

## 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

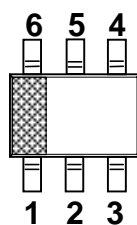


NJM2892F1

### ■ 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 $\mu F$  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



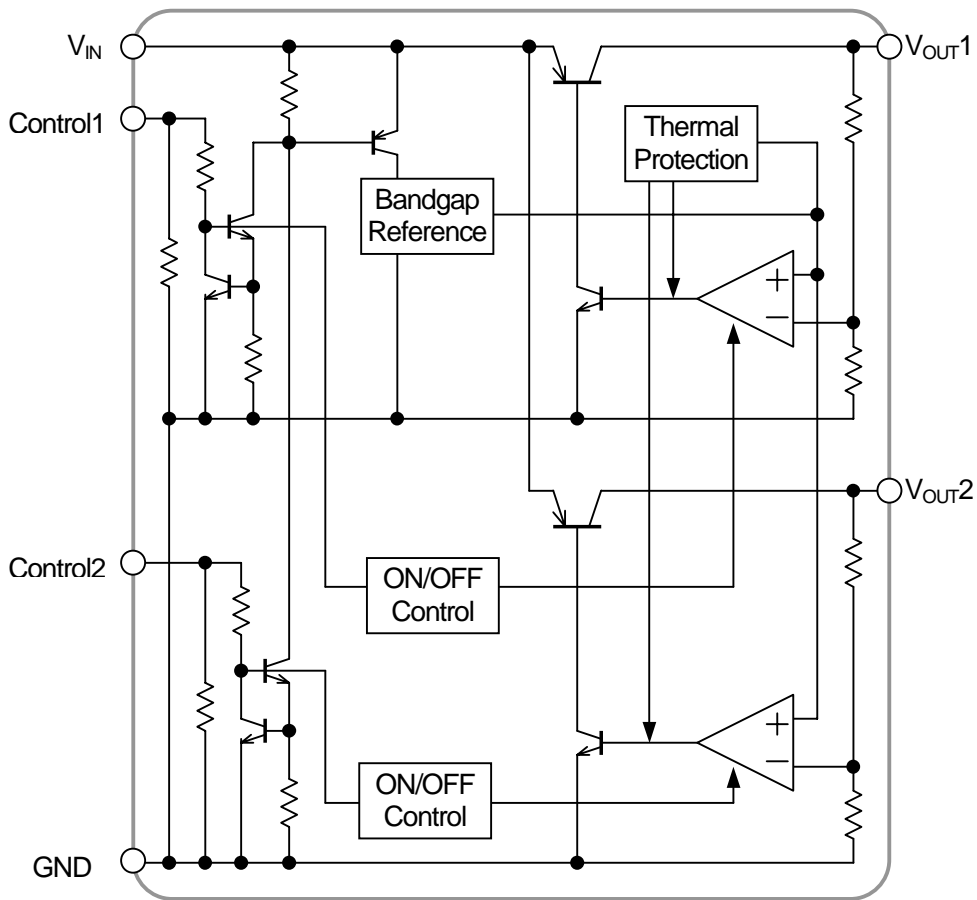
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#### PIN FUNCTION

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 <sub>OUT</sub>	
	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 <sub>IN</sub>	+14	V
Control Voltage	V <sub>CONT</sub>	+14(*1)	V
Power Dissipation	P <sub>D</sub>	SOT-23-6 350(*2) 200(*3)	mW
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<sub>IN</sub>=+2.3 ~ +14V (In case of Vo<2.1V version)

## ■ ELECTRICAL CHARACTERISTICS

(V<sub>IN</sub>=Vo+1V, C<sub>IN</sub>=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 <sub>Q1</sub>	V <sub>CONT</sub> 1= V <sub>IN</sub> , V <sub>CONT</sub> 2= 0V or V <sub>CONT</sub> 2= V <sub>IN</sub> , V <sub>CONT</sub> 1= 0V Io=0mA, Except I <sub>CONT</sub>	-	150	220	μA
Quiescent Current 2	I <sub>Q2</sub>	V <sub>CONT</sub> 1= V <sub>CONT</sub> 2= V <sub>IN</sub> Io=0mA, Except I <sub>CONT</sub>	-	270	400	μA
Quiescent Current at Control OFF	I <sub>Q(OFF)</sub>	V <sub>CONT</sub> =0V	-	-	100	nA
Output Current	Io	Vo=0.3V	100	130	-	mA
Line Regulation	ΔVo/ΔV <sub>IN</sub>	V <sub>IN</sub> =Vo+1V ~ Vo+6V, Io=30mA	-	-	0.10	%/V
Load Regulation	ΔVo/ΔIo	Io=0 ~ 60mA	-	-	0.03	%/mA
Dropout Voltage(*4)	ΔV <sub>LO</sub>	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	ΔVo/ΔTa	Ta=0 ~ 85°C, Io=10mA	-	± 50	-	ppm/°C
Output Noise Voltage	V <sub>NO</sub>	f=10Hz ~ 80kHz, Io=10mA, Vo=3V version	-	45	-	μVrms
Control Voltage for ON-state	V <sub>CONT(ON)</sub>		1.6	-	-	V
Control Voltage for OFF-state	V <sub>CONT(OFF)</sub>		-	-	0.6	V

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

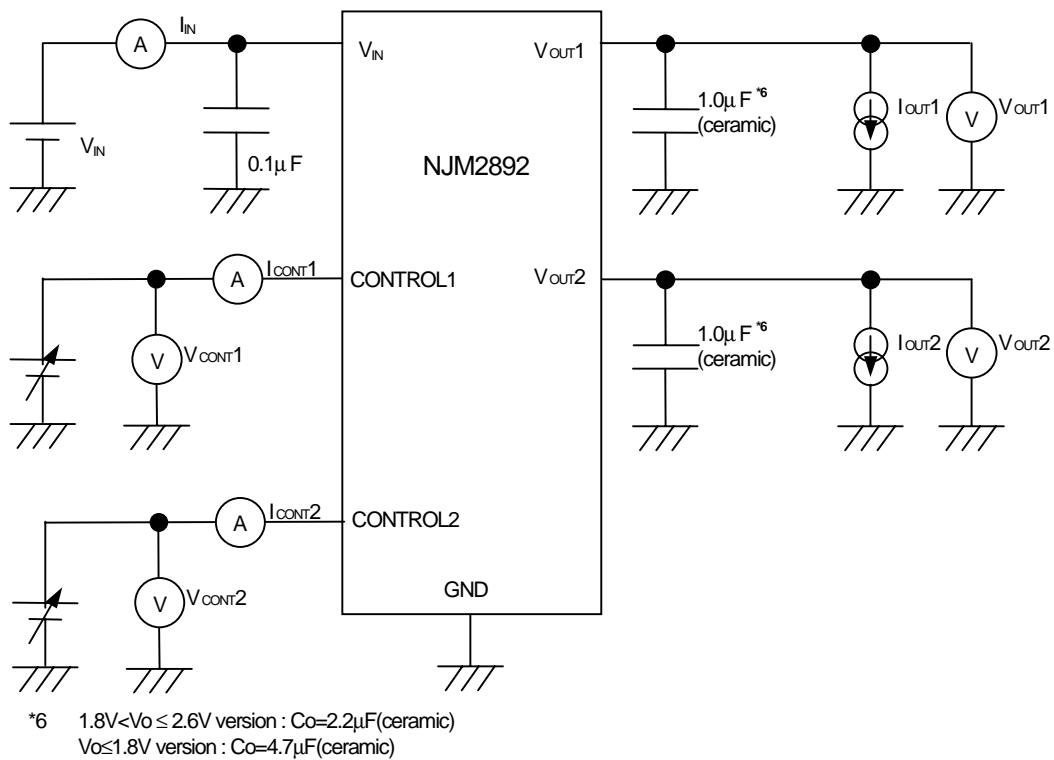
(\*5): V<sub>IN</sub> =Vo+1V means add 1V to higher output voltage.

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.

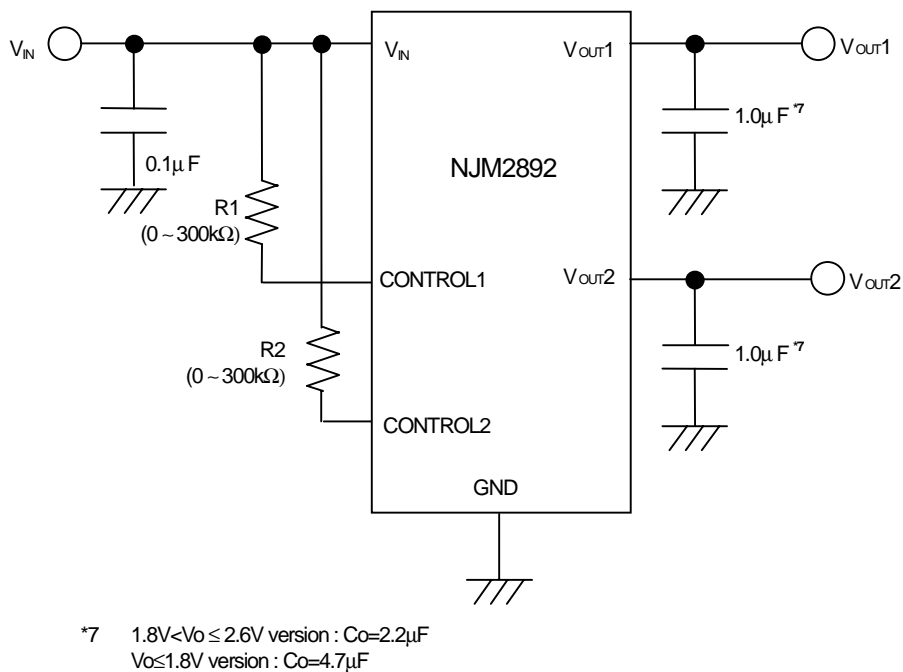
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## TEST CIRCUIT



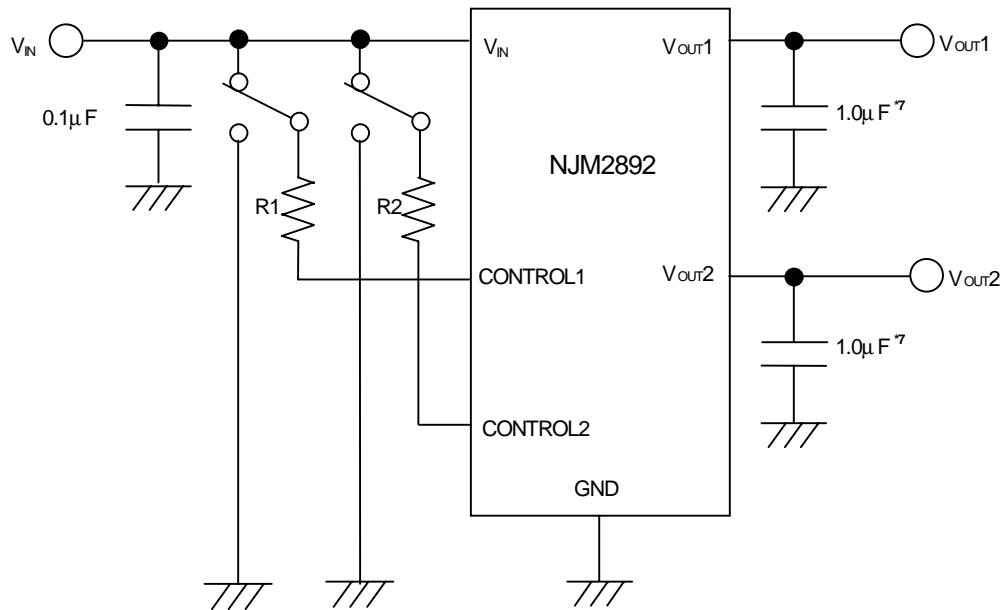
## TYPICAL APPLICATION

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 <  $V_o$  ≤ 2.6V version :  $C_o$  = 2.2µF  
 $V_o$  ≤ 1.8V version :  $C_o$  = 4.7µF

State of control terminal:

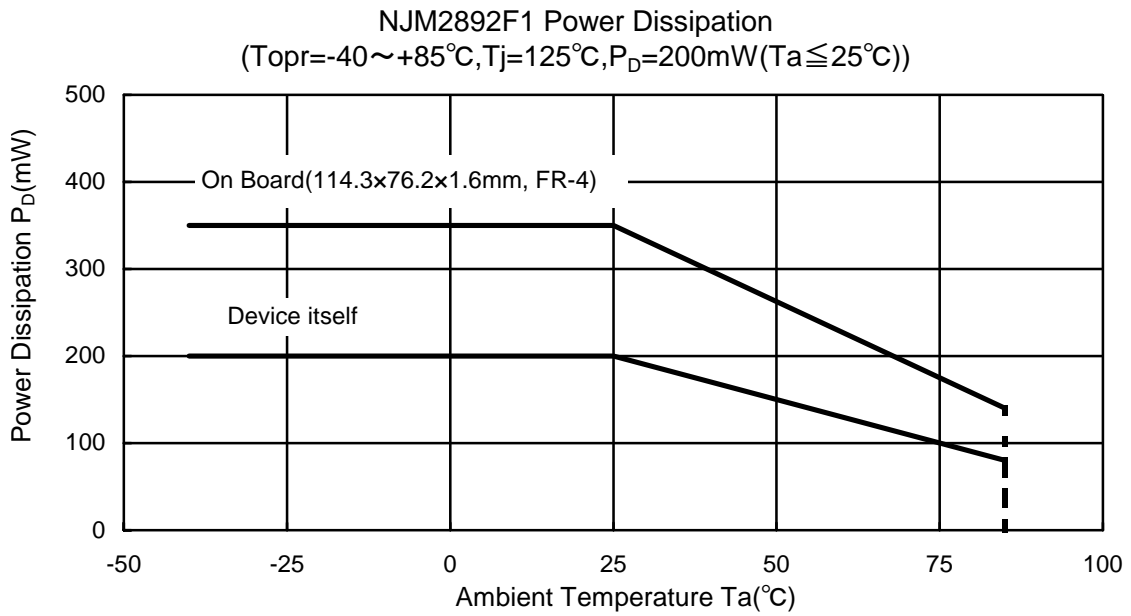
- “H” → output is enabled.
- “L” or “open” → output is disabled.

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

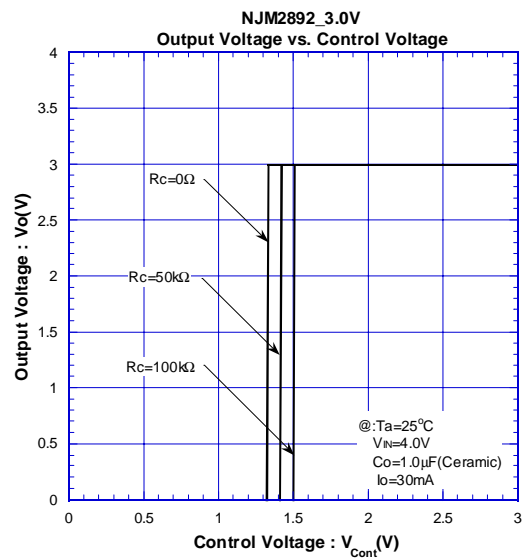
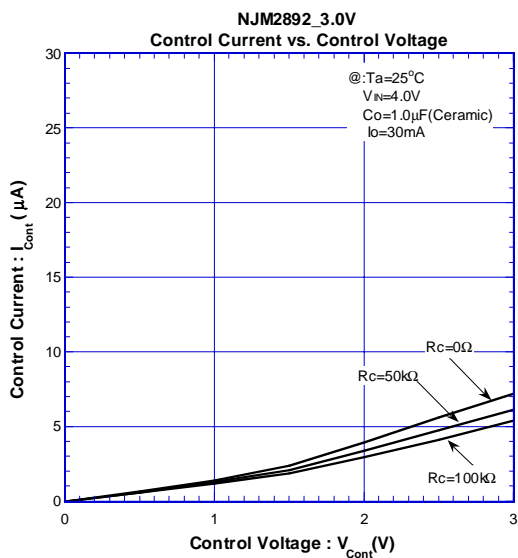
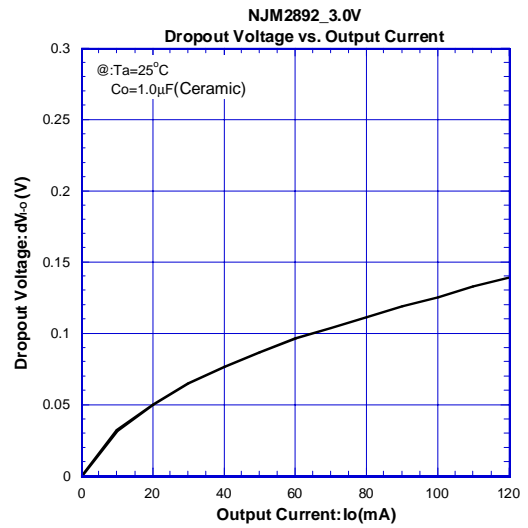
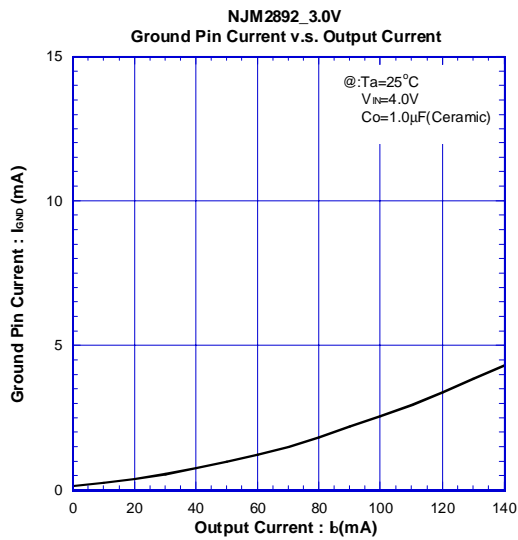
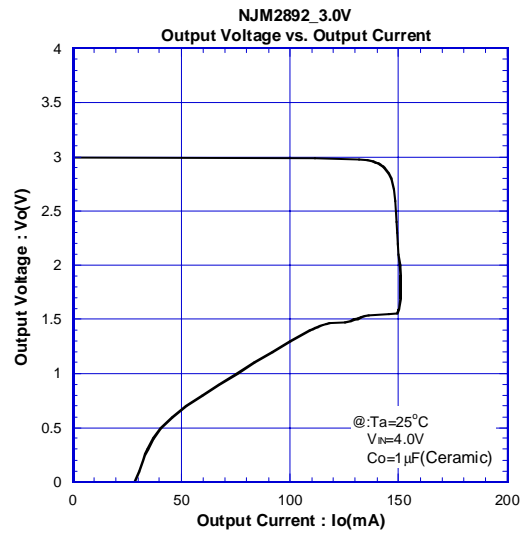
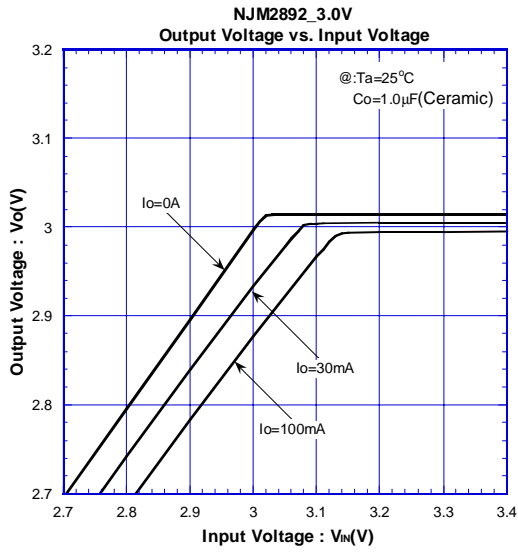
The current flow into the control terminal while the IC is ON state ( $I_{CONT}$ ) can be reduced when a pull up resistance "R" is inserted between  $V_{IN}$  and the control terminal.

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

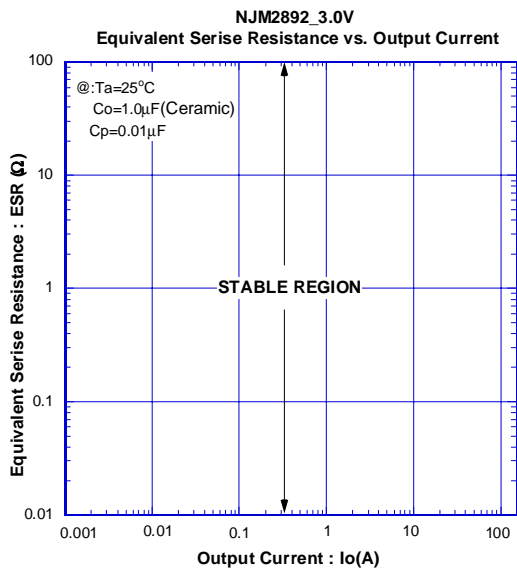
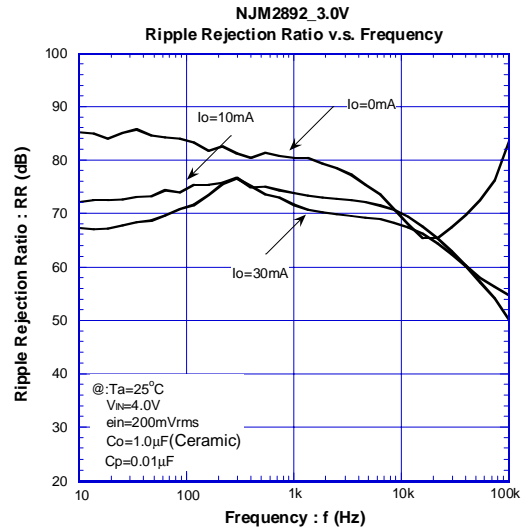
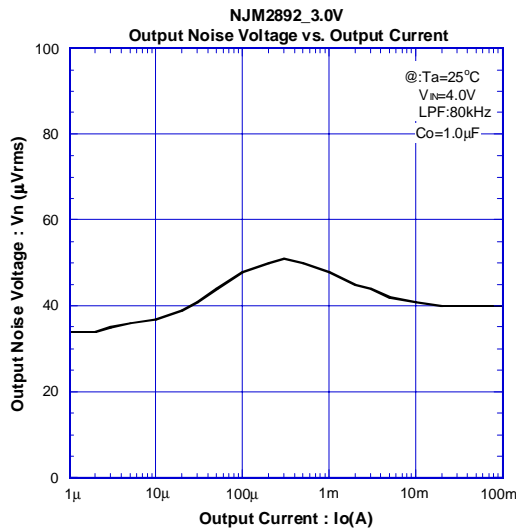
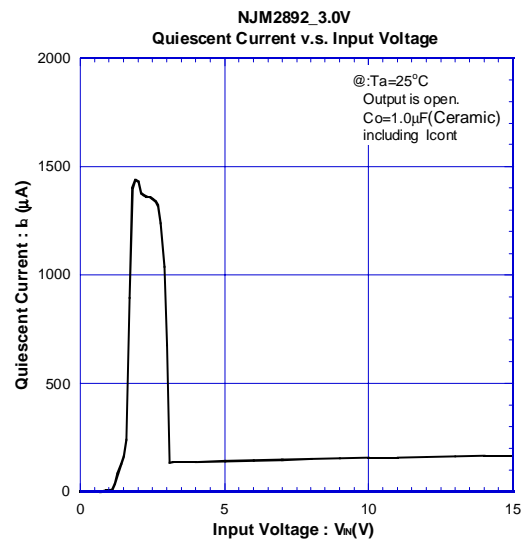
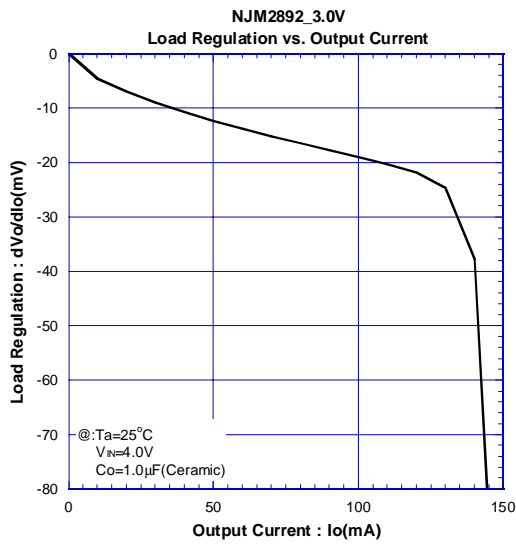


## ELECTRICAL CHARACTERISTICS



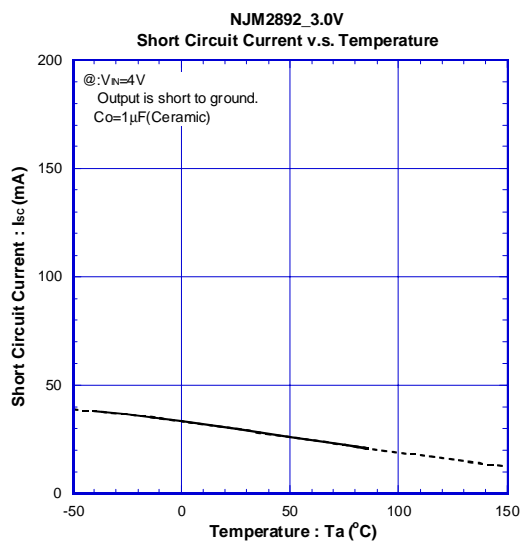
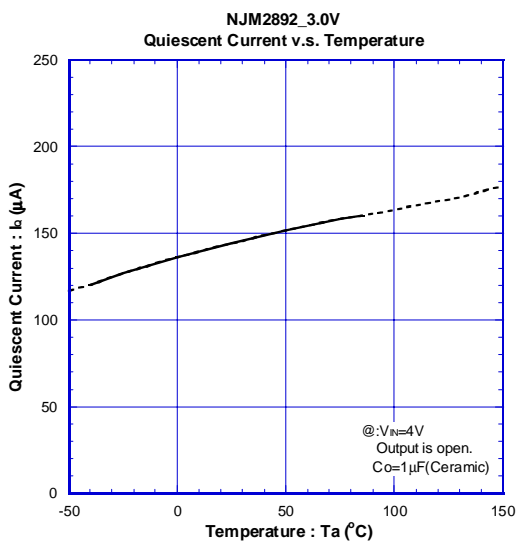
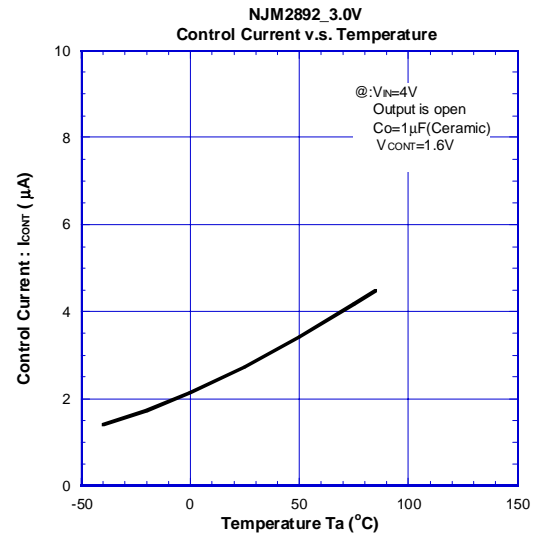
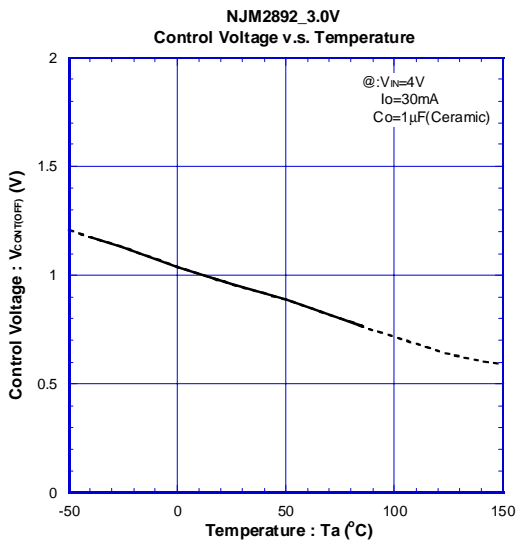
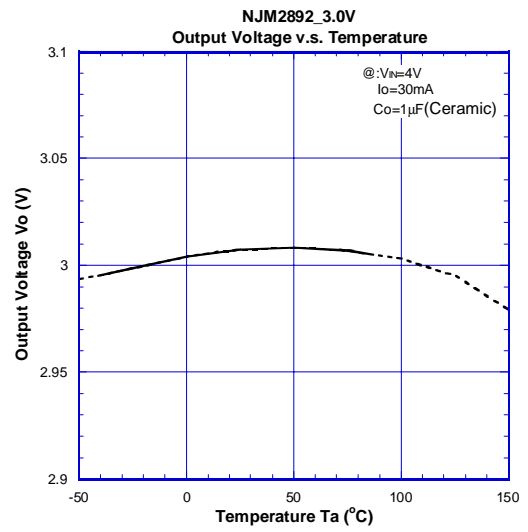
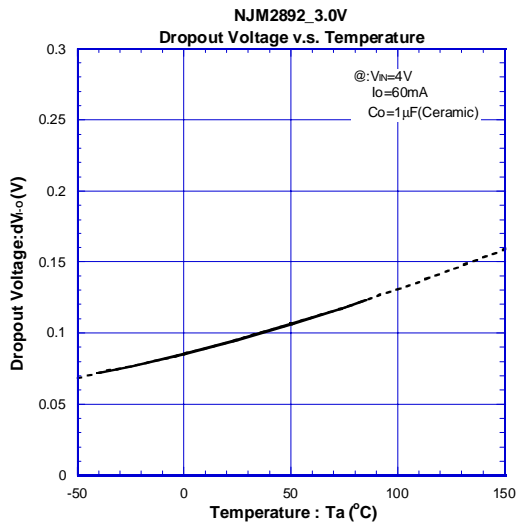
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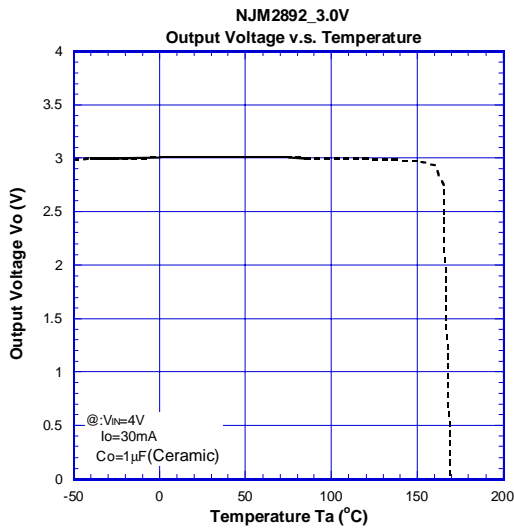
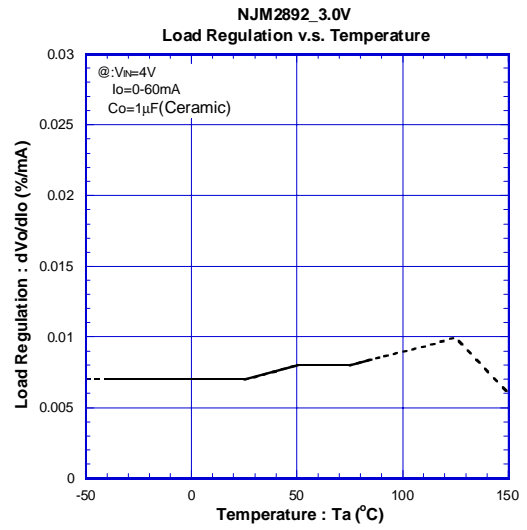
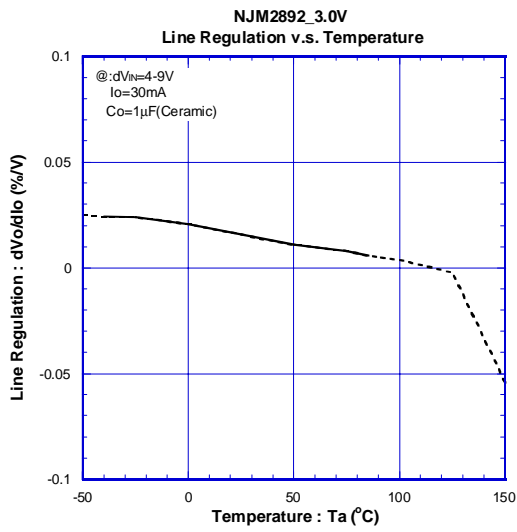




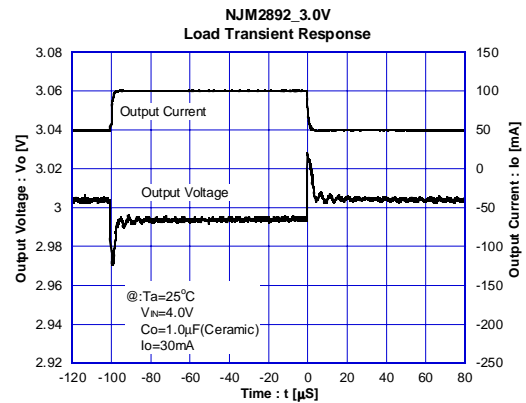
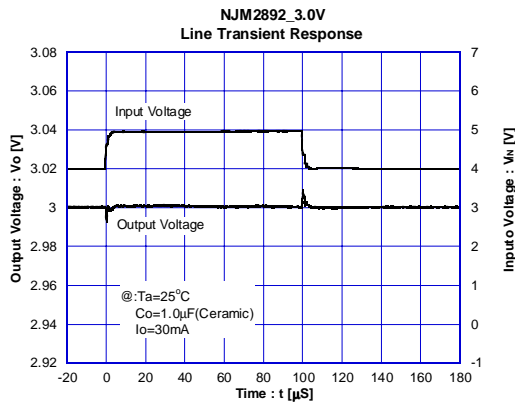
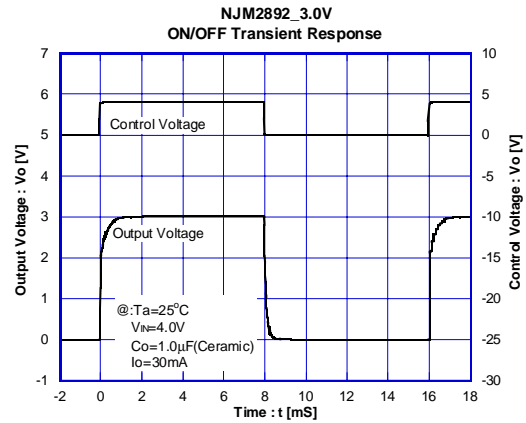
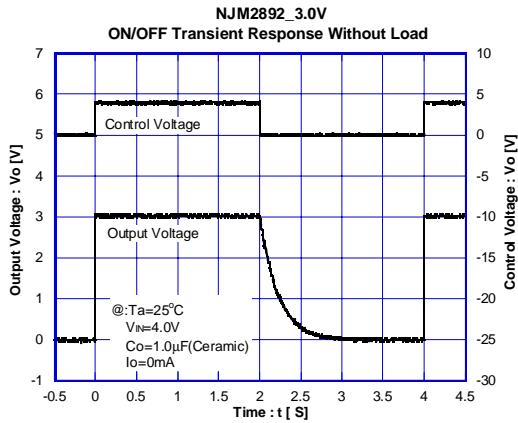
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