



TEST DATA OF ZUW60512
(5.0V INPUT)

Regulated DC Power Supply

Date : Sep. 21. 1996

Approved by : T. Sugimori
Design Manager

Prepared by : H. Ise
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. Efficiency	2
効率	
3. Load Regulation	3
静的負荷変動	
4. Ripple Voltage (by Load Current)	4
リップル電圧(負荷電流特性)	
5. Ripple-Noise	6
リップルノイズ	
6. Overcurrent Protection	8
過電流保護	
7. Dynamic Load Responce	9
動的負荷変動	
8. Rise and Fall Time	11
立上り、立下がり時間	
9. Ambient Temperature Drift	13
周囲温度変動	
10. Minimum Input Voltage for Regulated Output Voltage . . .	14
最低レギュレーション電圧	
11. Ripple Voltage (by Ambient Temperature)	15
リップル電圧(周囲温度特性)	
12. Time Lapse Drift	16
経時ドリフト	
13. Output Voltage Accuracy	17
定電圧精度	
14. Condensation	18
結露特性	
15. Figure of Testing Circuitry	20
測定回路図	

(Final Page 20)



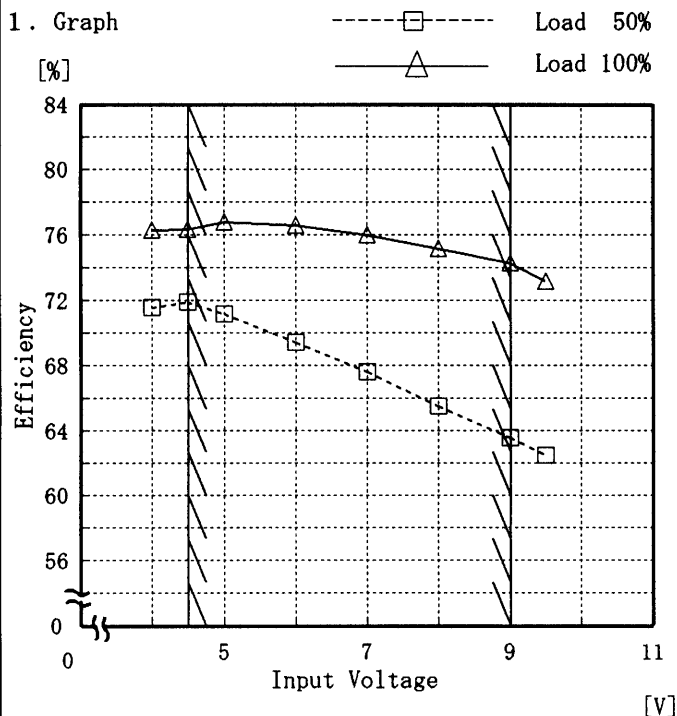
Model		ZUW60512	Temperature		25°C																																							
Item		Line Regulation 静的入力変動	Testing Circuitry		Figure A																																							
Object		+12V0.25A	2. Values																																									
1. Graph			<table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Load 50% Output Volt. [V]</th> <th>Load 100% Output Volt. [V]</th> </tr> </thead> <tbody> <tr><td>4.0</td><td>12.205</td><td>12.077</td></tr> <tr><td>4.5</td><td>12.192</td><td>12.081</td></tr> <tr><td>5.0</td><td>12.184</td><td>12.083</td></tr> <tr><td>6.0</td><td>12.174</td><td>12.085</td></tr> <tr><td>7.0</td><td>12.168</td><td>12.086</td></tr> <tr><td>8.0</td><td>12.163</td><td>12.085</td></tr> <tr><td>9.0</td><td>12.158</td><td>12.084</td></tr> <tr><td>9.5</td><td>12.156</td><td>12.083</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> </tbody> </table>			Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]	4.0	12.205	12.077	4.5	12.192	12.081	5.0	12.184	12.083	6.0	12.174	12.085	7.0	12.168	12.086	8.0	12.163	12.085	9.0	12.158	12.084	9.5	12.156	12.083	—	—	—	—	—	—	—	—	—	—	—	—
Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]																																										
4.0	12.205	12.077																																										
4.5	12.192	12.081																																										
5.0	12.184	12.083																																										
6.0	12.174	12.085																																										
7.0	12.168	12.086																																										
8.0	12.163	12.085																																										
9.0	12.158	12.084																																										
9.5	12.156	12.083																																										
—	—	—																																										
—	—	—																																										
—	—	—																																										
—	—	—																																										
Object		-12V0.25A	2. Values																																									
1. Graph			<table border="1"> <thead> <tr> <th>Input Voltage [V]</th> <th>Load 50% Output Volt. [V]</th> <th>Load 100% Output Volt. [V]</th> </tr> </thead> <tbody> <tr><td>4.0</td><td>-12.204</td><td>-12.079</td></tr> <tr><td>4.5</td><td>-12.192</td><td>-12.080</td></tr> <tr><td>5.0</td><td>-12.184</td><td>-12.082</td></tr> <tr><td>6.0</td><td>-12.173</td><td>-12.083</td></tr> <tr><td>7.0</td><td>-12.166</td><td>-12.083</td></tr> <tr><td>8.0</td><td>-12.161</td><td>-12.082</td></tr> <tr><td>9.0</td><td>-12.156</td><td>-12.081</td></tr> <tr><td>9.5</td><td>-12.154</td><td>-12.080</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> </tbody> </table>			Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]	4.0	-12.204	-12.079	4.5	-12.192	-12.080	5.0	-12.184	-12.082	6.0	-12.173	-12.083	7.0	-12.166	-12.083	8.0	-12.161	-12.082	9.0	-12.156	-12.081	9.5	-12.154	-12.080	—	—	—	—	—	—	—	—	—	—	—	—
Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]																																										
4.0	-12.204	-12.079																																										
4.5	-12.192	-12.080																																										
5.0	-12.184	-12.082																																										
6.0	-12.173	-12.083																																										
7.0	-12.166	-12.083																																										
8.0	-12.161	-12.082																																										
9.0	-12.156	-12.081																																										
9.5	-12.154	-12.080																																										
—	—	—																																										
—	—	—																																										
—	—	—																																										
—	—	—																																										
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。																																												



Model	ZUW60512	Temperature	25°C
Item	Efficiency 効率	Testing Circuitry	Figure A

Object _____

1. Graph



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

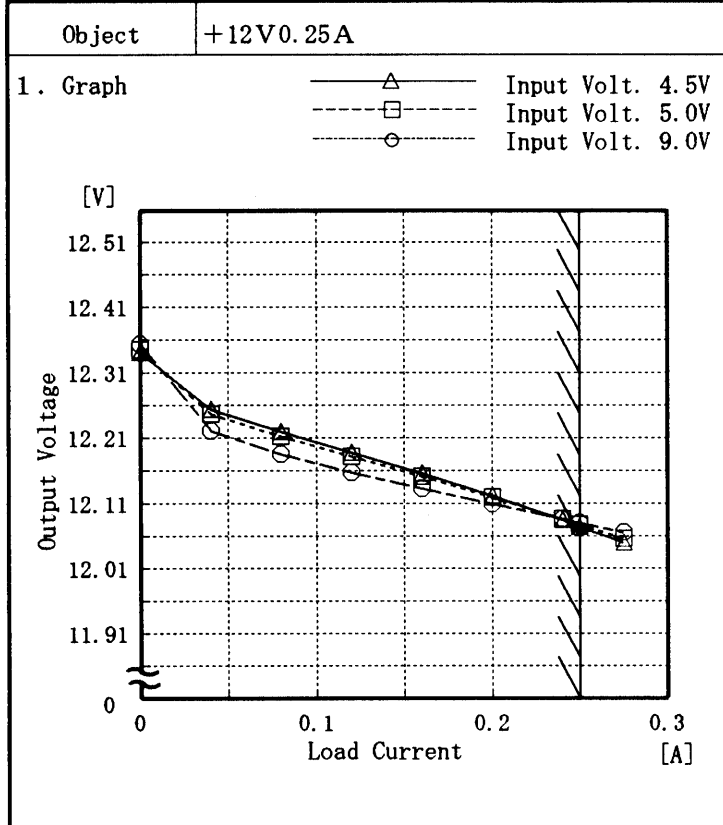
(注)斜線は定格入力電圧範囲を示す。

2. Values

Input Voltage [V]	Load 50%	Load 100%
	Efficiency [%]	Efficiency [%]
4.0	71.6	76.3
4.5	71.9	76.3
5.0	71.2	76.7
6.0	69.4	76.6
7.0	67.6	76.0
8.0	65.5	75.1
9.0	63.6	74.3
9.5	62.5	73.2
—	—	—
—	—	—
—	—	—
—	—	—

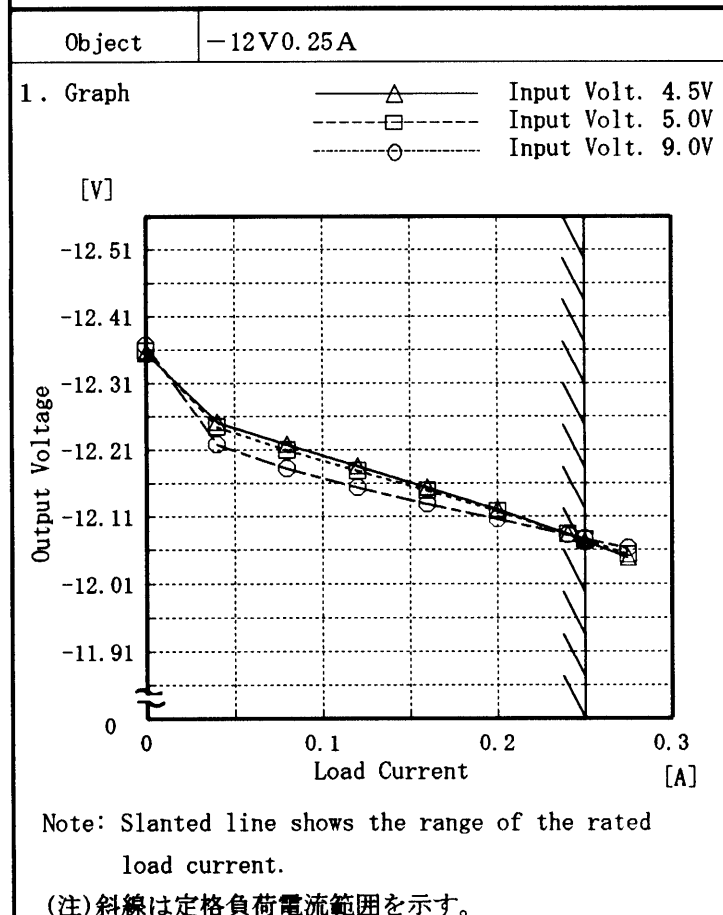


Model	ZUW60512	Temperature	25°C
Item	Load Regulation 静的負荷変動	Testing Circuitry	Figure A



2. Values

Load Current [A]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
0.000	12.342	12.345	12.354
0.040	12.254	12.247	12.221
0.080	12.220	12.212	12.185
0.120	12.188	12.181	12.158
0.160	12.156	12.151	12.133
0.200	12.122	12.120	12.110
0.240	12.085	12.087	12.086
0.250	12.075	12.078	12.080
0.275	12.050	12.056	12.066
-	-	-	-

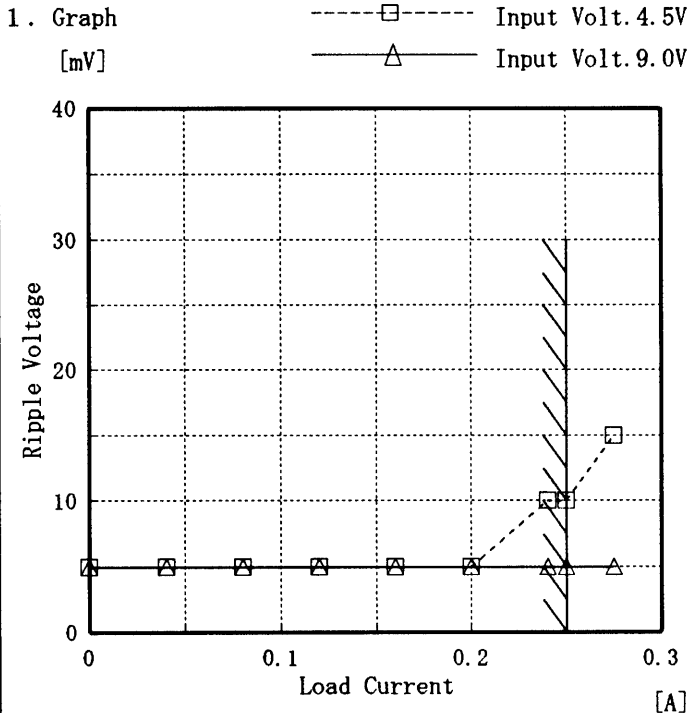


2. Values

Load Current [A]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
0.000	-12.356	-12.359	-12.368
0.040	-12.252	-12.245	-12.219
0.080	-12.219	-12.210	-12.183
0.120	-12.187	-12.180	-12.155
0.160	-12.154	-12.150	-12.130
0.200	-12.121	-12.118	-12.107
0.240	-12.084	-12.085	-12.084
0.250	-12.074	-12.076	-12.077
0.275	-12.049	-12.054	-12.063
-	-	-	-



Model	ZUW60512	Temperature	25°C
Item	Ripple Voltage (by Load Current) リップル電圧(負荷電流特性)	Testing Circuitry	Figure A
Object	+12V 0.25A		



2. Values

Load Current [A]	Input Volt. 4.5 [V]	Input Volt. 9.0 [V]
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
0.000	5	5
0.040	5	5
0.080	5	5
0.120	5	5
0.160	5	5
0.200	5	5
0.240	10	5
0.250	10	5
0.275	15	5
—	—	—
—	—	—

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

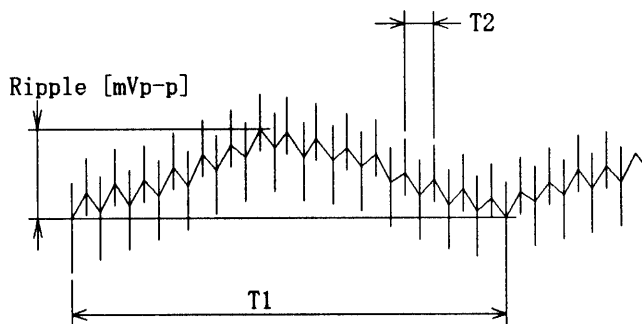
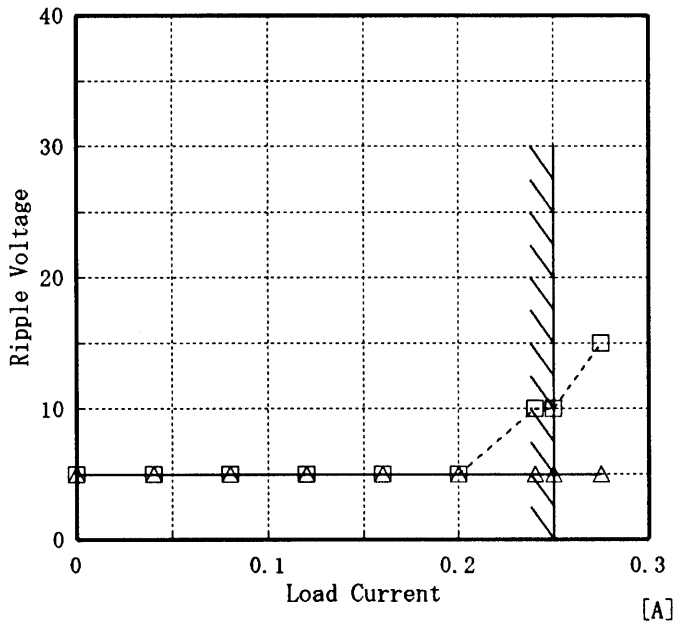


Fig. Complex Ripple Wave Form
 図 リップル波形詳細図



Model	ZUW60512	Temperature	25°C
Item	Ripple Voltage (by Load Current) リップル電圧(負荷電流特性)	Testing Circuitry	Figure A
Object	-12V 0.25A		

1. Graph
 [mV] □----- Input Volt. 4.5V
 △----- Input Volt. 9.0V



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

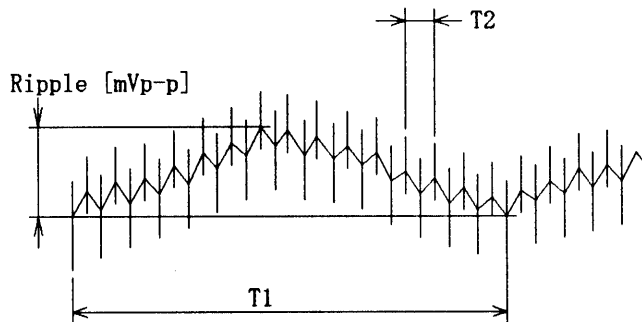


Fig. Complex Ripple Wave Form
 図 リップル波形詳細図

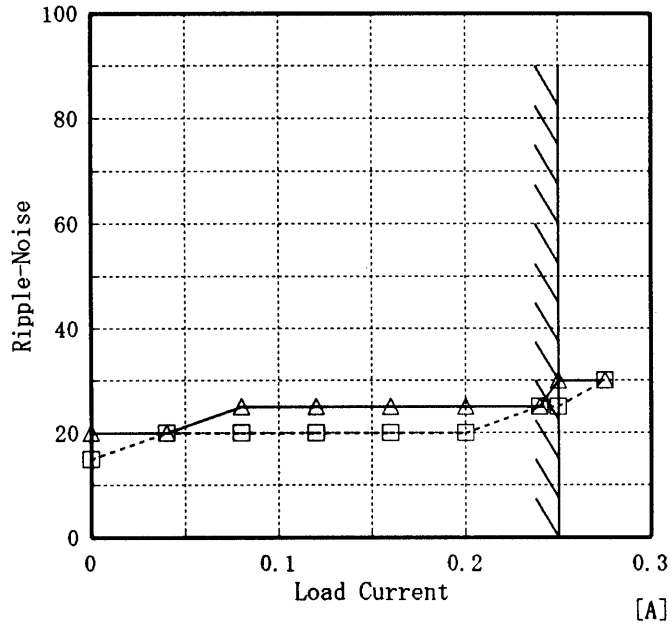
2. Values

Load Current [A]	Input Volt. 4.5 [V]	Input Volt. 9.0 [V]
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
0.000	5	5
0.040	5	5
0.080	5	5
0.120	5	5
0.160	5	5
0.200	5	5
0.240	10	5
0.250	10	5
0.275	15	5
—	—	—
—	—	—

Model	ZUW60512	Temperature	25°C
Item	Ripple-Noise リップルノイズ	Testing Circuitry	Figure A

Object +12V0.25A

1. Graph
 [mV]
 -----□----- Input Volt. 4.5V
 -----△----- Input Volt. 9.0V



2. Values

Load current [A]	Input Volt. 4.5 [V]	Input Volt. 9.0 [V]
	Ripple-Noise [mV]	Ripple-Noise [mV]
0.000	15	20
0.040	20	20
0.080	20	25
0.120	20	25
0.160	20	25
0.200	20	25
0.240	25	25
0.250	25	30
0.275	30	30
—	—	—
—	—	—

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

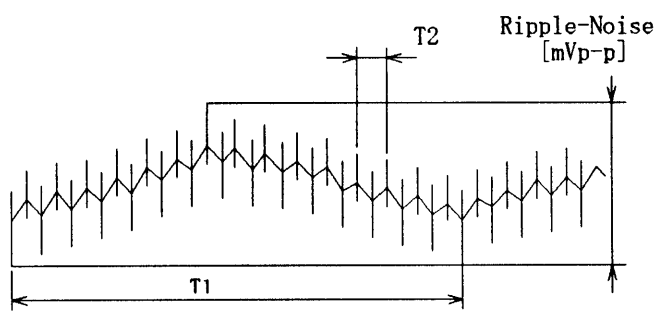


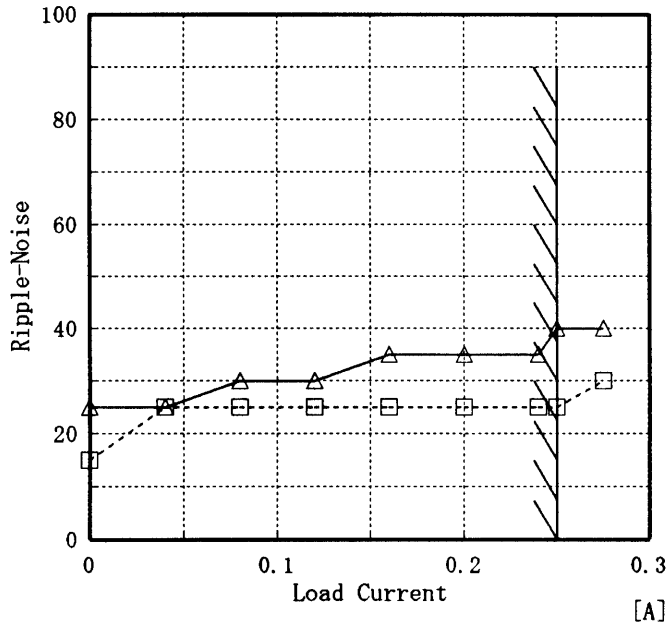
Fig. Complex Ripple Wave Form
 図 リップル波形詳細図



Model	ZUW60512	Temperature	25°C
Item	Ripple-Noise リップルノイズ	Testing Circuitry	Figure A

Object -12V0.25A

1. Graph
 [mV]
 -----□----- Input Volt. 4.5V
 -----△----- Input Volt. 9.0V



2. Values

Load current [A]	Input Volt. 4.5 [V]	Input Volt. 9.0 [V]
	Ripple-Noise [mV]	Ripple-Noise [mV]
0.000	15	25
0.040	25	25
0.080	25	30
0.120	25	30
0.160	25	35
0.200	25	35
0.240	25	35
0.250	25	40
0.275	30	40
—	—	—
—	—	—

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

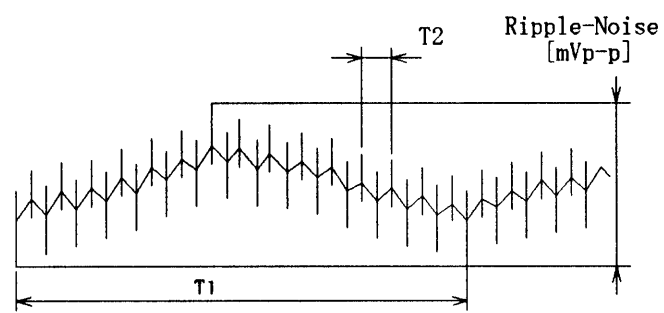


Fig. Complex Ripple Wave Form
 図 リップル波形詳細図

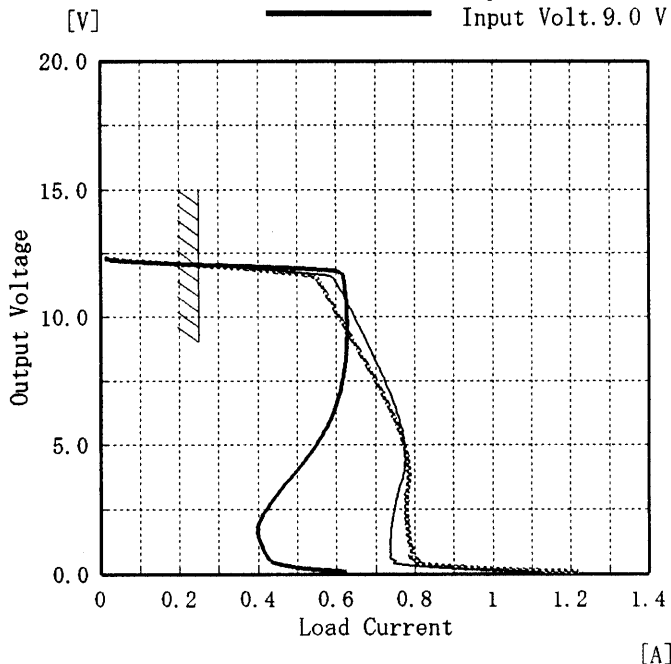


Model	ZUW60512
Item	Overcurrent Protection 過電流保護
Object	+12V0.25A

Temperature 25°C
Testing Circuitry Figure A

1. Graph

Input Volt. 4.5 V
 Input Volt. 5.0 V
 Input Volt. 9.0 V



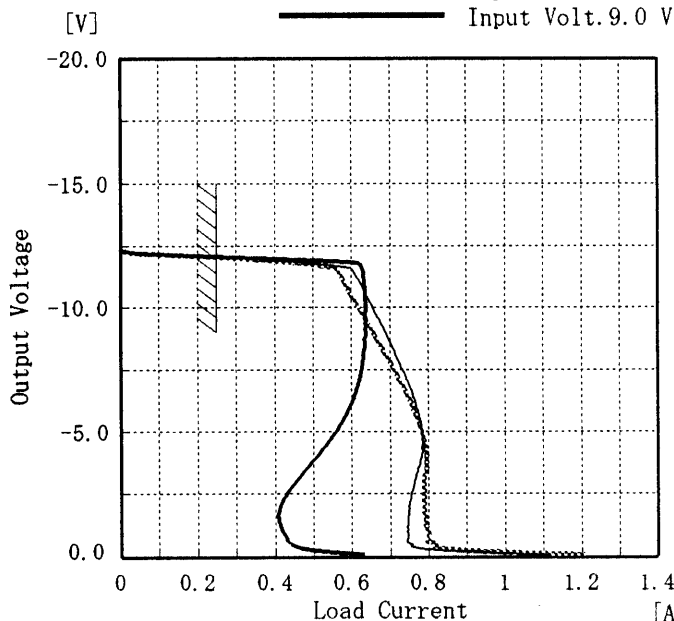
2. Values

Output Voltage [V]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]
	Load Current [A]	Load Current [A]	Load Current [A]
12.00	0.344	0.361	0.363
11.40	0.553	0.596	0.620
10.80	0.576	0.617	0.624
9.60	0.619	0.656	0.627
8.40	0.665	0.695	0.624
7.20	0.707	0.729	0.613
6.00	0.747	0.758	0.586
4.80	0.774	0.774	0.543
3.60	0.783	0.767	0.480
2.40	0.778	0.746	0.417
1.20	0.784	0.737	0.405
0.00	1.220	1.119	0.627

Object	-12V0.25A
--------	-----------

1. Graph

Input Volt. 4.5 V
 Input Volt. 5.0 V
 Input Volt. 9.0 V



2. Values

Output Voltage [V]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]
	Load Current [A]	Load Current [A]	Load Current [A]
-12.00	0.304	0.314	0.349
-11.40	0.565	0.607	0.630
-10.80	0.591	0.629	0.635
-9.60	0.631	0.665	0.638
-8.40	0.676	0.705	0.634
-7.20	0.721	0.740	0.622
-6.00	0.756	0.766	0.596
-4.80	0.784	0.783	0.551
-3.60	0.793	0.775	0.487
-2.40	0.787	0.753	0.429
-1.20	0.794	0.744	0.415
0.00	1.209	1.114	0.634

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

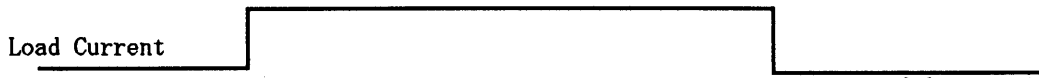
(注)斜線は定格負荷電流範囲を示す。

COSEL

Model	ZUW60512	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+12V0.25A		

Input Volt. 5.0 V

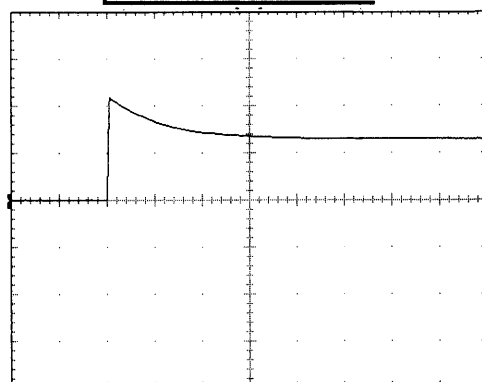
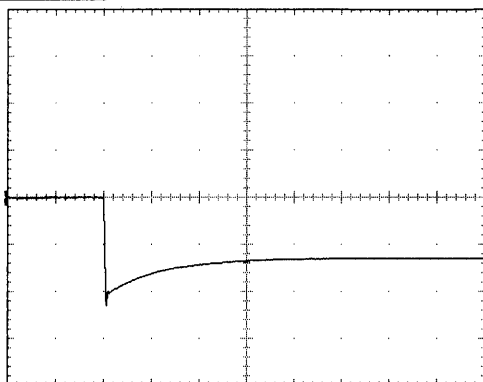
Cycle 100 mS



Min. Load ↔

Load 100 %

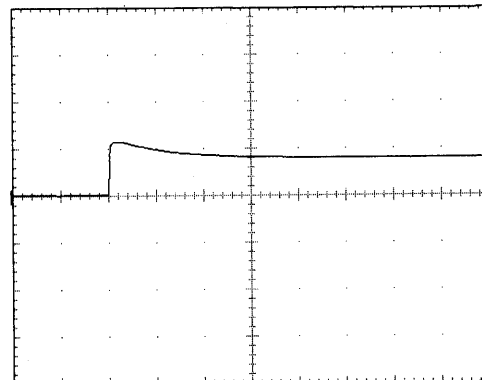
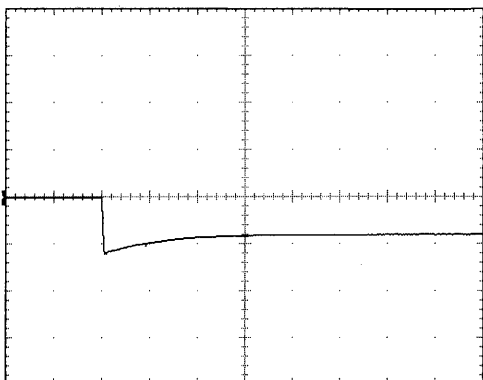
200 mV/div



Min. Load ↔

Load 50 %

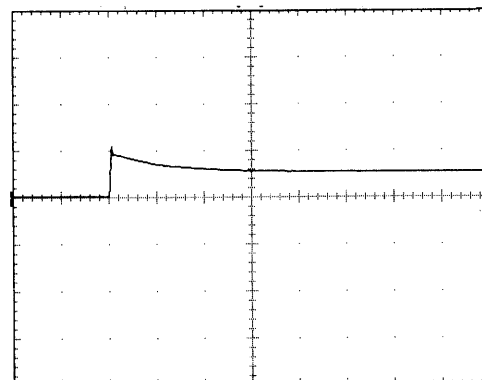
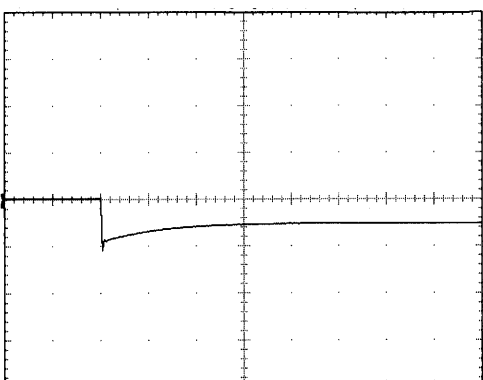
200 mV/div



Load 50% ↔

Load 100 %

200 mV/div



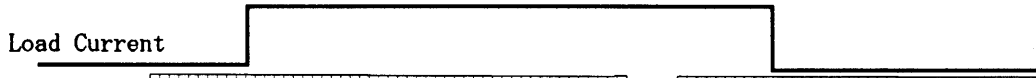
1 mS/div

COSEL

Model	ZUW60512	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	-12V0.25A		

Input Volt. 5.0 V

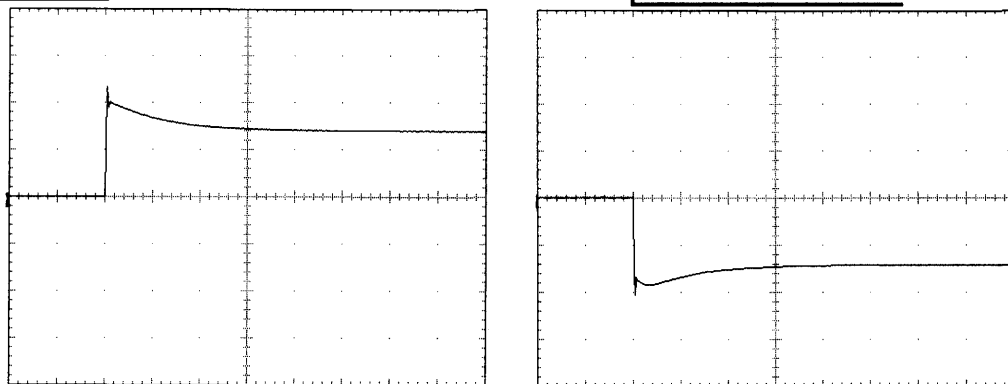
Cycle 100 mS



Min. Load ↔

Load 100 %

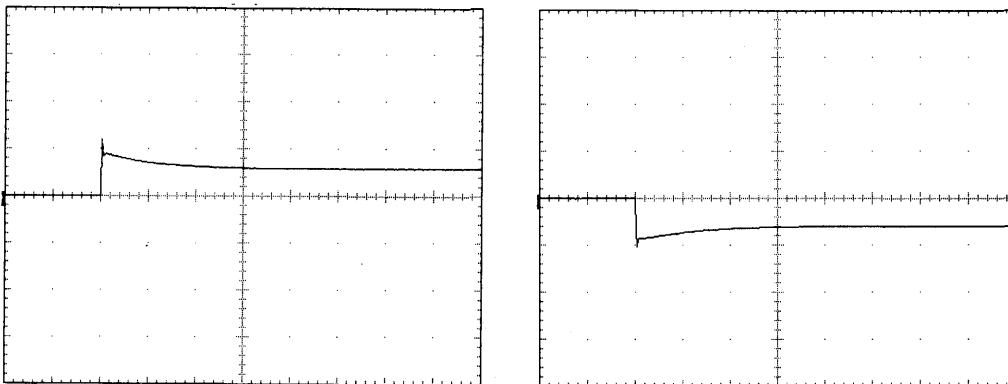
200 mV/div



Min. Load ↔

Load 50 %

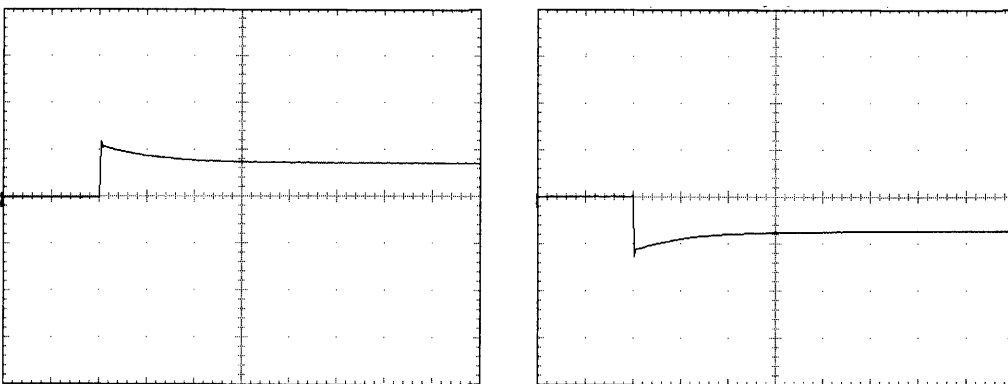
200 mV/div



Load 50% ↔

Load 100 %

200 mV/div



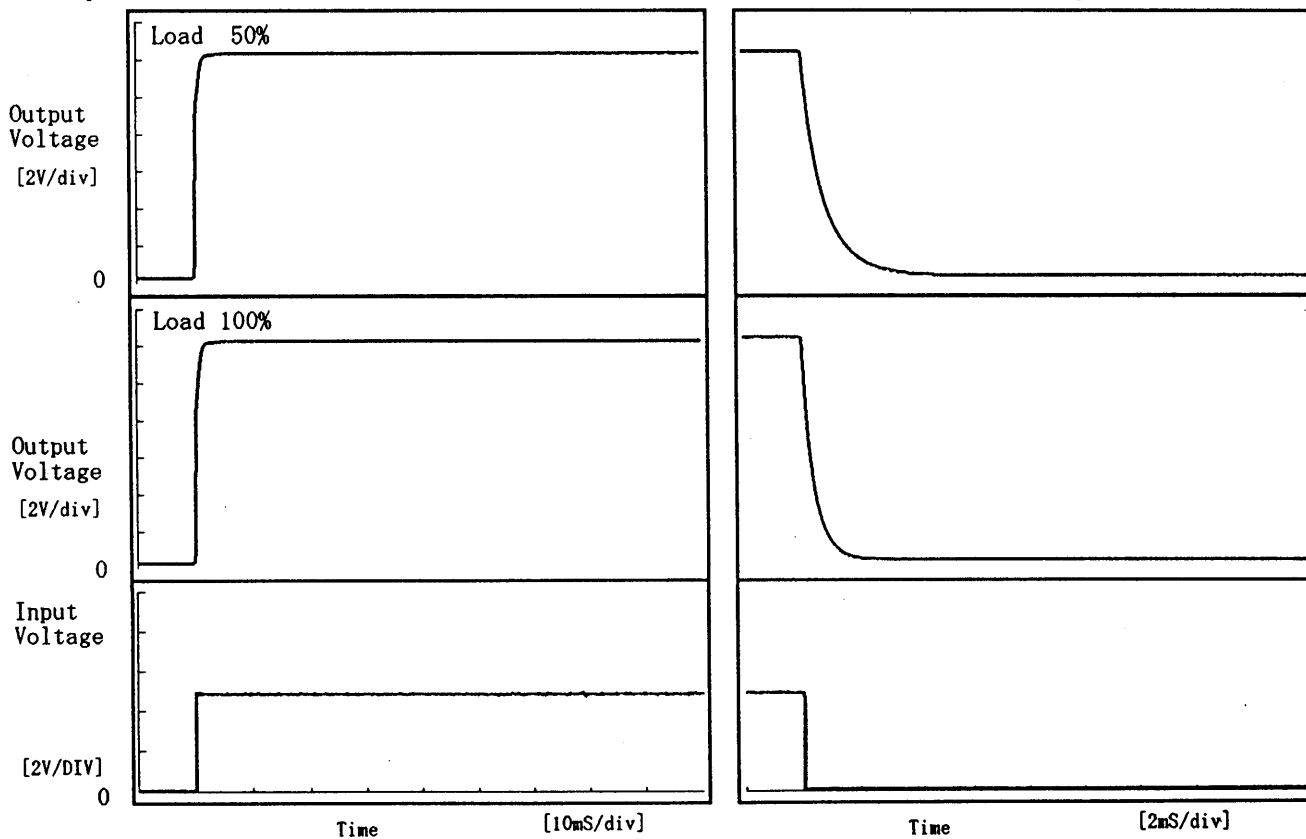
1 mS/div

COSEL

Model	ZUW60512	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12V0.25A		

1. Graph

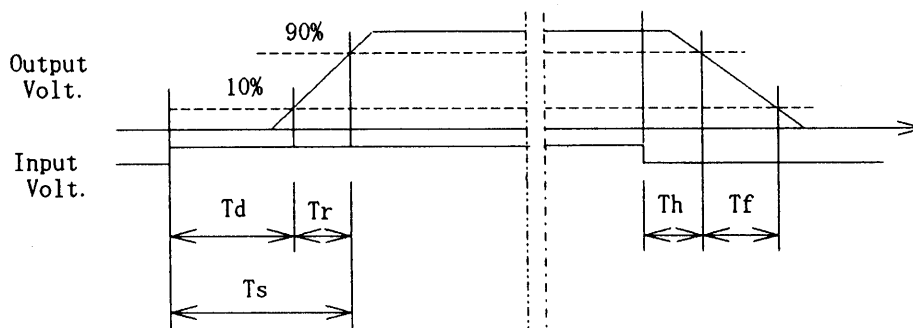
Input Volt. 4.5 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.10	0.90	1.00	0.13	1.88
100 %	0.10	0.95	1.05	0.08	0.99

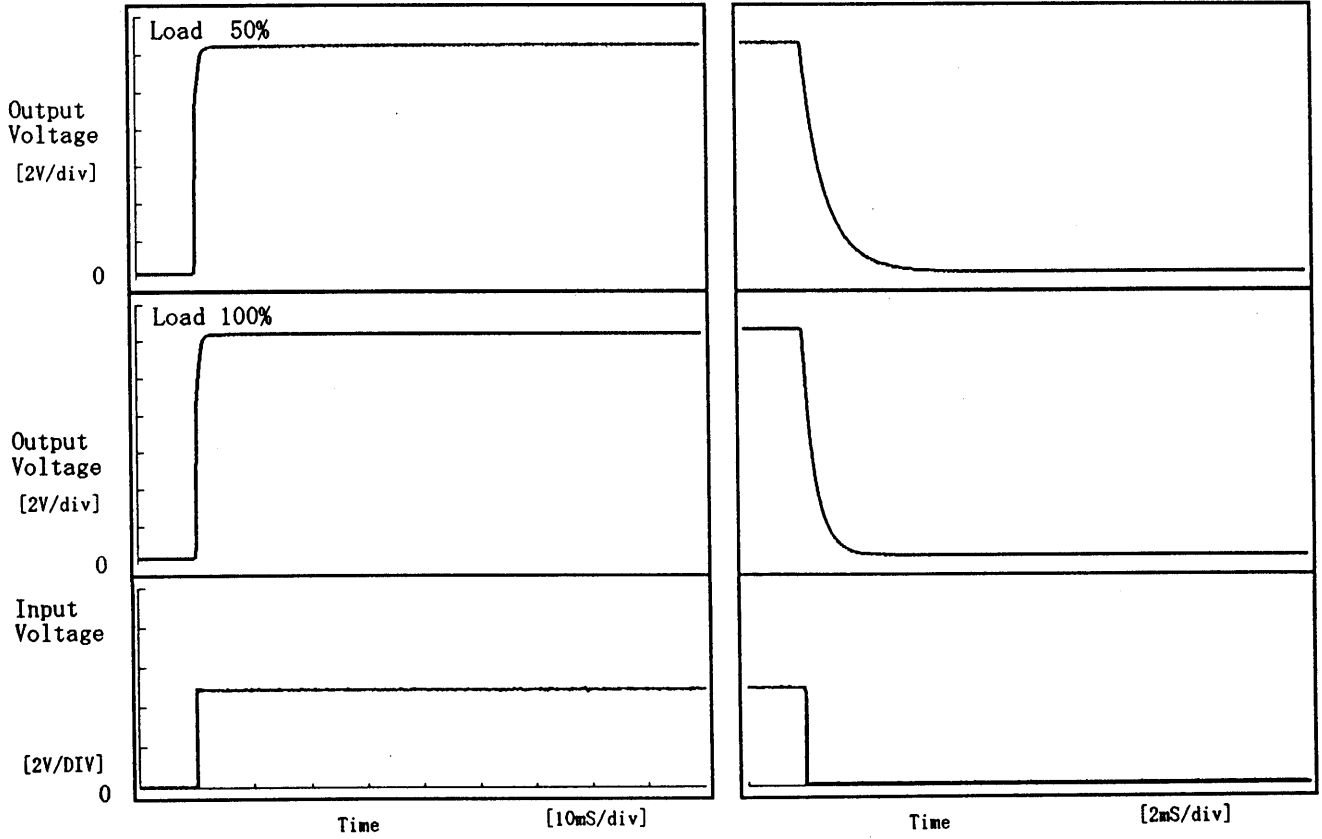




Model	ZUW60512	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	-12V0.25A		

1. Graph

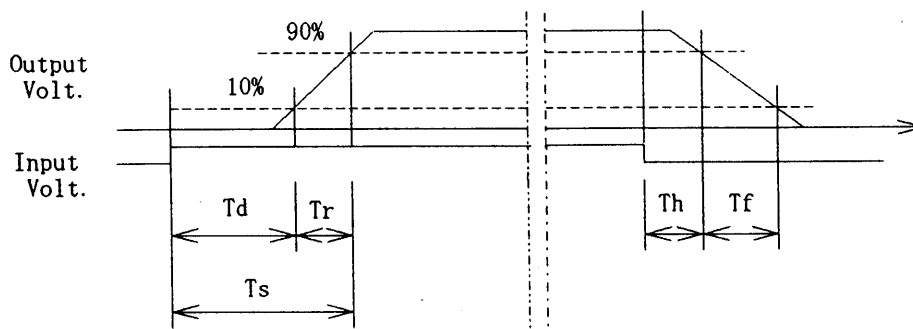
Input Volt. 4.5 V



2. Values

[mS]

Load \ Time	T _d	T _r	T _s	T _h	T _f
50 %	0.10	0.85	0.95	0.14	1.95
100 %	0.10	0.90	1.00	0.09	1.01





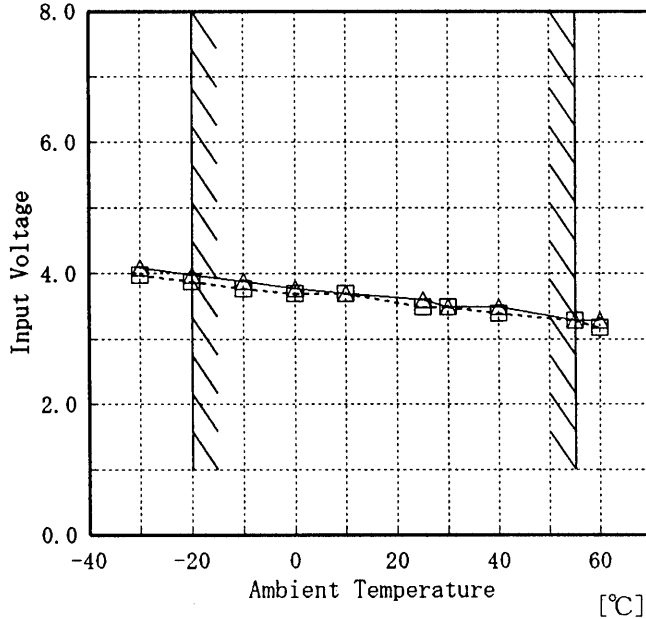
Model ZUW60512																																																				
Item Ambient Temperature Drift 周囲温度変動		Testing Circuitry Figure A																																																		
Object +12V0.25A																																																				
<p>1. Graph</p> <div style="text-align: right; margin-bottom: 5px;"> △ ——— Input Volt. 4.5V □ ——— Input Volt. 5.0V ○ ——— Input Volt. 9.0V </div> <p style="text-align: center;">Load 100%</p>	<p>2. Values</p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Temperature [°C]</th> <th>Input Volt. 4.5[V]</th> <th>Input Volt. 5.0[V]</th> <th>Input Volt. 9.0[V]</th> </tr> <tr> <th>Output Volt. [V]</th> <th>Output Volt. [V]</th> <th>Output Volt. [V]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>12.076</td><td>12.078</td><td>12.079</td></tr> <tr><td>-20</td><td>12.076</td><td>12.078</td><td>12.079</td></tr> <tr><td>-10</td><td>12.076</td><td>12.078</td><td>12.079</td></tr> <tr><td>0</td><td>12.077</td><td>12.079</td><td>12.080</td></tr> <tr><td>10</td><td>12.078</td><td>12.081</td><td>12.082</td></tr> <tr><td>25</td><td>12.081</td><td>12.083</td><td>12.084</td></tr> <tr><td>30</td><td>12.082</td><td>12.084</td><td>12.085</td></tr> <tr><td>40</td><td>12.084</td><td>12.086</td><td>12.087</td></tr> <tr><td>55</td><td>12.086</td><td>12.089</td><td>12.090</td></tr> <tr><td>60</td><td>12.087</td><td>12.090</td><td>12.091</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Temperature [°C]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]	-30	12.076	12.078	12.079	-20	12.076	12.078	12.079	-10	12.076	12.078	12.079	0	12.077	12.079	12.080	10	12.078	12.081	12.082	25	12.081	12.083	12.084	30	12.082	12.084	12.085	40	12.084	12.086	12.087	55	12.086	12.089	12.090	60	12.087	12.090	12.091	—	—	—	—
Temperature [°C]	Input Volt. 4.5[V]		Input Volt. 5.0[V]	Input Volt. 9.0[V]																																																
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]																																																	
-30	12.076	12.078	12.079																																																	
-20	12.076	12.078	12.079																																																	
-10	12.076	12.078	12.079																																																	
0	12.077	12.079	12.080																																																	
10	12.078	12.081	12.082																																																	
25	12.081	12.083	12.084																																																	
30	12.082	12.084	12.085																																																	
40	12.084	12.086	12.087																																																	
55	12.086	12.089	12.090																																																	
60	12.087	12.090	12.091																																																	
—	—	—	—																																																	
Object -12V0.25A																																																				
<p>1. Graph</p> <div style="text-align: right; margin-bottom: 5px;"> △ ——— Input Volt. 4.5V □ ——— Input Volt. 5.0V ○ ——— Input Volt. 9.0V </div> <p style="text-align: center;">Load 100%</p>	<p>2. Values</p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Temperature [°C]</th> <th>Input Volt. 4.5[V]</th> <th>Input Volt. 5.0[V]</th> <th>Input Volt. 9.0[V]</th> </tr> <tr> <th>Output Volt. [V]</th> <th>Output Volt. [V]</th> <th>Output Volt. [V]</th> </tr> </thead> <tbody> <tr><td>-30</td><td>-12.078</td><td>-12.079</td><td>-12.078</td></tr> <tr><td>-20</td><td>-12.077</td><td>-12.077</td><td>-12.077</td></tr> <tr><td>-10</td><td>-12.076</td><td>-12.077</td><td>-12.077</td></tr> <tr><td>0</td><td>-12.076</td><td>-12.077</td><td>-12.077</td></tr> <tr><td>10</td><td>-12.077</td><td>-12.079</td><td>-12.078</td></tr> <tr><td>25</td><td>-12.080</td><td>-12.081</td><td>-12.081</td></tr> <tr><td>30</td><td>-12.081</td><td>-12.083</td><td>-12.082</td></tr> <tr><td>40</td><td>-12.083</td><td>-12.085</td><td>-12.084</td></tr> <tr><td>55</td><td>-12.087</td><td>-12.088</td><td>-12.088</td></tr> <tr><td>60</td><td>-12.087</td><td>-12.089</td><td>-12.088</td></tr> <tr><td>—</td><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Temperature [°C]	Input Volt. 4.5[V]	Input Volt. 5.0[V]	Input Volt. 9.0[V]	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]	-30	-12.078	-12.079	-12.078	-20	-12.077	-12.077	-12.077	-10	-12.076	-12.077	-12.077	0	-12.076	-12.077	-12.077	10	-12.077	-12.079	-12.078	25	-12.080	-12.081	-12.081	30	-12.081	-12.083	-12.082	40	-12.083	-12.085	-12.084	55	-12.087	-12.088	-12.088	60	-12.087	-12.089	-12.088	—	—	—	—
Temperature [°C]	Input Volt. 4.5[V]		Input Volt. 5.0[V]	Input Volt. 9.0[V]																																																
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]																																																	
-30	-12.078	-12.079	-12.078																																																	
-20	-12.077	-12.077	-12.077																																																	
-10	-12.076	-12.077	-12.077																																																	
0	-12.076	-12.077	-12.077																																																	
10	-12.077	-12.079	-12.078																																																	
25	-12.080	-12.081	-12.081																																																	
30	-12.081	-12.083	-12.082																																																	
40	-12.083	-12.085	-12.084																																																	
55	-12.087	-12.088	-12.088																																																	
60	-12.087	-12.089	-12.088																																																	
—	—	—	—																																																	
<p>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。</p>																																																				



Model	ZUW60512
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+12V0.25A

Testing Circuitry Figure A

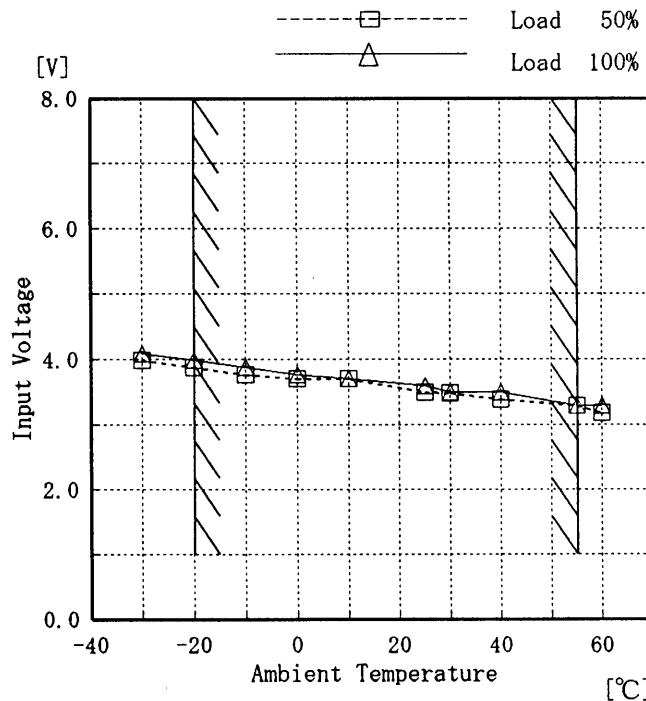
1. Graph
 [V]
 ---□--- Load 50%
 ---△--- Load 100%



2. Values

Ambient Temp. [°C]	Load 50%	Load 100%
	Input Volt. [V]	Input Volt. [V]
-30	4.0	4.1
-20	3.9	4.0
-10	3.8	3.9
0	3.7	3.8
10	3.7	3.7
25	3.5	3.6
30	3.5	3.5
40	3.4	3.5
55	3.3	3.3
60	3.2	3.3
—	—	—

Object	-12V0.25A
--------	-----------

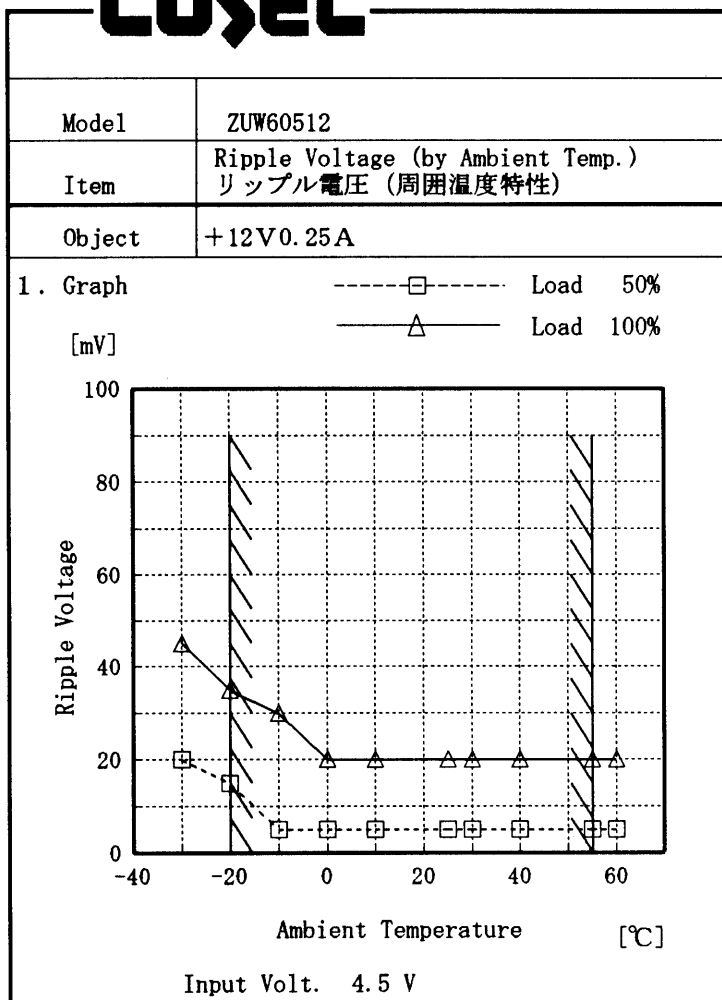


2. Values

Ambient Temp. [°C]	Load 50%	Load 100%
	Input Volt. [V]	Input Volt. [V]
-30	4.0	4.1
-20	3.9	4.0
-10	3.8	3.9
0	3.7	3.8
10	3.7	3.7
25	3.5	3.6
30	3.5	3.5
40	3.4	3.5
55	3.3	3.3
60	3.2	3.3
—	—	—

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

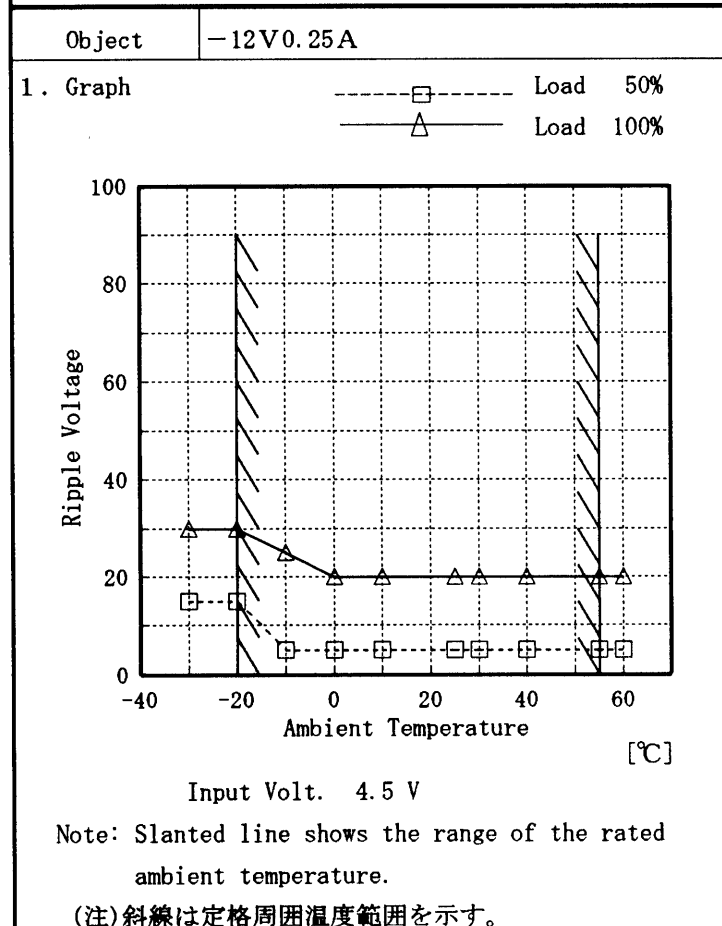
(注)斜線は定格周囲温度範囲を示す。



Testing Circuitry Figure A

2. Values

Ambient Temp. [°C]	Load 50%	Load 100%
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
-30	20	45
-20	15	35
-10	5	30
0	5	20
10	5	20
25	5	20
30	5	20
40	5	20
55	5	20
60	5	20
—	—	—



2. Values

Ambient Temp. [°C]	Load 50%	Load 100%
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
-30	15	30
-20	15	30
-10	5	25
0	5	20
10	5	20
25	5	20
30	5	20
40	5	20
55	5	20
60	5	20
—	—	—



Model	ZUW60512	Temperature	25 °C
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A

Object +12V0.25A

1. Graph

Input Volt. 5.0V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	12.082
0.5	12.083
1.0	12.083
2.0	12.083
3.0	12.083
4.0	12.083
5.0	12.083
6.0	12.083
7.0	12.083
8.0	12.083

Object -12V0.25A

1. Graph

Input Volt. 5.0V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	-12.081
0.5	-12.082
1.0	-12.082
2.0	-12.082
3.0	-12.082
4.0	-12.082
5.0	-12.082
6.0	-12.082
7.0	-12.082
8.0	-12.082



Model		ZUW60512	Testing Circuitry Figure A
Item		Output Voltage Accuracy 定電圧精度	

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 : -20~55 °C

Input Voltage : 4.5~9.0 V

Load Current (AVR 1) : 0.000~0.250 A

(AVR 2) : 0.000~0.250 A

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

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

定電圧精度

周囲温度、入力電圧、負荷を下記仕様内で、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 -20~55 °C

入力電圧 4.5~9.0 V

負荷電流 (AVR 1) 0.000~0.250 A

(AVR 2) 0.000~0.250 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) = $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

Object	+12V0.250A
--------	------------

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	55	5.0	0.250	12.092	±143	±1.2
Minimum Voltage	55	9.0	0.000	11.807		

Object	-12V0.250A
--------	------------

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	55	5.0	0.250	-12.090	±135	±1.2
Minimum Voltage	55	9.0	0.000	-11.820		

COSEL

Model	ZUW60512	Testing Circuitry Figure A
Item	Condensation 結露特性	
Object	+12V 0.25A	

1. Condensation test

Testing procedure is as follows.

- ① Keeping and cooling the unit in a tank at -10°C for an hour with the input off.
- ② Taking it out of the tank and dewing itself in a room where the temperature is 26°C and the humidity is 40%RH.
- ③ Testing electrical characteristics of the unit to confirm there be no fault.
- ④ Repeating ①, ② and ③ three times.

1. 結露特性試験

入力を切った状態で、恒温槽で -10°C に冷却しておき、約1時間後に恒温槽から取り出し、室温 26°C 、湿度40%RHの状態におき結露させ、その電気的特性の測定を3度行い、異常のないことを確認する。

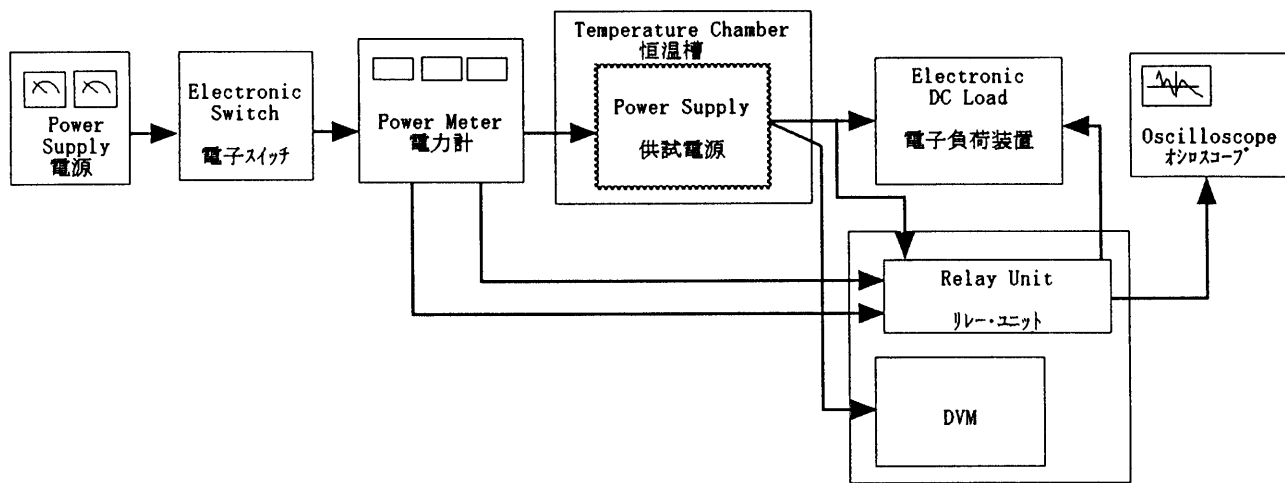
2. Values

	Times	Output Voltage [V]	Ripple Voltage [mV]	Ripple Noise [mV]
Load 50%	1	11.940	5	25
	2	11.948	5	25
	3	11.939	5	25
Load 100%	1	11.820	15	30
	2	11.827	15	30
	3	11.834	15	30

Input Volt. 5.0 V

COSEL

Model		ZUW60512																																	
Item		Condensation 結露特性																																	
Object		-12V 0.25A																																	
		Testing Circuitry Figure A																																	
<p>1. Condensation test</p> <p>Testing procedure is as follows.</p> <p>① Keeping and cooling the unit in a tank at -10°C for an hour with the input off.</p> <p>② Taking it out of the tank and dewing itself in a room where the temperature is 26°C and the humidity is 40%RH.</p> <p>③ Testing electrical characteristics of the unit to confirm there be no fault.</p> <p>④ Repeating ①, ② and ③ three times.</p> <p>1. 結露特性試験</p> <p>入力を切った状態で、恒温槽で-10°Cに冷却しておき、約1時間後に恒温槽から取り出し、室温26°C、湿度40%RHの状態におき結露させ、その電気的特性の測定を3度行い、異常のないことを確認する。</p>																																			
<p>2. Values</p> <table border="1"> <thead> <tr> <th></th> <th>Times</th> <th>Output Voltage [V]</th> <th>Ripple Voltage [mV]</th> <th>Ripple Noise [mV]</th> </tr> </thead> <tbody> <tr> <td rowspan="3">Load 50%</td> <td>1</td> <td>-11.918</td> <td>5</td> <td>25</td> </tr> <tr> <td>2</td> <td>-11.963</td> <td>5</td> <td>25</td> </tr> <tr> <td>3</td> <td>-11.969</td> <td>5</td> <td>25</td> </tr> <tr> <td rowspan="3">Load 100%</td> <td>1</td> <td>-11.867</td> <td>15</td> <td>30</td> </tr> <tr> <td>2</td> <td>-11.860</td> <td>15</td> <td>30</td> </tr> <tr> <td>3</td> <td>-11.853</td> <td>15</td> <td>30</td> </tr> </tbody> </table> <p style="text-align: right;">Input Volt. 5.0 V</p>						Times	Output Voltage [V]	Ripple Voltage [mV]	Ripple Noise [mV]	Load 50%	1	-11.918	5	25	2	-11.963	5	25	3	-11.969	5	25	Load 100%	1	-11.867	15	30	2	-11.860	15	30	3	-11.853	15	30
	Times	Output Voltage [V]	Ripple Voltage [mV]	Ripple Noise [mV]																															
Load 50%	1	-11.918	5	25																															
	2	-11.963	5	25																															
	3	-11.969	5	25																															
Load 100%	1	-11.867	15	30																															
	2	-11.860	15	30																															
	3	-11.853	15	30																															



Data Acquisition/Control Unit
データ集録システム

Figure A