

3OUTPUT LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJM2894 is a 3ch low dropout voltage regulator with ON/OFF control in TVSP-8 package.

It is suitable for camcorder, IC decoder, camera and other portable items.

■ PACKAGE OUTLINE

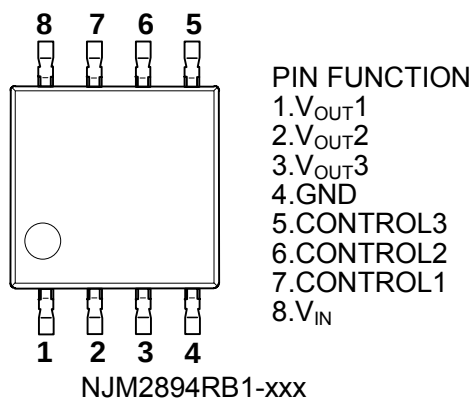


NJM2894RB1

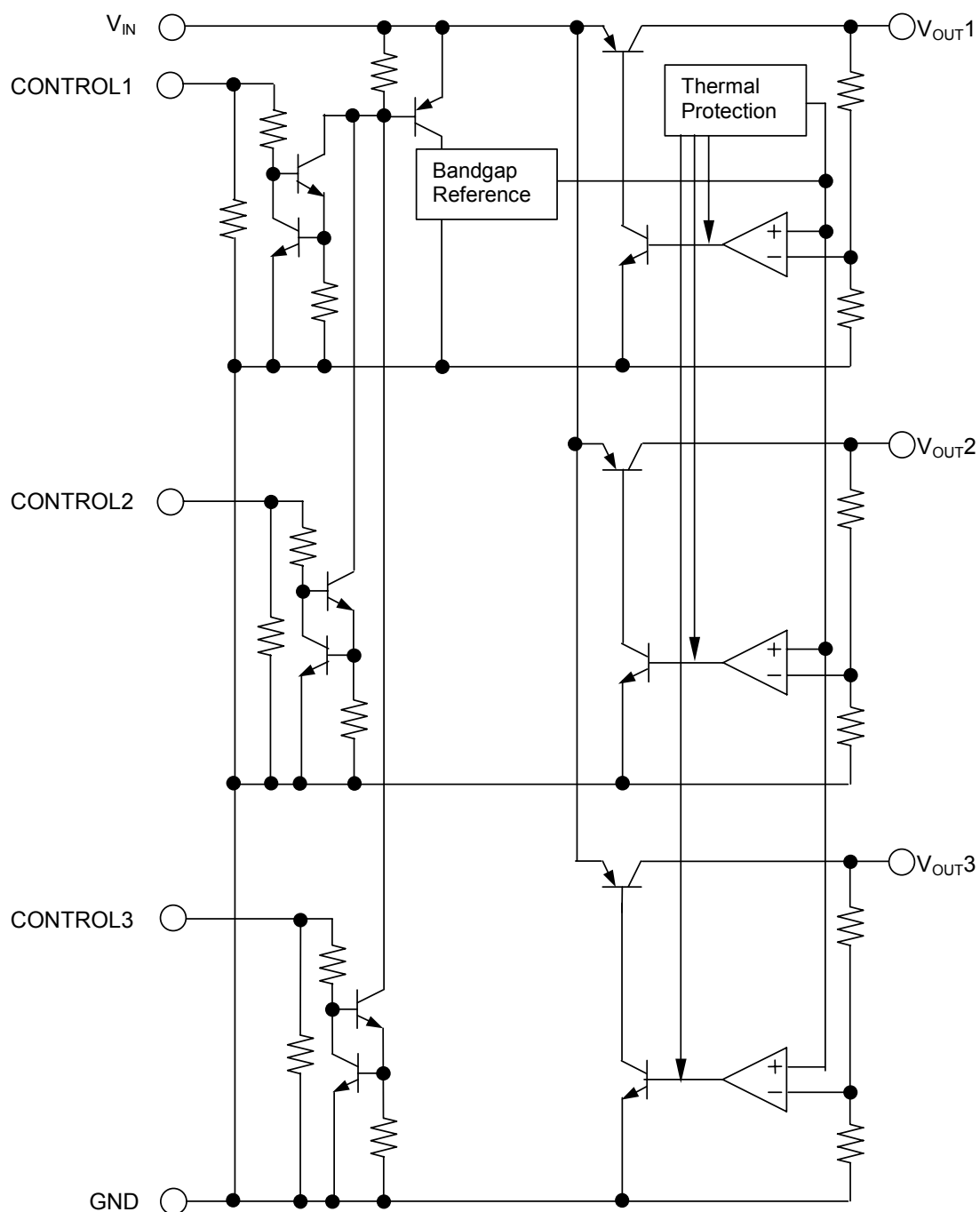
■ FEATURES

- High Ripple Rejection 75dB typ. (f=1kHz, Vo=3V Version)
- Output Noise Voltage Vno=45μVrms typ.
- Output capacitor with 1.0uF ceramic capacitor (Vo≥2.7V)
- Output Current Io(max.)=ch1=150mA ch2,ch3=80mA
- High Precision Output Vo±1.0%
- Low Dropout Voltage 0.10V typ. (Io=60mA)
- ON/OFF Control (Active High)
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- Bipolar Technology
- Package Outline TVSP-8

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

Device Name	Vout		
	CH1	CH2	CH3
NJM2894RB1-CCC	2.1V	2.1V	2.1V
NJM2894RB1-LLL	3.0V	3.0V	3.0V
NJM2894RB1-YLC	5.0V	3.0V	2.1V

■ 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	320	mW
Operating Temperature	T_{opr}	-40 to +85	°C
Storage Temperature	T_{stg}	-40 to +125	°C

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

■ ELECTRICAL CHARACTERISTICS

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

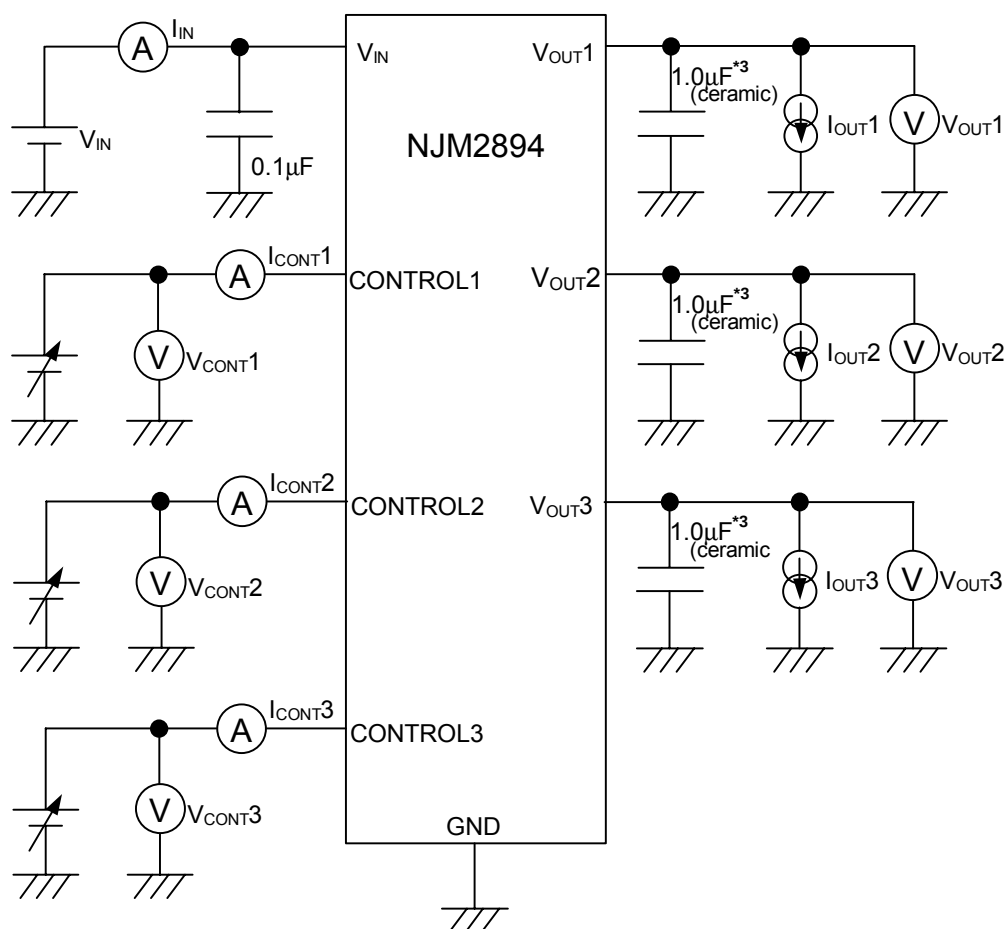
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_o	$I_o=30mA$	-1.0%	—	+1.0%	V
Quiescent Current1	I_{Q1}	$V_{CONT1}=V_{IN}$, $V_{CONT2}=V_{CONT3}=0V$ *1ch ON $I_o=0mA$, expect I_{cont}	—	150	220	μA
Quiescent Current2	I_{Q2}	$V_{CONT1}=V_{CONT2}=V_{IN}$, $V_{CONT3}=0V$ *2ch ON $I_o=0mA$, expect I_{cont}	—	270	400	μA
Quiescent Current3	I_{Q3}	$V_{CONT1}=V_{CONT2}=V_{CONT3}=V_{IN}$ $I_o=0mA$, expect I_{cont}	—	390	580	μA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	$V_{CONT}=0V$	—	—	100	nA
Output Current1	I_o	Ch1 : $V_o-0.3V$	150	200	—	mA
Output Current2	I_o	Ch2,3 : $V_o-0.3V$	80	100	—	mA
Line Regulation	$\Delta V_o/\Delta V_{IN}$	$V_{IN}=V_o+1V$ to V_o+6V , $I_o=30mA$	—	—	0.10	%/V
Load Regulation1	$\Delta V_o/\Delta I_{o1}$	Ch1 : $I_o=0$ to 100mA	—	—	0.03	%/mA
Load Regulation2	$\Delta V_o/\Delta I_{o2}$	Ch2,3 : $I_o=0$ to 60mA	—	—	0.03	%/mA
Dropout Voltage1	ΔV_{I-O1}	$I_o=60mA$	—	0.10	0.18	V
Dropout Voltage2	ΔV_{I-O2}	$I_o=40mA$	—	0.10	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	$\Delta V_o/\Delta T_a$	$T_a=0$ to $85^\circ C$, $I_o=10mA$	—	± 50	—	ppm/°C
Output Noise Voltage	V_{NO}	$f=10Hz$ to $80kHz$, $I_o=10mA$, $V_o=3V$ 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

(*2) $V_{IN}=V_o+1V$ 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.

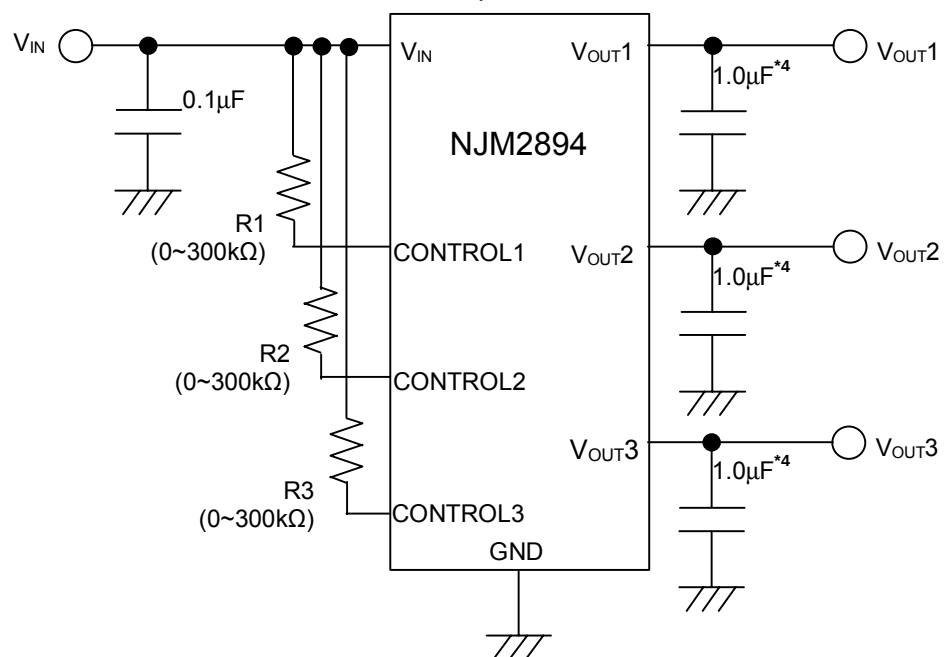
■ TEST CIRCUIT



*3 $V_O \leq 2.6V$ version: $C_O = 2.2\mu F$ (ceramic)

■ TYPICAL APPLICATION

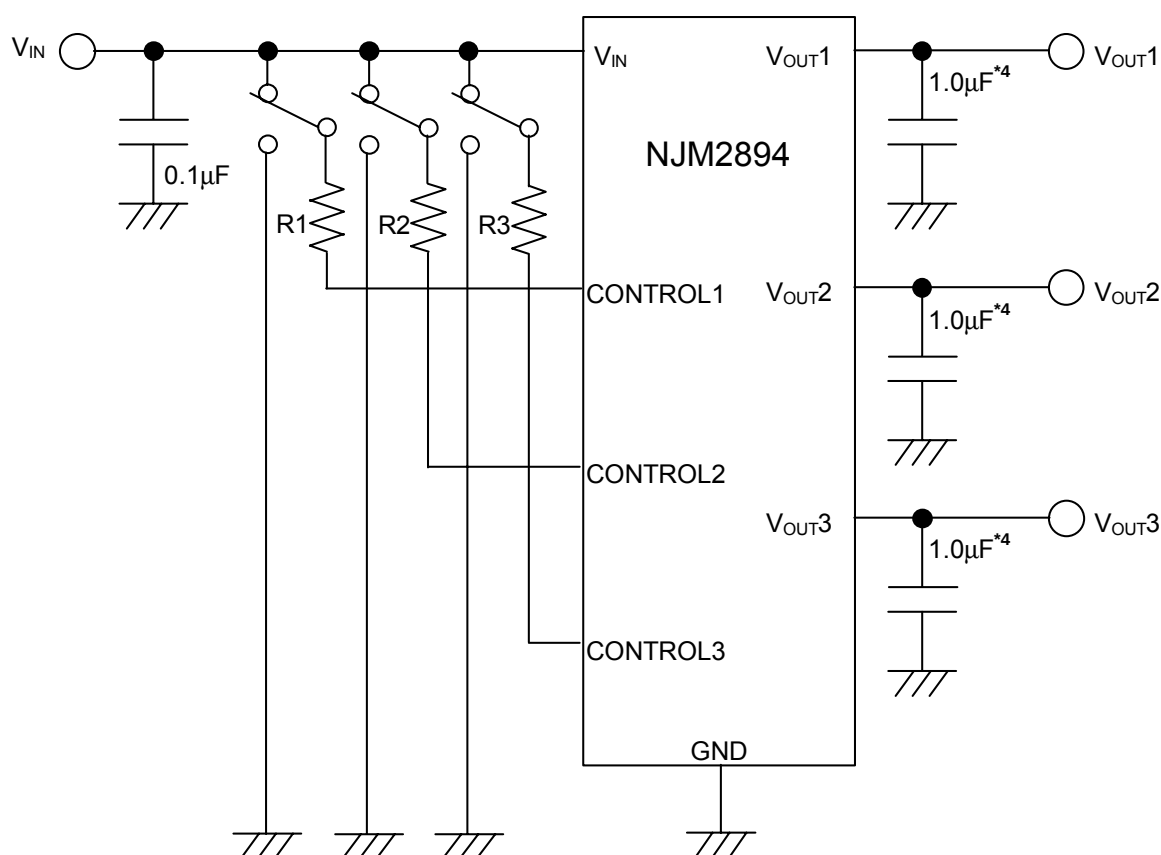
① In the case where ON/OFF Control is not required:



*4 $V_o \leq 2.6V$ version: $C_o = 2.2\mu F$

Connect control terminal to V_{IN} terminal

② In use of ON/OFF CONTROL:



*4 $V_O \leq 2.6V$ version: $C_O = 2.2\mu F$

State of control terminal:

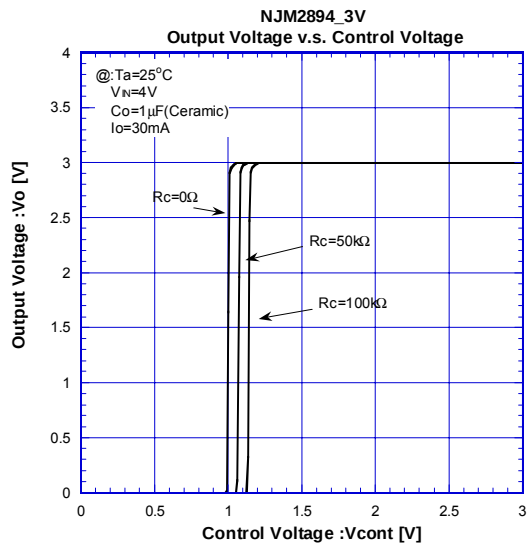
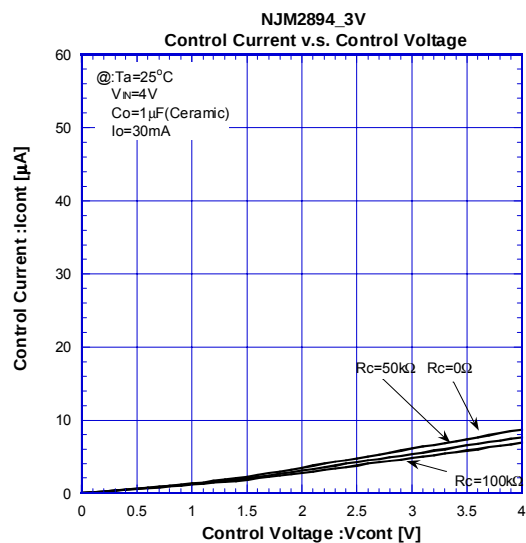
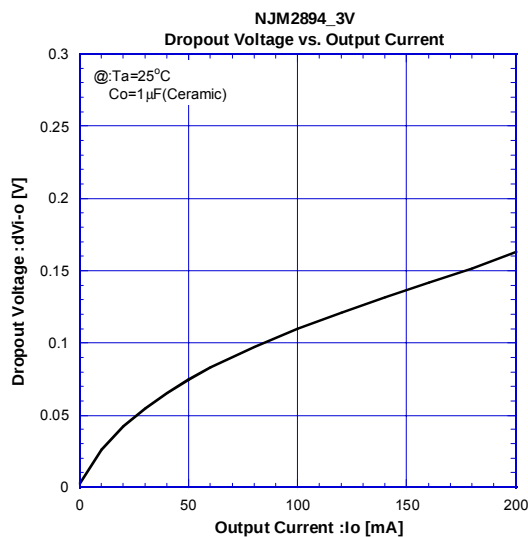
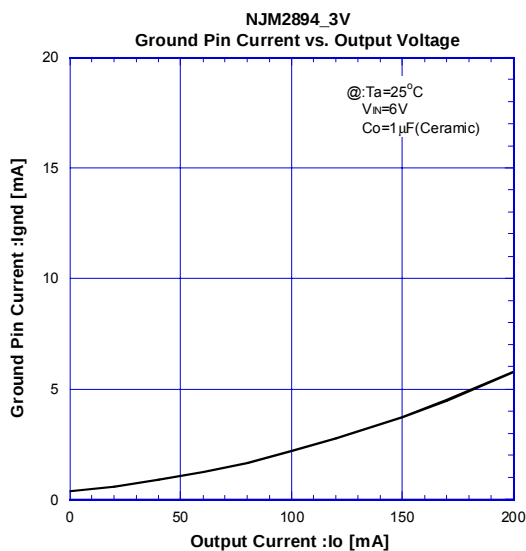
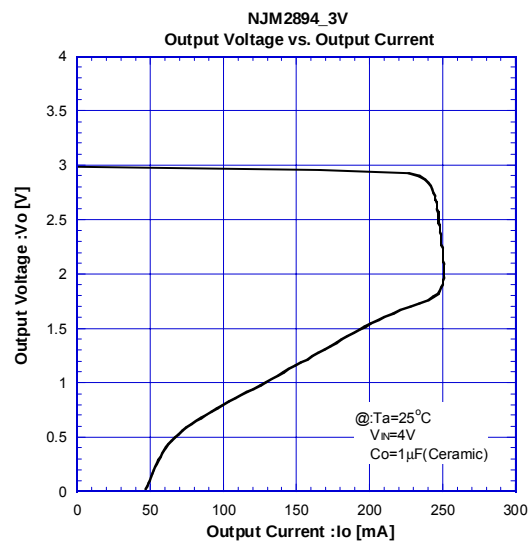
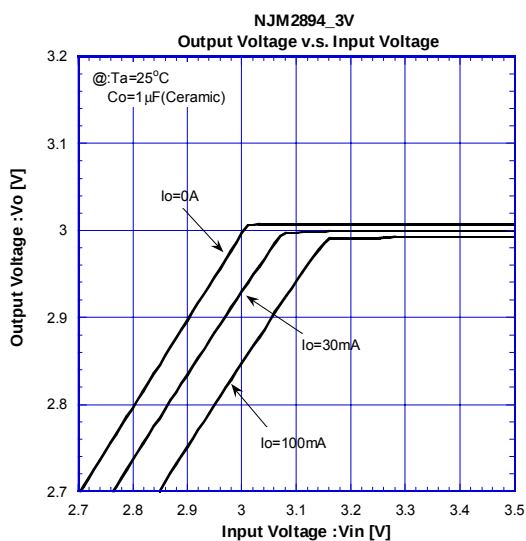
- "H" → output is enabled.
- "L" or "open" → output is disabled.

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

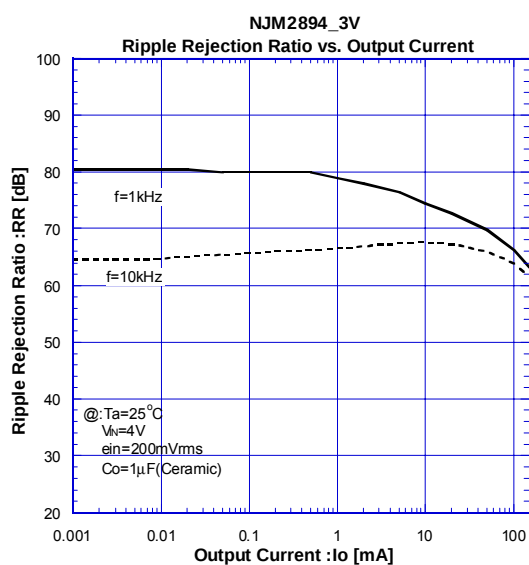
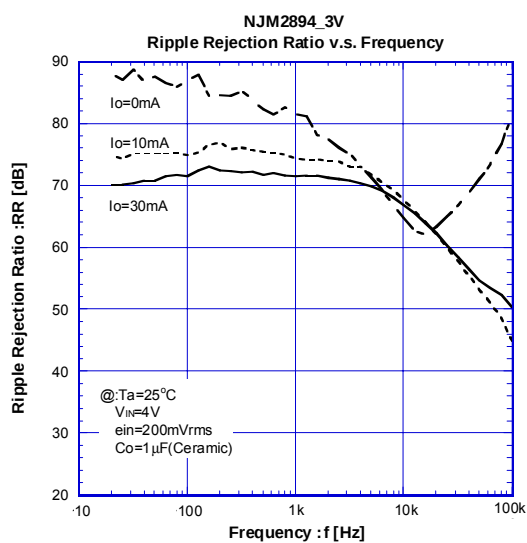
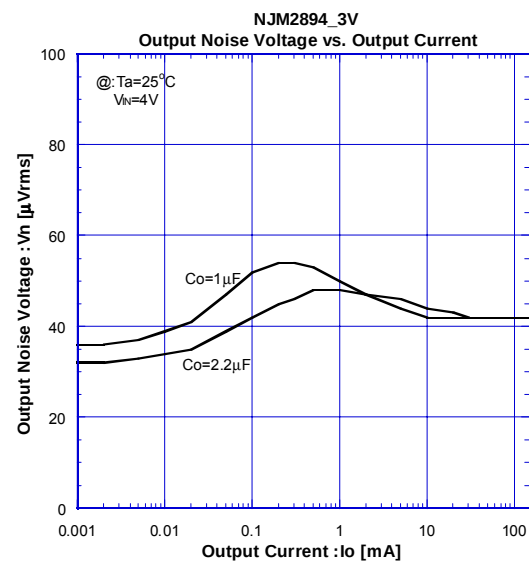
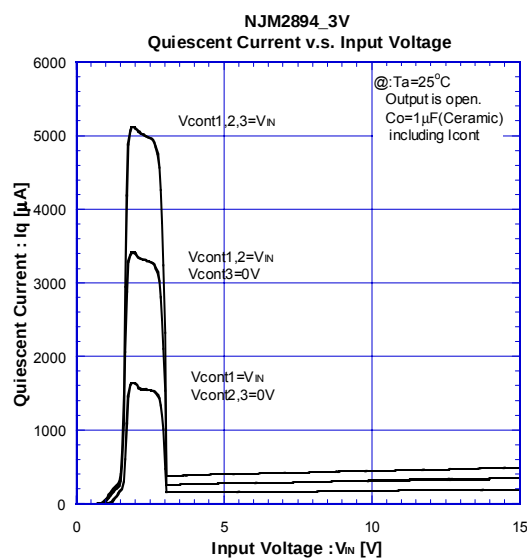
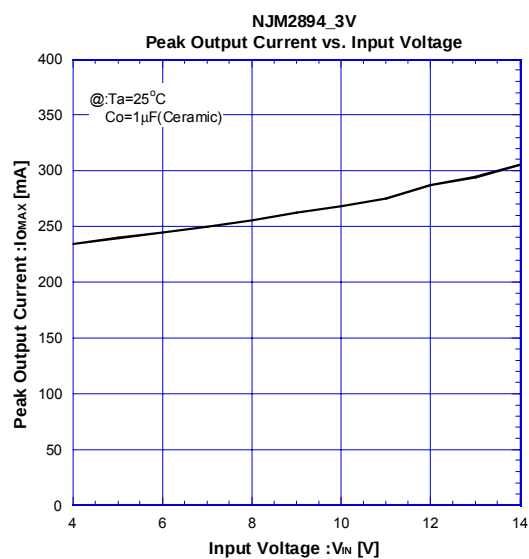
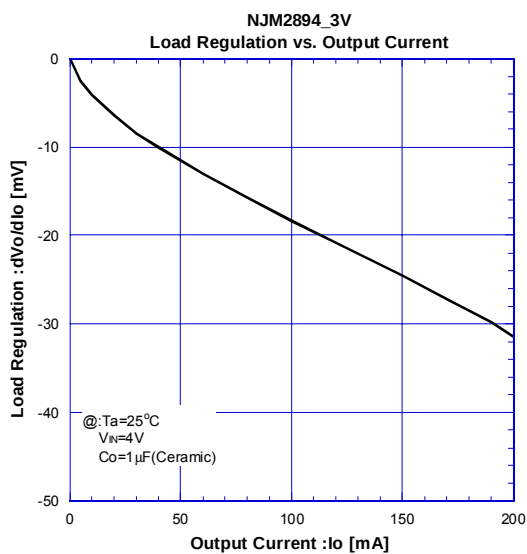
The current flow into the control terminal while the IC is ON state (I_{CONT}) can be reduced when a pull up resistance "R" is inserted between V_{IN} and the control terminal.

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.

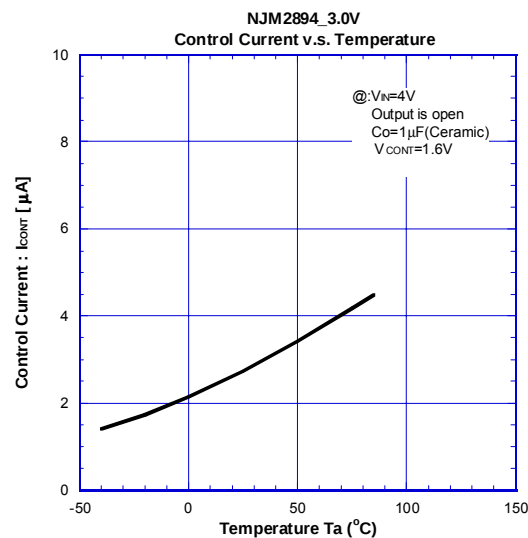
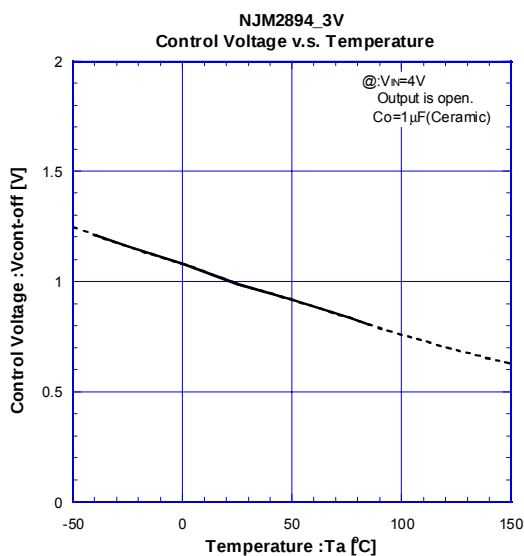
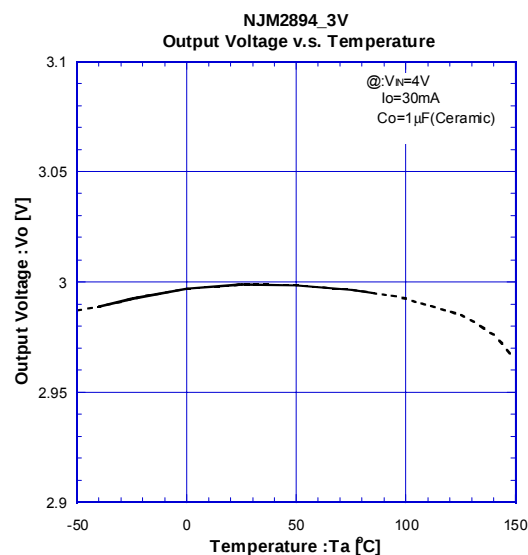
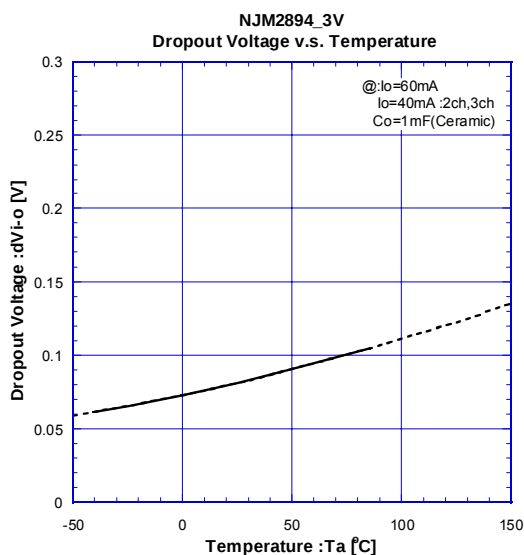
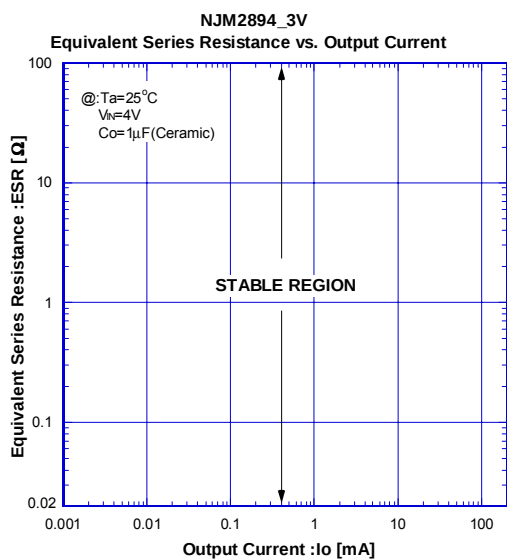
■ ELECTRICAL CHARACTERISTICS



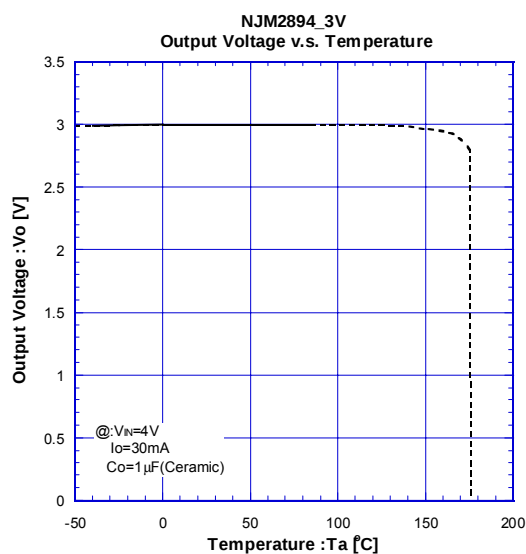
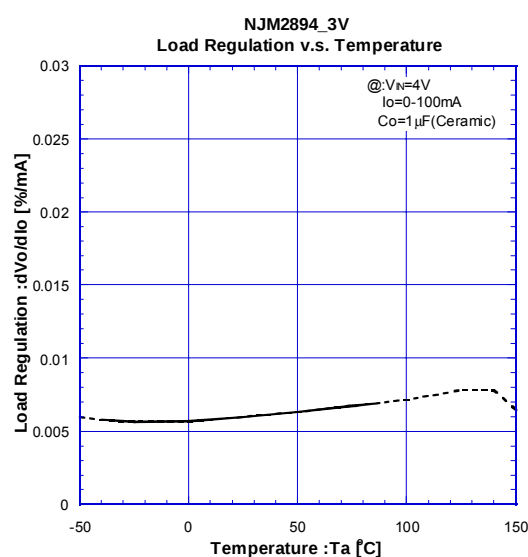
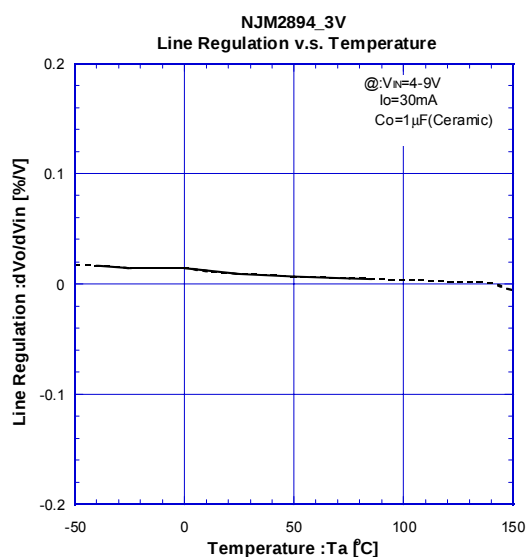
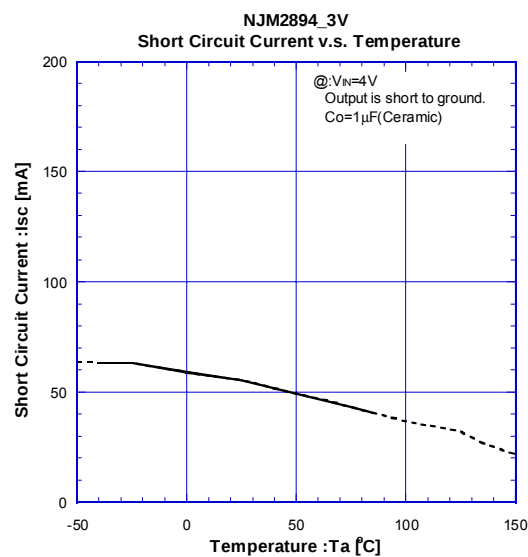
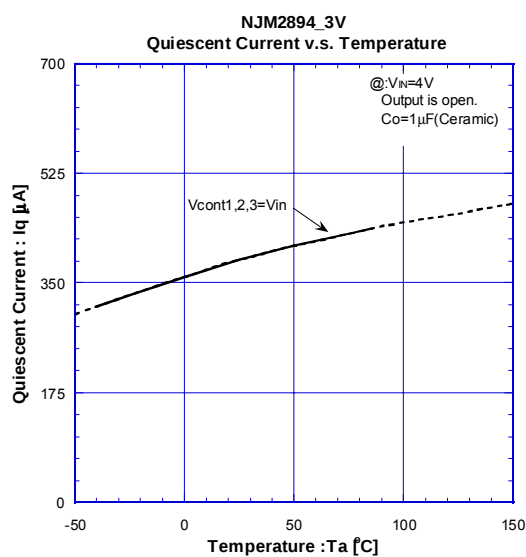
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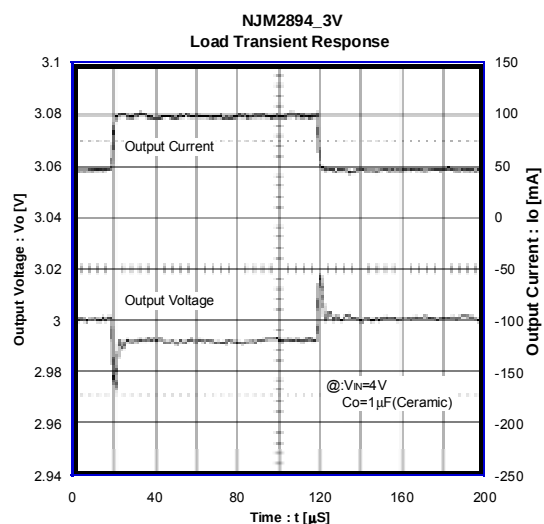
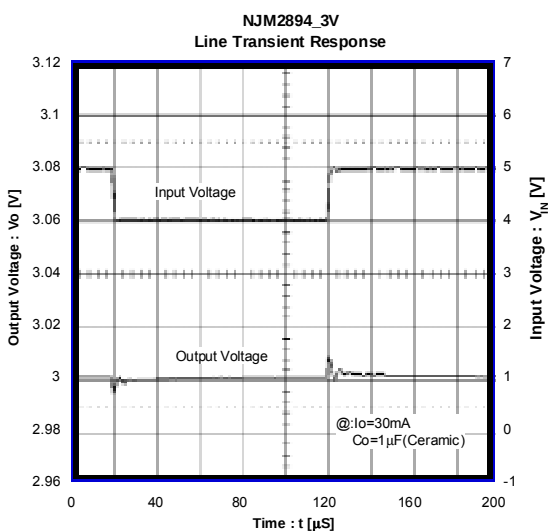
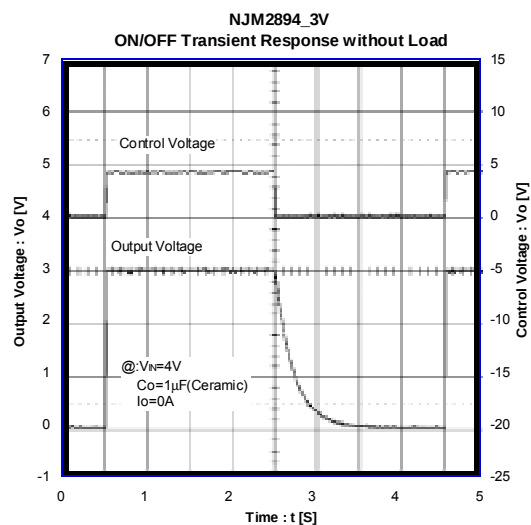
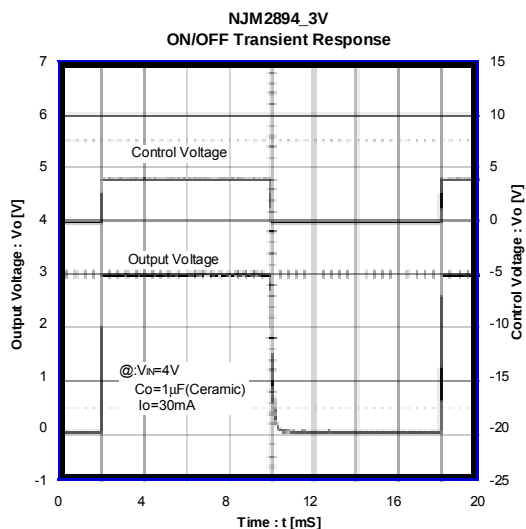
■ ELECTRICAL CHARACTERISTICS



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