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## 150mA 10V INPUT LDO REGULATOR

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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. 23 $\mu$ A 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. 23 $\mu$ A
- Standby Mode ..... Typ. 0.1 $\mu$ A
- Dropout Voltage..... Typ. 0.20V ( $I_{OUT}=100\text{mA}$ ,  $V_{OUT}=3.0\text{V}$ )  
Typ. 0.40V ( $I_{OUT}=150\text{mA}$ ,  $V_{OUT}=2.8\text{V}$ )
- Ripple Rejection ..... Typ. 70dB ( $f=1\text{kHz}$ )
- Temperature-Drift Coefficient of Output Voltage ..... Typ.  $\pm 80\text{ppm}/^\circ\text{C}$
- Line Regulation ..... Typ. 0.02%/V
- Output Voltage Accuracy .....  $\pm 1.0\%$
- 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 $^\circ\text{C}$
- Built-in Constant Slope Circuit (Soft-start Function)
- Ceramic capacitors are recommended to be used with this IC .... 1.0 $\mu$ F 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.

# RP171x

NO.EA-245-160324

## BLOCK DIAGRAMS



## 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



## 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 <sub>OUT</sub>	Output Pin
5	V <sub>DD</sub>	Input Pin

### • SOT-23-5

Pin No	Symbol	Pin Description
1	V <sub>DD</sub>	Input Pin
2	GND	Ground Pin
3	CE	Chip Enable Pin ("H" Active)
4	NC	No Connection
5	V <sub>OUT</sub>	Output Pin

## ABSOLUTE MAXIMUM RATINGS

Symbol	Item	Rating	Unit
V <sub>IN</sub>	Input Voltage	12	V
V <sub>CE</sub>	Input Voltage (CE Pin)	12	V
V <sub>OUT</sub>	Output Voltage	-0.3 to V <sub>IN</sub> +0.3	V
I <sub>OUT</sub>	Output Current	330	mA
P <sub>D</sub>	Power Dissipation* (SC-88A)	380	mW
	Power Dissipation* (SOT-23-5)	420	
T <sub>opt</sub>	Operating Temperature Range	-40 to 85	°C
T <sub>stg</sub>	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<sub>IN</sub>=Set V<sub>OUT</sub>+1V, I<sub>OUT</sub>=1mA, unless otherwise noted.

The specifications in   are guaranteed by Design Engineering at -40°C ≤ T<sub>a</sub> ≤ 85°C.

RP171xxxxB/D

T<sub>opt</sub>=25°C

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

All of unit are tested and specified under load conditions such that T<sub>j</sub>≈T<sub>opt</sub>=25°C except for Output Noise, Ripple Rejection, Output Voltage Temperature Coefficient and Thermal Shutdown.

## TYPICAL APPLICATION



(External Components)

C2 1.0 $\mu$ F 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 1.0 $\mu$ F 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<sub>DD</sub> 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 1.0 $\mu$ F or more between V<sub>DD</sub> 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:

( $T_a=25^\circ\text{C}$ )

	Standard Land Pattern	Free Air
Power Dissipation	380mW ( $T_{j\max}=125^\circ\text{C}$ ) 475mW ( $T_{j\max}=150^\circ\text{C}$ )	150mW
Thermal Resistance	$\theta_{ja}=(125-25^\circ\text{C})/0.38\text{W}=263^\circ\text{C/W}$	$\theta_{ja}=(125-25^\circ\text{C})/0.15\text{W}=667^\circ\text{C/W}$
	$\theta_{jc}=75^\circ\text{C/W}$	-



Measurement Board Pattern

○ IC Mount Area (Unit: mm)

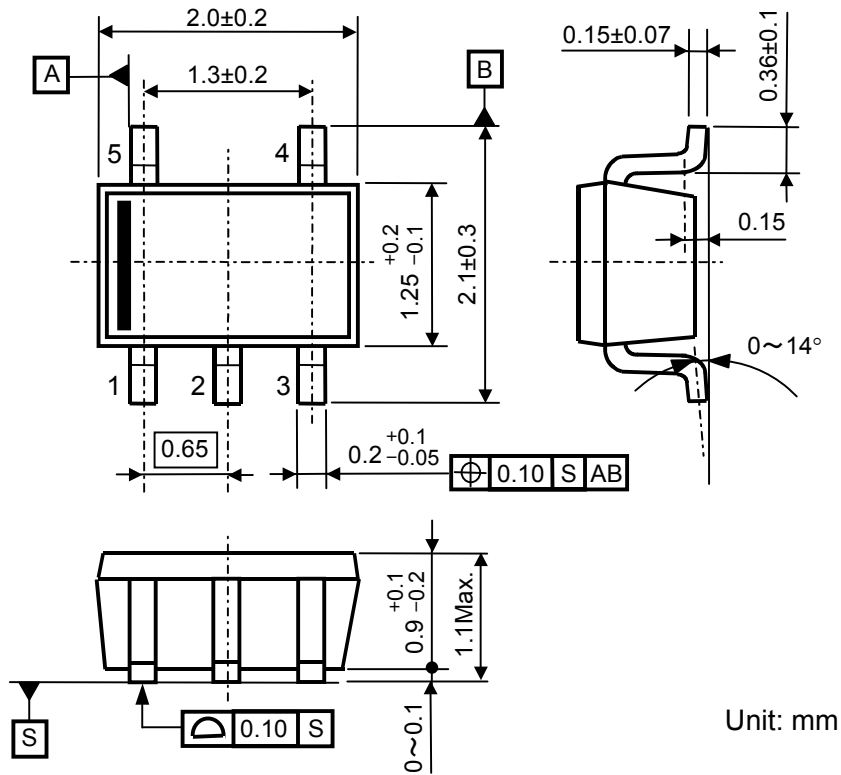
#### Power Dissipation

The above graph shows the Power Dissipation of the package under the conditions of  $T_{j\max}=125^\circ\text{C}$  and  $T_{j\max}=150^\circ\text{C}$ .

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	Volta ge
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	Volta ge
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	Volta ge
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	Volta ge
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	Volta ge
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	Volta ge
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

## RP171x

NO.EA-245-160324

### • 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:

( $T_a=25^\circ\text{C}$ )

	Standard Land Pattern	Free Air
Power Dissipation	420mW ( $T_{j\max}=125^\circ\text{C}$ ) 525mW ( $T_{j\max}=150^\circ\text{C}$ )	250mW
Thermal Resistance	$\theta_{ja} = (125-25^\circ\text{C})/0.42\text{W} = 238^\circ\text{C/W}$	400 $^\circ\text{C/W}$



**Power Dissipation**



**Measurement Board Pattern**

○ IC Mount Area (Unit: mm)

The above graph shows the Power Dissipation of the package under the conditions of  $T_{j\max}=125^\circ\text{C}$  and  $T_{j\max}=150^\circ\text{C}$ .

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



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**RP171x**

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NO.EA-245-160324

**• RP171N Series Mark Specification Table (SOT-23-5)****RP171Nxx1B**

Product Name	①② ③	Volta ge
RP171N121B	<b>JAA</b>	1.2V
RP171N121B5	<b>JAB</b>	1.25V
RP171N131B	<b>JAC</b>	1.3V
RP171N141B	<b>JAD</b>	1.4V
RP171N151B	<b>JA E</b>	1.5V
RP171N161B	<b>JAF</b>	1.6V
RP171N171B	<b>JAG</b>	1.7V
RP171N181B	<b>JA H</b>	1.8V
RP171N181B5	<b>JA J</b>	1.85V
RP171N191B	<b>JA K</b>	1.9V
RP171N201B	<b>JA L</b>	2.0V
RP171N211B	<b>JA M</b>	2.1V
RP171N221B	<b>JA N</b>	2.2V
RP171N231B	<b>JA P</b>	2.3V
RP171N241B	<b>JA Q</b>	2.4V
RP171N251B	<b>JA R</b>	2.5V
RP171N261B	<b>JA S</b>	2.6V
RP171N271B	<b>JA T</b>	2.7V
RP171N281B	<b>JA U</b>	2.8V
RP171N281B5	<b>JA V</b>	2.85V
RP171N291B	<b>JA W</b>	2.9V

Product Name	①② ③	Volta ge
RP171N301B	<b>JA X</b>	3.0V
RP171N311B	<b>JA Y</b>	3.1V
RP171N321B	<b>JA Z</b>	3.2V
RP171N331B	<b>KA A</b>	3.3V
RP171N341B	<b>KA B</b>	3.4V
RP171N351B	<b>KA C</b>	3.5V
RP171N361B	<b>KA D</b>	3.6V
RP171N371B	<b>KA E</b>	3.7V
RP171N381B	<b>KA F</b>	3.8V
RP171N391B	<b>KA G</b>	3.9V
RP171N401B	<b>KA H</b>	4.0V
RP171N411B	<b>KA J</b>	4.1V
RP171N421B	<b>KA K</b>	4.2V
RP171N431B	<b>KA L</b>	4.3V
RP171N441B	<b>KA M</b>	4.4V
RP171N451B	<b>KA N</b>	4.5V
RP171N461B	<b>KA P</b>	4.6V
RP171N471B	<b>KA Q</b>	4.7V
RP171N481B	<b>KA R</b>	4.8V
RP171N491B	<b>KA S</b>	4.9V

Product Name	①② ③	Volta ge
RP171N501B	<b>KA T</b>	5.0V
RP171N511B	<b>KA U</b>	5.1V
RP171N521B	<b>KA V</b>	5.2V
RP171N531B	<b>KA W</b>	5.3V
RP171N541B	<b>KA X</b>	5.4V
RP171N551B	<b>KA Y</b>	5.5V
RP171N561B	<b>KA Z</b>	5.6V
RP171N571B	<b>LA A</b>	5.7V
RP171N581B	<b>LA B</b>	5.8V
RP171N591B	<b>LA C</b>	5.9V
RP171N601B	<b>LA D</b>	6.0V

**RP171Nxx1D**

Product Name	①② ③	Volta ge
RP171N121D	<b>JA B</b>	1.2V
RP171N121D5	<b>JA B</b>	1.25V
RP171N131D	<b>JA C</b>	1.3V
RP171N141D	<b>JA D</b>	1.4V
RP171N151D	<b>JA E</b>	1.5V
RP171N161D	<b>JA F</b>	1.6V
RP171N171D	<b>JA G</b>	1.7V
RP171N181D	<b>JA H</b>	1.8V
RP171N181D5	<b>JA J</b>	1.85V
RP171N191D	<b>JA K</b>	1.9V
RP171N201D	<b>JA L</b>	2.0V
RP171N211D	<b>JA M</b>	2.1V
RP171N221D	<b>JA N</b>	2.2V
RP171N231D	<b>JA P</b>	2.3V
RP171N241D	<b>JA Q</b>	2.4V
RP171N251D	<b>JA R</b>	2.5V
RP171N261D	<b>JA S</b>	2.6V
RP171N271D	<b>JA T</b>	2.7V
RP171N281D	<b>JA U</b>	2.8V
RP171N281D5	<b>JA V</b>	2.85V
RP171N291D	<b>JA W</b>	2.9V

Product Name	①② ③	Volta ge
RP171N301D	<b>JA X</b>	3.0V
RP171N311D	<b>JA Y</b>	3.1V
RP171N321D	<b>JA Z</b>	3.2V
RP171N331D	<b>KA B</b>	3.3V
RP171N341D	<b>KA B</b>	3.4V
RP171N351D	<b>KA C</b>	3.5V
RP171N361D	<b>KA D</b>	3.6V
RP171N371D	<b>KA E</b>	3.7V
RP171N381D	<b>KA F</b>	3.8V
RP171N391D	<b>KA G</b>	3.9V
RP171N401D	<b>KA H</b>	4.0V
RP171N411D	<b>KA J</b>	4.1V
RP171N421D	<b>KA K</b>	4.2V
RP171N431D	<b>KA L</b>	4.3V
RP171N441D	<b>KA M</b>	4.4V
RP171N451D	<b>KA N</b>	4.5V
RP171N461D	<b>KA P</b>	4.6V
RP171N471D	<b>KA Q</b>	4.7V
RP171N481D	<b>KA R</b>	4.8V
RP171N491D	<b>KA S</b>	4.9V

Product Name	①② ③	Volta ge
RP171N501D	<b>KA T</b>	5.0V
RP171N511D	<b>KA U</b>	5.1V
RP171N521D	<b>KA V</b>	5.2V
RP171N531D	<b>KA W</b>	5.3V
RP171N541D	<b>KA X</b>	5.4V
RP171N551D	<b>KA Y</b>	5.5V
RP171N561D	<b>KA Z</b>	5.6V
RP171N571D	<b>LA B</b>	5.7V
RP171N581D	<b>LA B</b>	5.8V
RP171N591D	<b>LA C</b>	5.9V
RP171N601D	<b>LA D</b>	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 ( $T_{opt}=25^{\circ}\text{C}$ )



### 2) Output Voltage vs. Input Voltage ( $T_{opt}=25^{\circ}\text{C}$ )





**3) Supply Current vs. Input Voltage ( $T_{opt}=25^{\circ}\text{C}$ )**



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### 4) Supply Current vs. Output Current ( $T_{opt}=25^{\circ}\text{C}$ )

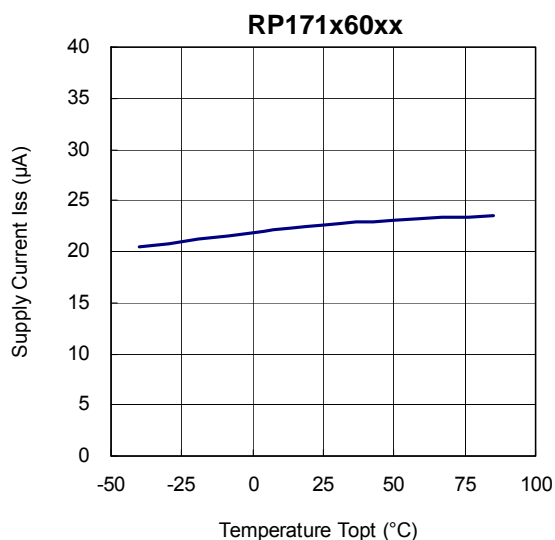


### 5) Output Voltage vs. Temperature





6) Supply Current vs. Temperature



7) Dropout Voltage vs. Output Current



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## 8) Dropout Voltage vs. Set Output Voltage ( $T_{opt}=25^{\circ}\text{C}$ )



## 9) Minimum Operating Voltage



10) Ripple Rejection vs. Input Bias Voltage (C1=none, C2=Ceramic 1.0μF, Ripple=0.2Vp-p, T<sub>opt</sub>=25°C)



11) Ripple Rejection vs. Frequency (C1=none, C2=Ceramic 1.0μF, T<sub>opt</sub>=25°C)



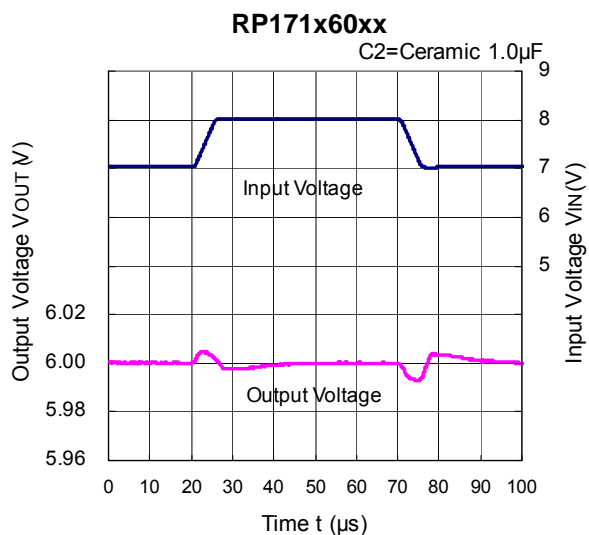
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## 12) Input Transient Response (C1=none, IOUT=30mA, tr=tf=5μs, Topt=25°C)





**13) Load Transient Response (C1=Ceramic 1.0 $\mu$ F,  $t_r=t_f=500ns$ ,  $T_{opt}=25^{\circ}C$ )**



RP171x12xx



RP171x30xx

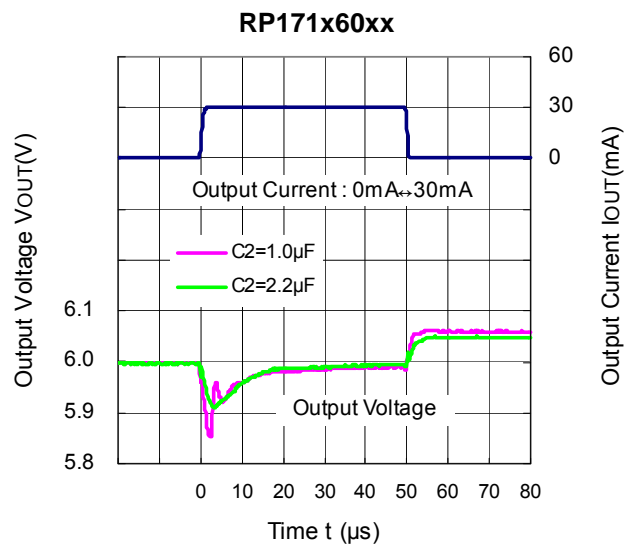
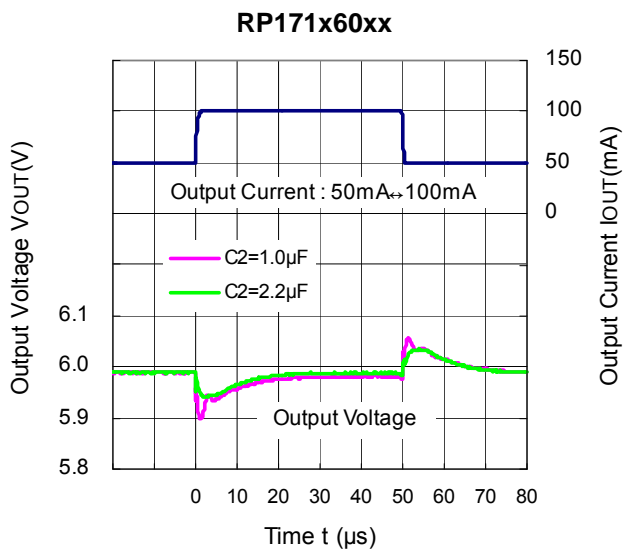


RP171x30xx

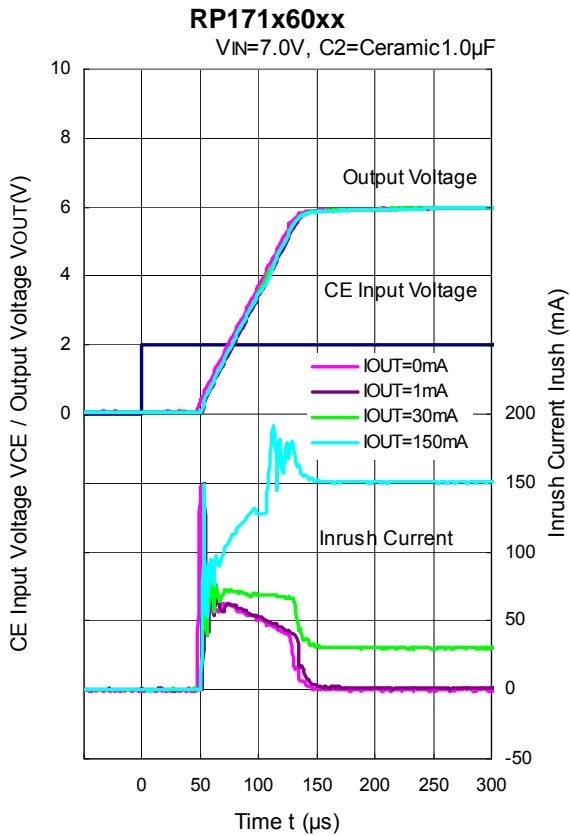


RP171x30xx





14) Turn On Speed with CE pin (C1=Ceramic 1.0μF, T<sub>opt</sub>=25°C)





**RP171x12xx**

$V_{IN}=2.6V, I_{OUT}=1mA$



**RP171x30xx**

$V_{IN}=4.0V, I_{OUT}=1mA$



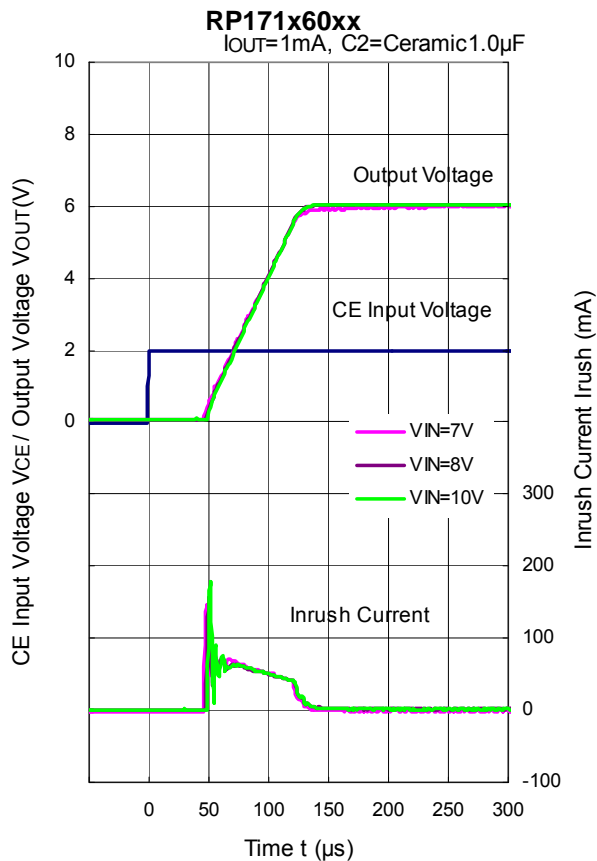
**RP171x60xx**

$V_{IN}=7.0V, I_{OUT}=1mA$

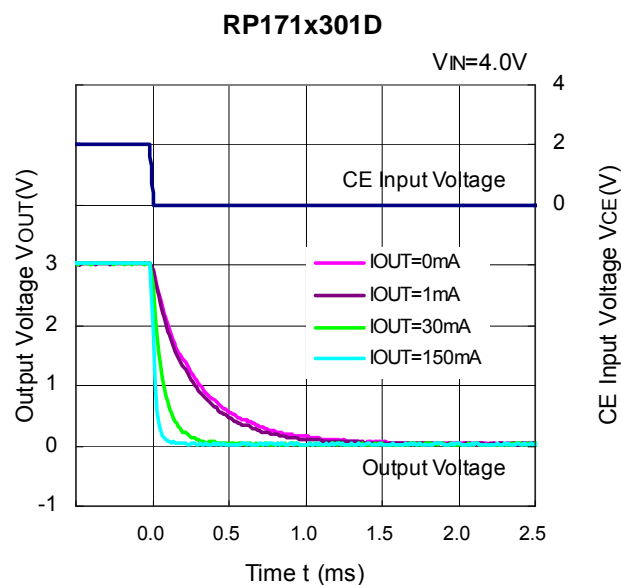


# RP171x

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15) Turn Off Speed with CE pin (D Version) (C1=Ceramic 1.0μF, T<sub>opt</sub>=25°C)



## 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.

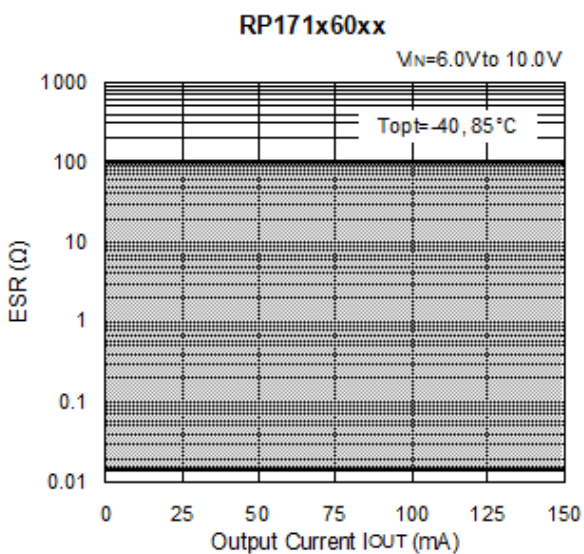
The conditions when the white noise level is under  $40\mu\text{V}$  (Avg.) are marked as the hatched area in the graph.

### Measurement conditions

Frequency Band : 10Hz to 2MHz

Temperature :  $-40^{\circ}\text{C}$  to  $85^{\circ}\text{C}$

C1, C2 : Ceramic  $1.0\mu\text{F}$  (Murata GRM155B31A105KE)





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