



# THE DATASHEET OF XC6202PB52FR

## High Voltage Positive Voltage Regulators

### ■ GENERAL DESCRIPTION

The XC6202 series are highly precise, low power consumption, high voltage input, positive voltage regulators manufactured using CMOS and laser trimming technologies. The XC6202 consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit.

Output voltage is selectable in 0.1V steps from 1.8V ~ 18V. The series are also compatible with low ESR ceramic capacitors which give added output stability.

Since the current limiter circuit is built-in, the IC is protected against overshoot currents at such times of output shorts etc.

SOT-23, SOT-89, SOT-223 and USP-6B packages are available.

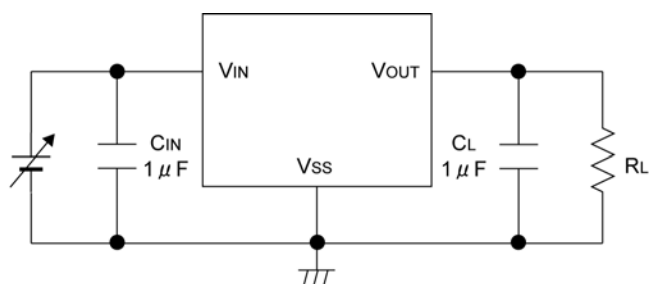
### ■ APPLICATIONS

- Multi-function power supplies
- Note PCs / Tablet PCs
- Digital still cameras / Camcorders
- Reference voltage sources

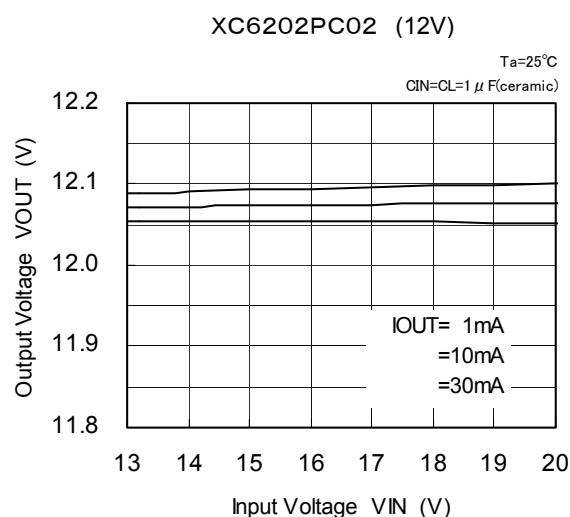
### ■ FEATURES

|                                         |                                         |
|-----------------------------------------|-----------------------------------------|
| <b>Maximum Output Current</b>           | : 150mA (within Pd)                     |
| <b>Maximum Operational Voltage</b>      | : 20V                                   |
| <b>Output Voltage Range</b>             | : 1.8V ~ 18V (0.1V increments)          |
| <b>Highly Accurate</b>                  | : $\pm 2\%$                             |
| <b>Low Power Consumption</b>            | : 10 $\mu$ A (TYP.)                     |
| <b>Line Regulation</b>                  | : 0.01% / V (TYP.)                      |
| <b>Dropout Voltage</b>                  | : 200mV @ 30mA<br>670mV@100mA           |
| <b>Operational Temperature Range</b>    | : -40°C ~ 85°C                          |
| <b>Low ESR Capacitor Compatible</b>     | : Ceramic capacitor                     |
| <b>Current Limiter Circuit Built-In</b> |                                         |
| <b>Packages</b>                         | : SOT-23<br>SOT-89<br>SOT-223<br>USP-6B |
| <b>Environmentally Friendly</b>         | : EU RoHS Compliant, Pb Free            |

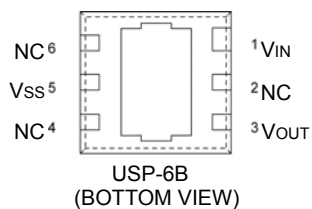
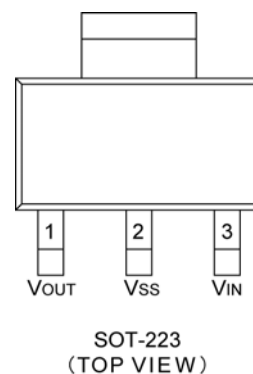
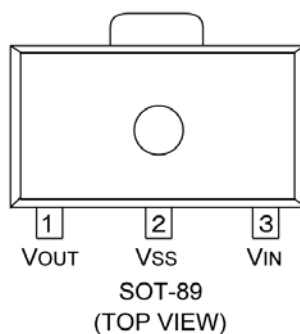
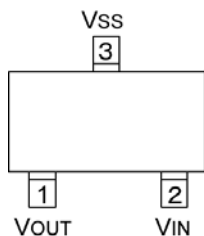
### ■ TYPICAL APPLICATION CIRCUIT



### ■ TYPICAL PERFORMANCE CHARACTERISTICS



## PIN CONFIGURATION



\*The dissipation pad for the USP-6B package should be solder-plated in recommended mount pattern and metal masking so as to enhance mounting strength and heat release. If the pad needs to be connected to other pins, it should be connected to the VSS (No.5) pin.

## PIN ASSIGNMENT

| PIN NUMBER |                   |         | PIN NAME | FUNCTIONS     |
|------------|-------------------|---------|----------|---------------|
| SOT-23     | SOT-89<br>SOT-223 | USP-6B  |          |               |
| 1          | 1                 | 3       | VOUT     | Output        |
| 3          | 2                 | 5       | VSS      | Ground        |
| 2          | 3                 | 1       | VIN      | Power Input   |
| —          | —                 | 2, 4, 6 | NC       | No connection |

## ■PRODUCT CLASSIFICATION

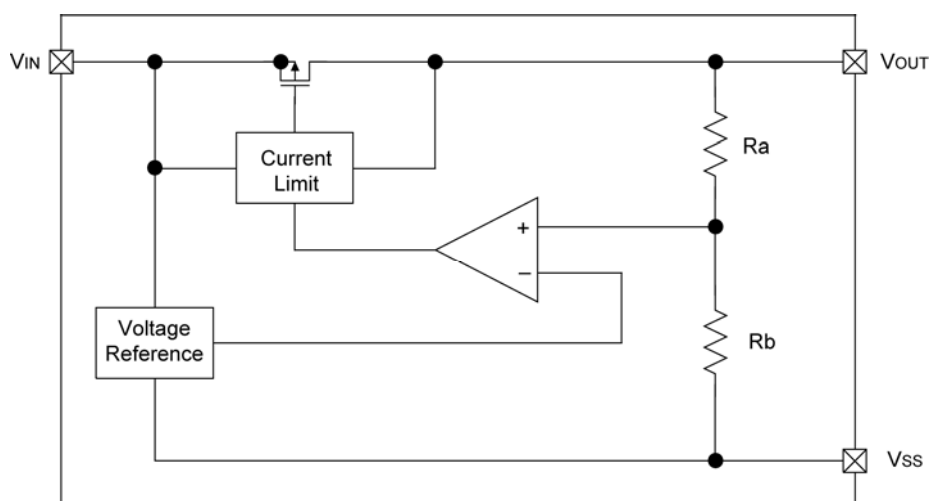
### ●Ordering Information

XC6202P①②③④⑤-⑥<sup>(\*)</sup>

| DESIGNATOR          | ITEM                     | SYMBOL  | DESCRIPTION                                                                                                                                                                                                              |
|---------------------|--------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①②                  | Output Voltage           | 18 ~ J0 | : For the voltage above 10V, see the example<br>10=A, 11=B 12=C, 13=D, 14=E, 15=F, 16=G, 17=H, 18=J<br>e.g. V <sub>OUT</sub> = 3.0V → ①:3, ②:0<br>V <sub>OUT</sub> = 12V → ①:C, ②:0<br>V <sub>OUT</sub> = 15V → ①:F, ②:0 |
| ③                   | Accuracy                 | 2       | : ±2%                                                                                                                                                                                                                    |
| ④⑤-⑥ <sup>(*)</sup> | Packages<br>(Order Unit) | MR      | : SOT-23 (3,000pcs/Reel)                                                                                                                                                                                                 |
|                     |                          | MR-G    | : SOT-23 (3,000pcs/Reel)                                                                                                                                                                                                 |
|                     |                          | PR      | : SOT-89 (1,000pcs/Reel)                                                                                                                                                                                                 |
|                     |                          | PR-G    | : SOT-89 (1,000pcs/Reel)                                                                                                                                                                                                 |
|                     |                          | FR      | : SOT-223 (1,000pcs/Reel)                                                                                                                                                                                                |
|                     |                          | FR-G    | : SOT-223 (1,000pcs/Reel)                                                                                                                                                                                                |
|                     |                          | DR      | : USP-6B (3,000pcs/Reel)                                                                                                                                                                                                 |
|                     |                          | DR-G    | : USP-6B (3,000pcs/Reel)                                                                                                                                                                                                 |

<sup>(\*)</sup> The "-G" suffix denotes Halogen and Antimony free as well as being fully EU RoHS compliant.

## ■ BLOCK DIAGRAM



## ■ ABSOLUTE MAXIMUM RATINGS

Ta = 25°C

| PARAMETER                     |         | SYMBOL           | RATINGS                                     | UNITS |
|-------------------------------|---------|------------------|---------------------------------------------|-------|
| Input Voltage                 |         | V <sub>IN</sub>  | 22.0                                        | V     |
| Output Current                |         | I <sub>OUT</sub> | 500                                         | mA    |
| Output Voltage                |         | V <sub>OUT</sub> | V <sub>SS</sub> -0.3 ~ V <sub>IN</sub> +0.3 | V     |
| Power<br>Dissipation          | SOT-23  | P <sub>d</sub>   | 250                                         | mW    |
|                               | SOT-89  |                  | 500                                         |       |
|                               | USP-6B  |                  | 120                                         |       |
|                               | SOT-223 |                  | 1,200 *                                     |       |
| Operating Ambient Temperature |         | T <sub>opr</sub> | -40~+85                                     | °C    |
| Storage Temperature           |         | T <sub>stg</sub> | -55~+125                                    | °C    |

## ■ ELECTRICAL CHARACTERISTICS

XC6202P182  $V_{OUT(T)}=1.8V$  (\*1)

$T_a=25^{\circ}C$

| PARAMETER                                  | SYMBOL                                                        | CONDITIONS                                                 | MIN.  | TYP.      | MAX.  | UNITS            | CIRCUIT |
|--------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------|-------|-----------|-------|------------------|---------|
| Output Voltage                             | $V_{OUT(E)}$ (*2)                                             | $V_{IN}=2.8V$<br>$I_{OUT}=30mA$                            | 1.764 | 1.800     | 1.836 | V                | ②       |
| Maximum Output Current                     | $I_{OUTmax}$                                                  | $V_{IN}=2.8V$<br>$V_{OUT} \geq V_{OUT(E)} \times 0.9$      | 60    | -         | -     | mA               | ②       |
| Load Regulation                            | $\Delta V_{OUT}$                                              | $V_{IN}=2.8V$<br>$1mA \leq I_{OUT} \leq 60mA$              | -     | 10        | 80    | mV               | ②       |
| Dropout Voltage(*3)                        | $V_{dif1}$                                                    | $I_{OUT}=30mA$                                             | -     | 340       | 470   | mV               | ②       |
|                                            | $V_{dif2}$                                                    | $I_{OUT}=100mA$                                            | -     | 1000      | 1500  |                  |         |
| Supply Current                             | $I_{SS}$                                                      | $V_{IN}=2.8V$                                              | -     | 10        | 24    | $\mu A$          | ①       |
| Line Regulation                            | $\frac{\Delta V_{OUT}}{(\Delta V_{IN} \cdot \Delta V_{OUT})}$ | $I_{OUT}=1mA$<br>$2.8V \leq V_{IN} \leq 20V$               | -     | 0.01      | 0.20  | %/V              | ②       |
| Input Voltage                              | $V_{IN}$                                                      |                                                            | -     | -         | 20    | V                | -       |
| Output Voltage Temperature Characteristics | $\frac{\Delta V_{OUT}}{(\Delta T_a \cdot \Delta V_{OUT})}$    | $I_{OUT}=30mA$<br>$-40^{\circ}C \leq T_a \leq 85^{\circ}C$ | -     | $\pm 100$ | -     | ppm/ $^{\circ}C$ | ②       |
| Short-circuit Current                      | $I_{short}$                                                   | $V_{IN}=3.8V$                                              | -     | 40        | -     | mA               | ②       |

XC6202P332  $V_{OUT(T)}=3.3V$  (\*1)

$T_a=25^{\circ}C$

| PARAMETER                                  | SYMBOL                                                        | CONDITIONS                                                 | MIN.  | TYP.      | MAX.  | UNITS            | CIRCUIT |
|--------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------|-------|-----------|-------|------------------|---------|
| Output Voltage                             | $V_{OUT(E)}$ (*2)                                             | $V_{IN}=4.3V$<br>$I_{OUT}=30mA$                            | 3.234 | 3.300     | 3.366 | V                | ②       |
| Maximum Output Current                     | $I_{OUTmax}$                                                  | $V_{IN}=4.3V$<br>$V_{OUT} \geq V_{OUT(E)} \times 0.9$      | 150   | -         | -     | mA               | ②       |
| Load Regulation                            | $\Delta V_{OUT}$                                              | $V_{IN}=4.3V$<br>$1mA \leq I_{OUT} \leq 100mA$             | -     | 25        | 90    | mV               | ②       |
| Dropout Voltage(*3)                        | $V_{dif1}$                                                    | $I_{OUT}=30mA$                                             | -     | 200       | 280   | mV               | ②       |
|                                            | $V_{dif2}$                                                    | $I_{OUT}=100mA$                                            | -     | 670       | 900   |                  |         |
| Supply Current                             | $I_{SS}$                                                      | $V_{IN}=4.3V$                                              | -     | 10        | 24    | $\mu A$          | ①       |
| Line Regulation                            | $\frac{\Delta V_{OUT}}{(\Delta V_{IN} \cdot \Delta V_{OUT})}$ | $I_{OUT}=1mA$<br>$4.3V \leq V_{IN} \leq 20V$               | -     | 0.01      | 0.20  | %/V              | ②       |
| Input Voltage                              | $V_{IN}$                                                      |                                                            | -     | -         | 20    | V                | -       |
| Output Voltage Temperature Characteristics | $\frac{\Delta V_{OUT}}{(\Delta T_a \cdot \Delta V_{OUT})}$    | $I_{OUT}=30mA$<br>$-40^{\circ}C \leq T_a \leq 85^{\circ}C$ | -     | $\pm 100$ | -     | ppm/ $^{\circ}C$ | ②       |
| Short-circuit Current                      | $I_{short}$                                                   | $V_{IN}=5.3V$                                              | -     | 40        | -     | mA               | ②       |

## ELECTRICAL CHARACTERISTICS (Continued)

XC6202P502

$V_{OUT(T)}=5.0V$  (\*1)

$T_a=25^{\circ}C$

| PARAMETER                                     | SYMBOL                                                        | CONDITIONS                                                 | MIN.  | TYP.      | MAX. | UNITS            | CIRCUIT |
|-----------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------|-------|-----------|------|------------------|---------|
| Output Voltage                                | $V_{OUT(E)}$ (*2)                                             | $V_{IN}=6V$<br>$I_{OUT}=30mA$                              | 4.900 | 5.000     | 5100 | V                | ②       |
| Maximum Output Current                        | $I_{OUTmax}$                                                  | $V_{IN}=6V$<br>$V_{OUT} \geq V_{OUT(E)} \times 0.9$        | 200   | -         | -    | mA               | ②       |
| Load Regulation                               | $\Delta V_{OUT}$                                              | $V_{IN}=6V$<br>$1mA \leq I_{OUT} \leq 100mA$               | -     | 30        | 100  | mV               | ②       |
| Dropout Voltage(*3)                           | $V_{dif1}$                                                    | $I_{OUT}=30mA$                                             | -     | 130       | 190  | mV               | ②       |
|                                               | $V_{dif2}$                                                    | $I_{OUT}=100mA$                                            | -     | 440       | 550  |                  |         |
| Supply Current                                | $I_{SS}$                                                      | $V_{IN}=6V$                                                | -     | 10        | 24   | $\mu A$          | ①       |
| Line Regulation                               | $\Delta V_{OUT}/$<br>( $\Delta V_{IN} \cdot \Delta V_{OUT}$ ) | $I_{OUT}=1mA$<br>$6V \leq V_{IN} \leq 20V$                 | -     | 0.01      | 0.20 | %/V              | ②       |
| Input Voltage                                 | $V_{IN}$                                                      |                                                            | -     | -         | 20   | V                | -       |
| Output Voltage<br>Temperature Characteristics | $\Delta V_{OUT}/$<br>( $\Delta T_a \cdot \Delta V_{OUT}$ )    | $I_{OUT}=30mA$<br>$-40^{\circ}C \leq T_a \leq 85^{\circ}C$ | -     | $\pm 100$ | -    | ppm/ $^{\circ}C$ | ②       |
| Short-circuit Current                         | $I_{short}$                                                   | $V_{IN}=7V$                                                | -     | 40        | -    | mA               | ②       |

XC6202PC02

$V_{OUT(T)}=12V$  (\*1)

$T_a=25^{\circ}C$

| PARAMETER                                     | SYMBOL                                                        | CONDITIONS                                                 | MIN.   | TYP.      | MAX.   | UNITS            | CIRCUIT |
|-----------------------------------------------|---------------------------------------------------------------|------------------------------------------------------------|--------|-----------|--------|------------------|---------|
| Output Voltage                                | $V_{OUT(E)}$ (*2)                                             | $V_{IN}=13V$<br>$I_{OUT}=30mA$                             | 11.760 | 12.000    | 12.240 | V                | ②       |
| Maximum Output Current                        | $I_{OUTmax}$                                                  | $V_{IN}=13V$<br>$V_{OUT} \geq V_{OUT(E)} \times 0.9$       | 200    | -         | -      | mA               | ②       |
| Load Regulation                               | $\Delta V_{OUT}$                                              | $V_{IN}=13V$<br>$1mA \leq I_{OUT} \leq 100mA$              | -      | 60        | 230    | mV               | ②       |
| Dropout Voltage(*3)                           | $V_{dif1}$                                                    | $I_{OUT}=30mA$                                             | -      | 90        | 150    | mV               | ②       |
|                                               | $V_{dif2}$                                                    | $I_{OUT}=100mA$                                            | -      | 290       | 380    |                  |         |
| Supply Current                                | $I_{SS}$                                                      | $V_{IN}=13V$                                               | -      | 12        | 28     | $\mu A$          | ①       |
| Line Regulation                               | $\Delta V_{OUT}/$<br>( $\Delta V_{IN} \cdot \Delta V_{OUT}$ ) | $I_{OUT}=1mA$<br>$13V \leq V_{IN} \leq 20V$                | -      | 0.01      | 0.20   | %/V              | ②       |
| Input Voltage                                 | $V_{IN}$                                                      |                                                            | -      | -         | 20     | V                | -       |
| Output Voltage<br>Temperature Characteristics | $\Delta V_{OUT}/$<br>( $\Delta T_a \cdot \Delta V_{OUT}$ )    | $I_{OUT}=30mA$<br>$-40^{\circ}C \leq T_a \leq 85^{\circ}C$ | -      | $\pm 100$ | -      | ppm/ $^{\circ}C$ | ②       |
| Short-circuit Current                         | $I_{short}$                                                   | $V_{IN}=14V$                                               | -      | 40        | -      | mA               | ②       |

## ■ ELECTRICAL CHARACTERISTICS (Continued)

XC6202PJ02

$V_{OUT(T)}=18V$  (\*1)

$T_a=25^{\circ}C$

| PARAMETER                                     | SYMBOL                                                      | CONDITIONS                                                 | MIN.   | TYP.      | MAX.   | UNITS            | CIRCUIT |
|-----------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------|--------|-----------|--------|------------------|---------|
| Output Voltage                                | $V_{OUT(E)}$ (*2)                                           | $V_{IN}=19V$<br>$I_{OUT}=30mA$                             | 17.640 | 18.000    | 18.360 | V                | ②       |
| Maximum Output Current                        | $I_{OUTmax}$                                                | $V_{IN}=19V$<br>$V_{OUT} \geq V_{OUT(E)} \times 0.9$       | 200    | -         | -      | mA               | ②       |
| Load Regulation                               | $\Delta V_{OUT}$                                            | $V_{IN}=19V$<br>$1mA \leq I_{OUT} \leq 100mA$              | -      | 120       | 380    | mV               | ②       |
| Dropout Voltage(*3)                           | $V_{dif1}$                                                  | $I_{OUT}=30mA$                                             | -      | 80        | 150    | mV               | ②       |
|                                               | $V_{dif2}$                                                  | $I_{OUT}=100mA$                                            | -      | 280       | 380    |                  |         |
| Supply Current                                | $I_{SS}$                                                    | $V_{IN}=19V$                                               | -      | 15        | 30     | $\mu A$          | ①       |
| Line Regulation                               | $\Delta V_{OUT}/$<br>$(\Delta V_{IN} \cdot \Delta V_{OUT})$ | $I_{OUT}=1mA$<br>$19V \leq V_{IN} \leq 20V$                | -      | 0.01      | 0.20   | %/V              | ②       |
| Input Voltage                                 | $V_{IN}$                                                    |                                                            | -      | -         | 20     | V                | -       |
| Output Voltage<br>Temperature Characteristics | $\Delta V_{OUT}/$<br>$(\Delta T_a \cdot \Delta V_{OUT})$    | $I_{OUT}=30mA$<br>$-40^{\circ}C \leq T_a \leq 85^{\circ}C$ | -      | $\pm 100$ | -      | ppm/ $^{\circ}C$ | ②       |
| Short-circuit Current                         | $I_{short}$                                                 | $V_{IN}=20V$                                               | -      | 40        | -      | mA               | ②       |

\*1.  $V_{OUT(T)}$  = Specified output voltage.

\*2.  $V_{OUT(E)}$  = Effective output voltage (i.e. the output voltage when " $V_{OUT(T)}+1.0V$ " is provided at the  $V_{IN}$  pin while maintaining certain  $I_{OUT}$  value).

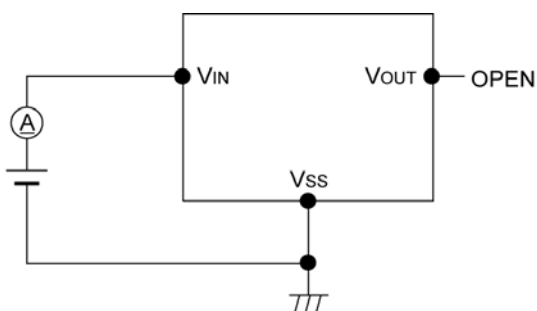
\*3.  $V_{dif} = \{V_{IN1}^{(*5)} - V_{OUT1}^{(*4)}\}$

\*4.  $V_{OUT1}$  = A voltage equal to 98% of the output voltage when " $V_{OUT(T)} + 1.0V$ " is input.

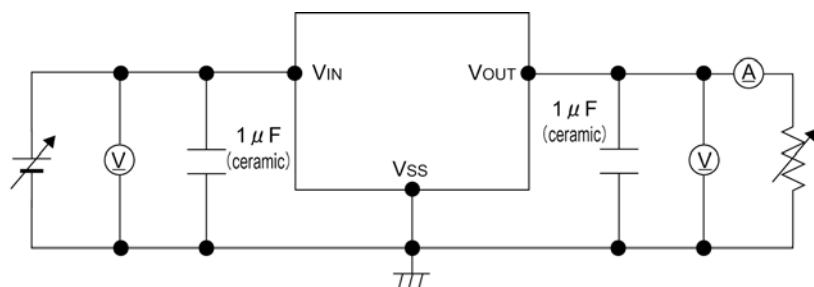
\*5.  $V_{IN1}$  = The input voltage when  $V_{OUT1}$  is output following a gradual decrease in the input voltage.

## ■ TEST CIRCUITS

CIRCUIT ①



CIRCUIT ②

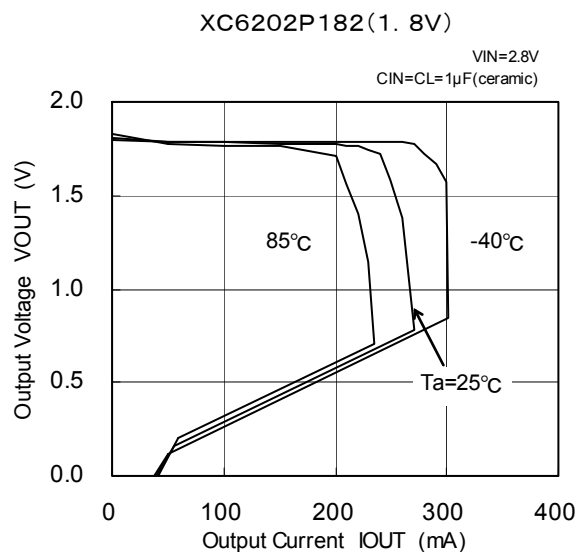
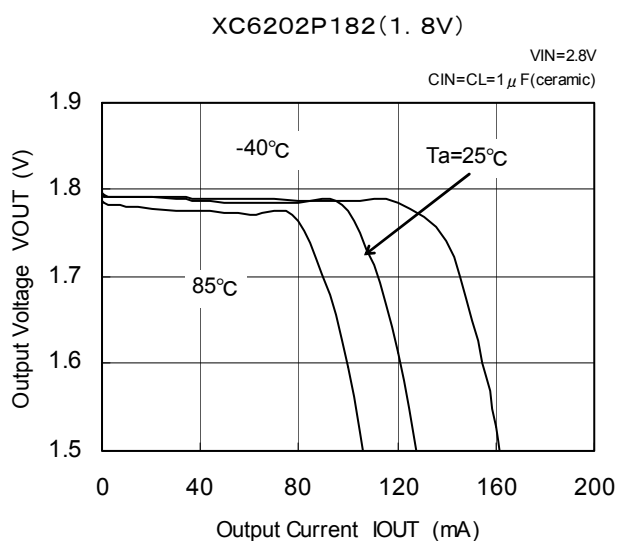




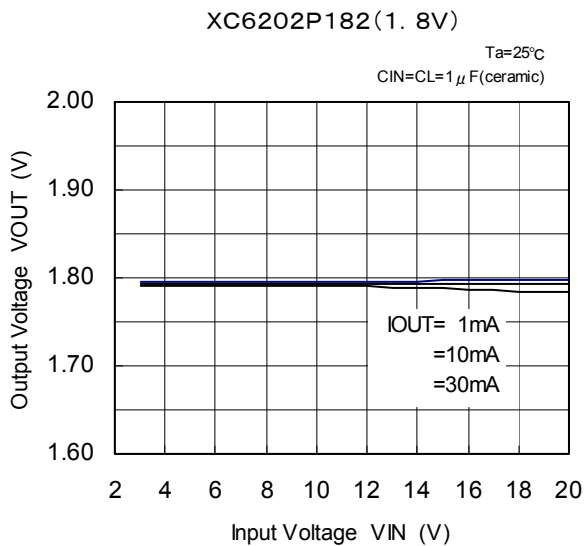
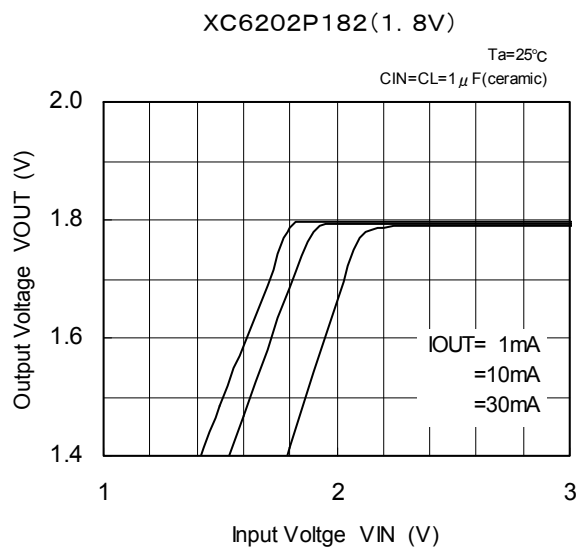
## TYPICAL PERFORMANCE CHARACTERISTICS

### ●XC6202P182

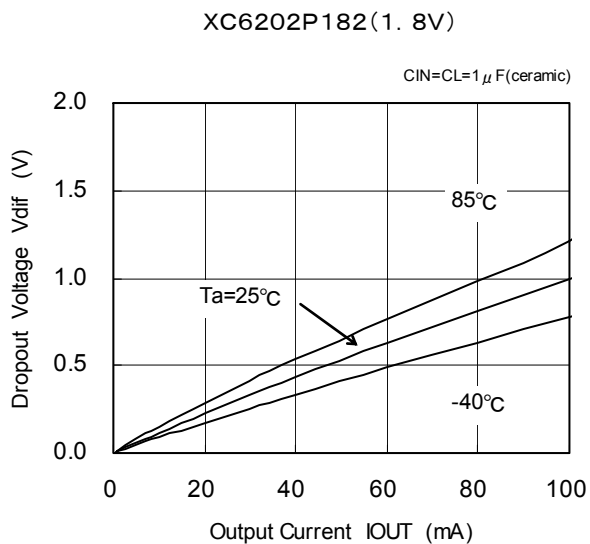
#### (1) Output Voltage vs. Output Current



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



#### (3) Dropout Voltage vs. Output Current

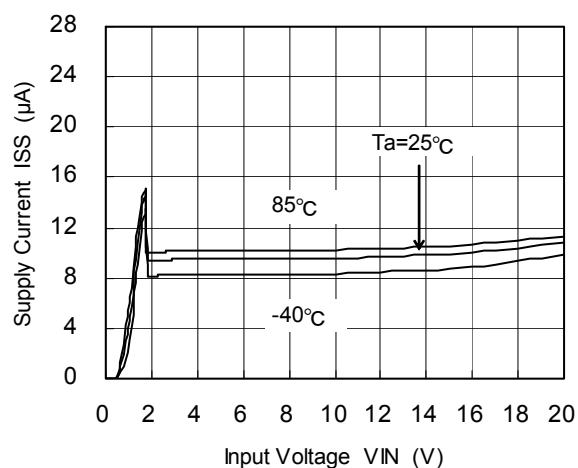


## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

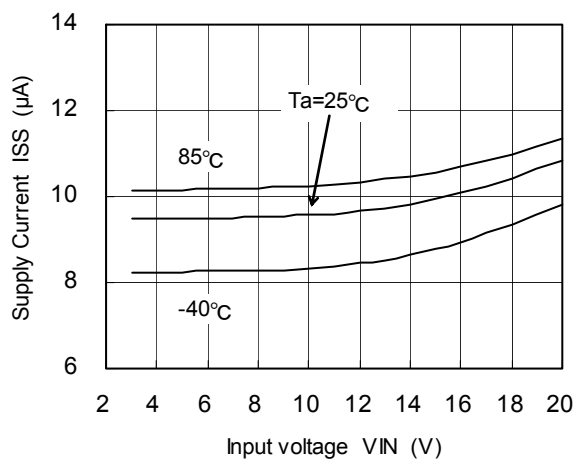
### ● XC6202P182 (Continued)

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

XC6202P182 (1.8V)

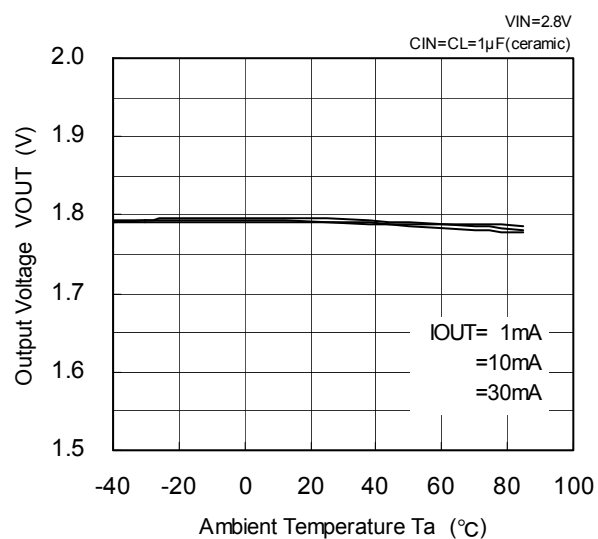


XC6202P182 (1.8V)



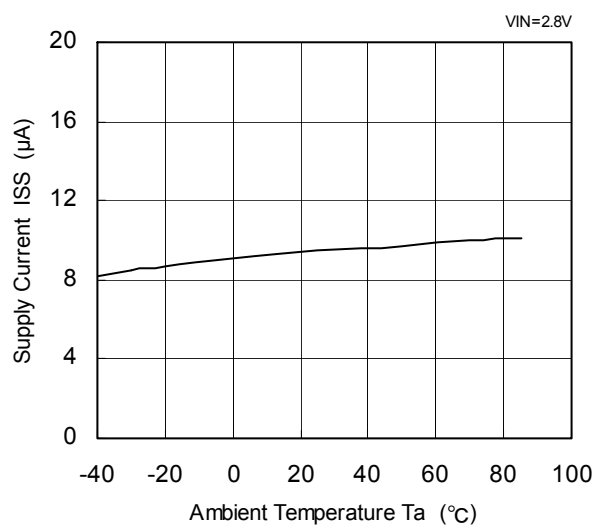
#### (5) Output Voltage vs. Ambient Temperature

XC6202P182 (1.8V)



#### (6) Supply Current vs. Ambient Temperature

XC6202P182 (1.8V)

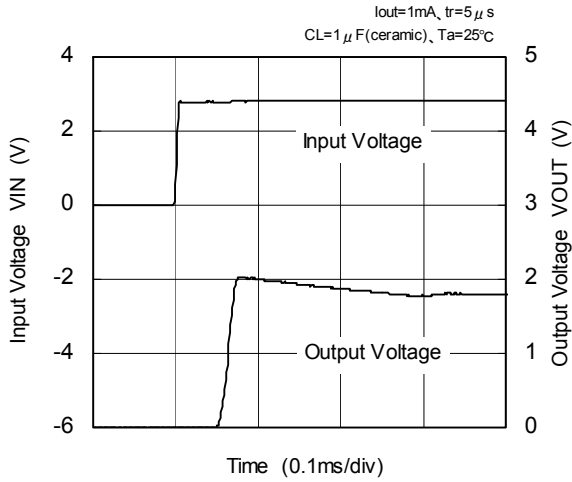


## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

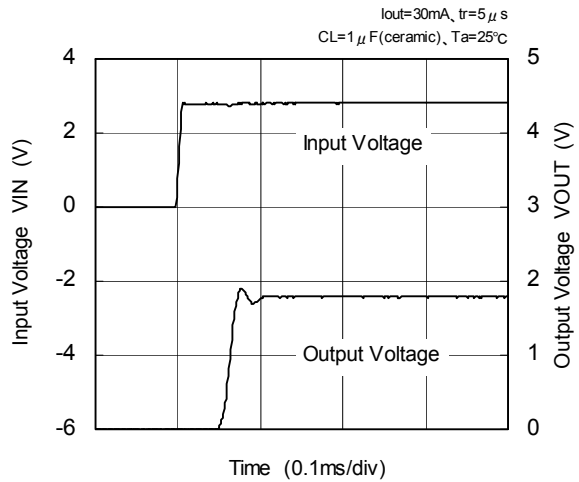
### XC6202P182 (Continued)

#### (7) Input Transient Response 1

XC6202P182(1.8V)

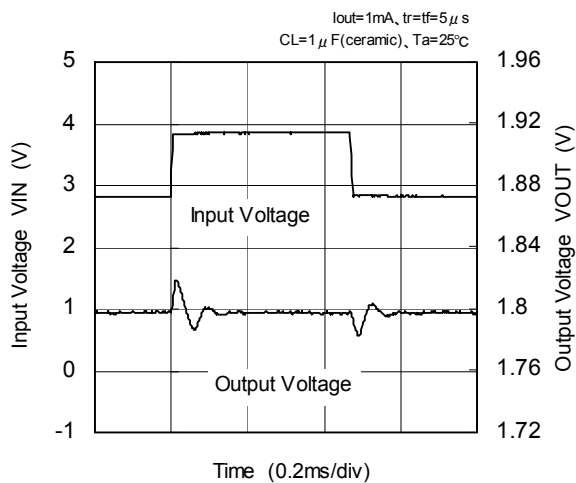


XC6202P182(1.8V)

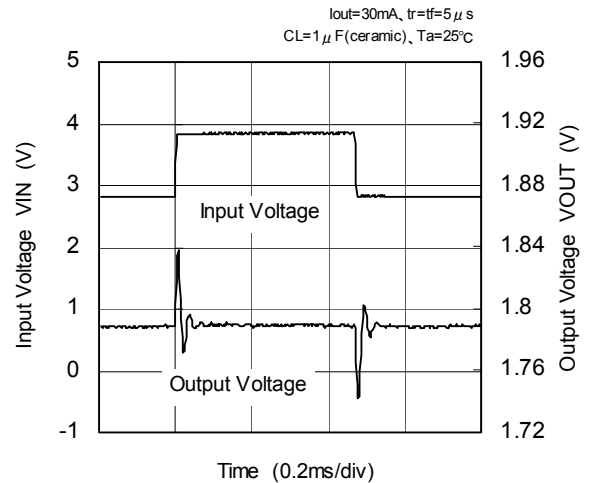


#### (8) Input Transient Response 2

XC6202P182(1.8V)

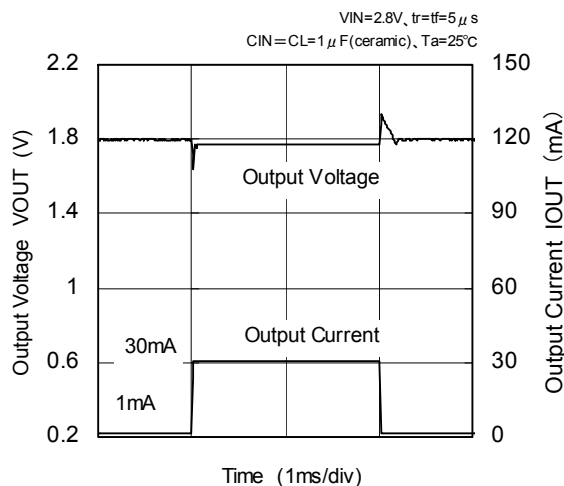


XC6202P182(1.8V)



#### (9) Load Transient Response

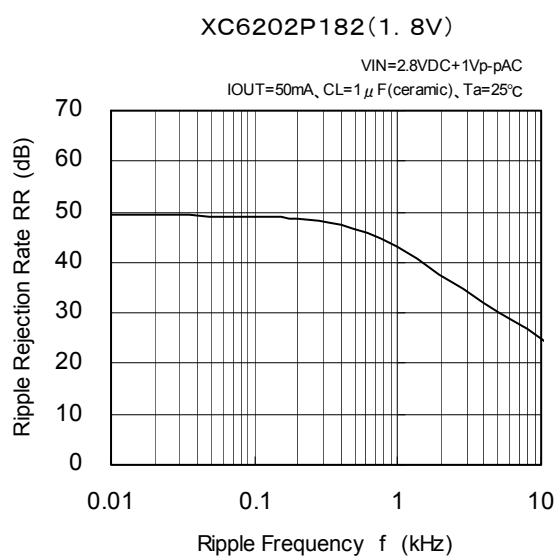
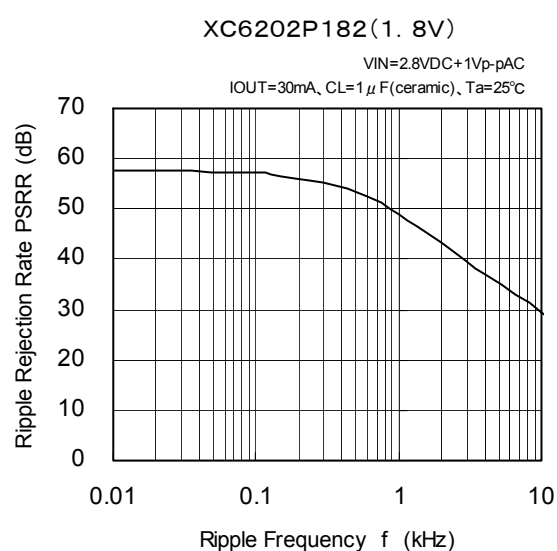
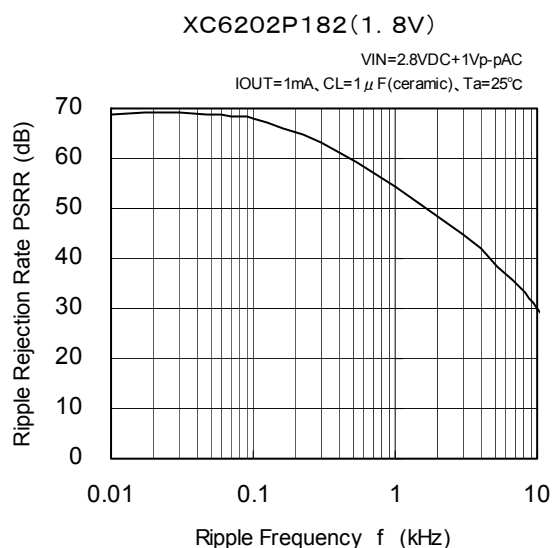
XC6202P182(1.8V)



## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ● XC6202P182 (Continued)

#### (10) Ripple Rejection Rate

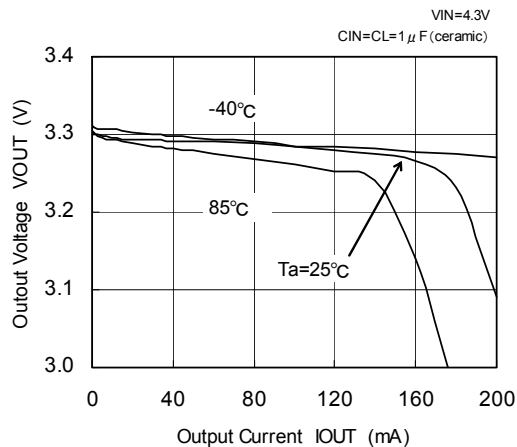


## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

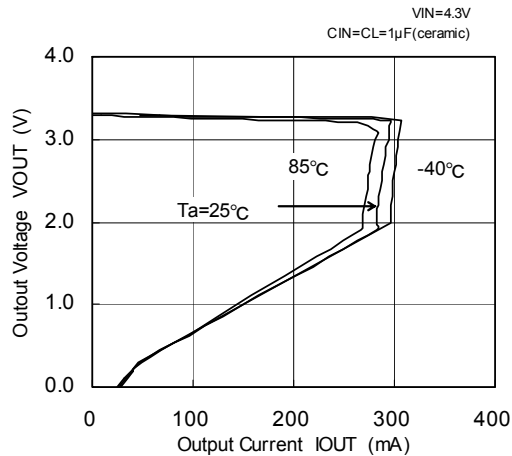
### ●XC6202P332

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

XC6202P332 (3.3V)

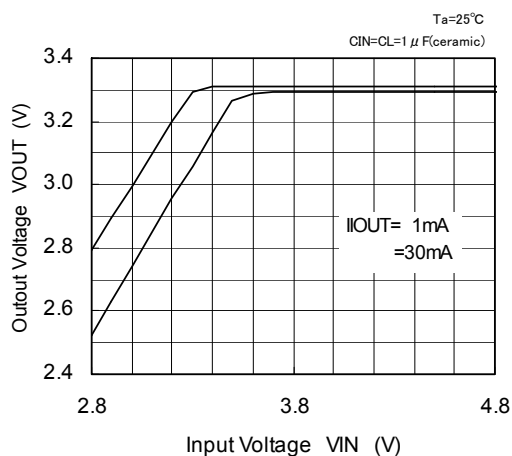


XC6202P332 (3.3V)

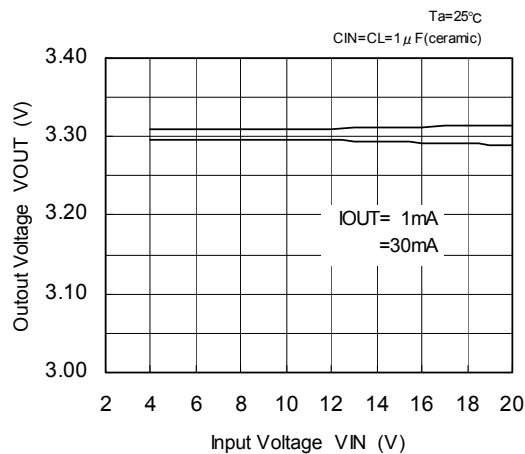


#### (2) Output Voltage vs. Input Voltage

XC6202P332 (3.3V)

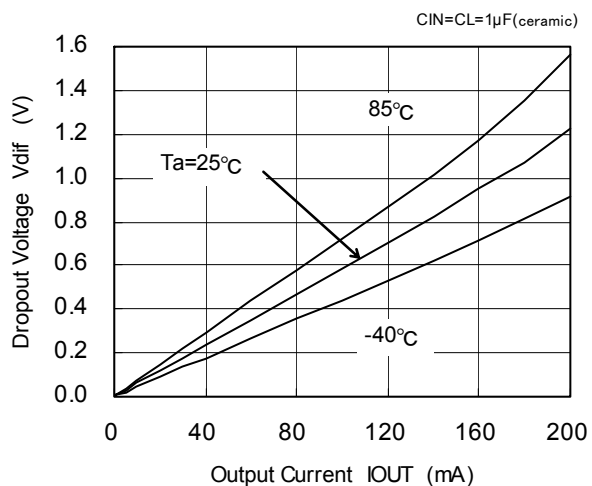


XC6202P332 (3.3V)



#### (3) Dropout Voltage vs. Output Current

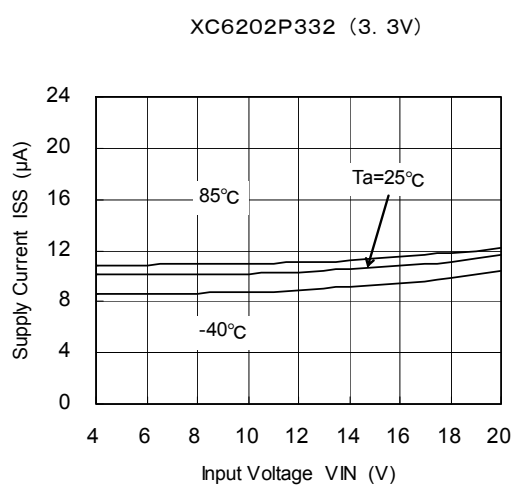
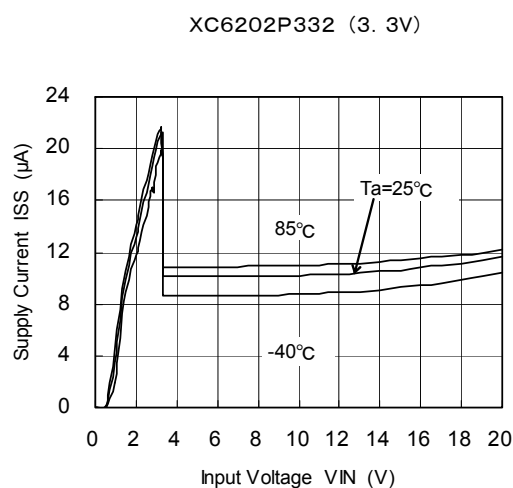
XC6202P332 (3.3V)



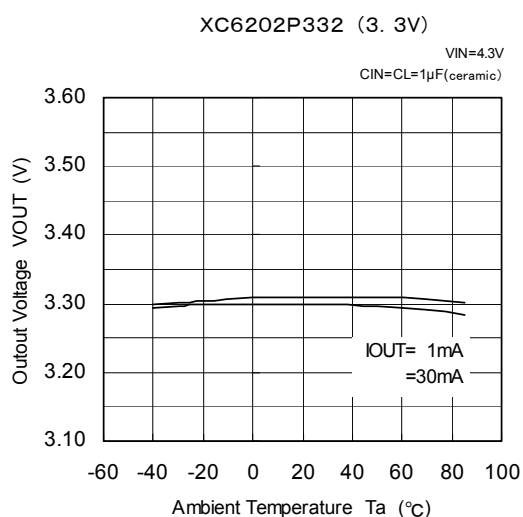
## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ● XC6202P332 (Continued)

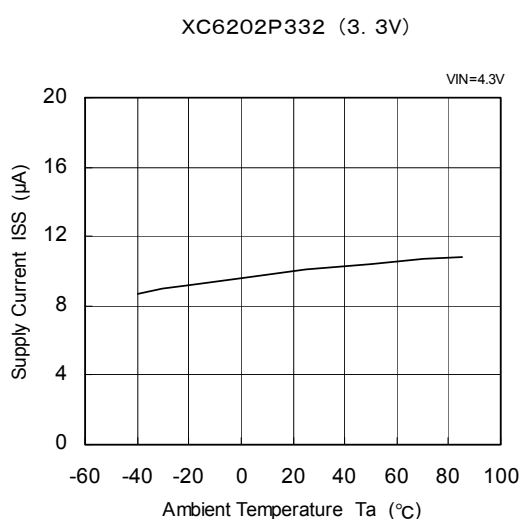
#### (4) Supply Current vs. Input Voltage



#### (5) Output Voltage vs. Ambient Temperature



#### (6) Supply Current vs. Ambient Temperature

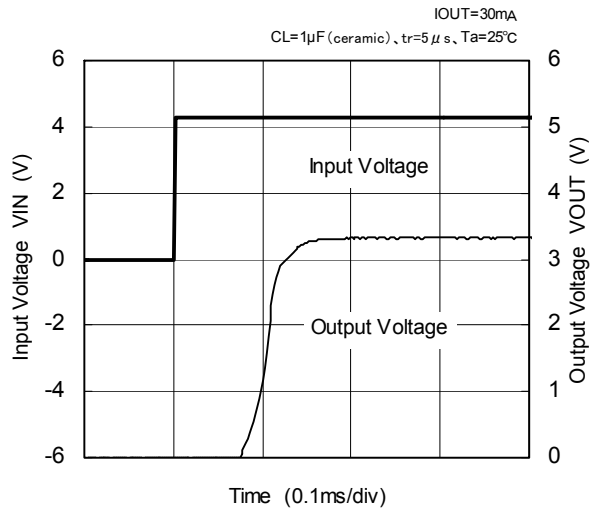


## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ●XC6202P332 (Continued)

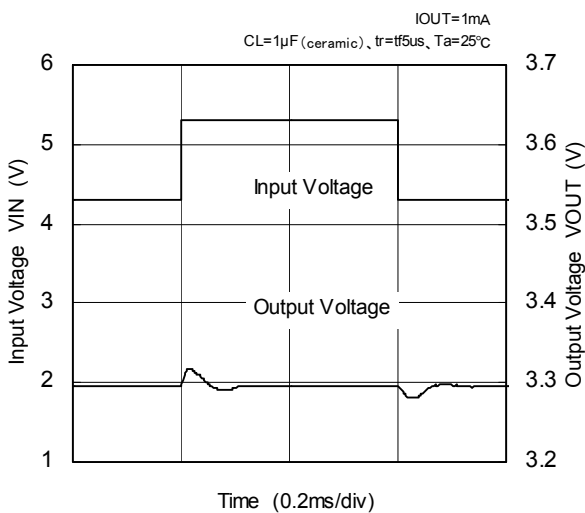
#### (7) Input Transient Response 1

XC6202P332 (3.3V)

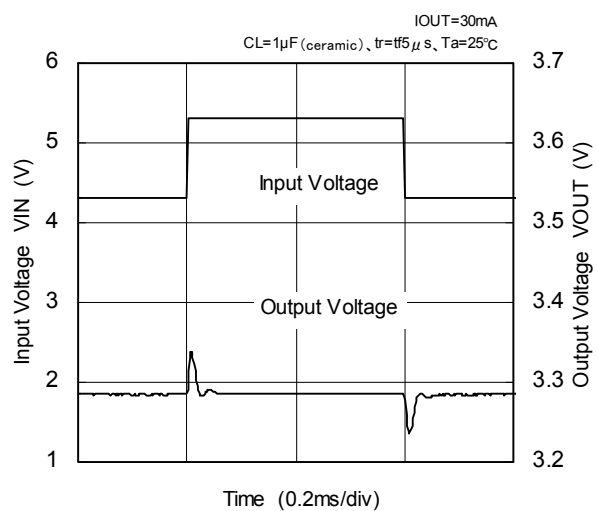


#### (8) Input Transient Response 2

XC6202P332 (3.3V)

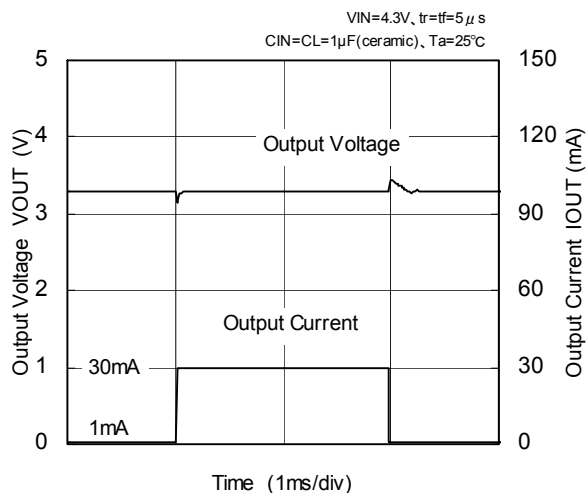


XC6202P332 (3.3V)



#### (9) Load Transient Response

XC6202P332 (3.3V)

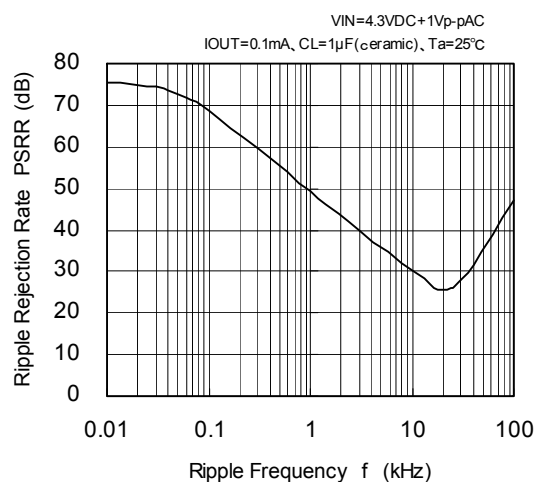


## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

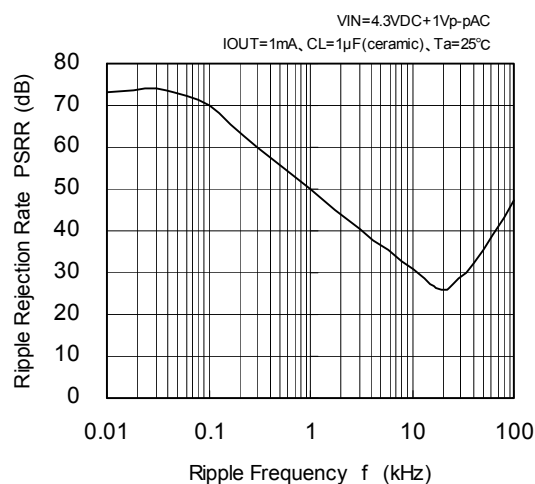
### ● XC6202P332 (Continued)

#### (10) Ripple Rejection Rate

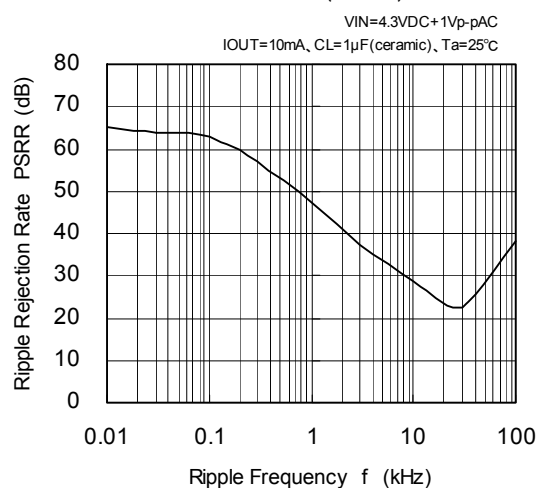
XC6202P332 (3.3V)



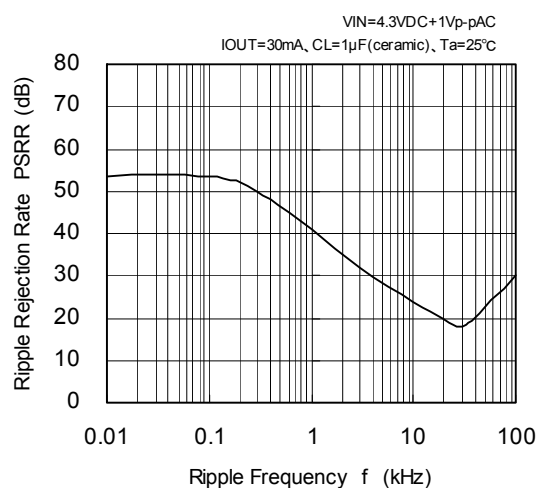
XC6202P332 (3.3V)



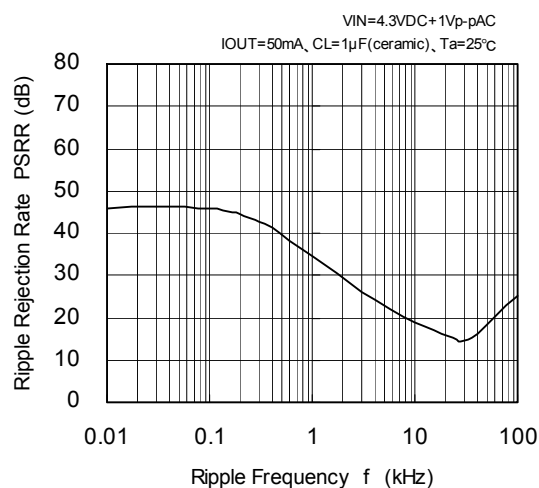
XC6202P332 (3.3V)



XC6202P332 (3.3V)



XC6202P332 (3.3V)

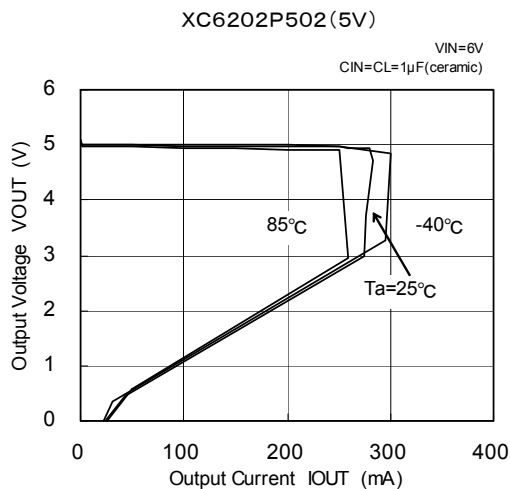
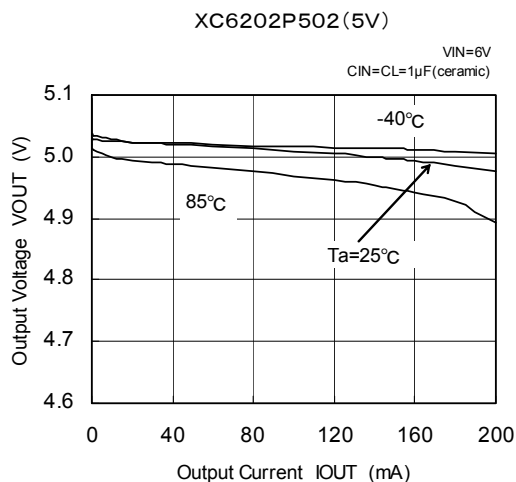




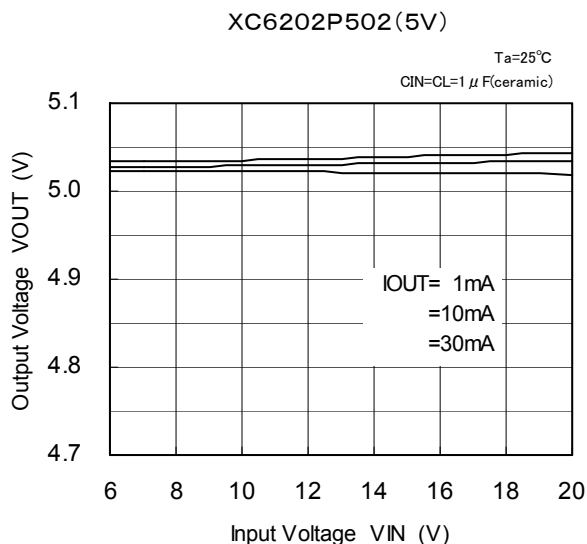
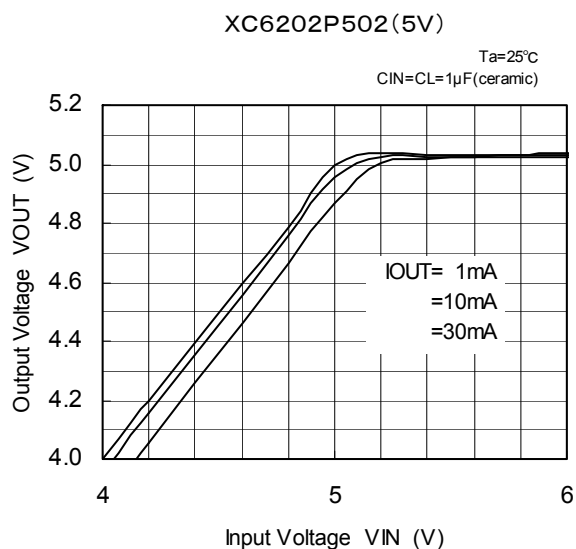
## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ●XC6202P502

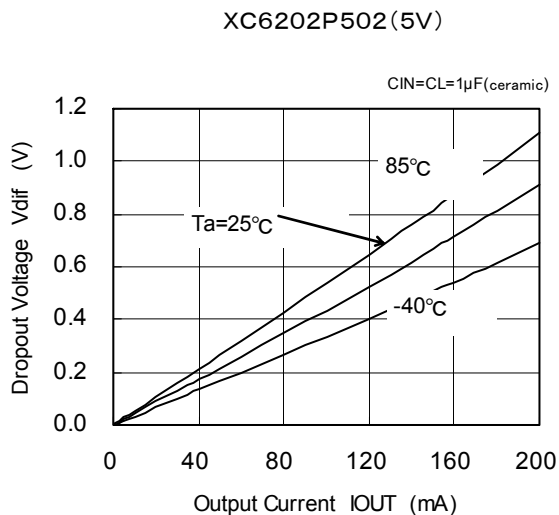
#### (1) Output Voltage vs. Output Current



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



#### (3) Dropout Voltage vs. Output Current

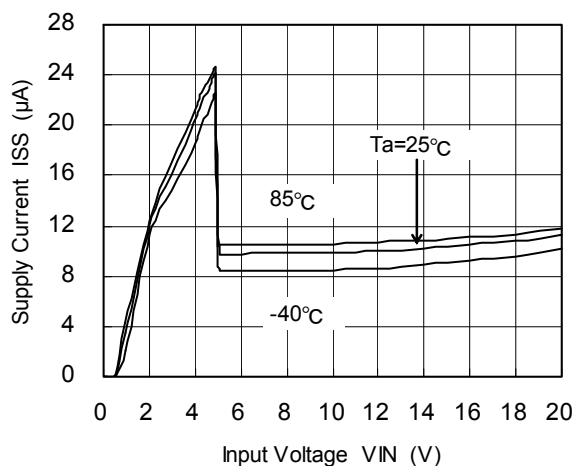


## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

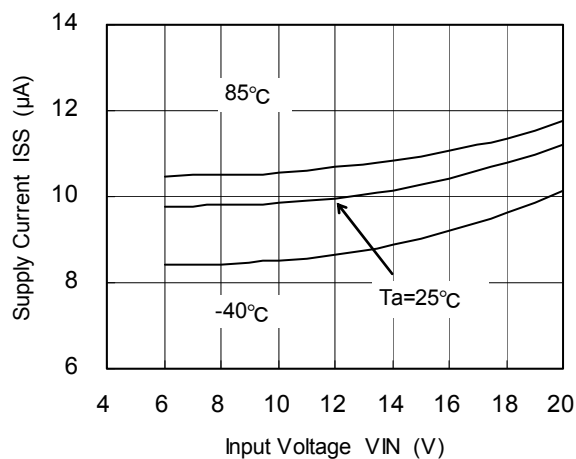
### ● XC6202P502 (Continued)

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

XC6202P502 (5V)



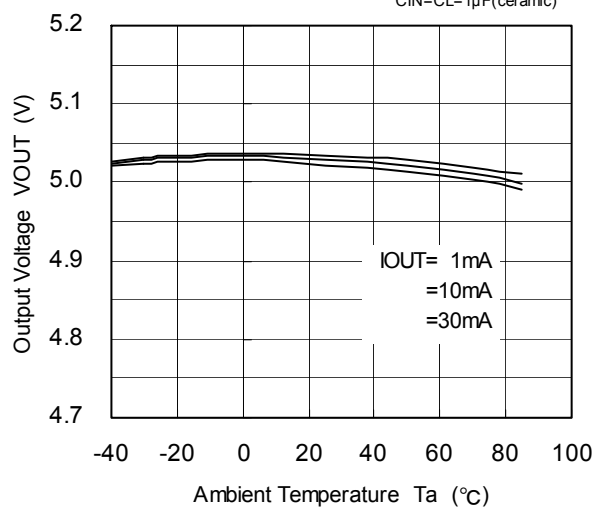
XC6202P502 (5V)



#### (5) Output Voltage vs. Ambient Temperature

XC6202P502 (5V)

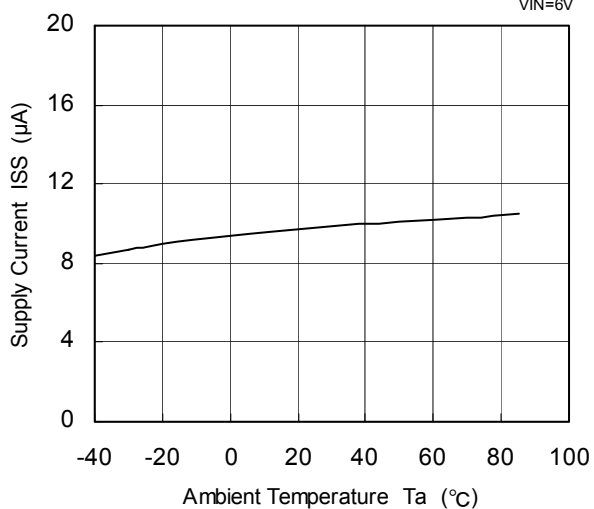
VIN=6V  
CIN=CL=1 $\mu\text{F}$ (ceramic)



#### (6) Supply Current vs. Ambient Temperature

XC6202P502 (5V)

VIN=6V

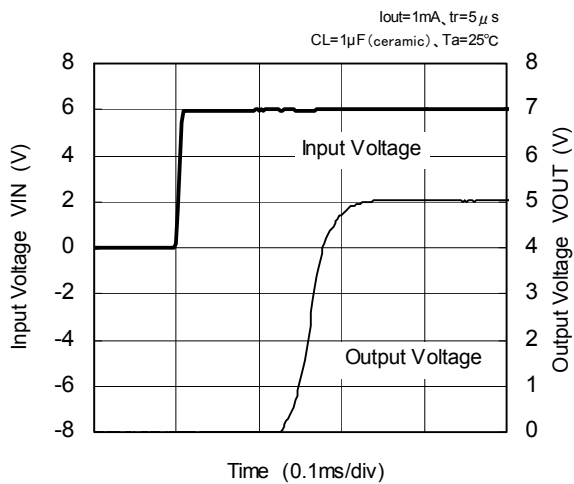


## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

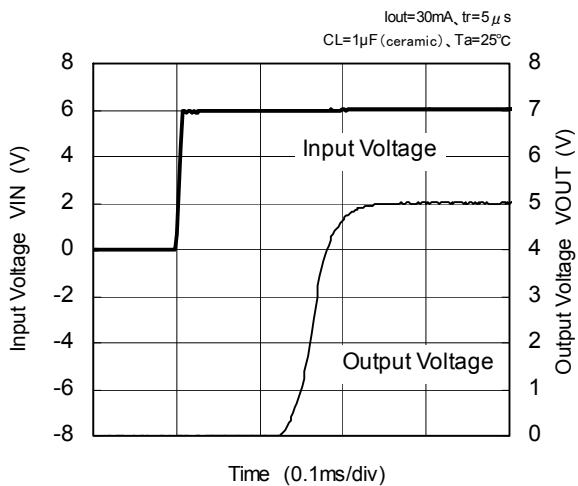
### ●XC6202P502 (Continued)

#### (7) Input Transient Response 1

XC6202P502 (5V)

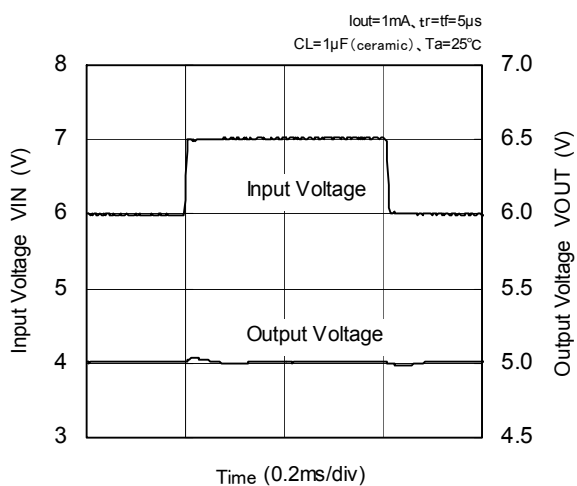


XC6202P502 (5V)

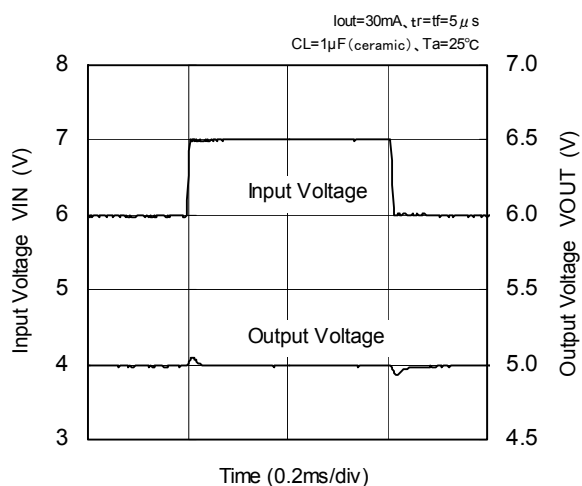


#### (8) Input Transient Response 2

XC6202P502 (5V)

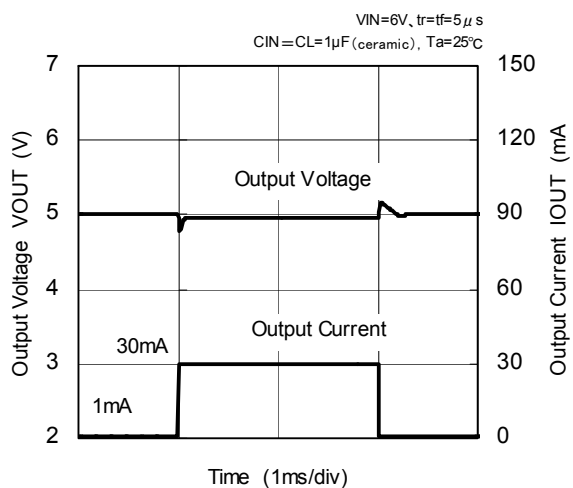


XC6202P502 (5V)



#### (9) Load Transient Response

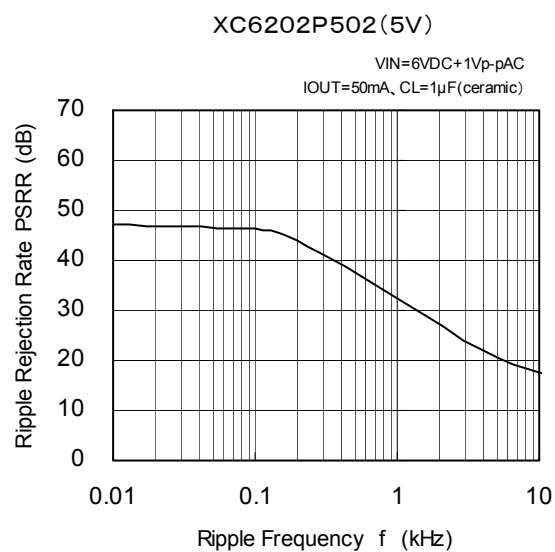
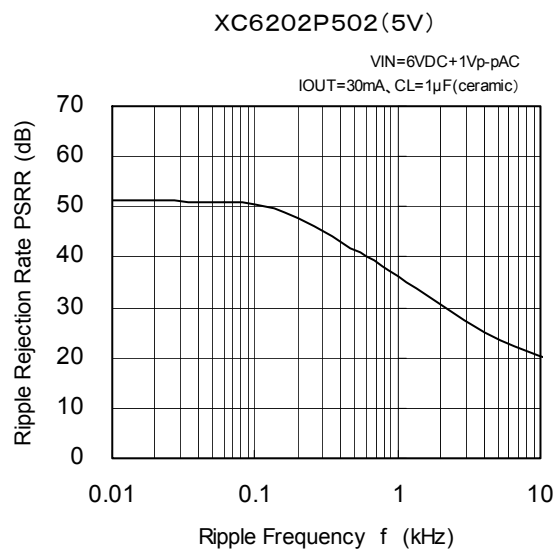
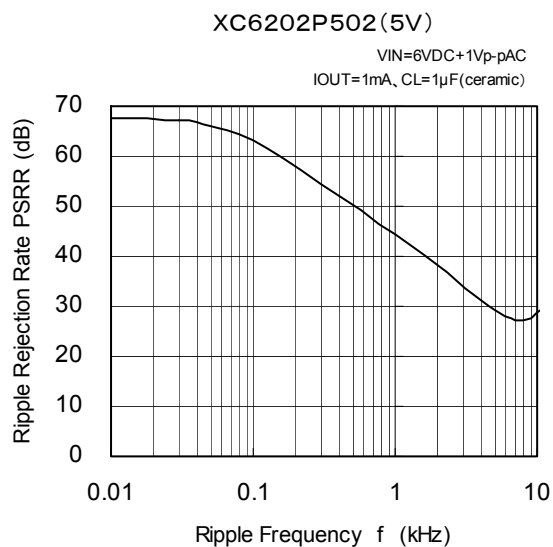
XC6202P502 (5V)



## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ● XC6202P502 (Continued)

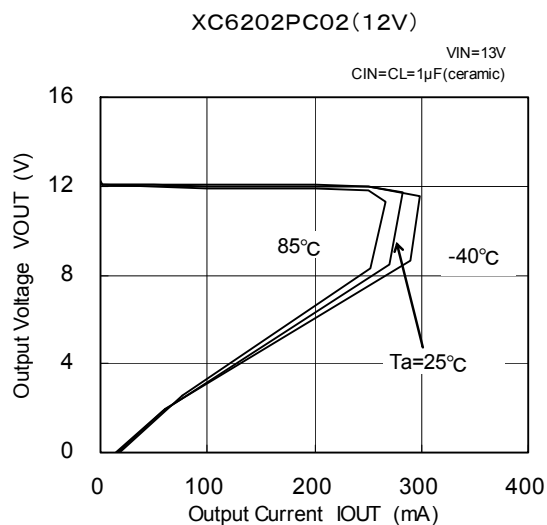
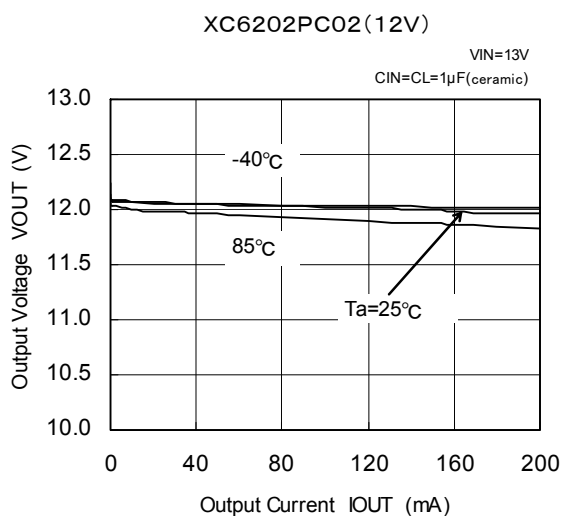
#### (10) Ripple Rejection Rate



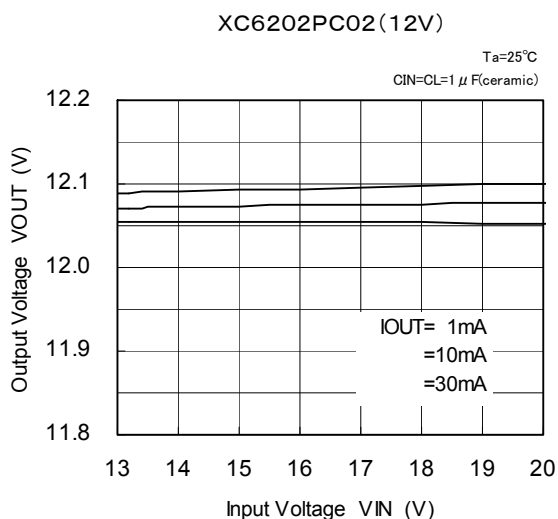
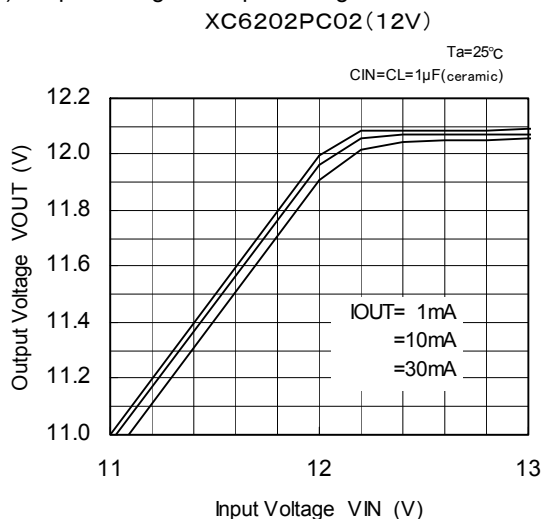
## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ●XC6202PC02

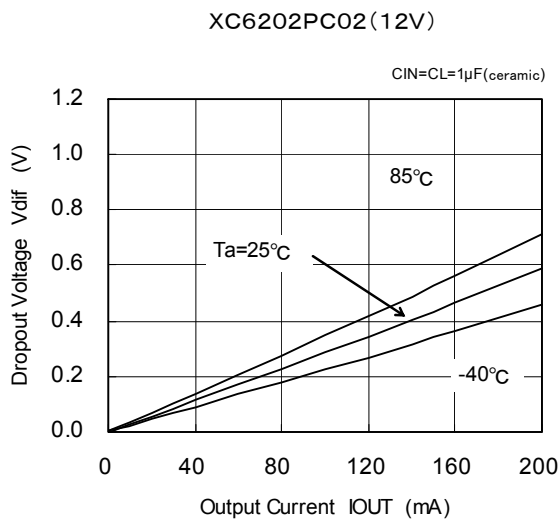
#### (1) Output Voltage vs. Output Current



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



#### (3) Dropout Voltage vs. Output Current

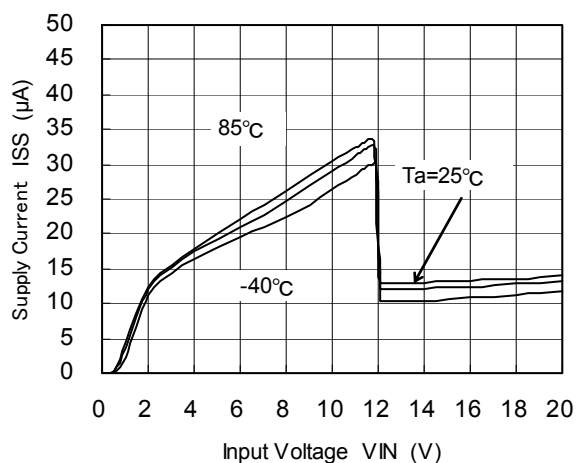


## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

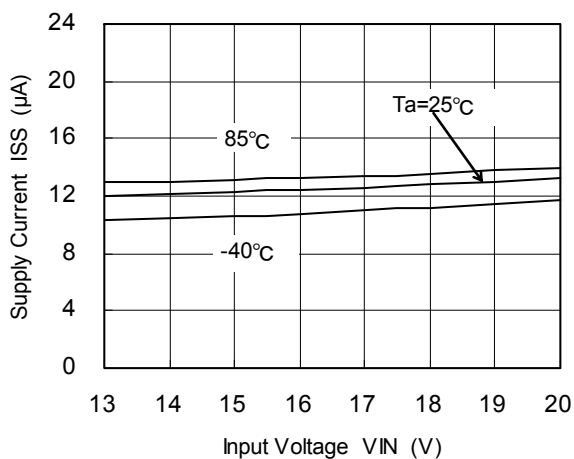
### ● XC6202PC02 (Continued)

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

XC6202PC02(12V)

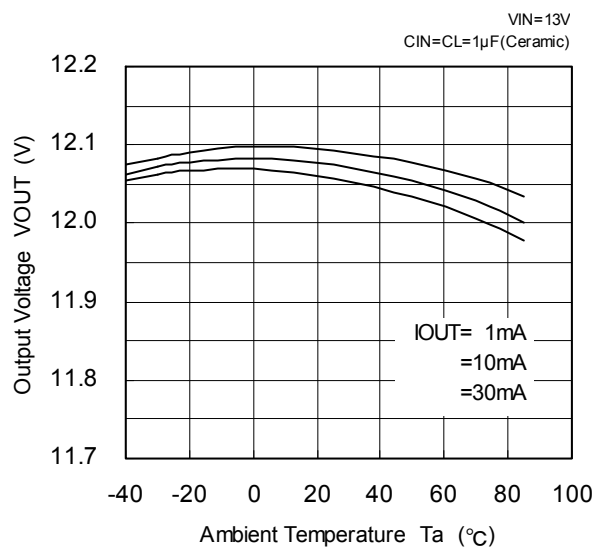


XC6202PC02(12V)



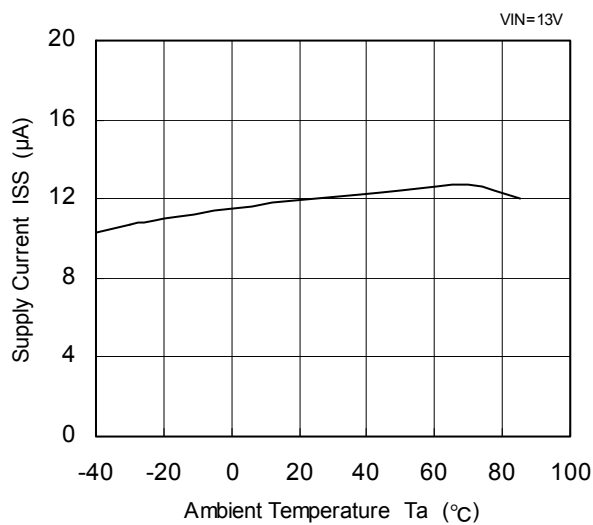
#### (5) Output Voltage vs. Ambient Temperature

XC6202PC02(12V)



#### (6) Supply Current vs. Ambient Temperature

XC6202PC02(12V)

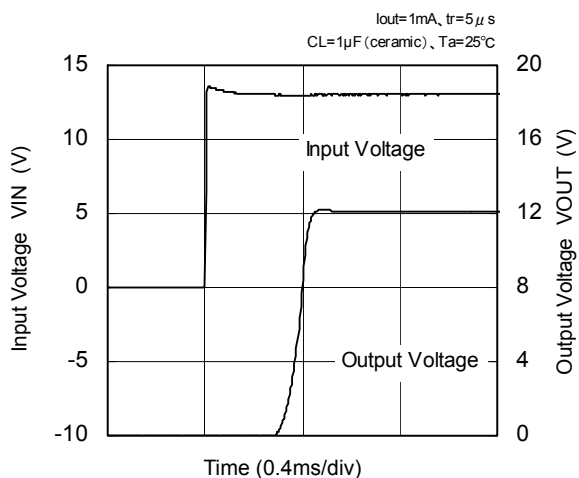


## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

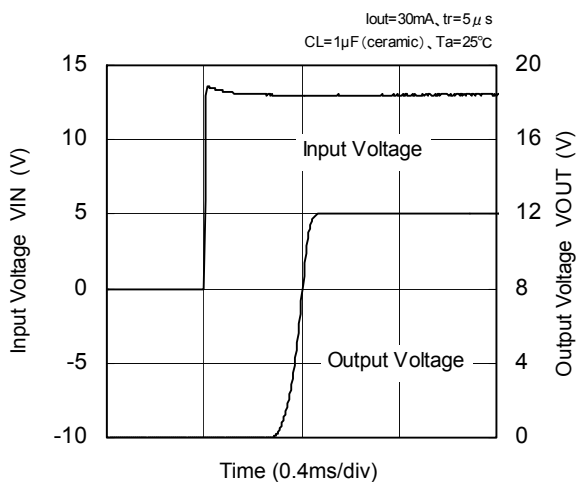
### ●XC6202PC02 (Continued)

#### (7) Input Transient Response 1

XC6202PC02 (12V)

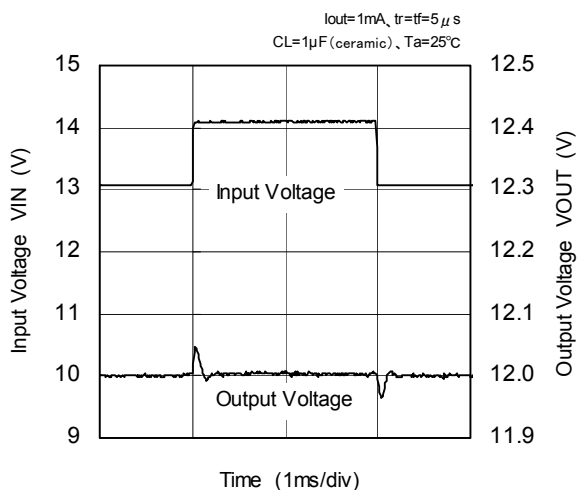


XC6202PC02 (12V)

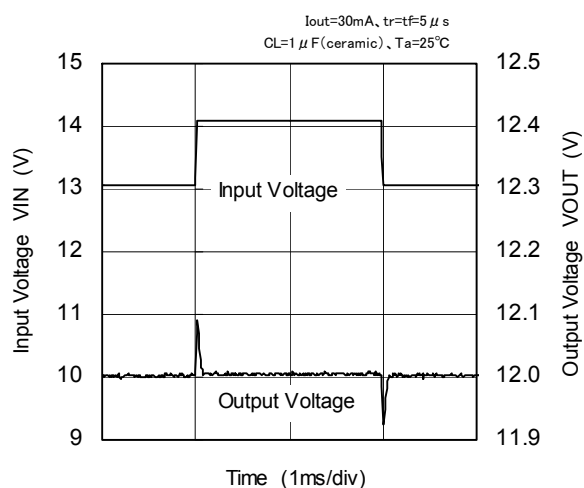


#### (8) Input Transient Response 2

XC6202PC02 (12V)

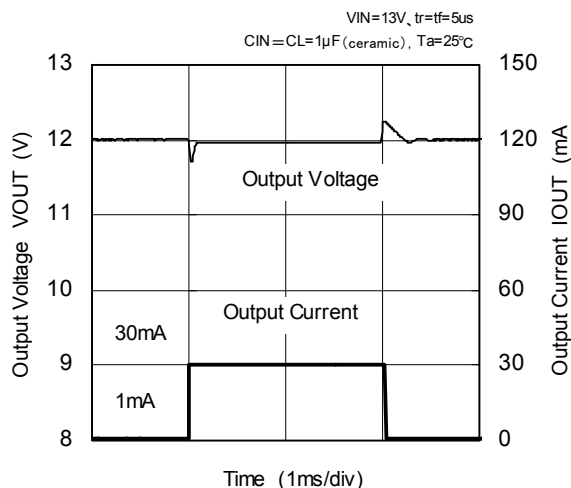


XC6202PC02 (12V)



#### (9) Load Transient Response

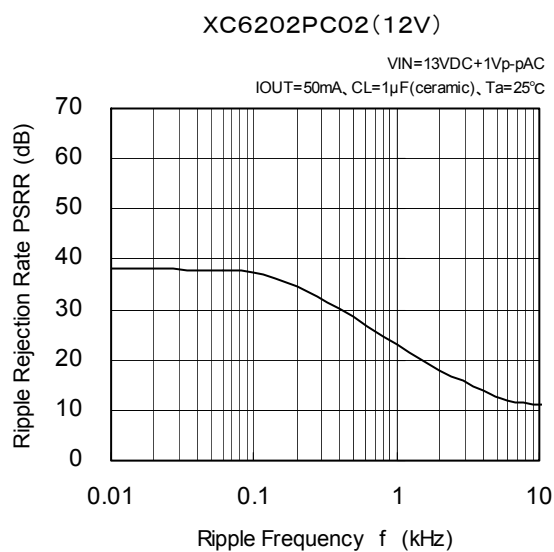
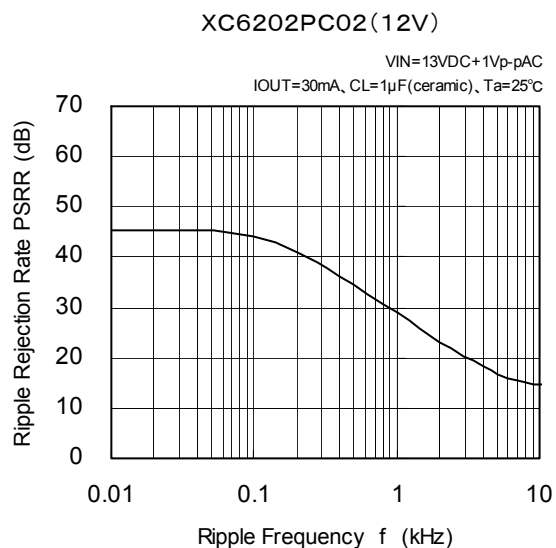
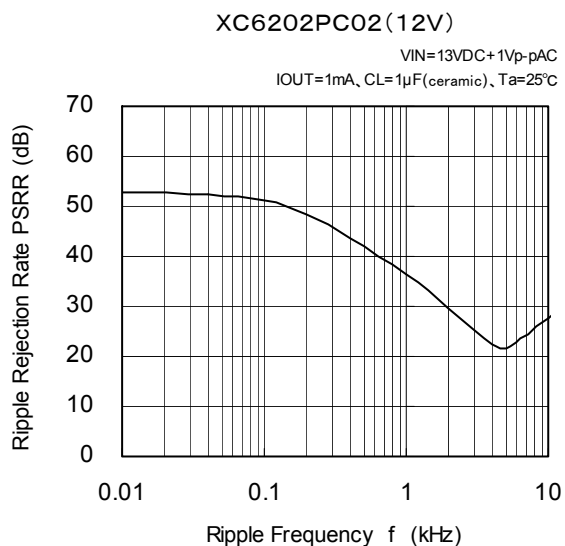
XC6202PC02 (12V)



## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ● XC6202PC02 (Continued)

#### (10) Ripple Rejection Rate

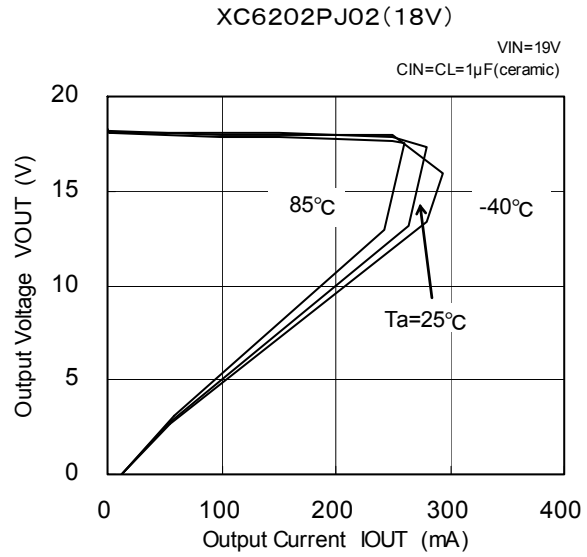
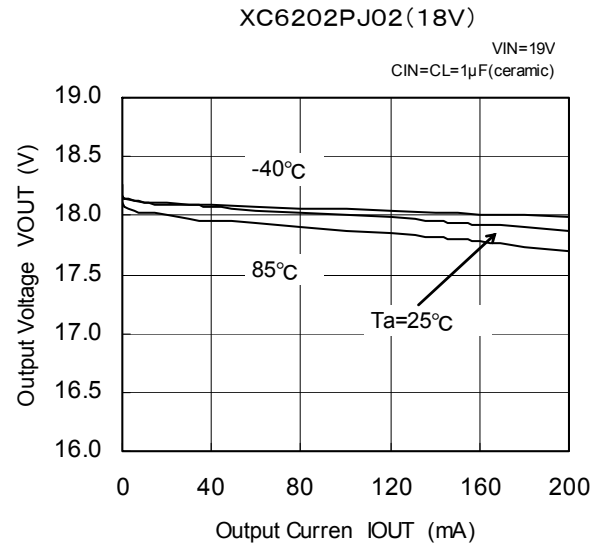




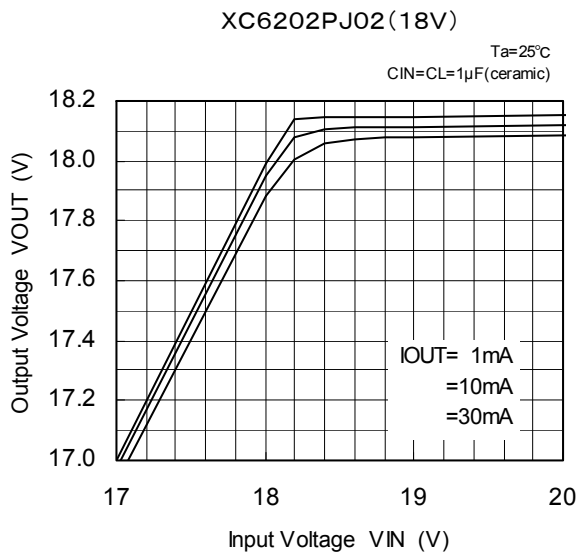
## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ●XC6202PJ02

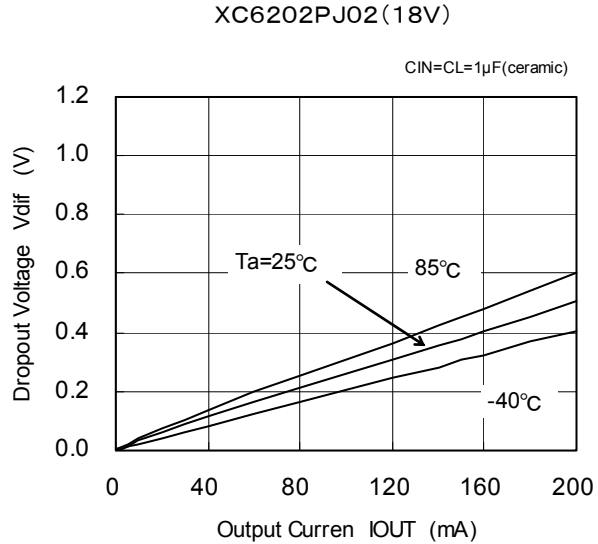
#### (1) Output Voltage vs. Output Current



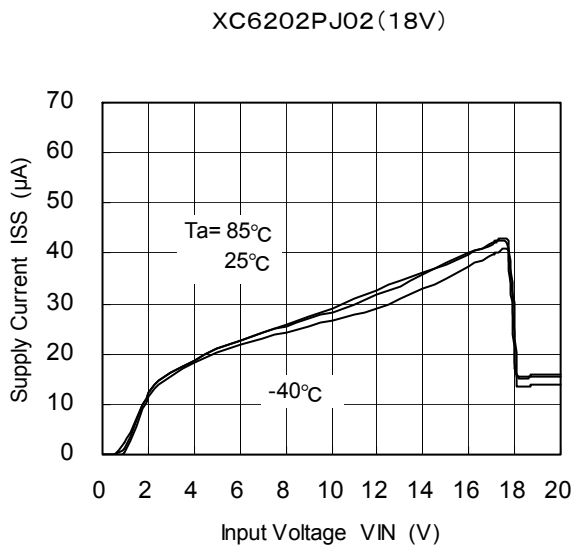
#### (2) Output Voltage vs. Input Voltage



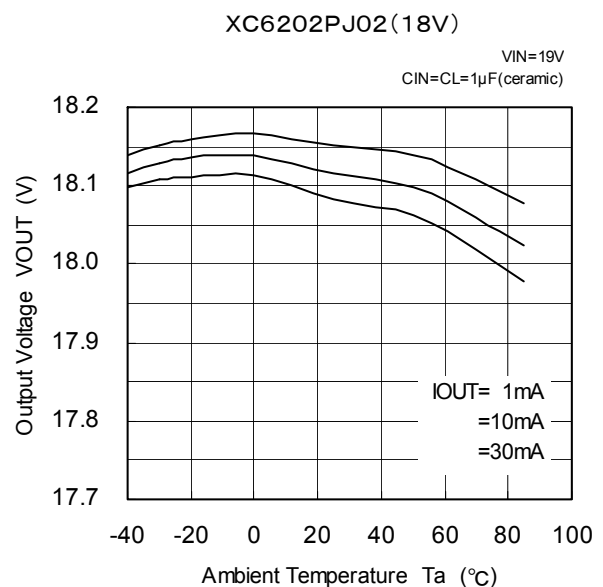
#### (3) Dropout Voltage vs. Output Current



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



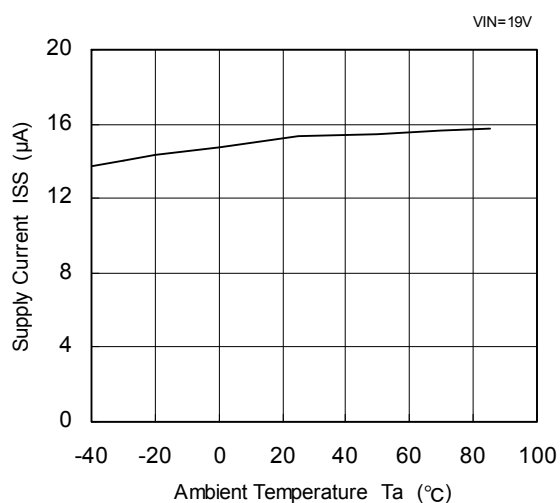
#### (5) Output Voltage vs. Ambient Temperature



## ■ TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

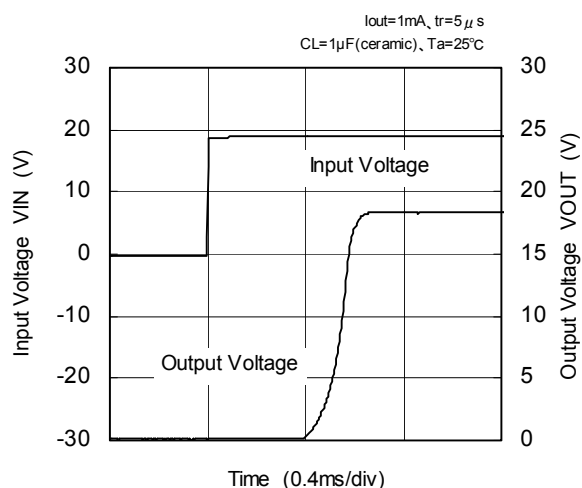
### ● XC6202PJ02 (Continued)

(6) Supply Current vs. Ambient Temperature  
XC6202PJ02(18V)

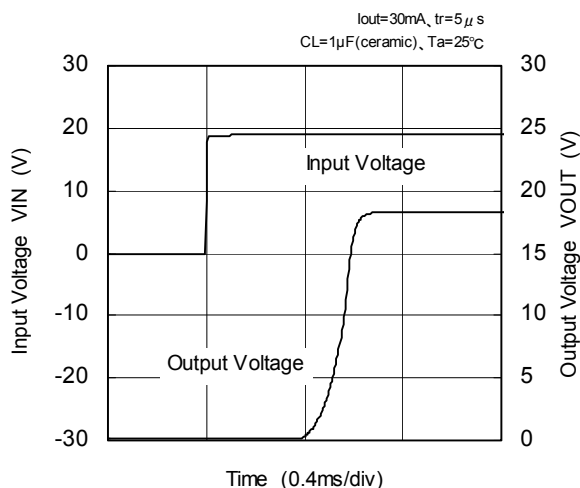


(7) Input Transient Response 1

XC6202PJ02(18V)

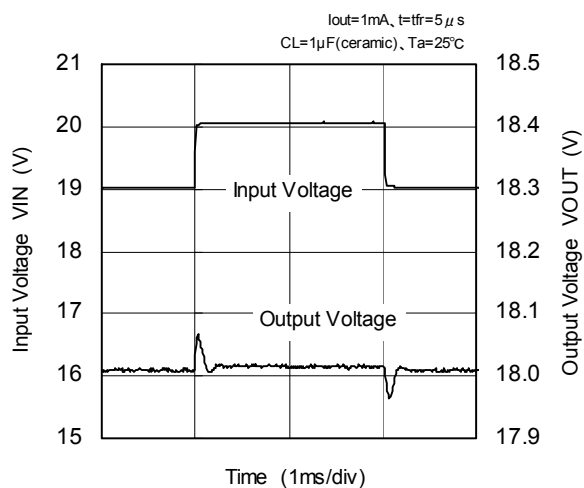


XC6202PJ02(18V)

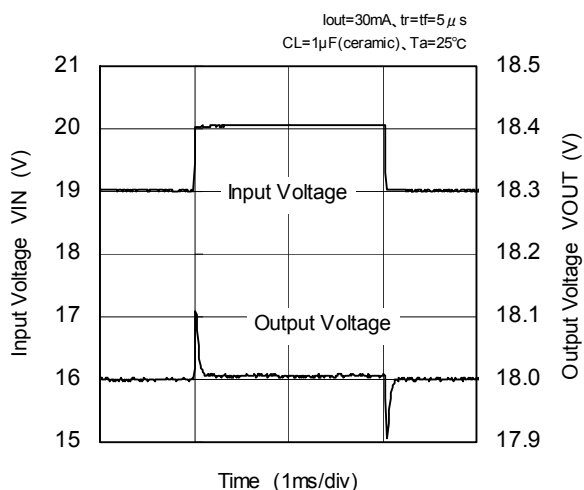


(8) Input Transient Response 2

XC6202PJ02(18V)



XC6202PJ02(18V)

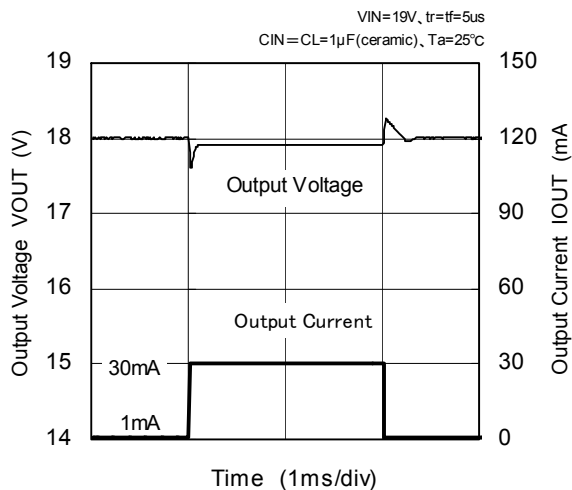


## TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

### ●XC6202PJ02 (Continued)

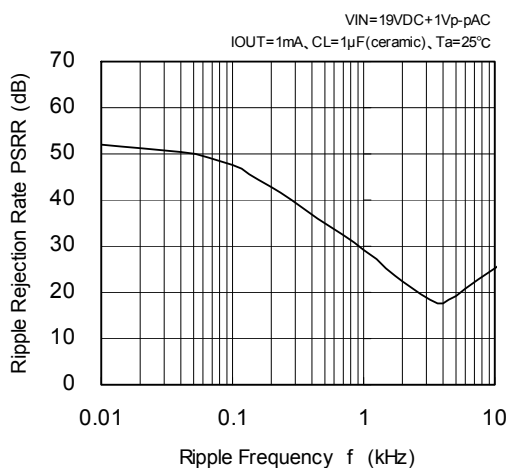
#### (9) Load Transient Response

XC6202PJ02(18V)

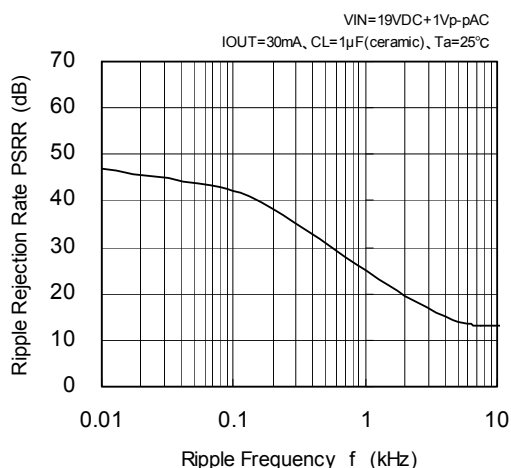


#### (10) Ripple Rejection Rate

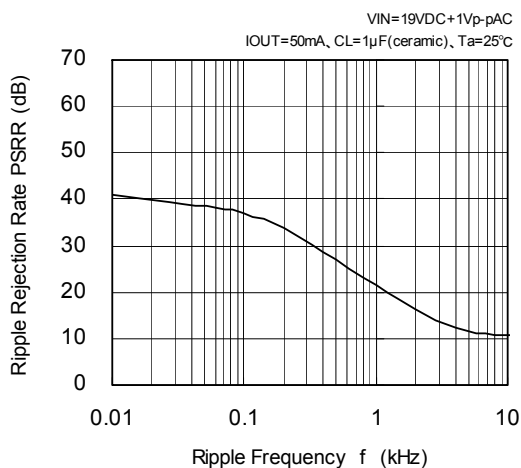
XC6202PJ02(18V)



XC6202PJ02(18V)

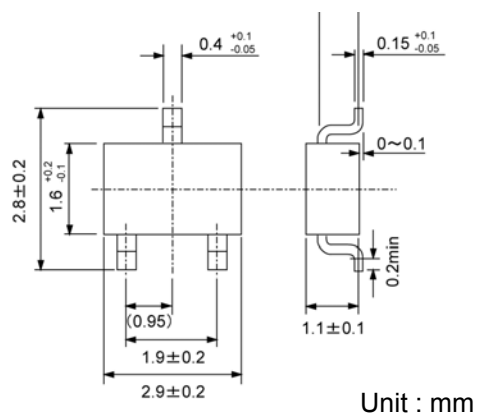


XC6202PJ02(18V)

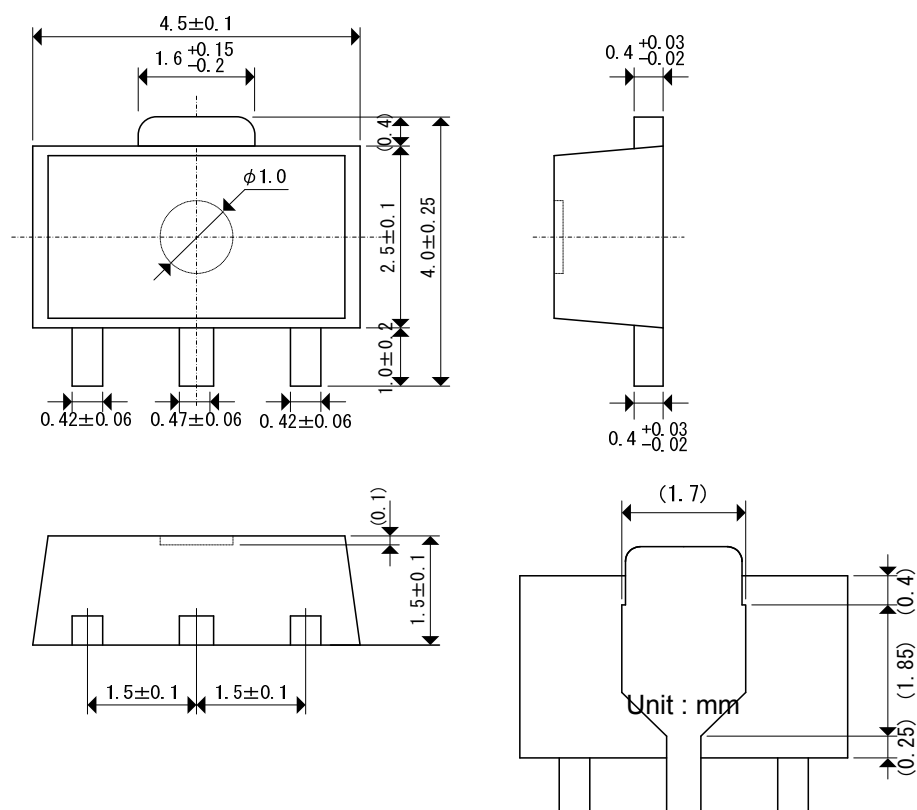


## ■ PACKAGING INFORMATION

### ● SOT-23

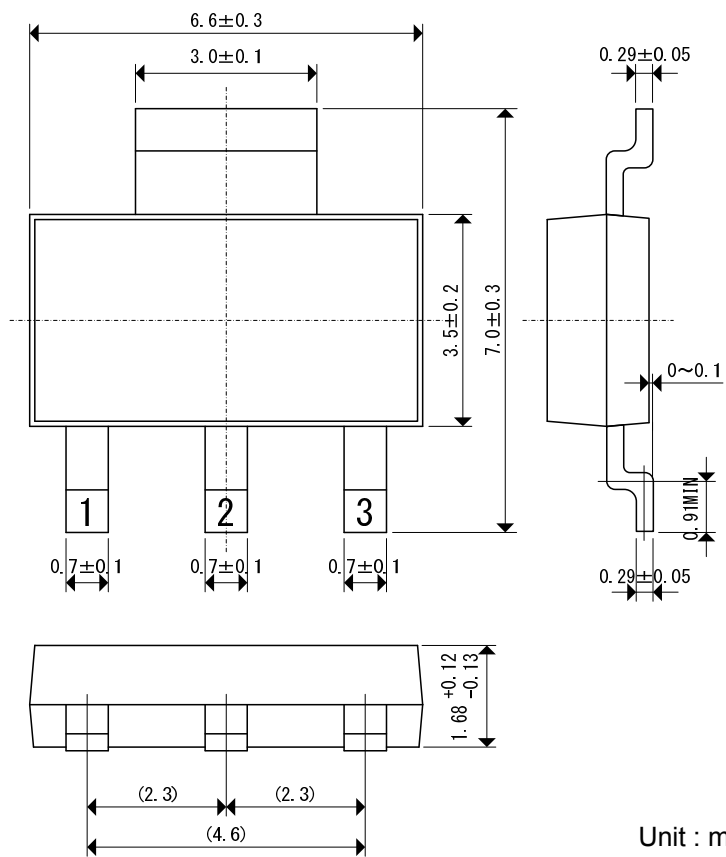


### ● SOT-89



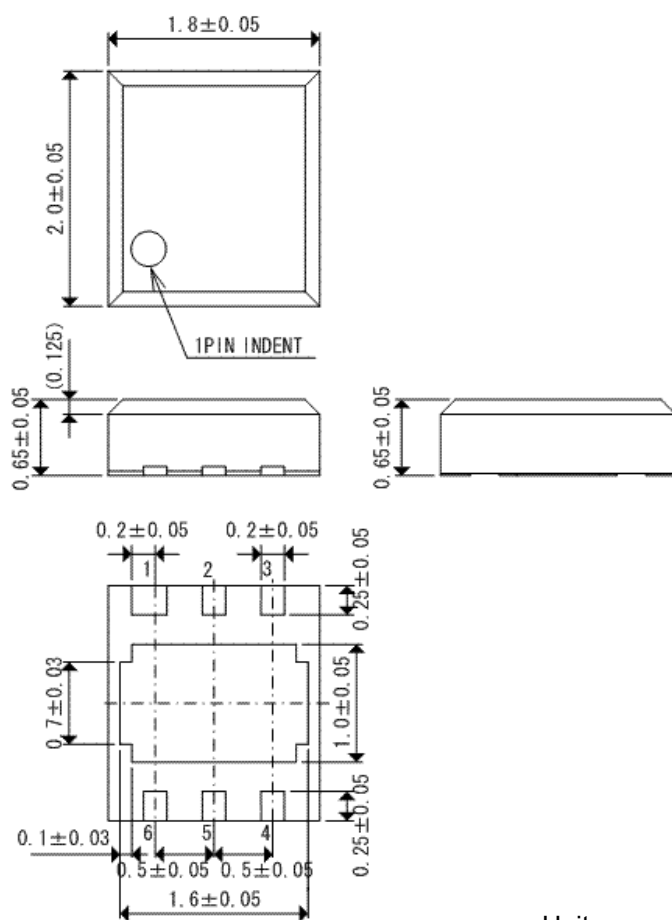
## PACKAGING INFORMATION (Continued)

### ● SOT-223



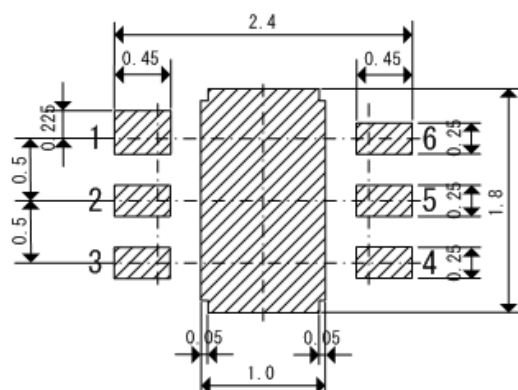
## ■ PACKAGING INFORMATION (Continued)

### ● USP-6B

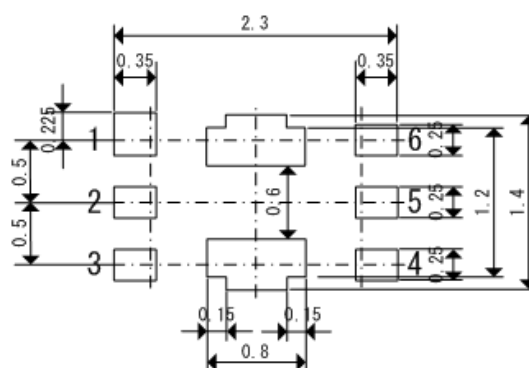


Unit : mm

### ● USP-6B Recommended Pattern Layout

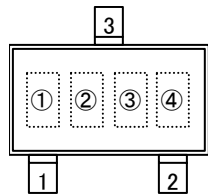


### ● USP-6B Recommended Metal Mask Design

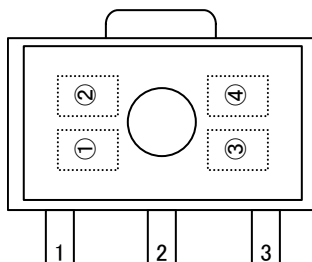


## MARKING RULE

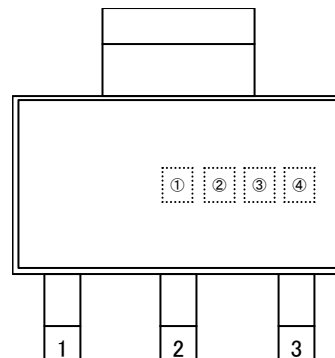
● SOT-23, SOT-89, SOT-223



SOT-23  
(TOP VIEW)



SOT-89  
(TOP VIEW)



SOT-223  
(TOP VIEW)

① represents product series

| MARK | PRODUCT SERIES |
|------|----------------|
| 2    | XC6202Pxxxxx   |

② represents output voltage range

| MARK | VOLTAGE (V) | PRODUCT SERIES |
|------|-------------|----------------|
| 4    | 0.1 ~ 3.0   | XC6202Pxxxxx   |
| 5    | 3.1 ~ 6.0   |                |
| 6    | 6.1 ~ 9.0   |                |
| 7    | 9.1 ~ 12.0  |                |
| 8    | 12.1 ~ 15.0 |                |
| 9    | 15.1 ~ 18.0 |                |

③ represents output voltage

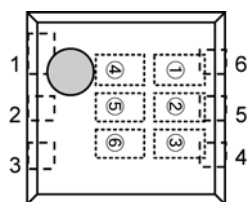
| MARK | VOLTAGE (V) |     |     |      |      |      | MARK | VOLTAGE (V) |     |     |      |      |      |
|------|-------------|-----|-----|------|------|------|------|-------------|-----|-----|------|------|------|
| 0    | —           | 3.1 | 6.1 | 9.1  | 12.1 | 15.1 | F    | —           | 4.6 | 7.6 | 10.6 | 13.6 | 16.6 |
| 1    | —           | 3.2 | 6.2 | 9.2  | 12.2 | 15.2 | H    | —           | 4.7 | 7.7 | 10.7 | 13.7 | 16.7 |
| 2    | —           | 3.3 | 6.3 | 9.3  | 12.3 | 15.3 | K    | 1.8         | 4.8 | 7.8 | 10.8 | 13.8 | 16.8 |
| 3    | —           | 3.4 | 6.4 | 9.4  | 12.4 | 15.4 | L    | 1.9         | 4.9 | 7.9 | 10.9 | 13.9 | 16.9 |
| 4    | —           | 3.5 | 6.5 | 9.5  | 12.5 | 15.5 | M    | 2.0         | 5.0 | 8.0 | 11.0 | 14.0 | 17.0 |
| 5    | —           | 3.6 | 6.6 | 9.6  | 12.6 | 15.6 | N    | 2.1         | 5.1 | 8.1 | 11.1 | 14.1 | 17.1 |
| 6    | —           | 3.7 | 6.7 | 9.7  | 12.7 | 15.7 | P    | 2.2         | 5.2 | 8.2 | 11.2 | 14.2 | 17.2 |
| 7    | —           | 3.8 | 6.8 | 9.8  | 12.8 | 15.8 | R    | 2.3         | 5.3 | 8.3 | 11.3 | 14.3 | 17.3 |
| 8    | —           | 3.9 | 6.9 | 9.9  | 12.9 | 15.9 | S    | 2.4         | 5.4 | 8.4 | 11.4 | 14.4 | 17.4 |
| 9    | —           | 4.0 | 7.0 | 10.0 | 13.0 | 16.0 | T    | 2.5         | 5.5 | 8.5 | 11.5 | 14.5 | 17.5 |
| A    | —           | 4.1 | 7.1 | 10.1 | 13.1 | 16.1 | U    | 2.6         | 5.6 | 8.6 | 11.6 | 14.6 | 17.6 |
| B    | —           | 4.2 | 7.2 | 10.2 | 13.2 | 16.2 | V    | 2.7         | 5.7 | 8.7 | 11.7 | 14.7 | 17.7 |
| C    | —           | 4.3 | 7.3 | 10.3 | 13.3 | 16.3 | X    | 2.8         | 5.8 | 8.8 | 11.8 | 14.8 | 17.8 |
| D    | —           | 4.4 | 7.4 | 10.4 | 13.4 | 16.4 | Y    | 2.9         | 5.9 | 8.9 | 11.9 | 14.9 | 17.9 |
| E    | —           | 4.5 | 7.5 | 10.5 | 13.5 | 16.5 | Z    | 3.0         | 6.0 | 9.0 | 12.0 | 15.0 | 18.0 |

④ represents production lot number

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

## ■ MARKING RULE (Continued)

### ● USP-6B



USP-6B  
(TOP VIEW)

①② represents product series

| MARK |   | PRODUCT SERIES |
|------|---|----------------|
| ②    | ② |                |
| 0    | 2 | XC6202PxxxDx   |

③ represents type of regulator

| MARK | PRODUCT SERIES |
|------|----------------|
| P    | XC6202Pxxxxx   |

④ represents integer of the output voltage

| MARK | VOLTAGE (V) | PRODUCT SERIES | MARK | VOLTAGE (V) | PRODUCT SERIES |
|------|-------------|----------------|------|-------------|----------------|
| 1    | 1.x         | XC6202P1xxDx   | A    | 10.x        | XC6202PAxxDx   |
| 2    | 2.x         | XC6202P2xxDx   | B    | 11.x        | XC6202PBxxDx   |
| 3    | 3.x         | XC6202P3xxDx   | C    | 12.x        | XC6202PCxxDx   |
| 4    | 4.x         | XC6202P4xxDx   | D    | 13.x        | XC6202PDxxDx   |
| 5    | 5.x         | XC6202P5xxDx   | E    | 14.x        | XC6202PExxDx   |
| 6    | 6.x         | XC6202P6xxDx   | F    | 15.x        | XC6202PFxxDx   |
| 7    | 7.x         | XC6202P7xxDx   | G    | 16.x        | XC6202PGxxDx   |
| 8    | 8.x         | XC6202P8xxDx   | H    | 17.x        | XC6202PHxxDx   |
| 9    | 9.x         | XC6202P9xxDx   | J    | 18.x        | XC6202PJxxDx   |

⑤ represents decimal number of output voltage

| MARK | VOLTAGE (V) | PRODUCT SERIES |
|------|-------------|----------------|
| 3    | X.3         | XC6202Px3xDx   |
| 0    | X.0         | XC6202Px0xDx   |

⑥ represents production lot number

0 to 9, A to Z repeated (G, I, J, O, Q, W excluded)

Note: No character inversion used.



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