



TEST DATA OF ZUW1R54812
(48.0V INPUT)

Regulated DC Power Supply

Date : June 14, 1996

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Design Manager

Prepared by : K. Shimano
Design Engineer

コーセル株式会社

COSEL CO., LTD.

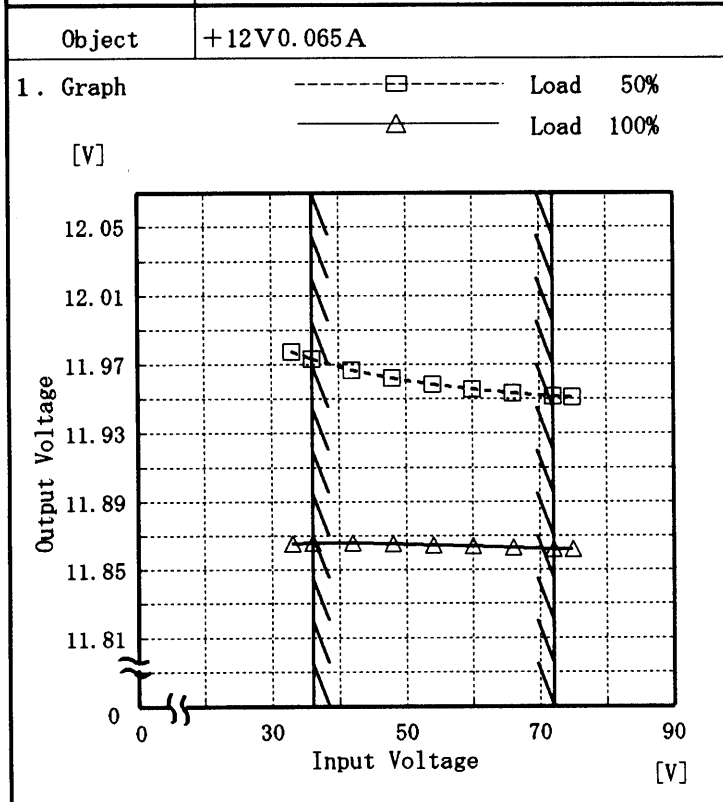
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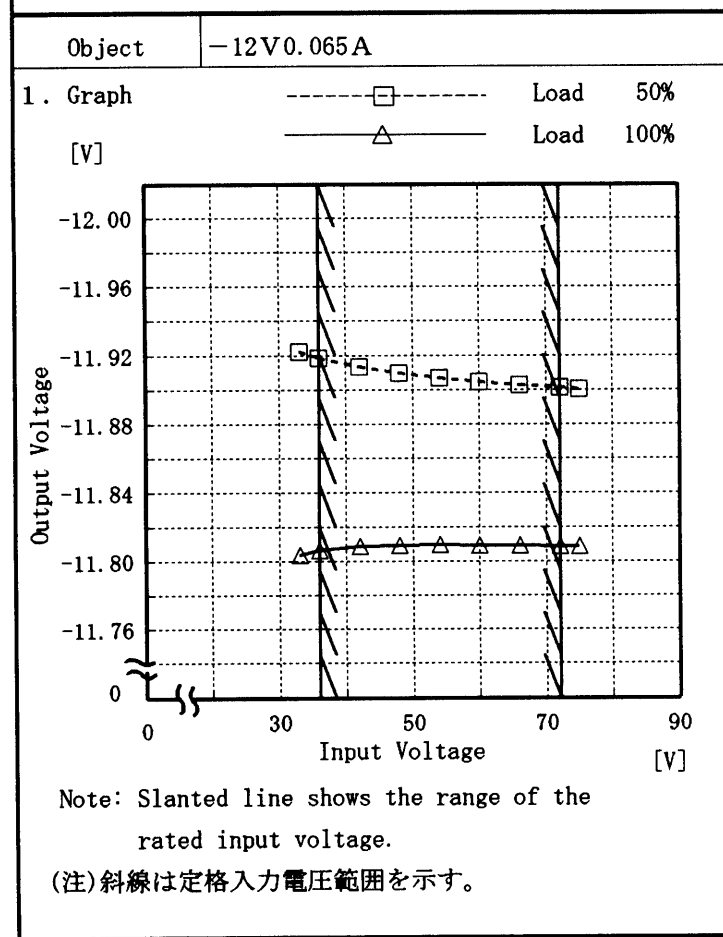


Model	ZUW1R54812	Temperature	25°C
Item	Line Regulation 静的入力変動	Testing Circuitry	Figure A



2. Values

Input Voltage [V]	Load 50%	Load 100%
	Output Volt. [V]	Output Volt. [V]
33.0	11.977	11.865
36.0	11.973	11.866
42.0	11.967	11.866
48.0	11.962	11.865
54.0	11.959	11.865
60.0	11.956	11.864
66.0	11.953	11.863
72.0	11.952	11.862
75.0	11.951	11.862
—	—	—
—	—	—
—	—	—



2. Values

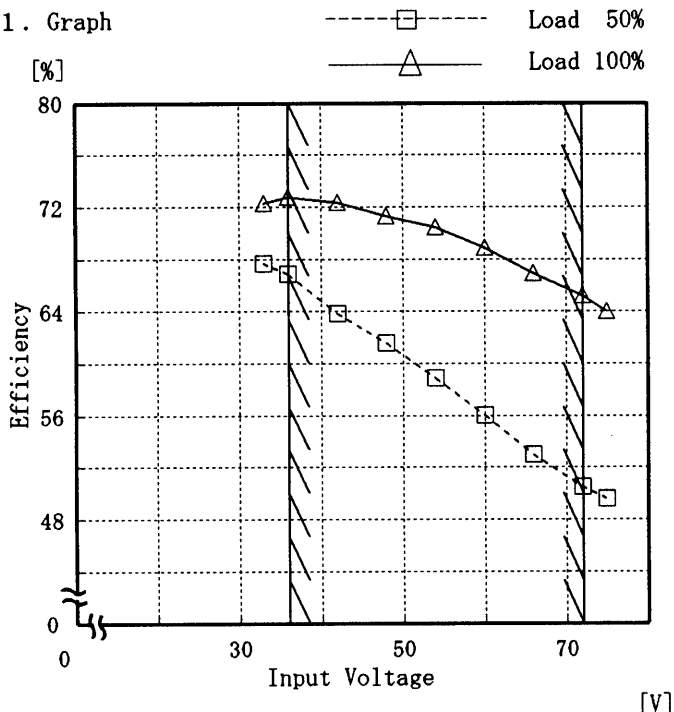
Input Voltage [V]	Load 50%	Load 100%
	Output Volt. [V]	Output Volt. [V]
33.0	-11.922	-11.804
36.0	-11.918	-11.806
42.0	-11.913	-11.809
48.0	-11.910	-11.809
54.0	-11.907	-11.810
60.0	-11.904	-11.809
66.0	-11.903	-11.809
72.0	-11.901	-11.809
75.0	-11.900	-11.809
—	—	—
—	—	—
—	—	—



Model	ZUW1R54812
Item	Efficiency 効率
Object	

Temperature 25°C
Testing Circuitry Figure A

1. Graph



2. Values

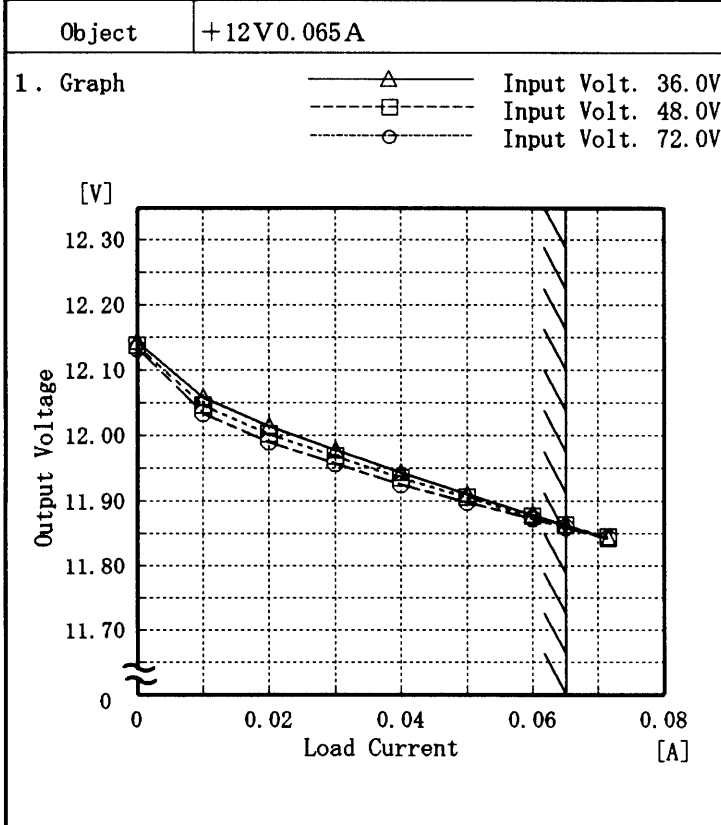
Input Voltage [V]	Load 50%	Load 100%
	Efficiency [%]	Efficiency [%]
33.0	67.7	72.3
36.0	66.9	72.8
42.0	63.8	72.3
48.0	61.6	71.3
54.0	58.9	70.5
60.0	56.0	68.9
66.0	53.0	67.0
72.0	50.5	65.3
75.0	49.6	64.0
—	—	—
—	—	—
—	—	—

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。

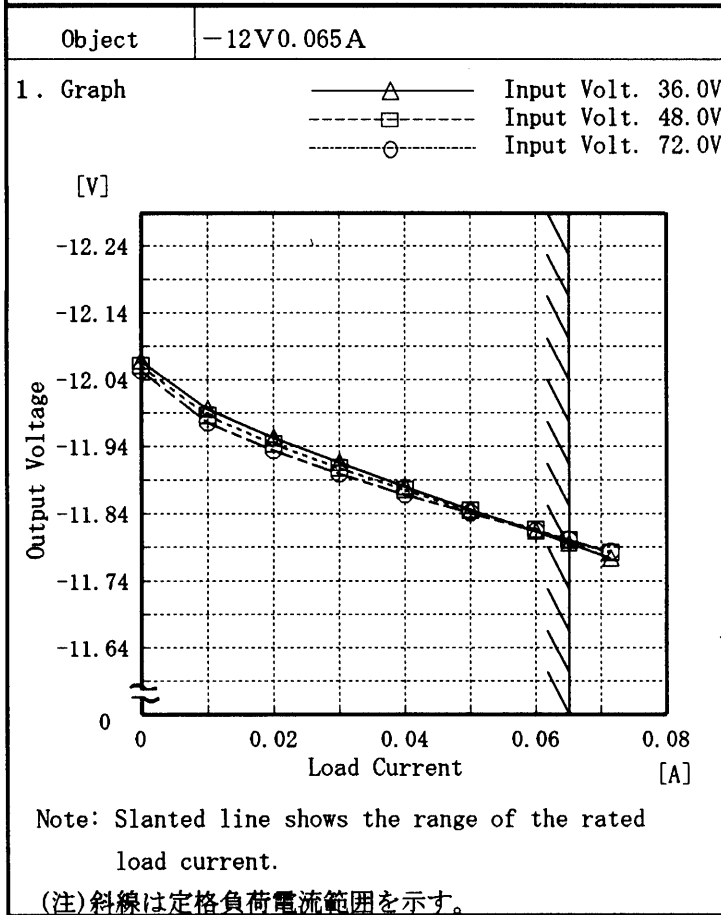


Model	ZUW1R54812	Temperature	25°C
Item	Load Regulation 静的負荷変動	Testing Circuitry	Figure A



2. Values

Load Current [A]	Input Volt. 36.0[V]	Input Volt. 48.0[V]	Input Volt. 72.0[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
0.000	12.144	12.138	12.133
0.010	12.059	12.046	12.034
0.020	12.014	12.002	11.991
0.030	11.978	11.968	11.957
0.040	11.943	11.935	11.926
0.050	11.911	11.906	11.899
0.060	11.879	11.877	11.872
0.065	11.863	11.863	11.859
0.072	11.842	11.844	11.843
-	-	-	-



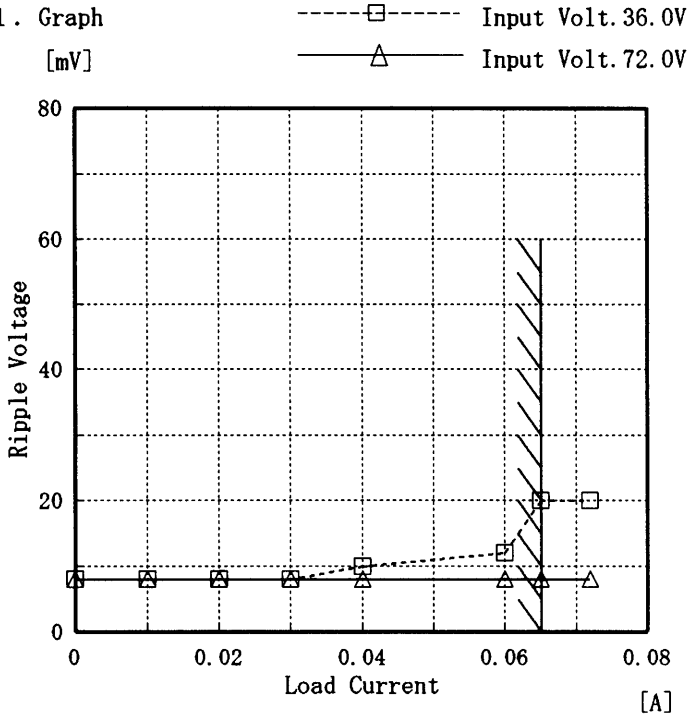
2. Values

Load Current [A]	Input Volt. 36.0[V]	Input Volt. 48.0[V]	Input Volt. 72.0[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
0.000	-12.070	-12.061	-12.055
0.010	-11.997	-11.987	-11.976
0.020	-11.954	-11.945	-11.935
0.030	-11.916	-11.908	-11.900
0.040	-11.881	-11.876	-11.870
0.050	-11.847	-11.845	-11.841
0.060	-11.815	-11.817	-11.815
0.065	-11.797	-11.802	-11.801
0.072	-11.774	-11.782	-11.784
-	-	-	-



Model	ZUW1R54812	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 0.065A		

1. Graph



2. Values

Load Current [A]	Input Volt. 36.0 [V]	Input Volt. 72.0 [V]
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
0.000	8	8
0.010	8	8
0.020	8	8
0.030	8	8
0.040	10	8
0.060	12	8
0.065	20	8
0.072	20	8
—	—	—
—	—	—
—	—	—

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

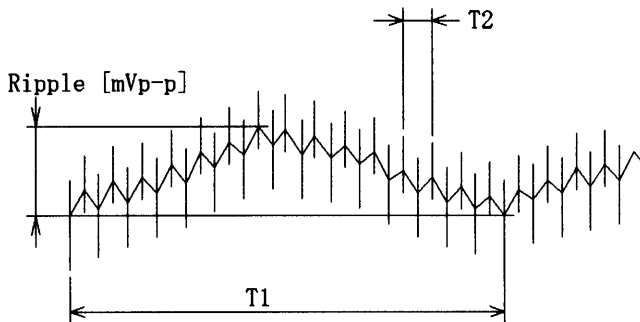
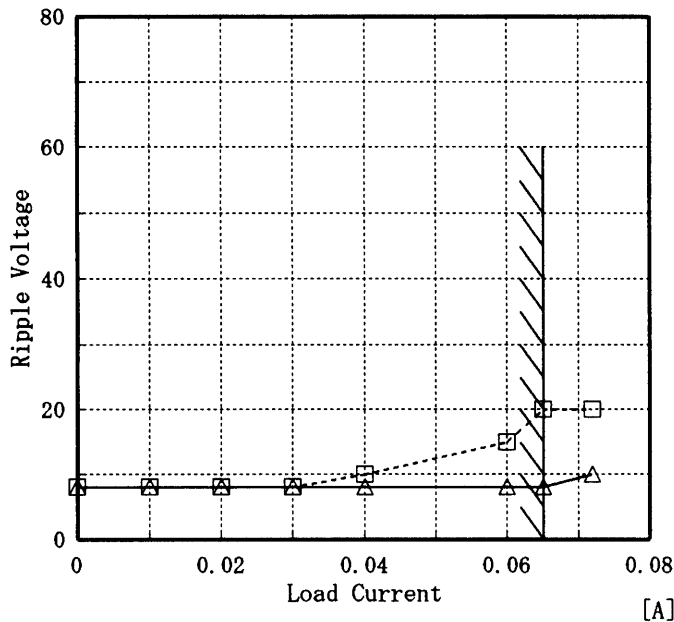


Fig. Complex Ripple Wave Form
 図 リップル波形詳細図



Model	ZUW1R54812	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 0.065A		

1. Graph
 [mV]
 -----□----- Input Volt. 36.0V
 -----△----- Input Volt. 72.0V



2. Values

Load Current [A]	Input Volt. 36.0 [V]	Input Volt. 72.0 [V]
	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
0.000	8	8
0.010	8	8
0.020	8	8
0.030	8	8
0.040	10	8
0.060	15	8
0.065	20	8
0.072	20	10
—	—	—
—	—	—
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Ripple Voltage is shown as p-p in the figure below.

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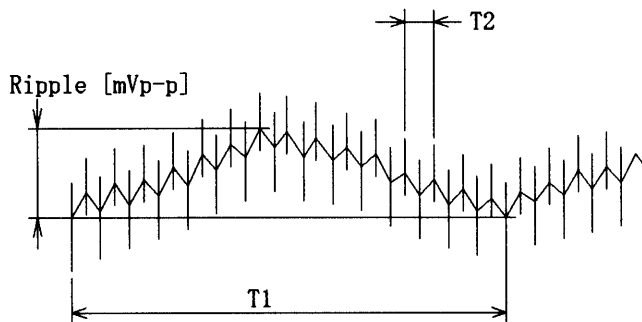


Fig. Complex Ripple Wave Form
 図 リップル波形詳細図



Model		ZUW1R54812	Temperature		25°C																																						
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Model	ZUW1R24812	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+12V0.065A		

Input Volt. 48.0 V

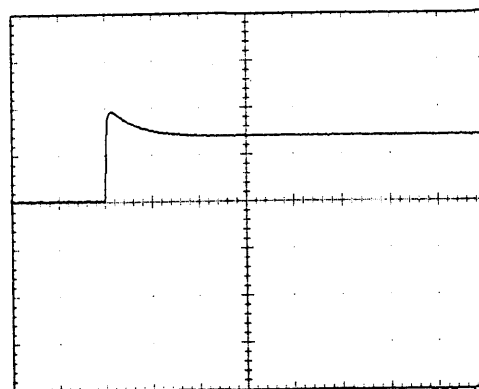
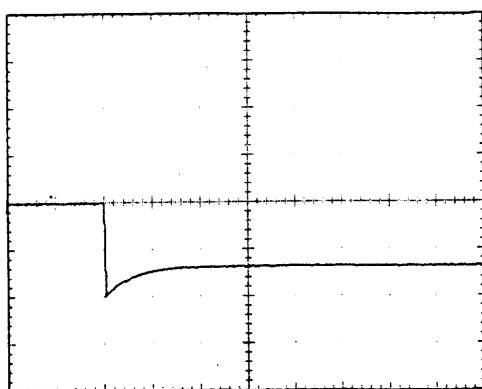
Cycle 100 mS

Load Current

Min. Load ←→

Load 100 %

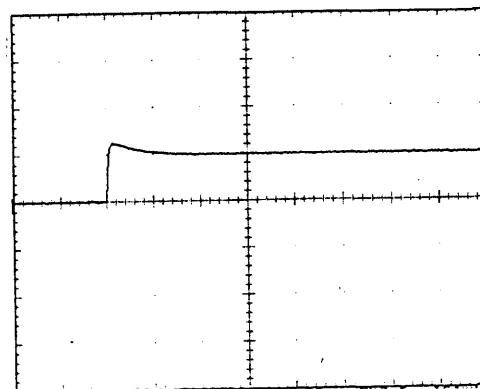
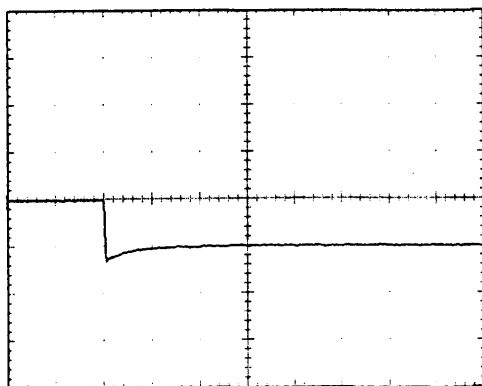
200 mV/div



Min. Load ←→

Load 50 %

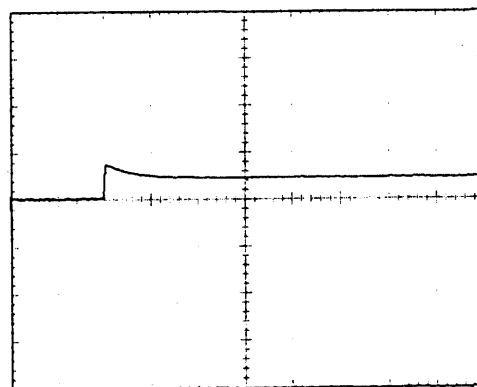
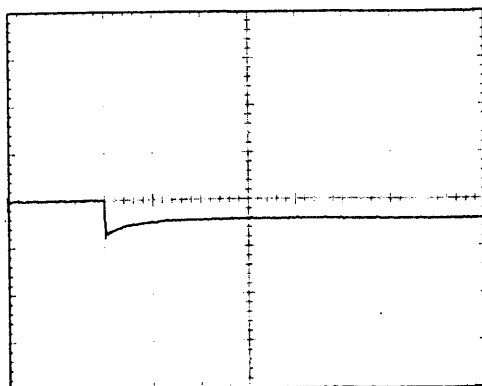
200 mV/div



Load 50% ←→

Load 100 %

200 mV/div



1 mS/div

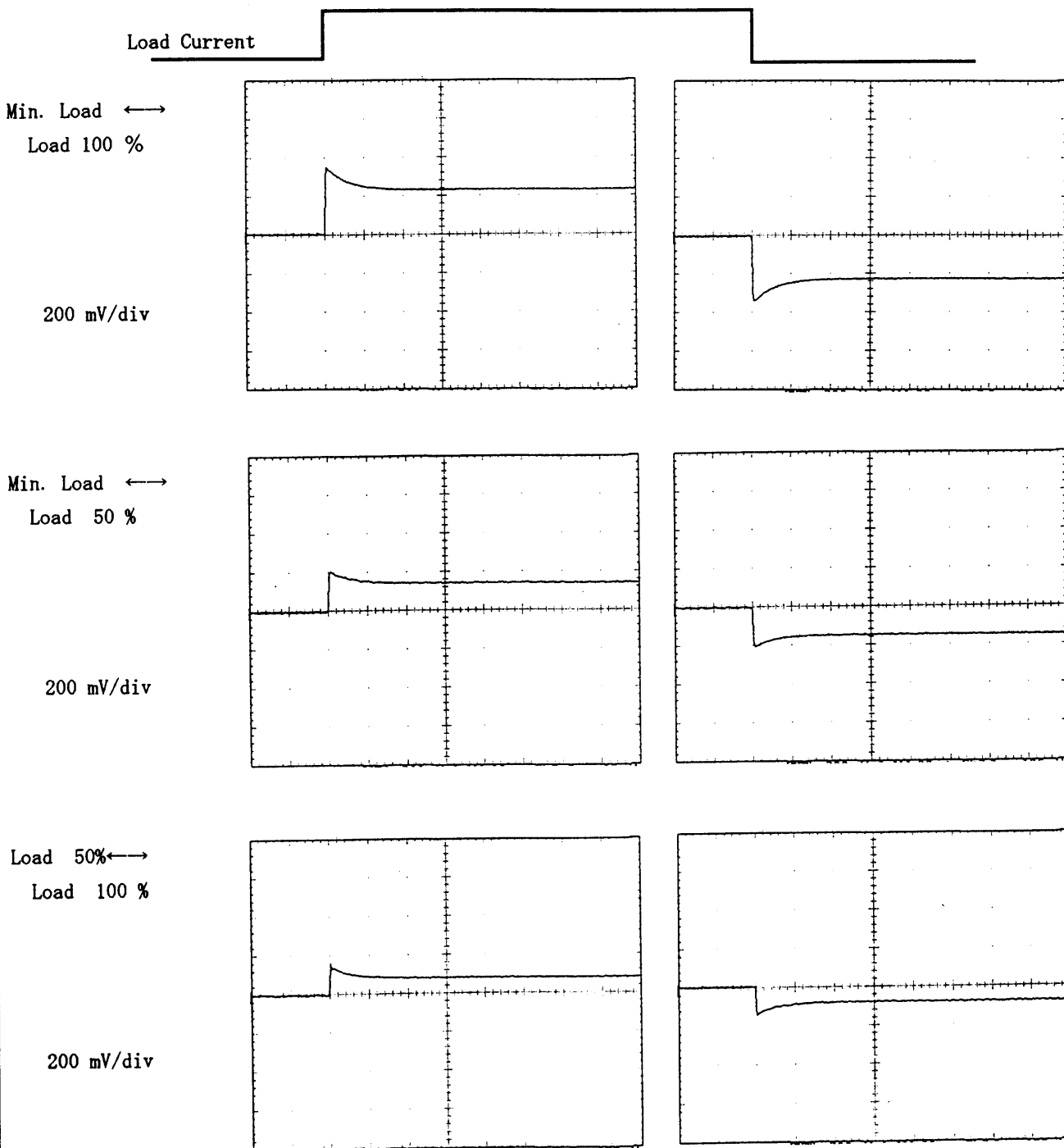


Model	ZUW1R54812	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	-12V0.065A		

Input Volt. 48.0 V

Cycle 100 mS

Load Current

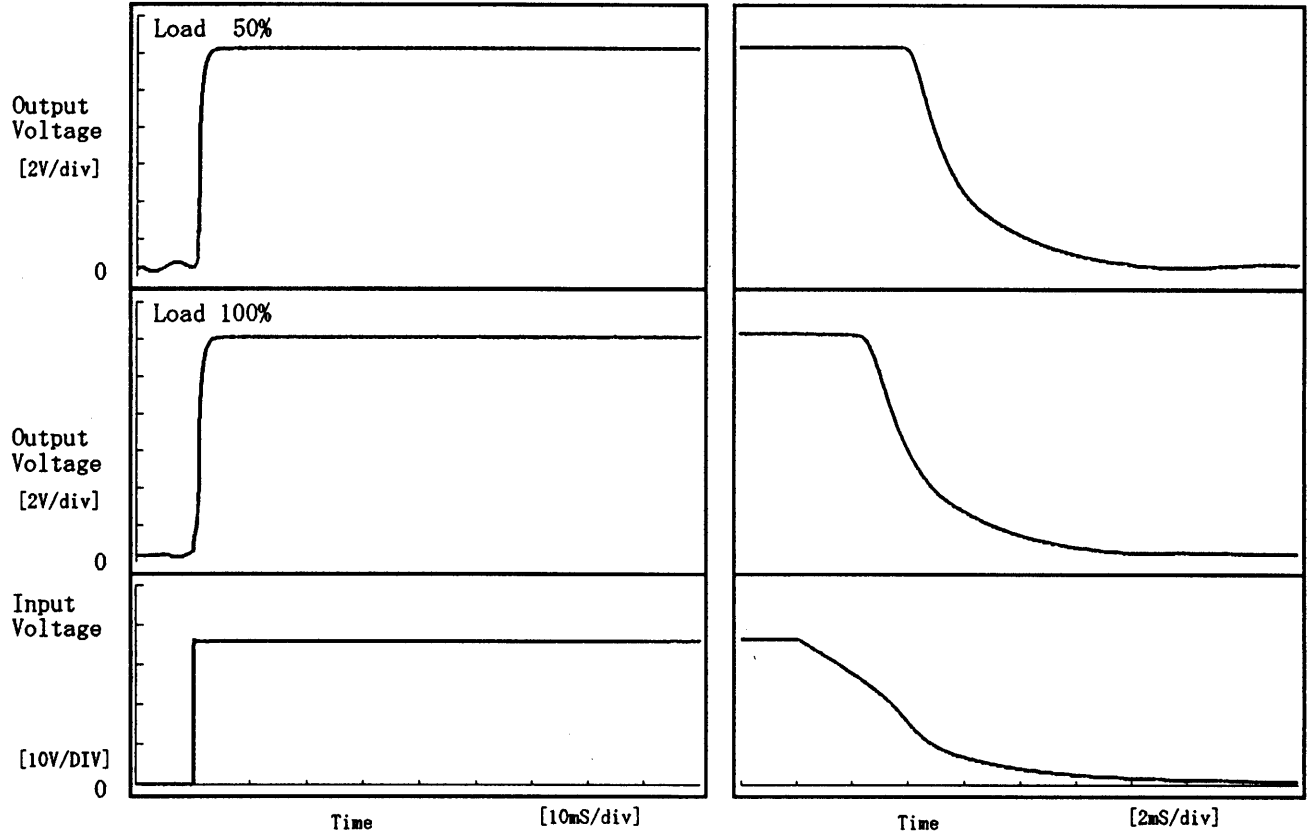




Model	ZUW1R54812	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+12V 0.065A		

1. Graph

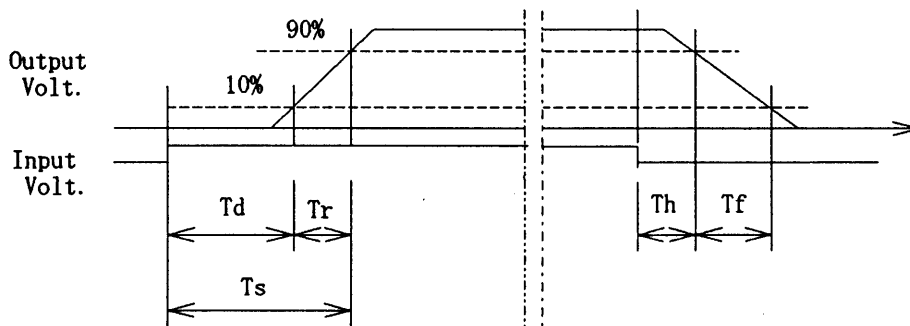
Input Volt. 36.0 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.10	1.75	1.85	4.33	4.97
100 %	0.10	1.85	1.95	2.79	5.14

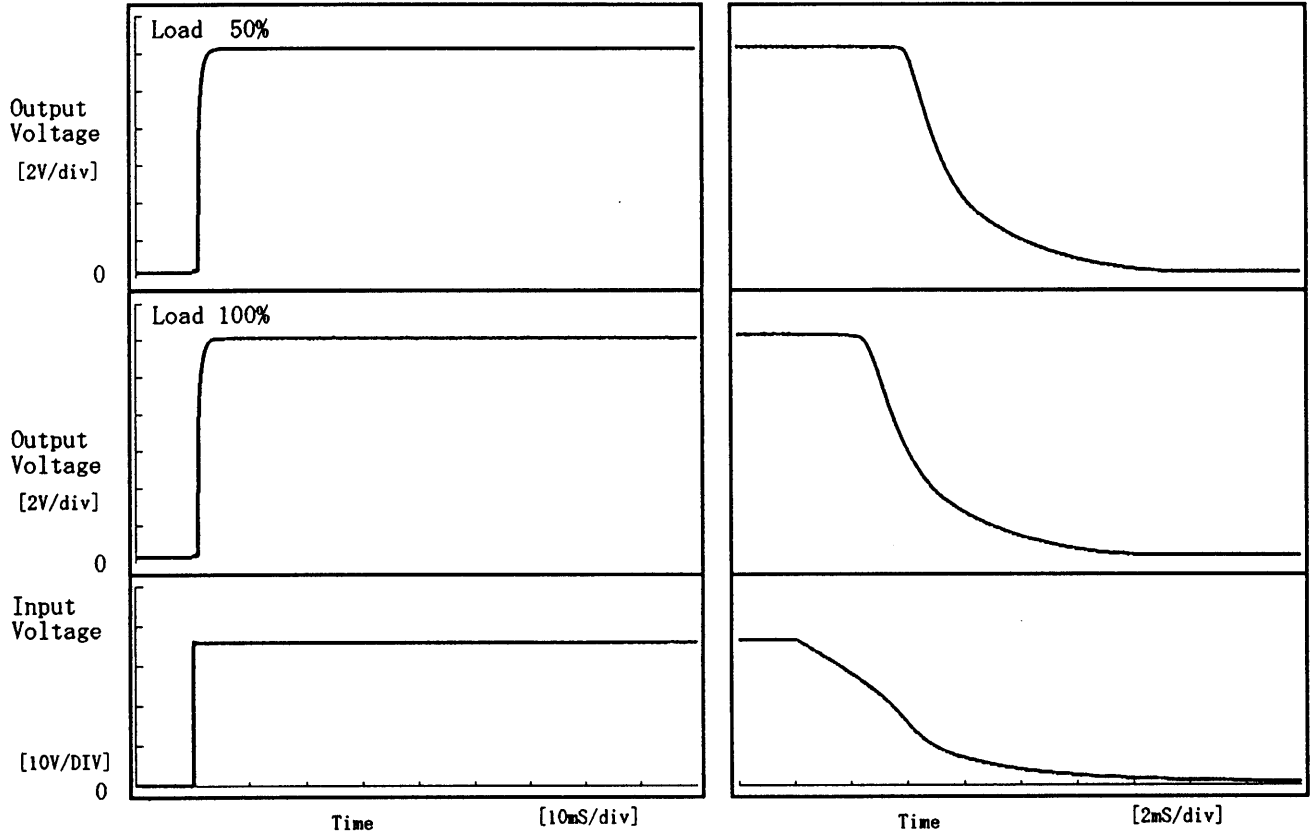




Model	ZUW1R54812	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	-12V0.065A		

1. Graph

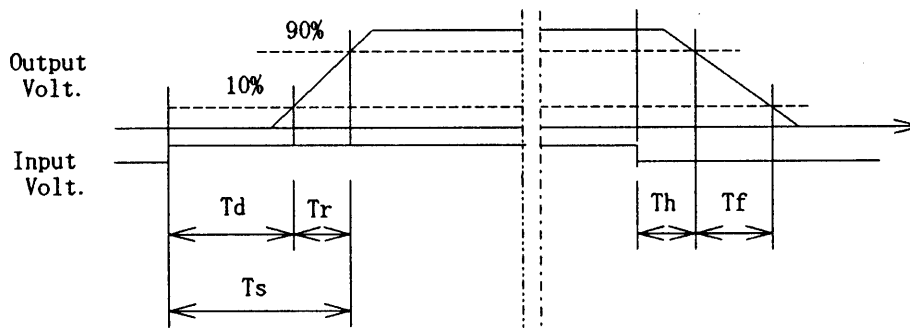
Input Volt. 36.0 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.85	1.00	1.85	4.22	4.78
100 %	0.85	1.10	1.95	2.78	4.97





COSEL																																																						
Model	ZUW1R54812																																																					
Item	Ambient Temperature Drift 周囲温度変動	Testing Circuitry Figure A																																																				
Object	+12V0.065A																																																					
1. Graph	<p> \triangle Input Volt. 36.0V \square Input Volt. 48.0V \circ Input Volt. 72.0V </p>	2. Values																																																				
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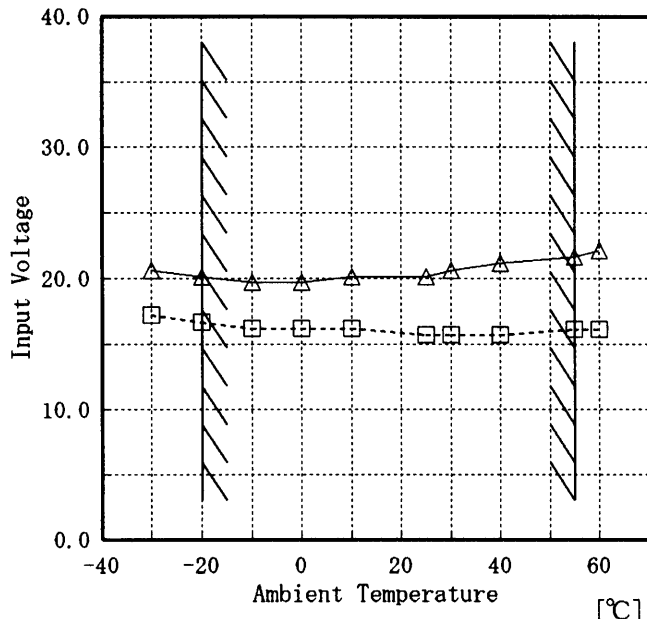
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<p>Note: Slanted line shows the range of the rated ambient temperature. (注)斜線は定格周囲温度範囲を示す。</p>																																																						



Model	ZUW1R54812
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+12V0.065A

Testing Circuitry Figure A

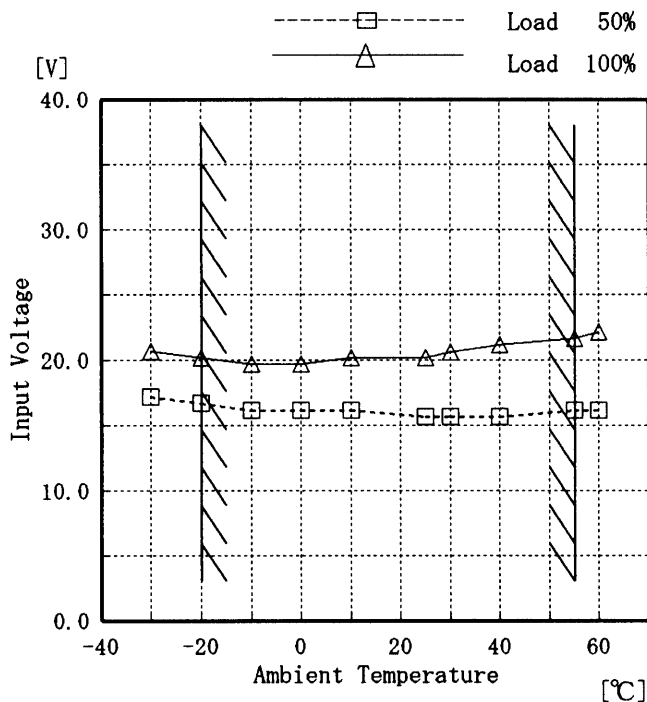
1. Graph
 [V]
 -----□----- Load 50%
 -----△----- Load 100%



2. Values

Ambient Temp. [°C]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-30	17.2	20.7
-20	16.7	20.2
-10	16.2	19.7
0	16.2	19.7
10	16.2	20.2
25	15.7	20.2
30	15.7	20.6
40	15.7	21.1
55	16.2	21.6
60	16.2	22.1
-	-	-

Object -12V0.065A



2. Values

Ambient Temp. [°C]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-30	17.2	20.7
-20	16.7	20.2
-10	16.2	19.7
0	16.2	19.7
10	16.2	20.2
25	15.7	20.2
30	15.7	20.6
40	15.7	21.1
55	16.2	21.6
60	16.2	22.1
-	-	-

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

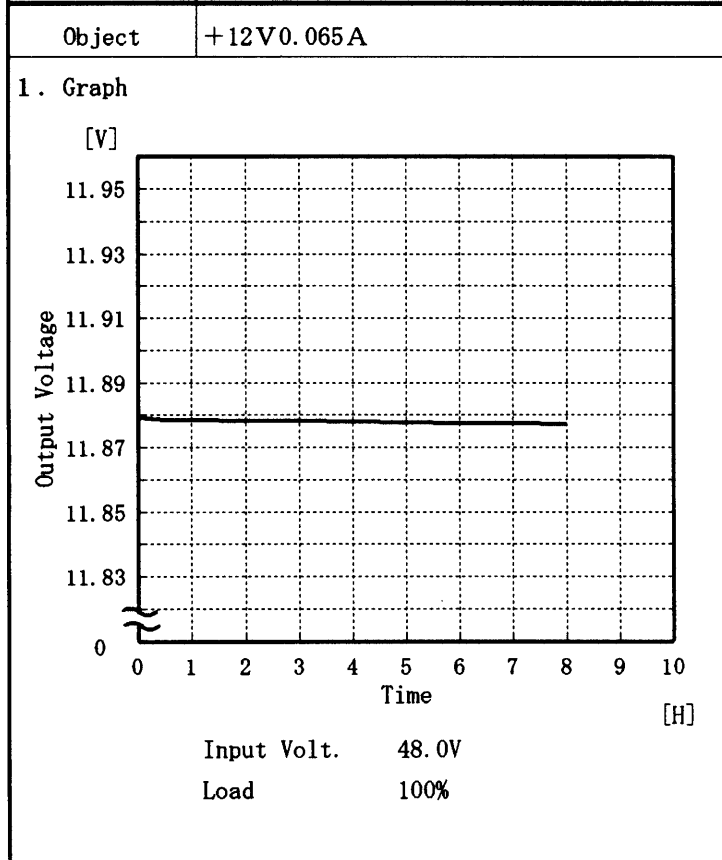
(注)斜線は定格周囲温度範囲を示す。



Model ZUW1R54812		Testing Circuitry Figure A																																					
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)																																						
Object +12V0.065A		2. Values																																					
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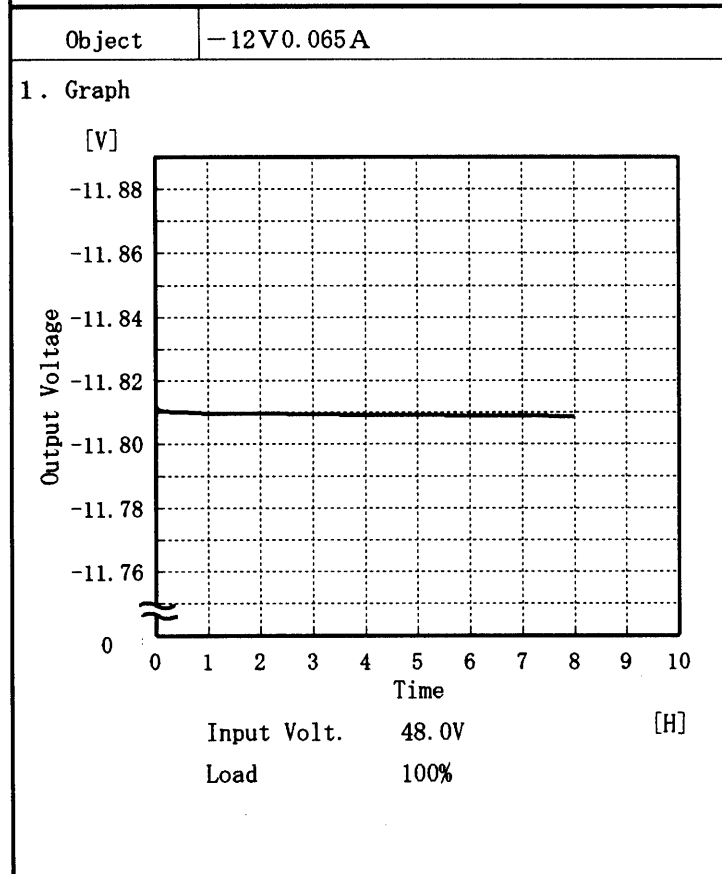


Model	ZUW1R54812	Temperature	25 °C
Item	Time Lapse Drift 経時ドリフト	Testing Circuitry	Figure A



2. Values

Time since start [H]	Output Voltage [V]
0.0	11.879
0.5	11.879
1.0	11.879
2.0	11.878
3.0	11.878
4.0	11.878
5.0	11.878
6.0	11.878
7.0	11.878
8.0	11.877



2. Values

Time since start [H]	Output Voltage [V]
0.0	-11.812
0.5	-11.810
1.0	-11.810
2.0	-11.810
3.0	-11.810
4.0	-11.809
5.0	-11.809
6.0	-11.809
7.0	-11.809
8.0	-11.809



COSEL		
Model	ZUW1R54812	
Item	Output Voltage Accuracy 定電圧精度	Testing Circuitry Figure A

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 : 36.0~72.0 V

Load Current (AVR 1) : 0.000~0.065 A

(AVR 2) : 0.000~0.065 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 36.0~72.0 V

負荷電流 (AVR 1) 0.000~0.065 A

(AVR 2) 0.000~0.065 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	+12V0.065A
--------	------------

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-20	36.0	0.065	11.892	±148	±1.3
Minimum Voltage	55	36.0	0.000	11.597		

Object	-12V0.065A
--------	------------

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-20	48.0	0.065	-11.833	±150	±1.3
Minimum Voltage	55	36.0	0.000	-11.533		



Model		ZUW1R54812	Testing Circuitry	Figure A
Item		Condensation 結露特性		
Object		+12V 0.065A		

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 25°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 25°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	11.862	10	15
	2	11.872	10	15
	3	11.866	10	15
Load 100 %	1	11.848	20	25
	2	11.851	20	25
	3	11.851	20	25

Input Volt. 48.0 V



Model		ZUW1R54812	Testing Circuitry Figure A
Item		Condensation 結露特性	
Object		-12V 0.065A	

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 25°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25°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	-11.860	10	15
	2	-11.873	10	15
	3	-11.865	10	15
Load 100%	1	-11.846	20	25
	2	-11.850	20	25
	3	-11.854	20	25

Input Volt. 48.0 V

