

- CMOS Low Power Consumption
- Dropout Voltage : 160mV @ 100mA  
: 400mV @ 200mA
- Output Current : more than 250mA (5.0V type)
- Highly Accurate :  $\pm 2\%$
- Output Voltage Range : 1.2V to 5.0V
- Current Limiter Circuit Built-In
- Low ESR Capacitor can be used

### ■ GENERAL DESCRIPTION

The XC6206 series are precise, low power consumption, high voltage, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage. The XC6206 consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit.

The series is compatible with low ESR ceramic capacitors. The current limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin. Output voltage can be set internally by laser trimming technologies. It is selectable in 100mV increments within a range of 1.2V to 5.0V.

SOT-23 (250mW) and SOT-89 (500mW) packages are available.

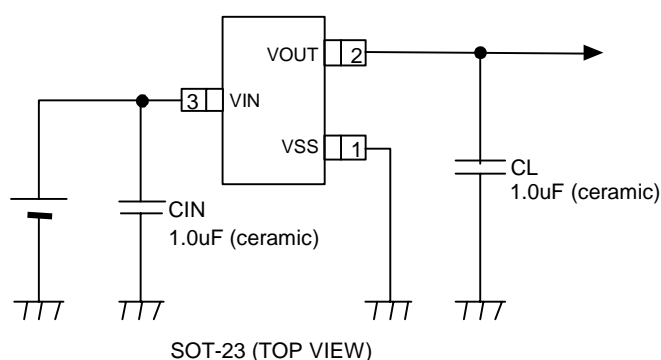
### ■ APPLICATIONS

- Battery powered equipment
- Reference voltage sources
- Cameras, Video cameras
- Portable AV systems
- Mobile phones
- Communication tools
- Portable games

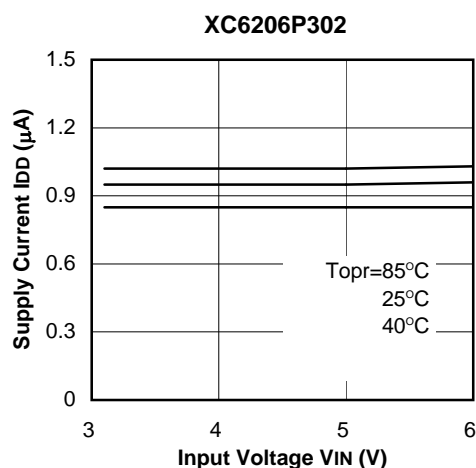
### ■ FEATURES

Maximum Output Current	250mA (5.0V type)
Dropout Voltage	160mV @ 100mA (5.0V type)
Maximum Operating Voltage	6.0V
Output Voltage Range	1.2V to 5.0V (selectable in 100mV steps)
Highly Accurate	$\pm 2\%$
Low Power Consumption	1.0 $\mu$ A (TYP.)
Operational Temperature Range	-40°C ~ 85°C
Ultra Small Packages	SOT-23 (250mW), SOT-89 (500mW)
Low ESR capacitor ceramic compatible	

### ■ TYPICAL APPLICATION CIRCUIT



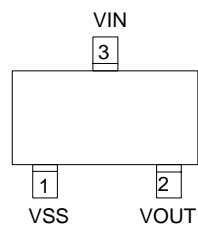
### ■ TYPICAL PERFORMANCE CHARACTERISTICS



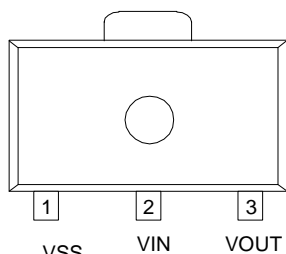
# XC6206 Series

Low ESR Cap. Compatible Positive Voltage Regulators

## PIN CONFIGURATION



SOT-23  
(TOP VIEW)

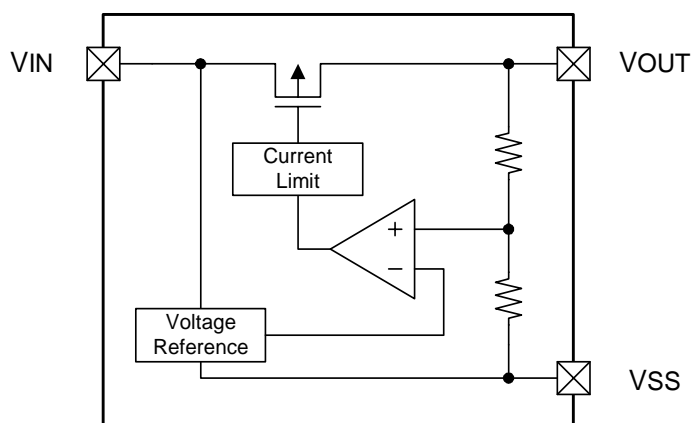


SOT-89  
(TOP VIEW)

## PIN ASSIGNMENT

PIN NUMBER		PIN NAME	FUNCTION
SOT-23	SOT-89		
1	1	VSS	Ground
3	2	VIN	Power Input
2	3	VOUT	Output

## BLOCK DIAGRAM



## ORDERING INFORMATION

XC6206P①②③④⑤

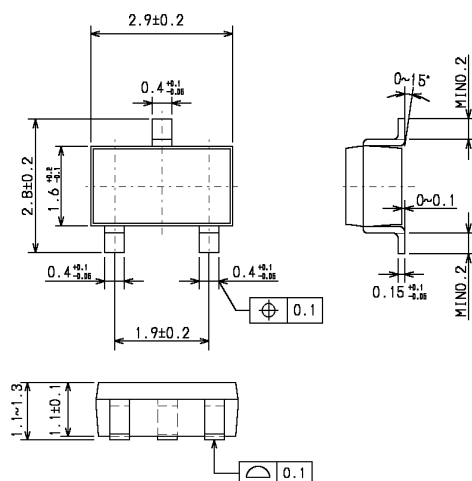
DESIGNATOR	SYMBOL	DESCRIPTION
① ②	Integer	Output Voltage : e.g. ① = 3, ② = 0 ⇒ 3.0V
③	2	Accuracy : within ±2%
④		Packaging Type :
	M	SOT-23
	P	SOT-89
⑤		Device Orientation :
	R	Embossed Tape : Standard Feed
	L	Embossed Tape : Reverse Feed

# XC6206 Series

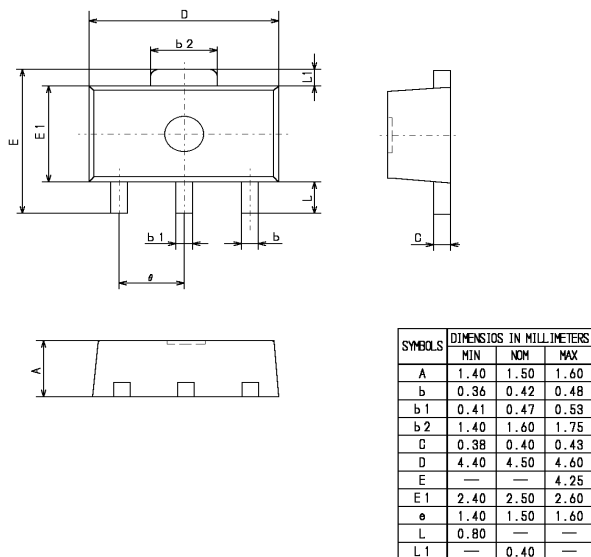
## Low ESR Cap. Compatible Positive Voltage Regulators

### ■ PACKAGING INFORMATION

#### ○ SOT-23



#### ○ SOT-89



# XC6206 Series

## Low ESR Cap. Compatible Positive Voltage Regulators

### MARKING RULE

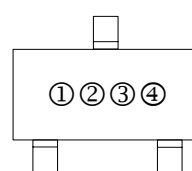
○ SOT-23 & SOT-89

① Represents product series

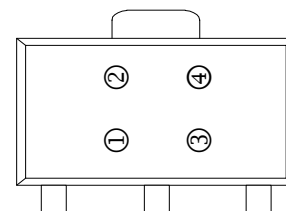
SYMBOL	PRODUCT SERIES
6	XC6206Pxxxxx

② Represents three pins regulator

SYMBOL		PRODUCT SERIES
VOLTAGE : 0.1~3.0V	VOLTAGE : 3.1~6.0V	
5	6	XC6206Pxxxxx



SOT-23 (TOP VIEW)



SOT-89 (TOP VIEW)

③ Represents output voltage

SYMBOL	OUTPUT VOLTAGE (V)			SYMBOL	OUTPUT VOLTAGE (V)		
0	-	3.1	-	F	1.6	4.6	-
1	-	3.2	-	H	1.7	4.7	-
2	-	3.3	-	K	1.8	4.8	-
3	-	3.4	-	L	1.9	4.9	-
4	-	3.5	-	M	2.0	5.0	-
5	-	3.6	-	N	2.1	-	-
6	-	3.7	-	P	2.2	-	-
7	-	3.8	-	R	2.3	-	-
8	-	3.9	-	S	2.4	-	-
9	-	4	-	T	2.5	-	-
A	-	4.1	-	U	2.6	-	-
B	1.2	4.2	-	V	2.7	-	-
C	1.3	4.3	-	X	2.8	-	-
D	1.4	4.4	-	Y	2.9	-	-
E	1.5	4.5	-	Z	3.0	-	-

④ Represents the production lot number

0 to 9, A to Z, reversed character of 0 to 9 and A to Z repeated. (G.I.J.O.Q.W excepted)

# XC6206 Series

Low ESR Cap. Compatible Positive Voltage Regulators

## ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	DESCRIPTION	UNIT
Input Voltage	VIN	6.0	V
Output Current	IOUT	500	mA
Output Voltage	VOUT	VSS - 0.3 ~ VIN + 0.3	V
Power Dissipation	SOT-23	Pd	mW
	SOT-89		
Operating Ambient Temperature	Topr	- 40 ~ + 85	°C
Storage Temperature	Tstg	- 55 ~ + 125	°C

## ■ ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	CIRCUIT
Output Voltage	VOUT (E)	IOUT = 40mA	x 0.98 2.940	VOUT(T) 3.000	x 1.02 3.060	V	①
Maximum Output Current	IOUTMAX		200			mA	①
Load Regulation	ΔVOUT	1mA ≤ IOUT ≤ 100mA		25		mV	①
Dropout Voltage	Vdif 1	IOUT = 30mA		80		mV	①
	Vdif 2	IOUT = 100mA		250		mV	
Supply Current	IDD	VIN = 4.0V		1.0		μA	②
Line Regulations	$\frac{VOUT}{\Delta VIN \cdot VOUT}$	VOUT(T) + 1.0V ≤ VIN ≤ 6V IOUT = 40mA		0.01	0.30	%/V	①
Input Voltage	VIN		1.8		6	V	-
Output Voltage Temperature Characteristics	$\frac{\Delta VOUT}{\Delta Topr \cdot VOUT}$	IOUT = 40mA -40°C ≤ Topr ≤ 85°C		100		ppm/°C	①
Current Limiter	Ishort	VIN = VOUT + 1.5V, VOUT = VSS		100		mA	①

(NOTE 1) VOUT(T) = Specified Output Voltage

(NOTE 2) VOUT(E) = Effective Output Voltage (I.e. The output voltage when "VOUT(T)+1.0V" is provided at the VIN pin while maintaining a certain IOUT value.)

(NOTE 3) Vdif = {VIN 1 (NOTE5) + VOUT 1 (NOTE4)}

(NOTE 4) VOUT1 = A voltage equal to 98% of the Output Voltage whenever an amply stabilized IOUT {VOUT(T) + 1.0V} is input.

(NOTE 5) VIN 1 = The Input Voltage when VOUT1 appears as Input Voltage is gradually decreased.

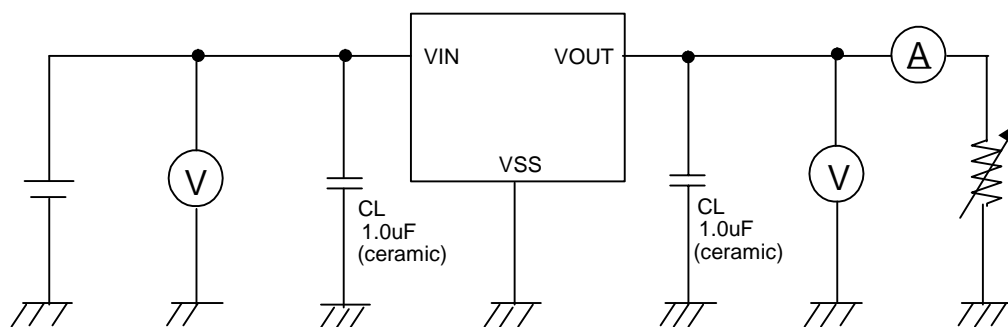
(NOTE 6) Unless otherwise stated, VIN = VOUT(T)+1.0V

# XC6206 Series

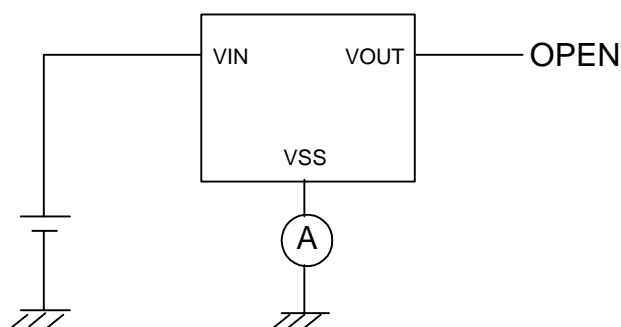
Low ESR Cap. Compatible Positive Voltage Regulators

## ■ TEST CIRCUITS

Circuit ①



Circuit ②



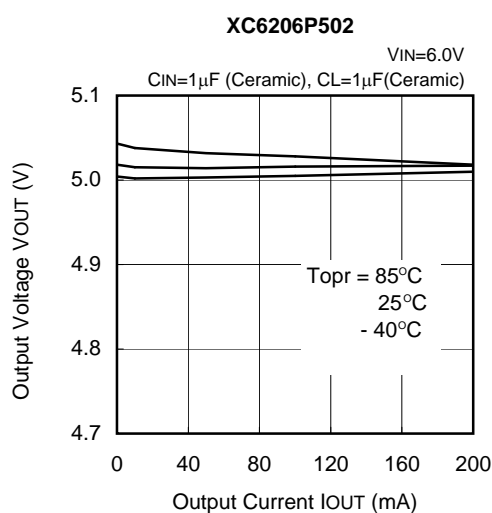
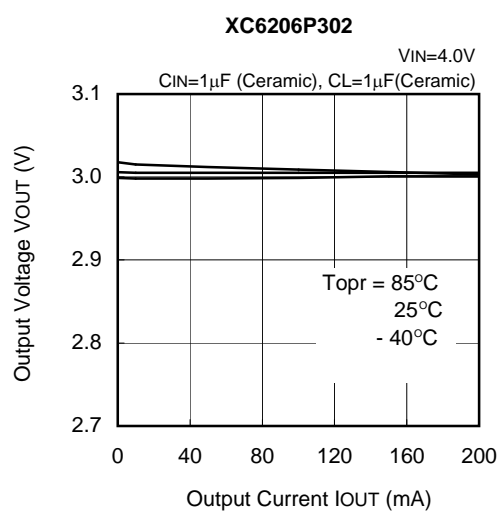
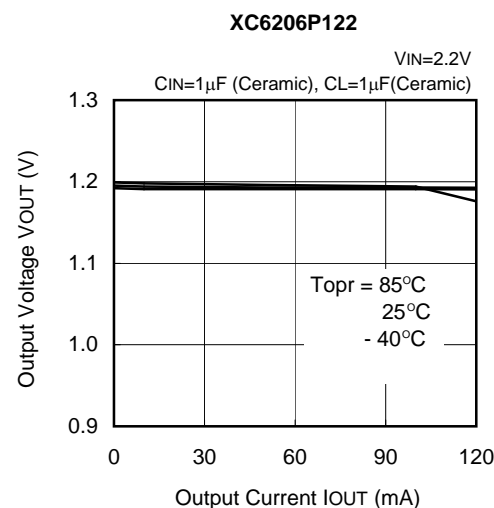
# XC6206 Series

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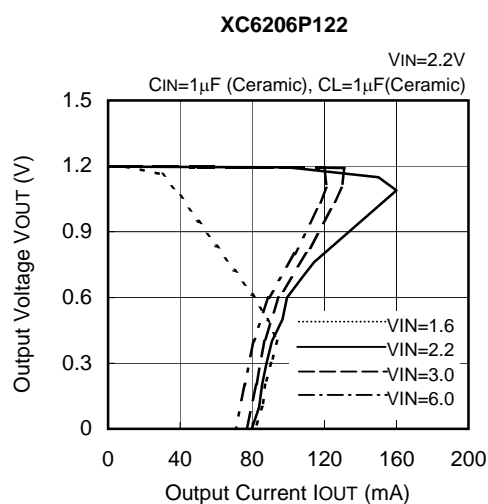
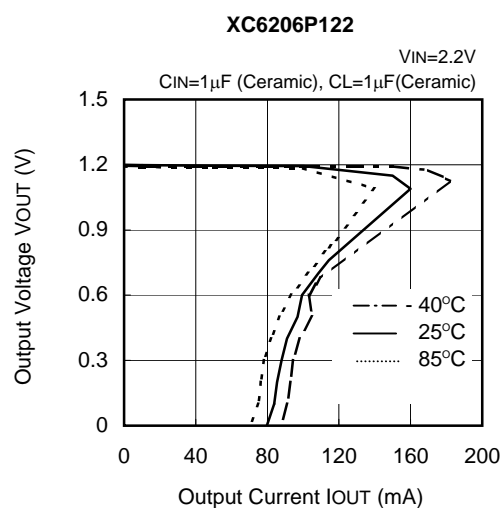
## ■ TYPICAL PERFORMANCE CHARACTERISTICS

## XC6206P Series

### (1) Output Voltage vs. Output Current



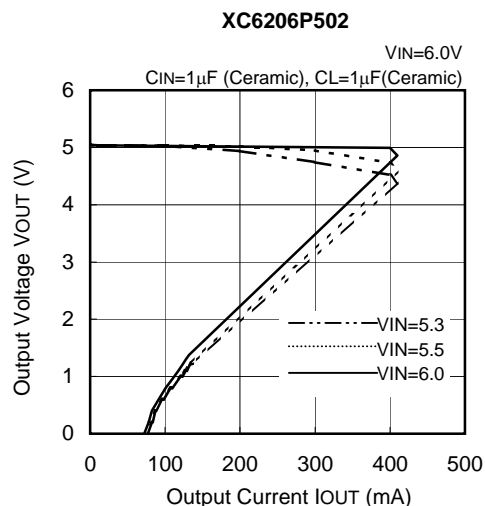
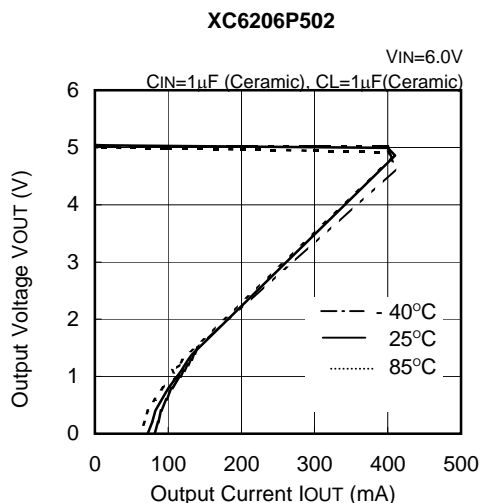
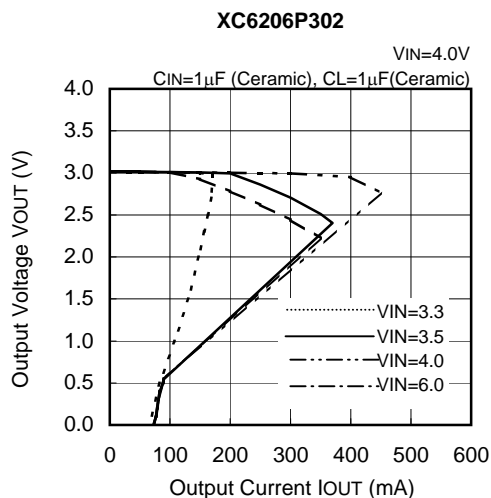
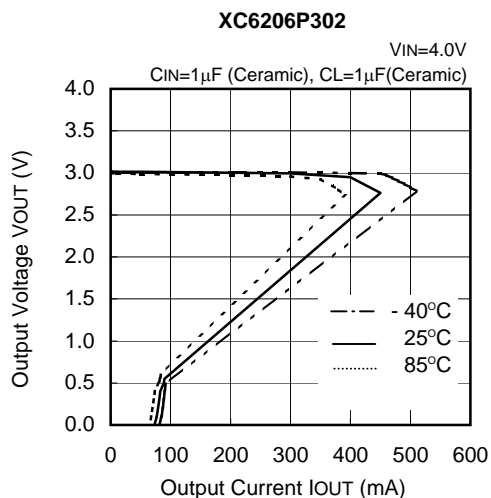
### (2) Current Limit



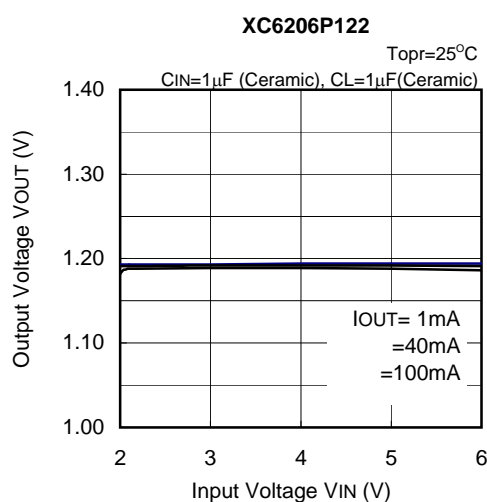
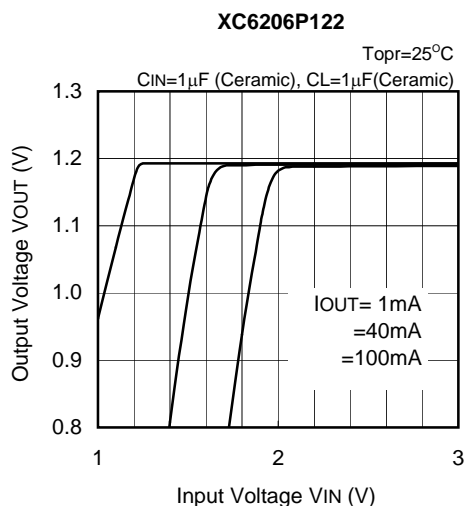
# XC6206 Series

## Low ESR Cap. Compatible Positive Voltage Regulators

### (2) Current Limit (Continued)



### (3) Output Voltage vs. Input Voltage

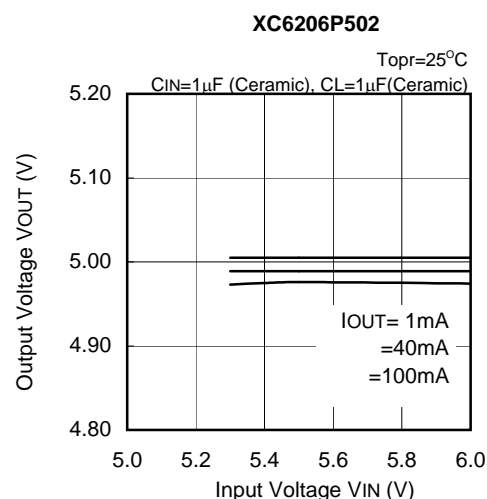
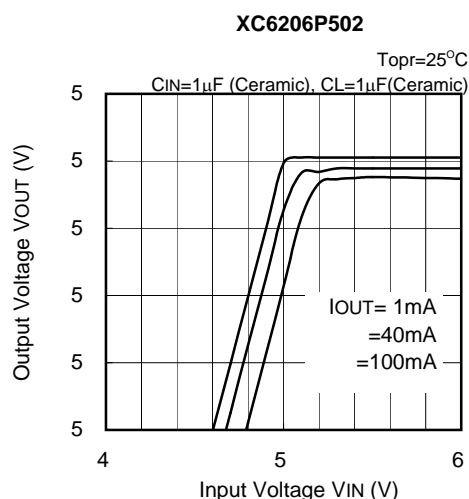
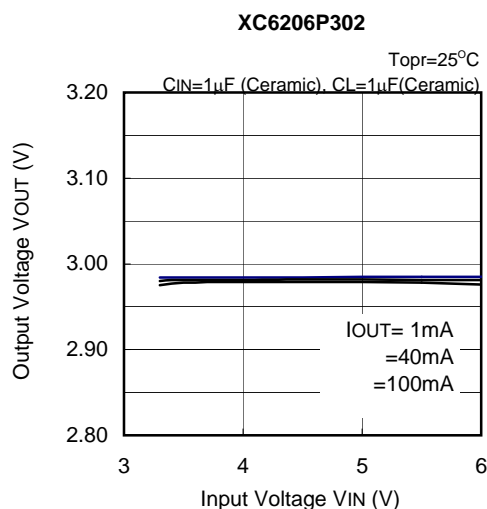
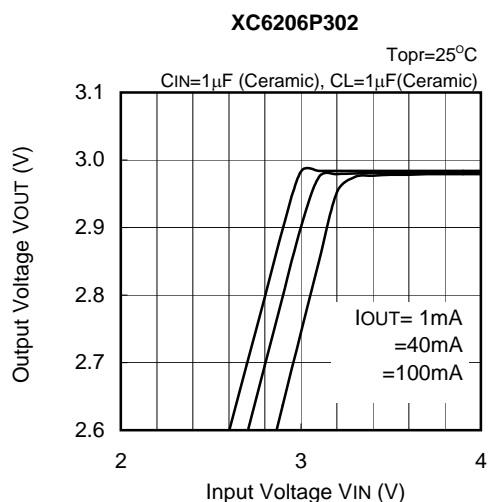




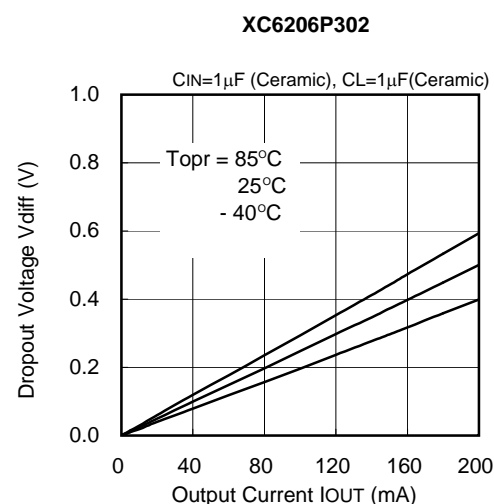
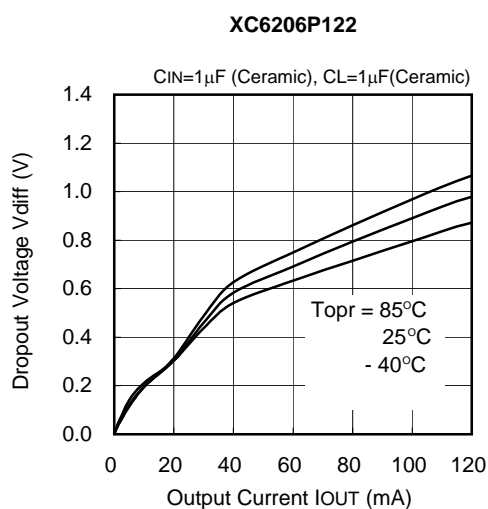
# XC6206 Series

Low ESR Cap. Compatible Positive Voltage Regulators

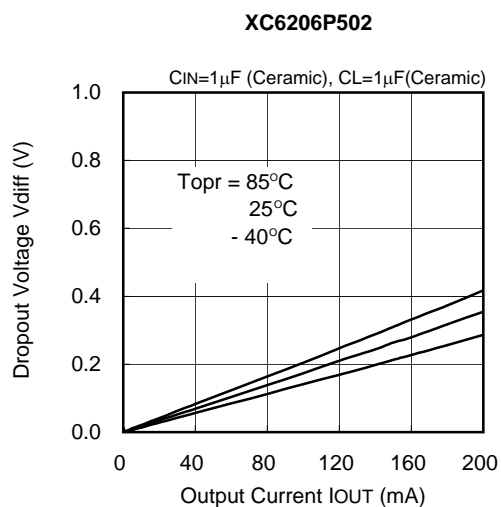
## (3) Output Voltage vs. Input Voltage (Continued)



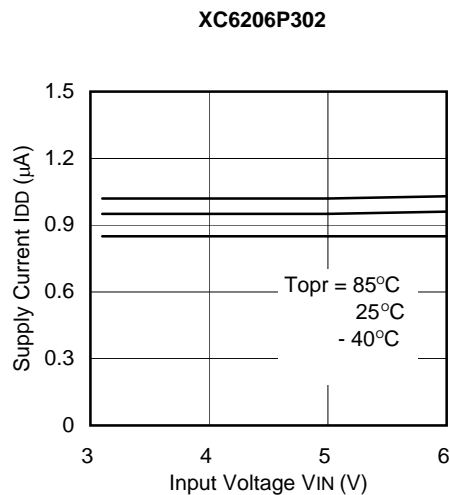
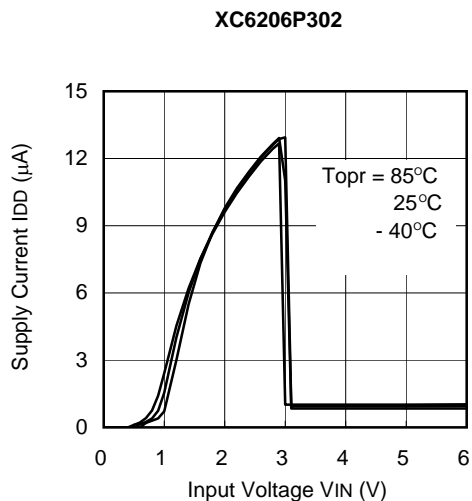
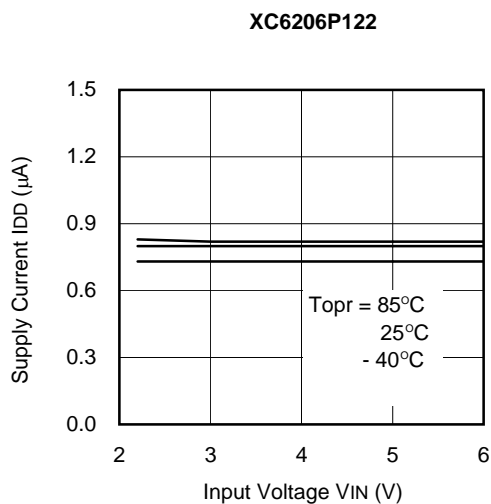
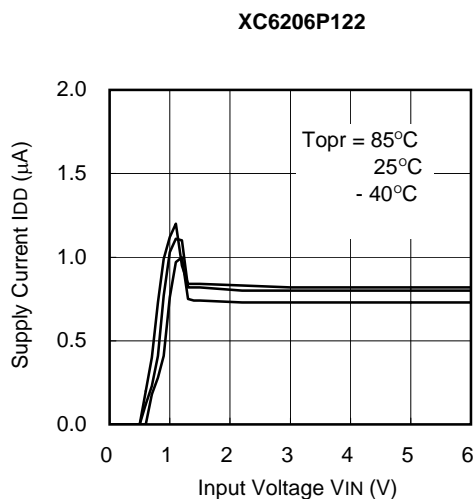
## (4) Dropout Voltage vs. Output Current



### (4) Dropout Voltage vs. Output Current (Continued)



### (5) Supply Current vs. Input Voltage

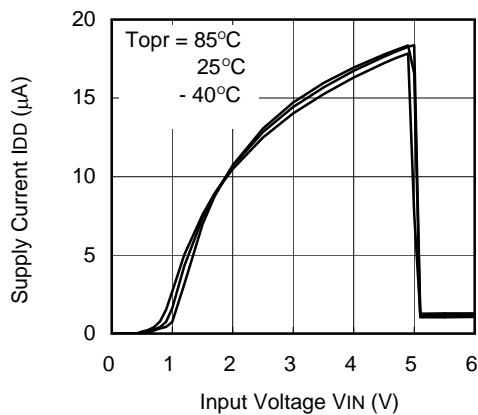


# XC6206 Series

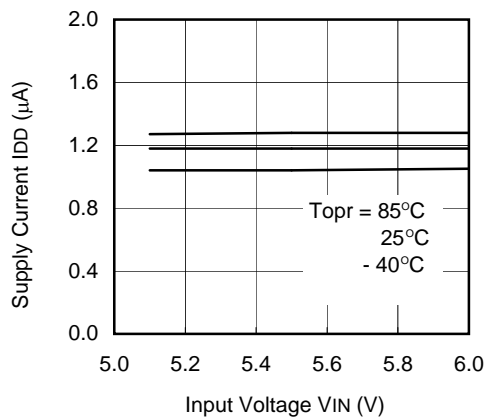
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## (5) Supply Current vs. Input Voltage (Continued)

XC6206P502

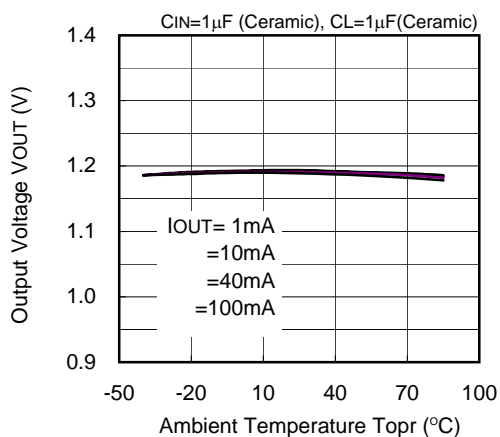


XC6206P502

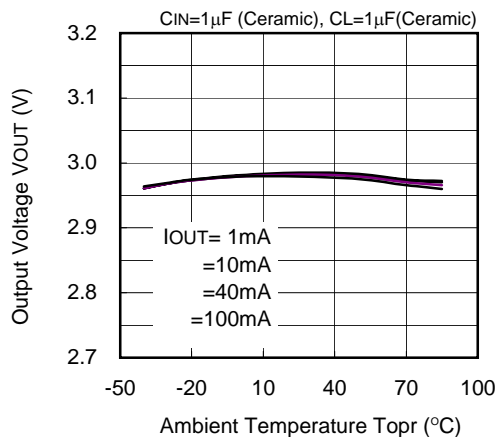


## (6) Output Voltage vs. Ambient Temperature

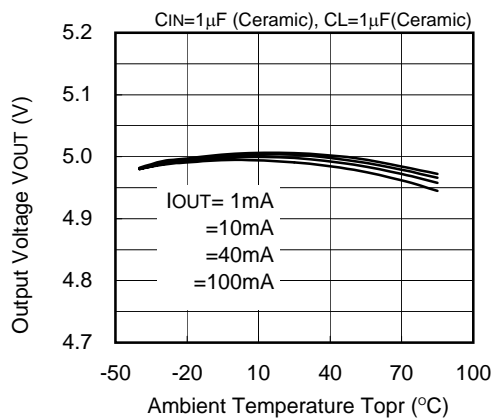
XC6206P122



XC6206P302



XC6206P502

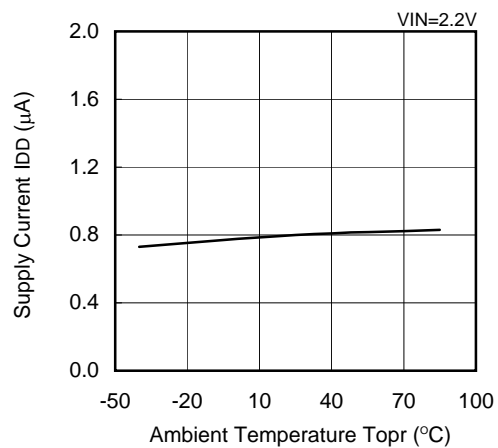


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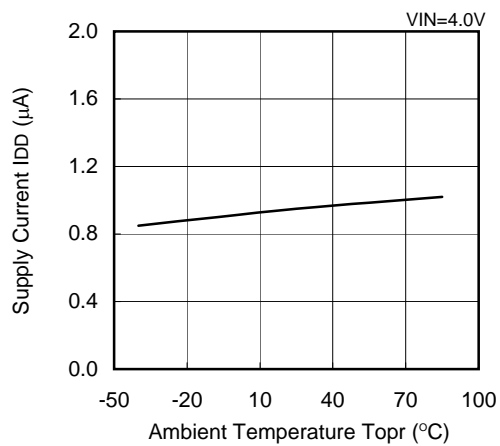
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(7) Output Voltage vs. Ambient Temperature

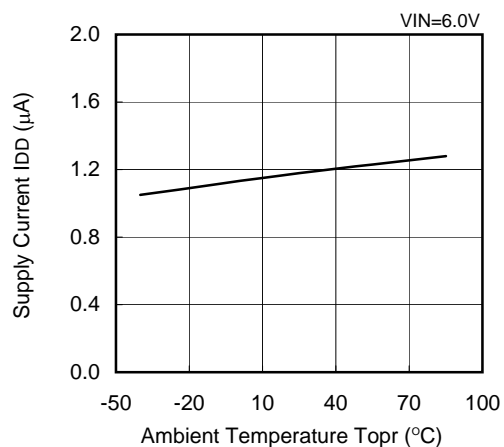
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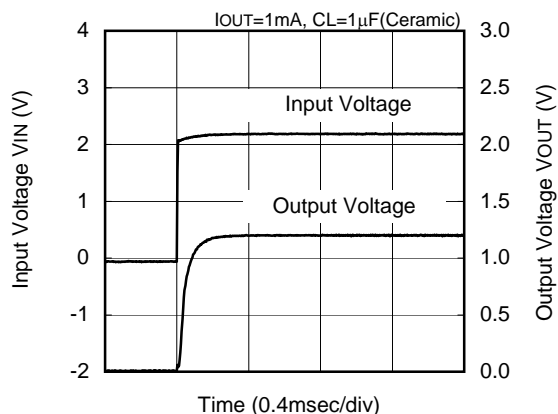


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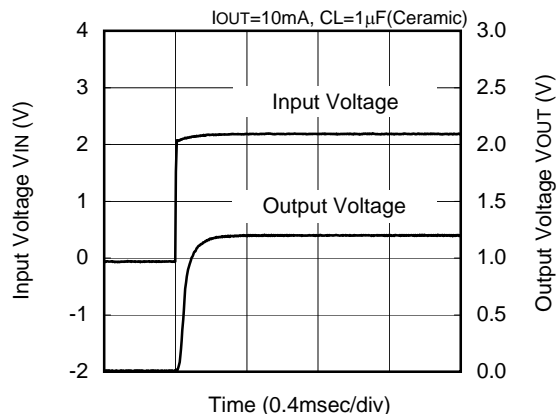


### (8) Input Transient Response 1

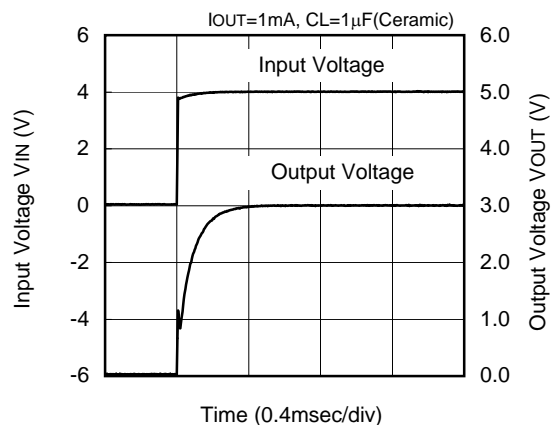
**XC6206P122**



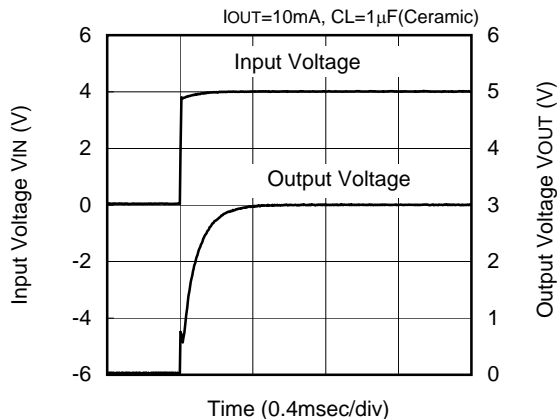
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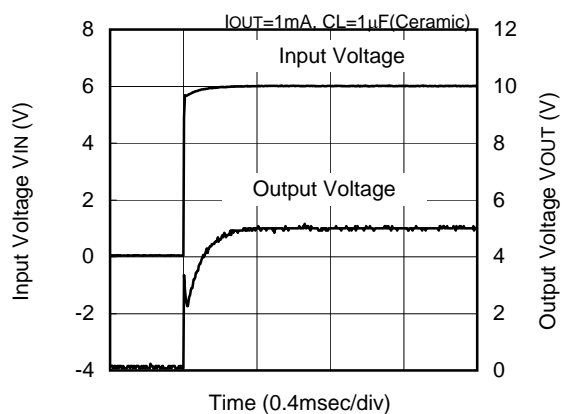
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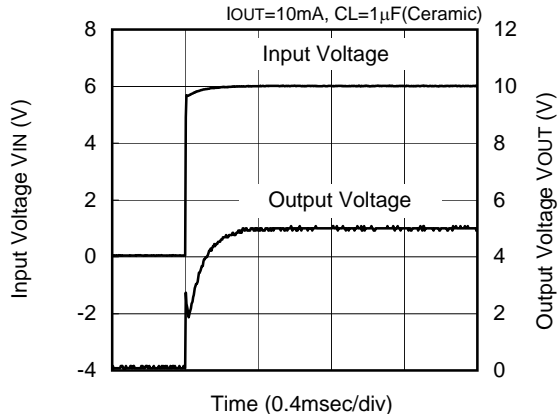
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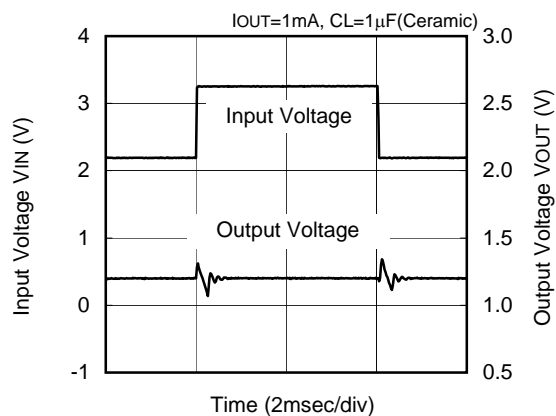


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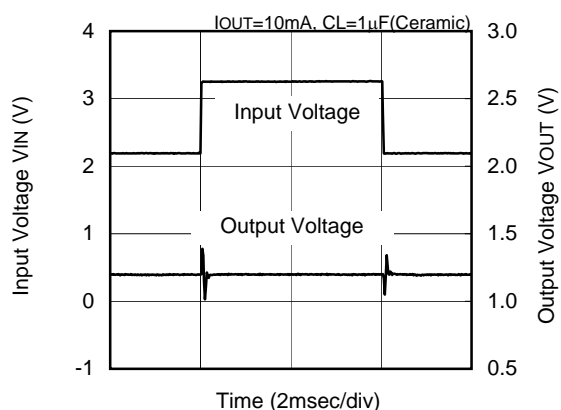


### (9) Input Transient Response 2

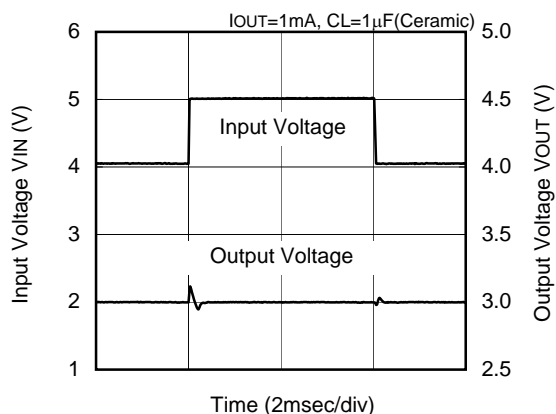
**XC6206P122**



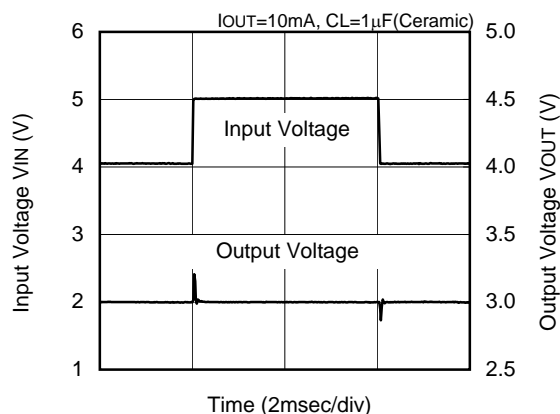
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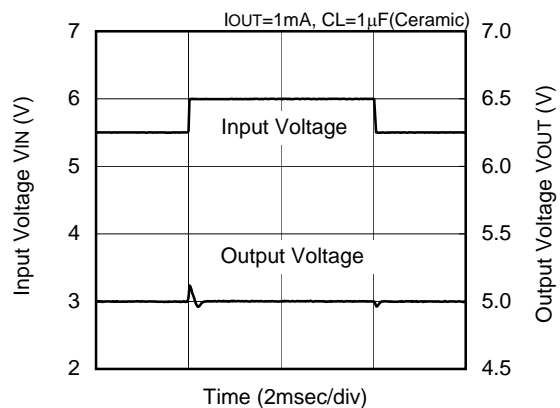
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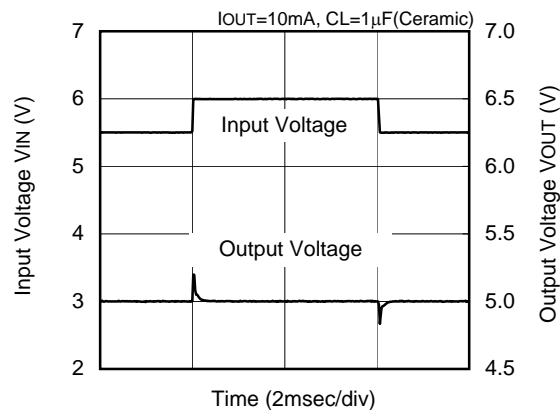
**XC6206P302**



**XC6206P502**



**XC6206P502**

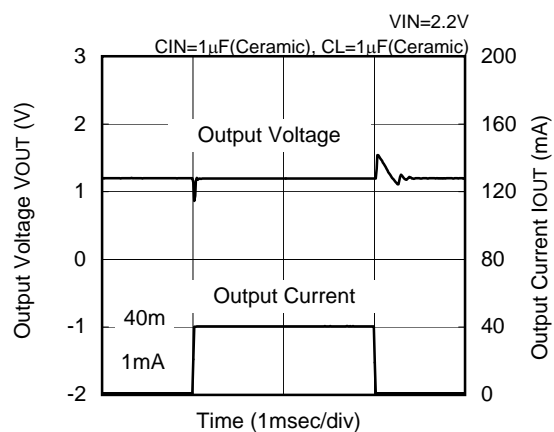


# XC6206 Series

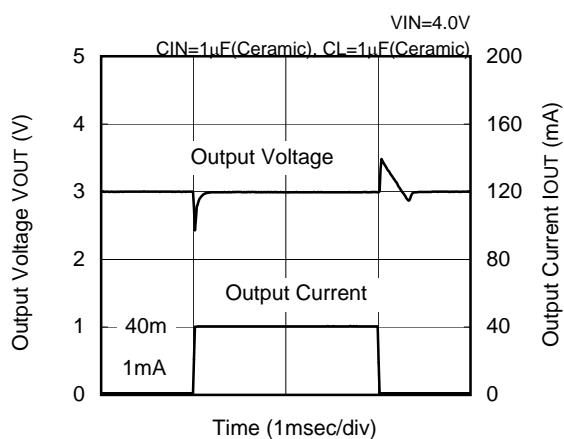
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(10) Load Transient Response

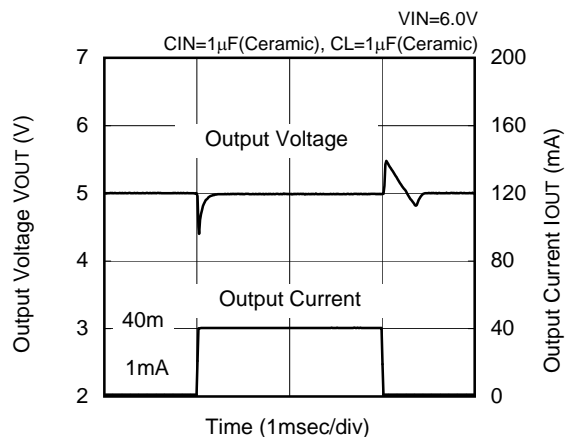
**XC6206P122**



**XC6206P302**



**XC6206P502**



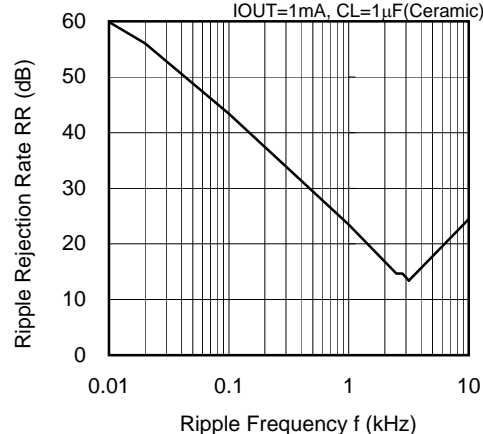
# XC6206 Series

Low ESR Cap. Compatible Positive Voltage Regulators

## (11) Ripple Rejection Rate

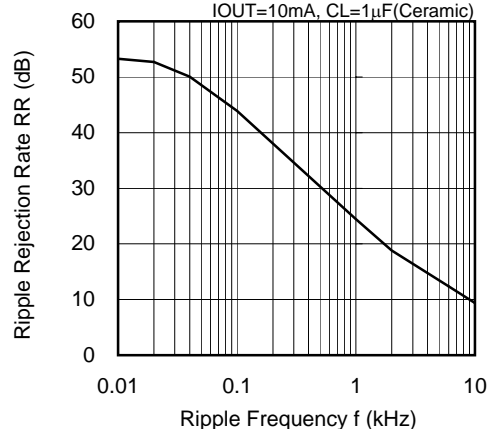
**XC6206P122**

VIN=2.2VDC+1Vp-pAC  
IOUT=1mA, CL=1 $\mu$ F(Ceramic)



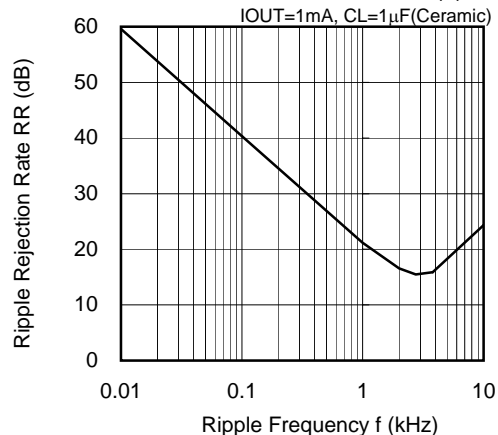
**XC6206P122**

VIN=2.2VDC+1Vp-pAC  
IOUT=10mA, CL=1 $\mu$ F(Ceramic)



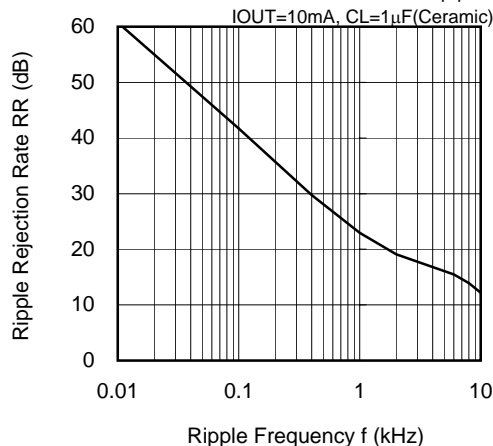
**XC6206P302**

VIN=4.0VDC+1Vp-pAC  
IOUT=1mA, CL=1 $\mu$ F(Ceramic)



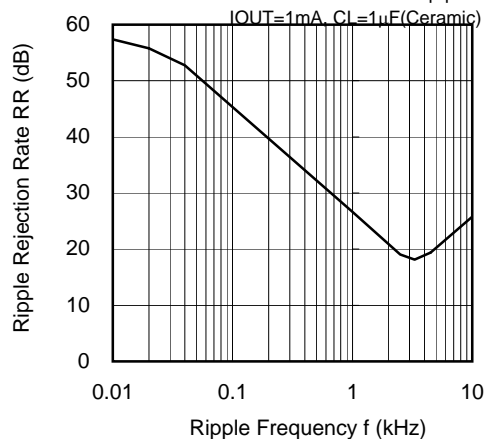
**XC6206P302**

VIN=4VDC+1Vp-pAC  
IOUT=10mA, CL=1 $\mu$ F(Ceramic)



**XC6206P502**

VIN=6VDC+1Vp-pAC  
IOUT=1mA, CL=1 $\mu$ F(Ceramic)



**XC6206P502**

VIN=6VDC+1Vp-pAC  
IOUT=10mA, CL=1 $\mu$ F(Ceramic)

