
Material name : Evaluation data

Customer's product name :

TDK product name : DC-DC converter
CC3-0512DS-E (SIP model)

TDK·Lambda

TDK Corporation
Power Systems Business Group

| | |
|---------|-------------|
| DWG.No. | TRSC-1578-1 |
|---------|-------------|

Issued 2006/12/01

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* The measurement has been done without external output capacitor.
(Except the output ripple noise measurement.)

(Product specification)

| Product name | Input voltage(V) | Output voltage(V) | Output current(mA) | The maximum output power(W) | Ambient temperature(°C) |
|--------------|------------------|-------------------|--------------------|-----------------------------|-------------------------|
| CC3-0512DS-E | 4.5~9 | ±12 ±5% | 0~125 | 3 | -40 ~ +85 *2 |
| | | ±15 ±5% *1 | 0~100 | | |

*1 TRM and -Vout are short-circuited.

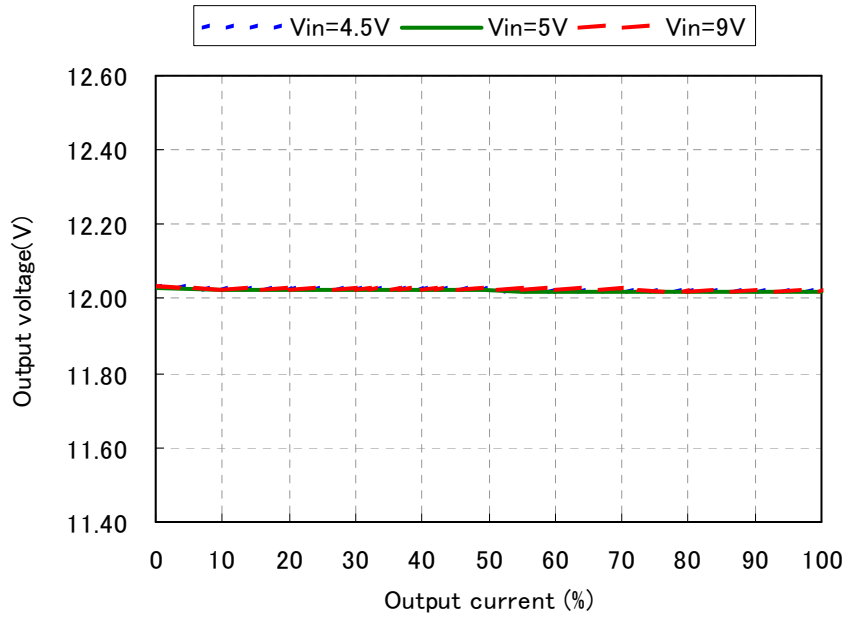
*2 At 50°C or more, output power derating is necessary.

| | | | |
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1. Load regulation

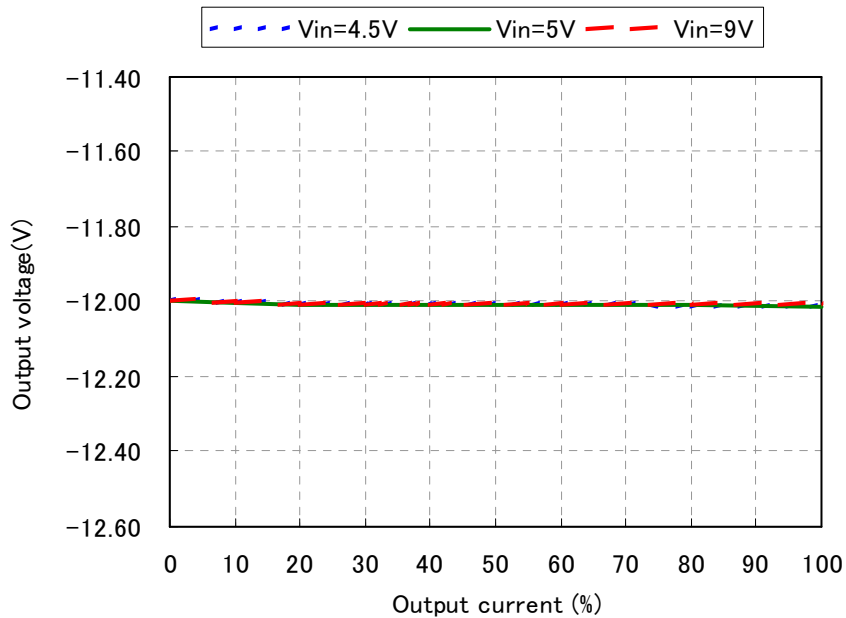
Condition Ta : -40°C

【 +Vout 】



Condition Ta : -40°C

【 -Vout 】



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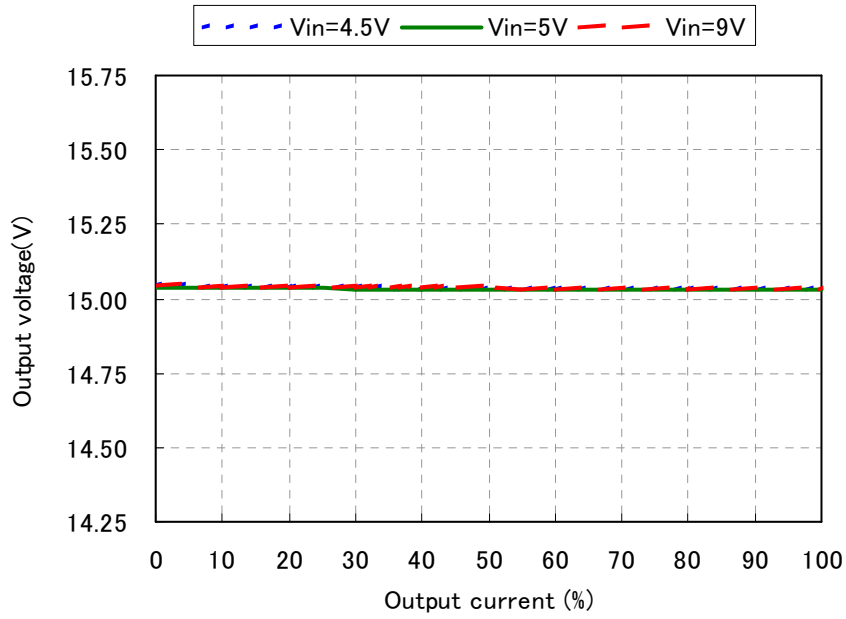
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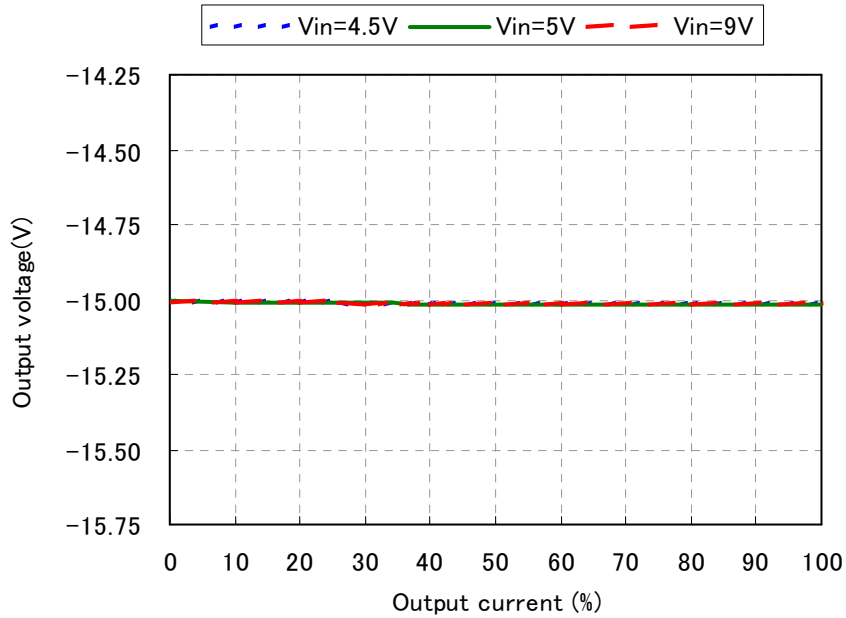
Condition Ta : -40°C
TRM: Short-circuited to -Vout.

【 +Vout 】



Condition Ta : -40°C
TRM: Short-circuited to -Vout.

【 -Vout 】



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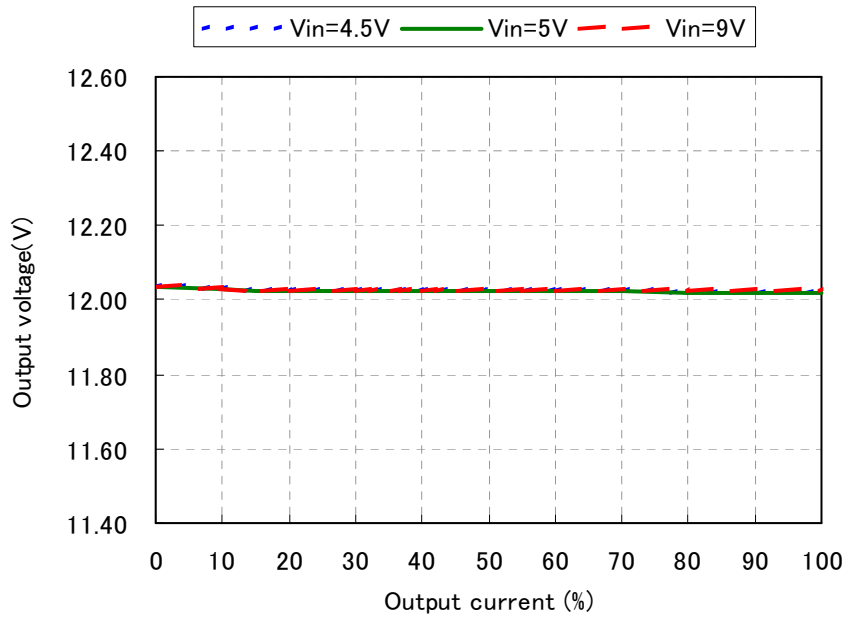
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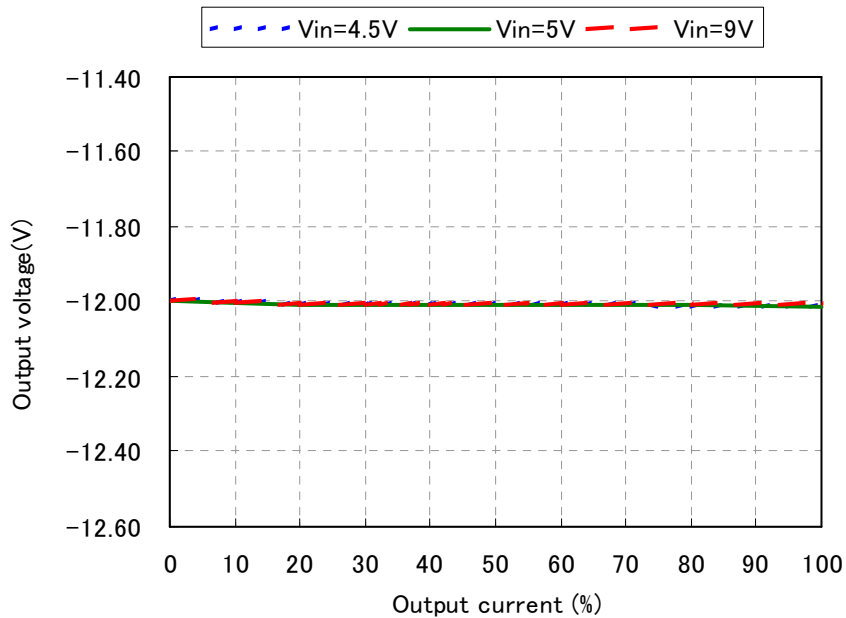
Condition Ta : 25°C

【 +Vout 】



Condition Ta : 25°C

【 -Vout 】



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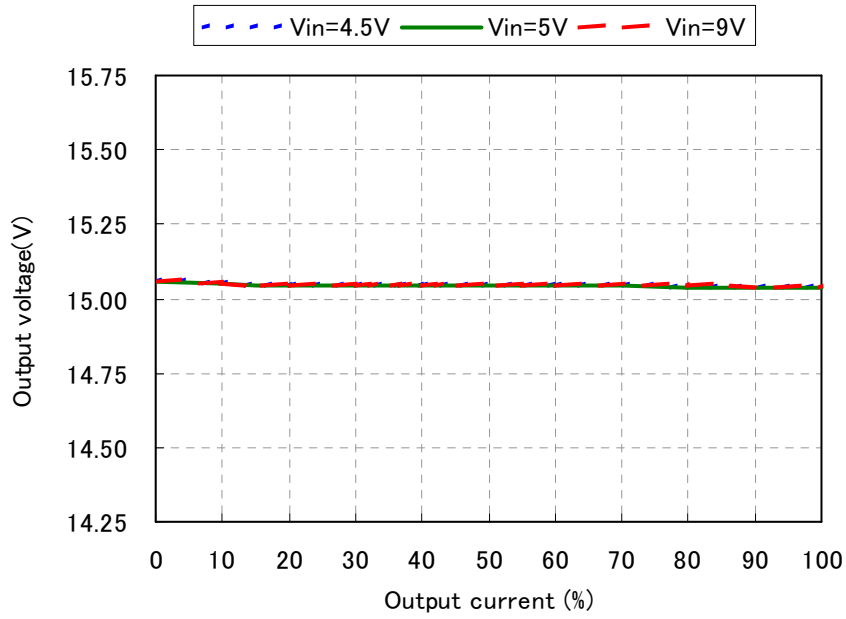
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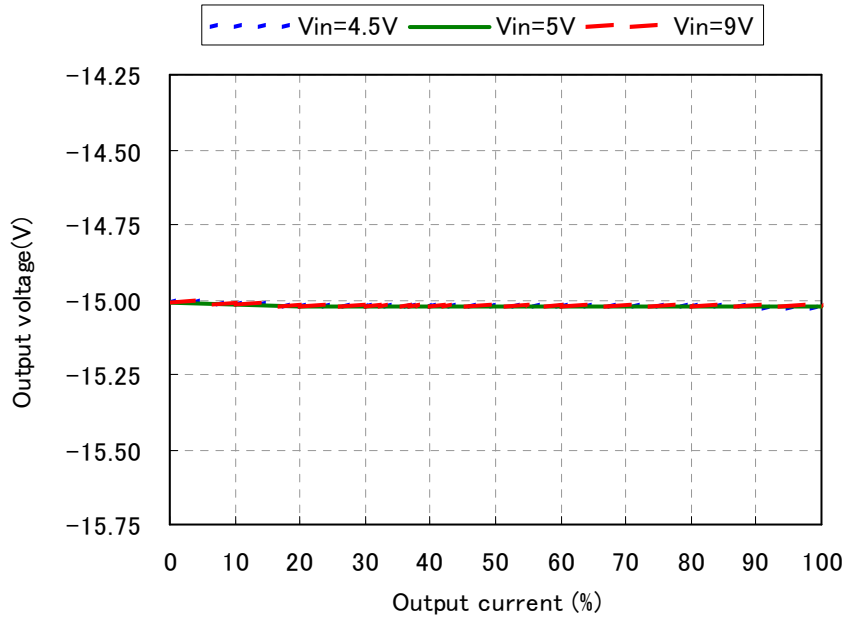
Condition Ta : 25°C
 TRM: Short-circuited to -Vout.

【 +Vout 】



Condition Ta : 25°C
 TRM: Short-circuited to -Vout.

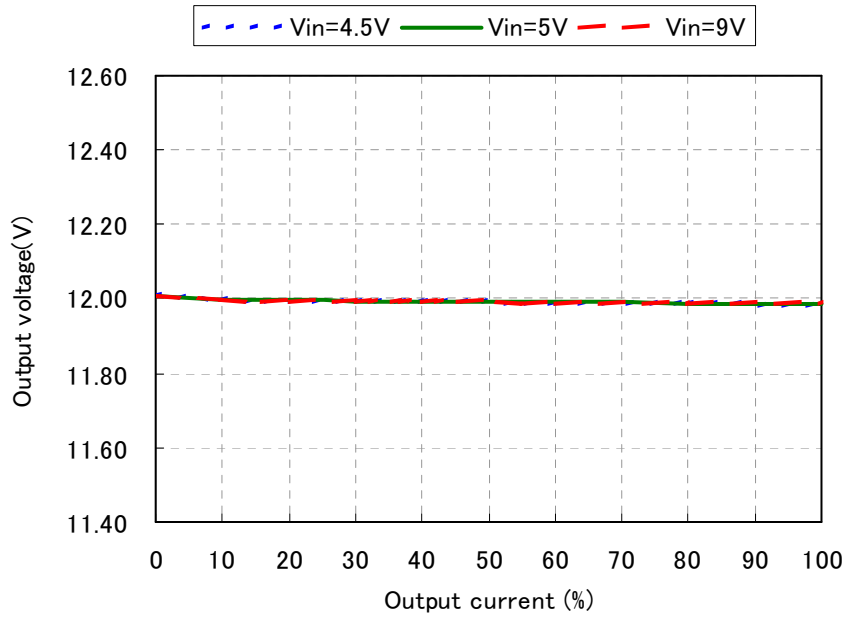
【 -Vout 】



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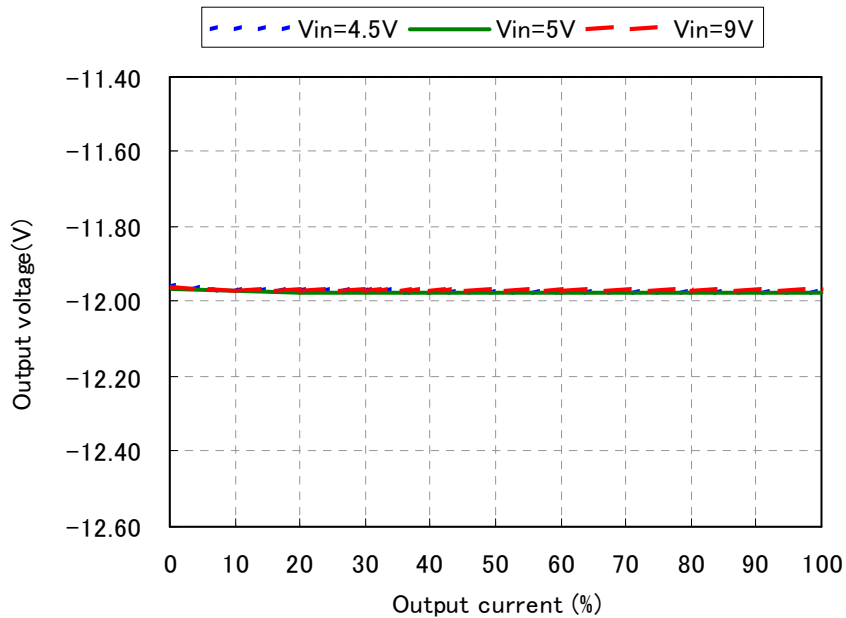
Condition Ta : 85°C

【 +Vout 】



Condition Ta : 85°C

【 -Vout 】



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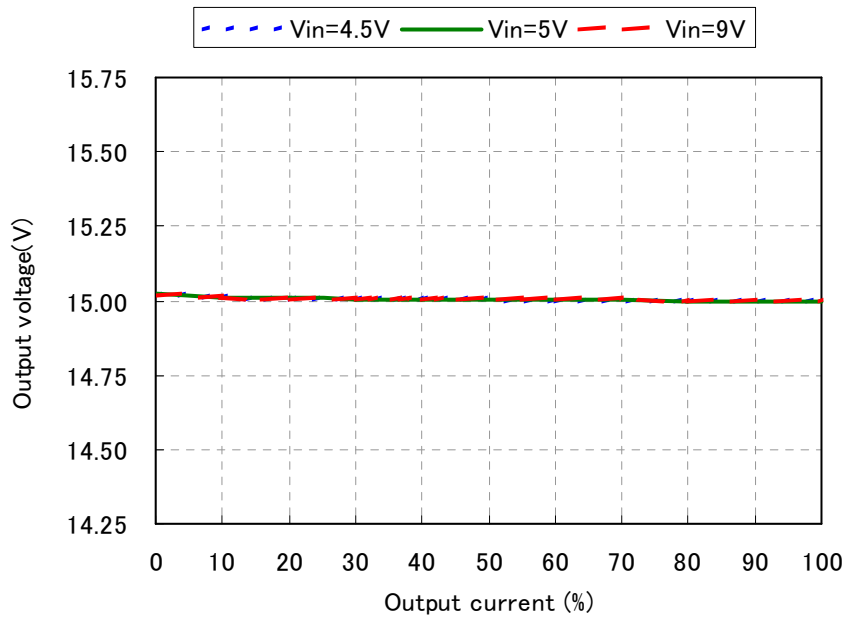
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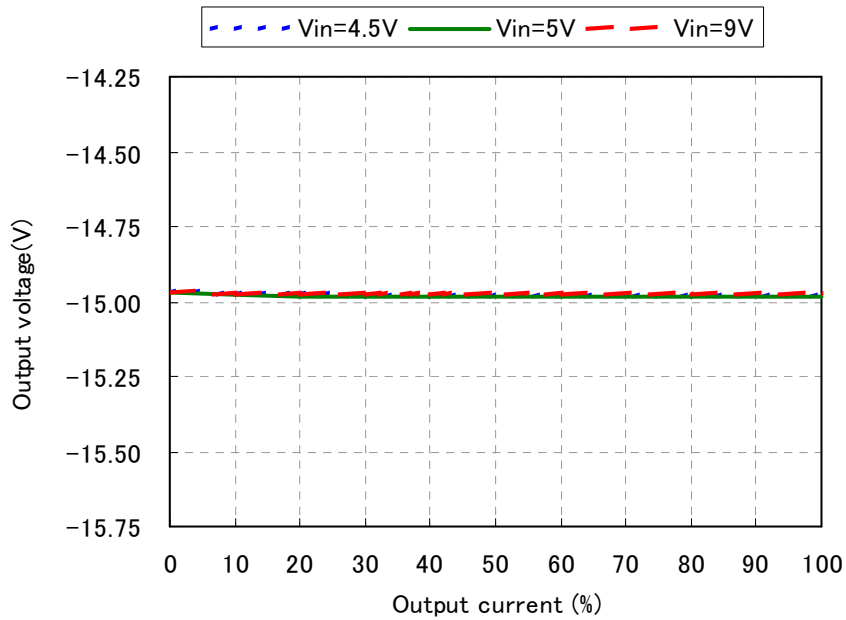
Condition Ta : 85°C
TRM: Short-circuited to -Vout.

【 +Vout 】



Condition Ta : 85°C
TRM: Short-circuited to -Vout.

【 -Vout 】



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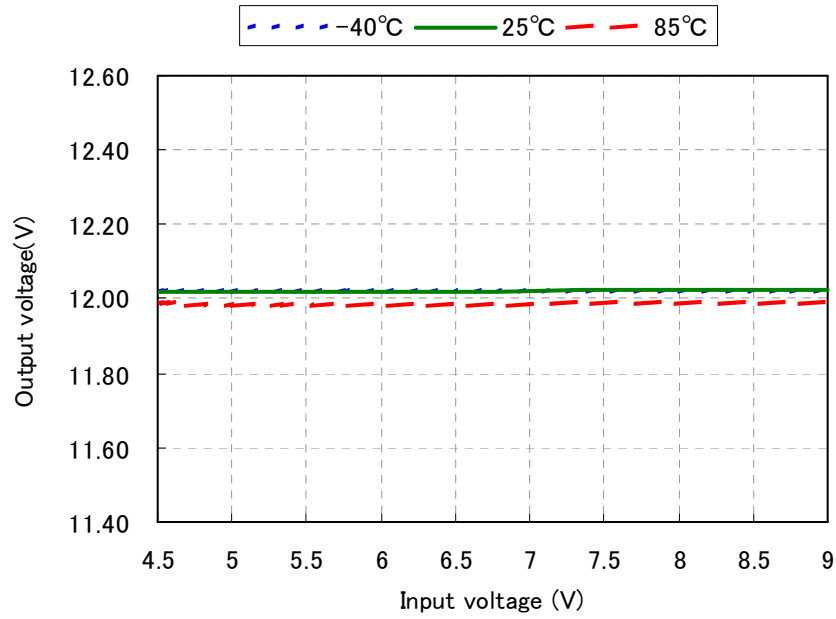
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2. Line regulation

Condition

I_{out} : 100%

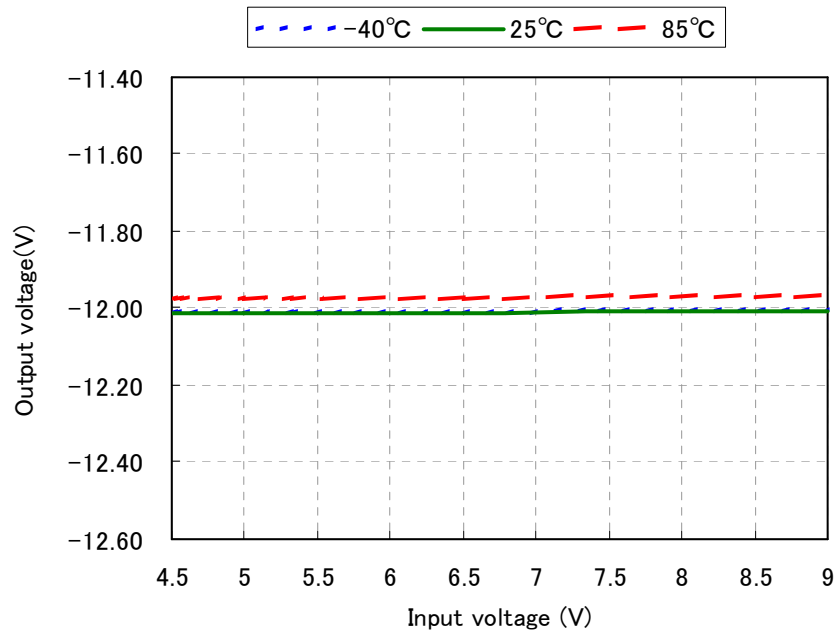
【 +V_{out} 】



Condition

I_{out} : 100%

【 -V_{out} 】



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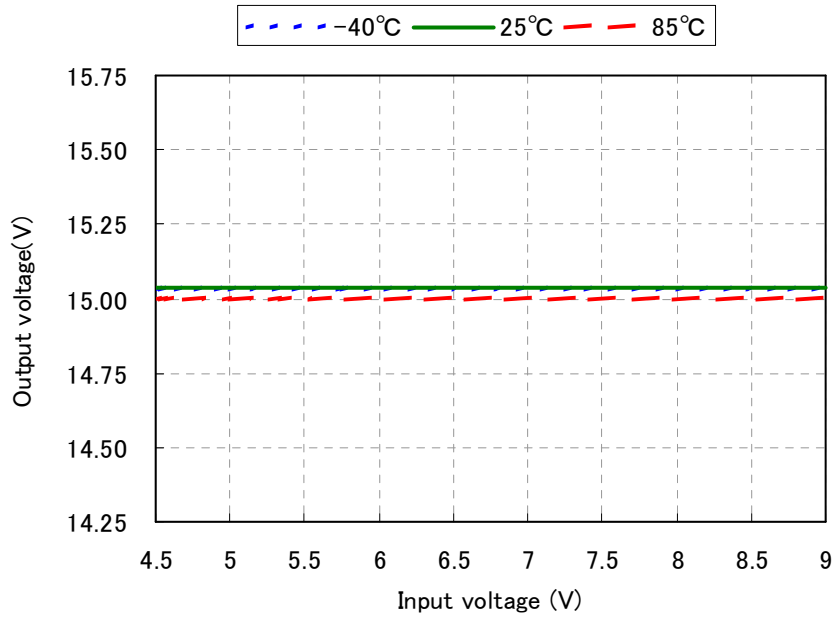
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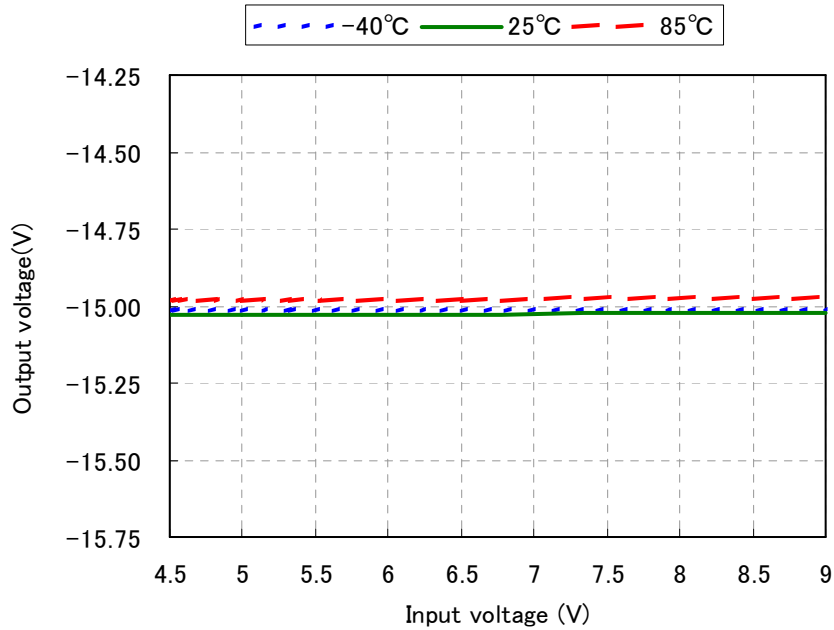
Condition Iout : 100%
TRM: Short-circuited to -Vout.

【 +Vout 】



Condition Iout : 100%
TRM: Short-circuited to -Vout.

【 -Vout 】



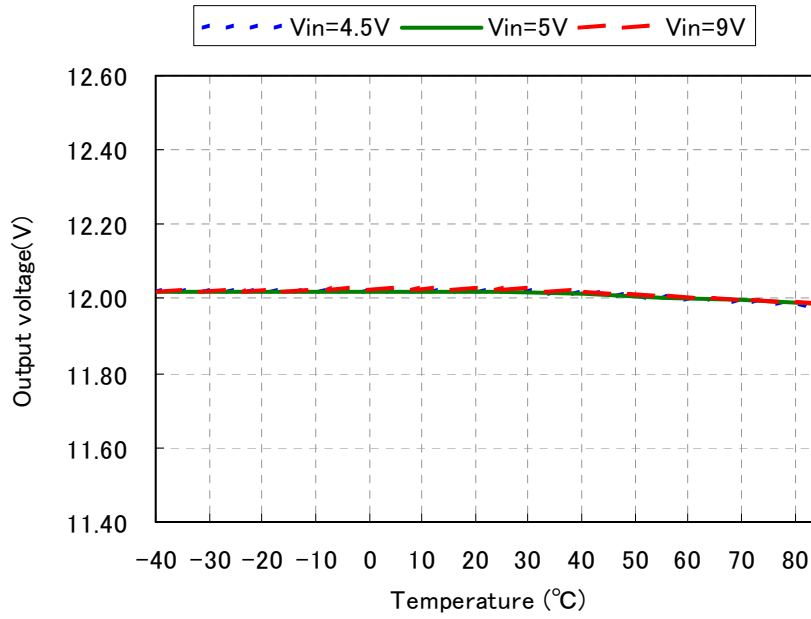
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3. Temperature regulation

Condition

Iout : 100%

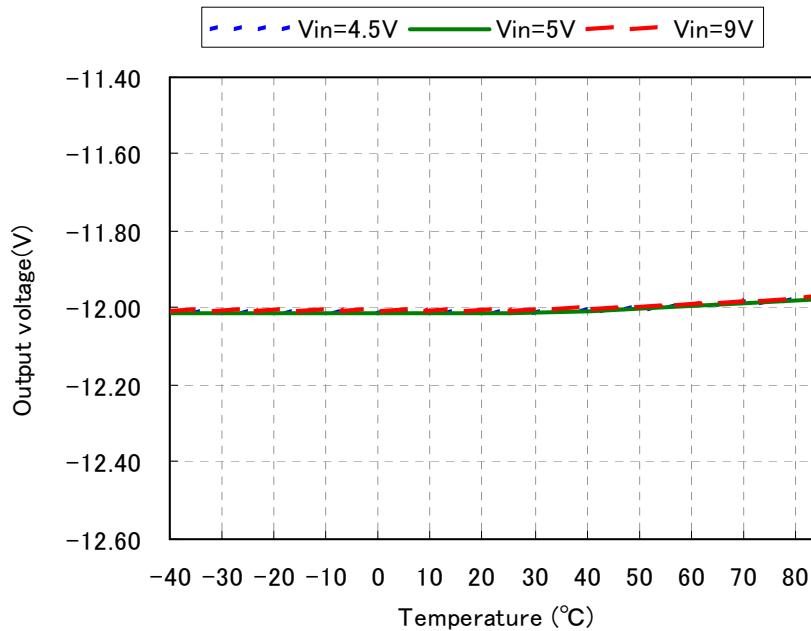
【 +Vout 】



Condition

Iout : 100%

【 -Vout 】



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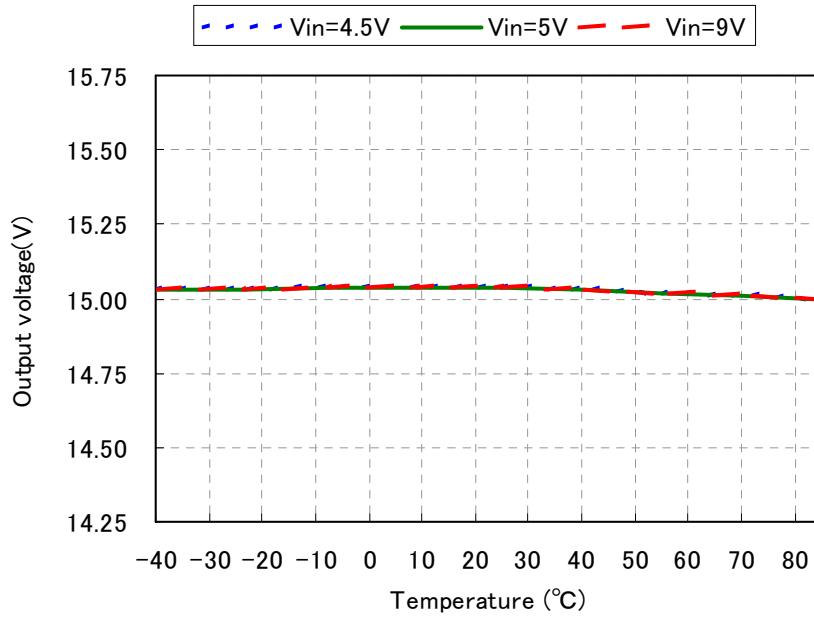
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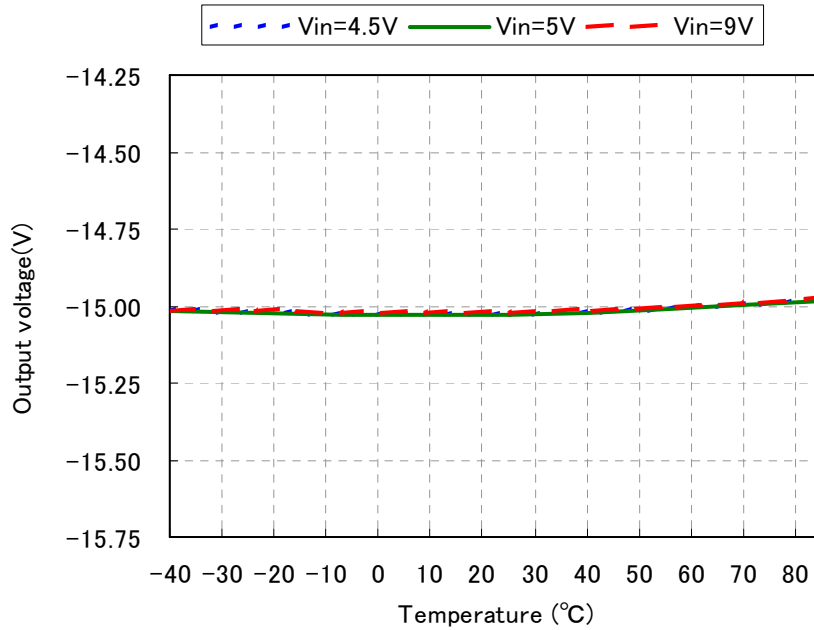
Condition Iout : 100%
 TRM: Short-circuited to -Vout.

【 +Vout 】



Condition Iout : 100%
 TRM: Short-circuited to -Vout.

【 -Vout 】



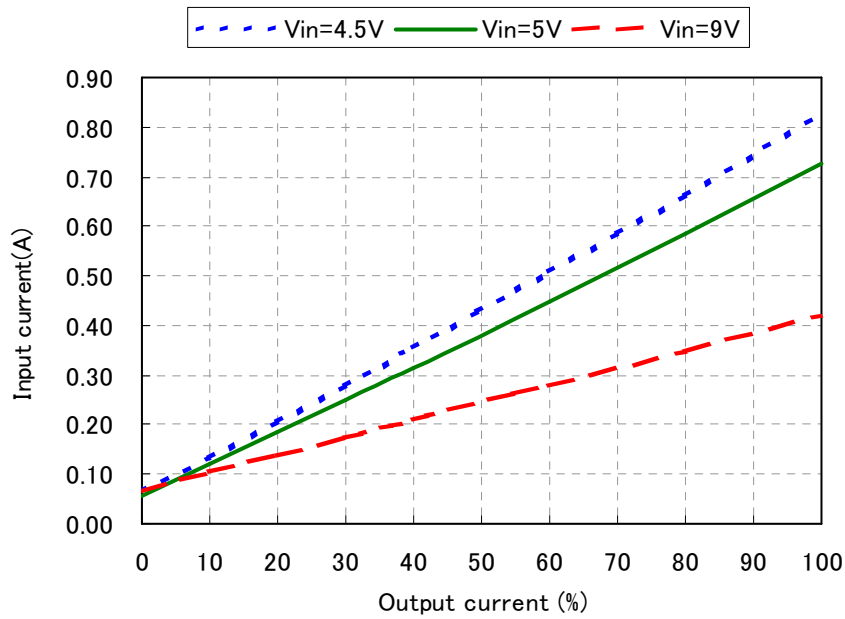
| | | | |
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4. Input current(vs. load current)

Condition

Ta : 25°C

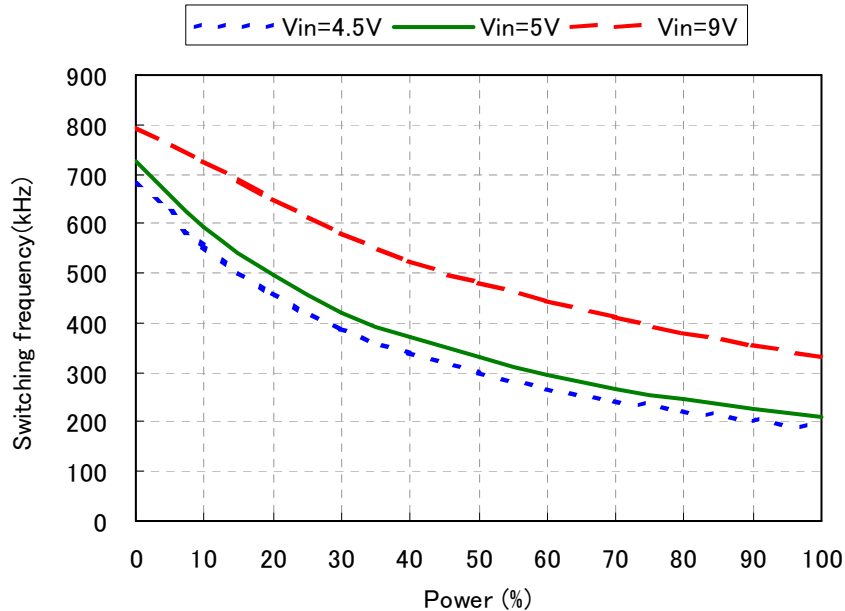
Vout : ±12V



5. Switching frequency(vs. output power)

Condition

Ta : 25°C



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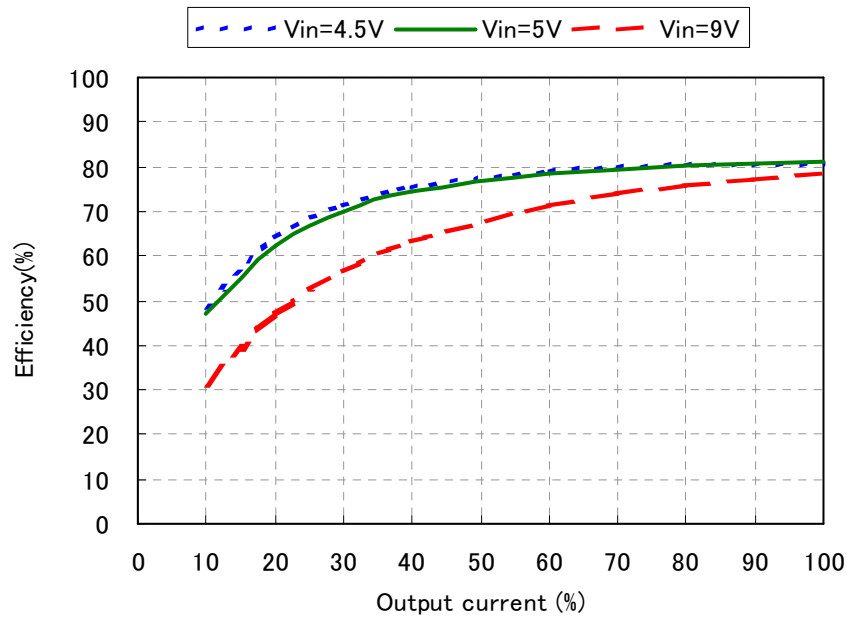
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6. Efficiency(vs. load current)

Condition

Ta : 25°C

Vout : ±12V

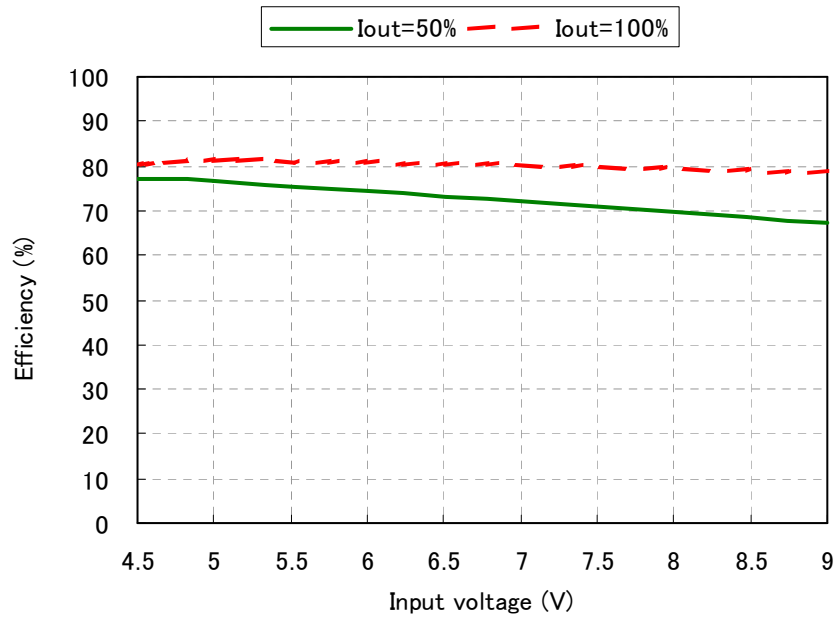


7. Efficiency(vs. input voltage)

Condition

Ta : 25°C

Vout : ±12V



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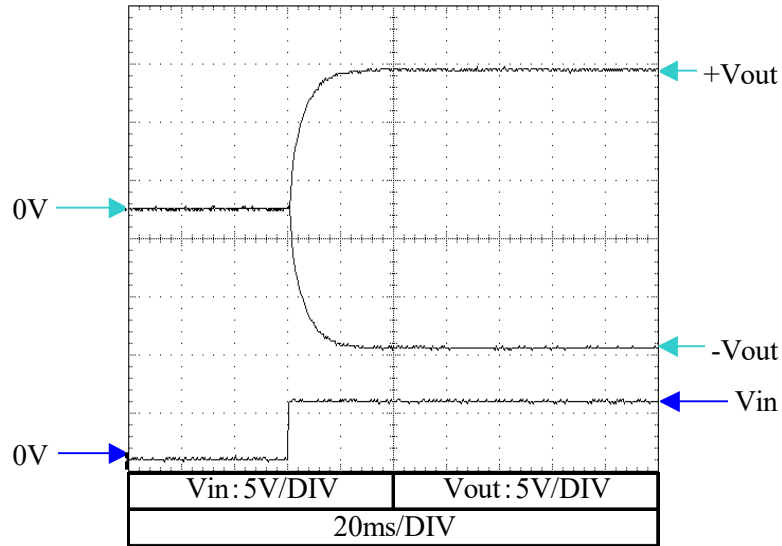
8. Output rise characteristics

Condition

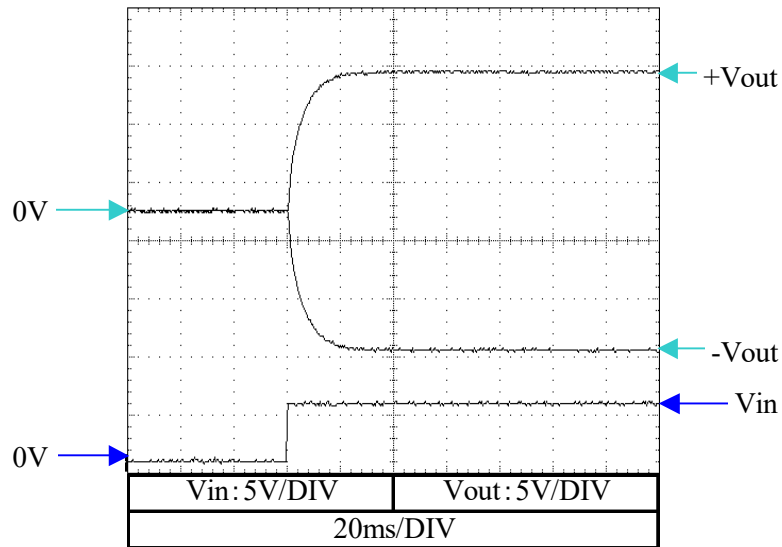
V_{in} : 5V

T_a : 25°C

I_{out} : 0%



I_{out} : 100%



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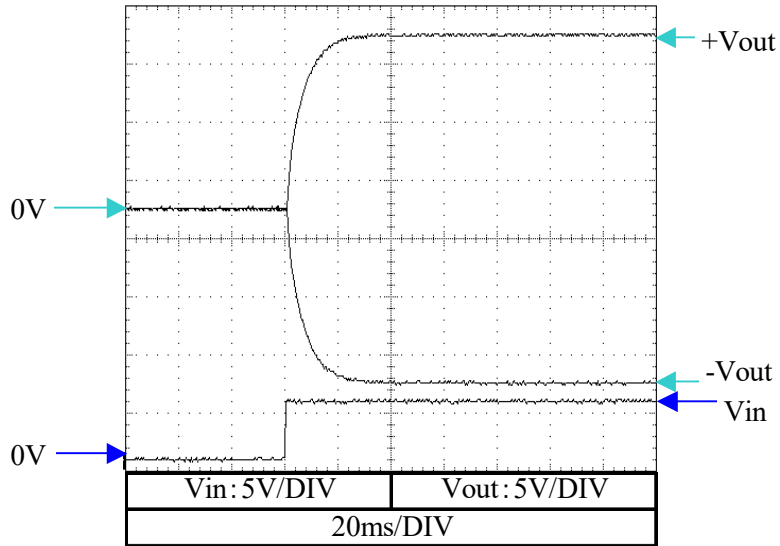
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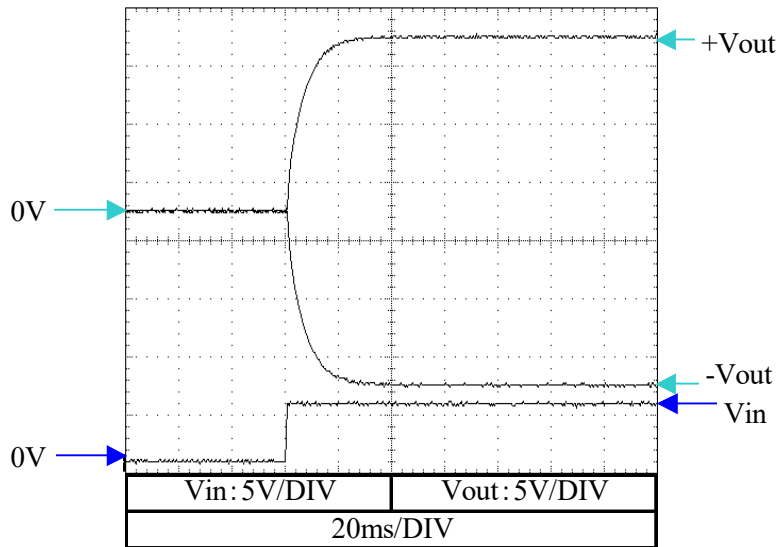
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Condition Vin : 5V
 Ta : 25°C
 TRM: Short-circuited to -Vout.

Iout : 0%



Iout : 100%



Product name or model, title

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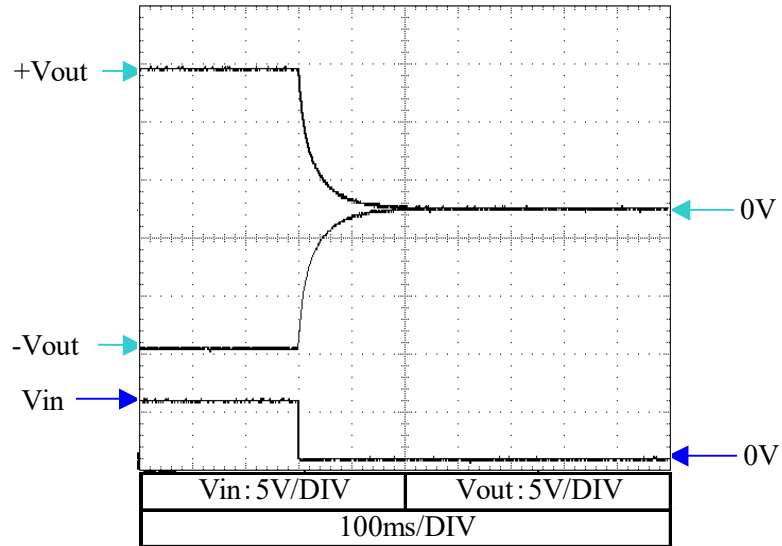
9. Output fall characteristics

Condition

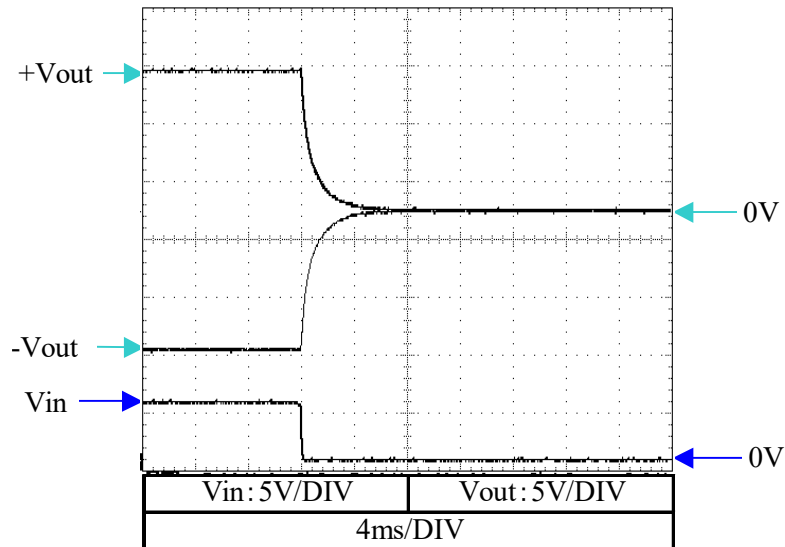
V_{in} : 5V

T_a : 25°C

I_{out} : 0%



I_{out} : 100%



Product name or model, title

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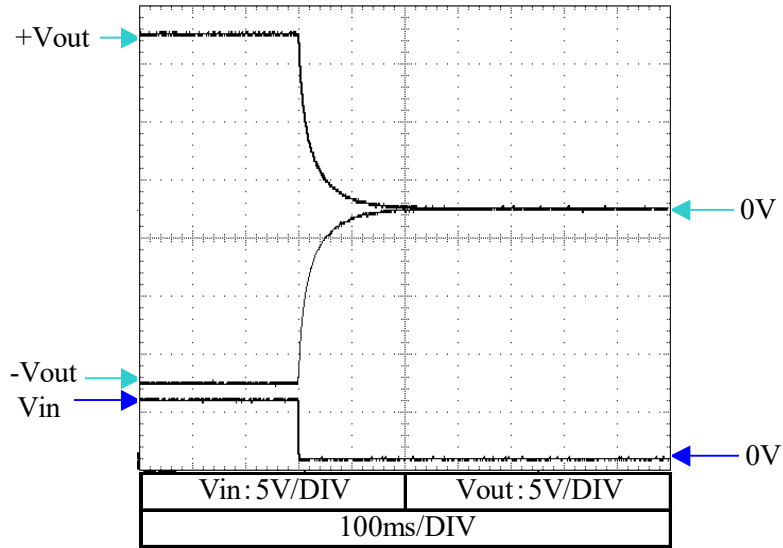
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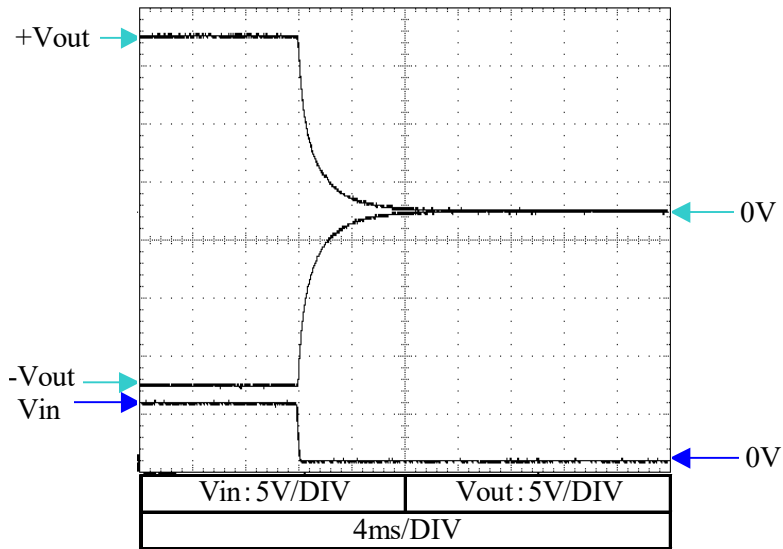
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Condition Vin : 5V
 Ta : 25°C
 TRM: Short-circuited to -Vout.

Iout : 0%



Iout : 100%



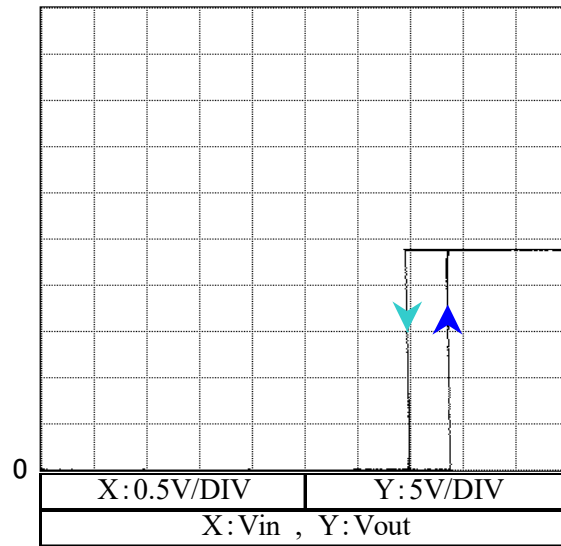
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10. Start/stop input voltage characteristics

Condition

I_{out} : 100%

T_a : 25°C



11. Dynamic load response characteristics

Condition

V_{in} : 5V

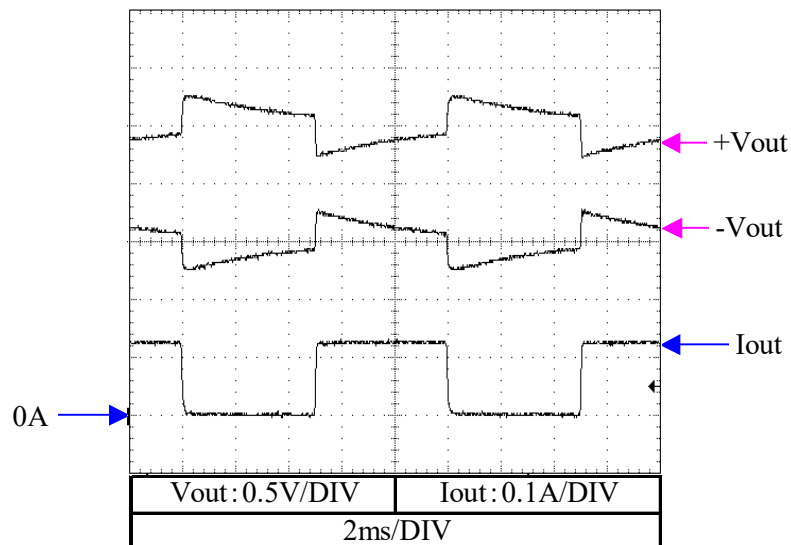
V_{out} : $\pm 12V$

I_{out} : 0% ~ 100%

$T_r=T_f$: 100us

f : 100Hz

T_a : 25°C



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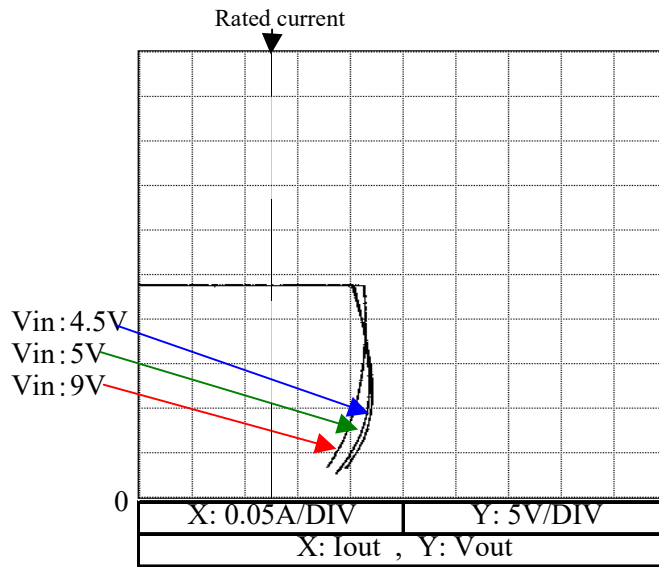
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12. Over current protection characteristics

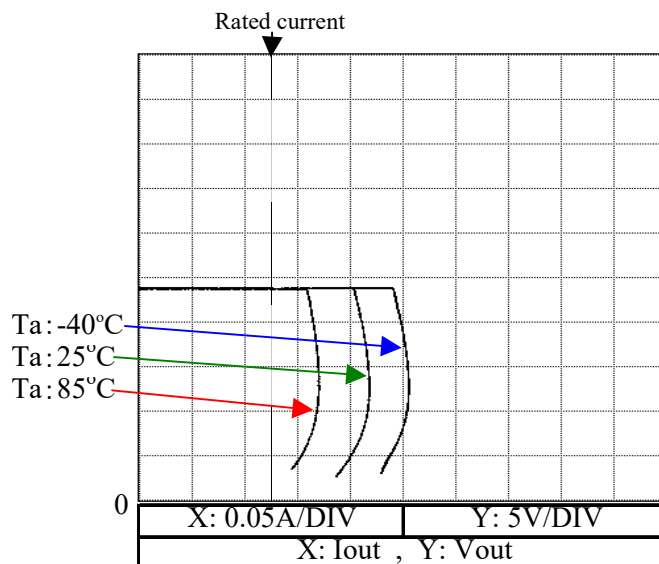
Condition

Ta : 25°C



Condition

Vin : 5V



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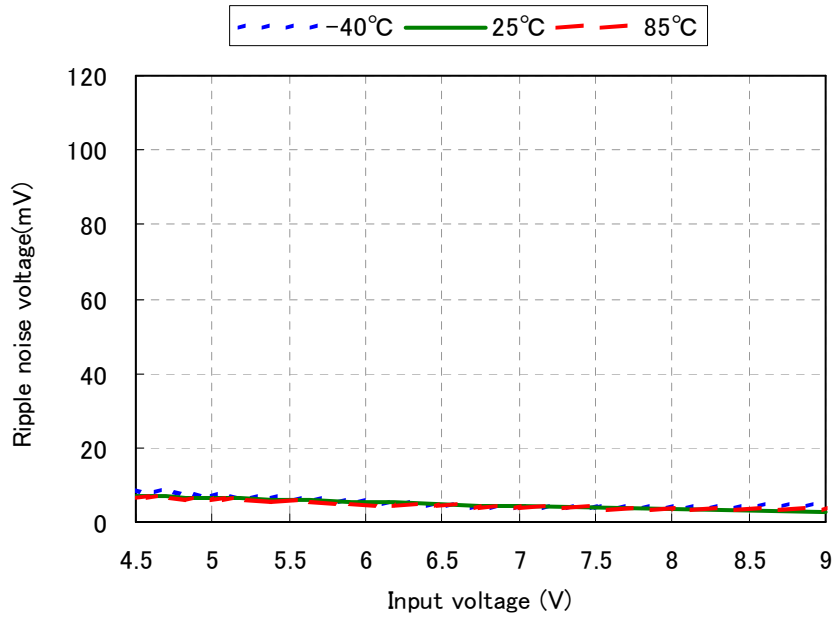
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13. Output ripple and noise characteristics

Condition

Iout : 100%

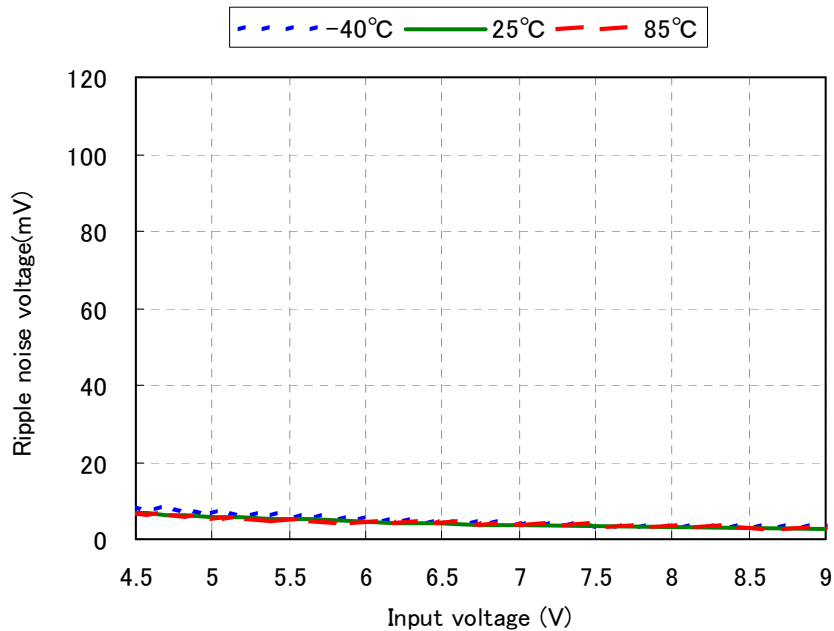
【 +Vout 】



Condition

Iout : 100%

【 -Vout 】



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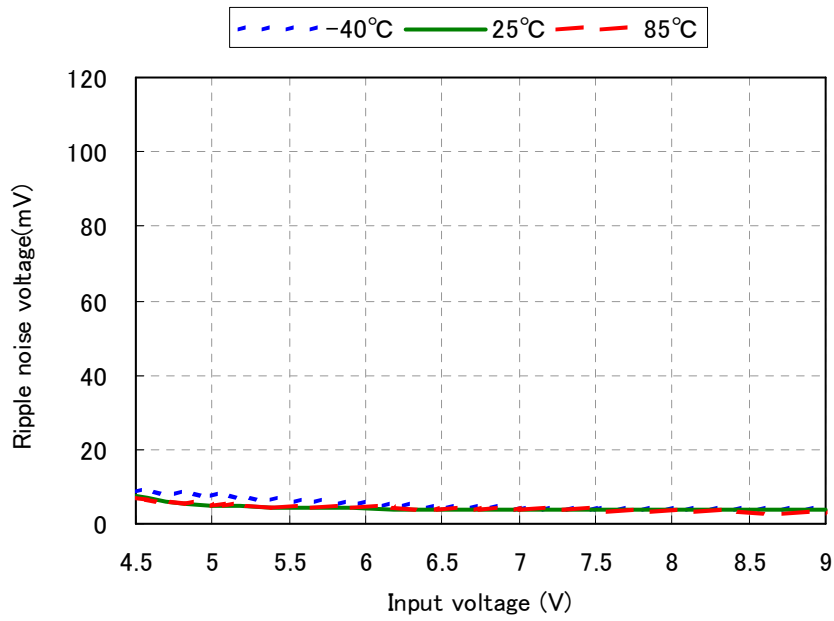
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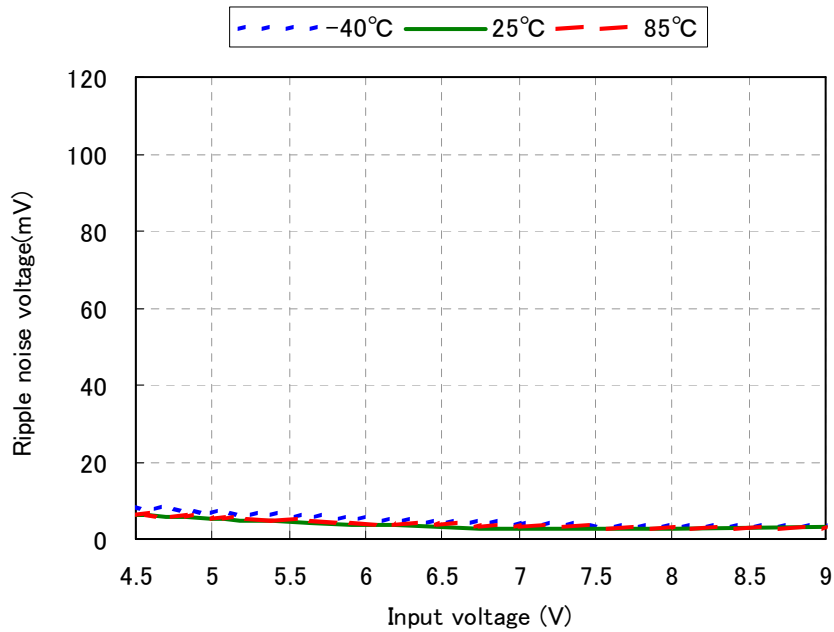
Condition Iout : 100%
 TRM: Short-circuited to -Vout.

【 +Vout 】



Condition Iout : 100%
 TRM: Short-circuited to -Vout.

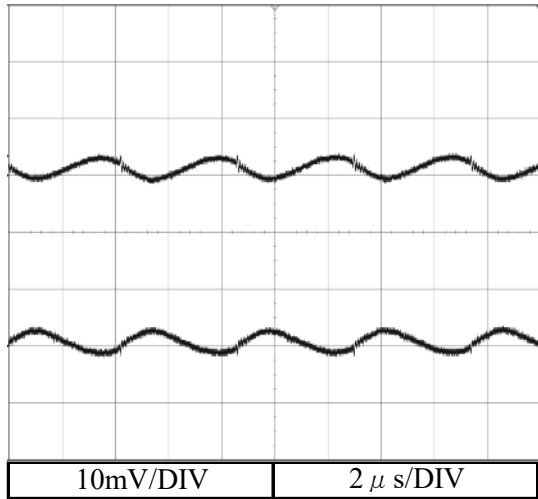
【 -Vout 】



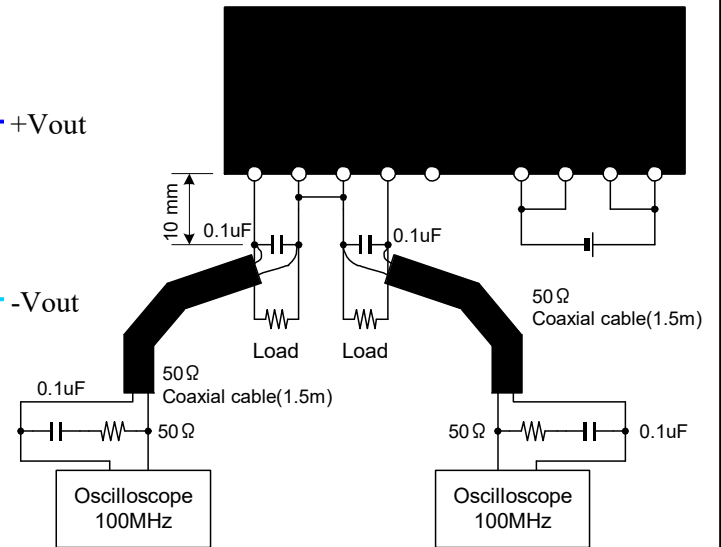
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14. Output ripple and noise waveform

Condition
 V_{in} : 5V
 I_{out} : 100%
 T_a : 25°C

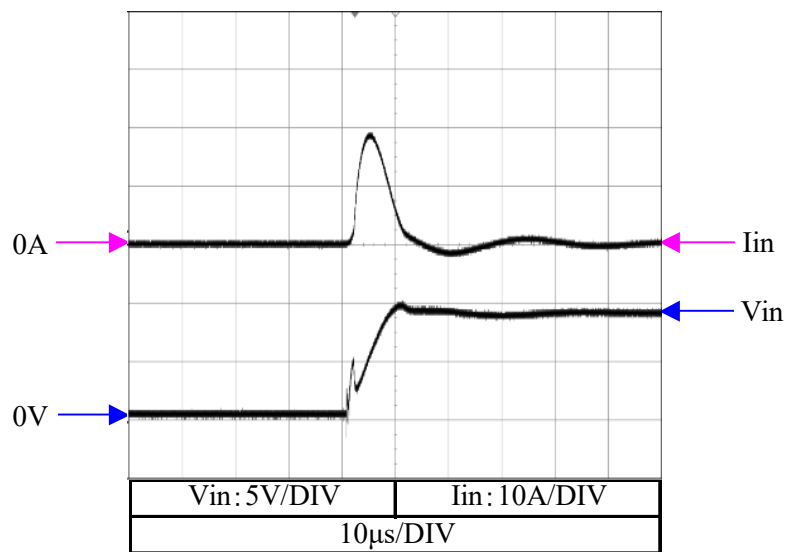


(Measurement circuit)



15. Inrush current waveform

Condition
 V_{in} : 9V
 I_{out} : 100%
 T_a : 25°C



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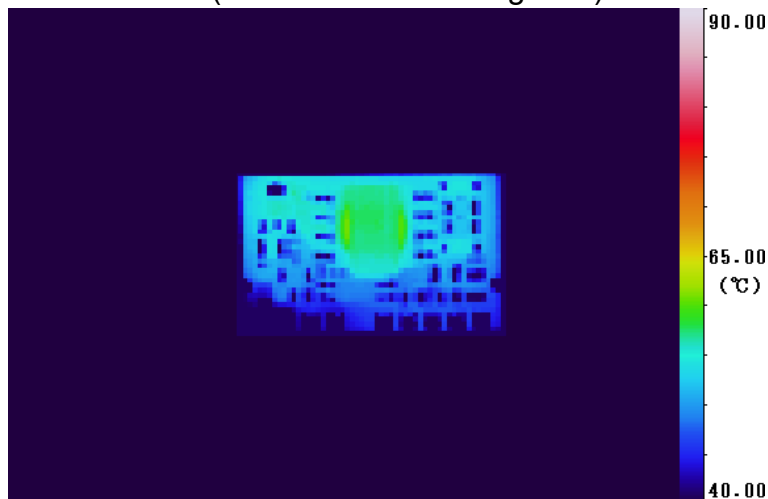
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16. Temperature distribution

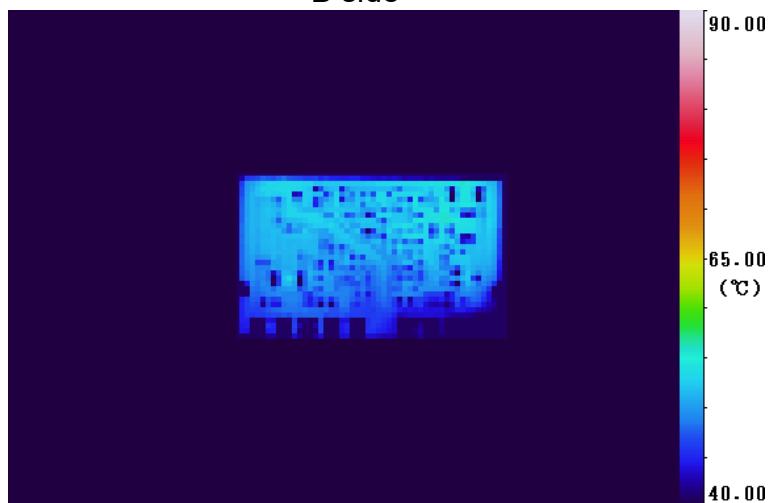
(Thermography)

Condition
 Vin : 5V
 Vout : ±12V
 Iout : 100%
 Ta : 25°C
 Wind velocity: 0m/s

A side(transformer mounting side)



B side



(Main parts)

| rise of temperature(ΔT) | | |
|-----------------------------------|---------------------|-----------------|
| Main swtch(°C) | Rectifier diode(°C) | Transformer(°C) |
| 29.6 | 28.6 | 33.9 |

* We measured the temperatures of parts without the case by using the thermography. Therefore, it might be different a little from the actual temperature.

| | | | |
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