COSEL

TEST DATA OF ZTS1R54815
(48.0V　INPUT)

Regulated DC Power Supply

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Approved by :　*N. Shiraishi*
　　　　　　　　　　　　　　Design Manager

Prepared by :　*T. Tsuri*
　　　　　　　　　　　　　　Design Engineer

コーセル株式会社
COSEL CO., LTD.

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Item	Line Regulation　静的入力変動
Object	＋15V0.1A

Temperature	25℃
Testing Circuitry	Figure A

1．Graph

```
-------⊟-------  Load  50%
———△———  Load 100%
```

[V]

Output Voltage

15.36
15.26
15.16
15.06
14.96
14.86
14.76
0

0   40   50   60   70   80

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。

2．Values

Input Voltage [V]	Load 50% Output Volt. [V]	Load 100% Output Volt. [V]
33.0	15.008	15.007
36.0	15.008	15.007
42.0	15.008	15.007
48.0	15.008	15.007
54.0	15.008	15.006
60.0	15.008	15.006
66.0	15.008	15.006
72.0	15.008	15.006
75.0	15.008	15.006
—	—	—
—	—	—
—	—	—

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Model	ZTS1R54815
Item	Efficiency 効率
Object	

Temperature   25℃
Testing Circuitry   Figure A

1. Graph

------□------   Load   50%

△   Load 100%

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。
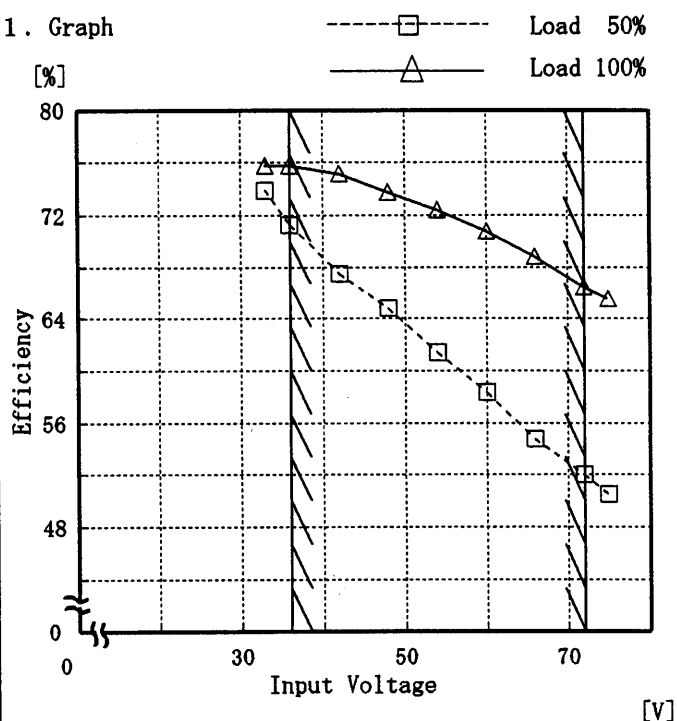
2. Values

Input Voltage [V]	Load 50% Efficiency [%]	Load 100% Efficiency [%]
33.0	73.9	75.8
36.0	71.3	75.8
42.0	67.5	75.1
48.0	64.8	73.8
54.0	61.4	72.4
60.0	58.3	70.8
66.0	54.8	68.8
72.0	52.0	66.5
75.0	50.5	65.5
—	—	—
—	—	—
—	—	—

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Model	ZTS1R54815
Item	Load Regulation 静的負荷変動
Object	＋15V0.1A

Temperature   25℃
Testing Circuitry   Figure A

1. Graph

————△———— Input Volt. 36.0V
------□------ Input Volt. 48.0V
—○— Input Volt. 72.0V

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。

2. Values

Load Current [A]	Input Volt. 36.0[V] Output Volt. [V]	Input Volt. 48.0[V] Output Volt. [V]	Input Volt. 72.0[V] Output Volt. [V]
0.00	15.009	15.010	15.010
0.02	15.008	15.008	15.009
0.04	15.008	15.008	15.008
0.06	15.007	15.008	15.008
0.08	15.007	15.007	15.007
0.10	15.007	15.007	15.007
0.11	15.007	15.007	15.007
—	—	—	—
—	—	—	—
—	—	—	—

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Model	ZTS1R54815
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+15V0.1A

Temperature 25℃
Testing Circuitry Figure A

1．Graph

-----□----- Input Volt. 36.0V
———△——— Input Volt. 72.0V

[mV]

2．Values

Load Current	Input Volt. 36.0 [V]	Input Volt. 72.0 [V]
[A]	Ripple Output Volt. [mV]	Ripple Output Volt. [mV]
0.00	5	5
0.02	5	8
0.04	5	8
0.06	8	8
0.08	8	10
0.10	10	10
0.11	10	10
—	—	—
—	—	—
—	—	—
—	—	—

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]

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

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Model	ZTS1R54815
Item	Ripple-Noise　リップルノイズ
Object	+15V0.1A

Temperature　　　25℃
Testing Circuitry　　Figure A

1. Graph

----□---- Input Volt. 36.0V
——△—— Input Volt. 72.0V

[mV]

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

Ripple-Noise
[mVp-p]

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

2. Values

Load current [A]	Input Volt. 36.0 [V] Ripple-Noise [mV]	Input Volt. 72.0 [V] Ripple-Noise [mV]
0.00	10	10
0.02	15	15
0.04	15	15
0.06	15	20
0.08	20	20
0.10	20	25
0.11	25	25
—	—	—
—	—	—
—	—	—
—	—	—

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Model	ZTS1R54815
Item	Overcurrent Protection 過電流保護
Object	＋15V0.1A

Temperature　　　　25℃
Testing Circuitry　Figure A

1. Graph

〜〜〜〜〜〜 Input Volt.36.0V
――――― Input Volt.48.0V
━━━━━ Input Volt.72.0V

[V]

Output Voltage vs Load Current [A]
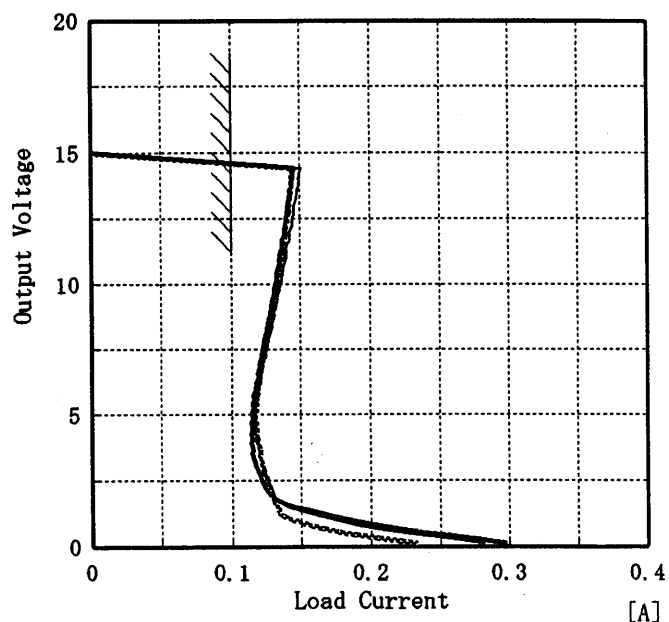
Note: Slanted line shows the range of the rated load current.

(注)斜線は定格負荷電流範囲を示す。

2. Values

Output Voltage [V]	Input Volt. 36.0[V] Load Current [A]	Input Volt. 48.0[V] Load Current [A]	Input Volt. 72.0[V] Load Current [A]
15.00	0.14	0.15	0.15
14.25	0.14	0.15	0.14
13.50	0.14	0.15	0.14
12.00	0.14	0.14	0.14
10.50	0.14	0.14	0.13
9.00	0.13	0.13	0.13
7.50	0.12	0.13	0.12
6.00	0.12	0.12	0.12
4.50	0.12	0.12	0.11
3.00	0.12	0.12	0.12
1.50	0.13	0.14	0.14
0.00	0.23	0.28	0.30

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Model	ZTS1R54815		
Item	Dynamic Load Responce 動的負荷変動	Temperature	25℃
		Testing Circuitry	Figure A
Object	+15V0.1A		

Input Volt.　　48.0 V

Cycle　　　　100 mS

Load Current

Min. Load ⟷
Load 100 %

100 mV/div
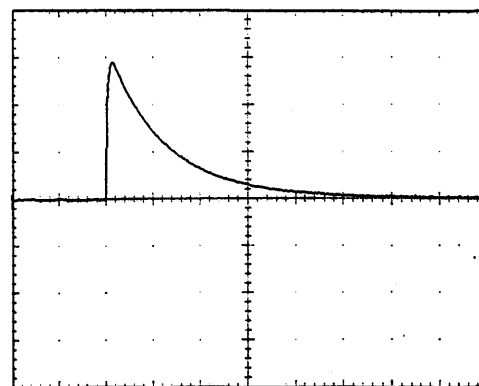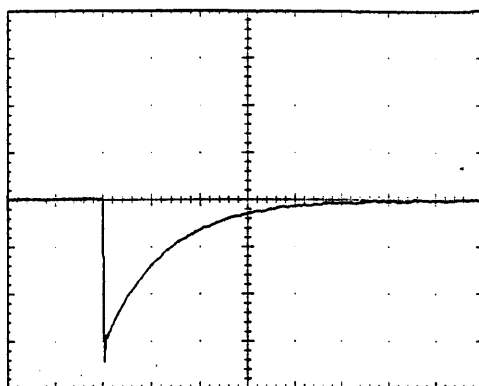
Min. Load ⟷
Load　50 %

100 mV/div
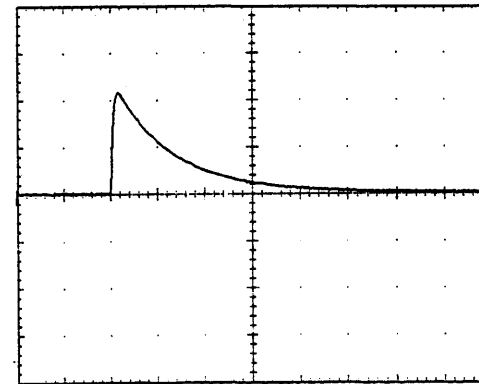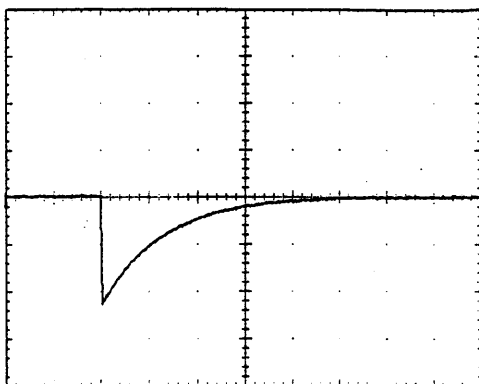
Load　50%⟷
Load　100 %

100 mV/div

1 mS/div

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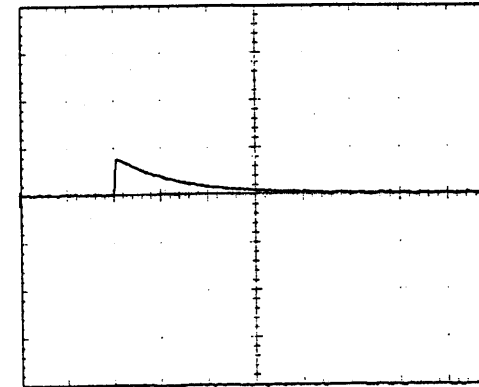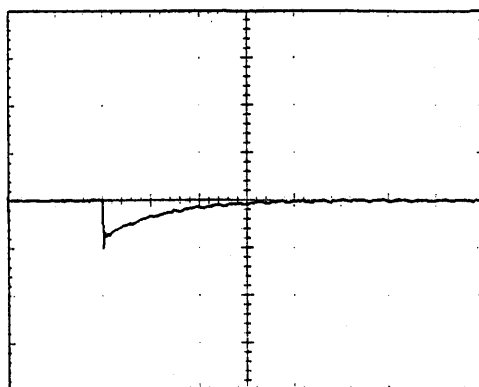
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Model	ZTS1R54815		
Item	Rise and Fall Time　立上り、立下り時間	Temperature	25℃
		Testing Circuitry	Figure A
Object	＋15V0.1A		

1．Graph

Input Volt. 36.0 V

Load 50%

Output Voltage [5V/div]

Load 100%

Output Voltage [5V/div]

Input Voltage [10V/DIV]

Time [10mS/div]　　Time [10mS/div]
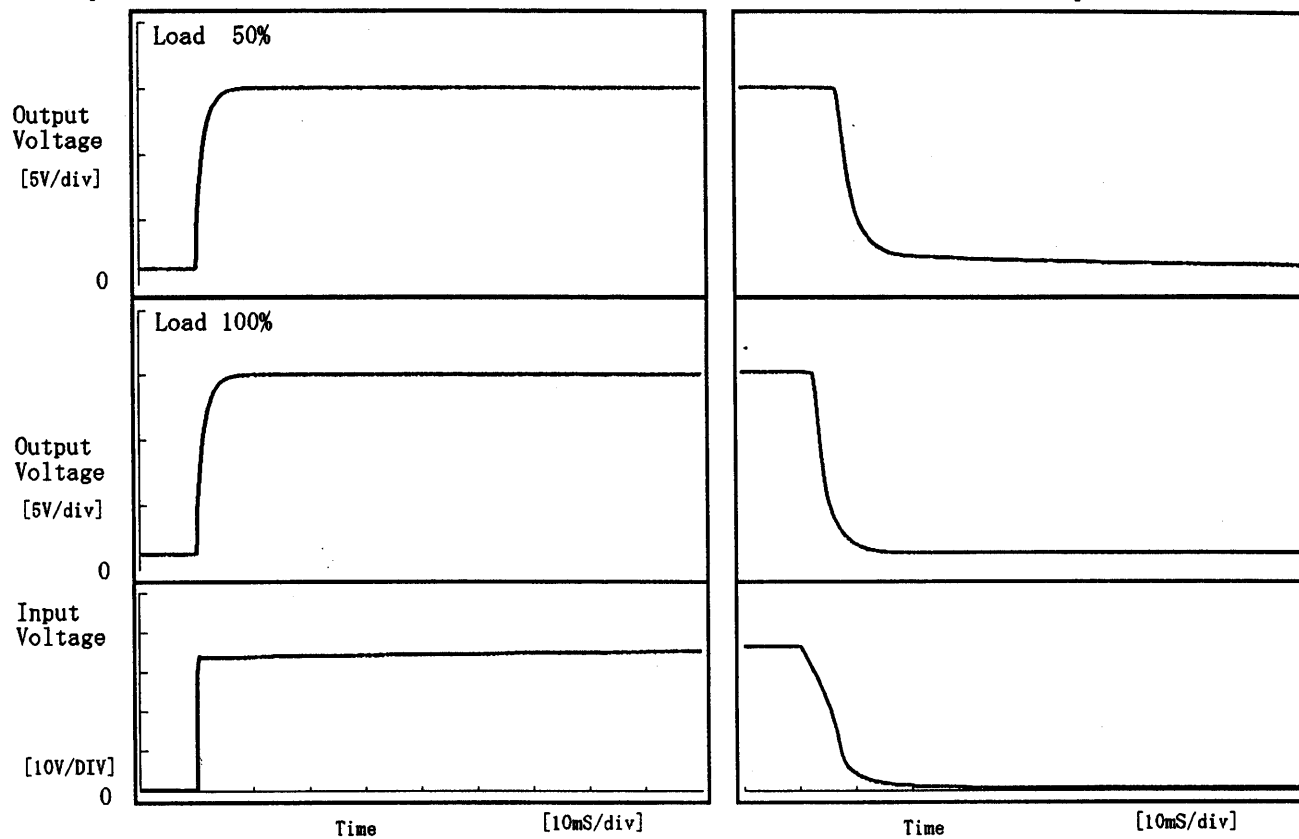
2．Values

[mS]

Load　　Time	T d	T r	T s	T h	T f
50 %	0.05	3.25	3.30	7.35	44.60
100 %	0.05	3.20	3.25	3.05	8.25

Output Volt.　90%　10%
Input Volt.
Td　Tr　Th　Tf　Ts

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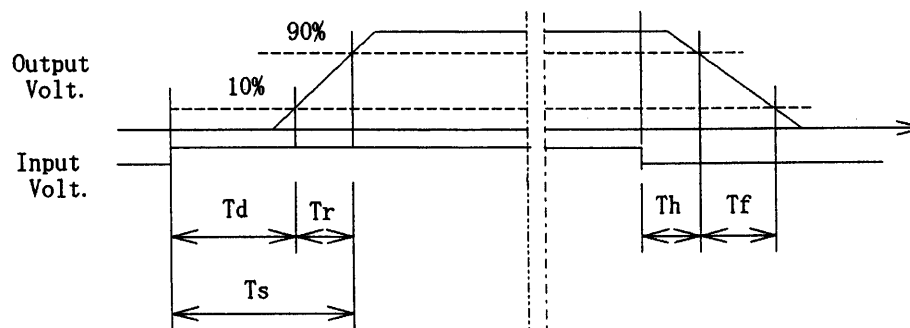
Model	ZTS1R54815
Item	Ambient Temperature Drift 周囲温度変動
Object	＋15V0.1A

Testing Circuitry　Figure A
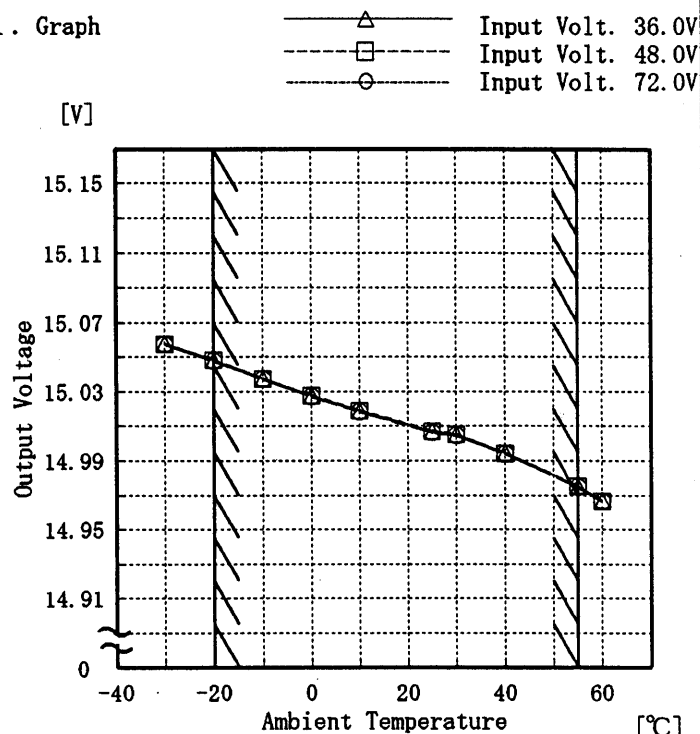
1. Graph

△ ── Input Volt. 36.0V
□ ----- Input Volt. 48.0V
○ ─·─ Input Volt. 72.0V

Load　100%

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。

2. Values

Temperature [℃]	Input Volt. 36.0[V] Output Volt. [V]	Input Volt. 48.0[V] Output Volt. [V]	Input Volt. 72.0[V] Output Volt. [V]
−30	15.058	15.058	15.057
−20	15.049	15.048	15.048
−10	15.038	15.037	15.037
0	15.028	15.027	15.027
10	15.019	15.019	15.019
25	15.007	15.007	15.007
30	15.005	15.005	15.004
40	14.995	14.994	14.994
55	14.975	14.975	14.975
60	14.967	14.967	14.966
―	―	―	―

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Model	ZTS1R54815
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	＋15Ｖ0.1A

Testing Circuitry　Figure A
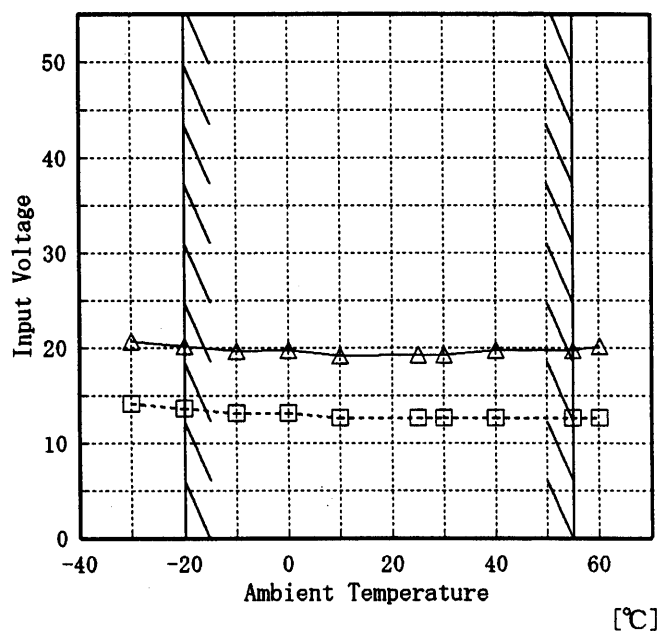
1. Graph
- - - - - - □ - - - - - - 　Load　50%
―――△――― 　Load　100%
[V]

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。

2. Values

Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
−30	14.2	20.7
−20	13.7	20.2
−10	13.2	19.7
0	13.2	19.7
10	12.7	19.2
25	12.7	19.2
30	12.7	19.2
40	12.7	19.8
55	12.7	19.8
60	12.7	20.2
－	－	－

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Model	ZTS1R54815
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	＋15Ｖ0.1Ａ

Testing Circuitry   Figure A

1. Graph

----☐---- Load 50%
——△—— Load 100%

[mV]

Input Volt. 36.0 V

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。

2. Values

Ambient Temp. [℃]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]
−30	10	20
−20	8	15
−10	8	15
0	8	15
10	8	15
25	8	15
30	8	15
40	8	15
55	8	10
60	8	10
—	—	—

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Model	ZTS1R54815
Item	Time Lapse Drift 経時ドリフト
Object	＋15V0.1A

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph

[V]

Input Volt. 48V
Load 100%
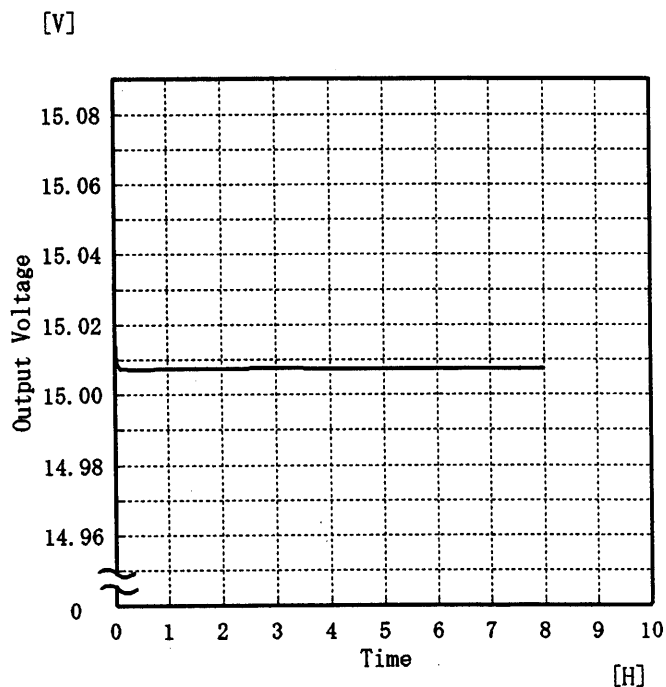
2. Values

Time since start [H]	Output Voltage [V]
0.0	15.017
0.5	15.007
1.0	15.008
2.0	15.008
3.0	15.008
4.0	15.008
5.0	15.008
6.0	15.008
7.0	15.007
8.0	15.007

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Model	ZTS1R54815	
Item	Output Voltage Accuracy　定電圧精度	Testing Circuitry　Figure A
Object	＋15V0.1A	

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 ℃
Input Voltage : 36.0〜72.0 V
Load Current　: 0.0〜0.1 A

* Output Voltage Accuracy = ±(Maximum of Output Voltage　− Minimum of Output Voltage)／2

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

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 ℃
入力電圧　　　　36.0〜72.0 V
負荷電流　　　　0.0〜0.1 A

* 定電圧精度(変動値)　= ±(出力電圧の最高値−出力電圧の最低値)／2

* 定電圧精度(変動率)　= $\dfrac{\text{変動値}}{\text{定格出力電圧}} \times 100$

Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	-20	48.0	0.0	15.052	±40	±0.3
Minimum Voltage	55	72.0	0.1	14.972		

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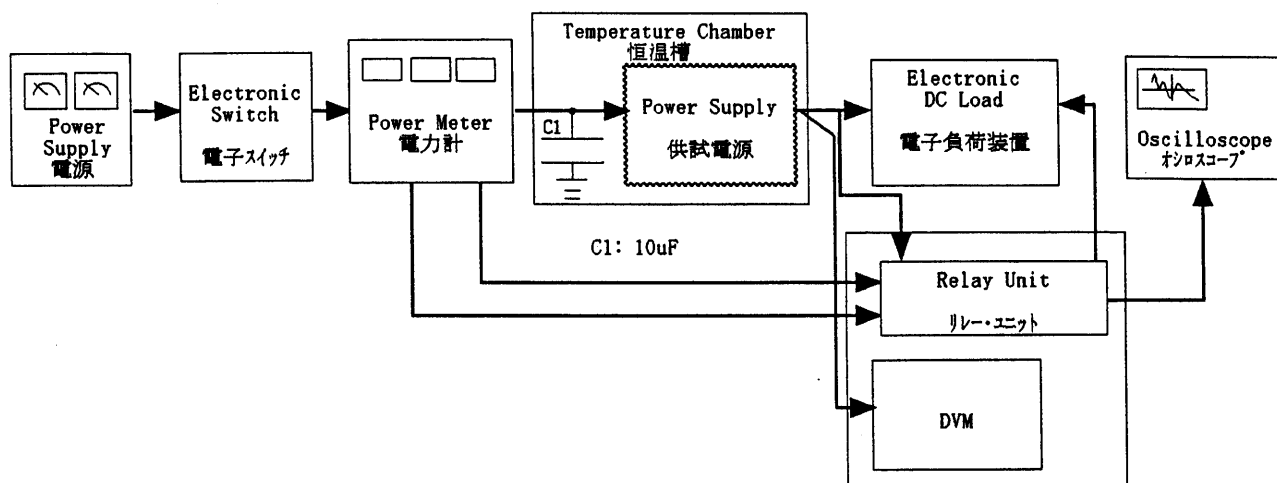|	
Model	ZTS1R54815
Item	Condensation 結露特性
Object	+15V0.1A

Testing Circuitry　　　Figure A

1. Condensation test

 Testing procedure is as follows.

① Keeping and cooling the unit in a tank at −10℃ 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℃ and the humidity is 40%RH.

③ Testing electrical characteristics of the unit to confirm there be no fault.

1．結露特性試験

　　入力を切った状態で、恒温槽で−１０℃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℃、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行い、異常のない
　ことを確認する。

2．Values

Item	Data	Testing Conditions
Output Voltage　[V]	14.810	Input Volt.：48V, Load Current：0.1A
Line Regulation [mV]	1	Input Volt.：36〜72V, Load Current：0.1A
Load Regulation [mV]	3	Input Volt.：48V, Load Current：0〜0.1A

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Figure A