

TEST DATA OF MODULE 2E

(ACE series)

Regulated DC power supply
Jun.5.2003

Approved by : *K. Shibutani*
K. Shibutani Design Manager

Prepared by : *M. Hamaguchi*
M. Hamaguchi Design Engineer

COSEL CO.,LTD.

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COSEL																																		
Model	MODULE 2E	Temperature 25°C Testing Circuitry Figure A																																
Item	Line Regulation																																	
Object	+12V25A																																	
<p>1. Graph</p> <div style="text-align: right;"> <p>---□--- Load 50%</p> <p>—△— Load 100%</p> </div> <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">Output Voltage [V]</th> </tr> <tr> <th>Load 50%</th> <th>Load 100%</th> </tr> </thead> <tbody> <tr><td>85</td><td>12.016</td><td>12.016</td></tr> <tr><td>100</td><td>12.016</td><td>12.017</td></tr> <tr><td>120</td><td>12.017</td><td>12.018</td></tr> <tr><td>200</td><td>12.019</td><td>12.019</td></tr> <tr><td>230</td><td>12.019</td><td>12.019</td></tr> <tr><td>264</td><td>12.019</td><td>12.019</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>	Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	85	12.016	12.016	100	12.016	12.017	120	12.017	12.018	200	12.019	12.019	230	12.019	12.019	264	12.019	12.019	--	-	-	--	-	-	--	-	-
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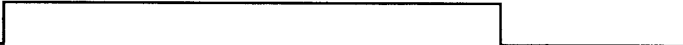
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<p>Note: Slanted line shows the range of the rated load current.</p>																																																					



Model		MODULE 2E	Temperature 25°C Testing Circuitry Figure A
Item		Dynamic Load Response	
Object		+12V25A	

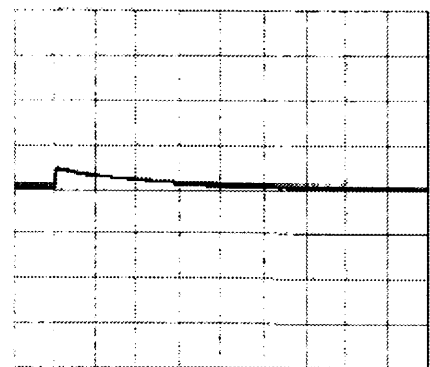
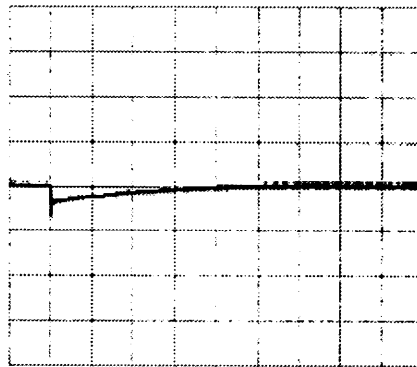
Input Volt. 100 V
Cycle 1000 mS

Load Current



Min. Load ↔

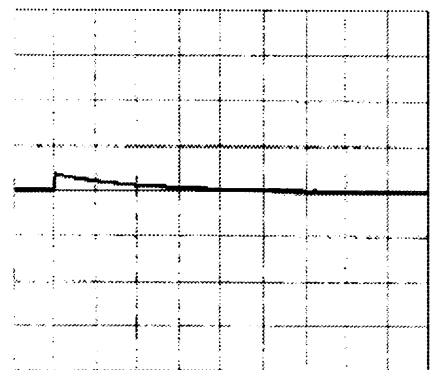
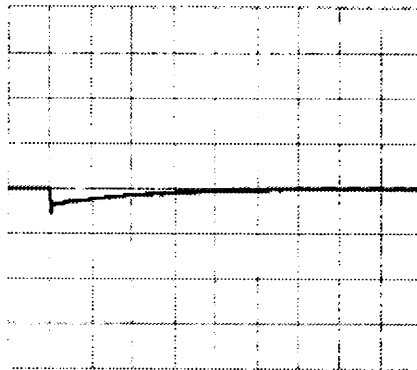
Load 100 %



Min. Load ↔

Load 50 %

100 mV/div



10 ms/div

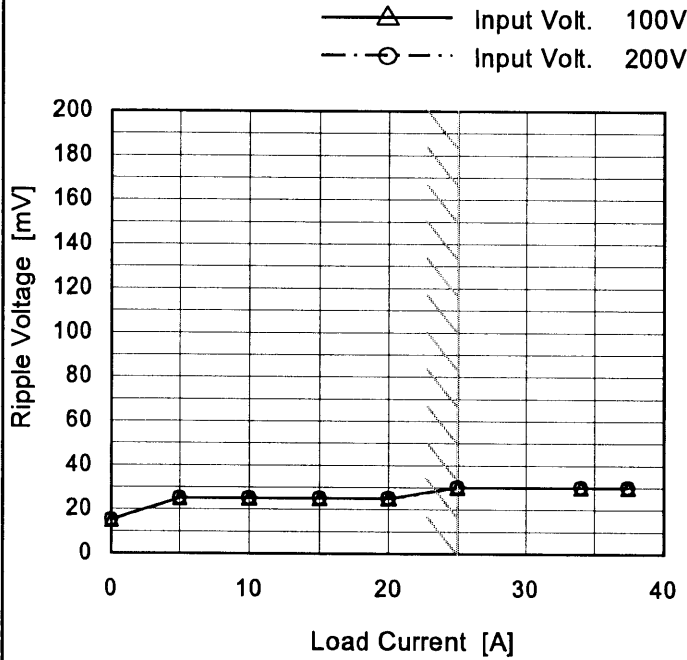
* The characteristic of AC200V is equal.



Model	MODULE 2E
Item	Ripple Voltage (by Load Current)
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0.0	15	15
5.0	25	25
10.0	25	25
15.0	25	25
20.0	25	25
25.0	30	30
34.0	30	30
37.4	30	30
--	-	-
--	-	-
--	-	-

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

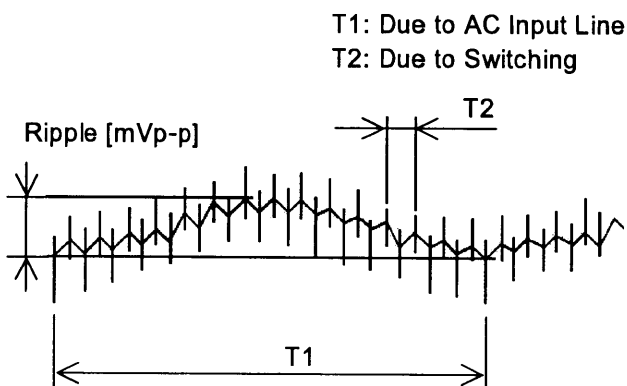


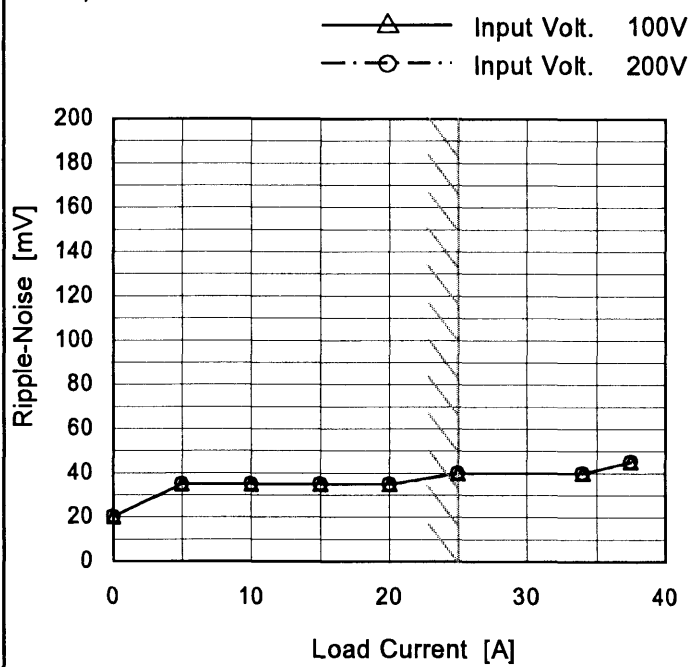
Fig. Complex Ripple Wave Form



Model	MODULE 2E
Item	Ripple-Noise
Object	+12V25A

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 100 [V]	Input Volt. 200 [V]
0	20	20
5	35	35
10	35	35
15	35	35
20	35	35
25	40	40
34	40	40
37.4	45	45
--	-	-
--	-	-
--	-	-

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

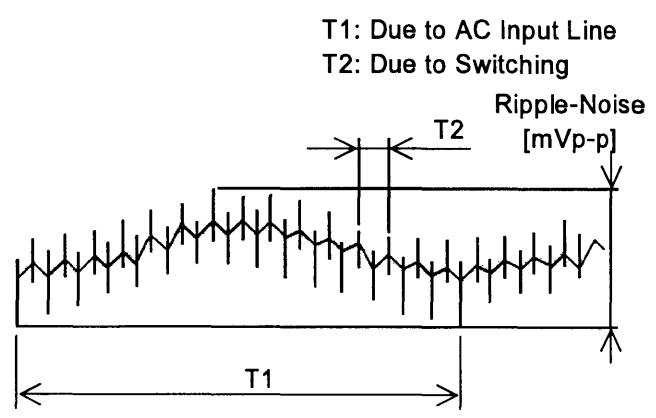


Fig. Complex Ripple Wave Form



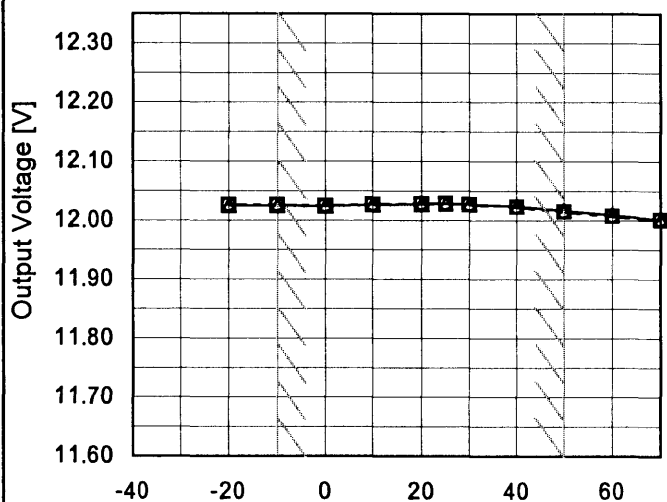
Model		MODULE 2E	Testing Circuitry Figure A																																						
Item		Ripple Voltage (by Ambient Temp.)																																							
Object		+12V25A																																							
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<p>Measured by 20 MHz Oscilloscope.</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																									



Model	MODULE 2E
Item	Ambient Temperature Drift
Object	+12V25A

Testing Circuitry Figure A

1.Graph
 —△— Input Volt. 100V
 ---□--- Input Volt. 200V
 -·-○-·- Input Volt. 230V



Ambient Temperature [°C]
 Load 100%

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

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 100[V]	Input Volt. 200[V]	Input Volt. 230[V]
-20	12.025	12.026	12.026
-10	12.025	12.026	12.026
0	12.024	12.025	12.025
10	12.026	12.027	12.027
20	12.027	12.028	12.029
25	12.028	12.029	12.029
30	12.027	12.027	12.027
40	12.024	12.023	12.023
50	12.017	12.015	12.015
60	12.009	12.008	12.008
70	12.001	12.001	12.001



COSEL		
Model	MODULE 2E	
Item	Output Voltage Accuracy	Testing Circuitry Figure A
Object	+12V25A	

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 : -10 - 50°C

Input Voltage : 85 - 264V

Load Current : 0 - 25A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	170	0	12.031	±9	±0.1
Minimum Voltage	50	132	25	12.014		



COSEL																									
Model	MODULE 2E	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+12V25A																								
<p>1. Graph</p> <p style="text-align: center;">Time [H]</p> <p>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>12.024</td></tr> <tr><td>0.5</td><td>12.018</td></tr> <tr><td>1.0</td><td>12.018</td></tr> <tr><td>2.0</td><td>12.018</td></tr> <tr><td>3.0</td><td>12.019</td></tr> <tr><td>4.0</td><td>12.019</td></tr> <tr><td>5.0</td><td>12.019</td></tr> <tr><td>6.0</td><td>12.019</td></tr> <tr><td>7.0</td><td>12.020</td></tr> <tr><td>8.0</td><td>12.020</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	12.024	0.5	12.018	1.0	12.018	2.0	12.018	3.0	12.019	4.0	12.019	5.0	12.019	6.0	12.019	7.0	12.020	8.0	12.020
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Item	Overcurrent Protection	Testing Circuitry	Figure A																																									
Object	+12V25A																																											
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20	15.60	15.60																																						
25	15.60	15.60																																						
30	15.72	15.72																																						
40	15.83	15.72																																						
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70	16.16	16.16																																						
<p>Note: Slanted line shows the range of the rated ambient temperature.</p>																																								

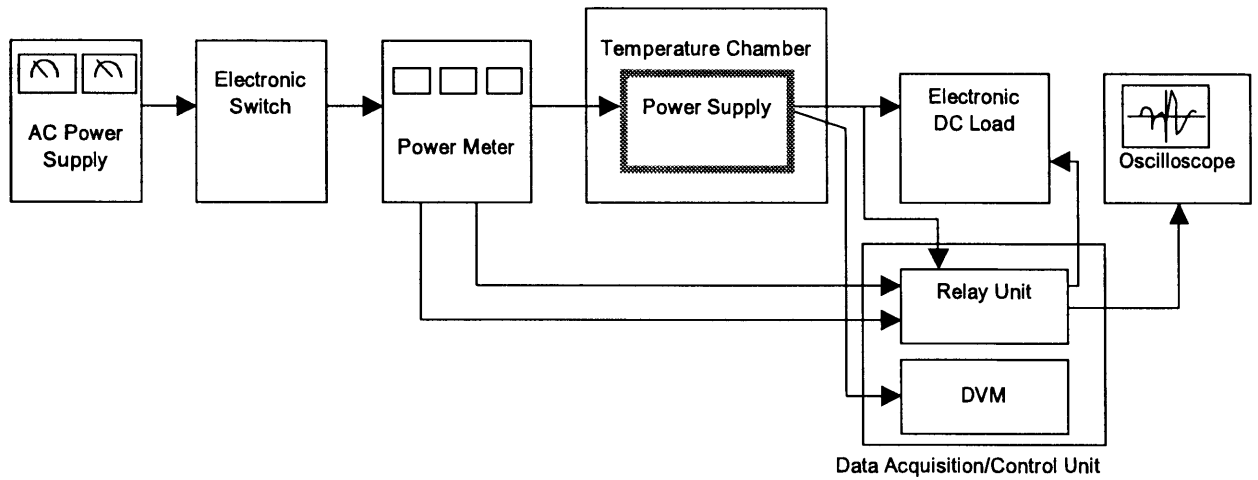


Figure A

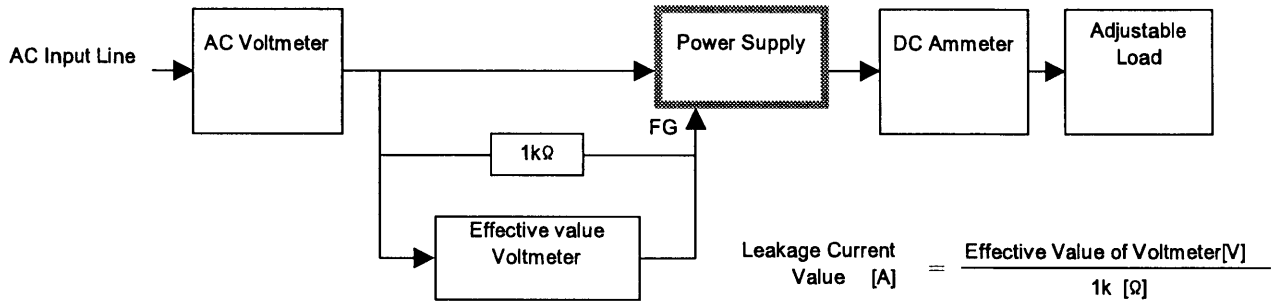


Figure B (DEN-AN)

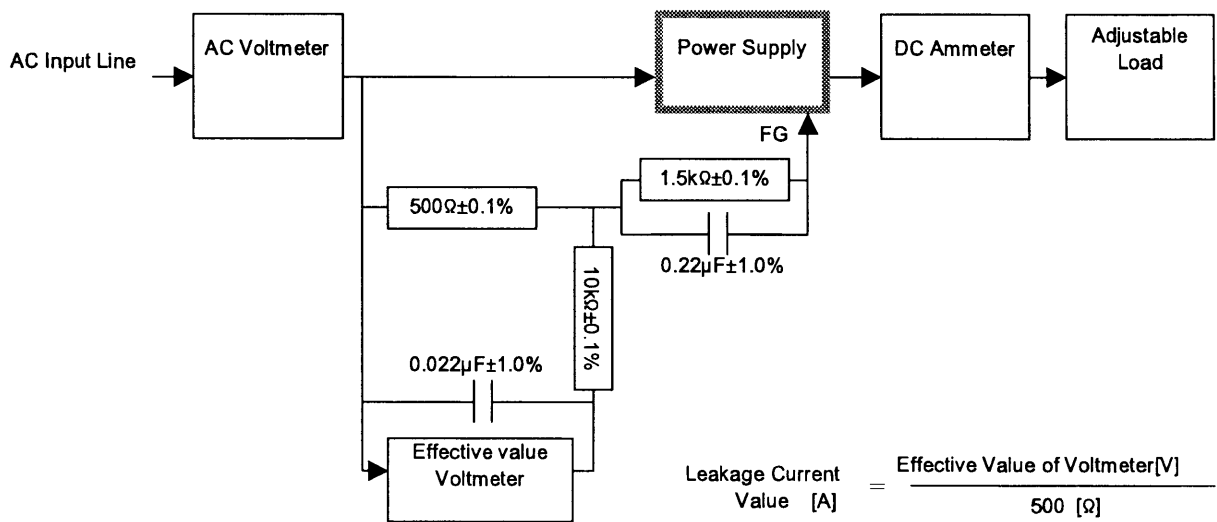


Figure B (IEC60950)