



TEST DATA OF SUCW32415

Regulated DC Power Supply

Mar 16, 2005

Approved by : Tetsuo Sugimori
Tetsuo Sugimori Design Manager

Prepared by : Hayato Nakatsubo Hayato Nakatsubo Design Engineer

COSEL CO.,LTD.



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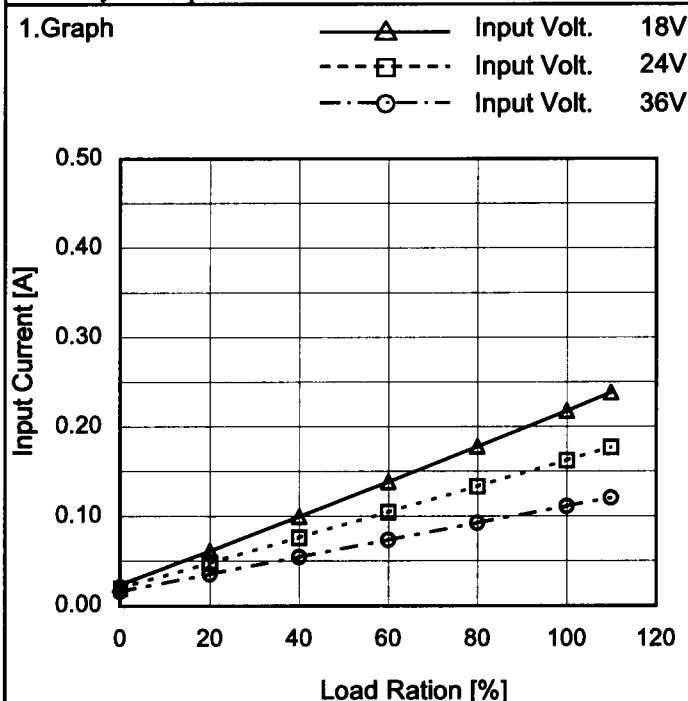
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Model	SUCW32415	Temperature Testing Circuitry	25°C Figure A																																																																															
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Note: Slanted line shows the range of the rated input voltage.

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Model	SUCW32415
Item	Input Current (by Load Current)
Object	_____

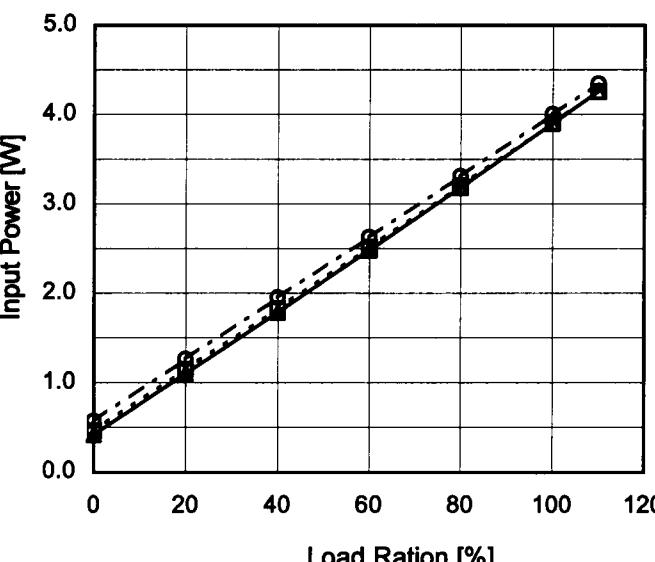


Temperature 25°C
Testing Circuitry Figure A

2.Values

Load Ration [%]	Input Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0	0.023	0.019	0.016
20	0.061	0.048	0.035
40	0.100	0.076	0.054
60	0.138	0.105	0.073
80	0.178	0.133	0.092
100	0.218	0.162	0.111
110	0.238	0.177	0.121
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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Model	SUCW32415	Temperature Testing Circuitry	25°C Figure A																																	
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Model	SUCW32415	Temperature 25°C Testing Circuitry Figure A																																
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1. Graph																																		
<p>Efficiency [%]</p> <p>Input Voltage [V]</p> <p>Legend: Load 50% (dashed line with open squares), Load 100% (solid line with solid triangles)</p>																																		
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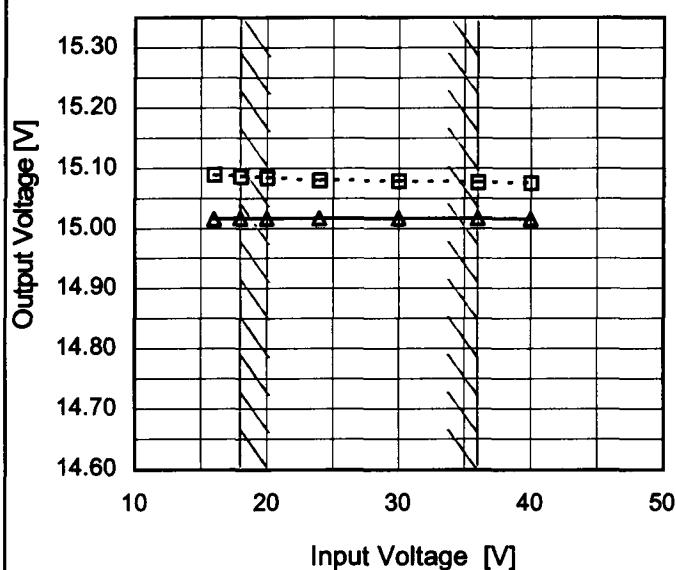
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Model	SUCW32415
Item	Line Regulation
Object	+15V0.1A

1.Graph

---□--- Load 50%
—△— Load 100%



Temperature 25°C
Testing Circuitry Figure A

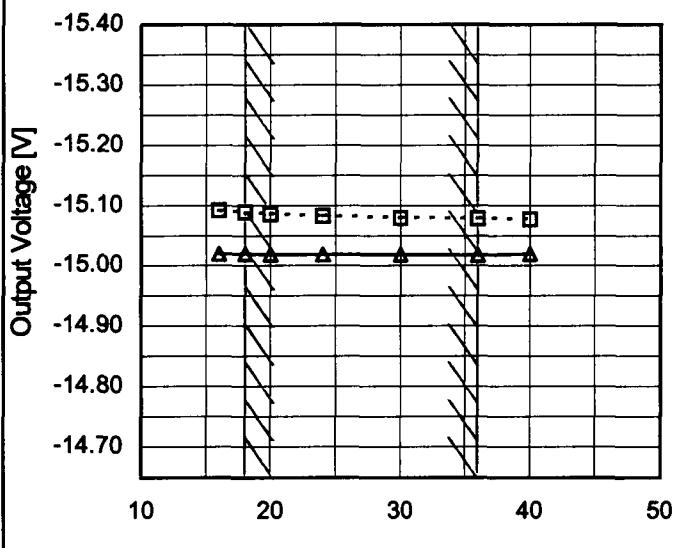
2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
16	15.089	15.015
18	15.086	15.016
20	15.084	15.016
24	15.080	15.017
30	15.079	15.016
36	15.076	15.017
40	15.075	15.016
-	-	-
--	-	-

Object	-15V0.1A
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1.Graph

---□--- Load 50%
—△— Load 100%



2.Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
16	-15.092	-15.020
18	-15.089	-15.019
20	-15.086	-15.019
24	-15.082	-15.019
30	-15.080	-15.019
36	-15.078	-15.018
40	-15.077	-15.020
-	-	-
--	-	-

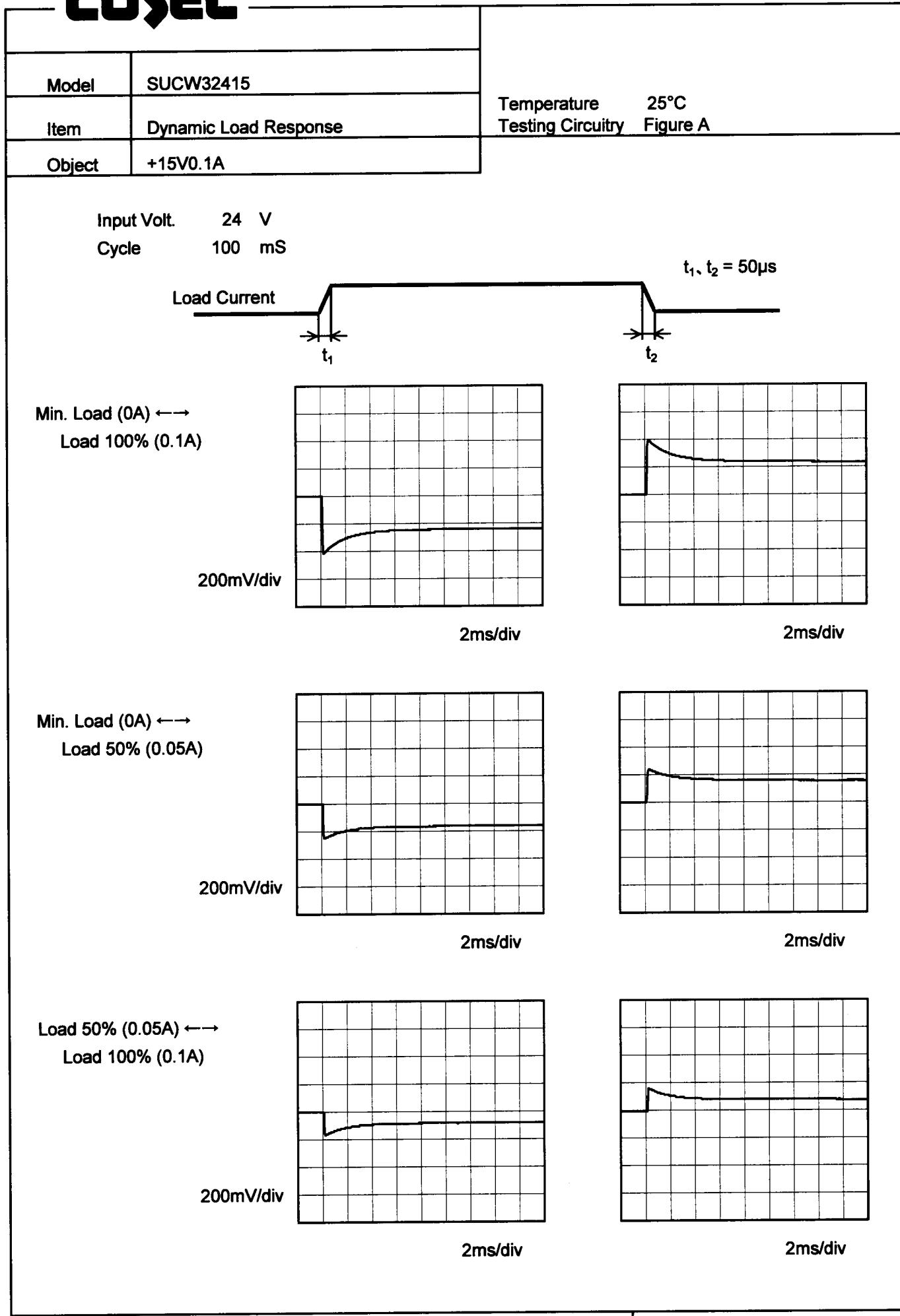
Note: Slanted line shows the range of the rated input voltage.

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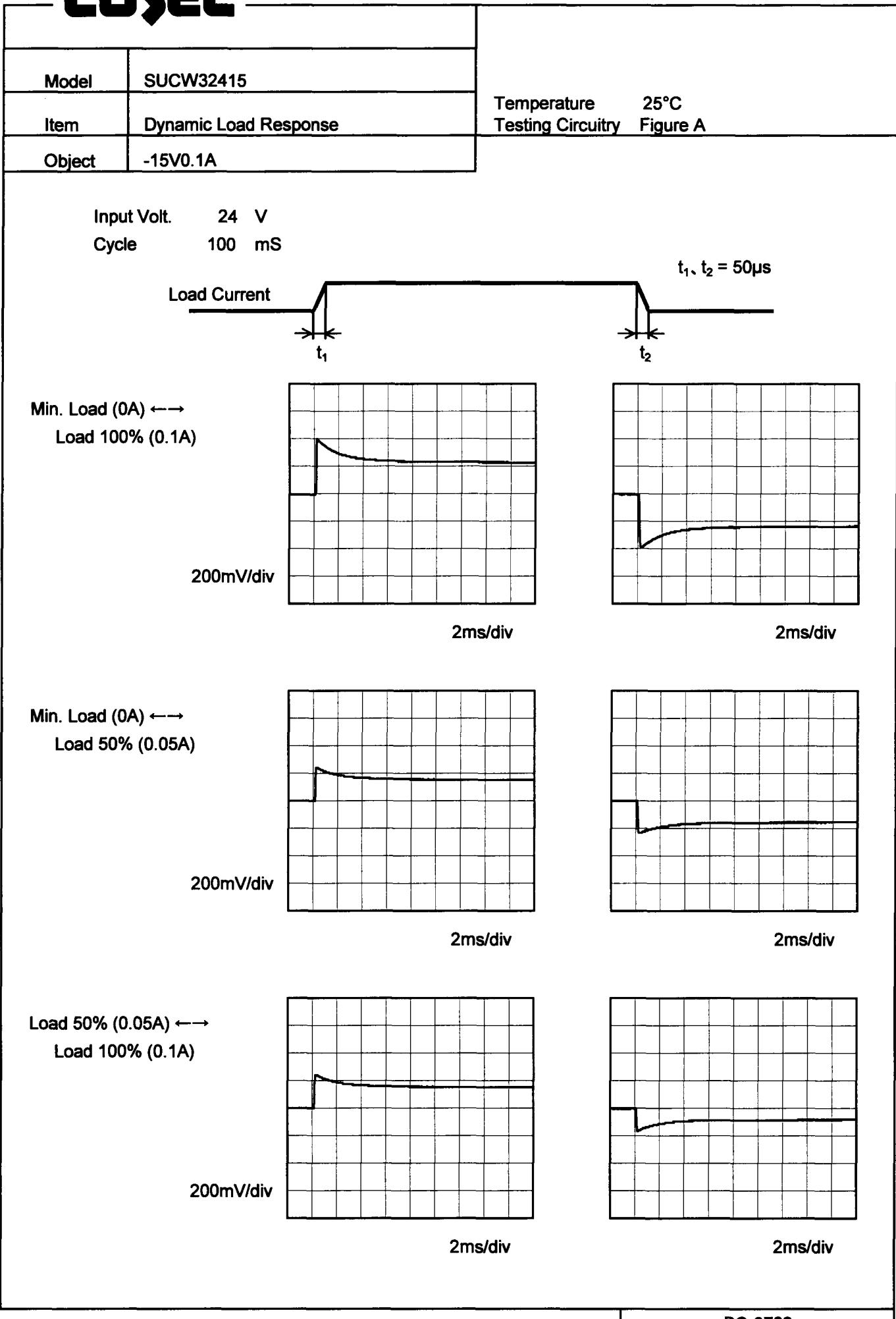
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0.00	-15.262	-15.259	-15.241																																														
0.02	-15.152	-15.144	-15.138																																														
0.04	-15.105	-15.098	-15.093																																														
0.06	-15.073	-15.067	-15.064																																														
0.08	-15.044	-15.041	-15.040																																														
0.10	-15.018	-15.018	-15.017																																														
0.11	-15.007	-15.007	-15.008																																														
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2.Values																																																	

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

COSEL



COSEL



COSEL

Model	SUCW32415																																							
Item	Ripple Voltage (by Load Current)	Temperature 25°C Testing Circuitry Figure B																																						
Object	+15V0.1A																																							
1.Graph																																								
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COSEL

Model	SUCW32415	Temperature Testing Circuitry 25°C Figure B																																					
Item	Ripple Voltage (by Load Current)																																						
Object	-15V0.1A																																						
1. Graph		2. Values																																					
<p>Graph showing Ripple Voltage [mV] vs Load Current [A]. The graph shows two sets of data points: Input Volt. 18V (solid line with triangle markers) and Input Volt. 36V (dashed line with circle markers). The x-axis represents Load Current [A] from 0.00 to 0.12. The y-axis represents Ripple Voltage [mV] from 0 to 50. Both curves show low ripple until about 0.08 A, after which it increases sharply. A slanted line indicates the rated load current range.</p>																																							
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Load Current [A]	Ripple Voltage [mV]																																						
	Input Volt. 18 [V]	Input Volt. 36 [V]																																					
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0.08	2	1																																					
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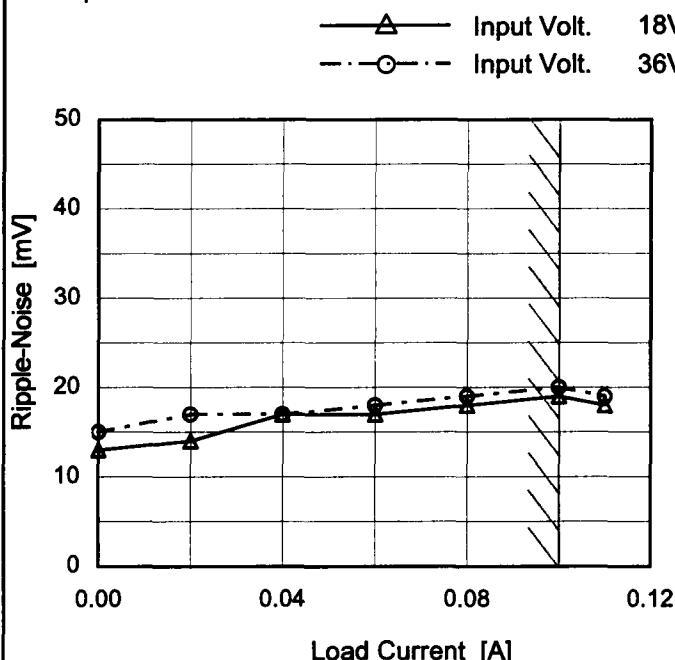
COSEL

Model	SUCW32415																																							
Item	Ripple-Noise	Temperature 25°C Testing Circuitry Figure B																																						
Object	+15V0.1A																																							
1.Graph																																								
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<p>Fig.Complex Ripple Noise Wave Form</p>																																								

COSEL

Model	SUCW32415
Item	Ripple-Noise
Object	-15V0.1A

1. Graph



Measured by 100 MHz Oscilloscope.

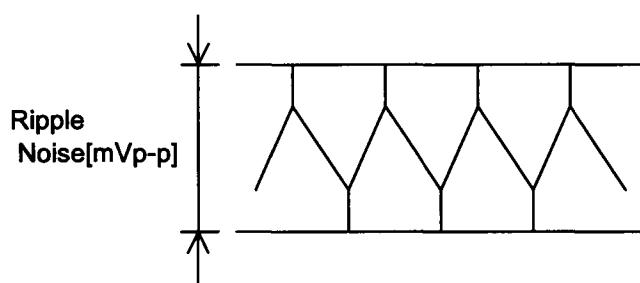
Ripple-Noise is shown as p-p in the figure below.

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

Temperature 25°C
Testing Circuitry Figure B

2. Values

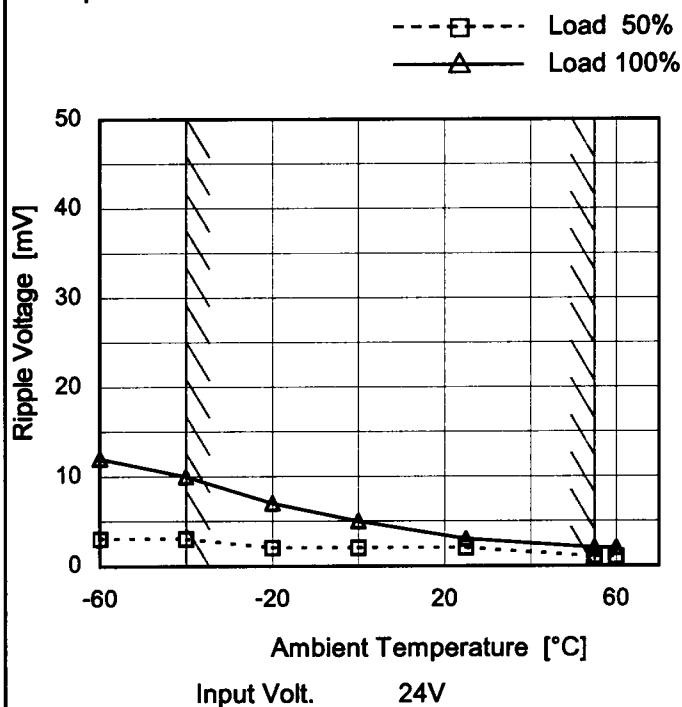
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	13	15
0.02	14	17
0.04	17	17
0.06	17	18
0.08	18	19
0.10	19	20
0.11	18	19
--	-	-
--	-	-
--	-	-
--	-	-



COSEL

Model	SUCW32415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.1A

1.Graph

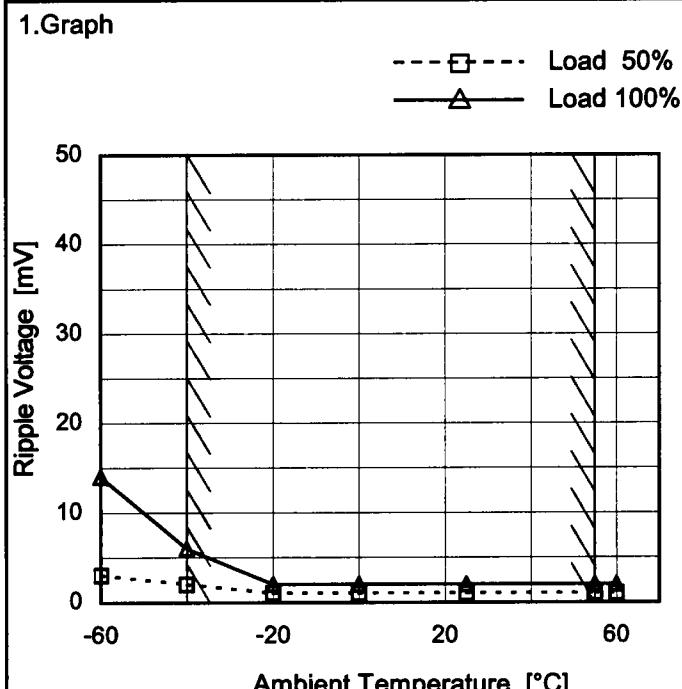


Testing Circuitry Figure B

2.Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	12
-40	3	10
-20	2	7
0	2	5
25	2	3
55	1	2
60	1	2
--	-	-
--	-	-
--	-	-
--	-	-

Object -15V0.1A



2.Values

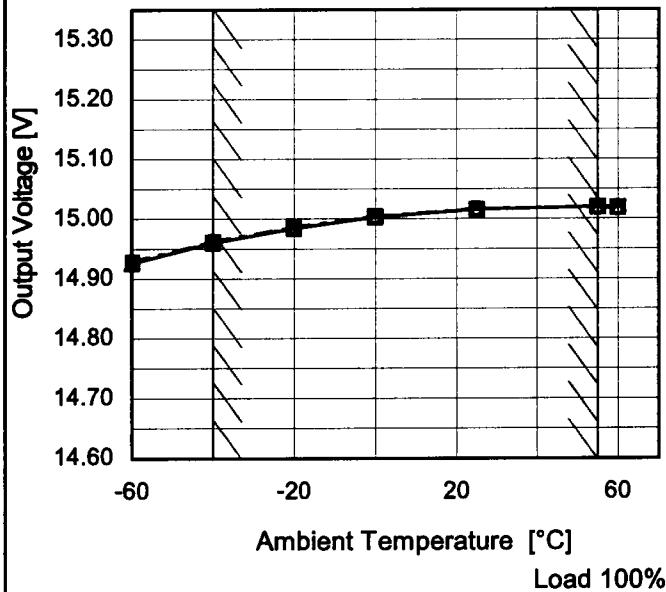
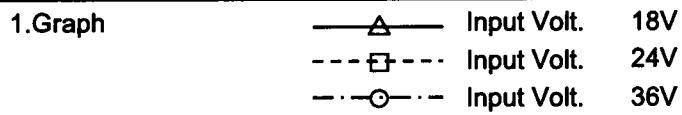
Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	3	14
-40	2	6
-20	1	2
0	1	2
25	1	2
55	1	2
60	1	2
--	-	-
--	-	-
--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.

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

COSEL

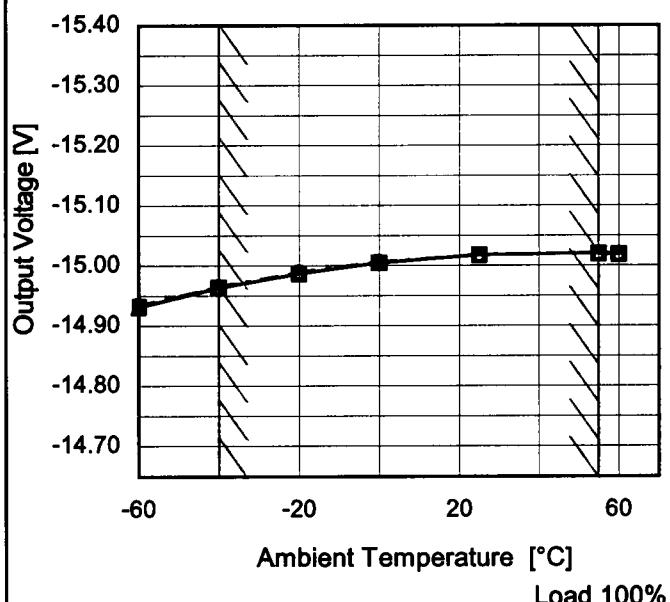
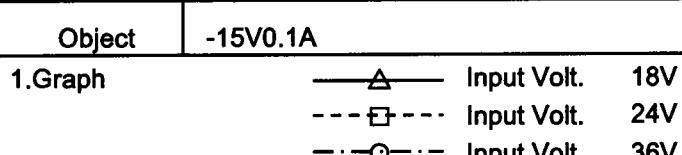
Model	SUCW32415
Item	Ambient Temperature Drift
Object	+15V0.1A



Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	14.926	14.928	14.929
-40	14.960	14.961	14.962
-20	14.984	14.985	14.986
0	15.003	15.004	15.004
25	15.016	15.016	15.017
55	15.020	15.020	15.019
60	15.019	15.019	15.018
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



2.Values

Ambient Temperature [°C]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-60	-14.931	-14.932	-14.934
-40	-14.963	-14.964	-14.965
-20	-14.987	-14.987	-14.989
0	-15.005	-15.005	-15.006
25	-15.018	-15.018	-15.018
55	-15.021	-15.020	-15.020
60	-15.020	-15.019	-15.019
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

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



Model	SUCW32415	Testing Circuitry Figure A
Item	Output Voltage Accuracy	

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 : -40 - 55°C

Input Voltage : 18 - 36V

Load Current (AVR 1) : 0 - 0.1A (AVR 2) : 0 - 0.1A

* Other Output : Rated Load

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

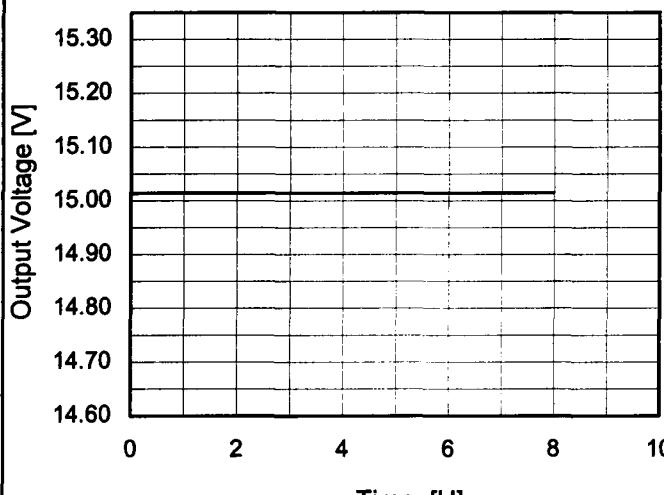
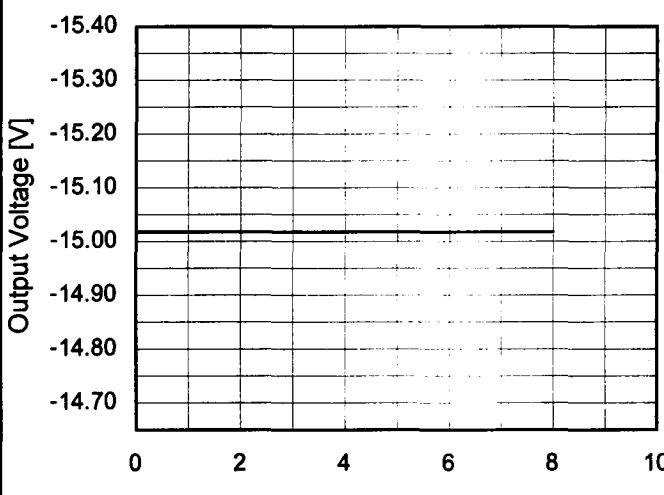
$$\text{* Output Voltage Accuracy (Ratio)} = \frac{\text{Output Voltage Accuracy}}{\text{Rated Output Voltage}} \times 100$$

2. Values

Object	+15V0.1A			Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]		Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	18		0	15.261		
Minimum Voltage	-40	18		0.1	14.960	±151	±1.0

Object	-15V0.1A			Output		Output Voltage Accuracy	
Item	Temperature [°C]	Input Voltage[V]		Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	55	18		0	-15.268		
Minimum Voltage	-40	18		0.1	-14.963	±153	±1.0

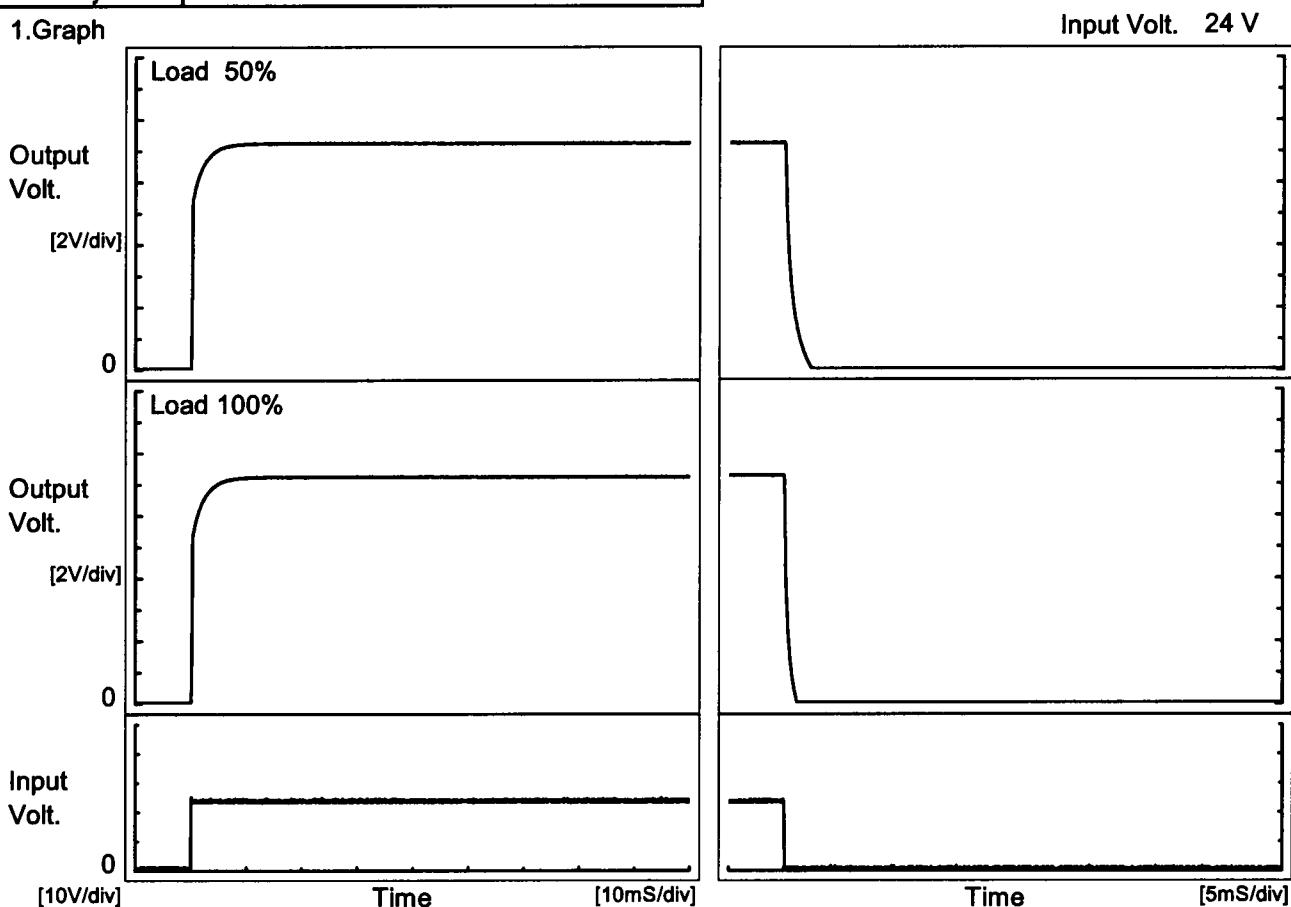
COSEL

Model	SUCW32415	Temperature	25°C																						
Item	Time Lapse Drift	Testing Circuitry	Figure A																						
Object	+15V0.1A																								
1.Graph		2.Values																							
 <p>Output Voltage [V]</p> <p>Time [H]</p> <p>Input Volt. 24V</p> <p>Load 100%</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>15.012</td></tr> <tr><td>0.5</td><td>15.015</td></tr> <tr><td>1.0</td><td>15.015</td></tr> <tr><td>2.0</td><td>15.015</td></tr> <tr><td>3.0</td><td>15.015</td></tr> <tr><td>4.0</td><td>15.015</td></tr> <tr><td>5.0</td><td>15.015</td></tr> <tr><td>6.0</td><td>15.015</td></tr> <tr><td>7.0</td><td>15.015</td></tr> <tr><td>8.0</td><td>15.015</td></tr> </tbody> </table>		Time since start [H]	Output Voltage [V]	0.0	15.012	0.5	15.015	1.0	15.015	2.0	15.015	3.0	15.015	4.0	15.015	5.0	15.015	6.0	15.015	7.0	15.015	8.0	15.015
Time since start [H]	Output Voltage [V]																								
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6.0	-15.018																								
7.0	-15.018																								
8.0	-15.018																								

COSEL

Model	SUCW32415	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+15V0.1A		

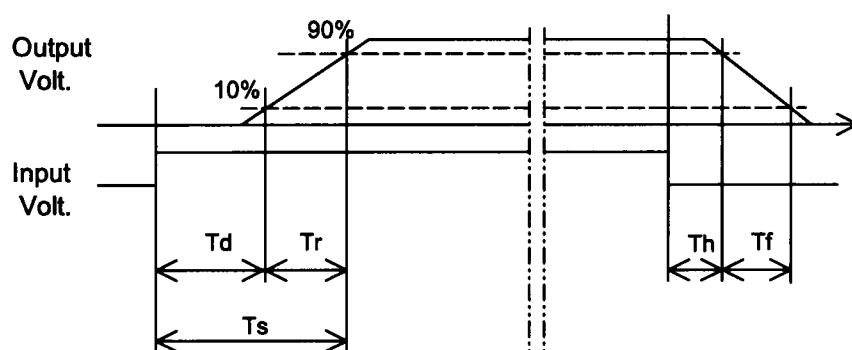
1.Graph



2.Values

[mS]

Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.1	3.2	3.3	0.1	1.5
100 %		0.1	3.3	3.4	0.1	0.7



COSEL

Model SUCW32415

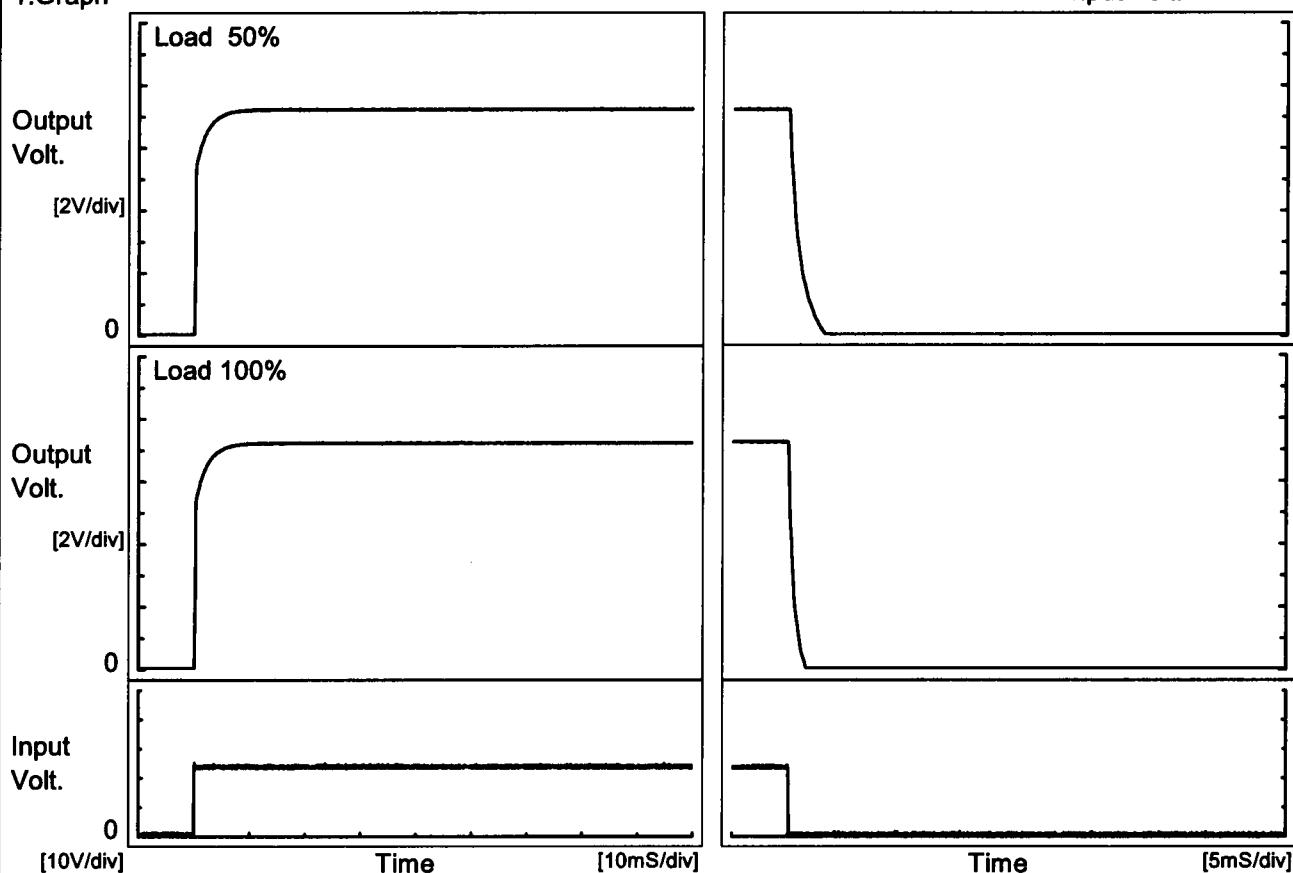
Item Rise and Fall Time

Object -15V0.1A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

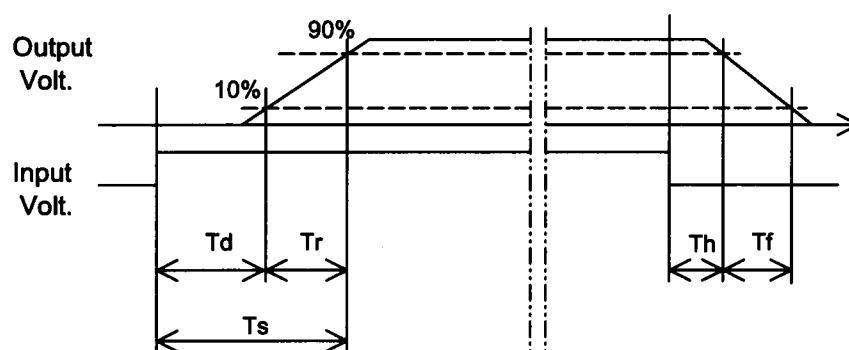
Input Volt. 24 V



2. Values

[mS]

Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.1	3.2	3.3	0.1	2.1
100 %		0.1	3.3	3.4	0.1	1.1

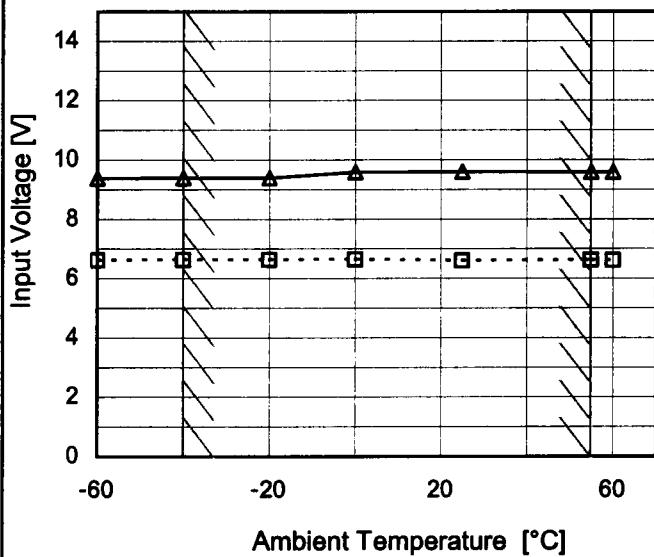


COSEL

Model	SUCW32415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.1A

1.Graph

---□--- Load 50%
—△— Load 100%



Testing Circuitry Figure A

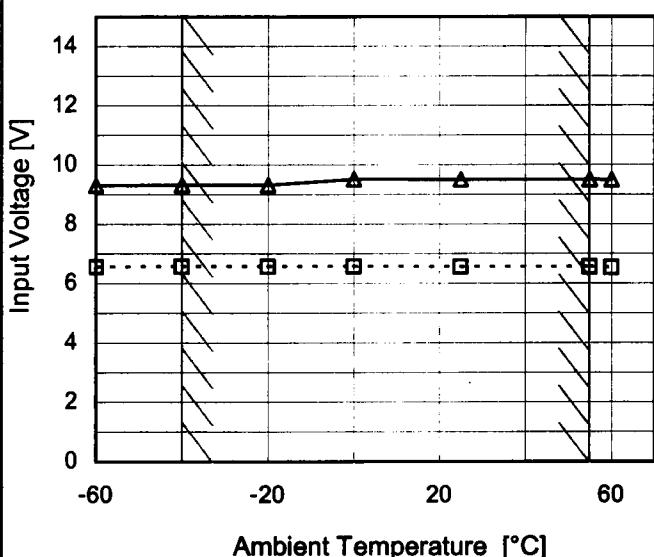
2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	6.7	9.4
-40	6.7	9.4
-20	6.7	9.4
0	6.7	9.6
25	6.7	9.6
55	6.7	9.6
60	6.7	9.6
-	-	-
-	-	-
-	-	-
-	-	-

Object	-15V0.1A
--------	----------

1.Graph

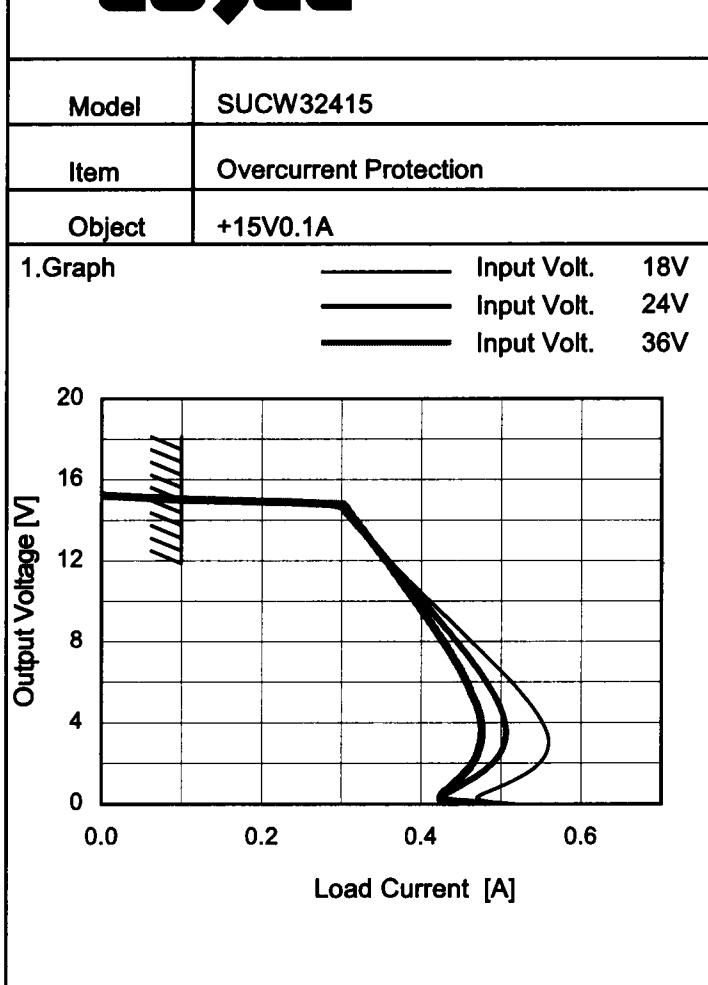
---□--- Load 50%
—△— Load 100%



2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	6.6	9.4
-40	6.6	9.4
-20	6.6	9.4
0	6.6	9.6
25	6.6	9.5
55	6.6	9.5
60	6.6	9.5
-	-	-
-	-	-
-	-	-
-	-	-

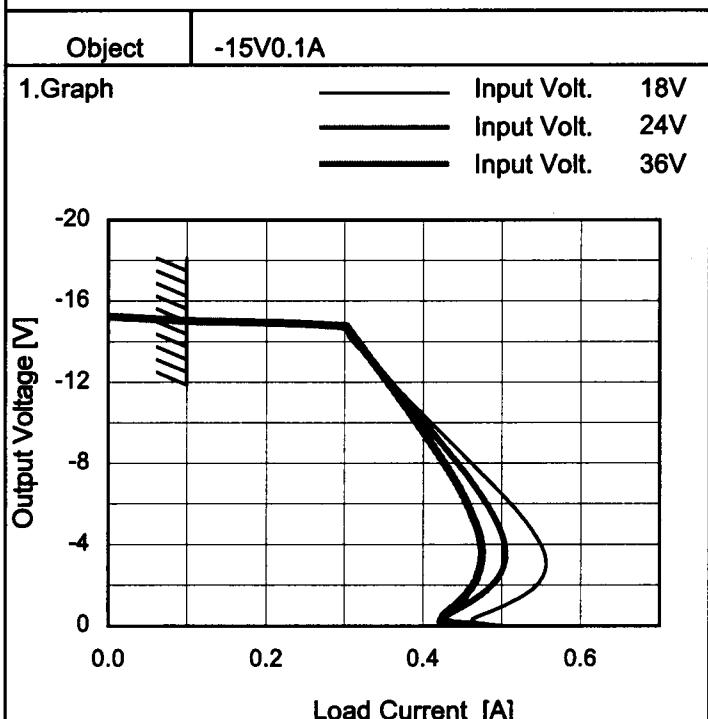
Note: Slanted line shows the range of the rated ambient temperature.

COSEL

Temperature 25°C
Testing Circuitry Figure A

2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
15.0	0.10	0.10	0.10
14.3	0.31	0.31	0.31
13.5	0.32	0.33	0.33
12.0	0.36	0.36	0.36
10.5	0.40	0.39	0.38
9.0	0.44	0.42	0.41
7.5	0.47	0.45	0.44
6.0	0.51	0.48	0.46
4.5	0.54	0.50	0.47
3.0	0.56	0.50	0.47
1.5	0.53	0.48	0.46
0.0	0.52	0.45	0.48



2.Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
-15.0	0.10	0.10	0.10
-14.3	0.31	0.31	0.31
-13.5	0.32	0.33	0.33
-12.0	0.36	0.36	0.36
-10.5	0.40	0.39	0.38
-9.0	0.44	0.42	0.41
-7.5	0.47	0.46	0.43
-6.0	0.51	0.48	0.46
-4.5	0.54	0.50	0.47
-3.0	0.56	0.50	0.47
-1.5	0.53	0.47	0.45
0.0	0.50	0.45	0.48

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

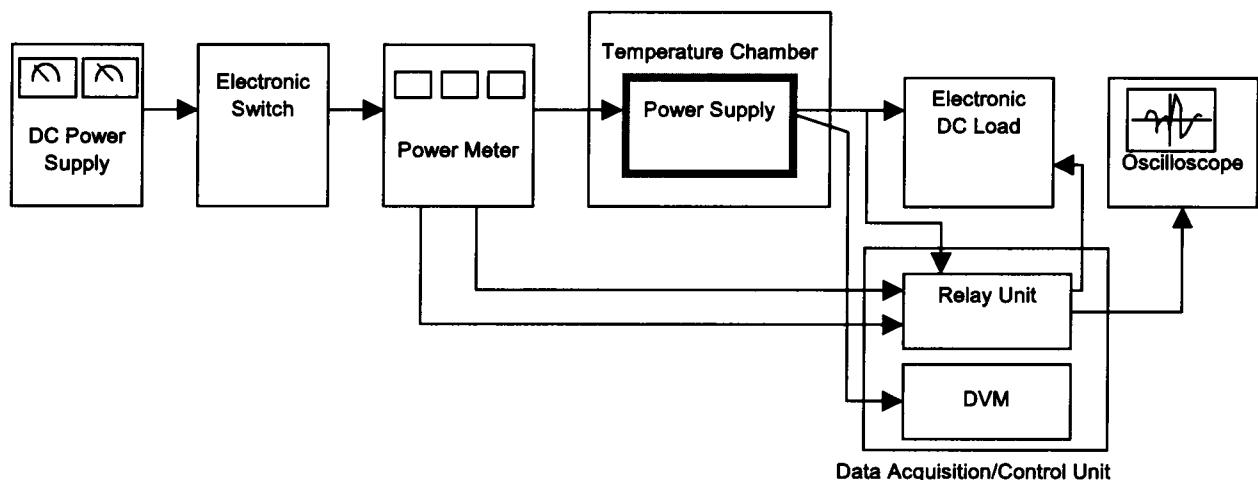


Figure A

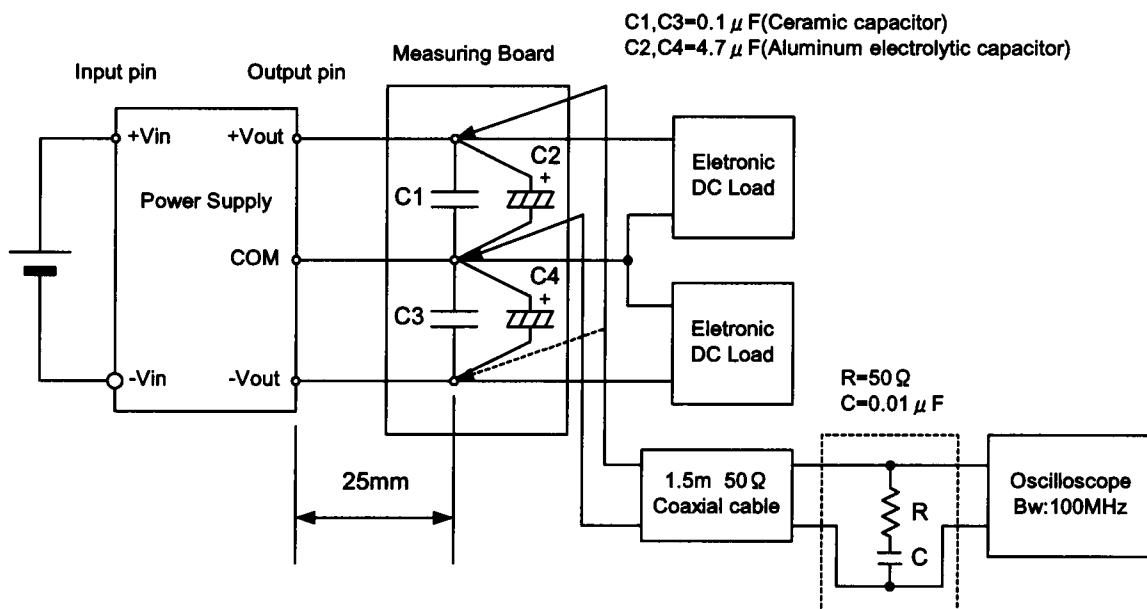


Figure B (Ripple and Ripple noise Characteristic)