RICOH

R5324x SERIES

TRIPLE LDO

NO. EA-099-080229

OUTLINE

The R5324x Series are CMOS-based multi positive voltage regulator ICs with high output voltage accuracy, low supply current, low noise, low dropout and high ripple rejection. The R5324x Series contain three voltage regulators. Each of these voltage regulators in the R5324x Series consists of a voltage reference unit, an error amplifier, resistors for setting output voltage, a short current limit circuit, a chip enable circuit, and so on.

The chip enable function contributes to prolong battery life. Further, regulators in the R5324x Series are with low dropout voltage, excellent load transient response and line transient response, thus the R5324x series are very suitable for the power supply for hand-held communication equipment.

Since the packages for these ICs are SON-8 and DFN(PLP)2527-10, high density mounting of the ICs on boards is possible.

FEATURES

- Supply Current .... Typ. 90μA (VR1, VR2, VR3)
- Standby Current .... Typ. 0.1μA
- Output Current .... Min. 200mA (VR1), 150mA (VR2), 100mA (VR3)
- Dropout Voltage .... Typ. 0.23V (VR1) (I_{OUT}=200mA, V_{OUT}=2.8V)
  Typ. 0.22V (VR2) (I_{OUT}=150mA, V_{OUT}=2.8V)
  Typ. 0.15V (VR3) (I_{OUT}=100mA, V_{OUT}=2.8V)
- Ripple Rejection .... Typ. 70dB (f=1kHz), Typ. 65dB (f=10kHz)
- Input Voltage Range .... 2.0V to 6.0V
- Output Voltage Range........ 1.5V to 4.0V
- Output Voltage Accuracy........ ±2.0%
- Temperature-Drift Coefficient of Output Voltage .... Typ. ±100ppm/°C
- Line Regulation Typ.0.02%/V
- Packages .... SON-8, DFN(PLP)2527-10
- Built-in fold-back protection circuit Typ.50mA (VR1), Typ.40mA (VR2, VR3)
- Ceramic capacitors are recommended to be used with this IC .....1.0μF or more

APPLICATIONS

- Power source for cellular phones and portable communication equipment.
- Power source for electrical appliances such as cameras, VCRs.
- Power source for battery-powered equipment.

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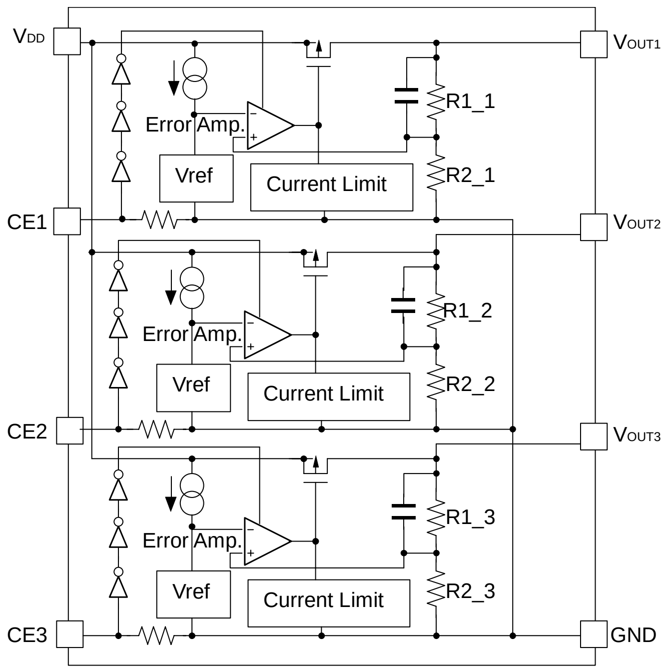
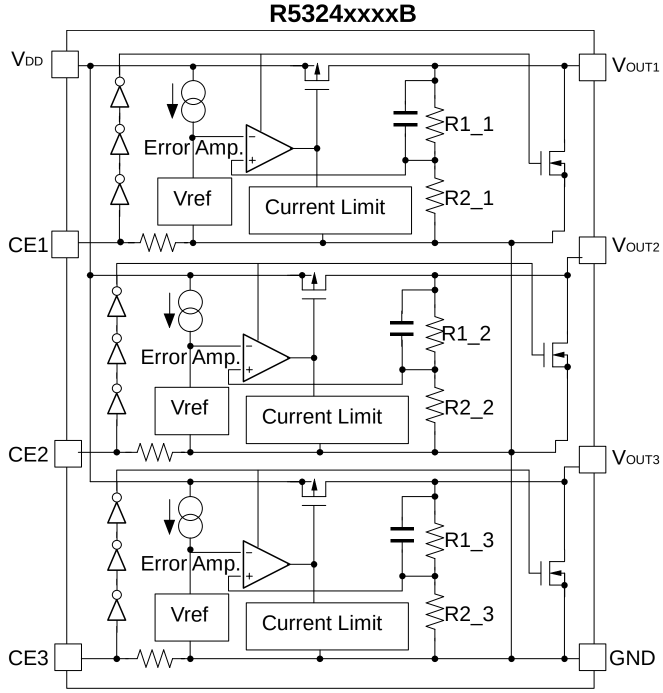
BLOCK DIAGRAMS

R5324xxxxA



R5324xxxxB



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SELECTION GUIDE

The selection can be made with designating the part number as shown below:

```
R5324xxxxx-xx-x ←Part Number
     ↑  ↑ ↑  ↑  ↑
     a  b c  d  e
```

Code	Contents
a	Designation of Package Type: D: SON-8 K: DFN(PLP)2527-10
b	Setting Output Voltage (V_{OUT}): Serial Number for Voltage setting from 001 Stepwise setting with a step of 0.1V in the range of 1.5V to 4.0V is possible.
c	Designation of Mask Option A: active high, without auto discharge function* at OFF state. B: active high, with auto discharge function* at OFF state.
d	Designation of Taping Type: Ex. TR (Refer to Taping Specifications; TR type is the standard direction.)
e	Designation of composition of pin plating: -F : Lead free solder plating (SON-8) None : Au plating (DFN(PLP)2527-10)

*) When the mode is into standby with CE signal, auto discharge transistor turns on, and it makes the turn-off speed faster than normal type.

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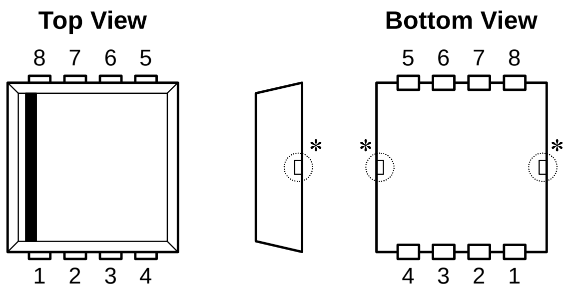
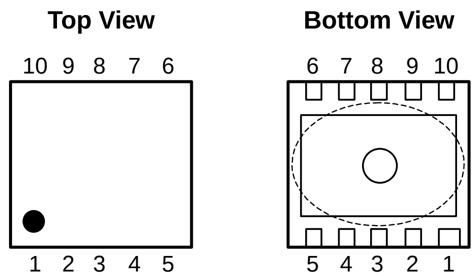
PIN CONFIGURATIONS

● SON-8



● DFN (PLP) 2527-10



PIN DESCRIPTIONS

● **SON-8**

Pin No	Symbol	Pin Description
1	V_{DD}	Input Pin
2	CE1	Chip Enable Pin 1
3	CE2	Chip Enable Pin 2
4	CE3	Chip Enable Pin 3
5	GND	Ground Pin
6	V_{OUT3}	Output Pin 3
7	V_{OUT2}	Output Pin 2
8	V_{OUT1}	Output Pin 1

*) Tab in the ◌ parts have GND level. (They are connected to the back side of this IC.)
Do not connect to other wires or land patterns.

● **DFN(PLP)2527-10**

Pin No	Symbol	Pin Description
1	V_{DD}	Input Pin
2	V_{DD}	Input Pin
3	CE1	Chip Enable Pin 1
4	CE2	Chip Enable Pin 2
5	CE3	Chip Enable Pin 3
6	GND	Ground Pin
7	NC	No Connection
8	V_{OUT3}	Output Pin 3
9	V_{OUT2}	Output Pin 2
10	V_{OUT1}	Output Pin 1

*) Tab in the ◌ parts have GND level. (They are connected to the back side of this IC.)
Do not connect to other wires or land patterns.
Both V_{DD} pins must be connected each other at same level as short as possible.

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ABSOLUTE MAXIMUM RATINGS

Symbol	Item	Rating	Unit
V_{IN}	Input Voltage	6.5	V
CE	Input Voltage (CE Pin)	-0.3 to 6.5	V
V_{OUT}	Output Voltage	-0.3 to V_{IN}+0.3	V
I_{OUT1}	Output Current (V_{OUT1})	230	mA
I_{OUT2}	Output Current (V_{OUT2})	180	mA
I_{OUT3}	Output Current (V_{OUT3})	180	mA
P_D	Power Dissipation (SON-8)*	480	mW
	Power Dissipation (DFN(PLP)2527-10)*	910	
Topt	Operating Temperature Range	-40 to 85	°C
Tstg	Storage Temperature Range	-55 to 125	°C

∗) For Power Dissipation, please refer to PACKAGE INFORMATION to be described.

ABSOLUTE MAXIMUM RATINGS
Absolute Maximum ratings are threshold limit values that must not be exceeded ever for an instant under any conditions. Moreover, such values for any two items must not be reached simultaneously. Operation above these absolute maximum ratings may cause degradation or permanent damage to the device. These are stress ratings only and do not necessarily imply functional operation below these limits.

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ELECTRICAL CHARACTERISTICS

- **R5324xxxxA/B**

VR1 Topt=25°C

Symbol	Item	Conditions	Min.	Typ.	Max.	Unit
V_{OUT}	Output Voltage	$V_{IN}-V_{OUT}$=1.0V 1mA ≦ I_{OUT} ≦ 30mA	×0.98		×1.02	V
I_{OUT}	Output Current	$V_{IN}-V_{OUT}$=1.0V	200			mA
$\Delta V_{OUT}/\Delta I_{OUT}$	Load Regulation	$V_{IN}-V_{OUT}$=1.0V 1mA ≦ I_{OUT} ≦ 200mA		25	50	mV
V_{DIF}	Dropout Voltage	I_{OUT}=200mA, V_{OUT}=1.5V		0.36	0.65	V
		V_{OUT}=1.6V		0.34	0.58	
		V_{OUT}=1.7V		0.33	0.56	
		1.8V ≦ V_{OUT} ≦ 2.0V		0.31	0.53	
		2.1V ≦ V_{OUT} ≦ 2.7V		0.28	0.46	
		2.8V ≦ V_{OUT} ≦ 4.0V		0.23	0.35	
I_{SS}	Supply Current	$V_{IN}-V_{OUT}$=1.0V		90	140	µA
$I_{standby}$	Standby Current	$V_{IN}-V_{OUT}$=1.0V, V_{CE}=GND		0.1	1.0	µA
$\Delta V_{OUT}/\Delta V_{IN}$	Line Regulation	I_{OUT}=30mA, V_{OUT}+0.5V ≦ V_{IN} ≦ 6.0V (V_{OUT} ≦ 1.6V: 2.2V ≦ V_{IN} ≦ 6.0V)		0.02	0.10	%/V
RR	Ripple Rejection	sinusoidal Ripple 0.5Vp-p $V_{IN}-V_{OUT}$=1.0V, I_{OUT}=30mA ∗V_{OUT} ≦ 1.7V, $V_{IN}-V_{OUT}$=1.2V, I_{OUT}=30mA f=1kHz		70		dB
		f=10kHz		65		
		f=10kHz (V_{OUT} ≧ 2.5V)		60		
V_{IN}	Input Voltage		2		6	V
$\Delta V_{OUT}/\Delta T_{opt}$	Output Voltage Temperature Coefficient	I_{OUT}=30mA –40°C ≦ Topt ≦ 85°C		±100		ppm /°C
I_{lim}	Short Current Limit	V_{OUT}=0V		50		mA
R_{PD}	CE Pull-down Resistance		0.7	2.0	5.0	MΩ
V_{CEH}	CE Input Voltage "H"		1.5		6.0	V
V_{CEL}	CE Input Voltage "L"		0		0.3	V
en	Output Noise	BW=10Hz to 100kHz		30		µVrms
R_{LOW}	On Resistance of Nch Tr. for Auto-discharge (Applied to B version)	V_{CE}=0V		50		Ω

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VR2

Topt=25°C

Symbol	Item	Conditions	Min.	Typ.	Max.	Unit
V_{OUT}	Output Voltage	$V_{IN}-V_{OUT}$=1.0V 1mA ≦ I_{OUT} ≦ 30mA	×0.98		×1.02	V
I_{OUT}	Output Current	$V_{IN}-V_{OUT}$=1.0V	150			mA
$\Delta V_{OUT}/\Delta I_{OUT}$	Load Regulation	$V_{IN}-V_{OUT}$=1.0V 1mA ≦ I_{OUT} ≦ 150mA		15	40	mV
V_{DIF}	Dropout Voltage	I_{OUT}=150mA, V_{OUT}=1.5V		0.34	0.60	V
		I_{OUT}=150mA, V_{OUT}=1.6V		0.32	0.56	
		I_{OUT}=150mA, V_{OUT}=1.7V		0.31	0.53	
		I_{OUT}=150mA, 1.8V ≦ V_{OUT} ≦ 2.0V		0.29	0.50	
		I_{OUT}=150mA, 2.1V ≦ V_{OUT} ≦ 2.7V		0.26	0.44	
		I_{OUT}=150mA, 2.8V ≦ V_{OUT} ≦ 4.0V		0.22	0.33	
I_{SS}	Supply Current	$V_{IN}-V_{OUT}$=1.0V		90	120	μA
$I_{standby}$	Standby Current	$V_{IN}-V_{OUT}$=1.0V, V_{CE}=GND		0.1	1.0	μA
$\Delta V_{OUT}/\Delta V_{IN}$	Line Regulation	I_{OUT}=30mA, V_{OUT}+0.5V ≦ V_{IN} ≦ 6.0V (V_{OUT} ≦ 1.6V: 2.2V ≦ V_{IN} ≦ 6.0V)		0.02	0.10	%/V
RR	Ripple Rejection	sinusoidal Ripple 0.5Vp-p $V_{IN}-V_{OUT}$=1.0V, I_{OUT}=30mA ∗V_{OUT} ≦ 1.7V, $V_{IN}-V_{OUT}$=1.2V, I_{OUT}=30mA f=1kHz		70		dB
		f=10kHz		65		
		f=10kHz (V_{OUT} ≧ 2.5V)		60		
V_{IN}	Input Voltage		2		6	V
$\Delta V_{OUT}/\Delta Topt$	Output Voltage Temperature Coefficient	I_{OUT}=30mA −40°C ≦ Topt ≦ 85°C		±100		ppm /°C
I_{lim}	Short Current Limit	V_{OUT}=0V		40		mA
R_{PD}	CE Pull-down Resistance		0.7	2.0	5.0	MΩ
V_{CEH}	CE Input Voltage "H"		1.5		6.0	V
V_{CEL}	CE Input Voltage "L"		0		0.3	V
en	Output Noise	BW=10Hz to 100kHz		30		μVrms
R_{LOW}	On Resistance of Nch Tr. for Auto-discharge (Applied to B version)	V_{CE}=0V		50		Ω

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VR3

Topt=25°C

Symbol	Item	Conditions		Min.	Typ.	Max.	Unit
V_{OUT}	Output Voltage	$V_{IN}–V_{OUT}$=1.0V 1mA ≦ I_{OUT} ≦ 30mA		×0.98		×1.02	V
I_{OUT}	Output Current	$V_{IN}–V_{OUT}$=1.0V		100			mA
$\Delta V_{OUT}/\Delta I_{OUT}$	Load Regulation	$V_{IN}–V_{OUT}$=1.0V 1mA ≦ I_{OUT} ≦ 100mA			8	20	mV
V_{DIF}	Dropout Voltage	I_{OUT}=100mA	V_{OUT}=1.5V		0.24	0.44	V
			V_{OUT}=1.6V		0.22	0.40	
			V_{OUT}=1.7V		0.21	0.38	
			1.8V ≦ V_{OUT} ≦ 2.0V		0.20	0.37	
			2.1V ≦ V_{OUT} ≦ 2.7V		0.18	0.33	
			2.8V ≦ V_{OUT} ≦ 4.0V		0.15	0.25	
I_{SS}	Supply Current	$V_{IN}–V_{OUT}$=1.0V			90	120	μA
$I_{standby}$	Standby Current	$V_{IN}–V_{OUT}$=1.0V, V_{CE}=GND			0.1	1.0	μA
$\Delta V_{OUT}/\Delta V_{IN}$	Line Regulation	I_{OUT}=30mA, V_{OUT}+0.5V ≦ V_{IN} ≦ 6.0V (V_{OUT} ≦ 1.6V: 2.2V ≦ V_{IN} ≦ 6.0V)			0.02	0.10	%/V
RR	Ripple Rejection	sinusoidal Ripple 0.5Vp-p $V_{IN}–V_{OUT}$=1.0V, I_{OUT}=30mA ∗V_{OUT} ≦ 1.7V, $V_{IN}–V_{OUT}$=1.2V, I_{OUT}=30mA	f=1kHz		70		dB
			f=10kHz		65		
			f=10kHz (V_{OUT} ≧ 2.5V)		60		
V_{IN}	Input Voltage			2		6	V
$\Delta V_{OUT}/\Delta T_{opt}$	Output Voltage Temperature Coefficient	I_{OUT}=30mA –40°C ≦ Topt ≦ 85°C			±100		ppm /°C
I_{lim}	Short Current Limit	V_{OUT}=0V			40		mA
R_{PD}	CE Pull-down Resistance			0.7	2.0	5.0	MΩ
V_{CEH}	CE Input Voltage “H”			1.5		6.0	V
V_{CEL}	CE Input Voltage “L”			0		0.3	V
en	Output Noise	BW=10Hz to 100kHz			30		μVrms
R_{LOW}	On Resistance of Nch Tr. for Auto-discharge (Applied to B version)	V_{CE}=0V			50		Ω

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OPERATION

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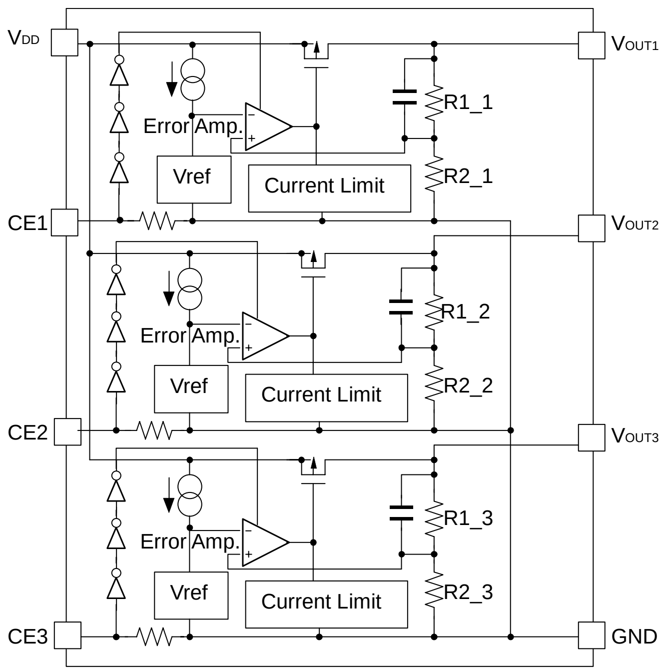

Fluctuation of each regulator's output voltage, or V_{OUT1}, V_{OUT2}, V_{OUT3} is detected individually. Then it is put back to an error amplifier through feedback resistors, or R1_1, R2_1, R1_2, R2_2, R1_3, R2_3 and compared with a reference voltage and compensated for the result and make a constant voltage.

In each regulator, short protection is made with a current limit circuit and stand-by mode is available by a chip enable circuit.

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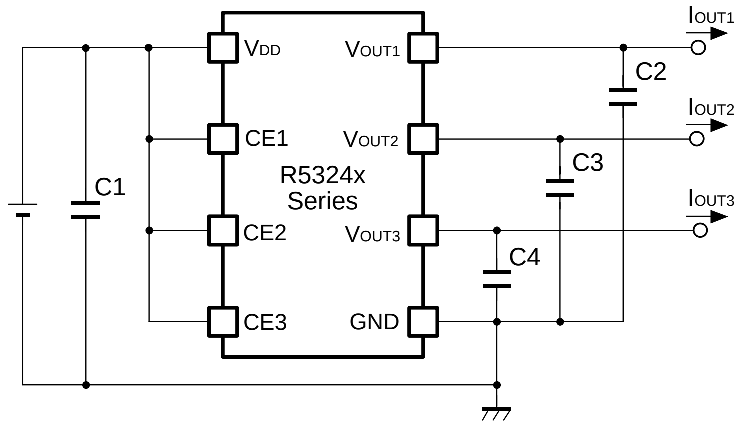
TYPICAL APPLICATION



(External Components)

Output Capacitor : Ceramic 1.0μF or more

TECHNICAL NOTES

When using these ICs, consider the following points:

Phase Compensation

In these ICs, phase compensation is made for securing stable operation even if the load current is varied. For this purpose, use a capacitor C2, C3 and C4 with 1.0μF or more.

If a tantalum capacitor is used, and its ESR (Equivalent Series Resistance) of C2, C3 and C4 is large, the loop oscillation may result. Because of this, select C2, C3 and C4 carefully considering its frequency characteristics.

PCB Layout

Make V_{DD} and GND lines sufficient. If their impedance is high, noise pickup or unstable operation may result. Connect a capacitor C1 with a capacitance value as much as 1.0μF or more between V_{DD} and GND pin, and as close as possible to the pins.

Set external components, especially the output capacitor C2, C3 and C4 as close as possible to the ICs, and make wiring as short as possible.

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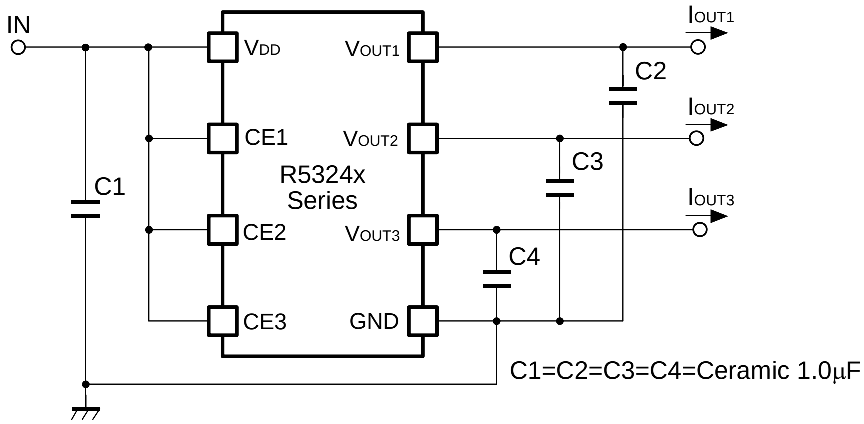
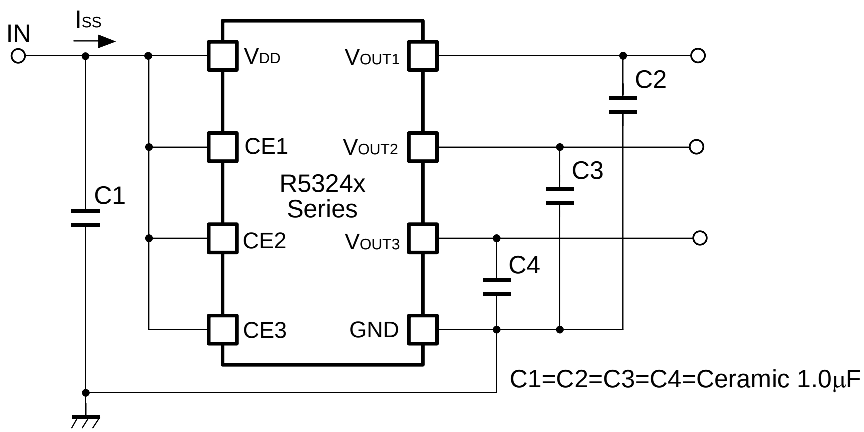
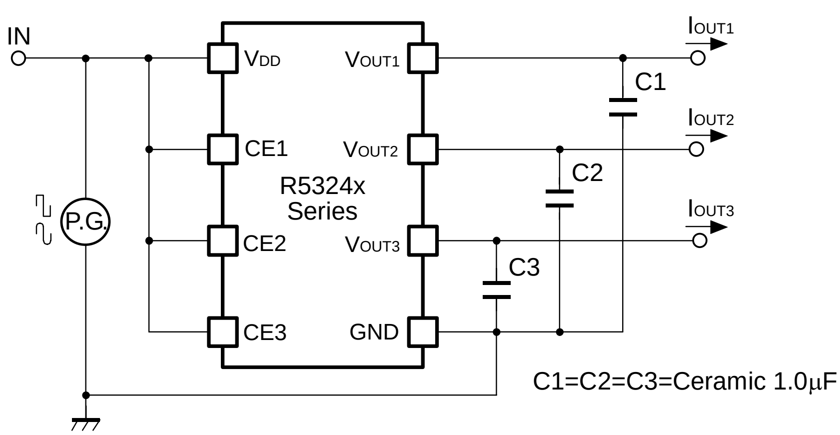
TEST CIRCUIT



Basic Test Circuit



Test Circuit for Supply Current



Test Circuit for Ripple Rejection, Input Transient Response

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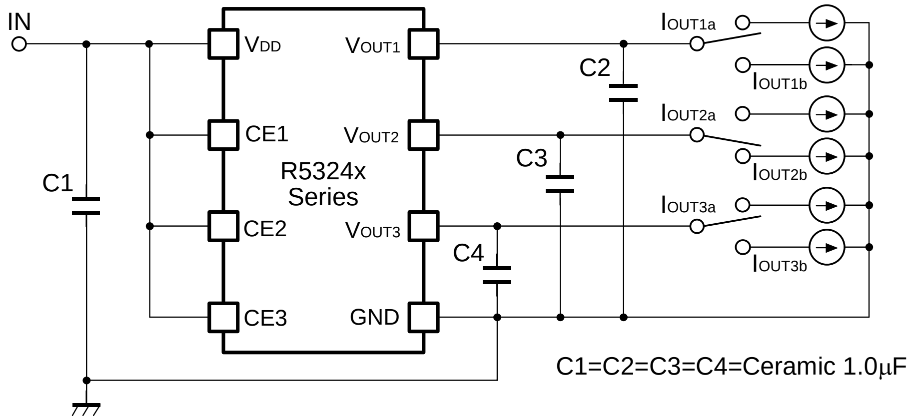

Test Circuit for Load Transient Response

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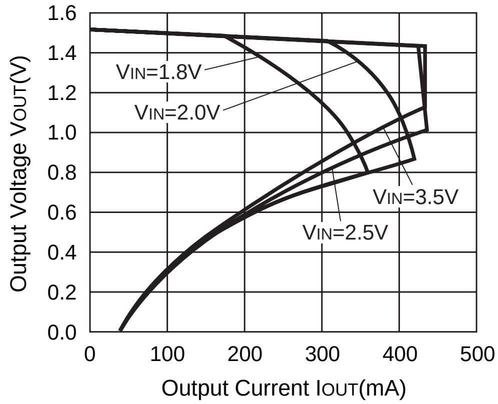
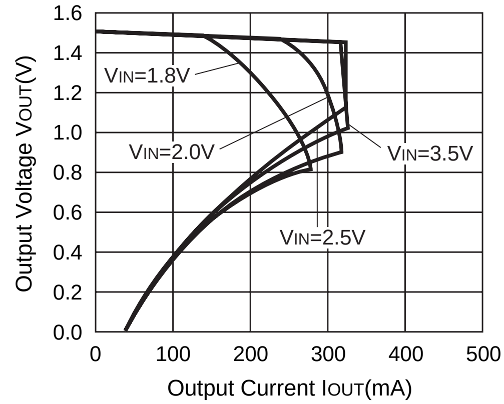
TYPICAL CHARACTERISTICS

1) Output Voltage vs. Output Current (Topt=25°C)

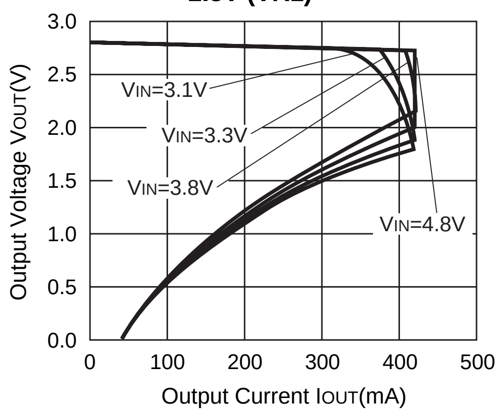
1.5V (VR1)



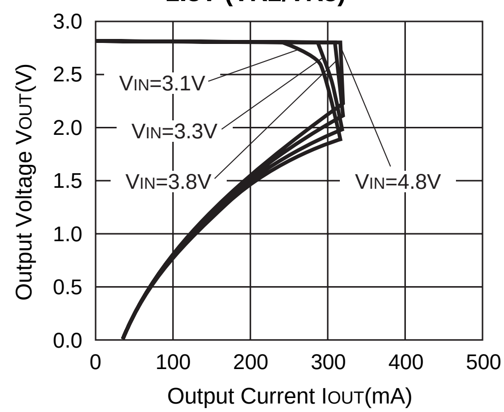
1.5V (VR2/VR3)



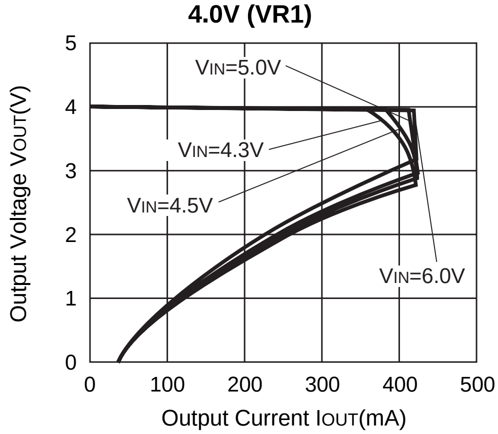
2.8V (VR1)



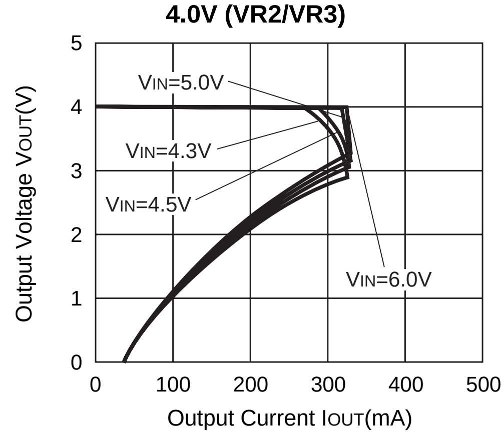
2.8V (VR2/VR3)



4.0V (VR1)



4.0V (VR2/VR3)



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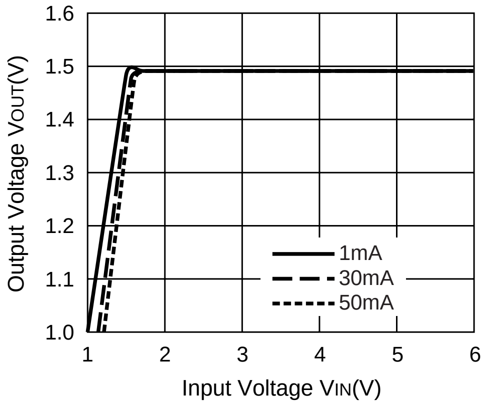
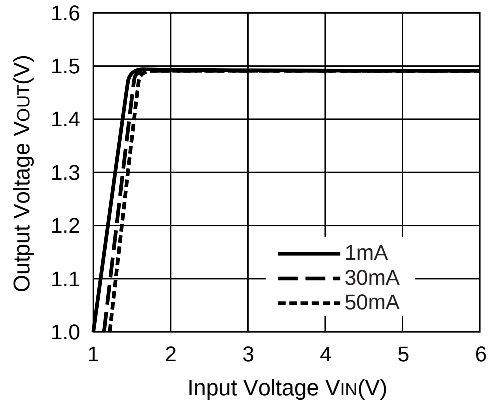
2) Output Voltage vs. Input Voltage (Topt=25°C)

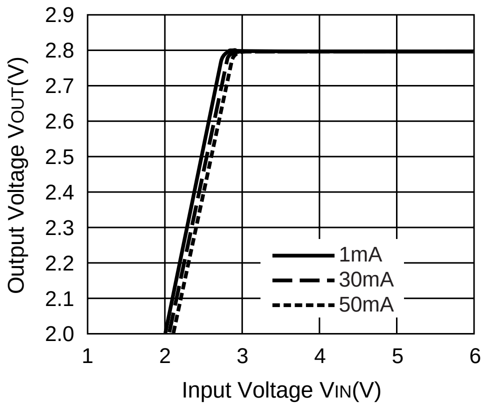
1.5V (VR1)



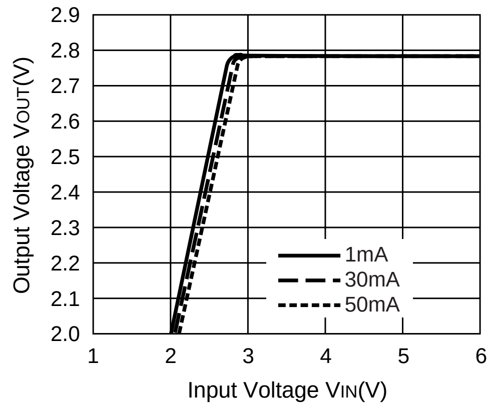
1.5V (VR2/VR3)



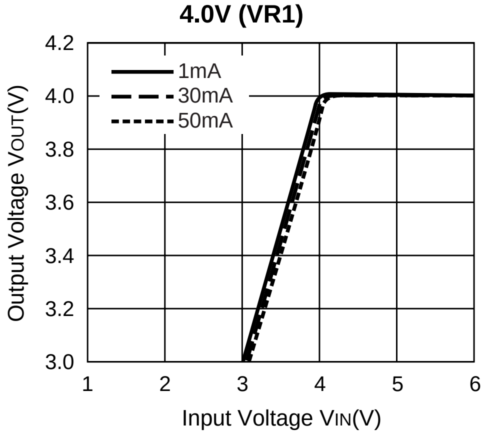
2.8V (VR1)



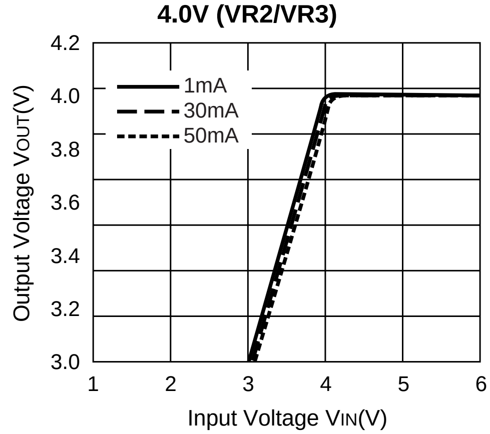
2.8V (VR2/VR3)



4.0V (VR1)



4.0V (VR2/VR3)



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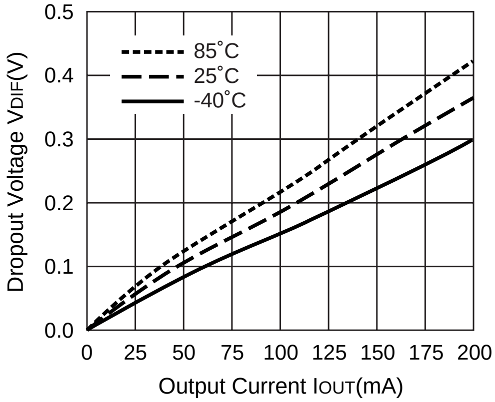
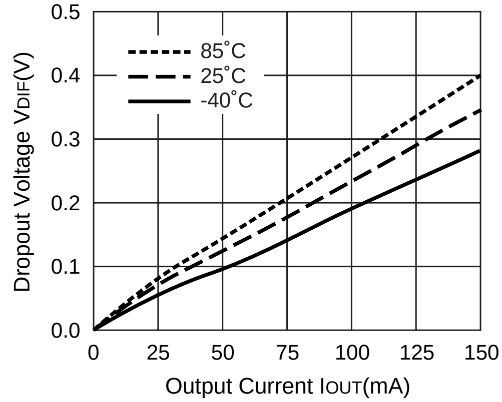
3) Dropout Voltage vs. Output Current

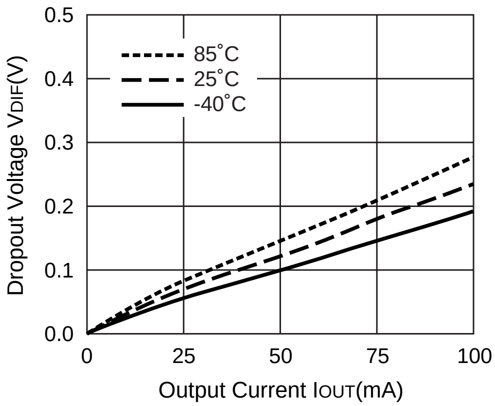
1.5V (VR1)



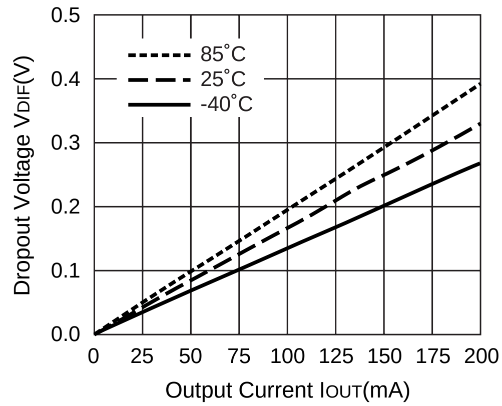
1.5V (VR2)



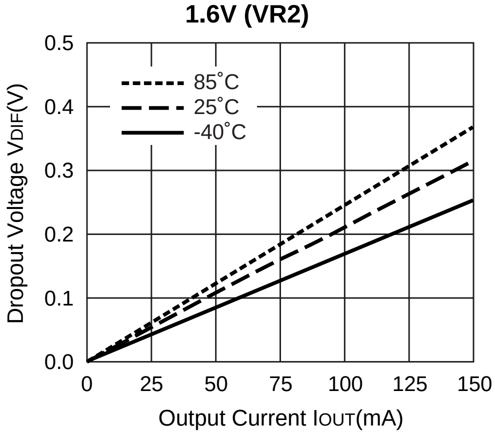
1.5V (VR3)



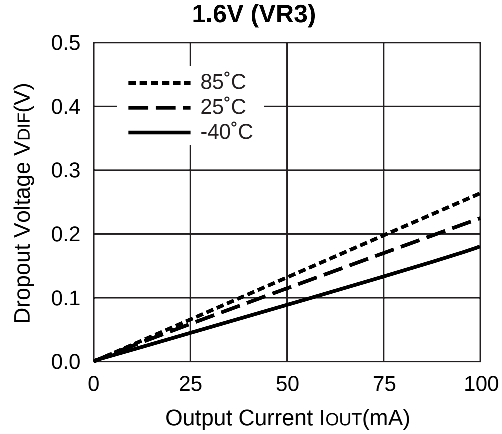
1.6V (VR1)



1.6V (VR2)



1.6V (VR3)



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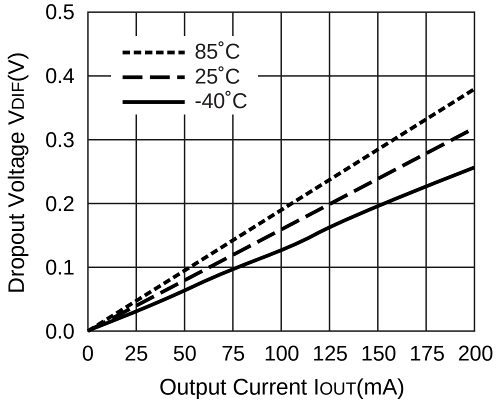
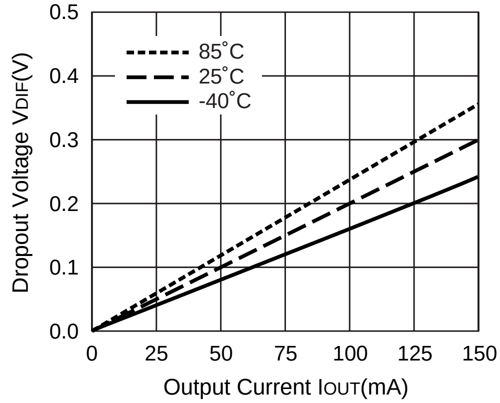
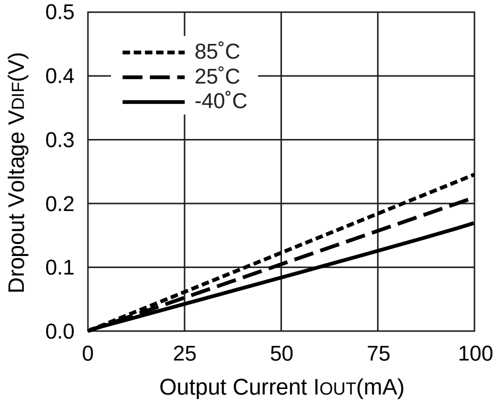
1.7V (VR1)



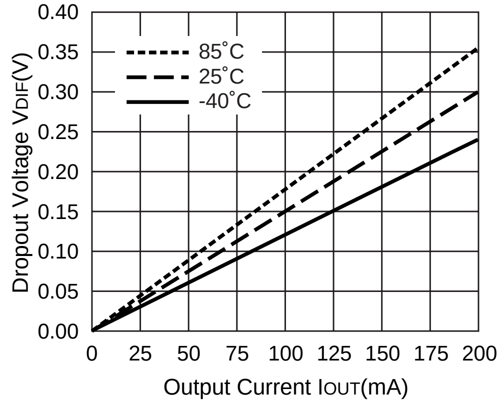
1.7V (VR2)



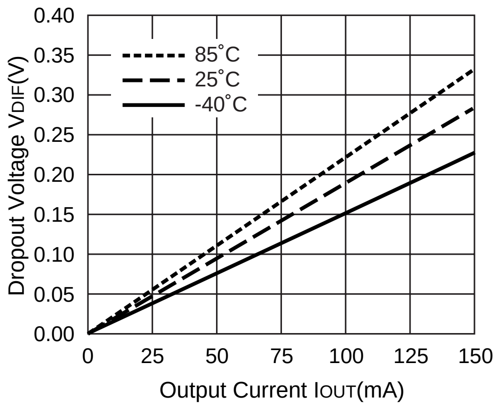
1.7V (VR3)



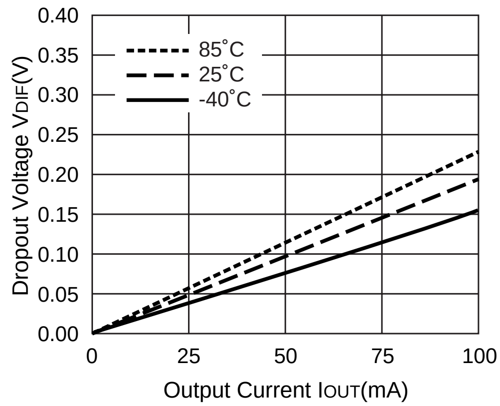
1.8V (VR1)



1.8V (VR2)



1.8V (VR3)



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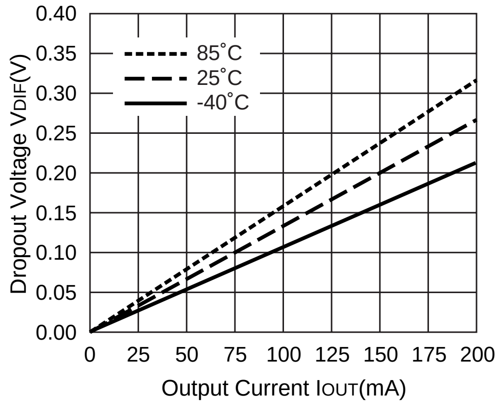
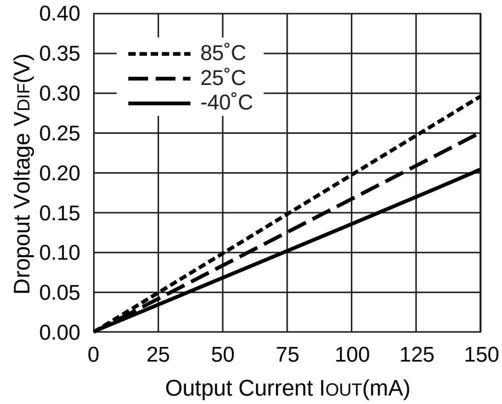
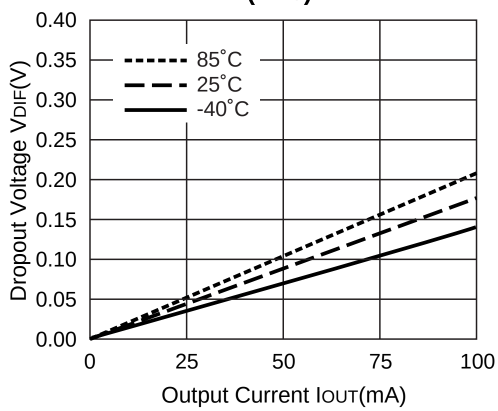
2.1V (VR1)



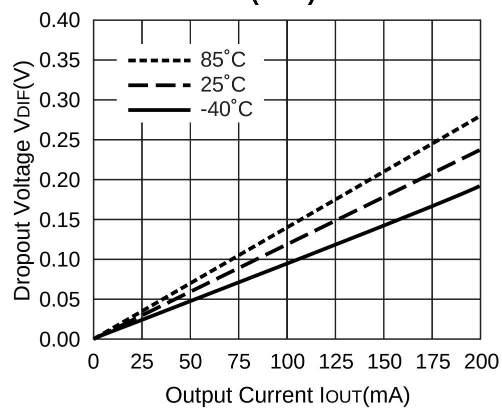
2.1V (VR2)



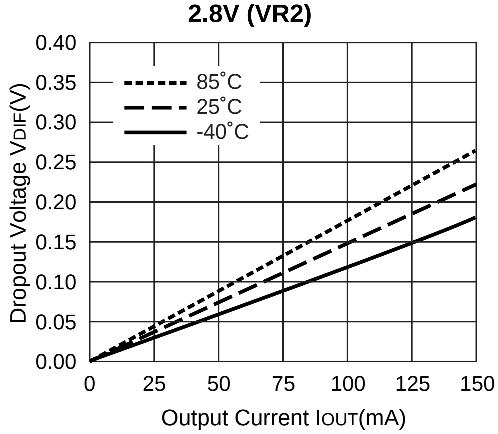
2.1V (VR3)



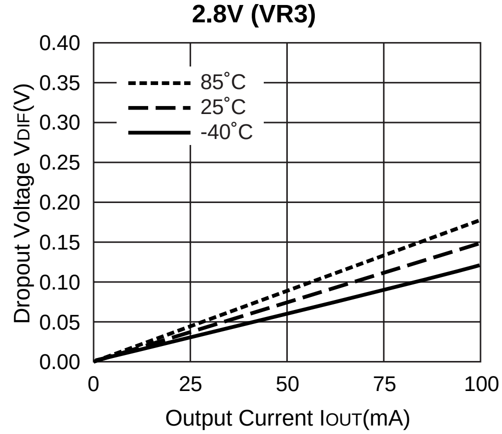
2.8V (VR1)



2.8V (VR2)



2.8V (VR3)



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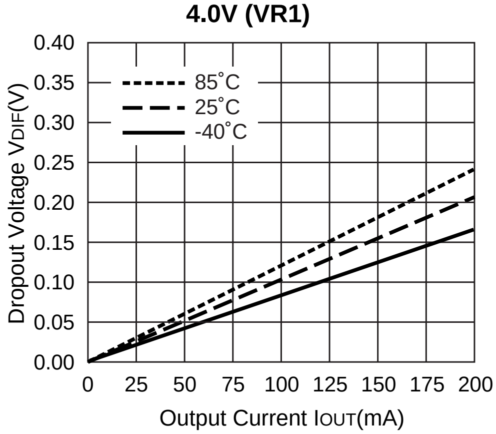
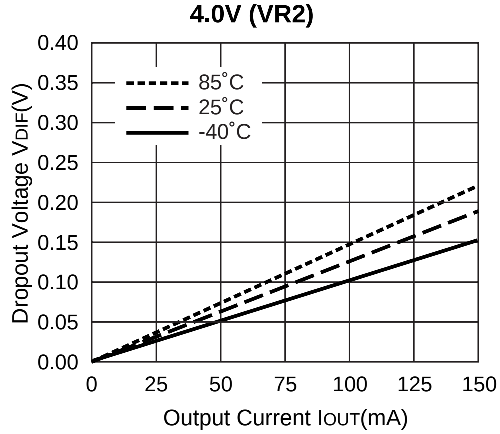
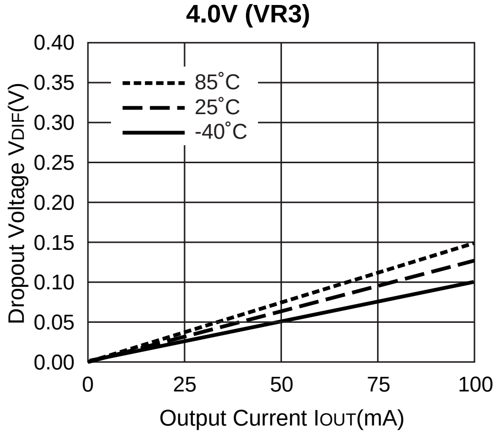
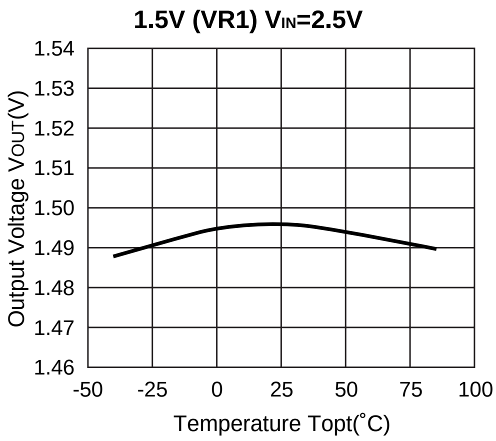
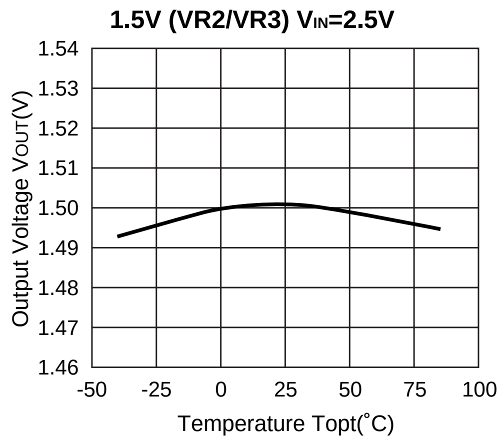






4) Output Voltage vs. Temperature (I_{OUT}=30mA)





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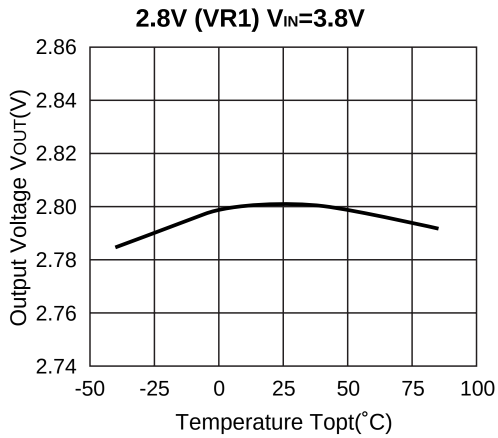
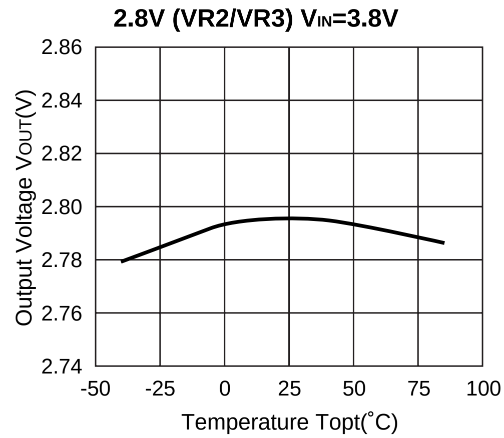
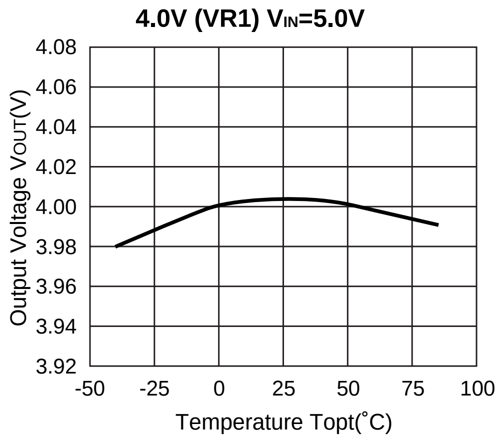
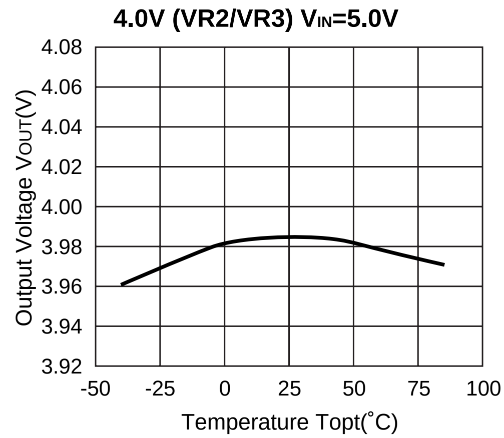
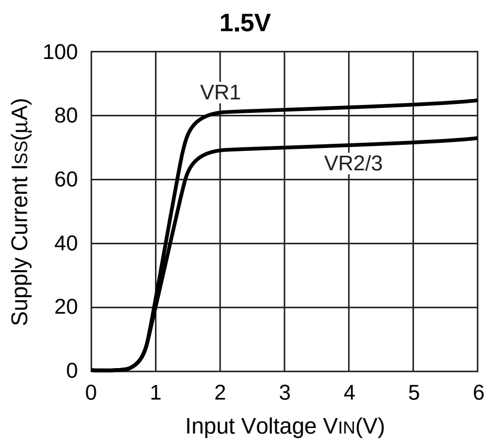


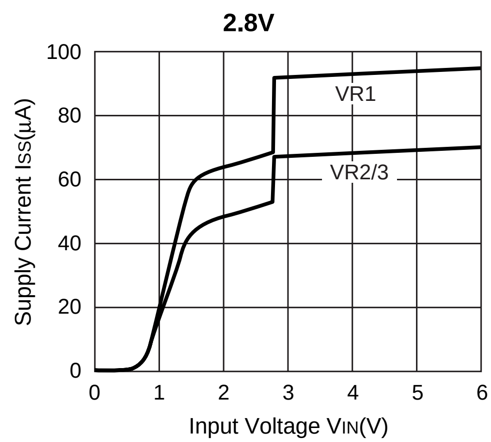






5) Supply Current vs. Input Voltage (Topt=25°C)





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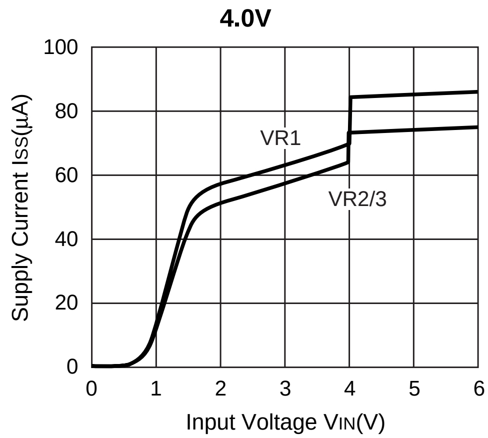
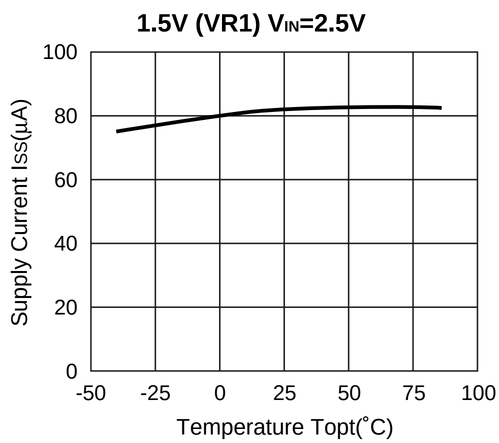
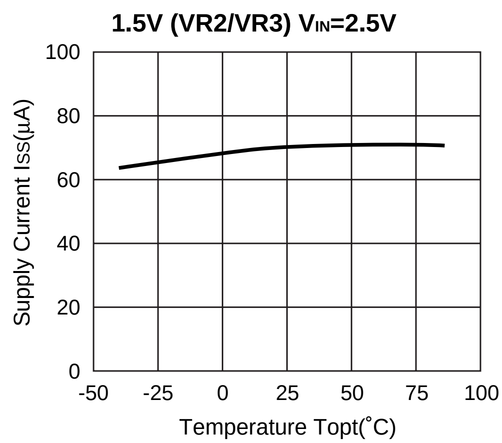
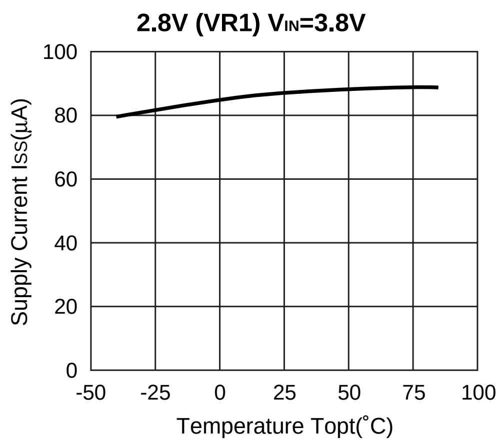
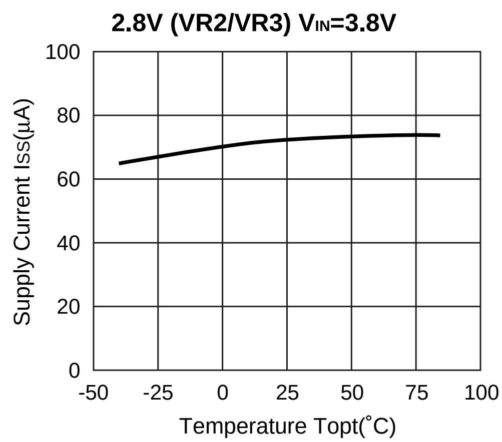


6) Supply Current vs. Temperature









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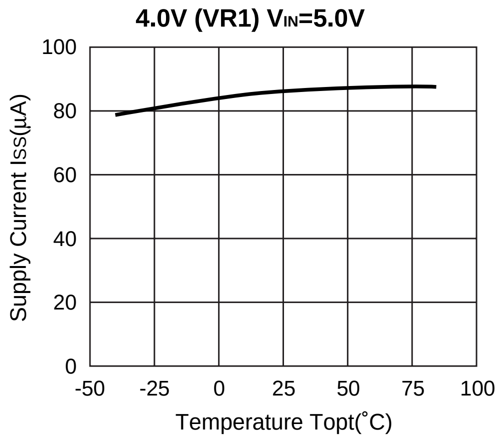
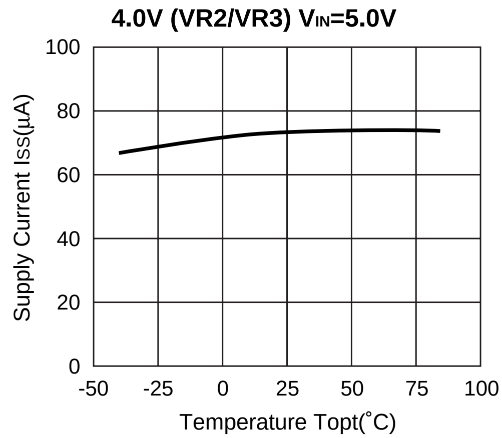
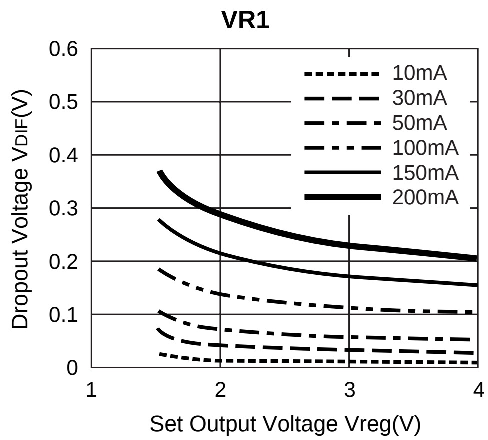
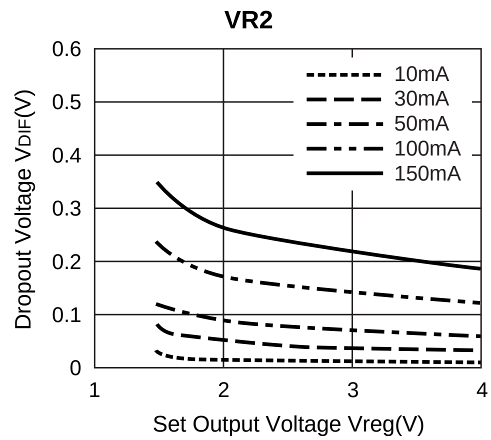
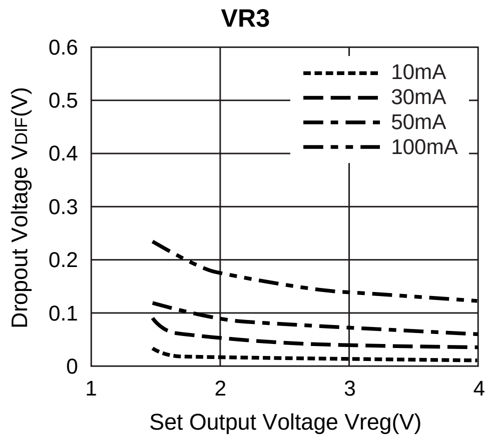




7) Dropout Voltage vs. Set Output Voltage (Topt=25°C)







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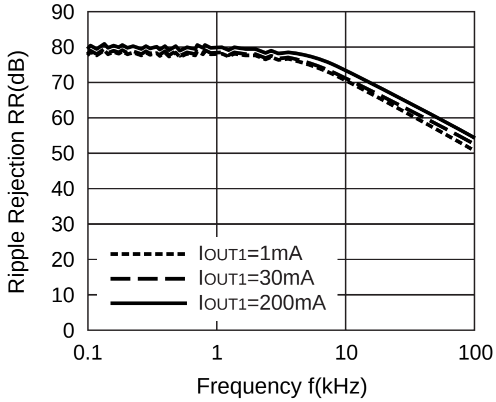
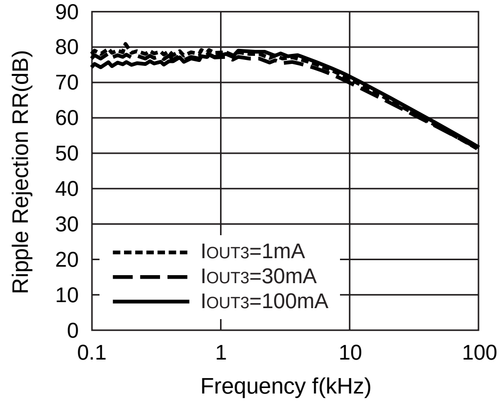
8) Ripple Rejection vs. Frequency (Topt=25°C, C_{OUT}=Ceramic 1.0µF)

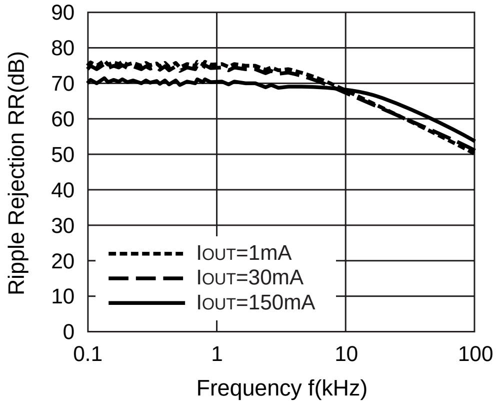
1.5V (VR1) V_{IN}=2.7V_{DC}+0.5Vp-p



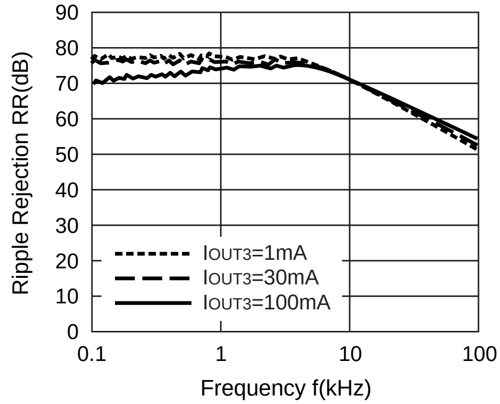
1.5V (VR1) (I_{OUT3} dependence) V_{IN}=2.7V_{DC}+0.5Vp-p



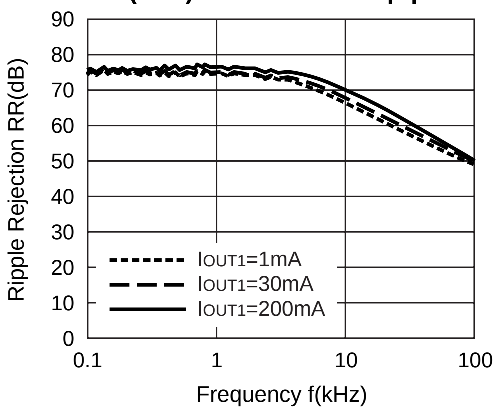
1.5V (VR2) V_{IN}=2.7V_{DC}+0.5Vp-p



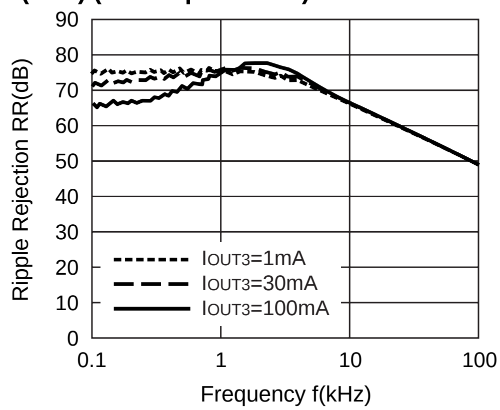
1.5V (VR3) V_{IN}=2.7V_{DC}+0.5Vp-p



2.8V (VR1) V_{IN}=3.8V_{DC}+0.5Vp-p



2.8V (VR1) (I_{OUT3} dependence) V_{IN}=3.8V_{DC}+0.5Vp-p



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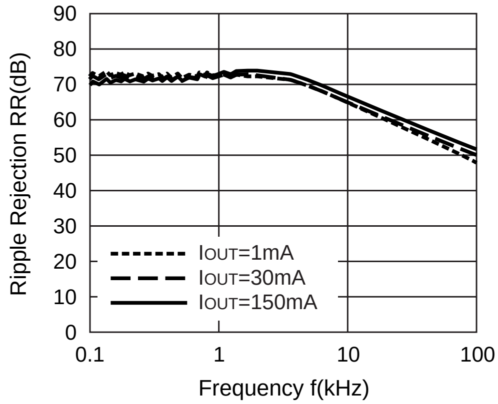
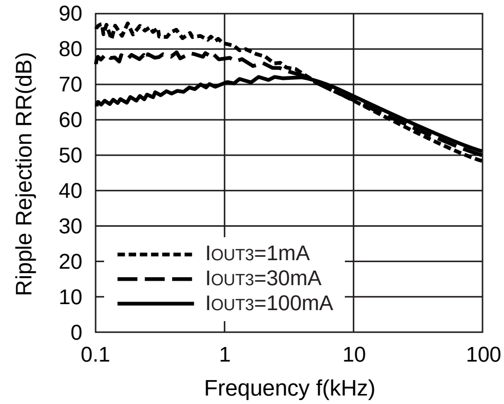
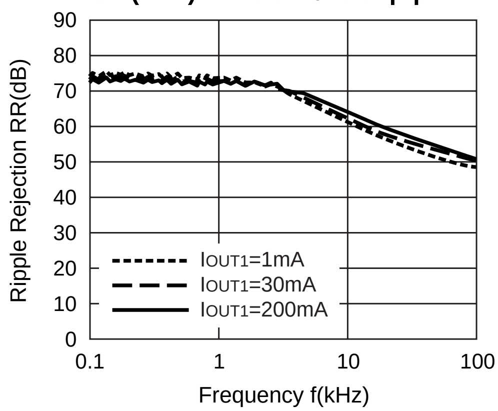
2.8V (VR2) V_{IN}=3.8V_{DC}+0.5Vp-p



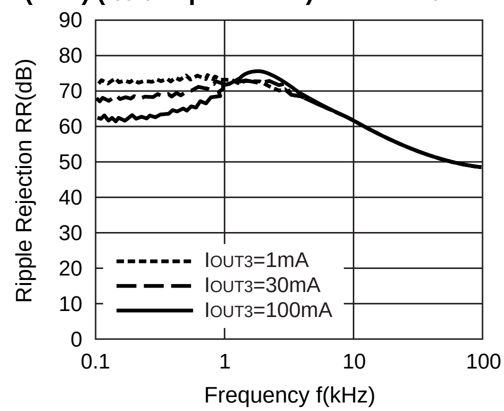
2.8V (VR3) V_{IN}=3.8V_{DC}+0.5Vp-p



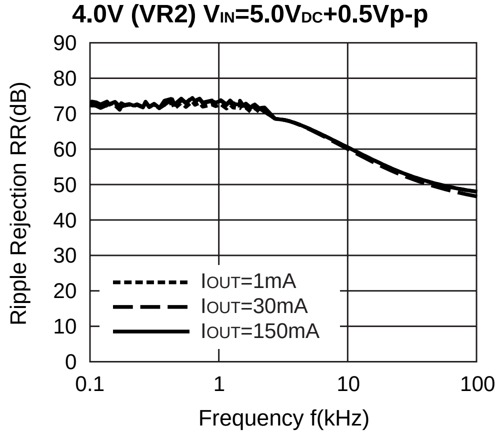
4.0V (VR1) V_{IN}=5.0V_{DC}+0.5Vp-p



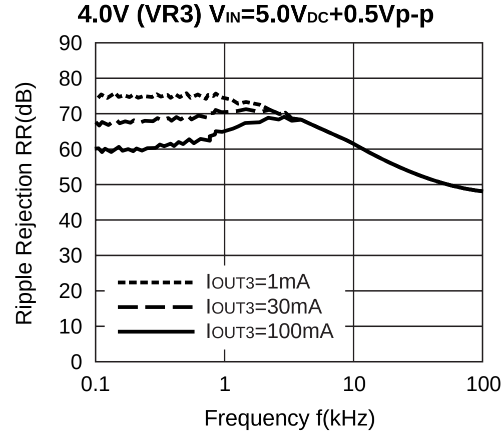
4.0V (VR1) (I_{OUT3} dependence) V_{IN}=5.0V_{DC}+0.5Vp-p



4.0V (VR2) V_{IN}=5.0V_{DC}+0.5Vp-p



4.0V (VR3) V_{IN}=5.0V_{DC}+0.5Vp-p



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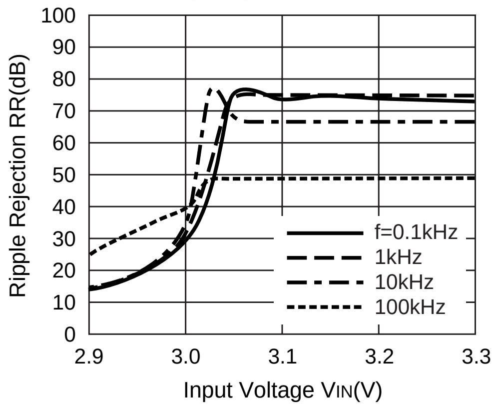
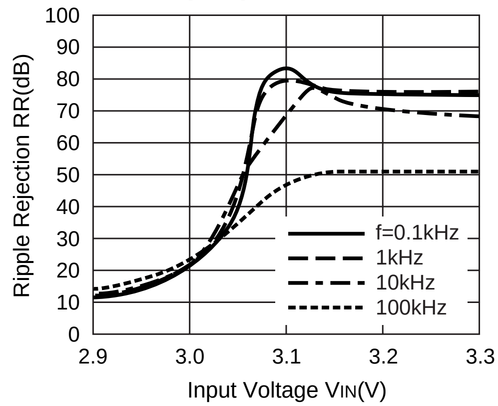
9) Ripple Rejection vs. DC Input Bias (Topt=25°C, C_{OUT}=1.0µF)

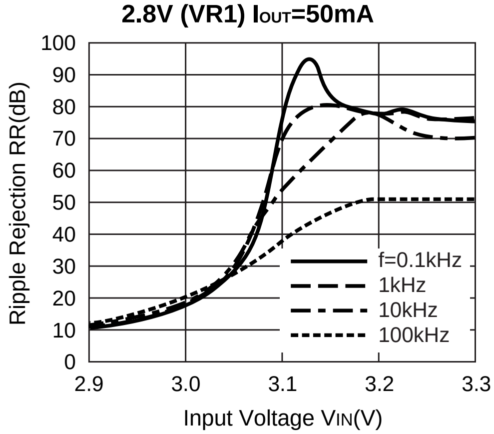
2.8V (VR1) I_{OUT}=1mA



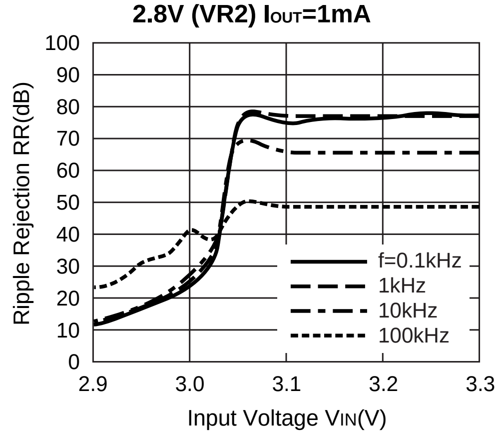
2.8V (VR1) I_{OUT}=30mA



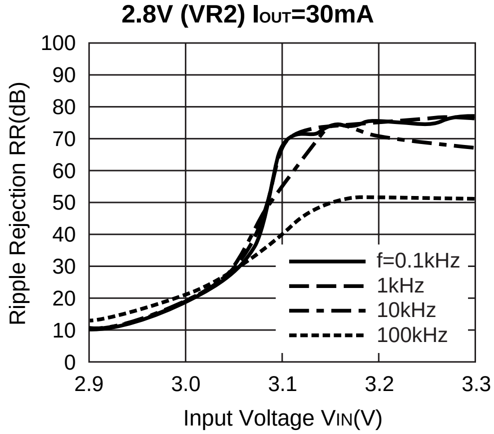
2.8V (VR1) I_{OUT}=50mA



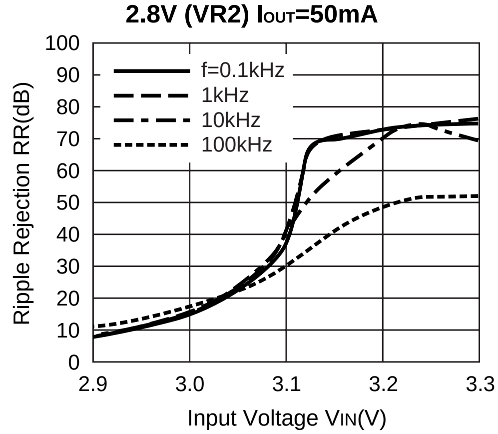
2.8V (VR2) I_{OUT}=1mA



2.8V (VR2) I_{OUT}=30mA



2.8V (VR2) I_{OUT}=50mA



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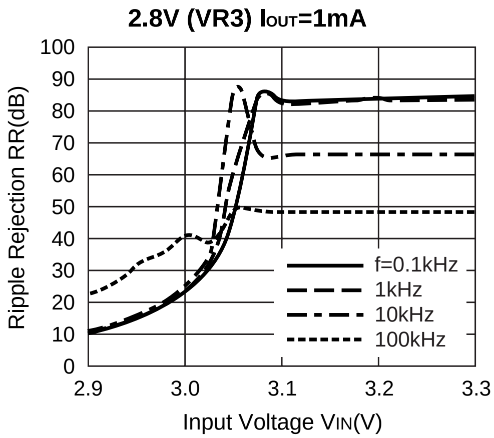

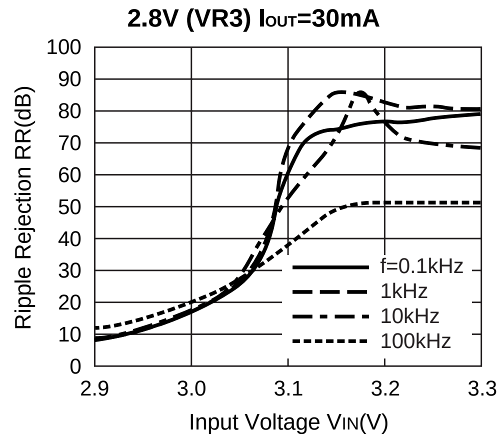

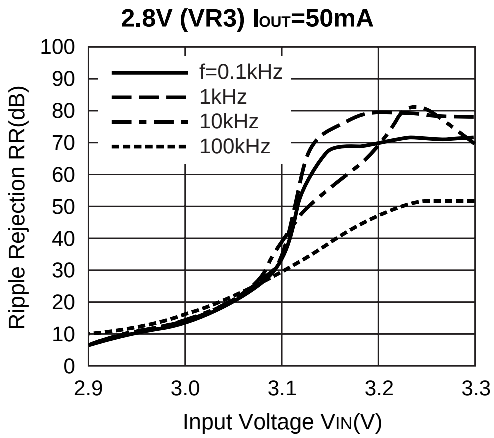

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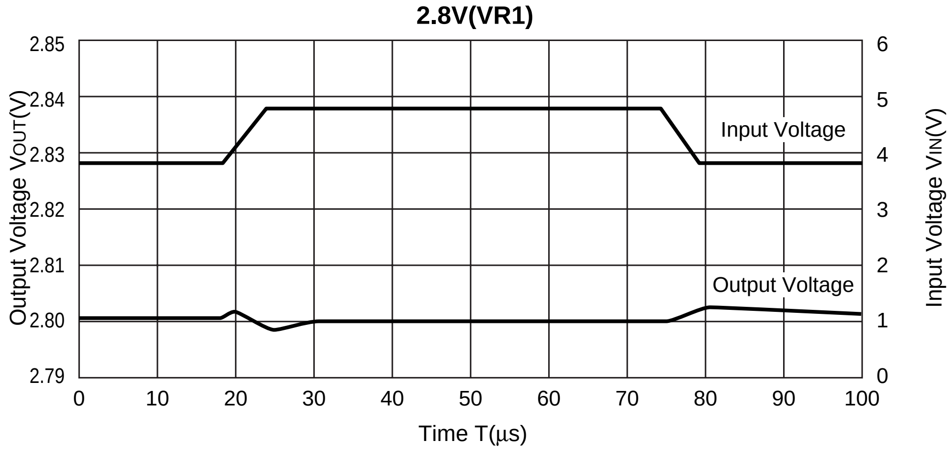
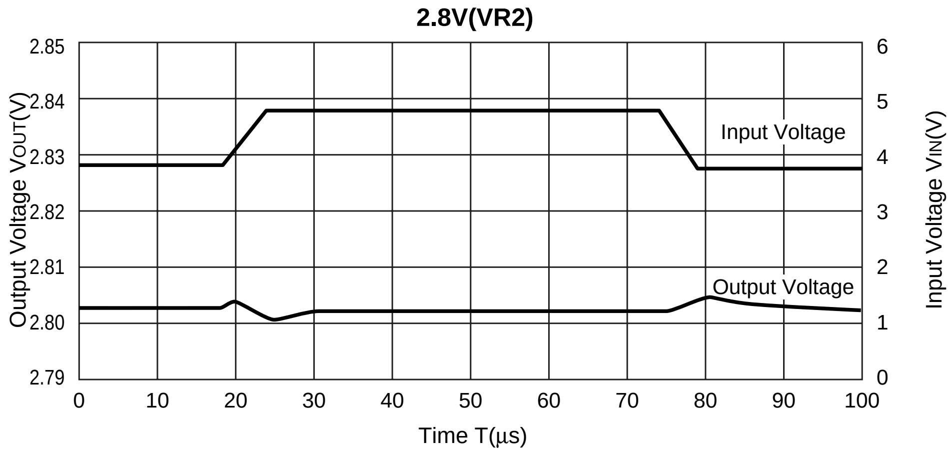
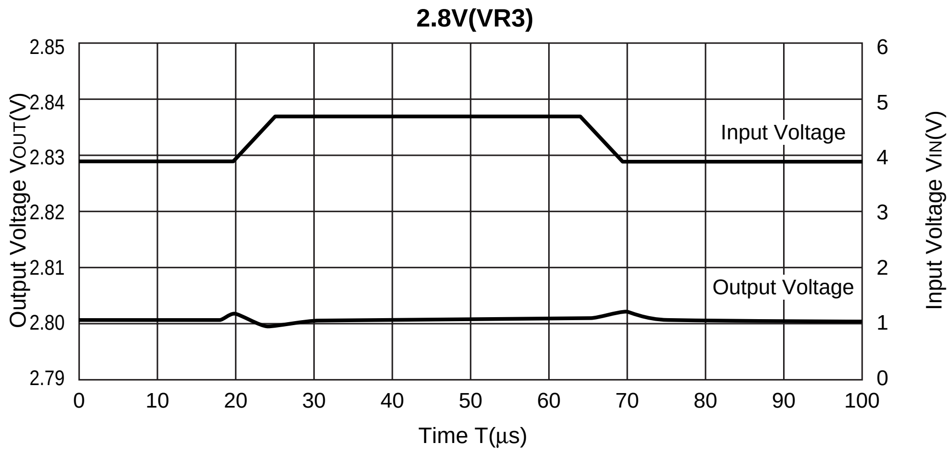
10) Line Transient Response (I_{OUT}=30mA, C_{IN}=none, tr=tf=5µs, C_{OUT}=Ceramic 1µF)







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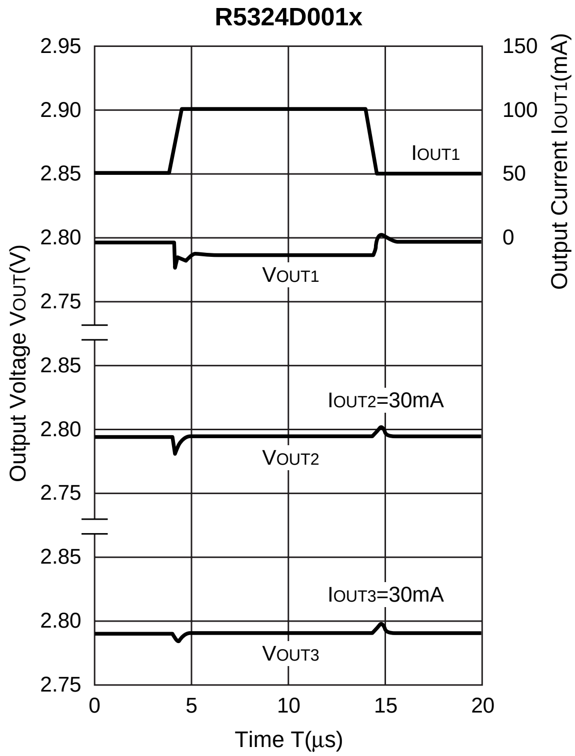
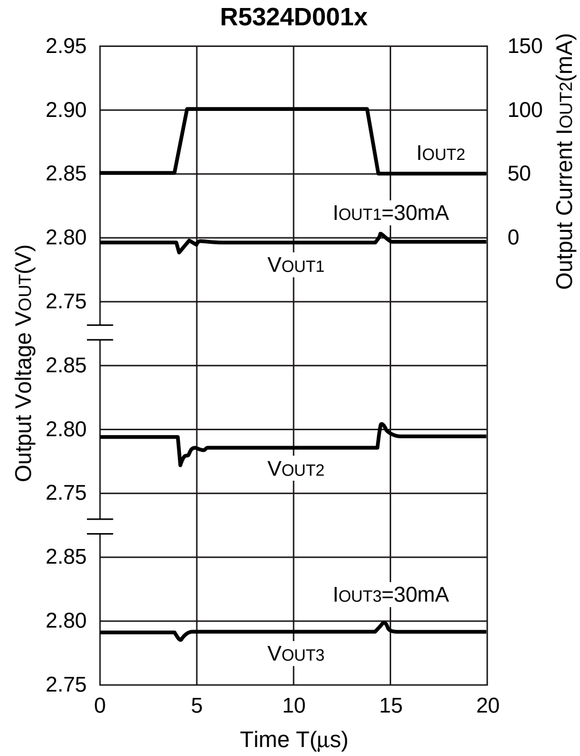
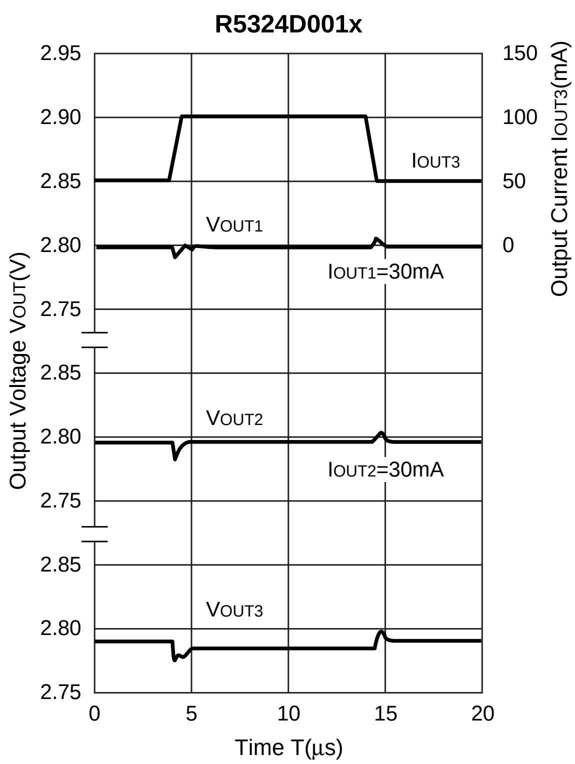
11) Load Transient Response (C_{IN}=Ceramic 1.0µF, C_{OUT}=Ceramic 1.0µF)







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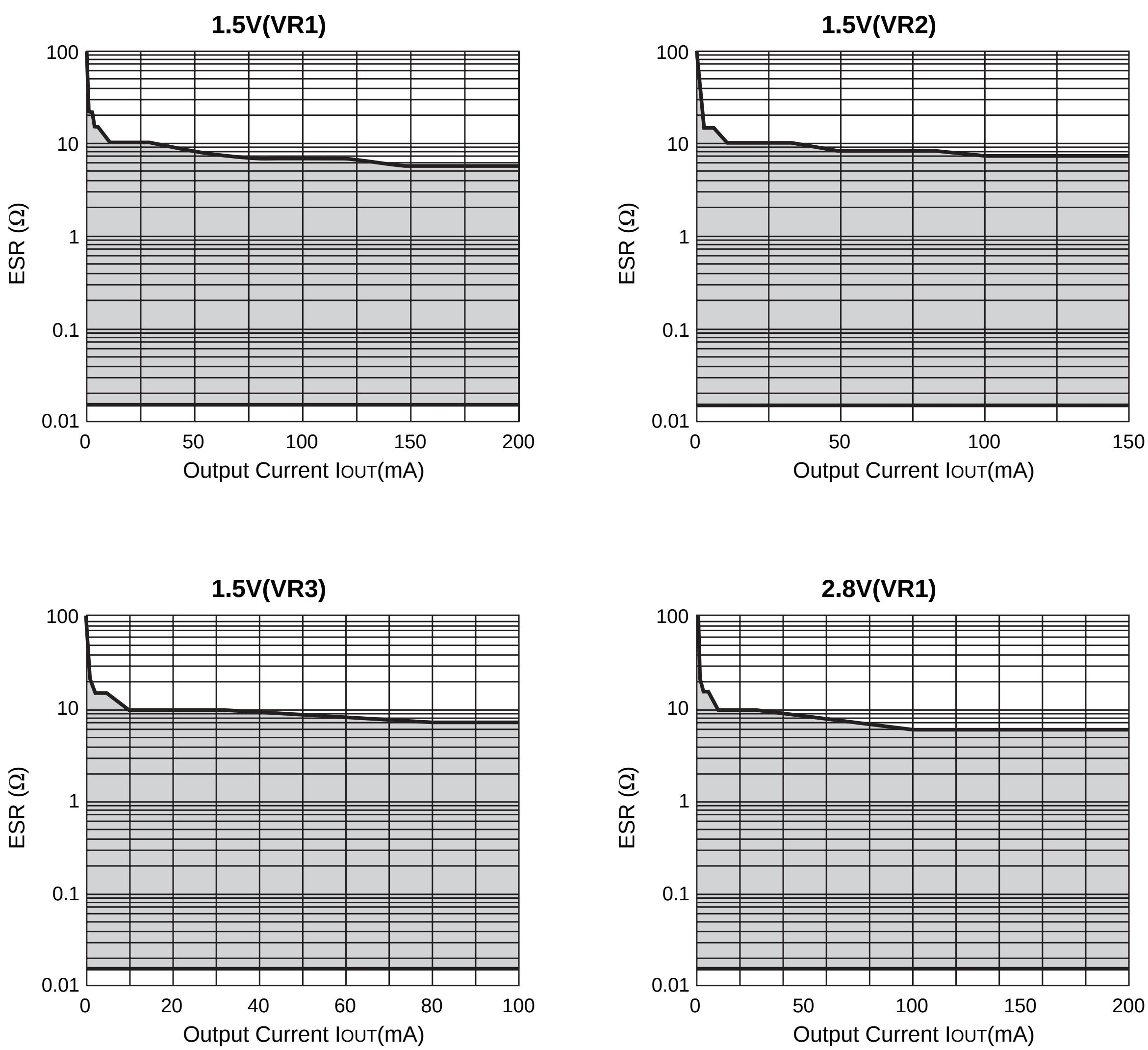
ESR vs. Output Current

When using these ICs, consider the following points:

The relations between I_{OUT} (Output Current) and ESR of an output capacitor are shown below.
The conditions when the white noise level is under 40μV (Avg.) are marked as the hatched area in the graph.

Measurement conditions

Frequency Band : 10Hz to 2MHz
Temperature : –40°C to 85°C



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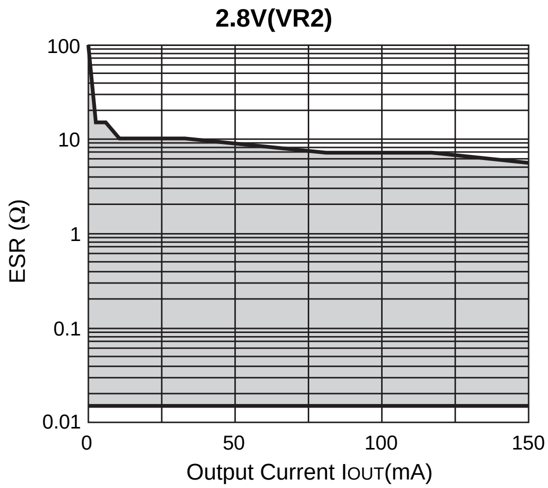

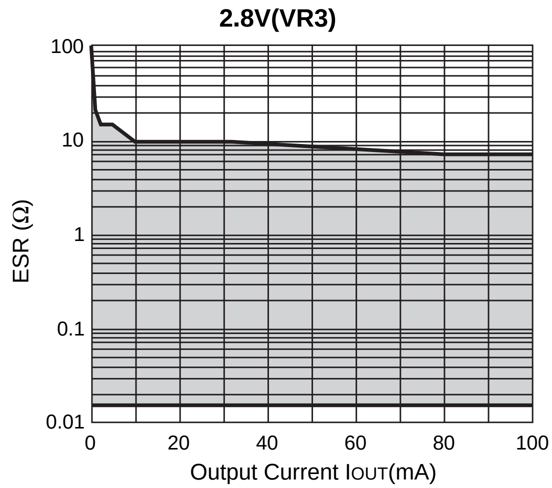

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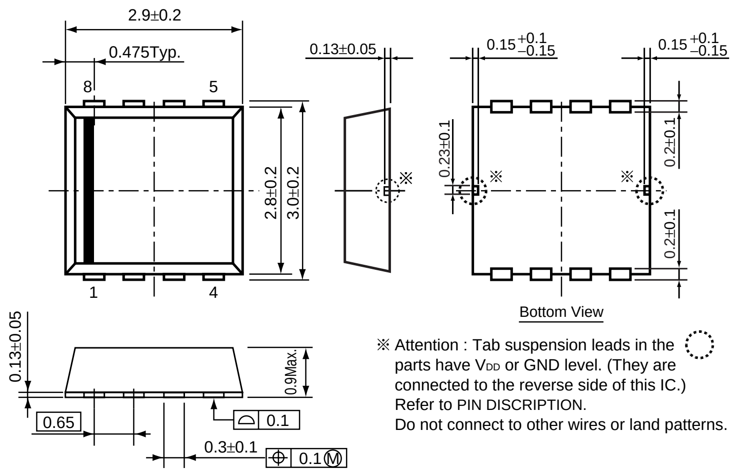
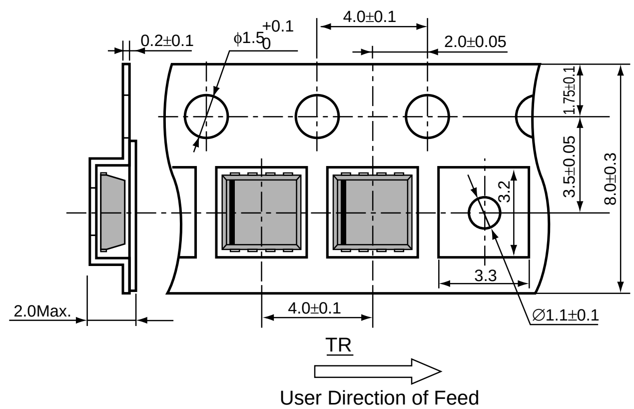
- **SON-8**

Unit: mm

PACKAGE DIMENSIONS

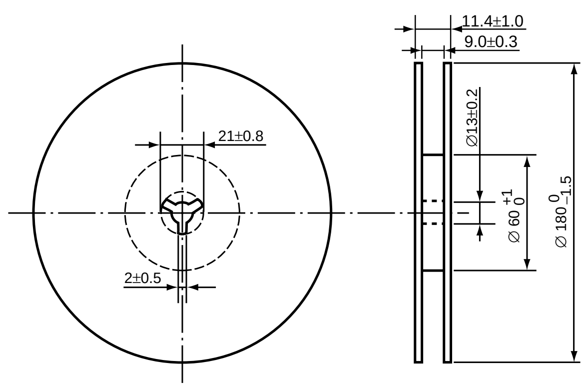


TAPING SPECIFICATION



TAPING REEL DIMENSIONS REUSE REEL (EIAJ-RRM-08Bc)

(1reel=3000pcs)



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POWER DISSIPATION (SON-8)

This specification is at mounted on board. Power Dissipation (P_D) depends on conditions of mounting on board. This specification is based on the measurement at the condition below:

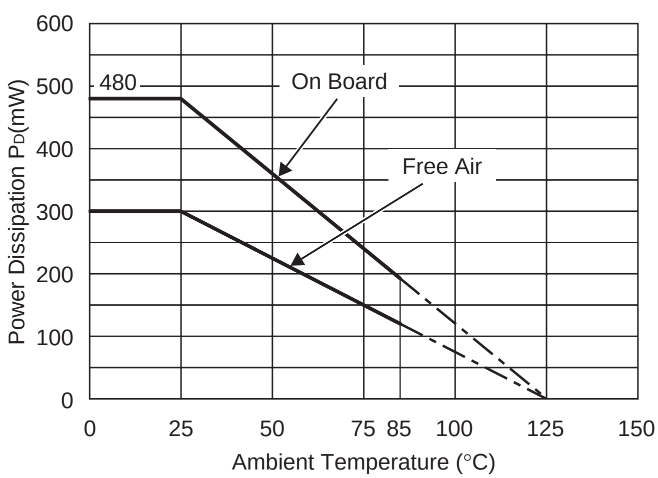
Measurement Conditions

	Standard Land Pattern
Environment	Mounting on Board (Wind velocity=0m/s)
Board Material	Glass cloth epoxy plactic (Double sided)
Board Dimensions	40mm × 40mm × 1.6mm
Copper Ratio	Top side : Approx. 50% , Back side : Approx. 50%
Through-hole	φ0.5mm × 44pcs

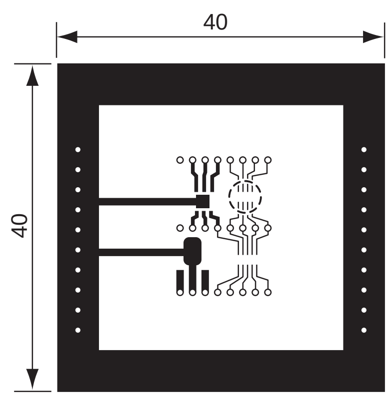
Measurement Result

(Topt=25°C,Tjmax=125°C)

	Standard Land Pattern	Free Air
Power Dissipation	480mW	300mW
Thermal Resistance	θja=(125−25°C)/0.48W=208°C/W	333°C/W



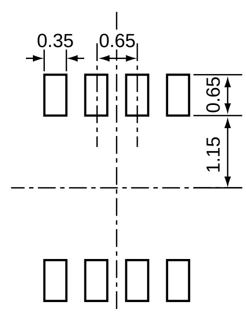
Power Dissipation



Measurement Board Pattern

IC Mount Area (Unit : mm)

RECOMMENDED LAND PATTERN



(Unit: mm)

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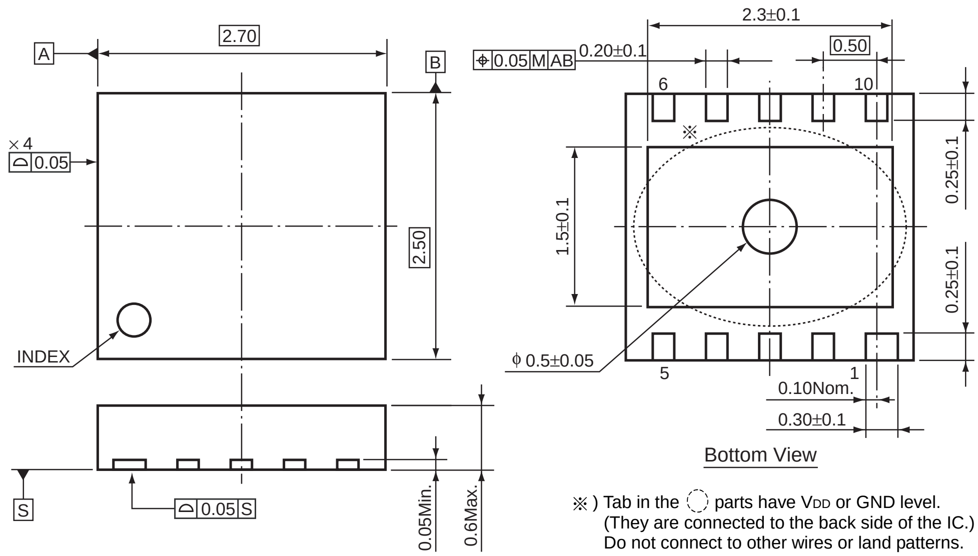
- **DFN(PLP)2527-10**

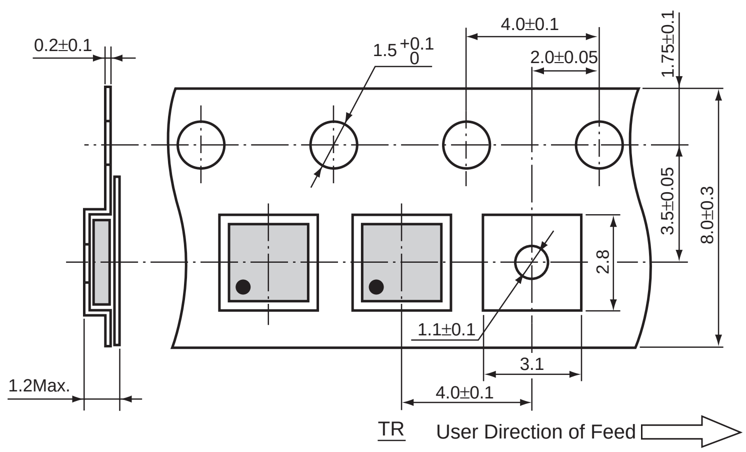
Unit: mm

PACKAGE DIMENSIONS



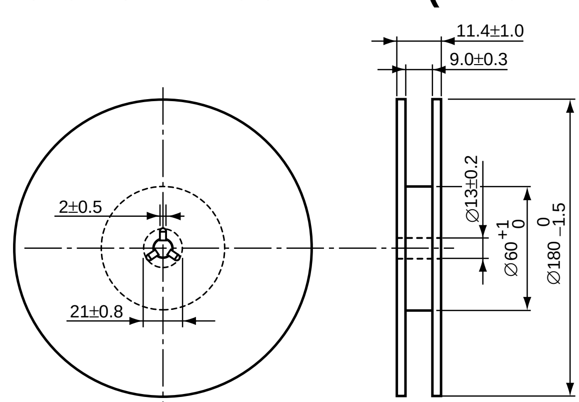
※) Tab in the ◌ parts have V_{DD} or GND level.
(They are connected to the back side of the IC.)
Do not connect to other wires or land patterns.

TAPING SPECIFICATION



TAPING REEL DIMENSIONS REUSE REEL (EIAJ-RRM-08Bc)

(1reel=5,000pcs)



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POWER DISSIPATION (DFN(PLP)2527-10)

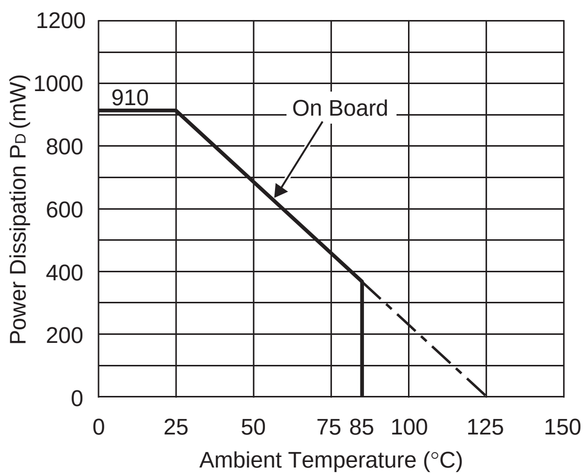
This specification is at mounted on board. Power Dissipation (P_D) depends on conditions of mounting on board. This specification is based on the measurement at the condition below:

Measurement Conditions

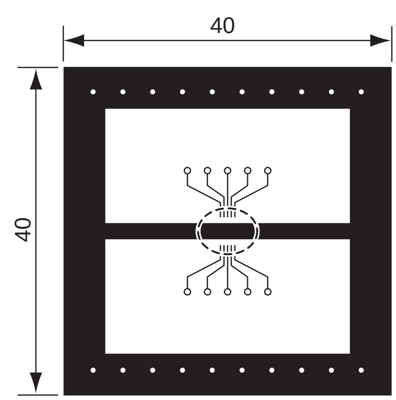
	Standard Land Pattern
Environment	Mounting on Board (Wind velocity=0m/s)
Board Material	Glass cloth epoxy plastic (Double sided)
Board Dimensions	40mm × 40mm × 1.6mm
Copper Ratio	Top side : Approx. 50% , Back side : Approx. 50%
Through-hole	ϕ0.54mm × 30pcs

Measurement Result (Topt=25°C, Tjmax=125°C)

	Standard Land Pattern
Power Dissipation	910mW
Thermal Resistance	θja=(125−25°C)/0.91W=110°C/W



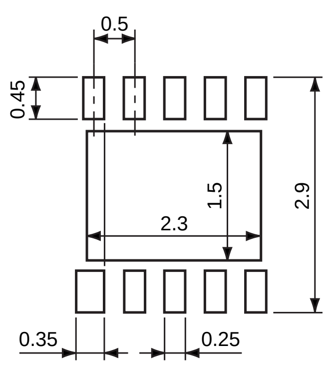
Power Dissipation



Measurement Board Pattem

◌ IC Mount Area (Unit: mm)

RECOMMENDED LAND PATTERN



(Unit: mm)

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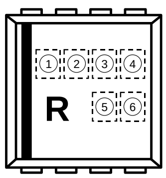
R5324D SERIES MARK SPECIFICATION

- **SON-8**



① to ④ : Product Code (refer to Part Number vs. Product Code)

⑤, ⑥ : Lot Number

- **Part Number vs. Product Code**

R5324DxxxA Series

Part Number	Product Code				Set V_{OUT} (V)		
	①	②	③	④	VR1	VR2	VR3
R5324D001A	E	0	1	A	2.8	2.8	2.8
R5324D002A	E	0	2	A	2.9	2.9	2.9
R5324D003A	E	0	3	A	3.0	3.0	3.0
R5324D004A	E	0	4	A	3.3	3.0	2.5

R5324DxxxB Series

Part Number	Product Code				Set V_{OUT} (V)		
	①	②	③	④	VR1	VR2	VR3
R5324D001B	E	0	1	B	2.8	2.8	2.8
R5324D002B	E	0	2	B	2.9	2.9	2.9
R5324D003B	E	0	3	B	3.0	3.0	3.0
R5324D004B	E	0	4	B	3.3	3.0	2.5
R5324D005B	E	0	5	B	1.5	2.9	1.5
R5324D006B	E	0	6	B	2.8	2.8	2.9
R5324D007B	E	0	7	B	3.3	2.5	1.8
R5324D008B	E	0	8	B	3.3	2.8	2.7
R5324D009B	E	0	9	B	3.1	2.8	1.8
R5324D010B	E	1	0	B	1.8	3.1	3.1
R5324D011B	E	1	1	B	3.0	2.5	1.8
R5324D012B	E	1	2	B	3.3	3.0	1.8
R5324D013B	E	1	3	B	3.0	1.8	1.8
R5324D014B	E	1	4	B	3.3	3.0	3.5
R5324D015B	E	1	5	B	3.3	1.8	1.8
R5324D016B	E	1	6	B	3.0	2.8	1.8
R5324D017B	E	1	7	B	2.9	1.5	2.9
R5324D018B	E	1	8	B	3.3	3.3	3.3
R5324D019B	E	1	9	B	1.5	1.85	2.85
R5324D020B	E	2	0	B	3.0	2.8	1.5
R5324D021B	E	2	1	B	2.5	3.0	3.3
R5324D022B	E	2	2	B	1.8	2.5	2.8
R5324D023B	E	2	3	B	2.8	1.8	1.8
R5324D024B	E	2	4	B	2.8	1.8	2.85
R5324D025B	E	2	5	B	2.8	2.6	1.8

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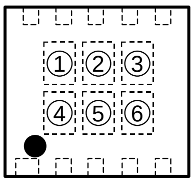
R5324K SERIES MARK SPECIFICATION

- **DFN(PLP)2527-10**



① to ④ : Product Code (refer to Part Number vs. Product Code)
⑤, ⑥ : Lot Number

- **Part Number vs. Product Code**

R5324KxxxA Series

Part Number	Product Code				Set V_{OUT} (V)		
	①	②	③	④	VR1	VR2	VR3
R5324K001A	A	P	0	1	2.8	2.8	2.8
R5324K002A	A	P	0	3	2.9	2.9	2.9
R5324K003A	A	P	0	5	3.0	3.0	3.0
R5324K004A	A	P	0	7	3.3	3.0	2.5

R5324KxxxB Series

Part Number	Product Code				Set V_{OUT} (V)		
	①	②	③	④	VR1	VR2	VR3
R5324K001B	A	P	0	2	2.8	2.8	2.8
R5324K002B	A	P	0	4	2.9	2.9	2.9
R5324K003B	A	P	0	6	3.0	3.0	3.0
R5324K004B	A	P	0	8	3.3	3.0	2.5
R5324K005B	A	P	0	9	1.5	2.9	1.5
R5324K006B	A	P	1	0	2.8	2.8	2.9
R5324K007B	A	P	1	1	3.3	2.5	1.8
R5324K008B	A	P	1	2	3.3	2.8	2.7
R5324K009B	A	P	1	3	3.1	2.8	1.8
R5324K010B	A	P	1	4	1.8	3.1	3.1
R5324K011B	A	P	1	5	3.0	2.5	1.8
R5324K012B	A	P	1	6	3.3	3.0	1.8
R5324K013B	A	P	1	7	3.0	1.8	1.8
R5324K014B	A	P	1	8	3.3	3.0	3.5
R5324K015B	A	P	1	9	3.3	1.8	1.8
R5324K016B	A	P	2	0	3.0	2.8	1.8
R5324K017B	A	P	2	1	2.9	1.5	2.9
R5324K018B	A	P	2	2	3.3	3.3	3.3
R5324K019B	A	P	2	3	1.5	1.85	2.85
R5324K020B	A	P	2	4	3.0	2.8	1.5
R5324K021B	A	P	2	5	2.5	3.0	3.3
R5324K022B	A	P	2	6	1.8	2.5	2.8
R5324K023B	A	P	2	7	2.8	1.8	1.8
R5324K024B	A	P	2	8	2.8	1.8	2.85
R5324K025B	A	P	2	9	2.8	2.6	1.8

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