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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  
CC3-2412SS-E (SIP model)

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# ***TDK-Lambda***

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

DWG.No.	TRSC-1585-1
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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)
CC3-2412SS-E	18~36	12 ±3%	0~250	3	-40 ~ +85 *2
		15 ±3% *1	0~200		

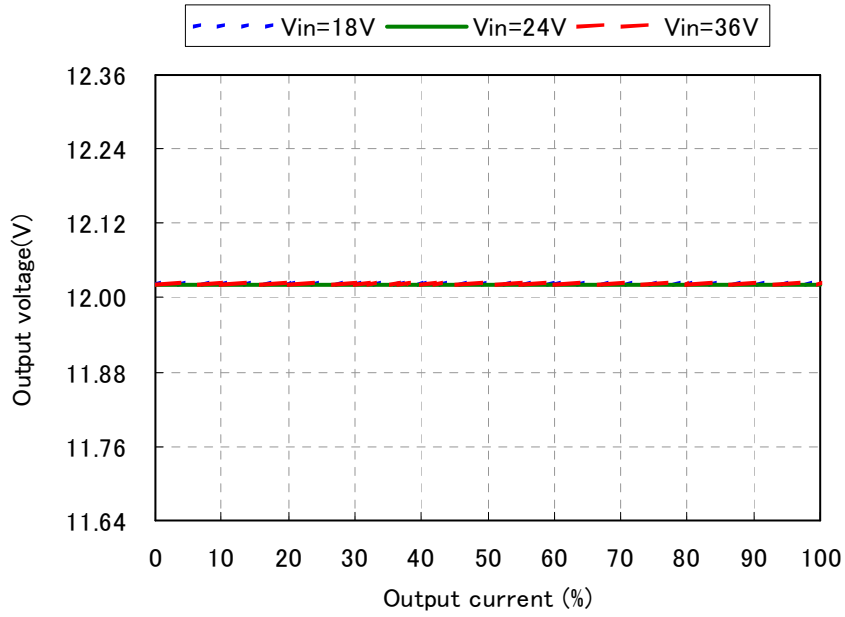
\*1 TRM and -Vout are short-circuited.

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

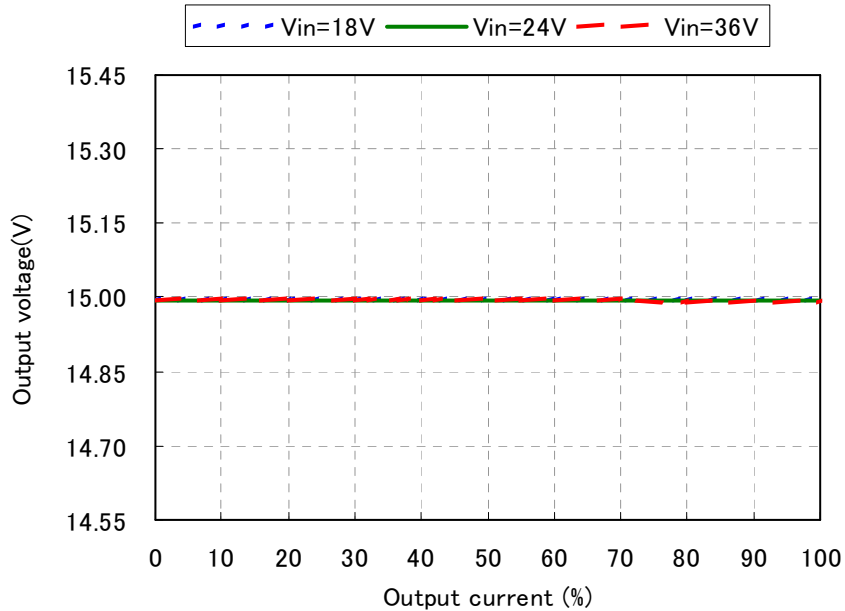
Product name or model, title			
DC-DC converter CC3-2412SS-E			
TDK CORPORATION	Name of drawing	Drawing No.	PAGE
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# 1. Load regulation

Condition Ta : -40°C

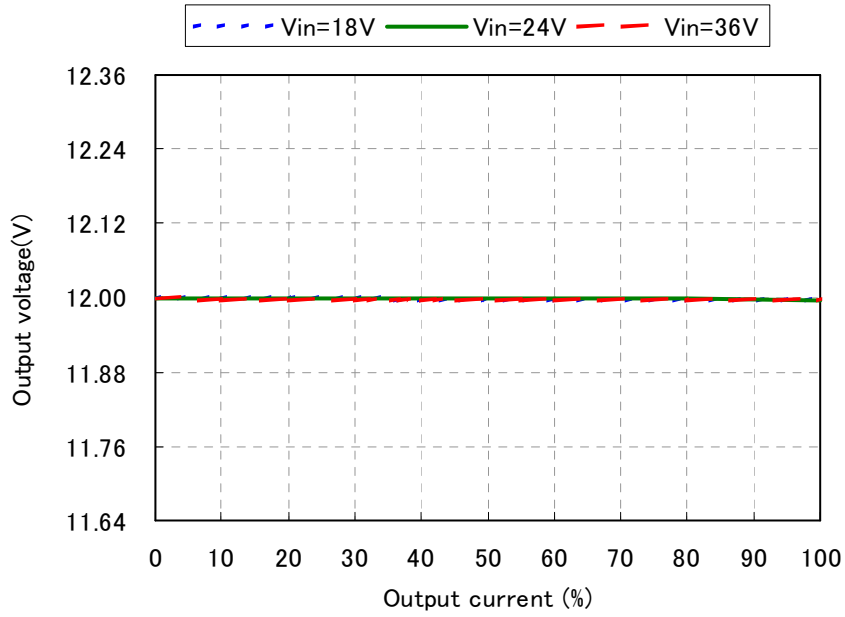


Condition Ta : -40°C  
TRM: Short-circuited to -Vout.

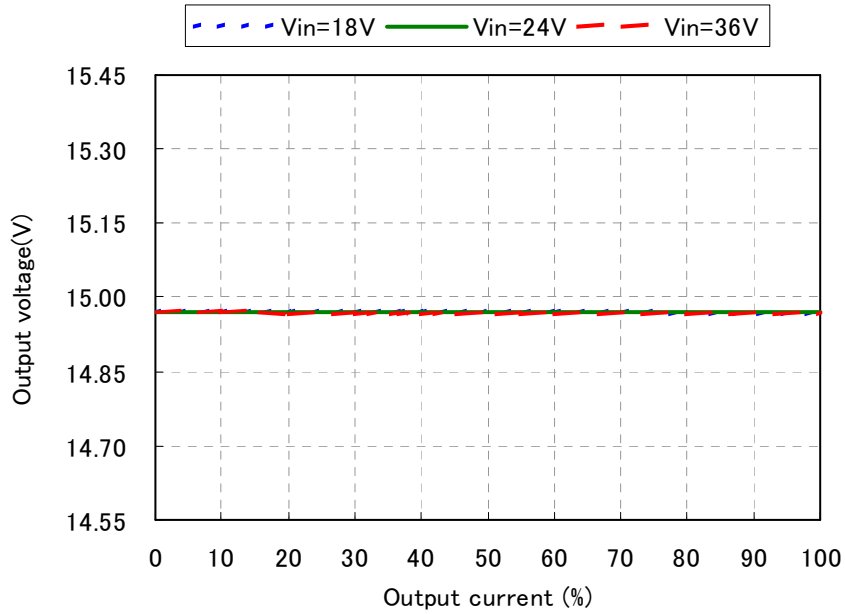


Product name or model, title			
DC-DC converter CC3-2412SS-E			
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Condition Ta : 25°C

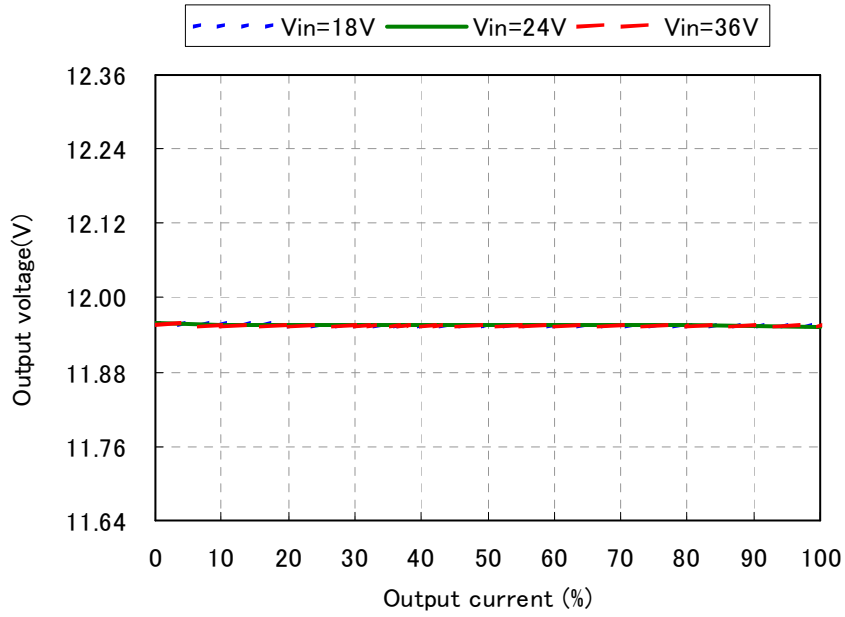


Condition Ta : 25°C  
TRM: Short-circuited to -Vout.

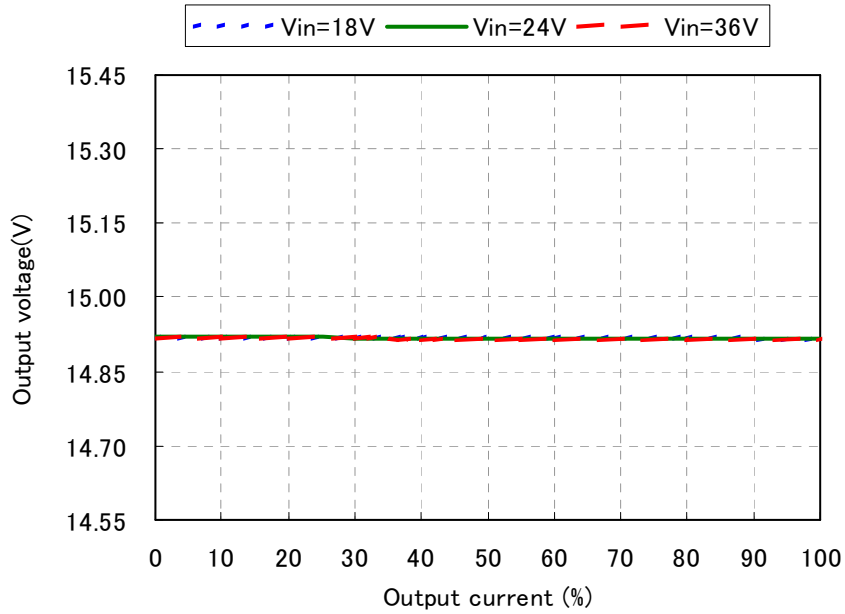


Product name or model, title			
DC-DC converter CC3-2412SS-E			
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Condition Ta : 85°C



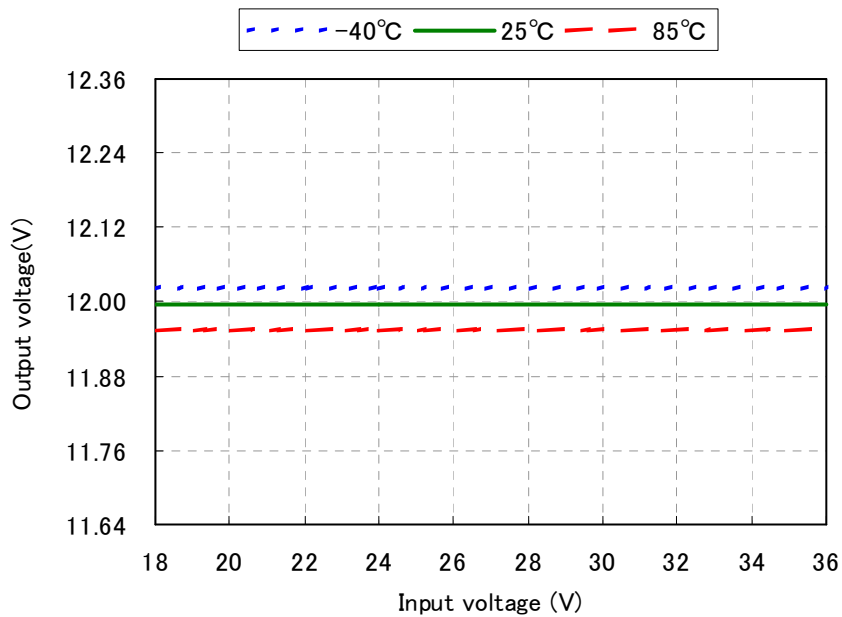
Condition Ta : 85°C  
TRM: Short-circuited to -Vout.



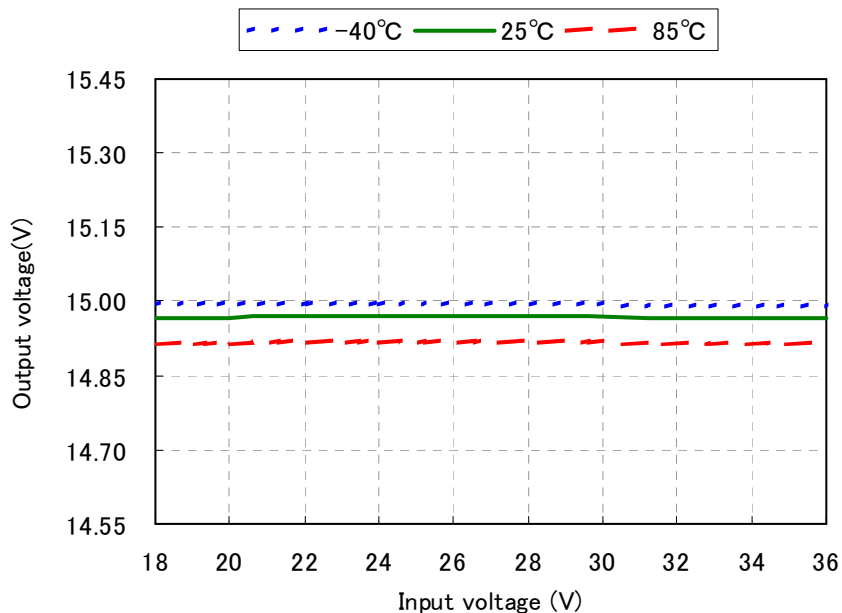
Product name or model, title			
DC-DC converter CC3-2412SS-E			
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## 2. Line regulation

Condition      Iout : 100%



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



Product name or model, title

DC-DC converter CC3-2412SS-E

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Name of drawing

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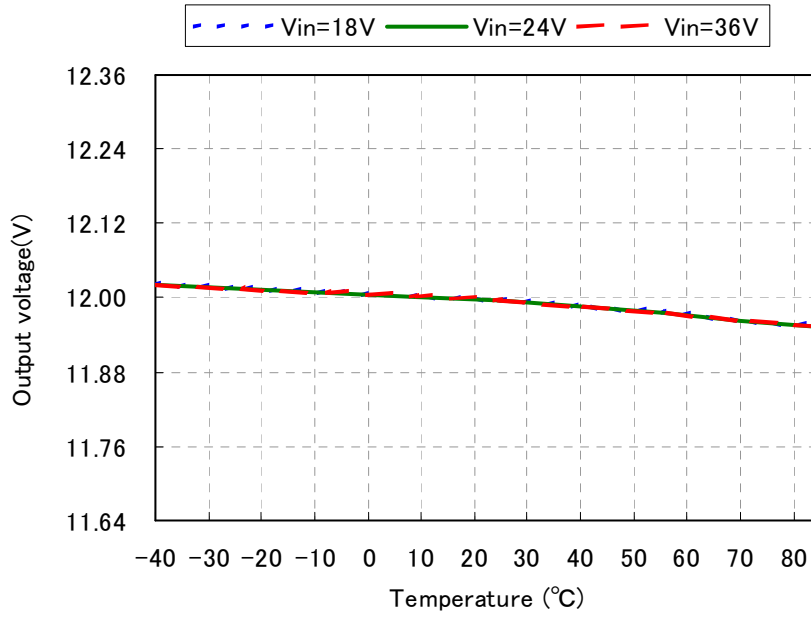
Evaluation data

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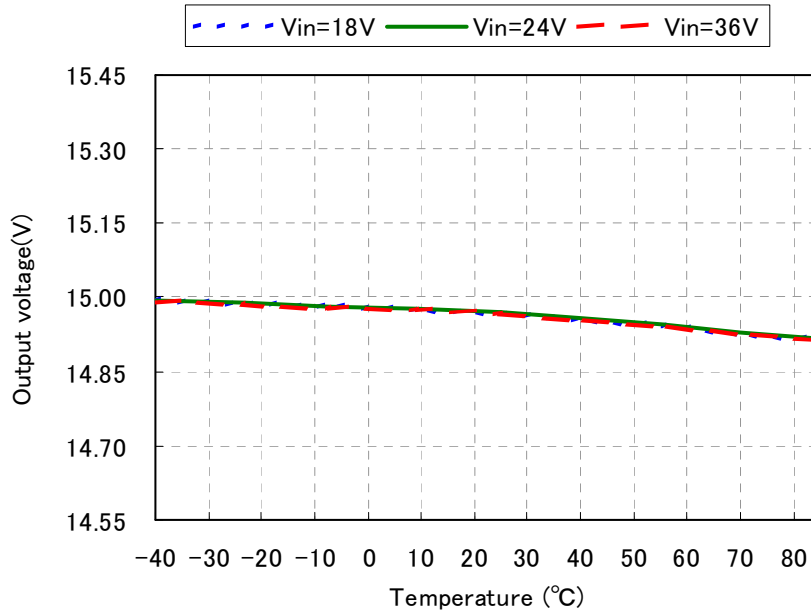
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### 3. Temperature regulation

Condition      Iout : 100%



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



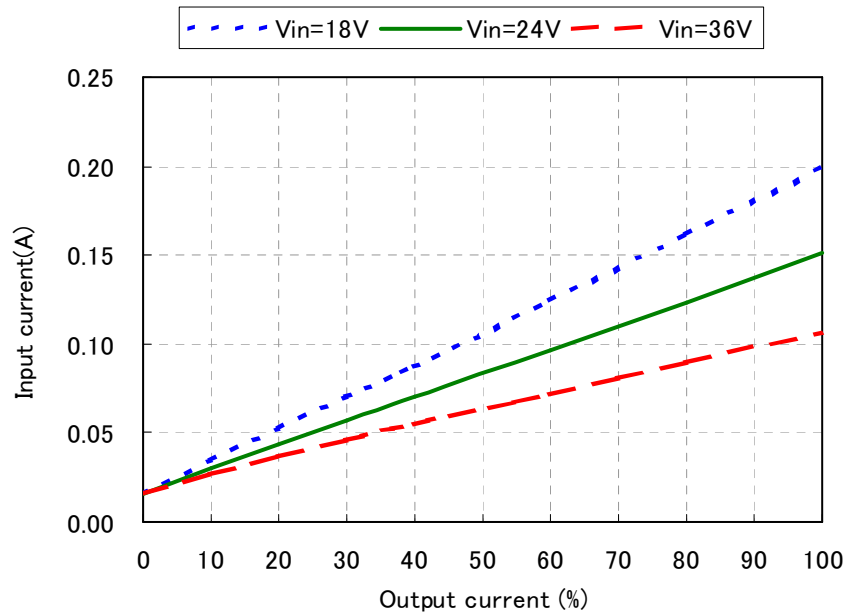
Product name or model, title		
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## 4. Input current(vs. load current)

Condition

Ta : 25°C

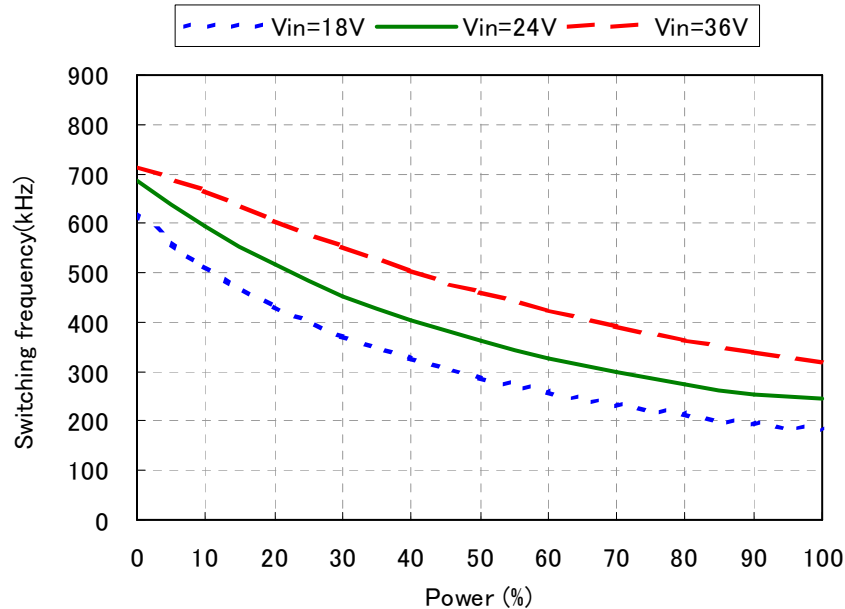
Vout : 12V



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

Condition

Ta : 25°C



Product name or model, title

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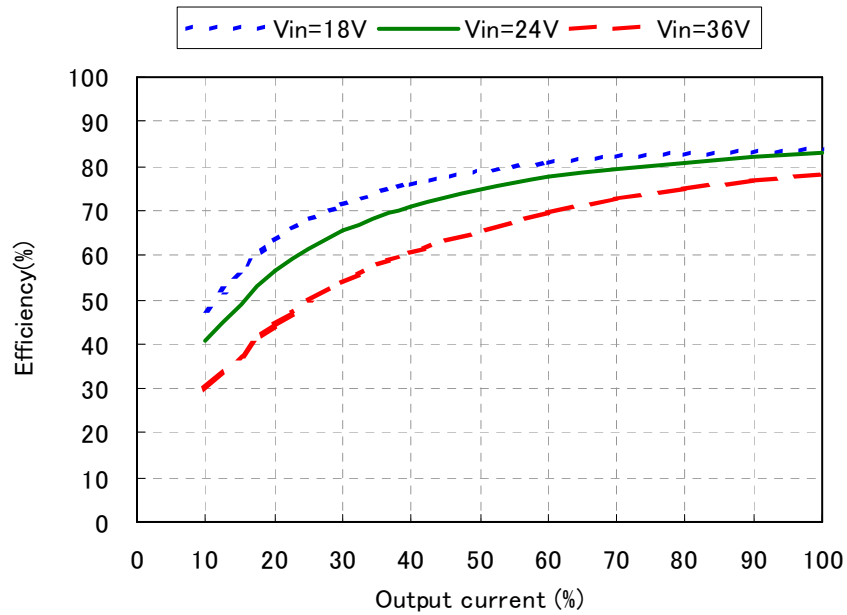
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## 6. Efficiency(vs. load current)

Condition

Ta : 25°C

Vout : 12V

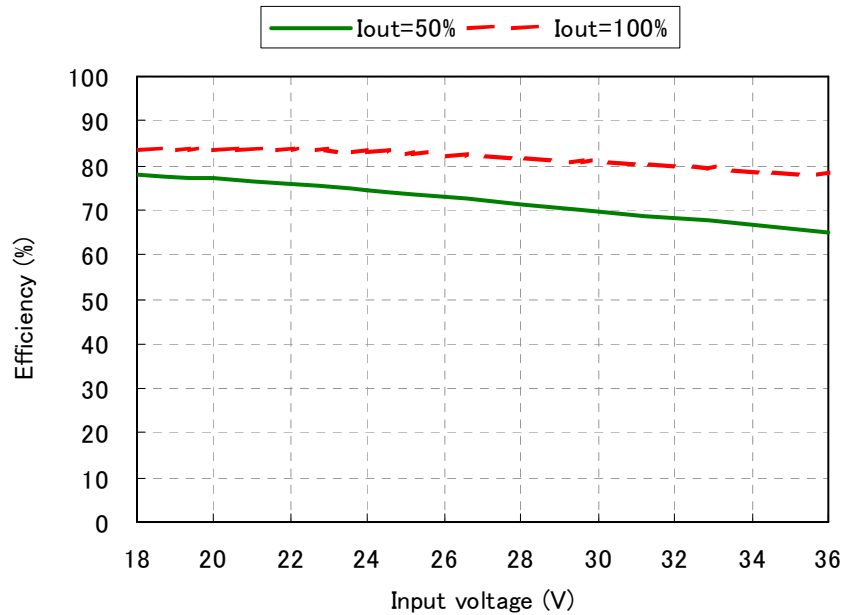


## 7. Efficiency(vs. input voltage)

Condition

Ta : 25°C

Vout : 12V



Product name or model, title

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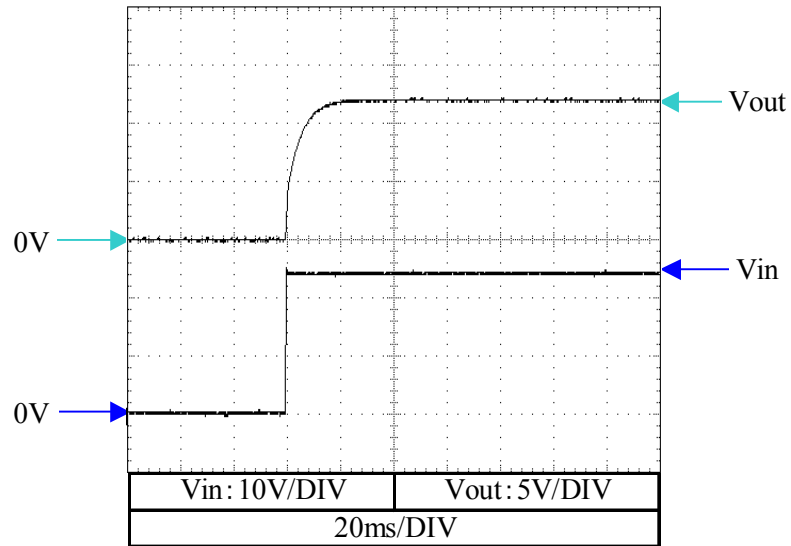
## 8. Output rise characteristics

Condition

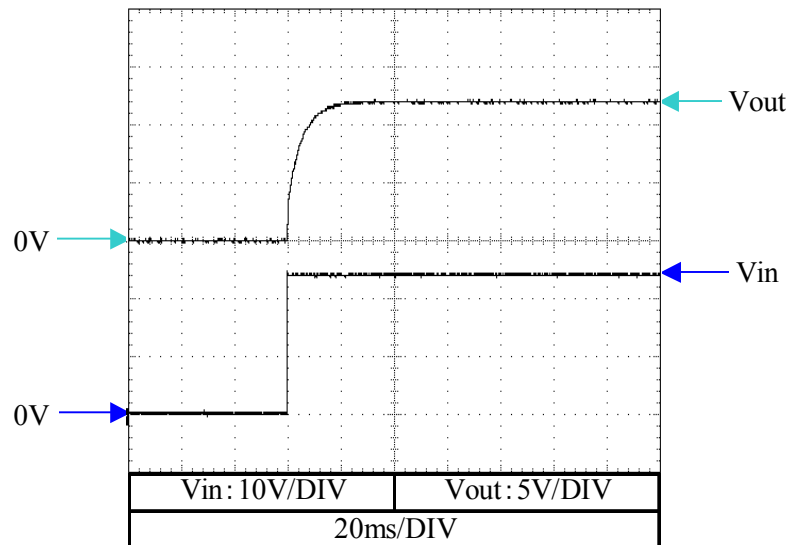
Vin : 24V

Ta : 25°C

Iout : 0%



Iout : 100%



Product name or model, title

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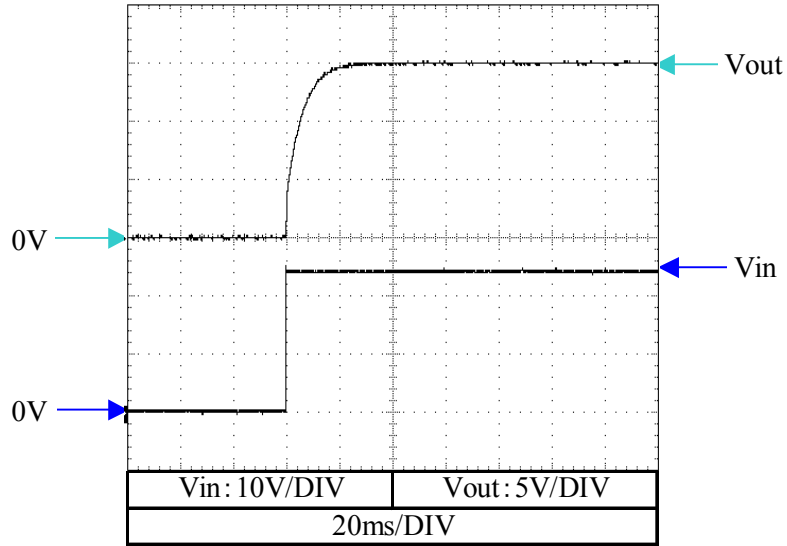
Evaluation data

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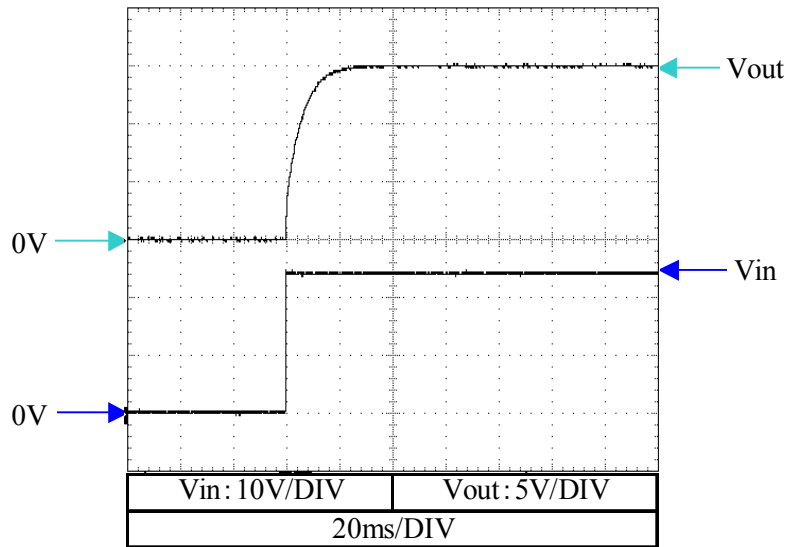
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Condition Vin : 24V  
 Ta : 25°C  
 TRM: Short-circuited to -Vout.

Iout : 0%



Iout : 100%



Product name or model, title			
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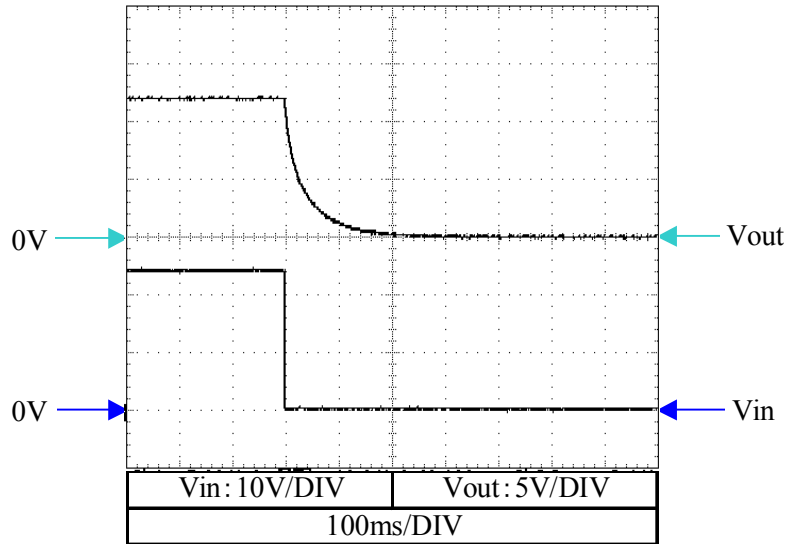
# 9. Output fall characteristics

Condition

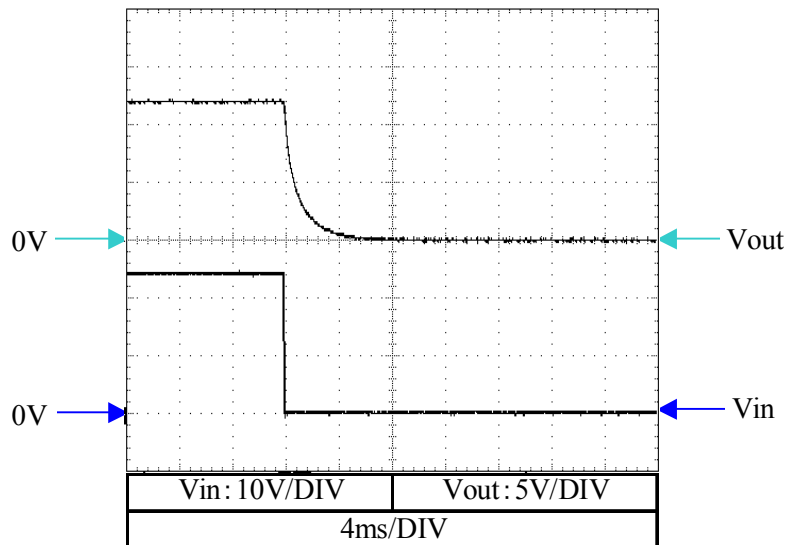
Vin : 24V

Ta : 25°C

Iout : 0%



Iout : 100%



Product name or model, title

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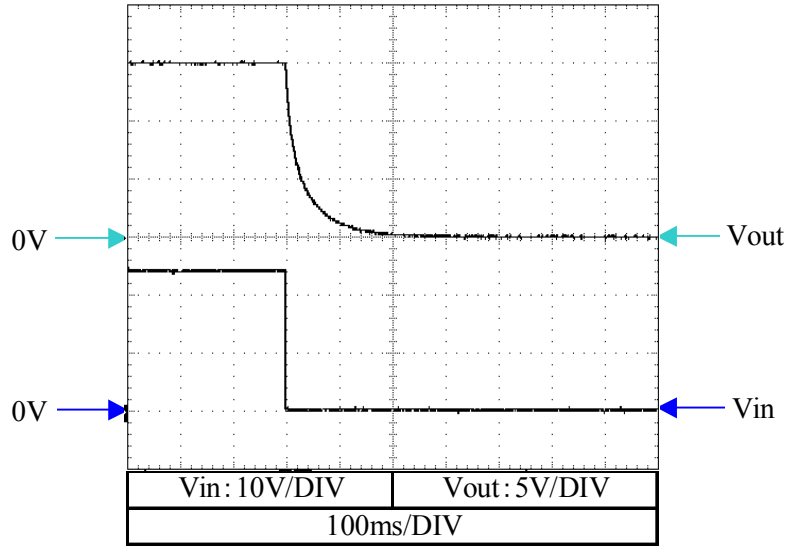
Evaluation data

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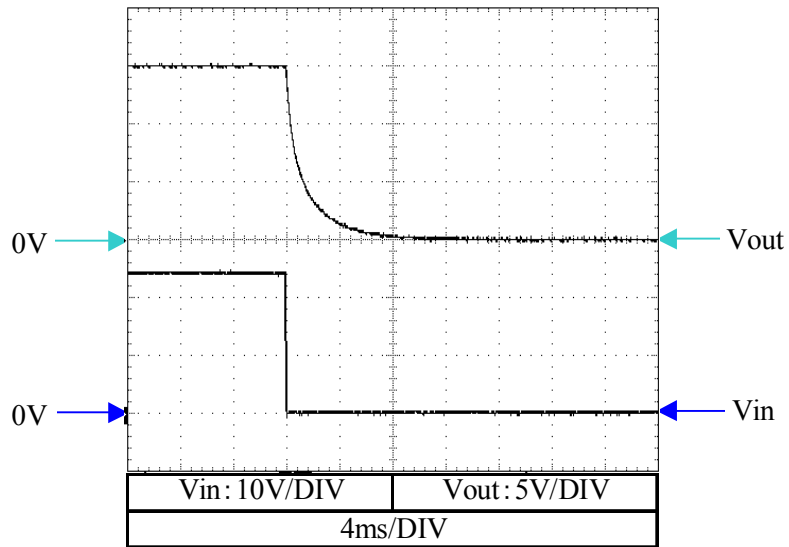
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Condition Vin : 24V  
 Ta : 25°C  
 TRM: Short-circuited to -Vout.

Iout : 0%



Iout : 100%



Product name or model, title

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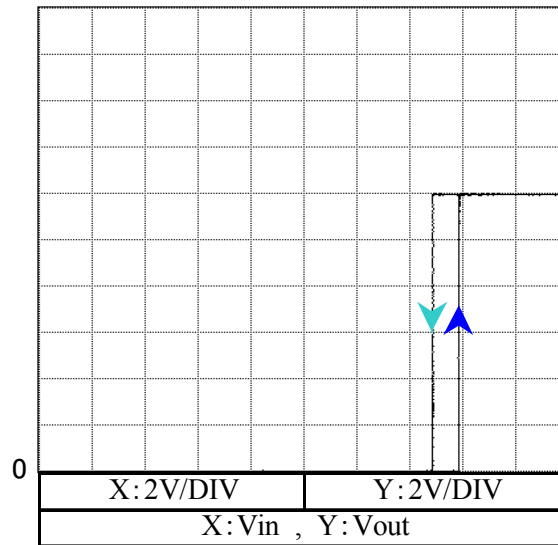
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## 10. Start/stop input voltage characteristics

Condition

I<sub>out</sub> : 100%

T<sub>a</sub> : 25°C



## 11. Dynamic load response characteristics

Condition

V<sub>in</sub> : 24V

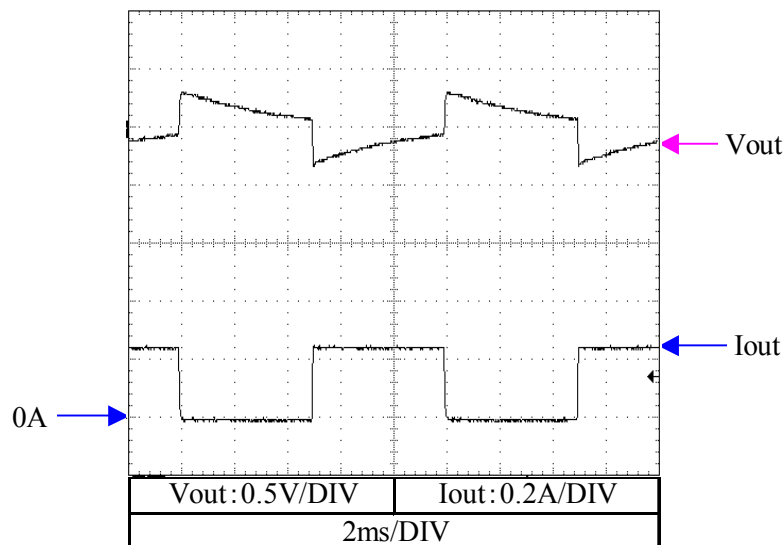
V<sub>out</sub> : 12V

I<sub>out</sub> : 0% ~ 100%

Tr=Tf: 100us

f : 100Hz

T<sub>a</sub> : 25°C



Product name or model, title

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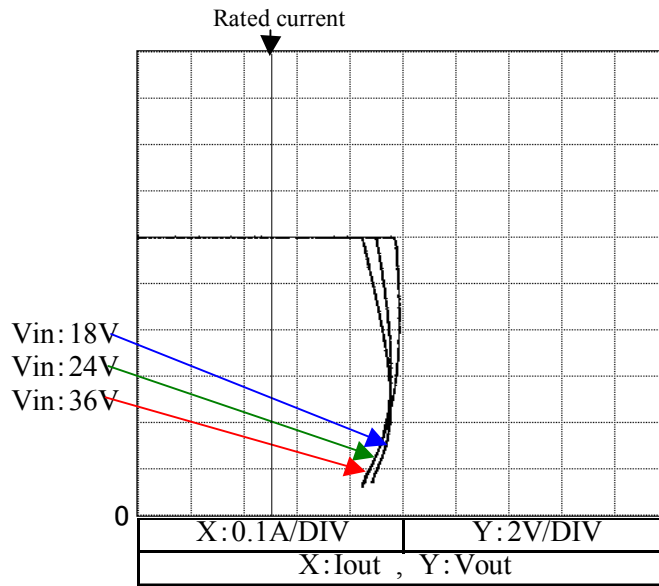
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# 12. Over current protection characteristics

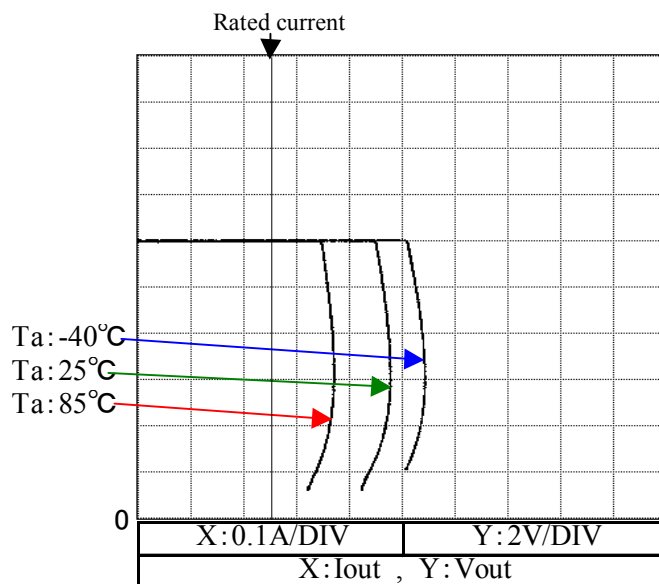
Condition

Ta : 25°C



Condition

Vin : 24V



Product name or model, title

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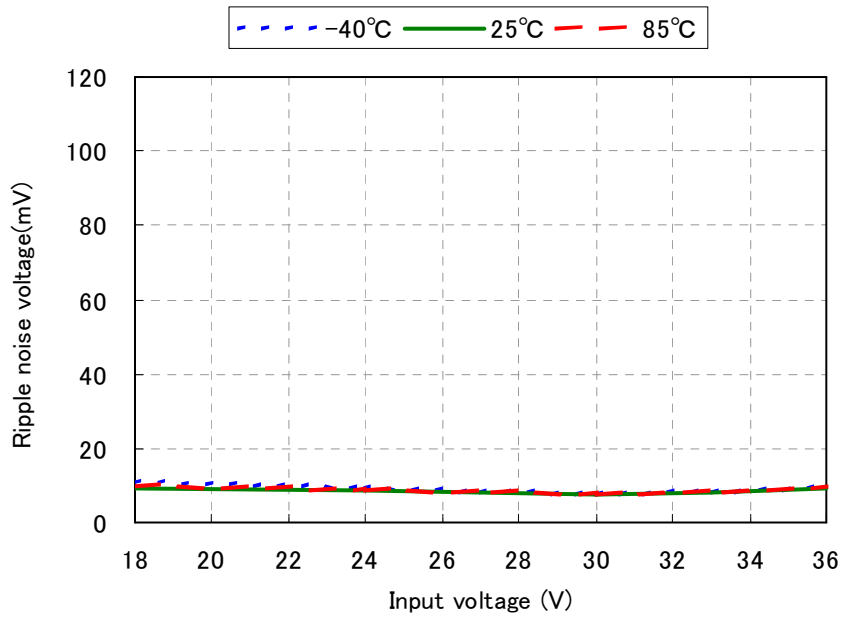
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# 13. Output ripple and noise characteristics

Condition

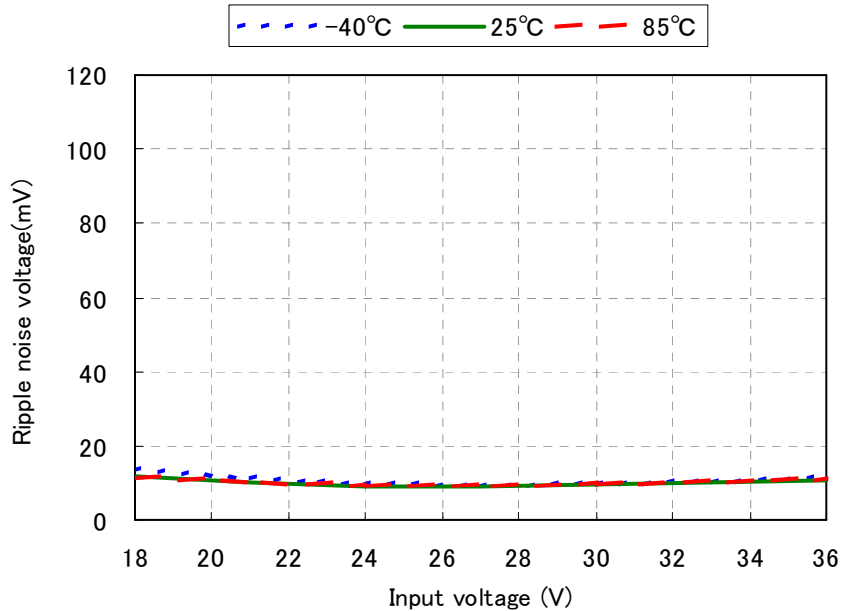
Iout : 100%



Condition

Iout : 100%

TRM: Short-circuited to -Vout.



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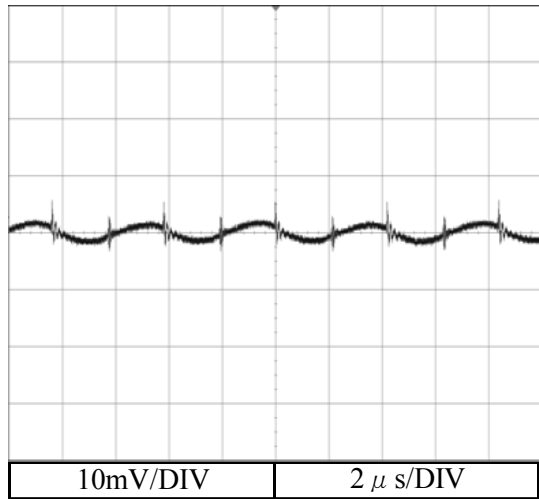
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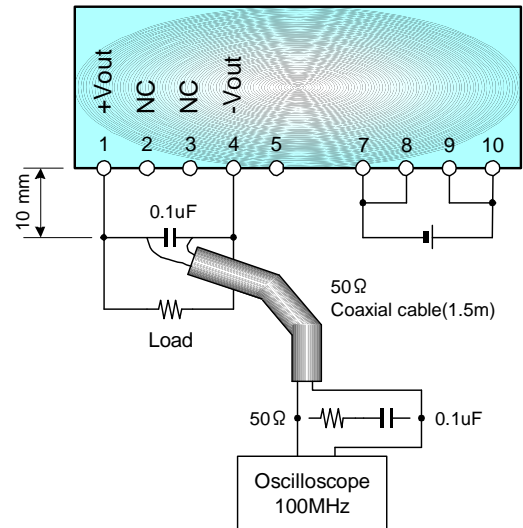
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## 14. Output ripple and noise waveform

Condition Vin : 24V  
Iout : 100%  
Ta : 25°C

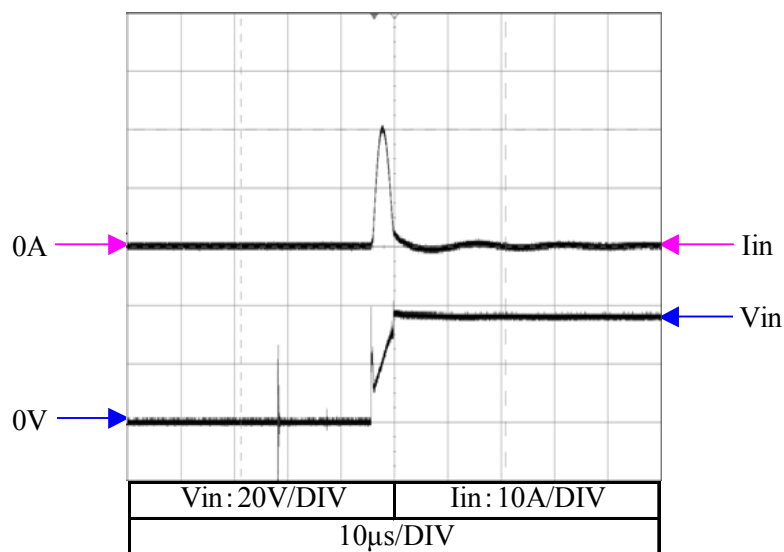


(Measurement circuit)



## 15. Inrush current waveform

Condition Vin : 36V  
Iout : 100%  
Ta : 25°C



Product name or model, title

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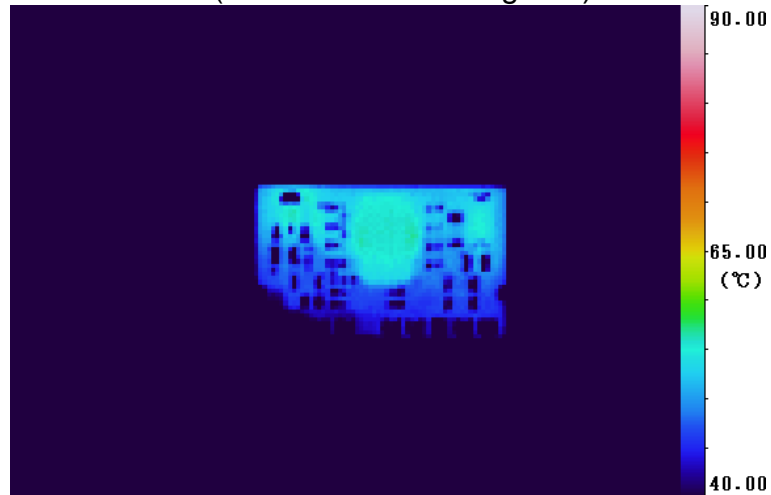
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# 16. Temperature distribution

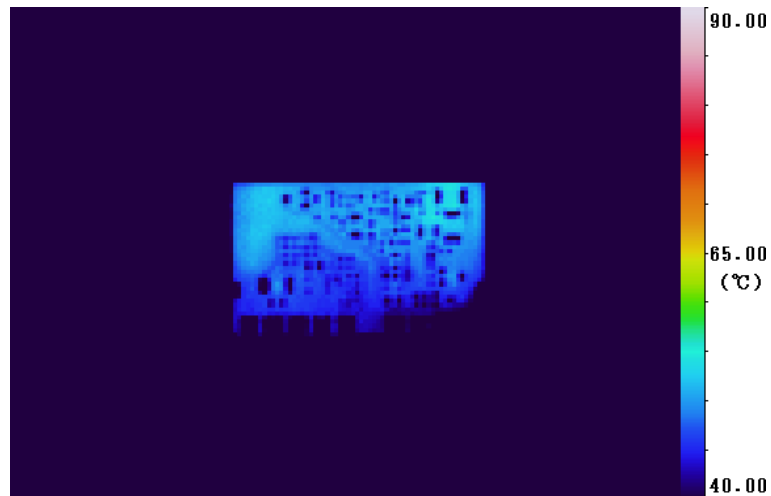
(Thermography)

Condition  
 Vin : 24V  
 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)
28.4	26.7	28.4

\* 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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	DC-DC converter CC3-2412SS-E		
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