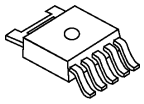
LOW DROPOUT VOLTAGE REGULATOR

■ 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

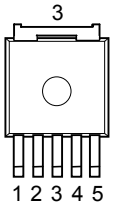


NJM2886DL3

■ 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 Contorol
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TO-252-5(DL3)

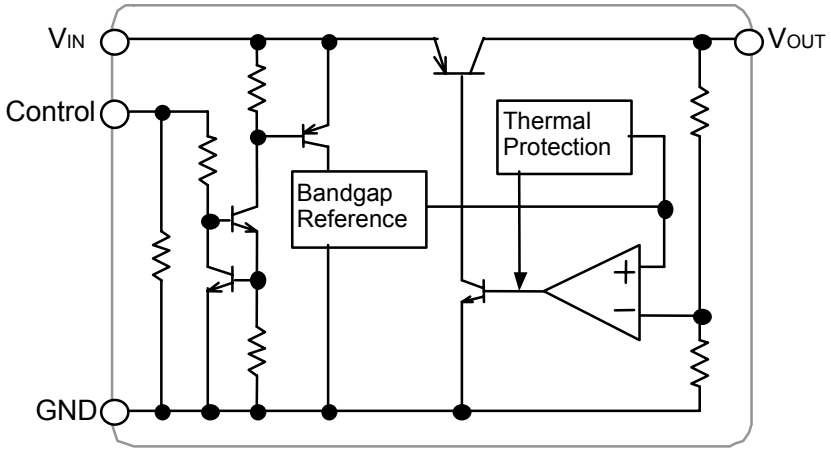
■ PIN CONFIGURATION



NJM2886DL3

PIN FUNCTION
1.CONTROL
2.V_{IN}
3.GND
4.V_{OUT}
5.NC

■ EQUIVALENT CIRCUIT



■ 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 Voltae	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)

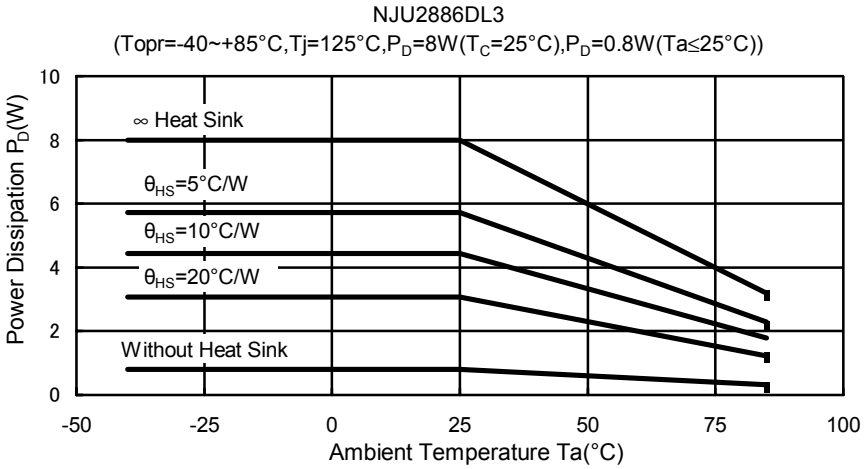
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	Vo	Io=30mA	-1.0%	–	+1.0%	V
Quiescent Current	I_Q	Io=0mA	–	200	300	µA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	V_{CONT}=0V	–	–	100	nA
Output Current	Io	Vo-0.3V	500	650	-	mA
Line Regulation	$\Delta Vo/\Delta V_{IN}$	V_{IN}=Vo+1V ~ Vo+6.0V, Io=30mA	–	–	0.10	%/V
Load Regulation	$\Delta Vo/\Delta Io$	Io=0 ~ 500mA	–	–	0.03	%/mA
Dropout Voltage(*2)	ΔV_{I-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	$\Delta Vo/\Delta Ta$	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.

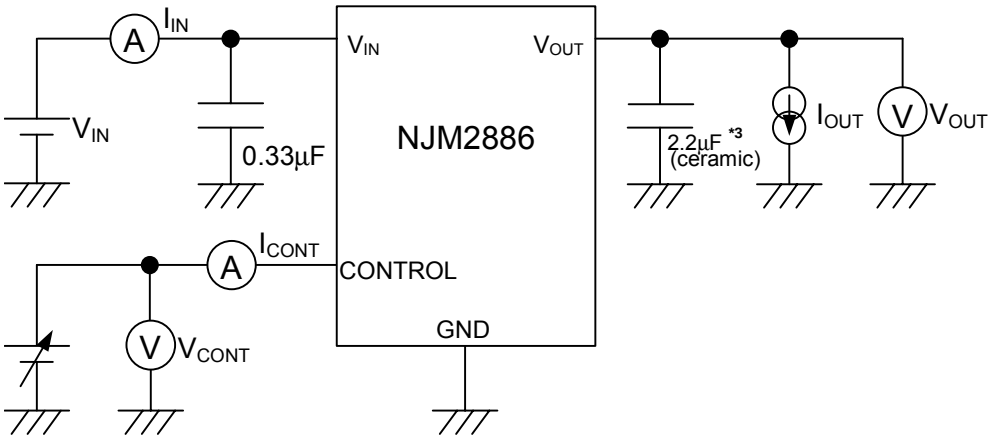
The above specification is a common specification for all output voltages.

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

■ POWER DISSIPATION VS. AMBIENT TEMPERATURE



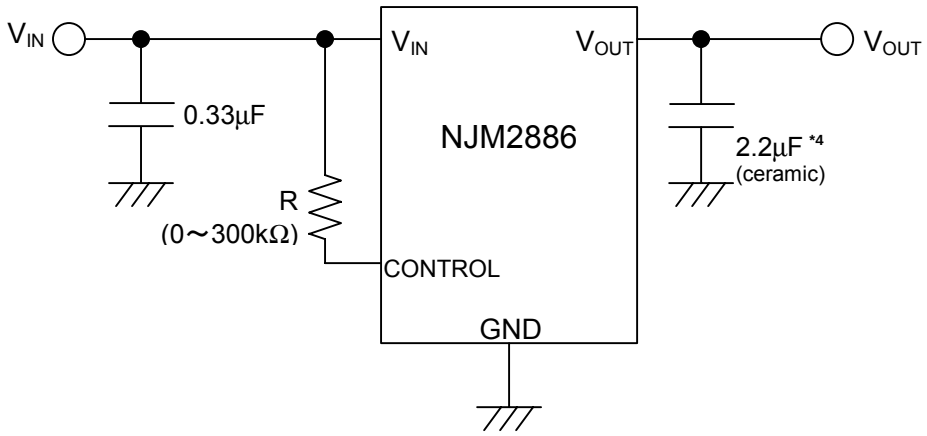
■ TEST CIRCUIT



*3 1.7V<Vo≤2.6V version: Co=4.7µF(ceramic)
Vo≤1.7V version: 10µF(ceramic)

■ TYPICAL APPLICATION

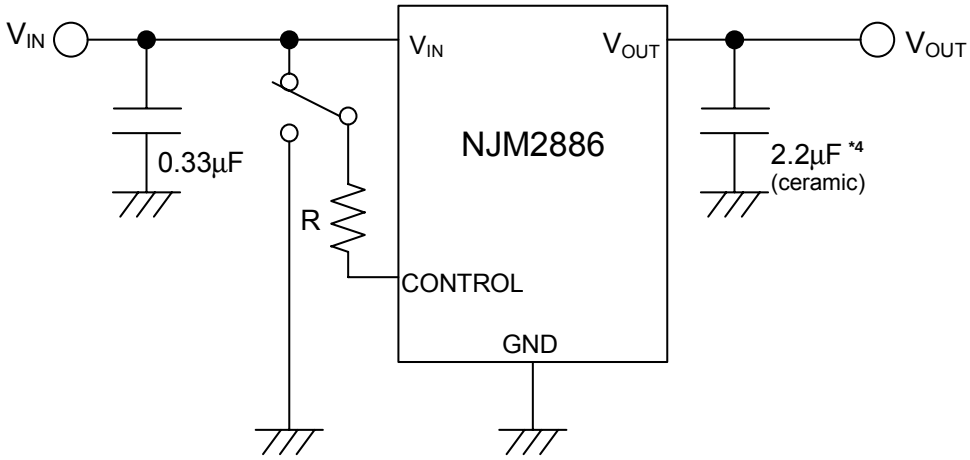
① In the case where ON/OFF Control is not required:



*4 1.7V<Vo≤2.6V version: Co=4.7μF
Vo≤1.7V version: 10μF

Connect control terminal to V_{IN} terminal

② In use of ON/OFF CONTROL:



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

State of control terminal:

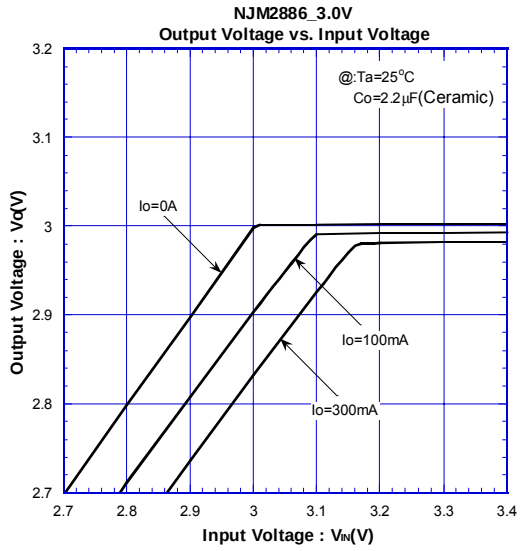
- "H"→ output is enabled.
- "L" or "open" → output is disabled.

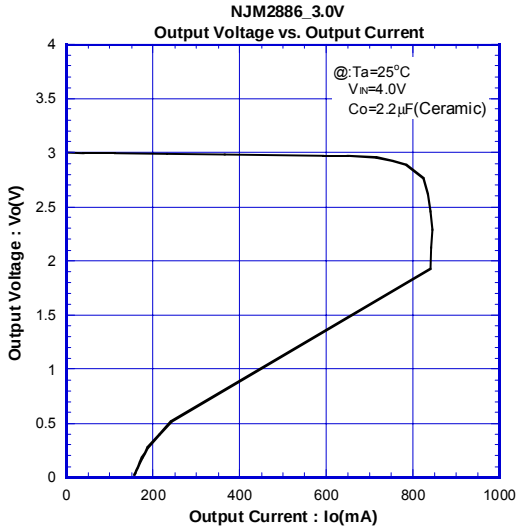
∗In the case of using a resistance "R" between V_{IN} and control.

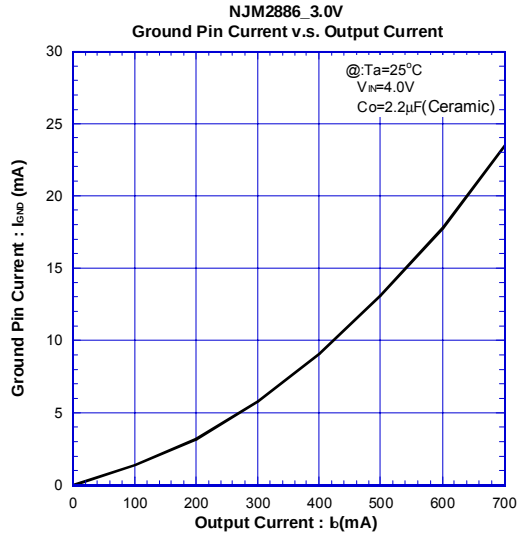
The current flow into the control terminal while the IC is ON state (I_{CONT}) can be reduced when a pull up resistance "R" is inserted between V_{IN} and the control terminal.

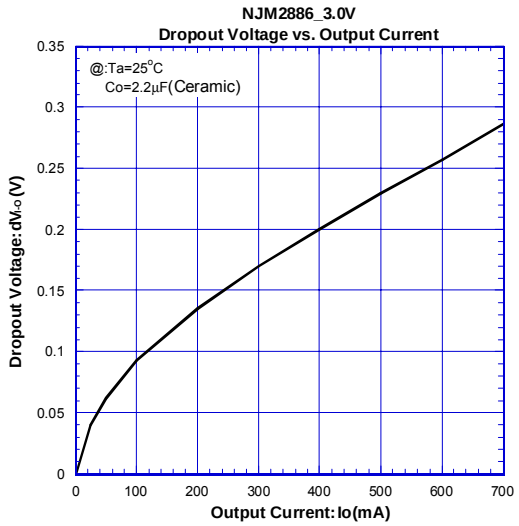
The minimum control voltage for ON state ($V_{CONT\ (ON)}$) is increased due to the voltage drop caused by I_{CONT} and the resistance "R". The I_{CONT} is temperature dependence as shown in the "Control Current vs. Temperature" characteristics. Therefore, the resistance "R" should be carefully selected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

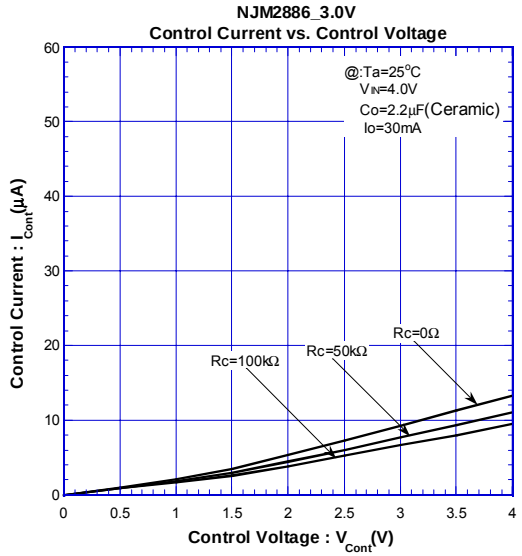
■ ELECTRICAL CHARACTERISTICS

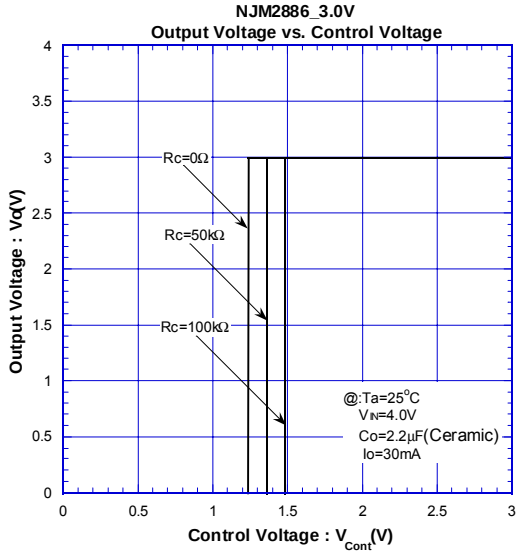




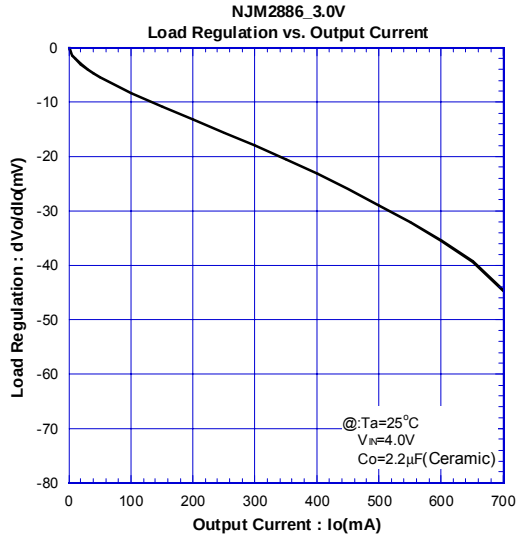


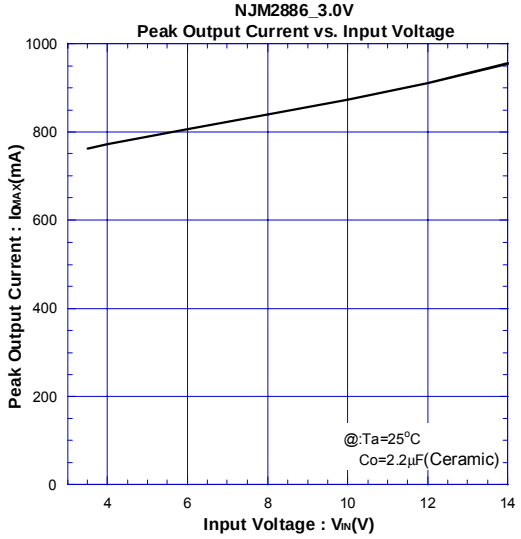


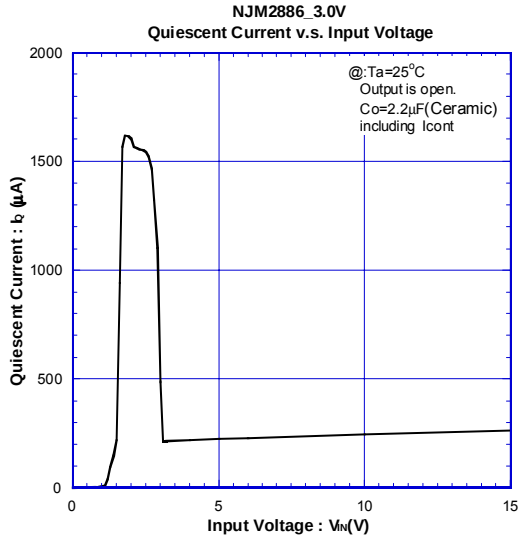


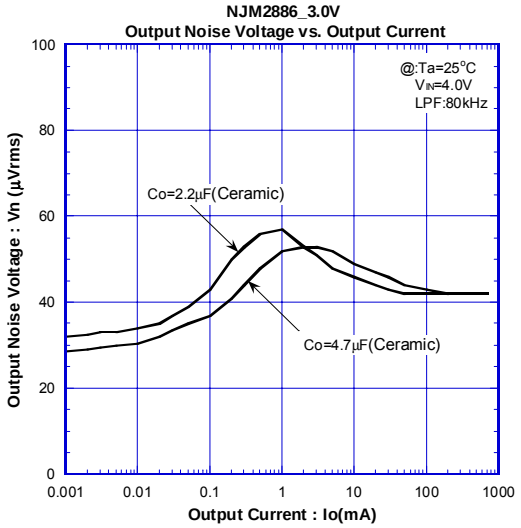


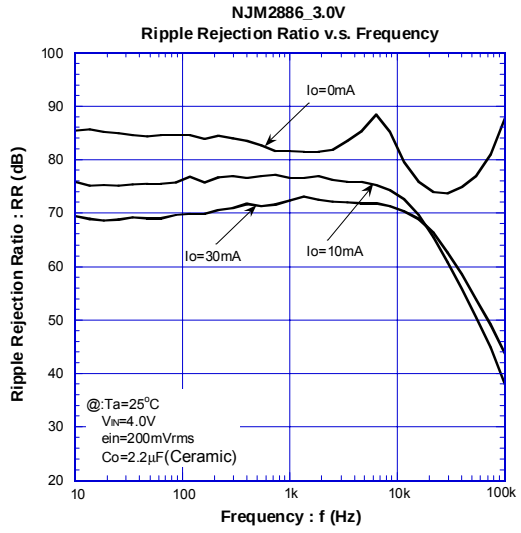
■ ELECTRICAL CHARACTERISTICS

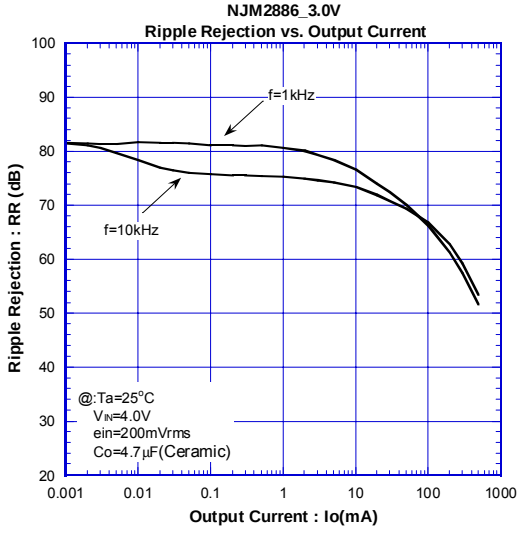












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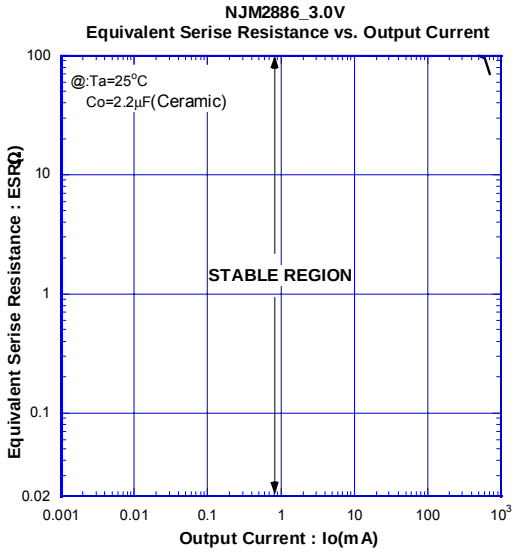

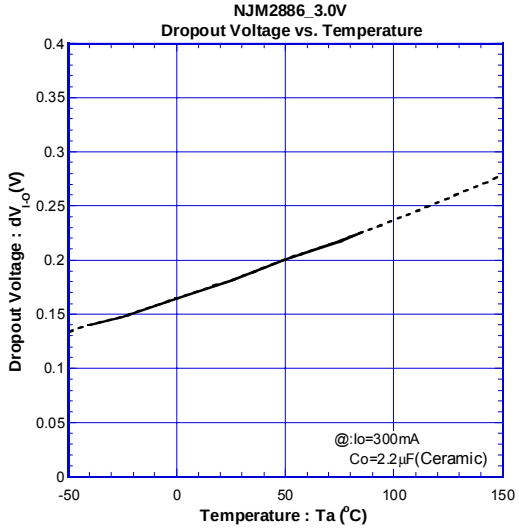

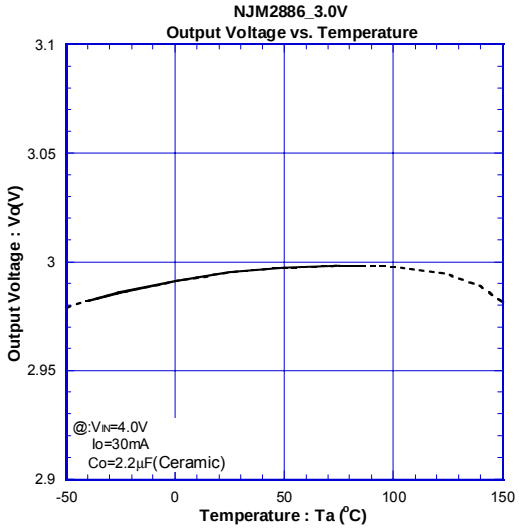

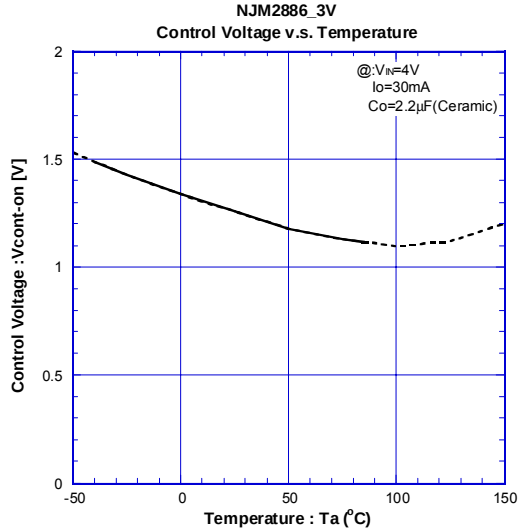

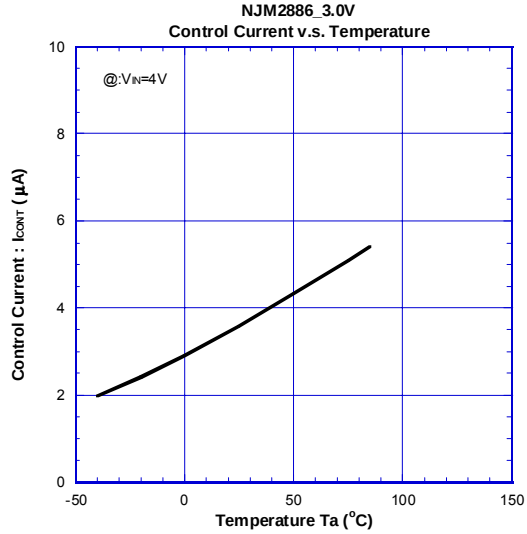

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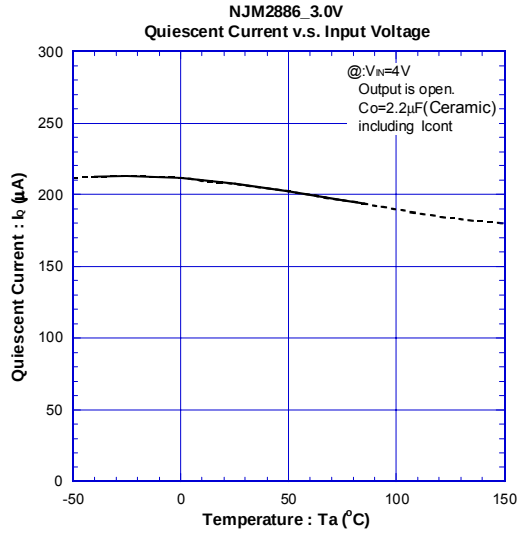
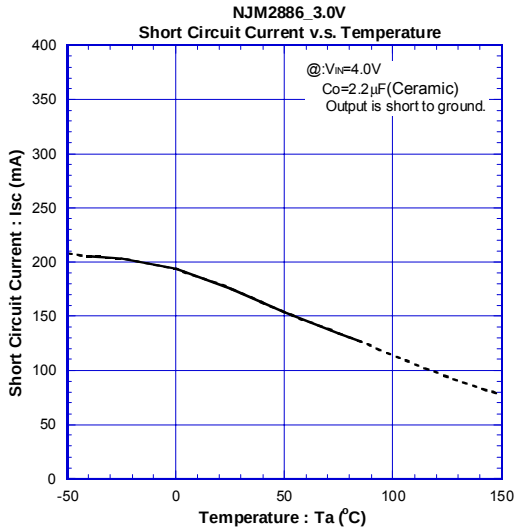
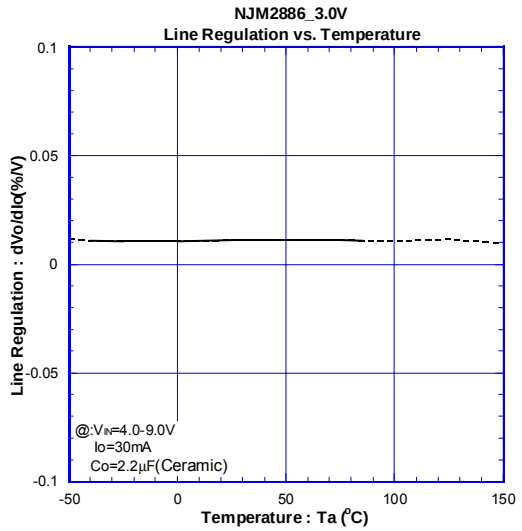
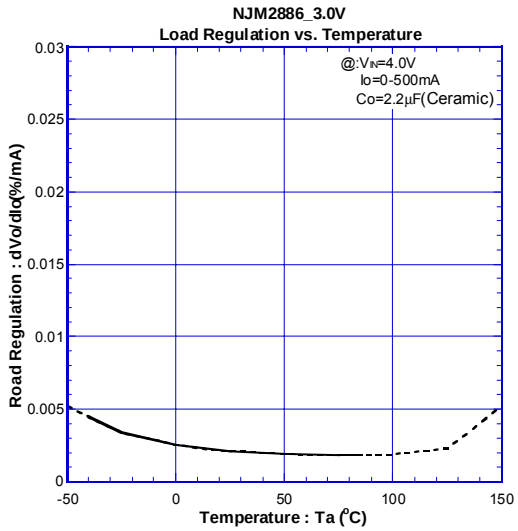
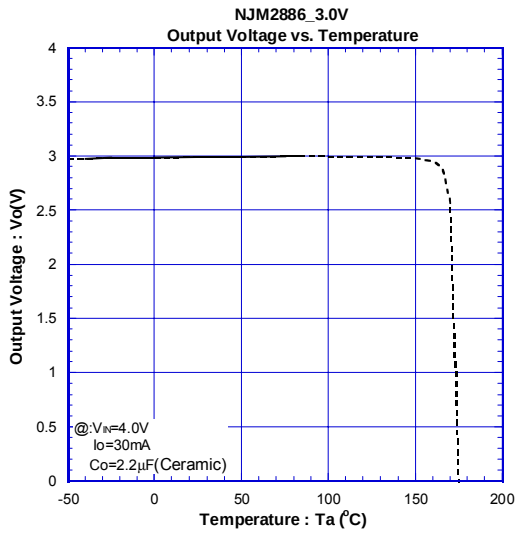




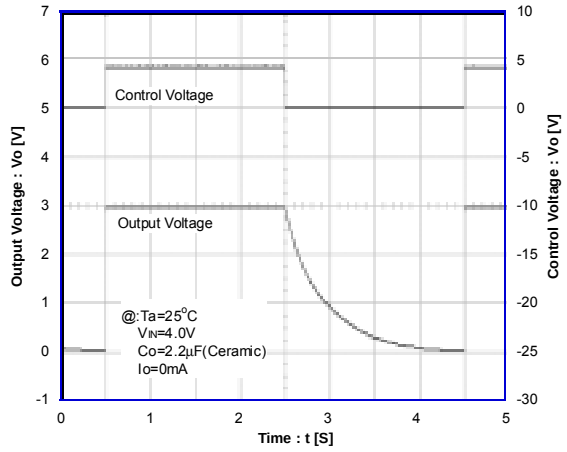




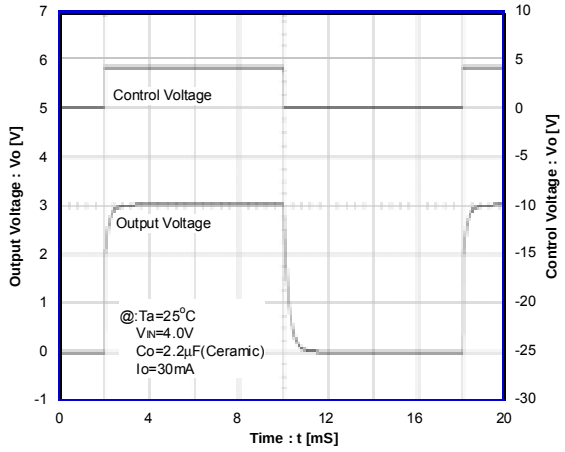


■ ELECTRICAL CHARACTERISTICS

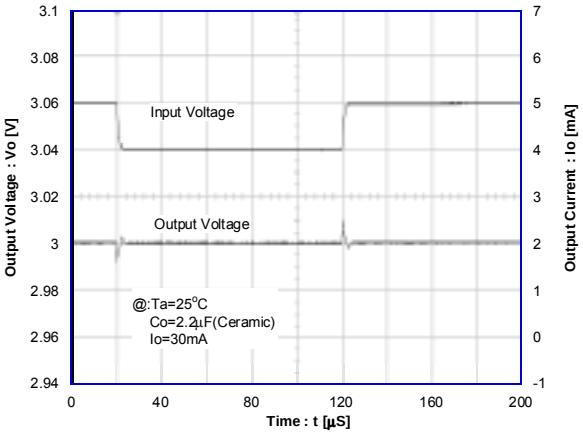
NJM2886_3.0V
ON/OFF Transient Response without load



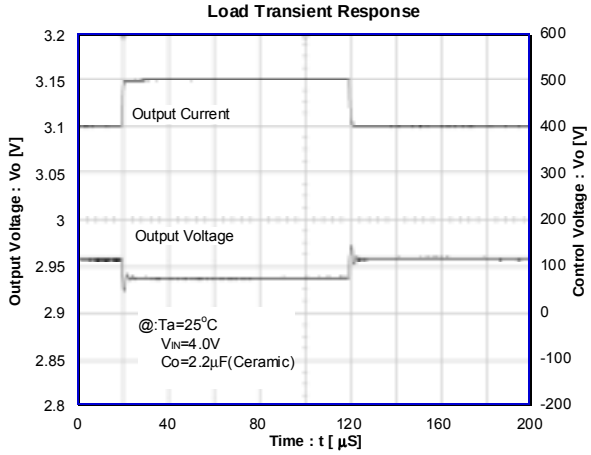
NJM2886_3.0V
ON/OFF Transient Response



NJM2886_3.0V
Line Transient Response



NJM2886_3.0V
Load Transient Response



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