

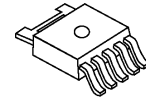
LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJM2886 is low dropout voltage regulator designed for portable application.

Advanced Bipolar technology achieves low noise, high ripple rejection and low quiescent current.

■ PACKAGE OUTLINE

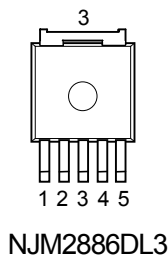


NJM2886DL3

■ FEATURES

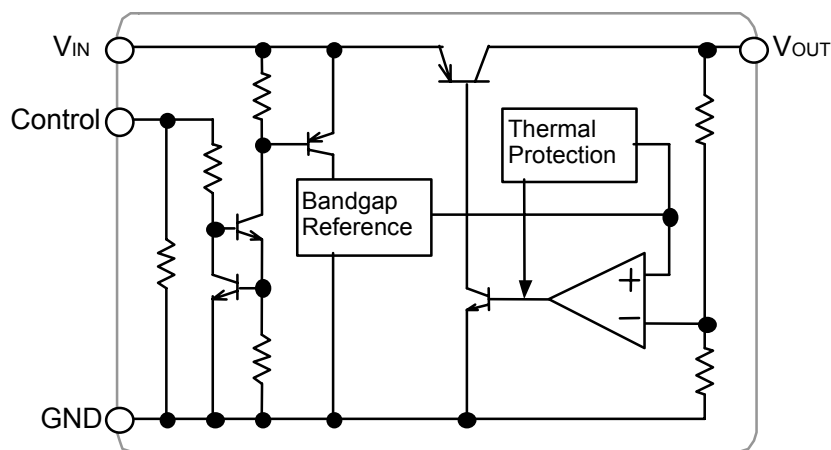
- High Ripple Rejection 75dB typ. (f=1kHz,Vo=3V Version)
- Output Noise Voltage Vno=45μVrms typ.
- Output capacitor with 2.2μF ceramic capacitor (Vo≥2.7V)
- Output Current Io(max.)=500mA
- High Precision Output Vo±1.0%
- Low Dropout Voltage 0.18V typ. (Io=300mA)
- ON/OFF Control
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-252-5(DL3)

■ PIN CONFIGURATION



| PIN FUNCTION | |
|--------------|------------------|
| 1. | CONTROL |
| 2. | V _{IN} |
| 3. | GND |
| 4. | V _{OUT} |
| 5. | NC |

■ EQUIVALENT CIRCUIT



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■ OUTPUT VOLTAGE RANK LIST

| Device Name | V _{OUT} | Device Name | V _{OUT} |
|---------------|------------------|---------------|------------------|
| NJM2886DL*-15 | 1.5V | NJM2886DL*-28 | 2.8V |
| NJM2886DL*-18 | 1.8V | NJM2886DL*-03 | 3.0V |
| NJM2886DL*-19 | 1.9V | NJM2886DL*-33 | 3.3V |
| NJM2886DL*-21 | 2.1V | NJM2886DL*-35 | 3.5V |
| NJM2886DL*-25 | 2.5V | NJM2886DL*-38 | 3.8V |
| NJM2886DL*-26 | 2.6V | NJM2886DL*-05 | 5.0V |

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|-----------------------|-------------------|----------------------------|------|
| Input Voltage | V _{IN} | +14 | V |
| Control Voltage | V _{CONT} | +14(*1) | V |
| Power Dissipation | P _D | 8(Tc=25°C) 0.8(Ta≤25°C) | W |
| Operating Temperature | Topr | -40 ~ +85 | °C |
| Storage Temperature | Tstg | -40 ~ +125 | °C |

(*1): When input voltage is less than +14V, the absolute maximum control voltage is equal to the input voltage.

■ Operating Voltage

V_{IN}=+2.3V ~ +14.0V (In case of Vo<2.1V)

■ ELECTRICAL CHARACTERISTICS

(V_{IN}=Vo+1V, C_{IN}=0.33μF, Co=2.2μF: Vo≥2.7V (Co=4.7μF: 1.7V<Vo≤2.6V, Co=10μF: Vo≤1.7V), Ta=25°C)

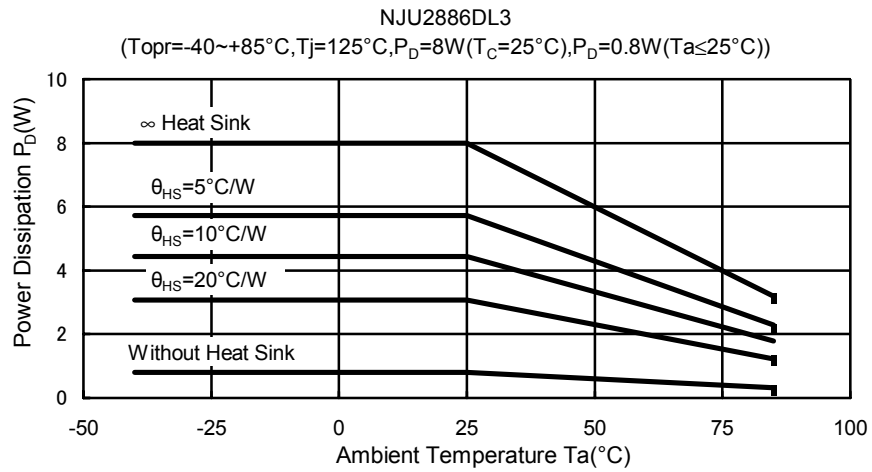
| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|---|------------------------|--|-------|------|-------|--------|
| Output Voltage | Vo | Io=30mA | -1.0% | - | +1.0% | V |
| Quiescent Current | I _Q | Io=0mA | - | 200 | 300 | μA |
| Quiescent Current at Control OFF | I _{Q(OFF)} | V _{CONT} =0V | - | - | 100 | nA |
| Output Current | Io | Vo=0.3V | 500 | 650 | - | mA |
| Line Regulation | ΔVo/ΔV _{IN} | V _{IN} =Vo+1V ~ Vo+6.0V, Io=30mA | - | - | 0.10 | %/V |
| Load Regulation | ΔVo/ΔIo | Io=0 ~ 500mA | - | - | 0.03 | %/mA |
| Dropout Voltage(*2) | ΔV _{L-O} | Io=300mA | - | 0.18 | 0.28 | V |
| Ripple Rejection | RR | ein=200mVrms, f=1kHz, Io=10mA Vo=3.0V Version | - | 75 | - | dB |
| Average Temperature Coefficient of Output Voltage | ΔVo/ΔTa | Ta=0~85°C, Io=10mA | - | ±50 | - | ppm/°C |
| Output Noise Voltage | V _{NO} | f=10Hz~80kHz, Io=10mA, Vo=3.0V Version | - | 45 | - | μVrms |
| Control Voltage for ON-state | V _{CONT(ON)} | | 1.6 | - | - | V |
| Control Voltage for OFF-state | V _{CONT(OFF)} | | - | - | 0.6 | V |

(*2): The output voltage excludes under 2.1V.

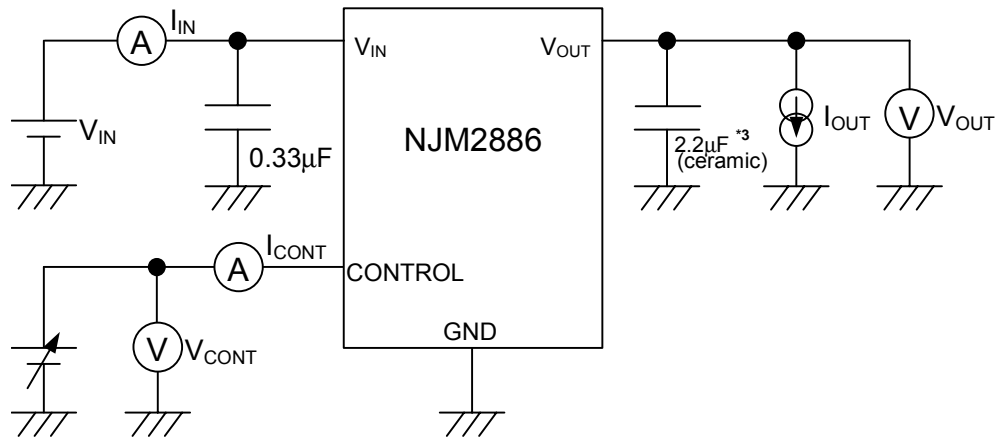
The above specification is a common specification for all output voltages.

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

POWER DISSIPATION VS. AMBIENT TEMPERATURE



TEST CIRCUIT

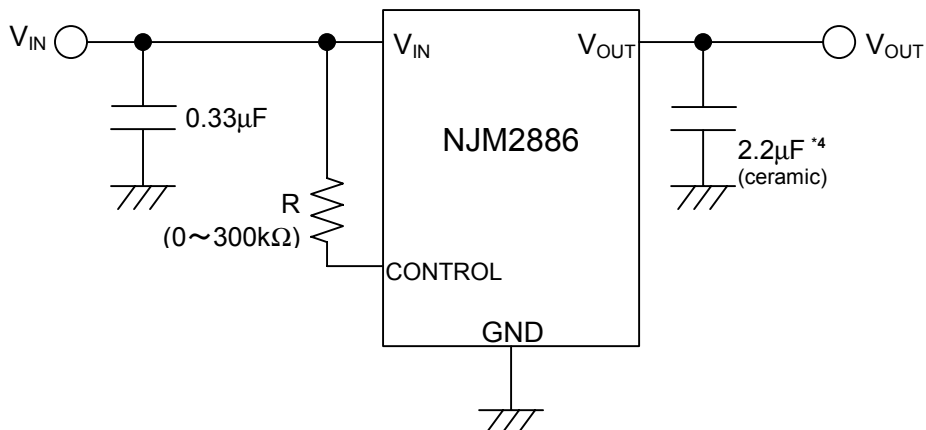


*3 1.7V < V_o ≤ 2.6V version: $C_o = 4.7\mu\text{F}$ (ceramic)
 $V_o \leq 1.7\text{V}$ version: $10\mu\text{F}$ (ceramic)

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■ TYPICAL APPLICATION

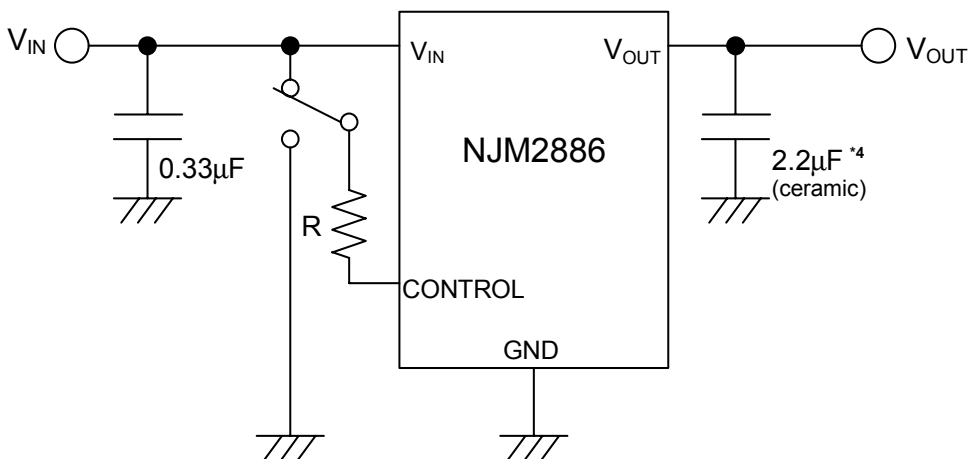
① In the case where ON/OFF Control is not required:



*4 1.7V<V_o≤2.6V version: C_o=4.7µF
V_o≤1.7V version: 10µF

Connect control terminal to V_{IN} terminal

② In use of ON/OFF CONTROL:



*4 1.7V<V_o≤2.6V version: C_o=4.7µF(ceramic)
V_o≤1.7V version: 10µF(ceramic)

State of control terminal:

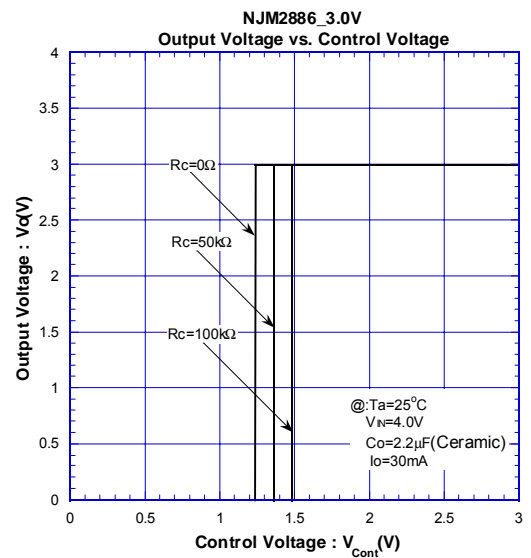
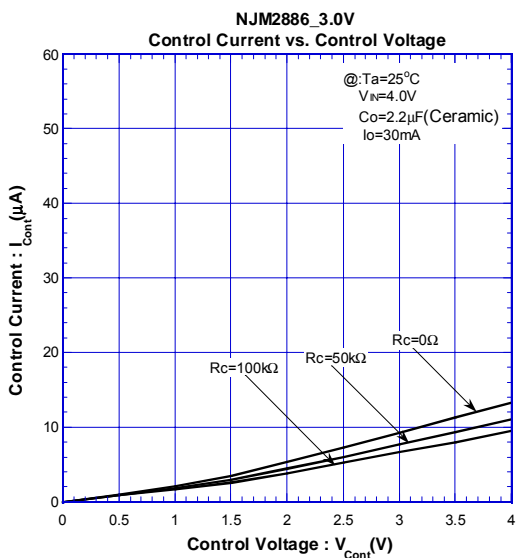
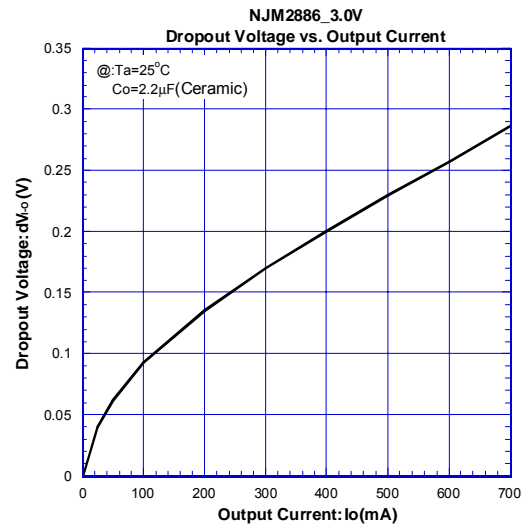
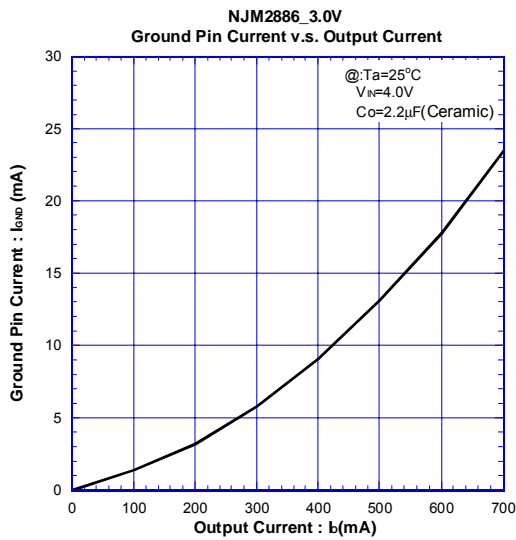
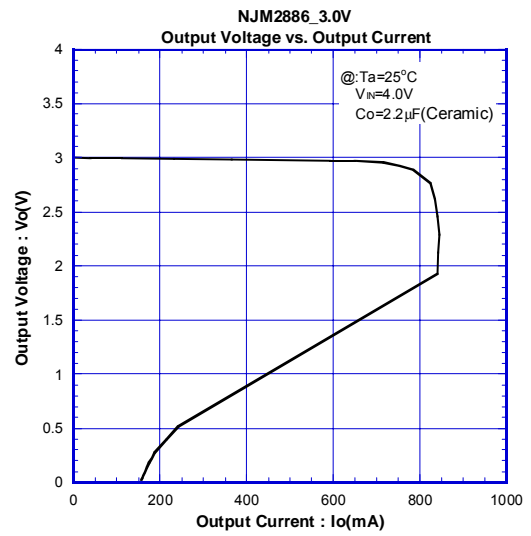
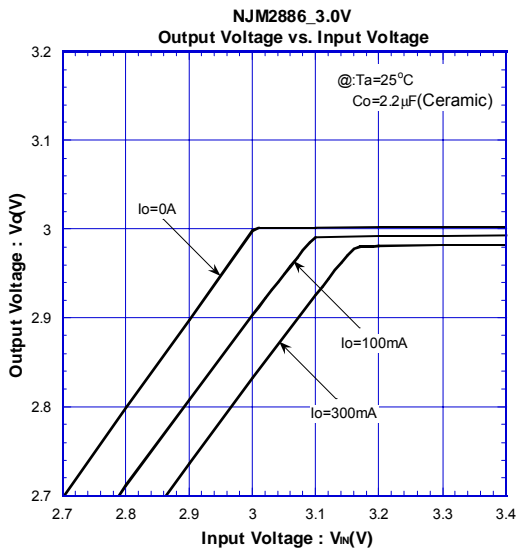
- “H” → output is enabled.
- “L” or “open” → output is disabled.

*In the case of using a resistance "R" between V_{IN} and control.

The current flow into the control terminal while the IC is ON state (I_{CONT}) can be reduced when a pull up resistance "R" is inserted between V_{IN} and the control terminal.

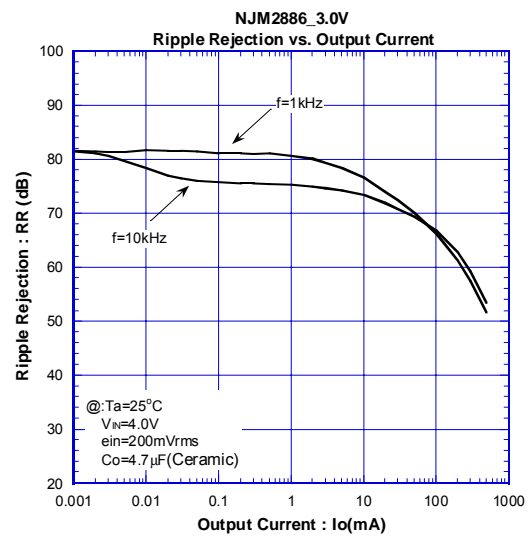
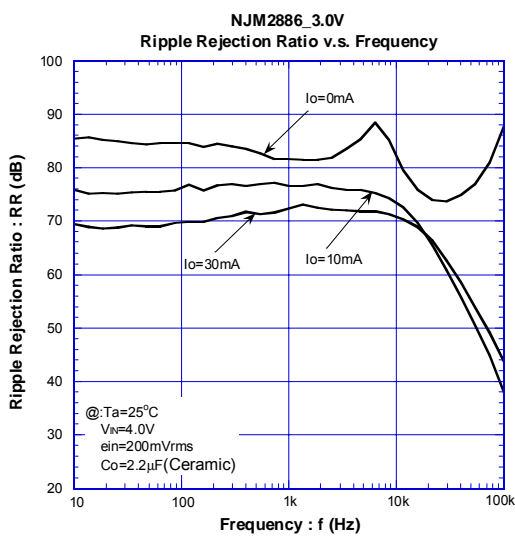
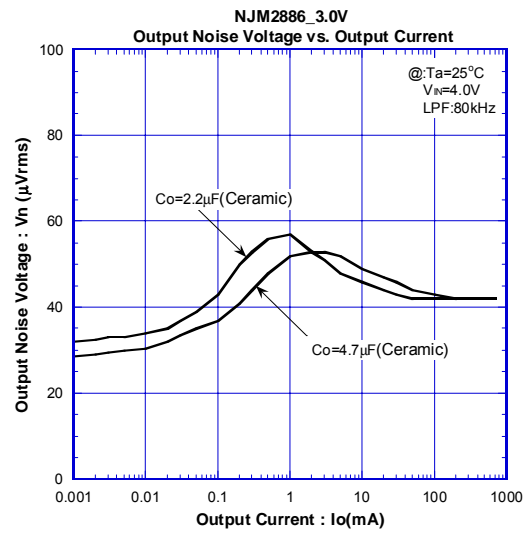
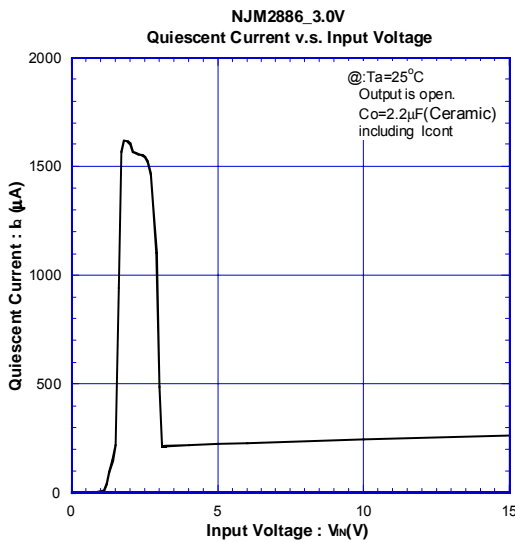
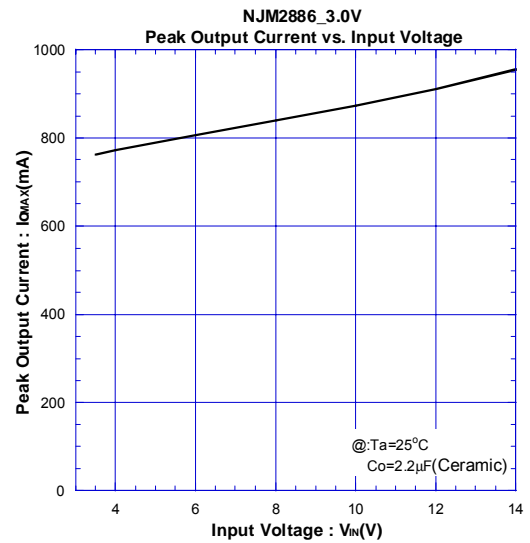
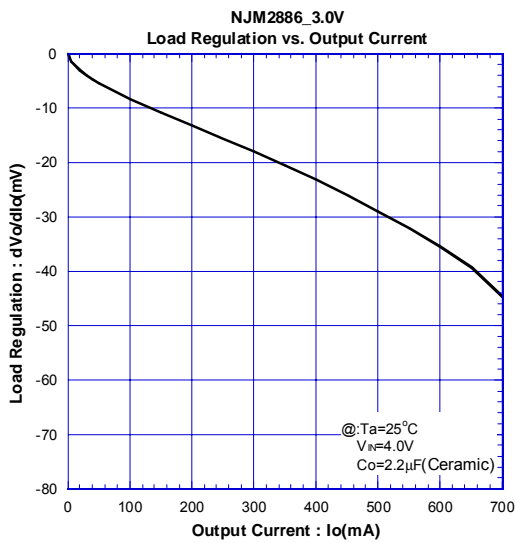
The minimum control voltage for ON state (V_{CONT(ON)}) is increased due to the voltage drop caused by I_{CONT} and the resistance "R". The I_{CONT} is temperature dependence as shown in the "Control Current vs. Temperature" characteristics. Therefore, the resistance "R" should be carefully selected to ensure the control voltage exceeds the V_{CONT(ON)} over the required temperature range.

ELECTRICAL CHARACTERISTICS

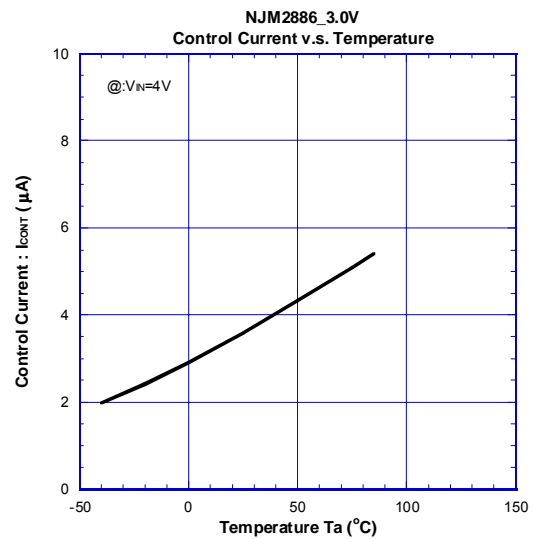
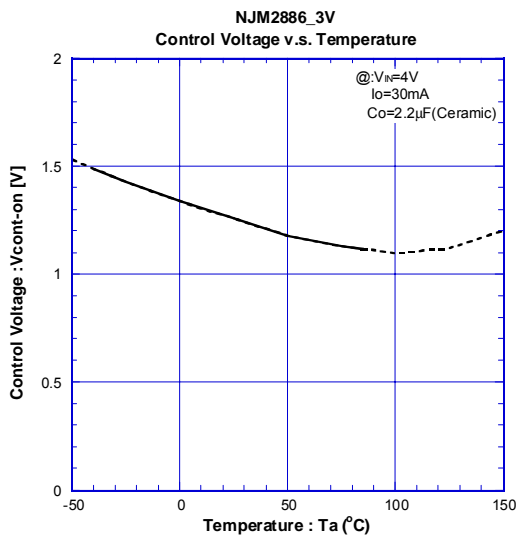
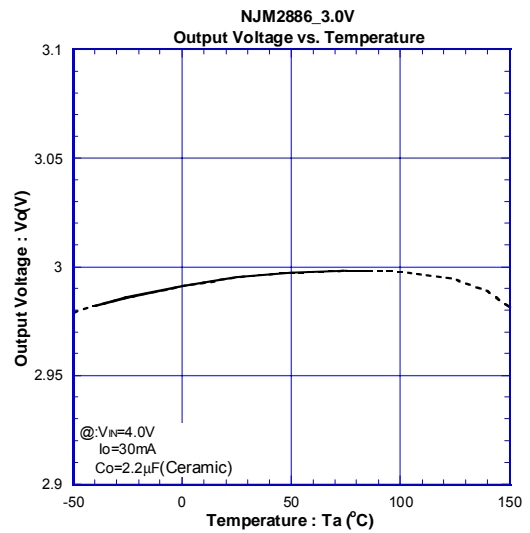
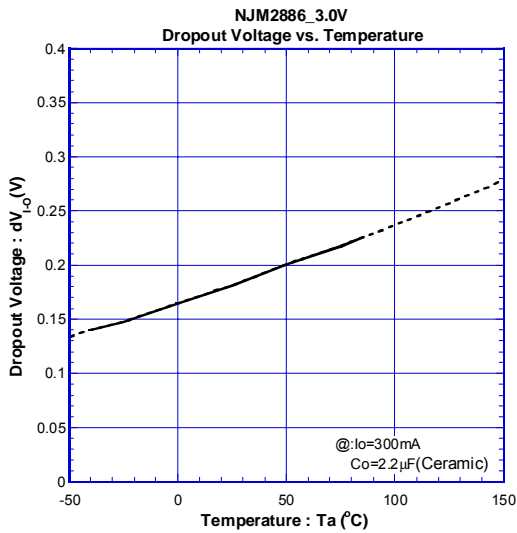
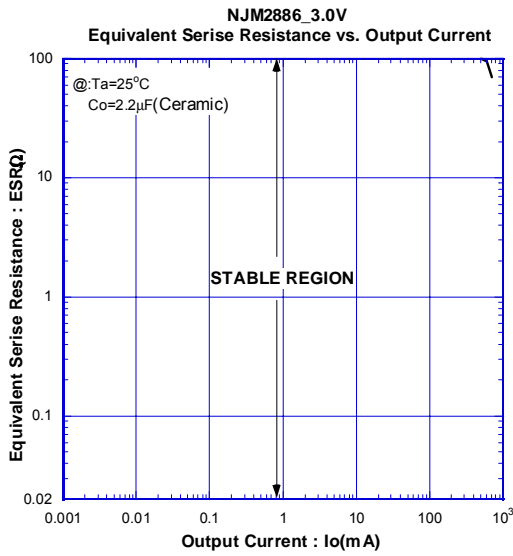


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ELECTRICAL CHARACTERISTICS

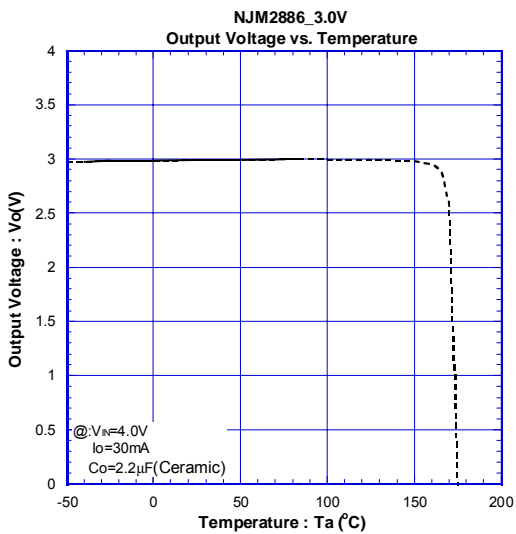
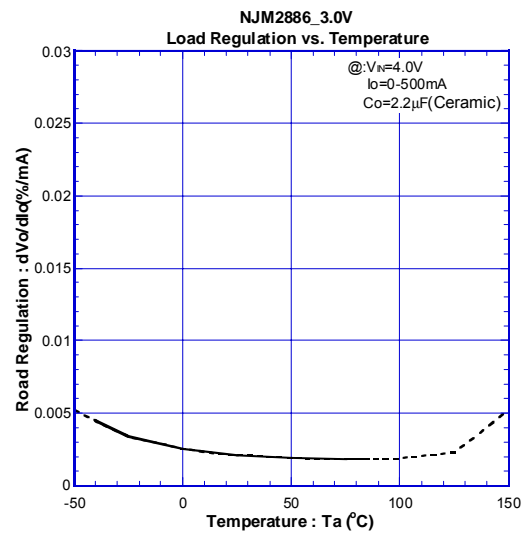
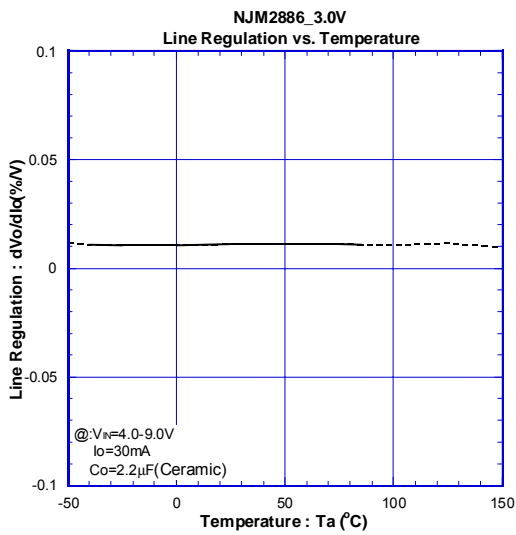
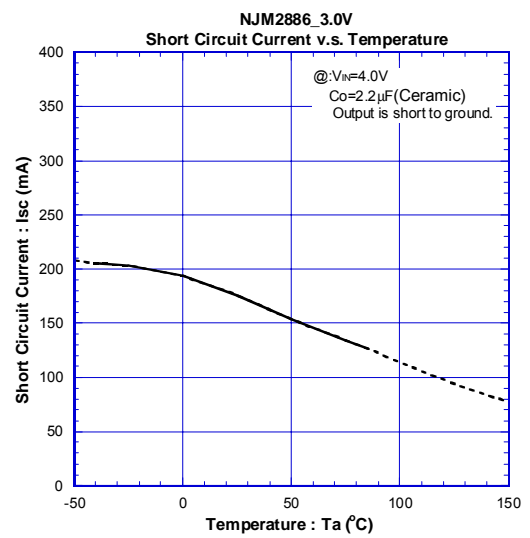
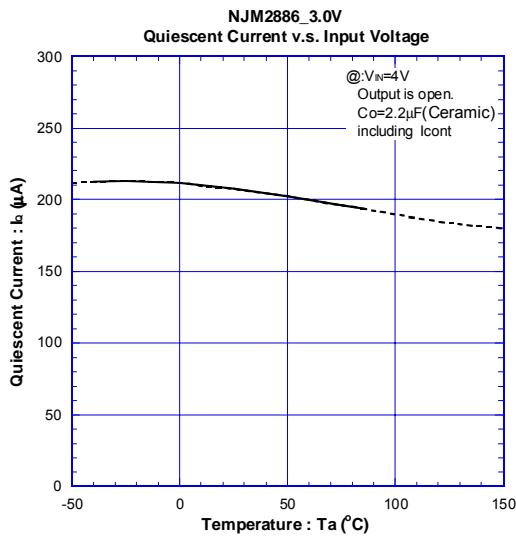


ELECTRICAL CHARACTERISTICS

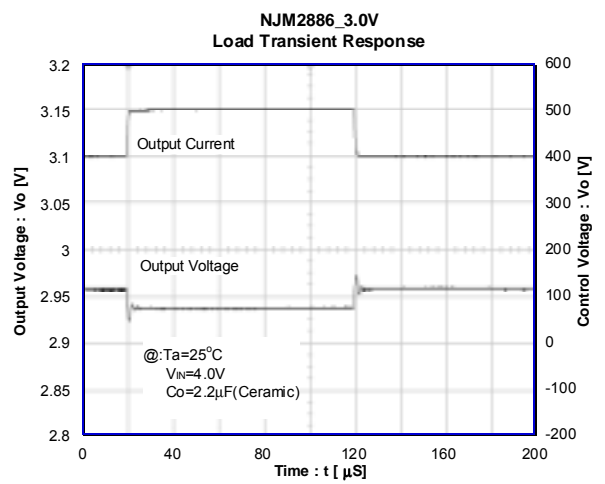
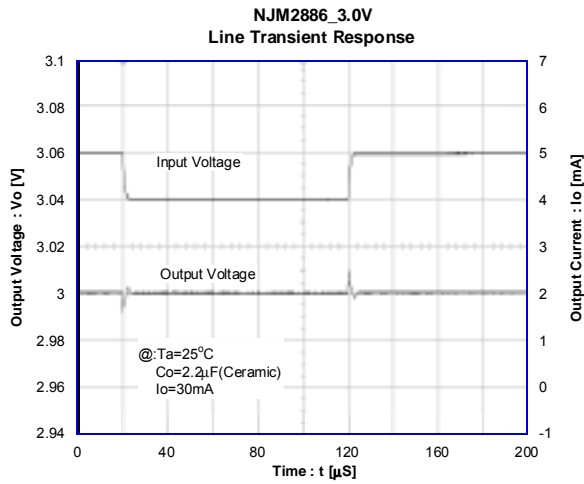
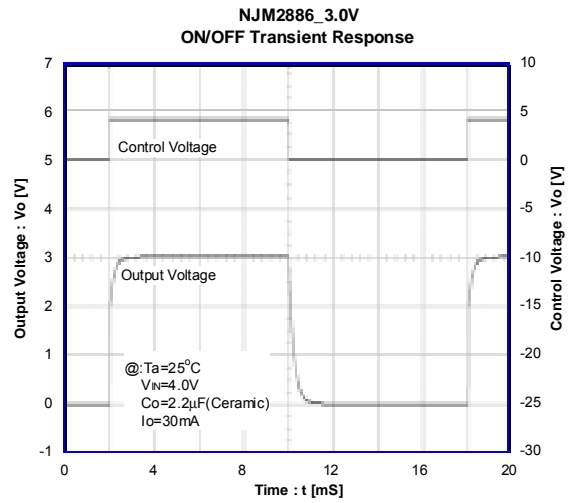
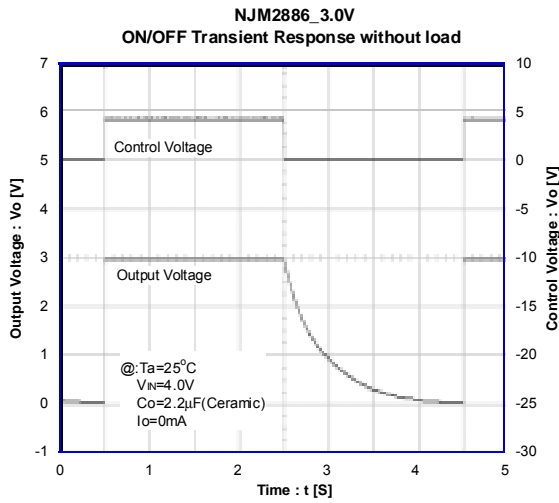


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ELECTRICAL CHARACTERISTICS



■ ELECTRICAL CHARACTERISTICS



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