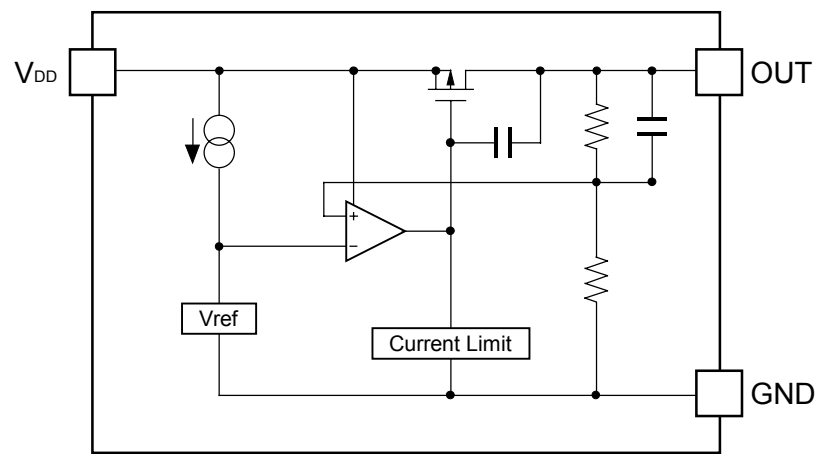


BLOCK DIAGRAMS



SELECTION GUIDE

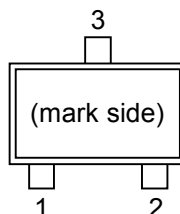
The output voltage, the active type, and the packing type for the ICs can be selected at the user’s request. The selection can be made with designating the part number as shown below:

R1100xxx1C-xx ←Part Number
 ↑↑↑↑↑
 a b cd e

Code	Contents
a	Designation of Package Type D: SON1408-3
b	Setting Output Voltage (V _{OUT}): Stepwise setting with a step of 0.1V in the range of 0.9V to 4.0V is possible.
c	1 : Fixed
d	C : Fixed
e	Designation of Taping Type: TR (Refer to Taping Specifications)

PIN CONFIGURATION

● SON1408-3



PIN DESCRIPTION

● SON1408-3

Pin No.	Symbol	Description
1	V_{OUT}	Output Pin
2	V_{DD}	Input Pin
3	GND	Ground Pin

ABSOLUTE MAXIMUM RATINGS

Symbol	Item	Rating	Unit
V_{IN}	Supply Voltage	6.5	V
V_{OUT}	Output Voltage	$V_{SS}-0.3$ to $V_{IN}+0.3$	V
I_{OUT}	Output Current	180	mA
P_D	Power Dissipation (SON1408-3)*Note1	250	mW
T_{opt}	Operating Temperature	-40 to +85	°C
T_{stg}	Storage Temperature	-55 to +125	°C
T_{solder}	Soldering Temperature	260°C, 10s	

*Note 1: This specification is at mounted on board.

P_D depends on conditions of mounting on board. This specification is based on the measurement at the condition below:

*Measurement Conditions

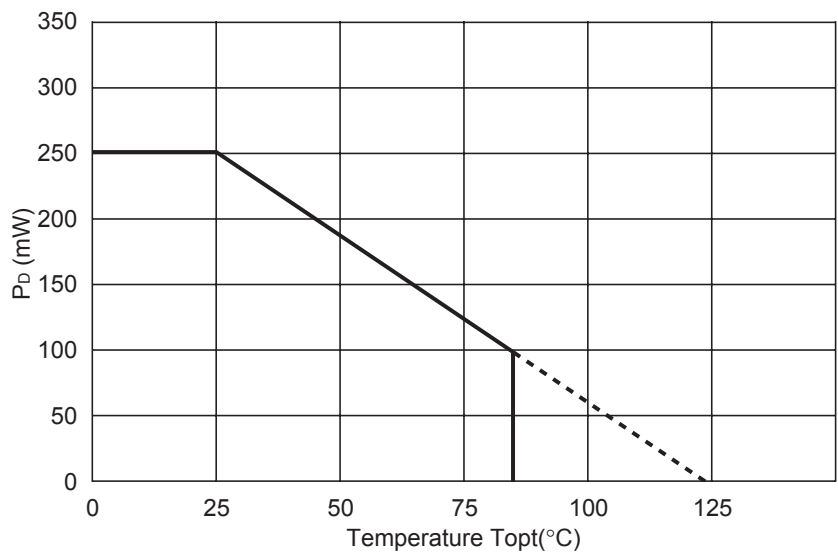
Environment: Mounted on board (Wind velocity 0m/s)

Board Material: FR-4 (2-layer)

Board dimensions : 40mm × 40mm × t1.6mm

Copper Area : 50%

Tab (3pin) pattern width is same as lead width and connected to GND plane.



ELECTRICAL CHARACTERISTICS

• R1100D301C

$T_{opt}=25^{\circ}\text{C}$

Symbol	Item	Test Conditions	Min.	Typ.	Max.	Unit
V_{OUT}	Output Voltage	$V_{IN}=5.0\text{V}$ $10\mu\text{A} \leq I_{OUT} \leq 10\text{mA}$	2.940	3.000	3.060	V
I_{OUT}	Output Current	$V_{IN}=5.0\text{V}$	100			mA
$\Delta V_{OUT}/\Delta I_{OUT}$	Load Regulation	$V_{IN}=5.0\text{V}$, $1\text{mA} \leq I_{OUT} \leq 50\text{mA}$		35	60	mV
V_{DIF}	Dropout Voltage	$I_{OUT}=1\text{mA}$		20	30	mV
I_{SS}	Supply Current	$V_{IN}=5.0\text{V}$		1.5	3.0	μA
$\Delta V_{OUT}/\Delta V_{IN}$	Line Regulation	$I_{OUT}=1\text{mA}$ $V_{OUT}+0.5\text{V} \leq V_{IN} \leq 6.0\text{V}$	-0.20		0.20	%/V
V_{IN}	Input Voltage				6.0	V
$\Delta V_{OUT}/\Delta T$	Output Voltage Temperature Coefficient	$I_{OUT}=10\text{mA}$ $-40^{\circ}\text{C} \leq T_{opt} \leq 85^{\circ}\text{C}$		± 100		ppm/ $^{\circ}\text{C}$
I_{LIM}	Short Current Limit	$V_{OUT}=0\text{V}$		40		mA

ELECTRICAL CHARACTERISTICS BY OUTPUT VOLTAGE

T_{opt}=25°C

Part Number	Output Voltage				Output Current			Load Regulation			Dropout Voltage			
	V _{OUT} [V]				I _{OUT} [mA]			ΔV _{OUT} /ΔI _{OUT} [mV]			V _{DIF} [mV]			
	Condi- tions	MIN.	TYP.	MAX.	Condi- tions	MIN.	TYP.	Condi- tions	TYP.	MAX.	Condi- tions	TYP.	MAX.	
R1100D091C	V _{IN} -V _{OUT} =2.0V 10μA ≦ I _{OUT} ≦ 10mA	0.876	0.900	0.924	V _{IN} - V _{OUT} =2.0V	35		V _{IN} -V _{OUT} =2.0V	7.5	20	I _{OUT} =1mA		380	750
R1100D101C		0.976	1.000	1.024								280	700	
R1100D111C		1.076	1.100	1.124								200	600	
R1100D121C		1.176	1.200	1.224								100	400	
R1100D131C		1.274	1.300	1.326										
R1100D141C		1.372	1.400	1.428										
R1100D151C		1.470	1.500	1.530										
R1100D161C		1.568	1.600	1.632		65		V _{IN} -V _{OUT} =2.0V 1mA ≦ I _{OUT} ≦ 35mA	20	40			50	100
R1100D171C		1.666	1.700	1.734								25	50	
R1100D181C		1.764	1.800	1.836										
R1100D191C		1.862	1.900	1.938										
R1100D201C		1.960	2.000	2.040										
R1100D211C		2.058	2.100	2.142										
R1100D221C		2.156	2.200	2.244										
R1100D231C		2.254	2.300	2.346										
R1100D241C		2.352	2.400	2.448										
R1100D251C		2.450	2.500	2.550										
R1100D261C		2.548	2.600	2.652										
R1100D271C		2.646	2.700	2.754										
R1100D281C		2.744	2.800	2.856										
R1100D291C	2.842	2.900	2.958											
R1100D301C	2.940	3.000	3.060	100		V _{IN} -V _{OUT} =2.0V 1mA ≦ I _{OUT} ≦ 50mA	35	60	20	30				
R1100D311C	3.038	3.100	3.162											
R1100D321C	3.136	3.200	3.264											
R1100D331C	3.234	3.300	3.366											
R1100D341C	3.332	3.400	3.468											
R1100D351C	3.430	3.500	2.570											
R1100D361C	3.528	3.600	3.672											
R1100D371C	3.626	3.700	3.774											
R1100D381C	3.724	3.800	3.876											
R1100D391C	3.822	3.900	3.978											
R1100D401C	3.920	4.000	4.080											

ELECTRICAL CHARACTERISTICS

(Common characteristics)

Symbol	Item	Test Conditions	Min.	Typ.	Max.	Unit
$\Delta V_{OUT}/\Delta V_{IN}$	Line Regulation	$I_{OUT}=1\text{mA}$ $\text{SET } V_{OUT}+0.5\text{V} \leq V_{IN} \leq 6\text{V}$	-0.20		0.20	%/V
V_{IN}	Input Voltage		(1.2)		6.0	V
$\Delta V_{OUT}/\Delta T_{opt}$	Output Voltage Temperature Coefficient	$I_{OUT}=10\text{mA}$ $-40^{\circ}\text{C} \leq T_{opt} \leq 85^{\circ}\text{C}$		± 100		ppm/ $^{\circ}\text{C}$
I_{LIM}	Short Current Limit	$V_{OUT}=0\text{V}$		40		mA

ELECTRICAL CHARACTERISTICS BY OUTPUT VOLTAGE

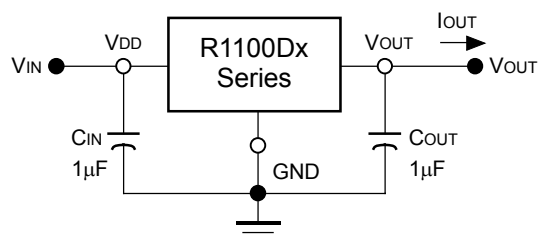
Symbol	Item	Output Voltage	Conditions	Min.	Typ.	Max.	Unit
I_{SS}	Supply Current	$0.9\text{V} \leq V_{OUT} \leq 1.0\text{V}$	$V_{IN}=\text{SET } V_{OUT}+2.0\text{V}$		0.8	1.8	μA
		$1.1\text{V} \leq V_{OUT} \leq 1.4\text{V}$			1.0	2.4	
		$1.5\text{V} \leq V_{OUT} \leq 2.0\text{V}$			1.2	2.7	
		$2.1\text{V} \leq V_{OUT} \leq 4.0\text{V}$			1.5	3.0	

OPERATION

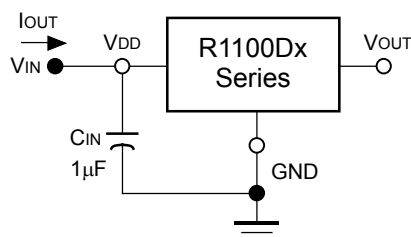
these ICs, the output voltage V_{OUT} is detected by Feedback Registers, and the detected output voltage is compare with a reference voltage by the error amplifier, so that a constant voltage is output.

A current limit circuit against short protection and a chip enable circuit are included.

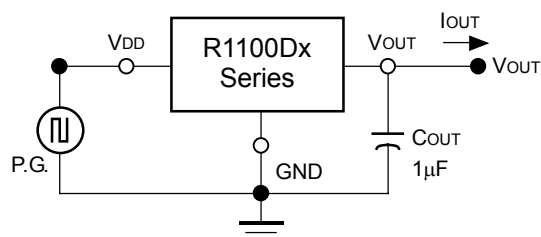
TEST CIRCUITS



Standard Test Circuit



Test Circuit for Supply Current

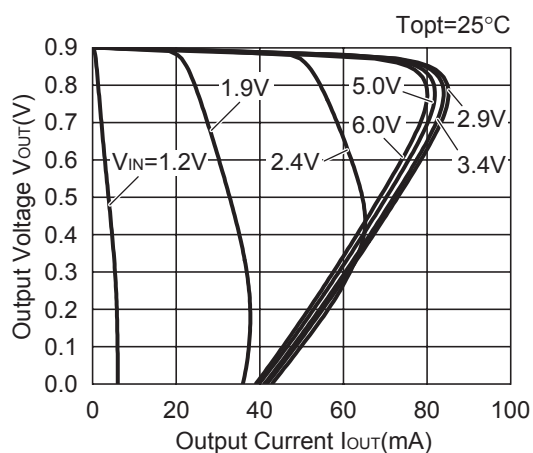


Test Circuit for Line Transient Response

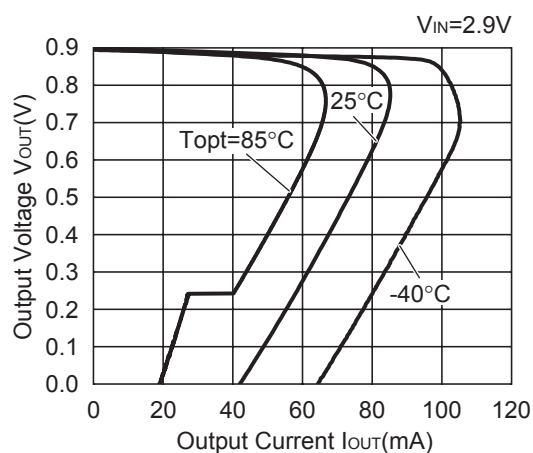
TYPICAL CHARACTERISTICS

1) Output Voltage vs. Output Current

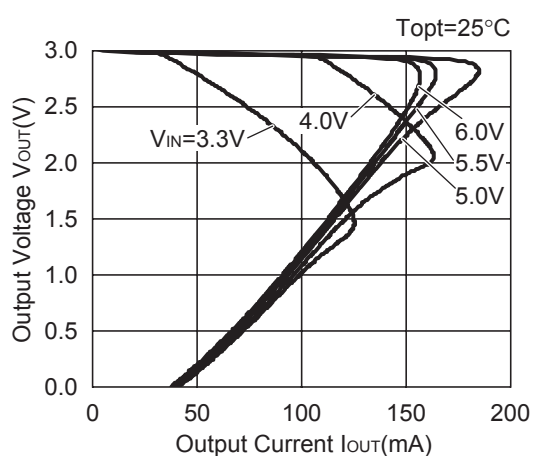
R1100D091C



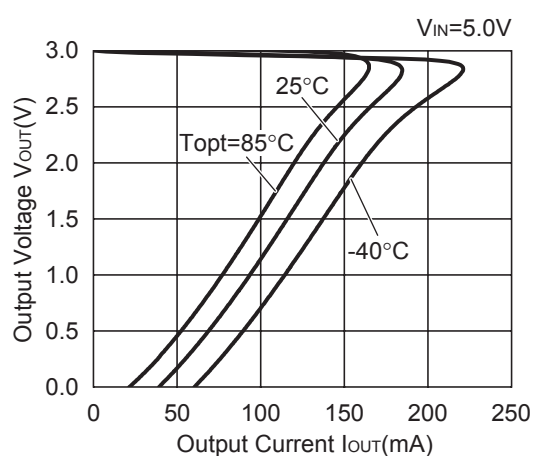
R1100D091C



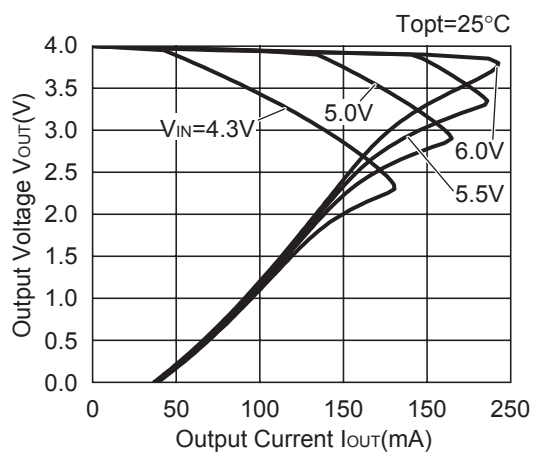
R1100D301C



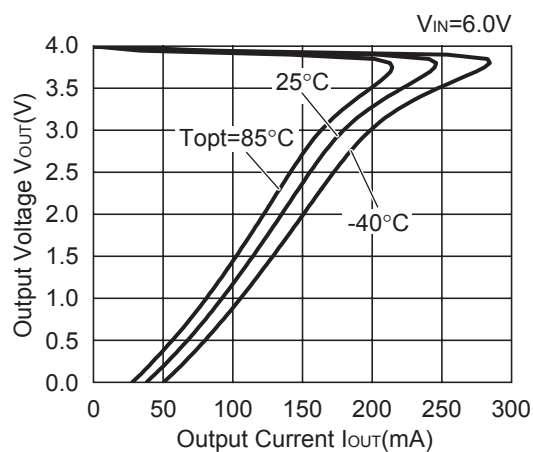
R1100D301C



R1100D401C



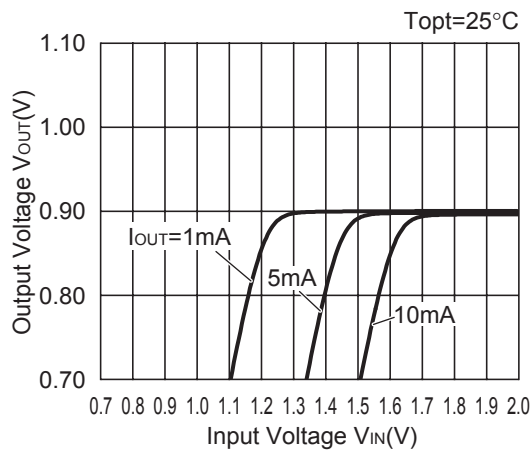
R1100D401C



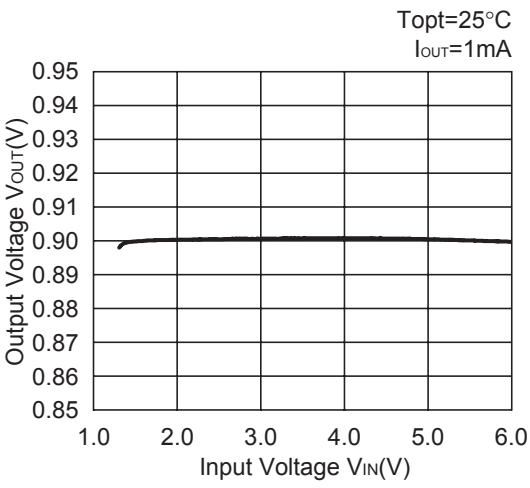
R1100D

2) Output Voltage vs. Input Voltage

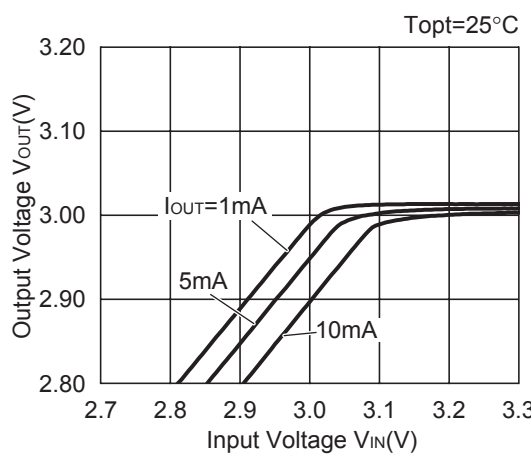
R1100D091C



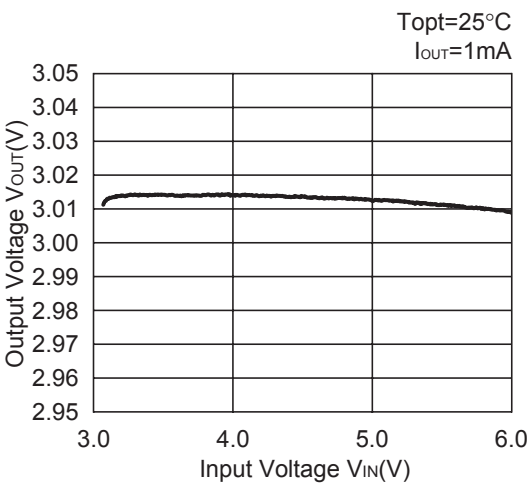
R1100D091C



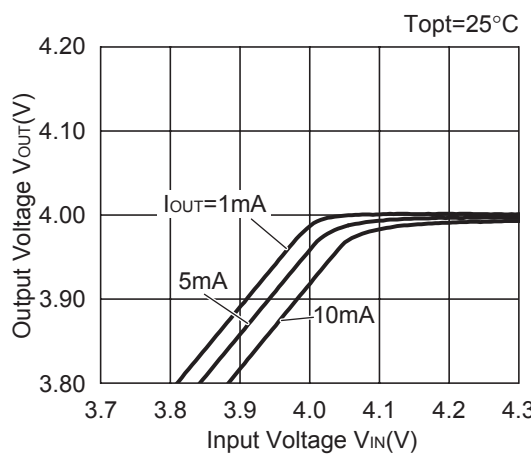
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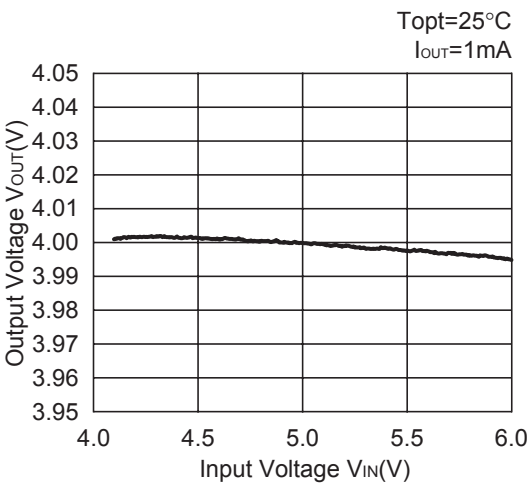
R1100D301C



R1100D401C

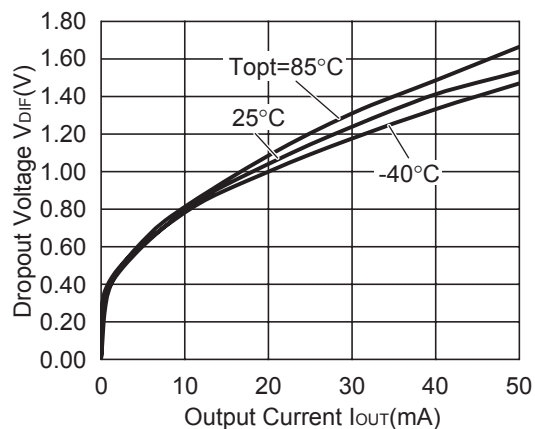


R1100D401C

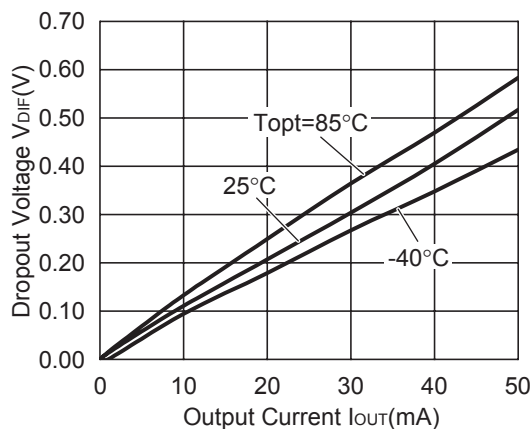


3) Dropout Voltage vs. Output Current

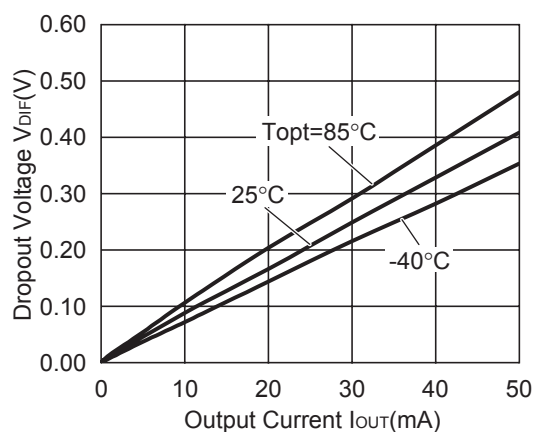
R1100D091C



R1100D301C

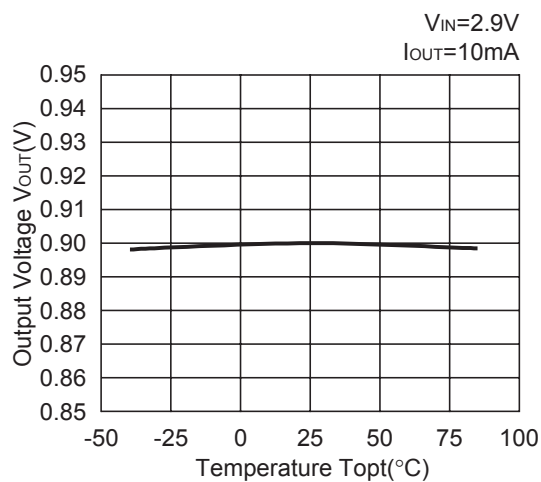


R1100D401C

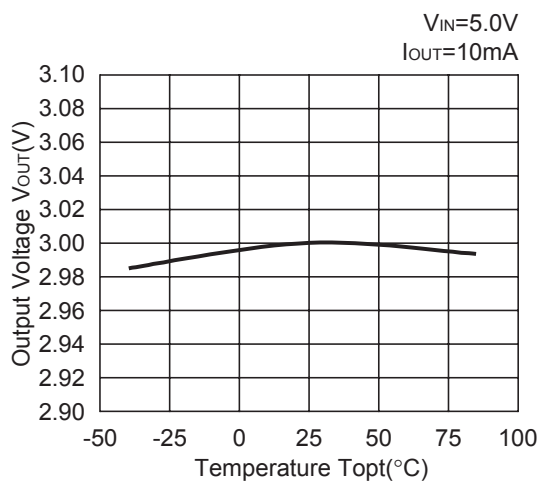


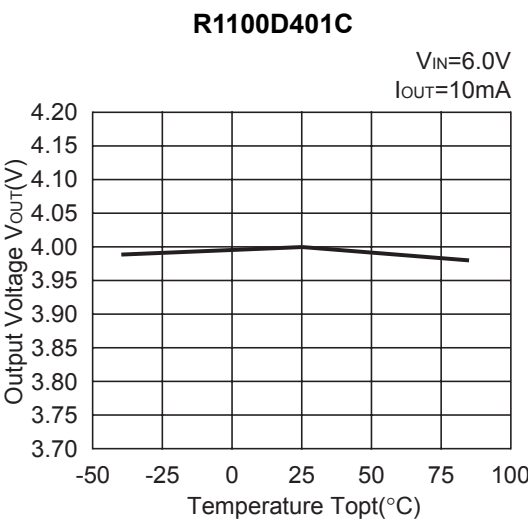
4) Output Voltage vs. Temperature

R1100D091C

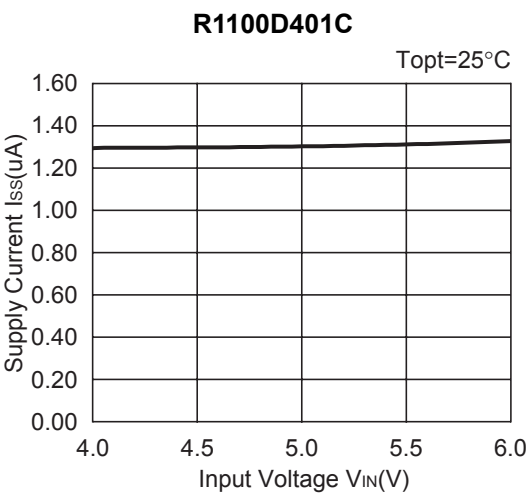
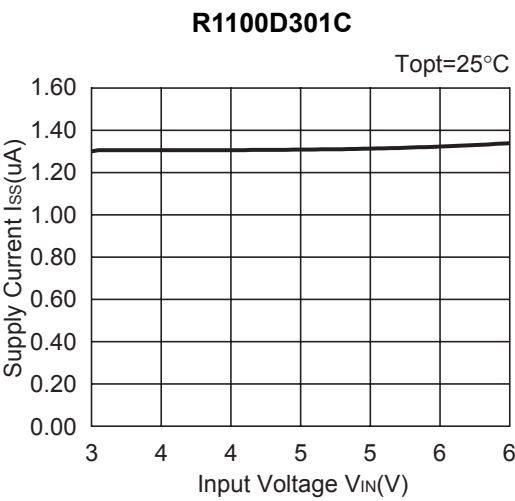
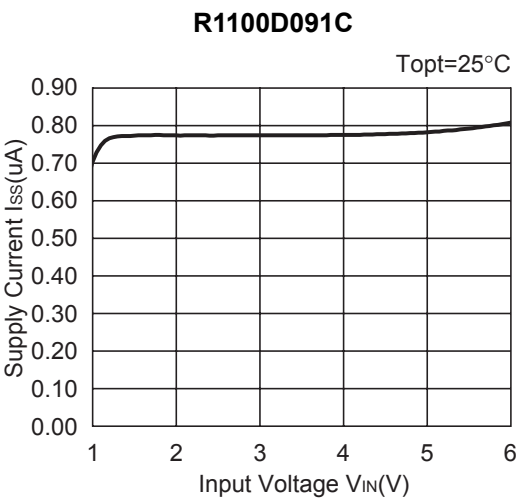


R1100D301C



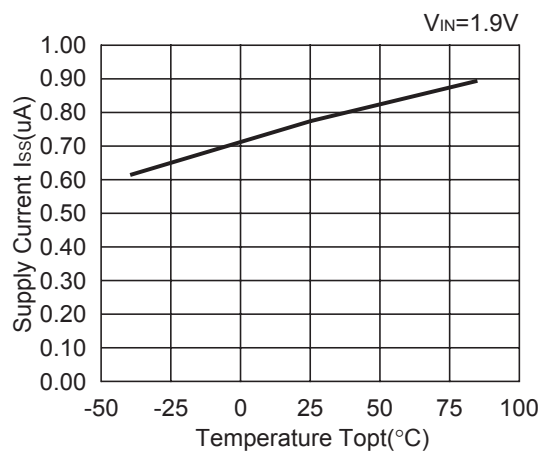


5) Supply Current vs. Input Voltage

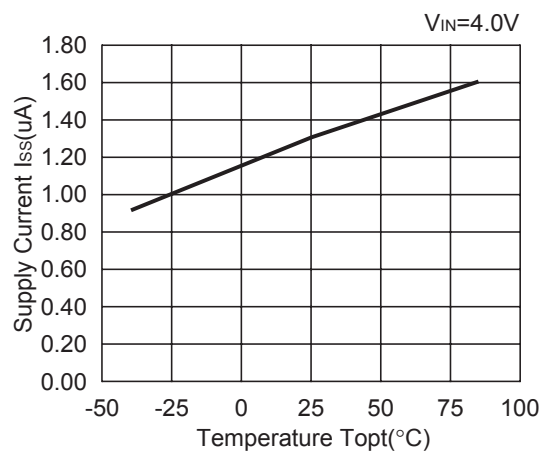


6) Supply Current vs. Temperature

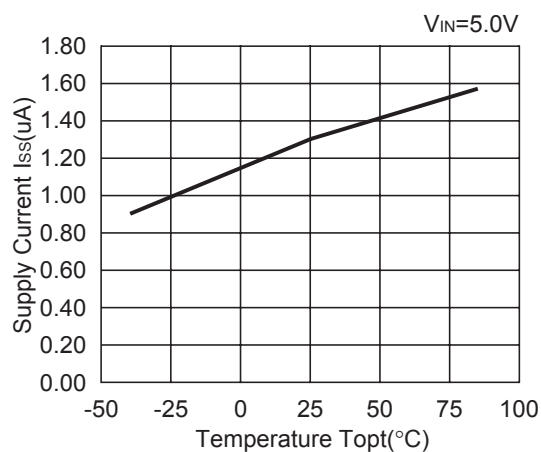
R1100D091C



R1100D301C

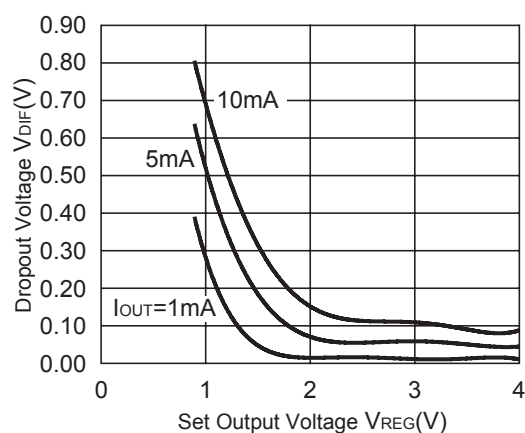


R1100D401C

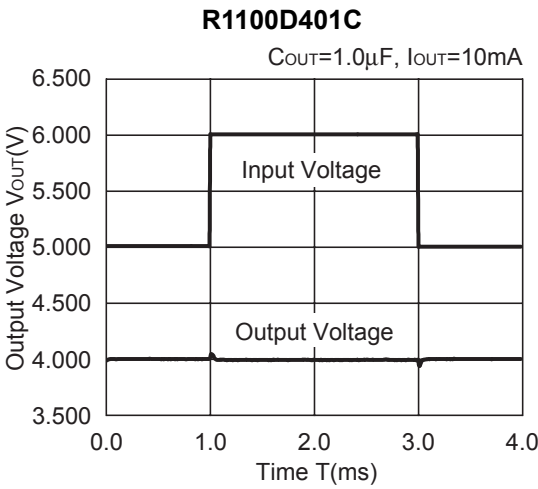
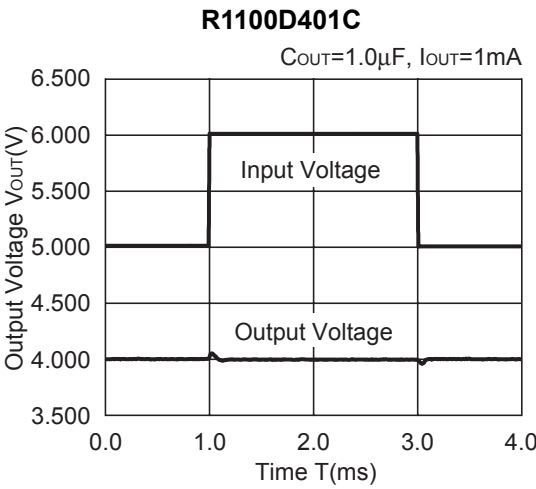
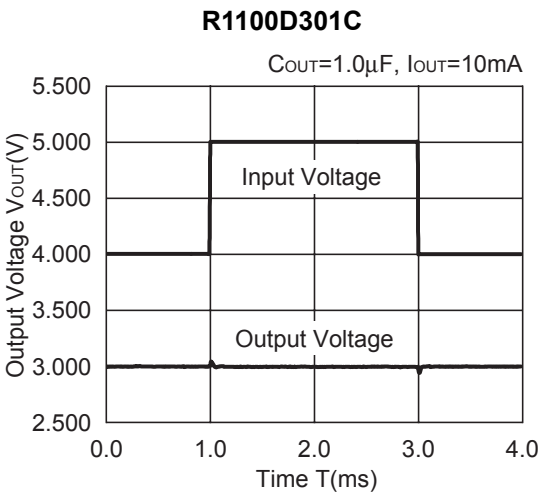
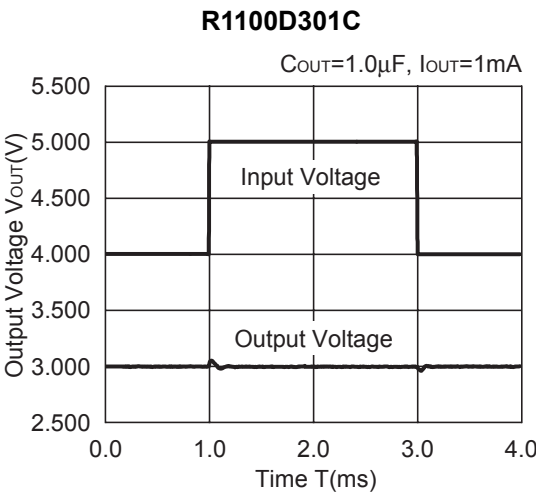
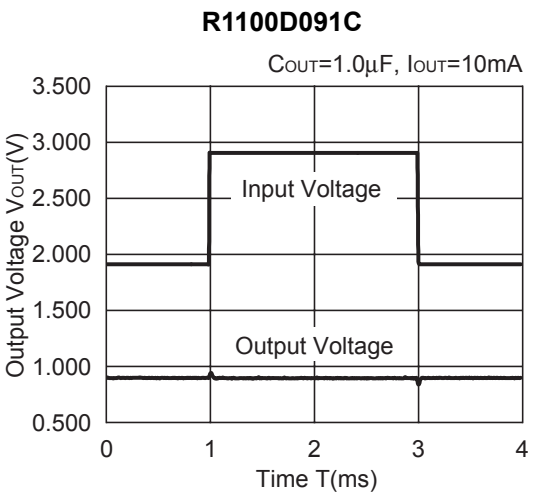
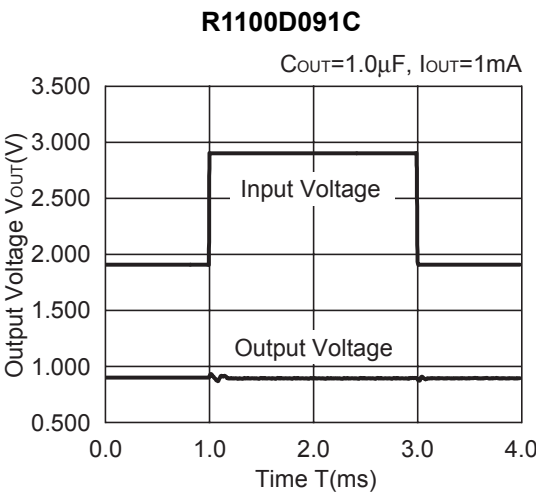


7) Dropout Voltage vs. Set Output Voltage

R1100Dxx1C

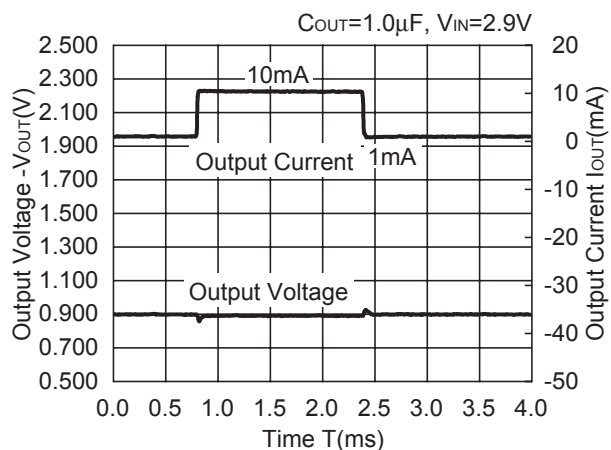


8) Line Transient Response

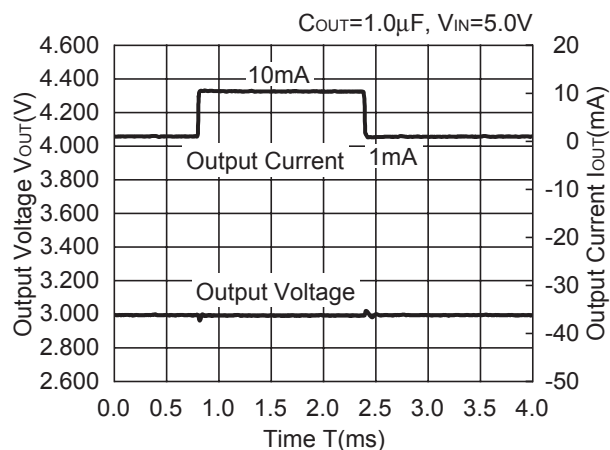


9) Load Transient Response

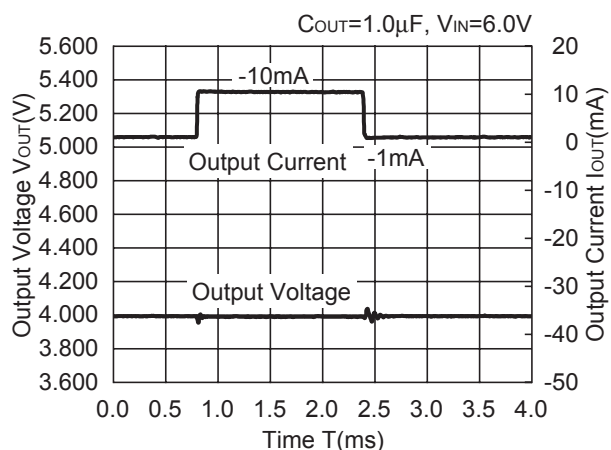
R1100D091C



R1100D301C

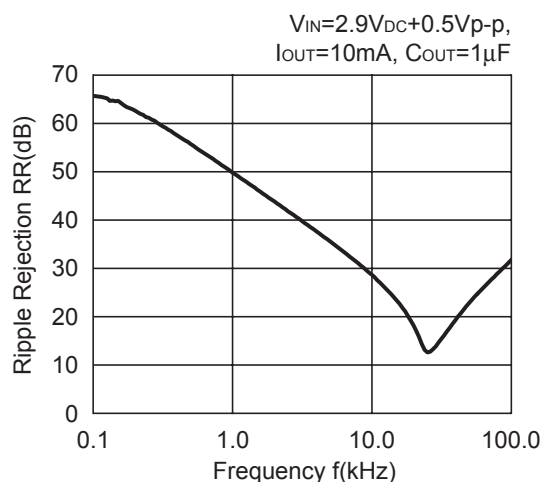


R1100D401C

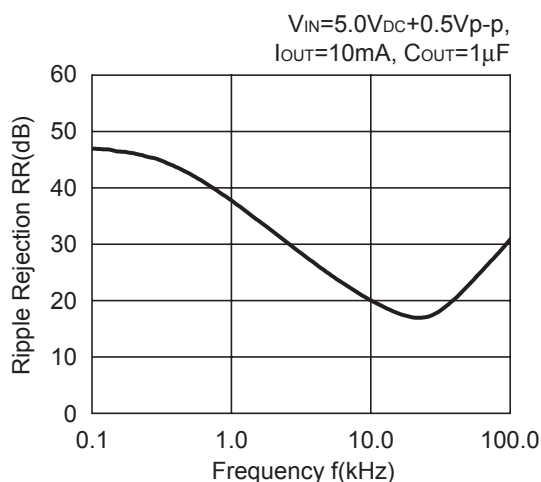


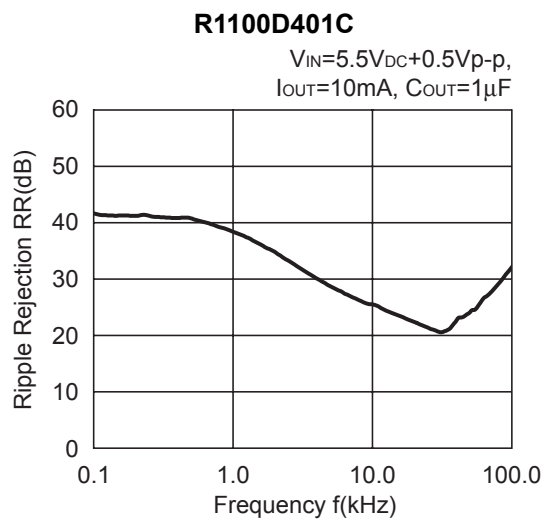
10) Ripple Rejection vs. Frequency

R1100D091C



R1100D301C





TYPICAL APPLICATION

In R1100D Series, a constant voltage can be obtained without using capacitors. However, when the wire connected V_{IN} is long, use a capacitor. Output noise can be reduced with using capacitor.

Insert capacitors with the capacitance of $0.1\mu F$ to $2.2\mu F$ between input/output pins and GND pin as close as possible.