																																			
0.8	11.975	11.974	11.973																																																			
1.6	11.973	11.972	11.971																																																			
2.4	11.970	11.969	11.968																																																			
3.2	11.966	11.966	11.965																																																			
4.0	11.963	11.962	11.962																																																			
4.4	11.961	11.960	11.960																																																			
-	-	-	-																																																			
-	-	-	-																																																			
-	-	-	-																																																			
<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>																																																						



Model		MMC100A-4		Temperature	25°C																																															
Item		Load Regulation 静的負荷変動		Testing Circuitry	Figure A																																															
Object		-12.0V1A																																																		
1. Graph			—△— Input Volt. 85 V - - -□- - - Input Volt. 100 V - - -○- - - Input Volt. 132 V	2. Values																																																
			<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>-12.017</td><td>-12.018</td><td>-12.020</td></tr> <tr><td>0.2</td><td>-12.011</td><td>-12.011</td><td>-12.011</td></tr> <tr><td>0.4</td><td>-12.007</td><td>-12.007</td><td>-12.007</td></tr> <tr><td>0.6</td><td>-12.003</td><td>-12.003</td><td>-12.003</td></tr> <tr><td>0.8</td><td>-11.999</td><td>-12.000</td><td>-12.000</td></tr> <tr><td>1.0</td><td>-11.996</td><td>-11.996</td><td>-11.996</td></tr> <tr><td>1.1</td><td>-11.993</td><td>-11.994</td><td>-11.994</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	-12.017	-12.018	-12.020	0.2	-12.011	-12.011	-12.011	0.4	-12.007	-12.007	-12.007	0.6	-12.003	-12.003	-12.003	0.8	-11.999	-12.000	-12.000	1.0	-11.996	-11.996	-11.996	1.1	-11.993	-11.994	-11.994	-	-	-	-	-	-	-	-	-	-	-	-
Load Current [A]	Output Voltage [V]																																																			
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]																																																	
0.0	-12.017	-12.018	-12.020																																																	
0.2	-12.011	-12.011	-12.011																																																	
0.4	-12.007	-12.007	-12.007																																																	
0.6	-12.003	-12.003	-12.003																																																	
0.8	-11.999	-12.000	-12.000																																																	
1.0	-11.996	-11.996	-11.996																																																	
1.1	-11.993	-11.994	-11.994																																																	
-	-	-	-																																																	
-	-	-	-																																																	
-	-	-	-																																																	
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。																																																				

# COSEL

Model		MMC100A-4		Temperature		25°C																																							
Item		Ripple Voltage (by Load Current) リップル電圧(負荷特性)		Testing Circuitry		Figure A																																							
Object		+5.0V8A																																											
<p>1. Graph</p> <p>—△— Input Volt. 85V</p> <p>- - -○- - - 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>1.6</td><td>20</td><td>20</td></tr> <tr><td>3.2</td><td>20</td><td>20</td></tr> <tr><td>4.8</td><td>20</td><td>20</td></tr> <tr><td>6.4</td><td>20</td><td>20</td></tr> <tr><td>8.0</td><td>20</td><td>20</td></tr> <tr><td>8.8</td><td>20</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	1.6	20	20	3.2	20	20	4.8	20	20	6.4	20	20	8.0	20	20	8.8	20	20	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple Output Voltage [mV]																																												
	Input Volt. 85 [V]	Input Volt. 132 [V]																																											
0.0	10	10																																											
1.6	20	20																																											
3.2	20	20																																											
4.8	20	20																																											
6.4	20	20																																											
8.0	20	20																																											
8.8	20	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。</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-4		Temperature		25°C																																							
Item		Ripple Voltage (by Load Current) リップル電圧(負荷特性)		Testing Circuitry		Figure A																																							
Object		+12.0V4A																																											
1. Graph				2. Values																																									
<p>—△— Input Volt. 85V - - -○- - - 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>0.8</td><td>15</td><td>15</td></tr> <tr><td>1.6</td><td>15</td><td>15</td></tr> <tr><td>2.4</td><td>15</td><td>15</td></tr> <tr><td>3.2</td><td>20</td><td>20</td></tr> <tr><td>4.0</td><td>20</td><td>20</td></tr> <tr><td>4.4</td><td>20</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	0.8	15	15	1.6	15	15	2.4	15	15	3.2	20	20	4.0	20	20	4.4	20	20	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple Output Voltage [mV]																																												
	Input Volt. 85 [V]	Input Volt. 132 [V]																																											
0.0	10	10																																											
0.8	15	15																																											
1.6	15	15																																											
2.4	15	15																																											
3.2	20	20																																											
4.0	20	20																																											
4.4	20	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>																																													



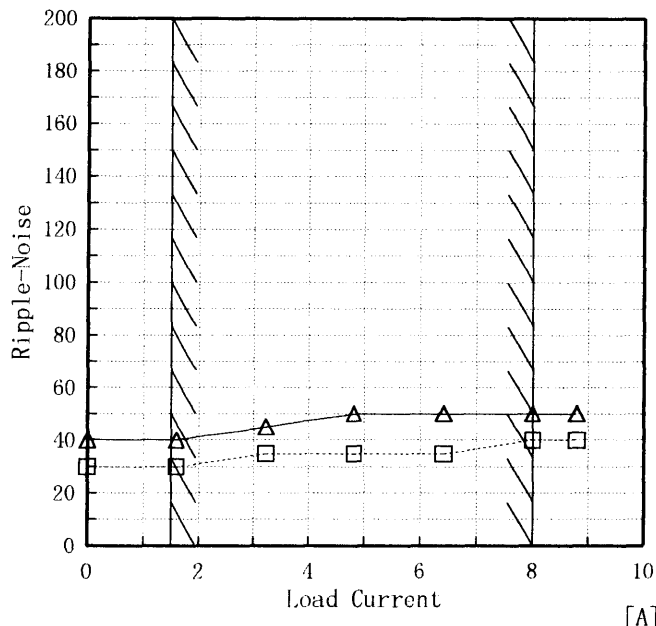


Model		MMC100A-4		Temperature		25°C																																							
Item		Ripple Voltage (by Load Current) リップル電圧(負荷特性)		Testing Circuitry		Figure A																																							
Object		-12.0V1A																																											
1. Graph				2. Values																																									
<p> <span style="border-bottom: 1px solid black; display: inline-block; width: 20px;"></span> <math>\Delta</math> Input Volt. 85V  <span style="border-bottom: 1px dashed black; display: inline-block; width: 20px;"></span> <math>\circ</math> 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>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																																											
—	—	—																																											
—	—	—																																											
—	—	—																																											
—	—	—																																											
<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。</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-4
Item	Ripple-Noise リップルノイズ
Object	+5.0V8A

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	30	40
1.6	30	40
3.2	35	45
4.8	35	50
6.4	35	50
8.0	40	50
8.8	40	50
—	—	—
—	—	—
—	—	—
—	—	—

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

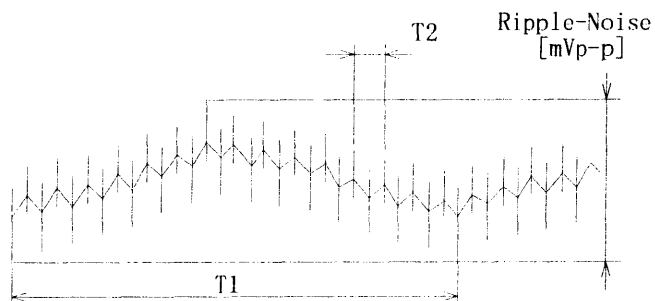
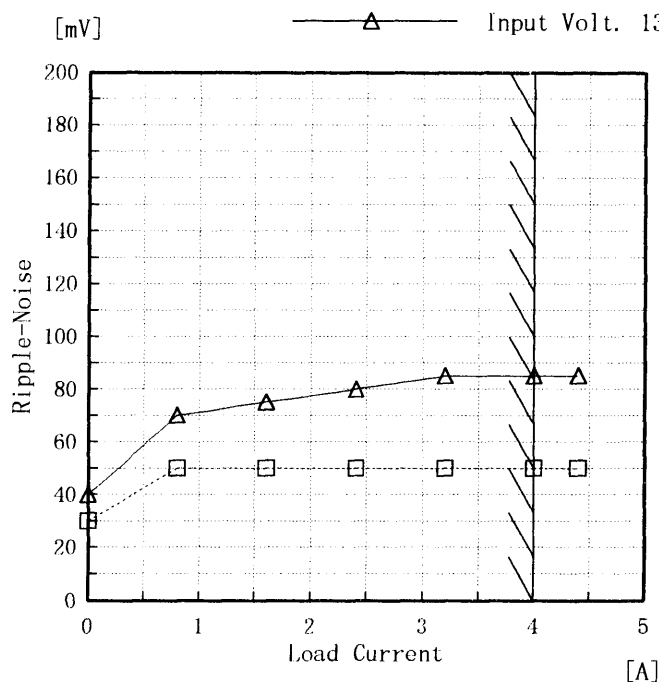


Fig. Complex Ripple Wave Form  
 図 リップル波形詳細図



Model	MMC100A-4	Temperature	25°C
Item	Ripple-Noise リップルノイズ	Testing Circuitry	Figure A
Object	+12.0V4A		

1. Graph



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 85 [V]	Input Volt. 132 [V]
0.0	30	40
0.8	50	70
1.6	50	75
2.4	50	80
3.2	50	85
4.0	50	85
4.4	50	85
—	—	—
—	—	—
—	—	—
—	—	—

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

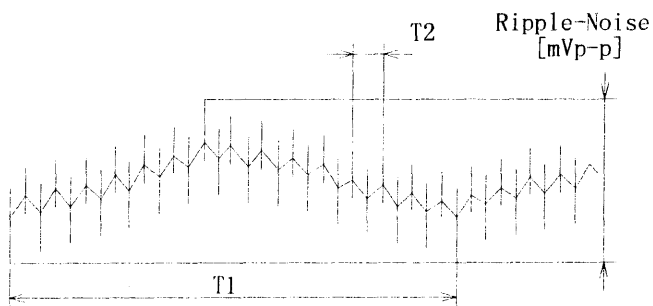


Fig. Complex Ripple Wave Form  
 図 リップル波形詳細図

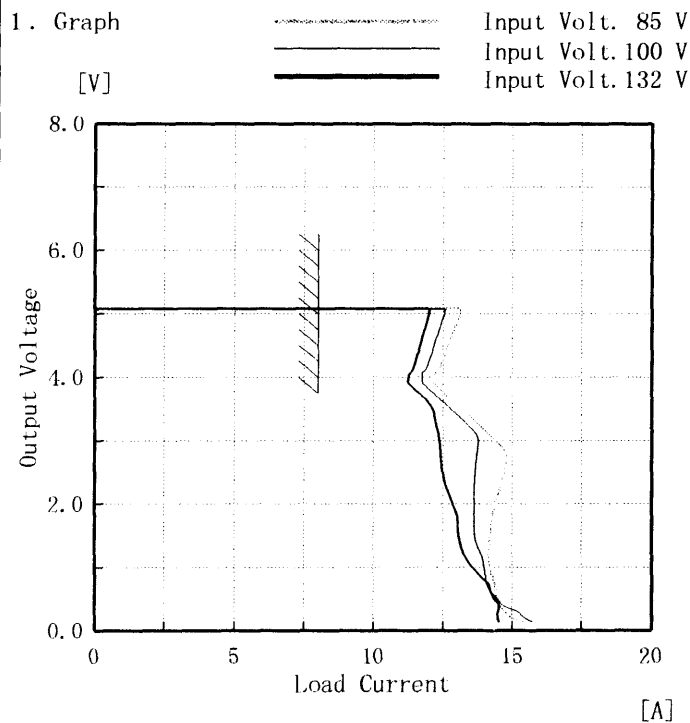


Model		MMC100A-4		Temperature	25°C																																					
Item		Ripple-Noise リップルノイズ		Testing Circuitry	Figure A																																					
Object		-12.0V1A																																								
1. Graph			2. Values																																							
<p>-----□----- Input Volt. 85V                  -----△----- Input Volt. 132V</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>35</td><td>40</td></tr> <tr><td>0.2</td><td>35</td><td>40</td></tr> <tr><td>0.4</td><td>40</td><td>40</td></tr> <tr><td>0.6</td><td>40</td><td>40</td></tr> <tr><td>0.8</td><td>40</td><td>40</td></tr> <tr><td>1.0</td><td>40</td><td>40</td></tr> <tr><td>1.1</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	35	40	0.2	35	40	0.4	40	40	0.6	40	40	0.8	40	40	1.0	40	40	1.1	40	40	—	—	—	—	—	—	—	—	—	—	—	—
Load Current [A]	Ripple-Noise [mV]																																									
	Input Volt. 85 [V]	Input Volt. 132 [V]																																								
0.0	35	40																																								
0.2	35	40																																								
0.4	40	40																																								
0.6	40	40																																								
0.8	40	40																																								
1.0	40	40																																								
1.1	40	40																																								
—	—	—																																								
—	—	—																																								
—	—	—																																								
—	—	—																																								
<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>																																										



Model	MMC100A-4
Item	Overcurrent Protection 過電流保護
Object	+5.0V8A

Temperature	25°C
Testing Circuitry	Figure A

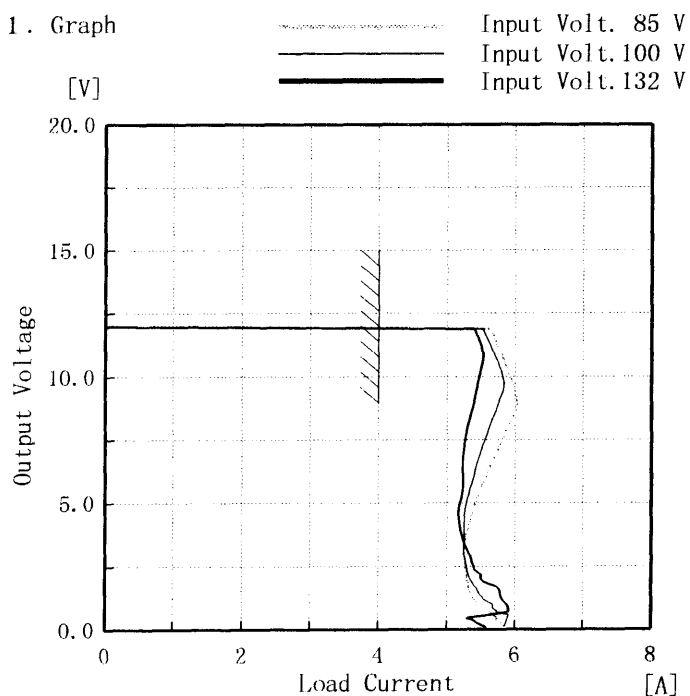


2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
5.00	13.14	12.54	11.98
4.75	12.92	12.36	11.82
4.50	12.71	12.18	11.67
4.00	12.19	11.75	11.27
3.50	13.11	12.77	12.11
3.00	14.29	13.75	12.35
2.50	14.72	13.66	12.46
2.00	14.39	13.64	12.85
1.50	14.21	13.65	13.07
1.00	14.18	13.98	13.55
0.50	14.43	14.42	14.32
0.00	15.45	15.78	14.51

Object	+12.0V4A
--------	----------

Temperature	25°C
Testing Circuitry	Figure A



2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
12.00	-	-	-
11.40	5.72	5.61	5.48
10.80	5.79	5.69	5.53
9.60	5.97	5.83	5.45
8.40	5.98	5.68	5.35
7.20	5.77	5.53	5.26
6.00	5.57	5.40	5.23
4.80	5.41	5.28	5.18
3.60	5.28	5.26	5.24
2.40	5.28	5.30	5.40
1.20	5.41	5.54	5.80
0.00	5.86	5.84	5.60

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>Model MMC100A-4</p> <p>Item Overcurrent Protection 過電流保護</p> <p>Object -12.0V1A</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>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>		<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>2.92</td><td>2.76</td><td>2.61</td></tr> <tr><td>-10.80</td><td>2.96</td><td>2.82</td><td>2.67</td></tr> <tr><td>-9.60</td><td>3.09</td><td>3.02</td><td>2.91</td></tr> <tr><td>-8.40</td><td>3.44</td><td>3.38</td><td>3.22</td></tr> <tr><td>-7.20</td><td>3.65</td><td>3.61</td><td>3.34</td></tr> <tr><td>-6.00</td><td>3.78</td><td>3.75</td><td>3.43</td></tr> <tr><td>-4.80</td><td>3.88</td><td>3.85</td><td>3.49</td></tr> <tr><td>-3.60</td><td>3.98</td><td>3.93</td><td>3.54</td></tr> <tr><td>-2.40</td><td>4.05</td><td>3.98</td><td>3.59</td></tr> <tr><td>-1.20</td><td>4.05</td><td>3.98</td><td>3.59</td></tr> <tr><td>0.00</td><td>0.97</td><td>0.97</td><td>0.96</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	2.92	2.76	2.61	-10.80	2.96	2.82	2.67	-9.60	3.09	3.02	2.91	-8.40	3.44	3.38	3.22	-7.20	3.65	3.61	3.34	-6.00	3.78	3.75	3.43	-4.80	3.88	3.85	3.49	-3.60	3.98	3.93	3.54	-2.40	4.05	3.98	3.59	-1.20	4.05	3.98	3.59	0.00	0.97	0.97	0.96
Output Voltage [V]	Load Current [A]																																																								
	Input Volt. 85 [V]	Input Volt. 100 [V]	Input Volt. 132 [V]																																																						
-12.00	-	-	-																																																						
-11.40	2.92	2.76	2.61																																																						
-10.80	2.96	2.82	2.67																																																						
-9.60	3.09	3.02	2.91																																																						
-8.40	3.44	3.38	3.22																																																						
-7.20	3.65	3.61	3.34																																																						
-6.00	3.78	3.75	3.43																																																						
-4.80	3.88	3.85	3.49																																																						
-3.60	3.98	3.93	3.54																																																						
-2.40	4.05	3.98	3.59																																																						
-1.20	4.05	3.98	3.59																																																						
0.00	0.97	0.97	0.96																																																						

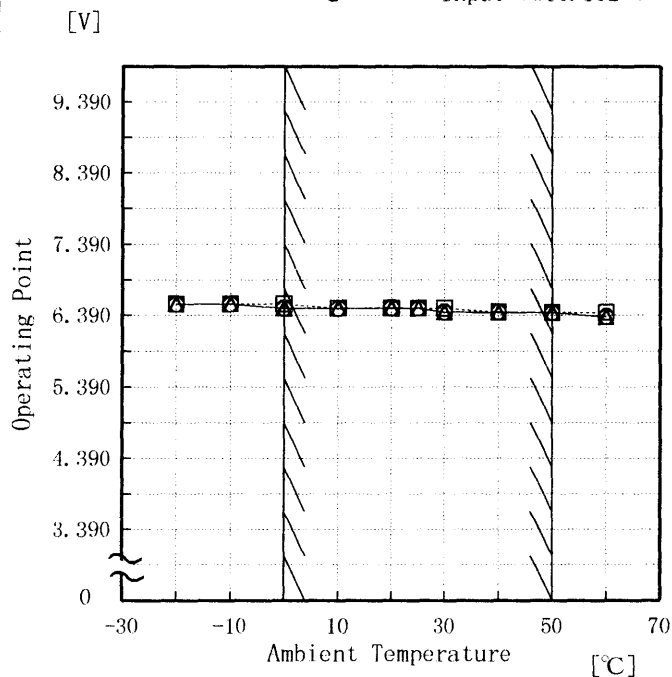


Model	MMC100A-4
Item	Overvoltage Protection 過電圧保護
Object	+5.0V8A

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.

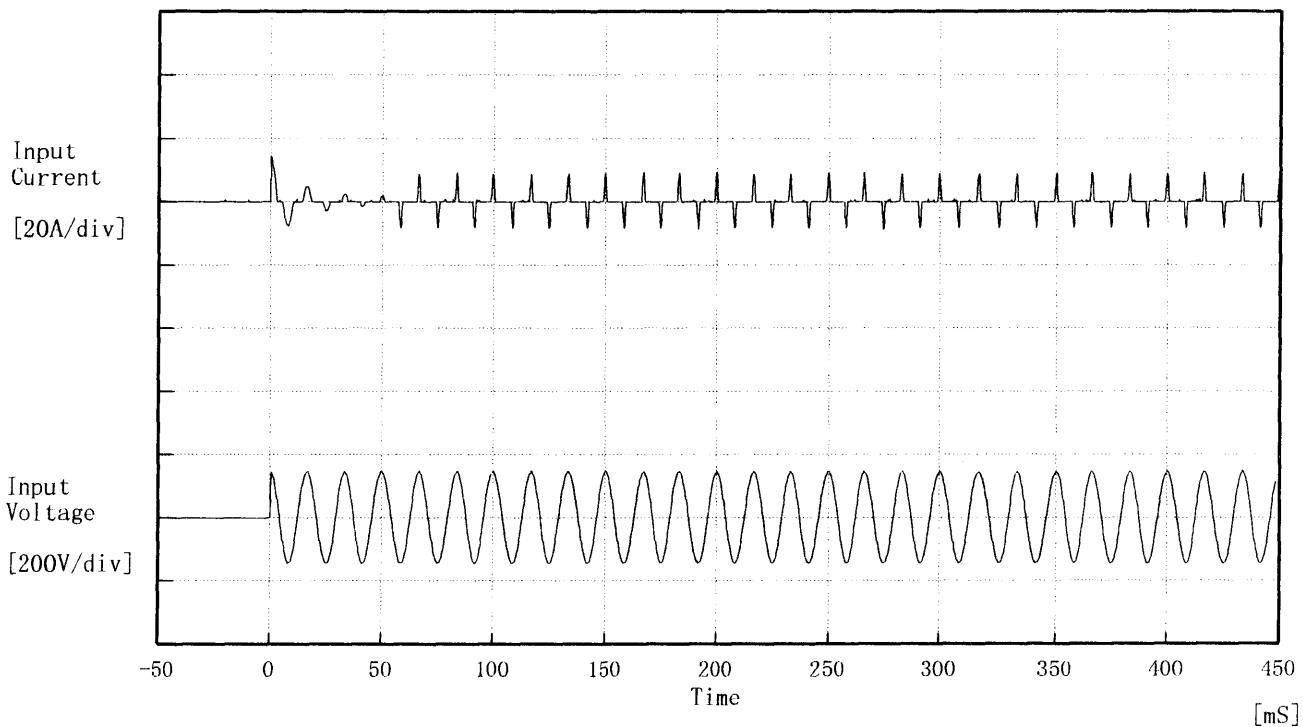
(注) 斜線は定格周囲温度範囲を示す。

2. Values

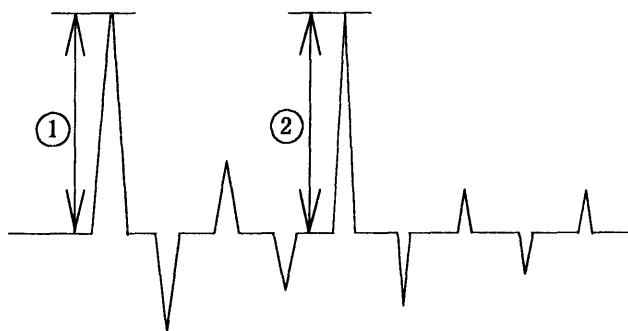
Ambient Temperature [°C]	Operating Point [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	6.55	6.55	6.55
-10	6.55	6.55	6.55
0	6.49	6.55	6.49
10	6.49	6.49	6.49
20	6.49	6.49	6.50
25	6.49	6.49	6.49
30	6.44	6.49	6.44
40	6.43	6.44	6.44
50	6.43	6.43	6.43
60	6.37	6.43	6.37
—	—	—	—



Model		MMC100A-4	Temperature	25°C
Item		Inrush Current 突入電流		
Object		_____		



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





# COSEL

Model	MMC100A-4	Temperature 25°C Testing Circuitry Figure A
Item	Dynamic Load Responce 動的負荷変動	
Object	±5.0V8A	

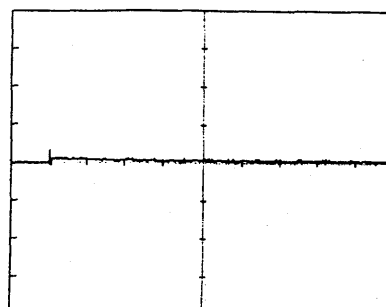
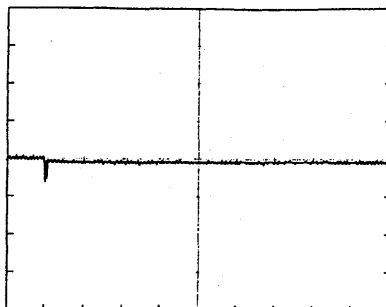
Input Volt. 100 V  
Cycle 200 mS

Load Current



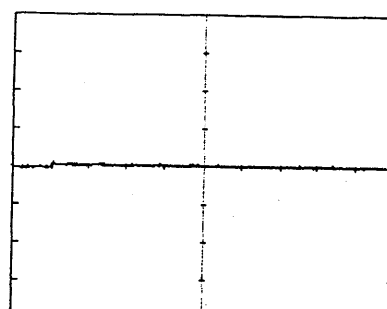
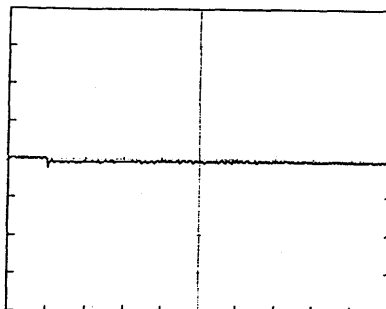
Min Load ←→

Load 100 %



Min Load ←→

Load 50 %



100 mV/div

10 mS/div

# COSEL

Model		MMC100A-4	Temperature		25°C
Item		Dynamic Load Responce 動的負荷変動	Testing Circuitry		Figure A
Object		+12.0V4A			

Input Volt. 100 V

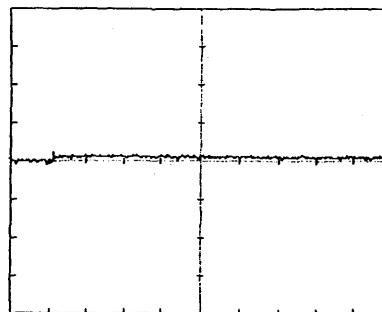
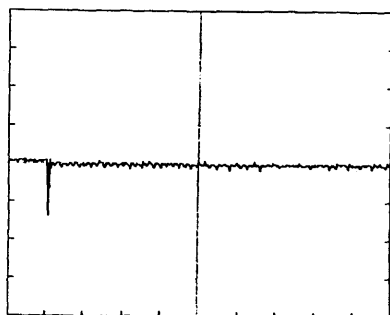
Cycle 200 mS

Load Current



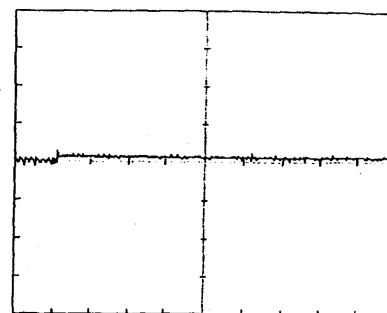
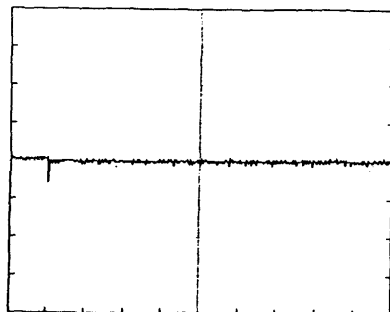
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



100 mV/div

10 mS/div

# COSEL

Model	MMC100A-4	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	-12.0V1A		

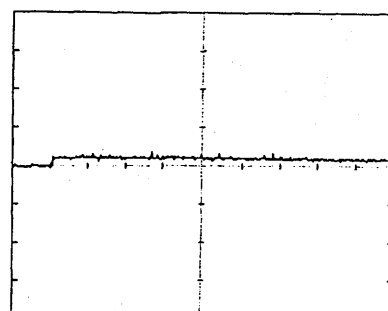
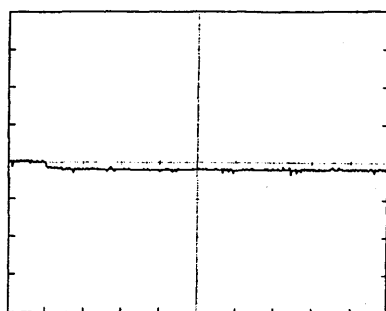
Input Volt. 100 V

Cycle 200 mS

Load Current

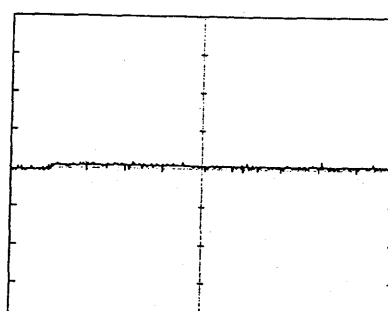
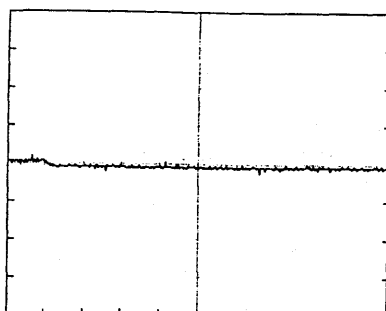
Load 0% ↔

Load 100 %



Load 0% ↔

Load 50 %



100 mV/div

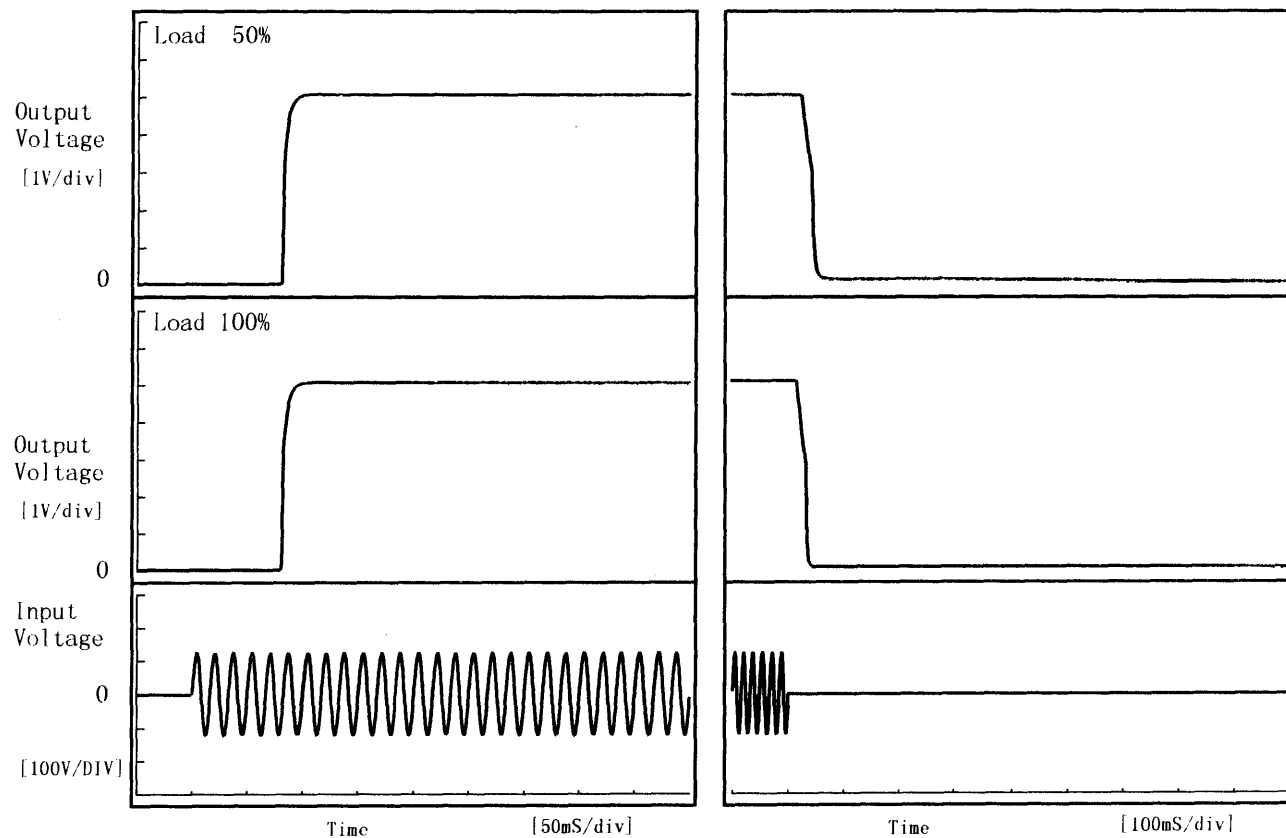
10 mS/div

# COSEL

Model	MMC100A-4	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+5.0V8A		

1. Graph

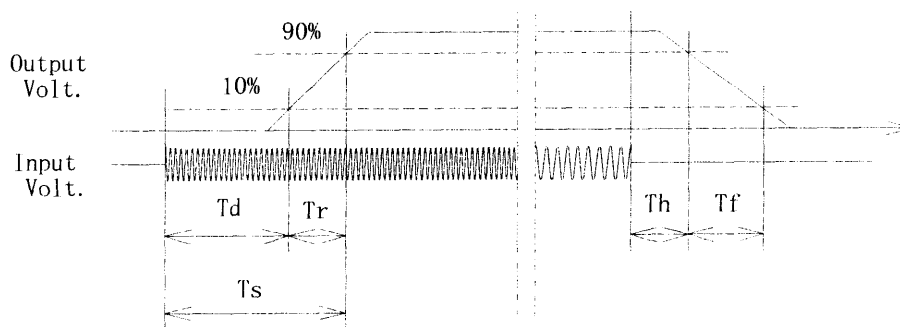
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T <sub>d</sub>	T <sub>r</sub>	T <sub>s</sub>	T <sub>h</sub>	T <sub>f</sub>
50 %	81.3	6.3	87.5	30.5	22.5
100 %	81.3	6.3	87.5	22.5	17.0

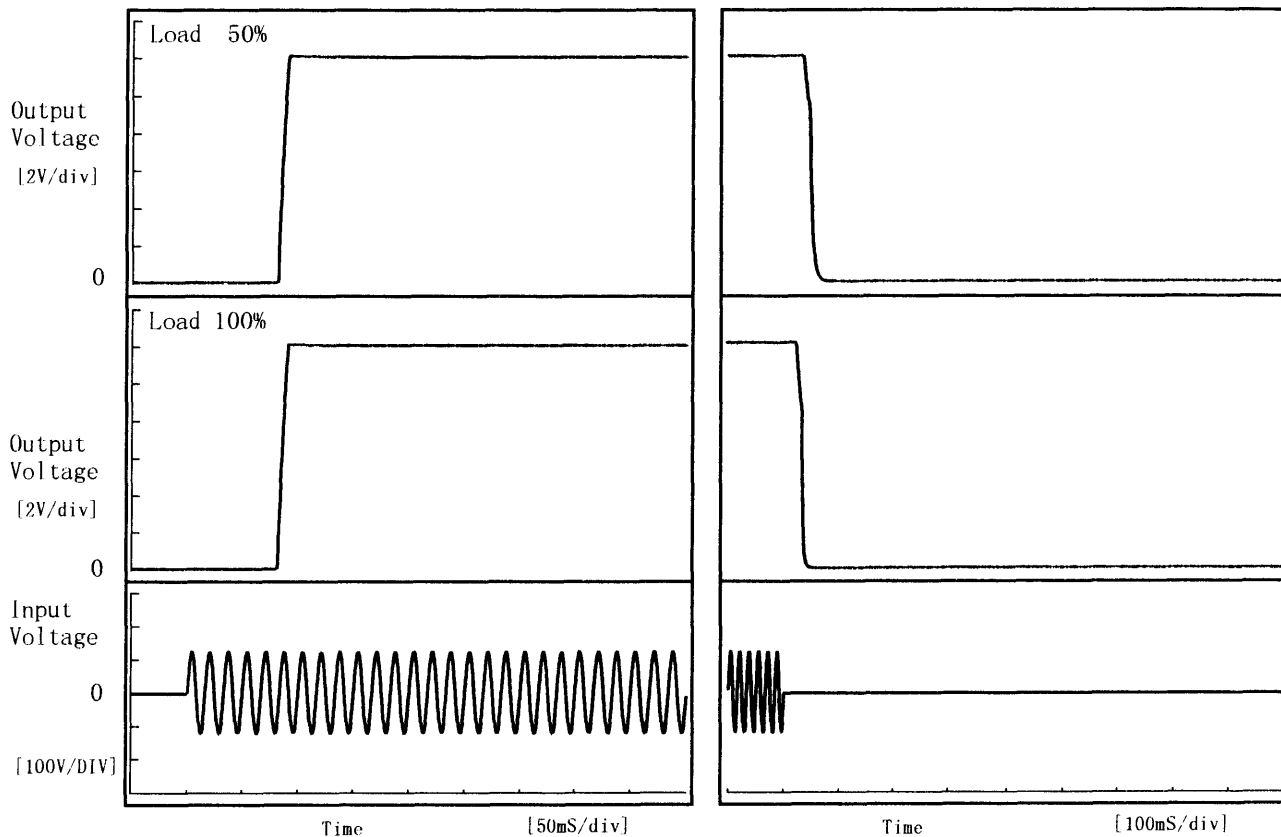




Model	MMC100A-4	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12.0V4A		

1. Graph

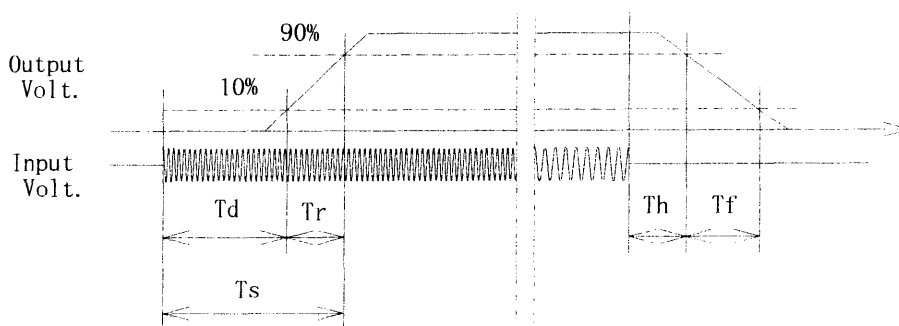
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	81.3	7.8	89.0	41.5	16.5
100 %	81.3	8.0	89.3	28.5	12.0

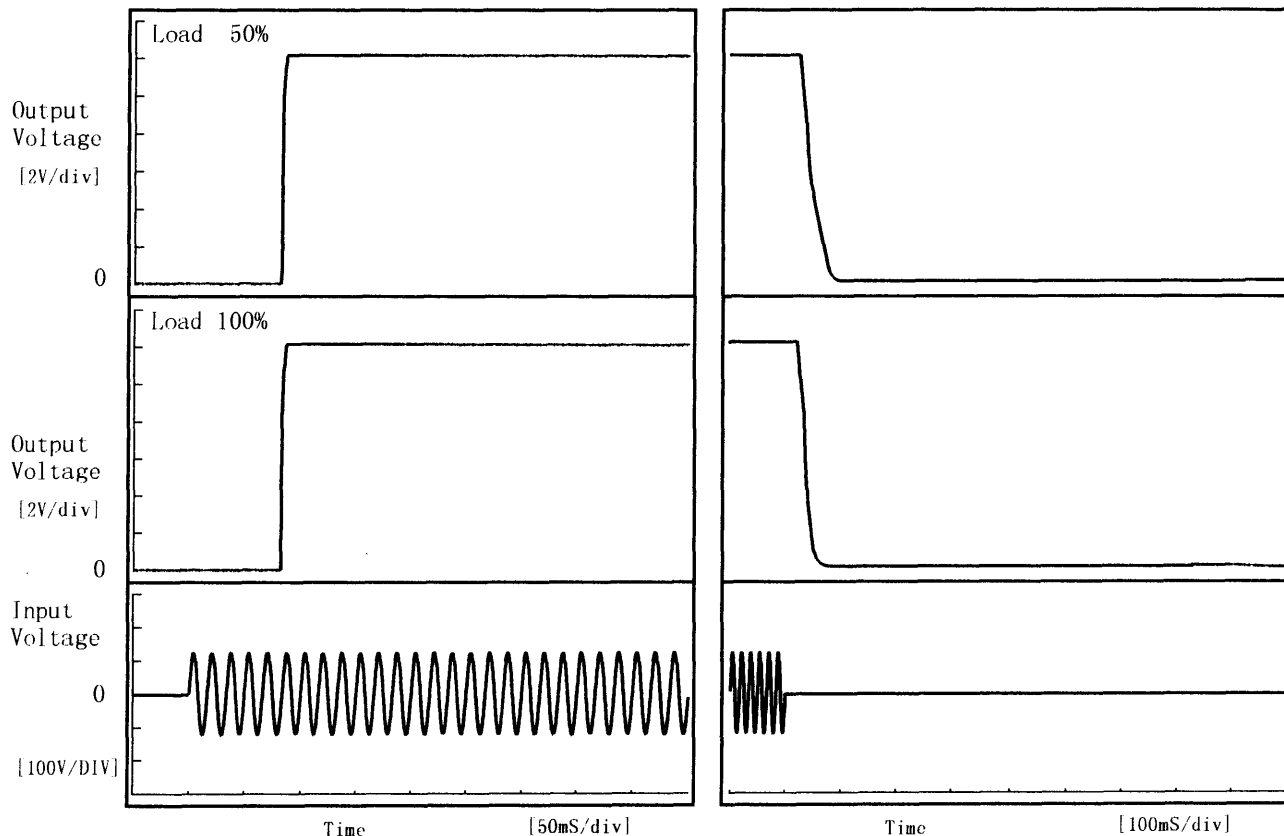




Model	MMC100A-4	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	-12.0V1A		

1. Graph

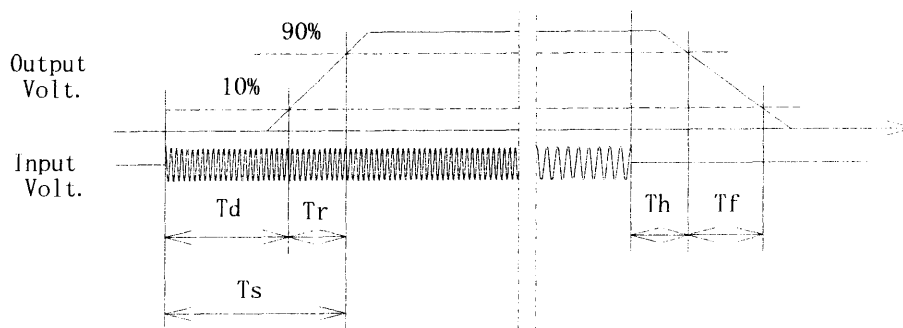
Input Volt. 85 V



2. Values

[mS]

Load \ Time	T <sub>d</sub>	T <sub>r</sub>	T <sub>s</sub>	T <sub>h</sub>	T <sub>f</sub>
50 %	81.8	2.3	84.0	31.5	56.8
100 %	81.8	3.0	84.8	28.0	26.5



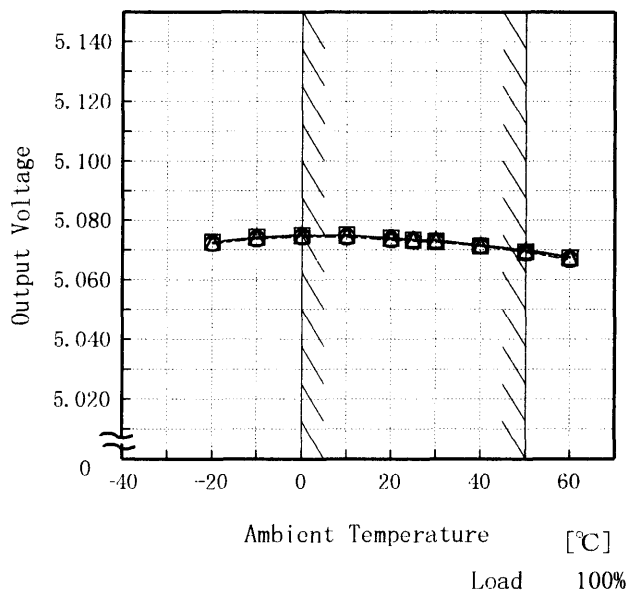


Model	MMC100A-4
Item	Ambient Temperature Drift 周囲温度変動
Object	+5.0V8A

Testing Circuitry Figure A

1. Graph

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



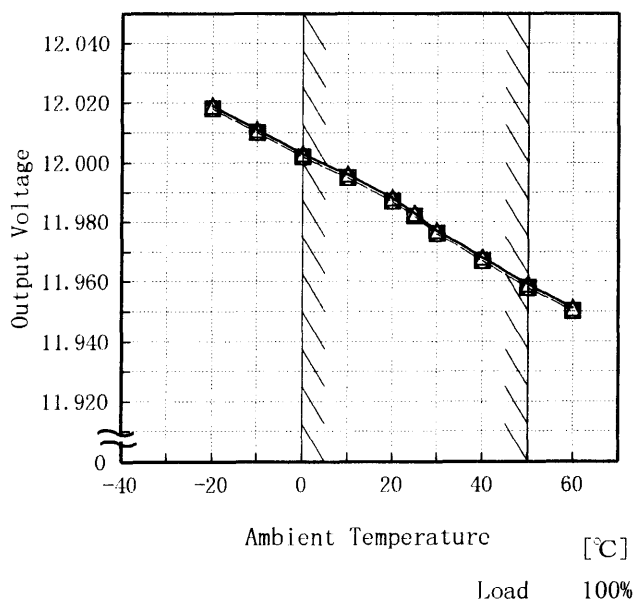
2. Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	5.073	5.073	5.072
-10	5.074	5.074	5.074
0	5.075	5.075	5.074
10	5.075	5.075	5.074
20	5.074	5.074	5.073
25	5.074	5.073	5.073
30	5.073	5.073	5.073
40	5.072	5.071	5.071
50	5.070	5.069	5.069
60	5.068	5.067	5.067
—	—	—	—

Object	+12.0V4A
--------	----------

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	12.019	12.018	12.018
-10	12.011	12.010	12.010
0	12.003	12.002	12.002
10	11.996	11.995	11.995
20	11.988	11.987	11.987
25	11.983	11.982	11.982
30	11.977	11.976	11.976
40	11.968	11.967	11.967
50	11.959	11.958	11.958
60	11.951	11.950	11.950
—	—	—	—

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

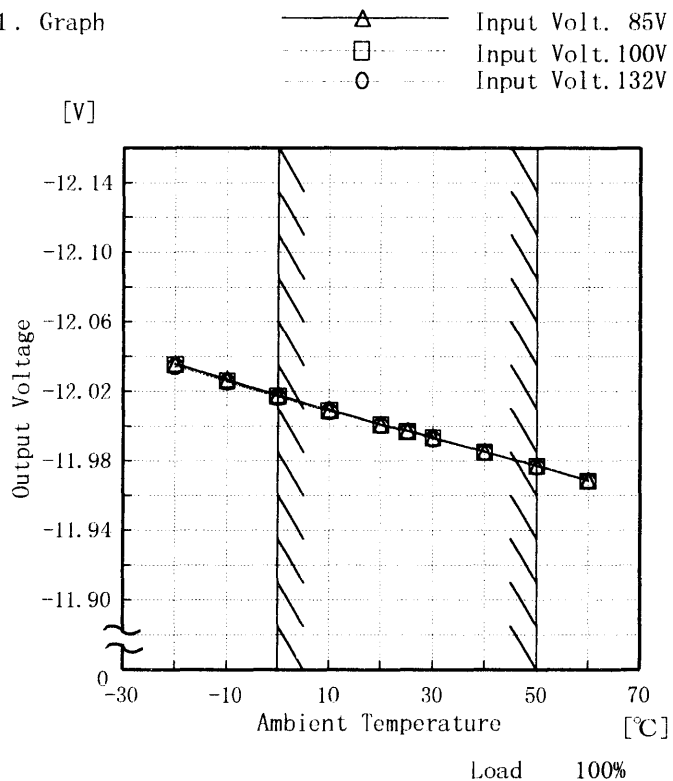
(注)斜線は定格周囲温度範囲を示す。



Model	MMC100A-4
Item	Ambient Temperature Drift 周囲温度変動
Object	-12.0V1A

Testing Circuitry Figure A

1. Graph



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

(注)斜線は定格周囲温度範囲を示す。

2. Values

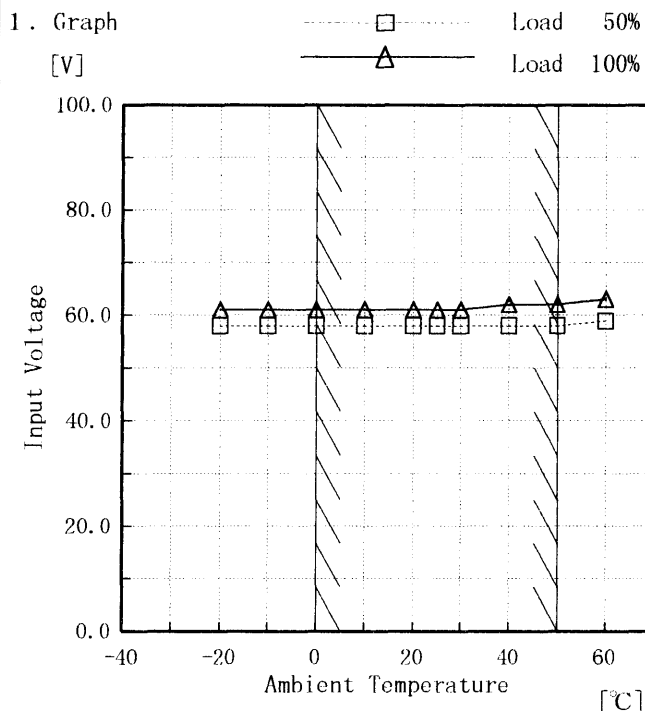
Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 85[V]	Input Volt. 100[V]	Input Volt. 132[V]
-20	-12.036	-12.035	-12.035
-10	-12.027	-12.026	-12.026
0	-12.018	-12.017	-12.017
10	-12.009	-12.009	-12.008
20	-12.001	-12.001	-12.000
25	-11.997	-11.997	-11.997
30	-11.994	-11.993	-11.993
40	-11.985	-11.985	-11.985
50	-11.977	-11.977	-11.977
60	-11.969	-11.968	-11.968
—	—	—	—





Model	MMC100A-4
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+5.0V8A

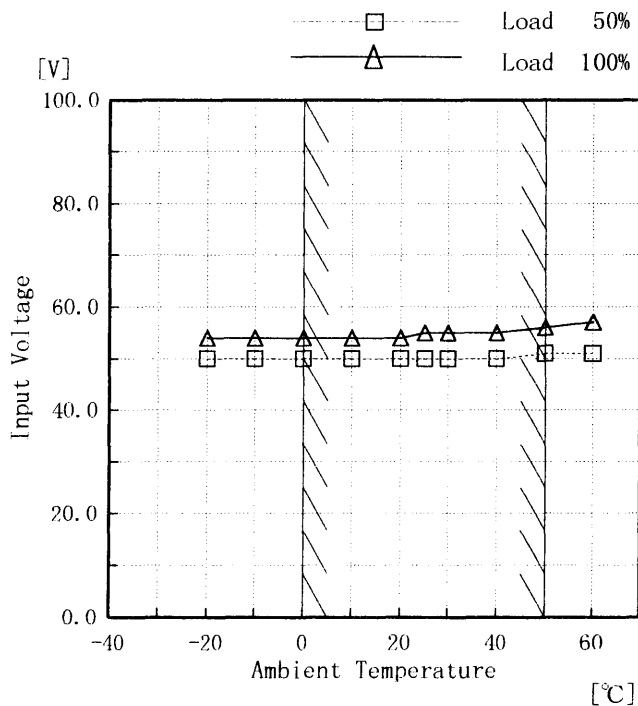
Testing Circuitry Figure A



2. Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-20	58	61
-10	58	61
0	58	61
10	58	61
20	58	61
25	58	61
30	58	61
40	58	62
50	58	62
60	59	63
—	—	—

Object	+12.0V4A
--------	----------



2. Values

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

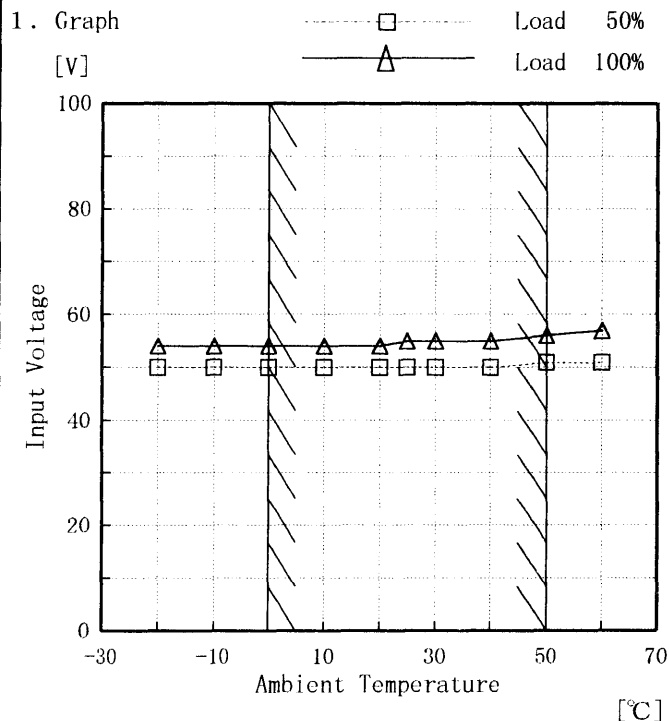
Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。



Model	MMC100A-4
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	50	54
-10	50	54
0	50	54
10	50	54
20	50	54
25	50	55
30	50	55
40	50	55
50	51	56
60	51	57
—	—	—

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

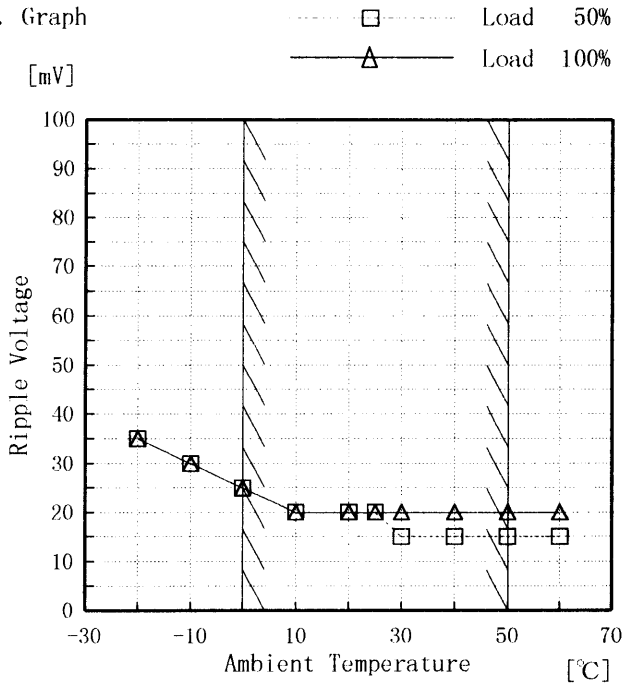
(注) 斜線は定格周囲温度範囲を示す。



Model	MMC100A-4
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+5.0V8A

Testing Circuitry Figure A

1. Graph



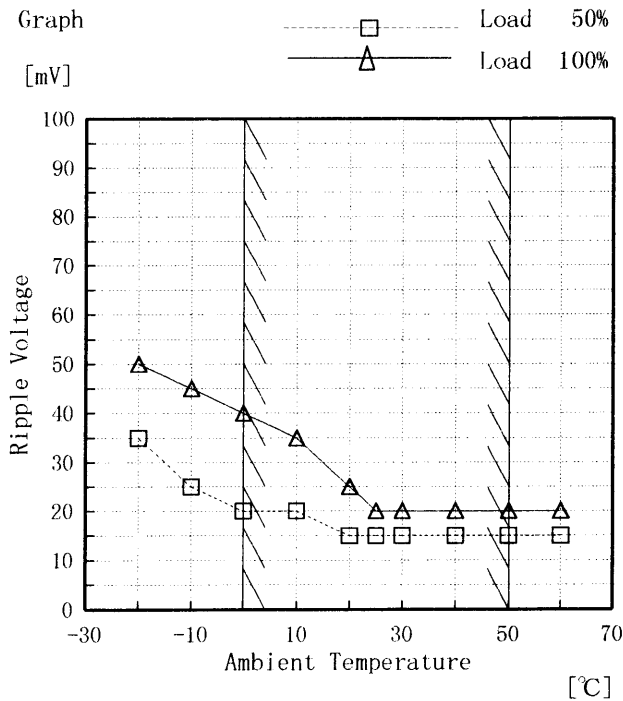
Input Volt. 100 V

2. Values

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

Object	+12.0V4A
--------	----------

1. Graph



Input Volt. 100 V

2. Values

Ambient Temperature [°C]	Ripple Output Voltage [mV]	
	Load 50%	Load 100%
-20	35	50
-10	25	45
0	20	40
10	20	35
20	15	25
25	15	20
30	15	20
40	15	20
50	15	20
60	15	20
—	—	—

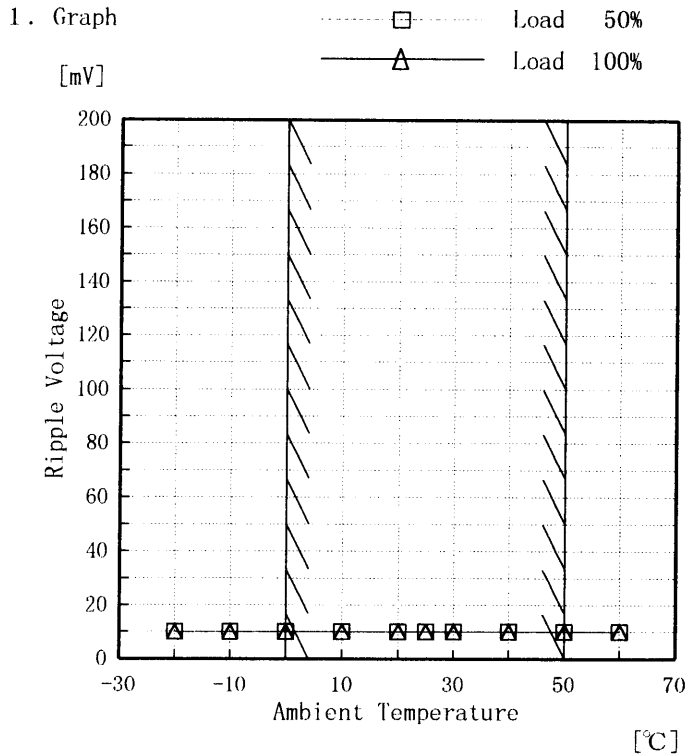
Note: Slanted line shows the range of the rated ambient temperature.

(注) 斜線は定格周囲温度範囲を示す。



Model	MMC100A-4
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
—	—	—

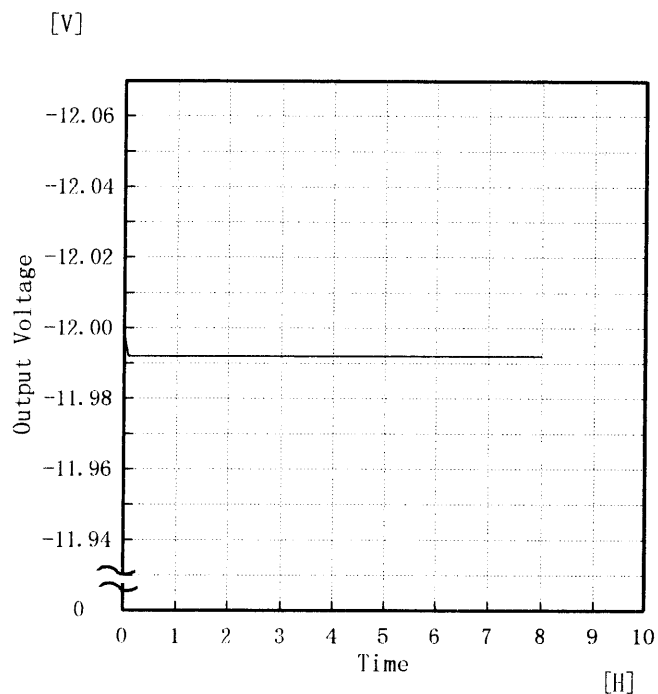


<b>COSEL</b>																									
Model	MMC100A-4	Temperature	25°C																						
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A																						
Object	+5.0V8A																								
<p>1. Graph</p> <p style="text-align: center;">Time [H]</p> <p style="text-align: center;">Input 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>5.074</td></tr> <tr><td>0.5</td><td>5.073</td></tr> <tr><td>1.0</td><td>5.073</td></tr> <tr><td>2.0</td><td>5.073</td></tr> <tr><td>3.0</td><td>5.073</td></tr> <tr><td>4.0</td><td>5.073</td></tr> <tr><td>5.0</td><td>5.073</td></tr> <tr><td>6.0</td><td>5.073</td></tr> <tr><td>7.0</td><td>5.073</td></tr> <tr><td>8.0</td><td>5.073</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	5.074	0.5	5.073	1.0	5.073	2.0	5.073	3.0	5.073	4.0	5.073	5.0	5.073	6.0	5.073	7.0	5.073	8.0	5.073
Time since start [H]	Output Voltage [V]																								
0.0	5.074																								
0.5	5.073																								
1.0	5.073																								
2.0	5.073																								
3.0	5.073																								
4.0	5.073																								
5.0	5.073																								
6.0	5.073																								
7.0	5.073																								
8.0	5.073																								
Object	+12.0V4A																								
<p>1. Graph</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>11.988</td></tr> <tr><td>0.5</td><td>11.965</td></tr> <tr><td>1.0</td><td>11.965</td></tr> <tr><td>2.0</td><td>11.965</td></tr> <tr><td>3.0</td><td>11.965</td></tr> <tr><td>4.0</td><td>11.965</td></tr> <tr><td>5.0</td><td>11.965</td></tr> <tr><td>6.0</td><td>11.965</td></tr> <tr><td>7.0</td><td>11.965</td></tr> <tr><td>8.0</td><td>11.965</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	11.988	0.5	11.965	1.0	11.965	2.0	11.965	3.0	11.965	4.0	11.965	5.0	11.965	6.0	11.965	7.0	11.965	8.0	11.965
Time since start [H]	Output Voltage [V]																								
0.0	11.988																								
0.5	11.965																								
1.0	11.965																								
2.0	11.965																								
3.0	11.965																								
4.0	11.965																								
5.0	11.965																								
6.0	11.965																								
7.0	11.965																								
8.0	11.965																								



Model	MMC100A-4	Temperature	25°C
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A
Object	-12.0V1A		

1. Graph



Input Volt. 100V  
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	-12.004
0.5	-11.992
1.0	-11.992
2.0	-11.992
3.0	-11.992
4.0	-11.992
5.0	-11.992
6.0	-11.992
7.0	-11.992
8.0	-11.992



Model		MMC100A-4	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) : 1.5~8 A (AVR 2) : 0~4 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) : 1.5~8 A (AVR 2) : 0~4 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	+5.0V8A					
Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	0	85	1.5	5.089	±11	±0.2
Minimum Voltage	50	132	8.0	5.068		

Object	+12.0V4A					
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	12.020	±50	±0.4
Minimum Voltage	50	132	4	11.920		

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	-12.045	±36	±0.3
Minimum Voltage	50	132	1	-11.973		



<b>COSEL</b>		
Model	MMC100A-4	
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℃に冷却しておき、約1時間後に恒温槽から取り出し、室温25℃、湿度40%RHの状態におき結露させ、その電気的特性の測定を行い、異常のないことを確認する。

2. Values

Object	+5.0V8A
--------	---------

Item	Data	Testing Conditions
Output Voltage [V]	5.074	Input Volt.: 100V, Load Current:8A
Line Regulation [mV]	1	Input Volt.: 85~132V, Load Current:8A
Load Regulation [mV]	14	Input Volt.: 100V, Load Current:1.5~8A

Object	+12.0V4A
--------	----------

Item	Data	Testing Conditions
Output Voltage [V]	11.959	Input Volt.: 100V, Load Current:4A
Line Regulation [mV]	1	Input Volt.: 85~132V, Load Current:4A
Load Regulation [mV]	19	Input Volt.: 100V, Load Current:0~4A

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

Item	Data	Testing Conditions
Output Voltage [V]	-11.994	Input Volt.: 100V, Load Current:1A
Line Regulation [mV]	1	Input Volt.: 85~132V, Load Current:1A
Load Regulation [mV]	22	Input Volt.: 100V, Load Current:0~1A





Model		MMC100A-4	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	0.20
(B) IEC60950	0.13	0.15	0.21

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。



<b>COSEL</b>	
Model	MMC100A-4
Item	Conducted Emission 雑音端子電圧
Object	_____

Testing Circuitry Figure D

1. Graph

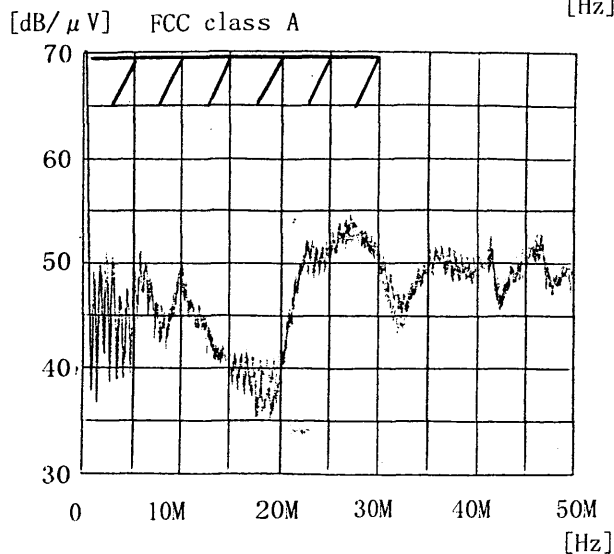
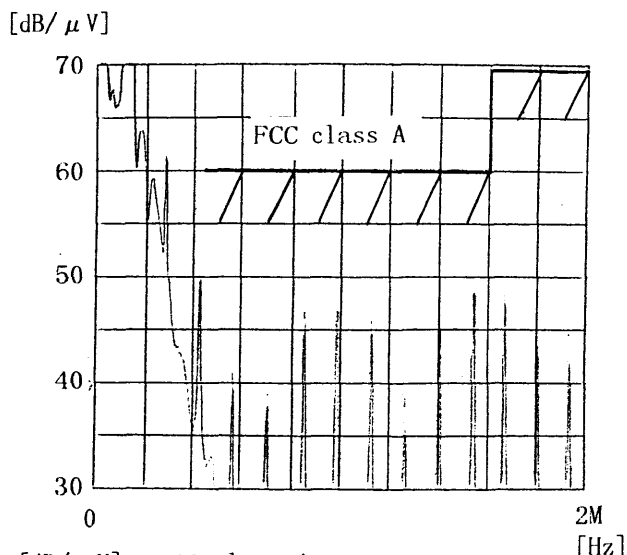
Remarks

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



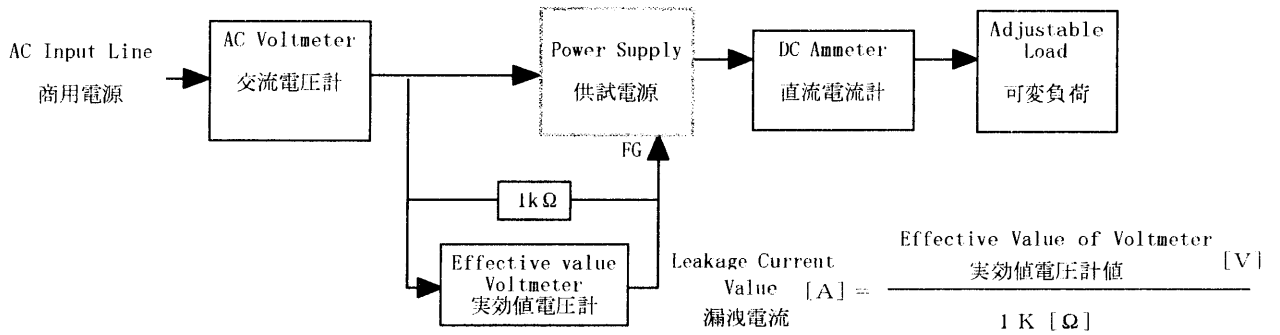
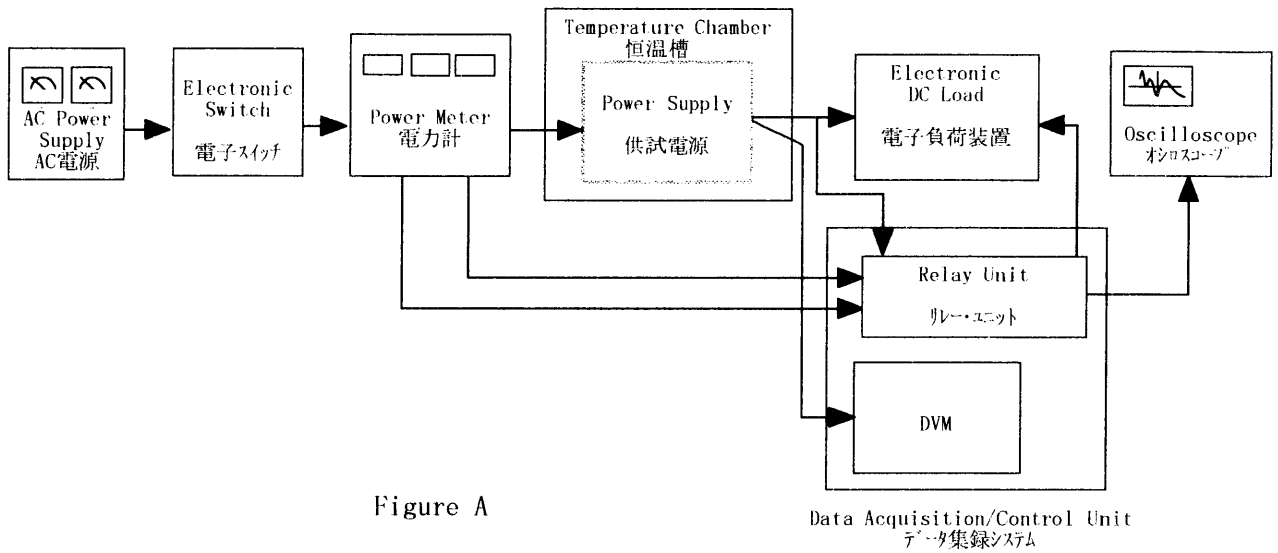


Figure B (DENTORI)

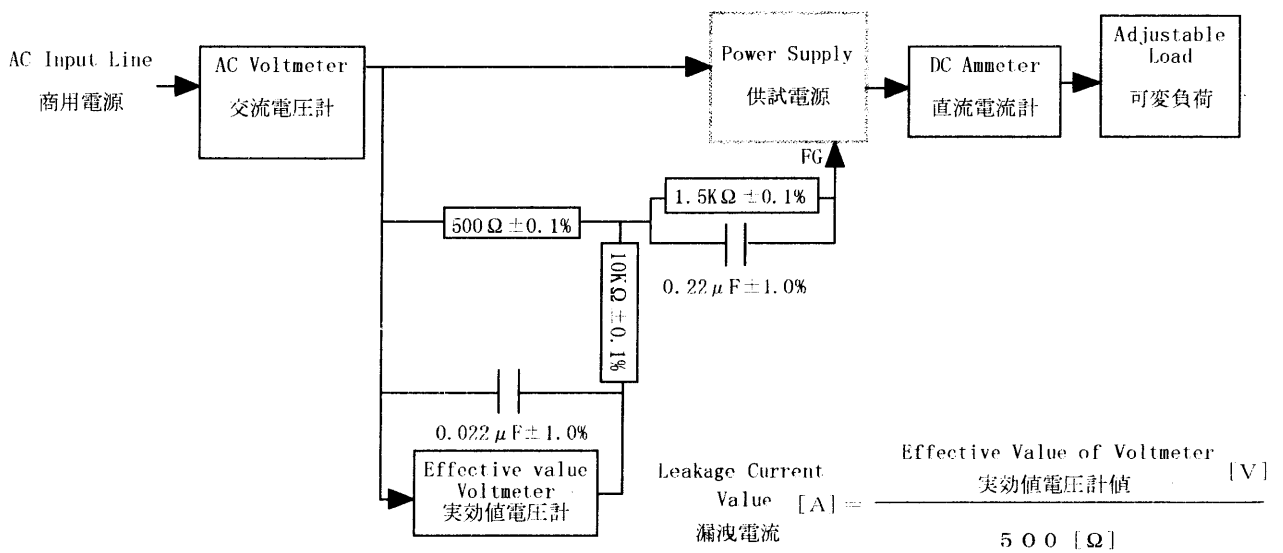


Figure B (IEC 60950)

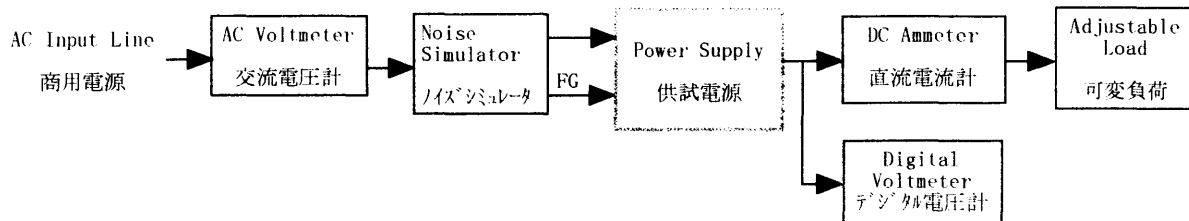


Figure C

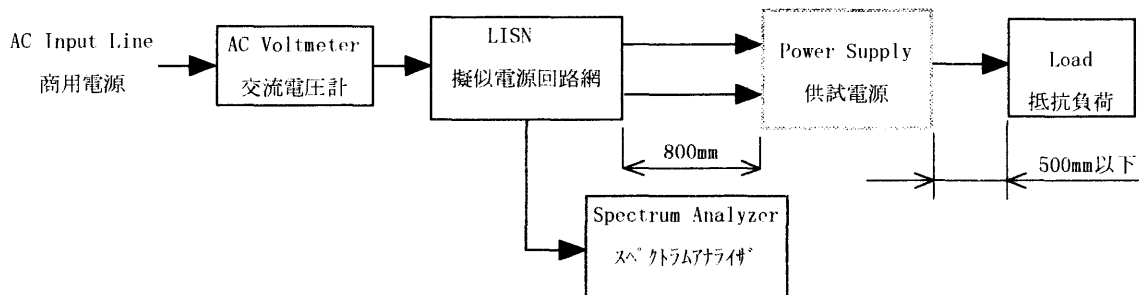


Figure D

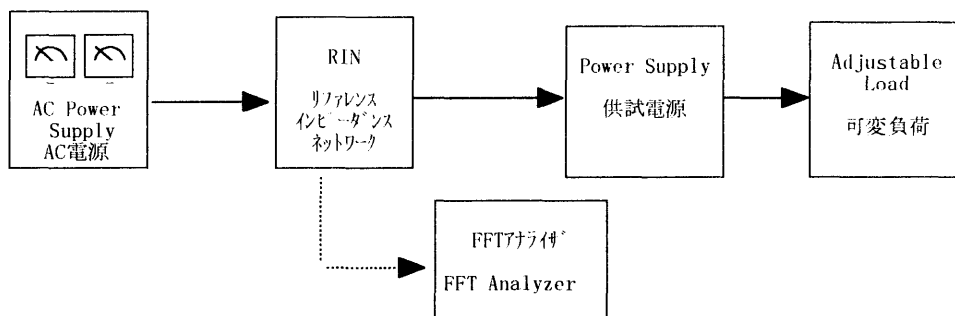


Figure E