



# TEST DATA OF LDA30F-3 (200V INPUT)

Regulated DC Power Supply

Nov. 28, 2001

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Design Manager

Prepared by : M. Hamaguchi  
Design Engineer

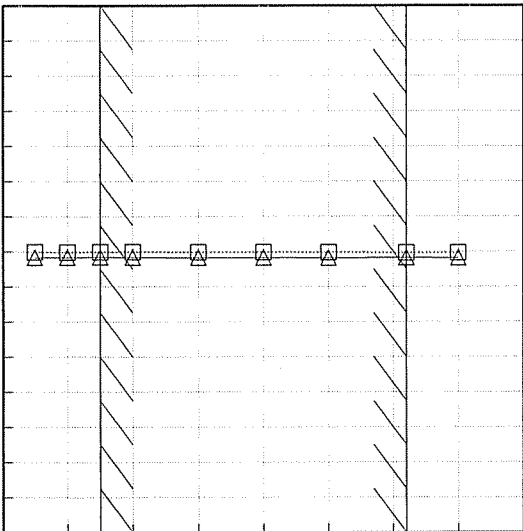
**コーセル株式会社**  
**COSEL CO., LTD.**

## CONTENTS

1. Line Regulation . . . . .	1
静的入力変動	
2. Input Current (by Load Current) . . . . .	2
入力電流 (負荷特性)	
3. Input Power (by Load Current) . . . . .	3
入力電力 (負荷特性)	
4. Efficiency (by Input Voltage) . . . . .	4
効率 (入力電圧特性)	
5. Efficiency (by Load Current) . . . . .	5
効率 (負荷特性)	
6. Power Factor (by Input Voltage) . . . . .	6
力率 (入力電圧特性)	
7. Power Factor (by Load Current) . . . . .	7
力率 (負荷特性)	
8. Hold-Up Time . . . . .	8
出力保持時間	
9. Instantaneous Interruption Compensation . . . . .	9
瞬時停電保障	
10. Load Regulation . . . . .	10
静的負荷変動	
11. Ripple Voltage (by Load Current) . . . . .	11
リップル電圧 (負荷特性)	
12. Ripple-Noise . . . . .	12
リップルノイズ	
13. Overcurrent Protection . . . . .	13
過電流保護	
14. Overvoltage Protection . . . . .	14
過電圧保護	
15. Inrush Current . . . . .	15
突入電流	
16. Rise and Fall Time . . . . .	16
立上り、立下り時間	
17. Ambient Temperature Drift . . . . .	17
周囲温度変動	
18. Minimum Input Voltage for Regulated Output Voltage . . . . .	18
最低レギュレーション電圧	
19. Ripple Voltage (by Ambient Temperature) . . . . .	19
リップル電圧 (周囲温度特性)	
20. Output Voltage Accuracy . . . . .	20
定電圧精度	
21. Figure of Testing Circuitry . . . . .	21
測定回路図	

(Final Page 21 )

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Model	LDA30F-3																																		
Item	Line Regulation 静の入力変動	Temperature	25℃																																
		Testing Circuitry	Figure A																																
Object	+3.0V6A																																		
1. Graph		2. Values																																	
<div><div><div>-----□-----</div><div>Load 50%</div></div><div><div>-----△-----</div><div>Load 100%</div></div></div> <div><div>Output Voltage</div><div>[V]</div><div><div><div>3.120</div><div>3.100</div><div>3.080</div><div>3.060</div><div>3.040</div><div>3.020</div><div>3.000</div><div>2.980</div></div><div><div><div>140</div><div>160</div><div>180</div><div>200</div><div>220</div><div>240</div><div>260</div><div>280</div><div>300</div></div><div>Input Voltage</div><div>[V]</div></div></div></div> <div><div>Note: Slanted line shows the range of the rated input voltage.</div><div>(注)斜線は定格入力電圧範囲を示す。</div></div>		<table><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><tr><td>150</td><td>3.060</td><td>3.058</td></tr><tr><td>160</td><td>3.060</td><td>3.058</td></tr><tr><td>170</td><td>3.060</td><td>3.058</td></tr><tr><td>180</td><td>3.060</td><td>3.058</td></tr><tr><td>200</td><td>3.060</td><td>3.058</td></tr><tr><td>220</td><td>3.060</td><td>3.058</td></tr><tr><td>240</td><td>3.060</td><td>3.058</td></tr><tr><td>264</td><td>3.060</td><td>3.058</td></tr><tr><td>280</td><td>3.060</td><td>3.058</td></tr></table>		Input Voltage [V]	Output Voltage [V]		Load 50%	Load 100%	150	3.060	3.058	160	3.060	3.058	170	3.060	3.058	180	3.060	3.058	200	3.060	3.058	220	3.060	3.058	240	3.060	3.058	264	3.060	3.058	280	3.060	3.058
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# COSEL

Model		LDA30F-3		Temperature		25°C																																																								
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<div><div>—△—</div>Input Volt. 170V</div> <div><div>—□—</div>Input Volt. 200V</div> <div><div>—○—</div>Input Volt. 264V</div> <div><div>Input Current [A]</div><div>0.5</div><div>0.4</div><div>0.3</div><div>0.2</div><div>0.1</div><div>0</div><div>0</div><div>2</div><div>4</div><div>6</div><div>8</div><div>Load Current [A]</div><div>Note: Slanted line shows the range of the rated load current.</div><div>(注)斜線は定格負荷電流範囲を示す。</div></div>				<table><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Input Current [A]</th></tr><tr><th>Input Volt. 170[V]</th><th>Input Volt. 200[V]</th><th>Input Volt. 264[V]</th></tr><tr><td>0.0</td><td>0.047</td><td>0.046</td><td>0.054</td></tr><tr><td>1.0</td><td>0.093</td><td>0.091</td><td>0.093</td></tr><tr><td>2.0</td><td>0.136</td><td>0.129</td><td>0.123</td></tr><tr><td>3.0</td><td>0.179</td><td>0.167</td><td>0.153</td></tr><tr><td>4.0</td><td>0.223</td><td>0.205</td><td>0.183</td></tr><tr><td>5.0</td><td>0.267</td><td>0.244</td><td>0.214</td></tr><tr><td>6.0</td><td>0.312</td><td>0.282</td><td>0.244</td></tr><tr><td>6.6</td><td>0.338</td><td>0.299</td><td>0.258</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>				Load Current [A]	Input Current [A]			Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]	0.0	0.047	0.046	0.054	1.0	0.093	0.091	0.093	2.0	0.136	0.129	0.123	3.0	0.179	0.167	0.153	4.0	0.223	0.205	0.183	5.0	0.267	0.244	0.214	6.0	0.312	0.282	0.244	6.6	0.338	0.299	0.258	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
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Model		LDA30F-3	
Item	Efficiency (by Input Voltage)		Temperature 25°C
	効率 (入力電圧特性)		Testing Circuitry Figure A
Object			
1. Graph		2. Values	

-----□----- Load 50%

-----△----- Load 100%

Efficiency [%]

70

66

62

58

54

50

46

42

140

160

180

200

220

240

260

280

300

Input Voltage [V]

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。

Input Voltage [V]	Efficiency [%]	
	Load 50%	Load 100%
150	66.3	69.6
160	64.9	69.0
170	63.9	68.5
180	62.6	68.0
200	60.6	66.8
220	58.3	65.6
240	55.8	64.4
264	53.2	62.7
280	51.4	61.5

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Item	Power Factor (by Input Voltage)		Temperature																														
	力率 (入力電圧特性)		25℃																														
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BC - 0785

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Model		LDA30F-3		Temperature		25°C																																	
Item		Hold-Up Time 出力保持時間		Testing Circuitry		Figure A																																	
Object		+3.0V6A																																					
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<div><div><div>-----□-----</div><div>Load 50%</div></div><div><div>-----△-----</div><div>Load 100%</div></div></div> <div><div>[mS]</div><div>1000</div><div>100</div><div>10</div><div>1</div></div> <div>Hold-Up Time</div> <div><div>140</div><div>160</div><div>180</div><div>200</div><div>220</div><div>240</div><div>260</div><div>280</div><div>300</div></div> <div>Input Voltage</div> <div>[V]</div> <div><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></div>				<table><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><tr><td>150</td><td>218</td><td>108</td></tr><tr><td>160</td><td>249</td><td>125</td></tr><tr><td>170</td><td>283</td><td>142</td></tr><tr><td>180</td><td>318</td><td>161</td></tr><tr><td>200</td><td>393</td><td>202</td></tr><tr><td>220</td><td>474</td><td>247</td></tr><tr><td>240</td><td>561</td><td>295</td></tr><tr><td>264</td><td>672</td><td>359</td></tr><tr><td>280</td><td>750</td><td>404</td></tr></table>				Input Voltage [V]	Hold-Up Time [mS]		Load 50%	Load 100%	150	218	108	160	249	125	170	283	142	180	318	161	200	393	202	220	474	247	240	561	295	264	672	359	280	750	404
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# COSEL

Model

LDA30F-3

Item

Instantaneous Interruption Compensation  
瞬時停電保障

Object

+3.0V6A

1. Graph

△

Input Volt.170 V

□

Input Volt.200 V

○

Input Volt.264 V

[mS]

Instantaneous Compensation Time

1000

100

10

1

0

2

4

6

8

Load Current

[A]

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.

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。

Temperature

25℃

Testing Circuitry

Figure A

2. Values

Load Current [A]	Time [mS]		
	Input Volt. 170[V]	Input Volt. 200[V]	Input Volt. 264[V]
0.0	—	—	—
1.0	669	876	1428
2.0	415	600	950
3.0	329	455	665
4.0	214	297	515
5.0	180	246	425
6.0	140	199	269
6.6	126	169	194
—	—	—	—
—	—	—	—
—	—	—	—

**COSEL**

Model		LDA30F-3		Temperature		25℃																																																																																												
Item		Load Regulation 静的負荷変動		Testing Circuitry		Figure A																																																																																												
Object		+3.0V6A																																																																																																
1. Graph				2. Values																																																																																														
<div><div><div><div>△</div><div>Input Volt.170 V</div></div><div><div>□</div><div>Input Volt.200 V</div></div><div><div>○</div><div>Input Volt.264 V</div></div></div><div><table><thead><tr><th>Load Current [A]</th><th>Input Volt. 170 V [V]</th><th>Input Volt. 200 V [V]</th><th>Input Volt. 264 V [V]</th></tr></thead><tbody><tr><td>0.0</td><td>3.061</td><td>3.061</td><td>3.061</td></tr><tr><td>1.0</td><td>3.061</td><td>3.061</td><td>3.060</td></tr><tr><td>2.0</td><td>3.060</td><td>3.060</td><td>3.060</td></tr><tr><td>3.0</td><td>3.060</td><td>3.060</td><td>3.060</td></tr><tr><td>4.0</td><td>3.059</td><td>3.059</td><td>3.059</td></tr><tr><td>5.0</td><td>3.059</td><td>3.059</td><td>3.059</td></tr><tr><td>6.0</td><td>3.058</td><td>3.058</td><td>3.058</td></tr><tr><td>6.6</td><td>3.058</td><td>3.058</td><td>3.058</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr><tr><td>—</td><td>—</td><td>—</td><td>—</td></tr></tbody></table></div></div> <div><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></div>				Load Current [A]	Input Volt. 170 V [V]	Input Volt. 200 V [V]	Input Volt. 264 V [V]	0.0	3.061	3.061	3.061	1.0	3.061	3.061	3.060	2.0	3.060	3.060	3.060	3.0	3.060	3.060	3.060	4.0	3.059	3.059	3.059	5.0	3.059	3.059	3.059	6.0	3.058	3.058	3.058	6.6	3.058	3.058	3.058	—	—	—	—	—	—	—	—	<table><thead><tr><th rowspan="2">Load Current [A]</th><th colspan="3">Output Voltage [V]</th></tr><tr><th>Input Volt. 170 [V]</th><th>Input Volt. 200 [V]</th><th>Input Volt. 264 [V]</th></tr></thead><tbody><tr><td>0.0</td><td>3.061</td><td>3.061</td><td>3.061</td></tr><tr><td>1.0</td><td>3.061</td><td>3.061</td><td>3.060</td></tr><tr><td>2.0</td><td>3.060</td><td>3.060</td><td>3.060</td></tr><tr><td>3.0</td><td>3.060</td><td>3.060</td><td>3.060</td></tr><tr><td>4.0</td><td>3.059</td><td>3.059</td><td>3.059</td></tr><tr><td>5.0</td><td>3.059</td><td>3.059</td><td>3.059</td></tr><tr><td>6.0</td><td>3.058</td><td>3.058</td><td>3.058</td></tr><tr><td>6.6</td><td>3.058</td><td>3.058</td><td>3.058</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. 170 [V]	Input Volt. 200 [V]	Input Volt. 264 [V]	0.0	3.061	3.061	3.061	1.0	3.061	3.061	3.060	2.0	3.060	3.060	3.060	3.0	3.060	3.060	3.060	4.0	3.059	3.059	3.059	5.0	3.059	3.059	3.059	6.0	3.058	3.058	3.058	6.6	3.058	3.058	3.058	—	—	—	—	—	—	—	—
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# COSEL

Model		LDA30F-3	
Item		Ripple Voltage (by Load Current) リップル電圧 (負荷特性)	
Object		+3V6A	

1. Graph

—△—

Input Volt. 170V

-·-○-·-

Input Volt. 264V

140

120

100

80

60

40

20

0

Ripple Voltage [mV]

0

1

2

3

4

5

6

7

8

Load Current [A]

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

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

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。

T1: Due to AC Input Line  
入力商用周期

T2: Due to Switching  
スイッチング周期

Ripple [mVp-p]

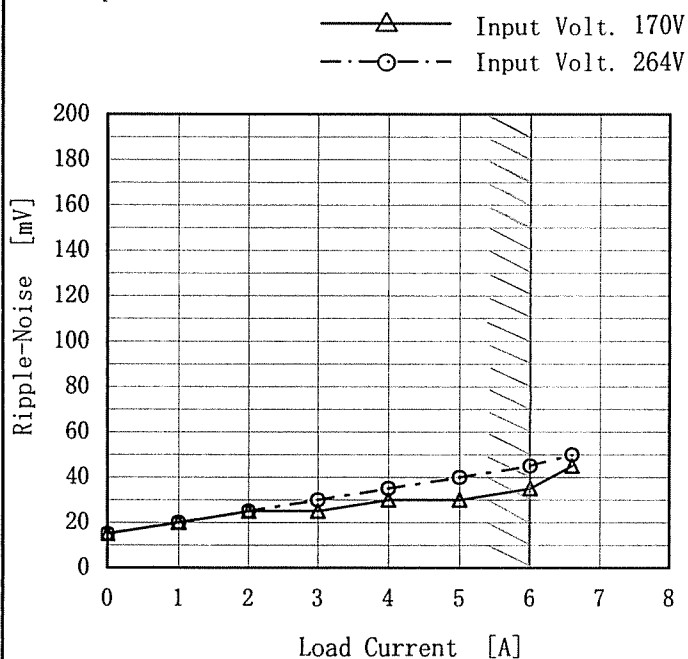
</

# COSEL

Model	LDA30F-3
Item	Ripple-Noise リップルノイズ
Object	+3V10A

Temperature 25°C  
Testing Circuitry Figure A

## 1. Graph



## 2. Values

Load Current [A]	Ripple-Noise [mV]	
	Input Volt. 170 [V]	Input Volt. 264 [V]
0.0	15	15
1.0	20	20
2.0	25	25
3.0	25	30
4.0	30	35
5.0	30	40
6.0	35	45
6.6	45	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

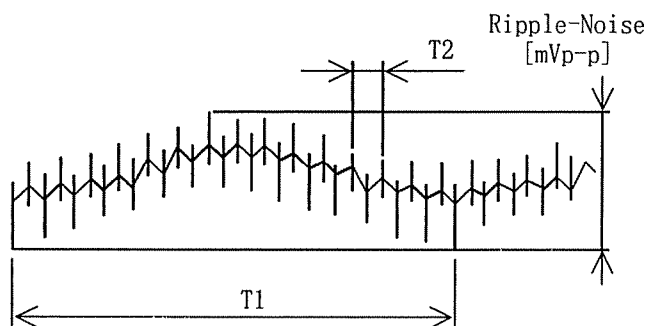


Fig. Complex Ripple Wave Form  
図 リップル波形詳細図

**COSEL**

Model		LDA30F-3	Temperature25℃ Testing CircuitryFigure A	
Item		Overcurrent Protection 過電流保護		
Object		+3.0V6A	2. Values	
1. Graph				

[V]

4.0

3.0

2.0

1.0

0.0

Output Voltage

0

2

4

6

8

10

Load Current

[A]

Input Volt. 170 V

Input Volt. 200 V

Input Volt. 264 V

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。

Output Voltage [V]	Load Current [A]		
	Input Volt. 170 [V]	Input Volt. 200 [V]	Input Volt. 264 [V]
3.00	7.84	7.74	7.75
2.85	7.79	7.77	7.80
2.70	7.79	7.78	7.81
2.40	7.81	7.80	7.84
2.10	7.82	7.82	7.87
1.80	7.83	7.83	7.89
1.50	7.83	7.83	7.89
1.20	7.82	7.81	7.86
0.90	7.78	7.75	7.76
0.60	7.68	7.62	7.53
0.30	7.46	7.32	7.12
0.00	7.06	6.82	6.34

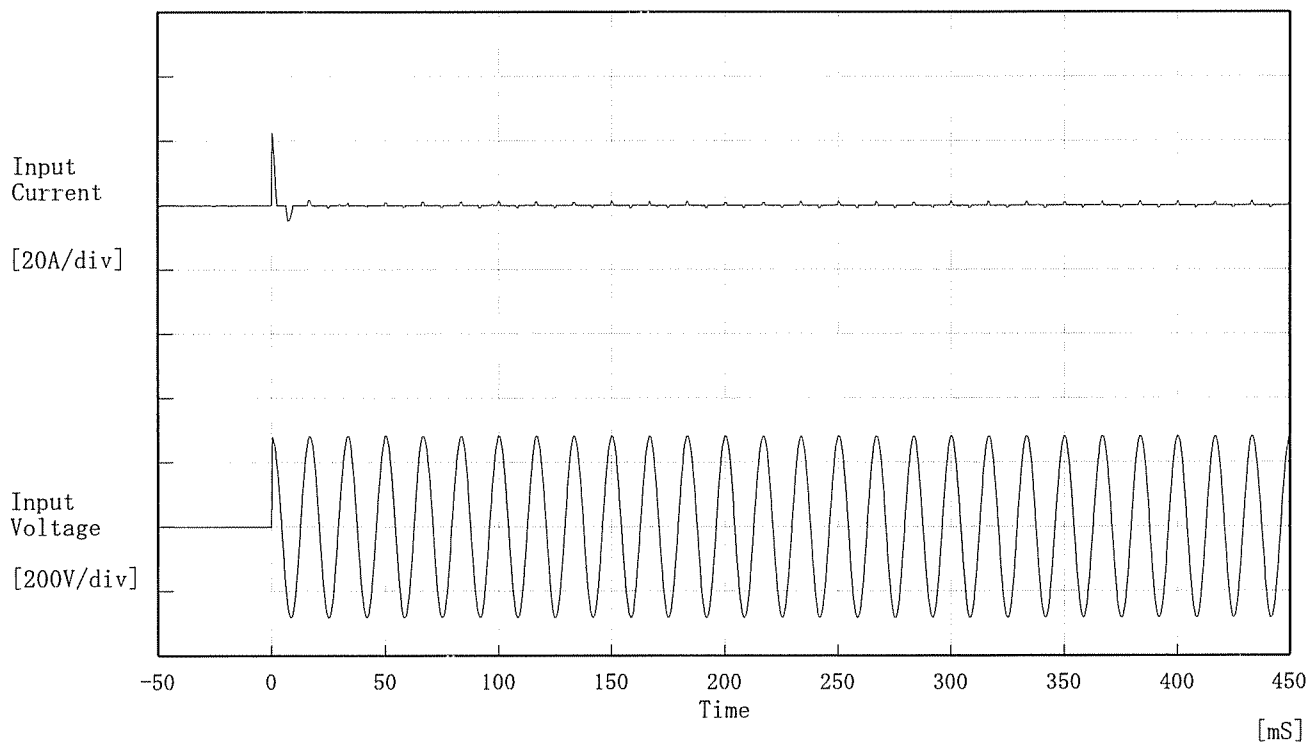
# COSEL

Model		LDA30F-3	Testing Circuitry    Figure A																																																				
Item		Overvoltage Protection 過電圧保護																																																					
Object		+3.0V6A																																																					
1. Graph		<div><div>—△—</div>Input Volt. 170 V</div> <div><div>—□—</div>Input Volt. 200 V</div> <div><div>—○—</div>Input Volt. 264 V</div> <div><div>Operating Point [V]</div><div><div>7.000</div><div>6.000</div><div>5.000</div><div>4.000</div><div>3.000</div><div>2.000</div><div>1.000</div><div>0.000</div></div><div><div>-30</div><div>-10</div><div>10</div><div>30</div><div>50</div><div>70</div></div><div>Ambient Temperature [°C]</div></div> <div><div>Load    0%</div><div>Note: Slanted line shows the range of the rated ambient temperature.</div><div>(注)斜線は定格周囲温度範囲を示す。</div></div>	2. Values																																																				
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Ambient Temperature [°C]	Operating Point [V]																																																						
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—	—	—	—																																																				



**COSEL**

Model	LDA30F-3	Temperature Testing Circuitry	25°C Figure A
Item	Inrush Current 突入電流		
Object	_____		



Input Voltage 200 V

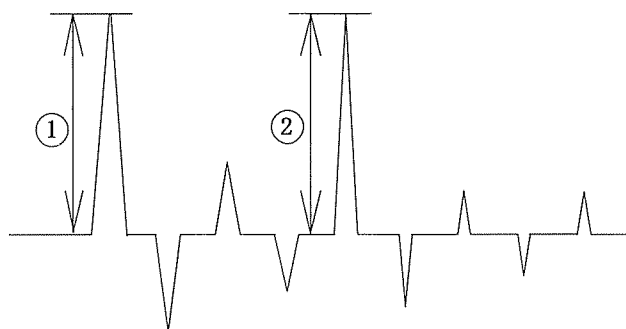
Frequency 60 Hz

Load 100 %

Inrush Current

① 22.40 [A]

② 1.20 [A]

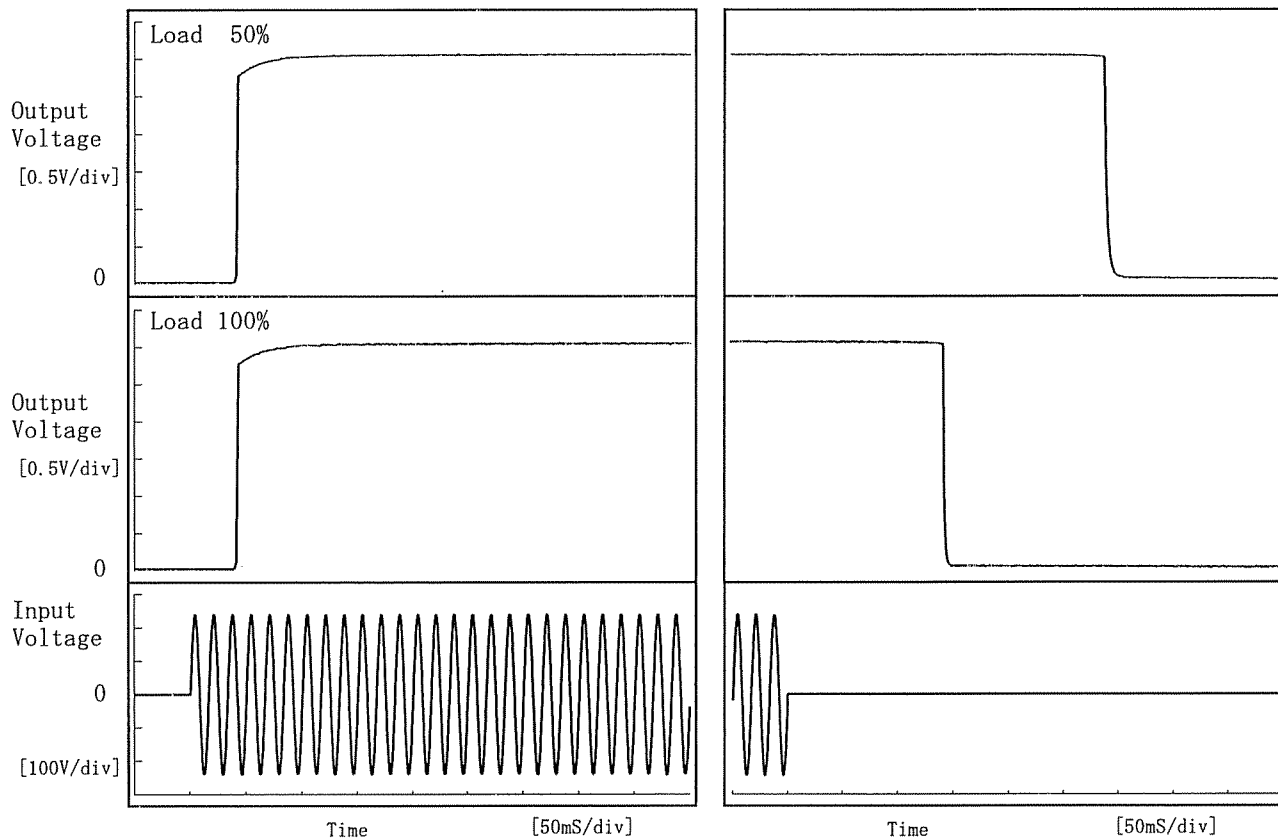


**COSEL**

Model	LDA30F-3	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+3.0V6A		

## 1. Graph

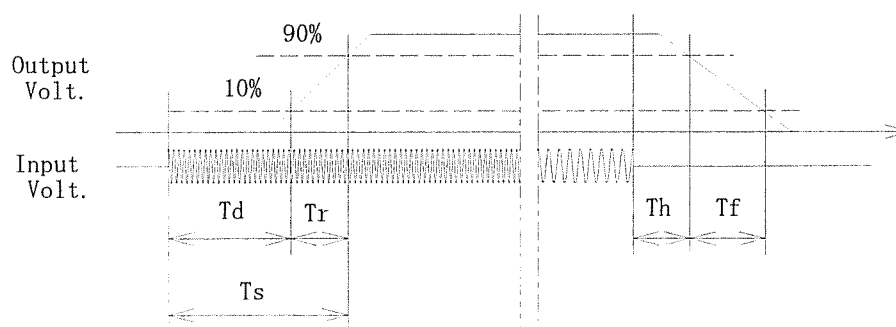
Input Volt. 170 V



## 2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	40.8	1.5	42.3	287.8	6.0
100 %	41.0	1.8	42.8	141.8	3.0



# COSEL

Model		LDA30F-3	Testing Circuitry      Figure A																																																			
Item		Ambient Temperature Drift 周囲温度変動																																																				
Object		+3.0V6A																																																				
1. Graph		<div><div>△</div> Input Volt. 170V</div> <div><div>□</div> Input Volt. 200V</div> <div><div>○</div> Input Volt. 264V</div> <div><p>Output Voltage [V]</p><p>Ambient Temperature [°C]</p><p>Load      100%</p></div> <div>Note: Slanted line shows the range of the rated ambient temperature.</div> <div>(注) 斜線は定格周囲温度範囲を示す。</div>																																																				
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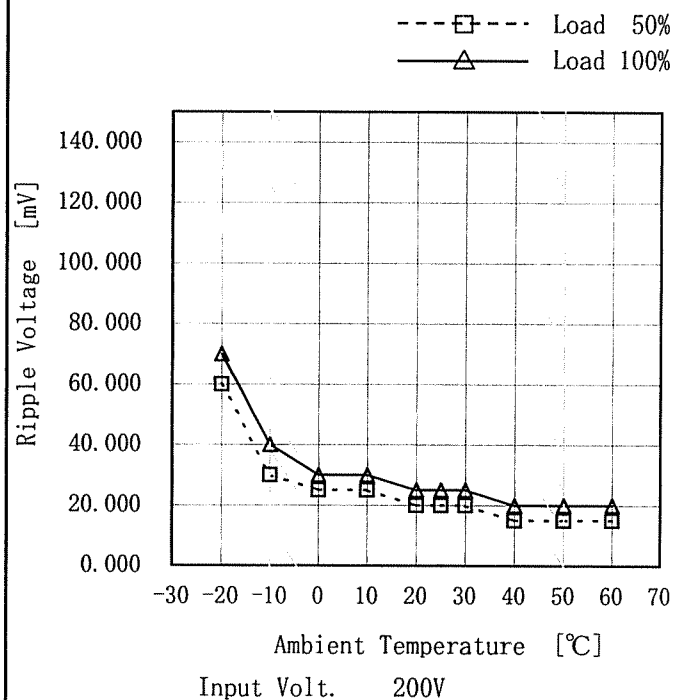
# COSEL

Model		LDA30F-3	Testing Circuitry    Figure A																																						
Item		Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧																																							
Object		+3.0V6A																																							
1. Graph			2. Values																																						
<div><div>.....□..... Load    50%</div><div>—————△———— Load    100%</div></div> <p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注) 斜線は定格周囲温度範囲を示す。</p>			<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>-20</td><td>52</td><td>57</td></tr><tr><td>-10</td><td>51</td><td>56</td></tr><tr><td>0</td><td>50</td><td>55</td></tr><tr><td>10</td><td>50</td><td>55</td></tr><tr><td>20</td><td>49</td><td>55</td></tr><tr><td>25</td><td>49</td><td>55</td></tr><tr><td>30</td><td>49</td><td>55</td></tr><tr><td>40</td><td>49</td><td>54</td></tr><tr><td>50</td><td>48</td><td>54</td></tr><tr><td>60</td><td>48</td><td>54</td></tr><tr><td>—</td><td>—</td><td>—</td></tr></table>	Ambient Temperature [°C]	Input Voltage [V]		Load    50%	Load    100%	-20	52	57	-10	51	56	0	50	55	10	50	55	20	49	55	25	49	55	30	49	55	40	49	54	50	48	54	60	48	54	—	—	—
Ambient Temperature [°C]	Input Voltage [V]																																								
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—	—	—																																							

# COSEL

Model	LDA30F-3
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)
Object	+3V6A

## 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。

## Testing Circuitry Figure A

## 2. Values

Ambient Temperature [°C]	Ripple Voltage [mV]	
	Load 50%	Load 100%
-20	60	70
-10	30	40
0	25	30
10	25	30
20	20	25
25	20	25
30	20	25
40	15	20
50	15	20
60	15	20
--	--	--

**COSEL**

Model		LDA30F-3	Testing Circuitry     Figure A
Item		Output Voltage Accuracy 定電圧精度	
Object		+3.0V6A	

## 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 : 170~264 V

Load Current : 0~6 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            -10~50 °C

入力電圧            170~264 V

負荷電流            0~6 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

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-10	170	0	3.063	±4	±0.2
Minimum Voltage	50	264	6	3.055		

**COSEL**

