参考資料

COSEL

TEST DATA OF ZTS31215
(12.0V INPUT)

Regulated DC Power Supply

Date : Mar.5. 1998

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コーセル株式会社

COSEL CO.,LTD.

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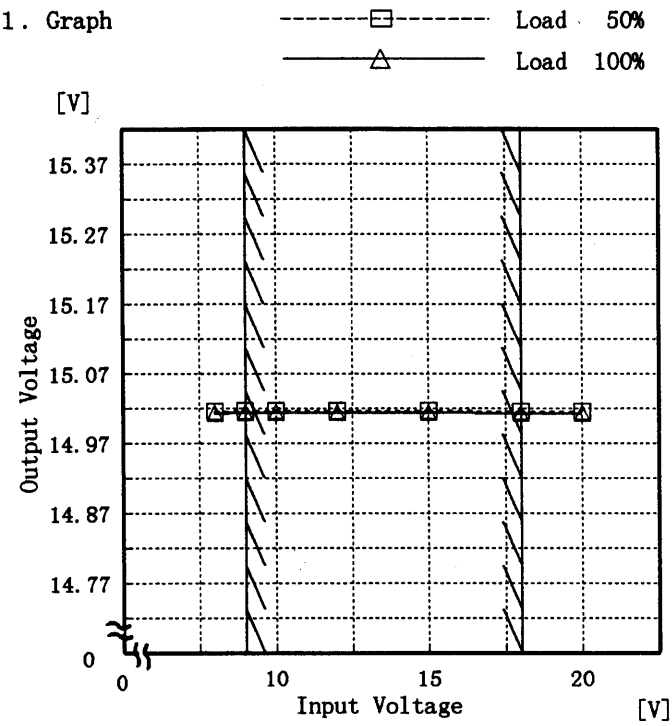
Model	ZTS31215
Item	Line Regulation 静的入力変動
Object	+15V0.2A

Temperature 25℃
Testing Circuitry Figure A

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% Output Volt. [V]	Load 100% Output Volt. [V]
8.0	15.016	15.014
9.0	15.017	15.014
10.0	15.017	15.014
12.0	15.017	15.014
15.0	15.016	15.014
18.0	15.016	15.014
20.0	15.016	15.013
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

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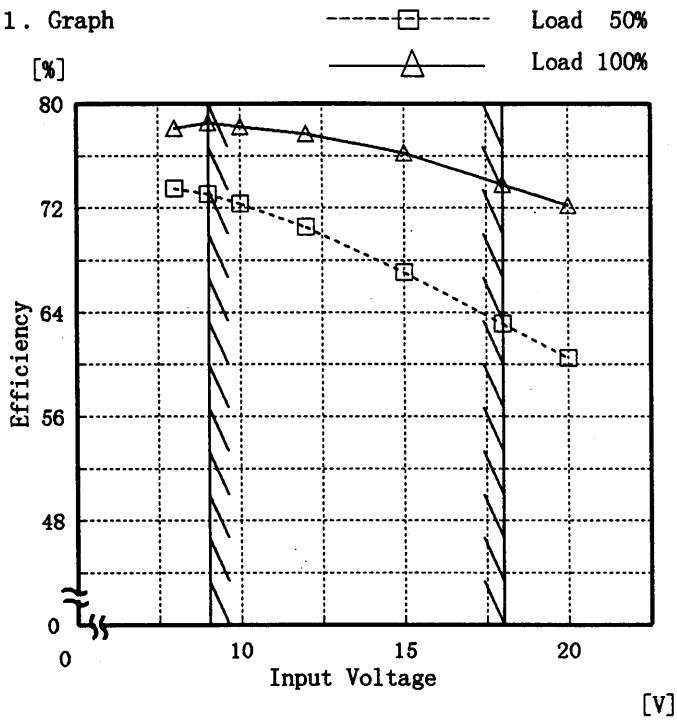
Model	ZTS31215
Item	Efficiency 効率
Object	――――――――――――――

Temperature 25℃
Testing Circuitry Figure A

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% Efficiency [%]	Load 100% Efficiency [%]
8.0	73.5	78.1
9.0	73.1	78.5
10.0	72.3	78.2
12.0	70.6	77.7
15.0	67.1	76.2
18.0	63.1	73.8
20.0	60.5	72.2
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

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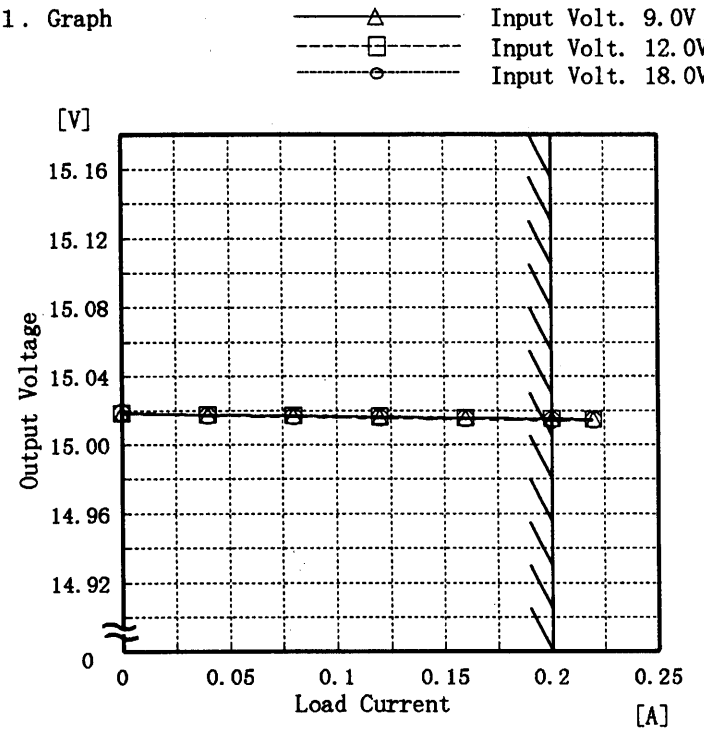
Model	ZTS31215
Item	Load Regulation 静的負荷変動
Object	+15V0.2A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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. 9.0[V] Output Volt. [V]	Input Volt. 12.0[V] Output Volt. [V]	Input Volt. 18.0[V] Output Volt. [V]
0.00	15.018	15.018	15.019
0.04	15.018	15.018	15.017
0.08	15.017	15.017	15.016
0.12	15.016	15.016	15.016
0.16	15.016	15.016	15.015
0.20	15.015	15.015	15.014
0.22	15.015	15.015	15.014
—	—	—	—
—	—	—	—
—	—	—	—

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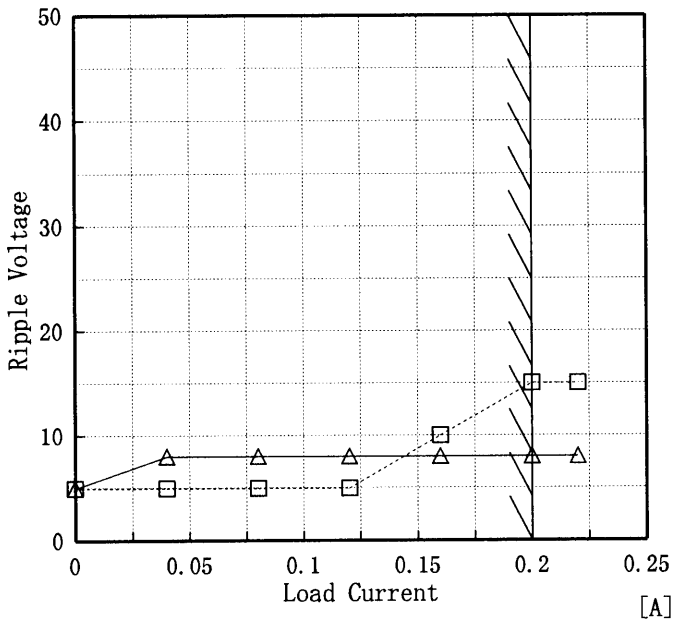
Model	ZTS31215
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+15V0.2A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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
ｽｲｯﾁﾝｸﾞ周期

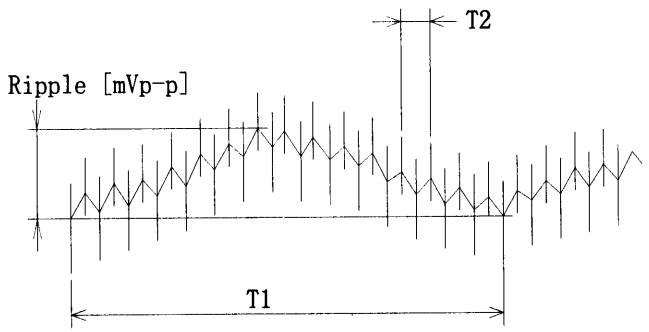


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

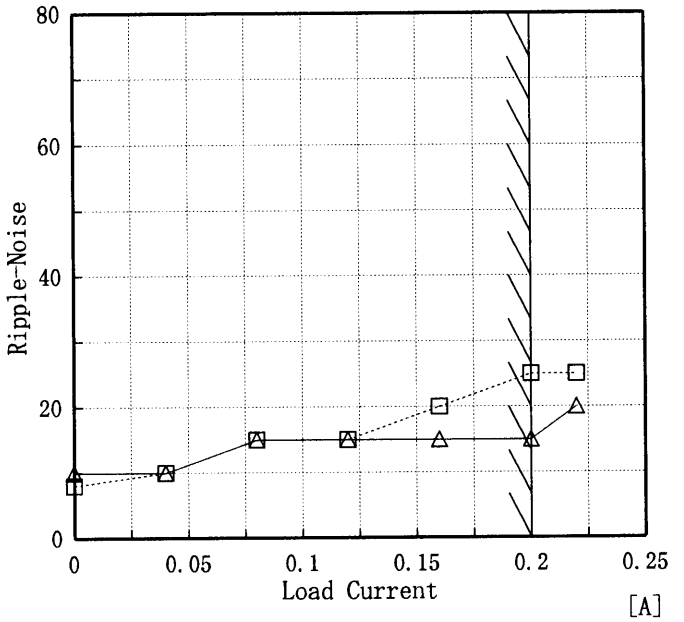
Load Current [A]	Input Volt. 9.0 [V] Ripple Output Volt. [mV]	Input Volt. 18.0 [V] Ripple Output Volt. [mV]
0.00	5	5
0.04	5	8
0.08	5	8
0.12	5	8
0.16	10	8
0.20	15	8
0.22	15	8
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model	ZTS31215
Item	Ripple-Noise リップルノイズ
Object	+15V0.2A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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
ｽｲｯﾁﾝｸﾞ周期

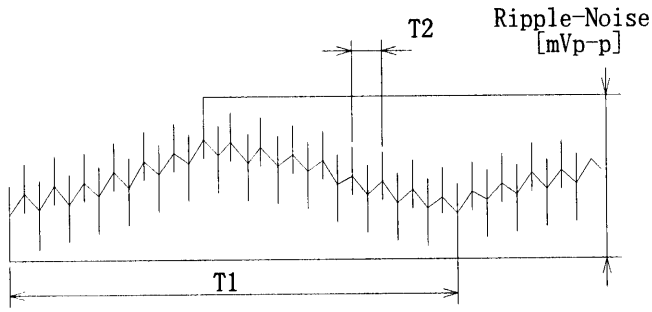


Fig. Complex Ripple Wave Form
図 リップル波形詳細図

2. Values

Load current [A]	Input Volt. 9.0 [V] Ripple-Noise [mV]	Input Volt. 18.0 [V] Ripple-Noise [mV]
0.00	8	10
0.04	10	10
0.08	15	15
0.12	15	15
0.16	20	15
0.20	25	15
0.22	25	20
—	—	—
—	—	—
—	—	—
—	—	—

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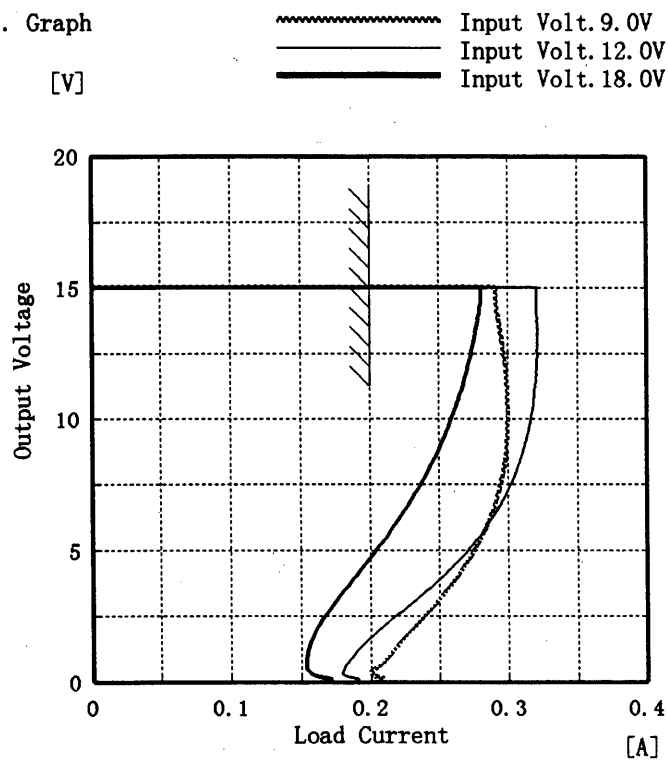
Model	ZTS31215
Item	Overcurrent Protection 過電流保護
Object	+15V0.2A

Temperature 25℃
Testing Circuitry Figure A

1. Graph



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. 9.0[V] Load Current [A]	Input Volt. 12.0[V] Load Current [A]	Input Volt. 18.0[V] Load Current [A]
15.00	0.29	0.32	0.28
14.25	0.29	0.32	0.28
13.50	0.29	0.32	0.28
12.00	0.30	0.32	0.27
10.50	0.30	0.32	0.26
9.00	0.30	0.31	0.25
7.50	0.29	0.30	0.24
6.00	0.29	0.29	0.22
4.50	0.27	0.26	0.20
3.00	0.25	0.23	0.17
1.50	0.22	0.20	0.16
0.00	0.21	0.19	0.17

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Model	ZTS31215		
Item	Dynamic Load Responce 動的負荷変動	Temperature Testing Circuitry	25℃ Figure A
Object	+15V0.2A		

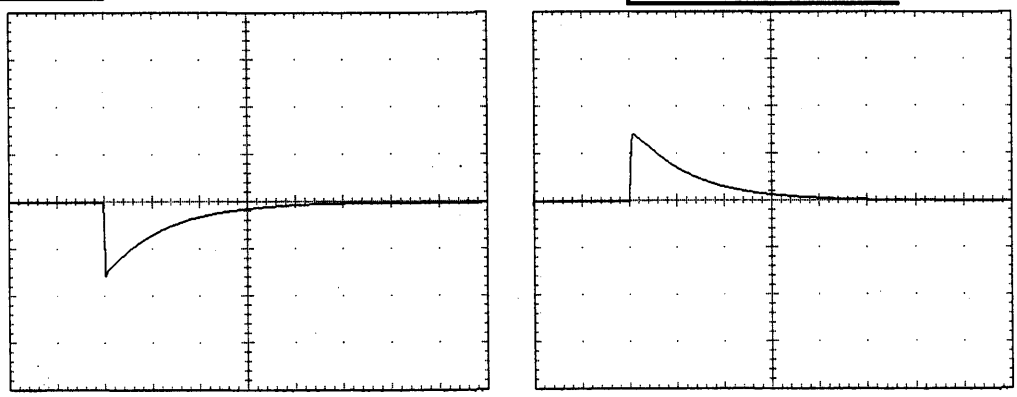
Input Volt. 12.0 V

Cycle 100 mS

Load Current

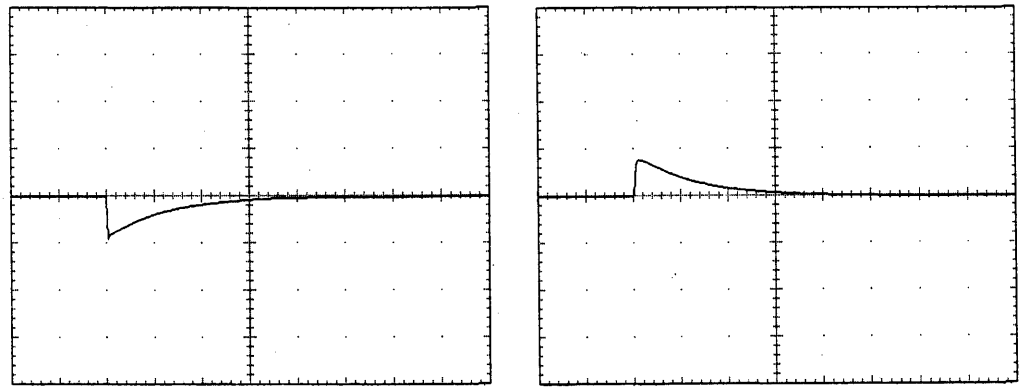
Min. Load ⟷
Load 100 %

200 mV/div



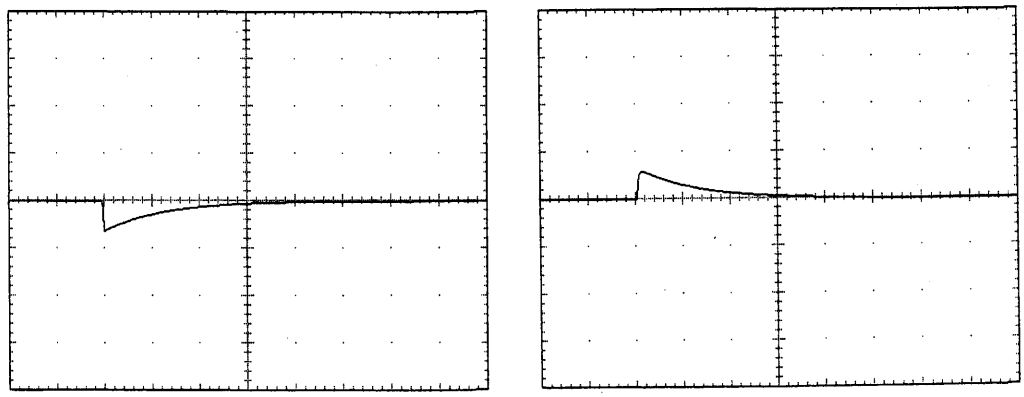
Min. Load ⟷
Load 50 %

200 mV/div



Load 50%⟷
Load 100 %

200 mV/div



1 mS/div

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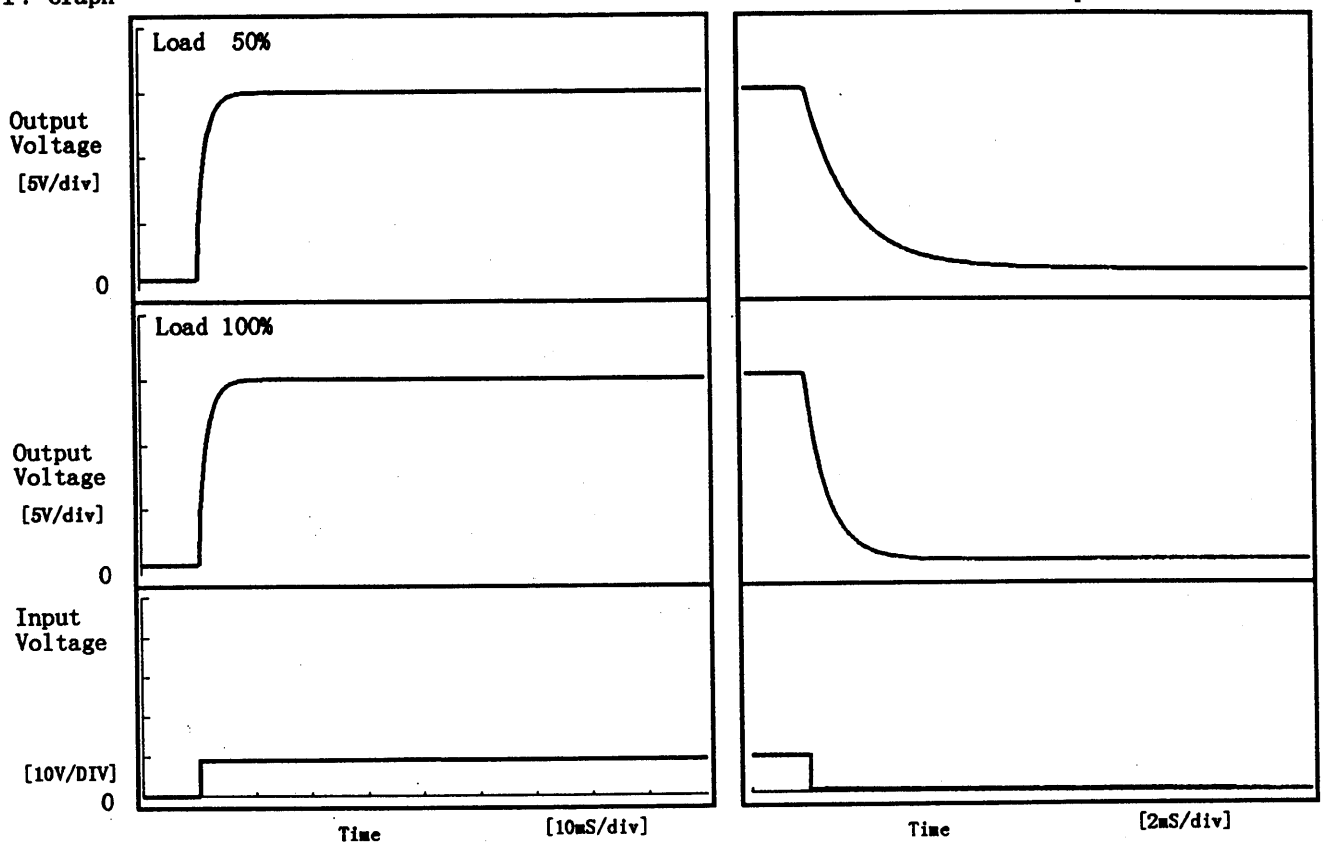
Model	ZTS31215		
Item	Rise and Fall Time 立上り、立下り時間	Temperature Testing Circuitry	25℃ Figure A
Object	+15V0.2A		

1. Graph

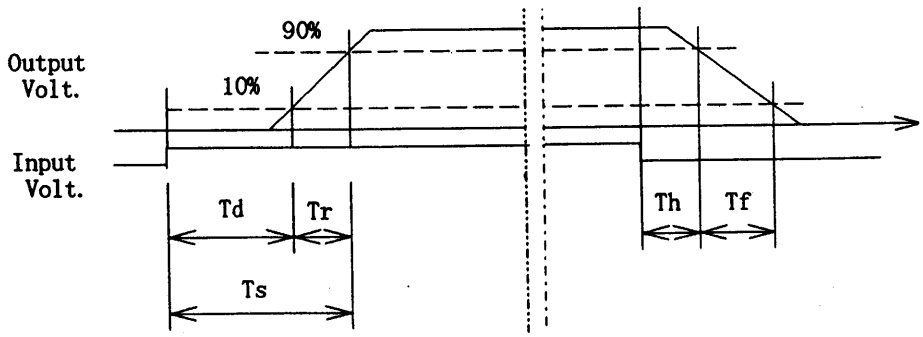
Input Volt. 9.0 V



2. Values

[mS]

Load \ Time	Td	Tr	Ts	Th	Tf
50 %	0.10	3.50	3.60	0.30	5.68
100 %	0.10	3.55	3.65	0.14	2.13



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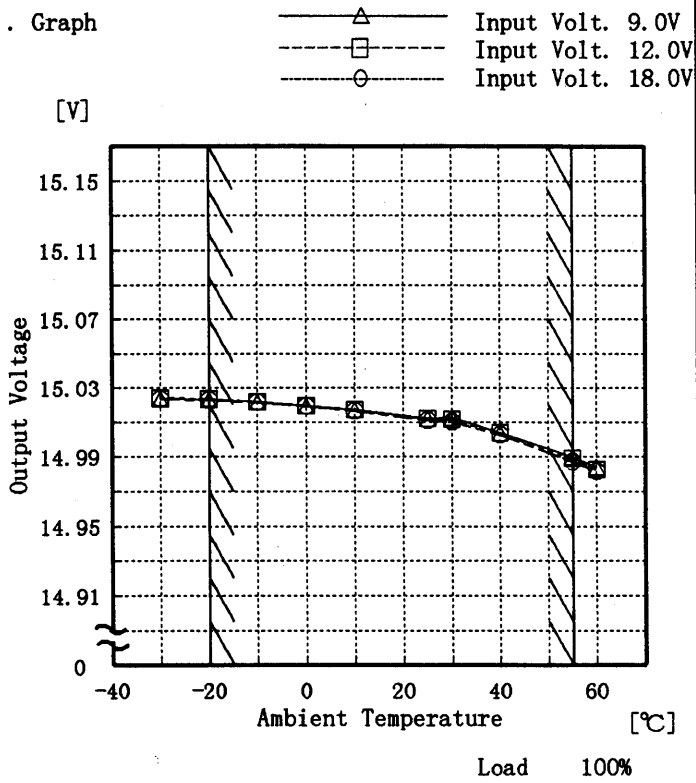
Model	ZTS31215
Item	Ambient Temperature Drift 周囲温度変動
Object	+15V0.2A

Testing Circuitry Figure A

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。

2. Values

Temperature [℃]	Input Volt. 9.0[V] Output Volt. [V]	Input Volt. 12.0[V] Output Volt. [V]	Input Volt. 18.0[V] Output Volt. [V]
-30	15.024	15.024	15.024
-20	15.023	15.024	15.023
-10	15.022	15.022	15.022
0	15.020	15.020	15.019
10	15.017	15.017	15.017
25	15.012	15.012	15.011
30	15.013	15.012	15.011
40	15.004	15.004	15.003
55	14.990	14.989	14.988
60	14.984	14.983	14.982
—	—	—	—

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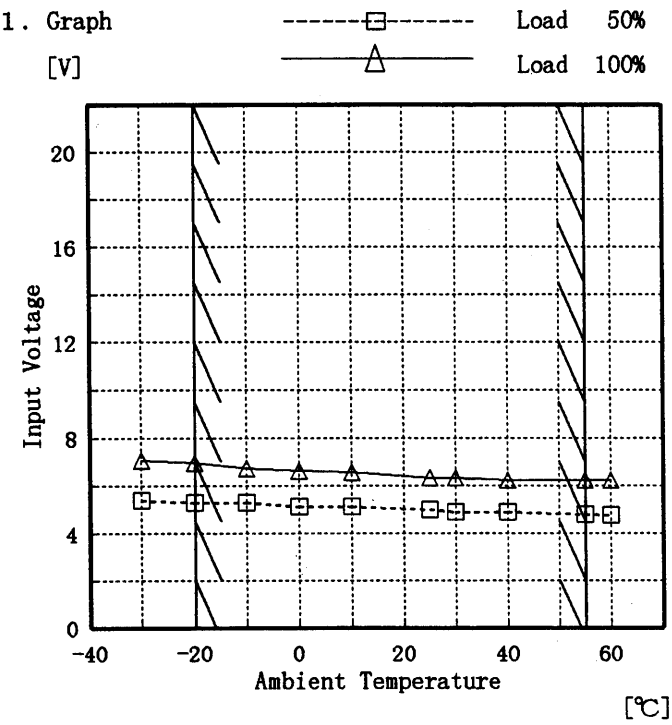
Model	ZTS31215
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+15V0.2A

Testing Circuitry Figure A

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。

2. Values

Ambient Temp. [℃]	Load 50% Input Volt. [V]	Load 100% Input Volt. [V]
-30	5.4	7.1
-20	5.3	7.0
-10	5.3	6.7
0	5.1	6.6
10	5.1	6.6
25	5.0	6.3
30	4.9	6.3
40	4.9	6.2
55	4.8	6.2
60	4.8	6.2
—	—	—

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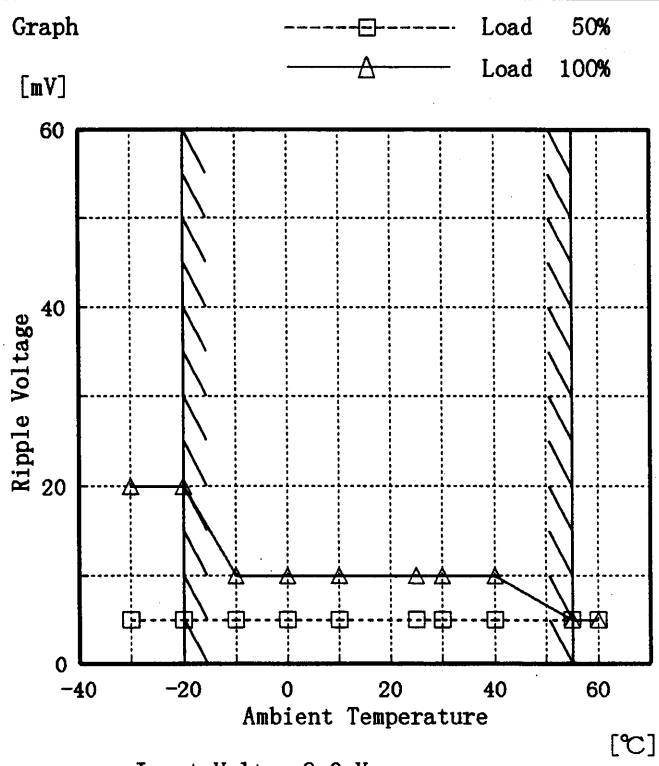
Model	ZTS31215
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	+15V0.2A

Testing Circuitry　Figure A

1. Graph



Input Volt.　9.0 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	5	20
-20	5	20
-10	5	10
0	5	10
10	5	10
25	5	10
30	5	10
40	5	10
55	5	5
60	5	5
—	—	—

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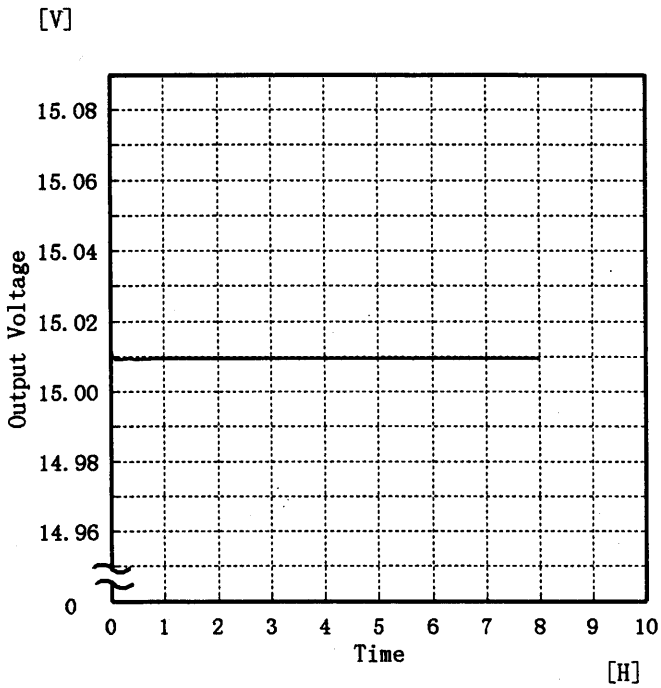
Model	ZTS31215
Item	Time Lapse Drift 経時ドリフト
Object	+15V0.2A

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph



Input Volt. 12V
Load 100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	15.014
0.5	15.009
1.0	15.009
2.0	15.009
3.0	15.010
4.0	15.009
5.0	15.009
6.0	15.010
7.0	15.009
8.0	15.009

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Model	ZTS31215
Item	Output Voltage Accuracy 定電圧精度
Object	+15V0.2A

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 ℃
Input Voltage : 9.0～18.0 V
Load Current : 0.0～0.2 A

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

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

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 ℃
入力電圧 9.0～18.0 V
負荷電流 0.0～0.2 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

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

Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	-20	18.0	0.0	15.028	±20	±0.2
Minimum Voltage	55	18.0	0.2	14.988		

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Model	ZTS31215
Item	Condensation 結露特性
Object	+15V0.2A

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]	14.915	Input Volt.: 12V, Load Current:0.2A
Line Regulation [mV]	1	Input Volt.: 9～18V, Load Current:0.2A
Load Regulation [mV]	5	Input Volt.: 12V, Load Current:0～0.2A

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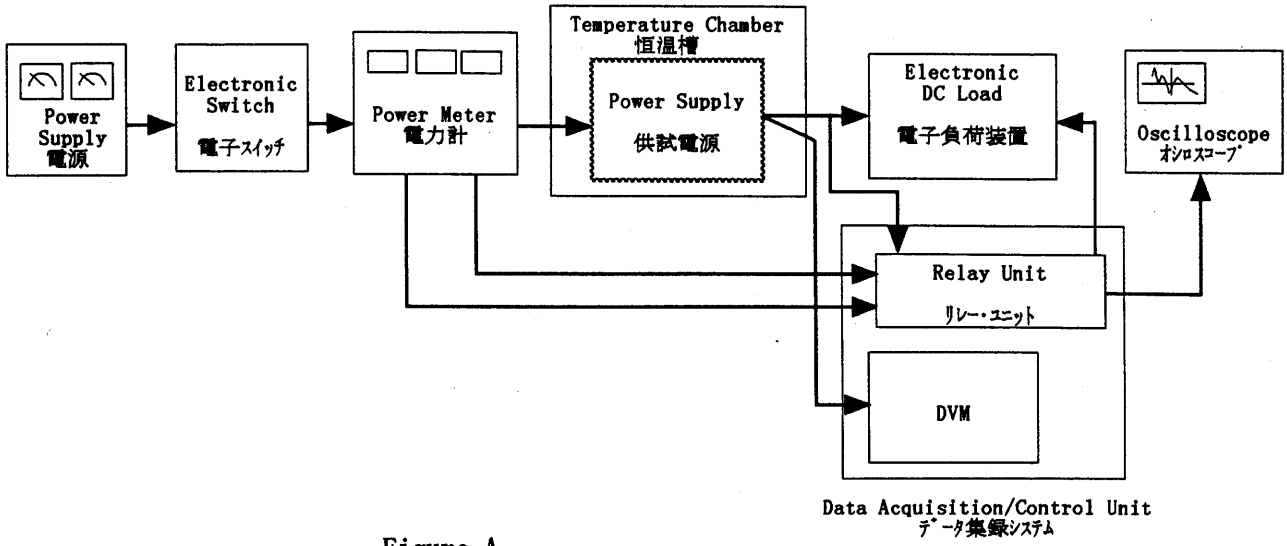

Figure A