

## LOW DROPOUT VOLTAGE REGULATOR

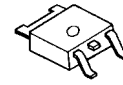
### ■ GENERAL DESCRIPTION

The NJM2835 is a 500mA output low dropout voltage regulator.

Advanced Bipolar technology achieves low noise, high ripple rejection and high supply voltage.

2.1V to 15.5V output voltage range, 2.2 $\mu$ F small decoupling capacitor, built-in noise bypass capacitor make the NJM2835 suitable for various applications.

### ■ PACKAGE OUTLINE

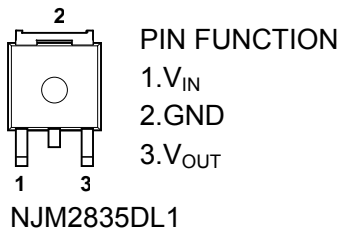


NJM2835DL1

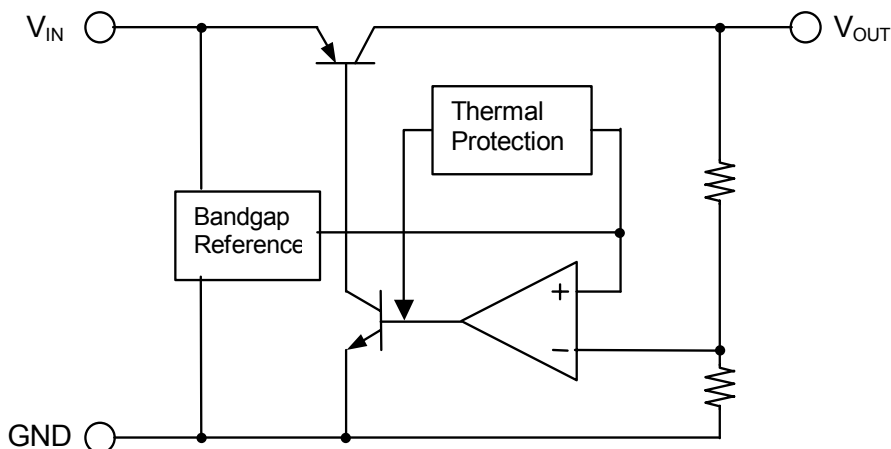
### ■ FEATURES

- Output voltage options available 2.1 ~ 15.5V
- High Ripple Rejection 75dB typ. (f=1kHz, Vo=3V Version)
- Output Noise Voltage Vno=45 $\mu$ Vrms typ.
- Output capacitor with 2.2 $\mu$ F ceramic capacitor (Vo $\geq$ 5.1V)
- Output Current Io(max.)=500mA
- High Precision Output Vo $\pm$ 1.0%
- Low Dropout Voltage 0.18V typ. (Io=300mA)
- Internal Thermal Overload Protection
- Internal Over Current Protection
- Bipolar Technology
- Package Outline TO-252-3

### ■ PIN CONFIGURATION



### ■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

The WHITE column shows applicable Voltage Rank(s)

| Device Name   | Vout | Device Name   | Vout | Device Name   | Vout  |
|---------------|------|---------------|------|---------------|-------|
| NJM2835DL1-21 | 2.1V | NJM2835DL1-36 | 3.6V | NJM2835DL1-08 | 8.0V  |
| NJM2835DL1-22 | 2.2V | NJM2835DL1-37 | 3.7V | NJM2835DL1-85 | 8.5V  |
| NJM2835DL1-23 | 2.3V | NJM2835DL1-38 | 3.8V | NJM2835DL1-09 | 9.0V  |
| NJM2835DL1-24 | 2.4V | NJM2835DL1-39 | 3.9V | NJM2835DL1-10 | 10.0V |
| NJM2835DL1-25 | 2.5V | NJM2835DL1-04 | 4.0V | NJM2835DL1-12 | 12.0V |
| NJM2835DL1-26 | 2.6V | NJM2835DL1-41 | 4.1V | NJM2835DL1-15 | 15.0V |
| NJM2835DL1-27 | 2.7V | NJM2835DL1-42 | 4.2V |               |       |
| NJM2835DL1-28 | 2.8V | NJM2835DL1-43 | 4.3V |               |       |
| NJM2835DL1-29 | 2.9V | NJM2835DL1-44 | 4.4V |               |       |
| NJM2835DL1-03 | 3.0V | NJM2835DL1-45 | 4.5V |               |       |
| NJM2835DL1-31 | 3.1V | NJM2835DL1-46 | 4.6V |               |       |
| NJM2835DL1-32 | 3.2V | NJM2835DL1-47 | 4.7V |               |       |
| NJM2835DL1-33 | 3.3V | NJM2835DL1-48 | 4.8V |               |       |
| NJM2835DL1-34 | 3.4V | NJM2835DL1-49 | 4.9V |               |       |
| NJM2835DL1-35 | 3.5V | NJM2835DL1-05 | 5.0V |               |       |

**■ ABSOLUTE MAXIMUM RATINGS** (Ta=25°C)

| PARAMETER             | SYMBOL           | RATINGS   | UNIT |
|-----------------------|------------------|---|------|
| Input Voltage         | V <sub>IN</sub>  | +20   | V    |
| Power Dissipation     | P <sub>D</sub>   | 10(T <sub>c</sub> ≤25°C)<br>1(T <sub>a</sub> ≤25°C) | W    |
| Operating Temperature | T <sub>opr</sub> | -40 ~ +85   | °C   |
| Storage Temperature   | T <sub>stg</sub> | -40 ~ +150  | °C   |

**■ ELECTRICAL CHARACTERISTICS**

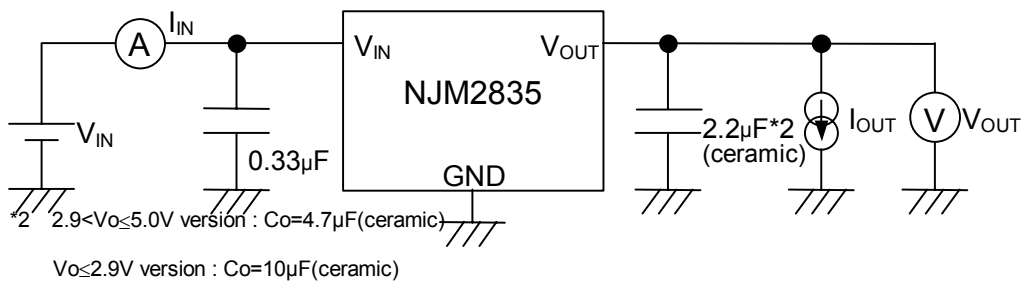
(V<sub>IN</sub>= V<sub>o</sub>+1V, C<sub>IN</sub>=0.33μF, C<sub>o</sub>=2.2μF (2.9V<V<sub>o</sub>≤5V:C<sub>o</sub>=4.7μF, V<sub>o</sub>≤2.9V:C<sub>o</sub>=10μF), Ta=25°C)

| PARAMETER   | SYMBOL                            | TEST CONDITION  | MIN                             | TYP  | MAX   | UNIT              |    |
|---|-----------------------------------|---|---------------------------------|------|-------|-------------------|----|
| Output Voltage                                    | V <sub>o</sub>                    | I <sub>o</sub> =30mA  | -1.0%                           | -    | +1.0% | V                 |    |
| Quiescent Current                                 | I <sub>Q</sub>                    | I <sub>o</sub> =0mA   | V <sub>o</sub> ≤5V Version      | -    | 200   | 300               | μA |
|   |                                   |   | 5V<V <sub>o</sub> ≤10V Version  | -    | 215   | 315               | μA |
|   |                                   |   | 10V<V <sub>o</sub> ≤15V Version | -    | 230   | 330               | μA |
| Output Current                                    | I <sub>o</sub>                    | V <sub>o</sub> -0.3V  | 500                             | 650  | -     | mA                |    |
| Line Regulation                                   | ΔV <sub>o</sub> /ΔV <sub>IN</sub> | V <sub>IN</sub> =V <sub>o</sub> +1V ~ V <sub>o</sub> +6V(V <sub>o</sub> ≤12V),<br>V <sub>IN</sub> =V <sub>o</sub> +1V ~ 18V(V <sub>o</sub> >12V),<br>I <sub>o</sub> =30mA | -                               | -    | 0.10  | %/V               |    |
| Load Regulation                                   | ΔV <sub>o</sub> /ΔI <sub>o</sub>  | I <sub>o</sub> =0 ~ 500mA   | -                               | -    | 0.007 | %/mA              |    |
| Dropout Voltage(*1)                               | ΔV <sub>I-O</sub>                 | I <sub>o</sub> =300mA   | -                               | 0.18 | 0.28  | V                 |    |
| Ripple Rejection                                  | RR                                | e <sub>in</sub> =200mV <sub>rms</sub> , f=1kHz, I <sub>o</sub> =10mA<br>V <sub>o</sub> =3V Version  | -                               | 75   | -     | dB                |    |
| Average Temperature Coefficient of Output Voltage | ΔV <sub>o</sub> /ΔT <sub>a</sub>  | T <sub>a</sub> =0 ~ 85°C, I <sub>o</sub> =10mA  | -                               | ± 50 | -     | ppm/°C            |    |
| Output Noise Voltage                              | V <sub>NO</sub>                   | f=10Hz ~ 80kHz, I <sub>o</sub> =10mA,<br>V <sub>o</sub> =3V Version   | -                               | 45   | -     | μV <sub>rms</sub> |    |
| Input Voltage                                     | V <sub>IN</sub>                   |   | -                               | -    | 18    | V                 |    |

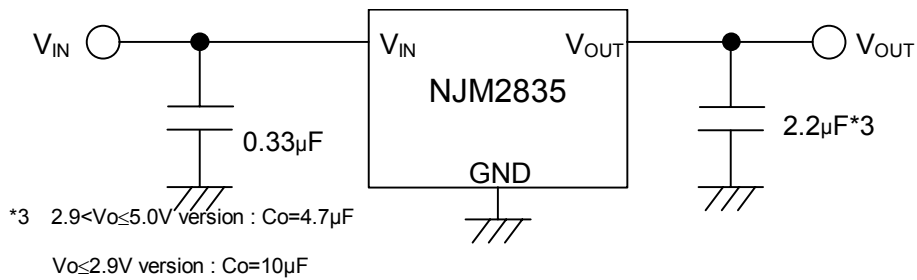
(\*1): The above specification is a common specification for all output voltages.

Therefore, it may be different from the individual specification for a specific output voltage.

## ■ TEST CIRCUIT



## ■ TYPICAL APPLICATION



### \*Input Capacitance $C_{IN}$

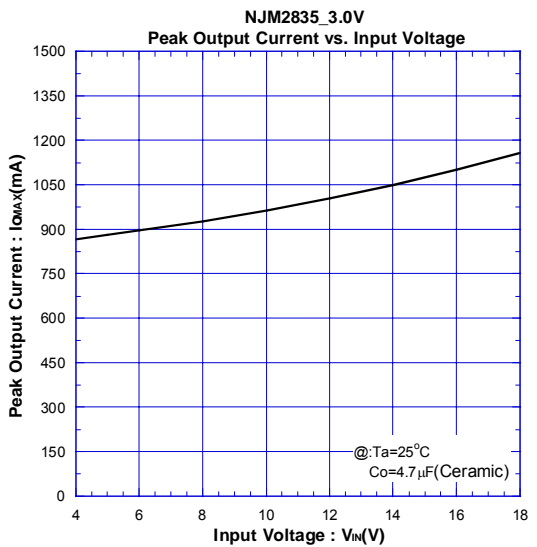
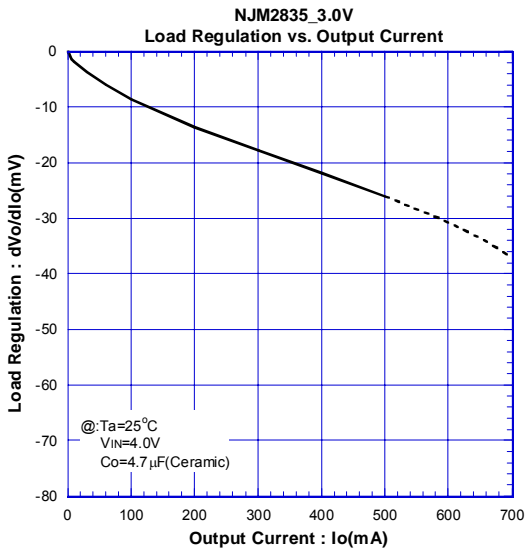
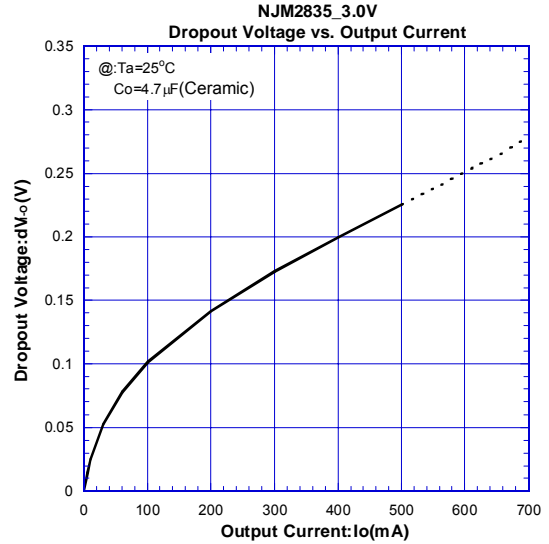
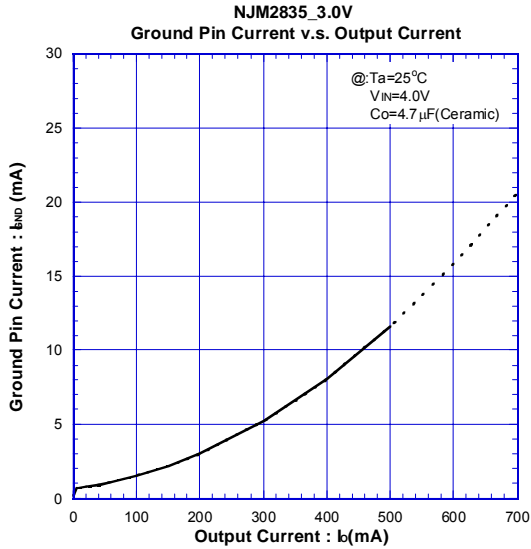
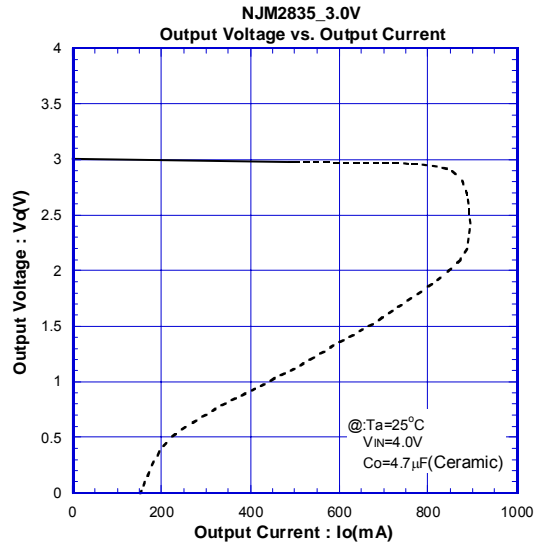
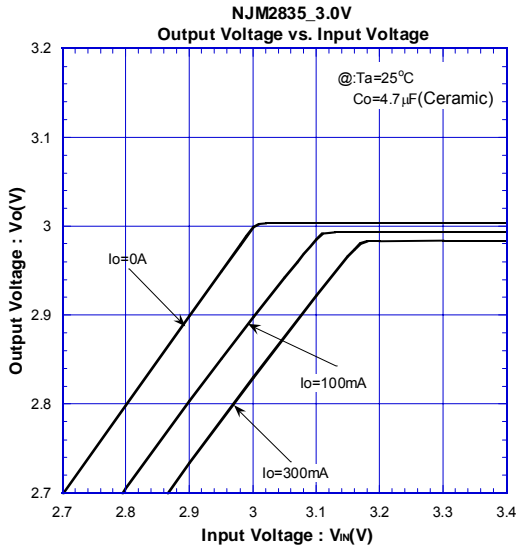
Input Capacitance  $C_{IN}$  is required to prevent oscillation and reduce power supply ripple for applications with high power supply impedance or a long power supply line.

Use the  $C_{IN}$  value of  $0.33\mu F$  greater to avoid the problem.

$C_{IN}$  should connect between GND and  $V_{IN}$  as short as possible.

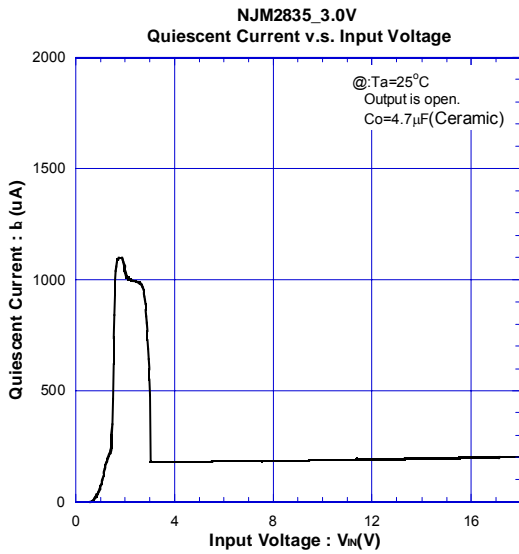
## TYPICAL CHARACTERISTICS

### DC CHARACTERISTICS (3V Version)

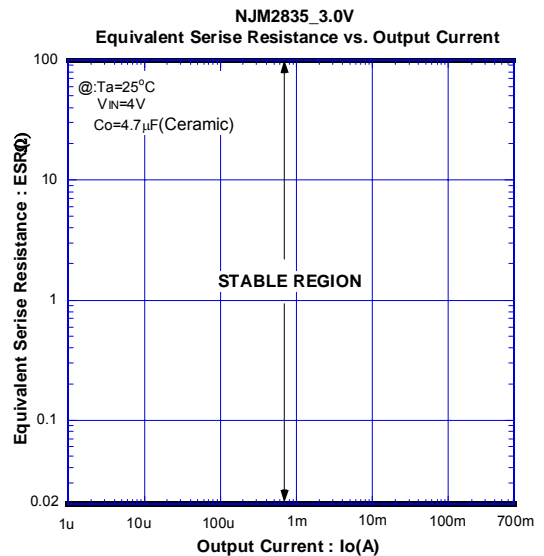
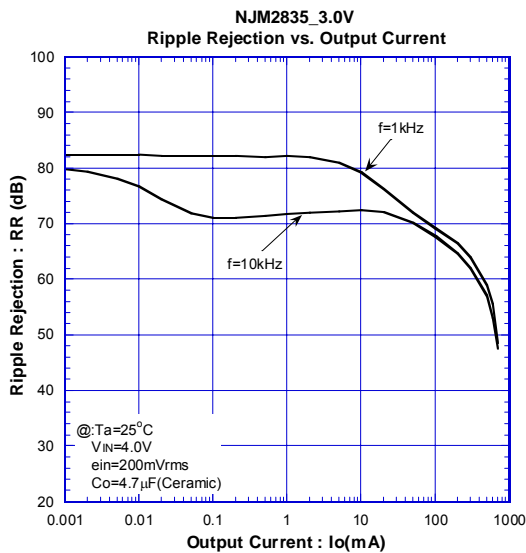
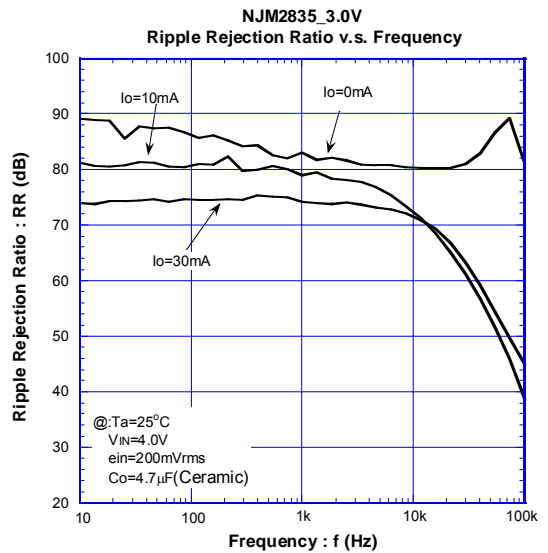
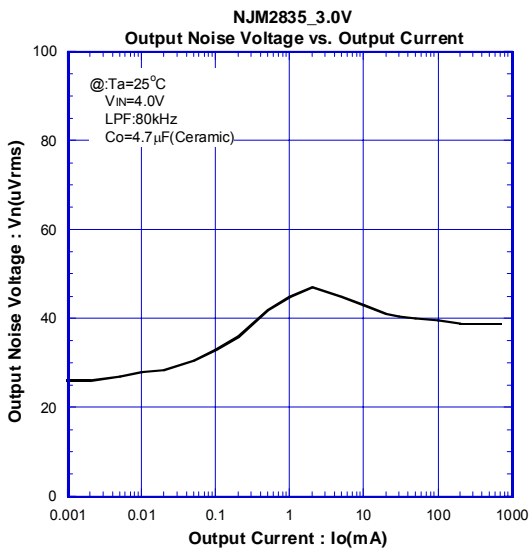


■ TYPICAL CHARACTERISTICS

● DC CHARACTERISTICS (3V Version)

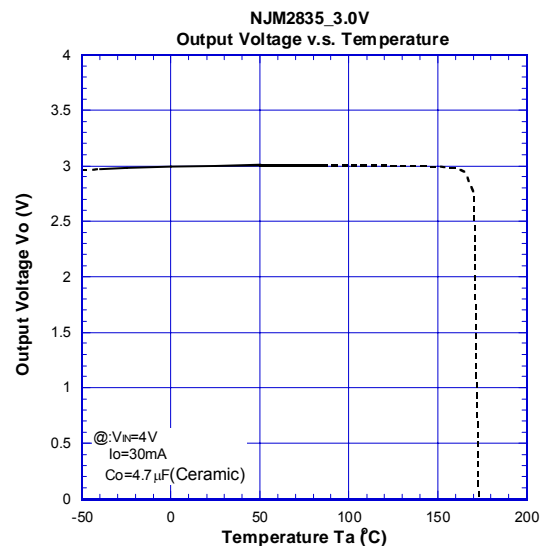
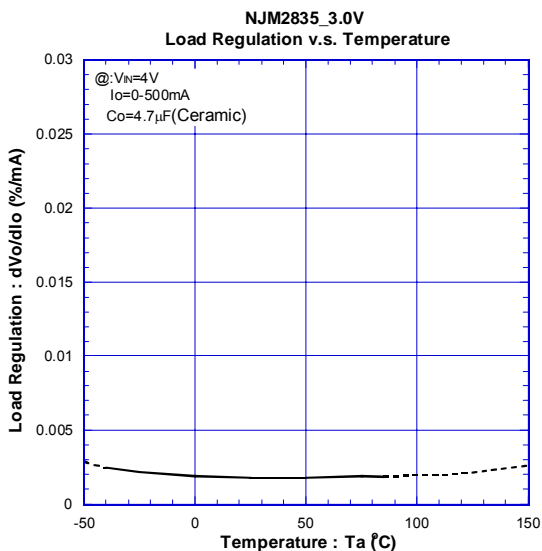
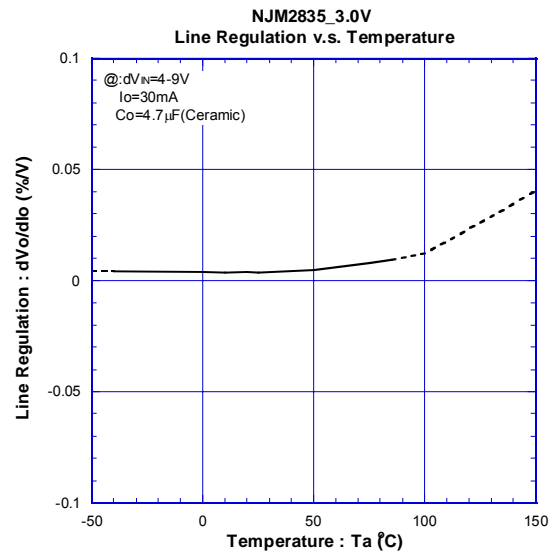
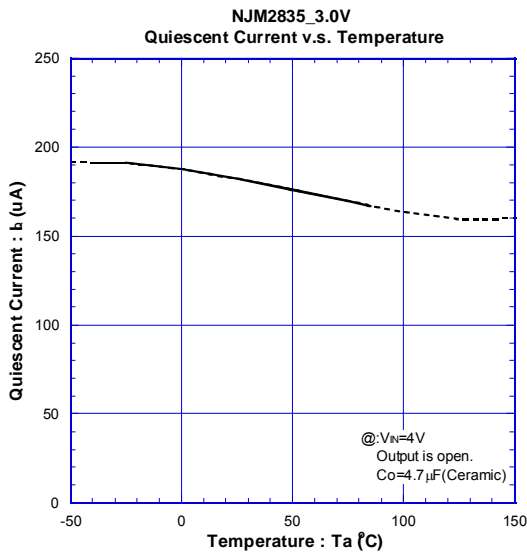
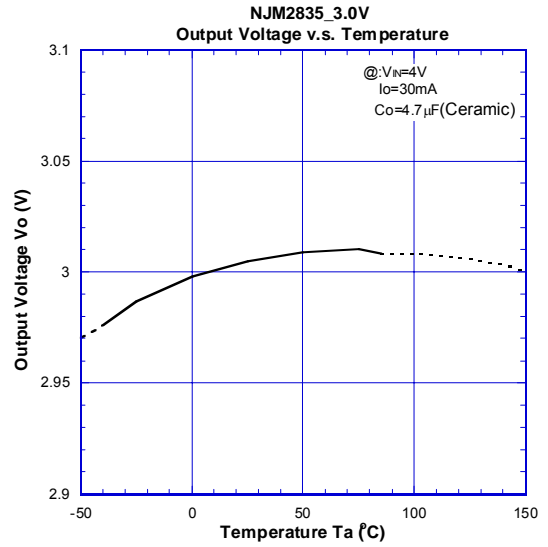
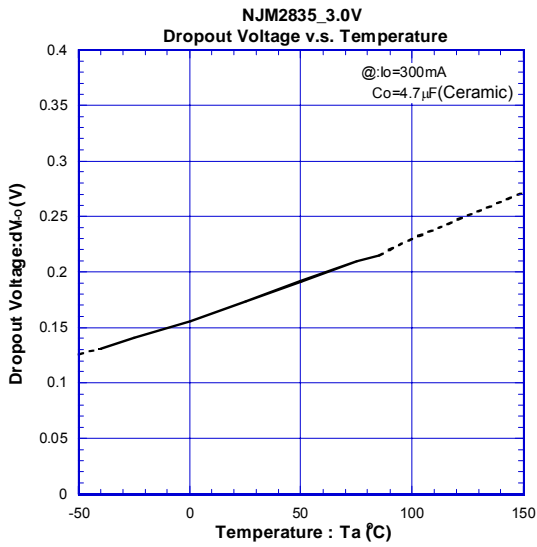


● AC CHARACTERISTICS (3V Version)



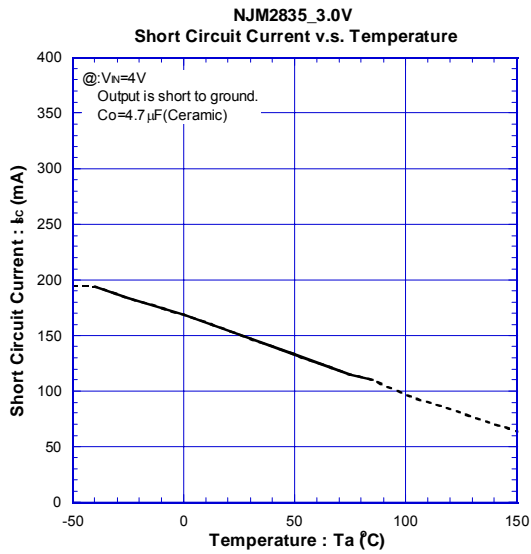
## TYPICAL CHARACTERISTICS

### TEMPERATURE CHARACTERISTICS (3V Version)



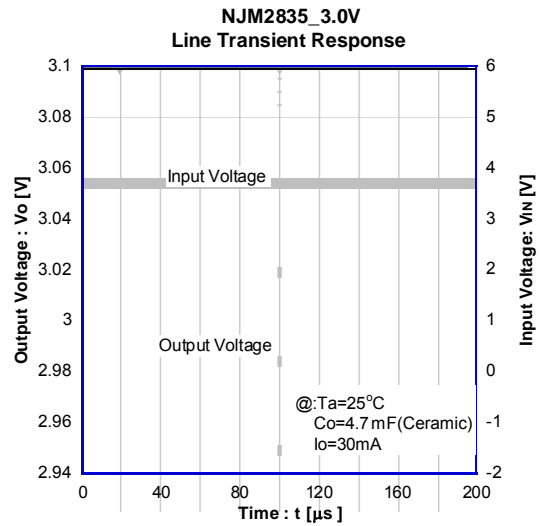
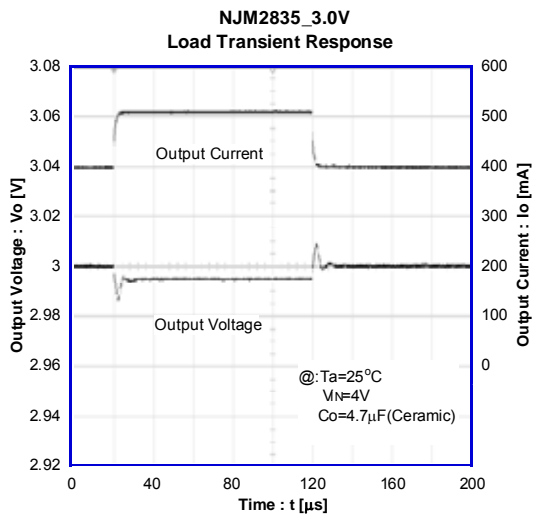
## TYPICAL CHARACTERISTICS

### TEMPERATURE CHARACTERISTICS (3V Version)



## TYPICAL CHARACTERISTICS

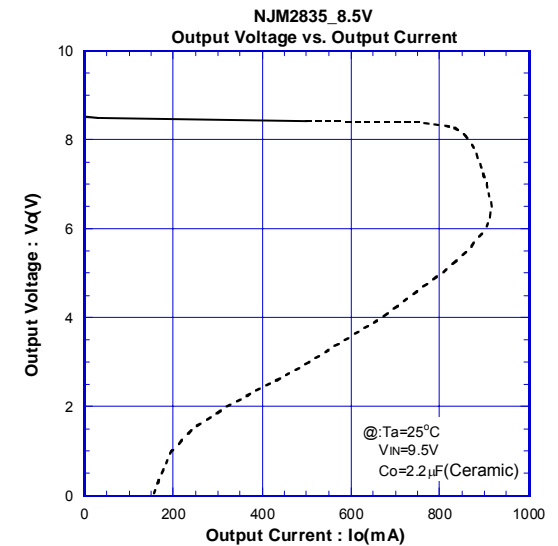
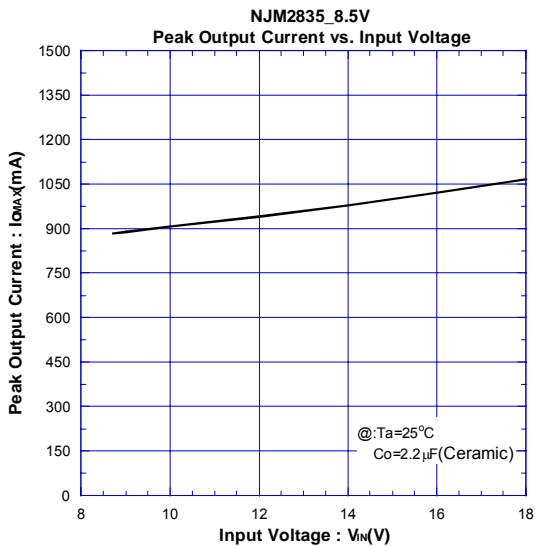
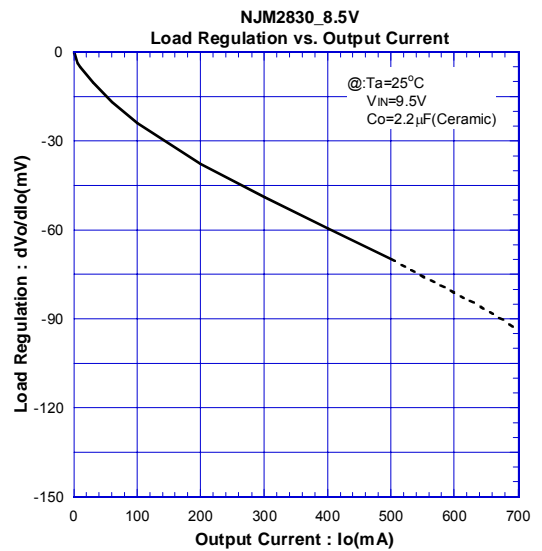
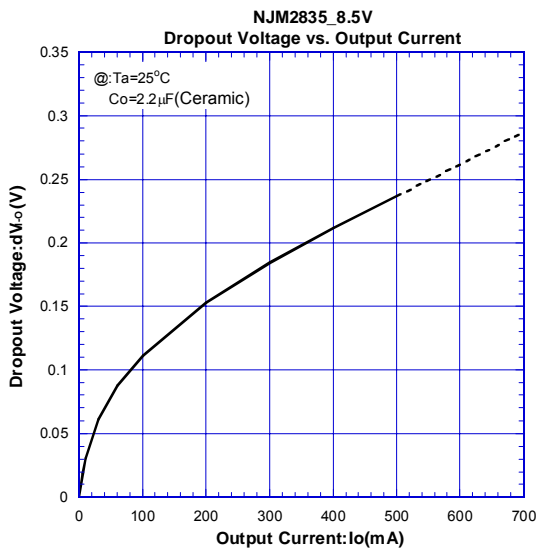
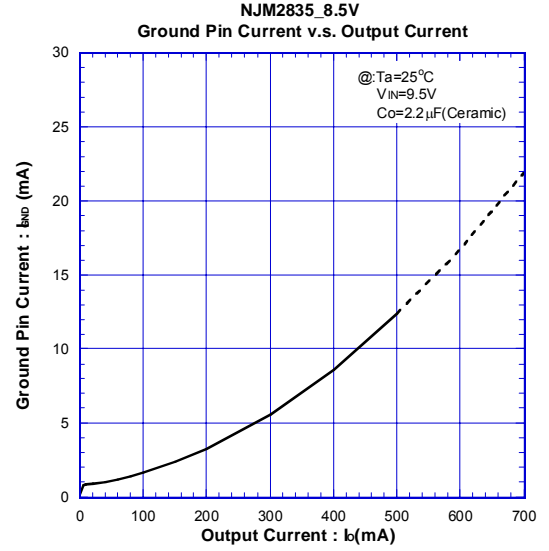
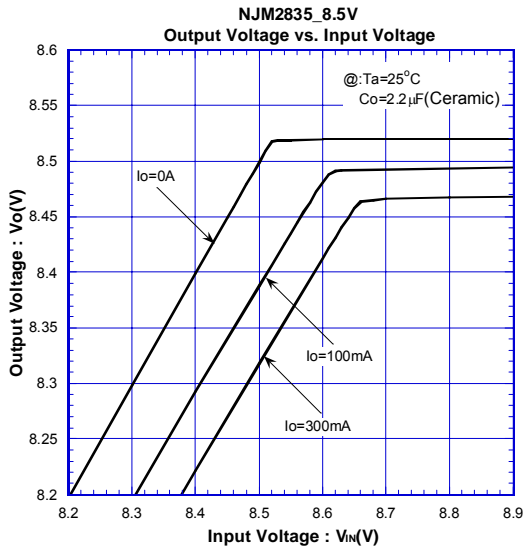
### TRANSIENT RESPONSE (3V Version)





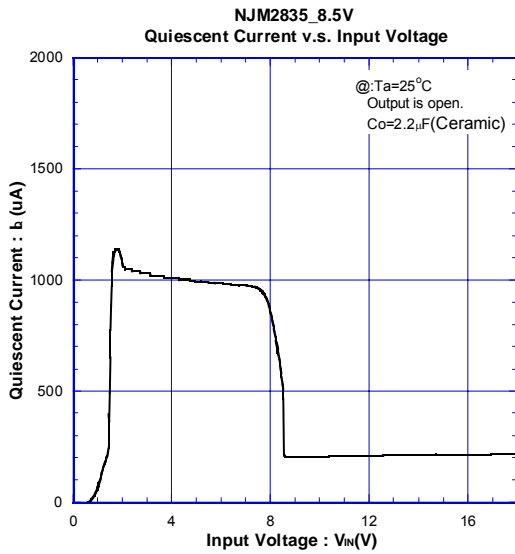
## TYPICAL CHARACTERISTICS

### DC CHARACTERISTICS (8.5V Version)

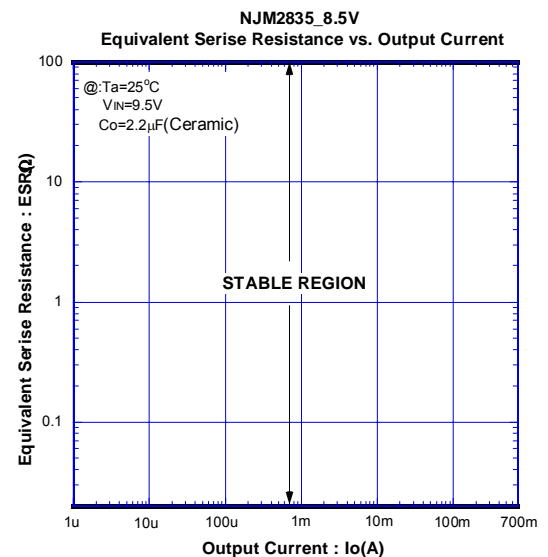
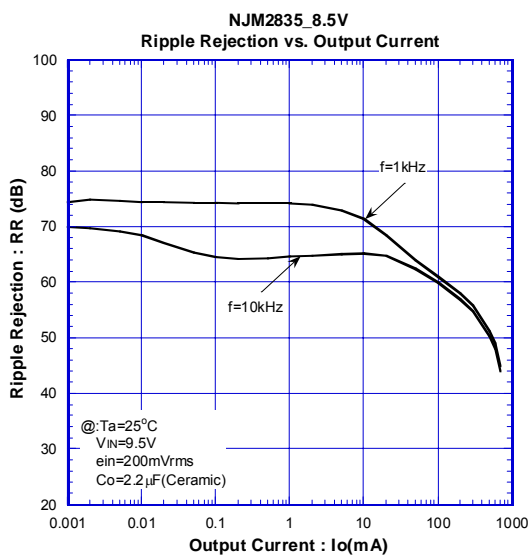
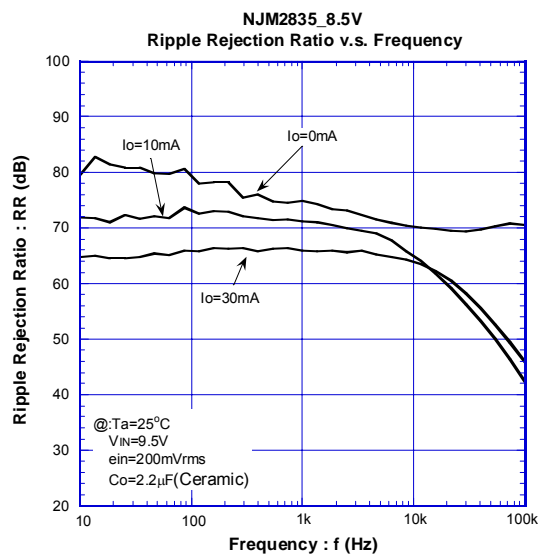
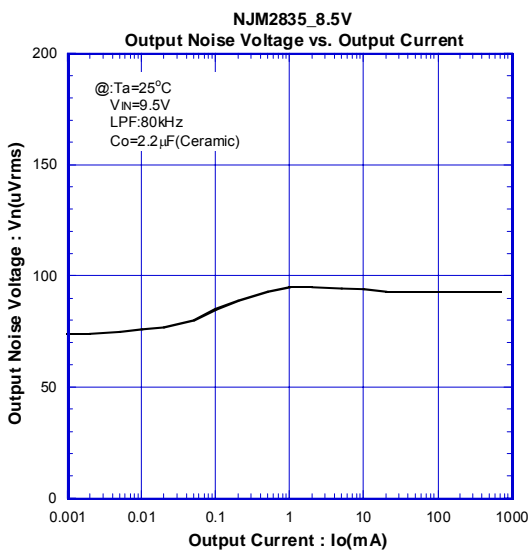


## ■ TYPICAL CHARACTERISTICS

### ● DC CHARACTERISTICS (8.5V Version)

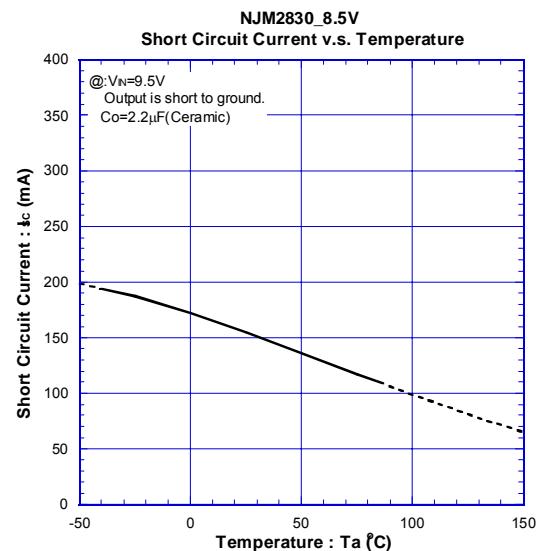
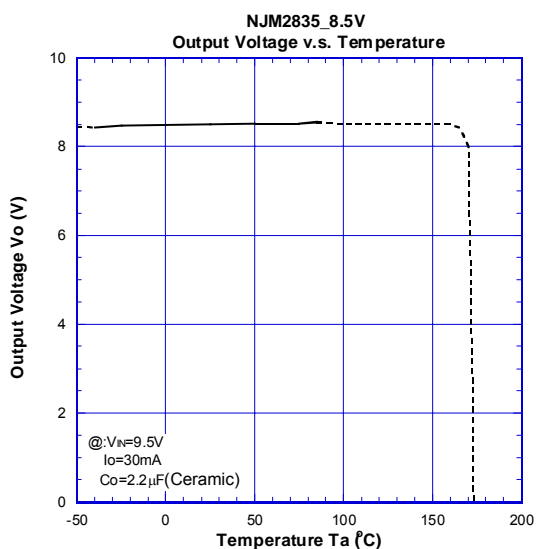
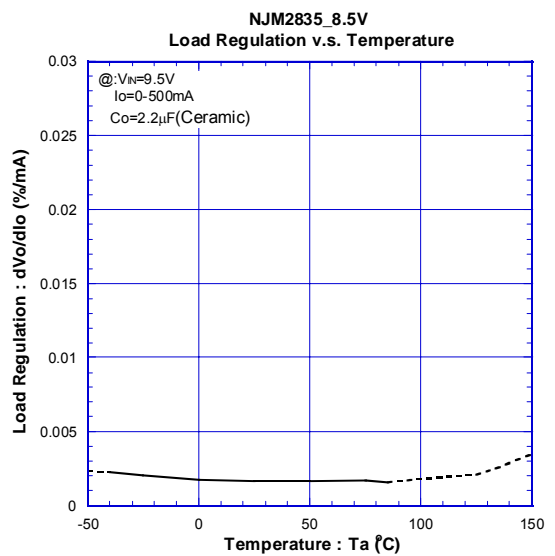
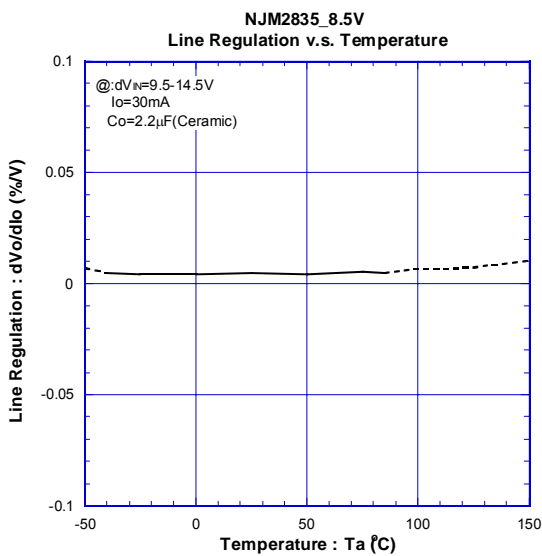
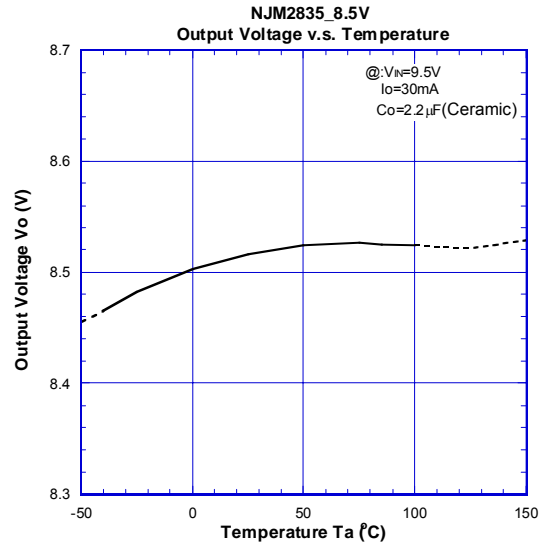
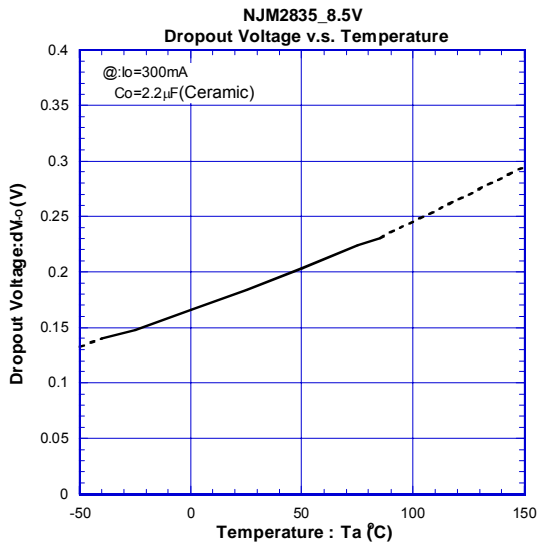


### ● AC CHARACTERISTICS (8.5V Version)



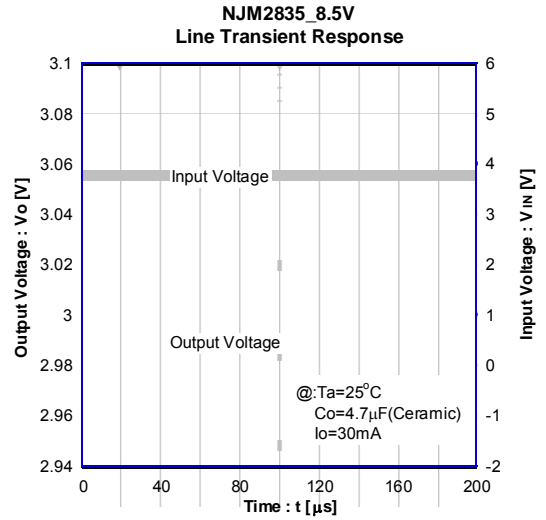
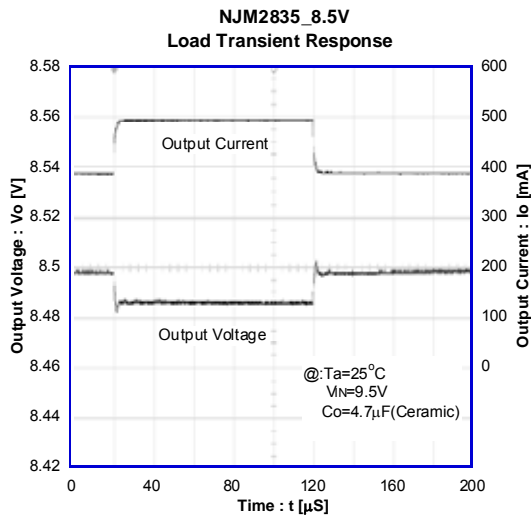
## TYPICAL CHARACTERISTICS

### TEMPERATURE CHARACTERISTICS (8.5V Version)



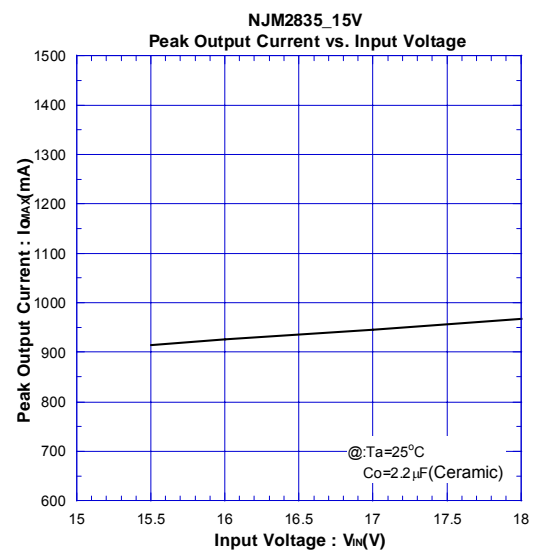
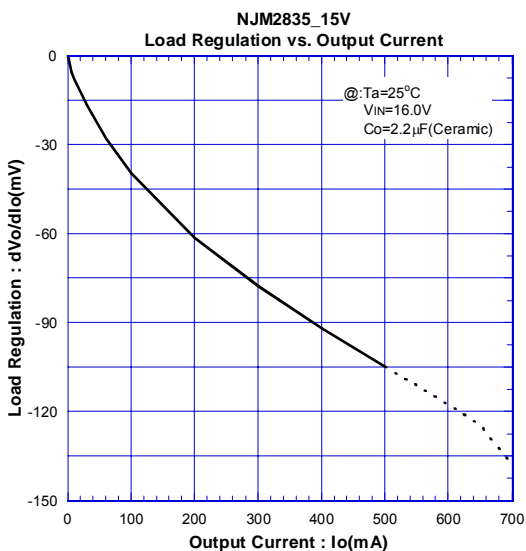
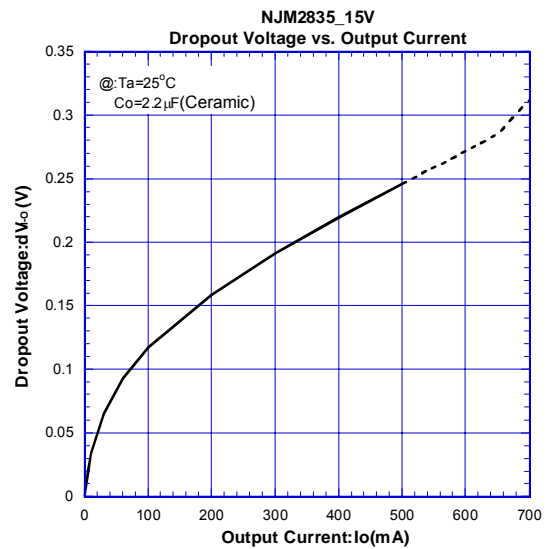
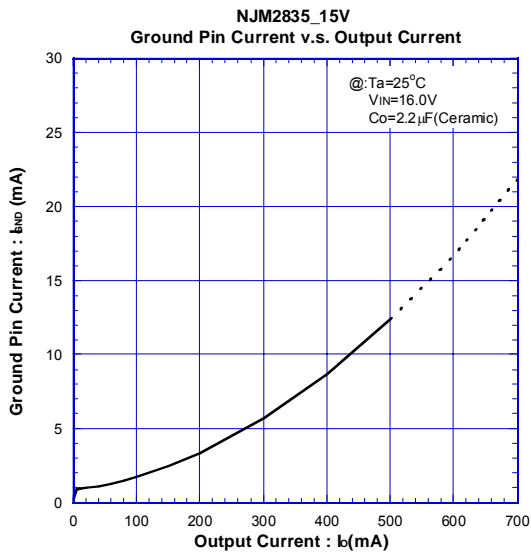
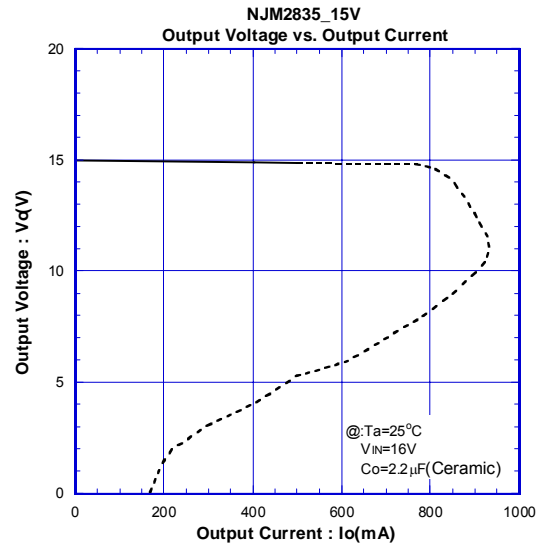
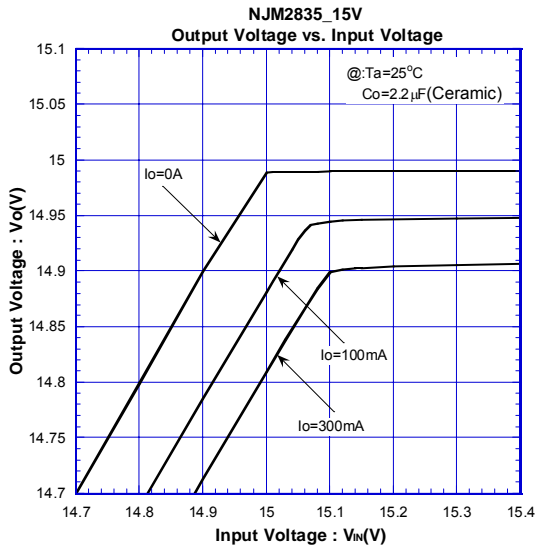
## ■ TYPICAL CHARACTERISTICS

### ● TRANSIENT RESPONSE (8.5V Version)



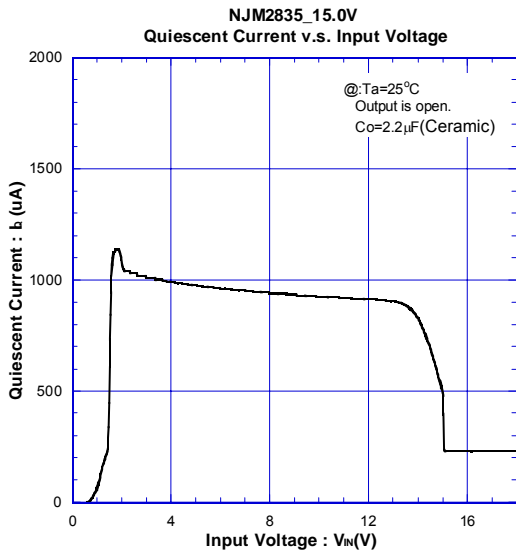
## ■ TYPICAL CHARACTERISTICS

### ● DC CHARACTERISTICS (15V Version)

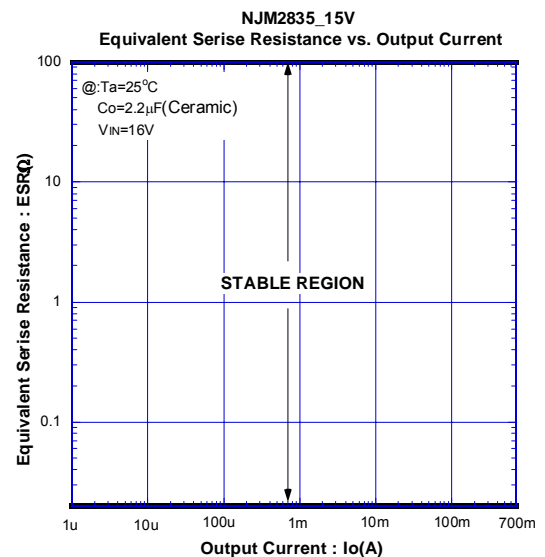
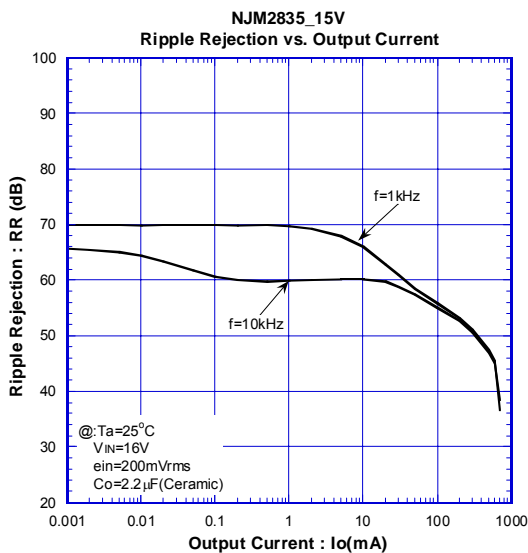
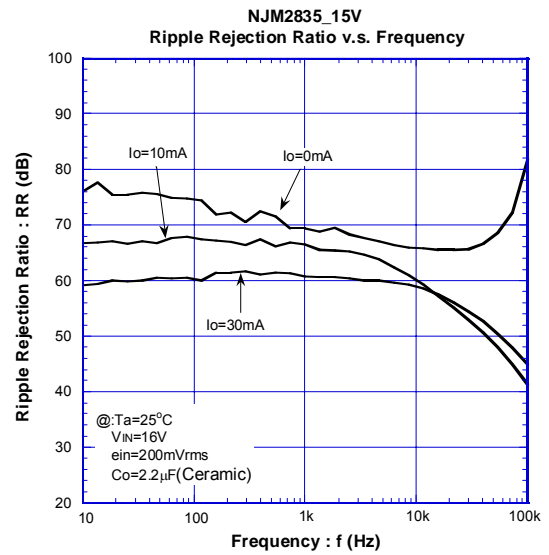
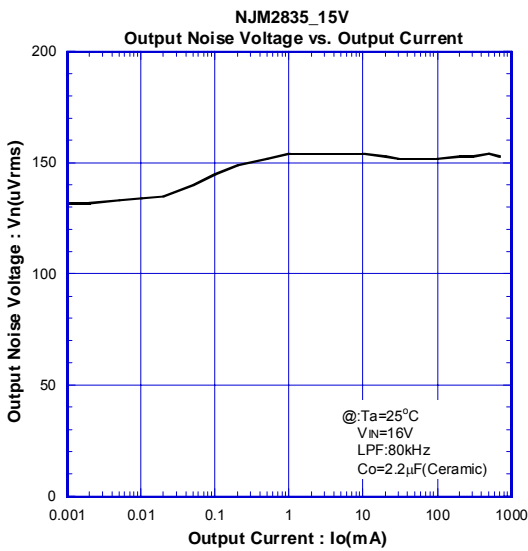


## TYPICAL CHARACTERISTICS

### DC CHARACTERISTICS (15V Version)

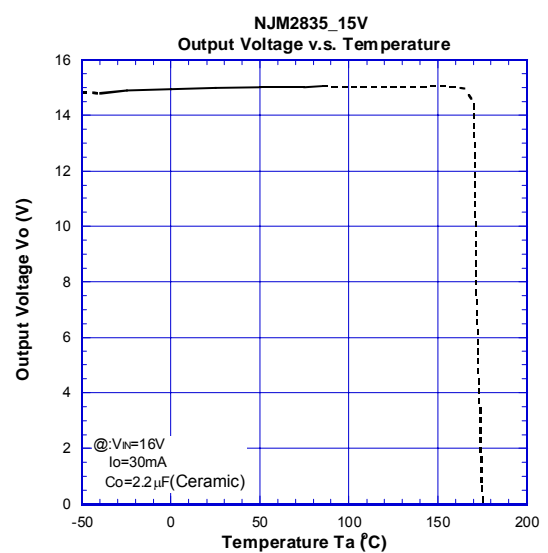
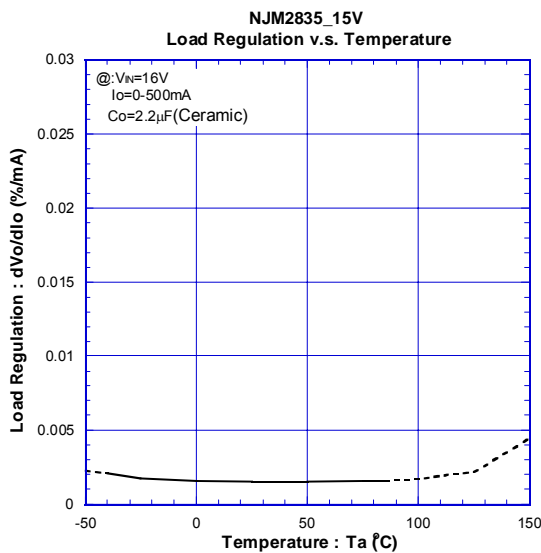
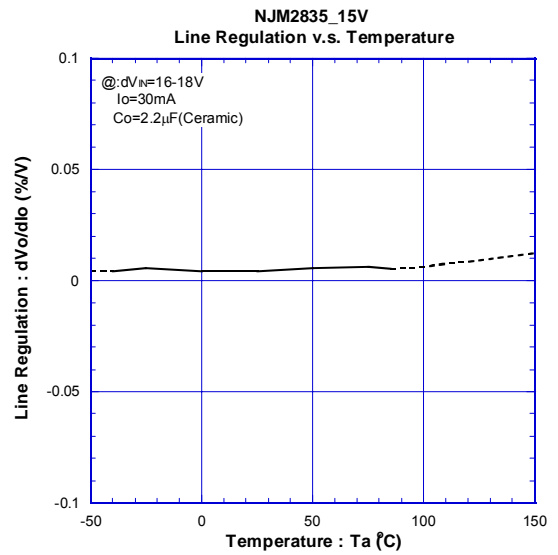
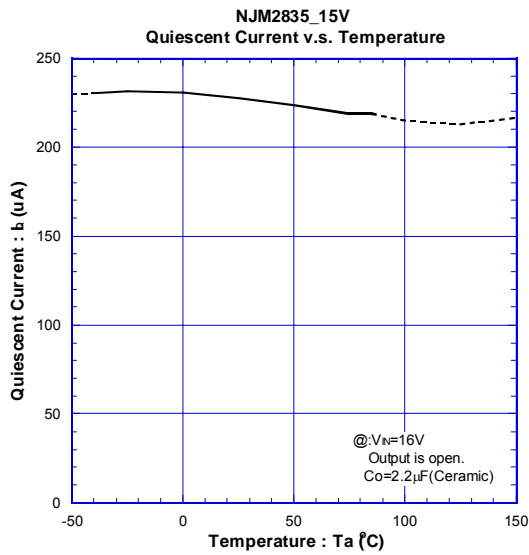
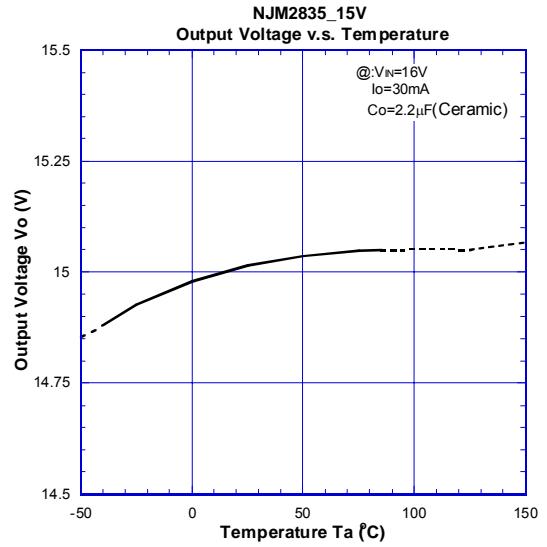
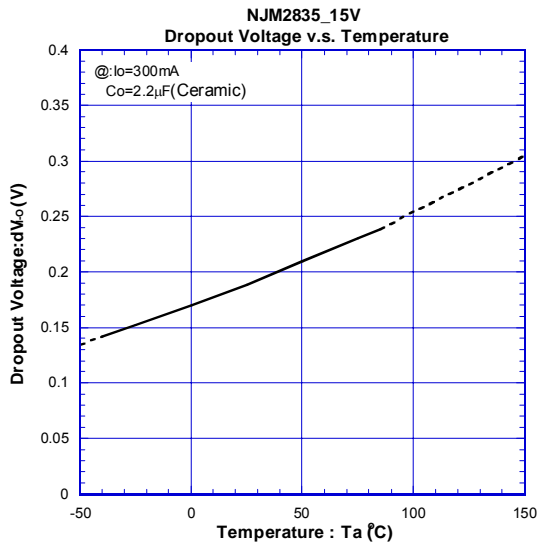


### AC CHARACTERISTICS (15V Version)



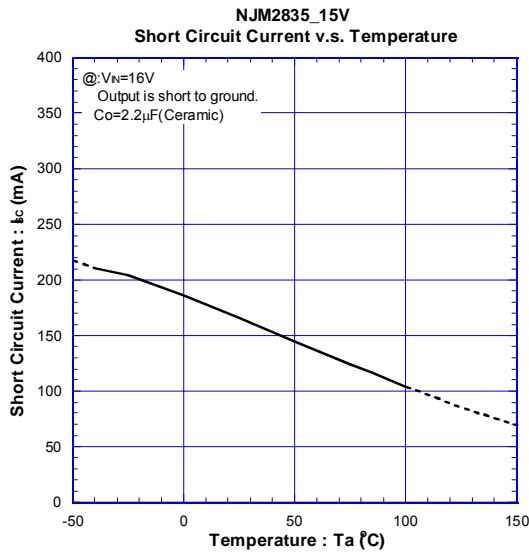
## TYPICAL CHARACTERISTICS

### TEMPERATURE CHARACTERISTICS (15V Version)



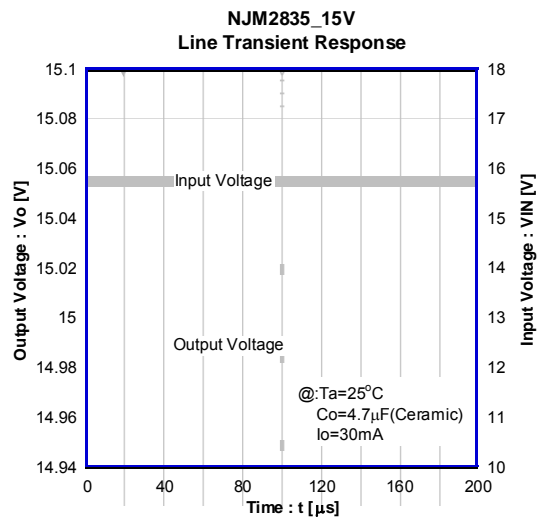
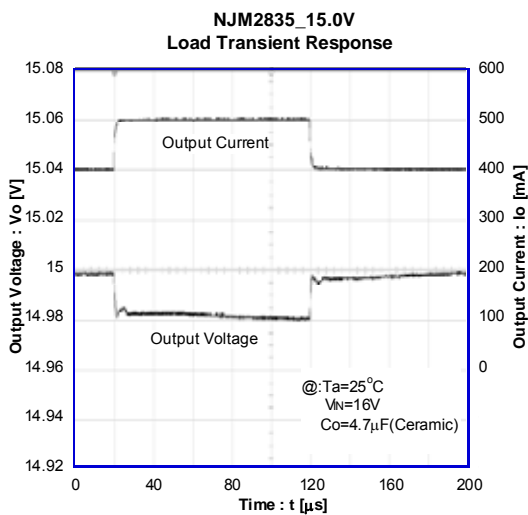
## TYPICAL CHARACTERISTICS

### TEMPERATURE CHARACTERISTICS (15V Version)



## TYPICAL CHARACTERISTICS

### TRANSIENT RESPONSE (15V Version)



**[CAUTION]**  
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