COSEL

TEST DATA OF ZTS1R50505
(5.0V   INPUT)

Regulated DC Power Supply

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COSEL CO., LTD.

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CONTENTS

(Final Page 15)

COSEL

Model	ZTS1R50505
Item	Line Regulation 静的入力変動
Object	+5V0.3A

Temperature 25℃
Testing Circuitry Figure A
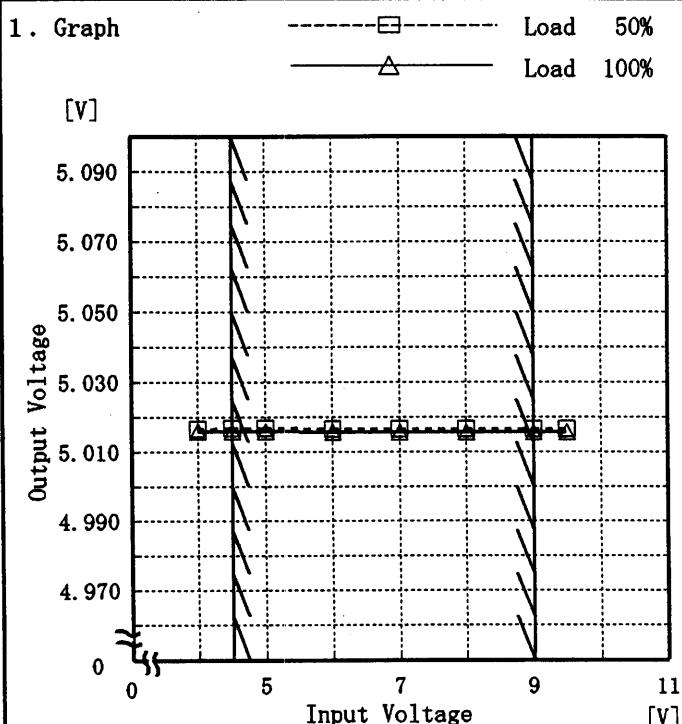
1. Graph

-------□------- Load 50%
———△——— Load 100%

[V]

Output Voltage

5.090
5.070
5.050
5.030
5.010
4.990
4.970
0

0   5   7   9   11

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]
4.0	5.017	5.016
4.5	5.017	5.016
5.0	5.017	5.016
6.0	5.017	5.016
7.0	5.017	5.016
8.0	5.017	5.016
9.0	5.017	5.016
9.5	5.017	5.015
—	—	—
—	—	—
—	—	—
—	—	—

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Model	ZTS1R50505
Item	Efficiency 効率
Object	
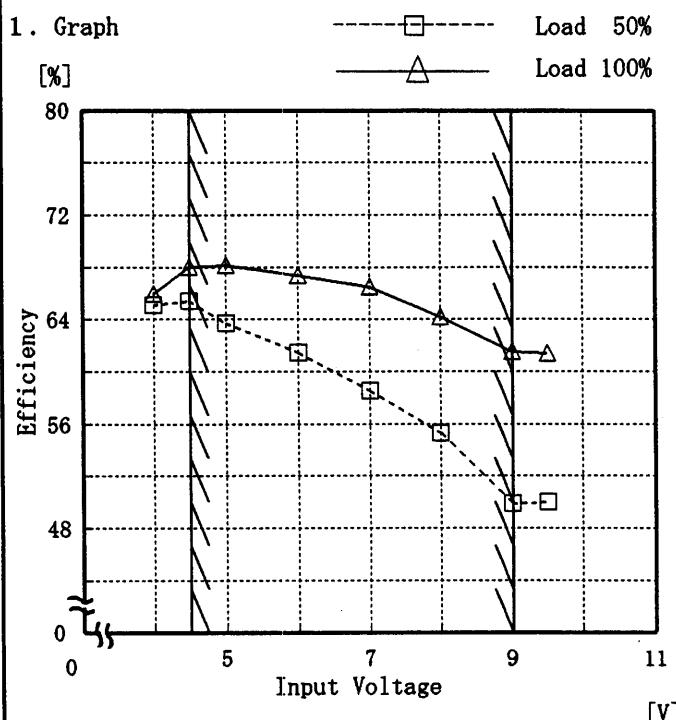
Temperature   25℃
Testing Circuitry   Figure A

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 [%]
4.0	65.1	65.9
4.5	65.4	68.0
5.0	63.7	68.2
6.0	61.5	67.4
7.0	58.5	66.5
8.0	55.3	64.2
9.0	49.9	61.5
9.5	50.0	61.4
—	—	—
—	—	—
—	—	—
—	—	—

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Model	ZTS1R50505
Item	Load Regulation　静的負荷変動
Object	＋5V0.3A

Temperature　　　　25℃
Testing Circuitry　　Figure A
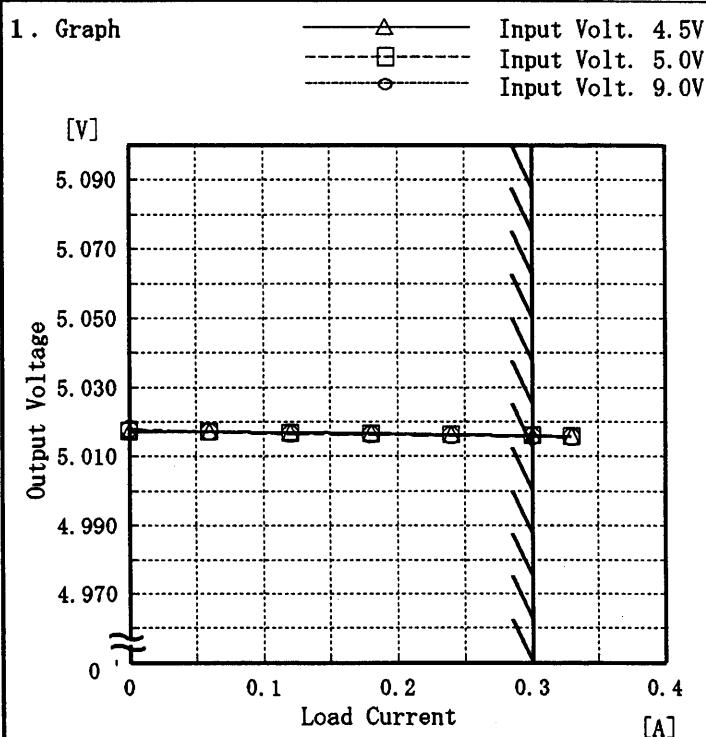
1．Graph

△ —— Input Volt. 4.5V
□ ----- Input Volt. 5.0V
○ —— Input Volt. 9.0V

[V]

Output Voltage

5.090
5.070
5.050
5.030
5.010
4.990
4.970
0

0   0.1   0.2   0.3   0.4
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

Load Current [A]	Input Volt. 4.5[V] Output Volt. [V]	Input Volt. 5.0[V] Output Volt. [V]	Input Volt. 9.0[V] Output Volt. [V]
0.00	5.017	5.017	5.018
0.06	5.017	5.017	5.017
0.12	5.017	5.017	5.017
0.18	5.017	5.017	5.016
0.24	5.016	5.016	5.016
0.30	5.016	5.016	5.016
0.33	5.016	5.016	5.016
—	—	—	—
—	—	—	—
—	—	—	—

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Model	ZTS1R50505
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+5V0.3A

Temperature　　　　25℃
Testing　Circuitry　　Figure A

1. Graph
[mV]

-------□------- Input Volt. 4.5V
———△——— Input Volt. 9.0V

Ripple Voltage (vertical axis)
Load Current (horizontal axis) [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
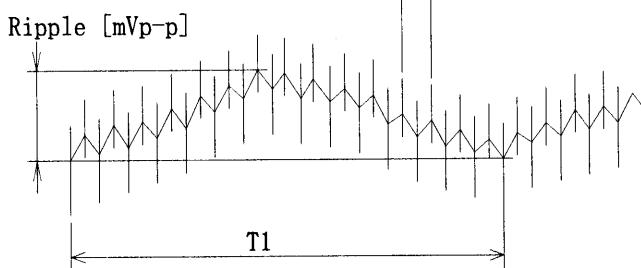
Ripple [mVp-p]

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] Ripple Output Volt. [mV]	Input Volt. 9.0 [V] Ripple Output Volt. [mV]
0.00	5	5
0.06	5	8
0.12	5	8
0.18	8	8
0.24	10	8
0.30	10	8
0.33	15	8
—	—	—
—	—	—
—	—	—
—	—	—

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Model	ZTS1R50505
Item	Ripple-Noise　リップルノイズ
Object	+5V0.3A

Temperature　　　　25℃
Testing Circuitry　　Figure A

1. Graph

-----□----- Input Volt.4.5V
————△———— Input Volt.9.0V

[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。
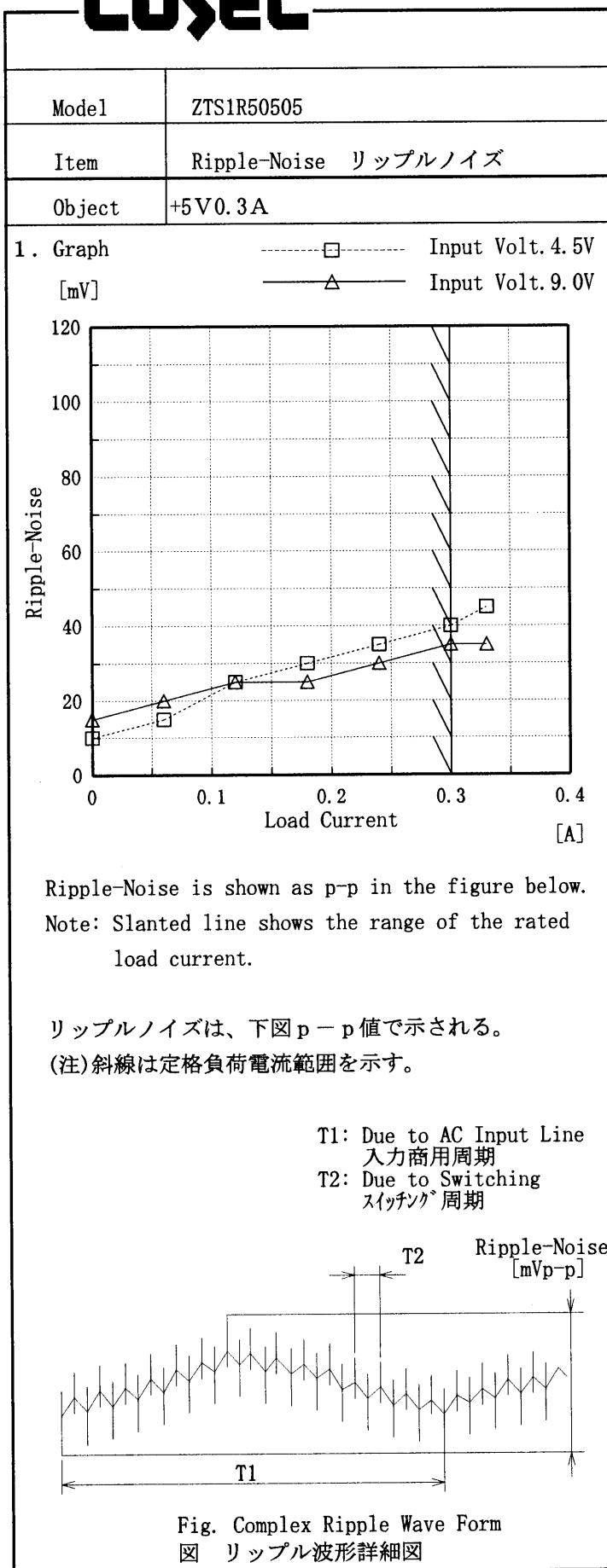
2. Values

Load current [A]	Input Volt. 4.5 [V] Ripple-Noise [mV]	Input Volt. 9.0 [V] Ripple-Noise [mV]
0.00	10	15
0.06	15	20
0.12	25	25
0.18	30	25
0.24	35	30
0.30	40	35
0.33	45	35
—	—	—
—	—	—
—	—	—
—	—	—

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

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Model	ZTS1R50505
Item	Overcurrent Protection 過電流保護
Object	＋5V0.3A
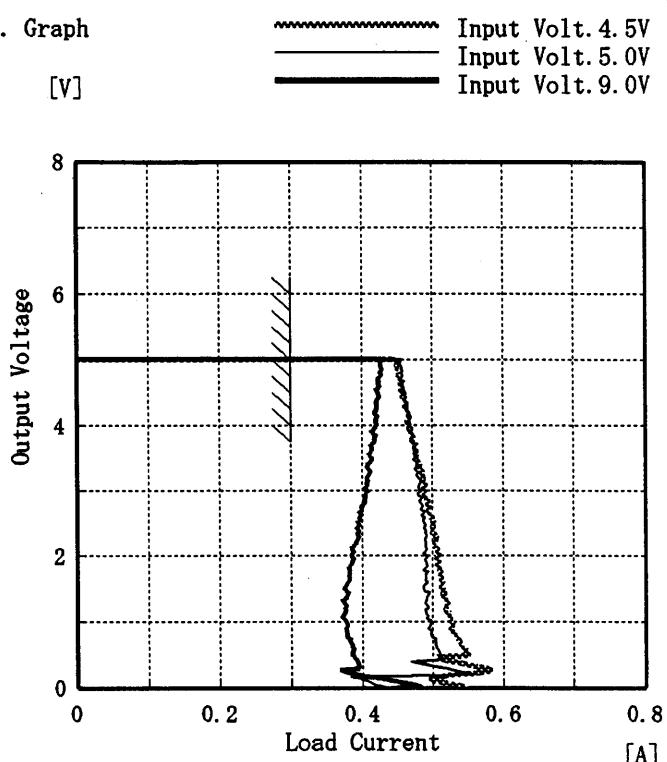
Temperature　　　　25℃
Testing Circuitry　Figure A

1．Graph

〰〰〰〰〰〰　Input Volt.4.5V
─────　Input Volt.5.0V
━━━━━　Input Volt.9.0V

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

Output Voltage [V]	Input Volt. 4.5[V] Load Current [A]	Input Volt. 5.0[V] Load Current [A]	Input Volt. 9.0[V] Load Current [A]
5.00	0.45	0.45	0.43
4.75	0.45	0.46	0.43
4.50	0.45	0.46	0.42
4.00	0.46	0.47	0.42
3.50	0.48	0.48	0.41
3.00	0.49	0.48	0.40
2.50	0.50	0.49	0.39
2.00	0.51	0.49	0.38
1.50	0.52	0.49	0.37
1.00	0.52	0.50	0.38
0.50	0.54	0.51	0.39
0.00	0.55	0.50	0.44

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Model	ZTS1R50505		
Item	Dynamic Load Responce 動的負荷変動	Temperature	25℃
		Testing Circuitry	Figure A
Object	+5V0.3A		

Input Volt.   5.0 V
Cycle   100 mS

Load Current
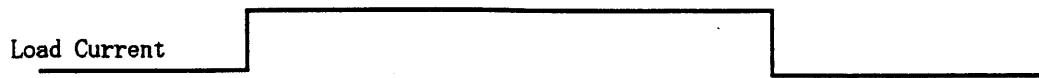
Min. Load ⟷
Load 100 %

100 mV/div
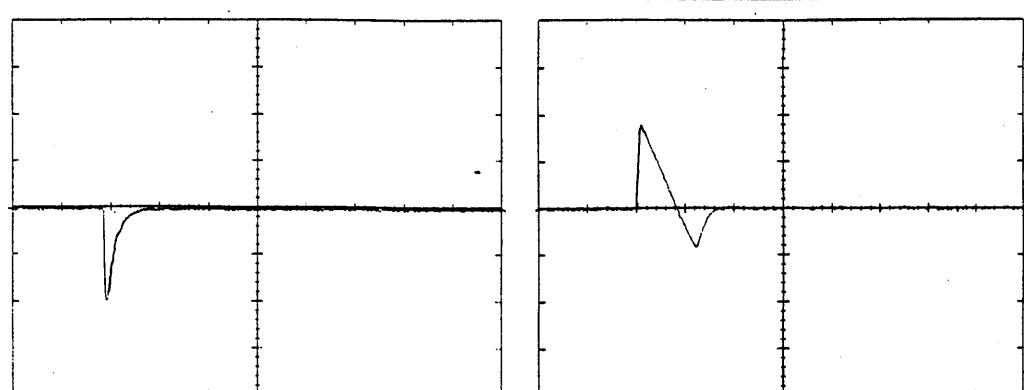
Min. Load ⟷
Load 50 %

100 mV/div
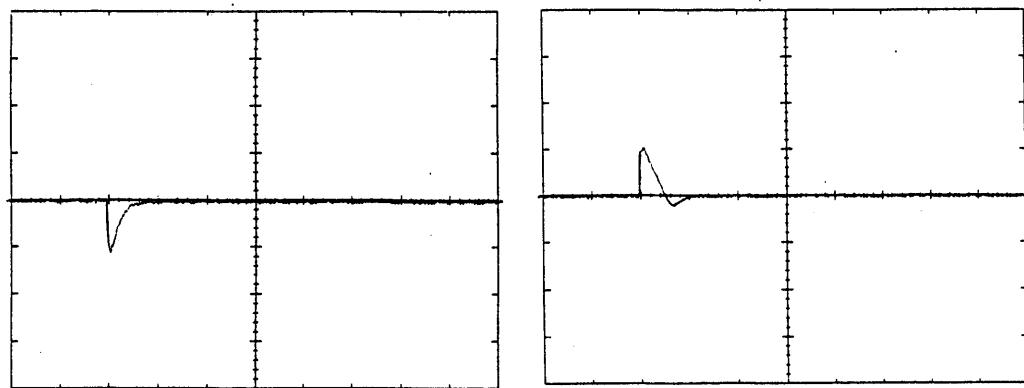
Load 50%⟷
Load 100 %

100 mV/div

1 mS/div

—7—

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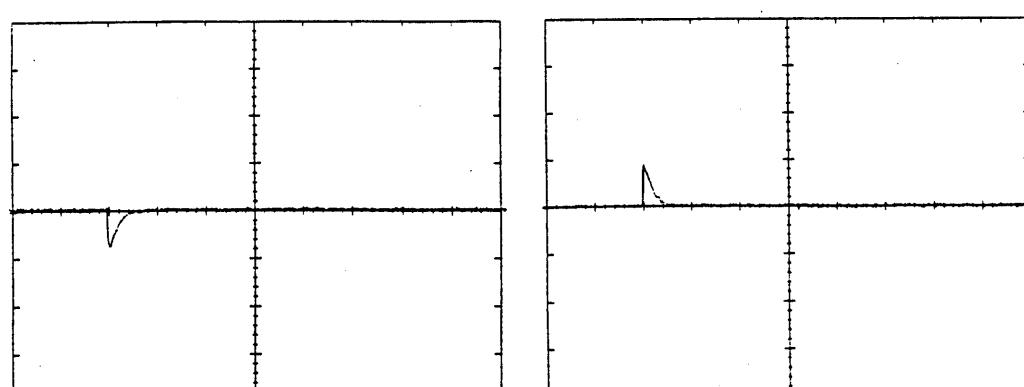
Model	ZTS1R50505
Item	Rise and Fall Time　立上り、立下り時間
Object	＋5V0.3A

Temperature	25℃
Testing Circuitry	Figure A

1．Graph

Input Volt. 4.5 V

Load 50%

Output Voltage [1V/div]

0

Load 100%

Output Voltage [1V/div]

0

Input Voltage

[2V/DIV]

0

Time　　[10mS/div]

Time　[5mS/div]
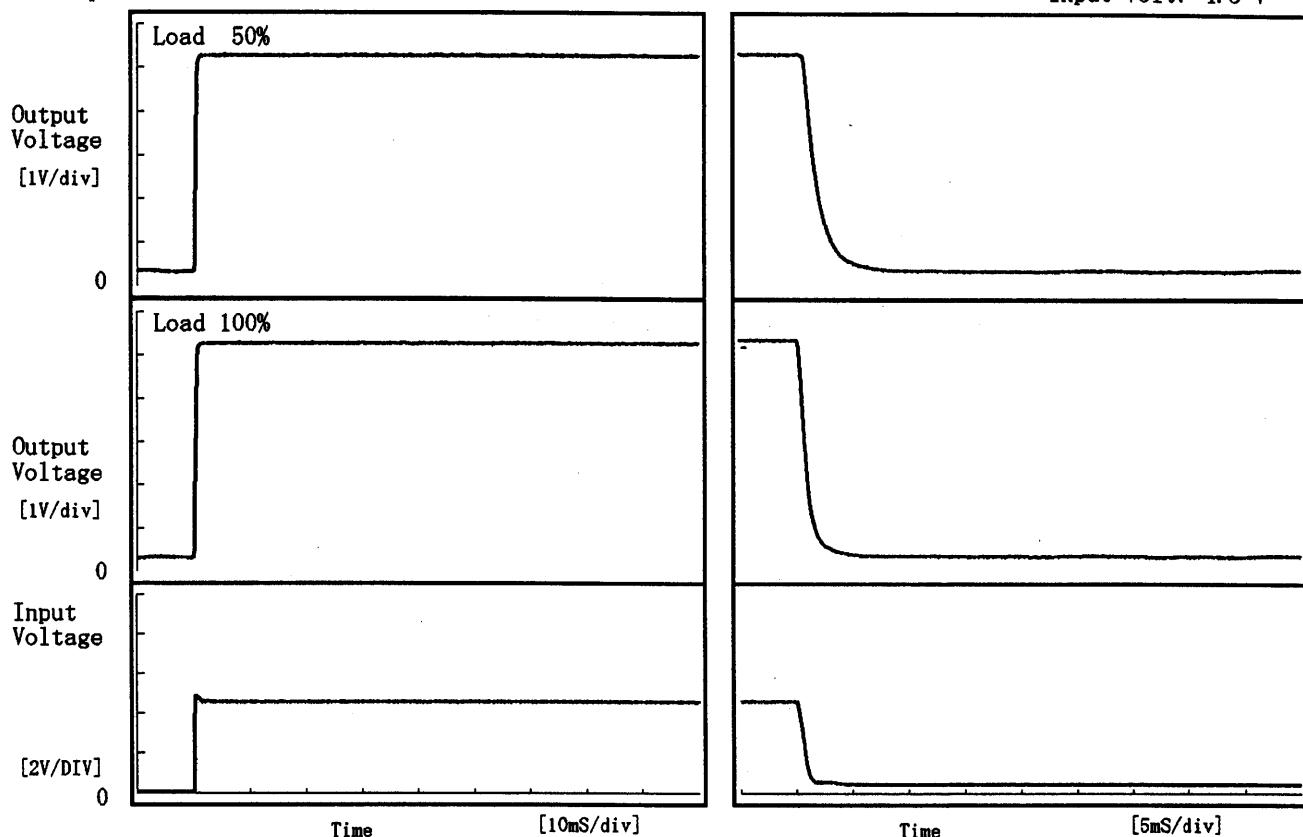
2．Values

[mS]

Load ＼ Time	T d	T r	T s	T h	T f
50 %	0.10	0.40	0.50	0.90	3.03
100 %	0.10	0.50	0.60	0.38	1.75

Output Volt.

90%

10%

Input Volt.

Td　Tr

Ts

Th　Tf

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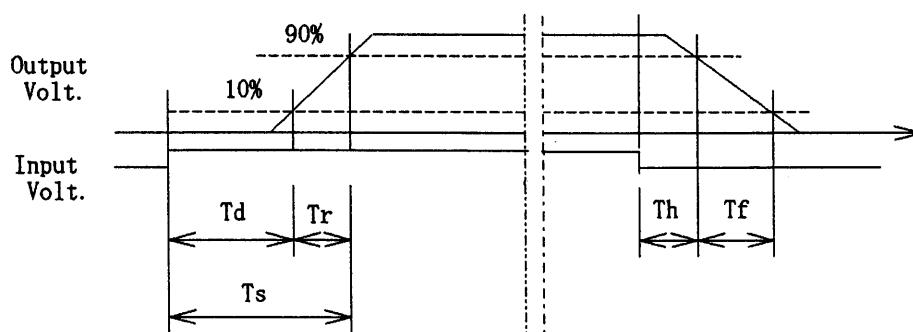
Model	ZTS1R50505
Item	Ambient Temperature Drift 周囲温度変動
Object	＋5V0.3A

Testing Circuitry Figure A

1. Graph

Input Volt. 4.5V (△)
Input Volt. 5.0V (□)
Input Volt. 9.0V (○)

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。
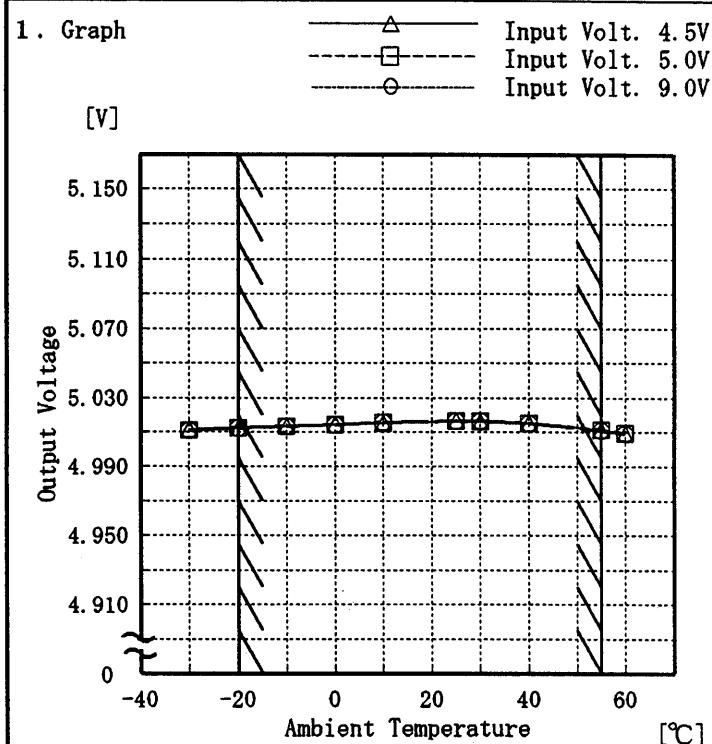
2. Values

Temperature [℃]	Input Volt. 4.5[V] Output Volt. [V]	Input Volt. 5.0[V] Output Volt. [V]	Input Volt. 9.0[V] Output Volt. [V]
−30	5.011	5.011	5.011
−20	5.013	5.012	5.012
−10	5.013	5.013	5.013
0	5.014	5.014	5.014
10	5.015	5.016	5.016
25	5.017	5.017	5.017
30	5.016	5.016	5.016
40	5.015	5.015	5.015
55	5.012	5.011	5.011
60	5.009	5.010	5.009
－	－	－	－

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Model	ZTS1R50505
Item	Minimum Input Voltage for Regulated Output Voltage 最低レギュレーション電圧
Object	+5V0.3A
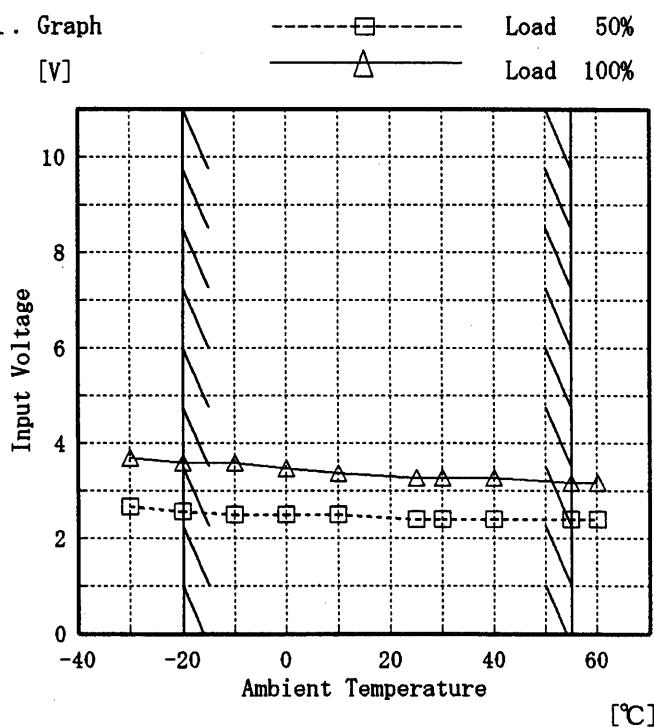
Testing Circuitry   Figure A

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	2.7	3.7
-20	2.6	3.6
-10	2.5	3.6
0	2.5	3.5
10	2.5	3.4
25	2.4	3.3
30	2.4	3.3
40	2.4	3.3
55	2.4	3.2
60	2.4	3.2
—	—	—

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Model	ZTS1R50505
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	＋5V0.3A

Testing Circuitry　　　Figure A

1. Graph　　　　--------□--------　　Load　50%
　　　　　　　　————△————　　Load　100%

[mV]

Input Volt.　4.5 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。
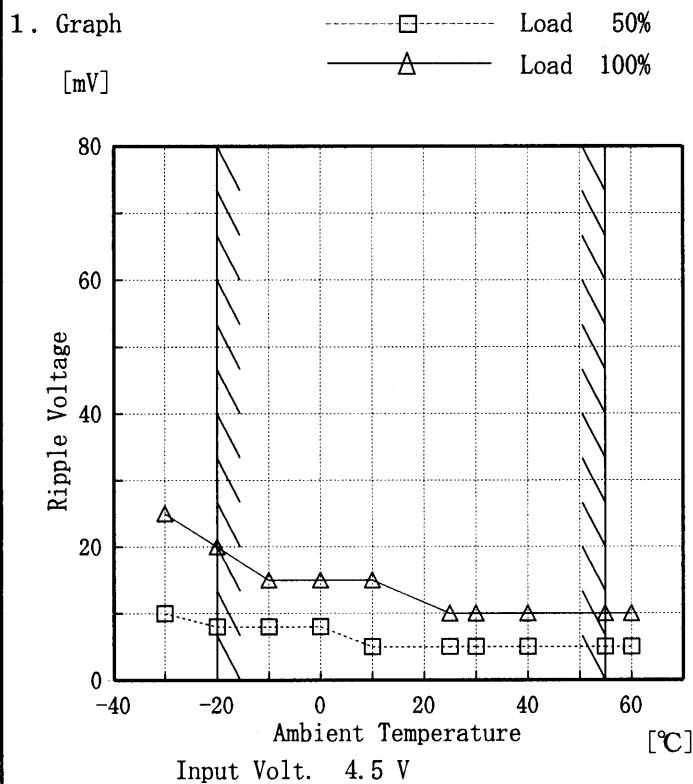
2. Values

Ambient Temp. [℃]	Load　50% Ripple Output Volt.　[mV]	Load　100% Ripple Output Volt.　[mV]
−30	10	25
−20	8	20
−10	8	15
0	8	15
10	5	15
25	5	10
30	5	10
40	5	10
55	5	10
60	5	10
—	—	—

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Model	ZTS1R50505
Item	Time Lapse Drift 経時ドリフト
Object	＋5V0.3A

Temperature   25 ℃
Testing Circuitry   Figure A

1. Graph

[V]

Input Volt.   5V
Load   100%

2. Values

Time since start [H]	Output Voltage [V]
0.0	5.014
0.5	5.013
1.0	5.013
2.0	5.013
3.0	5.013
4.0	5.013
5.0	5.013
6.0	5.013
7.0	5.013
8.0	5.013

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Model	ZTS1R50505
Item	Output Voltage Accuracy　定電圧精度
Object	＋5Ｖ0.3Ａ

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：　4.5〜9.0 V

　　Load Current　：　0.0〜0.3 A

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

＊ Output Voltage Accuracy (Ration)　=　$\dfrac{\text{Voltage Accuracy}}{\text{Rated Output Voltage}}$ ×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　　　　　4.5〜9.0 V

　　負荷電流　　　　　0.0〜0.3 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)　=　$\dfrac{\text{変動値}}{\text{定格出力電圧}}$ ×100

Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	25	9.0	0.0	5.017	±4	±0.1
Minimum Voltage	55	9.0	0.3	5.010		

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| Model	ZTS1R50505		
Item	Condensation 結露特性	Testing Circuitry	Figure A
Object	＋5V0.3A		

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]	5.008	Input Volt.：5V, Load Current:0.3A
Line Regulation [mV]	1	Input Volt.：4.5～9V, Load Current:0.3A
Load Regulation [mV]	5	Input Volt.：5V, Load Current:0～0.3A

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Figure A

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