

LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DISCRIPTION

NJU7751/54 is a low dropout voltage regulator with ON/OFF control and Output shunt switch.

Advanced CMOS technology achieves high ripple rejection and ultra low quiescent current.

It is suitable for reset small micro controller and other logic chips.

■ PACKAGE OUTLINE

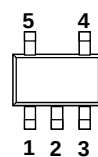


NJU7751/54F

■ FEATURES

- Ultra Low quiescent Current $I_q=20\mu A$ typ. ($I_o=0mA$)
- Output capacitor with 1.0uF ceramic capacitor
- Output Current $I_o(max.)=100mA$
- High Precision Output $V_o\pm 1.0\%$
- Low Dropout Voltage 0.15V typ. ($I_o=60mA$, $V_o=3V$)
- With ON/OFF Control (Active High)
- With Output Shunt Switch
- Internal Short Circuit Current Limit
- CMOS Technology
- Package Outline SOT-23-5

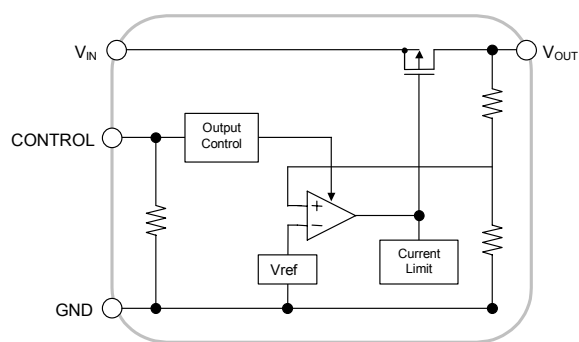
■ PIN CONFIGURATION



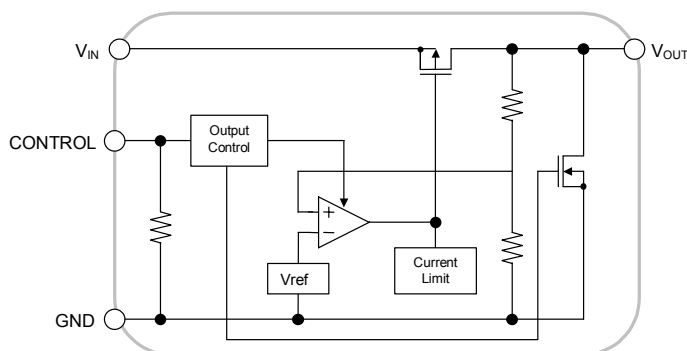
NJU7751/54F

- PIN FUNCTION
- 1.CONTROL
 - 2.GND
 - 3.N.C.
 - 4. V_{OUT}
 - 5. V_{IN}

■ EQUIVALENT CIRCUIT



NJU7751



NJU7754

■ OUTPUT VOLTAGE RANK LIST

DEVICE NAME	V_{OUT}	DEVICE NAME	V_{OUT}
NJU775*F15	1.5V	NJU775*F28	2.8V
NJU775*F18	1.8V	NJU775*F03	3.0V
NJU775*F21	2.1V	NJU775*F32	3.2V
NJU775*F22	2.2V	NJU775*F33	3.3V
NJU775*F24	2.4V	NJU775*F05	5.0V
NJU775*F25	2.5V		

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	+10	V
Control Voltage	V_{CONT}	+10(*1)	V
Power Dissipation	P_D	SOT-23-5 350(*2) 200(*3)	mW
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +125	°C
Output Sink Current at OFF-state(*4)	I_O	10	mA

(*1) When input voltage is less than +10V, 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.

(*4): This maximum rating is applied to NJU7754.

■ Operating voltage

V_{IN} =+2.3 ~ +9V (In case of V_O <2.1V version)

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=V_O+1V$, $C_{IN}=0.1\mu F$, $C_O=1.0\mu F$ ($V_O \leq 2.0V$: $C_O=2.2\mu F$), $T_a=25^\circ C$)

PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_O	$I_O=30mA$	-1.0%	—	+1.0%	V
Input Voltage	V_{IN}		—	—	9	V
Quiescent Current	I_Q	$I_O=0mA$, $V_{CONT}=V_{IN}$, Include I_{CONT}	—	20	40	μA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	$V_{CONT}=0V$	—	0.1	1	μA
Output Current	I_O	$V_O=0.3V$	100	—	—	mA
Short Circuit Limit	I_{LIM}	$V_O=0V$	—	40	—	mA
Line Regulation	$\Delta V_O / \Delta V_{IN}$	$V_{IN}=V_O+1V \sim V_O+6.0V$ ($V_O < 3.0V$) $V_{IN}=V_O+1V \sim 9.0V$ ($V_O \geq 3.0V$), $I_O=30mA$	—	—	0.20	%/V
Load Regulation	$\Delta V_O / \Delta V_O$	$I_O=0 \sim 100mA$	—	—	0.03	%/mA
Dropout Voltage(*5)	ΔV_{LO}	$I_O=60mA$	$2.1V \leq V_O \leq 2.4V$	—	0.20	0.27 V
			$2.5V \leq V_O \leq 2.7V$	—	0.18	0.25 V
			$2.8V \leq V_O \leq 3.3V$	—	0.15	0.22 V
			$3.4V \leq V_O \leq 5.0V$	—	0.12	0.19 V
Ripple Rejection	RR	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_O=10mA$, $V_O=3.0V$ Version	—	65	—	dB
Average Temperature Coefficient of Output Voltage	$\Delta V_O / \Delta T_a$	$T_a=0 \sim 85^\circ C$, $I_O=10mA$	—	± 100	—	ppm/°C
Output Noise Voltage	V_{NO}	$f=10Hz \sim 80kHz$, $I_O=10mA$, $V_O=3.0V$ Version	—	75	—	μV_{rms}
Pull-down Resistance	R_{CONT}		2	5	10	$M\Omega$
Control Voltage for ON-State	$V_{CONT(ON)}$		1.6	—	—	V
Control Voltage for OFF-State(*6)	$V_{CONT(OFF)}$		—	—	0.3	V
Pull-down Resistance at OFF-state	$R_{O(OFF)}$	$V_{CONT}=0V$ ($V_O=3.0V$ Version)	—	150	—	Ω

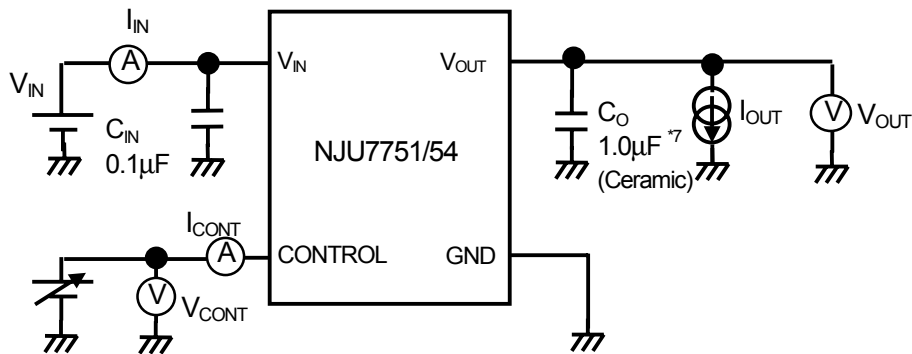
(*5): The output voltage excludes under 2.1V.

(*6): This electrical characteristics is applied to NJU7754.

The above specification is a common specification for all voltages.

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

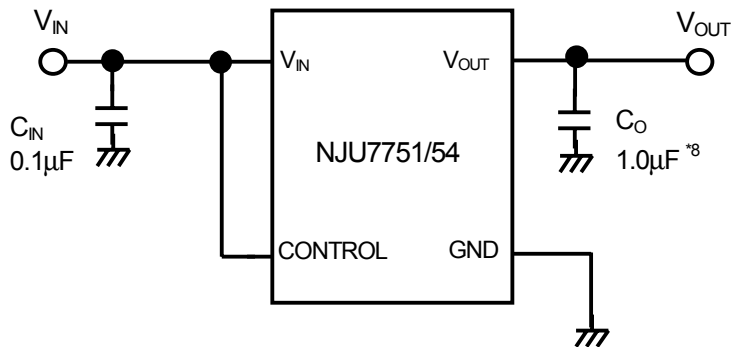
■ TEST CIRCUIT



*7 : $V_O \leq 2.0V$ version, $C_O = 2.2\mu F$ (Ceramic)

■ TYPICAL APPLICATION

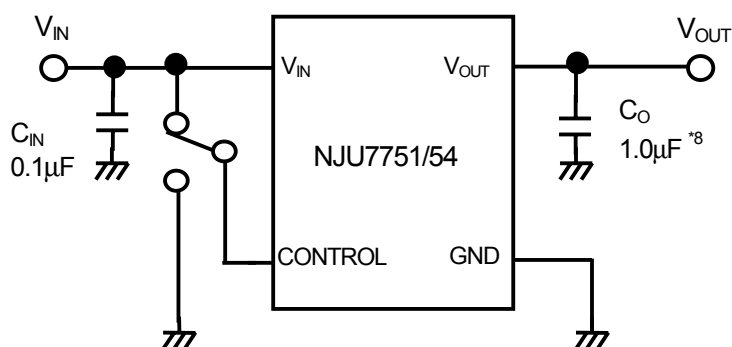
① In case that ON/OFF Control is not required:



*8 : $V_O \leq 2.0V$ version, $C_O = 2.2\mu F$

Connect control terminal to V_{IN} terminal.

② In use of ON/OFF Control

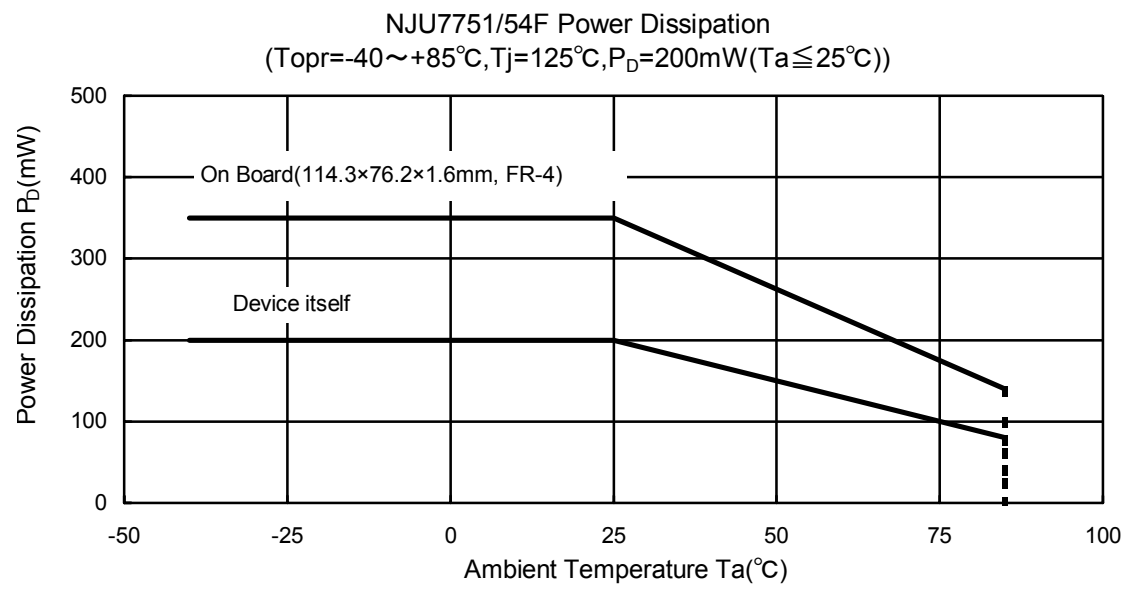


*8 : $V_O \leq 2.0V$ version, $C_O = 2.2\mu F$

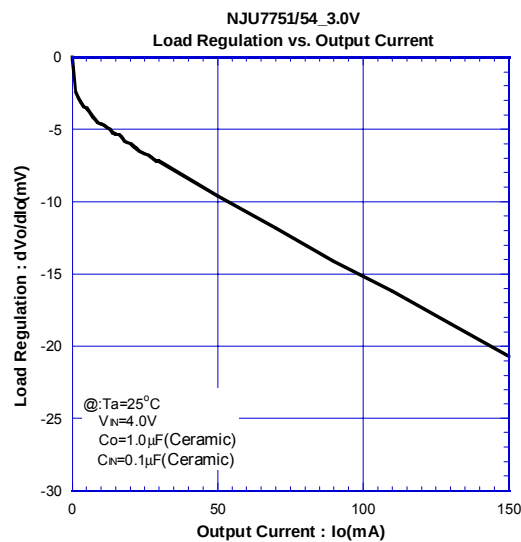
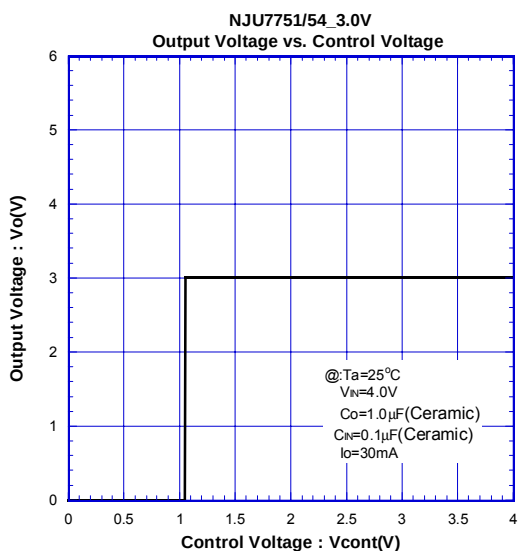
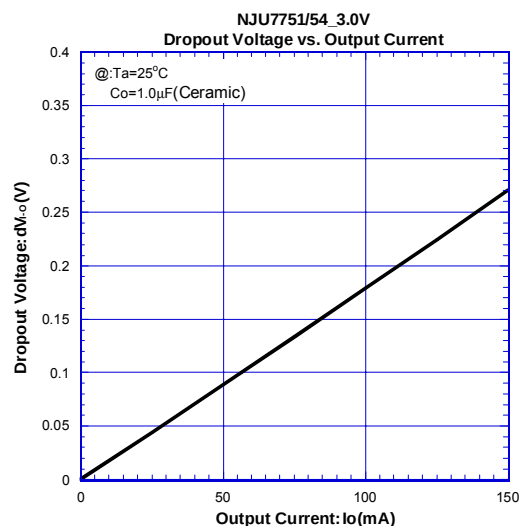
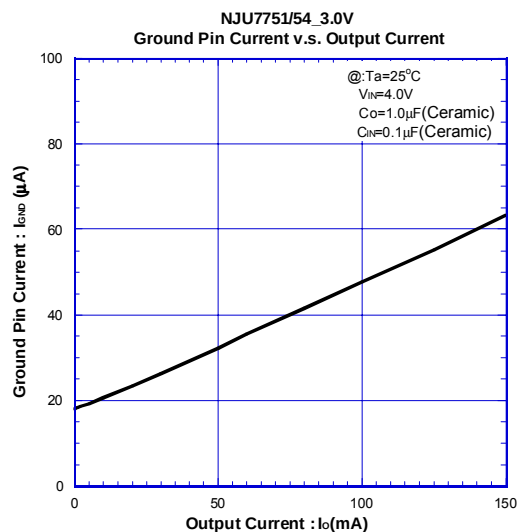
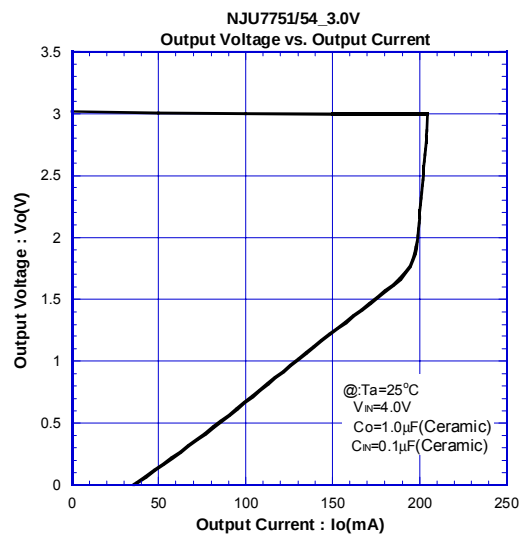
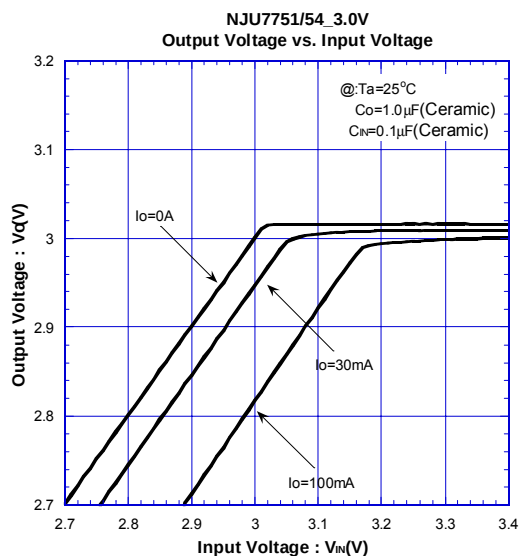
State of control terminal:

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

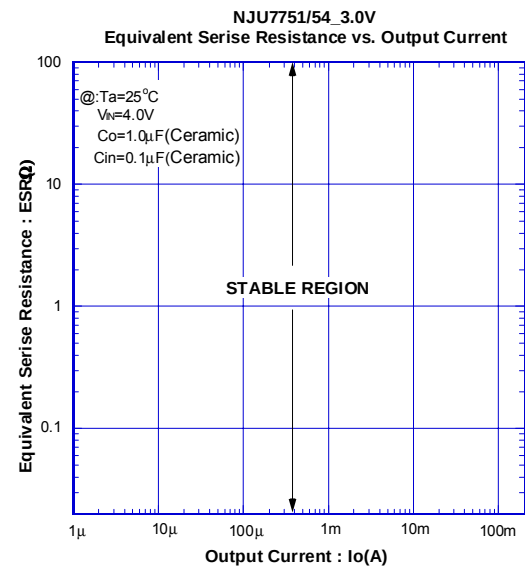
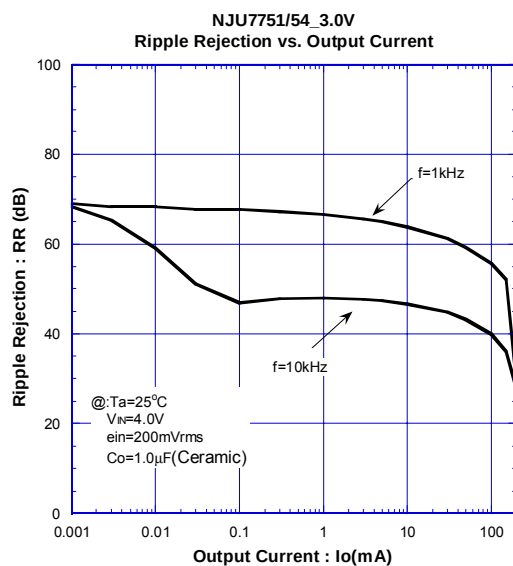
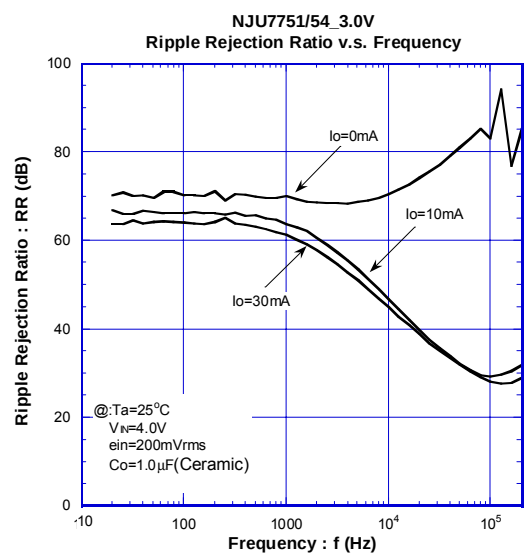
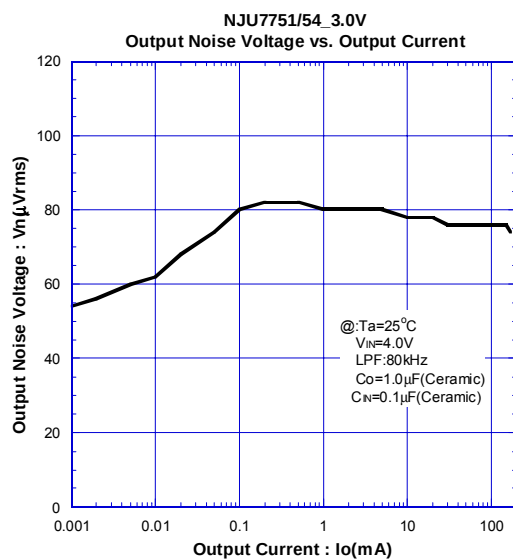
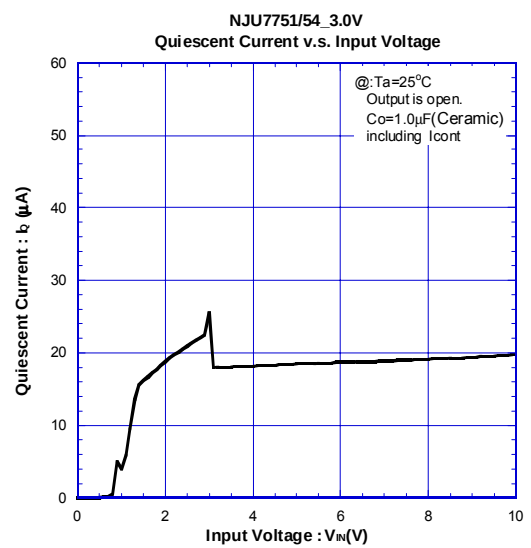
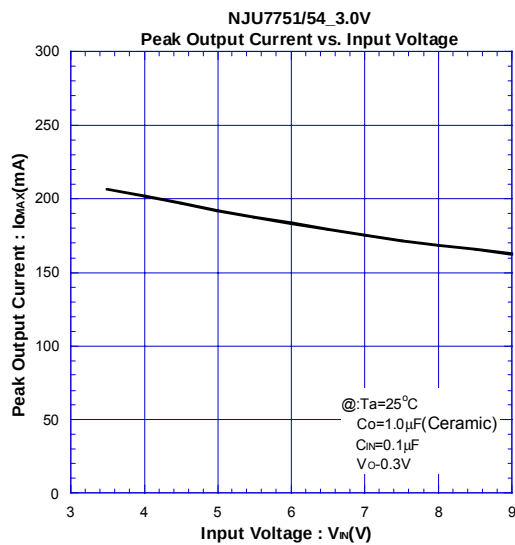
POWER DISSIPATION vs. AMBIENT TEMPERATURE



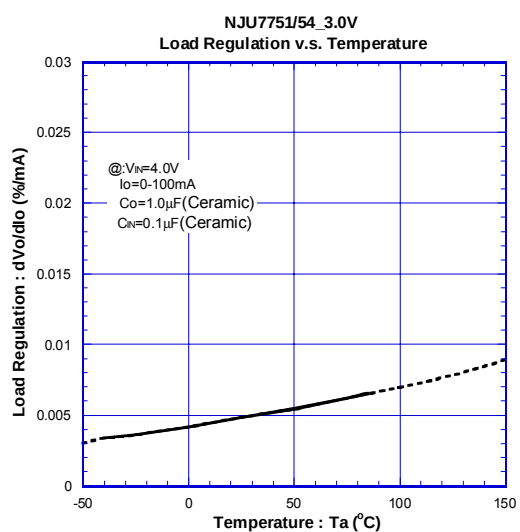
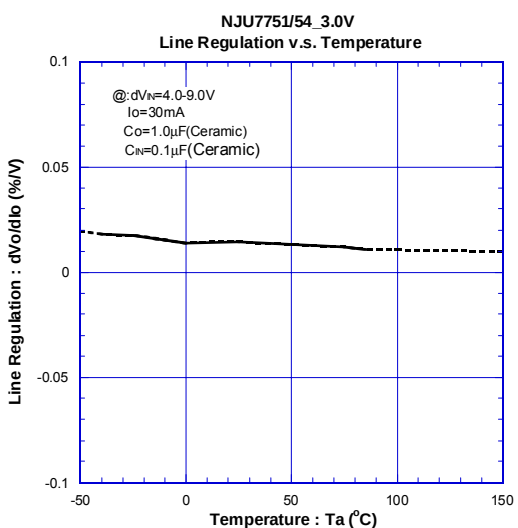
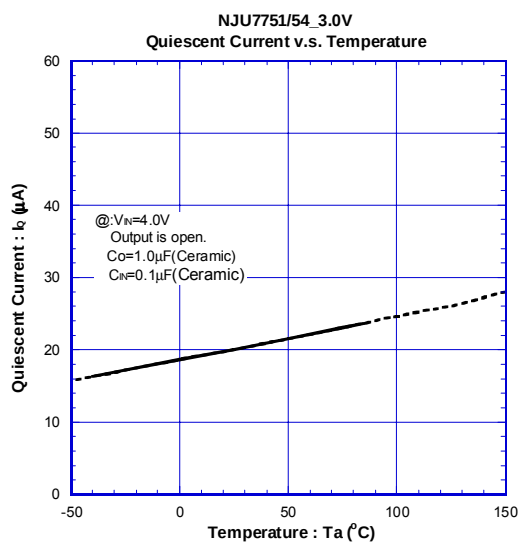
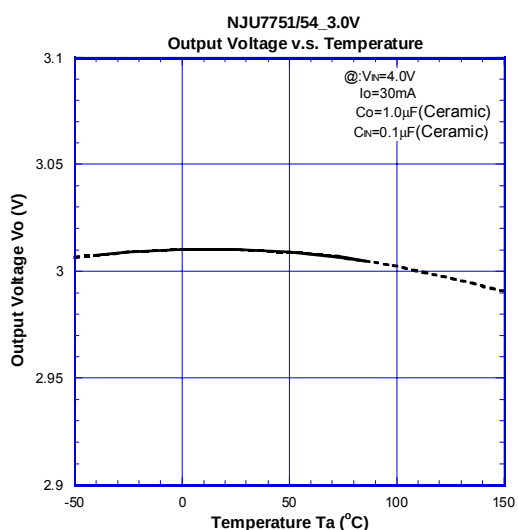
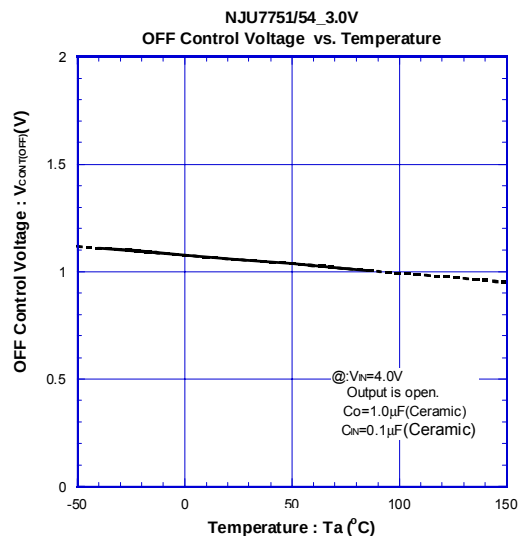
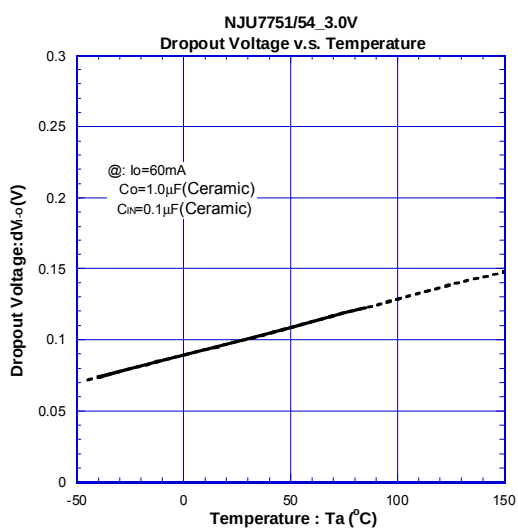
ELECTRICAL CHARACTERISTICS



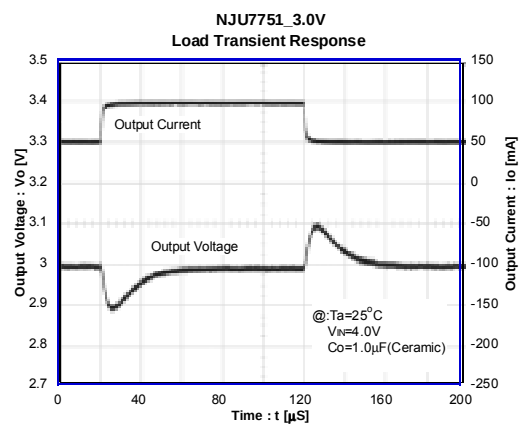
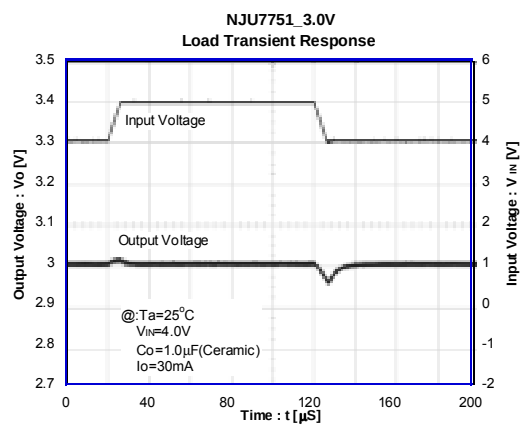
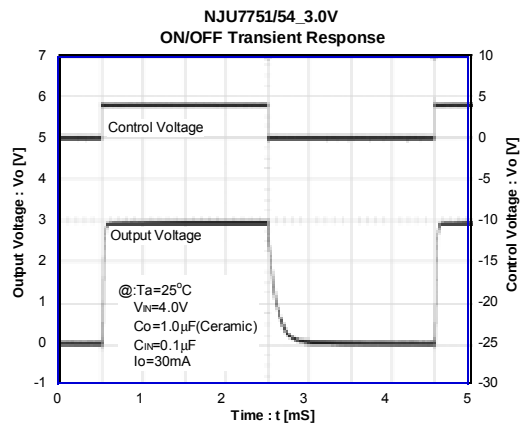
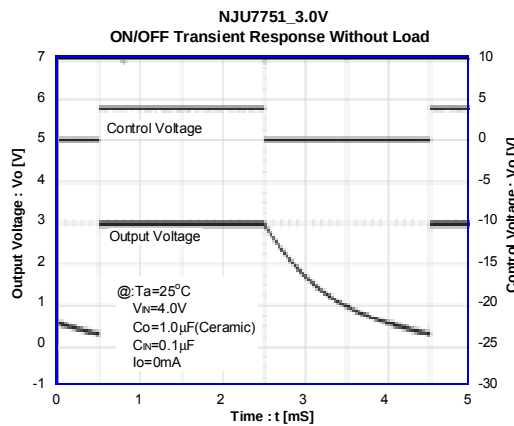
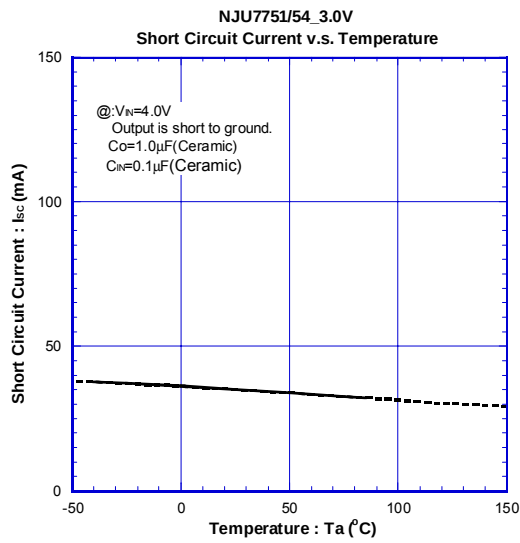
■ ELECTRICAL CHARACTERISTICS



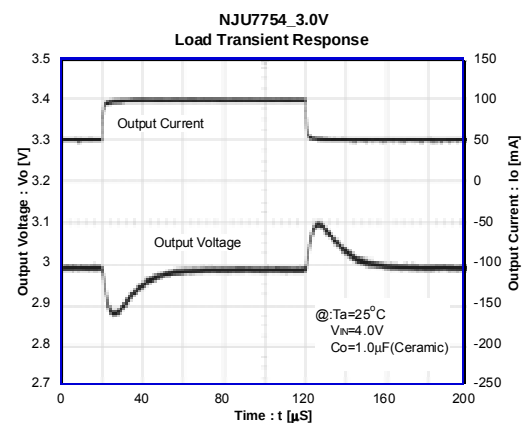
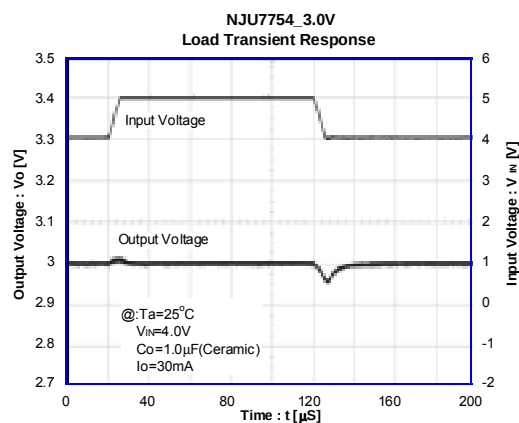
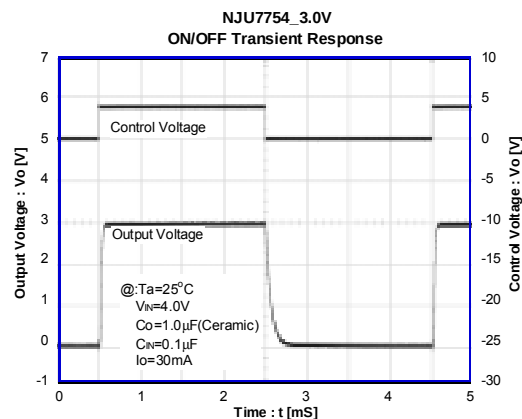
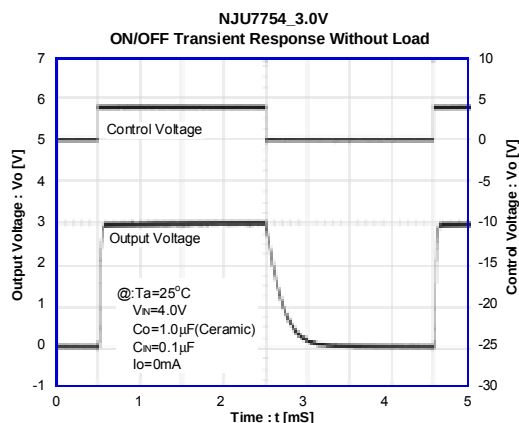
ELECTRICAL CHARACTERISTICS



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ELECTRICAL CHARACTERISTICS



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