
Material name : Evaluation data

Customer's product name :

TDK product name : DC-DC converter
CC3-1212DS-E (SIP model)

TDK-Lambda

TDK Corporation
Power Systems Business Group

DWG.No.	TRSC-1582-1
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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)
CC3-1212DS-E	9~18	±12 ±5%	0~125	3	-40 ~ +85 *2
		±15 ±5% *1	0~100		

*1 TRM and -Vout are short-circuited.

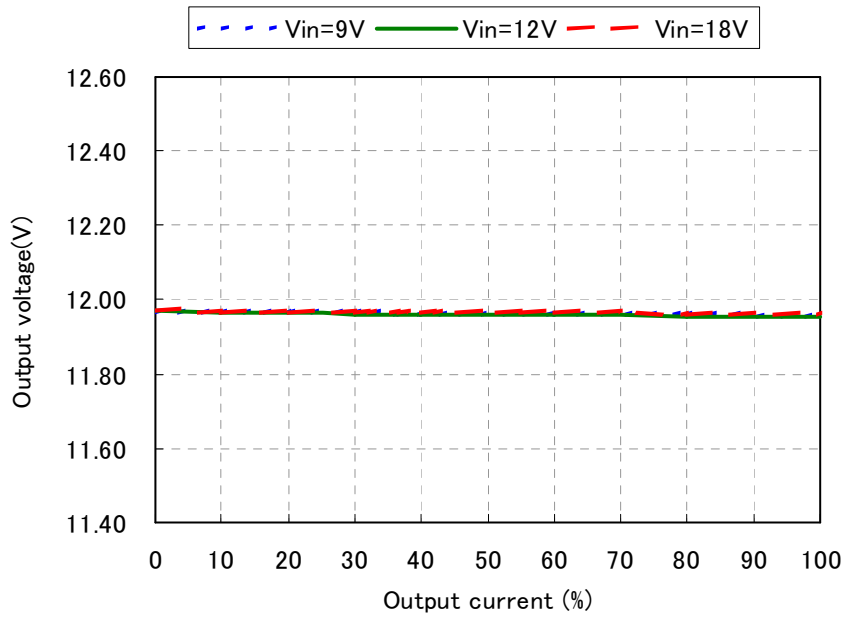
*2 At 50°C or more, output power derating is necessary.

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1. Load regulation

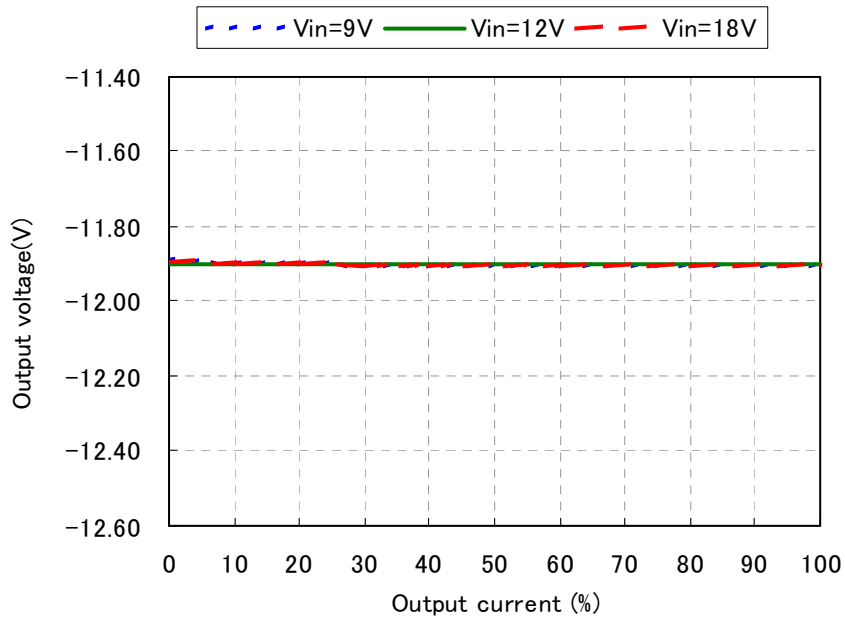
Condition Ta : -40°C

【 +Vout 】



Condition Ta : -40°C

【 -Vout 】



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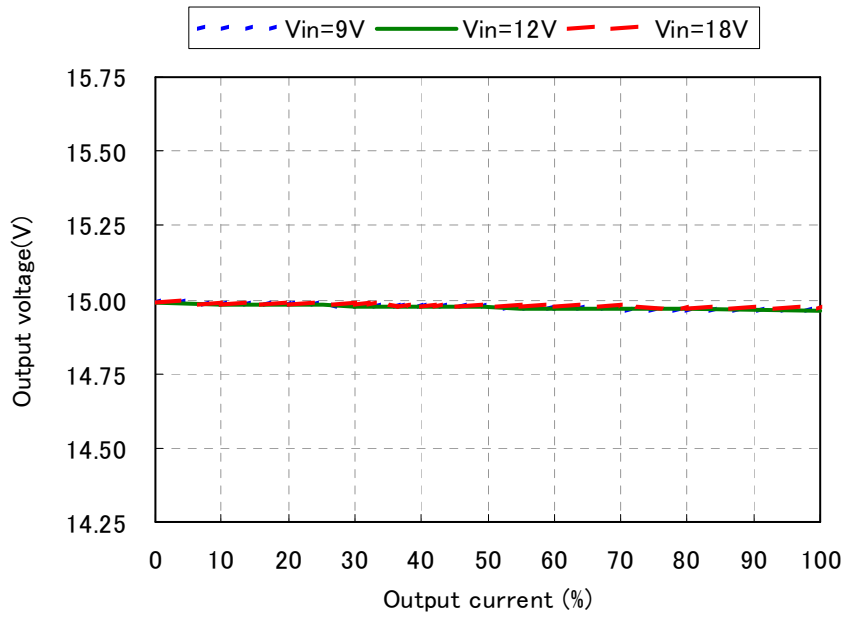
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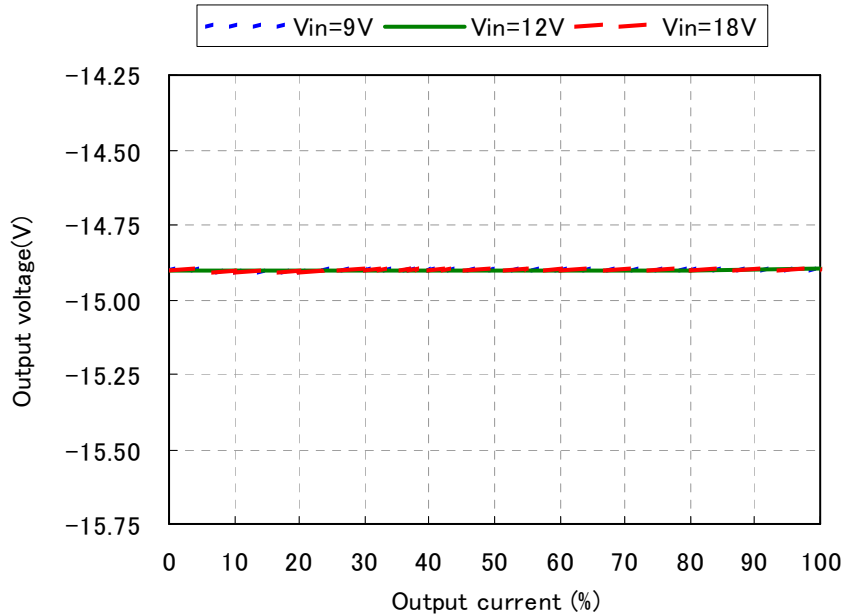
Condition Ta : -40°C
TRM: Short-circuited to -Vout.

【 +Vout 】



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

【 -Vout 】



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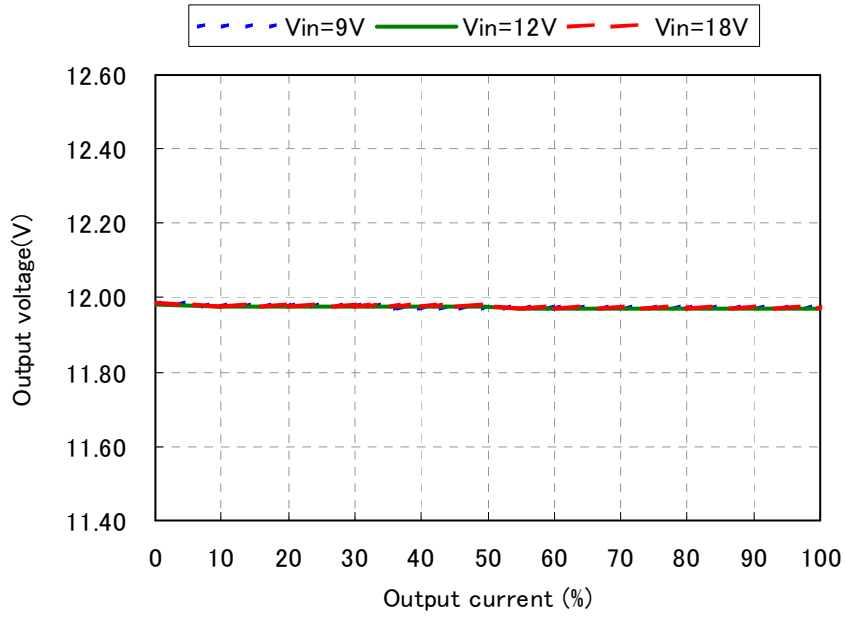
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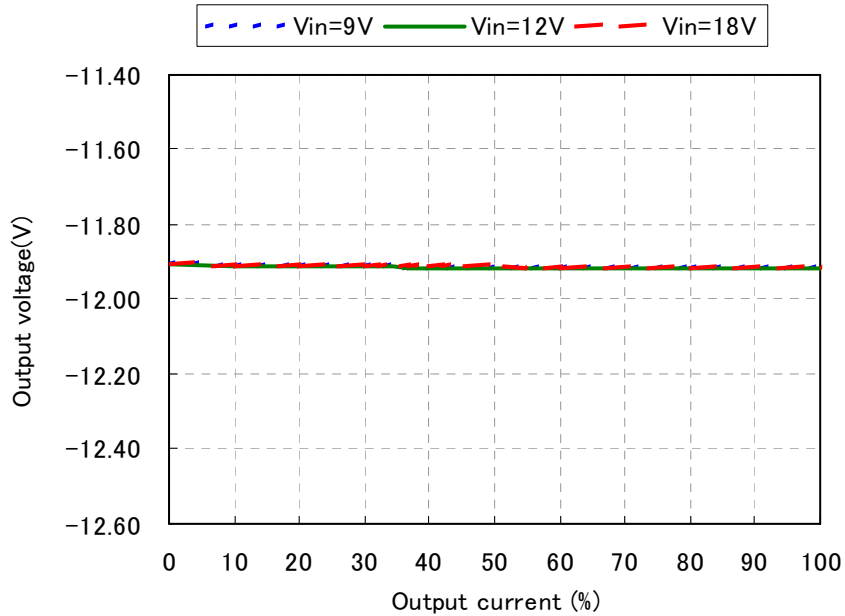
Condition Ta : 25°C

【 +Vout 】



Condition Ta : 25°C

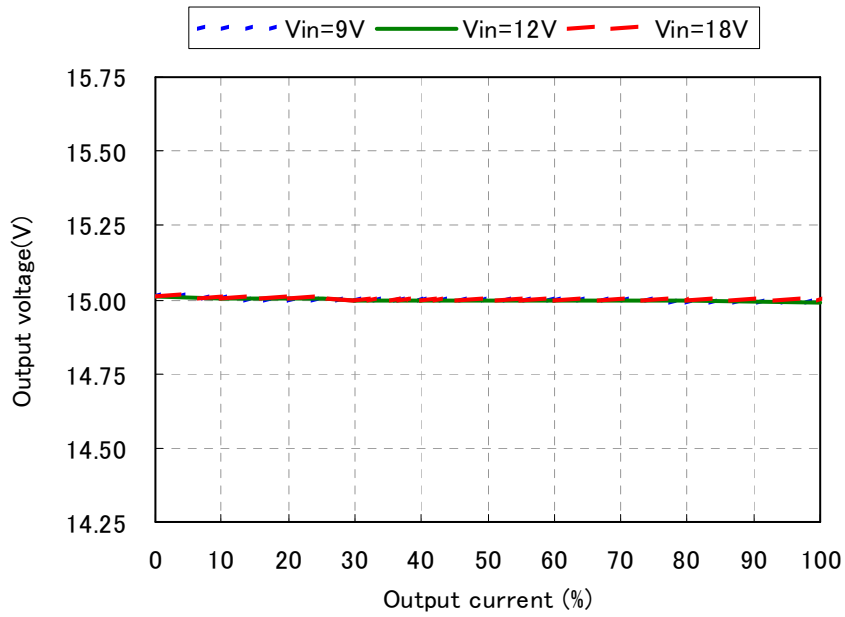
【 -Vout 】



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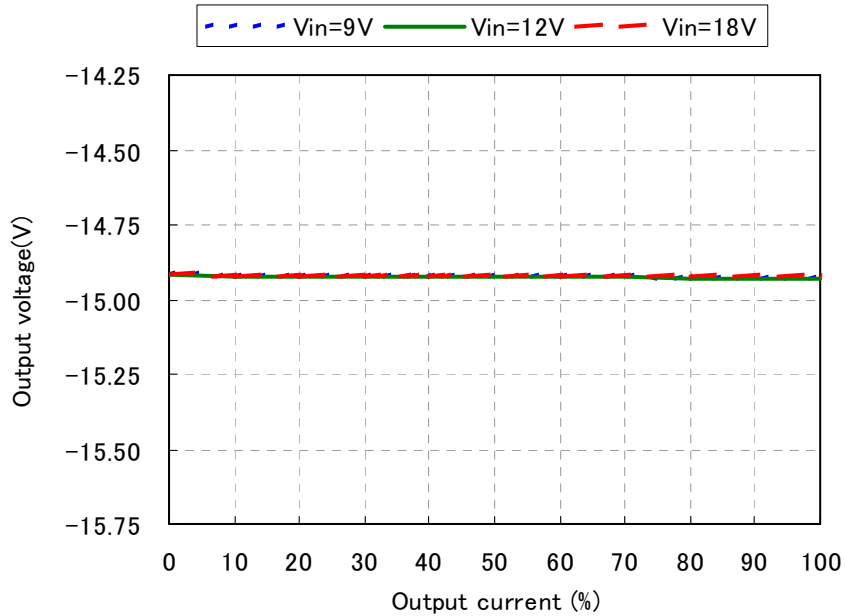
Condition Ta : 25°C
TRM: Short-circuited to -Vout.

【 +Vout 】



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

【 -Vout 】



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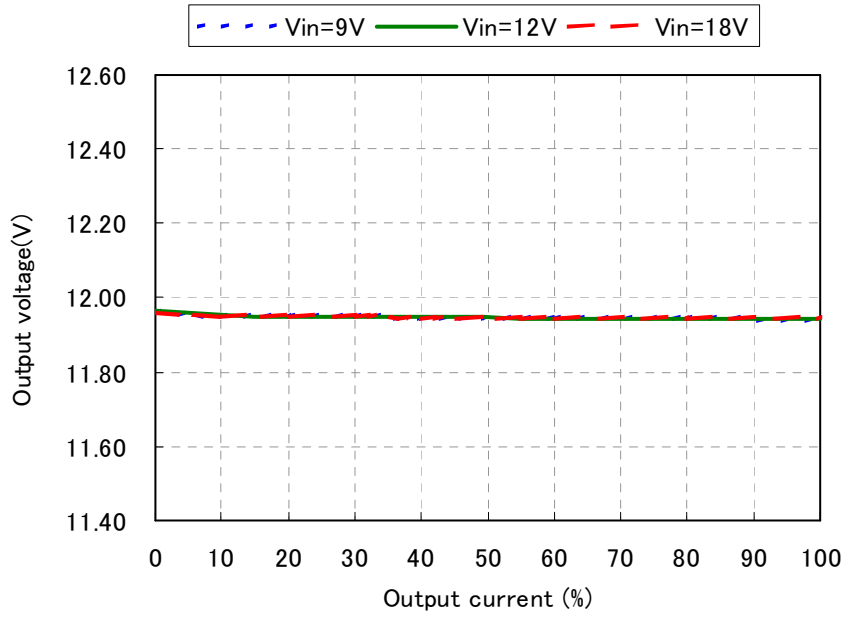
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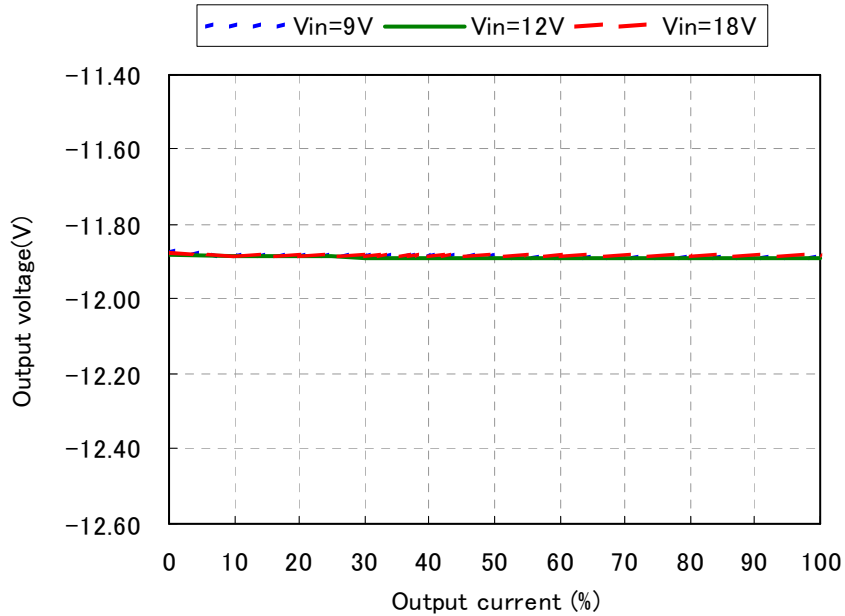
Condition Ta : 85°C

【 +Vout 】



Condition Ta : 85°C

【 -Vout 】



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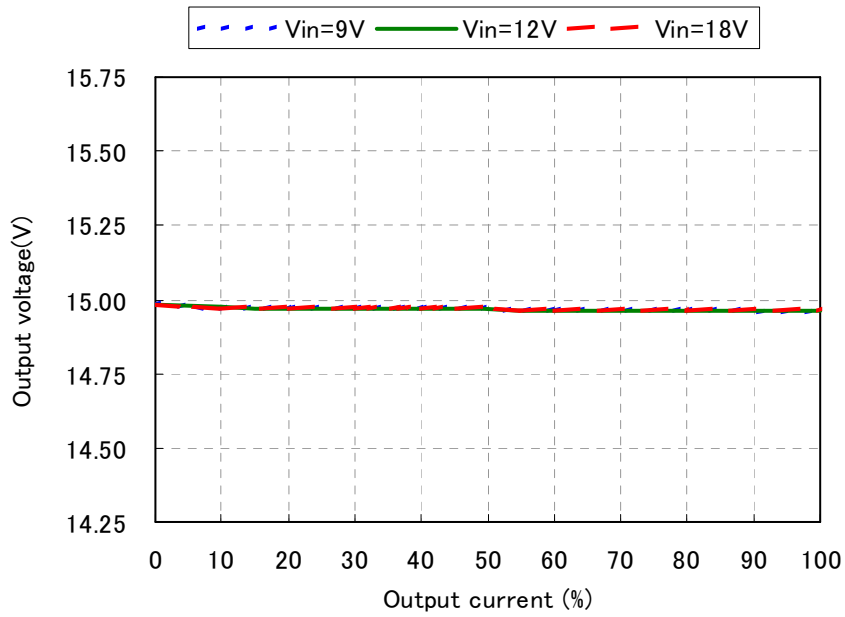
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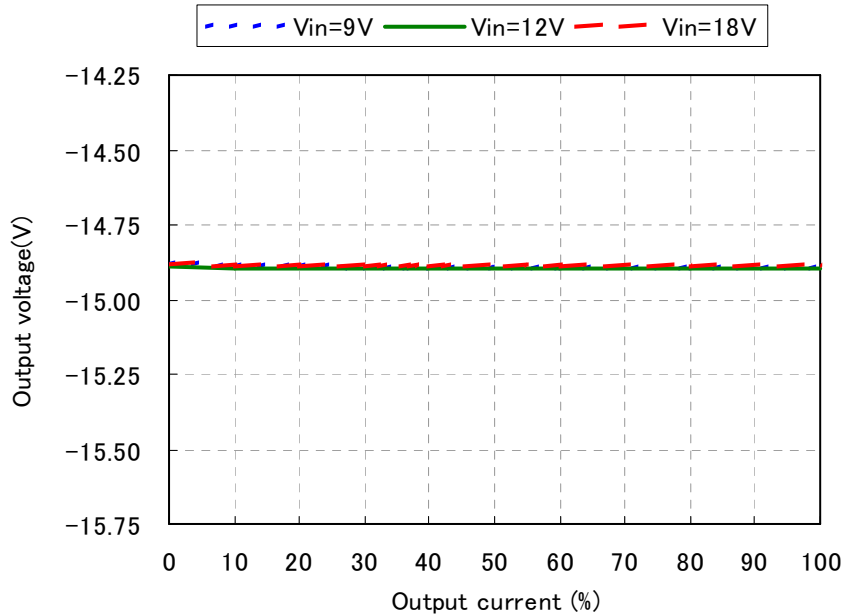
Condition Ta : 85°C
TRM: Short-circuited to -Vout.

【 +Vout 】



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

【 -Vout 】



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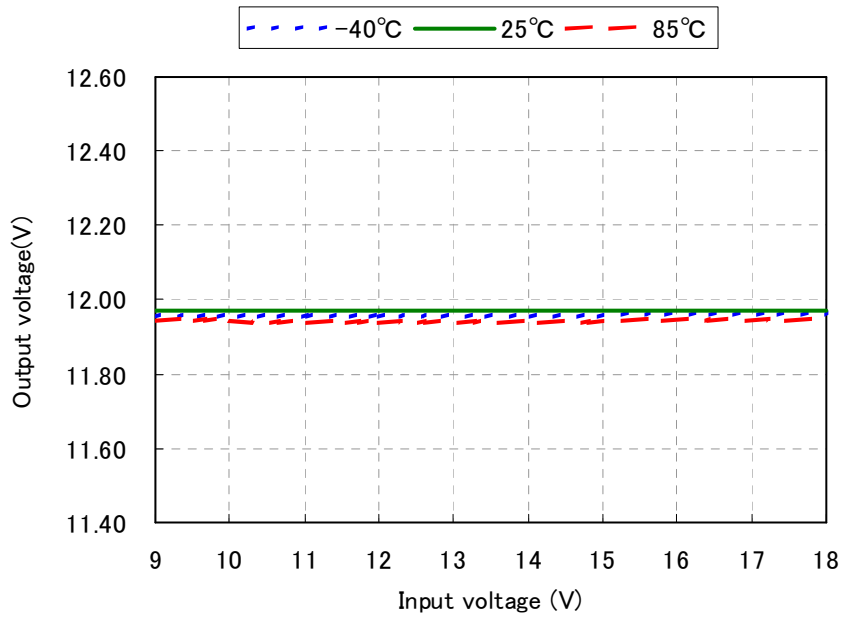
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2. Line regulation

Condition

Iout : 100%

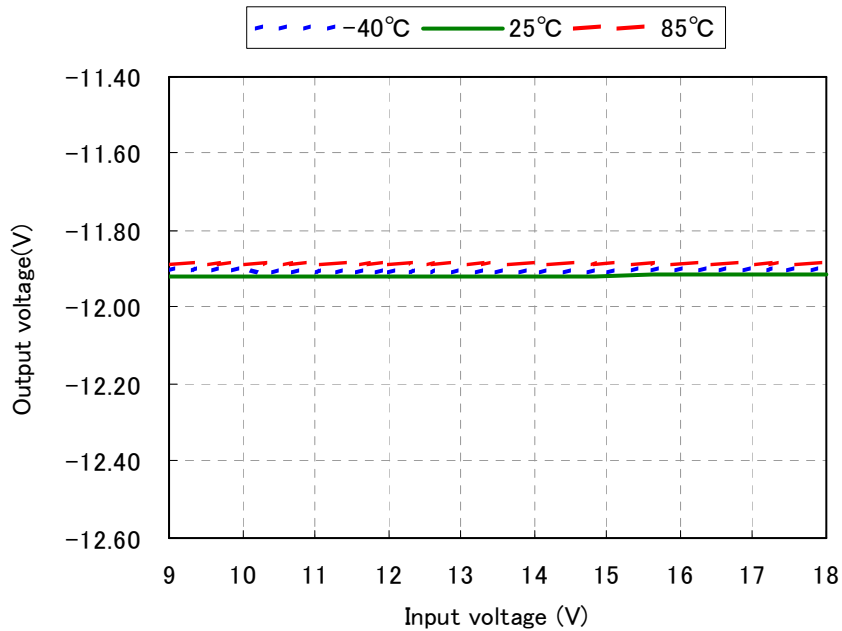
【 +Vout 】



Condition

Iout : 100%

【 -Vout 】



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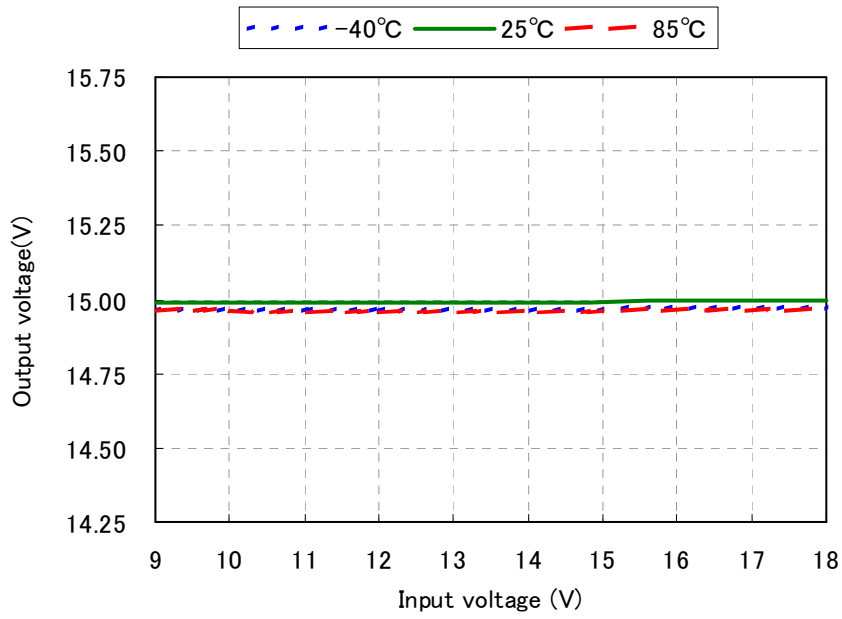
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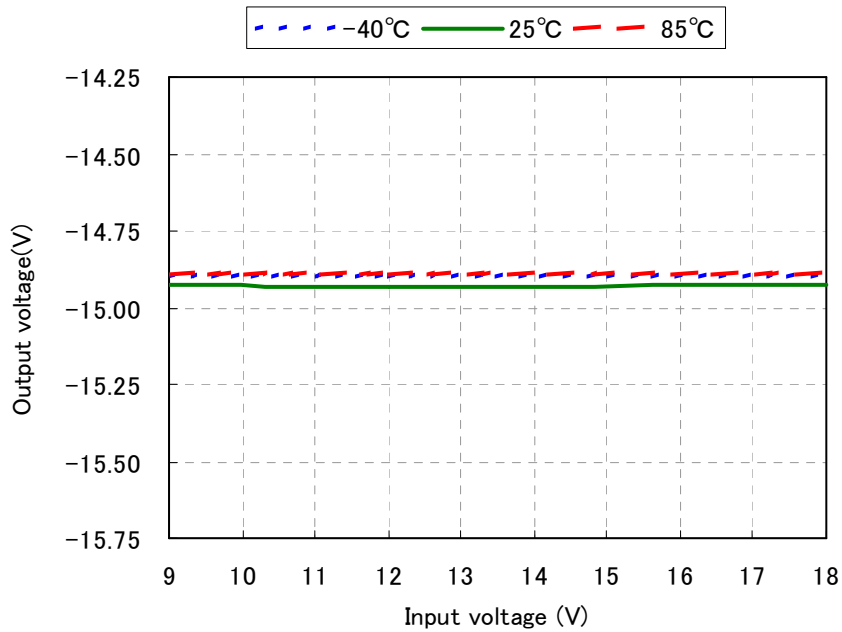
Condition Iout : 100%
 TRM: Short-circuited to -Vout.

【 +Vout 】



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

【 -Vout 】



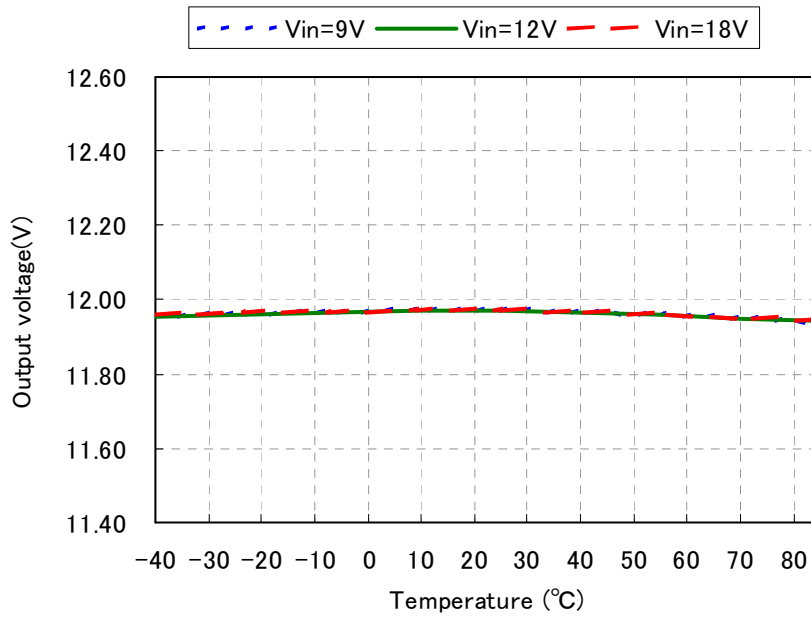
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3. Temperature regulation

Condition

lout : 100%

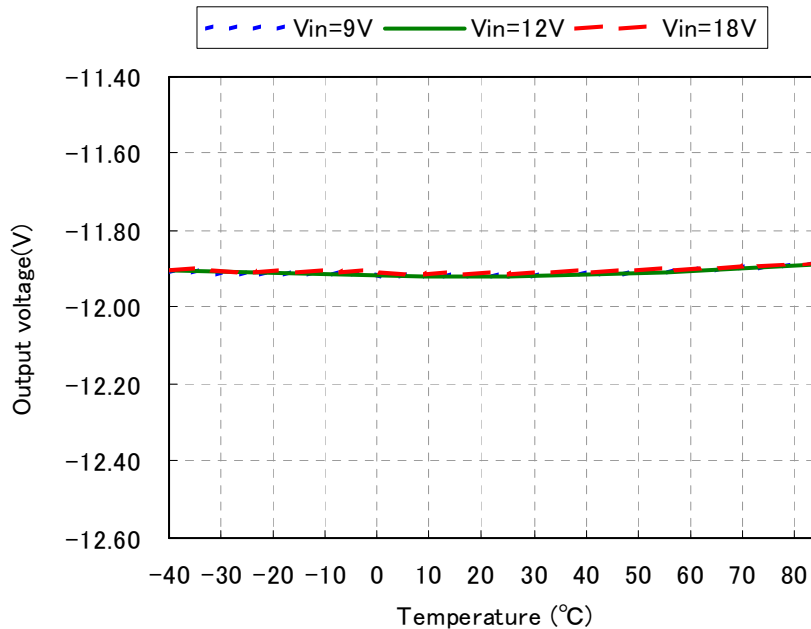
【 +Vout 】



Condition

lout : 100%

【 -Vout 】



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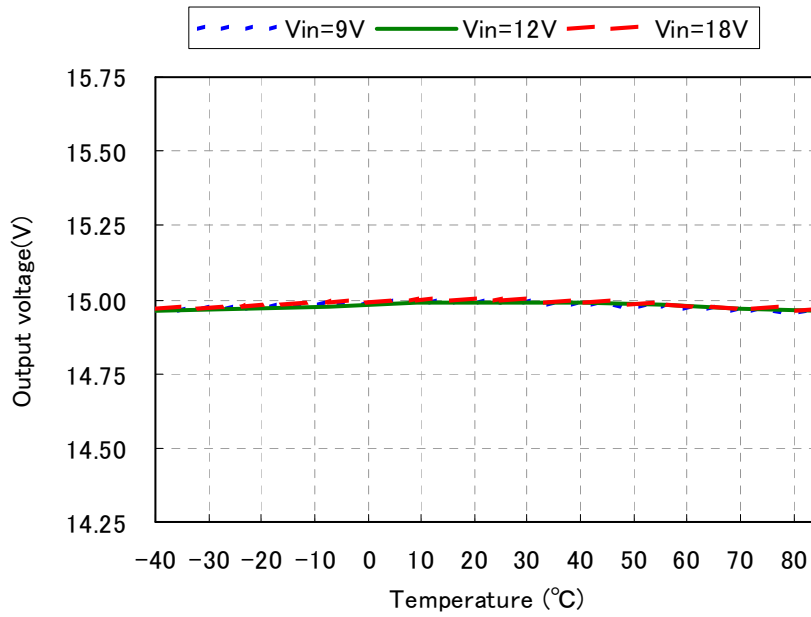
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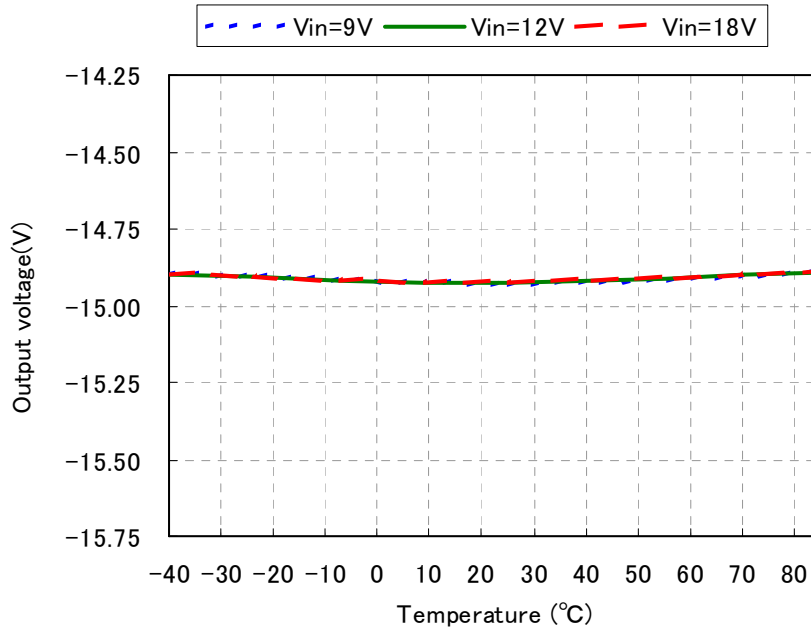
Condition Iout : 100%
TRM: Short-circuited to -Vout.

【 +Vout 】



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

【 -Vout 】



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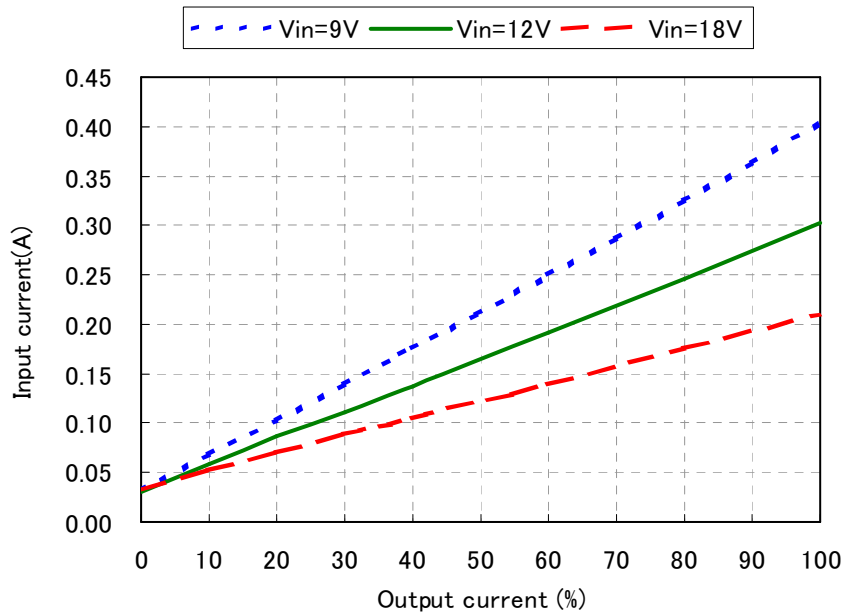
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4. Input current(vs. load current)

Condition

Ta : 25°C

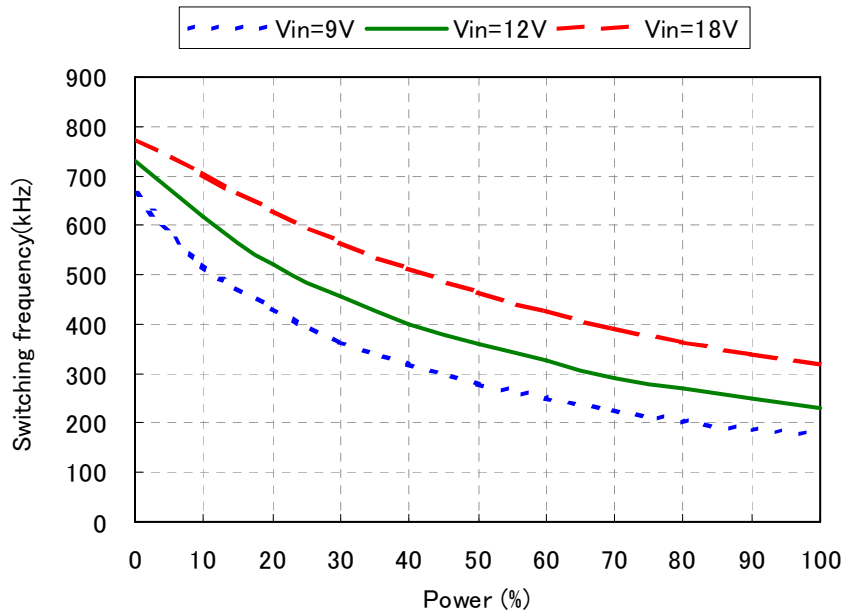
Vout : ±12V



5. Switching frequency(vs. output power)

Condition

Ta : 25°C



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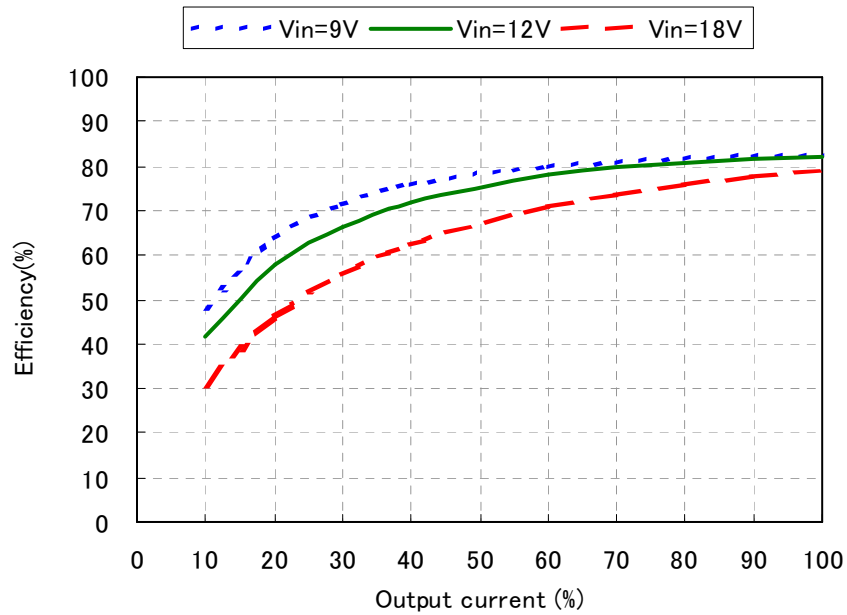
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6. Efficiency(vs. load current)

Condition

Ta : 25°C

Vout : ±12V

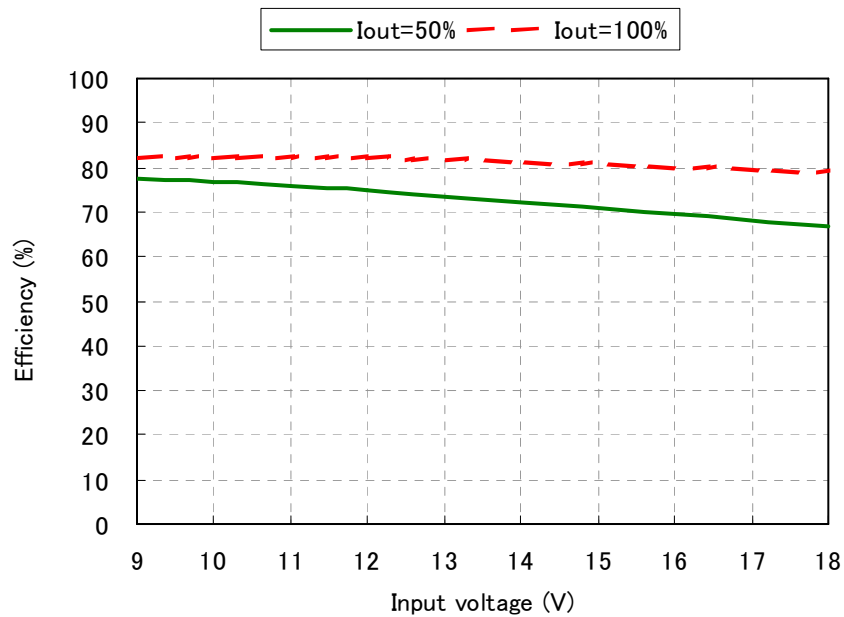


7. Efficiency(vs. input voltage)

Condition

Ta : 25°C

Vout : ±12V



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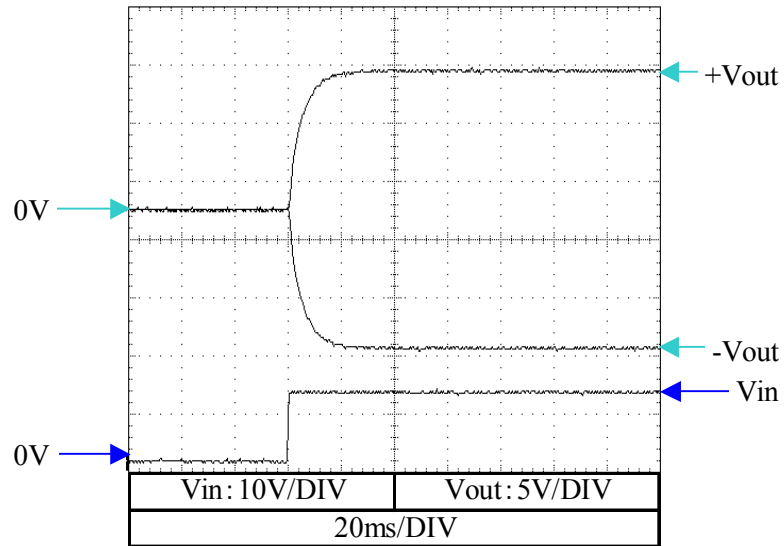
8. Output rise characteristics

Condition

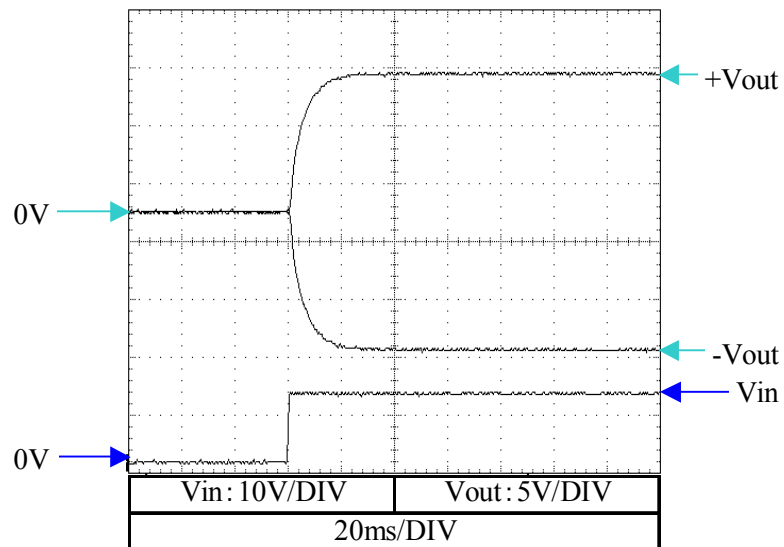
Vin : 12V

Ta : 25°C

Iout : 0%



Iout : 100%



Product name or model, title

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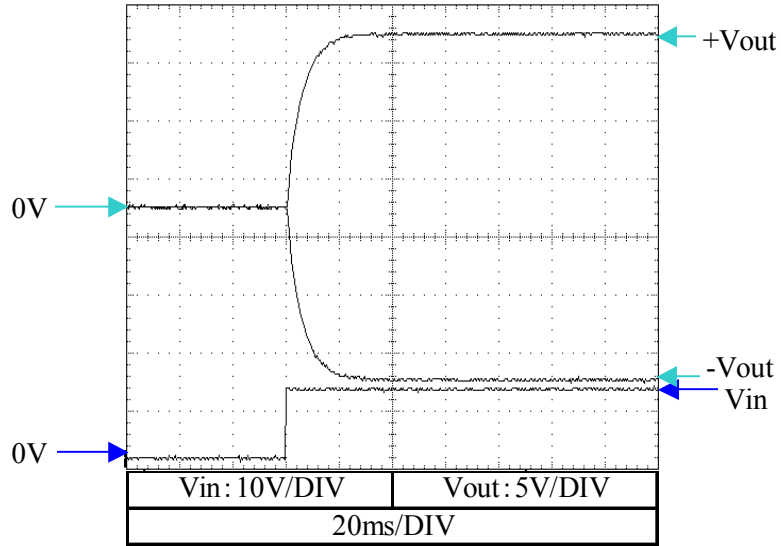
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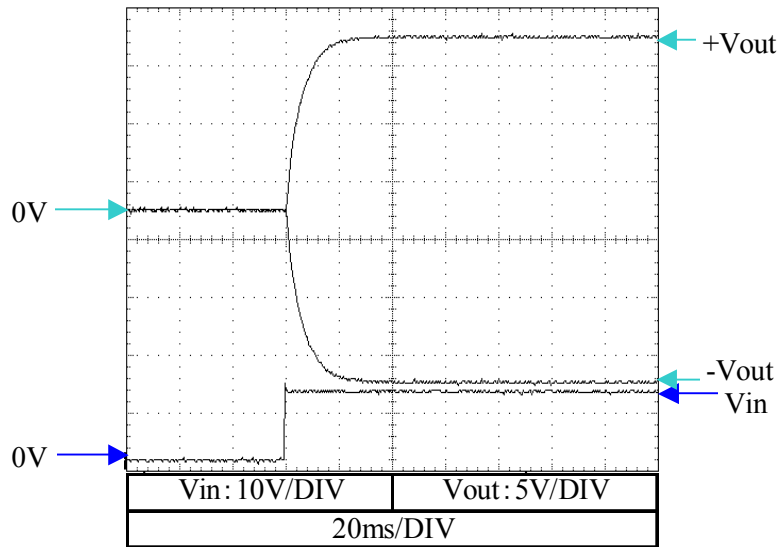
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Condition Vin : 12V
 Ta : 25°C
 TRM: Short-circuited to -Vout.

Iout : 0%



Iout : 100%



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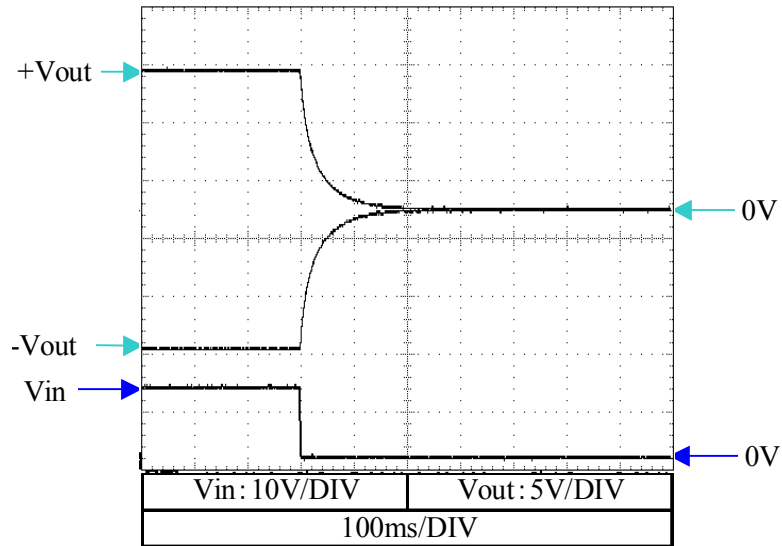
9. Output fall characteristics

Condition

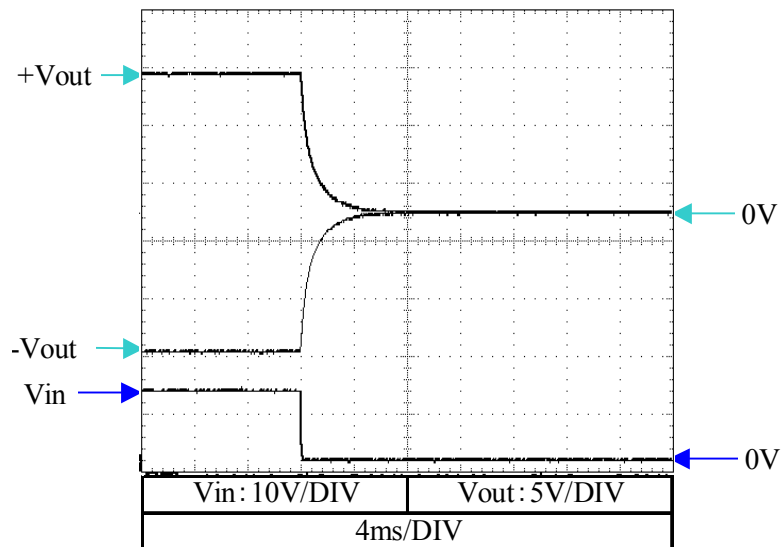
Vin : 12V

Ta : 25°C

Iout : 0%



Iout : 100%



Product name or model, title

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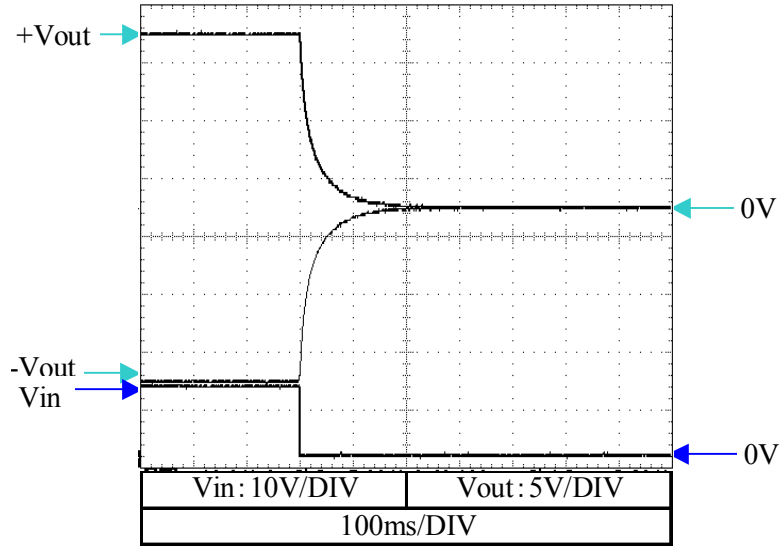
Evaluation data

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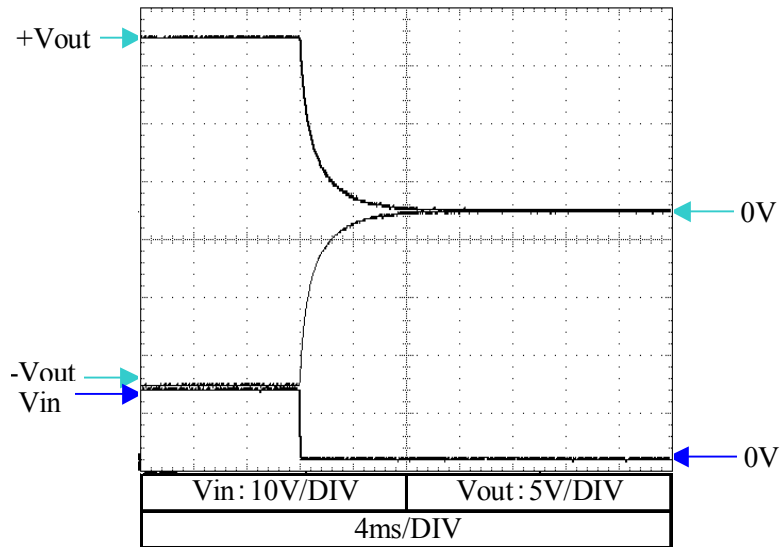
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Condition Vin : 12V
 Ta : 25°C
 TRM: Short-circuited to -Vout.

Iout : 0%



Iout : 100%



Product name or model, title

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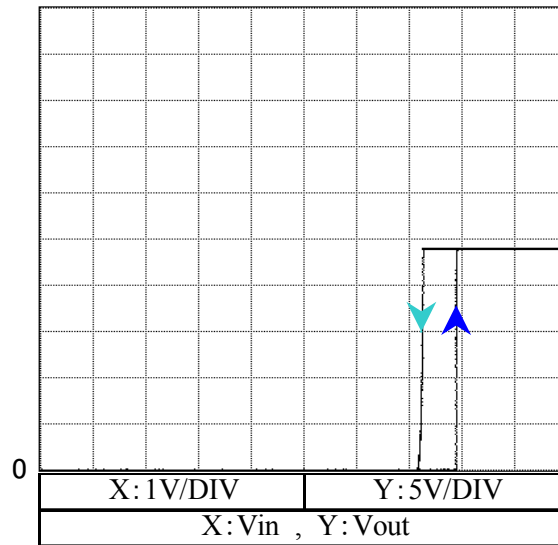
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10. Start/stop input voltage characteristics

Condition

I_{out} : 100%

T_a : 25°C



11. Dynamic load response characteristics

Condition

V_{in} : 12V

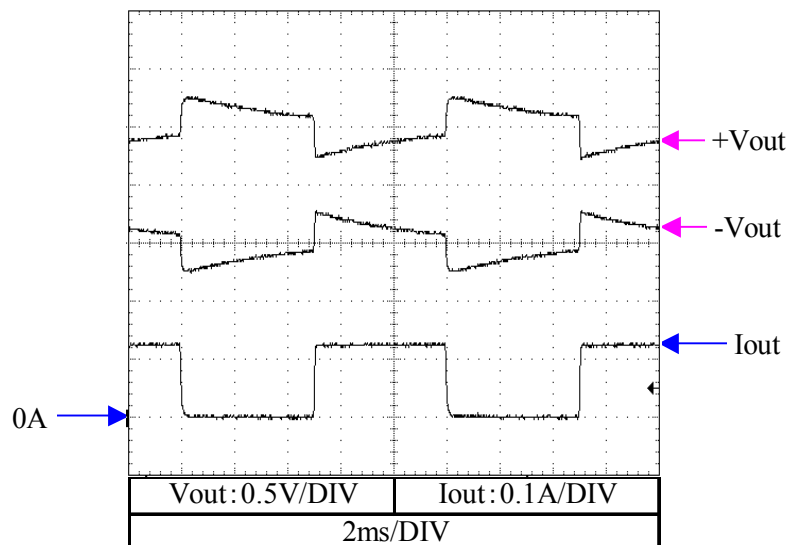
V_{out} : $\pm 12V$

I_{out} : 0% ~ 100%

$T_r=T_f$: 100us

f : 100Hz

T_a : 25°C



Product name or model, title

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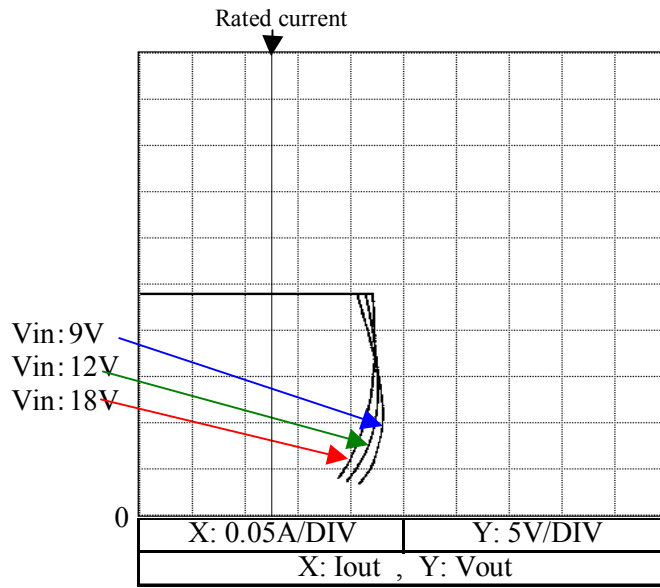
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12. Over current protection characteristics

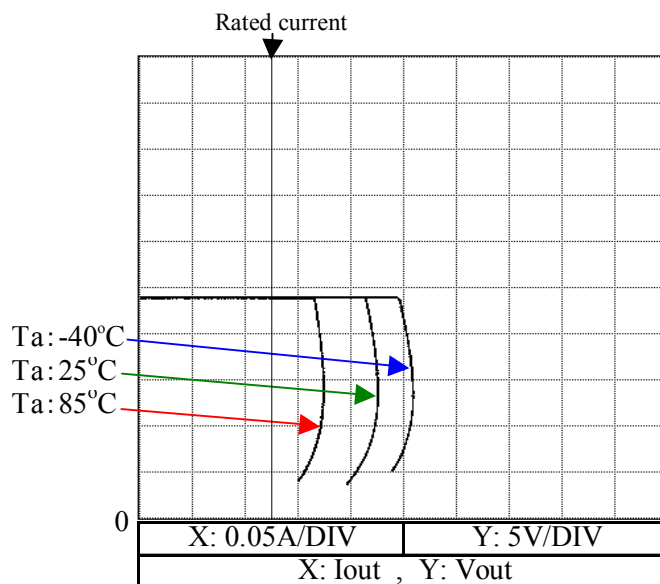
Condition

Ta : 25°C



Condition

Vin : 12V



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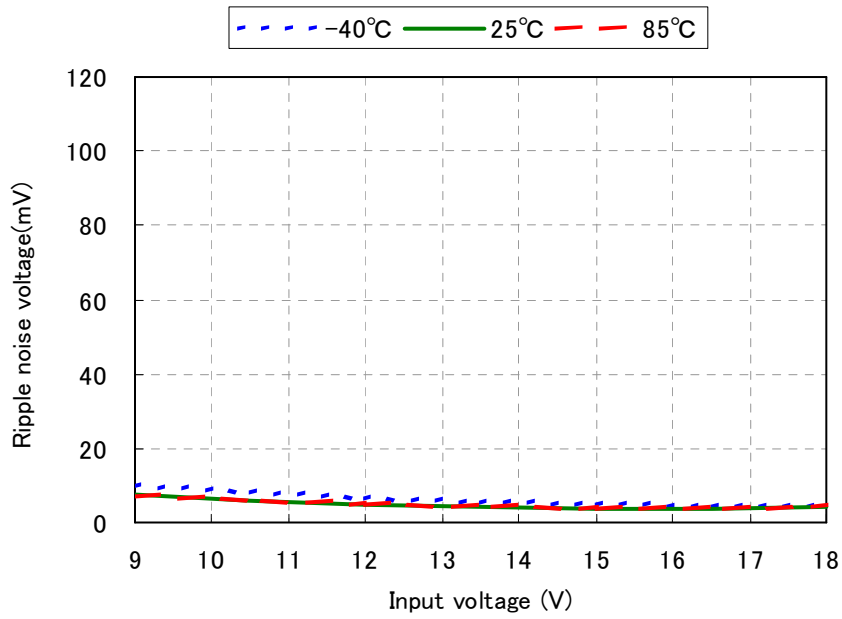
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13. Output ripple and noise characteristics

Condition

lout : 100%

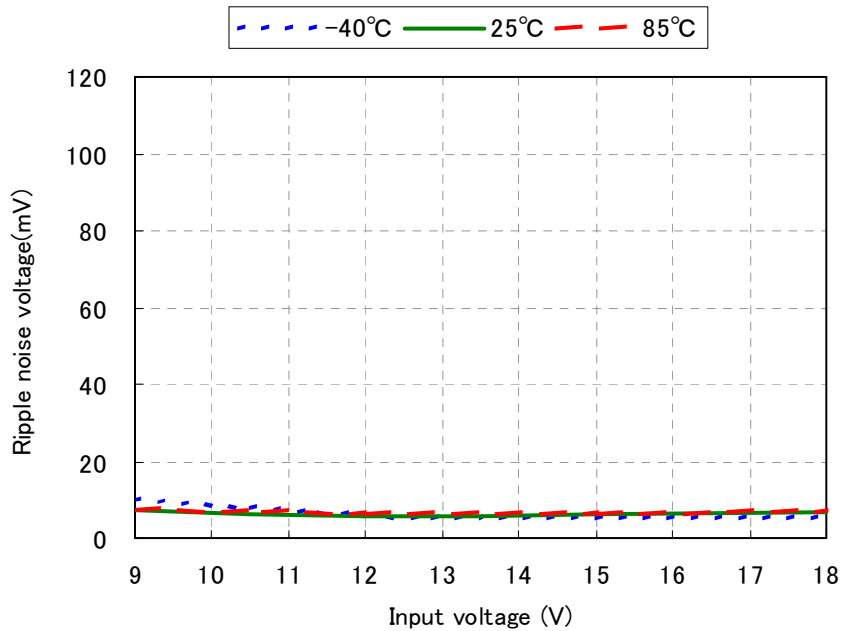
【 +Vout 】



Condition

lout : 100%

【 -Vout 】



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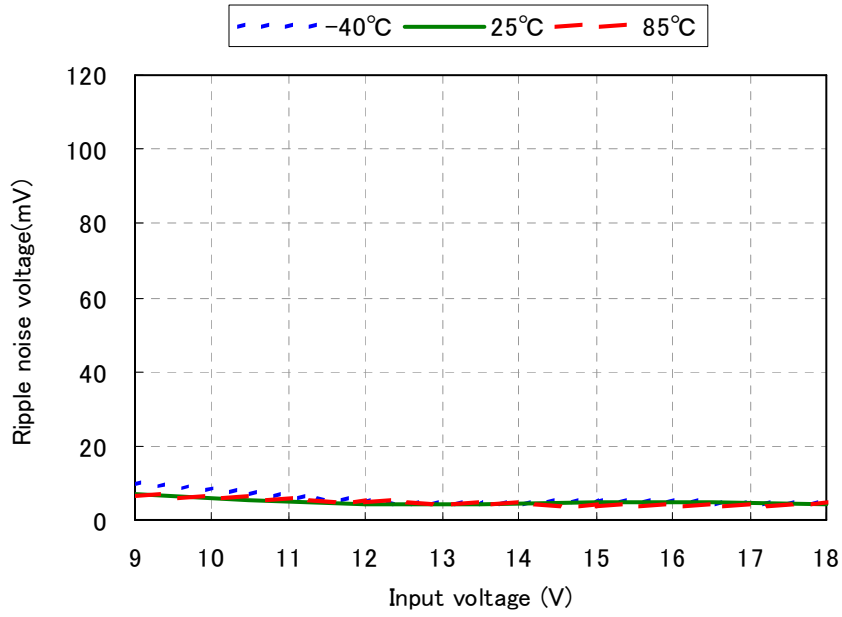
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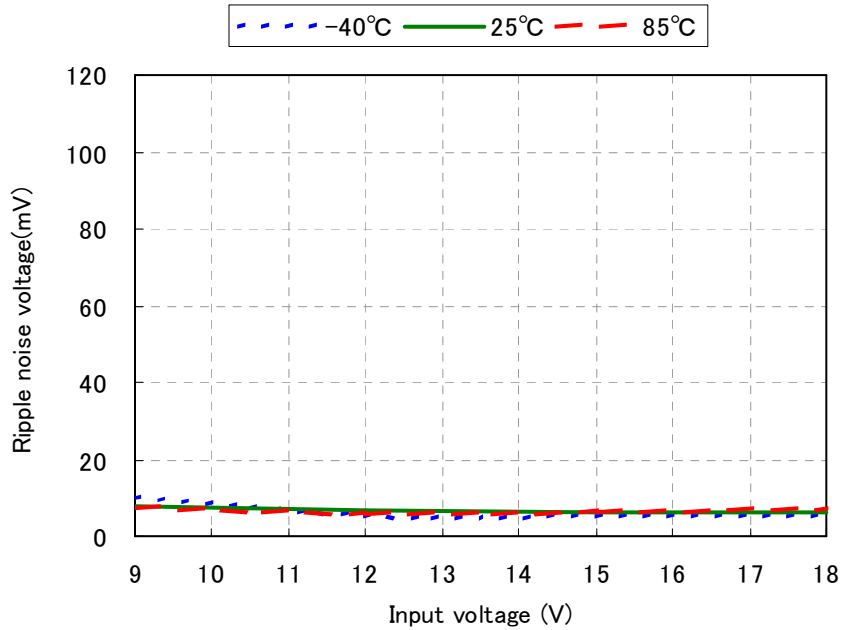
Condition Iout : 100%
 TRM: Short-circuited to -Vout.

【 +Vout 】



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

【 -Vout 】



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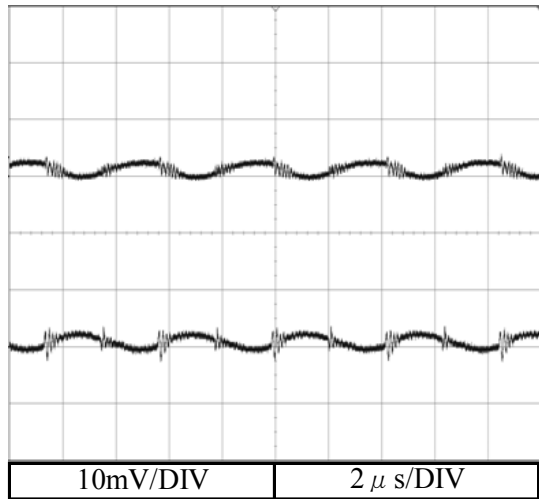
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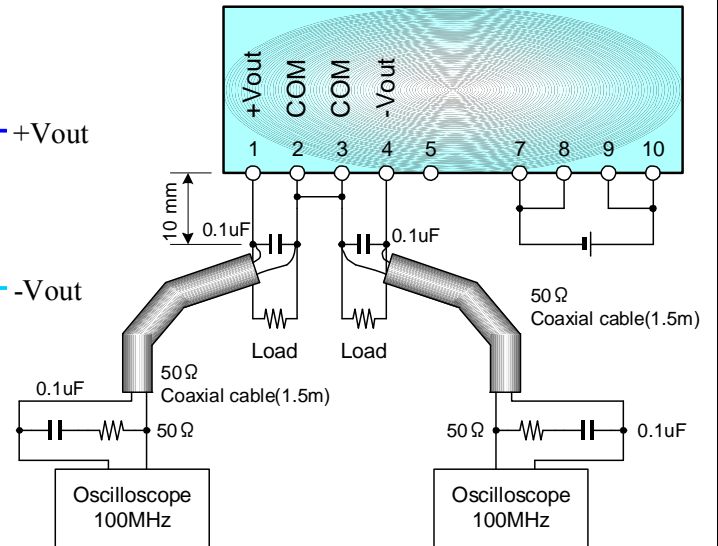
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14. Output ripple and noise waveform

Condition Vin : 12V
Iout : 100%
Ta : 25°C

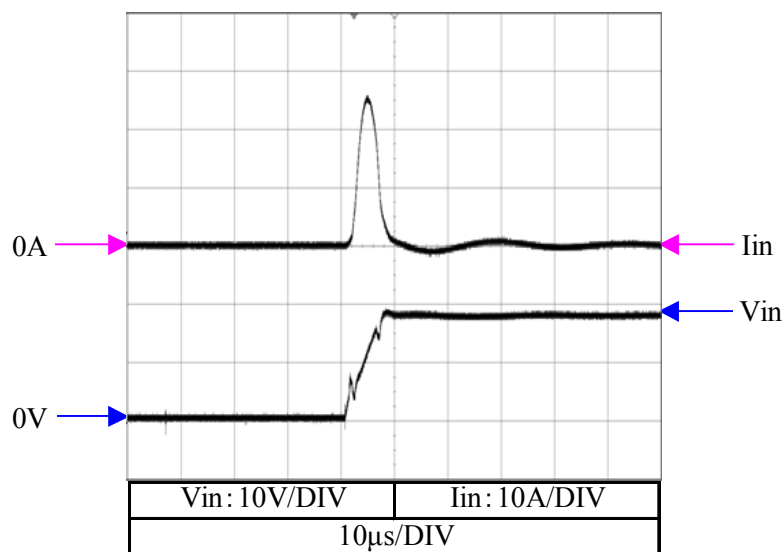


(Measurement circuit)



15. Inrush current waveform

Condition Vin : 18V
Iout : 100%
Ta : 25°C



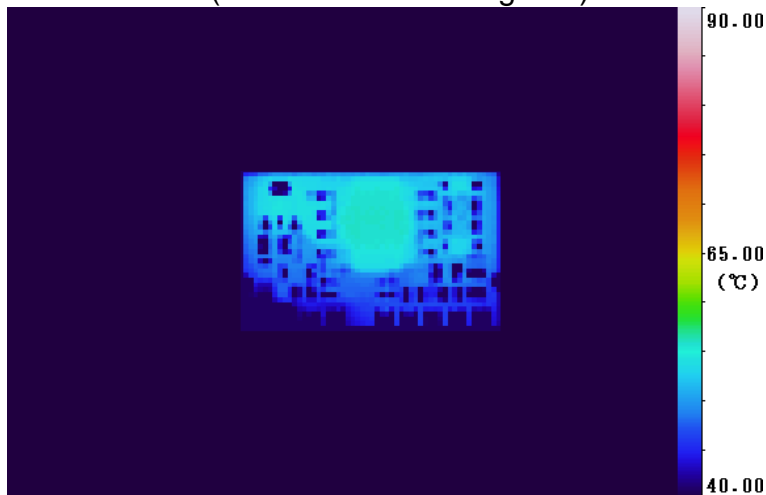
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16. Temperature distribution

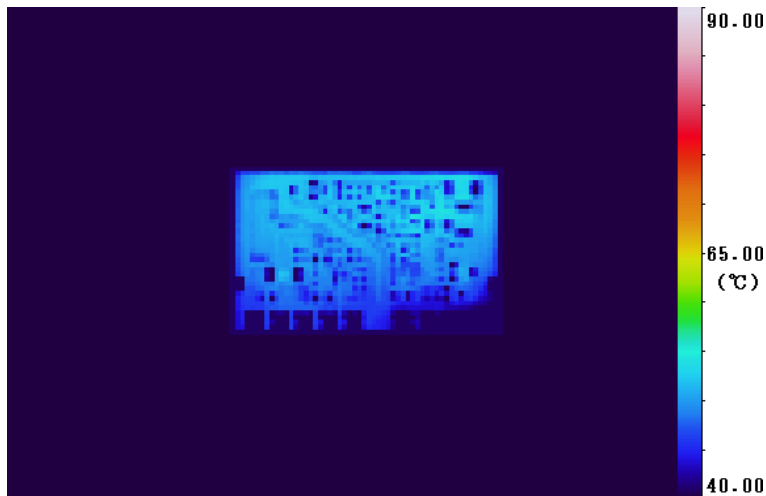
(Thermography)

Condition
 Vin : 12V
 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)
27.3	26.3	28.9

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

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