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Material name : Evaluation data

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Customer's product name :

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

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# ***TDK·Lambda***

**TDK Corporation**  
**Power Systems Business Group**

DWG.No.	TRSC-1581-1
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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)
CC3-1212SS-E	9~18	12 ±3%	0~250	3	-40 ~ +85 *2
		15 ±3% *1	0~200		

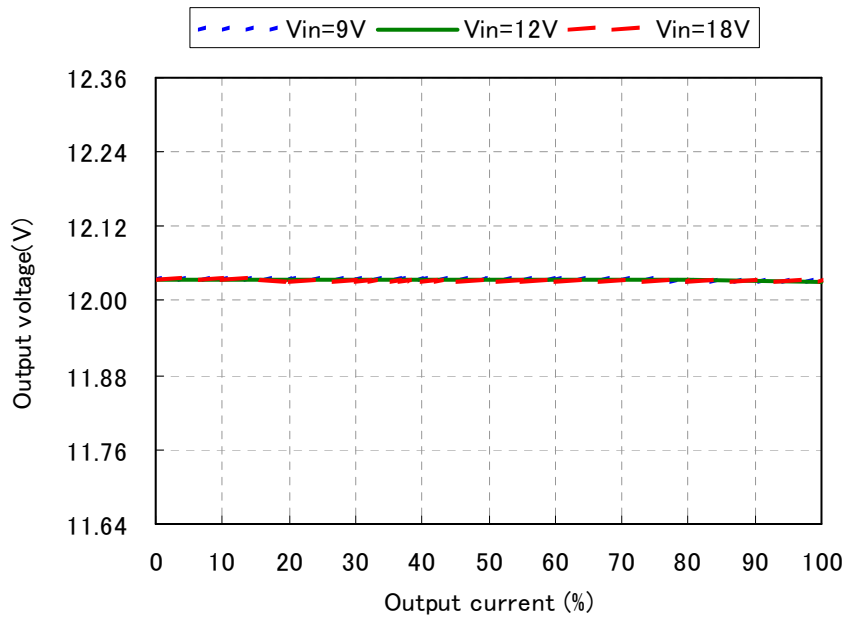
\*1 TRM and -Vout are short-circuited.

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

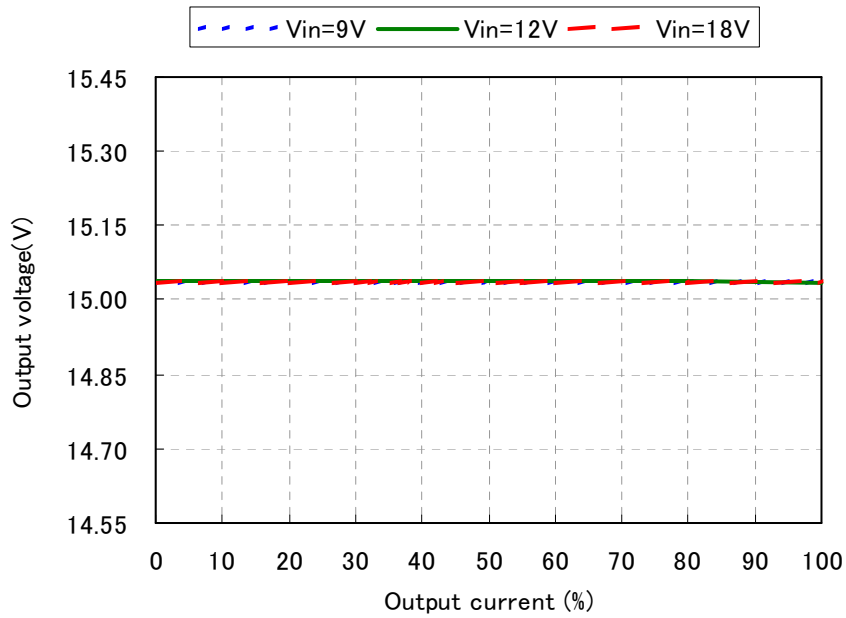
	Product name or model, title		
	DC-DC converter CC3-1212SS-E		
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# 1. Load regulation

Condition Ta : -40°C

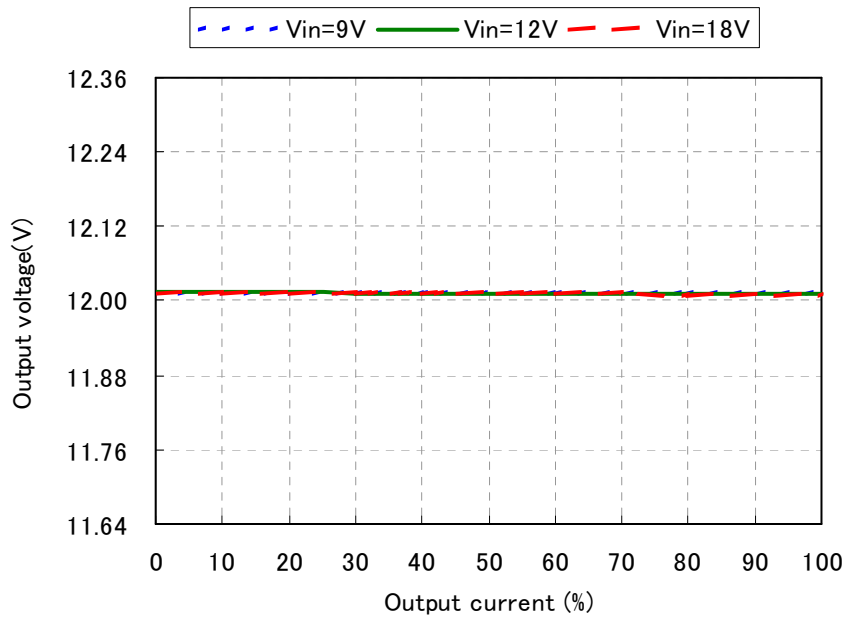


Condition Ta : -40°C  
TRM: Short-circuited to -Vout.

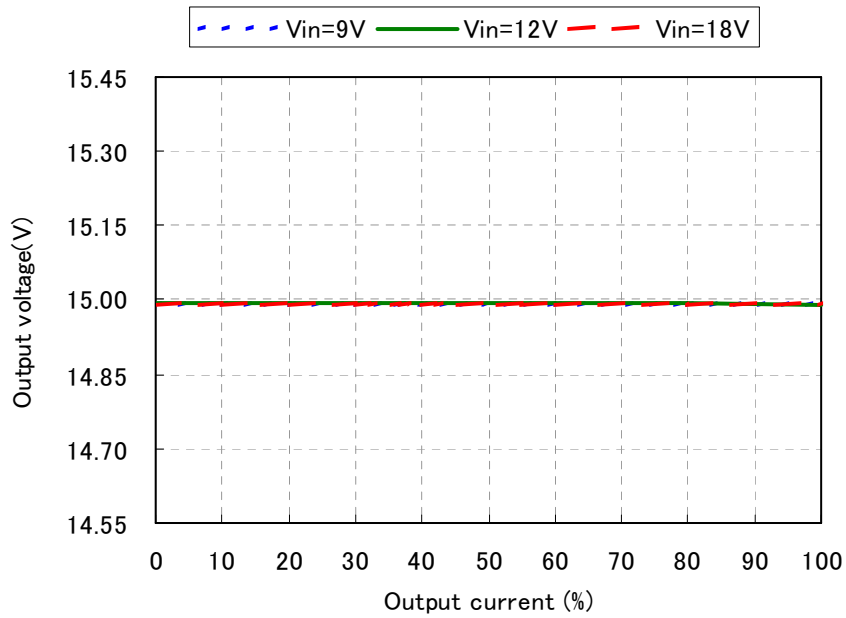


Product name or model, title			
DC-DC converter CC3-1212SS-E			
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Condition Ta : 25°C

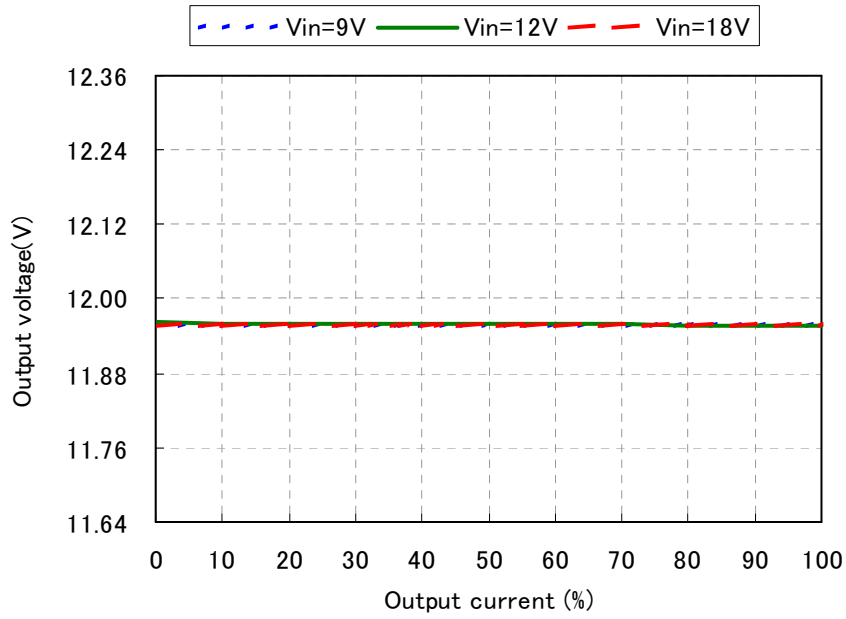


Condition Ta : 25°C  
TRM: Short-circuited to -Vout.

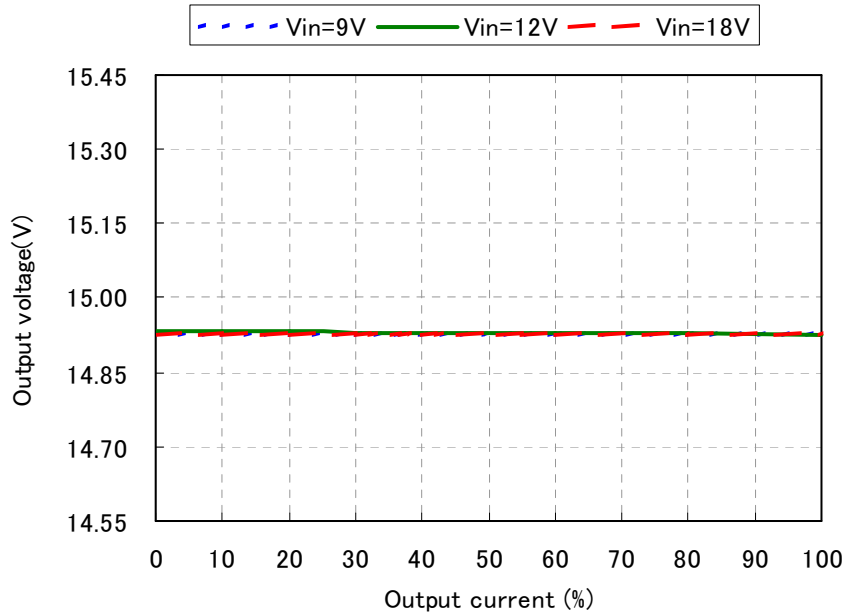


Product name or model, title			
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Condition Ta : 85°C



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

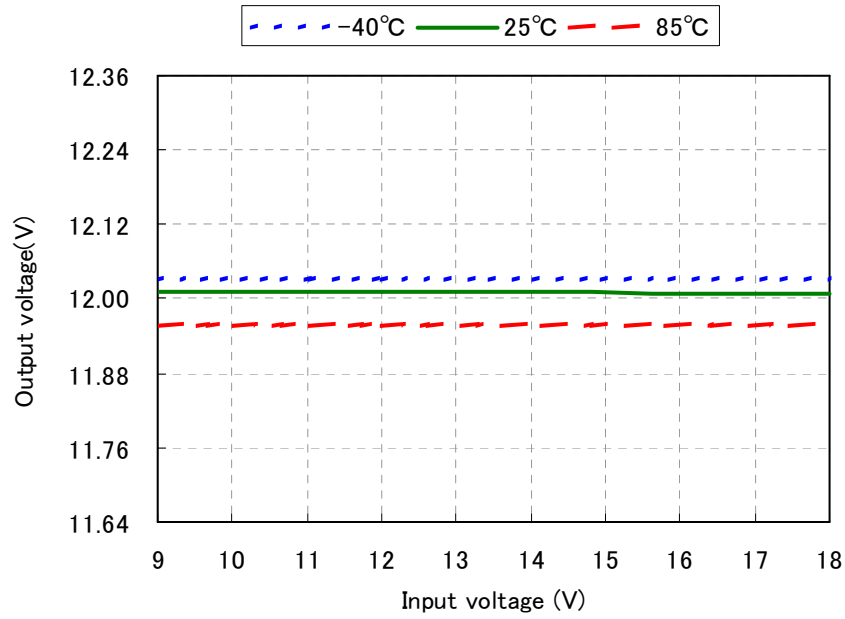


Product name or model, title			
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## 2. Line regulation

Condition

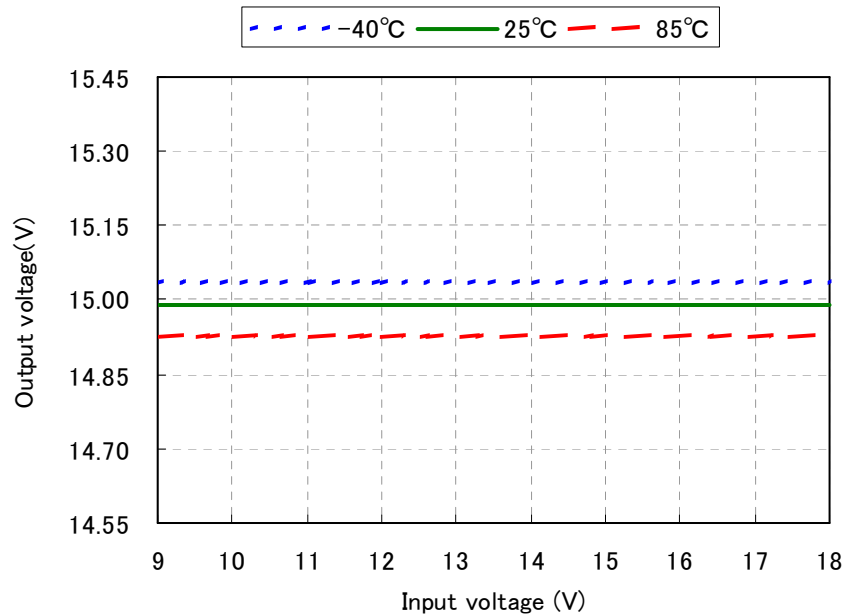
Iout : 100%



Condition

Iout : 100%

TRM: Short-circuited to -Vout.



Product name or model, title

DC-DC converter CC3-1212SS-E

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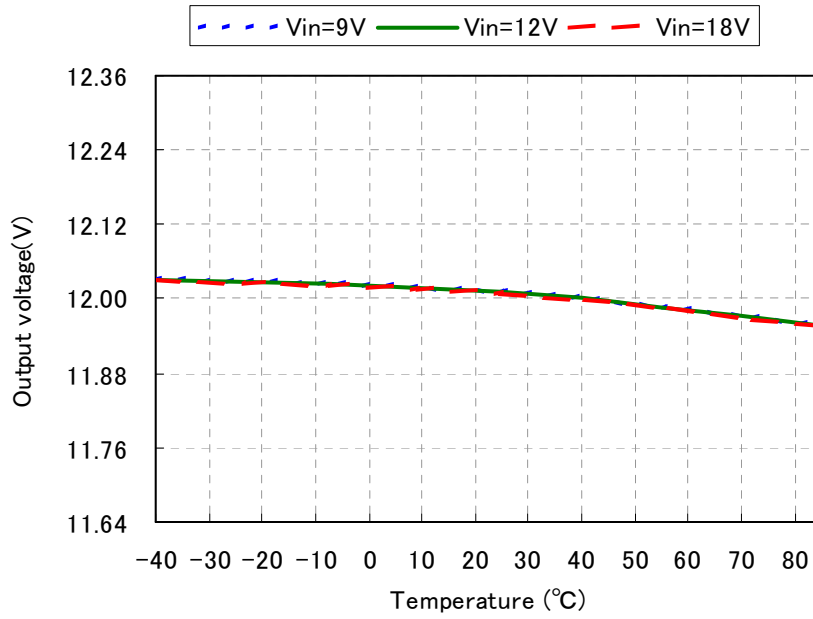
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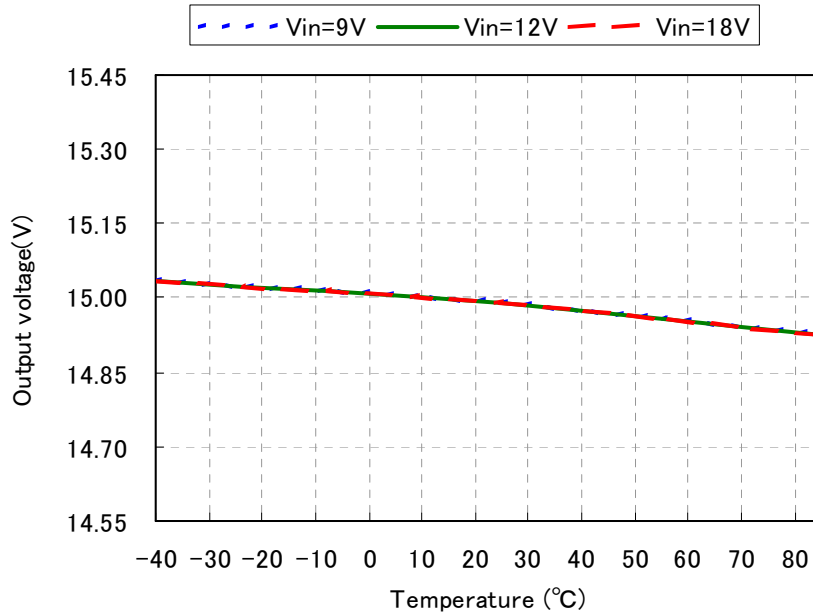
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### 3. Temperature regulation

Condition      Iout : 100%



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



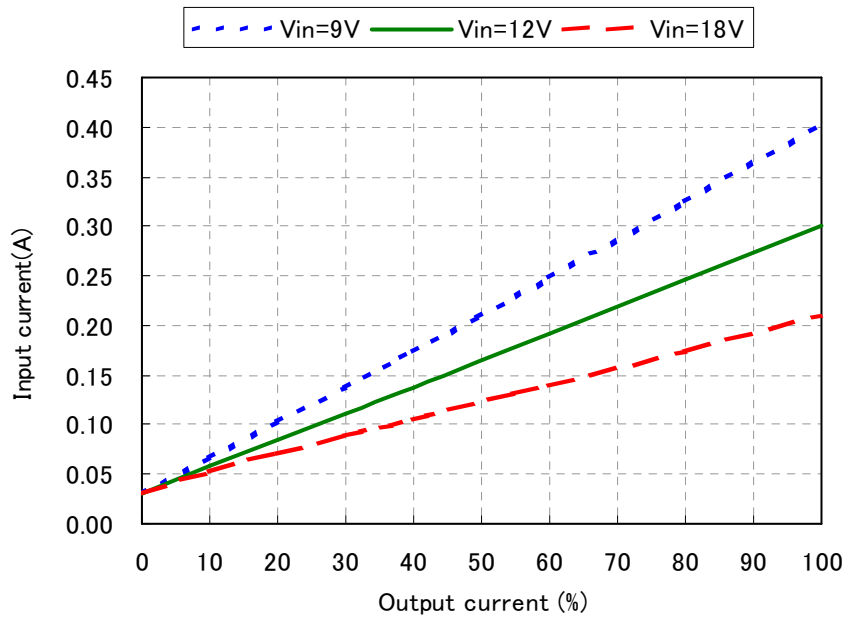
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## 4. Input current(vs. load current)

Condition

Ta : 25°C

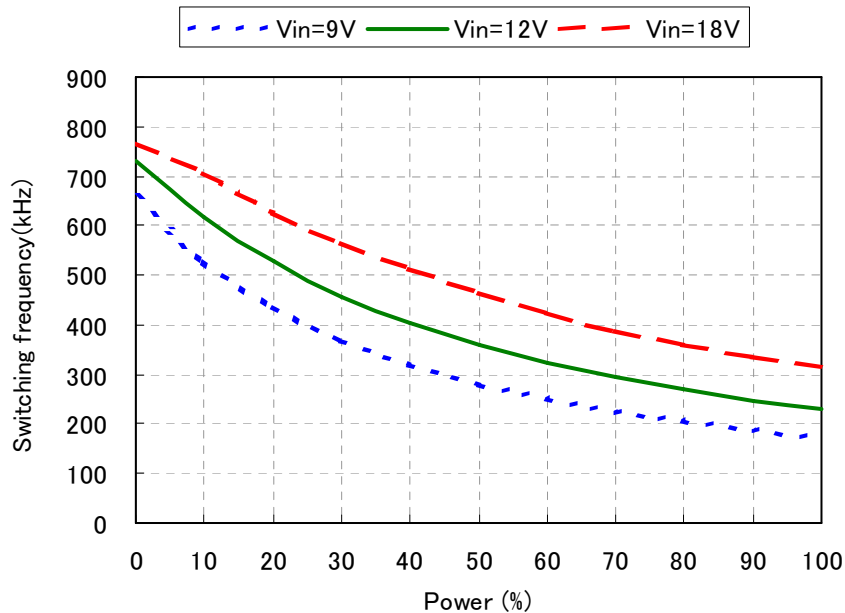
Vout : 12V



## 5. Switching frequency(vs. output power)

Condition

Ta : 25°C



Product name or model, title

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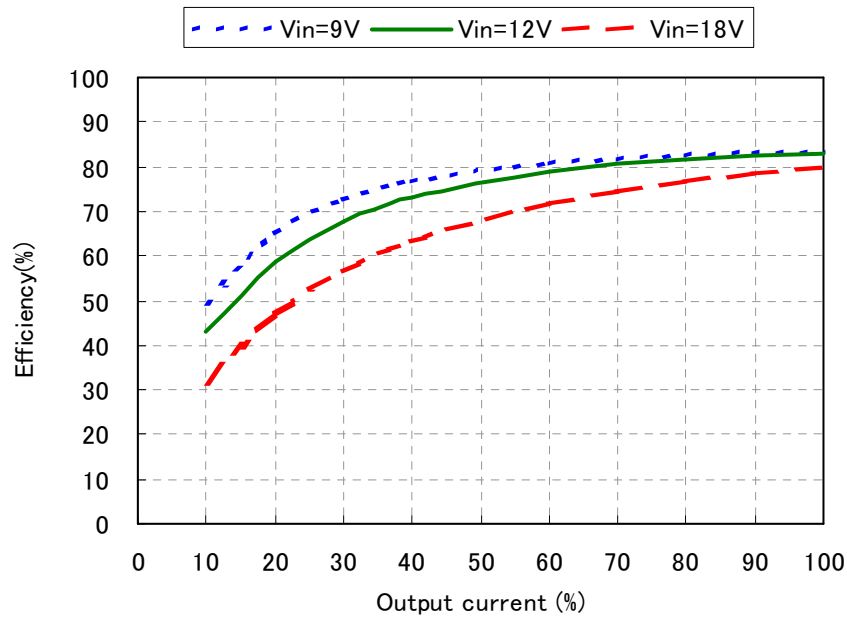
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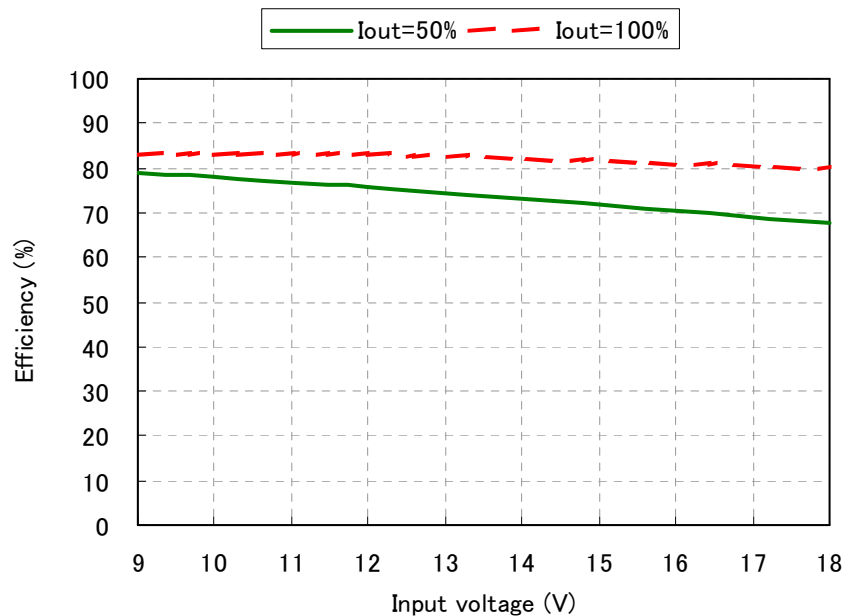
## 6. Efficiency(vs. load current)

Condition Ta : 25°C  
Vout : 12V



## 7. Efficiency(vs. input voltage)

Condition Ta : 25°C  
Vout : 12V



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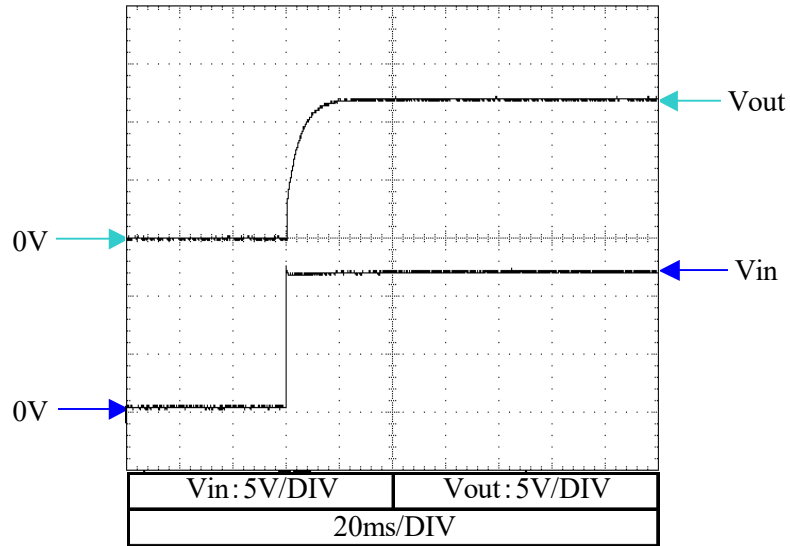
## 8. Output rise characteristics

Condition

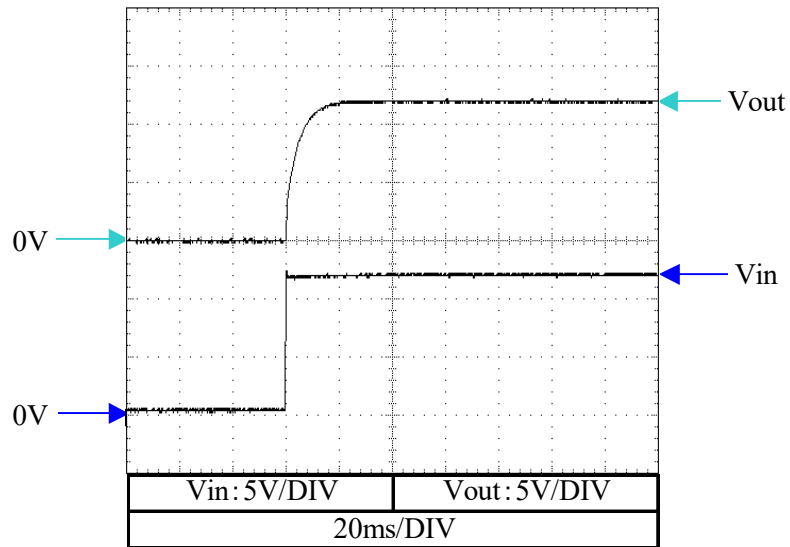
Vin : 12V

Ta : 25°C

Iout : 0%



Iout : 100%



Product name or model, title

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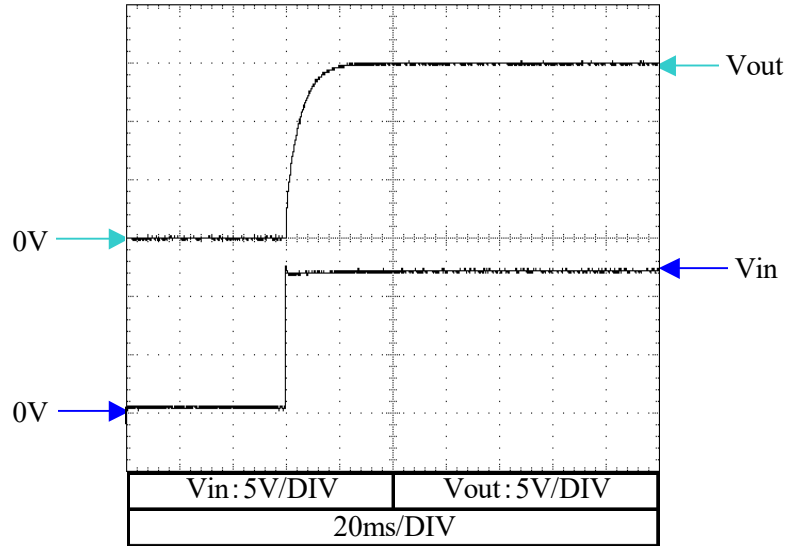
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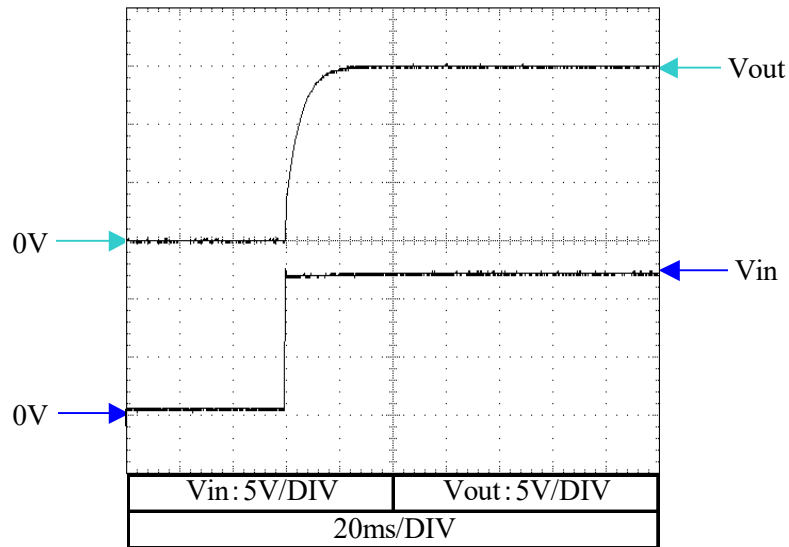
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Condition Vin : 12V  
 Ta : 25°C  
 TRM: Short-circuited to -Vout.

Iout : 0%



Iout : 100%



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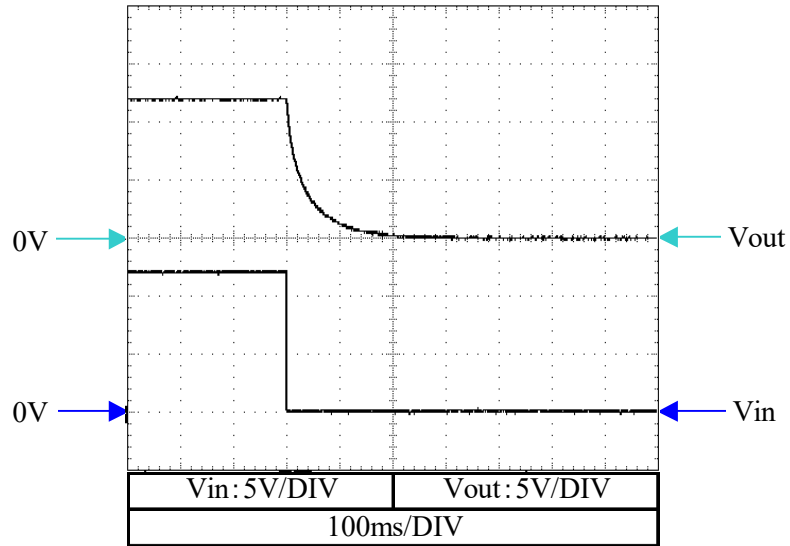
## 9. Output fall characteristics

Condition

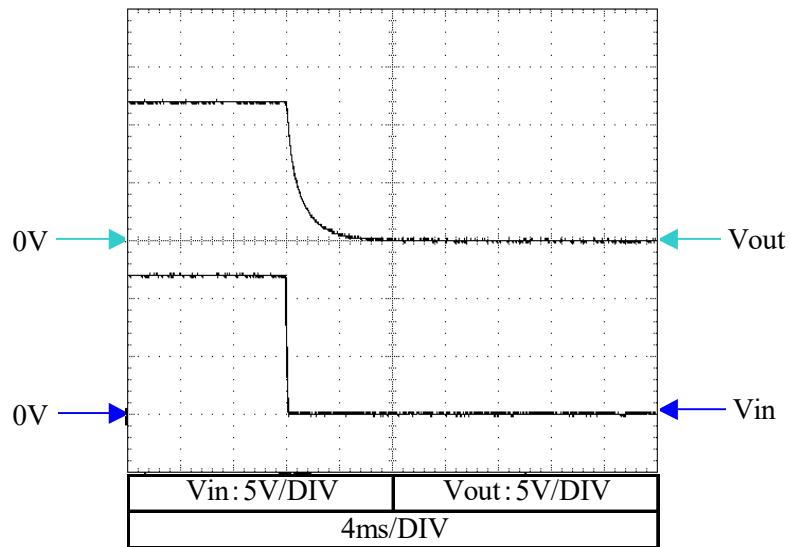
Vin : 12V

Ta : 25°C

Iout : 0%



Iout : 100%



Product name or model, title

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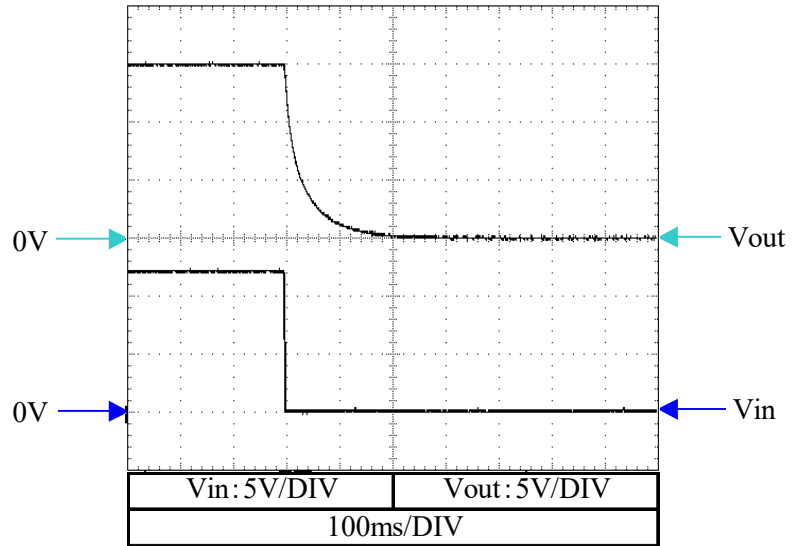
Evaluation data

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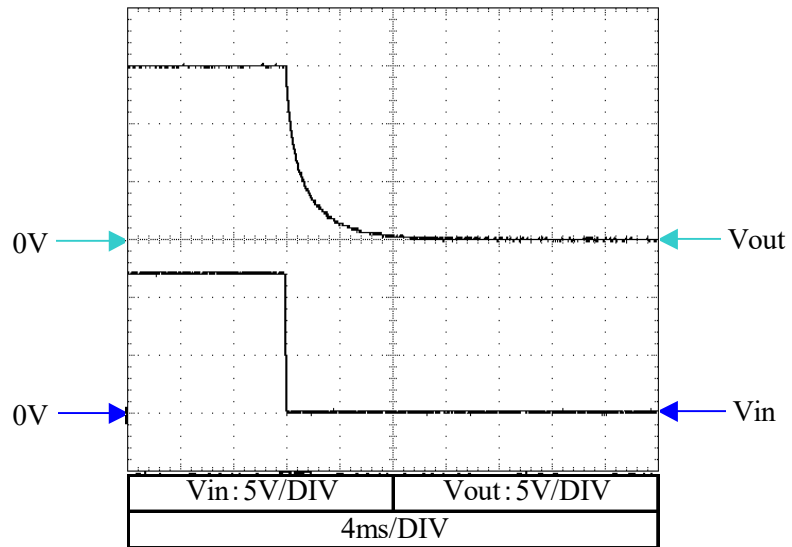
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Condition Vin : 12V  
 Ta : 25°C  
 TRM: Short-circuited to -Vout.

Iout : 0%



Iout : 100%



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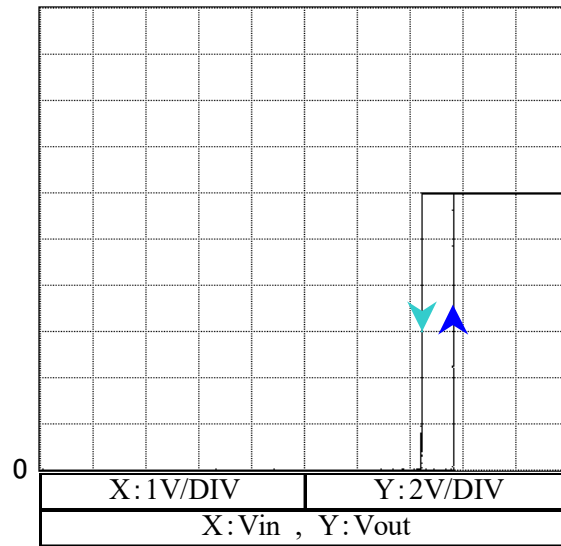
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## 10. Start/stop input voltage characteristics

Condition

$I_{out}$  : 100%

$T_a$  : 25°C



## 11. Dynamic load response characteristics

Condition

$V_{in}$  : 12V

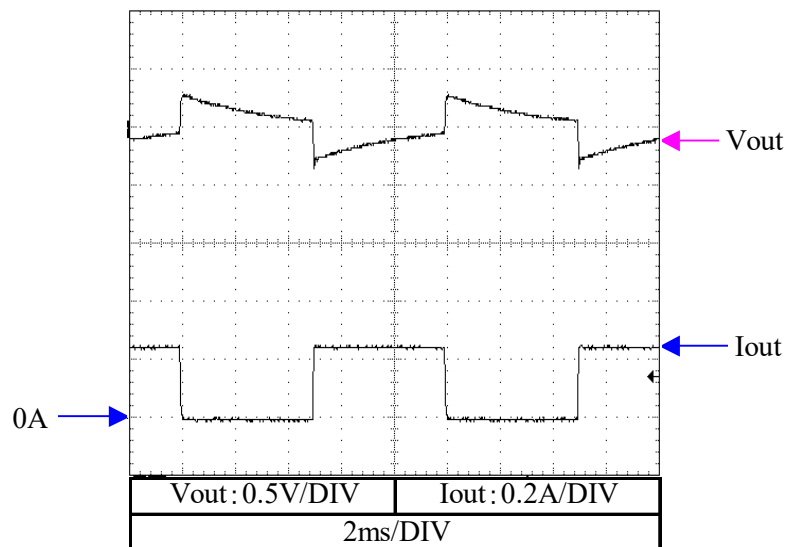
$V_{out}$  : 12V

$I_{out}$  : 0% ~ 100%

$T_r=T_f$  : 100us

$f$  : 100Hz

$T_a$  : 25°C



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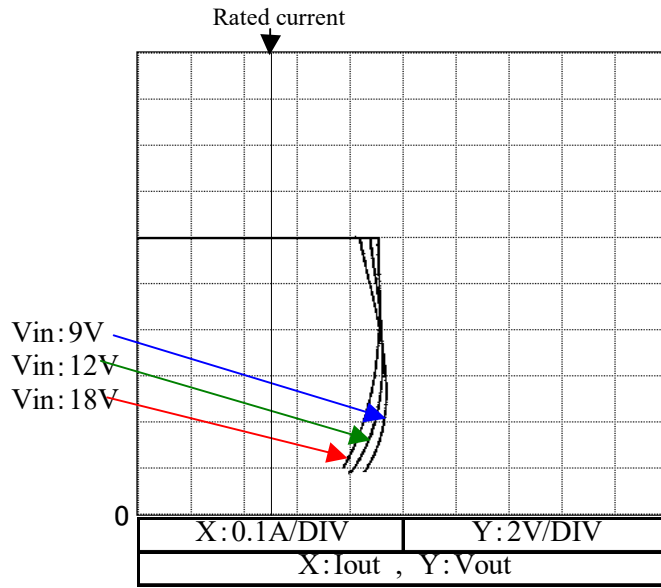
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# 12. Over current protection characteristics

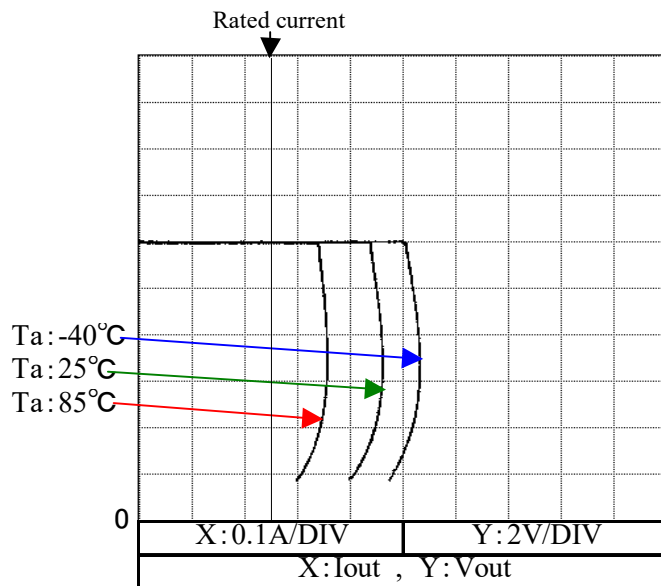
Condition

Ta : 25°C



Condition

Vin : 12V



Product name or model, title

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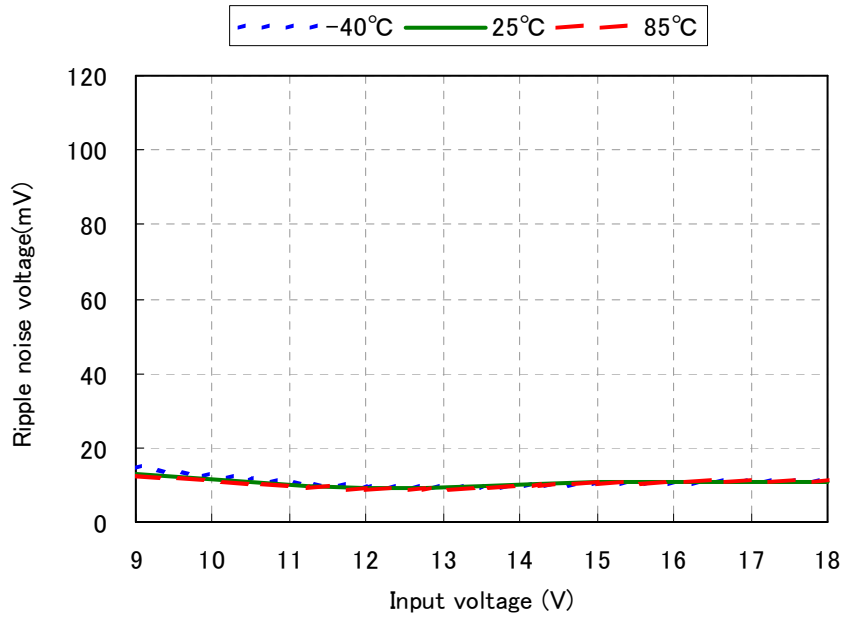
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# 13. Output ripple and noise characteristics

Condition

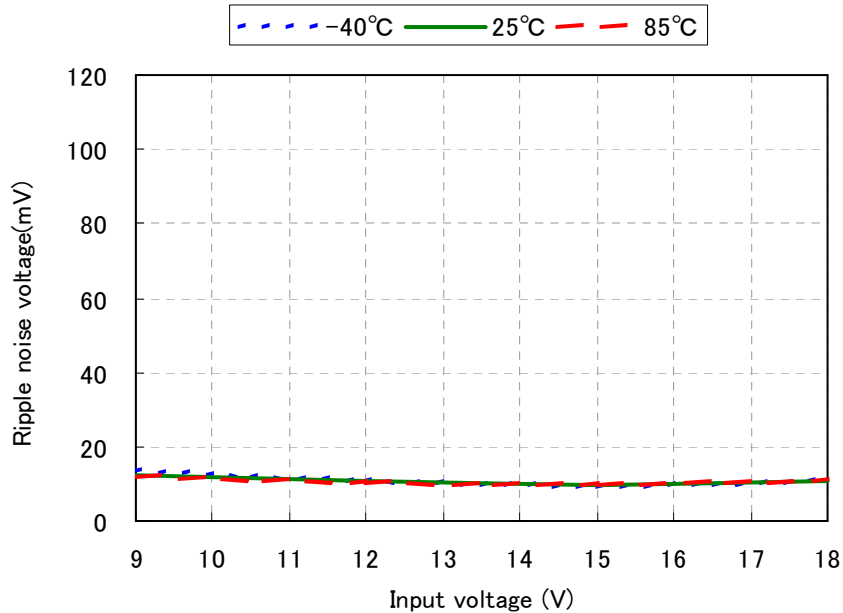
Iout : 100%



Condition

Iout : 100%

TRM: Short-circuited to -Vout.



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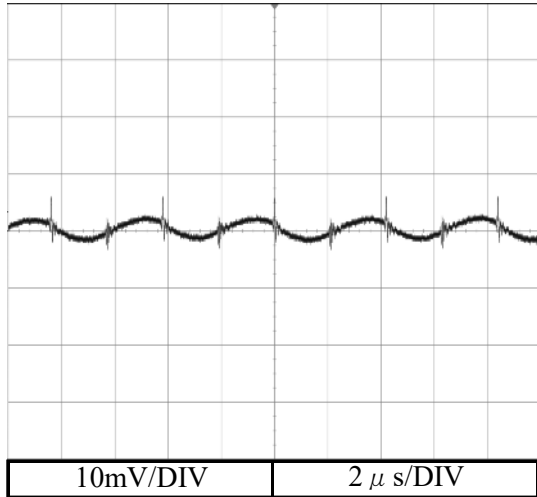
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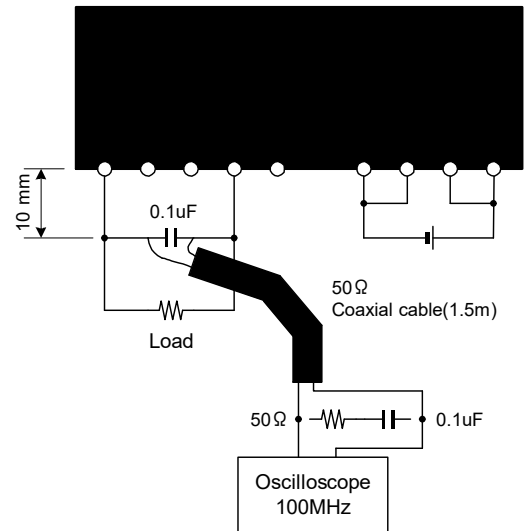


## 14. Output ripple and noise waveform

Condition  
 $V_{in}$  : 12V  
 $I_{out}$  : 100%  
 $T_a$  : 25°C

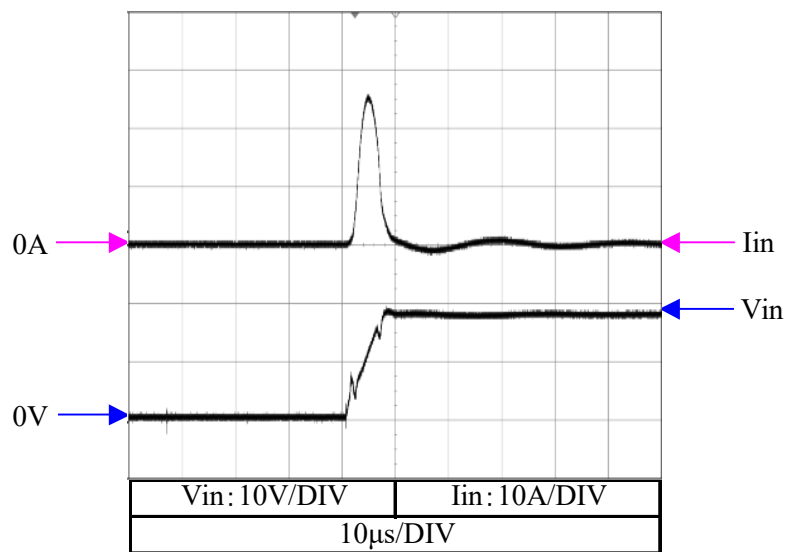


(Measurement circuit)



## 15. Inrush current waveform

Condition  
 $V_{in}$  : 18V  
 $I_{out}$  : 100%  
 $T_a$  : 25°C



Product name or model, title

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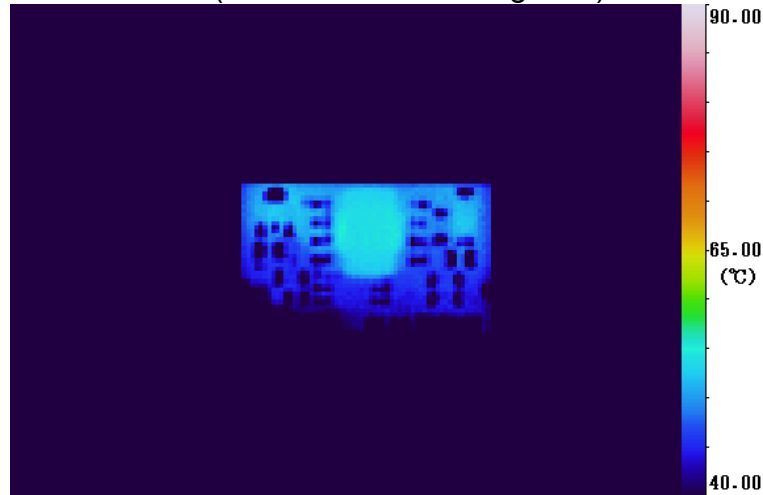
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# 16. Temperature distribution

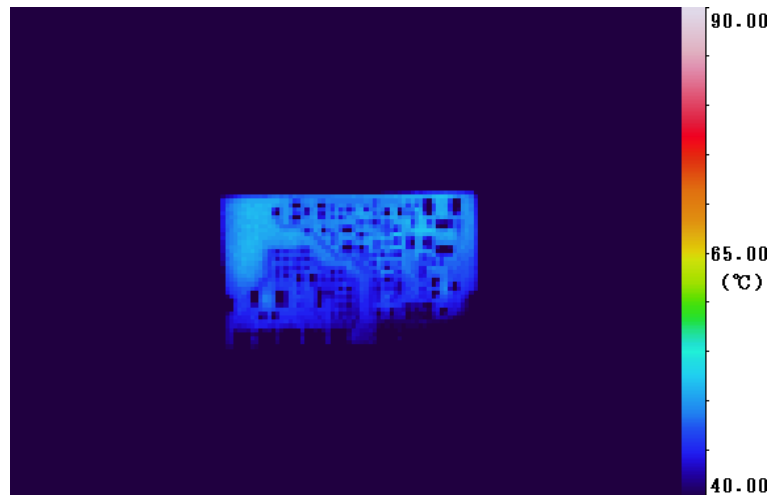
(Thermography)

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(Delta T)		
Main swtch(°C)	Rectifier diode(°C)	Transformer(°C)
23.9	24.0	26.6

\* 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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	DC-DC converter CC3-1212SS-E		
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