

---

Material name : Evaluation data

---

Customer's product name :

---

TDK product name : DC-DC converter  
CC3-0503SS-E (SIP model)

---

# ***TDK·Lambda***

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

DWG.No.	TRSC-1575-1
---------	-------------

Issued 2006/12/01

# INDEX

1.Load regulation -----	P2~4
2.Line regulation -----	P5
3.Temperature regulation -----	P6
4.Input current(vs. load current)-----	P7
5.Switching frequency(vs. output power) -----	P7
6.Efficiency(vs. load current) -----	P8
7.Efficiency(vs. input voltage) -----	P8
8.Output rise characteristics -----	P9~10
9.Output fall characteristics -----	P11~12
10.Start/stop input voltage characteristics -----	P13
11.Dynamic load response characteristics -----	P13
12.Over current protection characteristics -----	P14
13.Output ripple and noise characteristics -----	P15
14.Output ripple and noise waveform -----	P16
15.Inrush current waveform -----	P16
16.Temperature distribution -----	P17

\* 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)
CC3-0503SS-E	4.5~9	3.3 ±3%	0~800	2.64	-40 ~ +85 *2
		3.67 ±3% *1	0~720		

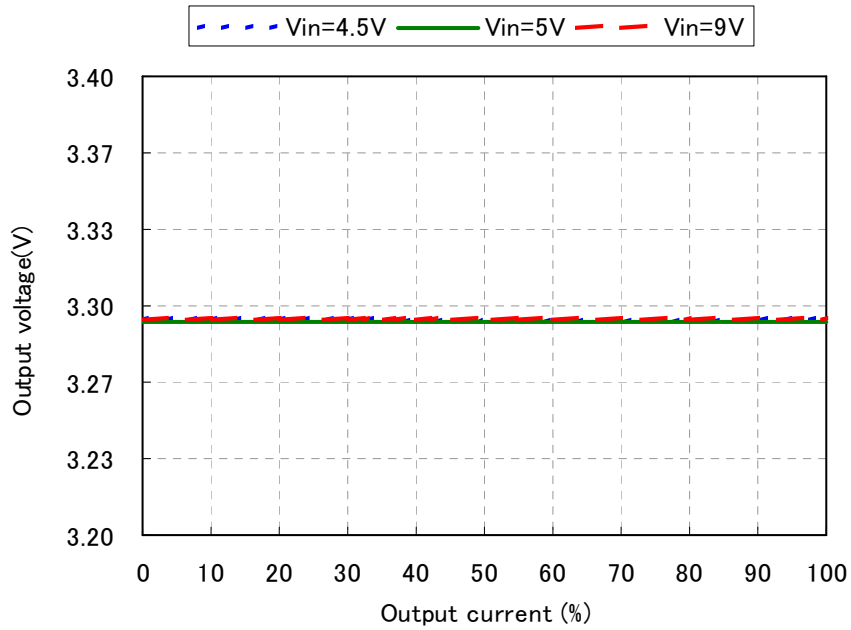
\*1 TRM and -Vout are short-circuited.

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

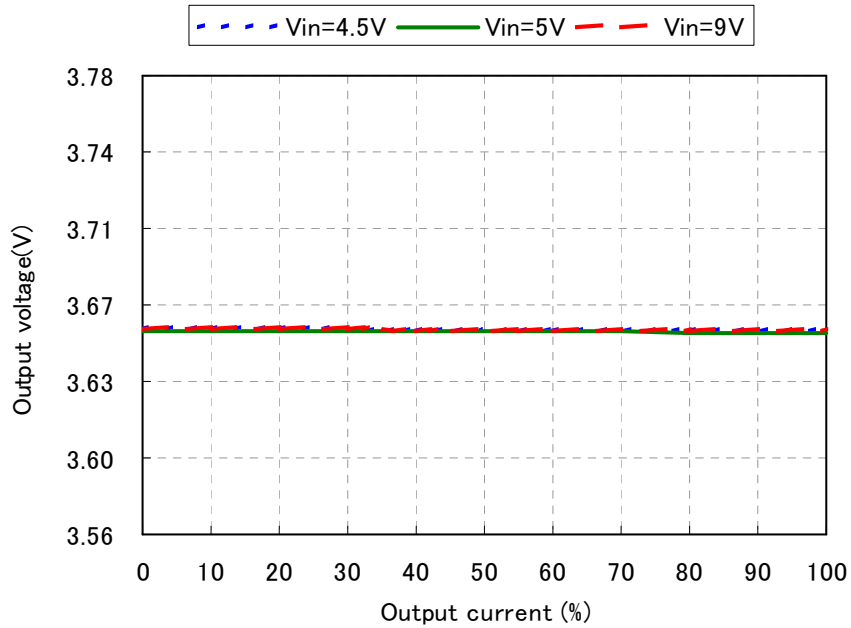
	Product name or model, title		
	DC-DC converter CC3-0503SS-E		
TDK CORPORATION	Name of drawing	Drawing No.	PAGE
	Evaluation data	TRSC-1575-1	1 / 17

# 1. Load regulation

Condition Ta : -40°C

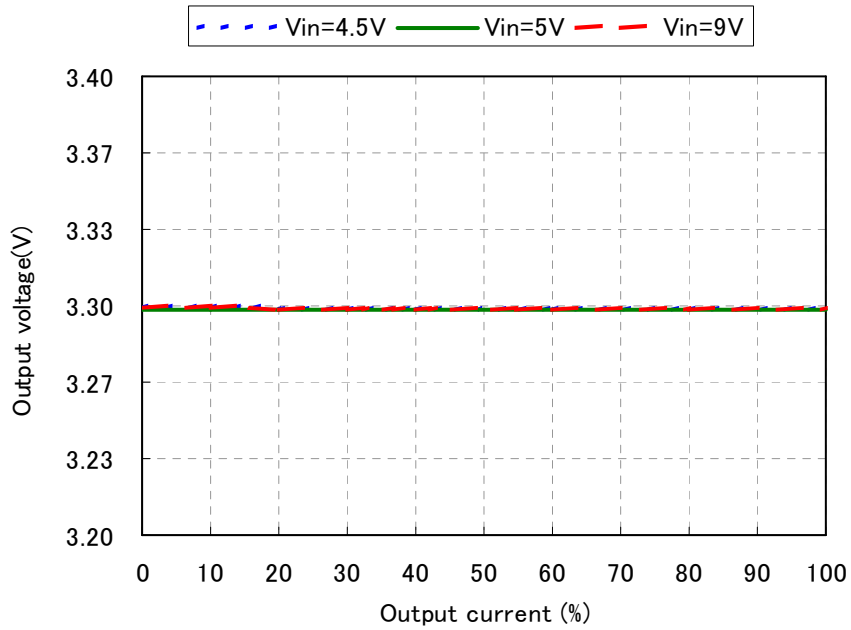


Condition Ta : -40°C  
TRM: Short-circuited to -Vout.

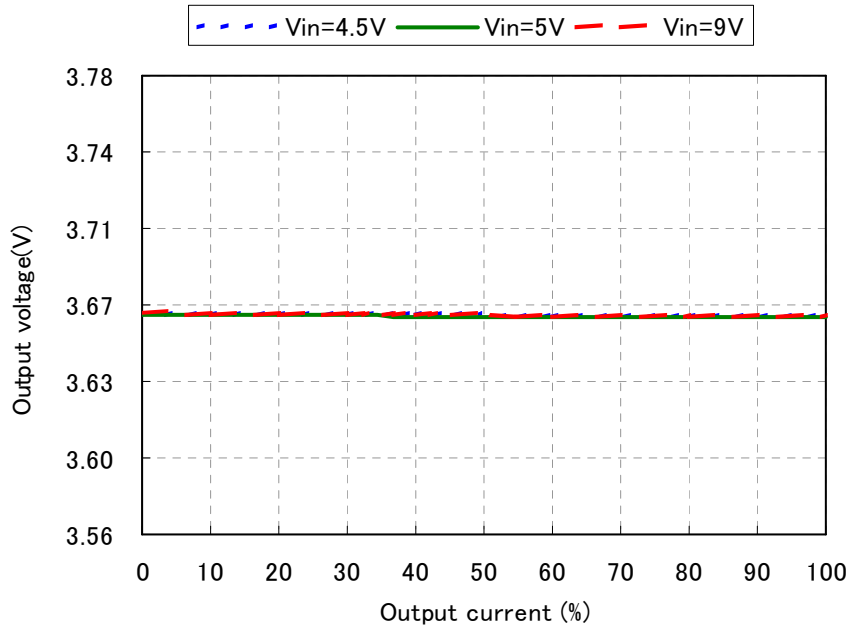


Product name or model, title			
DC-DC converter CC3-0503SS-E			
TDK CORPORATION	Name of drawing	Drawing No.	PAGE
	Evaluation data	TRSC-1575-1	2 / 17

Condition Ta : 25°C

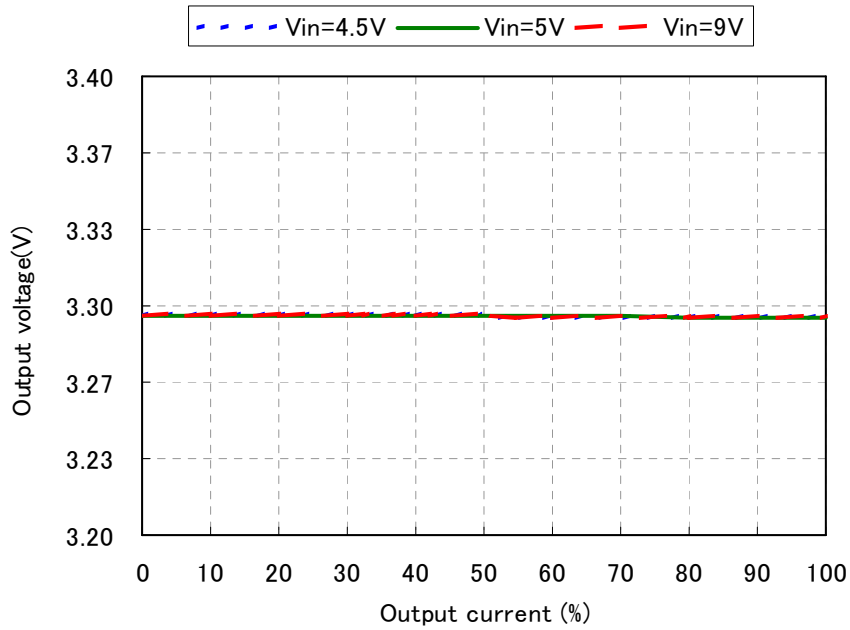


Condition Ta : 25°C  
TRM: Short-circuited to -Vout.

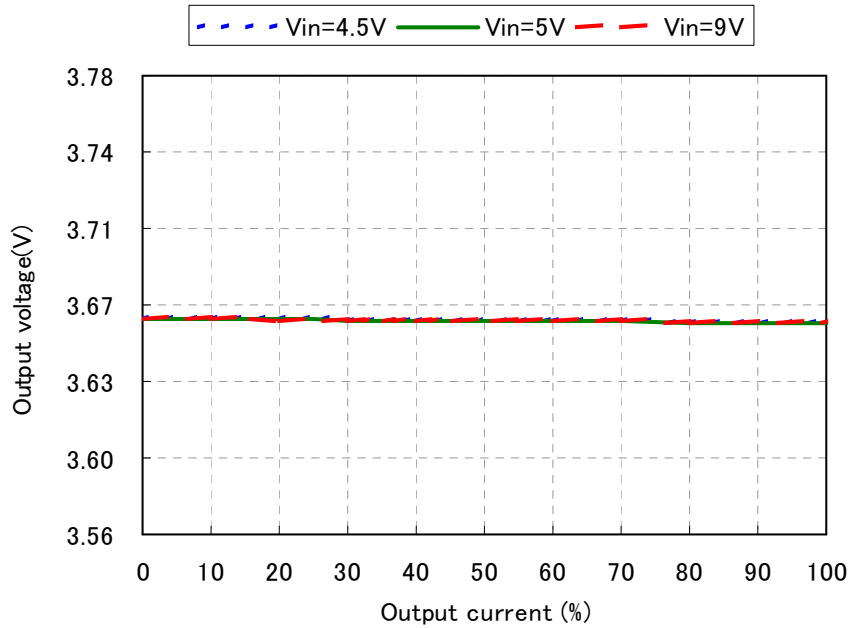


Product name or model, title			
DC-DC converter CC3-0503SS-E			
TDK CORPORATION	Name of drawing	Drawing No.	PAGE
	Evaluation data	TRSC-1575-1	3 / 17

Condition Ta : 85°C



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

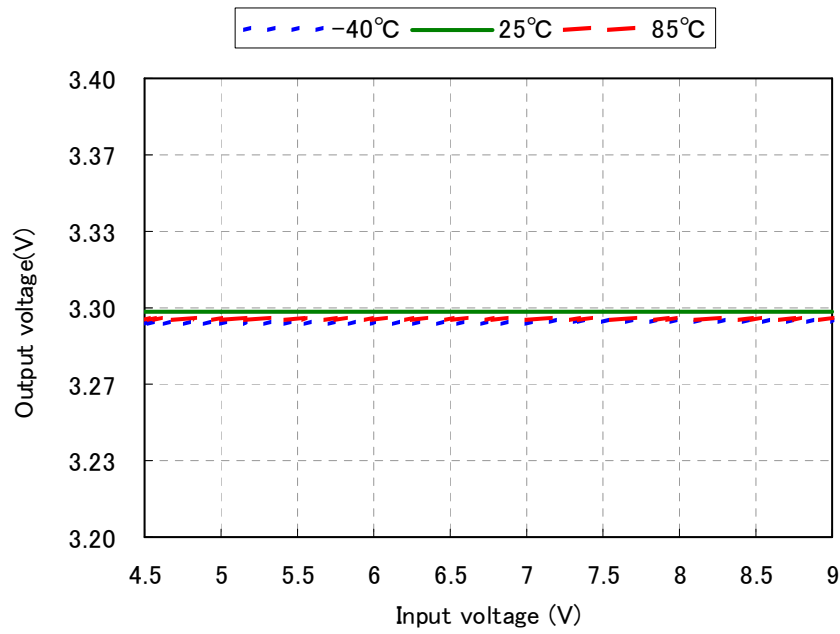


Product name or model, title			
DC-DC converter CC3-0503SS-E			
TDK CORPORATION	Name of drawing	Drawing No.	PAGE
	Evaluation data	TRSC-1575-1	4 /17

## 2. Line regulation

Condition

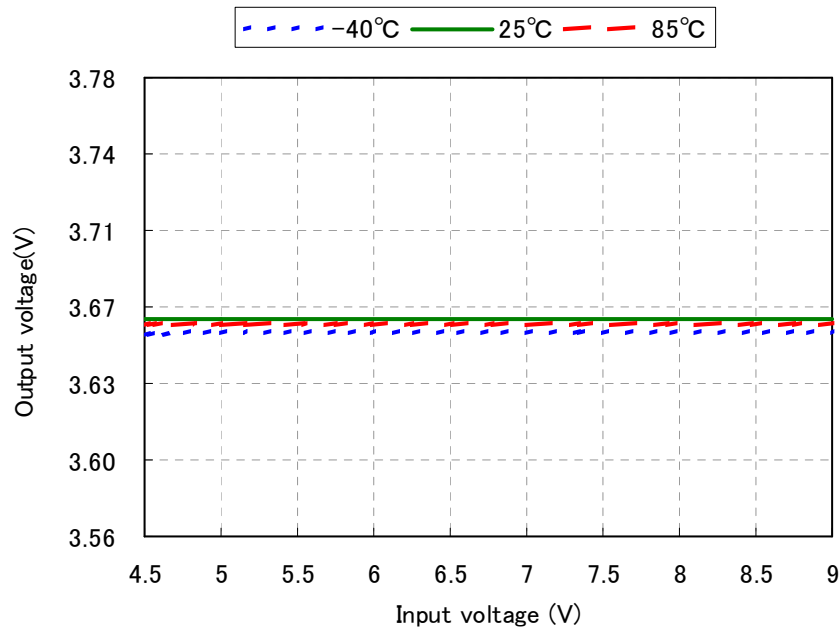
Iout : 100%



Condition

Iout : 100%

TRM: Short-circuited to -Vout.



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Drawing No.

PAGE

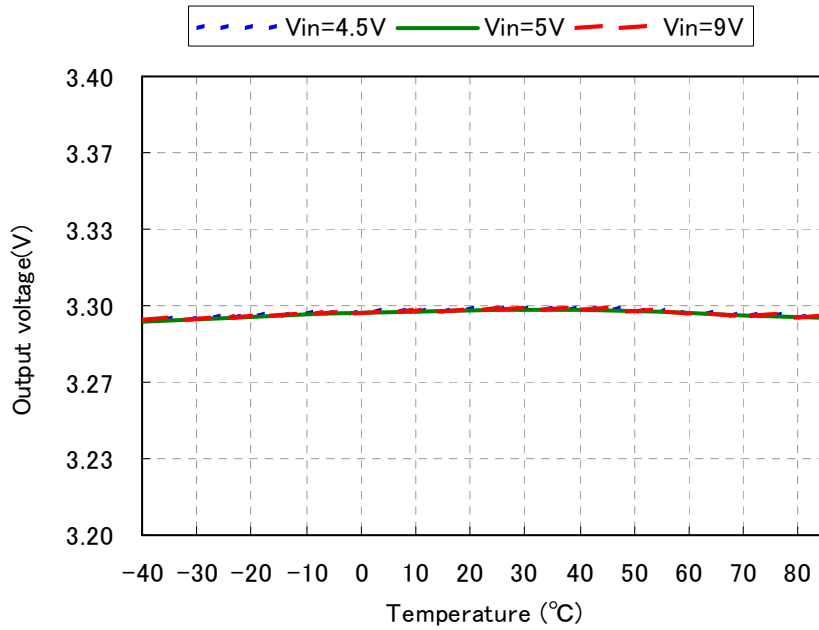
Evaluation data

TRSC-1575-1

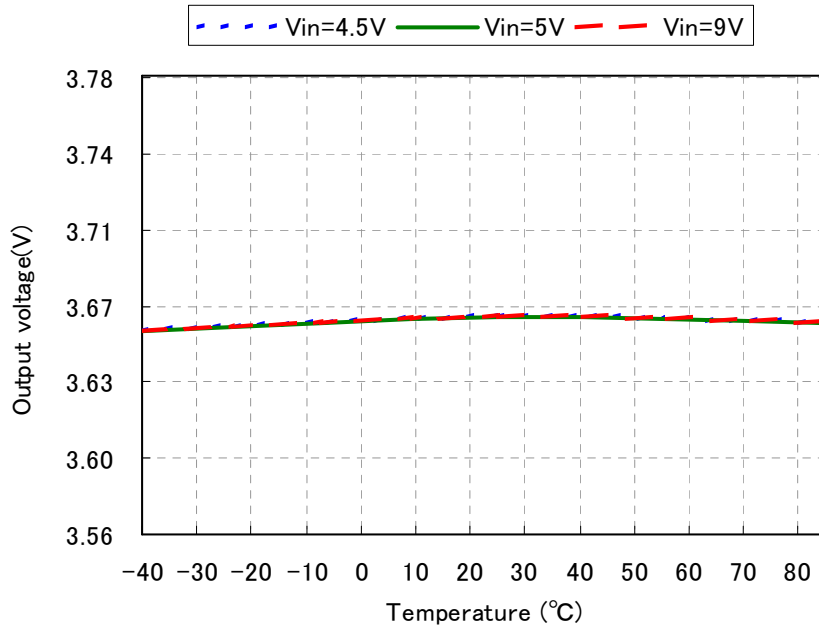
5 / 17

### 3. Temperature regulation

Condition      Iout : 100%



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



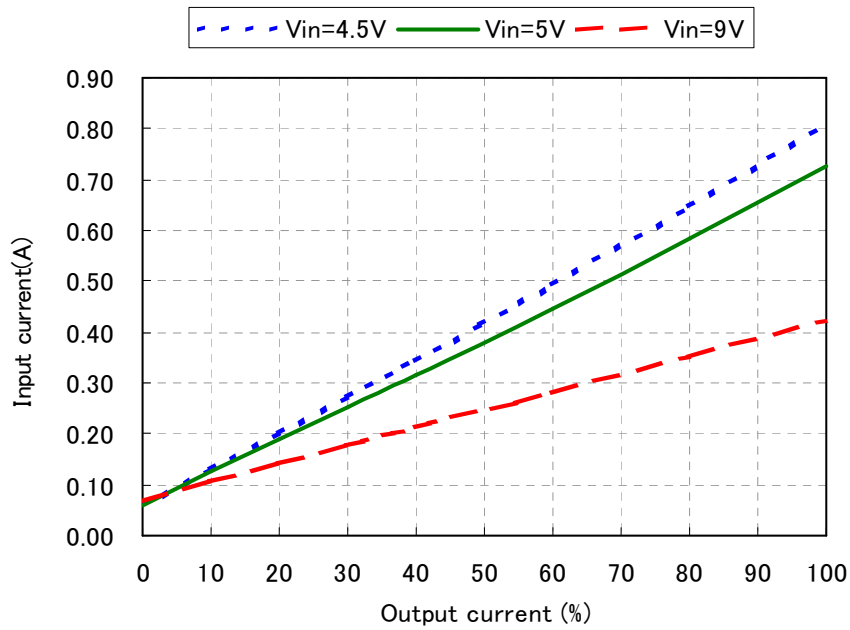
Product name or model, title			
DC-DC converter CC3-0503SS-E			
TDK CORPORATION	Name of drawing	Drawing No.	PAGE
	Evaluation data	TRSC-1575-1	6 / 17

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

Condition

Ta : 25°C

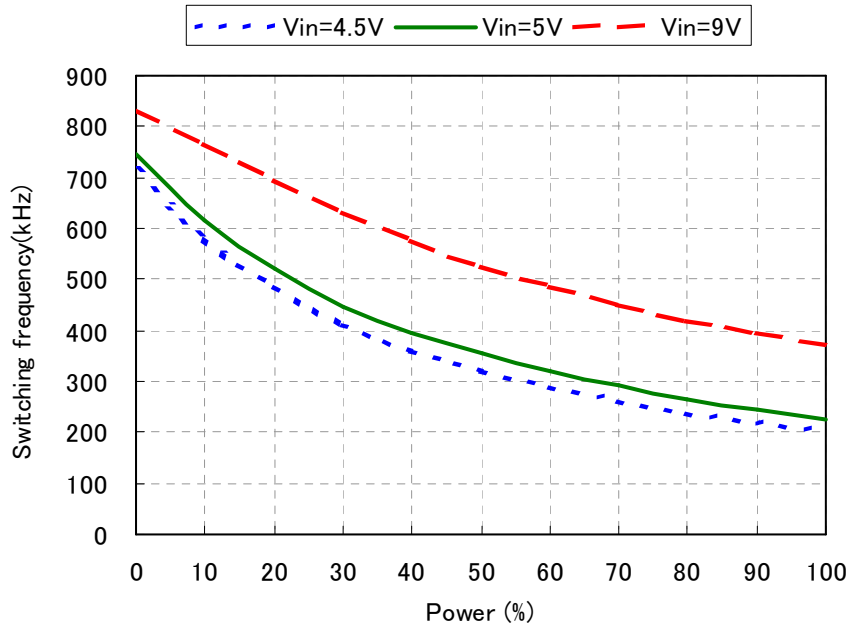
Vout : 3.3V



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

Condition

Ta : 25°C



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Evaluation data

Drawing No.

TRSC-1575-1

PAGE

7 / 17

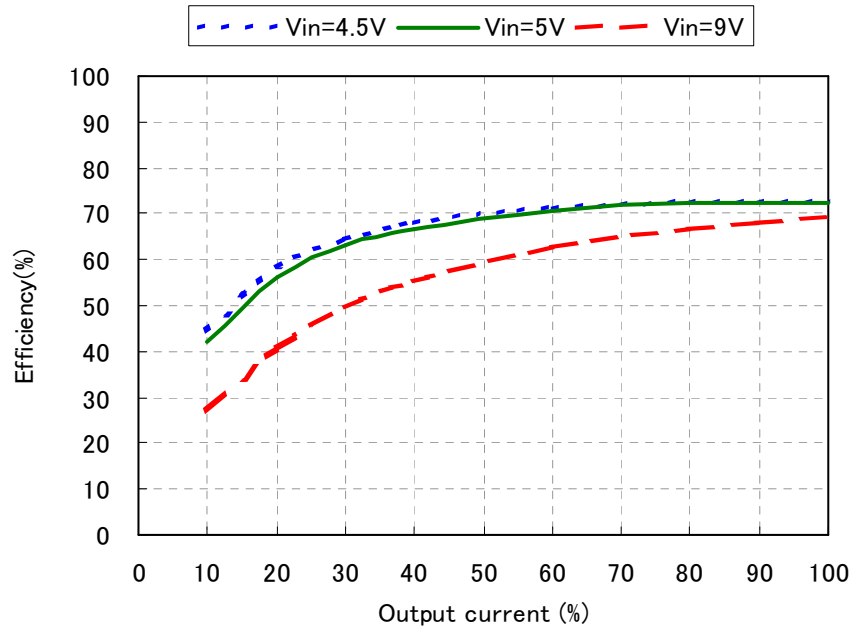


## 6. Efficiency(vs. load current)

Condition

Ta : 25°C

Vout : 3.3V

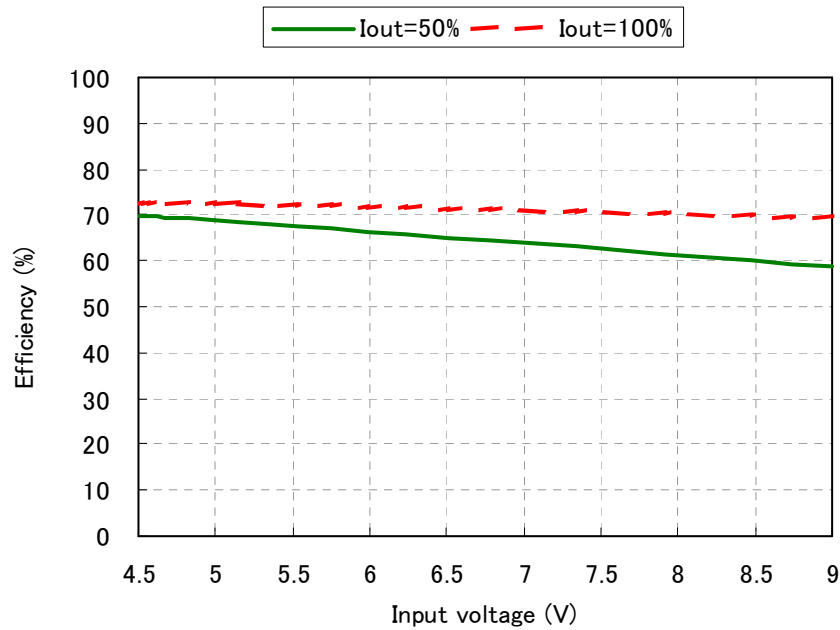


## 7. Efficiency(vs. input voltage)

Condition

Ta : 25°C

Vout : 3.3V



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Drawing No.

PAGE

Evaluation data

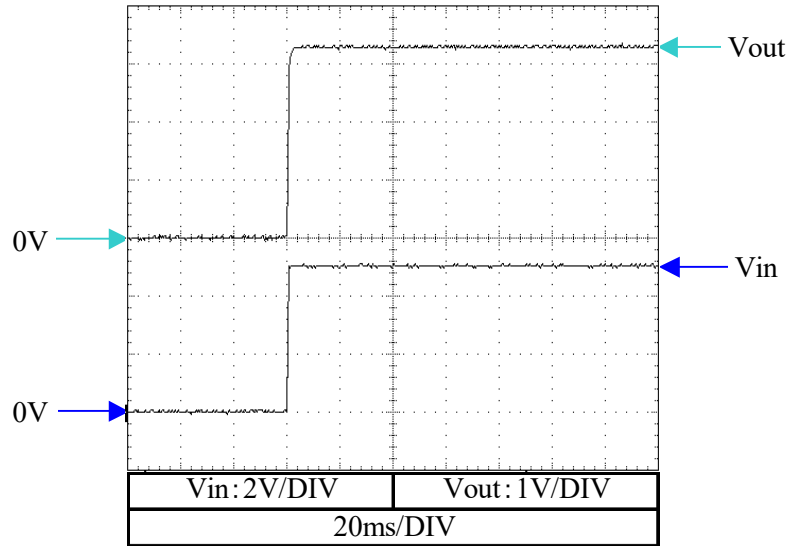
TRSC-1575-1

8 / 17

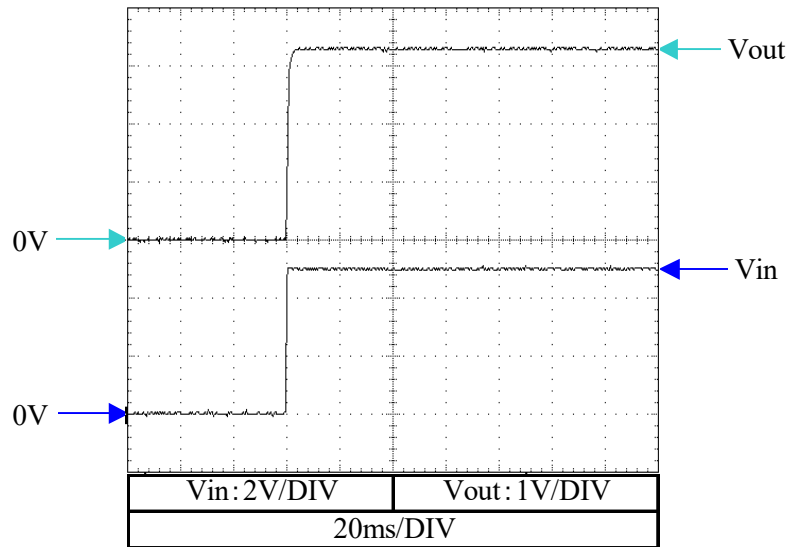
## 8. Output rise characteristics

Condition       $V_{in}$  : 5V  
                      $T_a$  : 25°C

$I_{out}$  : 0%



$I_{out}$  : 100%



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Evaluation data

Drawing No.

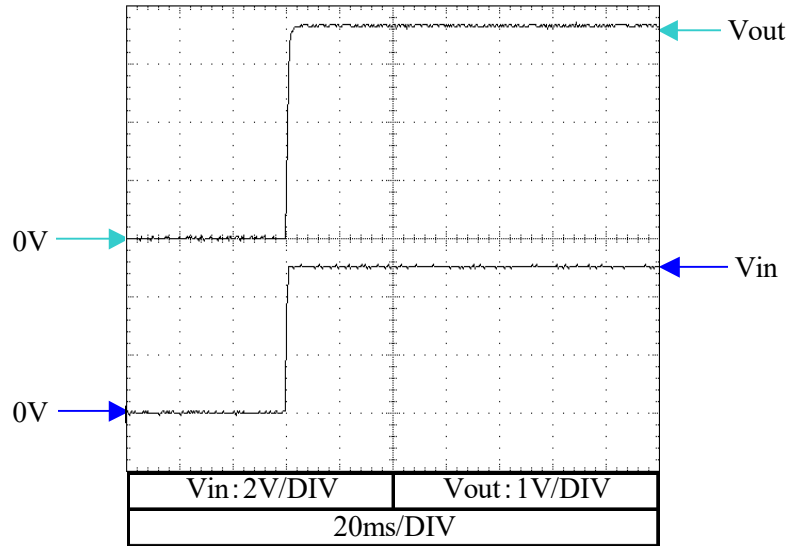
TRSC-1575-1

PAGE

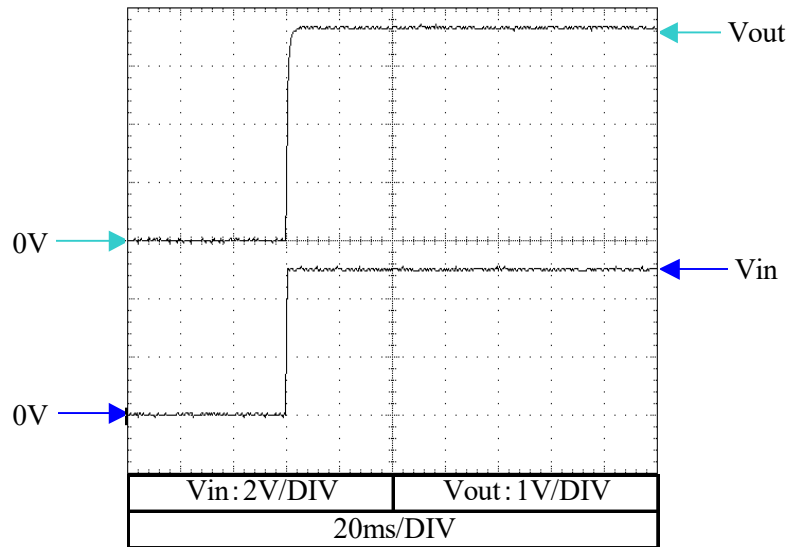
9 / 17

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

Iout : 0%



Iout : 100%



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Drawing No.

PAGE

Evaluation data

TRSC-1575-1

10 / 17

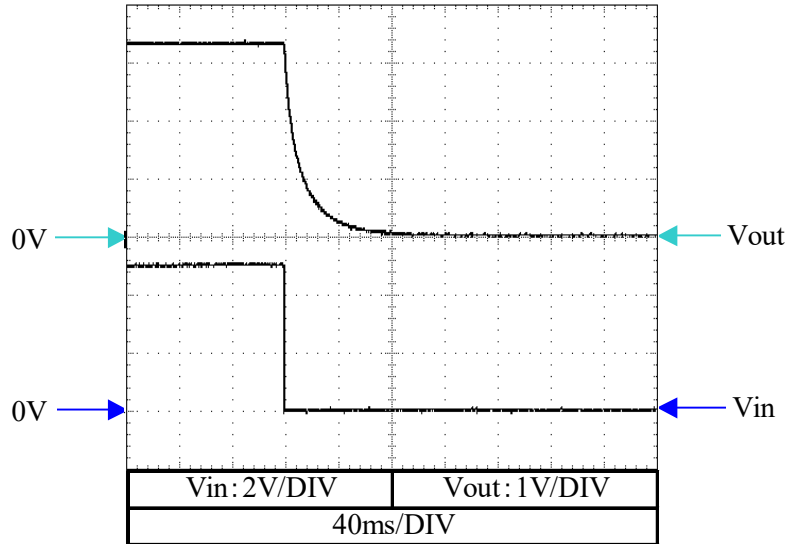
## 9. Output fall characteristics

Condition

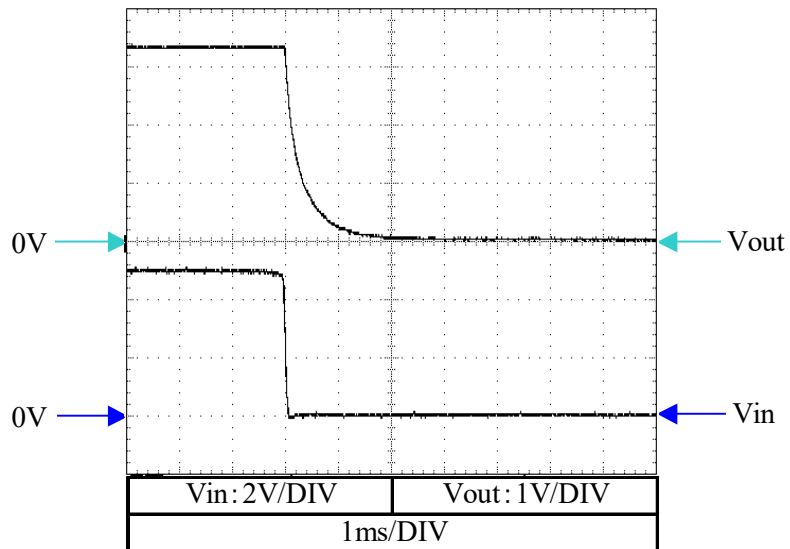
Vin : 5V

Ta : 25°C

Iout : 0%



Iout : 100%



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Drawing No.

PAGE

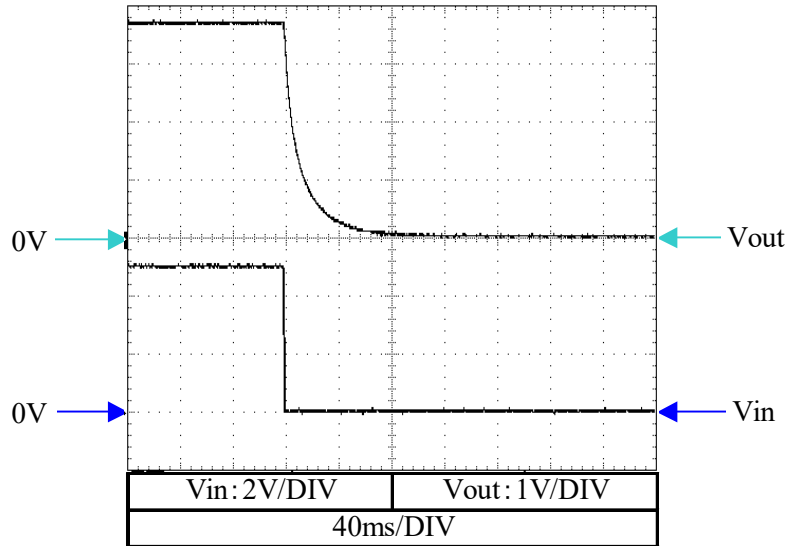
Evaluation data

TRSC-1575-1

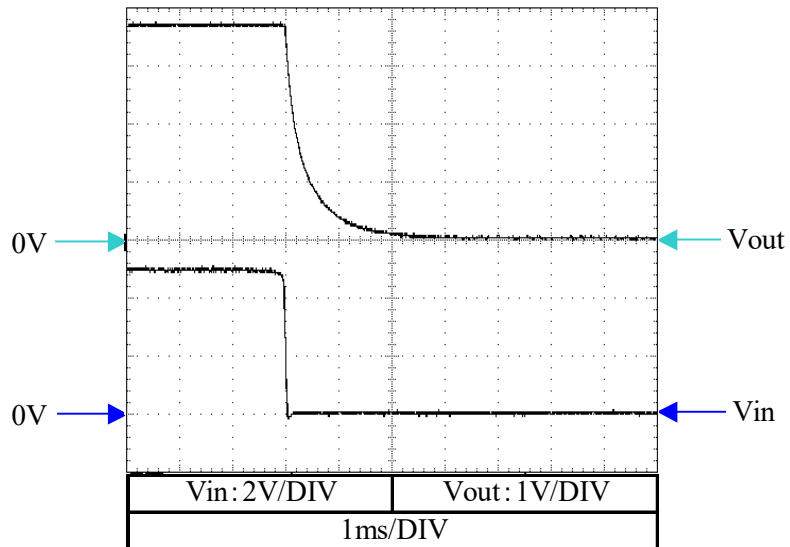
11 / 17

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

Iout : 0%



Iout : 100%



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Drawing No.

PAGE

Evaluation data

TRSC-1575-1

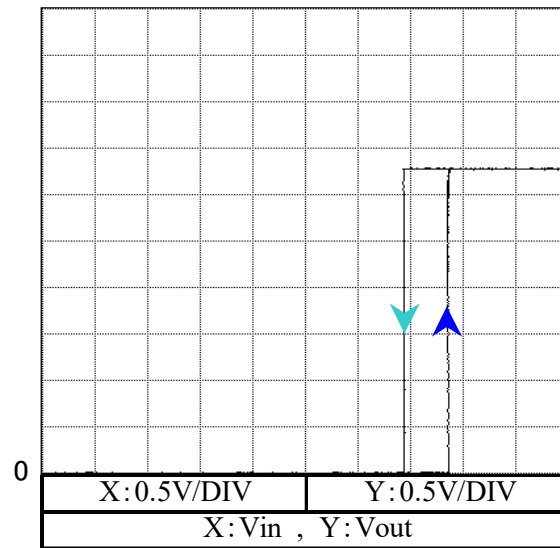
12 / 17

## 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> : 5V

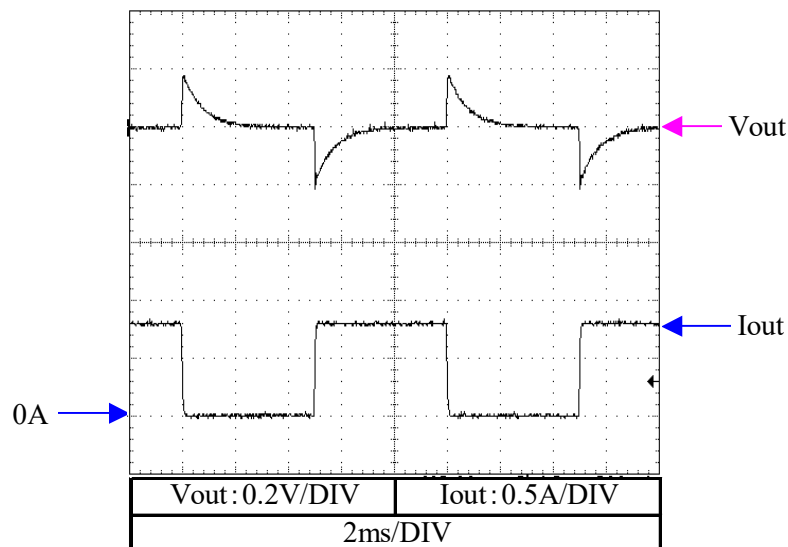
V<sub>out</sub> : 3.3V

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

Tr=Tf: 100us

f : 100Hz

T<sub>a</sub> : 25°C



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Drawing No.

PAGE

Evaluation data

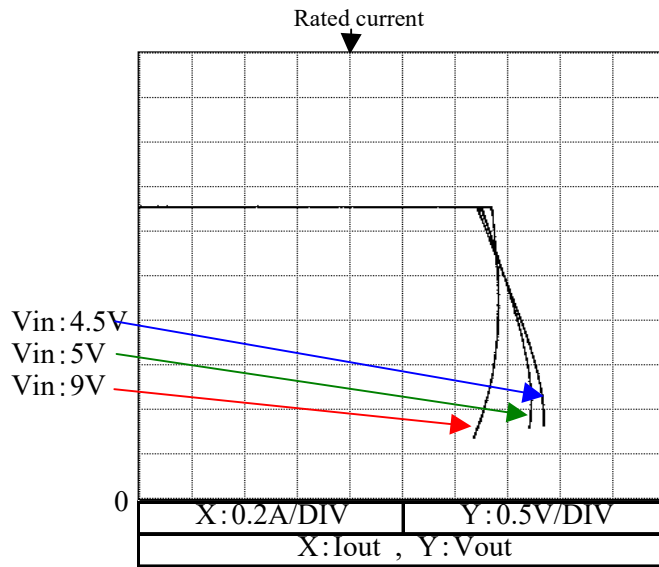
TRSC-1575-1

13 / 17

# 12. Over current protection characteristics

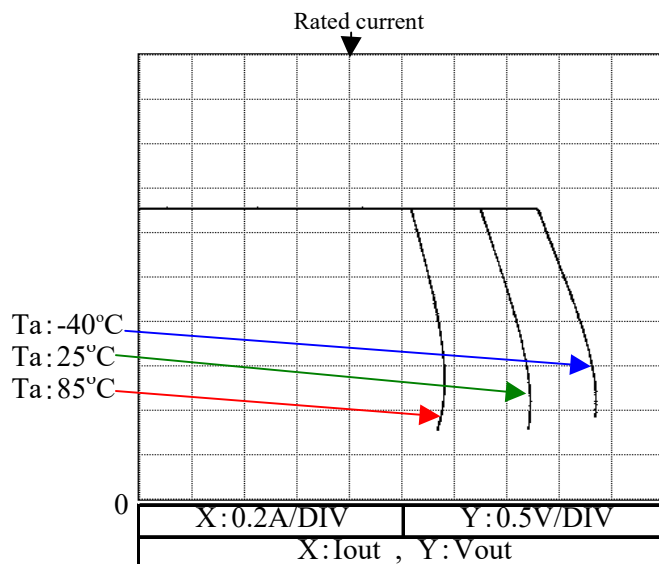
Condition

Ta : 25°C



Condition

Vin : 5V



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Evaluation data

Drawing No.

TRSC-1575-1

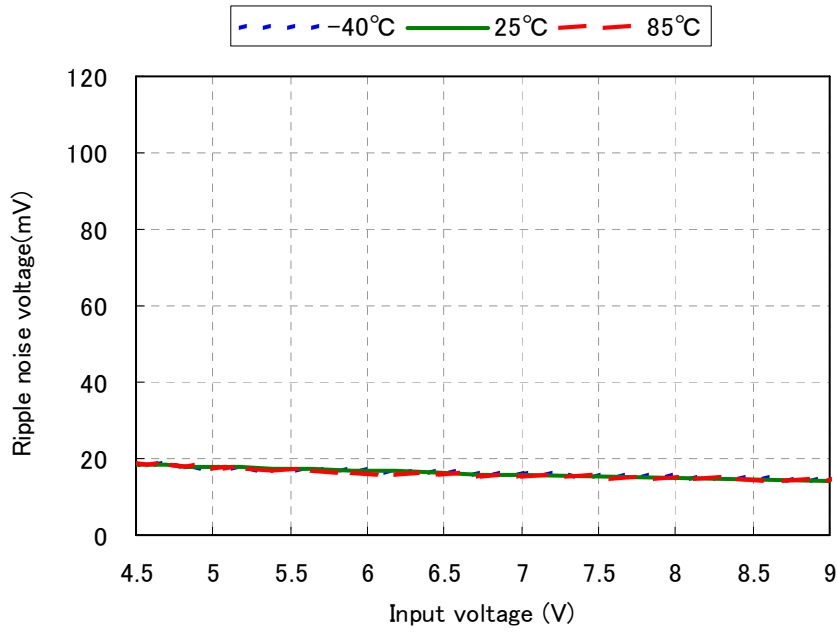
PAGE

14 /17

# 13. Output ripple and noise characteristics

Condition

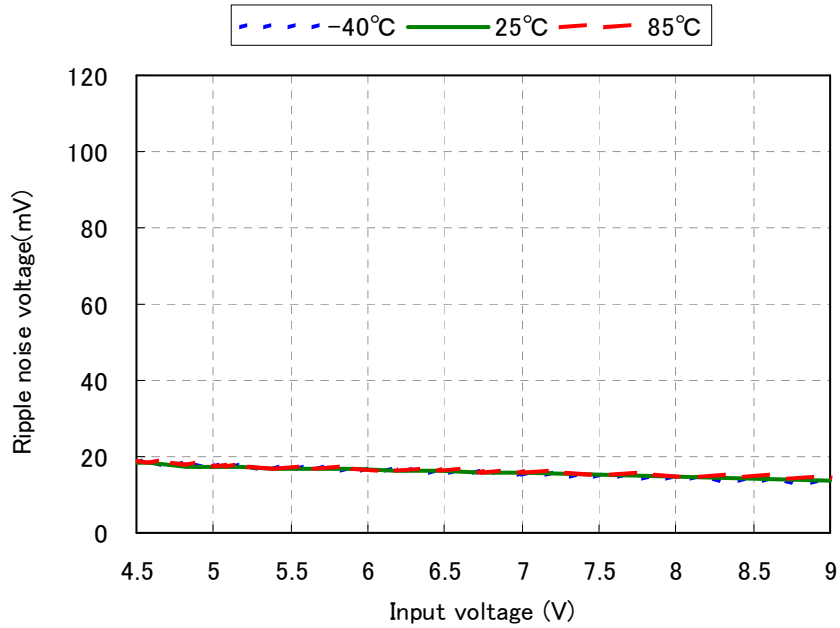
Iout : 100%



Condition

Iout : 100%

TRM: Short-circuited to -Vout.



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Drawing No.

PAGE

Evaluation data

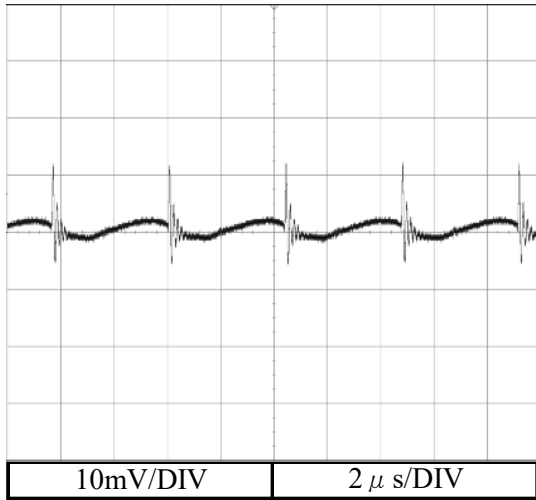
TRSC-1575-1

15 / 17

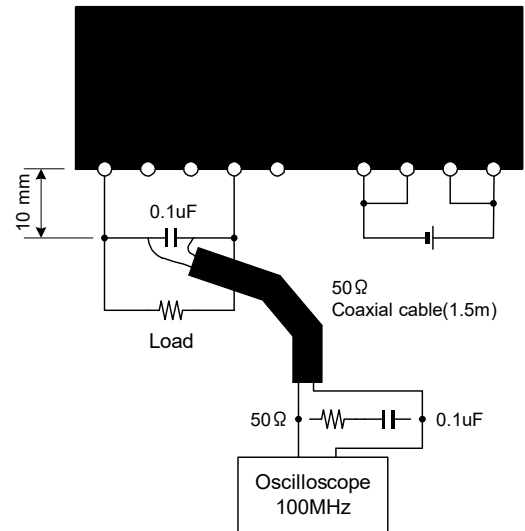


## 14. Output ripple and noise waveform

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

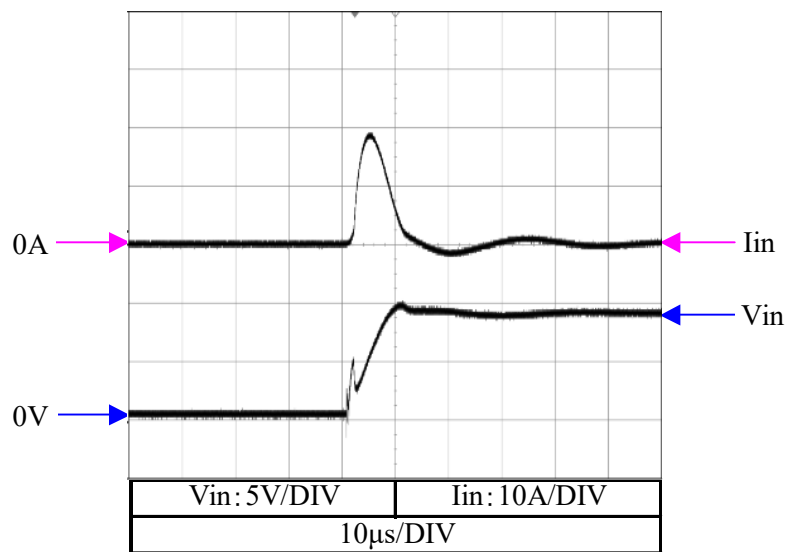


(Measurement circuit)



## 15. Inrush current waveform

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



Product name or model, title

DC-DC converter CC3-0503SS-E

TDK CORPORATION

Name of drawing

Drawing No.

PAGE

Evaluation data

TRSC-1575-1

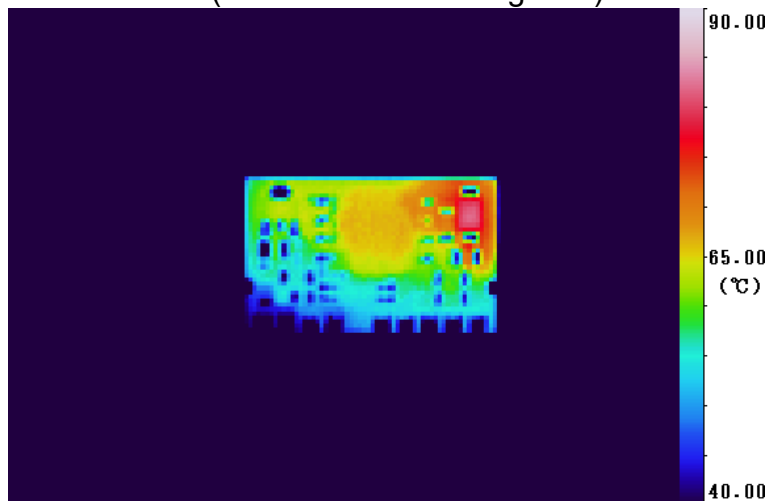
16 / 17

# 16. Temperature distribution

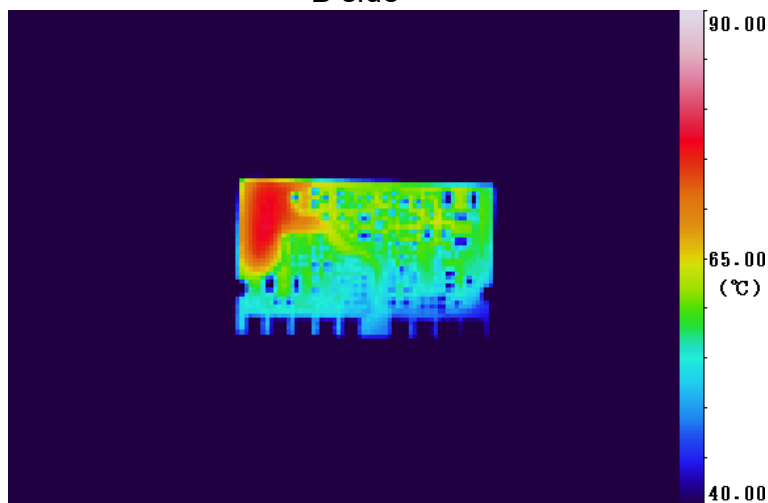
(Thermography)

Condition Vin : 5V  
 Vout : 3.3V  
 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)
35.1	53.8	38.5

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

	Product name or model, title		
	DC-DC converter CC3-0503SS-E		
TDK CORPORATION	Name of drawing	Drawing No.	PAGE
	Evaluation data	TRSC-1575-1	17 /17