

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

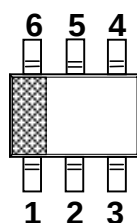


NJM2892F1

■ FEATURES

- High Ripple Rejection 75dB typ. (f=1kHz $V_o=3V$ version)
- Output Noise Voltage $V_{NO}=45\mu V_{rms}$ typ.
- Output capacitor with 1.0 μF ceramic capacitor ($V_o \geq 2.7V$)
- Output Current $I_o(max.)=100mA \times 2ch$
- High Precision Output $V_o \pm 1.0\%$
- Low Dropout Voltage 0.1V typ. ($I_o=60mA$)
- 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



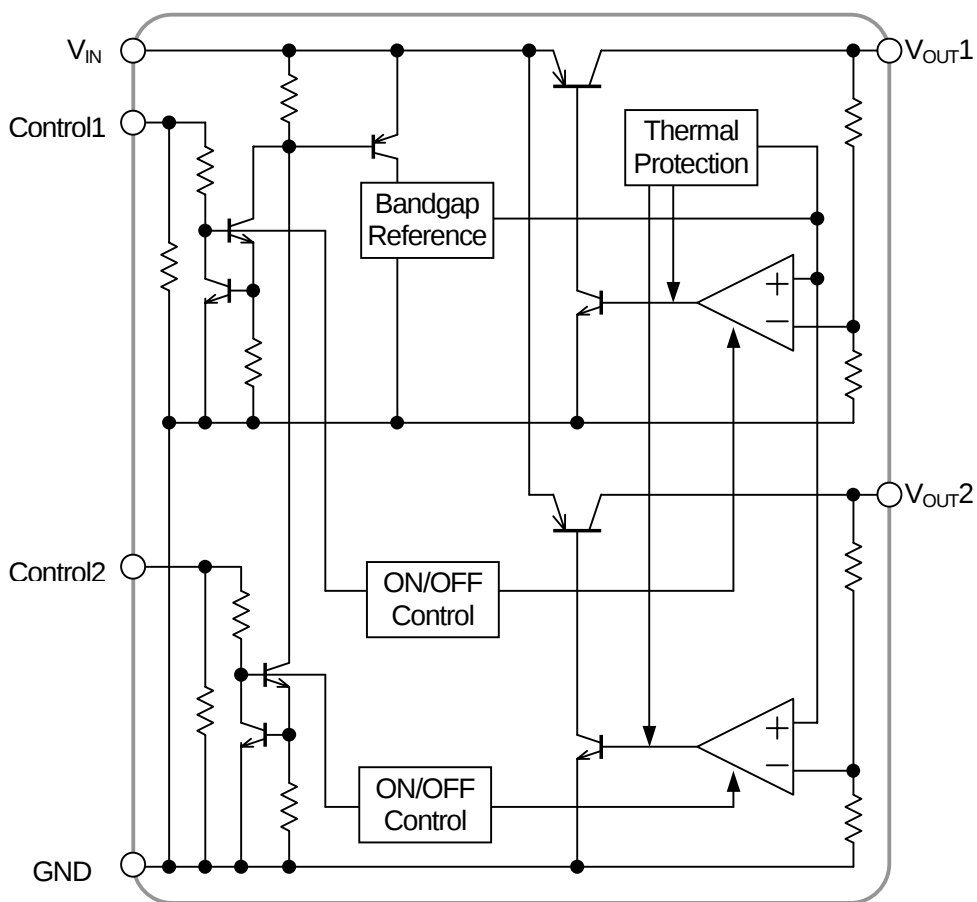
NJM2892F1

PIN FUNCTION

1. V_{OUT2}
2. GND
3. V_{OUT1}
4. CONTROL1
5. V_{IN}
6. CONTROL2

NJM2892

■ 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) 200(*3)	mW
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-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

$V_{IN}=+2.3 \sim +14V$ (In case of $V_O<2.1V$ version)

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=V_O+1V$, $C_{IN}=0.1\mu F$, $C_O=1.0\mu F$: $V_O\geq 2.7V$ ($C_O=2.2\mu F$: $1.8V<V_O\leq 2.6V$), $C_O=4.7\mu F$: $V_O\leq 1.8V$), $T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_O	$I_O=30mA$	-1.0%	-	+1.0%	V
Quiescent Current 1	I_{Q1}	$V_{CONT\ 1}=V_{IN}$, $V_{CONT\ 2}=0V$ or $V_{CONT\ 2}=V_{IN}$, $V_{CONT\ 1}=0V$ $I_O=0mA$, Except I_{CONT}	-	150	220	μA
Quiescent Current 2	I_{Q2}	$V_{CONT\ 1}=V_{CONT\ 2}=V_{IN}$ $I_O=0mA$, Except I_{CONT}	-	270	400	μA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	$V_{CONT}=0V$	-	-	100	nA
Output Current	I_O	$V_O=0.3V$	100	130	-	mA
Line Regulation	$\Delta V_O/\Delta V_{IN}$	$V_{IN}=V_O+1V \sim V_O+6V$, $I_O=30mA$	-	-	0.10	%/V
Load Regulation	$\Delta V_O/\Delta I_O$	$I_O=0 \sim 60mA$	-	-	0.03	%/mA
Dropout Voltage(*4)	ΔV_{I-O}	$I_O=60mA$	-	0.1	0.18	V
Ripple Rejection	RR	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_O=10mA$, $V_O=3V$ version	-	75	-	dB
Average Temperature Coefficient of Output Voltage	$\Delta V_O/\Delta T_a$	$T_a=0 \sim 85^\circ C$, $I_O=10mA$	-	± 50	-	ppm/°C
Output Noise Voltage	V_{NO}	$f=10Hz \sim 80kHz$, $I_O=10mA$, $V_O=3V$ version	-	45	-	μV_{rms}
Control Voltage for ON-state	$V_{CONT(ON)}$		1.6	-	-	V
Control Voltage for OFF-state	$V_{CONT(OFF)}$		-	-	0.6	V

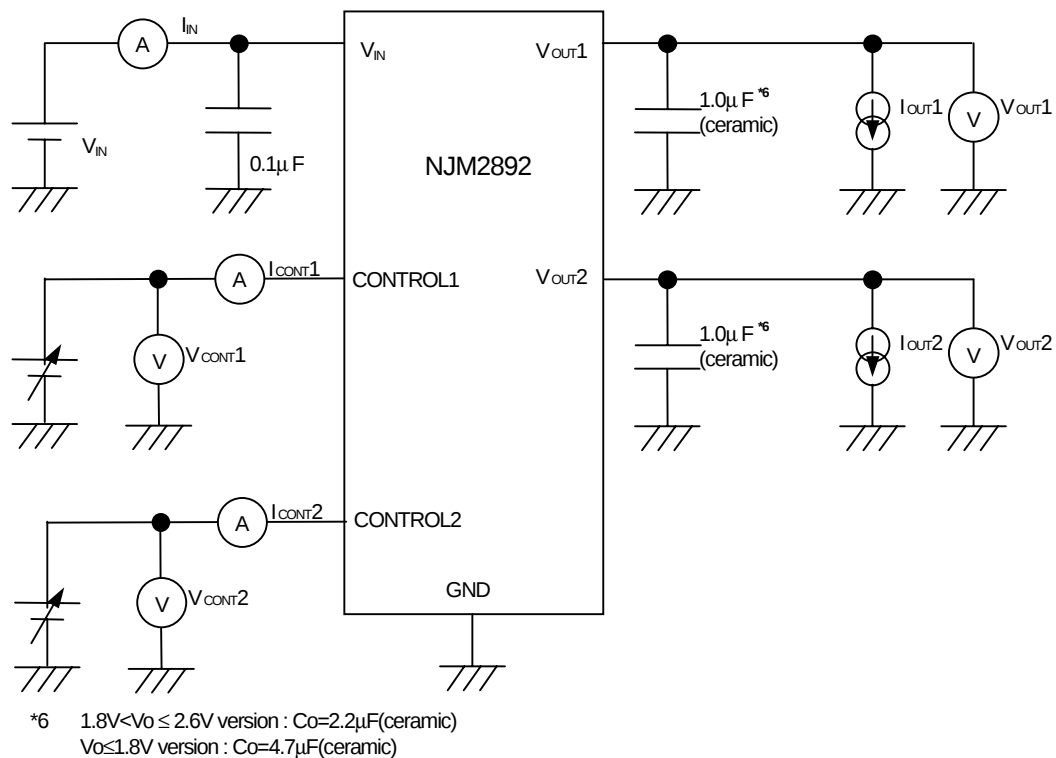
(*4): The output voltage excludes under 2.1V.

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

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

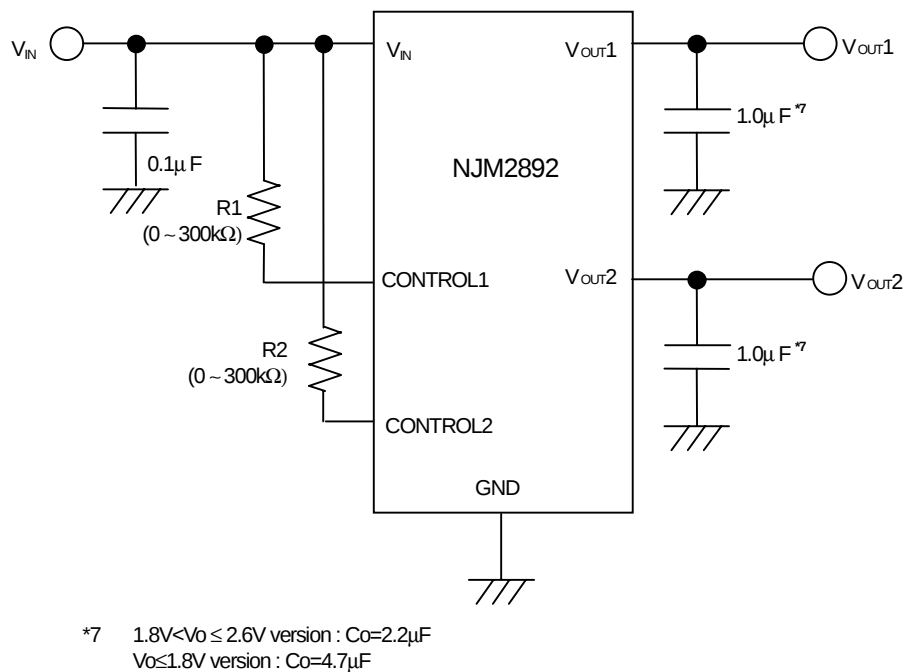
Therefore, it may be different from the individual specification for a specific output voltage.

■ TEST CIRCUIT



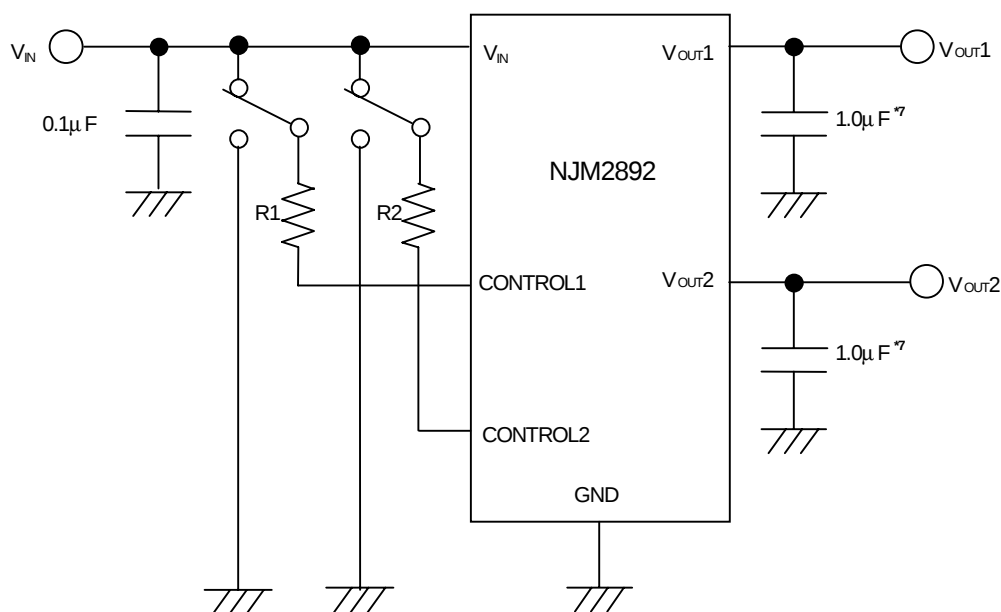
■ TYPICAL APPLICATION

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



Connect control terminal to V_{IN} terminal

② In use of ON/OFF CONTROL:



*7 1.8V < $V_o \leq 2.6$ V version : $C_o = 2.2\mu F$
 $V_o \leq 1.8$ V version : $C_o = 4.7\mu F$

State of control terminal:

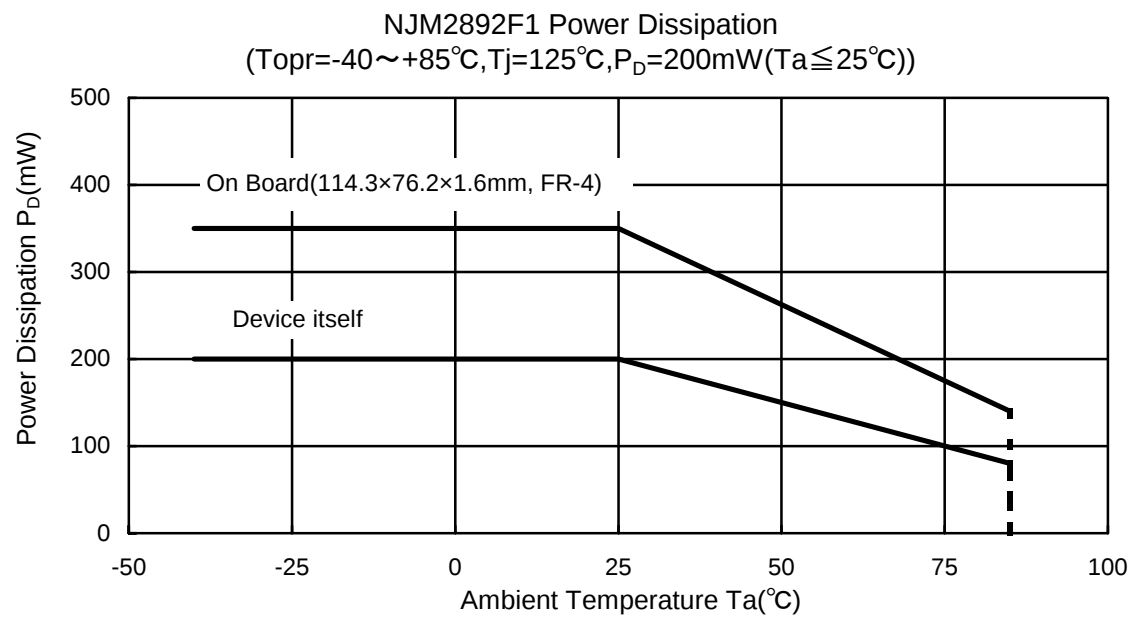
- "H" → output is enabled.
- "L" or "open" → output is disabled.

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

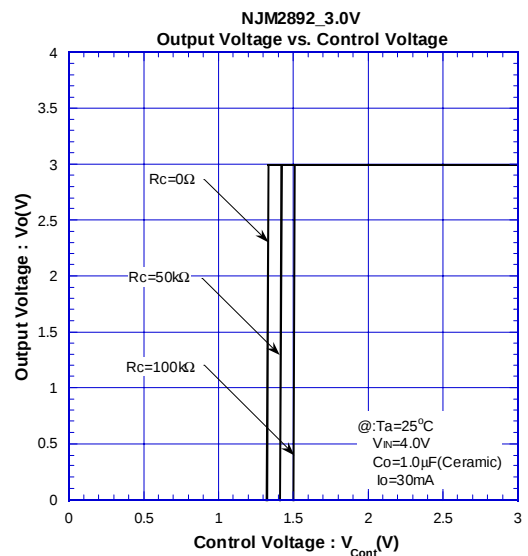
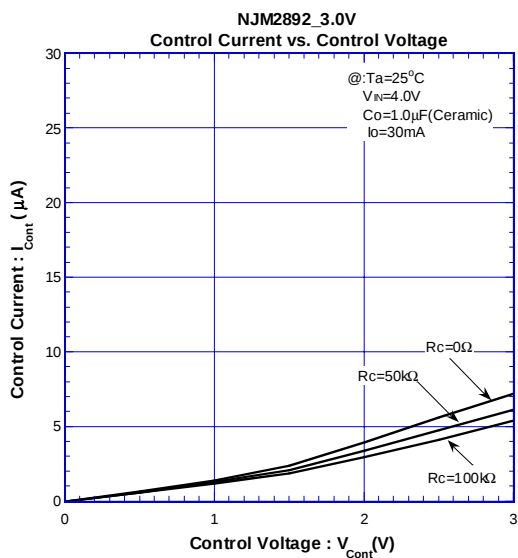
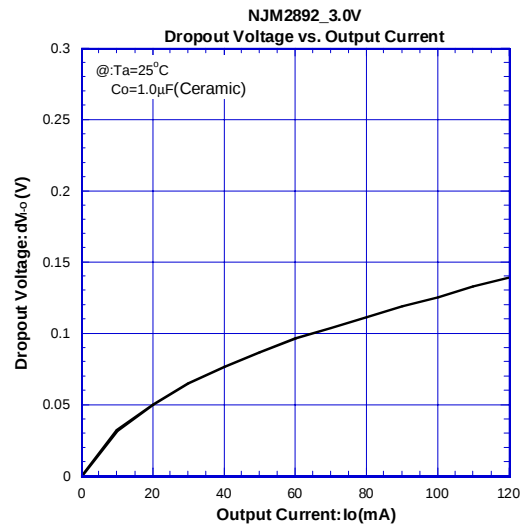
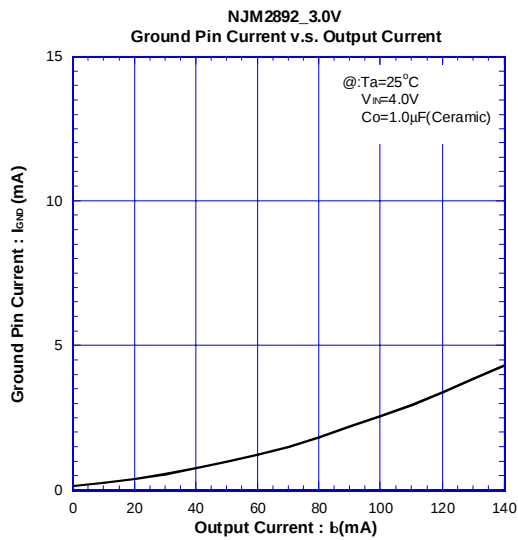
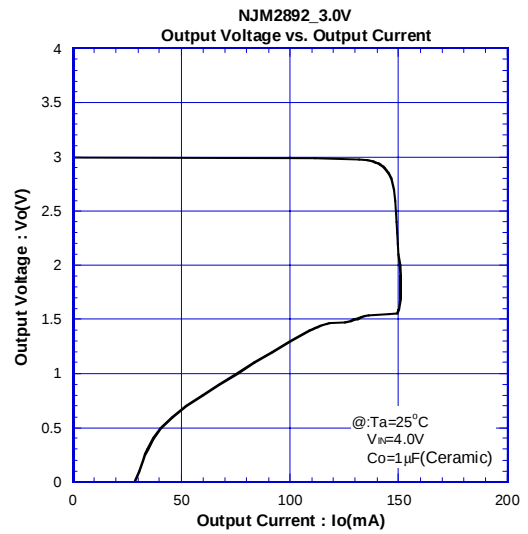
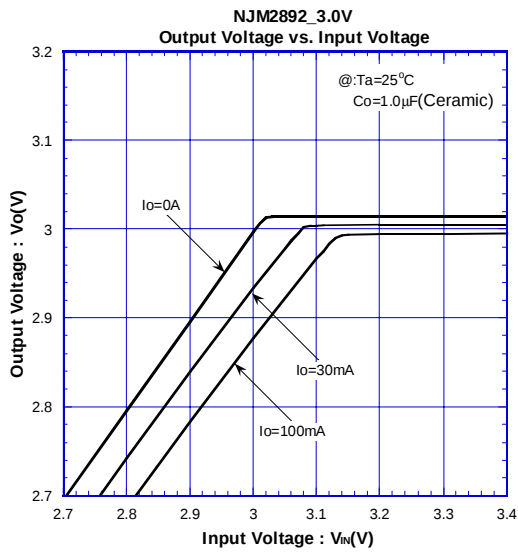
The current flow into the control terminal while the IC is ON state (I_{CONT}) can be reduced when a pull up resistance "R" is inserted between V_{IN} and the control terminal.

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.

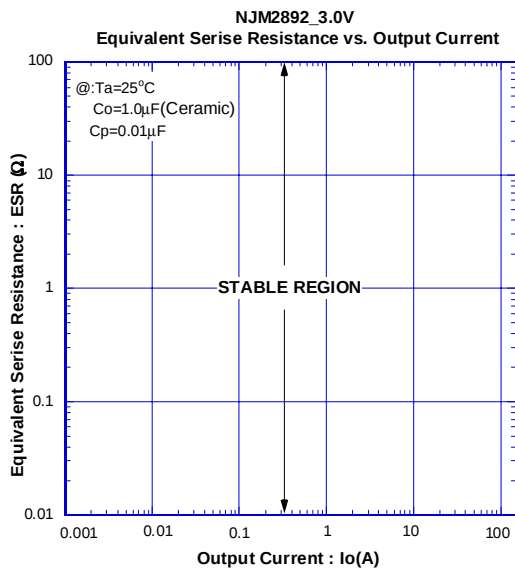
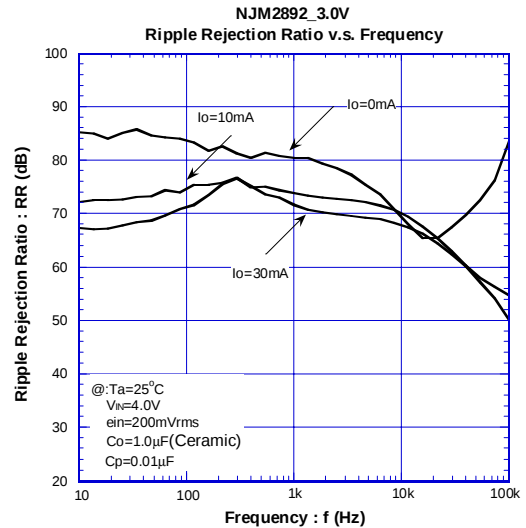
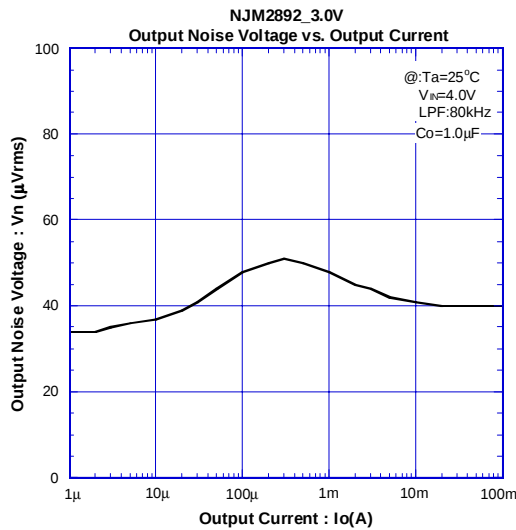
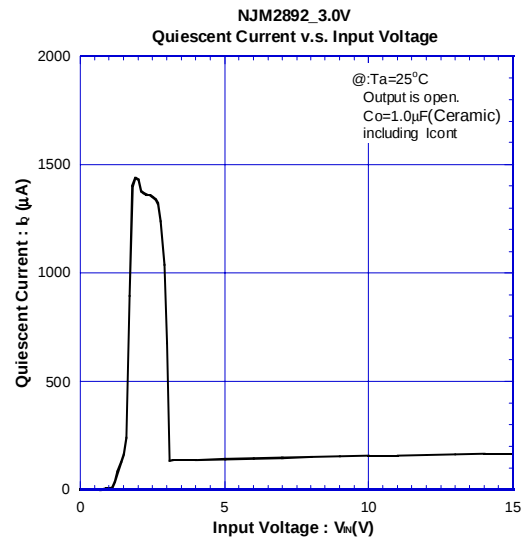
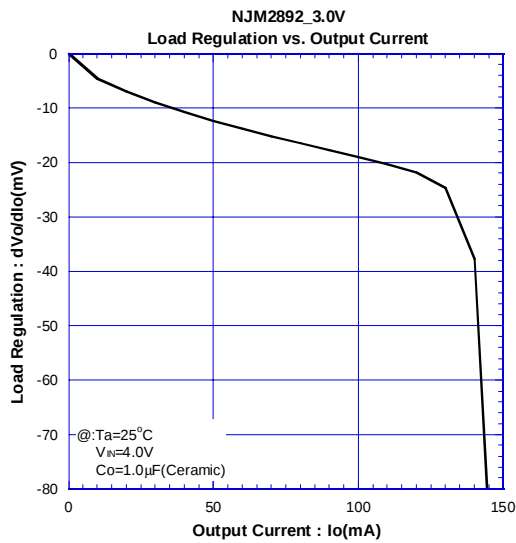
POWER DISSIPATION vs. AMBIENT TEMPERATURE



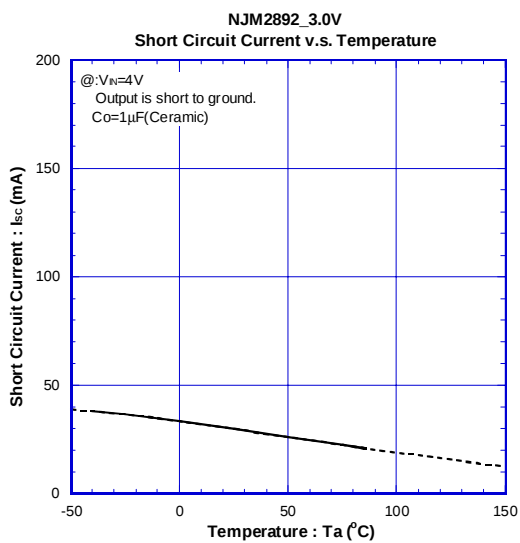
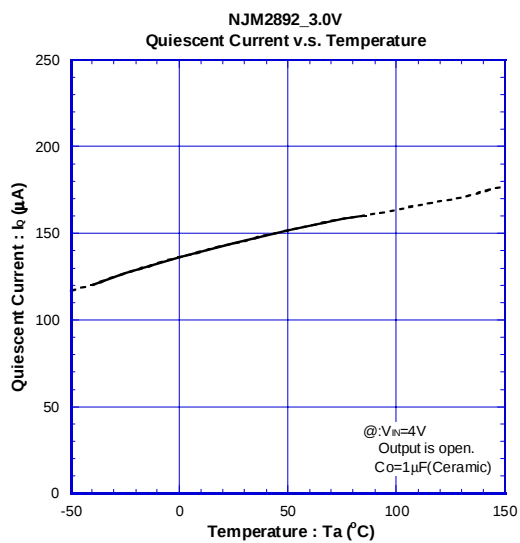
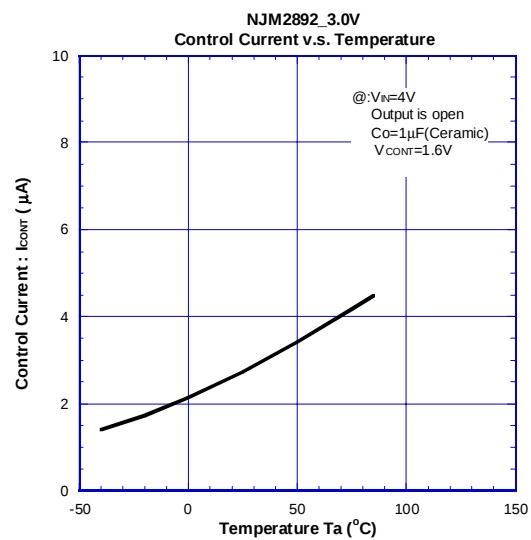
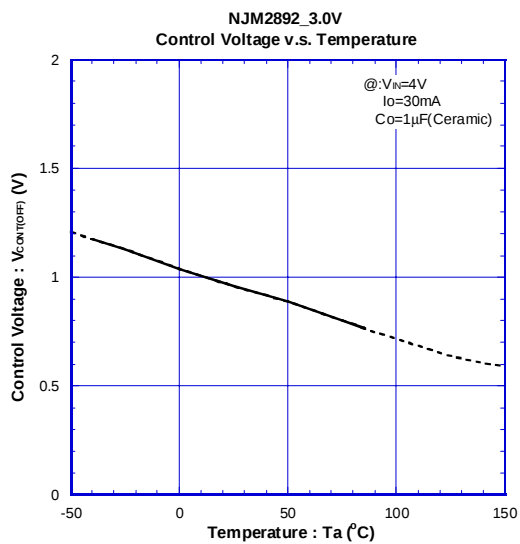
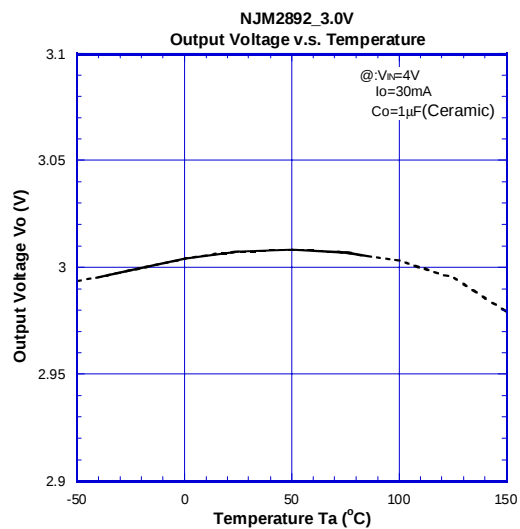
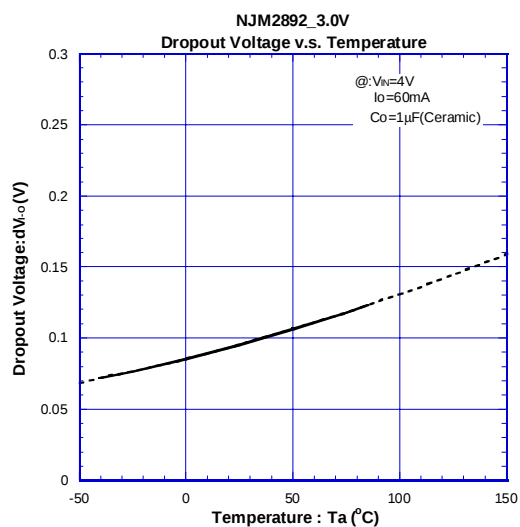
ELECTRICAL CHARACTERISTICS



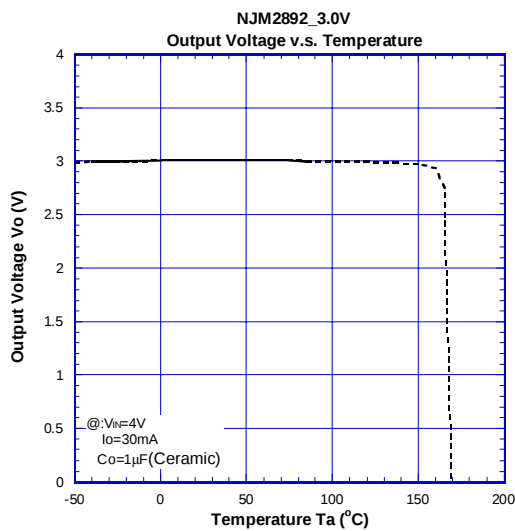
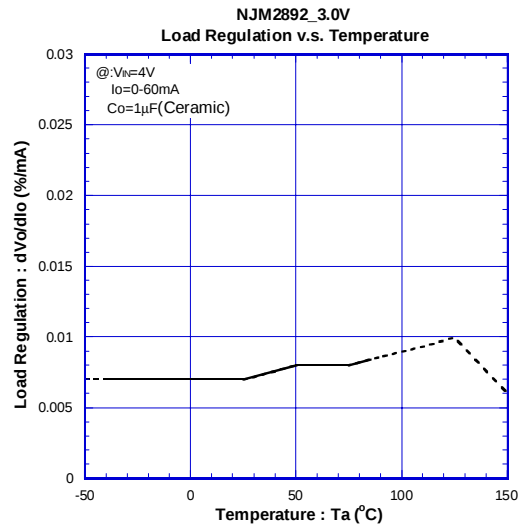
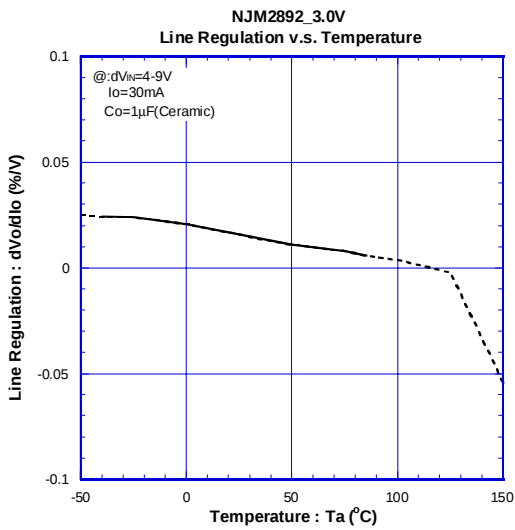
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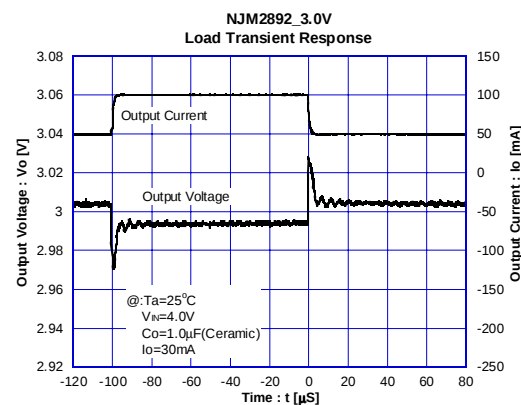
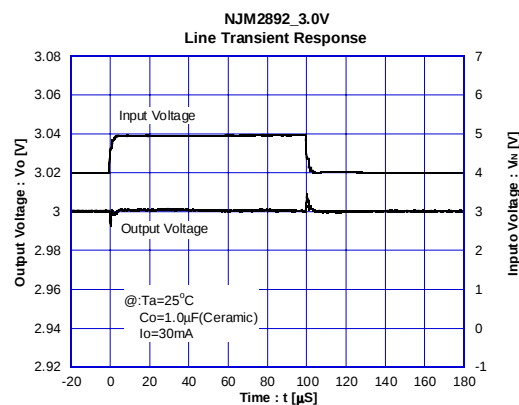
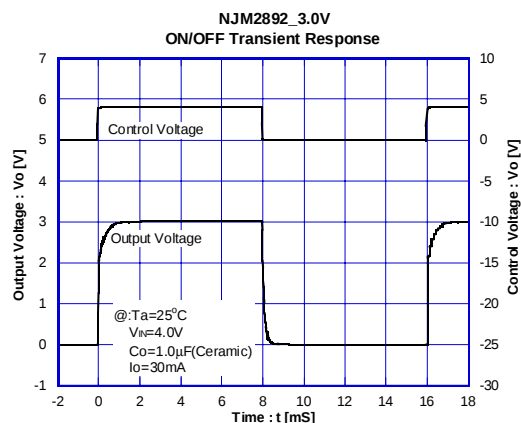
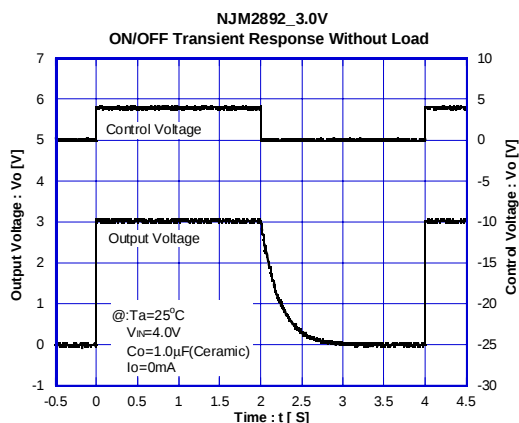
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