



TEST DATA OF ZTS1R51215

(12.0V INPUT)

Regulated DC Power Supply

Date : Mar. 5. 1998

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COSEL CO., LTD.

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Model

ZTS1R51215

Item

Line Regulation 静的入力変動

Object

+15V0.1A

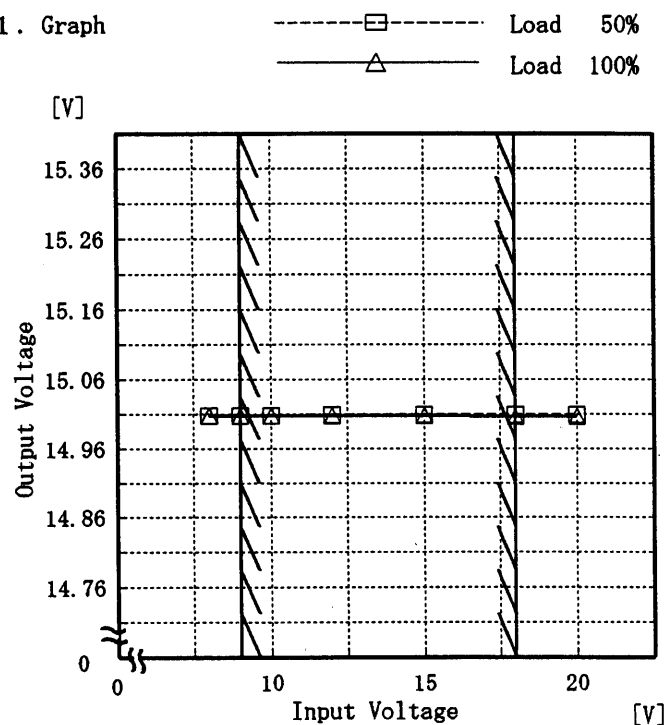
Temperature

25°C

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%	Load 100%
	Output Volt. [V]	Output Volt. [V]
8.0	15.008	15.007
9.0	15.008	15.007
10.0	15.008	15.007
12.0	15.008	15.007
15.0	15.008	15.007
18.0	15.008	15.006
20.0	15.008	15.006
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model

ZTS1R51215

Item

Efficiency 効率

Object

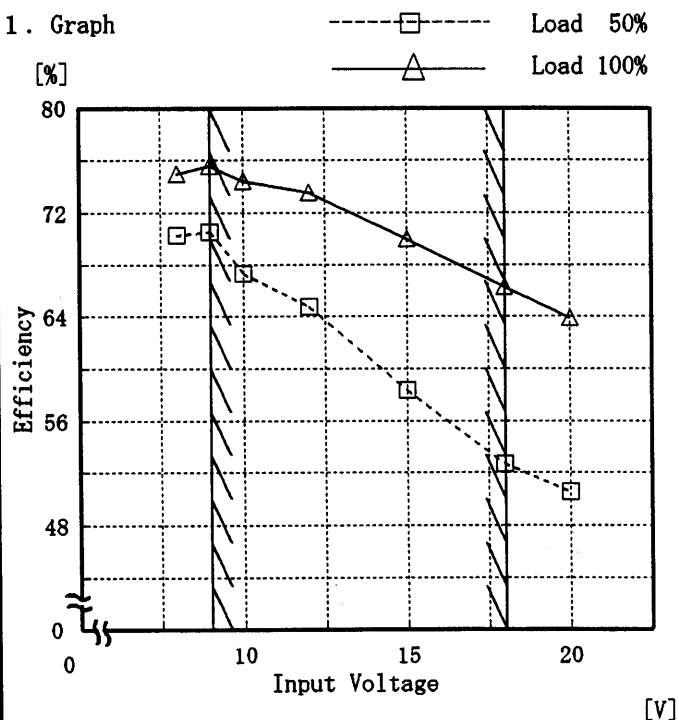
Temperature

25°C

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%	Load 100%
	Efficiency [%]	Efficiency [%]
8.0	70.3	74.9
9.0	70.5	75.6
10.0	67.3	74.4
12.0	64.8	73.6
15.0	58.3	70.0
18.0	52.7	66.3
20.0	50.6	63.9
—	—	—
—	—	—
—	—	—
—	—	—
—	—	—

COSEL

Model

ZTS1R51215

Item

Load Regulation 静的負荷変動

Object

+15V0.1A

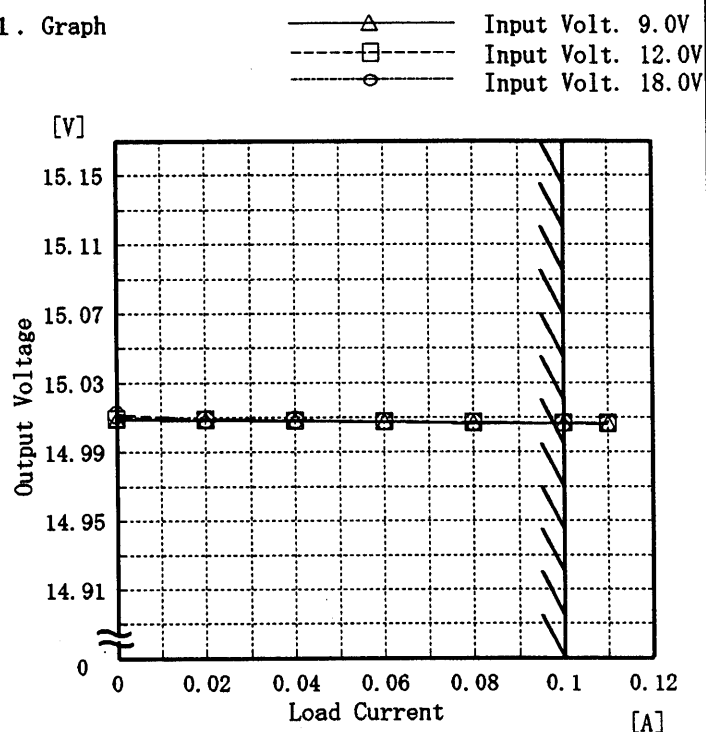
Temperature

25°C

Testing Circuitry

Figure A

1. Graph



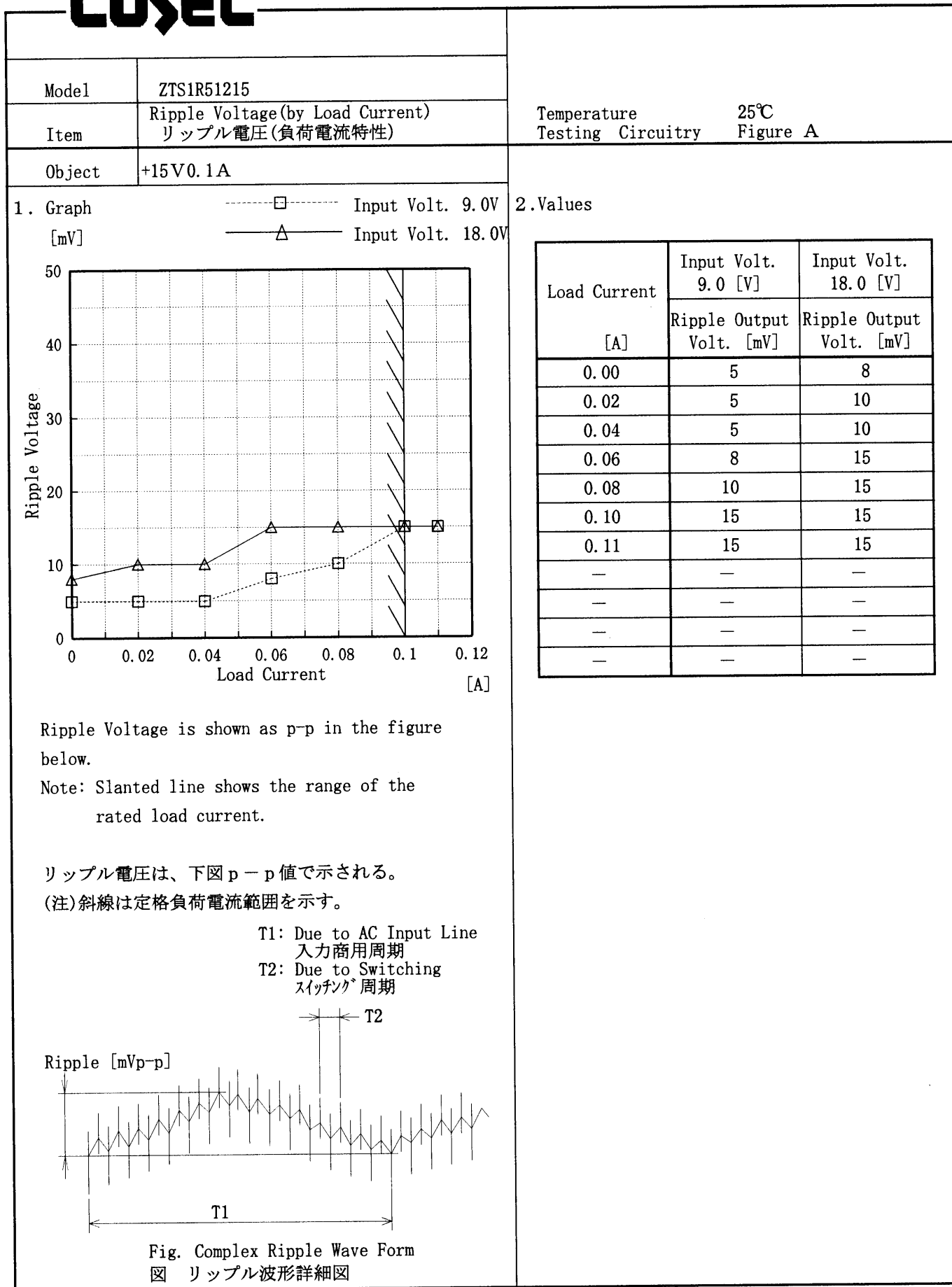
Note: Slanted line shows the range of the rated load current.

(注)斜線は定格負荷電流範囲を示す。

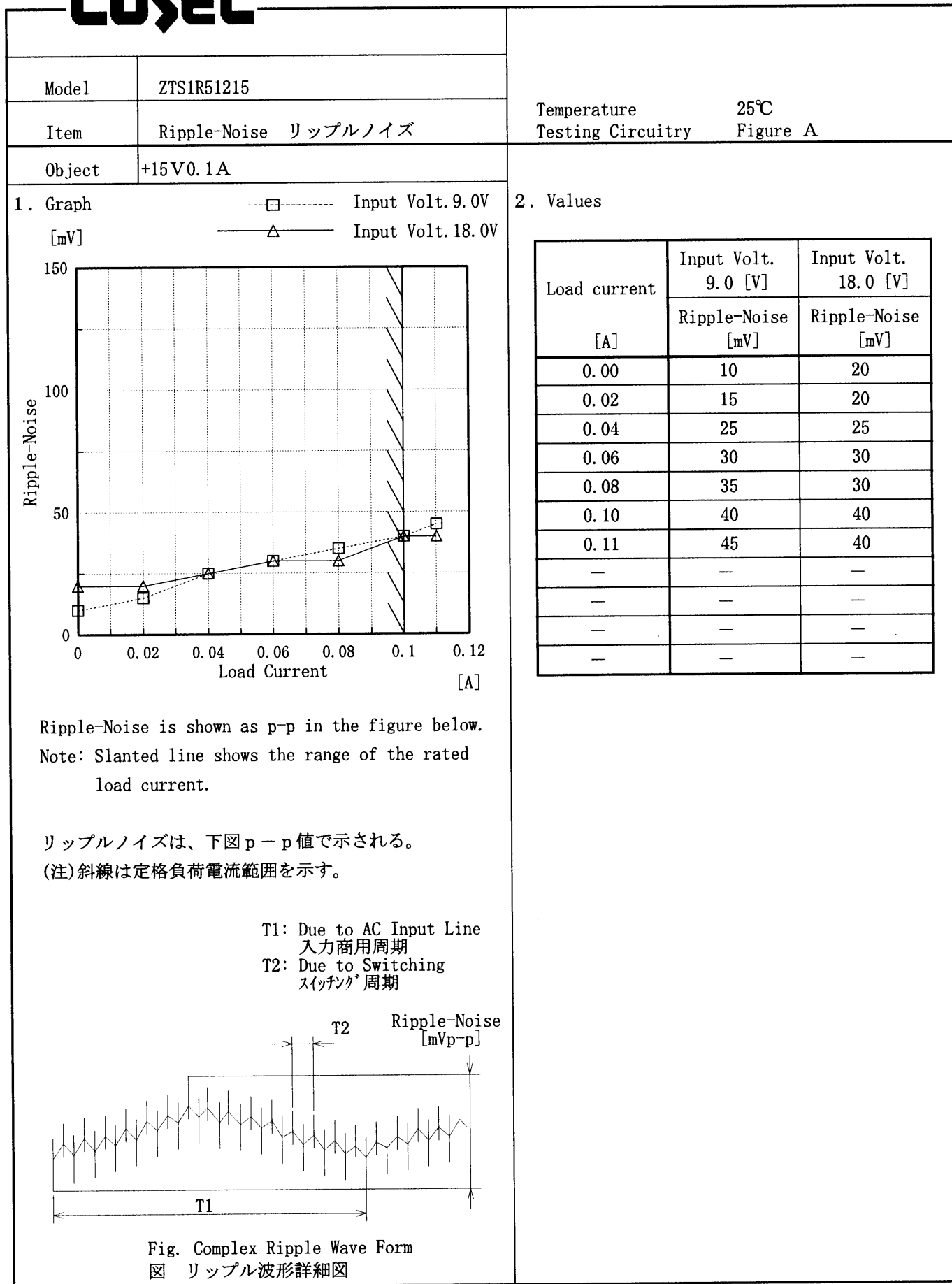
2. Values

Load Current [A]	Input Volt. 9.0[V]	Input Volt. 12.0[V]	Input Volt. 18.0[V]
	Output Volt. [V]	Output Volt. [V]	Output Volt. [V]
0.00	15.009	15.010	15.012
0.02	15.009	15.009	15.009
0.04	15.008	15.008	15.008
0.06	15.008	15.008	15.008
0.08	15.007	15.007	15.007
0.10	15.007	15.007	15.007
0.11	15.006	15.007	15.007
—	—	—	—
—	—	—	—
—	—	—	—

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Model ZTS1R51215		Temperature 25°C																																																								
Item Overcurrent Protection 過電流保護		Testing Circuitry Figure A																																																								
Object +15V0.1A																																																										
1. Graph <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="flex: 1;"> <p>~~~~~ Input Volt. 9.0V</p> <p>_____ Input Volt. 12.0V</p> <p>_____ Input Volt. 18.0V</p> </div> <div style="flex: 1;"> </div> </div>		2. Values <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Output Voltage [V]</th><th>Input Volt. 9.0[V]</th><th>Input Volt. 12.0[V]</th><th>Input Volt. 18.0[V]</th></tr> <tr> <th>Load Current [A]</th><th>Load Current [A]</th><th>Load Current [A]</th></tr> </thead> <tbody> <tr><td>15.00</td><td>0.14</td><td>0.16</td><td>0.14</td></tr> <tr><td>14.25</td><td>0.14</td><td>0.16</td><td>0.14</td></tr> <tr><td>13.50</td><td>0.14</td><td>0.16</td><td>0.14</td></tr> <tr><td>12.00</td><td>0.14</td><td>0.16</td><td>0.14</td></tr> <tr><td>10.50</td><td>0.15</td><td>0.16</td><td>0.13</td></tr> <tr><td>9.00</td><td>0.15</td><td>0.15</td><td>0.13</td></tr> <tr><td>7.50</td><td>0.15</td><td>0.15</td><td>0.13</td></tr> <tr><td>6.00</td><td>0.15</td><td>0.15</td><td>0.12</td></tr> <tr><td>4.50</td><td>0.15</td><td>0.14</td><td>0.12</td></tr> <tr><td>3.00</td><td>0.15</td><td>0.14</td><td>0.12</td></tr> <tr><td>1.50</td><td>0.15</td><td>0.14</td><td>0.12</td></tr> <tr><td>0.00</td><td>0.15</td><td>0.22</td><td>0.18</td></tr> </tbody> </table>		Output Voltage [V]	Input Volt. 9.0[V]	Input Volt. 12.0[V]	Input Volt. 18.0[V]	Load Current [A]	Load Current [A]	Load Current [A]	15.00	0.14	0.16	0.14	14.25	0.14	0.16	0.14	13.50	0.14	0.16	0.14	12.00	0.14	0.16	0.14	10.50	0.15	0.16	0.13	9.00	0.15	0.15	0.13	7.50	0.15	0.15	0.13	6.00	0.15	0.15	0.12	4.50	0.15	0.14	0.12	3.00	0.15	0.14	0.12	1.50	0.15	0.14	0.12	0.00	0.15	0.22	0.18
Output Voltage [V]	Input Volt. 9.0[V]	Input Volt. 12.0[V]	Input Volt. 18.0[V]																																																							
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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。																																																										

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Model	ZTS1R51215	Temperature	25°C
Item	Dynamic Load Responce 動的負荷変動	Testing Circuitry	Figure A
Object	+15V0.1A		

Input Volt. 12.0 V

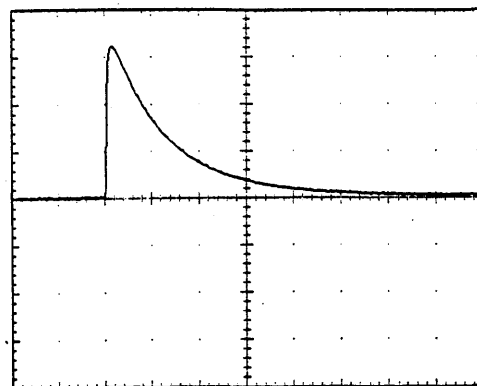
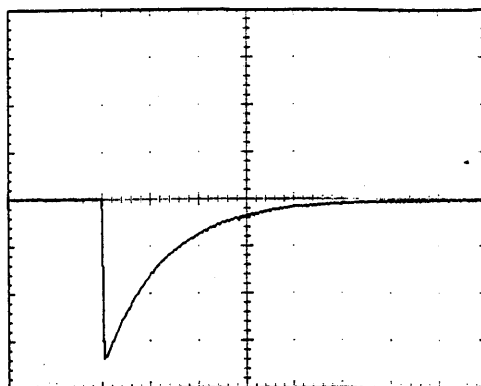
Cycle 100 mS

Load Current

Min. Load ↔

Load 100 %

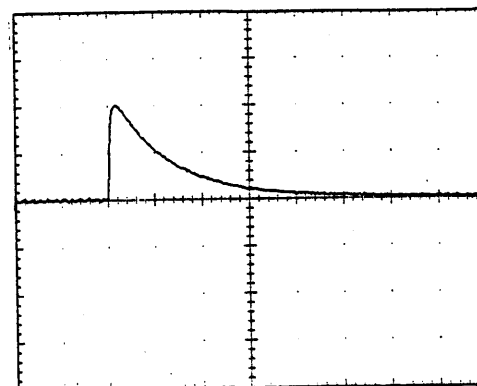
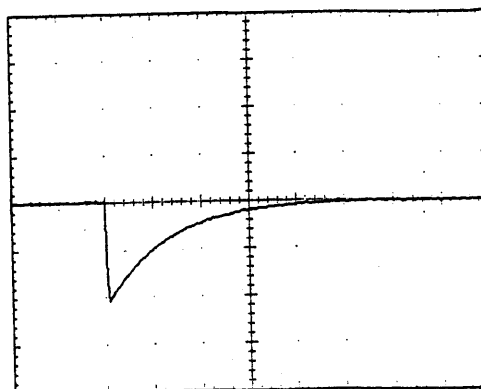
100 mV/div



Min. Load ↔

Load 50 %

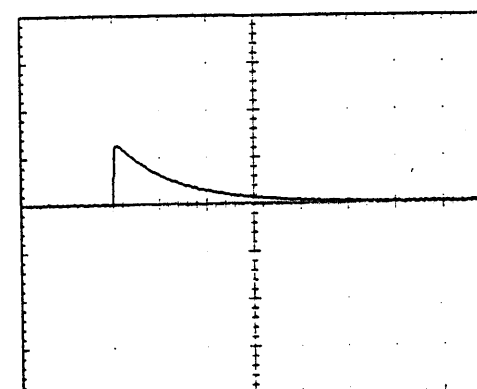
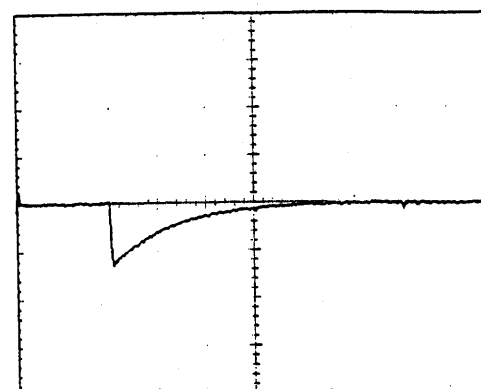
100 mV/div



Load 50% ↔

Load 100 %

100 mV/div



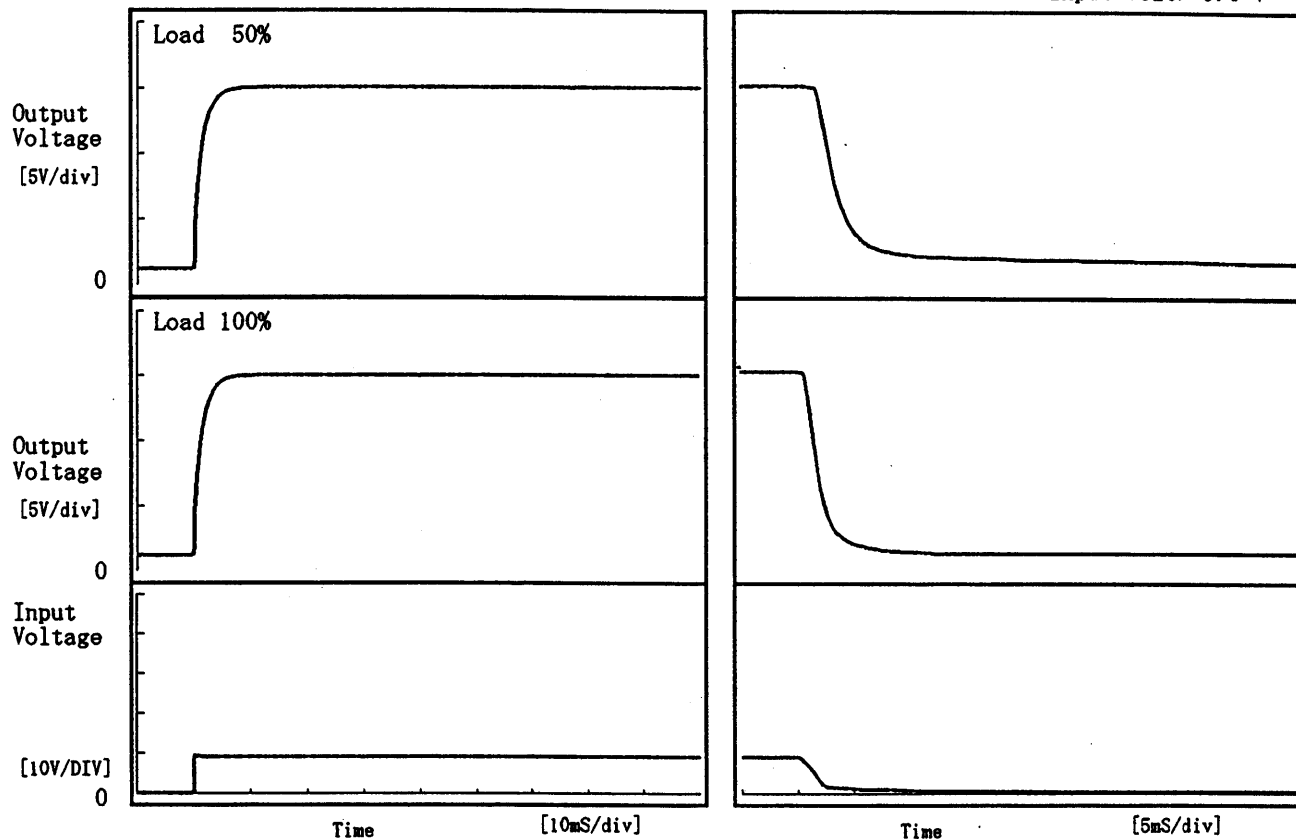
1 mS/div

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Model	ZTS1R51215	Temperature	25°C
Item	Rise and Fall Time 立上り、立下り時間	Testing Circuitry	Figure A
Object	+15V0.1A		

1. Graph

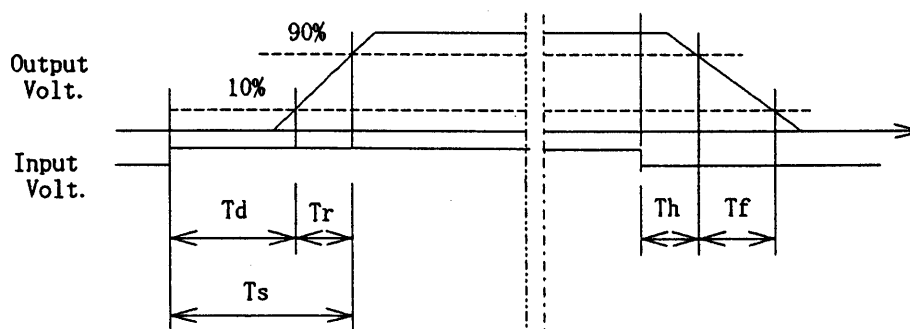
Input Volt. 9.0 V



2. Values

[mS]

Load \ Time	T d	T r	T s	T h	T f
50 %	0.05	3.40	3.45	1.95	41.98
100 %	0.05	3.40	3.45	0.85	6.03



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COSEL	
Model	ZTSLR51215
Item	Ambient Temperature Drift 周囲温度変動
Object	+15V0.1A

1. Graph

△

—

Input Volt. 9.0V

□

Input Volt. 12.0V

○

Input Volt. 18.0V

Output Voltage [V]

COSEL

Model

ZTS1R51215

Item

Minimum Input Voltage for Regulated Output Voltage
最低レギュレーション電圧

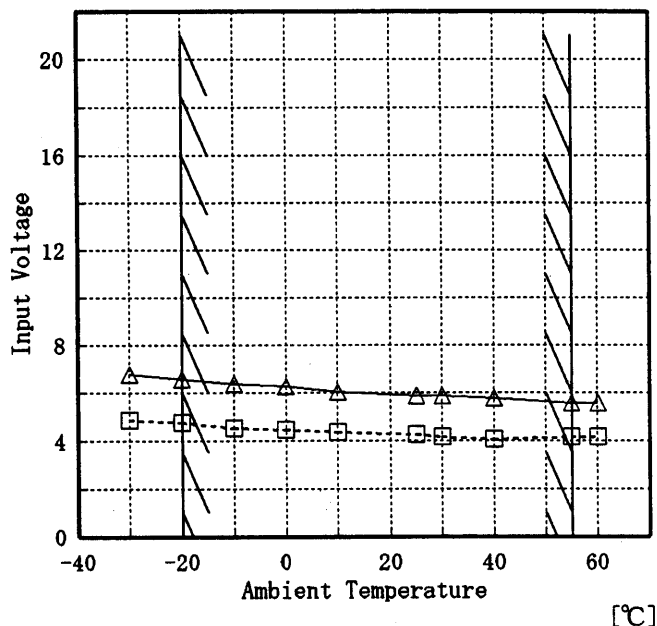
Object

+15V0.1A

Testing Circuitry Figure A

1. Graph

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



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.	Input Volt.
[°C]	[V]	[V]
-30	4.9	6.8
-20	4.8	6.6
-10	4.6	6.4
0	4.5	6.3
10	4.4	6.1
25	4.3	5.9
30	4.2	5.9
40	4.1	5.8
55	4.2	5.6
60	4.2	5.6
—	—	—

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Model ZTS1R51215		Testing Circuitry Figure A																																				
Item	Ripple Voltage (by Ambient Temp.) リップル電圧 (周囲温度特性)																																					
Object	+15V0.1A																																					
<p>1. Graph</p> <p>[mV]</p> <p>-----□----- Load 50%</p> <p>-----△----- Load 100%</p> <p>Ripple Voltage</p> <p>Ambient Temperature [°C]</p> <p>Input Volt. 9.0 V</p> <p>Note: Slanted line shows the range of the rated ambient temperature.</p> <p>(注)斜線は定格周囲温度範囲を示す。</p>		<p>2. Values</p> <table border="1"> <thead> <tr> <th>Ambient Temp. [°C]</th><th>Load 50% Ripple Output Volt. [mV]</th><th>Load 100% Ripple Output Volt. [mV]</th></tr> </thead> <tbody> <tr><td>-30</td><td>10</td><td>20</td></tr> <tr><td>-20</td><td>10</td><td>15</td></tr> <tr><td>-10</td><td>8</td><td>15</td></tr> <tr><td>0</td><td>8</td><td>15</td></tr> <tr><td>10</td><td>8</td><td>10</td></tr> <tr><td>25</td><td>8</td><td>10</td></tr> <tr><td>30</td><td>8</td><td>10</td></tr> <tr><td>40</td><td>8</td><td>10</td></tr> <tr><td>55</td><td>8</td><td>10</td></tr> <tr><td>60</td><td>8</td><td>10</td></tr> <tr><td>—</td><td>—</td><td>—</td></tr> </tbody> </table>	Ambient Temp. [°C]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]	-30	10	20	-20	10	15	-10	8	15	0	8	15	10	8	10	25	8	10	30	8	10	40	8	10	55	8	10	60	8	10	—	—	—
Ambient Temp. [°C]	Load 50% Ripple Output Volt. [mV]	Load 100% Ripple Output Volt. [mV]																																				
-30	10	20																																				
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-10	8	15																																				
0	8	15																																				
10	8	10																																				
25	8	10																																				
30	8	10																																				
40	8	10																																				
55	8	10																																				
60	8	10																																				
—	—	—																																				

COSEL

Model

ZTS1R51215

Item

Time Lapse Drift 経時ドリフト

Temperature

25 ℃

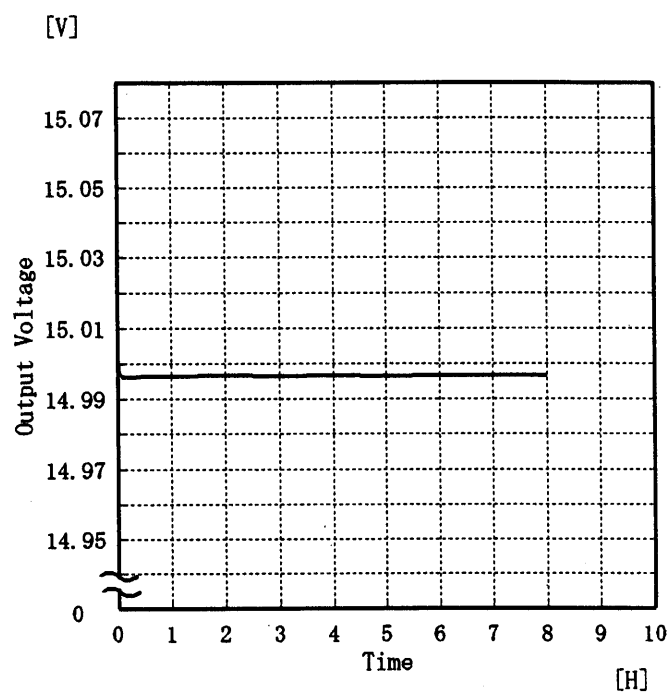
Testing Circuitry

Figure A

Object

+15V0.1A

1. Graph



2. Values

Time since start [H]	Output Voltage [V]
0.0	15.002
0.5	14.997
1.0	14.997
2.0	14.997
3.0	14.997
4.0	14.997
5.0	14.997
6.0	14.997
7.0	14.997
8.0	14.997

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Model	ZTS1R51215	Testing Circuitry Figure A
Item	Output Voltage Accuracy 定電圧精度	
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 °C

Input Voltage : 9.0~18.0 V

Load Current : 0.0~0.1 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 : 9.0~18.0 V

負荷電流 : 0.0~0.1 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) = $\frac{\text{変動値}}{\text{定格出力電圧}} \times 100$

Item	Temperature [°C]	Input Voltage [V]	Output Current [A]	Output Voltage [V]	Output Voltage Accuracy [mV]	Output Voltage Accuracy(Ration) [%]
Maximum Voltage	-20	18.0	0.0	15.026	±26	±0.2
Minimum Voltage	55	18.0	0.1	14.975		

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		Testing Circuitry Figure A
Model	ZTS1R51215	
Item	Condensation 結露特性	
Object	+15V0.1A	

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－1 0℃に冷却しておき、約1時間後に恒温槽から取り出し、室温2 5℃、湿度4 0 %RHの状態におき結露させ、その電氣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]	14.874	Input Volt. : 12V, Load Current:0.1A
Line Regulation [mV]	1	Input Volt. : 9～18V, Load Current:0.1A
Load Regulation [mV]	3	Input Volt. : 12V, Load Current:0～0.1A

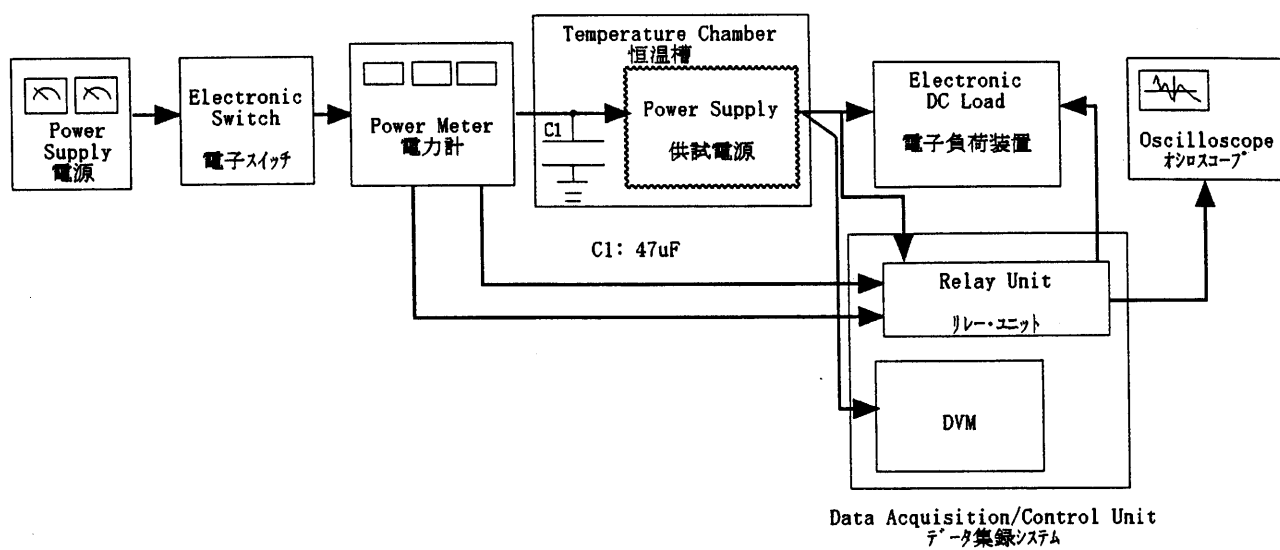
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Figure A