# COSEL

# TEST DATA OF GT2-5

Regulated DC Power Supply
April 12, 2010

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# COSEL CO.,LTD.

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| Model | GT2-5 |
|---|---|
| Item | Input Current (by Load Current) |
| Object | ——————— |

Temperature     25°C
Testing Circuitry    Figure A

1.Graph

     ——△——   Input Volt.   90V
     - - -◻- - -   Input Volt.   100V
     —·—○—·—   Input Volt.   110V



Load Current [A]

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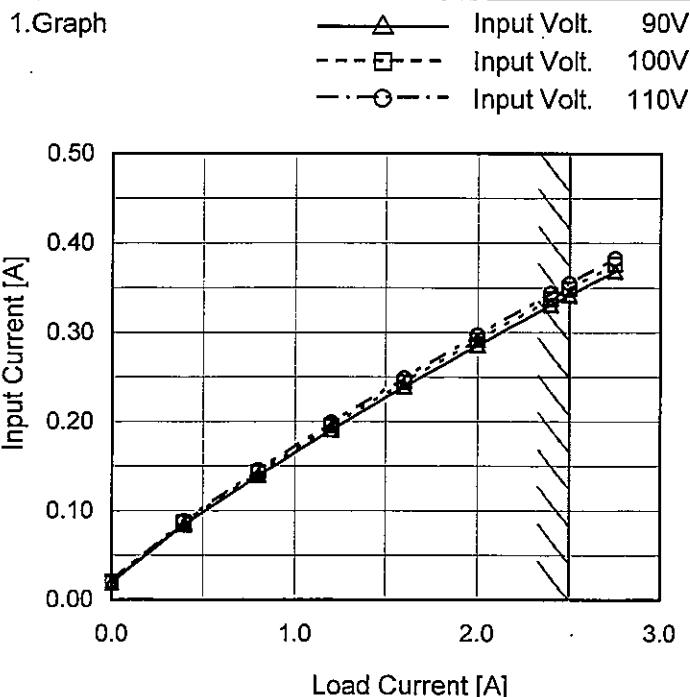
2.Values

| Load Current [A] | Input Current [A] | | |
|---|---|---|---|
| | Input Volt. 90[V] | Input Volt. 100[V] | Input Volt. 110[V] |
| 0.00 | 0.019 | 0.020 | 0.021 |
| 0.40 | 0.085 | 0.086 | 0.089 |
| 0.80 | 0.140 | 0.143 | 0.146 |
| 1.20 | 0.191 | 0.195 | 0.199 |
| 1.60 | 0.239 | 0.244 | 0.249 |
| 2.00 | 0.286 | 0.292 | 0.297 |
| 2.40 | 0.331 | 0.337 | 0.344 |
| 2.50 | 0.342 | 0.349 | 0.355 |
| 2.75 | 0.369 | 0.376 | 0.383 |
| -- | - | - | - |
| -- | - | - | - |

# CO$EL

| Model | GT2-5 |
|---|---|
| Item | Input Power (by Load Current) |
| Object | |

Temperature        25°C
Testing Circuitry    Figure A

1.Graph
——△—— Input Volt.    90V
---☐--- Input Volt.    100V
—··—O—··— Input Volt.    110V



Input Power [W] vs Load Current [A]

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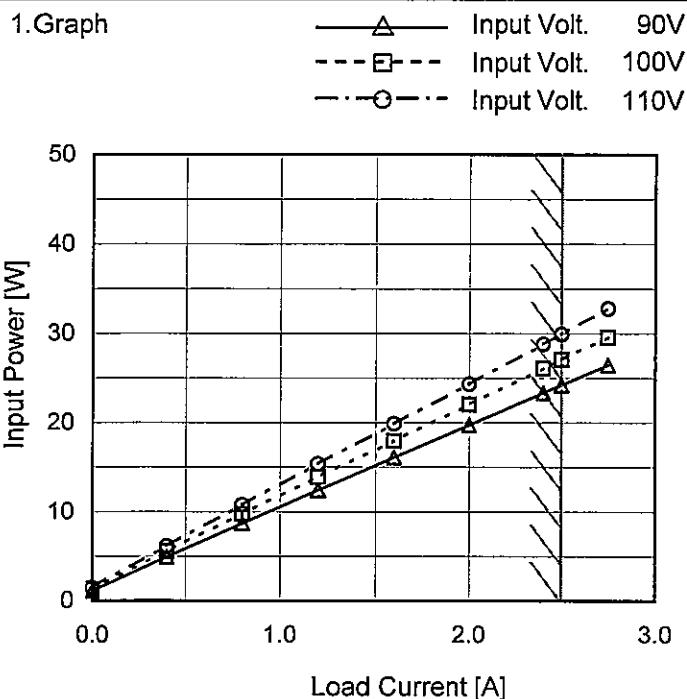
2.Values

| Load Current [A] | Input Power [W] | | |
|---|---|---|---|
| | Input Volt. 90[V] | Input Volt. 100[V] | Input Volt. 110[V] |
| 0.00 | 1.13 | 1.29 | 1.47 |
| 0.40 | 4.93 | 5.52 | 6.15 |
| 0.80 | 8.70 | 9.72 | 10.77 |
| 1.20 | 12.42 | 13.89 | 15.36 |
| 1.60 | 16.11 | 17.97 | 19.89 |
| 2.00 | 19.74 | 22.05 | 24.36 |
| 2.40 | 23.37 | 26.07 | 28.80 |
| 2.50 | 24.24 | 27.09 | 29.91 |
| 2.75 | 26.46 | 29.56 | 32.80 |
| -- | - | - | - |
| --- | - | - | - |

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# COSEL

| Model | GT2-5 |
|---|---|
| Item | Efficiency (by Input Voltage) |
| Object | ——————— |

Temperature     25°C
Testing Circuitry    Figure A

## 1.Graph

Load 50%
Load 100%



Note: Slanted line shows the range of the rated
input voltage.

## 2.Values

| Input Voltage [V] | Efficiency [%] | |
|---|---|---|
| | Load 50% | Load 100% |
| 85 | 52.0 | 55.3 |
| 90 | 49.0 | 52.0 |
| 100 | 43.8 | 46.6 |
| 110 | 39.6 | 42.1 |
| 115 | 37.8 | 40.2 |
| --- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

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# CO$EL

| Model | GT2-5 |
|---|---|
| Item | Efficiency (by Load Current) |
| Object | |
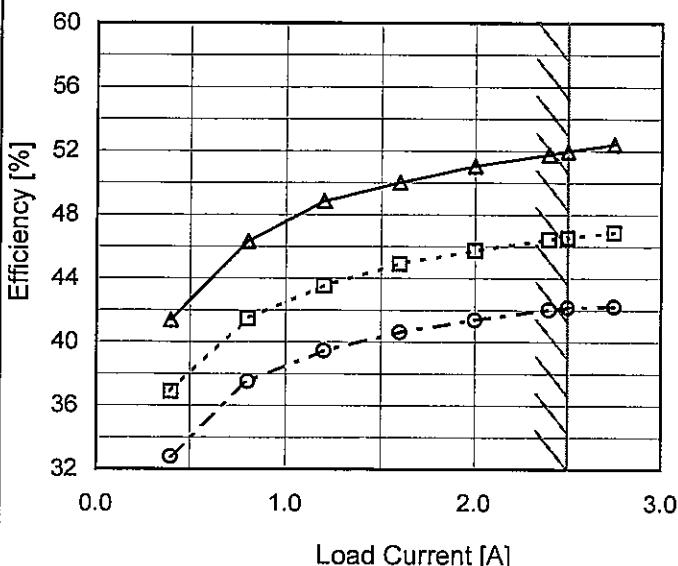
Temperature      25°C
Testing Circuitry    Figure A

1.Graph

———△——— Input Volt.   90V
– – –◻– – – Input Volt.   100V
—·—○—·— Input Volt.   110V



Load Current [A]

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

2.Values

| Load Current [A] | Efficiency [%] | | |
|---|---|---|---|
| | Input Volt. 90[V] | Input Volt. 100[V] | Input Volt. 110[V] |
| 0.00 | - | - | - |
| 0.40 | 41.4 | 36.9 | 32.8 |
| 0.80 | 46.3 | 41.5 | 37.5 |
| 1.20 | 48.8 | 43.5 | 39.4 |
| 1.60 | 50.0 | 44.9 | 40.6 |
| 2.00 | 51.1 | 45.7 | 41.4 |
| 2.40 | 51.8 | 46.4 | 42.0 |
| 2.50 | 52.0 | 46.5 | 42.2 |
| 2.75 | 52.4 | 46.9 | 42.2 |
| --- | - | - | - |
| --- | - | - | - |

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# CO$EL

| Model | GT2-5 |
|---|---|
| Item | Power Factor (by Input Voltage) |
| Object | |

1.Graph

--□-- Load 50%
——△—— Load 100%



Note: Slanted line shows the range of the rated input voltage.

2.Values

| Input Voltage [V] | Power Factor | |
|---|---|---|
| | Load 50% | Load 100% |
| 85 | 0.732 | 0.794 |
| 90 | 0.726 | 0.789 |
| 100 | 0.716 | 0.777 |
| 110 | 0.706 | 0.767 |
| 115 | 0.701 | 0.763 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

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# COSEL

| Model | GT2-5 |
|---|---|
| Item | Power Factor (by Load Current) |
| Object | |

Temperature       25°C
Testing Circuitry    Figure A

1. Graph

———△——— Input Volt.    90V
– – –☐– – – Input Volt.    100V
—·–○—·– Input Volt.    110V



Load Current [A]

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

2. Values

| Load Current [A] | Power Factor | | |
|---|---|---|---|
| | Input Volt. 90[V] | Input Volt. 100[V] | Input Volt. 110[V] |
| 0.00 | - | - | - |
| 0.40 | 0.648 | 0.638 | 0.631 |
| 0.80 | 0.691 | 0.680 | 0.671 |
| 1.20 | 0.722 | 0.711 | 0.702 |
| 1.60 | 0.748 | 0.736 | 0.726 |
| 2.00 | 0.767 | 0.756 | 0.745 |
| 2.40 | 0.784 | 0.772 | 0.762 |
| 2.50 | 0.788 | 0.777 | 0.766 |
| 2.75 | 0.798 | 0.786 | 0.777 |
| -- | - | - | - |
| -- | - | - | - |

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| Model | GT2-5 |
|---|---|
| Item | Inrush Current |
| Object | ———— |

Temperature       25°C
Testing Circuitry   Figure A

Input
Current
[10A/div]

Input
Voltage
[100V/div]

Time                                    [10ms/div]
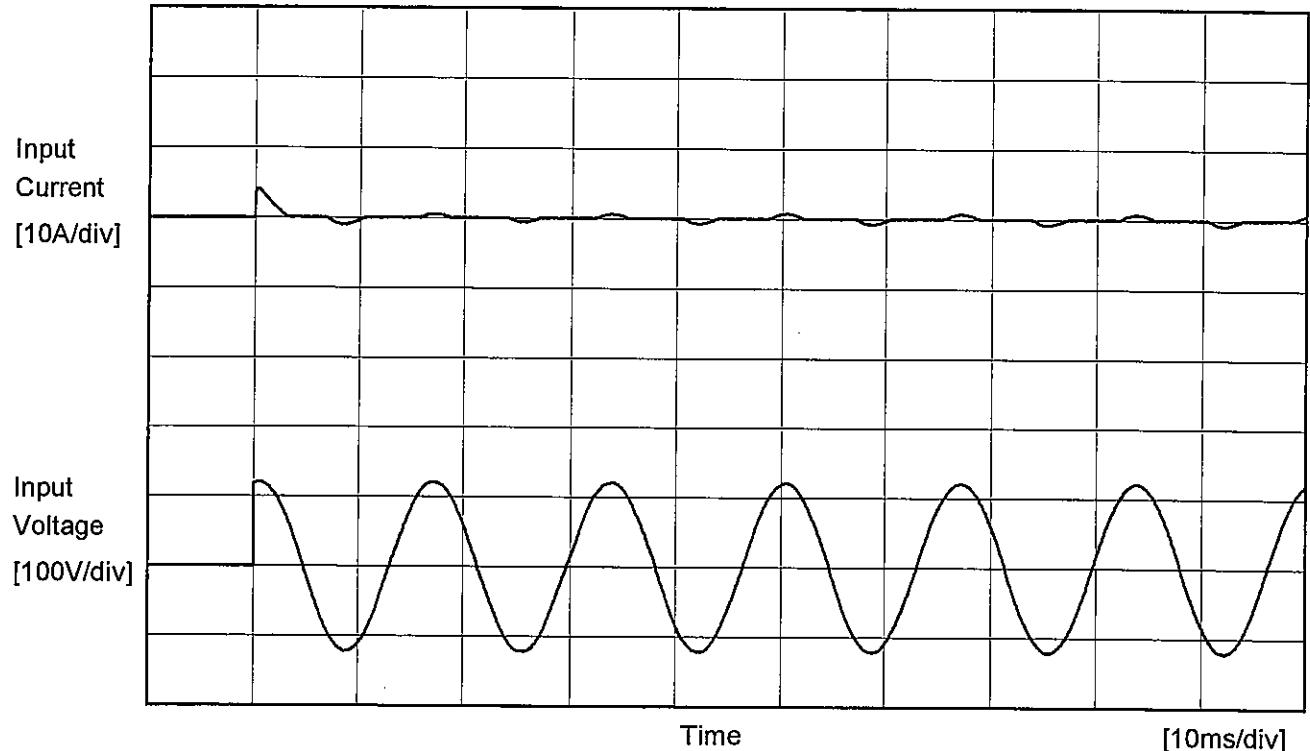
| Input Voltage | 100 V |
|---|---|
| Frequency | 60 Hz |
| Load | 100 % |

Primary inrush current        4.1 A

Primary inrush current

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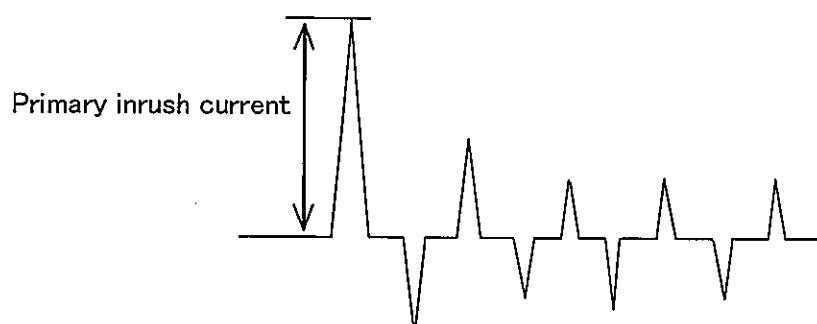
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| | |
|---|---|
| Model | GT2-5 |
| Item | Line Regulation |
| Object | +5V2.5A |

Temperature　　25°C
Testing Circuitry　Figure A

1.Graph

--- ▣ --- Load 50%
——— △ ——— Load 100%



Note: Slanted line shows the range of the rated input voltage.
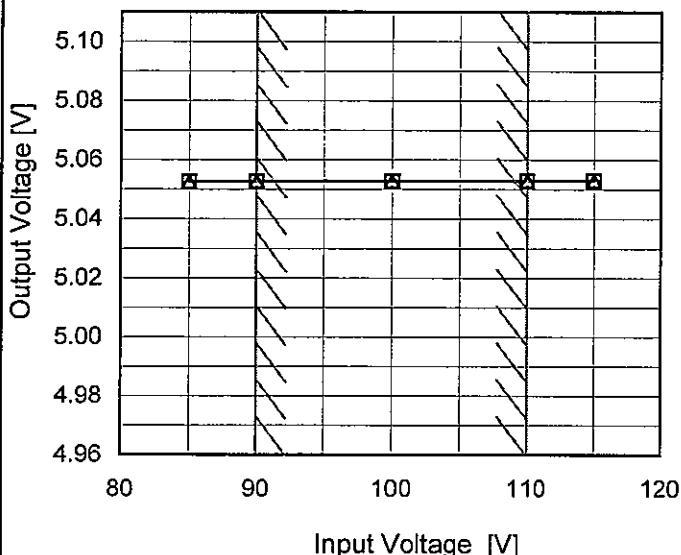
2.Values

| Input Voltage [V] | Output Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| 85 | 5.053 | 5.053 |
| 90 | 5.053 | 5.053 |
| 100 | 5.053 | 5.053 |
| 110 | 5.053 | 5.053 |
| 115 | 5.053 | 5.053 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

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| Model | GT2-5 |
|-------|-------|
| Item | Load Regulation |
| Object | +5V2.5A |
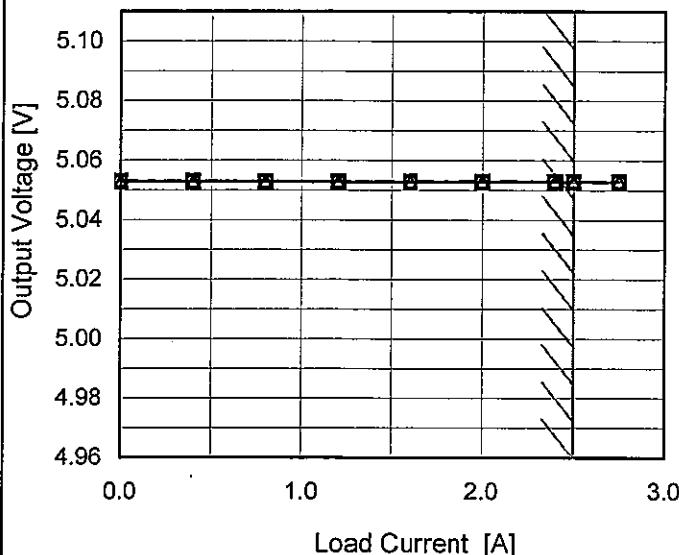
Temperature 25°C
Testing Circuitry Figure A

1.Graph

———△——— Input Volt. 90V
---☐--- Input Volt. 100V
—·—○—·— Input Volt. 110V



Output Voltage [V] vs Load Current [A]

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

2.Values

| Load Current [A] | Output Voltage [V] | | |
|------------------|--------------------|--------------------|--------------------|
| | Input Volt. 90[V] | Input Volt. 100[V] | Input Volt. 110[V] |
| 0.00 | 5.053 | 5.053 | 5.053 |
| 0.40 | 5.053 | 5.053 | 5.053 |
| 0.80 | 5.053 | 5.053 | 5.053 |
| 1.20 | 5.053 | 5.053 | 5.053 |
| 1.60 | 5.053 | 5.053 | 5.053 |
| 2.00 | 5.053 | 5.053 | 5.053 |
| 2.40 | 5.053 | 5.053 | 5.053 |
| 2.50 | 5.053 | 5.053 | 5.053 |
| 2.75 | 5.053 | 5.053 | 5.053 |
| -- | - | - | - |
| --- | - | - | -- |

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| Model | GT2-5 |
|---|---|
| Item | Dynamic Load Response |
| Object | +5V2.5A |

| Temperature | 25°C |
|---|---|
| Testing Circuitry | Figure   A |

Input Volt.   100 V

Cycle   1000 ms

Load Current

Min. Load (0A) ←—→
Load 100% (2.5A)

50 mV/div

100 µs/div

100 µs/div

Load 50% (1.25A) ←—→
Load 100% (2.5A)

50 mV/div

100 µs/div

100 µs/div

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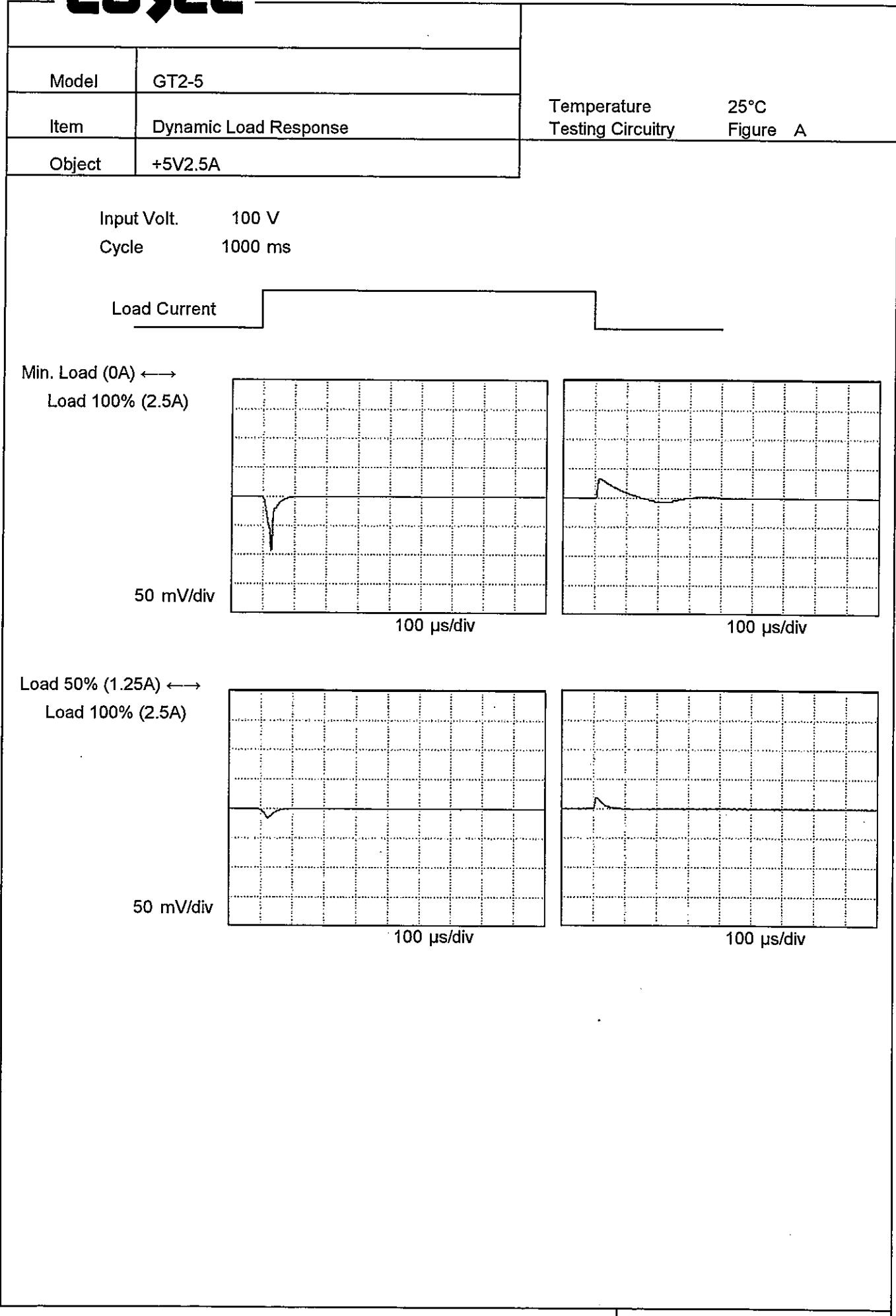
| Model | GT2-5 |
|---|---|
| Item | Ripple Voltage (by Load Current) |
| Object | +5V2.5A |

Temperature        25°C
Testing Circuitry    Figure A

## 1.Graph

———△——— Input Volt.    90V
—·—⊖—·— Input Volt.   110V



Load Current  [A]

Measured by 20 MHz Oscilloscope.
Note: Slanted line shows the range of the rated
load current.
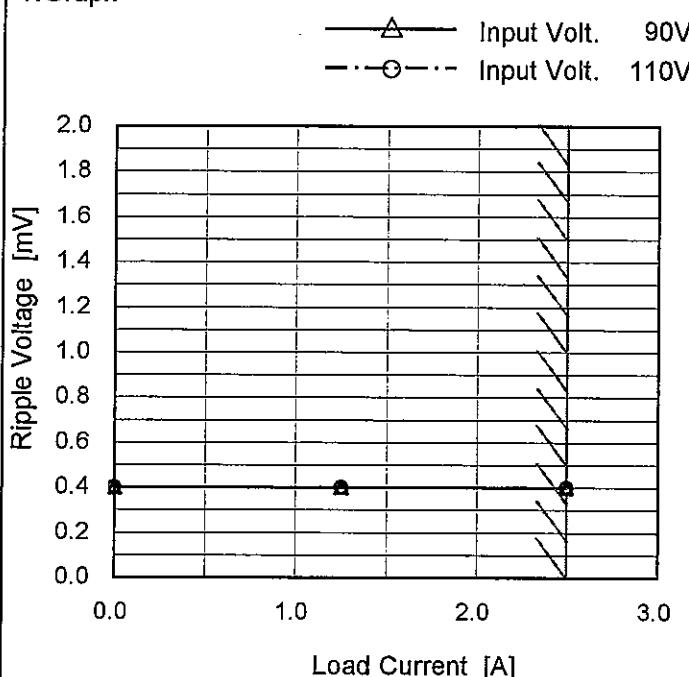
## 2.Values

| Load Current [A] | Ripple Voltage [mV] | |
|---|---|---|
| | Input Volt. 90 [V] | Input Volt. 110 [V] |
| 0.00 | 0.4 | 0.4 |
| 1.25 | 0.4 | 0.4 |
| 2.50 | 0.4 | 0.4 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

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| Model | GT2-5 |
|-------|-------|
| Item | Ripple Voltage (by Ambient Temp.) |
| Object | +5V2.5A |
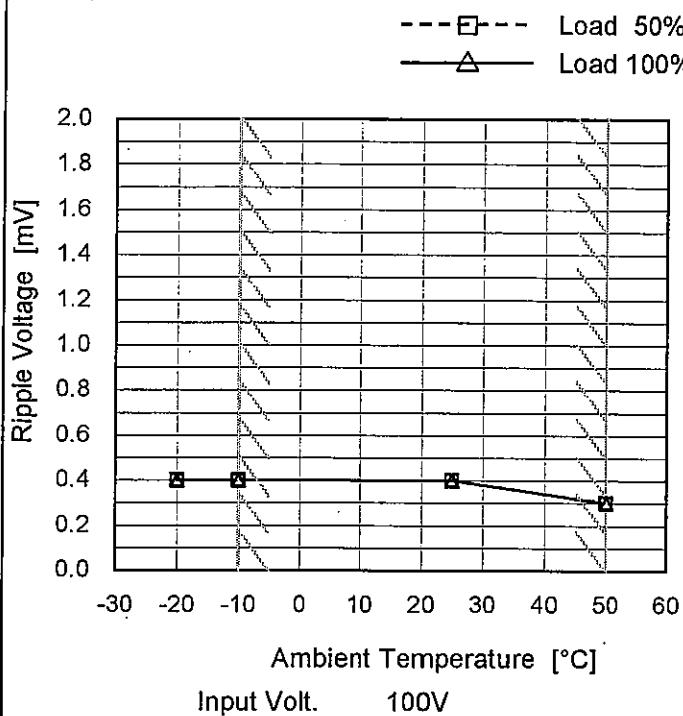
Testing Circuitry    Figure A

## 1.Graph

--- ⊟ --- Load  50%

——— △ ——— Load 100%



Ambient Temperature  [°C]

Input Volt.          100V

Measured by 20 MHz Oscilloscope.

Note: Slanted line shows the range of the rated
ambient temperature.

## 2.Values

| Ambient Temperature [°C] | Ripple Voltage [mV] | |
|---|---|---|
| | Load  50% | Load  100% |
| -20 | 0.4 | 0.4 |
| -10 | 0.4 | 0.4 |
| 25 | 0.4 | 0.4 |
| 50 | 0.3 | 0.3 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

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| | |
|---|---|
| Model | GT2-5 |
| Item | Ambient Temperature Drift |
| Object | +5V2.5A |
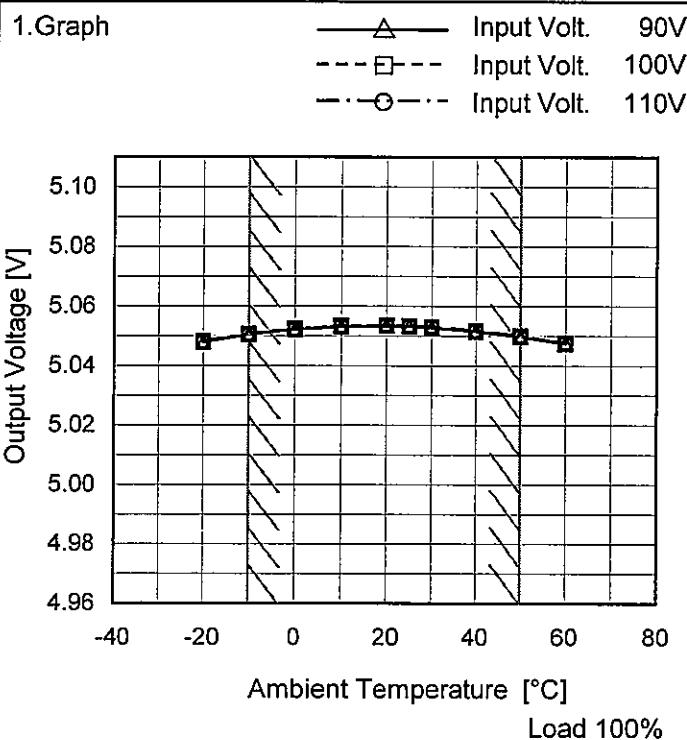
**Testing Circuitry   Figure A**

1.Graph

———△——— Input Volt.    90V
− − −⊟− − − Input Volt.   100V
—·—⊙—·— Input Volt.   110V



Ambient Temperature [°C]

Load 100%

Note: Slanted line shows the range of the rated
ambient temperature.

2.Values

| Ambient Temperature [°C] | Output Voltage [V] | | |
|---|---|---|---|
| | Input Volt. 90[V] | Input Volt. 100[V] | Input Volt. 110[V] |
| -20 | 5.048 | 5.048 | 5.048 |
| -10 | 5.051 | 5.051 | 5.051 |
| 0 | 5.052 | 5.052 | 5.052 |
| 10 | 5.053 | 5.053 | 5.053 |
| 20 | 5.053 | 5.054 | 5.054 |
| 25 | 5.053 | 5.053 | 5.053 |
| 30 | 5.053 | 5.053 | 5.053 |
| 40 | 5.052 | 5.052 | 5.052 |
| 50 | 5.050 | 5.050 | 5.050 |
| 60 | 5.048 | 5.048 | 5.048 |
| -- | - | - | -- |

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| Model | GT2-5 |
|-------|-------|

| Item | Output Voltage Accuracy |
|------|------------------------|

| Object | +5V2.5A |
|--------|---------|

Testing Circuitry    Figure A

1.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    :  -10  -  50°C
Input Voltage  :  90  -  110V
Load Current   :  0  -  2.5A

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

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

2.Values

| Item | Temperature [°C] | Input Voltage[V] | Output | | Output Voltage Accuracy | |
|------|------------------|------------------|--------|--------|-------------------------|--------|
| | | | Current[A] | Voltage[V] | Value [mV] | Ration [%] |
| Maximum Voltage | 20 | 110 | 0 | 5.054 | ±2 | ±0.1 |
| Minimum Voltage | 50 | 90 | 2.5 | 5.050 | | |

# CO$EL

| Model | GT2-5 |
|---|---|
| Item | Time Lapse Drift |
| Object | +5V2.5A |

Temperature    25°C
Testing Circuitry    Figure A

## 1.Graph



Input Volt.    100V
Load    100%

## 2.Values

| Time since start [H] | Output Voltage [V] |
|---|---|
| 0.0 | 5.001 |
| 0.5 | 5.001 |
| 1.0 | 5.001 |
| 2.0 | 5.001 |
| 3.0 | 5.001 |
| 4.0 | 5.001 |
| 5.0 | 5.001 |
| 6.0 | 5.001 |
| 7.0 | 5.001 |
| 8.0 | 5.001 |

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| | |
|---|---|
| Model | GT2-5 |
| Item | Rise and Fall Time |
| Object | +5V2.5A |

Temperature    25°C
Testing Circuitry    Figure A

1.Graph

Input Volt. 100 V

Load 50%

Output Volt.

[1V/div]

0

Load 100%

Output Volt.

[1V/div]

0

Input Volt.

0

[100V/div]

Time    [50ms/div]

Time    [100ms/div]
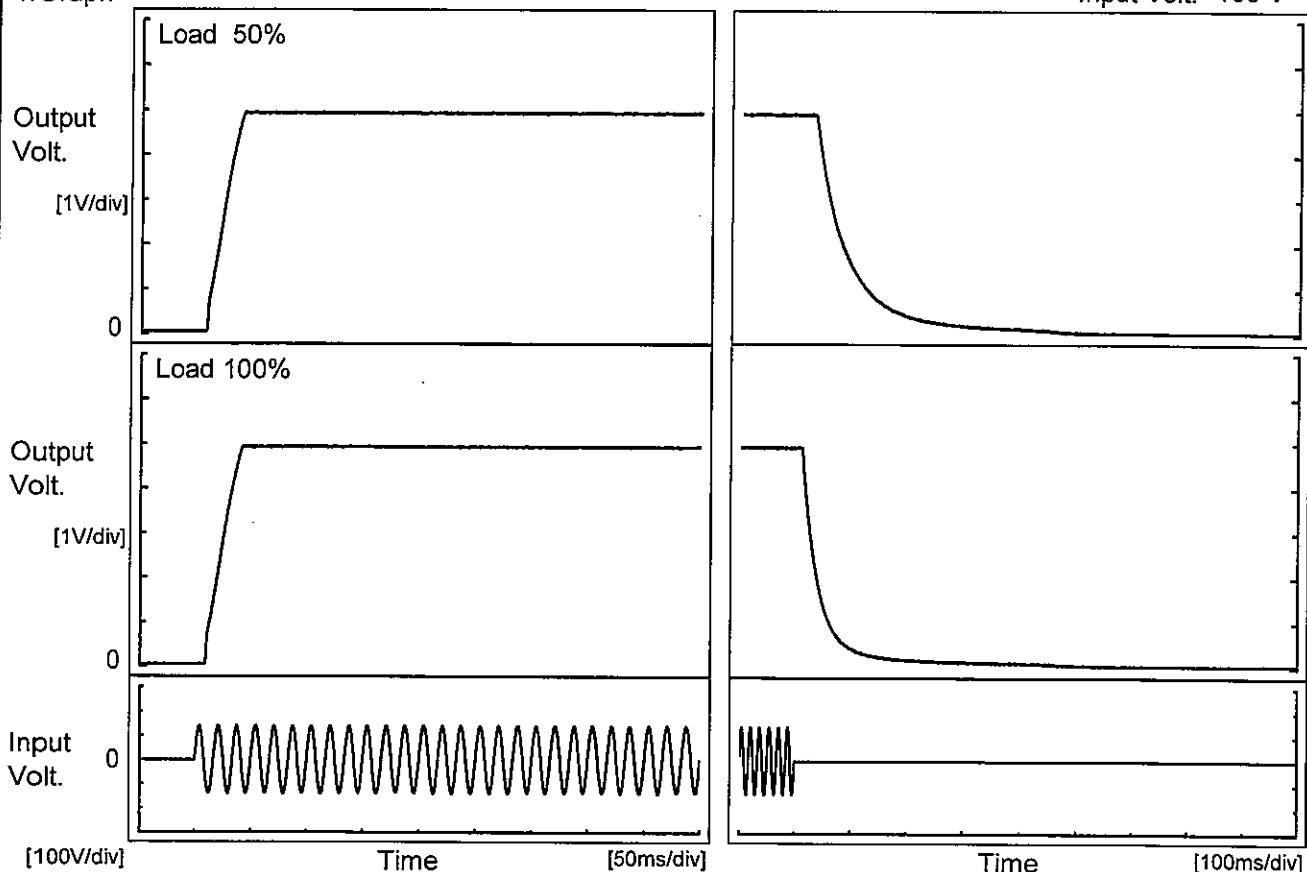
2.Values

[ms]

| Load \ Time | Td | Tr | Ts | Th | Tf |
|---|---|---|---|---|---|
| 50 % | 10.8 | 26.8 | 37.6 | 37.0 | 138.0 |
| 100 % | 10.5 | 27.0 | 37.5 | 14.5 | 74.5 |

Output Volt.

90%

10%

Input Volt.

Td   Tr

Ts

Th   Tf

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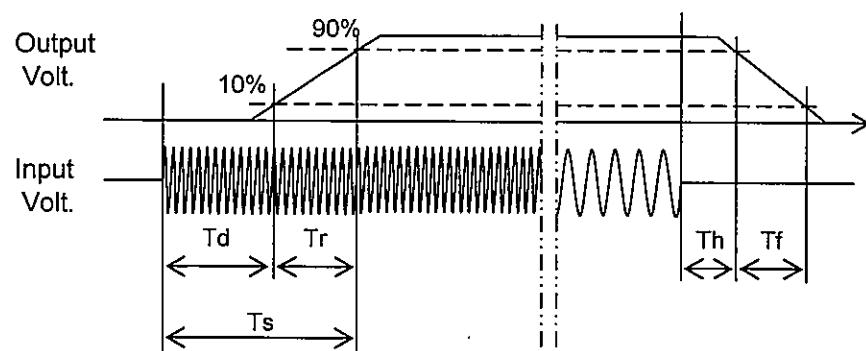
# COSEL

| Model | GT2-5 |
|---|---|
| Item | Hold-Up Time |
| Object | +5V2.5A |

Temperature        25°C
Testing Circuitry    Figure A

## 1.Graph

- - -□- - - Load 50%
——△—— Load 100%



Hold-Up Time [ms] vs Input Voltage [V]

This duration covers from Shut-off of input
voltage to the moment when output voltage
descends to the rated range of voltage accuracy.
Note: Slanted line shows the range of the rated
        input voltage.
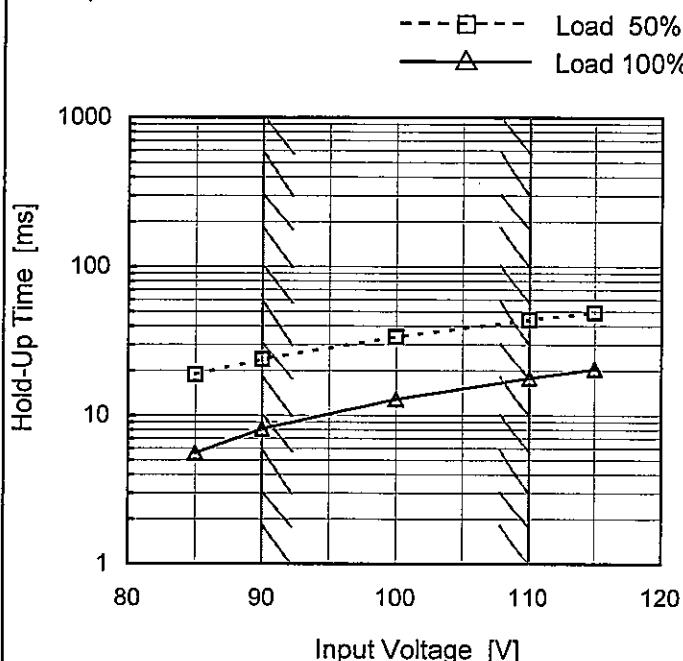
## 2.Values

| Input Voltage [V] | Hold-Up Time [ms] | |
|---|---|---|
| | Load 50% | Load 100% |
| 85 | 19 | 6 |
| 90 | 24 | 8 |
| 100 | 34 | 13 |
| 110 | 44 | 18 |
| 115 | 49 | 21 |
| -- | - | - |
| -- | - | - |
| -- | - | - |
| -- | - | - |

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# COSEL

| Model | GT2-5 |
|---|---|
| Item | Instantaneous Interruption Compensation |
| Object | +5V2.5A |

Temperature     25°C
Testing Circuitry    Figure A

1.Graph

———△——— Input Volt.   90V
– – –☐– – – Input Volt.   100V
—·—○—·— Input Volt.   110V



Load Current [A]

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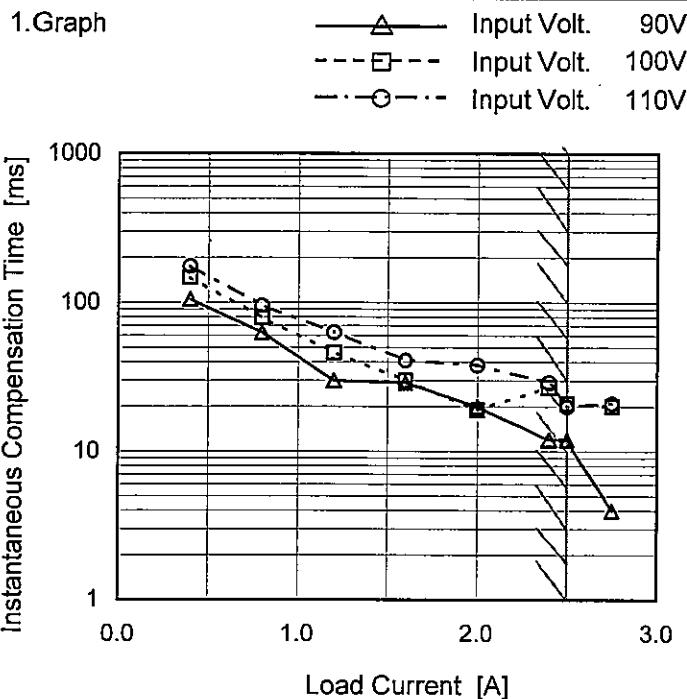
2.Values

| Load Current [A] | Time [ms] | | |
|---|---|---|---|
| | Input Volt. 90[V] | Input Volt. 100[V] | Input Volt. 110[V] |
| 0.00 | - | - | - |
| 0.40 | 105 | 147 | 175 |
| 0.80 | 63 | 79 | 95 |
| 1.20 | 30 | 46 | 63 |
| 1.60 | 29 | 30 | 41 |
| 2.00 | 20 | 19 | 38 |
| 2.40 | 12 | 27 | 29 |
| 2.50 | 12 | 21 | 20 |
| 2.75 | 4 | 20 | 21 |
| -- | - | - | - |
| -- | - | - | - |

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| | |
|---|---|
| Model | GT2-5 |
| Item | Minimum Input Voltage<br>for Regulated Output Voltage |
| Object | +5V2.5A |

Testing Circuitry    Figure A
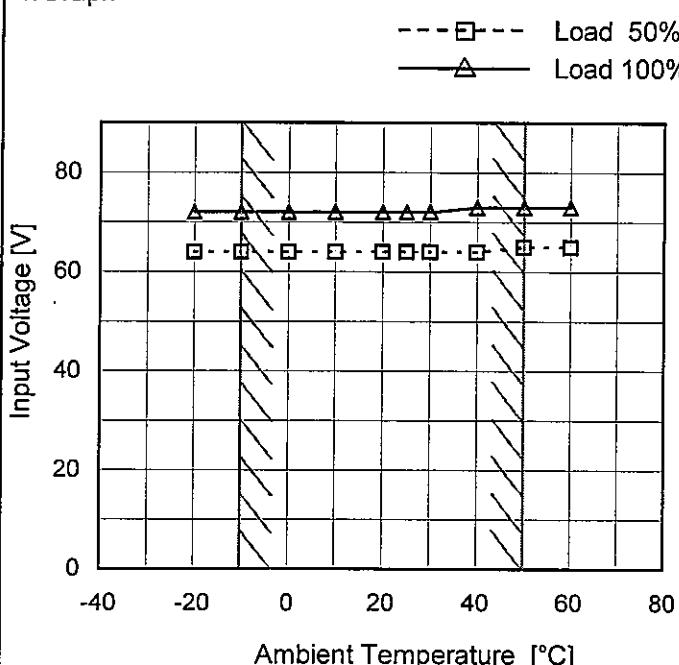
## 1.Graph

- - -◻- - - Load 50%
———△——— Load 100%

Ambient Temperature [°C]

Note: Slanted line shows the range of the rated
ambient temperature.

## 2.Values

| Ambient Temperature [°C] | Input Voltage [V] | |
|---|---|---|
| | Load 50% | Load 100% |
| -20 | 64 | 72 |
| -10 | 64 | 72 |
| 0 | 64 | 72 |
| 10 | 64 | 72 |
| 20 | 64 | 72 |
| 25 | 64 | 72 |
| 30 | 64 | 72 |
| 40 | 64 | 73 |
| 50 | 65 | 73 |
| 60 | 65 | 73 |
| --- | - | - |

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# COSEL

| Model | GT2-5 |
|---|---|
| Item | Overcurrent Protection |
| Object | +5V2.5A |
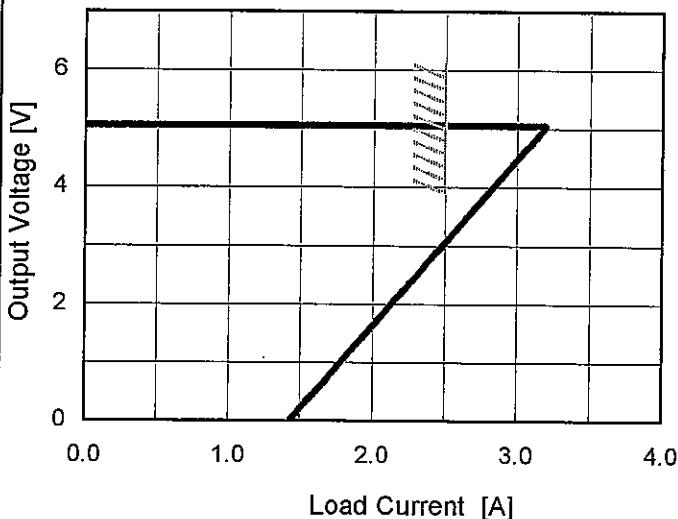
Temperature 25°C
Testing Circuitry Figure A

1.Graph

——— Input Volt. 90V
——— Input Volt. 100V
——— Input Volt. 110V



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

2.Values

| Output Voltage [V] | Load Current [A] | | |
|---|---|---|---|
| | Input Volt. 90[V] | Input Volt. 100[V] | Input Volt. 110[V] |
| 5.00 | 3.20 | 3.19 | 3.19 |
| 4.75 | 3.09 | 3.08 | 3.07 |
| 4.50 | 3.03 | 3.02 | 3.01 |
| 4.00 | 2.84 | 2.87 | 2.86 |
| 3.50 | 2.66 | 2.70 | 2.69 |
| 3.00 | 2.49 | 2.52 | 2.51 |
| 2.50 | 2.31 | 2.33 | 2.33 |
| 2.00 | 2.14 | 2.14 | 2.13 |
| 1.50 | 1.96 | 1.96 | 1.96 |
| 1.00 | 1.80 | 1.79 | 1.79 |
| 0.50 | 1.61 | 1.61 | 1.61 |
| 0.00 | 1.42 | 1.42 | 1.41 |

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Figure A