RICOH

RP171x SERIES

150mA 10V INPUT LDO REGULATOR

NO.EA-245-160324

OUTLINE

The RP171x Series are CMOS-based LDO regulators featuring 150mA output current. Because of the 10V maximum input voltage, RP171x can be used in 2 cell lithium-ion battery powered portable appliances and besides a portable equipment. The supply current is Typ. 23μA though an excellent response characteristics.

The output voltage range from 1.2V is possible. The output voltage accuracy and temperature-drift coefficient of output voltage of the RP171x Series are excellent.

RP171x has a fold-back protection circuit and a thermal shutdown circuit. Moreover, a standby mode with ultra low supply current can be realized with the chip enable function.

SC-88A and SOT-23-5 with high power dissipation packages are available.

FEATURES

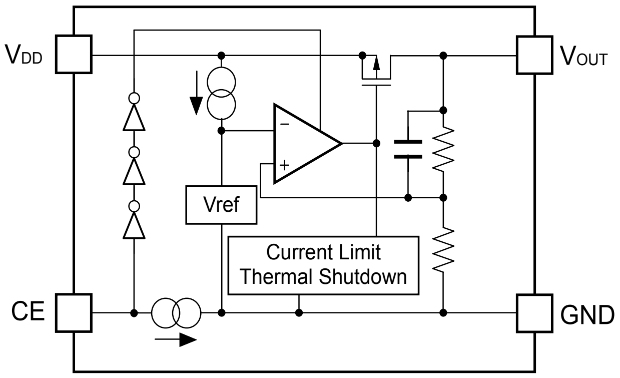
- Supply Current ....Typ. 23μA
- Standby Mode ....Typ. 0.1μA
- Dropout Voltage..Typ. 0.20V (I_{OUT}=100mA, V_{OUT}=3.0V)
  Typ. 0.40V (I_{OUT}=150mA, V_{OUT}=2.8V)
- Ripple Rejection ....Typ. 70dB (f=1kHz)
- Temperature-Drift Coefficient of Output Voltage ....Typ. ±80ppm/°C
- Line Regulation ....Typ. 0.02%/V
- Output Voltage Accuracy..±1.0%
- Packages...SC-88A, SOT-23-5
- Input Voltage Range...2.6V to 10.0V
- Output Voltage Range..1.2V to 6.0V (0.1V steps)
  (For other voltages, please refer to MARK INFORMATIONS.)
- Built-in Fold Back Protection Circuit.............................Typ. 40mA (Current at short mode)
- Built-in Thermal Shutdown Circuit................................Shutdown Temperature at 165°C
- Built-in Constant Slope Circuit (Soft-start Function)
- Ceramic capacitors are recommended to be used with this IC .... 1.0μF or more

APPLICATIONS

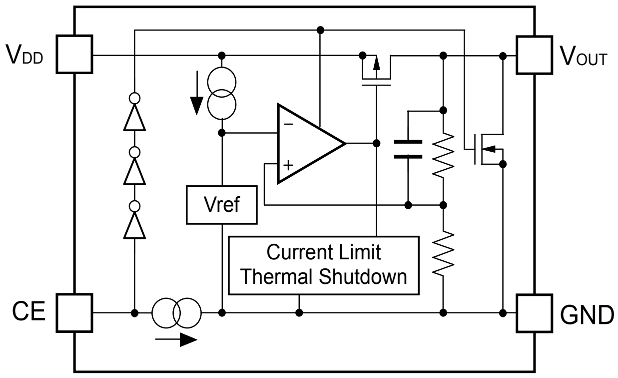
- Power source for portable communication equipment.
- Power source for electrical appliances such as cameras, VCRs and camcorders.
- Power source for battery-powered equipment.
- Power source for home appliances.

BLOCK DIAGRAMS

RP171xxxxB



RP171xxxxD



SELECTION GUIDE

The output voltage, auto discharge function, and package, etc. for the ICs can be selected at the user's request.

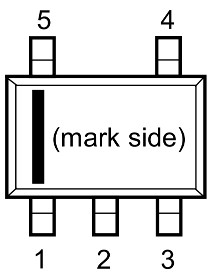
Product Name	Package	Quantity per Reel	Pb Free	Halogen Free
RP171Qxx2∗-TR-FE	SC-88A	3,000 pcs	Yes	Yes
RP171Nxx1∗-TR-FE	SOT-23-5	3,000 pcs	Yes	Yes

xx: The output voltage can be designated in the range from 1.2V(12) to 6.0V(60) in 0.1V steps.
(For other voltages, please refer to MARK INFORMATIONS.)

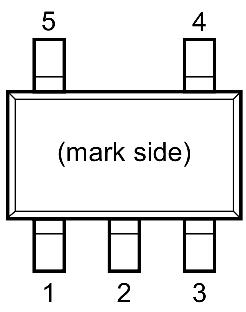
∗ : The auto discharge function at off state are options as follows.
(B) without auto discharge function at off state
(D) with auto discharge function at off state

PIN CONFIGURATIONS

• SC-88A



• SOT-23-5



PIN DESCRIPTIONS

• **SC-88A**

Pin No	Symbol	Pin Description
1	CE	Chip Enable Pin ("H" Active)
2	NC	No Connection
3	GND	Ground Pin
4	V_{OUT}	Output Pin
5	V_{DD}	Input Pin

• **SOT-23-5**

Pin No	Symbol	Pin Description
1	V_{DD}	Input Pin
2	GND	Ground Pin
3	CE	Chip Enable Pin ("H" Active)
4	NC	No Connection
5	V_{OUT}	Output Pin

ABSOLUTE MAXIMUM RATINGS

Symbol	Item	Rating	Unit
V_{IN}	Input Voltage	12	V
V_{CE}	Input Voltage (CE Pin)	12	V
V_{OUT}	Output Voltage	–0.3 to V_{IN}+0.3	V
I_{OUT}	Output Current	330	mA
P_D	Power Dissipation* (SC-88A)	380	mW
	Power Dissipation* (SOT-23-5)	420	
T_{opt}	Operating Temperature Range	–40 to 85	°C
T_{stg}	Storage Temperature Range	–55 to 125	°C

*) For Power Dissipation, please refer to PACKAGE INFORMATION.

ABSOLUTE MAXIMUM RATINGS

Electronic and mechanical stress momentarily exceeded absolute maximum ratings may cause the permanent damages and may degrade the life time and safety for both device and system using the device in the field.
The functional operation at or over these absolute maximum ratings is not assured.

RECOMMENDED OPERATING CONDITIONS (ELECTRICAL CHARACTERISTICS)

All of electronic equipment should be designed that the mounted semiconductor devices operate within the recommended operating conditions. The semiconductor devices cannot operate normally over the recommended operating conditions, even if when they are used over such conditions by momentary electronic noise or surge. And the semiconductor devices may receive serious damage when they continue to operate over the recommended operating conditions.

ELECTRICAL CHARACTERISTICS

V_{IN}=Set V_{OUT}+1V, I_{OUT}=1mA, unless otherwise noted.

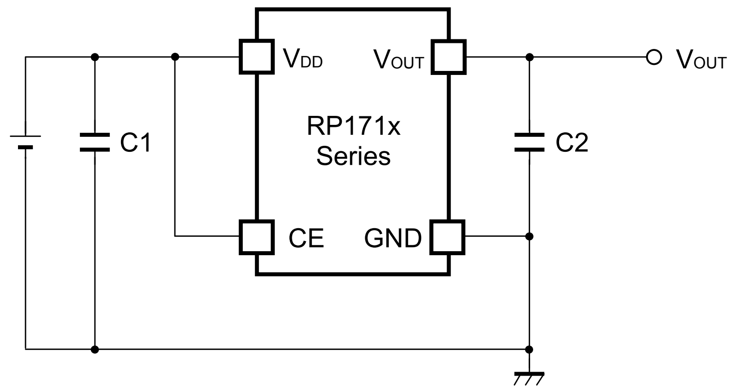
The specifications in [ ] are guaranteed by Design Engineering at - 40ºC ≤ Ta ≤ 85ºC.

RP171xxxxB/D Topt=25°C

Symbol	Item	Conditions		Min.	Typ.	Max.	Unit
V_{OUT}	Output Voltage	Topt=25°C	V_{OUT} > 1.5V	×0.99		×1.01	V
			V_{OUT} ≤ 1.5V	−15		+15	mV
		−40°C ≤ Topt ≤ 85°C	V_{OUT} > 1.5V	×0.974		×1.023	V
			V_{OUT} ≤ 1.5V	−40		+35	mV
I_{OUT}	Output Current			150			mA
$\Delta V_{OUT}/\Delta I_{OUT}$	Load Regulation	0.1mA ≤ I_{OUT} ≤ 150mA			5	40	mV
V_{DIF}	Dropout Voltage	I_{OUT}=150mA	1.2V ≤ V_{OUT} < 1.3V		-	1.400	V
			1.3V ≤ V_{OUT} < 1.5V		-	1.300	
			1.5V ≤ V_{OUT} < 1.8V		-	1.100	
			1.8V ≤ V_{OUT} < 2.3V		-	0.800	
			2.3V ≤ V_{OUT} < 3.0V		0.400	0.580	
			3.0V ≤ V_{OUT} < 4.0V		0.300	0.480	
			4.0V ≤ V_{OUT} ≤ 6.0V		0.250	0.400	
I_{SS}	Supply Current	I_{OUT}=0mA			23	40	μA
$I_{standby}$	Standby Current	V_{IN}=10.0V, V_{CE}=GND			0.1	1.0	μA
$\Delta V_{OUT}/\Delta V_{IN}$	Line Regulation	Set V_{OUT}+0.5V ≤ V_{IN} ≤ 10.0V (In case that V_{OUT} ≤ 2.1V, 2.6V ≤ V_{IN} ≤ 10.0V)			±0.02	±0.2	%/V
RR	Ripple Rejection	f=1kHz, Ripple 0.2Vp-p, I_{OUT}=30mA (In case that V_{OUT} < 2.0V, V_{IN}=3.0V)			70		dB
V_{IN}	Input Voltage			2.6		10	V
$\Delta V_{OUT}/\Delta T_{opt}$	Output Voltage Temperature Coefficient	−40°C ≤ Topt ≤ 85°C			±80		ppm/°C
I_{SC}	Short Current Limit	V_{OUT}=0V			40		mA
I_{PD}	CE Pull-down Current				0.30		μA
V_{CEH}	CE Input Voltage "H"			1.7			V
V_{CEL}	CE Input Voltage "L"					0.8	V
T_{TSD}	Thermal Shutdown Temperature	Junction Temperature			165		°C
T_{TSR}	Thermal Shutdown Released Temperature	Junction Temperature			110		°C
en	Output Noise	BW=10Hz to 100kHz			100		μVrms
R_{LOW}	Low Output Nch Tr. ON Resistance (of D version)	V_{IN}=7.0V V_{CE}=0V			250		Ω

All of unit are tested and specified under load conditions such that Tj≈Topt=25°C except for Output Noise, Ripple Rejection, Output Voltage Temperature Coefficient and Thermal Shutdown.

TYPICAL APPLICATION



(External Components)
C2 1.0µF MURATA: GRM155B31A105KE15

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 with 1.0µF or more and good ESR (Equivalent Series Resistance).

(Note: If additional ceramic capacitors are connected with parallel to the output pin with an output capacitor for phase compensation, the operation might be unstable. Because of this, test these ICs with as same external components as ones to be used on the PCB.)

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, as close as possible to the ICs, and make wiring as short as possible.

PACKAGE INFORMATION

● Power Dissipation (SC-88A)

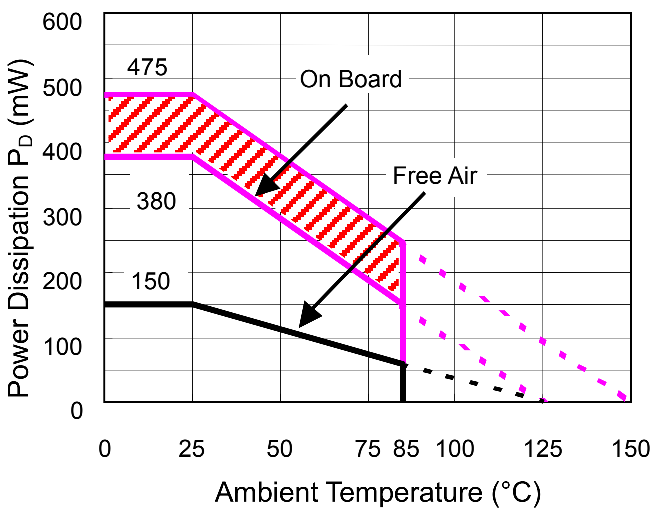
Power Dissipation (P_D) depends on conditions of mounting on board. This specification is based on the measurement at the condition below:

Measurement Conditions:

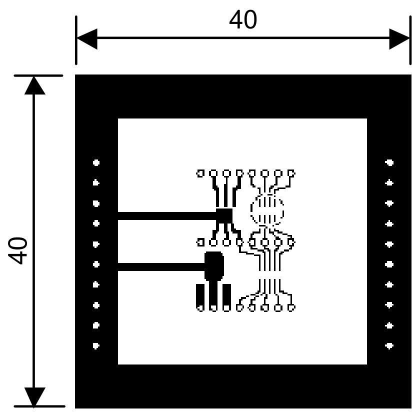
	Standard Land Pattern
Environment	Mounting on Board (Wind velocity=0m/s)
Board Material	Glass cloth epoxy plastic (Double Layers)
Board Dimensions	40mm × 40mm × 1.6mm
Copper Ratio	Top side: Approx. 50%, Back side: Approx. 50%
Through-hole	ϕ0.5mm × 44pcs

Measurement Results: (Ta=25°C)

	Standard Land Pattern	Free Air
Power Dissipation	380mW (Tjmax=125°C) 475mW (Tjmax=150°C)	150mW
Thermal Resistance	θja=(125-25°C)/0.38W=263°C/W	θja=(125-25°C)/0.15W=667°C/W
	θjc=75°C/W	-



Power Dissipation



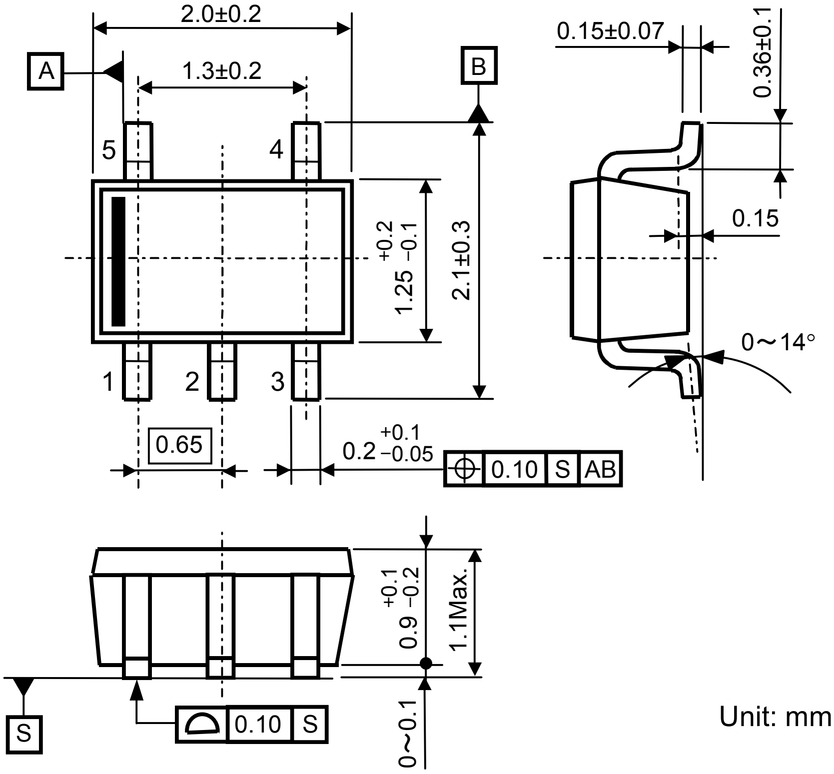
Measurement Board Pattern

IC Mount Area (Unit: mm)

The above graph shows the Power Dissipation of the package under the conditions of Tjmax=125°C and Tjmax=150°C.
The operation of the IC within the shaded range in the graph might have an affect on the IC's lifetime. The operation time of the IC must be remained within the time limit described in the table below.

Operating Time	Estimated Years (Operating 4 hours/day)
13,000 hours	9 years

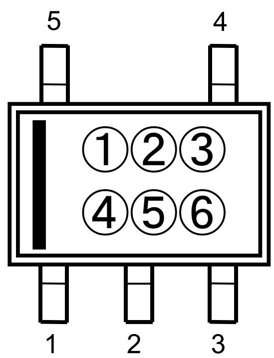
• Package Dimensions (SC-88A)



• Mark Specification (SC-88A)

①②③④: Product Code … Refer to "Mark Specification Table".

⑤⑥: Lot Number … Alphanumeric Serial Number



• RP171Q Series Mark Specification Table (SC-88A)

RP171Qxx2B

Product Name	①② ③④	Voltage
RP171Q122B	**AC01**	1.2V
RP171Q122B5	**AC02**	1.25V
RP171Q132B	**AC03**	1.3V
RP171Q142B	**AC04**	1.4V
RP171Q152B	**AC05**	1.5V
RP171Q162B	**AC06**	1.6V
RP171Q172B	**AC07**	1.7V
RP171Q182B	**AC08**	1.8V
RP171Q182B5	**AC09**	1.85V
RP171Q192B	**AC10**	1.9V
RP171Q202B	**AC11**	2.0V
RP171Q212B	**AC12**	2.1V
RP171Q222B	**AC13**	2.2V
RP171Q232B	**AC14**	2.3V
RP171Q242B	**AC15**	2.4V
RP171Q252B	**AC16**	2.5V
RP171Q262B	**AC17**	2.6V
RP171Q272B	**AC18**	2.7V
RP171Q282B	**AC19**	2.8V
RP171Q282B5	**AC20**	2.85V
RP171Q292B	**AC21**	2.9V

Product Name	①② ③④	Voltage
RP171Q302B	**AC22**	3.0V
RP171Q312B	**AC23**	3.1V
RP171Q322B	**AC24**	3.2V
RP171Q332B	**AC25**	3.3V
RP171Q342B	**AC26**	3.4V
RP171Q352B	**AC27**	3.5V
RP171Q362B	**AC28**	3.6V
RP171Q372B	**AC29**	3.7V
RP171Q382B	**AC30**	3.8V
RP171Q392B	**AC31**	3.9V
RP171Q402B	**AC32**	4.0V
RP171Q412B	**AC33**	4.1V
RP171Q422B	**AC34**	4.2V
RP171Q432B	**AC35**	4.3V
RP171Q442B	**AC36**	4.4V
RP171Q452B	**AC37**	4.5V
RP171Q462B	**AC38**	4.6V
RP171Q472B	**AC39**	4.7V
RP171Q482B	**AC40**	4.8V
RP171Q492B	**AC41**	4.9V

Product Name	①② ③④	Voltage
RP171Q502B	**AC42**	5.0V
RP171Q512B	**AC43**	5.1V
RP171Q522B	**AC44**	5.2V
RP171Q532B	**AC45**	5.3V
RP171Q542B	**AC46**	5.4V
RP171Q552B	**AC47**	5.5V
RP171Q562B	**AC48**	5.6V
RP171Q572B	**AC49**	5.7V
RP171Q582B	**AC50**	5.8V
RP171Q592B	**AC51**	5.9V
RP171Q602B	**AC52**	6.0V

RP171Qxx2D

Product Name	①② ③④	Voltage
RP171Q122D	**AD01**	1.2V
RP171Q122D5	**AD02**	1.25V
RP171Q132D	**AD03**	1.3V
RP171Q142D	**AD04**	1.4V
RP171Q152D	**AD05**	1.5V
RP171Q162D	**AD06**	1.6V
RP171Q172D	**AD07**	1.7V
RP171Q182D	**AD08**	1.8V
RP171Q182D5	**AD09**	1.85V
RP171Q192D	**AD10**	1.9V
RP171Q202D	**AD11**	2.0V
RP171Q212D	**AD12**	2.1V
RP171Q222D	**AD13**	2.2V
RP171Q232D	**AD14**	2.3V
RP171Q242D	**AD15**	2.4V
RP171Q252D	**AD16**	2.5V
RP171Q262D	**AD17**	2.6V
RP171Q272D	**AD18**	2.7V
RP171Q282D	**AD19**	2.8V
RP171Q282D5	**AD20**	2.85V
RP171Q292D	**AD21**	2.9V

Product Name	①② ③④	Voltage
RP171Q302D	**AD22**	3.0V
RP171Q312D	**AD23**	3.1V
RP171Q322D	**AD24**	3.2V
RP171Q332D	**AD25**	3.3V
RP171Q342D	**AD26**	3.4V
RP171Q352D	**AD27**	3.5V
RP171Q362D	**AD28**	3.6V
RP171Q372D	**AD29**	3.7V
RP171Q382D	**AD30**	3.8V
RP171Q392D	**AD31**	3.9V
RP171Q402D	**AD32**	4.0V
RP171Q412D	**AD33**	4.1V
RP171Q422D	**AD34**	4.2V
RP171Q432D	**AD35**	4.3V
RP171Q442D	**AD36**	4.4V
RP171Q452D	**AD37**	4.5V
RP171Q462D	**AD38**	4.6V
RP171Q472D	**AD39**	4.7V
RP171Q482D	**AD40**	4.8V
RP171Q492D	**AD41**	4.9V

Product Name	①② ③④	Voltage
RP171Q502D	**AD42**	5.0V
RP171Q512D	**AD43**	5.1V
RP171Q522D	**AD44**	5.2V
RP171Q532D	**AD45**	5.3V
RP171Q542D	**AD46**	5.4V
RP171Q552D	**AD47**	5.5V
RP171Q562D	**AD48**	5.6V
RP171Q572D	**AD49**	5.7V
RP171Q582D	**AD50**	5.8V
RP171Q592D	**AD51**	5.9V
RP171Q602D	**AD52**	6.0V

● Power Dissipation (SOT-23-5)

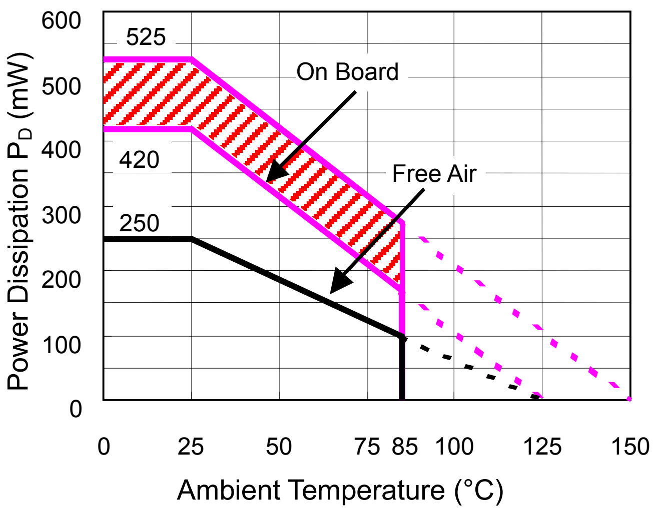
Power Dissipation (P_D) depends on conditions of mounting on board. This specification is based on the measurement at the condition below:
(Power Dissipation (SOT-23-5) is substitution of SOT-23-6.)

Measurement Conditions:

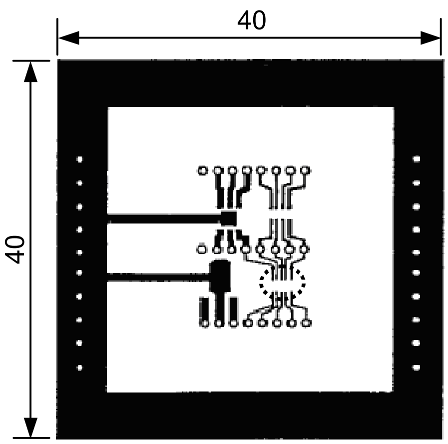
	Standard Land Pattern
Environment	Mounting on Board (Wind velocity=0m/s)
Board Material	Glass cloth epoxy plastic (Double sided)
Board Dimensions	40mm × 40mm × 1.6mm
Copper Ratio	Top side: Approx. 50%, Back side: Approx. 50%
Through-holes	ϕ 0.5mm × 44pcs

Measurement Results: (Ta=25°C)

	Standard Land Pattern	Free Air
Power Dissipation	420mW (Tjmax=125°C) 525mW (Tjmax=150°C)	250mW
Thermal Resistance	θja = (125-25°C)/0.42W= 238°C/W	400°C/W



Power Dissipation



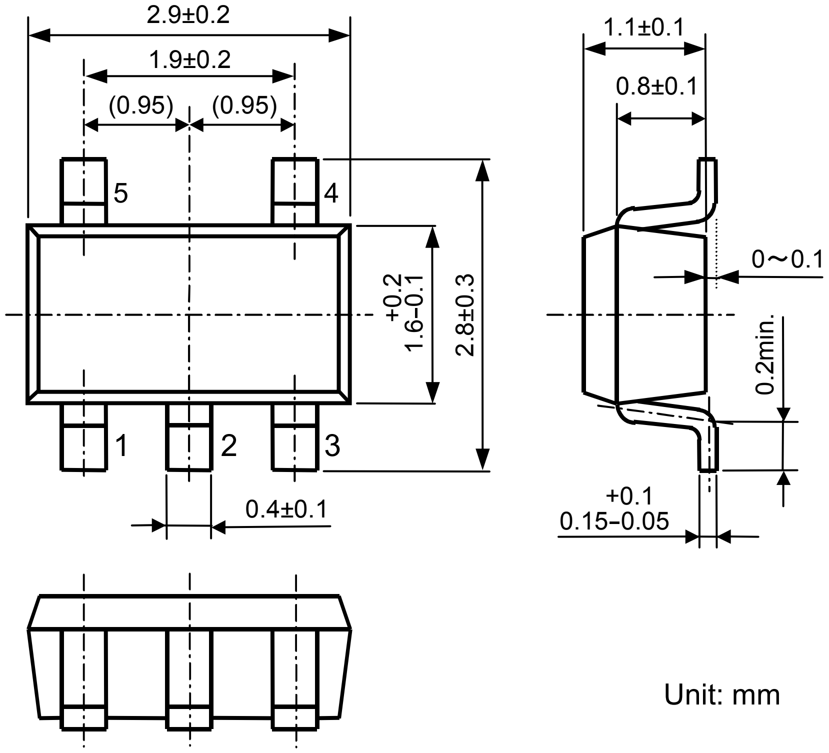
Measurement Board Pattern

IC Mount Area (Unit: mm)

The above graph shows the Power Dissipation of the package under the conditions of Tjmax=125°C and Tjmax=150°C.
The operation of the IC within the shaded range in the graph might have an affect on the IC's lifetime. The operation time of the IC must be remained within the time limit described in the table below.

Operating Time	Estimated Years (Operating 4 hours/day)
13,000 hours	9 years

- **Package Dimensions (SOT-23-5)**

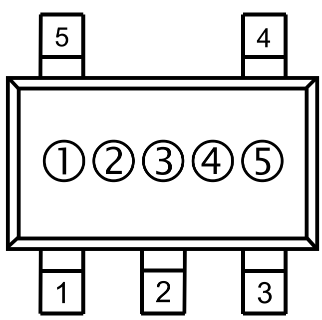


Unit: mm

- **Mark Specification (SOT-23-5)**

①②③: Product Code …Refer to “Mark Specification Table”.

④⑤: Lot Number … Alphanumeric Serial Number



• RP171N Series Mark Specification Table (SOT-23-5)

RP171Nxx1B

Product Name	①②③	Voltage
RP171N121B	**JAA**	1.2V
RP171N121B5	**JAB**	1.25V
RP171N131B	**JAC**	1.3V
RP171N141B	**JAD**	1.4V
RP171N151B	**JAE**	1.5V
RP171N161B	**JAF**	1.6V
RP171N171B	**JAG**	1.7V
RP171N181B	**JAH**	1.8V
RP171N181B5	**JAJ**	1.85V
RP171N191B	**JAK**	1.9V
RP171N201B	**JAL**	2.0V
RP171N211B	**JAM**	2.1V
RP171N221B	**JAN**	2.2V
RP171N231B	**JAP**	2.3V
RP171N241B	**JAQ**	2.4V
RP171N251B	**JAR**	2.5V
RP171N261B	**JAS**	2.6V
RP171N271B	**JAT**	2.7V
RP171N281B	**JAU**	2.8V
RP171N281B5	**JAV**	2.85V
RP171N291B	**JAW**	2.9V

Product Name	①②③	Voltage
RP171N301B	**JAX**	3.0V
RP171N311B	**JAY**	3.1V
RP171N321B	**JAZ**	3.2V
RP171N331B	**KAA**	3.3V
RP171N341B	**KAB**	3.4V
RP171N351B	**KAC**	3.5V
RP171N361B	**KAD**	3.6V
RP171N371B	**KAE**	3.7V
RP171N381B	**KAF**	3.8V
RP171N391B	**KAG**	3.9V
RP171N401B	**KAH**	4.0V
RP171N411B	**KAJ**	4.1V
RP171N421B	**KAK**	4.2V
RP171N431B	**KAL**	4.3V
RP171N441B	**KAM**	4.4V
RP171N451B	**KAN**	4.5V
RP171N461B	**KAP**	4.6V
RP171N471B	**KAQ**	4.7V
RP171N481B	**KAR**	4.8V
RP171N491B	**KAS**	4.9V

Product Name	①②③	Voltage
RP171N501B	**KAT**	5.0V
RP171N511B	**KAU**	5.1V
RP171N521B	**KAV**	5.2V
RP171N531B	**KAW**	5.3V
RP171N541B	**KAX**	5.4V
RP171N551B	**KAY**	5.5V
RP171N561B	**KAZ**	5.6V
RP171N571B	**LAA**	5.7V
RP171N581B	**LAB**	5.8V
RP171N591B	**LAC**	5.9V
RP171N601B	**LAD**	6.0V

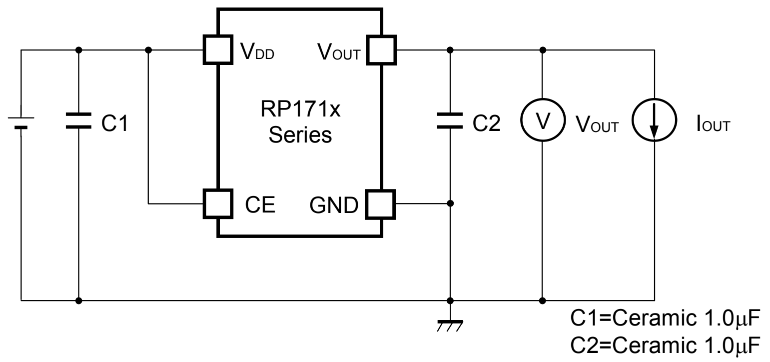
RP171Nxx1D

Product Name	①②③	Voltage
RP171N121D	**JBA**	1.2V
RP171N121D5	**JBB**	1.25V
RP171N131D	**JBC**	1.3V
RP171N141D	**JBD**	1.4V
RP171N151D	**JBE**	1.5V
RP171N161D	**JBF**	1.6V
RP171N171D	**JBG**	1.7V
RP171N181D	**JBH**	1.8V
RP171N181D5	**JBJ**	1.85V
RP171N191D	**JBK**	1.9V
RP171N201D	**JBL**	2.0V
RP171N211D	**JBM**	2.1V
RP171N221D	**JBN**	2.2V
RP171N231D	**JBP**	2.3V
RP171N241D	**JBQ**	2.4V
RP171N251D	**JBR**	2.5V
RP171N261D	**JBS**	2.6V
RP171N271D	**JBT**	2.7V
RP171N281D	**JBU**	2.8V
RP171N281D5	**JBV**	2.85V
RP171N291D	**JBW**	2.9V

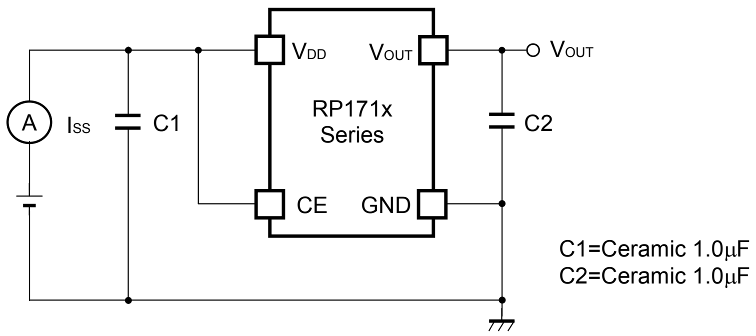
Product Name	①②③	Voltage
RP171N301D	**JBX**	3.0V
RP171N311D	**JBY**	3.1V
RP171N321D	**JBZ**	3.2V
RP171N331D	**KBA**	3.3V
RP171N341D	**KBB**	3.4V
RP171N351D	**KBC**	3.5V
RP171N361D	**KBD**	3.6V
RP171N371D	**KBE**	3.7V
RP171N381D	**KBF**	3.8V
RP171N391D	**KBG**	3.9V
RP171N401D	**KBH**	4.0V
RP171N411D	**KBJ**	4.1V
RP171N421D	**KBK**	4.2V
RP171N431D	**KBL**	4.3V
RP171N441D	**KBM**	4.4V
RP171N451D	**KBN**	4.5V
RP171N461D	**KBP**	4.6V
RP171N471D	**KBQ**	4.7V
RP171N481D	**KBR**	4.8V
RP171N491D	**KBS**	4.9V

Product Name	①②③	Voltage
RP171N501D	**KBT**	5.0V
RP171N511D	**KBU**	5.1V
RP171N521D	**KBV**	5.2V
RP171N531D	**KBW**	5.3V
RP171N541D	**KBX**	5.4V
RP171N551D	**KBY**	5.5V
RP171N561D	**KBZ**	5.6V
RP171N571D	**LBA**	5.7V
RP171N581D	**LBB**	5.8V
RP171N591D	**LBC**	5.9V
RP171N601D	**LBD**	6.0V

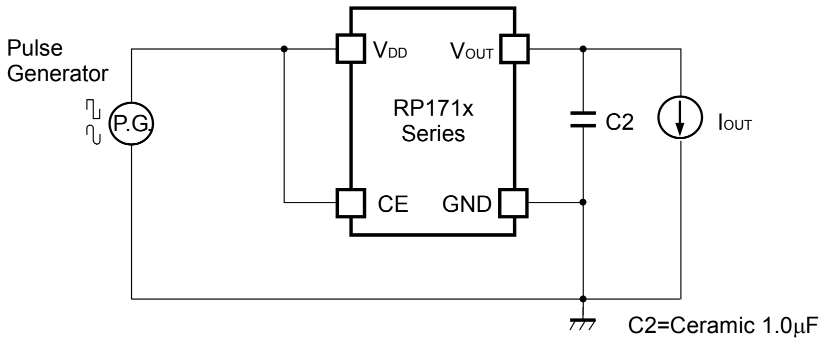
TEST CIRCUITS



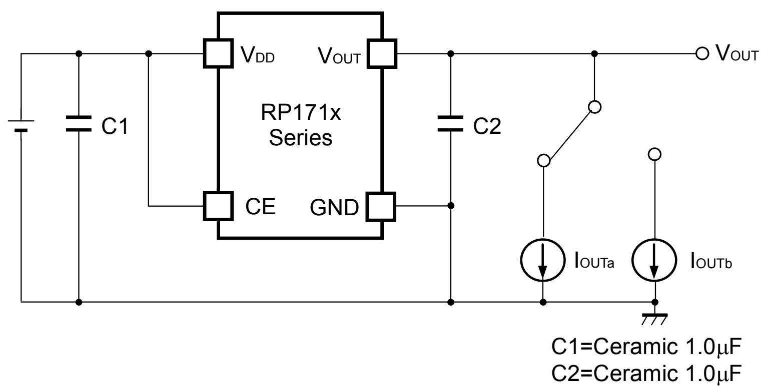
Basic Test Circuit



Test Circuit for Supply Current



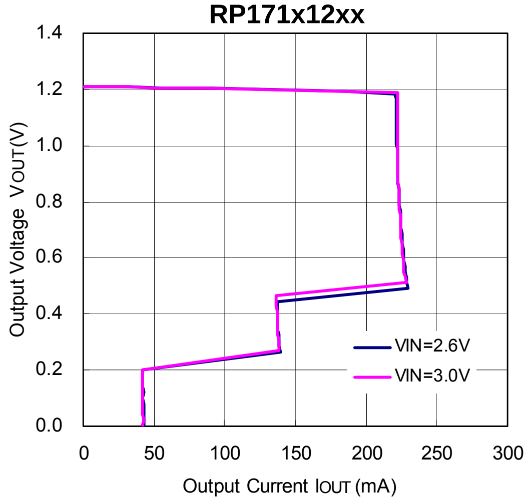
Test Circuit for Ripple Rejection

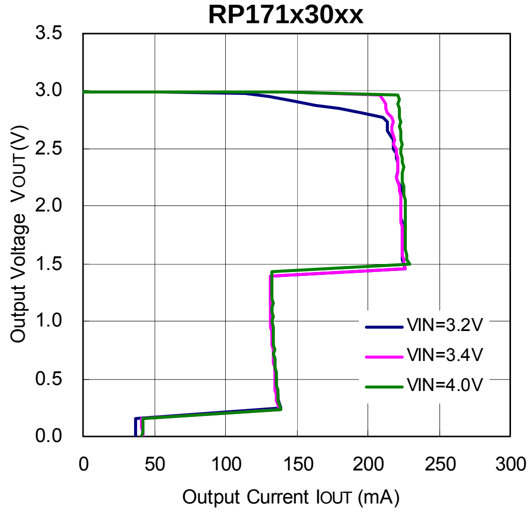


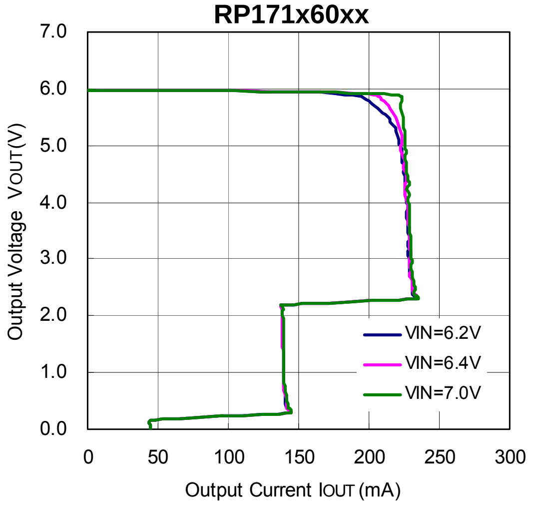
Test Circuit for Load Transient Response

TYPICAL CHARACTERISTICS

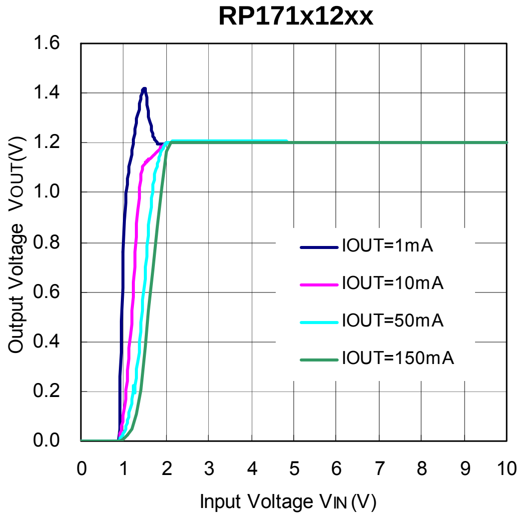
1) Output Voltage vs. Output Current (Topt=25°C)

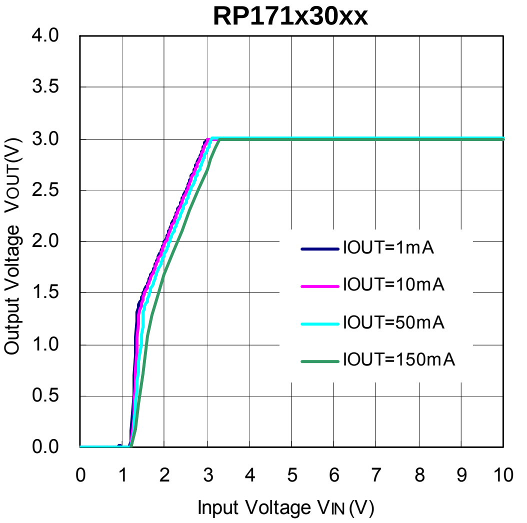


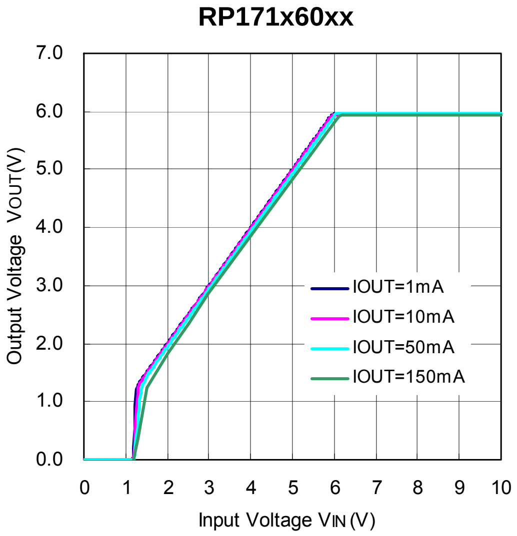




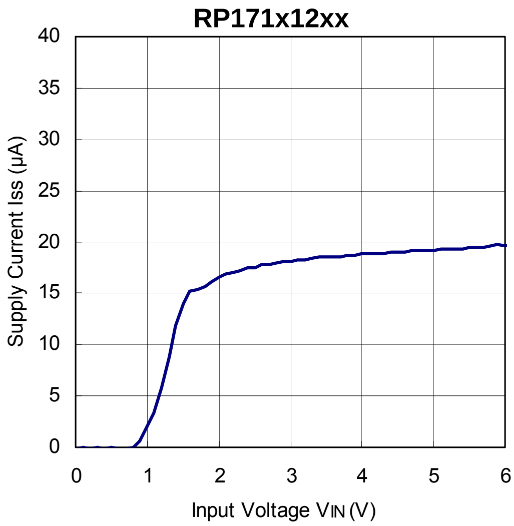
2) Output Voltage vs. Input Voltage (Topt=25°C)

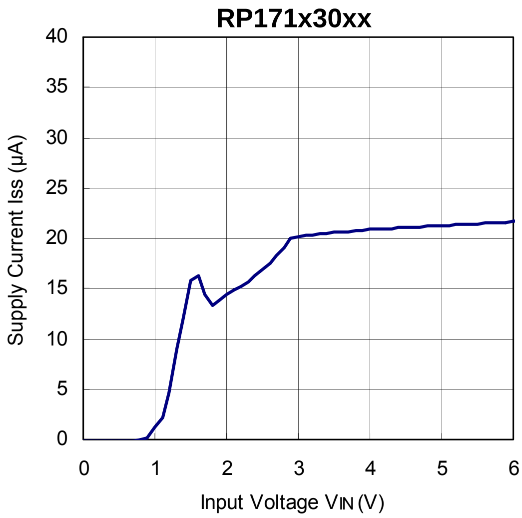


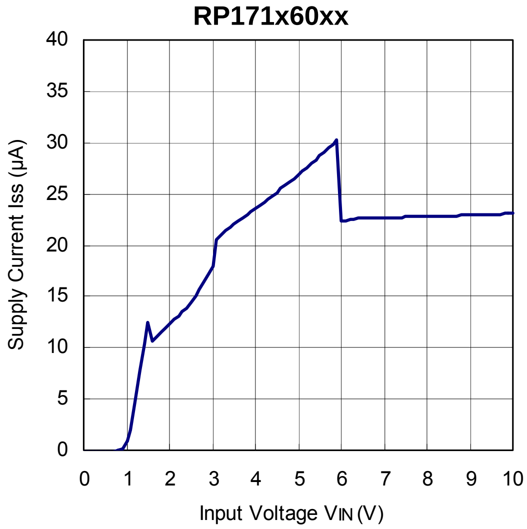




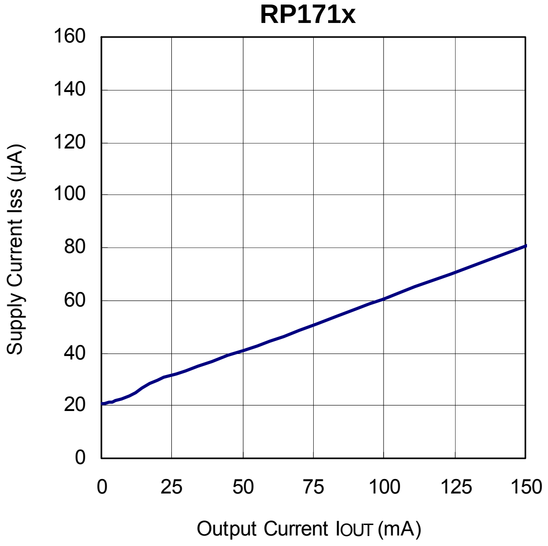
3) Supply Current vs. Input Voltage (Topt=25°C)



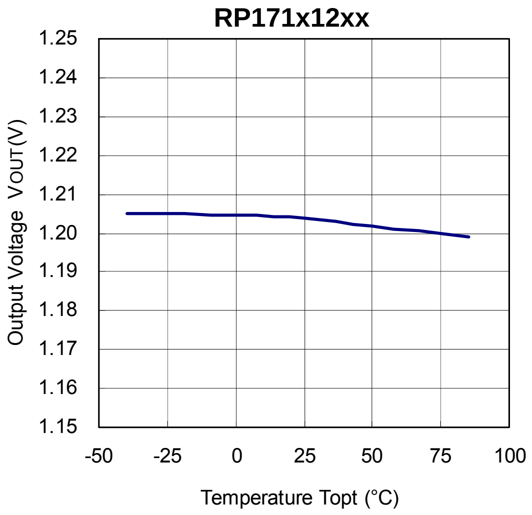


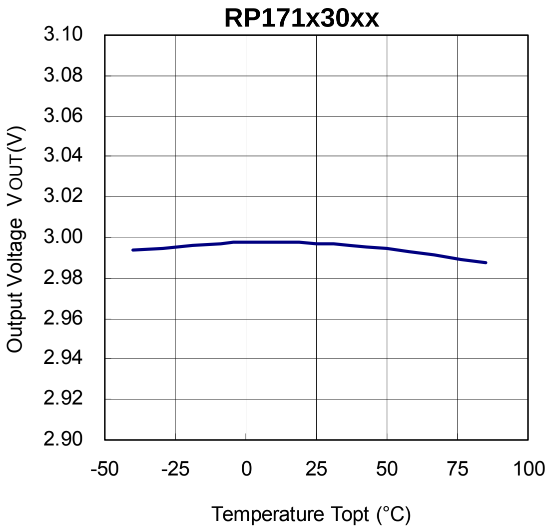


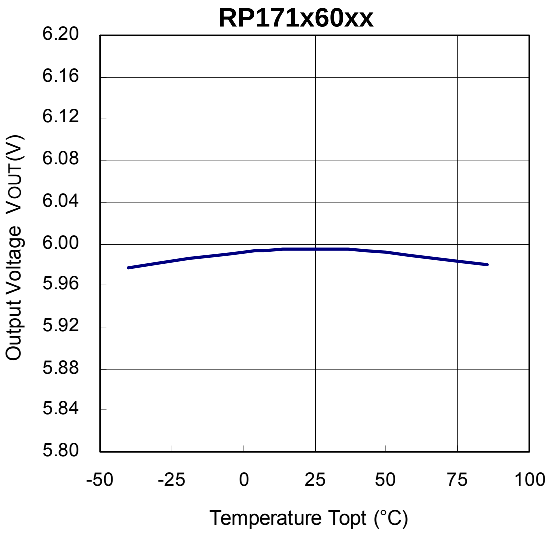
4) Supply Current vs. Output Current (Topt=25°C)



5) Output Voltage vs. Temperature

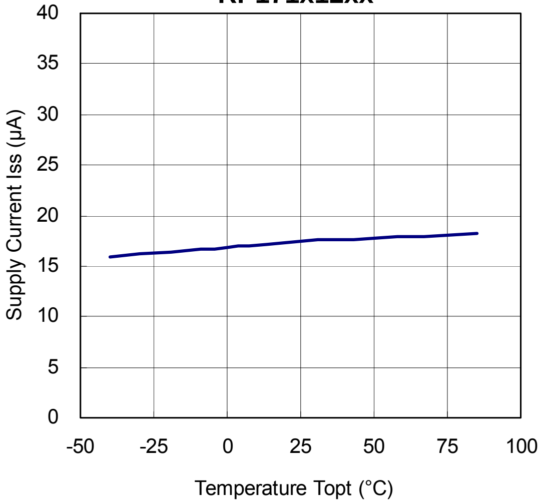




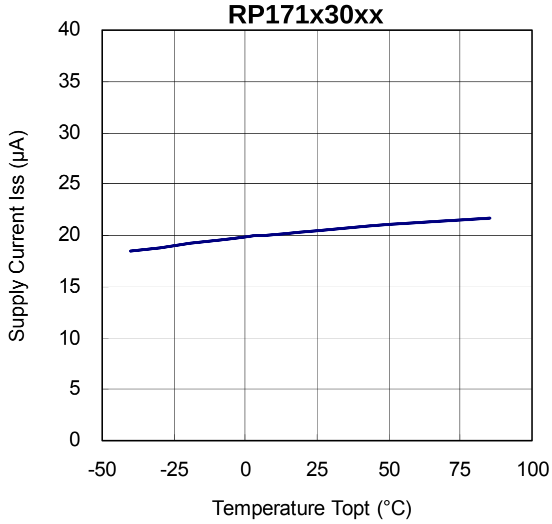


6) Supply Current vs. Temperature

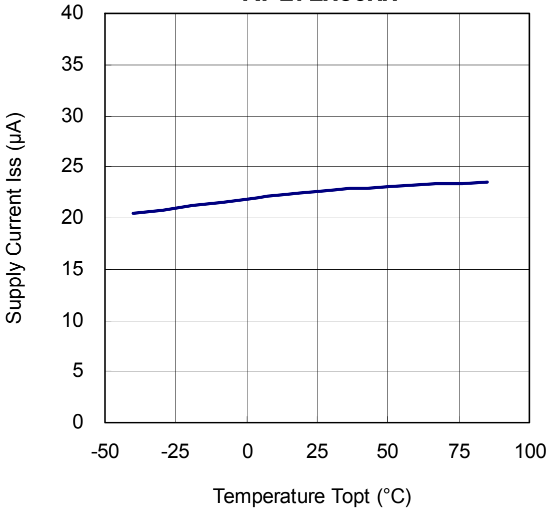
RP171x12xx



RP171x30xx

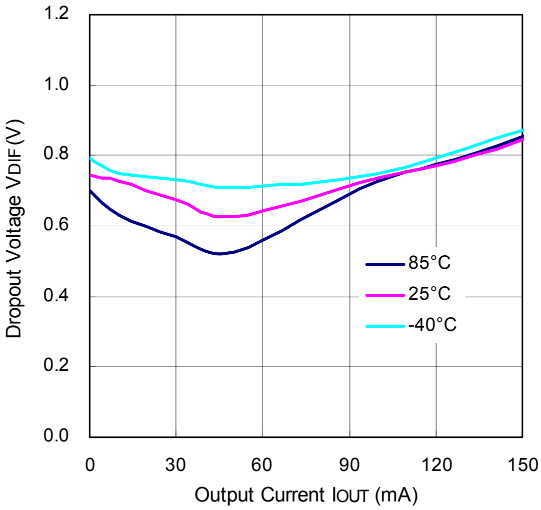


RP171x60xx

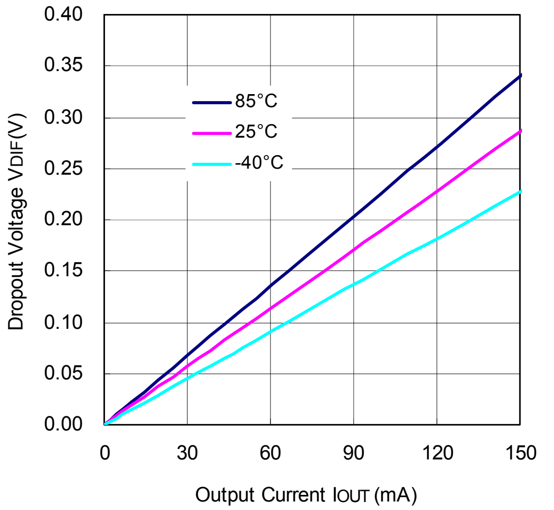


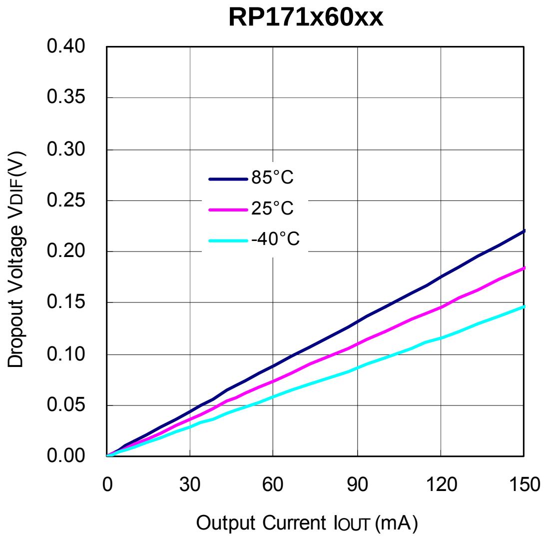
7) Dropout Voltage vs. Output Current

RP171x12xx

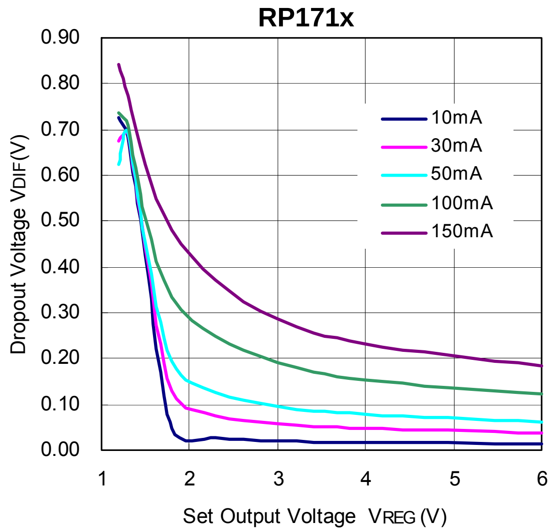


RP171x30xx

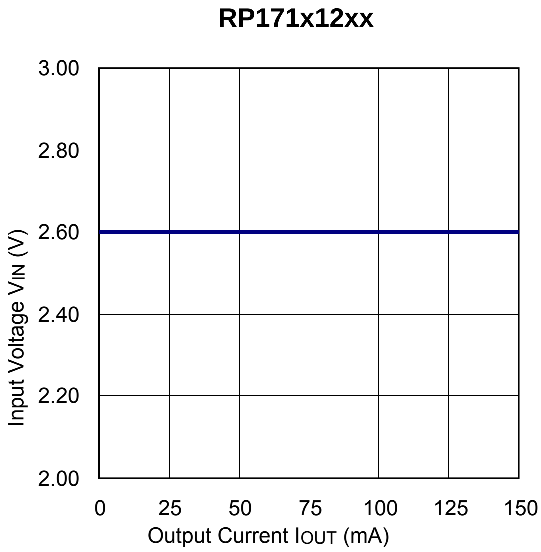




8) Dropout Voltage vs. Set Output Voltage (Topt=25°C)

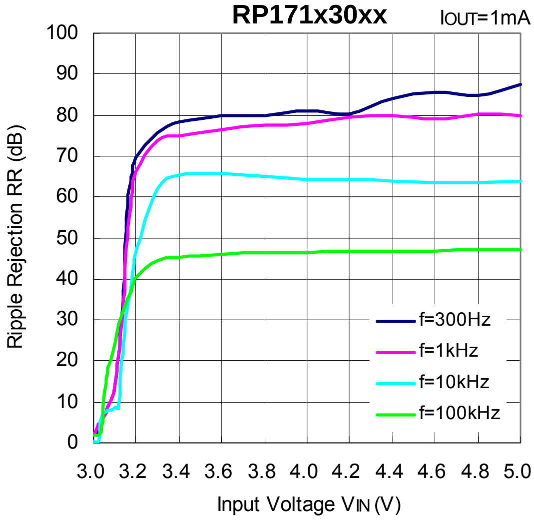


9) Minimum Operating Voltage

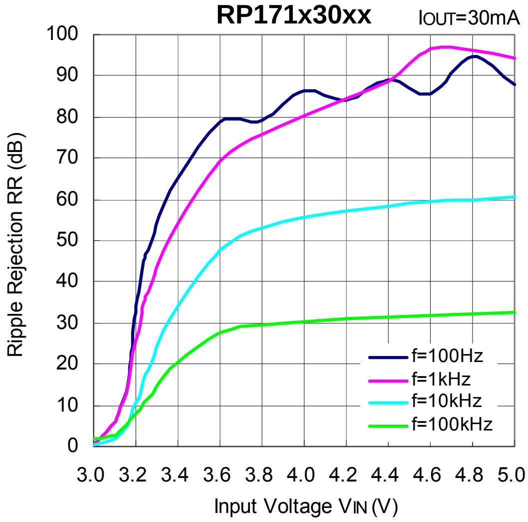


10) Ripple Rejection vs. Input Bias Voltage (C1=none, C2=Ceramic 1.0μF, Ripple=0.2Vp-p, Topt=25°C)

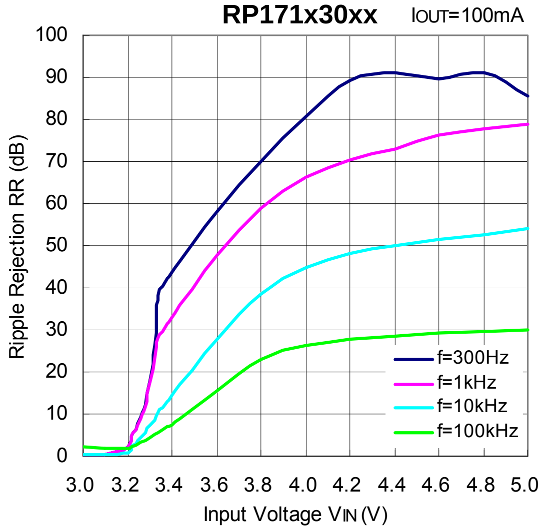
RP171x30xx IOUT=1mA



RP171x30xx IOUT=30mA

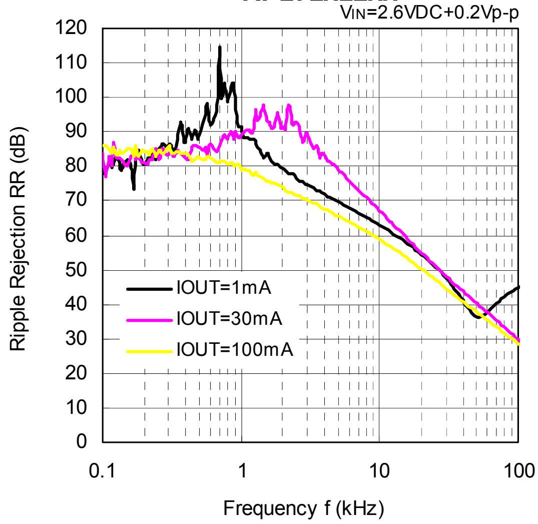


RP171x30xx IOUT=100mA

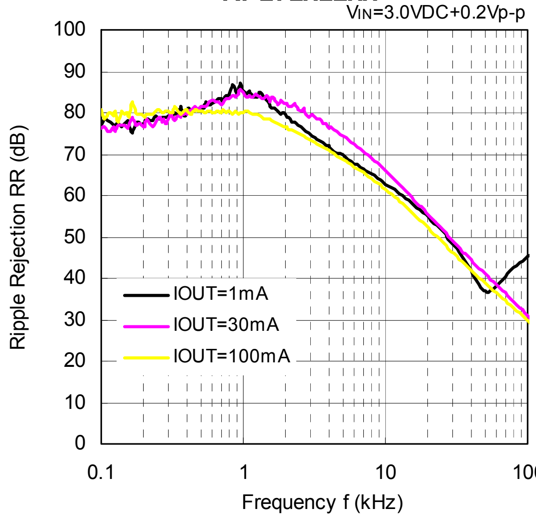


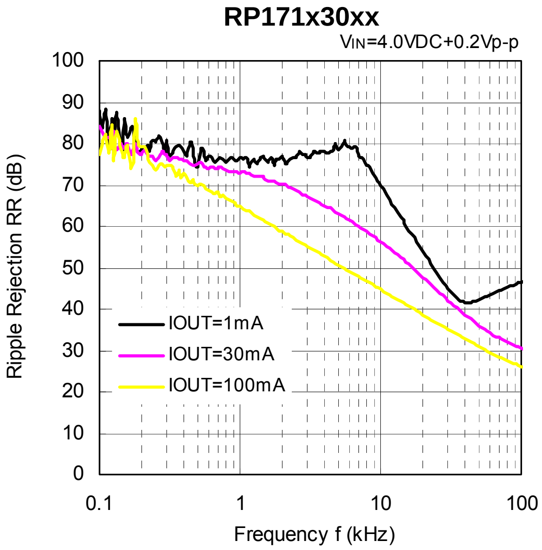
11) Ripple Rejection vs. Frequency (C1=none, C2=Ceramic 1.0μF, Topt=25°C)

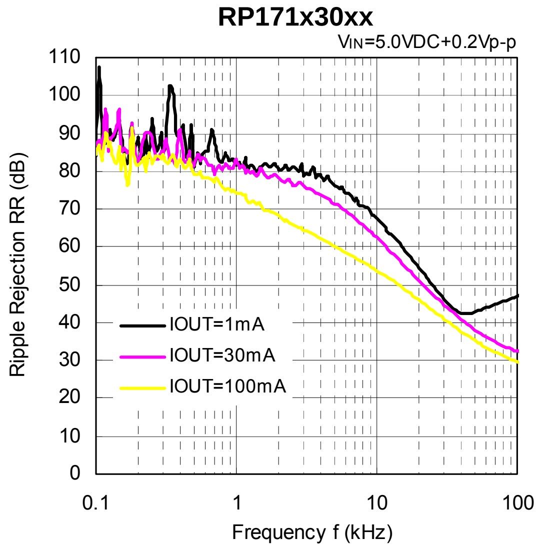
RP171x12xx VIN=2.6VDC+0.2Vp-p

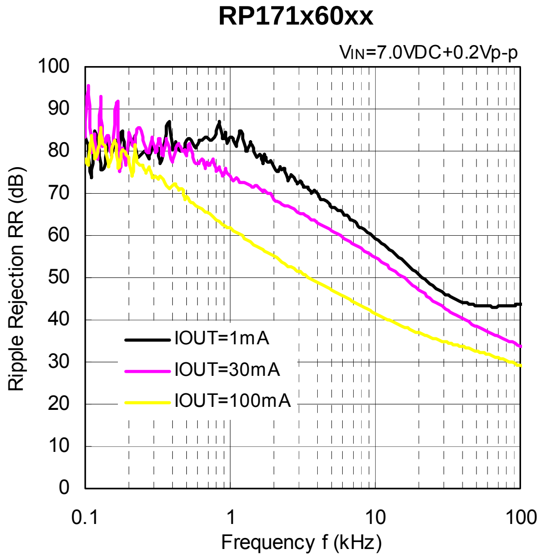


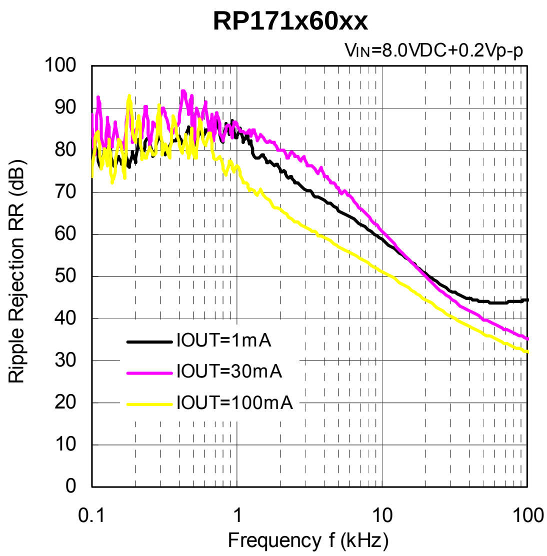
RP171x12xx VIN=3.0VDC+0.2Vp-p



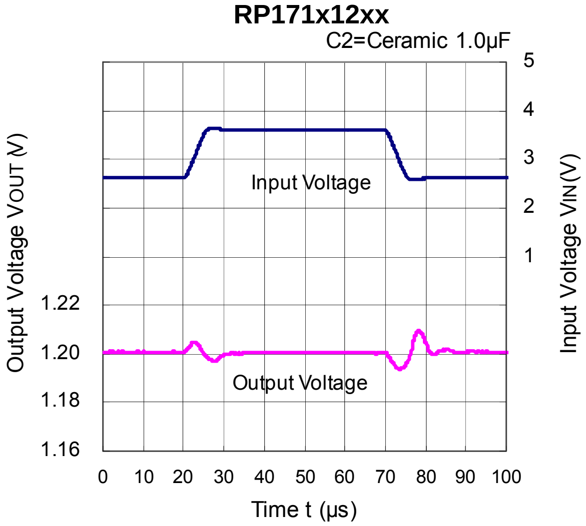


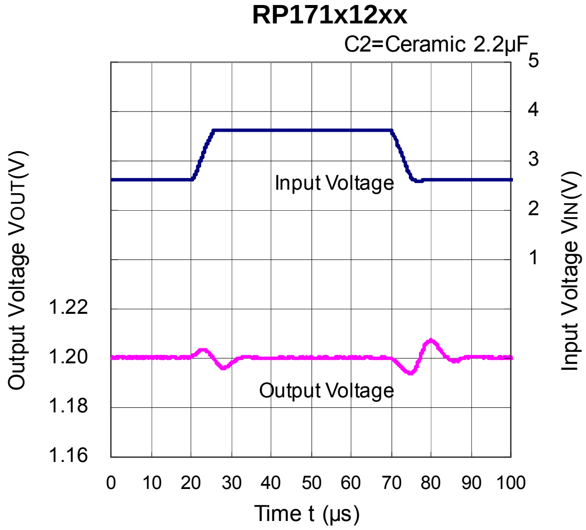






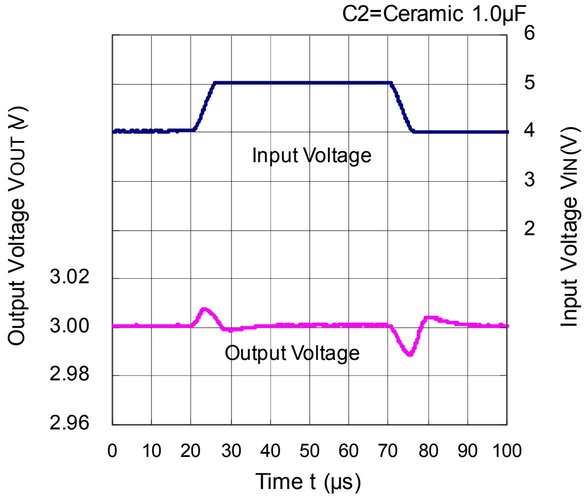
12) Input Transient Response (C1=none, I_{OUT}=30mA, tr=tf=5µs, T_{opt}=25°C)



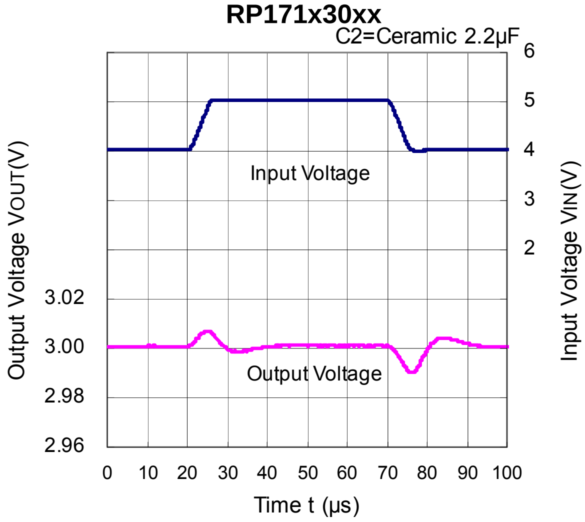


RICOH

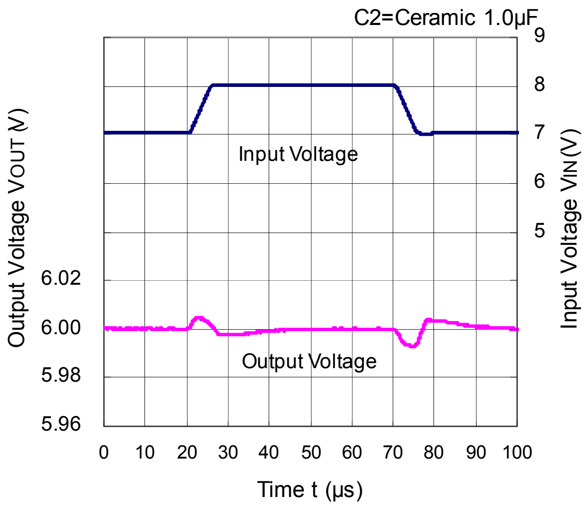
RP171x30xx



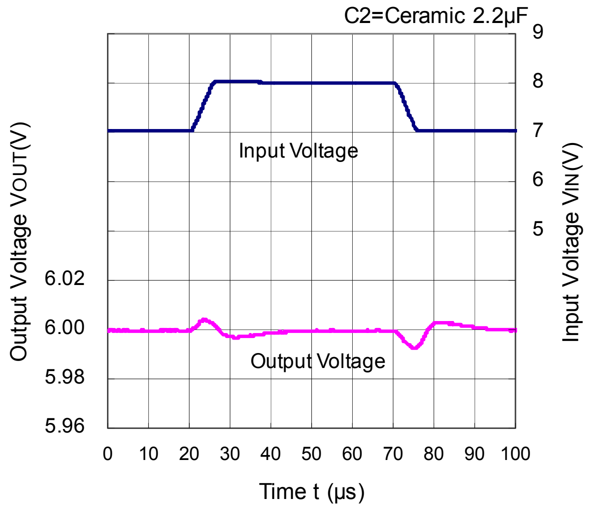
RP171x30xx



RP171x60xx

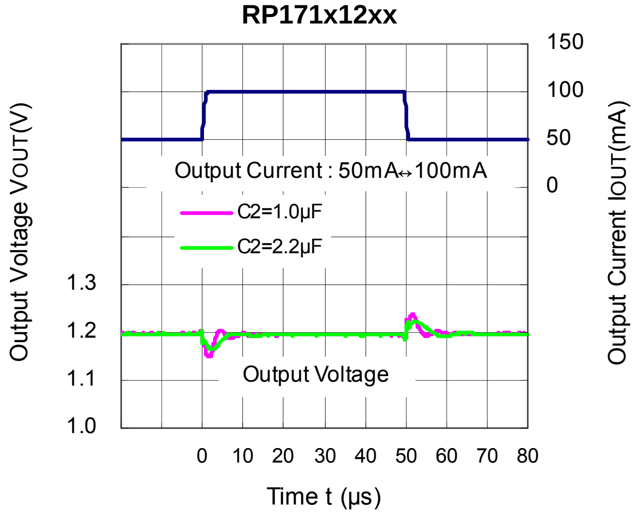


RP171x60xx

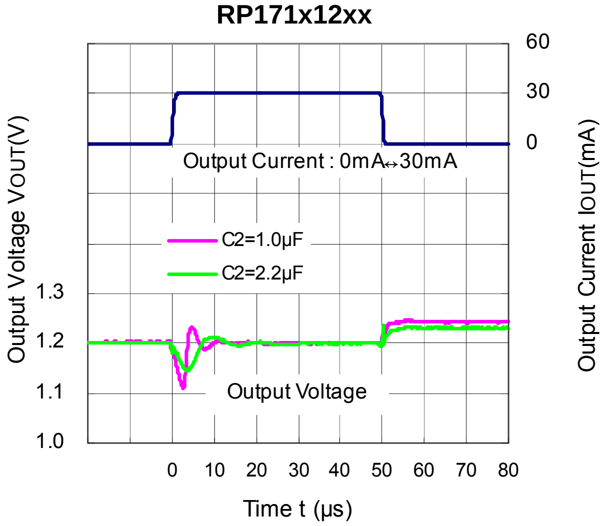


13) Load Transient Response (C1=Ceramic 1.0µF, tr=tf=500ns, Topt=25°C)

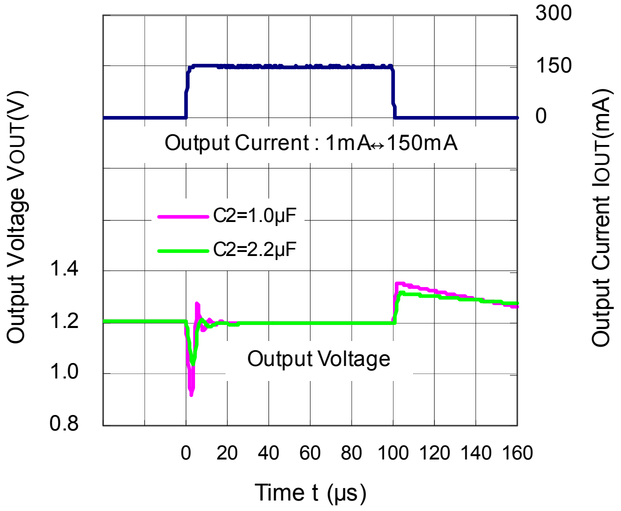
RP171x12xx



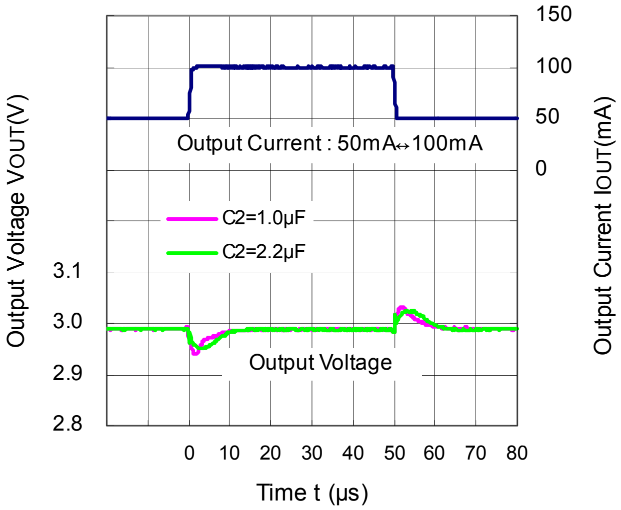
RP171x12xx



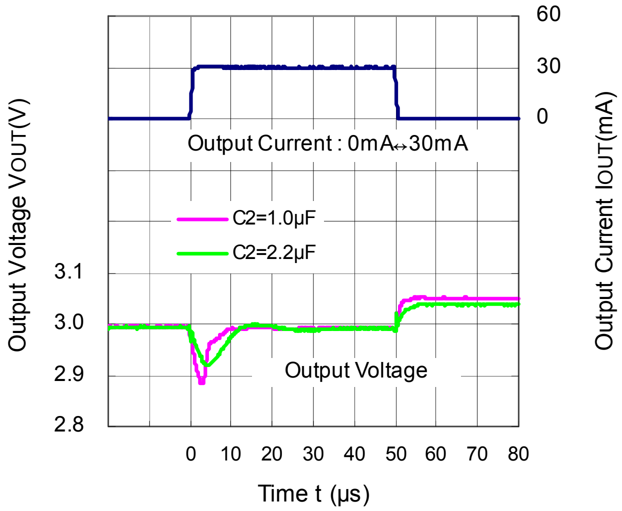
RP171x12xx



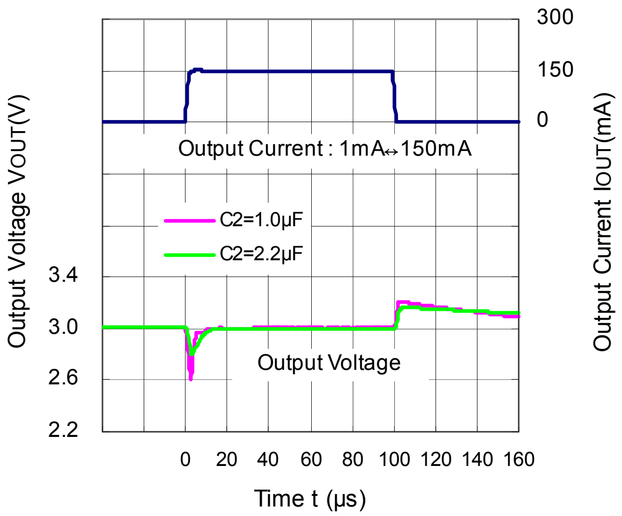
RP171x30xx



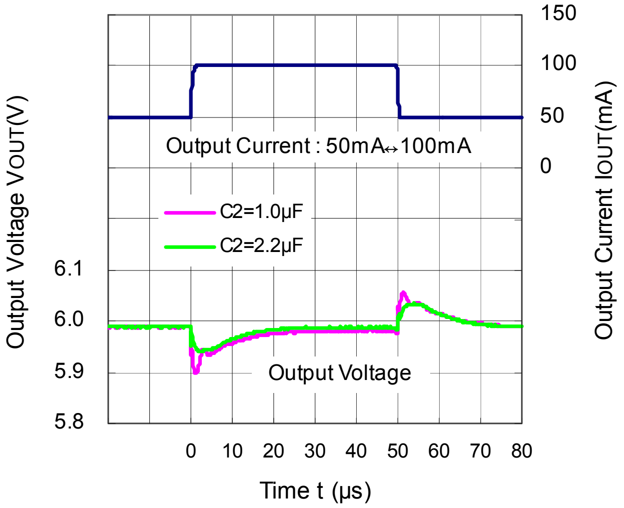
RP171x30xx



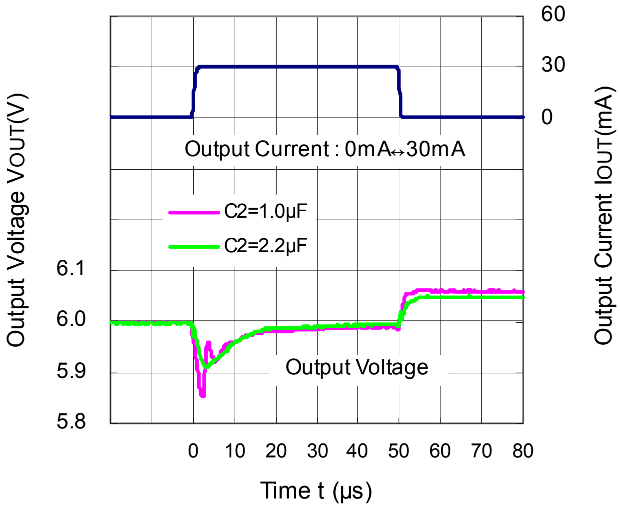
RP171x30xx



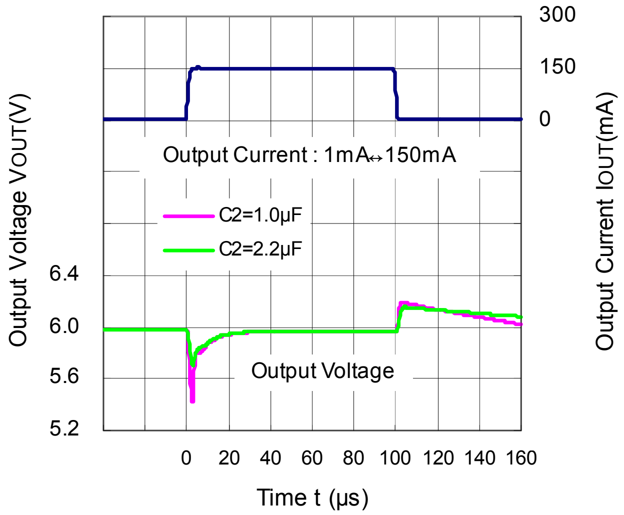
RP171x60xx



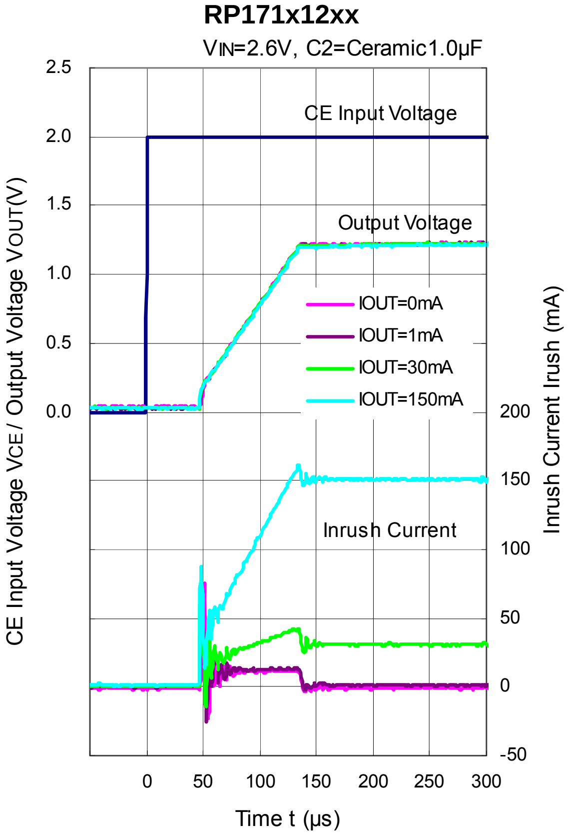
RP171x60xx

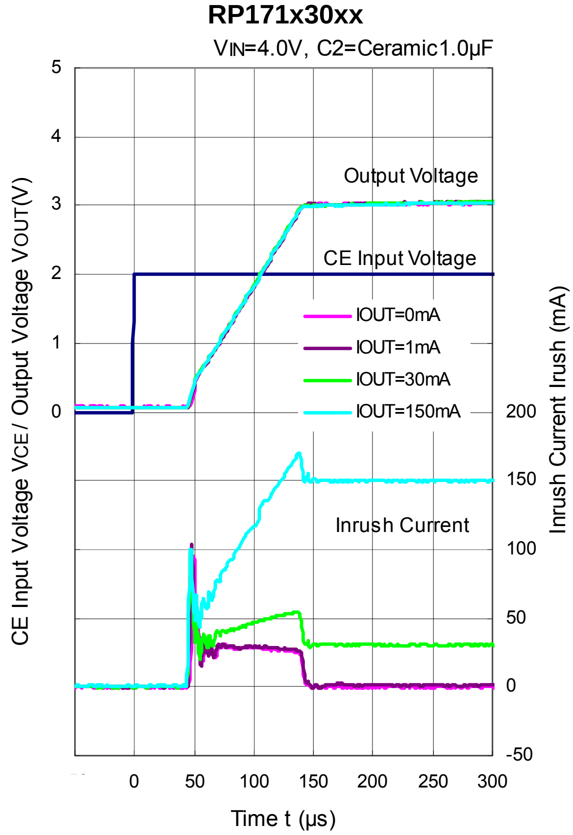


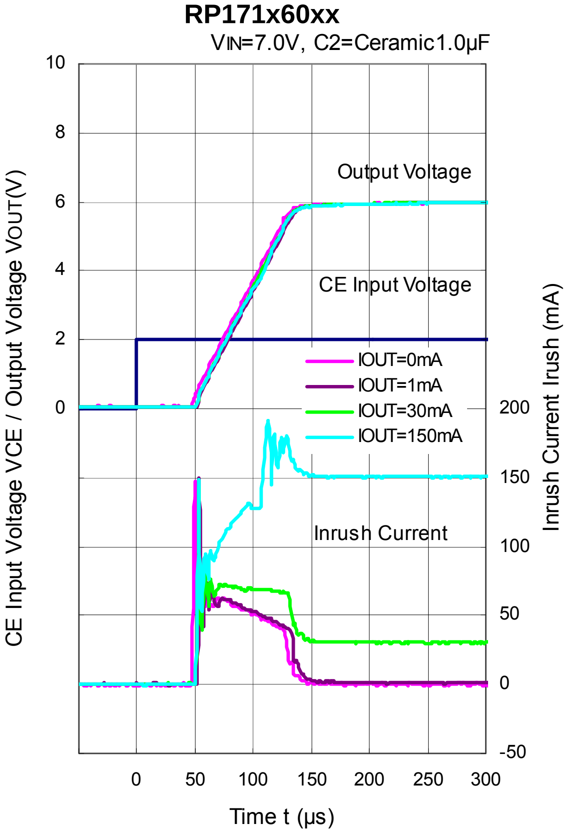
RP171x60xx

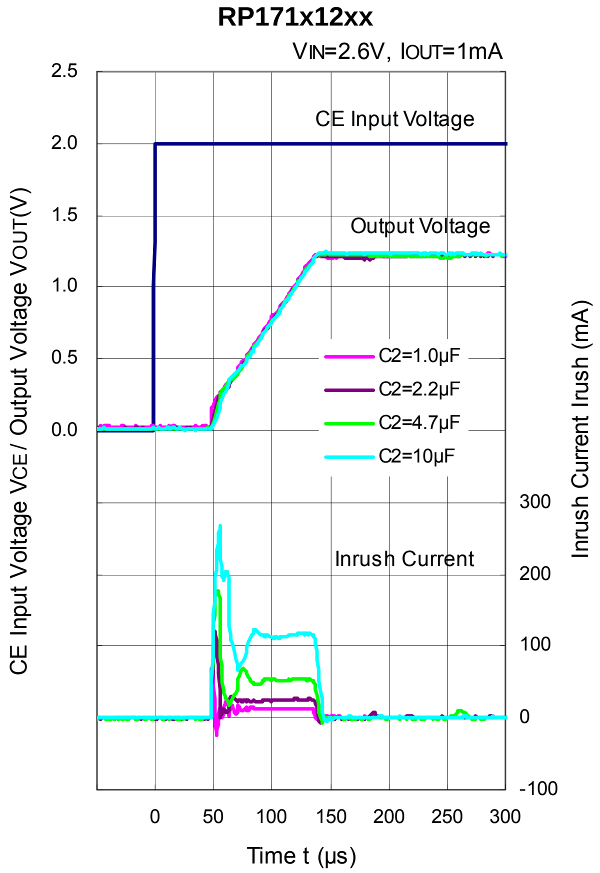


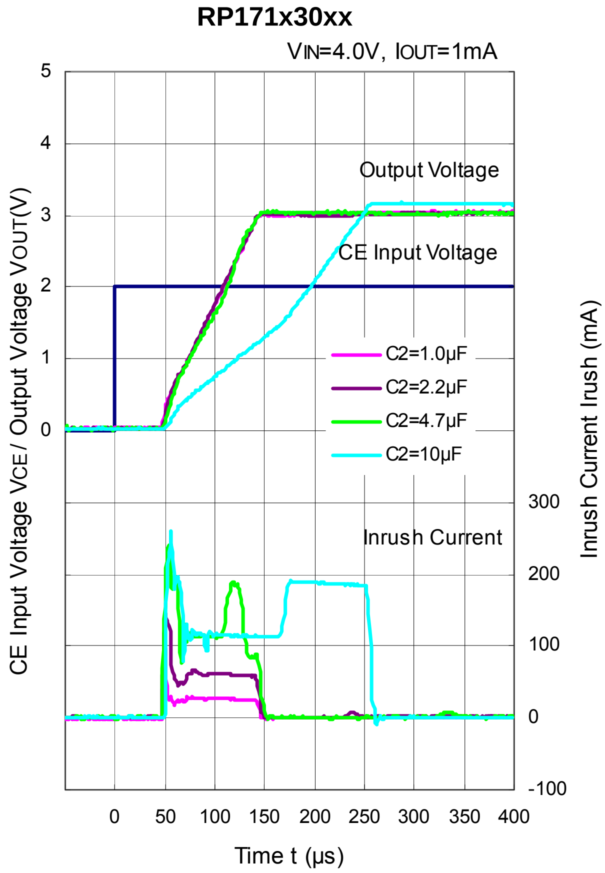
14) Turn On Speed with CE pin (C1=Ceramic 1.0µF, Topt=25°C)

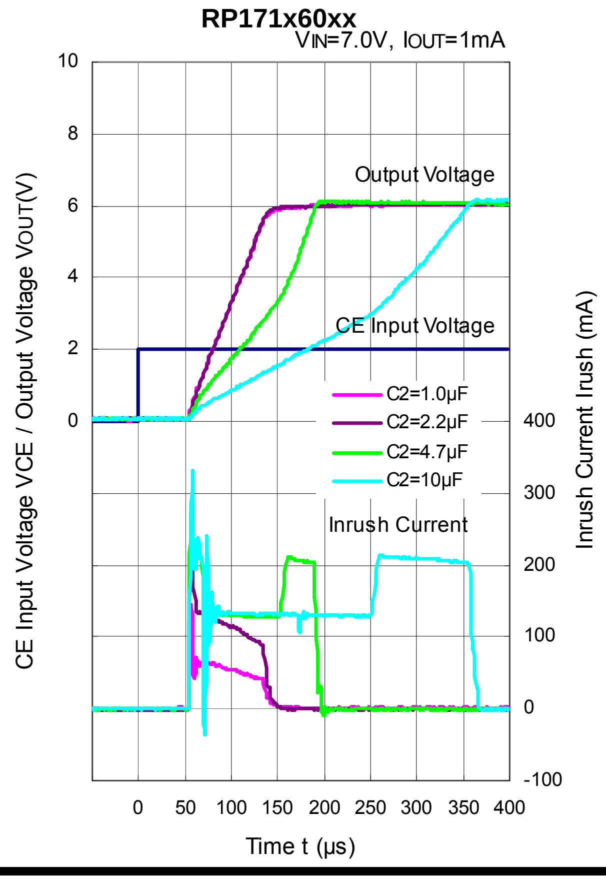


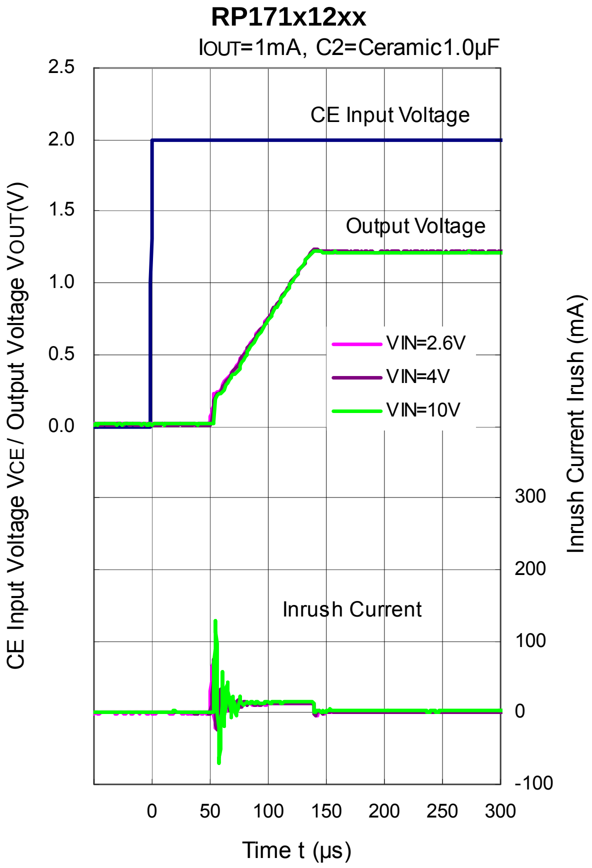


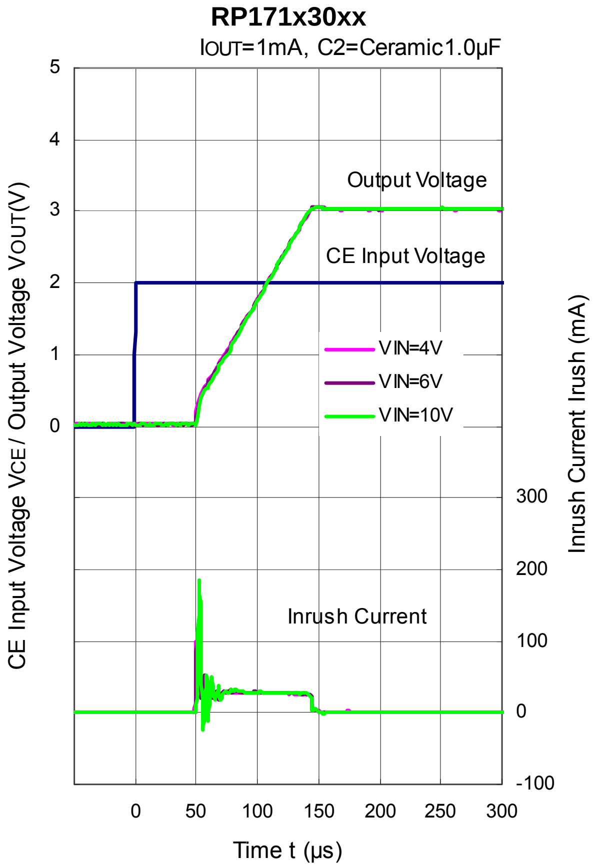


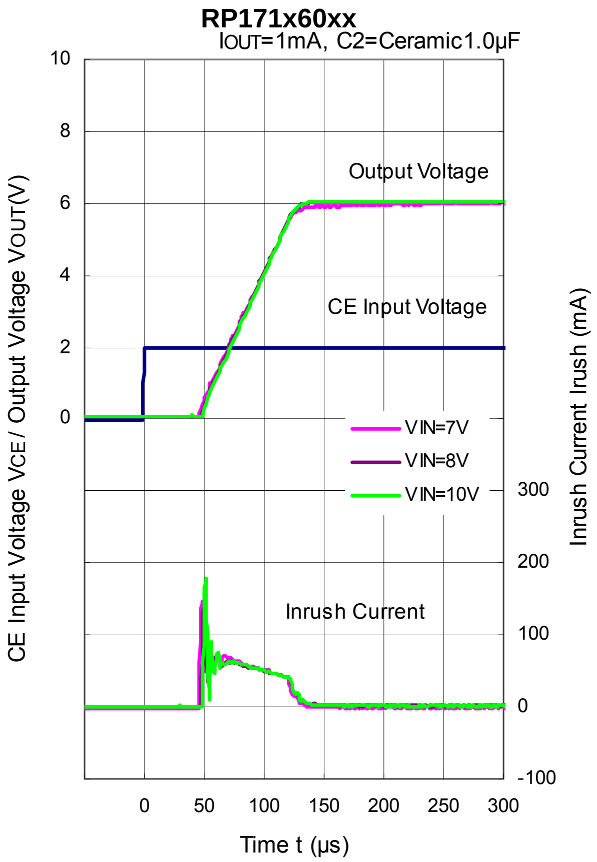

RP171x12xx
VIN=2.6V, IOUT=1mA
CE Input Voltage
Output Voltage
C2=1.0µF
C2=2.2µF
C2=4.7µF
C2=10µF
Inrush Current
CE Input Voltage VCE / Output Voltage VOUT(V)
Inrush Current Irush (mA)
Time t (µs)
2.5
2.0
1.5
1.0
0.5
0.0
300
200
100
0
-100
0 50 100 150 200 250 300


RP171x30xx
VIN=4.0V, IOUT=1mA
Output Voltage
CE Input Voltage
C2=1.0µF
C2=2.2µF
C2=4.7µF
C2=10µF
Inrush Current
CE Input Voltage VCE / Output Voltage VOUT(V)
Inrush Current Irush (mA)
Time t (µs)
5
4
3
2
1
0
300
200
100
0
-100
0 50 100 150 200 250 300 350 400


RP171x60xx
VIN=7.0V, IOUT=1mA
Output Voltage
CE Input Voltage
C2=1.0µF
C2=2.2µF
C2=4.7µF
C2=10µF
Inrush Current
CE Input Voltage VCE / Output Voltage VOUT(V)
Inrush Current Irush (mA)
Time t (µs)
10
8
6
4
2
0
400
300
200
100
0
-100
0 50 100 150 200 250 300 350 400

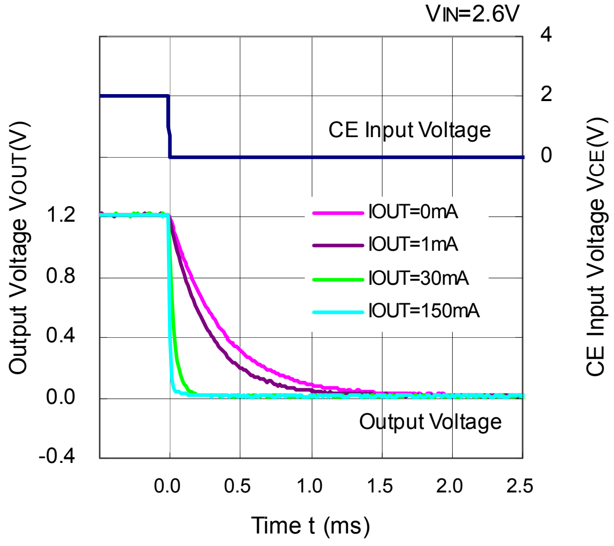

RP171x12xx
IOUT=1mA, C2=Ceramic1.0μF
CE Input Voltage
Output Voltage
VIN=2.6V
VIN=4V
VIN=10V
Inrush Current
CE Input Voltage VCE / Output Voltage VOUT(V)
Inrush Current Irush (mA)
Time t (μs)
2.5
2.0
1.5
1.0
0.5
0.0
300
200
100
0
-100
0
50
100
150
200
250
300


RP171x30xx
IOUT=1mA, C2=Ceramic1.0μF
Output Voltage
CE Input Voltage
VIN=4V
VIN=6V
VIN=10V
Inrush Current
CE Input Voltage VCE / Output Voltage VOUT(V)
Inrush Current Irush (mA)
Time t (μs)
5
4
3
2
1
0
300
200
100
0
-100
0
50
100
150
200
250
300

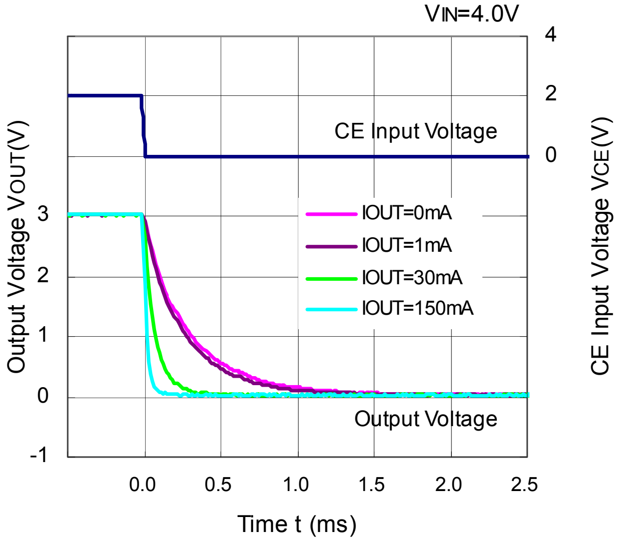

RP171x60xx
IOUT=1mA, C2=Ceramic1.0μF
Output Voltage
CE Input Voltage
VIN=7V
VIN=8V
VIN=10V
Inrush Current
CE Input Voltage VCE / Output Voltage VOUT(V)
Inrush Current Irush (mA)
Time t (μs)
10
8
6
4
2
0
300
200
100
0
-100
0
50
100
150
200
250
300

15) Turn Off Speed with CE pin (D Version) (C1=Ceramic 1.0μF, Topt=25°C)

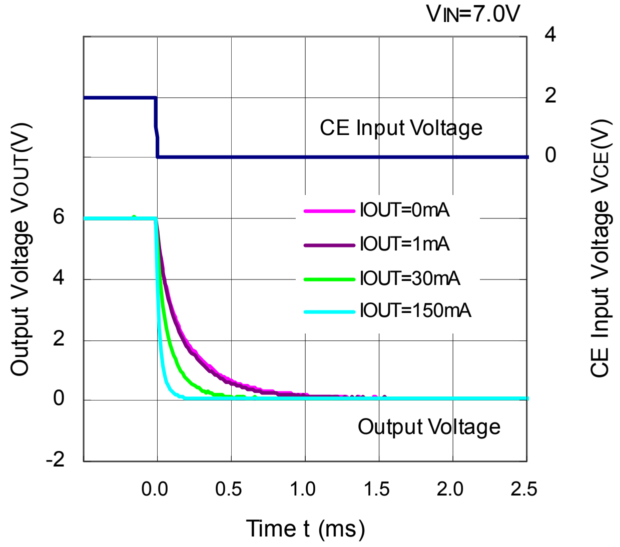
RP171x121D



RP171x301D



RP171x601D



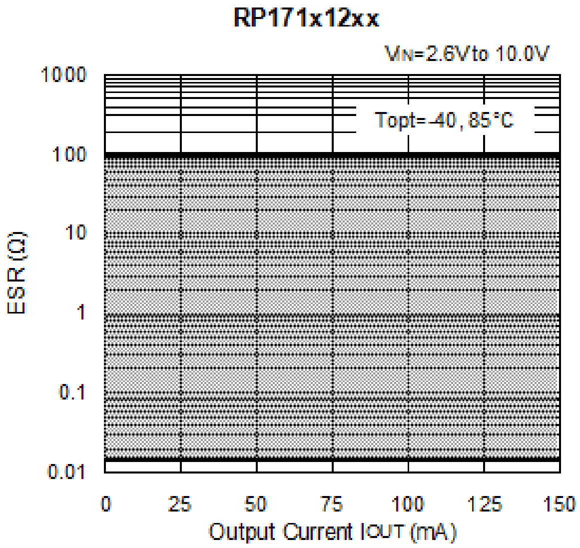
ESR vs. Output Current

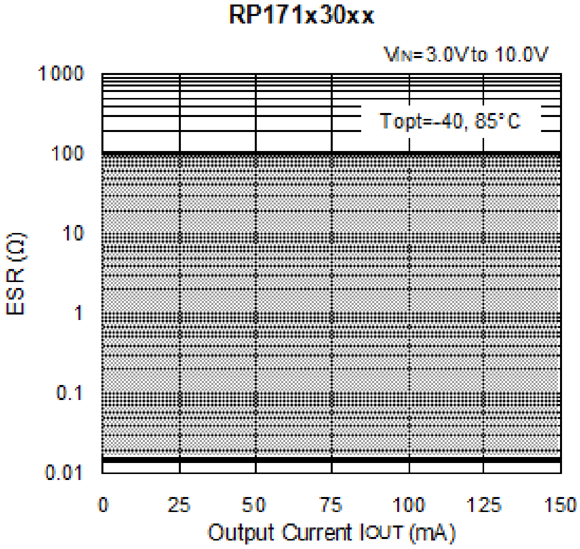
When using these ICs, consider the following points:

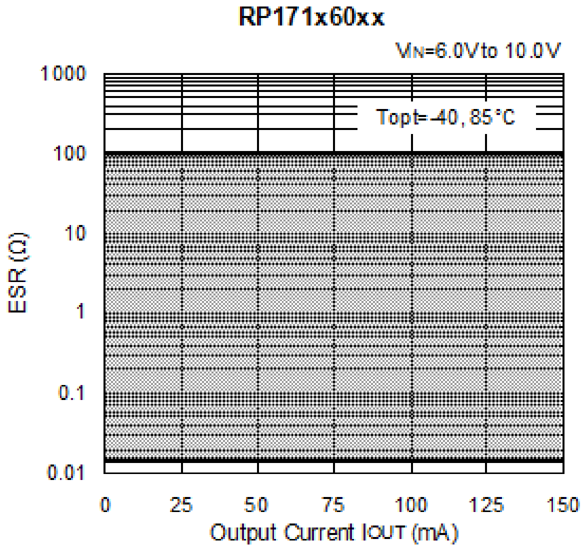
The relations between I_{OUT} (Output Current) and ESR of an output capacitor are shown below.
The conditions when the white noise level is under 40μV (Avg.) are marked as the hatched area in the graph.

Measurement conditions

Frequency Band : 10Hz to 2MHz
Temperature : –40°C to 85°C
C1, C2 : Ceramic 1.0μF (Murata GRM155B31A105KE)







1. The products and the product specifications described in this document are subject to change or discontinuation of production without notice for reasons such as improvement. Therefore, before deciding to use the products, please refer to Ricoh sales representatives for the latest information thereon.
2. The materials in this document may not be copied or otherwise reproduced in whole or in part without prior written consent of Ricoh.
3. Please be sure to take any necessary formalities under relevant laws or regulations before exporting or otherwise taking out of your country the products or the technical information described herein.
4. The technical information described in this document shows typical characteristics of and example application circuits for the products. The release of such information is not to be construed as a warranty of or a grant of license under Ricoh's or any third party's intellectual property rights or any other rights.
5. The products listed in this document are intended and designed for use as general electronic components in standard applications (office equipment, telecommunication equipment, measuring instruments, consumer electronic products, amusement equipment etc.). Those customers intending to use a product in an application requiring extreme quality and reliability, for example, in a highly specific application where the failure or misoperation of the product could result in human injury or death (aircraft, spacevehicle, nuclear reactor control system, traffic control system, automotive and transportation equipment, combustion equipment, safety devices, life support system etc.) should first contact us.
6. We are making our continuous effort to improve the quality and reliability of our products, but semiconductor products are likely to fail with certain probability. In order to prevent any injury to persons or damages to property resulting from such failure, customers should be careful enough to incorporate safety measures in their design, such as redundancy feature, fire containment feature and fail-safe feature. We do not assume any liability or responsibility for any loss or damage arising from misuse or inappropriate use of the products.
7. Anti-radiation design is not implemented in the products described in this document.
8. Please contact Ricoh sales representatives should you have any questions or comments concerning the products or the technical information.

RoHS Compliant
Halogen Free

Ricoh is committed to reducing the environmental loading materials in electrical devices with a view to contributing to the protection of human health and the environment.
Ricoh has been providing RoHS compliant products since April 1, 2006 and Halogen-free products since April 1, 2012.

RICOH ELECTRONIC DEVICES CO., LTD.

http://www.e-devices.ricoh.co.jp/en/

Sales & Support Offices

RICOH ELECTRONIC DEVICES CO., LTD.
Higashi-Shinagawa Office (International Sales)
3-32-3, Higashi-Shinagawa, Shinagawa-ku, Tokyo 140-8655, Japan
Phone: +81-3-5479-2857 Fax: +81-3-5479-0502

RICOH EUROPE (NETHERLANDS) B.V.
Semiconductor Support Centre
Prof. W.H. Keesomlaan 1, 1183 DJ Amstelveen, The Netherlands
Phone: +31-20-5474-309

RICOH INTERNATIONAL B.V. - German Branch
Semiconductor Sales and Support Centre
Oberrather Strasse 6, 40472 Düsseldorf, Germany
Phone: +49-211-6546-0

RICOH ELECTRONIC DEVICES KOREA CO., LTD.
3F, Haesung Bldg, 504, Teheran-ro, Gangnam-gu, Seoul, 135-725, Korea
Phone: +82-2-2135-5700 Fax: +82-2-2051-5713

RICOH ELECTRONIC DEVICES SHANGHAI CO., LTD.
Room 403, No.2 Building, No.690 Bibo Road, Pu Dong New District, Shanghai 201203, People's Republic of China
Phone: +86-21-5027-3200 Fax: +86-21-5027-3299

RICOH ELECTRONIC DEVICES CO., LTD.
Taipei office
Room 109, 10F-1, No.51, Hengyang Rd., Taipei City, Taiwan (R.O.C.)
Phone: +886-2-2313-1621/1622 Fax: +886-2-2313-1623

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Ricoh Electronics:

RP171N251B-TR-FE RP171N181B-TR-FE RP171N281D-TR-FE RP171N331B-TR-FE RP171N301D-TR-FE
RP171N601B-TR-FE RP171N501D-TR-FE RP171N151B-TR-FE RP171N121B-TR-FE RP171N301B-TR-FE
RP171N331D-TR-FE RP171N281B-TR-FE RP171N501B-TR-FE

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения **«JONHON»**, а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов **«FORSTAR»**.

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).

Телефон: 8 (812) 309-75-97 (многоканальный)
Факс: 8 (812) 320-03-32
Электронная почта: ocean@oceanchips.ru
Web: http://oceanchips.ru/
Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А