

## 3-MODE 300mA LDO REGULATOR

NO.EA-106-0511

### OUTLINE

The R1161x Series are CMOS-based voltage regulator ICs with high output voltage accuracy, low supply current, and low ON-resistance. Each of these voltage regulator ICs consists of a voltage reference unit, an error amplifier, resistors for setting output voltage, a current limit circuit, and a chip enable circuit.

These ICs perform with low dropout voltage and a chip enable function. To prevent the destruction by over current, current limit circuit is included. The R1161x Series have 3-mode. One is standby mode with CE or standby control pin. Standby mode realizes ultra small consumption current off mode. Other two modes are realized with ECO pin™. Fast Transient Mode (FT mode) and Low Power Mode (LP mode) are alternative with ECO pin™. Consumption current is reduced at Low Power Mode compared with Fast Transient Mode. Output voltage is maintained between FT mode and LP mode.

The output voltage of these ICs is internally fixed with high accuracy. Since the packages for these ICs are SOT-23-5, SON-6, and HSON-6, high density mounting of the ICs on boards is possible.

### FEATURES

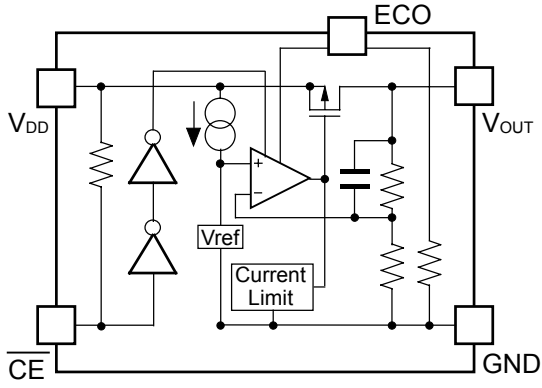
- Ultra-Low Supply Current ..... Typ. 3.5 $\mu$ A (Low Power Mode,  $V_{OUT}<1.6V$ ),  
Typ. 80 $\mu$ A (Fast Transient Mode,  $V_{OUT}<1.8V$ )  
Typ. 60 $\mu$ A (Fast Transient Mode,  $V_{OUT} \geq 1.8V$ )
- Standby Mode ..... Typ. 0.1 $\mu$ A
- Low Dropout Voltage..... Typ. 0.48V( $I_{OUT}=300mA$  Output Voltage=1.0V Type)  
Typ. 0.31V( $I_{OUT}=300mA$  Output Voltage=1.5V Type)  
Typ. 0.23V( $I_{OUT}=300mA$  Output Voltage=3.0V Type)
- High Ripple Rejection ..... Typ. 65dB( $f=1kHz$ , FT Mode)
- Low Temperature-Drift Coefficient of Output Voltage Typ.  $\pm 100ppm/^{\circ}C$
- Excellent Line Regulation ..... Typ. 0.01%/V (at Fast Transient Mode)
- High Output Voltage Accuracy .....  $\pm 2.0%$ ( $\pm 3.0%$  at LP Mode)
- Small Package ..... SOT-23-5 (Super Mini-mold), SON-6, HSON-6
- Output Voltage ..... Stepwise setting with a step of 0.1V in the range of 0.8V to 3.3V is possible
- Input Voltage ..... Min. 1.40V( $V_{OUT} \geq 1.0V$ )  
Min. 1.45V( $V_{OUT}<1.0V$ )
- Built-in fold-back protection circuit..... Typ. 50mA (Current at short mode)
- External Capacitors.....  $C_{IN} = C_{OUT} =$  Tantalum 1.0 $\mu$ F ( $V_{OUT}<1.0V$ )  
 $C_{IN} = C_{OUT} =$  Ceramic 1.0 $\mu$ F ( $V_{OUT} \geq 1.0V$ )

### APPLICATIONS

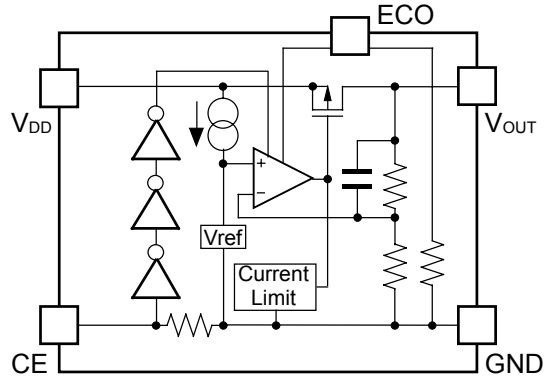
- Precision Voltage References.
- Power source for electrical appliances such as cameras, VCRs and hand-held communication equipment.
- Power source for battery-powered equipment.

**BLOCK DIAGRAM**

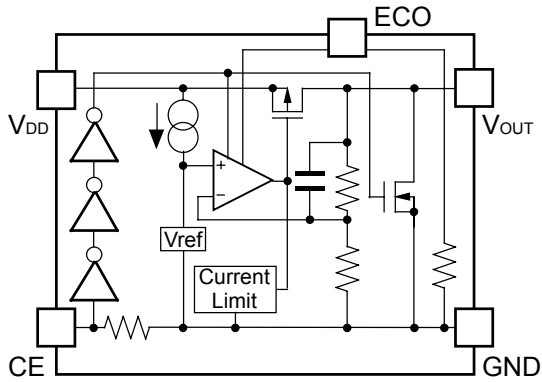
**R1161xxxxA**



**R1161xxxxB**



**R1161xxxxD**



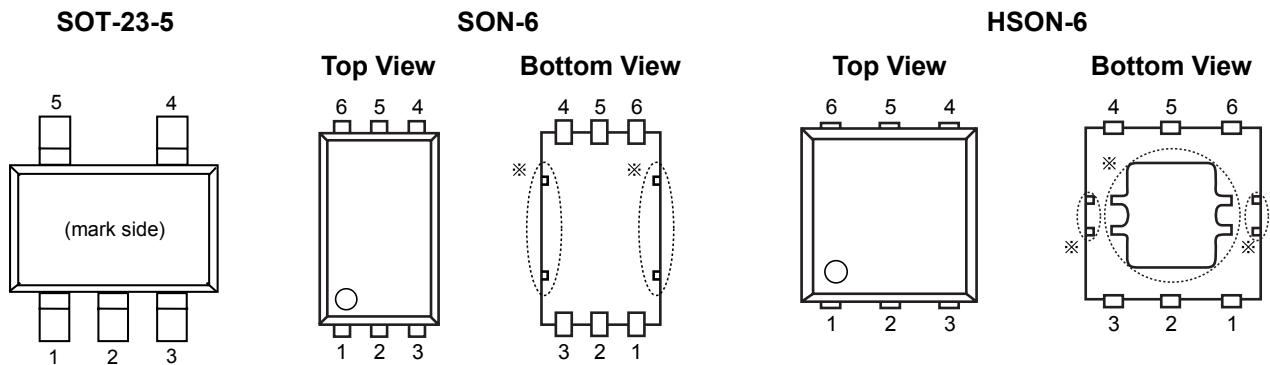
## SELECTION GUIDE

The output voltage, the chip enable polarity, package type, and the taping type for the ICs can be selected at the user's request. The selection can be available by designating the part number as shown below;

R1161xxxxx-xx ←Part Number  
 ↑ ↑ ↑↑ ↑  
 a b a'c d

| Code  | Contents   |
|-------|--|
| a, a' | Designation of Package Type :<br>R1161Nxx1x-xx:SOT-23-5 (Mini-mold)<br>R1161Dxx1x-xx:SON-6,<br>R1161Dxx2x-xx:HSON-6              |
| b     | Setting Output Voltage ( $V_{OUT}$ ) :<br>Stepwise setting with a step of 0.1V in the range of 0.8V to 3.3V is possible.         |
| c     | Designation of Chip Enable Option :<br>A:"L" active type.<br>B:"H" active type.<br>D:"H" active and with auto discharge function |
| d     | Designation of Taping Type : TR<br>Refer to Taping Specifications  |

## PIN CONFIGURATIONS



## PIN DESCRIPTIONS

### • SOT-23-5

| Pin No | Symbol                | Pin Description      |
|--------|-----------------------|----------------------|
| 1      | $V_{DD}$              | Input Pin            |
| 2      | GND                   | Ground Pin           |
| 3      | $\overline{CE}$ or CE | Chip Enable Pin      |
| 4      | ECO                   | MODE alternative pin |
| 5      | $V_{OUT}$             | Output pin           |

### SON-6, HSON-6

| Pin No | Symbol                | Pin Description      |
|--------|-----------------------|----------------------|
| 1      | $V_{DD}$              | Input Pin            |
| 2      | NC                    | No Connection        |
| 3      | $V_{OUT}$             | Output pin           |
| 4      | ECO                   | MODE alternative pin |
| 5      | GND                   | Ground Pin           |
| 6      | $\overline{CE}$ or CE | Chip Enable Pin      |

\* Tab in the parts have GND level.  
(They are connected to the reverse side of this IC.)  
Do not connect to other wires or land patterns.

## ABSOLUTE MAXIMUM RATINGS

| Symbol    | Item                                    | Rating              | Unit |
|-----------|---|---------------------|------|
| $V_{IN}$  | Input Voltage                           | 6.5                 | V    |
| $V_{ECO}$ | Input Voltage(ECO Pin)                  | -0.3 ~ 6.5          | V    |
| $V_{CE}$  | Input Voltage( $\overline{CE}$ /CE Pin) | -0.3 ~ 6.5          | V    |
| $V_{OUT}$ | Output Voltage                          | -0.3 ~ $V_{IN}+0.3$ | V    |
| $I_{OUT}$ | Output Current                          | 350                 | mA   |
| $P_D$     | Power Dissipation(SOT23-5)*             | 420                 | mW   |
| $P_D$     | Power Dissipation(SON-6)*               | 500                 |      |
| $P_D$     | Power Dissipation(HSON-6)*              | 900                 |      |
| $T_{opt}$ | Operating Temperature Range             | -40 ~ 85            | °C   |
| $T_{stg}$ | Storage Temperature Range               | -55 ~ 125           | °C   |

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

## ELECTRICAL CHARACTERISTICS

### • R1161xxxxA

T<sub>opt</sub>=25°C

| Symbol                                  | Item                                    | Conditions  | Min.             | Typ. | Max.            | Unit   |
|---|---|---|------------------|------|-----------------|--------|
| V <sub>OUT</sub>                        | Output Voltage                          | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =V <sub>IN</sub><br>1μA ≤ I <sub>OUT</sub> ≤ 30mA <sup>Note 1</sup>   | ×0.98<br>(-30mV) |      | ×1.02<br>(30mV) | V      |
|   |   | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =GND<br>1μA ≤ I <sub>OUT</sub> ≤ 30mA <sup>Note 2</sup>   | ×0.97<br>(-45mV) |      | ×1.03<br>(45mV) | V      |
| I <sub>OUT</sub>                        | Output Current                          | V <sub>IN</sub> -V <sub>OUT</sub> =1.0V   | 300              |      |                 | mA     |
| $\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$ | Load Regulation(FT Mode)                | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =V <sub>IN</sub><br>1mA ≤ I <sub>OUT</sub> ≤ 300mA  |                  | 40   | 70              | mV     |
| $\frac{\Delta V_{OUT}}{\Delta I_{OUT}}$ | Load Regulation(LP Mode)                | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =GND<br>1mA ≤ I <sub>OUT</sub> ≤ 100mA  |                  | 15   | 30              | mV     |
| V <sub>DIF</sub>                        | Dropout Voltage                         | Refer to the ELECTRICAL CHARACTERISTICS by OUTPUT VOLTAGE   |                  |      |                 |        |
| I <sub>SS1</sub>                        | Supply Current(FT Mode)                 | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V<br>V <sub>ECO</sub> =V <sub>IN</sub> , V <sub>OUT</sub> <1.8V   |                  | 80   | 111             | μA     |
|   |   | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V<br>V <sub>ECO</sub> =V <sub>IN</sub> , V <sub>OUT</sub> ≥ 1.8V  |                  | 60   | 90              | μA     |
| I <sub>SS2</sub>                        | Supply Current(LP Mode)                 | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V,<br>V <sub>OUT</sub> <1.6V, V <sub>ECO</sub> =GND   |                  | 3.5  | 8.0             | μA     |
|   |   | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V<br>V <sub>OUT</sub> ≥ 1.6V, V <sub>ECO</sub> =GND   |                  | 4.5  | 9.0             | μA     |
| I <sub>standby</sub>                    | Supply Current (Standby)                | V <sub>IN</sub> =V <sub>CE</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =GND   |                  | 0.1  | 1.0             | μA     |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN}}$  | Line Regulation(FT Mode)                | Set V <sub>OUT</sub> +0.5V ≤ V <sub>IN</sub> ≤ 6.0V<br>I <sub>OUT</sub> =30mA, V <sub>ECO</sub> =V <sub>IN</sub><br>Set V <sub>OUT</sub> <0.9V: 1.4V ≤ V <sub>IN</sub> ≤ 6.0V |                  | 0.01 | 0.15            | %/V    |
| $\frac{\Delta V_{OUT}}{\Delta V_{IN}}$  | Line Regulation(LP Mode)                | Set V <sub>OUT</sub> +0.5V ≤ V <sub>IN</sub> ≤ 6.0V<br>I <sub>OUT</sub> =30mA, V <sub>ECO</sub> =GND<br>Set V <sub>OUT</sub> <0.9V: 1.4V ≤ V <sub>IN</sub> ≤ 6.0V             |                  | 0.05 | 0.20            | %/V    |
| RR                                      | Ripple Rejection(FT Mode)               | f = 1kHz, Ripple 0.2Vp-p<br>V <sub>IN</sub> =Set V <sub>OUT</sub> +1V<br>I <sub>OUT</sub> =30mA, V <sub>ECO</sub> =V <sub>IN</sub>  |                  | 65   |                 | dB     |
| V <sub>IN</sub>                         | Input Voltage                           |   | 1.4              |      | 6.0             | V      |
| $\frac{\Delta V_{OUT}}{\Delta T_{opt}}$ | Output Voltage Temperature Coefficient  | I <sub>OUT</sub> =30mA<br>-40°C ≤ T <sub>opt</sub> ≤ 85°C   |                  | ±100 |                 | ppm/°C |
| I <sub>lim</sub>                        | Short Current Limit                     | V <sub>OUT</sub> =0V  |                  | 50   |                 | mA     |
| R <sub>PU</sub>                         | $\overline{CE}$ Pull-up Resistance      |   | 1.87             | 5.00 | 12.00           | MΩ     |
| R <sub>PD</sub>                         | ECO Pull-down Resistance                |   | 1.87             | 5.00 | 12.00           | MΩ     |
| V <sub>CEH</sub>                        | $\overline{CE}$ , ECO Input Voltage "H" |   | 1.0              |      | 6.0             | V      |
| V <sub>CEL</sub>                        | $\overline{CE}$ , ECO Input Voltage "L" |   | 0.0              |      | 0.3             | V      |
| V <sub>EN</sub>                         | Output Noise                            | BW=10Hz to 100kHz   |                  | 30   |                 | μVrms  |

Note1: ±30mV tolerance for V<sub>OUT</sub> ≤ 1.5V.

Note2: ±45mV tolerance for V<sub>OUT</sub> ≤ 1.5V.

## R1161x

### • R1161xxxxB

T<sub>opt</sub>=25°C

| Symbol                                   | Item   | Conditions  | Min.             | Typ. | Max.            | Unit       |
|--|--|---|------------------|------|-----------------|------------|
| V <sub>OUT</sub>                         | Output Voltage   | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =V <sub>IN</sub><br>1μA ≤ I <sub>OUT</sub> ≤ 30mA <sup>Note 1</sup>   | ×0.98<br>(-30mV) |      | ×1.02<br>(30mV) | V          |
|  |  | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =GND<br>1μA ≤ I <sub>OUT</sub> ≤ 30mA <sup>Note 2</sup>   | ×0.97<br>(-45mV) |      | ×1.03<br>(45mV) | V          |
| I <sub>OUT</sub>                         | Output Current   | V <sub>IN</sub> -V <sub>OUT</sub> =1.0V   | 300              |      |                 | mA         |
| ΔV <sub>OUT</sub> /<br>ΔI <sub>OUT</sub> | Load Regulation(FT Mode)   | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =V <sub>IN</sub><br>1mA ≤ I <sub>OUT</sub> ≤ 300mA  |                  | 40   | 70              | mV         |
| ΔV <sub>OUT</sub> /<br>ΔI <sub>OUT</sub> | Load Regulation(LP Mode)   | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V, V <sub>ECO</sub> =GND<br>1mA ≤ I <sub>OUT</sub> ≤ 100mA  |                  | 15   | 30              | mV         |
| V <sub>DIF</sub>                         | Dropout Voltage  | Refer to the ELECTRICAL CHARACTERISTICS by OUTPUT VOLTAGE   |                  |      |                 |            |
| I <sub>SS1</sub>                         | Supply Current(FT Mode)  | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V<br>V <sub>ECO</sub> =V <sub>IN</sub> , V <sub>OUT</sub> <1.8V   |                  | 80   | 111             | μA         |
|  |  | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V<br>V <sub>ECO</sub> =V <sub>IN</sub> , V <sub>OUT</sub> ≥ 1.8V  |                  | 60   | 90              | μA         |
| I <sub>SS2</sub>                         | Supply Current(LP Mode)  | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V,<br>V <sub>OUT</sub> <1.6V, V <sub>ECO</sub> =GND   |                  | 3.5  | 8.0             | μA         |
|  |  | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V,<br>V <sub>OUT</sub> ≥ 1.6V, V <sub>ECO</sub> =GND  |                  | 4.5  | 9.0             | μA         |
| I <sub>standby</sub>                     | Supply Current (Standby)   | V <sub>IN</sub> =Set V <sub>OUT</sub> +1V,<br>V <sub>CE</sub> =GND, V <sub>ECO</sub> =GND   |                  | 0.1  | 1.0             | μA         |
| ΔV <sub>OUT</sub> /<br>ΔV <sub>IN</sub>  | Line Regulation(FT Mode)   | Set V <sub>OUT</sub> +0.5V ≤ V <sub>IN</sub> ≤ 6.0V<br>I <sub>OUT</sub> =30mA, V <sub>ECO</sub> =V <sub>IN</sub><br>Set V <sub>OUT</sub> <0.9V: 1.4V ≤ V <sub>IN</sub> ≤ 6.0V |                  | 0.01 | 0.15            | %/V        |
| ΔV <sub>OUT</sub> /<br>ΔV <sub>IN</sub>  | Line Regulation(LP Mode)   | Set V <sub>OUT</sub> +0.5V ≤ V <sub>IN</sub> ≤ 6.0V<br>I <sub>OUT</sub> =30mA, V <sub>ECO</sub> =GND<br>Set V <sub>OUT</sub> <0.9V: 1.4V ≤ V <sub>IN</sub> ≤ 6.0V             |                  | 0.05 | 0.20            | %/V        |
| RR                                       | Ripple Rejection(FT Mode)  | f=1kHz, Ripple 0.2Vp-p<br>V <sub>IN</sub> =Set V <sub>OUT</sub> +1V<br>I <sub>OUT</sub> =30mA, V <sub>ECO</sub> =V <sub>IN</sub>  |                  | 65   |                 | dB         |
| V <sub>IN</sub>                          | Input Voltage  |   | 1.4              |      | 6.0             | V          |
| ΔV <sub>OUT</sub> /<br>ΔT <sub>opt</sub> | Output Voltage<br>Temperature Coefficient                              | I <sub>OUT</sub> =30mA<br>-40°C ≤ T <sub>opt</sub> ≤ 85°C   |                  | ±100 |                 | ppm<br>/°C |
| I <sub>lim</sub>                         | Short Current Limit  | V <sub>OUT</sub> =0V  |                  | 50   |                 | mA         |
| R <sub>PDC</sub>                         | CE Pull-down Resistance  |   | 1.87             | 5.00 | 12.00           | MΩ         |
| R <sub>PDE</sub>                         | ECO Pull-down Resistance   |   | 1.87             | 5.00 | 12.00           | MΩ         |
| V <sub>CEH</sub>                         | CE, ECO Input Voltage "H"  |   | 1.0              |      | 6.0             | V          |
| V <sub>CEL</sub>                         | CE, ECO Input Voltage "L"  |   | 0.0              |      | 0.3             | V          |
| V <sub>EN</sub>                          | Output Noise   | BW=10Hz to 100kHz   |                  | 30   |                 | μVrms      |
| R <sub>LOW</sub>                         | Nch On Resistance for auto<br>discharge (applied to D<br>version only) | V <sub>CE</sub> =0V   |                  | 60   |                 | Ω          |

Note1: ±30mV tolerance for V<sub>OUT</sub> ≤ 1.5V.

Note2: ±45mV tolerance for V<sub>OUT</sub> ≤ 1.5V.

## ELECTRICAL CHARACTERISTICS by OUTPUT VOLTAGE

T<sub>opt</sub>=25°C

| Output Voltage V <sub>OUT</sub> (V) | Dropout Voltage         |                          |       |                          |       |
|-------------------------------------|-------------------------|--------------------------|-------|--------------------------|-------|
|                                     | Condition               | V <sub>DIF</sub> (V)     |       |                          |       |
|                                     |                         | V <sub>DIF</sub> (ECO=H) |       | V <sub>DIF</sub> (ECO=L) |       |
|                                     |                         | Typ.                     | Max.  | Typ.                     | Max.  |
| 0.8=V <sub>OUT</sub>                | I <sub>OUT</sub> =300mA | 0.620                    | 0.850 | 0.670                    | 0.900 |
| 0.9=V <sub>OUT</sub>                |                         | 0.550                    | 0.780 | 0.590                    | 0.800 |
| 1.0 ≤ V <sub>OUT</sub> < 1.5        |                         | 0.480                    | 0.700 | 0.510                    | 0.750 |
| 1.5 ≤ V <sub>OUT</sub> < 2.6        |                         | 0.310                    | 0.450 | 0.320                    | 0.480 |
| 2.6 ≤ V <sub>OUT</sub>              |                         | 0.230                    | 0.350 | 0.240                    | 0.375 |

## TEST CIRCUITS

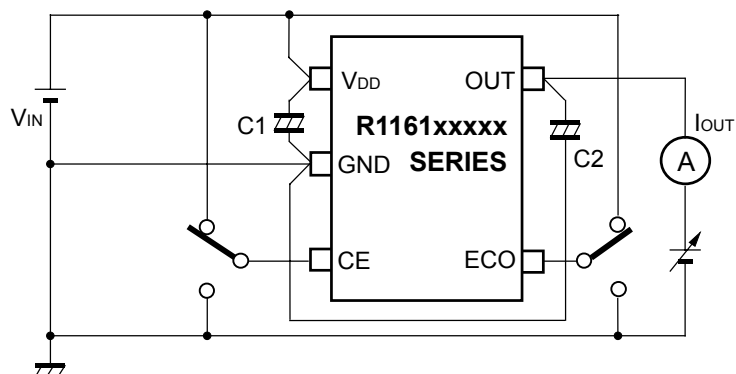


Fig.1 Output Voltage vs. Output Current Test Circuit

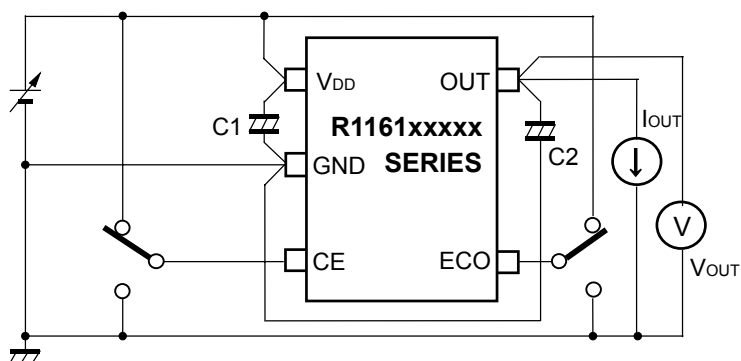


Fig.2 Output Voltage vs. Input Voltage Test Circuit

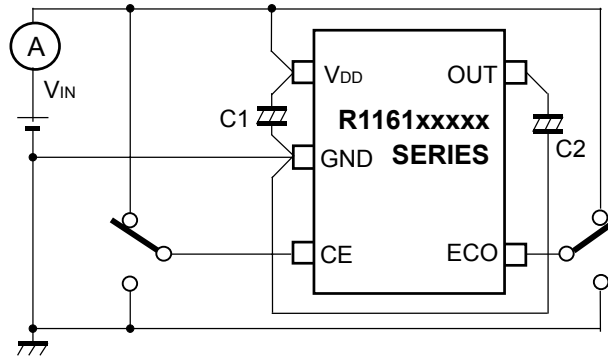


Fig.3 Supply Current vs. Input Voltage Test Circuit

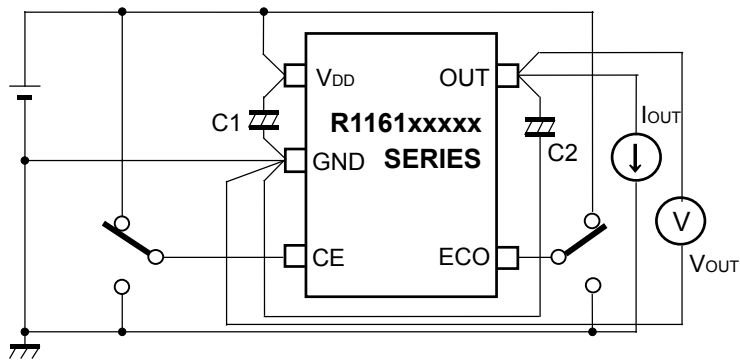


Fig.4 Output Voltage vs. Temperature Test Circuit

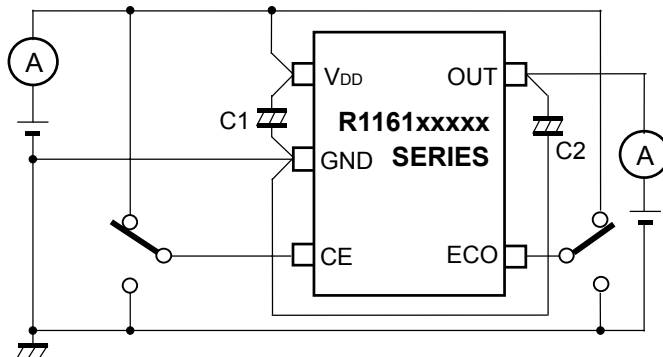


Fig.5 Supply Current vs. Temperature Test Circuit

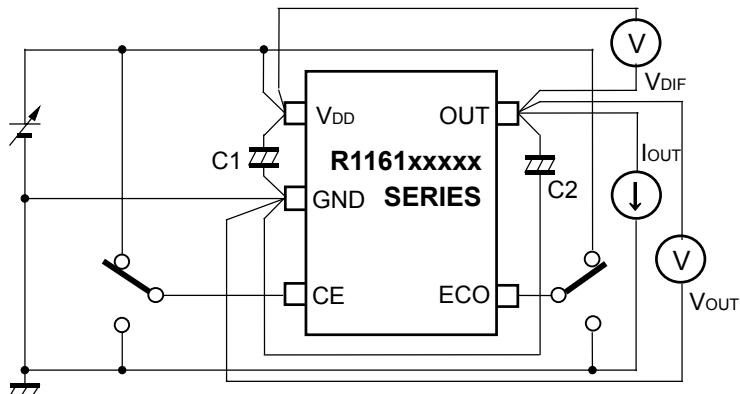


Fig. 6 Dropout Voltage vs. Output Current/ Set Output Voltage Test Circuit





Fig. 7 Ripple Rejection Test Circuit



Fig.8 Input Transient Response Test Circuit



Fig.9 Load Transient Response Test Circuit



Fig.10 Turn on Speed with CE pin Test Circuit



Fig.11 MODE Transient Response Test Circuit



Fig.12 Output Noise Test Circuit(IOUT vs. ESR)

## TYPICAL APPLICATION



(External Components)

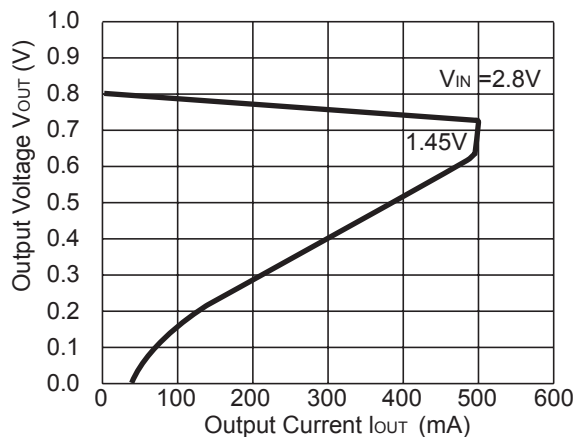
Output Capacitor; 1.0µF or more capacity ceramic Type (If  $V_{OUT} < 1.0V$ , Tantalum type is recommended)

Input Capacitor; 1.0µF or more capacity ceramic Type

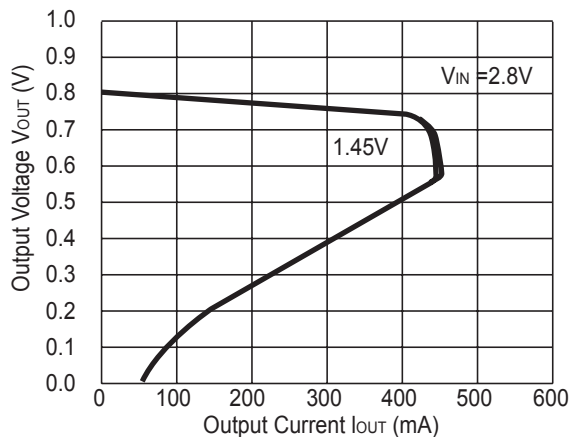
## TYPICAL CHARACTERISTICS

### 1) Output Voltage vs. Output Current

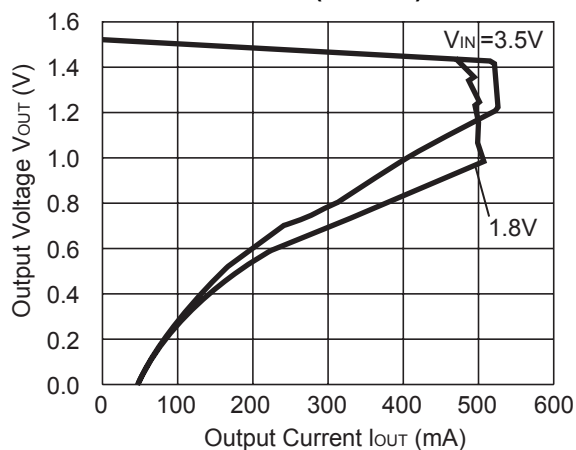
R1161x08xx (ECO=H)



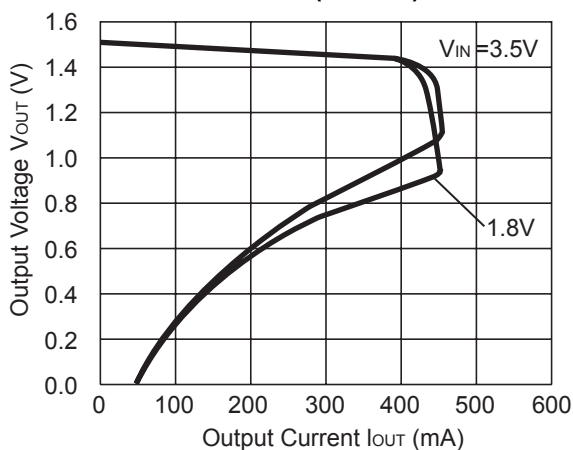
R1161x08xx (ECO=L)



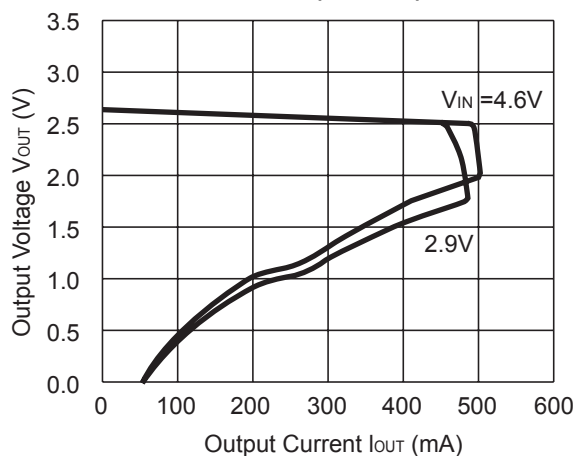
R1161x15xx (ECO=H)



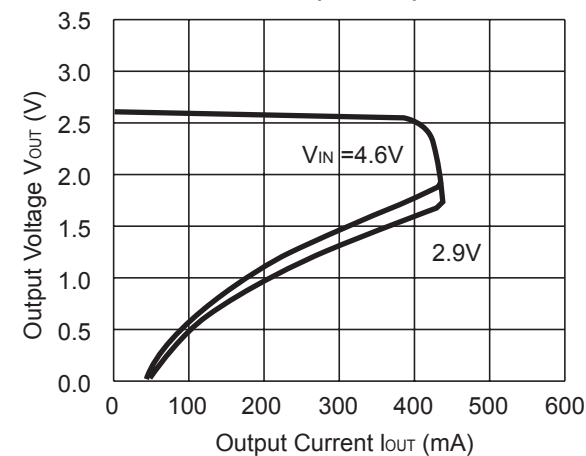
R1161x15xx (ECO=L)



R1161x26xx (ECO=H)

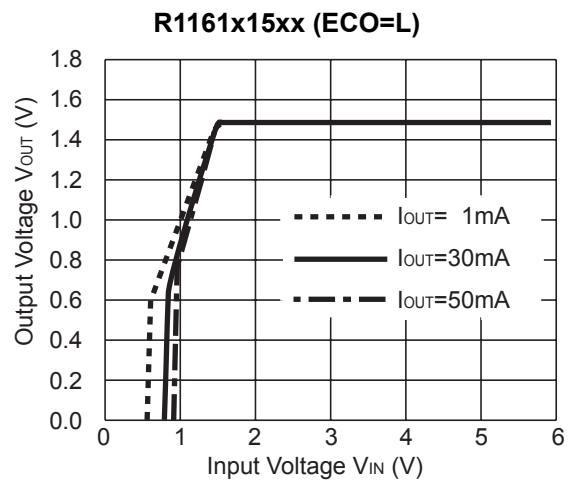
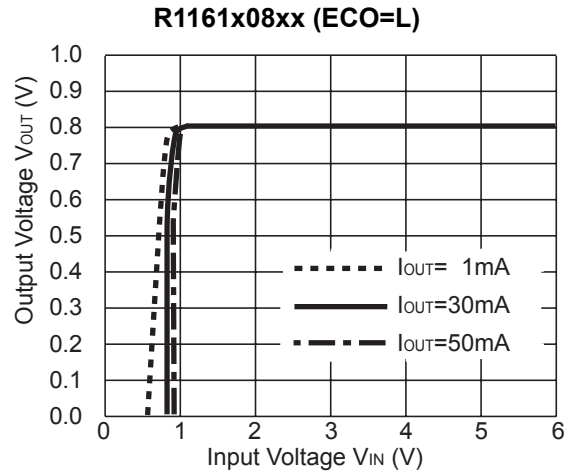
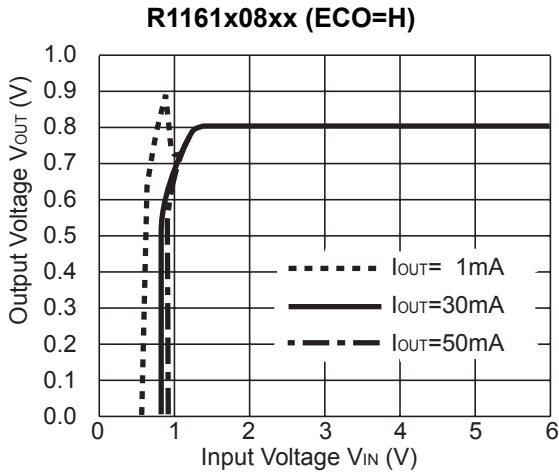


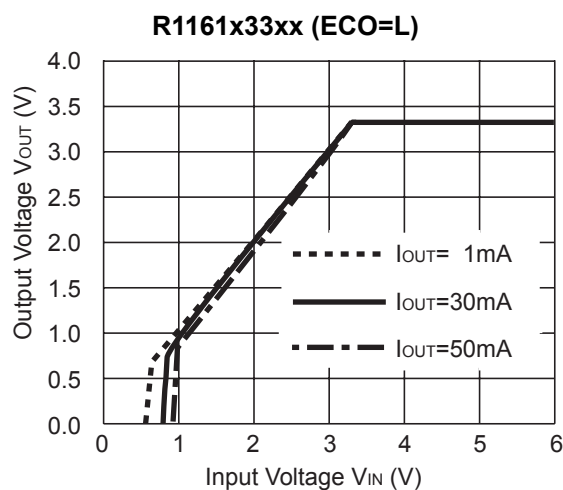
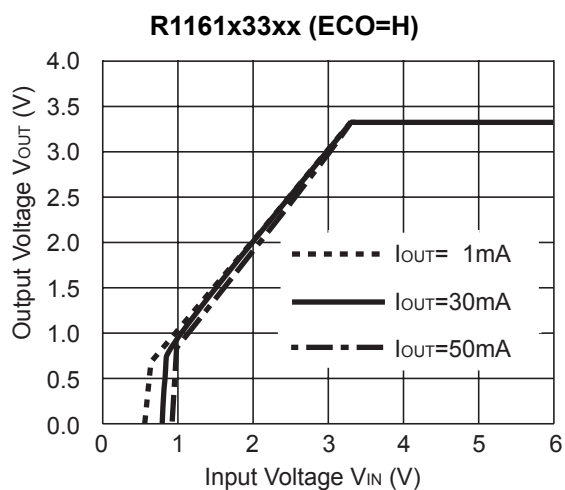
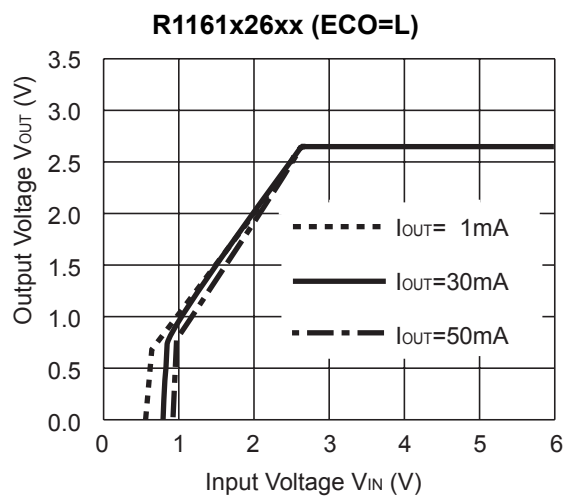
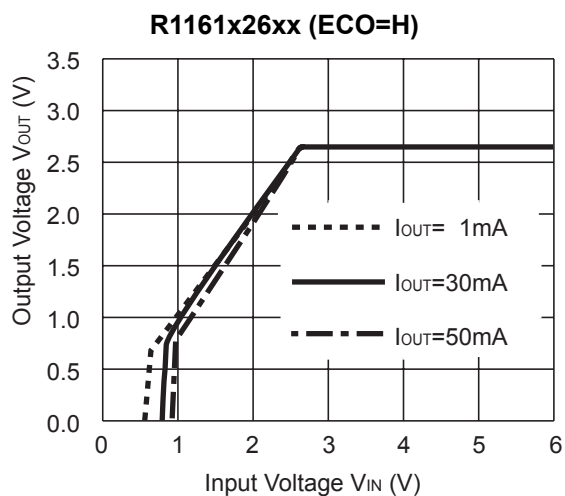
R1161x26xx (ECO=L)



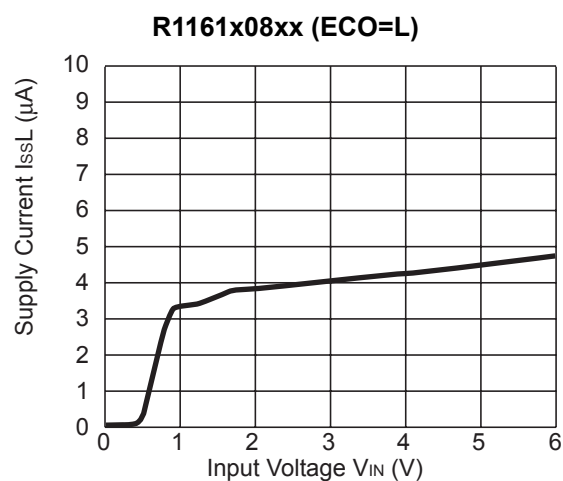
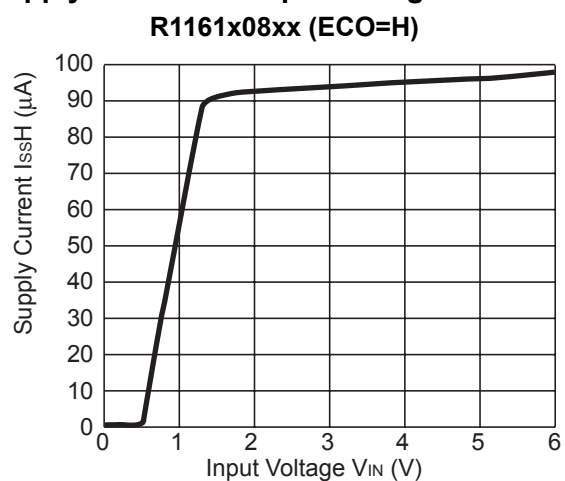


**2) Output Voltage vs. Input Voltage**





### 3) Supply Current vs. Input Voltage



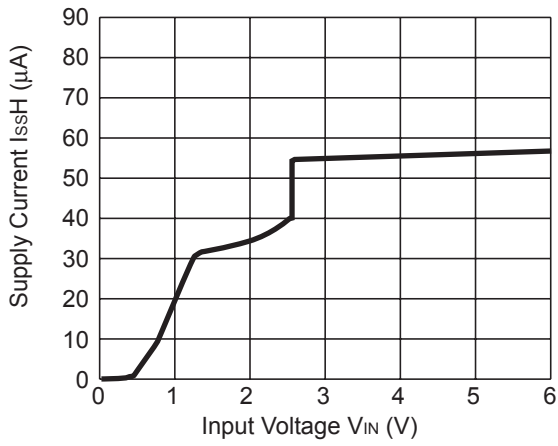
R1161x15xx (ECO=H)



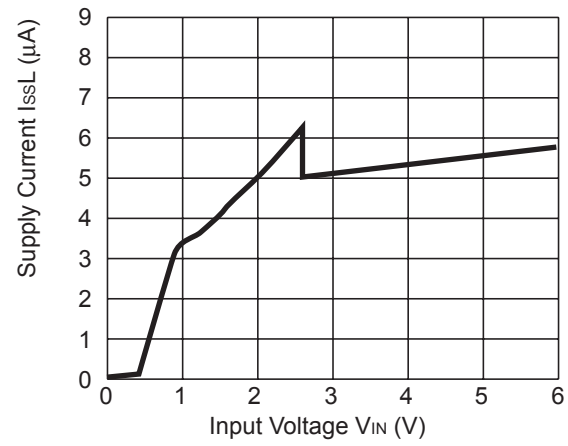
R1161x15xx (ECO=L)



R1161x26xx (ECO=H)



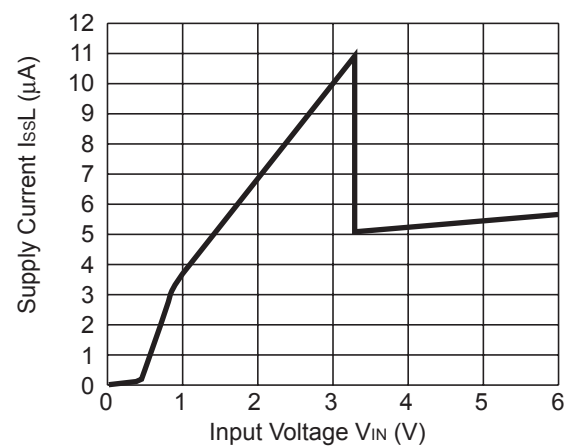
R1161x26xx (ECO=L)



R1161x33xx (ECO=H)

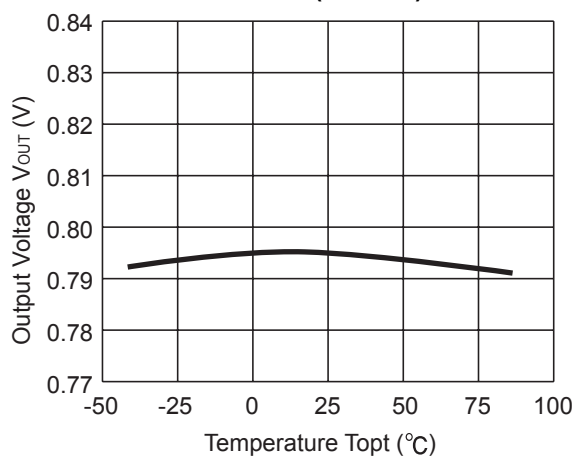


R1161x33xx (ECO=L)



## 4) Output Voltage vs. Temperature

R1161x08xx (ECO=H)



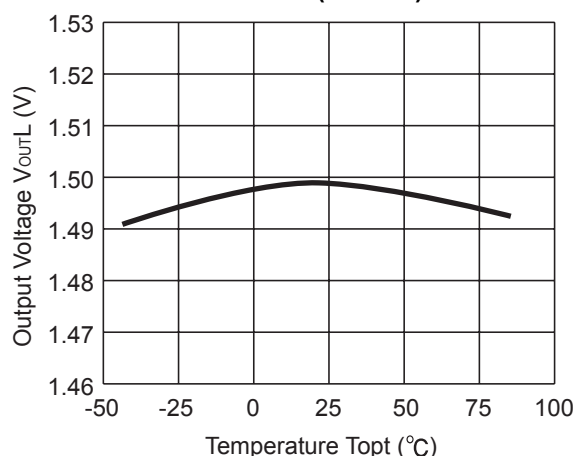
R1161x08xx (ECO=L)



R1161x15xx (ECO=H)



R1161x15xx (ECO=L)

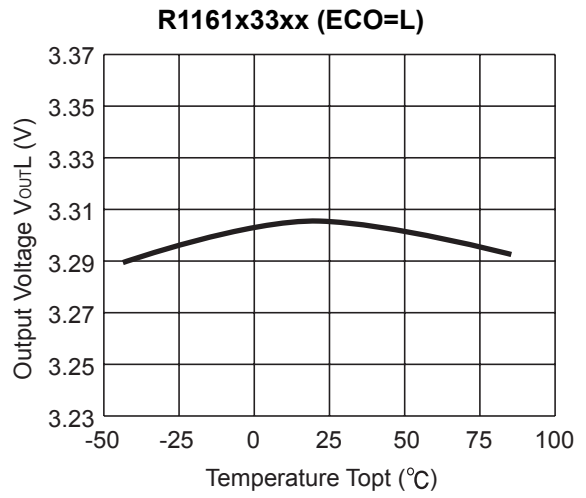
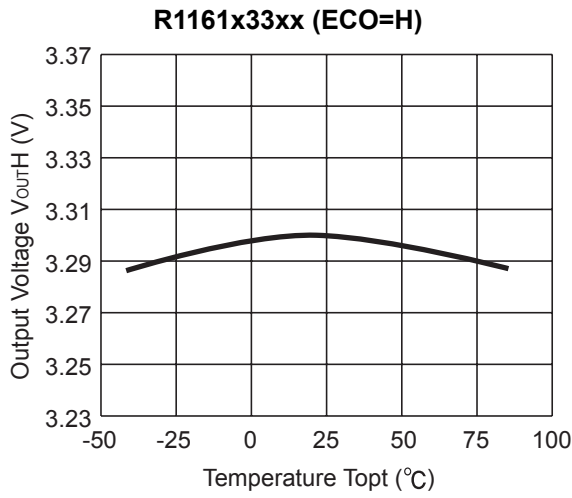


R1161x26xx (ECO=H)

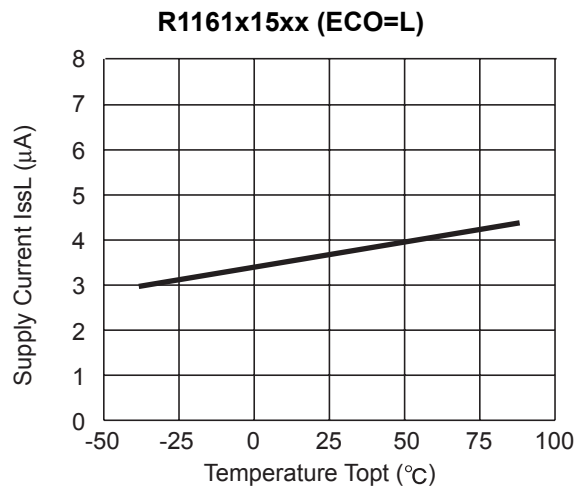
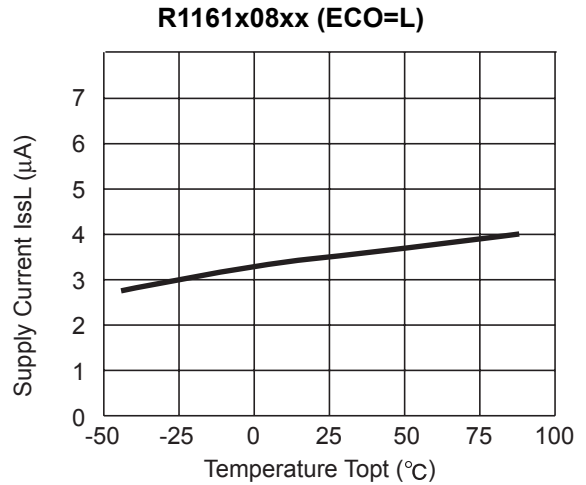


R1161x26xx (ECO=L)

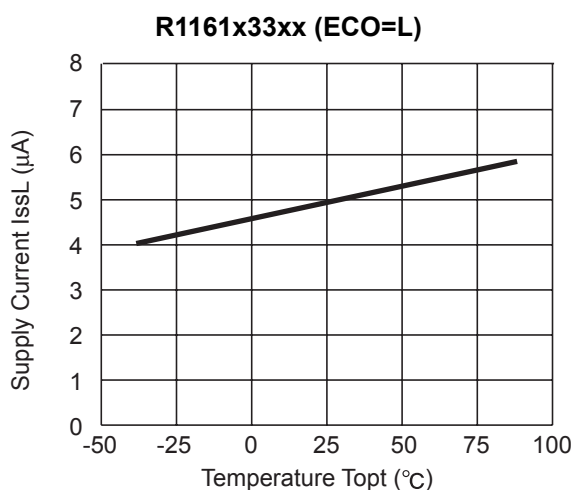
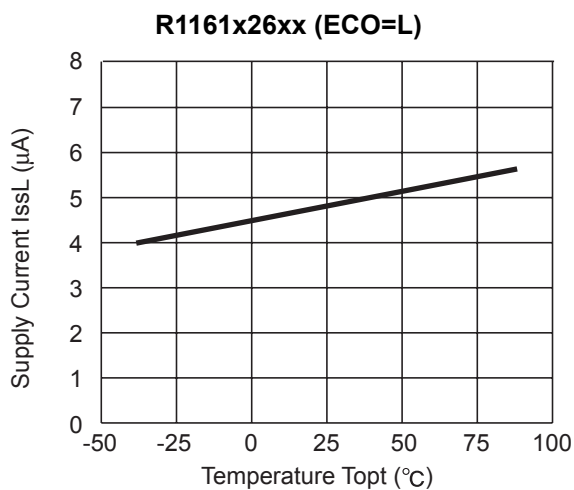




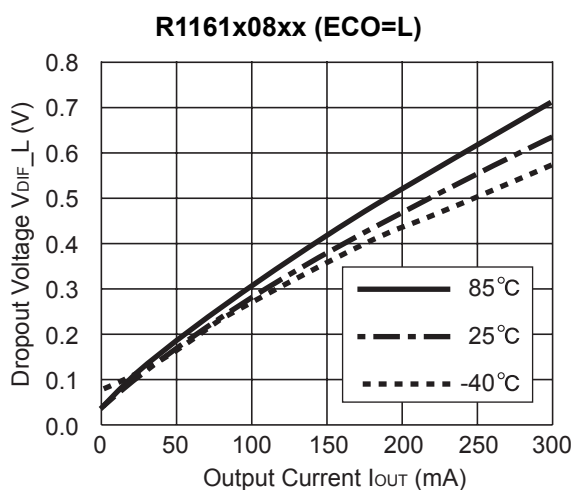
**5) Supply Current vs. Temperature**

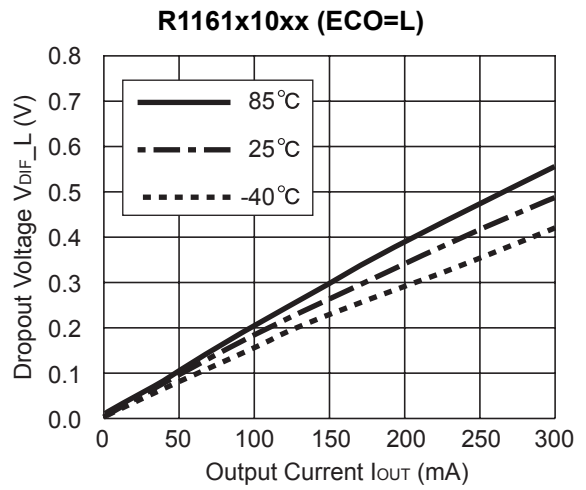
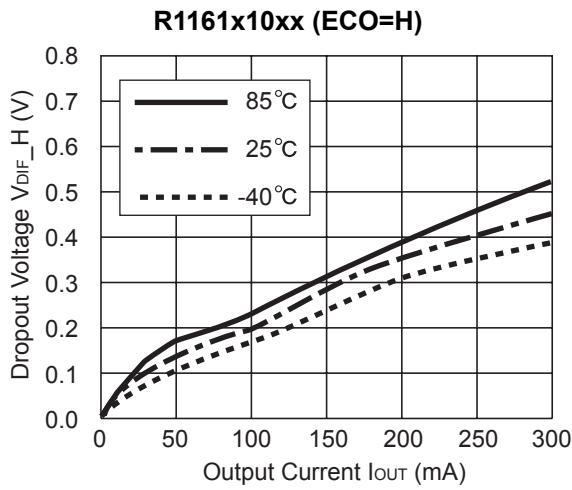






**6) Dropout Voltage vs. Output Current**



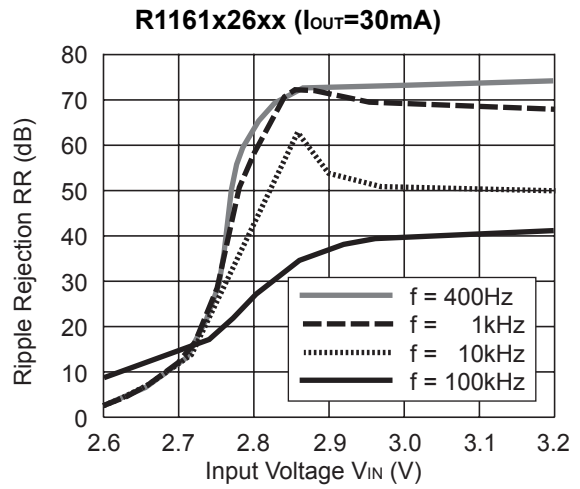
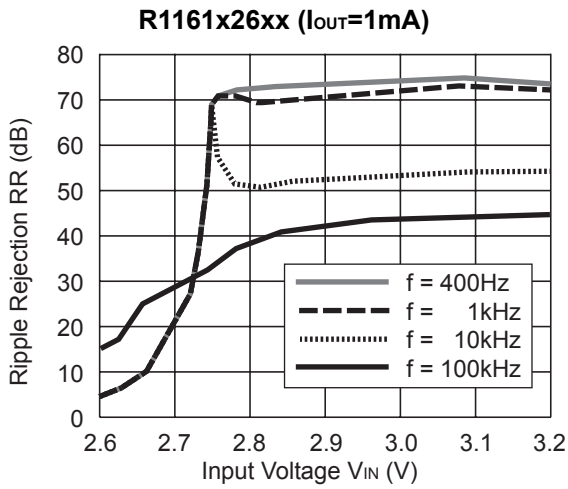




**7) Dropout Voltage vs. Set Output Voltage (T<sub>opt</sub>=25°C)**



8) Ripple Rejection vs. Input Bias (Topt=25°C CIN=none, COUT=Ceramic 1.0μF Ripple 0.2Vp-p)



9) Ripple Rejection vs. Frequency (CIN=none)



**R1161x08xx (ECO=H)**

$V_{IN}=1.8V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=\text{Tantal } 2.2\mu\text{F}$



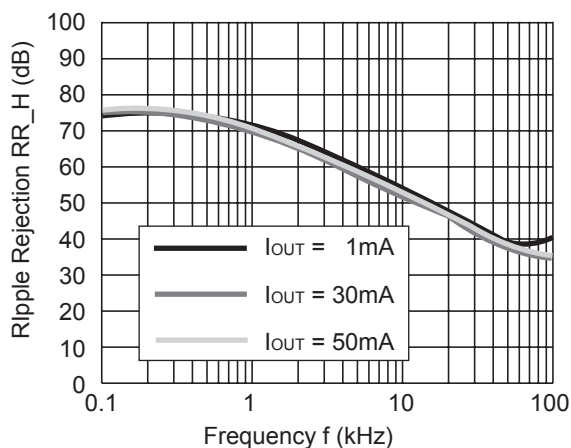
**R1161x08xx (ECO=L)**

$V_{IN}=1.8V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=\text{Tantal } 2.2\mu\text{F}$



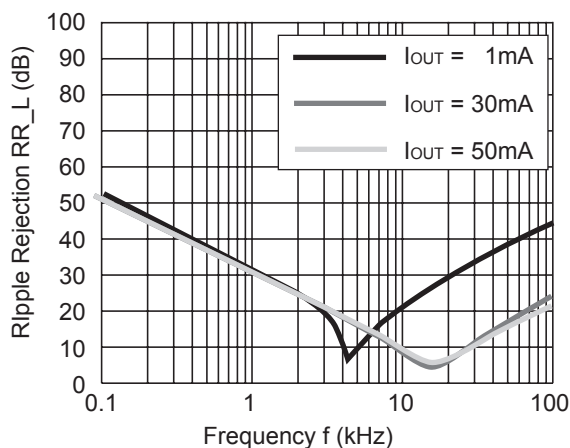
**R1161x10xx (ECO=H)**

$V_{IN}=2.0V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=\text{Ceramic } 1.0\mu\text{F}$



**R1161x10xx (ECO=L)**

$V_{IN}=2.0V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=\text{Ceramic } 1.0\mu\text{F}$



**R1161x10xx (ECO=H)**

$V_{IN}=2.0V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=\text{Ceramic } 2.2\mu\text{F}$



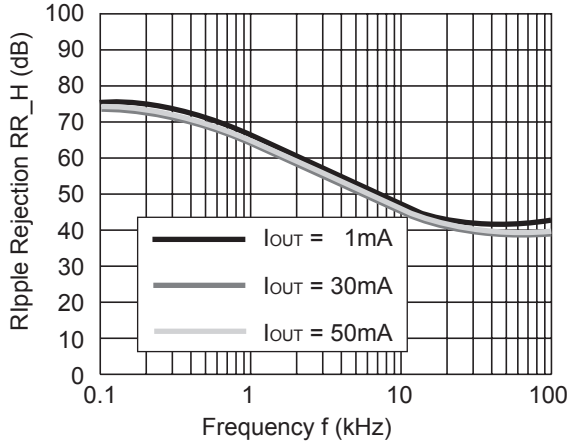
**R1161x10xx (ECO=L)**

$V_{IN}=2.0V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=\text{Ceramic } 2.2\mu\text{F}$



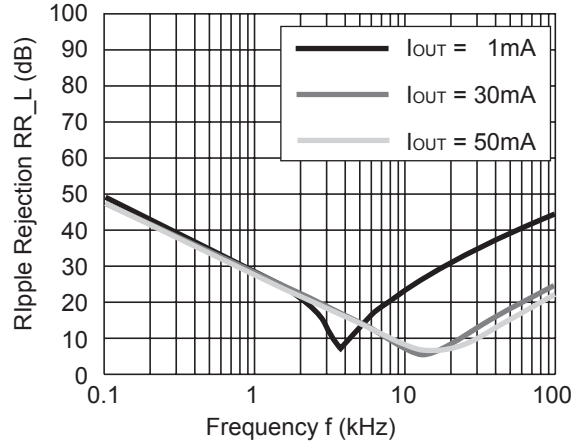
**R1161x15xx (ECO=H)**

$V_{IN}=2.5V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=1.0\mu F$



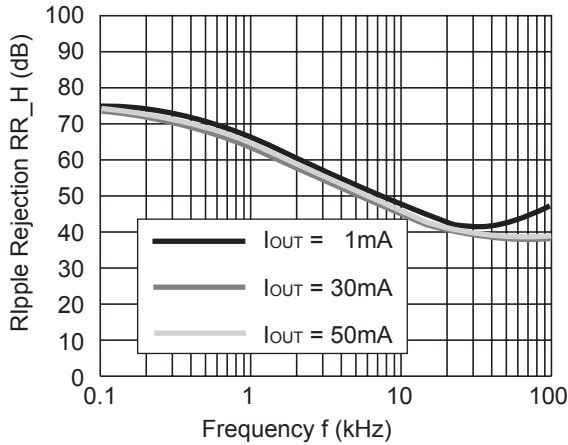
**R1161x15xx (ECO=L)**

$V_{IN}=2.5V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=1.0\mu F$



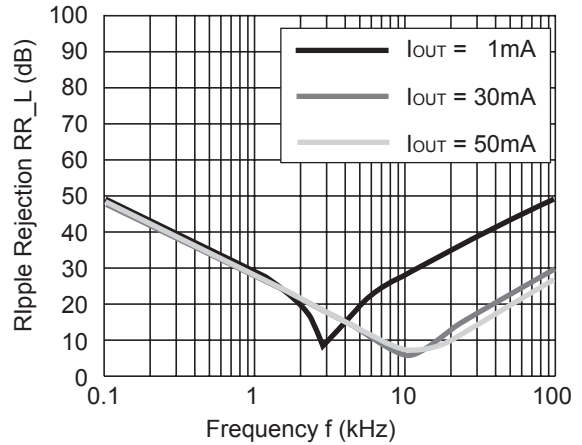
**R1161x15xx (ECO=H)**

$V_{IN}=2.5V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=2.2\mu F$



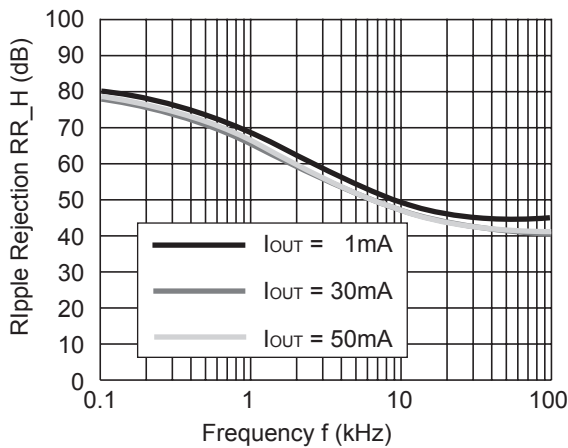
**R1161x15xx (ECO=L)**

$V_{IN}=2.5V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}=2.2\mu F$



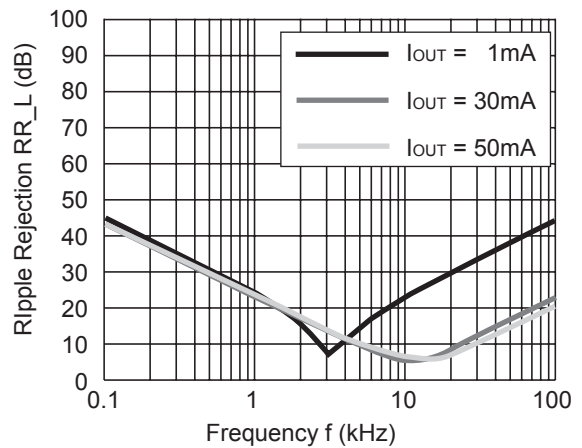
**R1161x26xx (ECO=H)**

$V_{IN}=3.6V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT} = \text{Ceramic } 1.0\mu F$



**R1161x26xx (ECO=L)**

$V_{IN}=3.6V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT} = \text{Ceramic } 1.0\mu F$



**R1161x26xx (ECO=H)**

$V_{IN}=3.6V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}$  = Ceramic 2.2 $\mu$ F



**R1161x26xx (ECO=L)**

$V_{IN}=3.6V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}$  = Ceramic 2.2 $\mu$ F



**R1161x33xx (ECO=H)**

$V_{IN}=4.3V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}$  = Ceramic 1.0 $\mu$ F



**R1161x33xx (ECO=L)**

$V_{IN}=4.3V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}$  = Ceramic 1.0 $\mu$ F



**R1161x33xx (ECO=H)**

$V_{IN}=4.3V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}$  = Ceramic 2.2 $\mu$ F



**R1161x33xx (ECO=L)**

$V_{IN}=4.3V_{DC}+0.2V_{p-p}$ ,  
 $C_{OUT}$  = Ceramic 2.2 $\mu$ F



10) Input Transient Response ( $C_{IN} = \text{none}$ ,  $t_r=t_f=5\mu\text{s}$ )

R1161x08xx (ECO=H)

$I_{OUT}=30\text{mA}$ ,  
 $C_{OUT} = \text{Tantalum } 1.0\mu\text{F}$



R1161x08x (ECO=L)

$I_{OUT}=10\text{mA}$ ,  
 $C_{OUT} = \text{Tantalum } 1.0\mu\text{F}$



R1161x10xx (ECO=H)

$I_{OUT}=30\text{mA}$ ,  
 $C_{OUT} = \text{Ceramic } 1.0\mu\text{F}$



R1161x10xx (ECO=L)

$I_{OUT}=10\text{mA}$ ,  
 $C_{OUT} = \text{Ceramic } 1.0\mu\text{F}$



R1161x26xx (ECO=H)

$I_{OUT}=30\text{mA}$ ,  
 $C_{OUT} = \text{Ceramic } 1.0\mu\text{F}$



R1161x26xx (ECO=L)

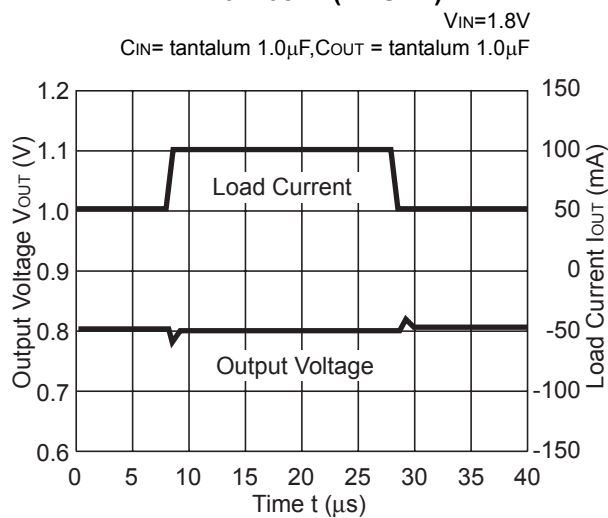
$I_{OUT}=10\text{mA}$ ,  
 $C_{OUT} = \text{Ceramic } 1.0\mu\text{F}$



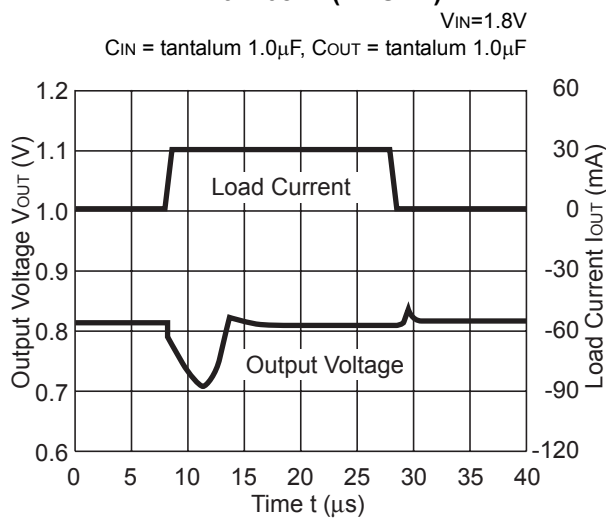


11) Load Transient Response ( $t_r=t_f=0.5\mu s$ )

R1161x08xx (ECO=H)



R1161x08xx (ECO=H)



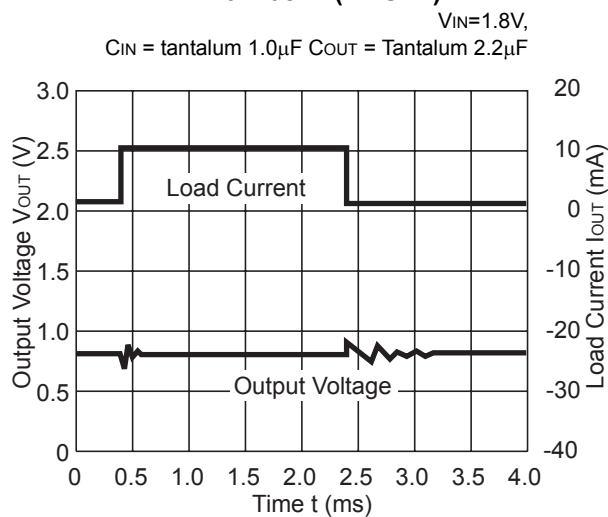
R1161x08xx (ECO=H)



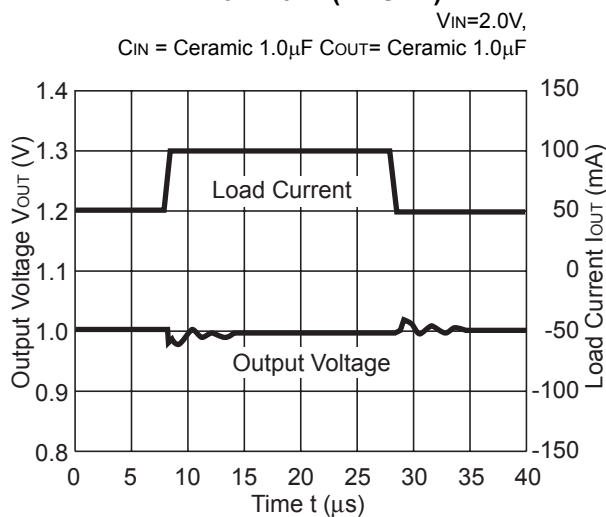
R1161x08xx (ECO=L)



R1161x08xx (ECO=L)



R1161x10xx (ECO=H)



**R1161x10xx (ECO=H)**

$V_{IN}=2.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$ ,  $C_{OUT}$  = Ceramic  $2.2\mu F$



**R1161x10xx (ECO=H)**

$V_{IN}=2.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$ ,  $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x10xx (ECO=H)**

$V_{IN}=2.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$ ,  $C_{OUT}$  = Ceramic  $2.2\mu F$



**R1161x10xx (ECO=H)**

$V_{IN}=2.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$ ,  $C_{OUT}$  = Ceramic  $1.0\mu F$



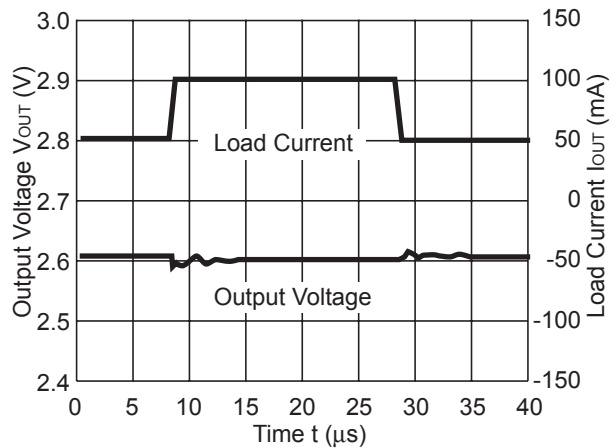
**R1161x10xx (ECO=L)**

$V_{IN}=2.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$ ,  $C_{OUT}$  = Ceramic  $2.2\mu F$



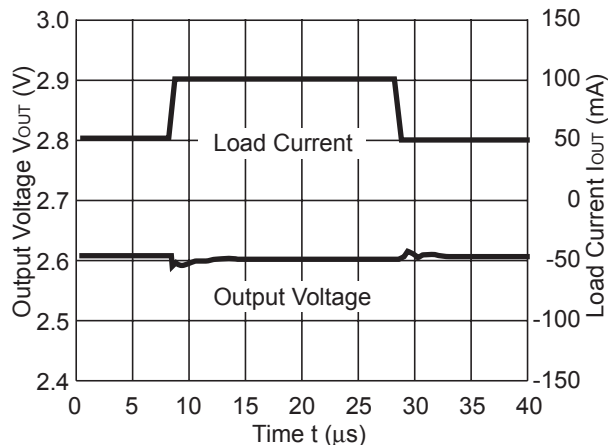
**R1161x10xx (ECO=L)**

$V_{IN}=2.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$ ,  $C_{OUT}$  = Ceramic  $1.0\mu F$



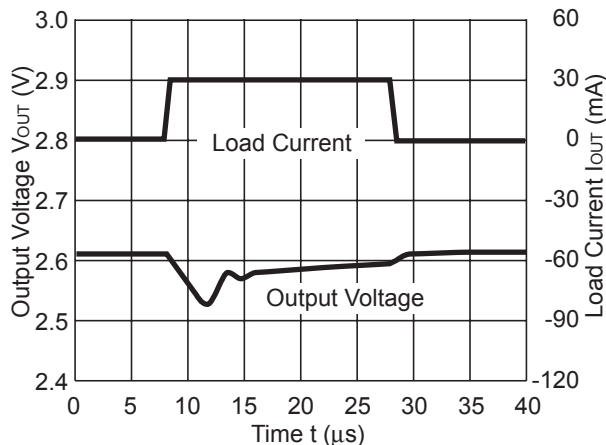
**R1161x26xx (ECO=H)**

$V_{IN}=3.6V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $2.2\mu F$



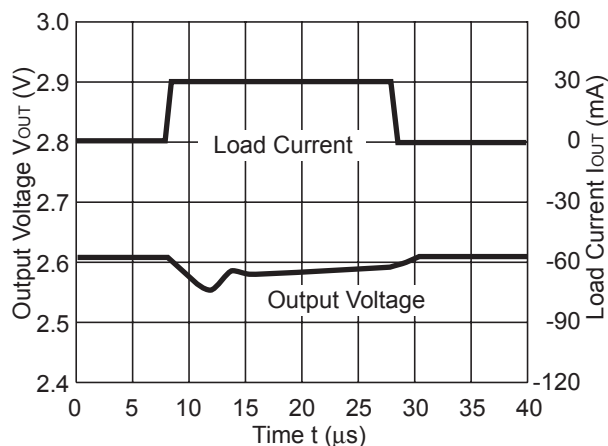
**R1161x26xx (ECO=H)**

$V_{IN}=3.6V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $1.0\mu F$



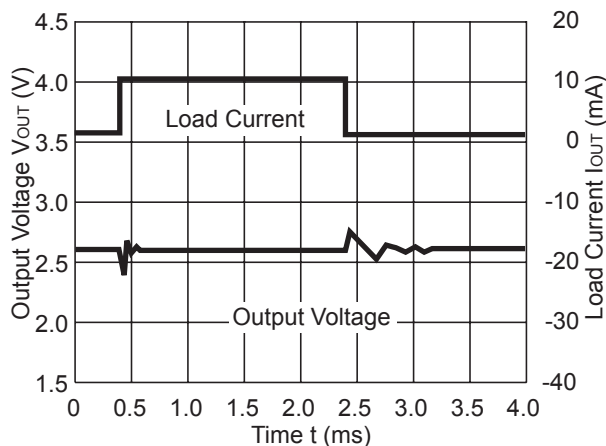
**R1161x26xx (ECO=H)**

$V_{IN}=3.6V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $2.2\mu F$



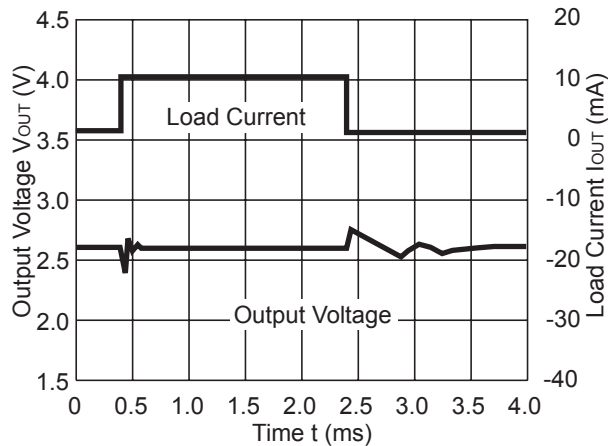
**R1161x26xx (ECO=L)**

$V_{IN}=3.6V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x26xx (ECO=L)**

$V_{IN}=3.6V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $2.2\mu F$



12) Turn on speed with CE pin

**R1161x08xx (ECO=H)**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



**R1161x08xx (ECO=L)**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



**R1161x08xx (ECO=H)**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



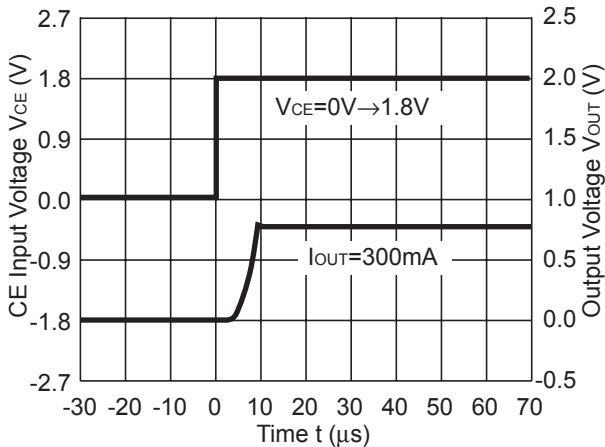
**R1161x08xx (ECO=L)**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



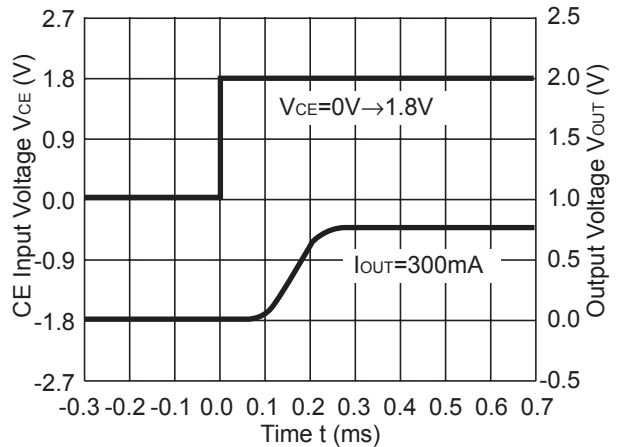
**R1161x08xx (ECO=H)**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



**R1161x08xx (ECO=L)**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



**R1161x33xx (ECO=H)**

$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x33xx (ECO=L)**

$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x33xx (ECO=H)**

$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x33xx (ECO=L)**

$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x33xx (ECO=H)**

$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x33xx (ECO=L)**

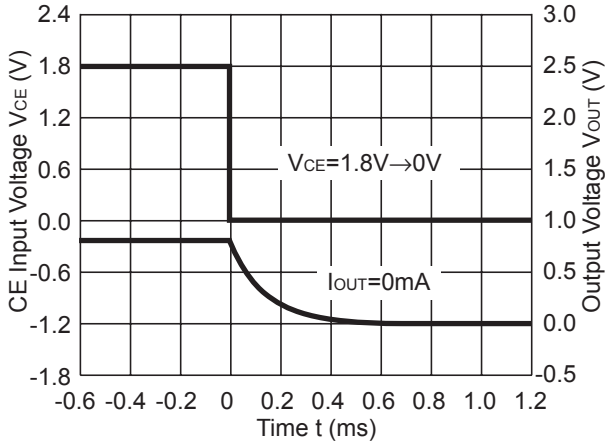
$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



13) Turn-off Speed with CE

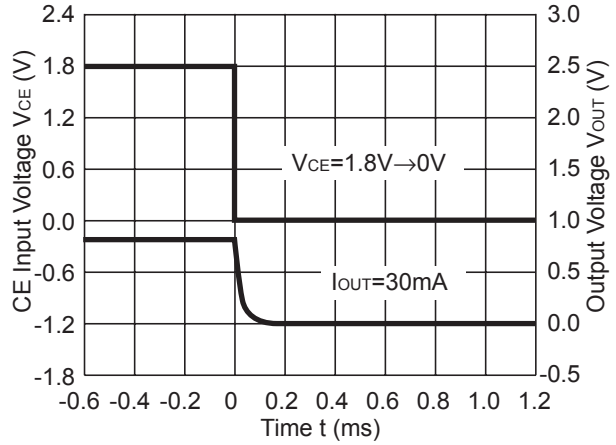
**R1161x08xD**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



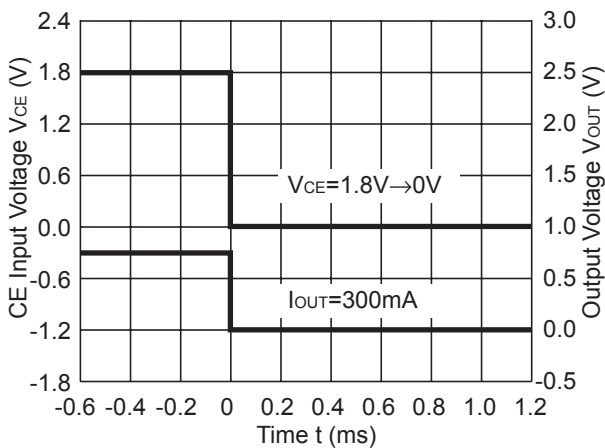
**R1161x08xD**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



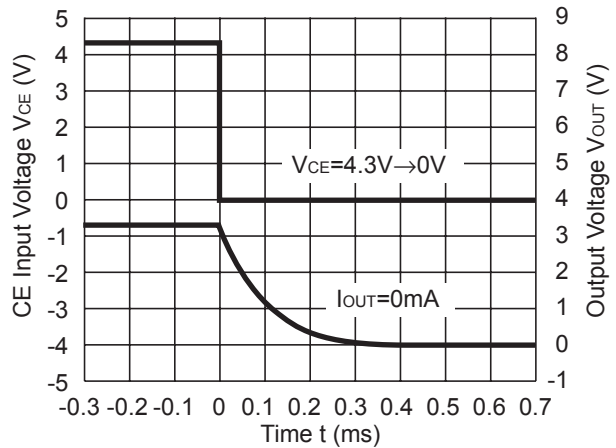
**R1161x08xD**

$V_{IN}=1.8V$ ,  $C_{IN}$  = Tantalum  $1.0\mu F$   
 $C_{OUT}$  = Tantalum  $1.0\mu F$



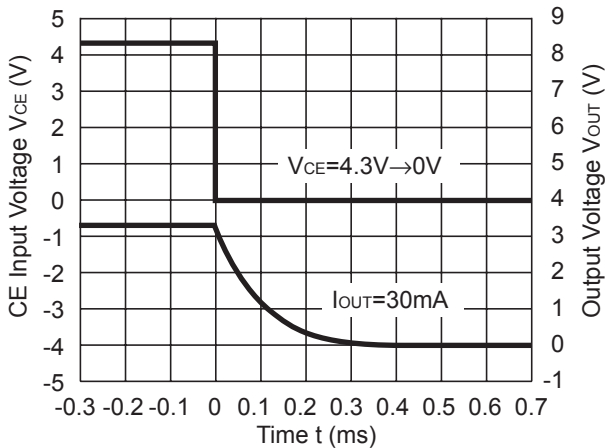
**R1161x33xD**

$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



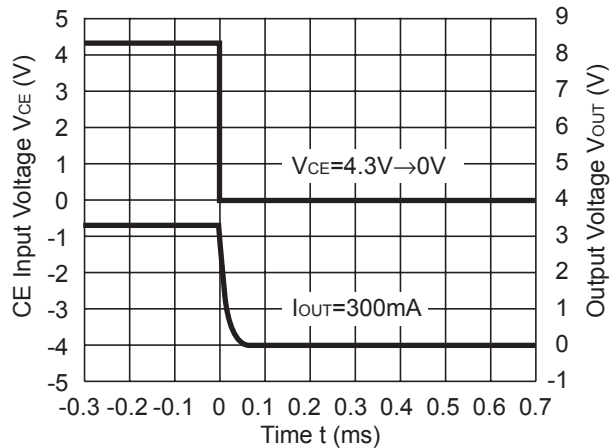
**R1161x33xD**

$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x33xD**

$V_{IN}=4.3V$ ,  $C_{IN}$  = Ceramic  $1.0\mu F$   
 $C_{OUT}$  = Ceramic  $1.0\mu F$



14) Output Voltage at Mode alternative point

**R1161x08xx**

V<sub>IN</sub>=1.8V, C<sub>IN</sub> = Ceramic 1.0μF  
C<sub>OUT</sub> = Tantalum 1.0μF



**R1161x08xx**

V<sub>IN</sub>=1.8V, C<sub>IN</sub> = Ceramic 1.0μF  
C<sub>OUT</sub> = Tantalum 1.0μF



**R1161x10xx**

V<sub>IN</sub>=2.0V, C<sub>IN</sub> = Ceramic 1.0μF  
C<sub>OUT</sub> = Ceramic 1.0μF



**R1161x10xx**

V<sub>IN</sub>=2.0V, C<sub>IN</sub> = Ceramic 1.0μF  
C<sub>OUT</sub> = Ceramic 1.0μF



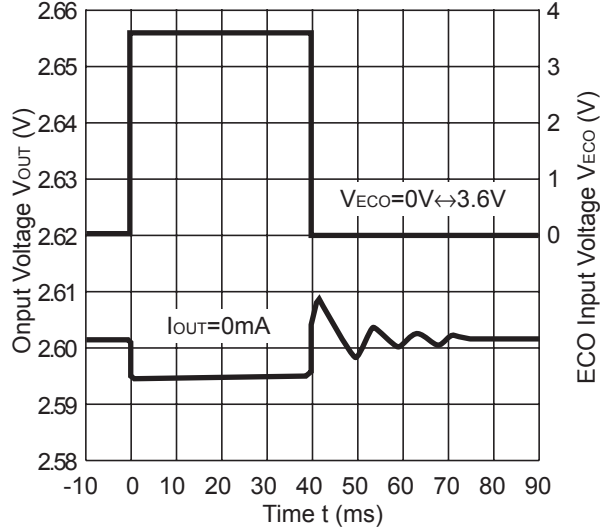
**R1161x26xx**

V<sub>IN</sub>=3.6V, C<sub>IN</sub> = Ceramic 1.0μF  
C<sub>OUT</sub> = Ceramic 1.0μF



**R1161x26xx**

V<sub>IN</sub>=3.6V, C<sub>IN</sub> = Ceramic 1.0μF  
C<sub>OUT</sub> = Ceramic 1.0μF





## TECHNICAL NOTES



When using these ICs, consider the following points:

### 1. Mounting on PCB

Make  $V_{DD}$  and GND lines sufficient. If their impedance is high, noise pickup or unstable operation may result. Connect a capacitor C1 with as much as  $1.0\mu\text{F}$  capacitor between  $V_{DD}$  and GND pin as close as possible.

Set external components, especially the output capacitor as close as possible to the ICs and make wiring as short as possible.

### 2. Phase Compensation

In these ICs, phase compensation is made for securing stable operation even if the load current is varied. For this purpose, be sure to use a  $1.0\mu\text{F}$  more capacitor C2 with good frequency characteristics and ESR (Equivalent Series Resistance).

| Output Voltage             | Recommended Value of C2                     |
|----------------------------|---|
| $V_{OUT} < 1.0\text{V}$    | $1.0\mu\text{F}$ or more Tantalum Capacitor |
| $1.0\text{V} \leq V_{OUT}$ | $1.0\mu\text{F}$ or more Ceramic Capacitor  |

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

If you use a tantalum type capacitor and ESR value of the capacitor is large, output might be unstable. Evaluate your circuit with considering frequency characteristics.

Depending on the capacitor size, manufacturer, and part number, the bias characteristics and temperature characteristics are different. Evaluate the circuit with actual using capacitors.

## ESR vs. Output Current

When using these ICs, consider the following points:

In these ICs, phase compensation is made for securing stable operation even if the output current is varied. For this purpose, be sure to use a capacitor  $C_{OUT}$  with good frequency characteristics and ESR (Equivalent Series Resistance) in the range described as follows:

The relations between  $I_{OUT}$  (Output Current) and ESR of Output Capacitor are shown below.

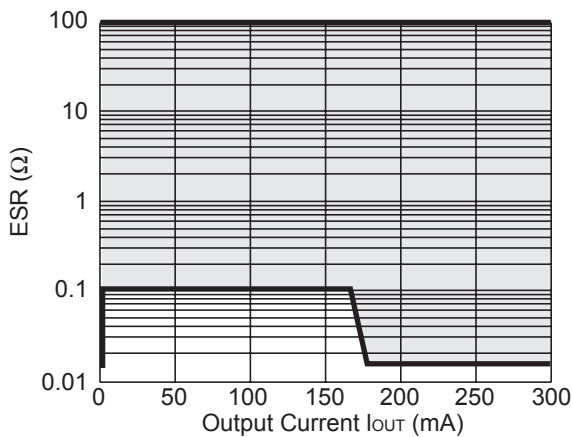
The conditions when the white noise level is under  $40\mu\text{V}$  (Avg.) are marked as the hatched area in the graph.

### <Test conditions>

- (1) Frequency band: 10Hz to 2MHz
- (2) Temperature: 25°C

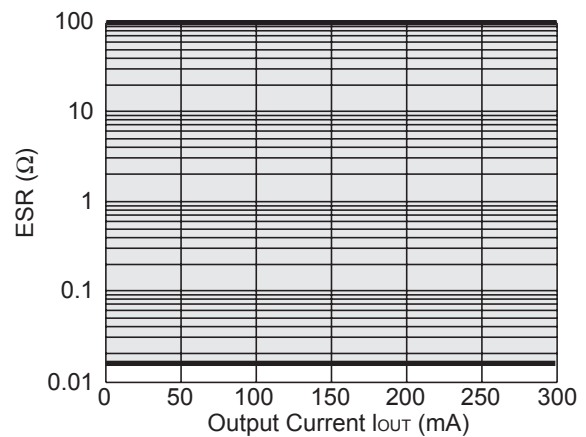
**R1161x08xx (ECO=H)**

$V_{IN}=1.4\text{V to }6.0\text{V}$ ,  
 $C_{IN} = \text{Ceramic } 1.0\mu\text{F}$   $C_{OUT} = \text{Ceramic } 1.0\mu\text{F}$



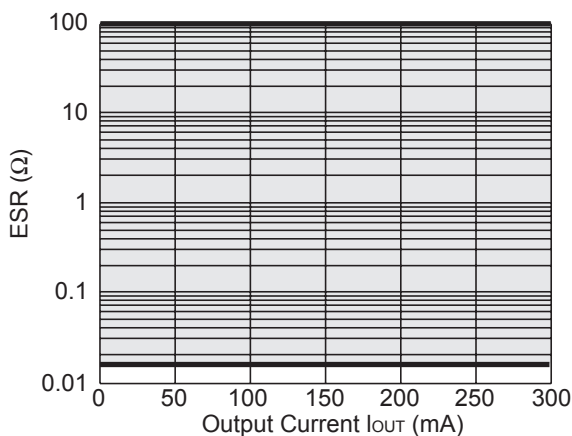
**R1161x08xx (ECO=L)**

$V_{IN}=1.4\text{V to }6.0\text{V}$ ,  
 $C_{IN} = \text{Ceramic } 1.0\mu\text{F}$   $C_{OUT} = \text{Ceramic } 1.0\mu\text{F}$



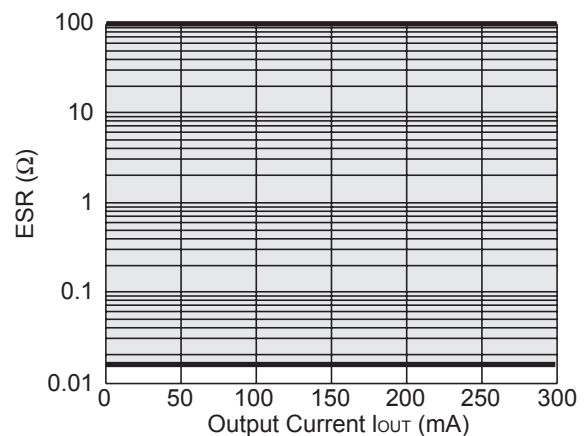
**R1161x10xx (ECO=H)**

$V_{IN}=1.4\text{V to }6.0\text{V}$ ,  
 $C_{IN} = \text{Ceramic } 1.0\mu\text{F}$   $C_{OUT} = \text{Ceramic } 1.0\mu\text{F}$



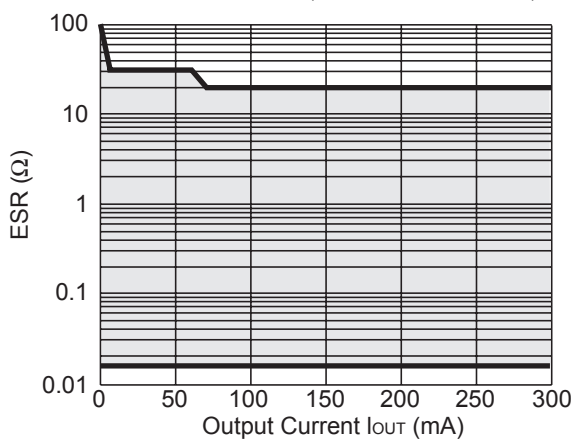
**R1161x10xx (ECO=L)**

$V_{IN}=1.4\text{V to }6.0\text{V}$ ,  
 $C_{IN} = \text{Ceramic } 1.0\mu\text{F}$   $C_{OUT} = \text{Ceramic } 1.0\mu\text{F}$



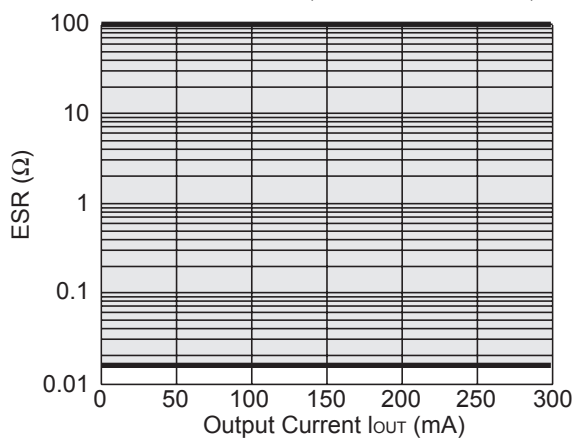
**R1161x26xx (ECO=H)**

$V_{IN}=3.0V$  to  $6.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $1.0\mu F$



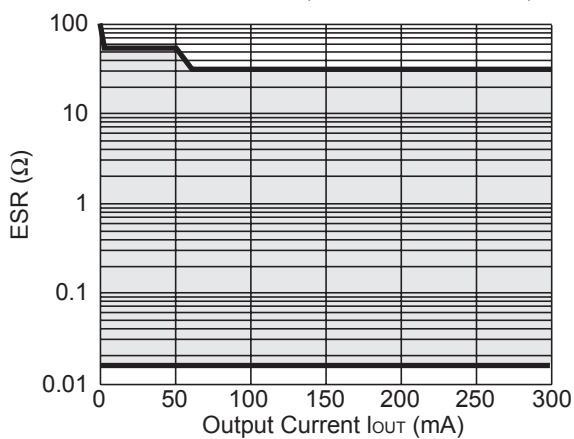
**R1161x26xx (ECO=L)**

$V_{IN}=3.0V$  to  $6.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $1.0\mu F$



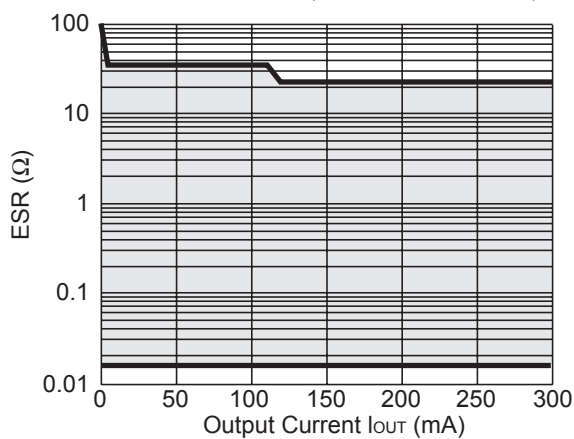
**R1161x15xx (ECO=H)**

$V_{IN}=2.0V$  to  $6.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $1.0\mu F$



**R1161x30xx (ECO=H)**

$V_{IN}=3.6V$  to  $6.0V$ ,  
 $C_{IN}$  = Ceramic  $1.0\mu F$   $C_{OUT}$  = Ceramic  $1.0\mu F$





### POWER DISSIPATION (SOT-23-5)

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

(Power Dissipation (SOT-23-5) is substitution of SOT-23-6.)

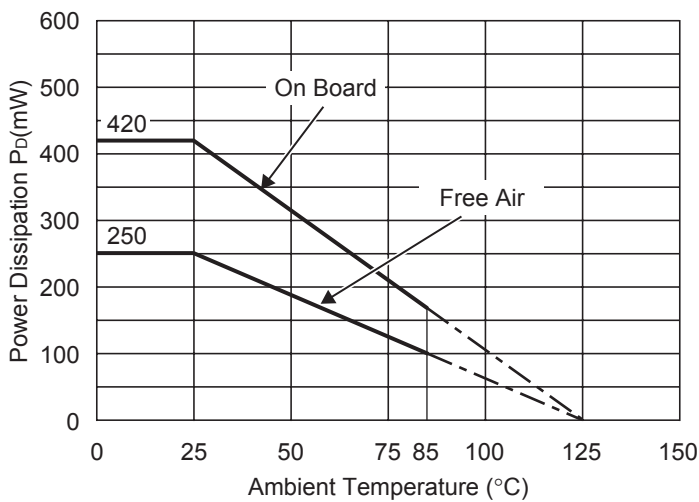
Measurement Conditions

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

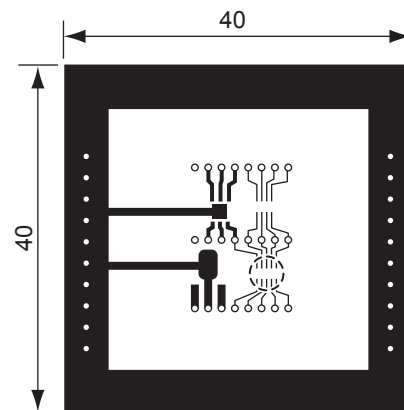
Measurement Result

( $T_{opt}=25^{\circ}C, T_{jmax}=125^{\circ}C$ )

|                    |  |                   |
|--------------------|--|-------------------|
|                    | Standard Land Pattern                                | Free Air          |
| Power Dissipation  | 420mW  | 250mW             |
| Thermal Resistance | $\theta_{ja}=(125-25^{\circ}C)/0.42W=263^{\circ}C/W$ | 400 $^{\circ}C/W$ |



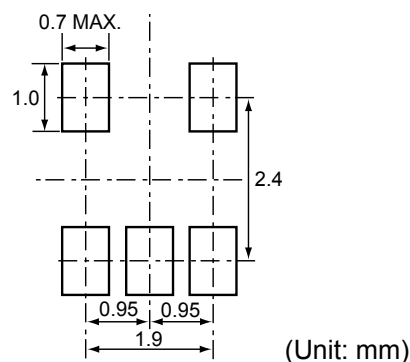
Power Dissipation



Measurement Board Pattern

○ IC Mount Area Unit : mm

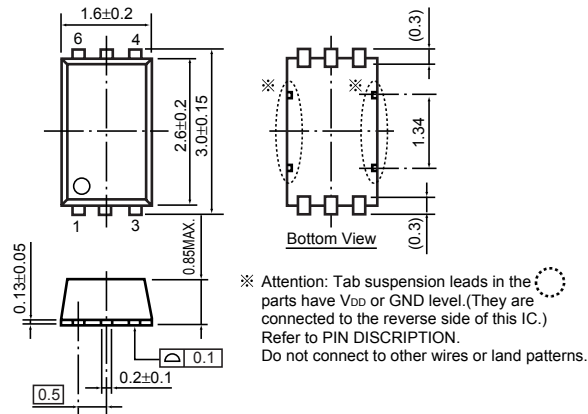
### RECOMMENDED LAND PATTERN



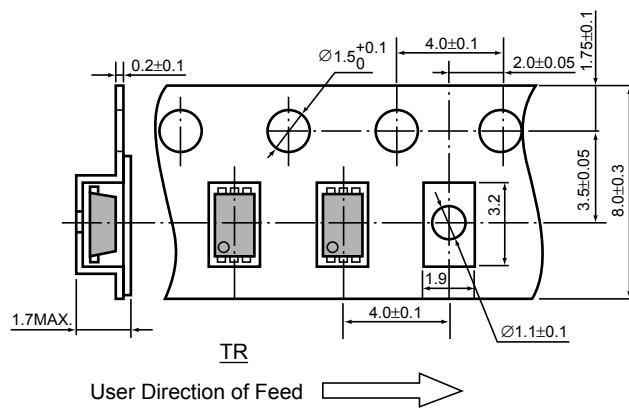
• SON-6

Unit: mm

PACKAGE DIMENSIONS

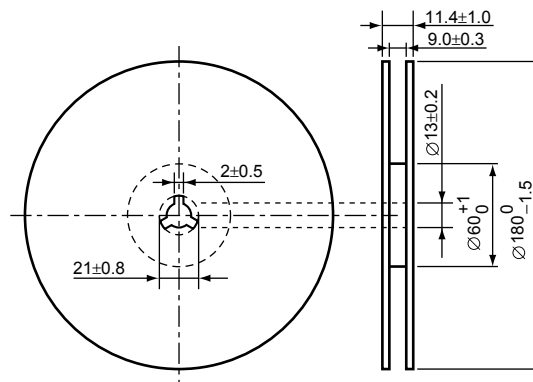


TAPING SPECIFICATION



TAPING REEL DIMENSIONS

(1reel=3000pcs)



## POWER DISSIPATION (SON-6)

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

### Measurement Conditions

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

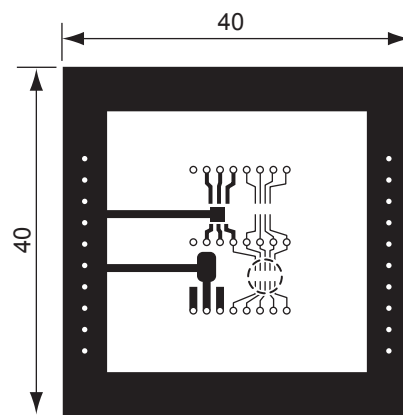
### Measurement Result

( $T_{opt}=25^{\circ}C, T_{jmax}=125^{\circ}C$ )

|                    |   |          |
|--------------------|---|----------|
|                    | Standard Land Pattern                               | Free Air |
| Power Dissipation  | 500mW   | 250mW    |
| Thermal Resistance | $\theta_{ja}=(125-25^{\circ}C)/0.5W=200^{\circ}C/W$ | -        |



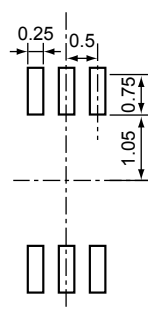
Power Dissipation



Measurement Board Pattern

○ IC Mount Area (Unit : mm)

## RECOMMENDED LAND PATTERN



(Unit: mm)

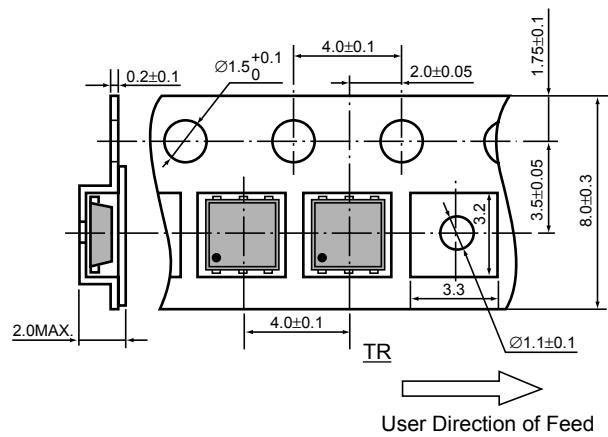
• HSON-6

Unit: mm

PACKAGE DIMENSIONS

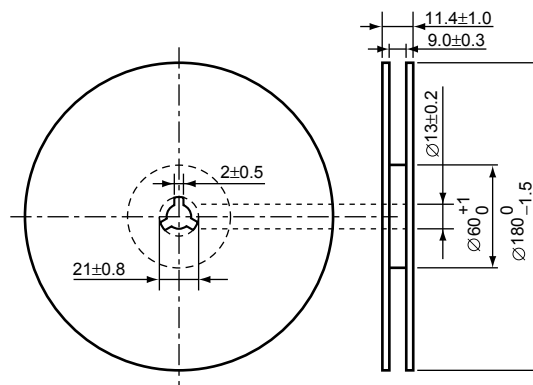


TAPING SPECIFICATION



TAPING REEL DIMENSIONS

(1reel=3000pcs)





### POWER DISSIPATION (HSON-6)

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

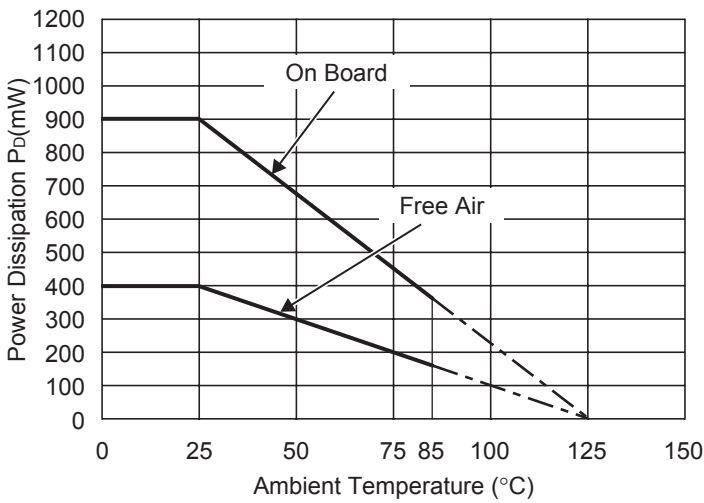
Measurement Conditions

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

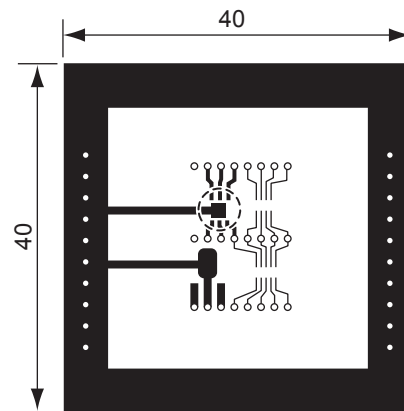
Measurement Result

( $T_{opt}=25^{\circ}C, T_{jmax}=125^{\circ}C$ )

|                    |   |          |
|--------------------|---|----------|
|                    | Standard Land Pattern                               | Free Air |
| Power Dissipation  | 900mW   | 400mW    |
| Thermal Resistance | $\theta_{ja}=(125-25^{\circ}C)/0.9W=111^{\circ}C/W$ | 250°C/W  |



Power Dissipation



Measurement Board Pattern

○ IC Mount Area Unit : mm

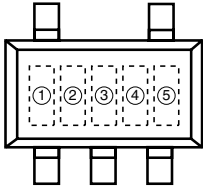
### RECOMMENDED LAND PATTERN



(Unit: mm)

**R1161N SERIES MARK SPECIFICATION**

● **SOT-23-5 (SC-74A)**



①, ②, ③ : Product Code (refer to Part Number vs. Product Code)  
 ④, ⑤ : Lot Number

● **Part Number vs. Product Code**

| Part Number | Product Code |   |   |
|-------------|--------------|---|---|
|             | ①            | ② | ③ |
| R1161N081A  | P            | 0 | 8 |
| R1161N091A  | P            | 0 | 9 |
| R1161N101A  | P            | 1 | 0 |
| R1161N111A  | P            | 1 | 1 |
| R1161N121A  | P            | 1 | 2 |
| R1161N131A  | P            | 1 | 3 |
| R1161N141A  | P            | 1 | 4 |
| R1161N151A  | P            | 1 | 5 |
| R1161N161A  | P            | 1 | 6 |
| R1161N171A  | P            | 1 | 7 |
| R1161N181A  | P            | 1 | 8 |
| R1161N191A  | P            | 1 | 9 |
| R1161N201A  | P            | 2 | 0 |
| R1161N211A  | P            | 2 | 1 |
| R1161N221A  | P            | 2 | 2 |
| R1161N231A  | P            | 2 | 3 |
| R1161N241A  | P            | 2 | 4 |
| R1161N251A  | P            | 2 | 5 |
| R1161N261A  | P            | 2 | 6 |
| R1161N271A  | P            | 2 | 7 |
| R1161N281A  | P            | 2 | 8 |
| R1161N291A  | P            | 2 | 9 |
| R1161N301A  | P            | 3 | 0 |
| R1161N311A  | P            | 3 | 1 |
| R1161N321A  | P            | 3 | 2 |
| R1161N331A  | P            | 3 | 3 |
| R1161N281A5 | P            | 0 | 0 |

| Part Number | Product Code |   |   |
|-------------|--------------|---|---|
|             | ①            | ② | ③ |
| R1161N081B  | Q            | 0 | 8 |
| R1161N091B  | Q            | 0 | 9 |
| R1161N101B  | Q            | 1 | 0 |
| R1161N111B  | Q            | 1 | 1 |
| R1161N121B  | Q            | 1 | 2 |
| R1161N131B  | Q            | 1 | 3 |
| R1161N141B  | Q            | 1 | 4 |
| R1161N151B  | Q            | 1 | 5 |
| R1161N161B  | Q            | 1 | 6 |
| R1161N171B  | Q            | 1 | 7 |
| R1161N181B  | Q            | 1 | 8 |
| R1161N191B  | Q            | 1 | 9 |
| R1161N201B  | Q            | 2 | 0 |
| R1161N211B  | Q            | 2 | 1 |
| R1161N221B  | Q            | 2 | 2 |
| R1161N231B  | Q            | 2 | 3 |
| R1161N241B  | Q            | 2 | 4 |
| R1161N251B  | Q            | 2 | 5 |
| R1161N261B  | Q            | 2 | 6 |
| R1161N271B  | Q            | 2 | 7 |
| R1161N281B  | Q            | 2 | 8 |
| R1161N291B  | Q            | 2 | 9 |
| R1161N301B  | Q            | 3 | 0 |
| R1161N311B  | Q            | 3 | 1 |
| R1161N321B  | Q            | 3 | 2 |
| R1161N331B  | Q            | 3 | 3 |
| R1161N281B5 | Q            | 0 | 0 |

| Part Number | Product Code |   |   |
|-------------|--------------|---|---|
|             | ①            | ② | ③ |
| R1161N081D  | R            | 0 | 8 |
| R1161N091D  | R            | 0 | 9 |
| R1161N101D  | R            | 1 | 0 |
| R1161N111D  | R            | 1 | 1 |
| R1161N121D  | R            | 1 | 2 |
| R1161N131D  | R            | 1 | 3 |
| R1161N141D  | R            | 1 | 4 |
| R1161N151D  | R            | 1 | 5 |
| R1161N161D  | R            | 1 | 6 |
| R1161N171D  | R            | 1 | 7 |
| R1161N181D  | R            | 1 | 8 |
| R1161N191D  | R            | 1 | 9 |
| R1161N201D  | R            | 2 | 0 |
| R1161N211D  | R            | 2 | 1 |
| R1161N221D  | R            | 2 | 2 |
| R1161N231D  | R            | 2 | 3 |
| R1161N241D  | R            | 2 | 4 |
| R1161N251D  | R            | 2 | 5 |
| R1161N261D  | R            | 2 | 6 |
| R1161N271D  | R            | 2 | 7 |
| R1161N281D  | R            | 2 | 8 |
| R1161N291D  | R            | 2 | 9 |
| R1161N301D  | R            | 3 | 0 |
| R1161N311D  | R            | 3 | 1 |
| R1161N321D  | R            | 3 | 2 |
| R1161N331D  | R            | 3 | 3 |
| R1161N281D5 | R            | 0 | 0 |

## R1161Dxx1 SERIES MARK SPECIFICATION

• SON-6



①, ② : Product Code (refer to Part Number vs. Product Code)

③, ④ : Lot Number

• Part Number vs. Product Code

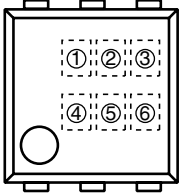
| Part Number | Product Code |   |
|-------------|--------------|---|
|             | ①            | ② |
| R1161D081A  | 8            | A |
| R1161D091A  | 9            | A |
| R1161D101A  | 0            | B |
| R1161D111A  | 1            | B |
| R1161D121A  | 2            | B |
| R1161D131A  | 3            | B |
| R1161D141A  | 4            | B |
| R1161D151A  | 5            | B |
| R1161D161A  | 6            | B |
| R1161D171A  | 7            | B |
| R1161D181A  | 8            | B |
| R1161D191A  | 9            | B |
| R1161D201A  | 0            | C |
| R1161D211A  | 1            | C |
| R1161D221A  | 2            | C |
| R1161D231A  | 3            | C |
| R1161D241A  | 4            | C |
| R1161D251A  | 5            | C |
| R1161D261A  | 6            | C |
| R1161D271A  | 7            | C |
| R1161D281A  | 8            | C |
| R1161D291A  | 9            | C |
| R1161D301A  | 0            | D |
| R1161D311A  | 1            | D |
| R1161D321A  | 2            | D |
| R1161D331A  | 3            | D |
| R1161D281A5 | 0            | A |
| R1161D121A5 | 1            | A |
| R1161D181A5 | 2            | A |

| Part Number | Product Code |   |
|-------------|--------------|---|
|             | ①            | ② |
| R1161D081B  | 8            | E |
| R1161D091B  | 9            | E |
| R1161D101B  | 0            | F |
| R1161D111B  | 1            | F |
| R1161D121B  | 2            | F |
| R1161D131B  | 3            | F |
| R1161D141B  | 4            | F |
| R1161D151B  | 5            | F |
| R1161D161B  | 6            | F |
| R1161D171B  | 7            | F |
| R1161D181B  | 8            | F |
| R1161D191B  | 9            | F |
| R1161D201B  | 0            | G |
| R1161D211B  | 1            | G |
| R1161D221B  | 2            | G |
| R1161D231B  | 3            | G |
| R1161D241B  | 4            | G |
| R1161D251B  | 5            | G |
| R1161D261B  | 6            | G |
| R1161D271B  | 7            | G |
| R1161D281B  | 8            | G |
| R1161D291B  | 9            | G |
| R1161D301B  | 0            | H |
| R1161D311B  | 1            | H |
| R1161D321B  | 2            | H |
| R1161D331B  | 3            | H |
| R1161D281B  | 0            | E |
| R1161D121B5 | 1            | E |
| R1161D181B5 | 2            | E |

| Part Number | Product Code |   |
|-------------|--------------|---|
|             | ①            | ② |
| R1161D081D  | 8            | J |
| R1161D091D  | 9            | J |
| R1161D101D  | 0            | J |
| R1161D111D  | 1            | K |
| R1161D121D  | 2            | K |
| R1161D131D  | 3            | K |
| R1161D141D  | 4            | K |
| R1161D151D  | 5            | K |
| R1161D161D  | 6            | K |
| R1161D171D  | 7            | K |
| R1161D181D  | 8            | K |
| R1161D191D  | 9            | K |
| R1161D201D  | 0            | L |
| R1161D211D  | 1            | L |
| R1161D221D  | 2            | L |
| R1161D231D  | 3            | L |
| R1161D241D  | 4            | L |
| R1161D251D  | 5            | L |
| R1161D261D  | 6            | L |
| R1161D271D  | 7            | L |
| R1161D281D  | 8            | L |
| R1161D291D  | 9            | L |
| R1161D301D  | 0            | M |
| R1161D311D  | 1            | M |
| R1161D321D  | 2            | M |
| R1161D331D  | 3            | M |
| R1161D281D  | 0            | J |
| R1161D121D5 | 1            | J |
| R1161D181D5 | 2            | J |

**R1161Dxx2 SERIES MARK SPECIFICATION**

● HSON-6



- ① : B (fixed)
- ②, ③ : Setting Voltage } (refer to Part Number vs. Product Code)
- ④ : Type (A, B,D)
- ⑤, ⑥ : Lot Number

● Part Number vs. Product Code

| Part Number | Product Code |   |   |   |
|-------------|--------------|---|---|---|
|             | ①            | ② | ③ | ④ |
| R1161D082A  | B            | 0 | 8 | A |
| R1161D092A  | B            | 0 | 9 | A |
| R1161D102A  | B            | 1 | 0 | A |
| R1161D112A  | B            | 1 | 1 | A |
| R1161D122A  | B            | 1 | 2 | A |
| R1161D132A  | B            | 1 | 3 | A |
| R1161D142A  | B            | 1 | 4 | A |
| R1161D152A  | B            | 1 | 5 | A |
| R1161D162A  | B            | 1 | 6 | A |
| R1161D172A  | B            | 1 | 7 | A |
| R1161D182A  | B            | 1 | 8 | A |
| R1161D192A  | B            | 1 | 9 | A |
| R1161D202A  | B            | 2 | 0 | A |
| R1161D212A  | B            | 2 | 1 | A |
| R1161D222A  | B            | 2 | 2 | A |
| R1161D232A  | B            | 2 | 3 | A |
| R1161D242A  | B            | 2 | 4 | A |
| R1161D252A  | B            | 2 | 5 | A |
| R1161D262A  | B            | 2 | 6 | A |
| R1161D272A  | B            | 2 | 7 | A |
| R1161D282A  | B            | 2 | 8 | A |
| R1161D292A  | B            | 2 | 9 | A |
| R1161D302A  | B            | 3 | 0 | A |
| R1161D312A  | B            | 3 | 1 | A |
| R1161D322A  | B            | 3 | 2 | A |
| R1161D332A  | B            | 3 | 3 | A |
| R1161D282A5 | B            | 0 | 0 | A |
| R1161D122A5 | B            | 0 | 1 | A |
| R1161D182A5 | B            | 0 | 2 | A |

| Part Number | Product Code |   |   |   |
|-------------|--------------|---|---|---|
|             | ①            | ② | ③ | ④ |
| R1161D082B  | B            | 0 | 8 | B |
| R1161D092B  | B            | 0 | 9 | B |
| R1161D102B  | B            | 1 | 0 | B |
| R1161D112B  | B            | 1 | 1 | B |
| R1161D122B  | B            | 1 | 2 | B |
| R1161D132B  | B            | 1 | 3 | B |
| R1161D142B  | B            | 1 | 4 | B |
| R1161D152B  | B            | 1 | 5 | B |
| R1161D162B  | B            | 1 | 6 | B |
| R1161D172B  | B            | 1 | 7 | B |
| R1161D182B  | B            | 1 | 8 | B |
| R1161D192B  | B            | 1 | 9 | B |
| R1161D202B  | B            | 2 | 0 | B |
| R1161D212B  | B            | 2 | 1 | B |
| R1161D222B  | B            | 2 | 2 | B |
| R1161D232B  | B            | 2 | 3 | B |
| R1161D242B  | B            | 2 | 4 | B |
| R1161D252B  | B            | 2 | 5 | B |
| R1161D262B  | B            | 2 | 6 | B |
| R1161D272B  | B            | 2 | 7 | B |
| R1161D282B  | B            | 2 | 8 | B |
| R1161D292B  | B            | 2 | 9 | B |
| R1161D302B  | B            | 3 | 0 | B |
| R1161D312B  | B            | 3 | 1 | B |
| R1161D322B  | B            | 3 | 2 | B |
| R1161D332B  | B            | 3 | 3 | B |
| R1161D282B5 | B            | 0 | 0 | B |
| R1161D122B5 | B            | 0 | 1 | B |
| R1161D182B5 | B            | 0 | 2 | B |

| Part Number | Product Code |   |   |   |
|-------------|--------------|---|---|---|
|             | ①            | ② | ③ | ④ |
| R1161D082D  | B            | 0 | 8 | D |
| R1161D092D  | B            | 0 | 9 | D |
| R1161D102D  | B            | 1 | 0 | D |
| R1161D112D  | B            | 1 | 1 | D |
| R1161D122D  | B            | 1 | 2 | D |
| R1161D132D  | B            | 1 | 3 | D |
| R1161D142D  | B            | 1 | 4 | D |
| R1161D152D  | B            | 1 | 5 | D |
| R1161D162D  | B            | 1 | 6 | D |
| R1161D172D  | B            | 1 | 7 | D |
| R1161D182D  | B            | 1 | 8 | D |
| R1161D192D  | B            | 1 | 9 | D |
| R1161D202D  | B            | 2 | 0 | D |
| R1161D212D  | B            | 2 | 1 | D |
| R1161D222D  | B            | 2 | 2 | D |
| R1161D232D  | B            | 2 | 3 | D |
| R1161D242D  | B            | 2 | 4 | D |
| R1161D252D  | B            | 2 | 5 | D |
| R1161D262D  | B            | 2 | 6 | D |
| R1161D272D  | B            | 2 | 7 | D |
| R1161D282D  | B            | 2 | 8 | D |
| R1161D292D  | B            | 2 | 9 | D |
| R1161D302D  | B            | 3 | 0 | D |
| R1161D312D  | B            | 3 | 1 | D |
| R1161D322D  | B            | 3 | 2 | D |
| R1161D332D  | B            | 3 | 3 | D |
| R1161D282D5 | B            | 0 | 0 | D |
| R1161D122D5 | B            | 0 | 1 | D |
| R1161D182D5 | B            | 0 | 2 | D |



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

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.