XC6206 Series

Low ESR Cap. Compatible Positive Voltage Regulators

TOREX

1

Preliminary

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

■Applications

- ●Battery Powered Equipment
- ●Reference Voltage Sources
- ●Cameras, Video Cameras
- ●Portable AV Systems
- ●Mobile Phones
- ●Communication Tools
- ●Portable Games

■General Description

The XC6206 series are highly 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 currrent limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin.

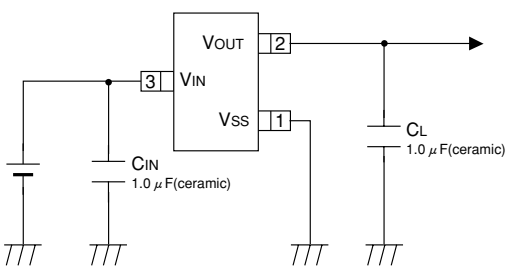
Output voltage can be set internally by laser trimming technologies. It is selectable in 0.1V increments within a range of 1.2V to 5.0V.

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

■Features

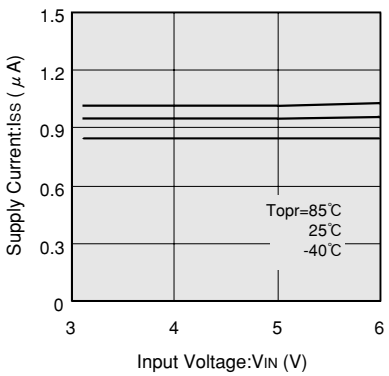
Maximum Output Current	: 250mA (5.0V type)
Dropout Voltage	: 160mV @ 100mA (5.0V type)
Maximum Operating Voltage	: 6.0V
Output Voltage Range	: 1.2V ~ 5.0V (selectable in 0.1V steps)
Highly Accurate	: ± 2%
Low Power Consumption	: Typ. 1.0μA
Operational Temperature Range	: -40°C ~ 85°C
Ultra Small Packages	: SOT-23 (250mW), SOT-89 (500mW)
Low ESR Capacitor	: Ceramic compatible

■Typical Application Circuit

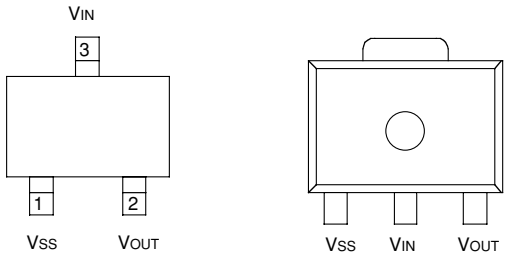


■Typical Performance Characteristic

XC6206P302



■Pin Configuration



SOT-23 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

■Product Classification

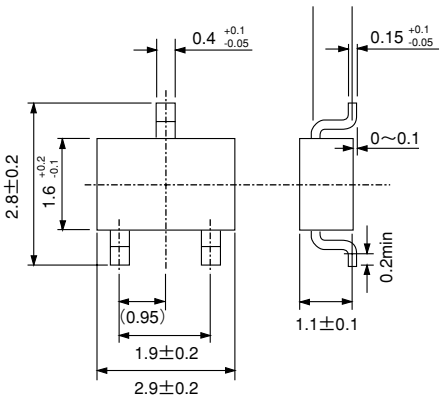
■Ordering Information

XC6206P ①②③④⑤

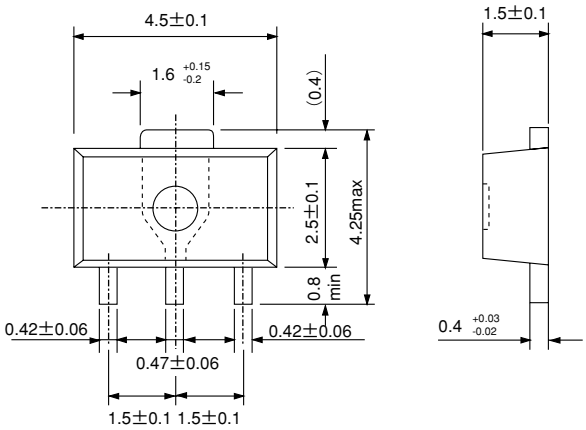
DESTINATION	SYMBOL	DESCRIPTION
①②	Integer	Output Voltage e.g. ① = 3, ② = 0 ⇒ 3.0V
③	2	Accuracy : within ± 2%
④	M	SOT-23
	P	SOT-89
⑤	R	Embossed Tape : Standard Feed
	L	Embossed Tape : Reverse Feed

■Packaging Information

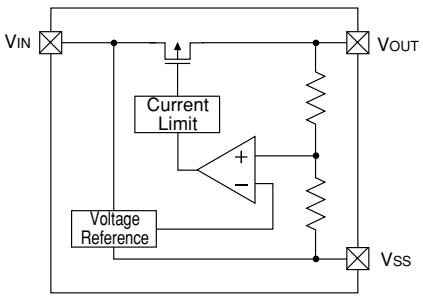
●SOT-23



●SOT-89



■Block Diagram



■Absolute Maximum Ratings

PARAMETER		SYMBOL	DESCRIPTION	UNIT
Input Voltage		VIN	7	V
Output Current		IOUT	500	mA
Output Voltage		VOUT	VSS−0.3～VIN+0.3	V
Power Dissipation	SOT-23	Pd	250	mW
	SOT-89		500	
Operating Ambient Temperature		Topr	−40～+85	℃
Storage Temperature		Tstg	−55～+125	℃

■Electrical Characteristics

XC6206P302 (3.0V)

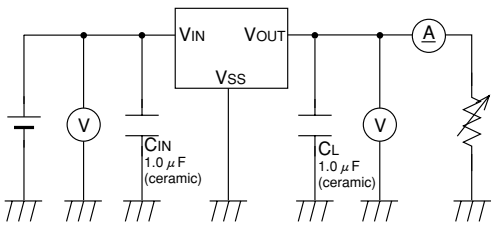
Ta=25℃

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	CIRCUIT
Output Voltage	VOUT(E)	IOUT = 40mA	×0.98 2.940	VOUT(T) 3.000	×1.02 3.060	V	①
Maximum Ouput Current	IOUTMAX		200			mA	①
Load Regulation	ΔVOUT	1mA ≤ IOUT ≤ 100mA		25		mV	①
Dropout Voltage	Vdif1	IOUT = 30mA		80		mV	①
	Vdif2	IOUT = 100mA		250		mV	
Supply Current	IDD	VIN = 4.0V		1.0		μA	②
Line Regulations	$\frac{\Delta VOUT}{\Delta VIN \cdot VOUT}$	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℃ ≤ Topr ≤ 85℃		100		ppm /℃	①
Current Limiter	Ishort	VIN = VOUT+1.5V、VOUT = VSS		100		mA	①

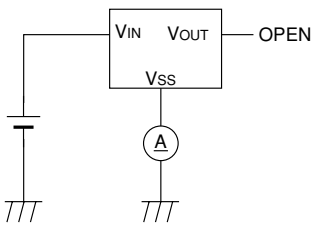
Note
(NOTE 1) VOUT(T) = Specified Output Voltage
(NOTE 2) VOUT(E) = Effective Output Voltage (Ie. The output voltage when "VOUT(T)+1.0V" is provided at the VIN pin while maintaining a certain IOUT value.)
(NOTE 3) Vdif = {VIN 1 (NOTE5) + VOUT 1 (NOTE4)}
(NOTE 4) VOUT1 = A voltage equal to 98% of the 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

■Test Circuits

Circuit ①



Circuit ②



■Typical Performance Characteristics

(1) OUTPUT VOLTAGE vs. OUTPUT CURRENT

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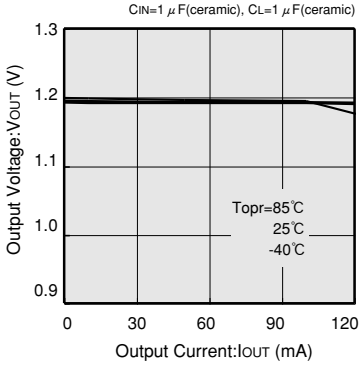

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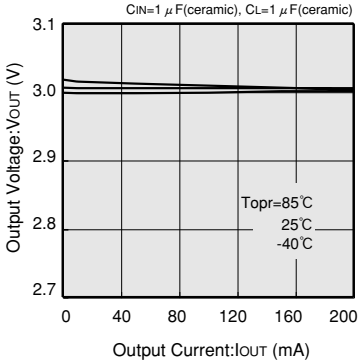

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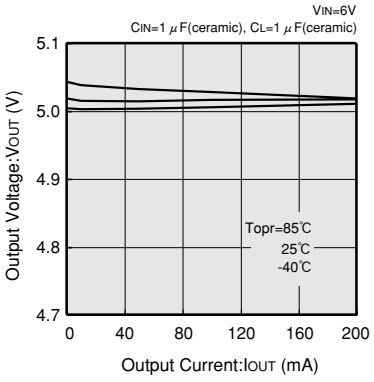

(2) CURRENT LIMIT

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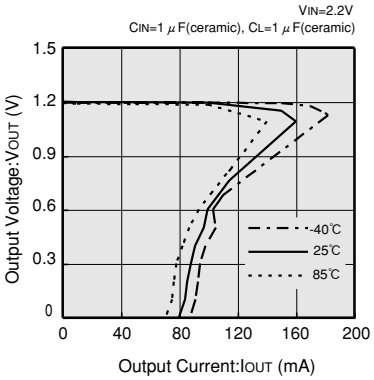

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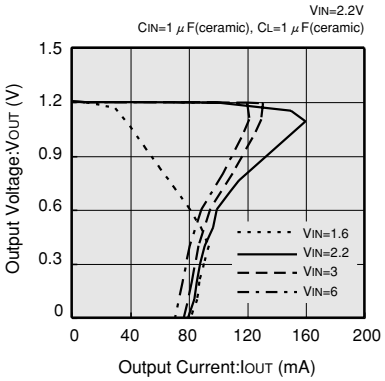

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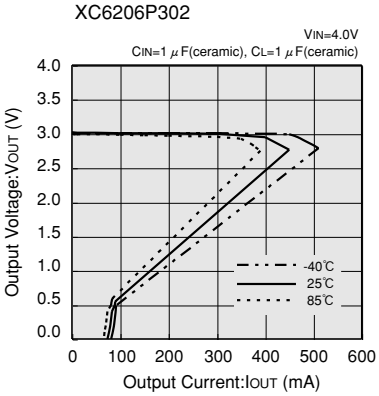

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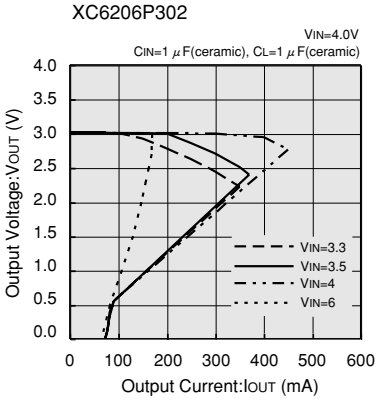

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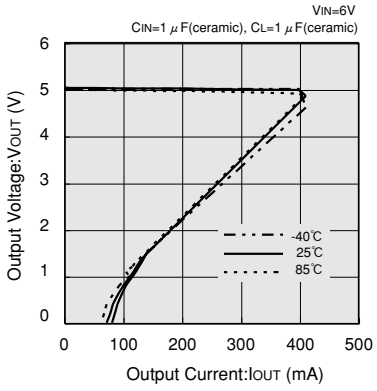

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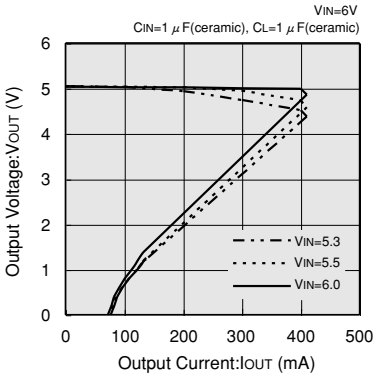

(3) OUTPUT VOLTAGE vs. INPUT VOLTAGE

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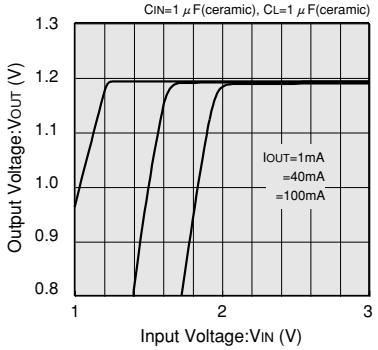

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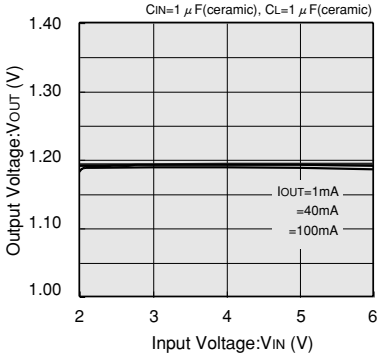

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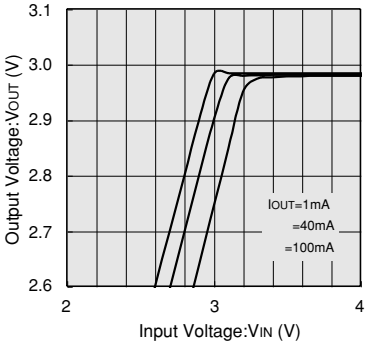

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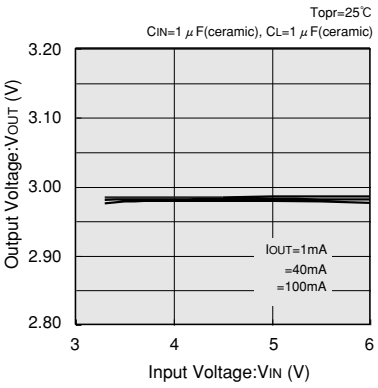

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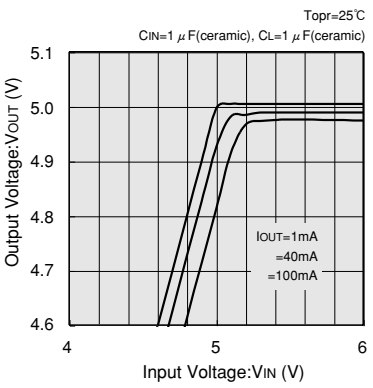

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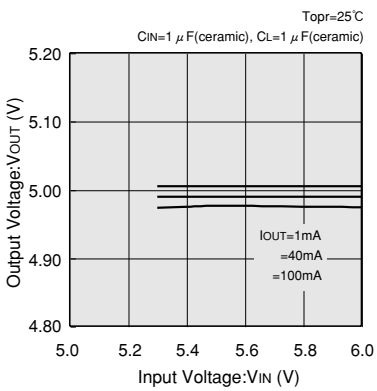

(4) DROPOUT VOLTAGE vs. OUTPUT CURRENT

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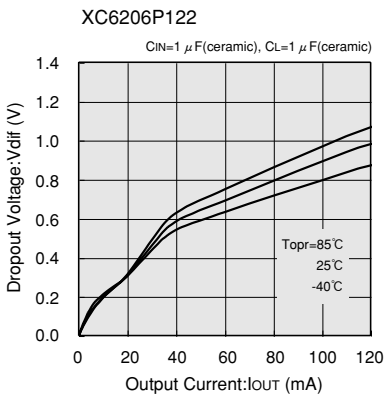

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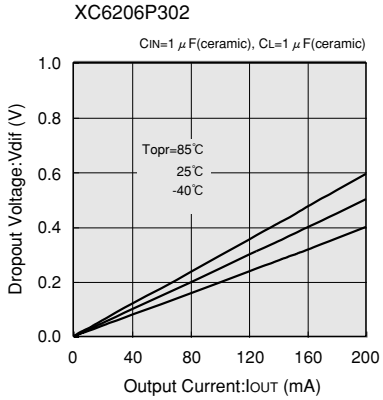

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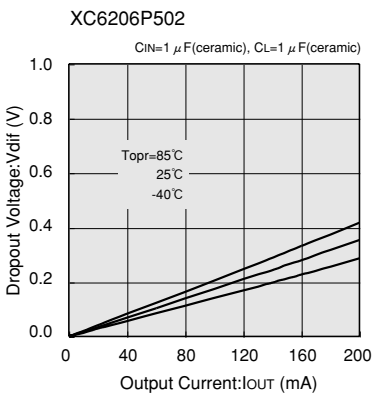

(5) SUPPLY CURRENT vs. INPUT VOLTAGE

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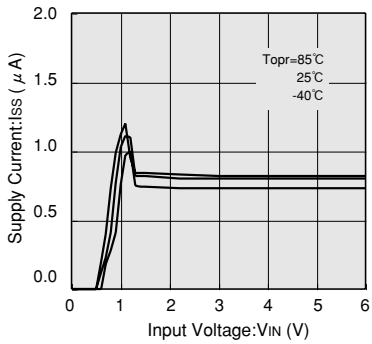

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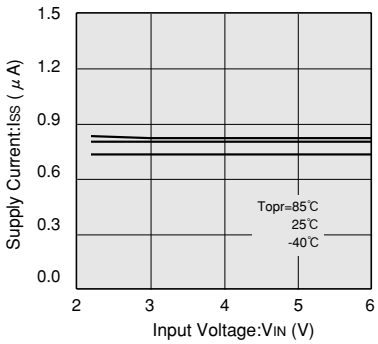

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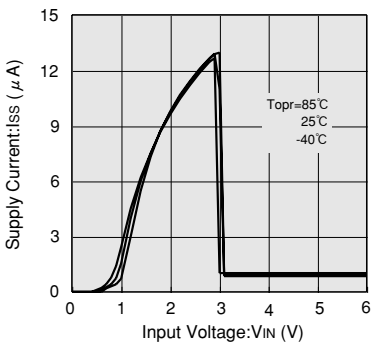

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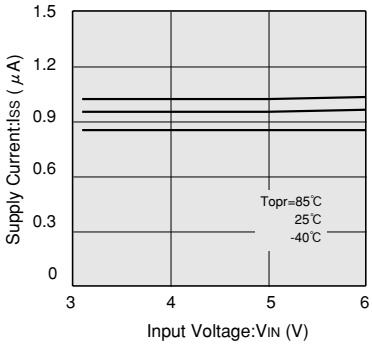

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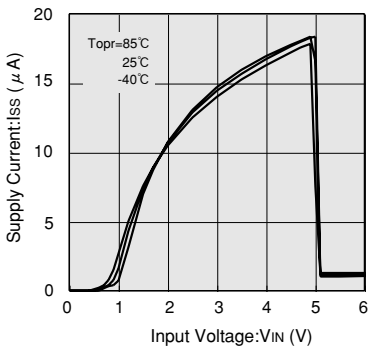

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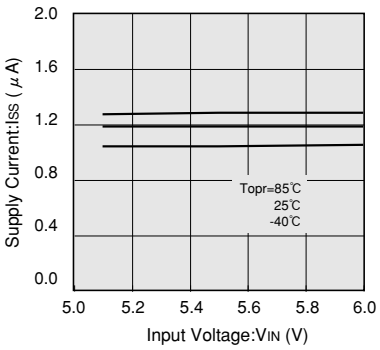

(6) OUTPUT VOLTAGE vs. AMBIENT TEMPERATURE

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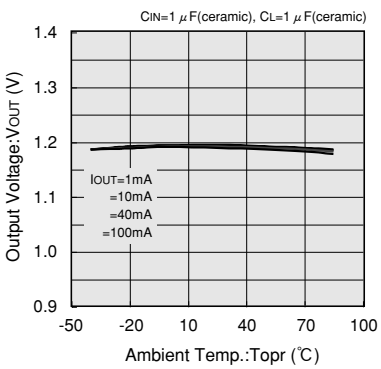

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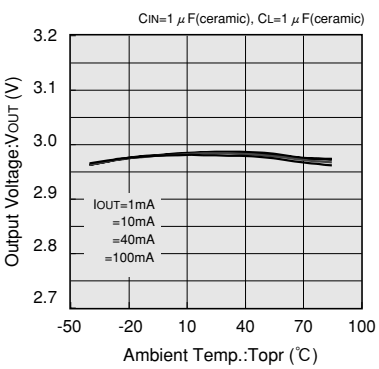

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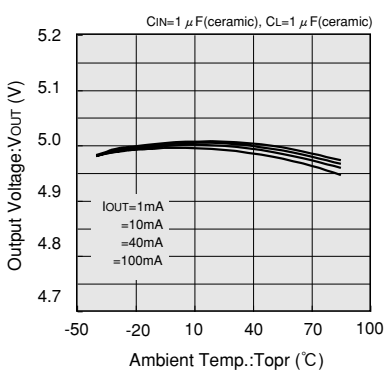

(7) OUTPUT VOLTAGE vs. AMBIENT TEMPERATURE

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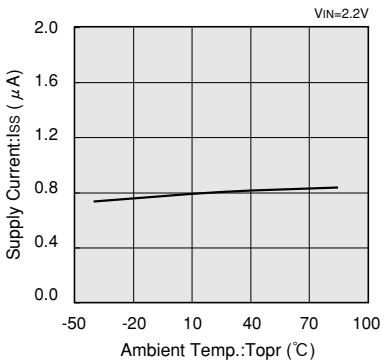

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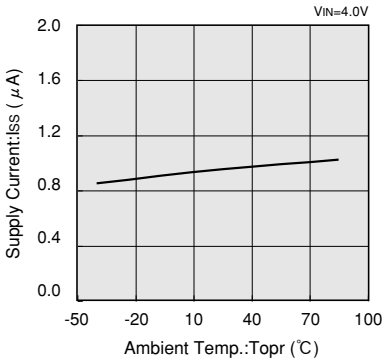

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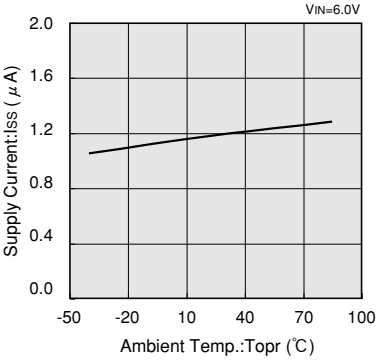

(8) INPUT TRANSIENT RESPONSE 1

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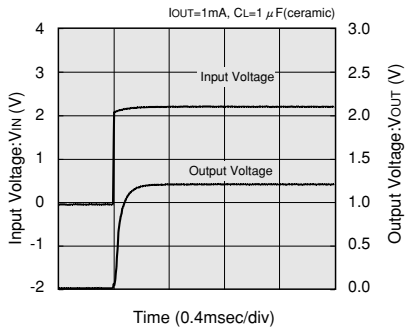

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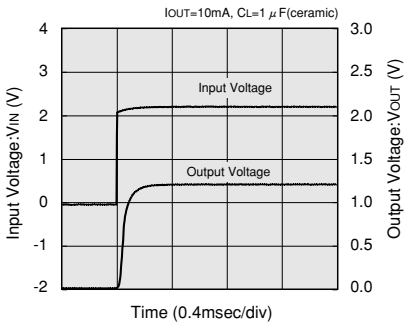

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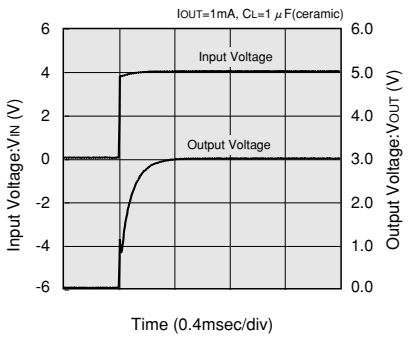

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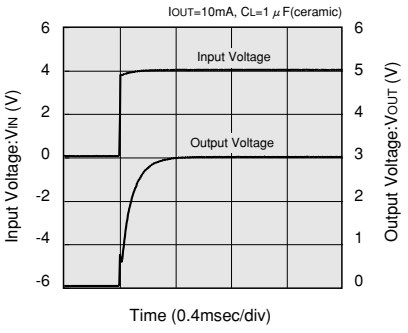

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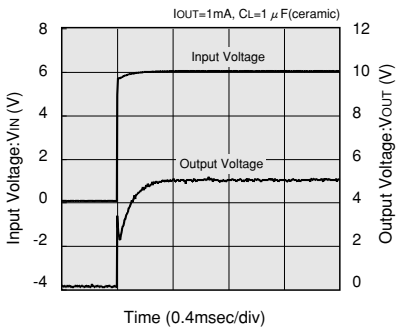

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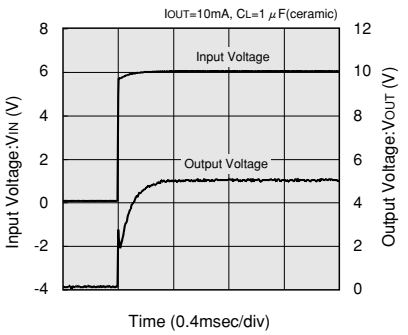

(9) INPUT TRANSIENT RESPONSE 2

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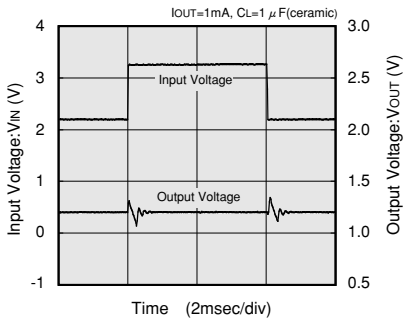

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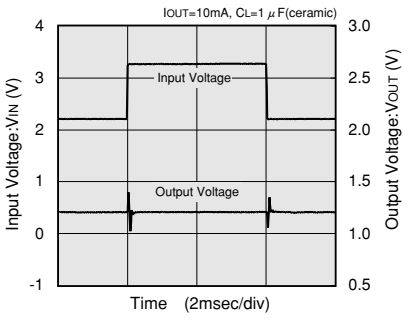

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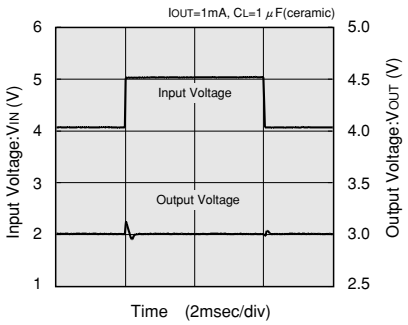

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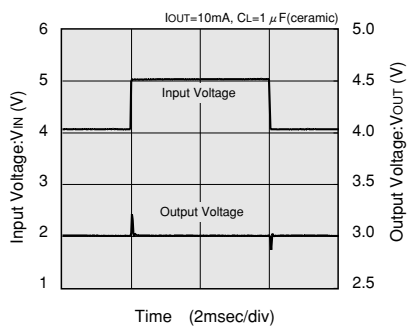

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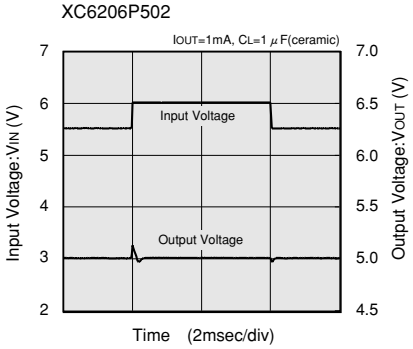

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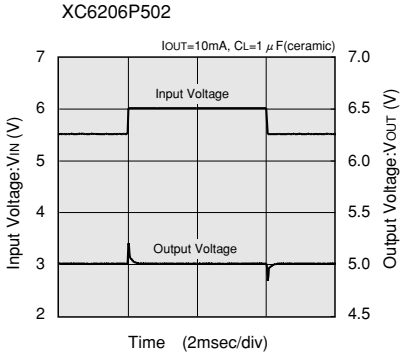

(10) LOAD TRANSIENT RESPONSE

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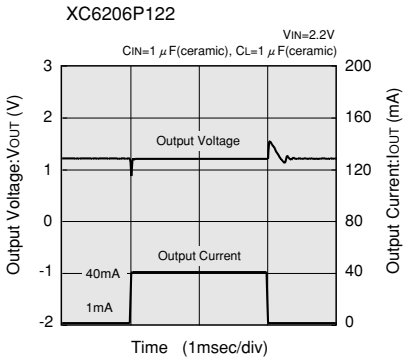

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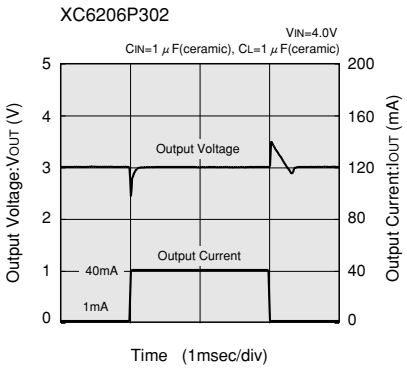

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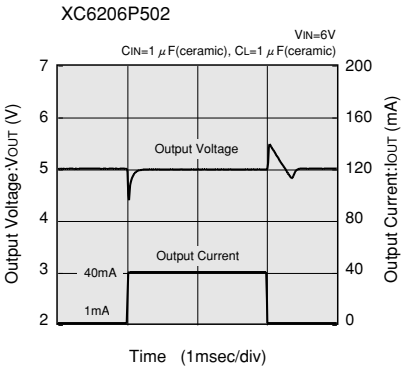
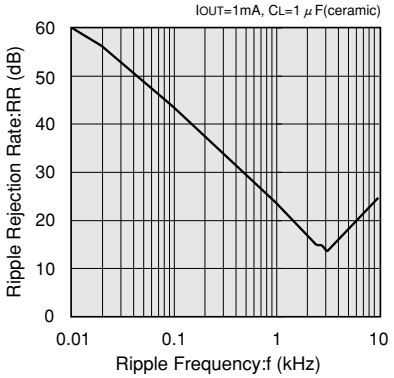


(11) RIPPLE REJECTION RATE

XC6206P122



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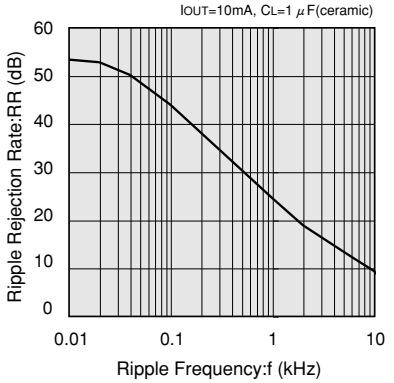

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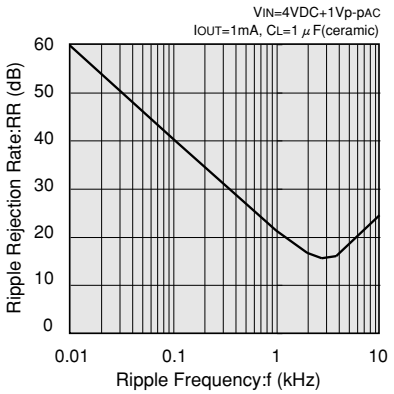

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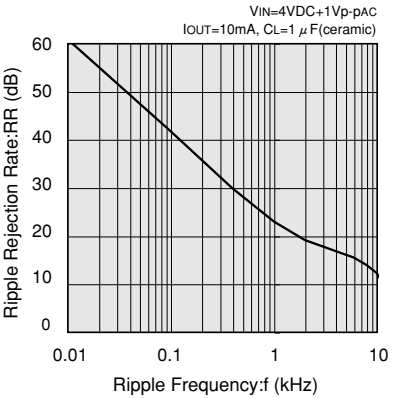

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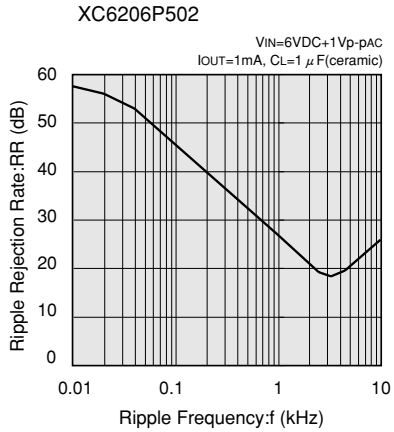

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