COSEL

TEST DATA OF ZTS31212
(12.0V   INPUT)

Regulated DC Power Supply

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Model	ZTS31212
Item	Line Regulation　静的入力変動
Object	＋12V 0.25A
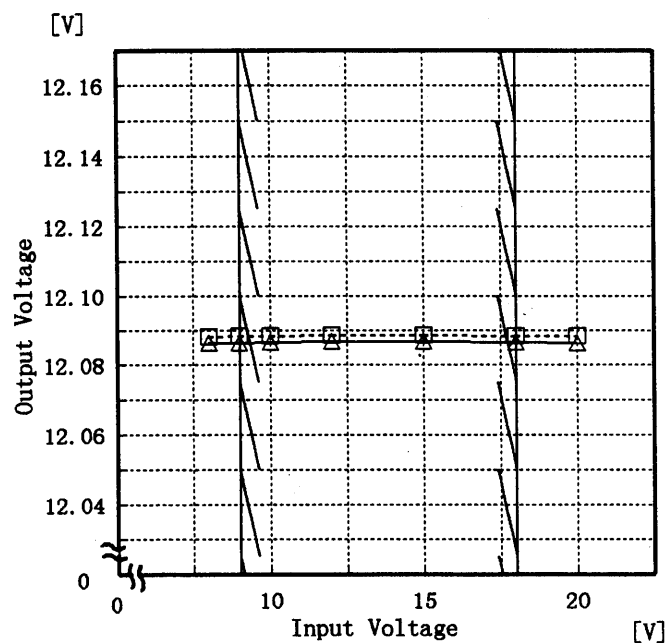
Temperature	25℃
Testing Circuitry	Figure A

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% Output Volt. [V]	Load 100% Output Volt. [V]
8.0	12.088	12.086
9.0	12.088	12.086
10.0	12.088	12.087
12.0	12.089	12.087
15.0	12.089	12.087
18.0	12.089	12.087
20.0	12.088	12.086
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

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Model	ZTS31212
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 [%]
8.0	73.4	75.3
9.0	72.2	75.6
10.0	71.0	76.2
12.0	67.9	75.6
15.0	63.7	73.6
18.0	61.2	71.6
20.0	59.0	70.1
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

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Model	ZTS31212
Item	Load Regulation　静的負荷変動
Object	＋12V 0.25A

Temperature　　　　25℃
Testing Circuitry　　Figure A

1. Graph

△ Input Volt. 9.0V
□ Input Volt. 12.0V
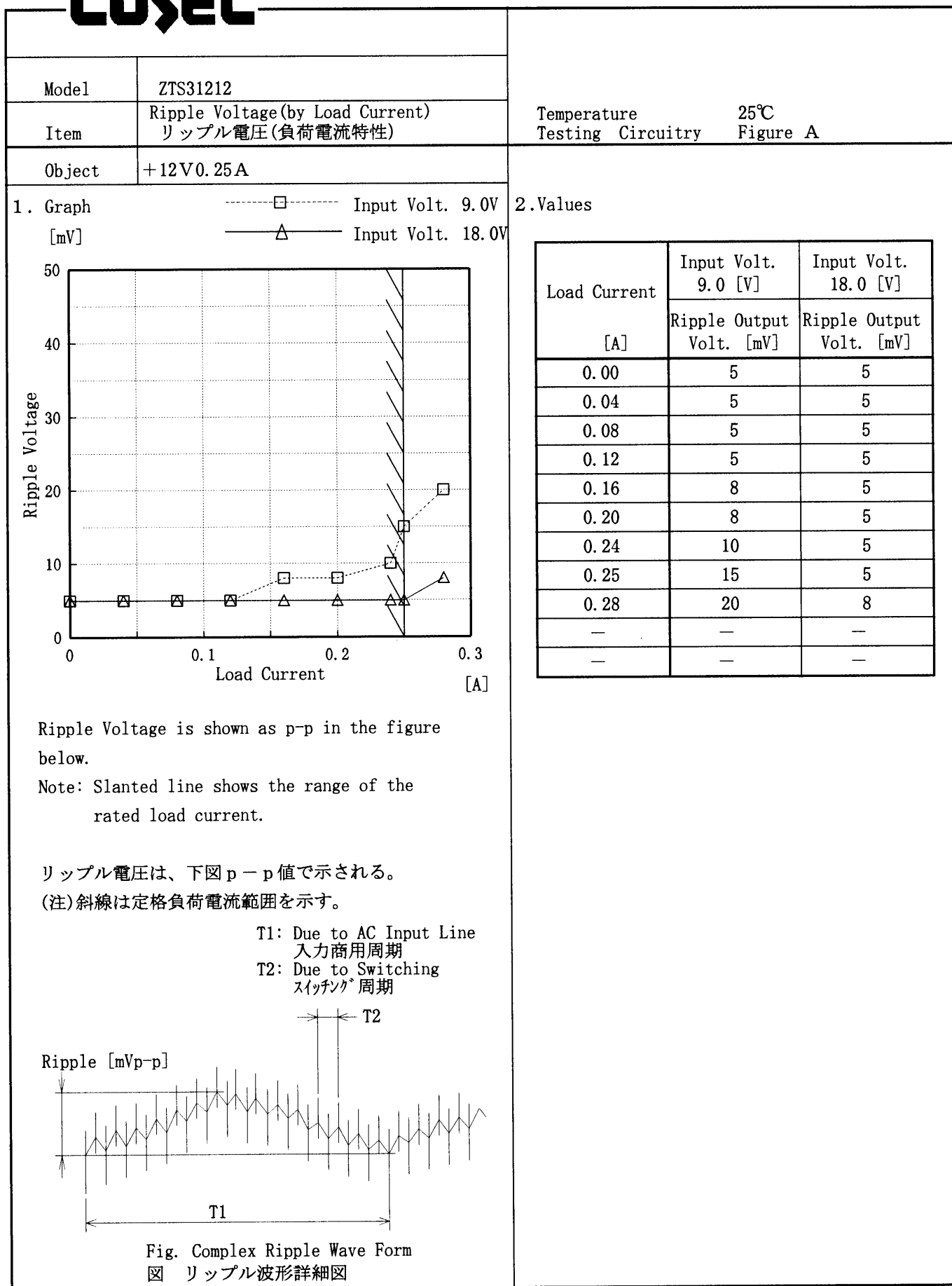○ Input Volt. 18.0V

[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

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	12.090	12.090	12.091
0.04	12.089	12.090	12.090
0.08	12.089	12.089	12.089
0.12	12.088	12.089	12.089
0.16	12.088	12.088	12.088
0.20	12.087	12.087	12.087
0.24	12.087	12.087	12.087
0.25	12.087	12.087	12.087
0.28	12.086	12.087	12.086
—	—	—	—

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Model	ZTS31212
Item	Ripple Voltage(by Load Current) リップル電圧(負荷電流特性)
Object	+12V0.25A

Temperature   25℃
Testing Circuitry   Figure A

1. Graph

-------□------- Input Volt. 9.0V
———△——— Input Volt. 18.0V

[mV]

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。

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	5
0.08	5	5
0.12	5	5
0.16	8	5
0.20	8	5
0.24	10	5
0.25	15	5
0.28	20	8
—	—	—
—	—	—

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	ZTS31212
Item	Ripple-Noise　リップルノイズ
Object	＋12Ｖ0.25Ａ

Temperature　　　　25℃
Testing Circuitry　　Figure A

1. Graph　　　　-----□-----　Input Volt.9.0V
[mV]　　　　———△———　Input Volt.18.0V

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. 9.0 [V] Ripple-Noise [mV]	Input Volt. 18.0 [V] Ripple-Noise [mV]
0.00	5	8
0.04	8	10
0.08	10	10
0.12	15	10
0.16	15	15
0.20	20	15
0.24	25	15
0.25	25	15
0.28	30	20
—	—	—
—	—	—

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	ZTS31212
Item	Overcurrent Protection 過電流保護
Object	＋12V0.25A

Temperature　　　　25℃
Testing Circuitry　Figure A

1．Graph

〰〰〰〰〰〰〰　Input Volt. 9.0V
────────　Input Volt. 12.0V
━━━━━━━━　Input Volt. 18.0V

[V]

Output Voltage

Load Current

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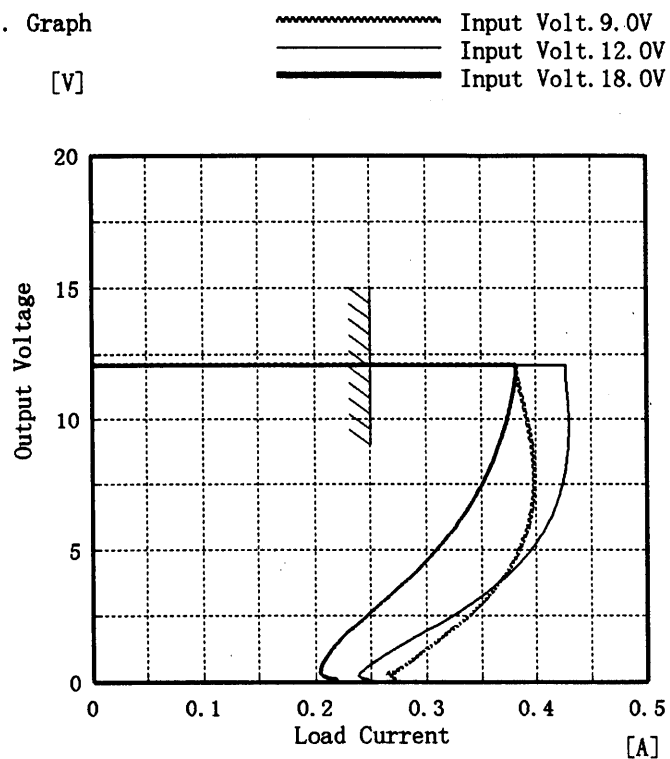
Note: Slanted line shows the range of the rated
　　　 load current.

(注)斜線は定格負荷電流範囲を示す。

2．Values

Output Voltage [V]	Input Volt. 9.0[V] Load Current [A]	Input Volt. 12.0[V] Load Current [A]	Input Volt. 18.0[V] Load Current [A]
12.00	0.38	0.43	0.38
11.40	0.38	0.43	0.38
10.80	0.39	0.43	0.38
9.60	0.39	0.43	0.37
8.40	0.40	0.43	0.36
7.20	0.40	0.42	0.35
6.00	0.39	0.41	0.33
4.80	0.38	0.39	0.31
3.60	0.36	0.36	0.28
2.40	0.34	0.32	0.24
1.20	0.30	0.27	0.22
0.00	0.27	0.25	0.22

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Model	ZTS31212	
Item	Dynamic Load Responce 動的負荷変動	Temperature 25℃ Testing Circuitry Figure A
Object	+12V0.25A	

Input Volt. 12.0 V
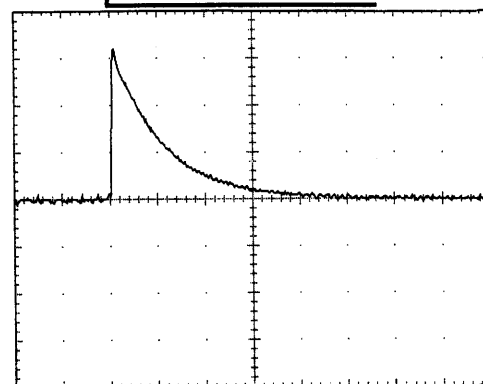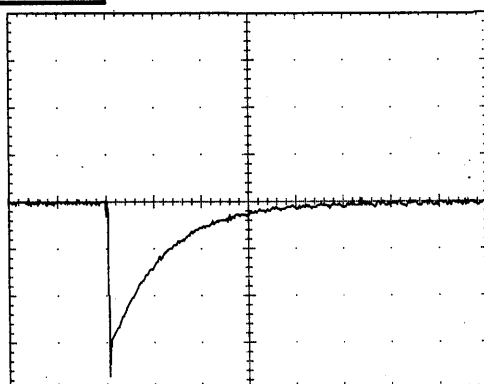
Cycle 100 mS
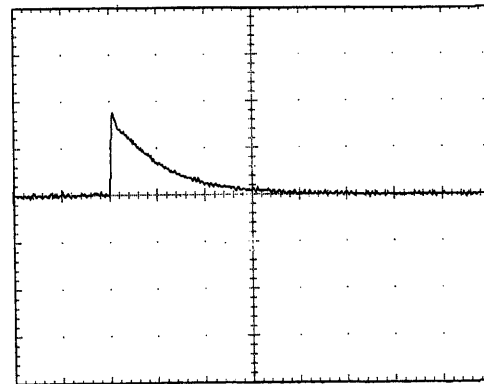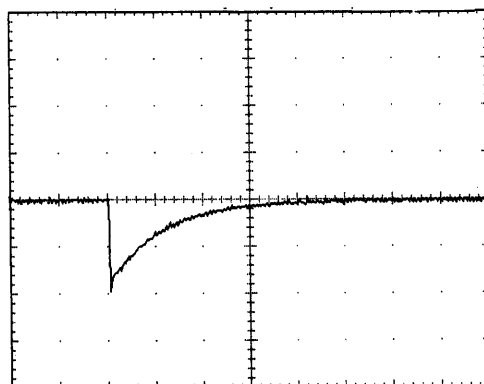
Load Current

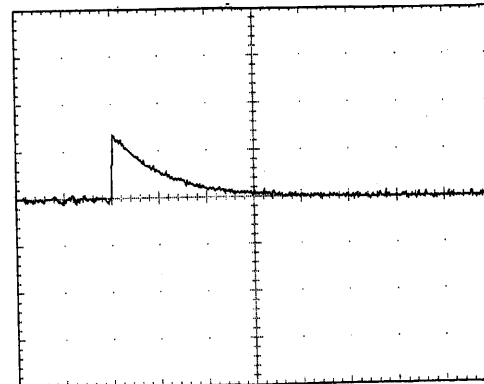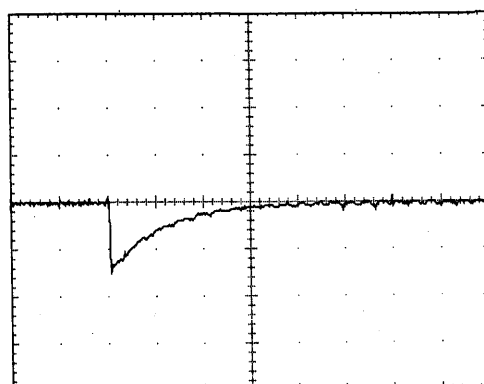Min. Load ←→
Load 100 %

100 mV/div

Min. Load ←→
Load 50 %

100 mV/div

Load 50%←→
Load 100 %

100 mV/div

1 mS/div
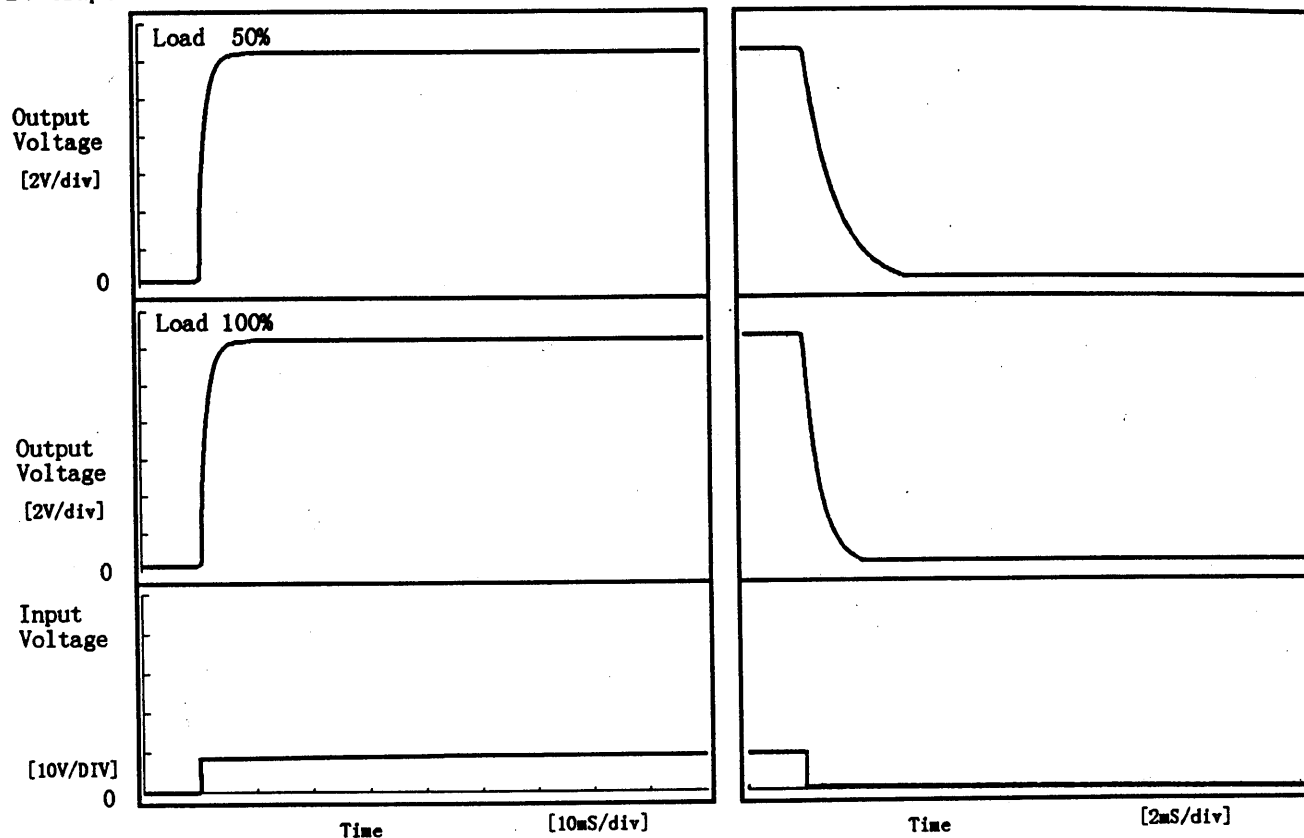
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Model	ZTS31212
Item	Rise and Fall Time　立上り、立下り時間
Object	＋12Ｖ0.25Ａ

Temperature	25℃
Testing Circuitry	Figure A

1. Graph

Input Volt. 9.0 V

Load 50%

Output
Voltage
[2V/div]

0

Load 100%

Output
Voltage
[2V/div]

0

Input
Voltage

[10V/DIV]
0

Time　[10mS/div]

Time　[2mS/div]

2. Values

[mS]

Load \ Time	Ｔd	Ｔr	Ｔs	Ｔh	Ｔf
50 ％	0.45	2.55	3.00	0.28	2.19
100 ％	0.45	2.60	3.05	0.14	1.16

Output
Volt.

90%

10%

Input
Volt.

Td　Tr

Th　Tf

Ts

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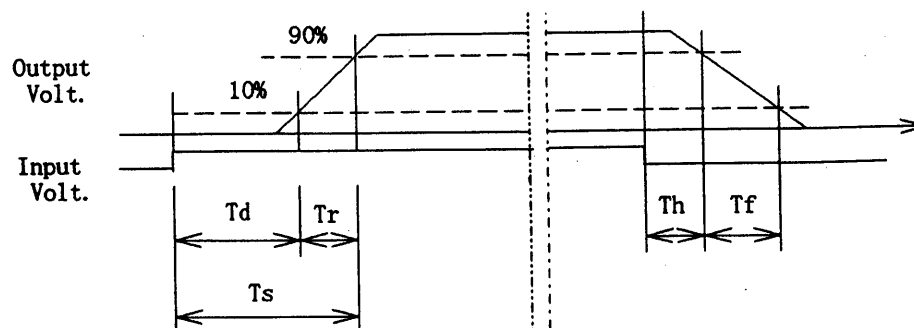
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Model	ZTS31212		
Item	Ambient Temperature Drift 周囲温度変動		Testing Circuitry　　Figure A
Object	＋12V0.25A		
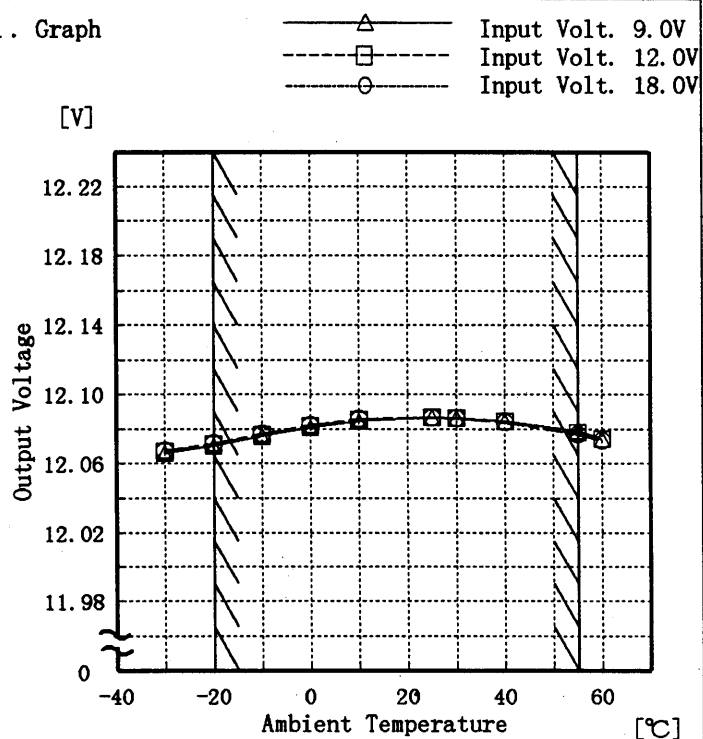
1. Graph

	△	Input Volt. 9.0V
	□	Input Volt. 12.0V
	○	Input Volt. 18.0V

Ambient Temperature [℃]

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. 9.0[V] Output Volt. [V]	Input Volt. 12.0[V] Output Volt. [V]	Input Volt. 18.0[V] Output Volt. [V]
−30	12.066	12.067	12.068
−20	12.070	12.071	12.072
−10	12.076	12.077	12.077
0	12.081	12.082	12.082
10	12.085	12.085	12.086
25	12.087	12.087	12.087
30	12.086	12.087	12.086
40	12.085	12.084	12.084
55	12.079	12.078	12.077
60	12.075	12.075	12.074
—	—	—	—

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Model	ZTS31212
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%
```


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%	Load　100%
	Input Volt.	Input Volt.
[℃]	[V]	[V]
-30	5.1	6.7
-20	5.0	6.5
-10	5.0	6.4
0	4.9	6.3
10	4.8	6.2
25	4.8	6.1
30	4.7	6.0
40	4.7	6.0
55	4.6	5.9
60	4.5	5.9
－	－	－

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Model	ZTS31212
Item	Ripple Voltage (by Ambient Temp.) リップル電圧（周囲温度特性）
Object	＋12V0.25A
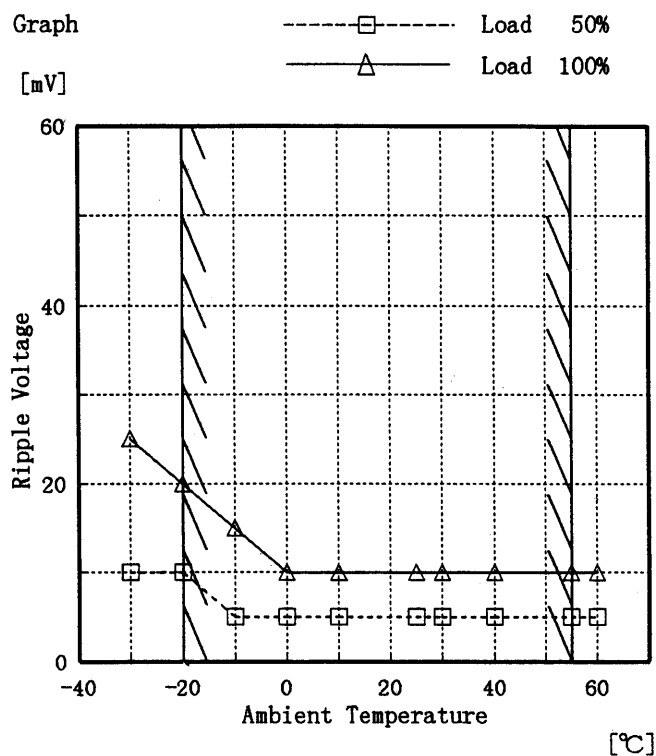
Testing Circuitry　　Figure A

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

[mV]

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	10	25
-20	10	20
-10	5	15
0	5	10
10	5	10
25	5	10
30	5	10
40	5	10
55	5	10
60	5	10
―	―	―

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Model	ZTS31212
Item	Time Lapse Drift 経時ドリフト
Object	＋12V0.25A

Temperature 25 ℃
Testing Circuitry Figure A

1. Graph

[V]

Input Volt. 12V
Load 100%
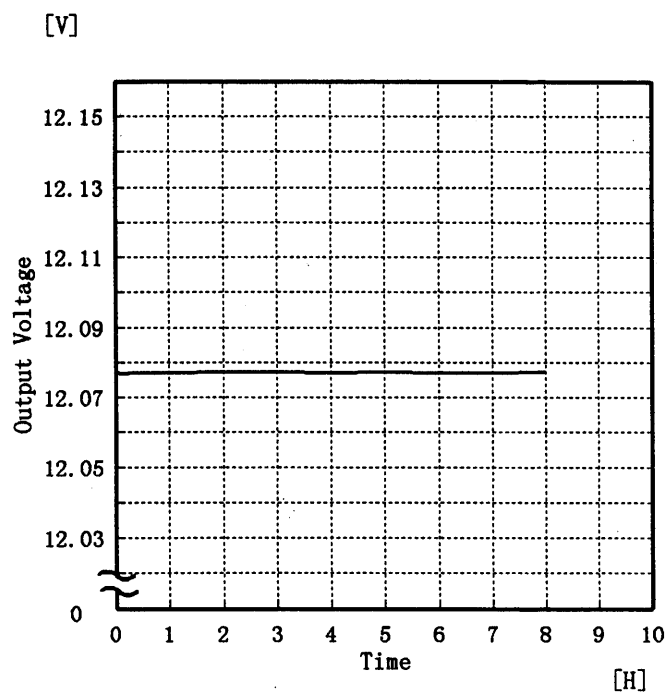
2. Values

Time since start [H]	Output Voltage [V]
0.0	12.078
0.5	12.077
1.0	12.077
2.0	12.077
3.0	12.077
4.0	12.077
5.0	12.077
6.0	12.077
7.0	12.077
8.0	12.077

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参考資料

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Model	ZTS31212	
Item	Output Voltage Accuracy　定電圧精度	Testing Circuitry　Figure A
Object	＋12V0.25A	

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 :　0.00～0.25 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　　　　9.0～18.0 V

負荷電流　　　　0.00～0.25 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) ＝$\dfrac{変動値}{定格出力電圧}$ ×100

Item	Temperature [℃]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy (Ration) [%]
Maximum Voltage	25	18.0	0.00	12.092	±10	±0.1
Minimum Voltage	-20	9.0	0.25	12.072		

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Model	ZTS31212
Item	Condensation 結露特性
Object	＋12Ｖ0.25Ａ

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]	11.885	Input Volt.：12V, Load Current：0.25Ａ
Line Regulation [mV]	1	Input Volt.：9〜18V, Load Current：0.25Ａ
Load Regulation [mV]	6	Input Volt.：12V, Load Current：0〜0.25Ａ

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Figure A

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