2ch LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJM2892 is a 2ch low dropout voltage regulator with ON/OFF control.

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

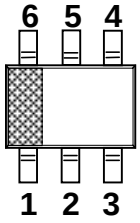
■ PACKAGE OUTLINE

NJM2892F1

■ FEATURES

- High Ripple Rejection 75dB typ. (f=1kHz Vo=3V version)
- Output Noise Voltage V_{NO} =45μVrms typ.
- Output capacitor with 1.0μF ceramic capacitor (Vo≥2.7V)
- Output Current Io(max.)=100mA x 2ch
- High Precision Output Vo±1.0%
- Low Dropout Voltage 0.1V typ. (Io=60mA)
- ON/OFF Control
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline SOT-23-6 (MTP-6 : 2.8x2.9x1.1mm)

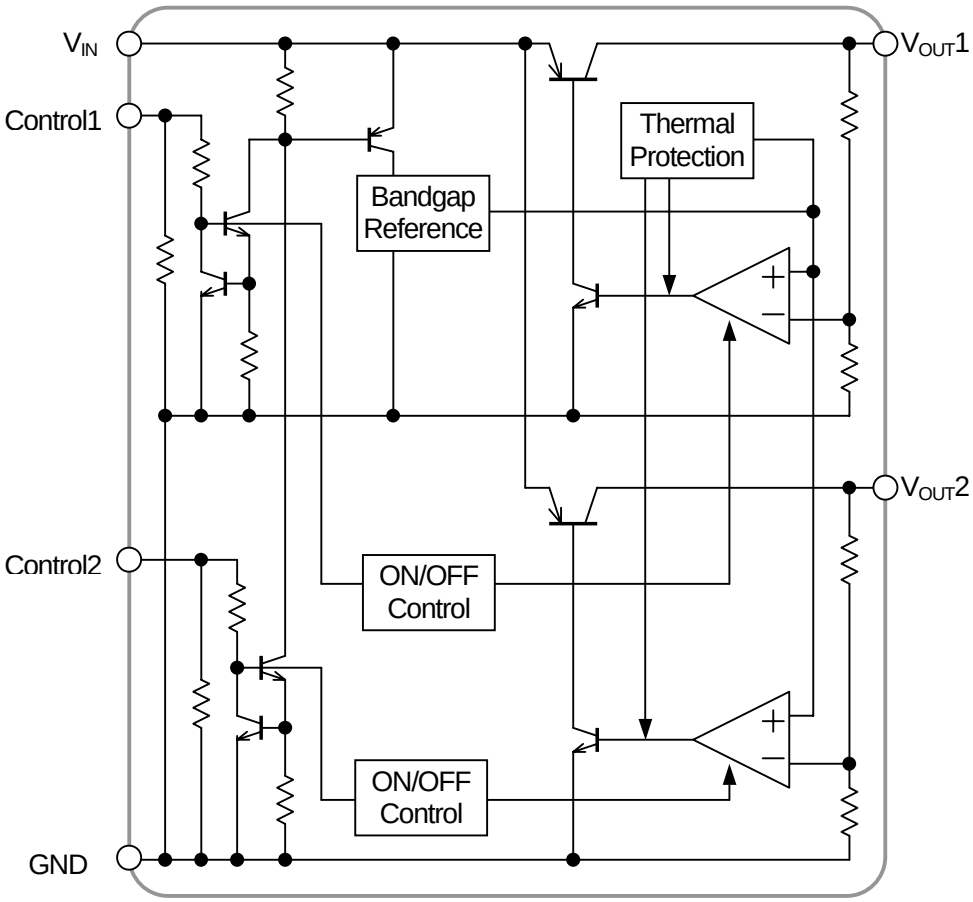
■ PIN CONFIGURATION



NJM2892F1

PIN FUNCTION
1. $V_{OUT}2$
2. GND
3. $V_{OUT}1$
4. CONTROL1
5. V_{IN}
6. CONTROL2

■ EQUIVALENT CIRCUIT



NJM2892

■ OUTPUT VOLTAGE RANK LIST

Device Name	V_{OUT}	
	Ch 1	Ch 2
NJM2892F1-1515	1.5V	1.5V
NJM2892F1-1815	1.8V	1.5V
NJM2892F1-2121	2.1V	2.1V
NJM2892F1-2518	2.5V	1.8V
NJM2892F1-2618	2.6V	1.8V
NJM2892F1-2815	2.8V	1.5v
NJM2892F1-2818	2.8v	1.8v
NJM2892F1-0303	3.0V	3.0V
NJM2892F1-3328	3.3V	2.8V
NJM2892F1-3303	3.3V	3.0V
NJM2892F1-3333	3.3V	3.3V
NJM2892F1-0521	5.0V	2.1V
NJM2892F1-0533	5.0V	3.3V

■ 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	SOT-23-6	350(*2)	mW
			200(*3)	
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.

(*2): Mounted on glass epoxy board based on EIA/JEDEC. (114.3x76.2x1.6mm: 2Layers)

(*3): Device itself.

■ Operating voltage

V_{IN}=+2.3 ~ +14V (In case of Vo<2.1V version)

■ ELECTRICAL CHARACTERISTICS

(V_{IN}=Vo+1V, C_{IN}=0.1µF, Co=1.0µF: Vo≥2.7V (Co=2.2µF : 1.8V<Vo≤2.6V:, Co=4.7µF : Vo≤1.8V), Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	Vo	Io=30mA	-1.0%	-	+1.0%	V
Quiescent Current 1	I_{Q1}	V_{CONT} 1= V_{IN} , V_{CONT} 2= 0V or V_{CONT} 2= V_{IN} , V_{CONT} 1= 0V Io=0mA , Except I_{CONT}	-	150	220	µA
Quiescent Current 2	I_{Q2}	V_{CONT} 1= V_{CONT} 2= V_{IN} Io=0mA , Except I_{CONT}	-	270	400	µA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	V_{CONT}=0V	-	-	100	nA
Output Current	Io	Vo-0.3V	100	130	-	mA
Line Regulation	$\Delta Vo/\Delta V_{IN}$	V_{IN}=Vo+1V ~ Vo+6V, Io=30mA	-	-	0.10	%/V
Load Regulation	$\Delta Vo/\Delta Io$	Io=0 ~ 60mA	-	-	0.03	%/mA
Dropout Voltage(*4)	ΔV_{I-O}	Io=60mA	-	0.1	0.18	V
Ripple Rejection	RR	ein=200mVrms, f=1kHz, Io=10mA, Vo=3V 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=3V 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

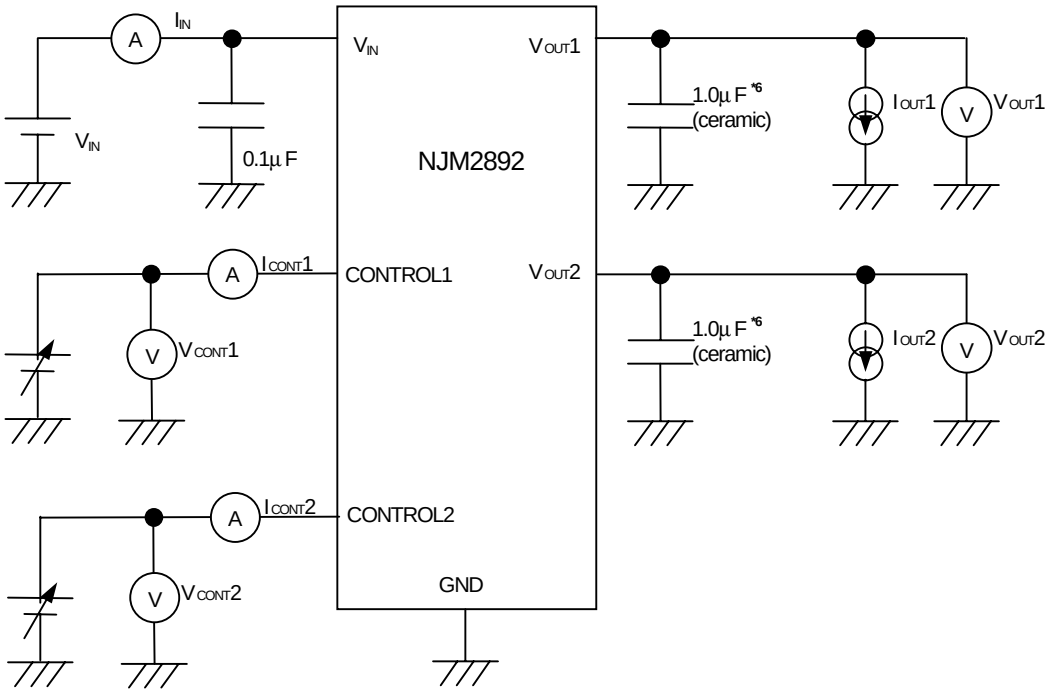
(*4): The output voltage excludes under 2.1V.

(*5): V_{IN} =Vo+1V means add 1V to higher output voltage.

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.

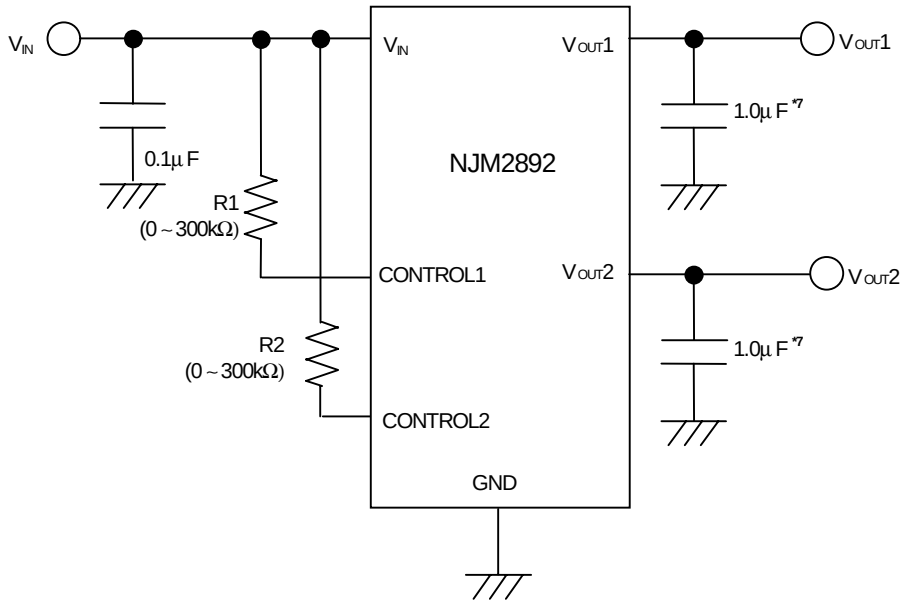
■ TEST CIRCUIT



*6 1.8V<Vo ≤ 2.6V version : Co=2.2µF(ceramic)
Vo≤1.8V version : Co=4.7µF(ceramic)

■ TYPICAL APPLICATION

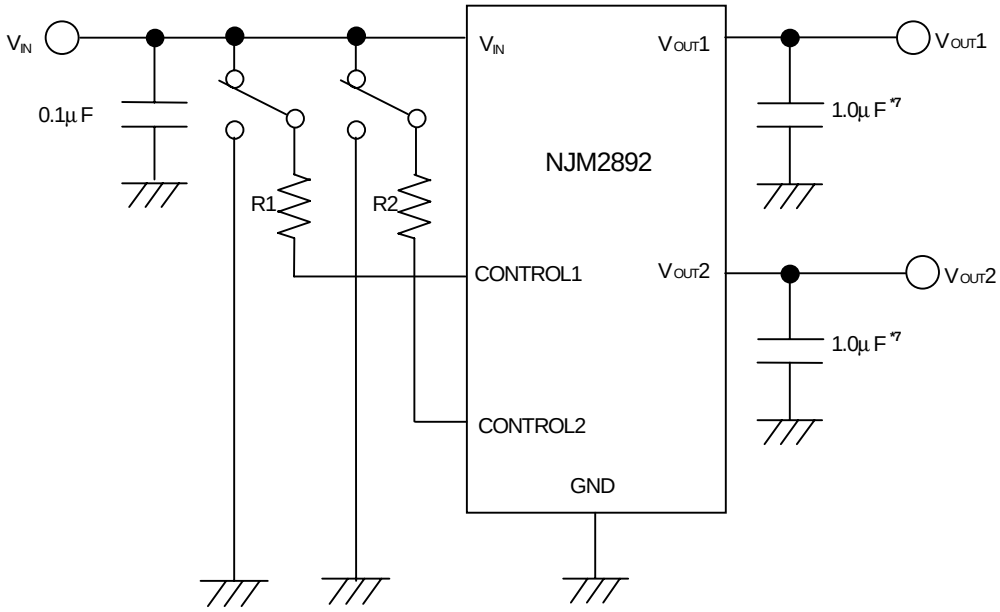
① In the case where ON/OFF Control is not required:



*7 1.8V<Vo ≤ 2.6V version : Co=2.2µF
Vo≤1.8V version : Co=4.7µF

Connect control terminal to V_{IN} terminal

② In use of ON/OFF CONTROL:



*7 1.8V<Vo ≤ 2.6V version : Co=2.2µF
Vo≤1.8V version : Co=4.7µF

State of control terminal:

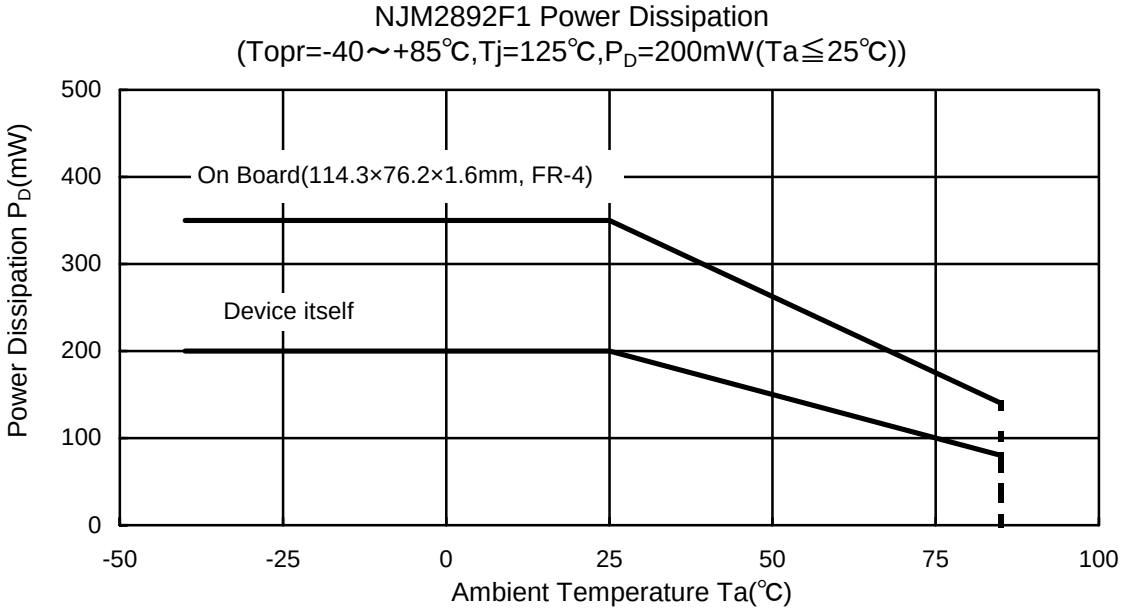
- "H"→ output is enabled.
- "L" or "open" → output is disabled.

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

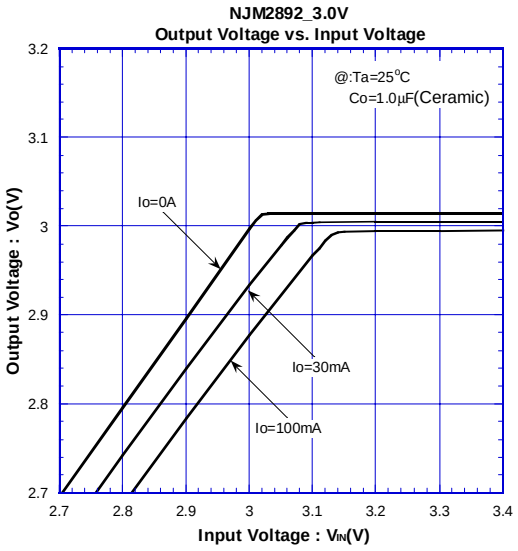
The current flow into the control terminal while the IC is ON state (I_{CONT}) can be reduced when a pull up resistance "R" is inserted between V_{IN} and the control terminal.

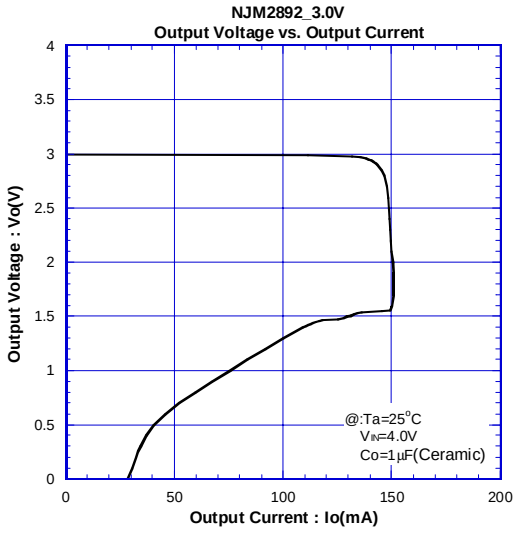
The minimum control voltage for ON state ($V_{CONT\ (ON)}$) is increased due to the voltage drop caused by I_{CONT} and the resistance "R". The I_{CONT} is temperature dependence as shown in the "Control Current vs. Temperature" characteristics. Therefore, the resistance "R" should be carefully selected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

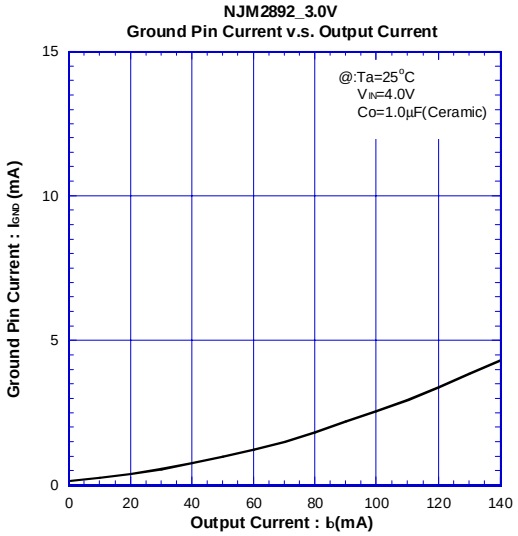
■ POWER DISSIPATION vs. AMBIENT TEMPERATURE

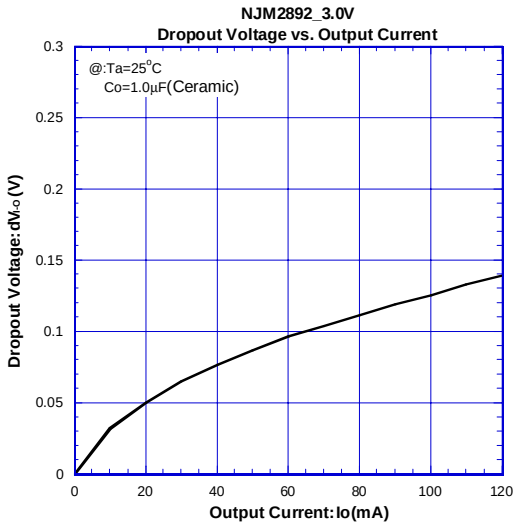


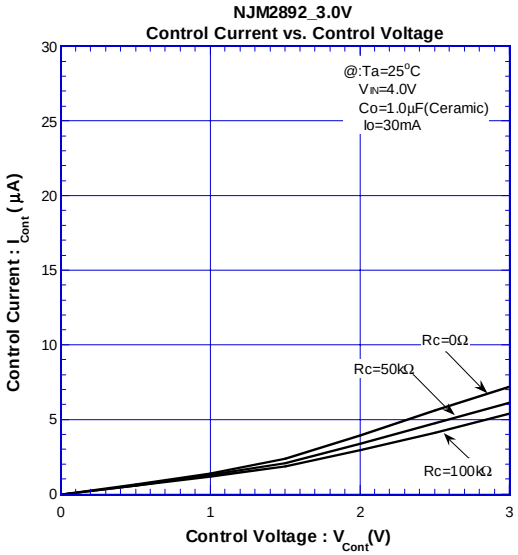
■ ELECTRICAL CHARACTERISTICS

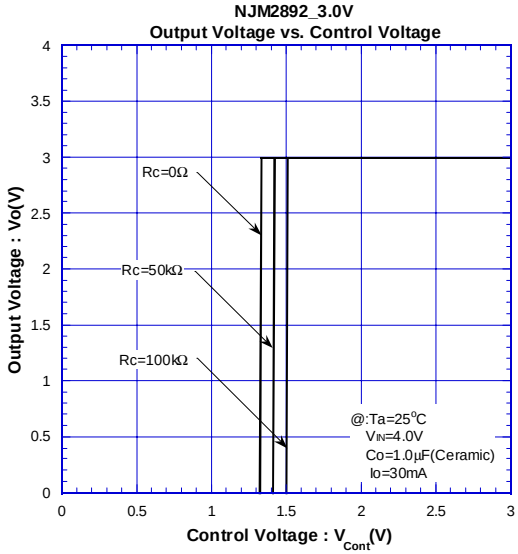






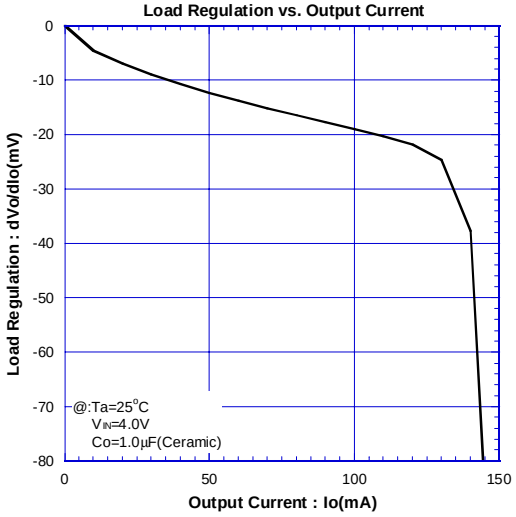




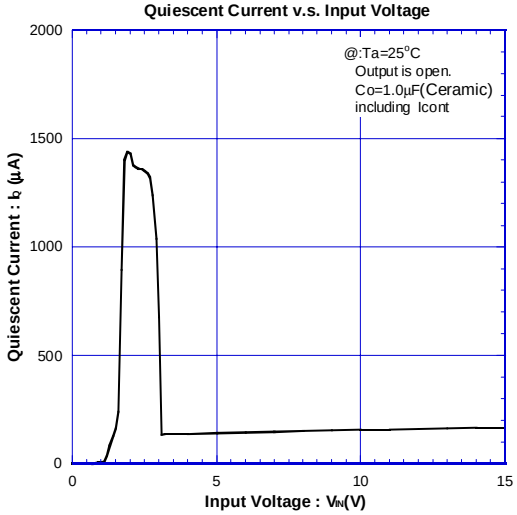


■ ELECTRICAL CHARACTERISTICS

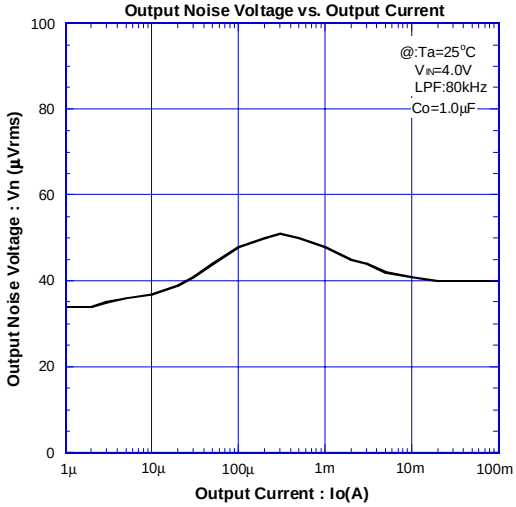
NJM2892_3.0V
Load Regulation vs. Output Current



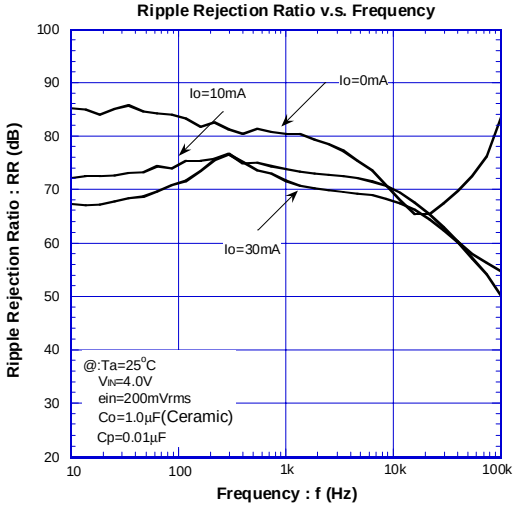
NJM2892_3.0V
Quiescent Current v.s. Input Voltage



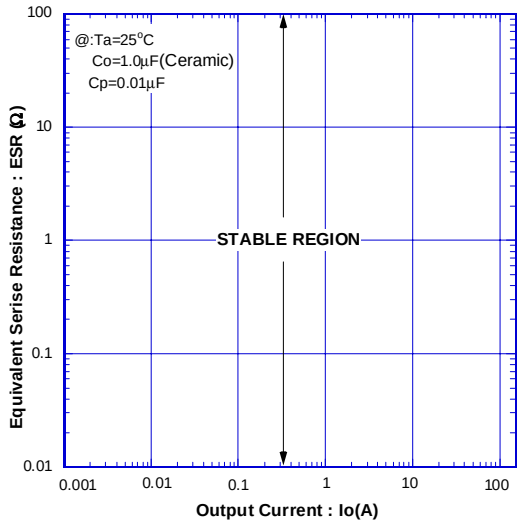
NJM2892_3.0V
Output Noise Voltage vs. Output Current



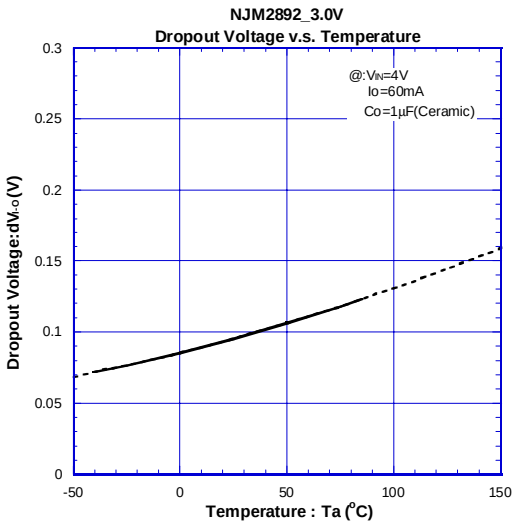
NJM2892_3.0V
Ripple Rejection Ratio v.s. Frequency

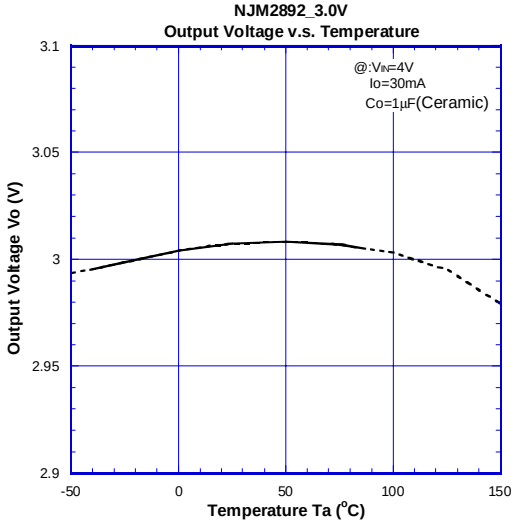


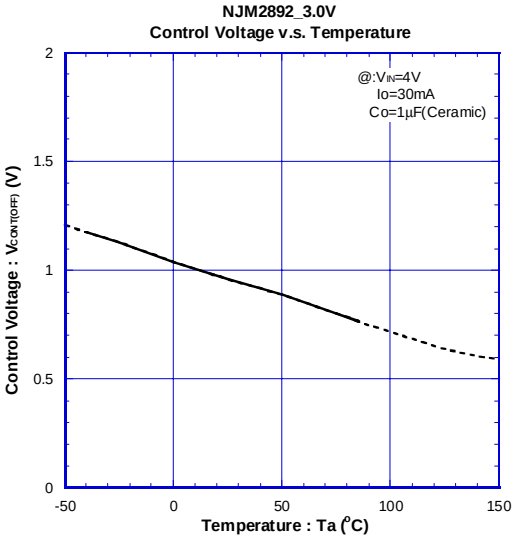
NJM2892_3.0V
Equivalent Serise Resistance vs. Output Current

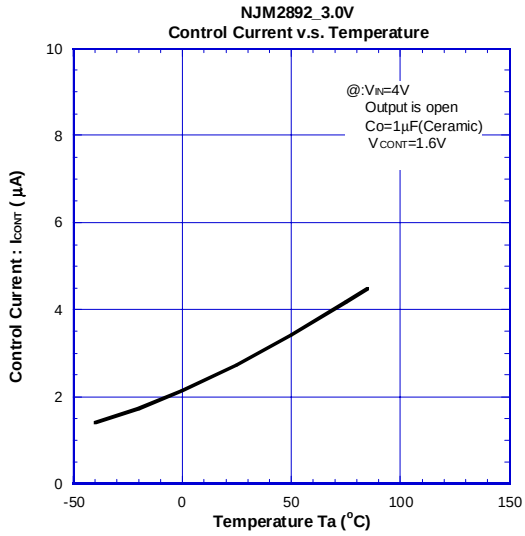


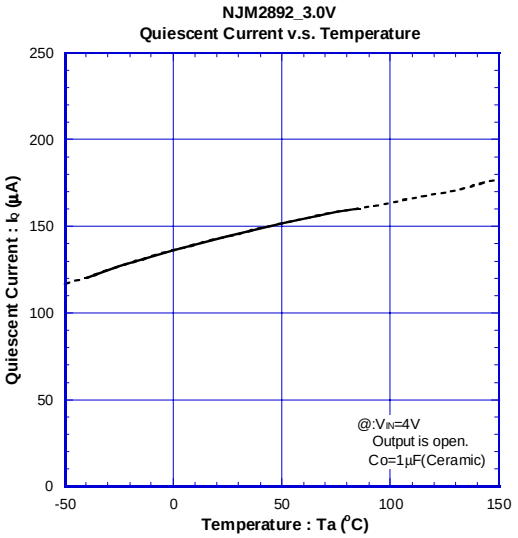
■ ELECTRICAL CHARACTERISTICS

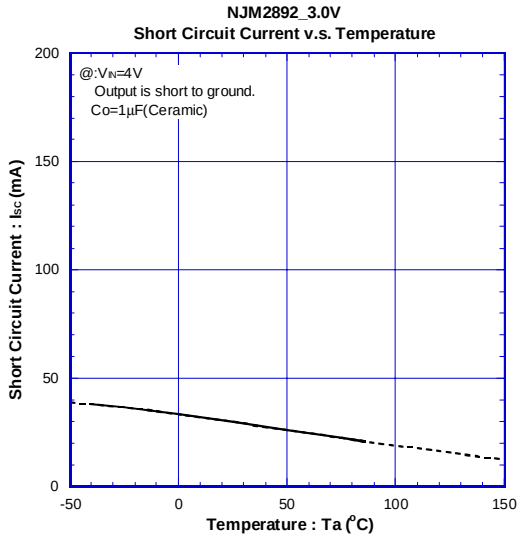












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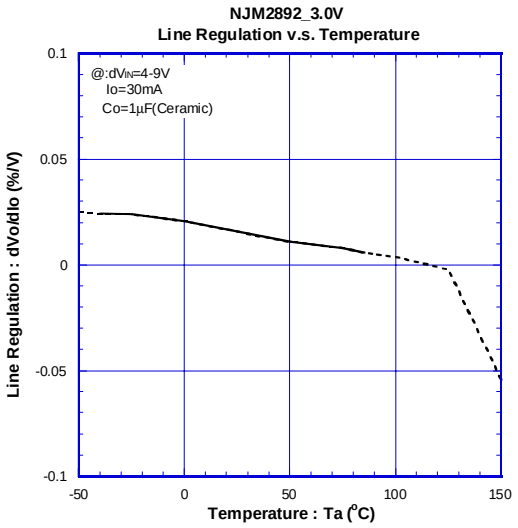

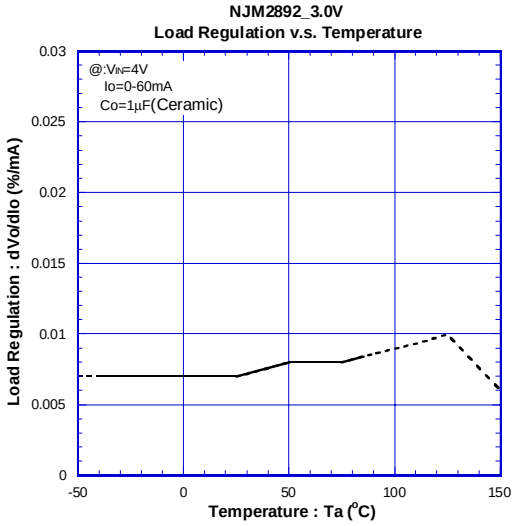

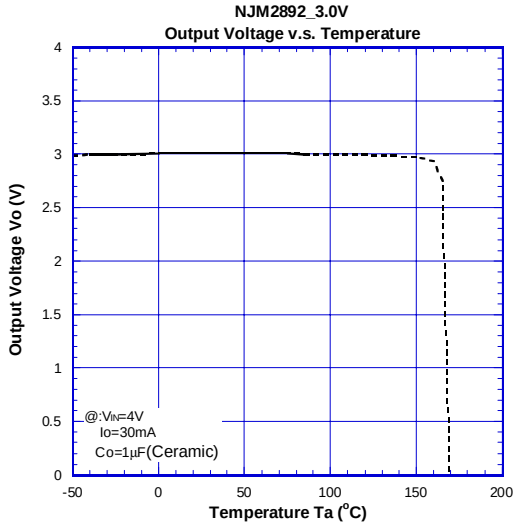

■ ELECTRICAL CHARACTERISTICS