

# TEST DATA OF CHS200483R3

Regulated DC Power Supply  
September 29, 2011

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Prepared by : Masanobu Shima  
Masanobu Shima Design Engineer

**COSEL CO.,LTD.**

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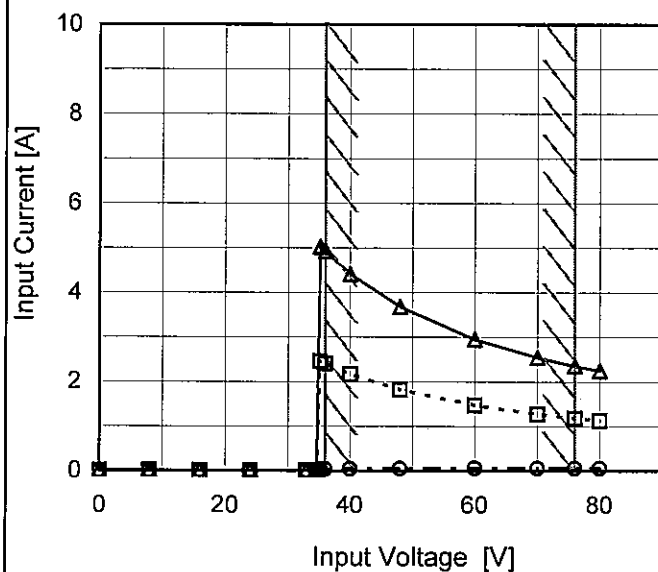
(Final Page 19)

Model	CHS200483R3
Item	Input Current (by Input Voltage)
Object	

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph

—△— Load 100%  
 ---□--- Load 50%  
 - - -○- - - Load 0%



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

## 2. Values

Input Voltage [V]	Input Current [A]		
	Load 0%	Load 50%	Load 100%
0.0	0.000	0.000	0.000
8.0	0.004	0.004	0.004
16.0	0.005	0.005	0.005
24.0	0.006	0.006	0.006
33.0	0.006	0.006	0.006
34.6	0.006	0.006	0.006
35.2	0.037	2.458	5.020
36.0	0.037	2.404	4.920
40.0	0.041	2.169	4.408
48.0	0.047	1.820	3.678
60.0	0.054	1.472	2.946
70.0	0.058	1.275	2.542
76.0	0.059	1.181	2.349
80.0	0.060	1.126	2.239
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model		CHS200483R3		Temperature 25°C																																																		
Item		Input Current (by Load Current)		Testing Circuitry Figure A																																																		
Object		_____																																																				
1.Graph		<div><div>—△—</div>Input Volt. 36V</div> <div><div>---□---</div>Input Volt. 48V</div> <div><div>---○---</div>Input Volt. 76V</div>		2.Values																																																		
<div><div><div>Input Current [A]</div><div><p>The graph plots Input Current [A] on the y-axis (0 to 10) against Load Current [A] on the x-axis (0 to 60). Three data series are shown: 36V (solid line with triangles), 48V (dashed line with squares), and 76V (dash-dot line with circles). All series show a linear increase in input current with load current. A slanted line is drawn from the origin to approximately (55, 5.5), indicating the rated load current range.</p></div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr><tr><td>0</td><td>0.037</td><td>0.047</td><td>0.059</td></tr><tr><td>8</td><td>0.782</td><td>0.603</td><td>0.410</td></tr><tr><td>16</td><td>1.540</td><td>1.171</td><td>0.768</td></tr><tr><td>24</td><td>2.310</td><td>1.748</td><td>1.134</td></tr><tr><td>32</td><td>3.088</td><td>2.328</td><td>1.503</td></tr><tr><td>40</td><td>3.888</td><td>2.920</td><td>1.876</td></tr><tr><td>48</td><td>4.710</td><td>3.522</td><td>2.256</td></tr><tr><td>50</td><td>4.920</td><td>3.676</td><td>2.349</td></tr><tr><td>55</td><td>5.450</td><td>4.068</td><td>2.595</td></tr><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr><tr><td>---</td><td>-</td><td>-</td><td>-</td></tr></table>		Load Current [A]	Input Current [A]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	0	0.037	0.047	0.059	8	0.782	0.603	0.410	16	1.540	1.171	0.768	24	2.310	1.748	1.134	32	3.088	2.328	1.503	40	3.888	2.920	1.876	48	4.710	3.522	2.256	50	4.920	3.676	2.349	55	5.450	4.068	2.595	--	-	-	-	---	-	-	-
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Note: Slanted line shows the range of the rated load current.																																																						

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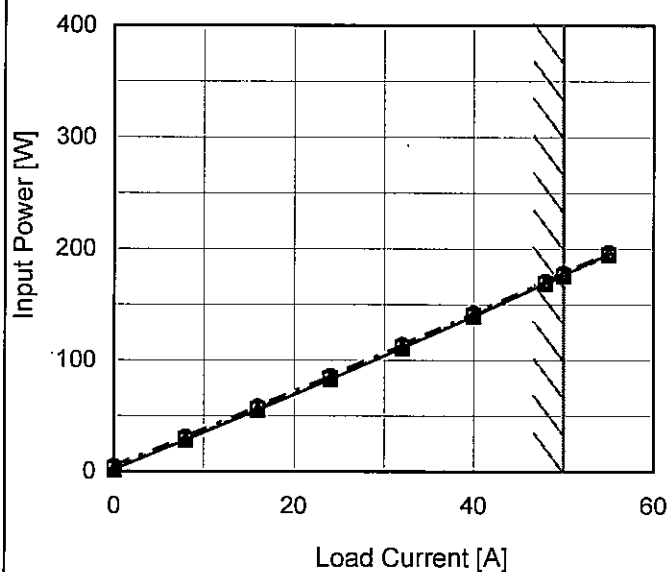
BC - 10617

Model	CHS200483R3
Item	Input Power (by Load Current)
Object	

Temperature 25°C  
Testing Circuitry Figure A

1. Graph

—△— Input Volt. 36V  
 ---□--- Input Volt. 48V  
 ---○--- Input Volt. 76V



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

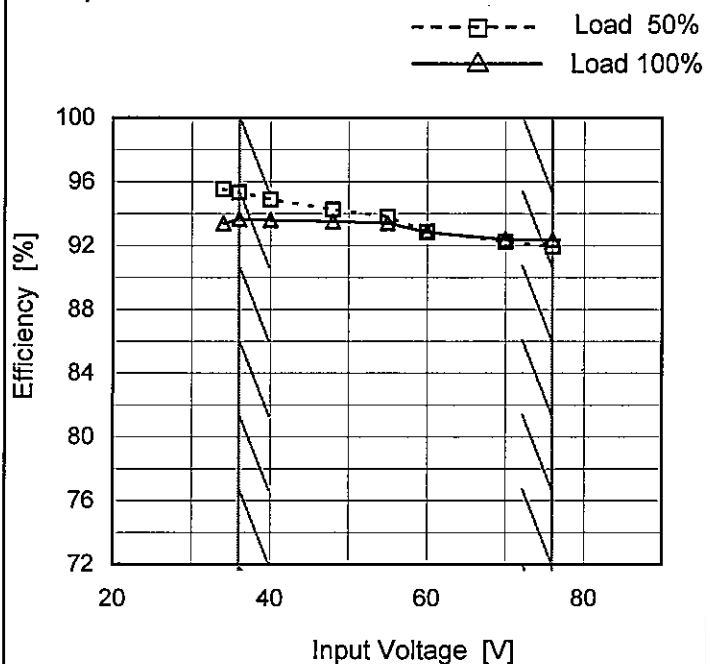
2. Values

Load Current [A]	Input Power [W]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	1.3	2.3	4.5
8	28.0	28.9	31.1
16	55.2	56.1	58.3
24	82.9	83.6	86.0
32	110.8	111.5	113.9
40	139.4	139.8	142.2
48	169.0	168.7	171.0
50	176.4	176.0	178.2
55	195.4	194.6	196.8
--	-	-	-
--	-	-	-

Model	CHS200483R3
Item	Efficiency (by Input Voltage)
Object	

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



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

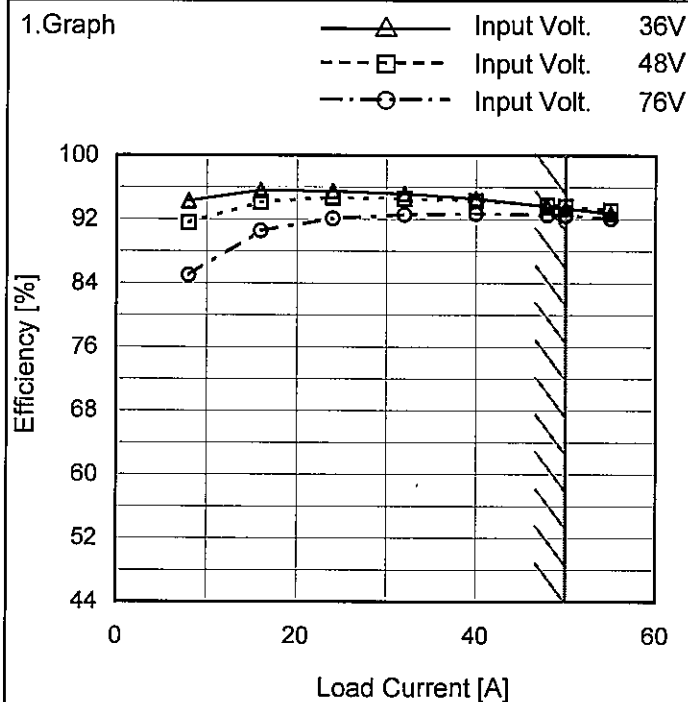
## 2. Values

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
34	95.6	93.3
36	95.5	93.4
40	95.3	93.7
48	94.9	93.6
55	94.2	93.5
60	93.8	93.4
70	92.9	92.8
76	92.2	92.4
80	91.9	92.4

Model	CHS200483R3
Item	Efficiency (by Load Current)
Object	

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



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

## 2. Values

Load Current [A]	Efficiency [%]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
0	-	-	-
8	94.3	91.6	85.0
16	95.6	94.1	90.6
24	95.5	94.7	92.1
32	95.2	94.6	92.6
40	94.6	94.3	92.7
48	93.6	93.8	92.5
50	93.4	93.6	92.4
55	92.7	93.1	92.1
--	-	-	-
--	-	-	-

Model	CHS200483R3	Temperature 25°C Testing Circuitry Figure A																																	
Item	Line Regulation																																		
Object	+3.3V50A																																		
1.Graph		2.Values																																	
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <table><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>34</td><td>3.297</td><td>3.297</td></tr><tr><td>36</td><td>3.297</td><td>3.297</td></tr><tr><td>40</td><td>3.298</td><td>3.297</td></tr><tr><td>48</td><td>3.298</td><td>3.297</td></tr><tr><td>55</td><td>3.298</td><td>3.297</td></tr><tr><td>60</td><td>3.298</td><td>3.297</td></tr><tr><td>70</td><td>3.298</td><td>3.297</td></tr><tr><td>76</td><td>3.298</td><td>3.297</td></tr><tr><td>80</td><td>3.298</td><td>3.297</td></tr></tbody></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	34	3.297	3.297	36	3.297	3.297	40	3.298	3.297	48	3.298	3.297	55	3.298	3.297	60	3.298	3.297	70	3.298	3.297	76	3.298	3.297	80	3.298	3.297		
Input Voltage [V]	Output Voltage [V]																																		
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Model	CHS200483R3																																																					
Item	Load Regulation	Temperature	25°C																																																			
Object	+3.3V50A	Testing Circuitry	Figure A																																																			
1.Graph		2.Values																																																				
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Load Current [A]	Output Voltage [V]																																																					
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48	3.297	3.297	3.297																																																			
50	3.297	3.297	3.297																																																			
55	3.296	3.297	3.297																																																			
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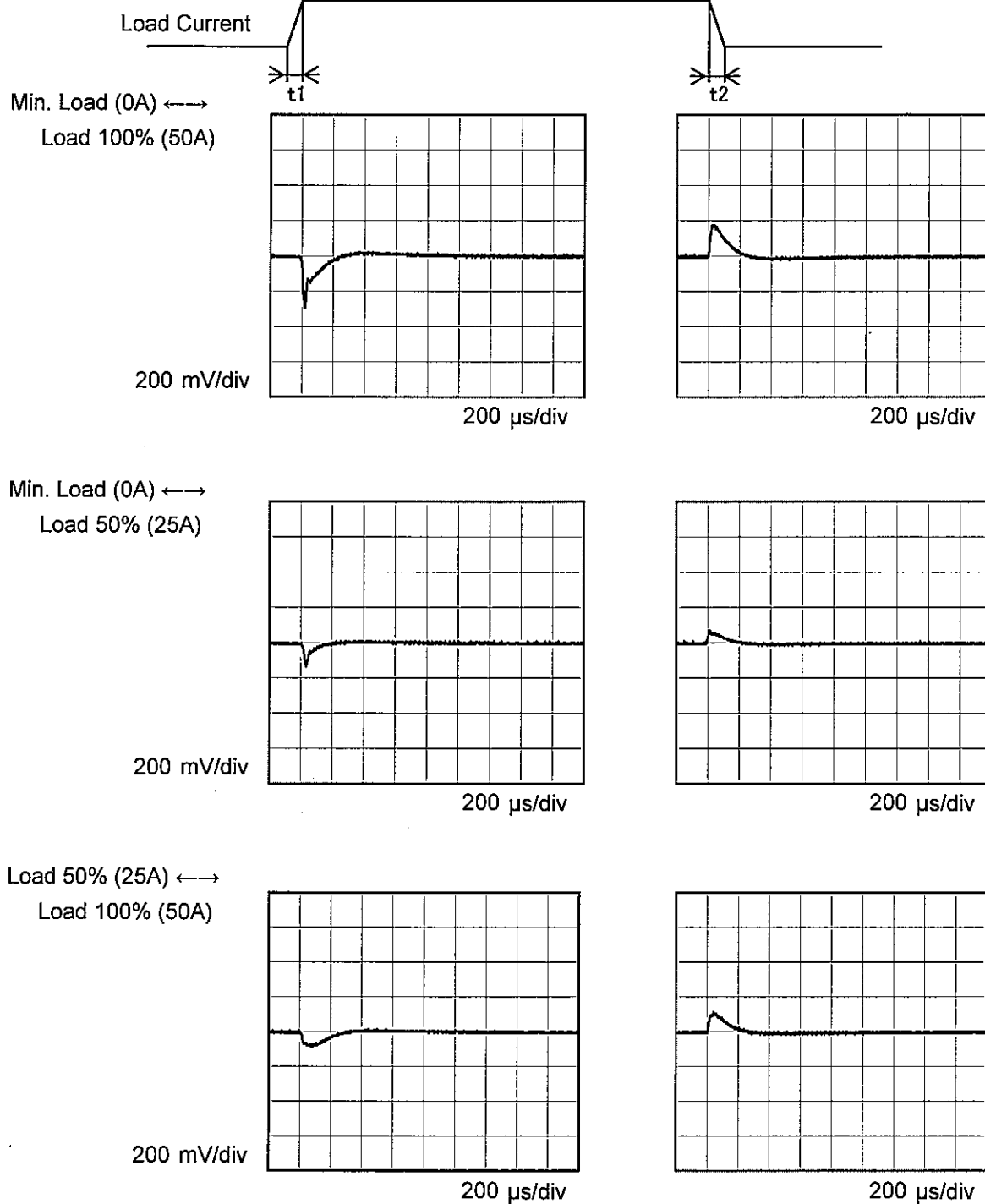
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Model	CHS200483R3
Item	Dynamic Load Response
Object	+3.3V50A

Temperature 25°C  
Testing Circuitry Figure A

Input Volt. 48 V  
Cycle 5 ms

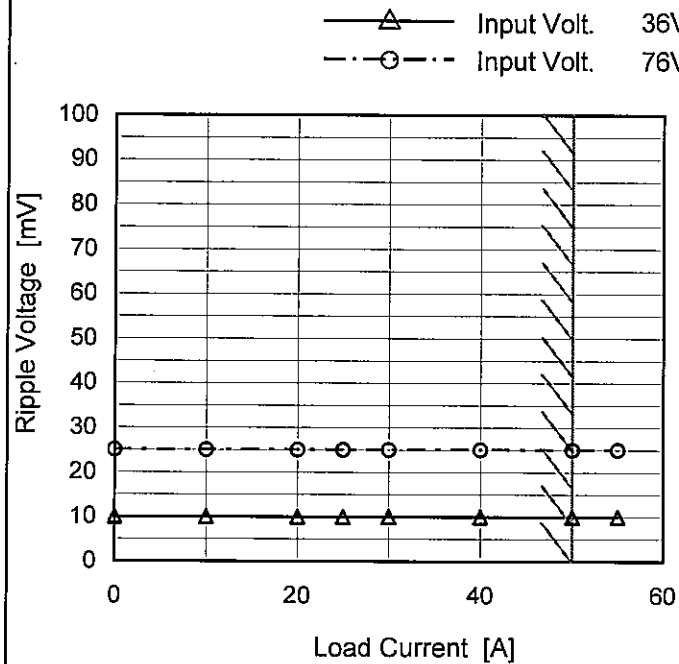
$t_1, t_2 = 50 \mu\text{s}$



Model	CHS200483R3
Item	Ripple Voltage (by Load Current)
Object	+3.3V50A

Temperature 25°C  
Testing Circuitry Figure B

## 1. Graph



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]

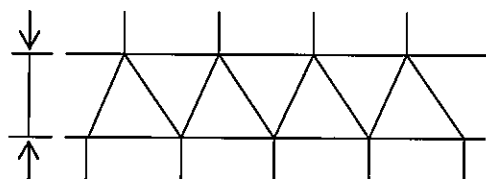
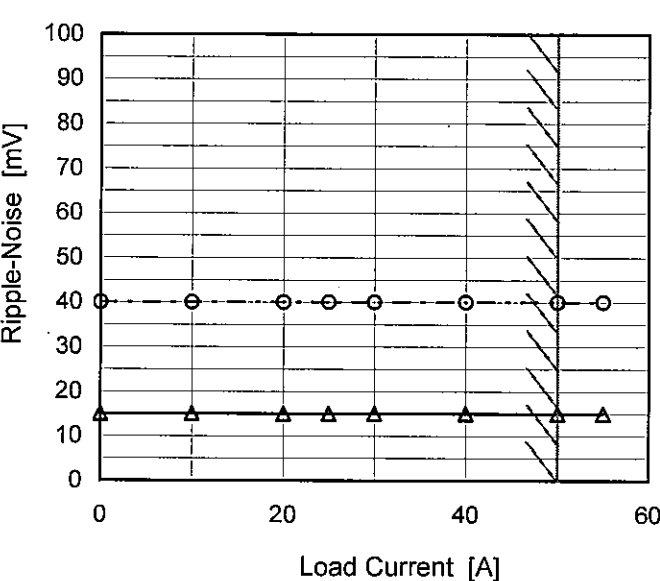
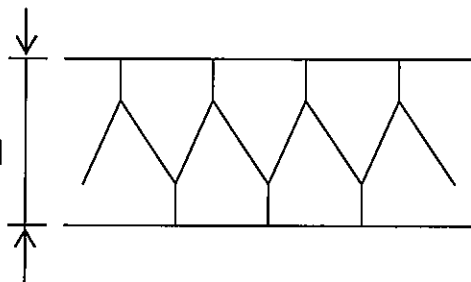


Fig. Complex Ripple Wave Form

## 2. Values

Load Current [A]	Ripple Voltage [mV]	
	Input Volt. 36[V]	Input Volt. 76[V]
0	10	25
10	10	25
20	10	25
25	10	25
30	10	25
40	10	25
50	10	25
55	10	25
--	-	-
--	-	-
--	-	-

Model		CHS200483R3																																							
Item		Ripple-Noise																																							
Object		+3.3V50A																																							
1.Graph		2.Values																																							
<div><div><div><div>—△—</div><div>Input Volt.</div><div>36V</div></div><div><div>---○---</div><div>Input Volt.</div><div>76V</div></div></div><div></div></div>		<table><tr><th rowspan="2">Load Current [A]</th><th colspan="2">Ripple-Noise [mV]</th></tr><tr><th>Input Volt. 36 [V]</th><th>Input Volt. 76 [V]</th></tr><tr><td>0</td><td>15</td><td>40</td></tr><tr><td>10</td><td>15</td><td>40</td></tr><tr><td>20</td><td>15</td><td>40</td></tr><tr><td>25</td><td>15</td><td>40</td></tr><tr><td>30</td><td>15</td><td>40</td></tr><tr><td>40</td><td>15</td><td>40</td></tr><tr><td>50</td><td>15</td><td>40</td></tr><tr><td>55</td><td>15</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></table>		Load Current [A]	Ripple-Noise [mV]		Input Volt. 36 [V]	Input Volt. 76 [V]	0	15	40	10	15	40	20	15	40	25	15	40	30	15	40	40	15	40	50	15	40	55	15	40	--	-	-	--	-	-	--	-	-
Load Current [A]	Ripple-Noise [mV]																																								
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<div><div><div><div><div></div><div></div></div><div>Ripple Noise[mVp-p]</div></div><div></div></div></div>		Fig.Complex Ripple Noise Wave Form																																							

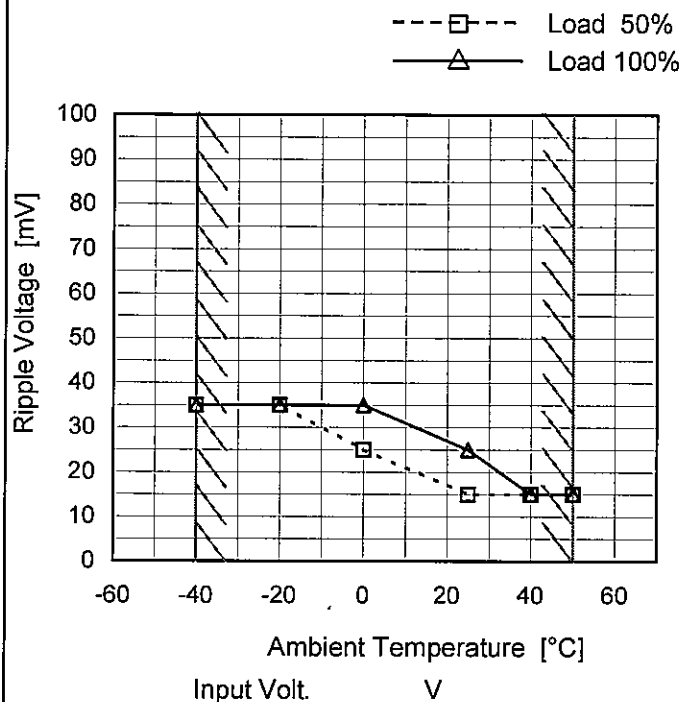
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Model	CHS200483R3
Item	Ripple Voltage (by Ambient Temp.)
Object	+3.3V50A

Testing Circuitry Figure A

## 1. Graph



## 2. Values

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

Measured by 100 MHz Oscilloscope.

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

Ripple [mVp-p]

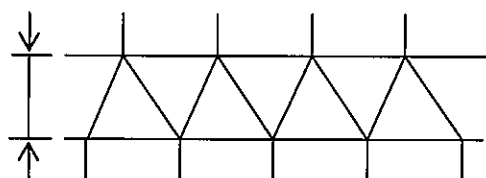


Fig. Complex Ripple Wave Form

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Model		CHS200483R3																																																				
Item		Ambient Temperature Drift																																																				
Object		+3.3V50A																																																				
1.Graph		2.Values																																																				
<div><div><div>—△—</div><div>---□---</div><div>---○---</div></div><div><div>Input Volt.</div><div>Input Volt.</div><div>Input Volt.</div></div><div><div>36V</div><div>48V</div><div>76V</div></div></div> <div><p>Output Voltage [V]</p><p>Ambient Temperature [°C]</p><p>Load 100%</p></div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 36[V]</th><th>Input Volt. 48[V]</th><th>Input Volt. 76[V]</th></tr><tr><td>-40</td><td>3.307</td><td>3.307</td><td>3.306</td></tr><tr><td>-20</td><td>3.303</td><td>3.303</td><td>3.302</td></tr><tr><td>0</td><td>3.300</td><td>3.300</td><td>3.300</td></tr><tr><td>25</td><td>3.297</td><td>3.297</td><td>3.297</td></tr><tr><td>40</td><td>3.295</td><td>3.295</td><td>3.295</td></tr><tr><td>50</td><td>3.294</td><td>3.295</td><td>3.294</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><tr><td>--</td><td>-</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Output Voltage [V]			Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]	-40	3.307	3.307	3.306	-20	3.303	3.303	3.302	0	3.300	3.300	3.300	25	3.297	3.297	3.297	40	3.295	3.295	3.295	50	3.294	3.295	3.294	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-	--	-	-	-
Ambient Temperature [°C]	Output Voltage [V]																																																					
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Note: Slanted line shows the range of the rated ambient temperature.																																																						

		Testing Circuitry Figure A
Model	CHS200483R3	
Item	Output Voltage Accuracy	
Object	+3.3V50A	

## 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 - 50°C

Input Voltage : 36 - 76V

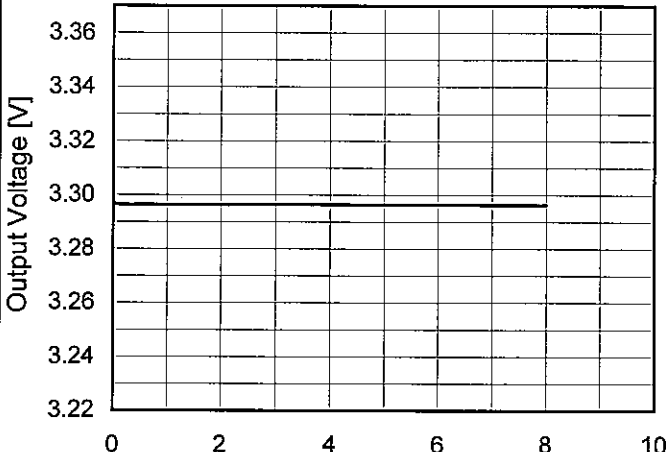
Load Current : 0 - 50A

\* 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	-40	76	0	3.309	±8	±0.2
Minimum Voltage	50	36	50	3.294		

Model	CHS200483R3																								
Item	Time Lapse Drift	Temperature	25°C																						
Object	+3.3V50A	Testing Circuitry	Figure A																						
1.Graph		2.Values																							
<div><p>Output Voltage [V]</p><p>Time [H]</p><p>Input Volt. 48V</p><p>Load 100%</p></div>		<table><tr><th>Time since start [H]</th><th>Output Voltage [V]</th></tr><tr><td>0.0</td><td>3.297</td></tr><tr><td>0.5</td><td>3.296</td></tr><tr><td>1.0</td><td>3.296</td></tr><tr><td>2.0</td><td>3.296</td></tr><tr><td>3.0</td><td>3.296</td></tr><tr><td>4.0</td><td>3.296</td></tr><tr><td>5.0</td><td>3.296</td></tr><tr><td>6.0</td><td>3.296</td></tr><tr><td>7.0</td><td>3.296</td></tr><tr><td>8.0</td><td>3.296</td></tr></table>		Time since start [H]	Output Voltage [V]	0.0	3.297	0.5	3.296	1.0	3.296	2.0	3.296	3.0	3.296	4.0	3.296	5.0	3.296	6.0	3.296	7.0	3.296	8.0	3.296
Time since start [H]	Output Voltage [V]																								
0.0	3.297																								
0.5	3.296																								
1.0	3.296																								
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5.0	3.296																								
6.0	3.296																								
7.0	3.296																								
8.0	3.296																								

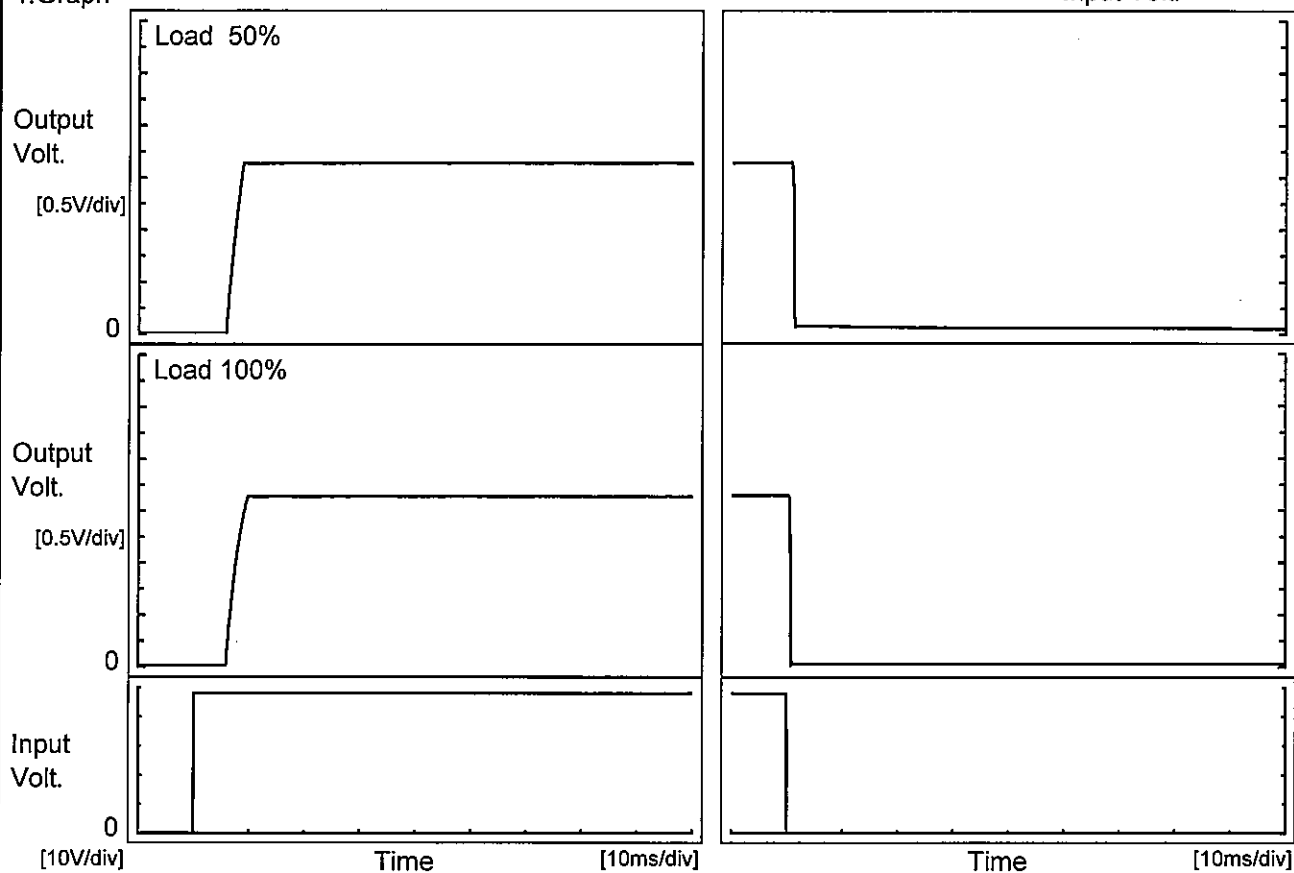


# COSEL

Model	CHS200483R3	Temperature	25°C
Item	Rise and Fall Time	Testing Circuitry	Figure A
Object	+3.3V50A		

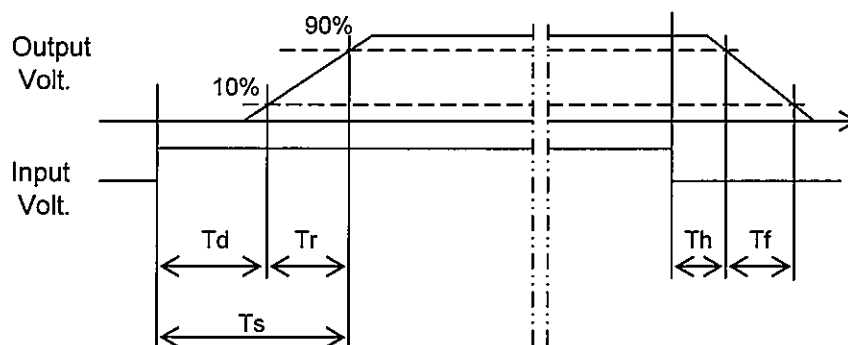
## 1. Graph

Input Volt. 48 V



## 2. Values

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	6.0	2.5	8.5	0.9	0.3
100 %	6.1	3.1	9.2	0.5	0.2

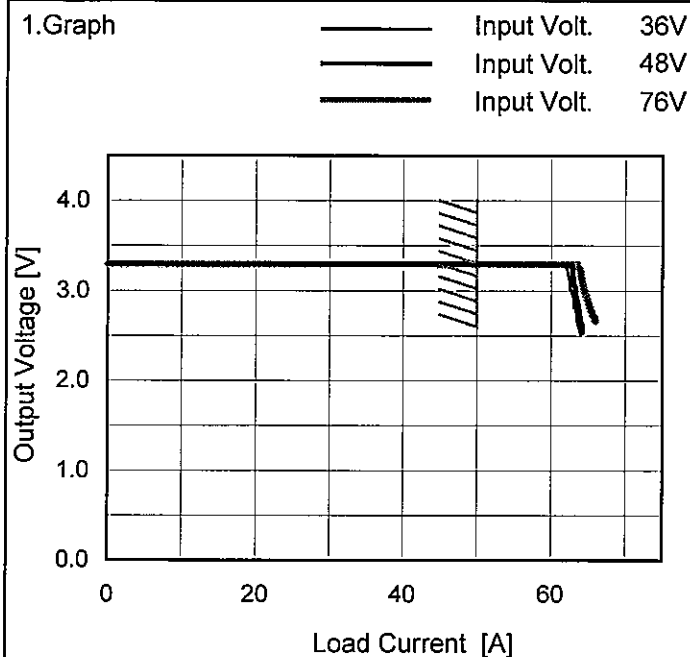


Model	CHS200483R3																																								
Item	Minimum Input Voltage for Regulated Output Voltage	Testing Circuitry    Figure A																																							
Object	+3.3V50A																																								
1.Graph		2.Values																																							
<div><div><div>---□---</div><div>Load 50%</div></div><div><div>—△—</div><div>Load 100%</div></div></div> <div>Input Voltage [V]</div> <div>Ambient Temperature [°C]</div>		<table><tr><th rowspan="2">Ambient Temperature [°C]</th><th colspan="2">Input Voltage [V]</th></tr><tr><th>Load 50%</th><th>Load 100%</th></tr><tr><td>-40</td><td>32.4</td><td>32.4</td></tr><tr><td>-20</td><td>32.4</td><td>32.4</td></tr><tr><td>0</td><td>32.6</td><td>32.6</td></tr><tr><td>25</td><td>32.5</td><td>32.8</td></tr><tr><td>40</td><td>32.5</td><td>32.8</td></tr><tr><td>50</td><td>32.6</td><td>32.8</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><tr><td>--</td><td>-</td><td>-</td></tr></table>		Ambient Temperature [°C]	Input Voltage [V]		Load 50%	Load 100%	-40	32.4	32.4	-20	32.4	32.4	0	32.6	32.6	25	32.5	32.8	40	32.5	32.8	50	32.6	32.8	--	-	-	--	-	-	--	-	-	--	-	-	--	-	-
Ambient Temperature [°C]	Input Voltage [V]																																								
	Load 50%	Load 100%																																							
-40	32.4	32.4																																							
-20	32.4	32.4																																							
0	32.6	32.6																																							
25	32.5	32.8																																							
40	32.5	32.8																																							
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--	-	-																																							
Note: Slanted line shows the range of the rated ambient temperature.																																									

Model	CHS200483R3
Item	Overcurrent Protection
Object	+3.3V50A

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Output Voltage [V]	Load Current [A]		
	Input Volt. 36[V]	Input Volt. 48[V]	Input Volt. 76[V]
3.14	62.23	62.95	64.03
2.97	62.79	63.31	64.29
2.64	63.46	64.05	65.93
2.31	63.95	64.24	66.86
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-
--	-	-	-

Model		CHS200483R3
Item		Overvoltage Protection
Object		+3.3V50A

1.Graph

△

Input Volt.

36V

□

Input Volt.

76V

Operating Point [V]

</

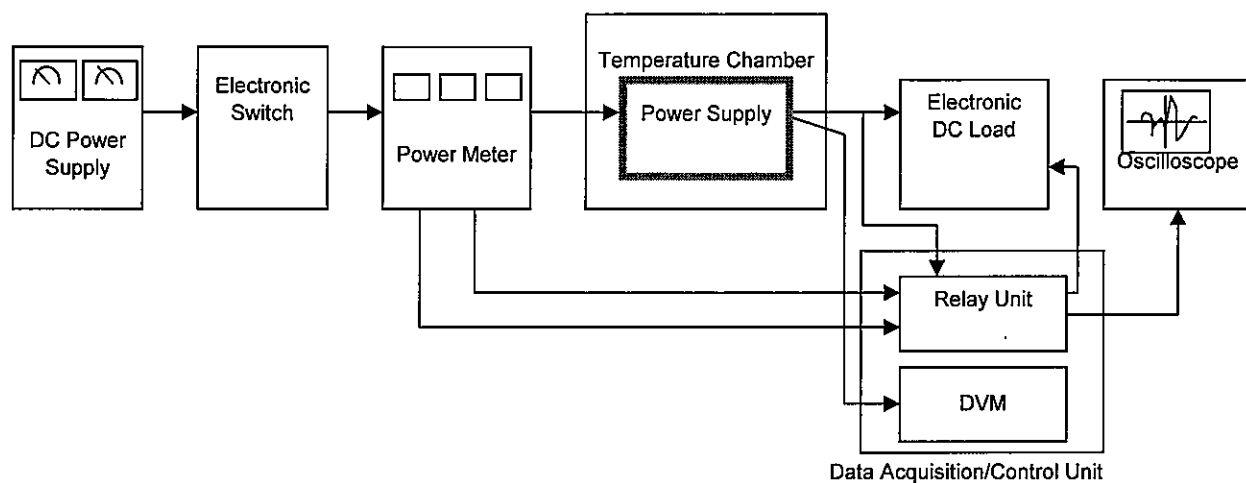


Figure A

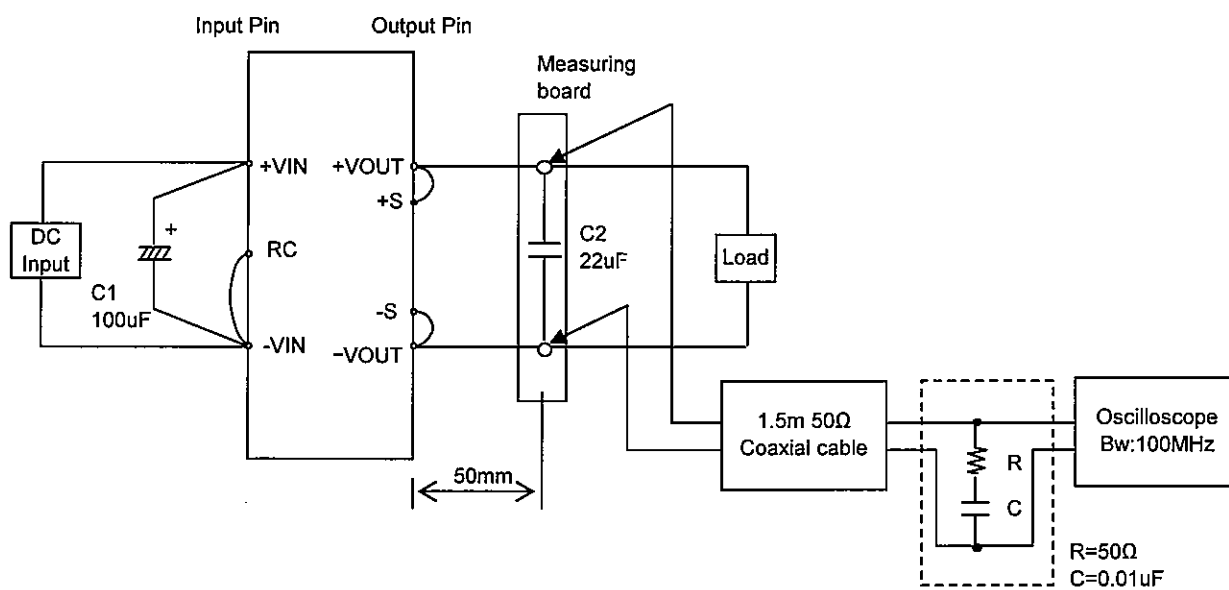


Figure B