



TEST DATA OF SUCS32415

Regulated DC Power Supply
Mar 23, 2005

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Tetsuo Sugimori Design Manager

Prepared by : Hayato Nakatsubo
Hayato Nakatsubo Design Engineer

COSEL CO.,LTD.



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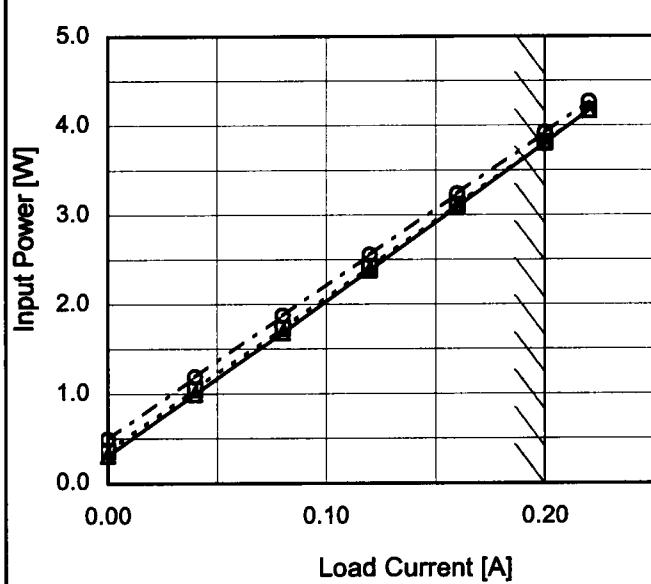
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1.Graph	<p>The graph shows Input Current [A] on the Y-axis (0.00 to 0.50) versus Input Voltage [V] on the X-axis (0 to 50). Three data series are plotted: Load 100% (triangles), Load 50% (squares), and Load 0% (circles). A slanted line at approximately 18V marks the rated input voltage range.</p> <table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Load 0% [A]</th> <th>Load 50% [A]</th> <th>Load 100% [A]</th> </tr> </thead> <tbody> <tr><td>10</td><td>0.00</td><td>0.00</td><td>0.35</td></tr> <tr><td>12</td><td>0.00</td><td>0.18</td><td>0.30</td></tr> <tr><td>15</td><td>0.00</td><td>0.15</td><td>0.22</td></tr> <tr><td>20</td><td>0.00</td><td>0.10</td><td>0.18</td></tr> <tr><td>25</td><td>0.00</td><td>0.08</td><td>0.14</td></tr> <tr><td>30</td><td>0.00</td><td>0.07</td><td>0.12</td></tr> <tr><td>35</td><td>0.00</td><td>0.06</td><td>0.10</td></tr> <tr><td>40</td><td>0.00</td><td>0.05</td><td>0.09</td></tr> </tbody> </table>			Input Voltage [V]	Load 0% [A]	Load 50% [A]	Load 100% [A]	10	0.00	0.00	0.35	12	0.00	0.18	0.30	15	0.00	0.15	0.22	20	0.00	0.10	0.18	25	0.00	0.08	0.14	30	0.00	0.07	0.12	35	0.00	0.06	0.10	40	0.00	0.05	0.09																																												
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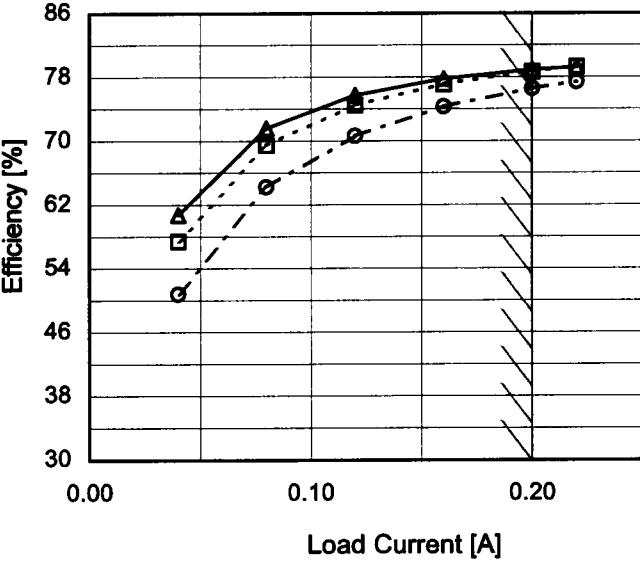
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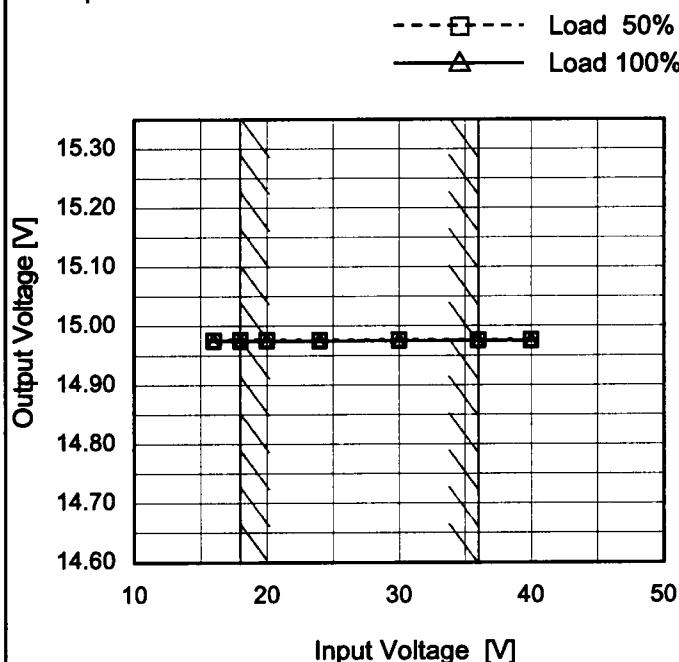
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Model	SUCS32415
Item	Line Regulation
Object	+15V0.2A

1. Graph



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

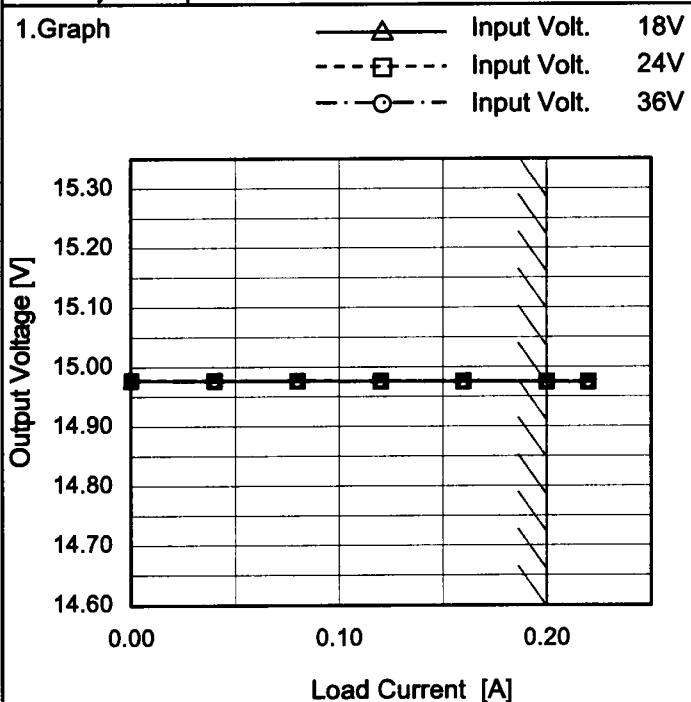
Temperature 25°C
Testing Circuitry Figure A

2. Values

Input Voltage [V]	Output Voltage [V]	
	Load 50%	Load 100%
16	14.976	14.975
18	14.976	14.975
20	14.976	14.975
24	14.977	14.975
30	14.976	14.975
36	14.976	14.975
40	14.976	14.975
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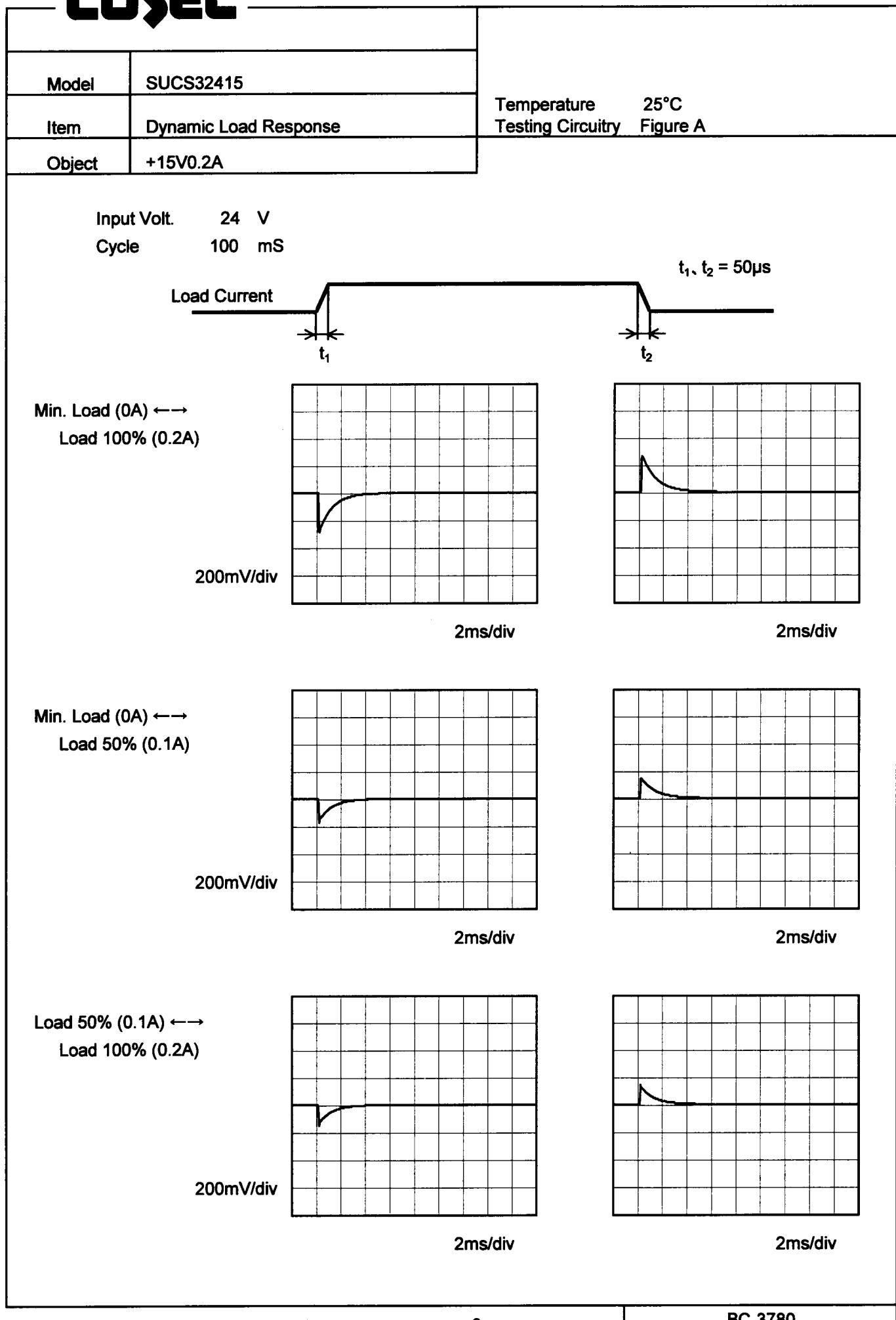
 Temperature 25°C
 Testing Circuitry Figure A


2.Values

Load Current [A]	Output Voltage [V]		
	Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]
0.00	14.977	14.978	14.978
0.04	14.977	14.977	14.977
0.08	14.976	14.977	14.977
0.12	14.976	14.976	14.976
0.16	14.975	14.976	14.976
0.20	14.975	14.975	14.975
0.22	14.975	14.975	14.975
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Note: Slanted line shows the range of the rated load current.

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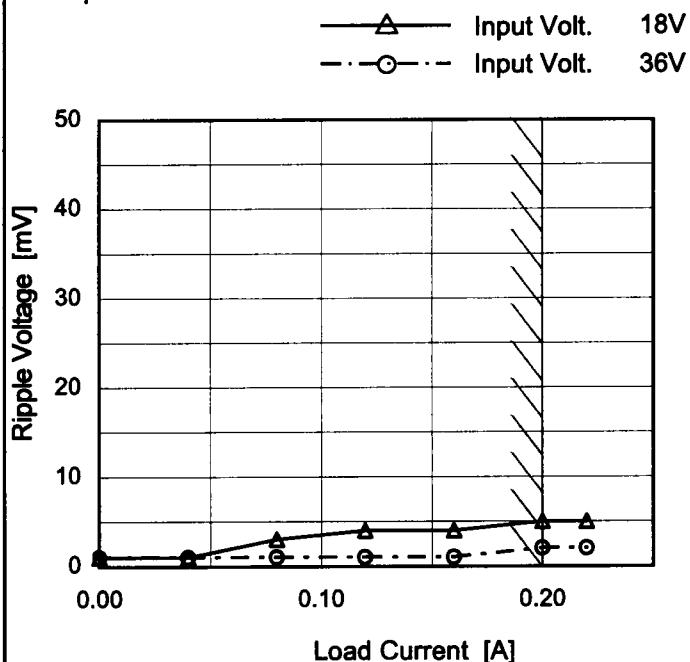


COSEL

Model	SUCS32415
Item	Ripple Voltage (by Load Current)
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure B

1. Graph



2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	1	1
0.04	1	1
0.08	3	1
0.12	4	1
0.16	4	1
0.20	5	2
0.22	5	2
--	-	-
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--	-	-
--	-	-

Measured by 100 MHz Oscilloscope.
Ripple Voltage is shown as p-p in the figure below.
Note: Slanted line shows the range of the rated load current.

Ripple [mVp-p]

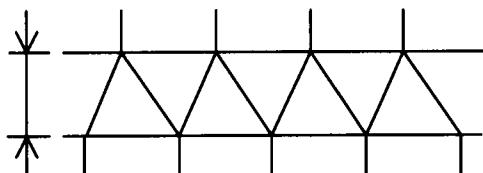


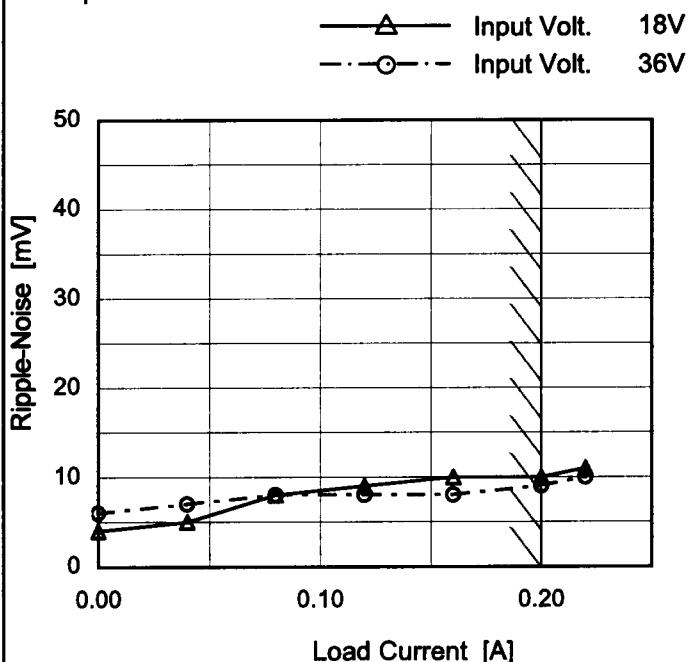
Fig.Complex Ripple Wave Form

COSEL

Model	SUCS32415
Item	Ripple-Noise
Object	+15V0.2A

Temperature 25°C
Testing Circuitry Figure B

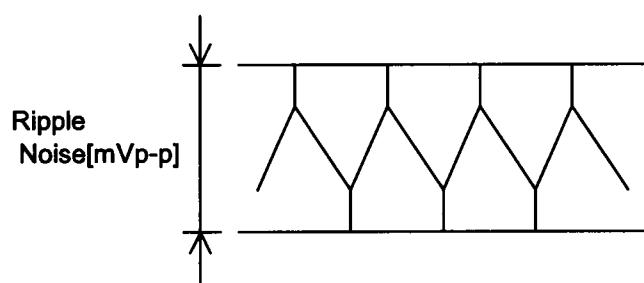
1. Graph



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.

2. Values

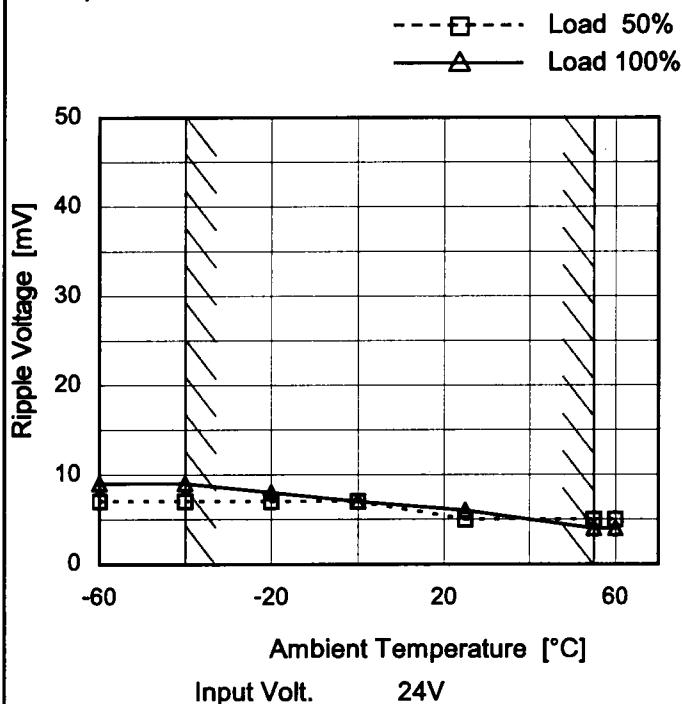
Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 18 [V]	Input Volt. 36 [V]
0.00	4	6
0.04	5	7
0.08	8	8
0.12	9	8
0.16	10	8
0.20	10	9
0.22	11	10
--	-	-
--	-	-
--	-	-
--	-	-



COSEL

Model	SUCS32415
Item	Ripple Voltage (by Ambient Temp.)
Object	+15V0.2A

1. Graph



Measured by 100 MHz Oscilloscope.

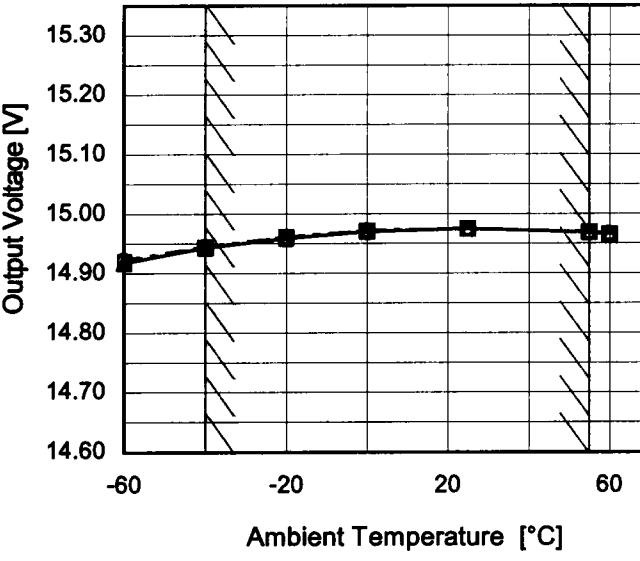
Note: Slanted line shows the range of the rated ambient temperature.

Testing Circuitry Figure B

2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-60	7	9
-40	7	9
-20	7	8
0	7	7
25	5	6
55	5	4
60	5	4
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCS32415
Item	Ambient Temperature Drift
Object	+15V0.2A
1.Graph	<p style="text-align: center;"> Input Volt. 18V Input Volt. 24V Input Volt. 36V </p>  <p style="text-align: center;">Load 100%</p>
Note:	Slanted line shows the range of the rated ambient temperature.

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	14.918	14.920	14.922
-40	14.943	14.944	14.945
-20	14.959	14.961	14.961
0	14.970	14.971	14.972
25	14.975	14.975	14.975
55	14.969	14.969	14.968
60	14.967	14.966	14.966
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-



Model	SUCS32415	Testing Circuitry Figure A
Item	Output Voltage Accuracy	
Object	+15V0.2A	

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 : 0 - 0.2A

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

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

2. Values

Item	Temperature [°C]	Input Voltage[V]	Output		Output Voltage Accuracy	
			Current[A]	Voltage[V]	Value [mV]	Ration [%]
Maximum Voltage	25	36	0	14.977	±17	±0.1
Minimum Voltage	-40	18	0.2	14.943		

COSEL

Model	SUCCS32415	Temperature Testing Circuitry	25°C Figure A																						
Item	Time Lapse Drift																								
Object	+15V0.2A																								
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>14.977</td></tr> <tr><td>0.5</td><td>14.975</td></tr> <tr><td>1.0</td><td>14.974</td></tr> <tr><td>2.0</td><td>14.974</td></tr> <tr><td>3.0</td><td>14.974</td></tr> <tr><td>4.0</td><td>14.974</td></tr> <tr><td>5.0</td><td>14.974</td></tr> <tr><td>6.0</td><td>14.974</td></tr> <tr><td>7.0</td><td>14.974</td></tr> <tr><td>8.0</td><td>14.974</td></tr> </tbody> </table>	Time since start [H]	Output Voltage [V]	0.0	14.977	0.5	14.975	1.0	14.974	2.0	14.974	3.0	14.974	4.0	14.974	5.0	14.974	6.0	14.974	7.0	14.974	8.0	14.974
Time since start [H]	Output Voltage [V]																								
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8.0	14.974																								

COSEL

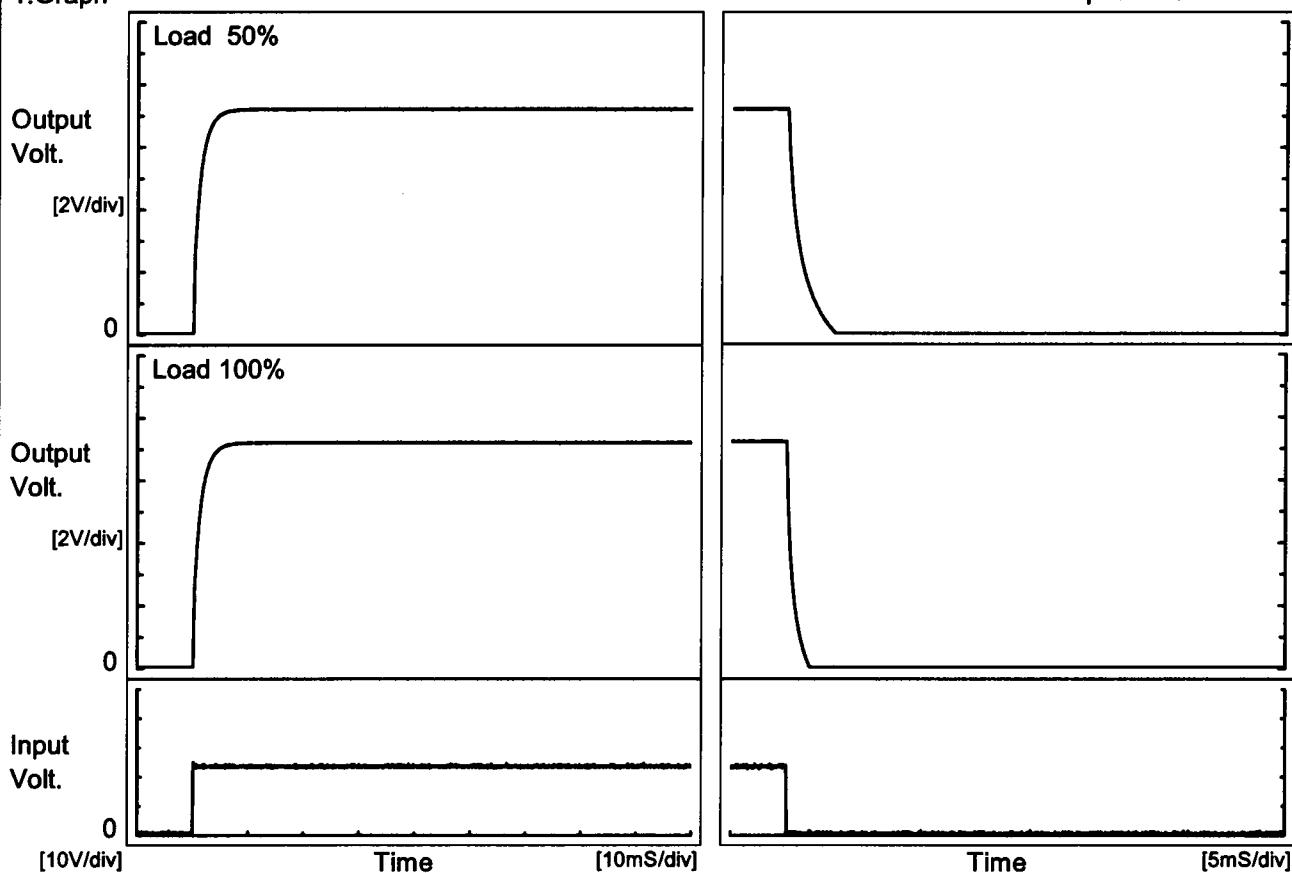
Model SUCS32415

Item Rise and Fall Time

Object +15V0.2A

Temperature 25°C
Testing Circuitry Figure A

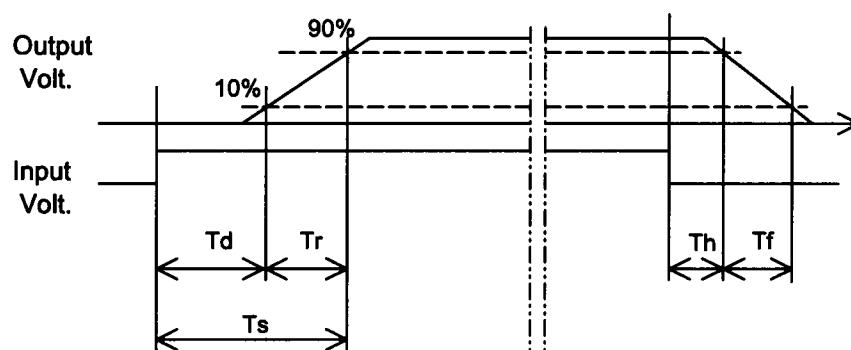
1. Graph



2. Values

[mS]

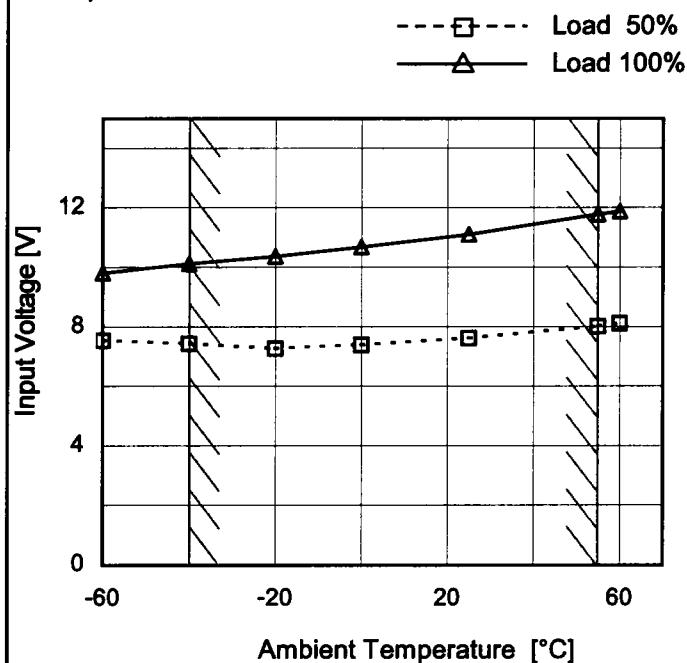
Load	Time	Td	Tr	Ts	Th	Tf
50 %		0.1	3.6	3.7	0.1	2.8
100 %		0.1	3.6	3.7	0.1	1.4



COSEL

Model	SUCS32415
Item	Minimum Input Voltage for Regulated Output Voltage
Object	+15V0.2A

1.Graph



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

Testing Circuitry Figure A

2.Values

Ambient Temperature [°C]	Input Voltage [V]	
	Load 50%	Load 100%
-60	7.6	9.9
-40	7.5	10.2
-20	7.3	10.4
0	7.4	10.7
25	7.7	11.1
55	8.1	11.8
60	8.2	11.9
--	-	-
--	-	-
--	-	-
--	-	-

COSEL

Model	SUCS32415	Temperature Testing Circuitry	25°C Figure A																																																							
Item	Overcurrent Protection																																																									
Object	+15V0.2A																																																									
1.Graph	<p style="text-align: center;">Input Volt. 18V Input Volt. 24V Input Volt. 36V</p> <p style="text-align: center;">Output Voltage [V]</p> <p style="text-align: center;">Load Current [A]</p>	2.Values																																																								
	<p>Note: Slanted line shows the range of the rated load current.</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. 18[V]</th> <th>Input Volt. 24[V]</th> <th>Input Volt. 36[V]</th> </tr> </thead> <tbody> <tr><td>15.0</td><td>0.20</td><td>0.20</td><td>0.20</td></tr> <tr><td>14.3</td><td>0.38</td><td>0.44</td><td>0.42</td></tr> <tr><td>13.5</td><td>0.39</td><td>0.45</td><td>0.43</td></tr> <tr><td>12.0</td><td>0.42</td><td>0.48</td><td>0.45</td></tr> <tr><td>10.5</td><td>0.45</td><td>0.50</td><td>0.47</td></tr> <tr><td>9.0</td><td>0.48</td><td>0.53</td><td>0.49</td></tr> <tr><td>7.5</td><td>0.51</td><td>0.55</td><td>0.52</td></tr> <tr><td>6.0</td><td>0.54</td><td>0.58</td><td>0.54</td></tr> <tr><td>4.5</td><td>0.56</td><td>0.59</td><td>0.55</td></tr> <tr><td>3.0</td><td>0.57</td><td>0.60</td><td>0.56</td></tr> <tr><td>1.5</td><td>0.55</td><td>0.57</td><td>0.54</td></tr> <tr><td>0.0</td><td>0.57</td><td>0.60</td><td>0.61</td></tr> </tbody> </table>	Output Voltage [V]	Load Current [A]			Input Volt. 18[V]	Input Volt. 24[V]	Input Volt. 36[V]	15.0	0.20	0.20	0.20	14.3	0.38	0.44	0.42	13.5	0.39	0.45	0.43	12.0	0.42	0.48	0.45	10.5	0.45	0.50	0.47	9.0	0.48	0.53	0.49	7.5	0.51	0.55	0.52	6.0	0.54	0.58	0.54	4.5	0.56	0.59	0.55	3.0	0.57	0.60	0.56	1.5	0.55	0.57	0.54	0.0	0.57	0.60	0.61	
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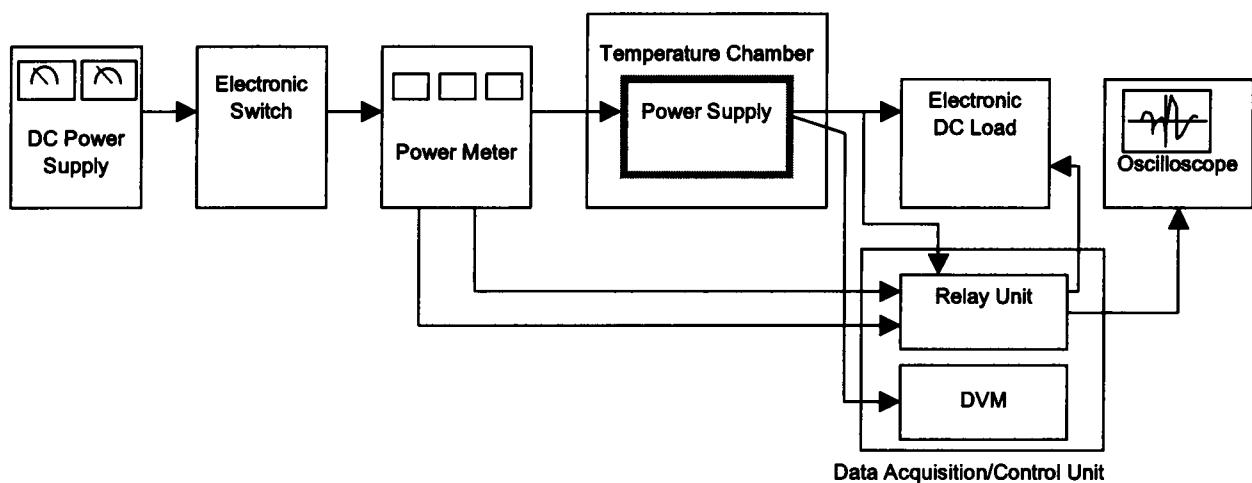


Figure A

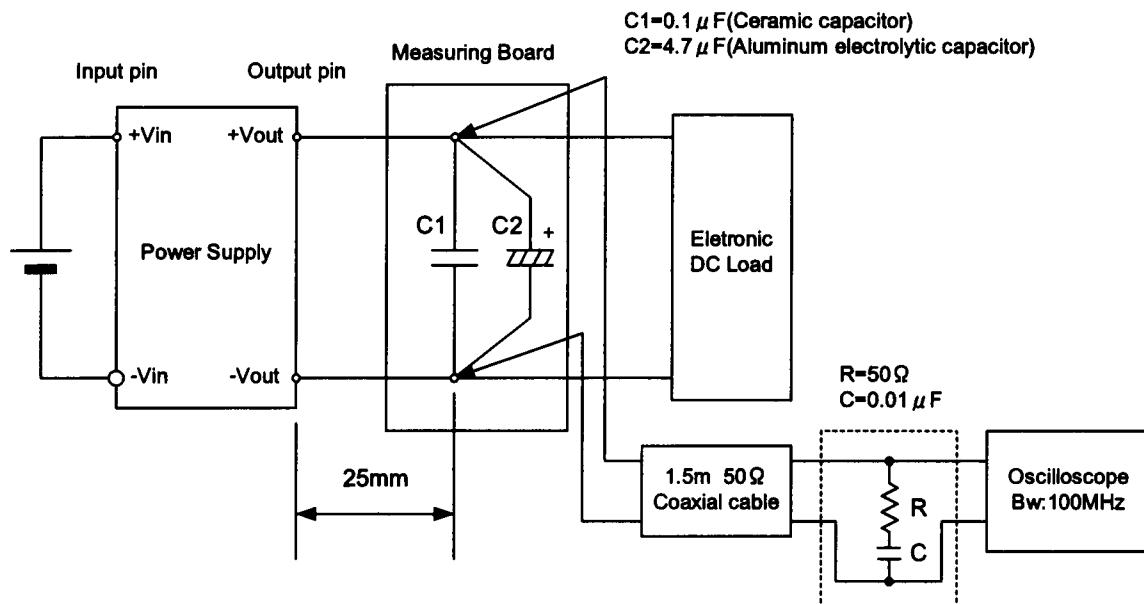


Figure B (Ripple and Ripple noise Characteristic)