

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

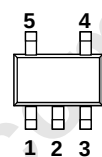


NJU7751/54F

■ 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

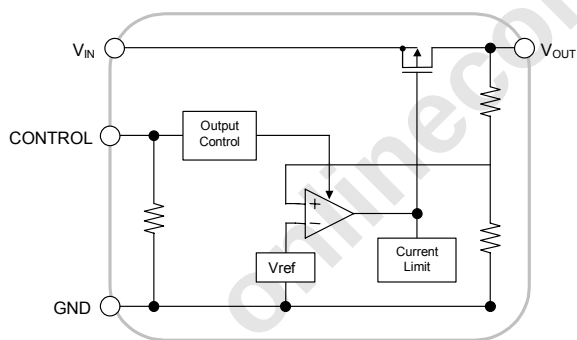
■ PIN CONFIGURATION



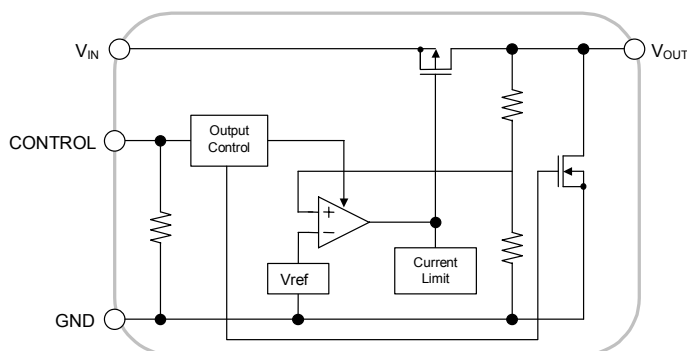
NJU7751/54F

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	Topr	-40 ~ +85	°C
Storage Temperature	Tstg	-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 Vo<2.1V version)

■ ELECTRICAL CHARACTERISTICS

(V_{IN}=V_O+1V, C_{IN}=0.1μ F, C_O=1.0μ F (V_O≤2.0V: C_O=2.2μ F), Ta=25°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	ΔV _O / ΔV _{IN}	V _{IN} = V _O +1V~V _O +6.0V (V _O <3.0V) V _{IN} = V _O +1V~9.0V (V _O ≥3.0V), I _O =30mA	—	—	0.20	%/V
Load Regulation	ΔV _O / ΔV _O	I _O =0~100mA	—	—	0.03	%/mA
Dropout Voltage(*5)	ΔV _{IO}	I _O =60mA	2.1V≤V _O ≤2.4V	—	0.20	0.27 V
			2.5V≤V _O ≤2.7V	—	0.18	0.25 V
			2.8V≤V _O ≤3.3V	—	0.15	0.22 V
			3.4V≤V _O ≤5.0V	—	0.12	0.19 V
Ripple Rejection	RR	e _{in} =200mVrms, f=1kHz, I _O =10mA, V _O =3.0V Version	—	65	—	dB
Average Temperature Coefficient of Output Voltage	ΔV _O / ΔTa	Ta=0~85°C, I _O =10mA	—	±100	—	ppm/°C
Output Noise Voltage	V _{NO}	f=10Hz ~ 80kHz, I _O =10mA, V _O =3.0V Version	—	75	—	μVrms
Pull-down Resistance	R _{CONT}		2	5	10	MΩ
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

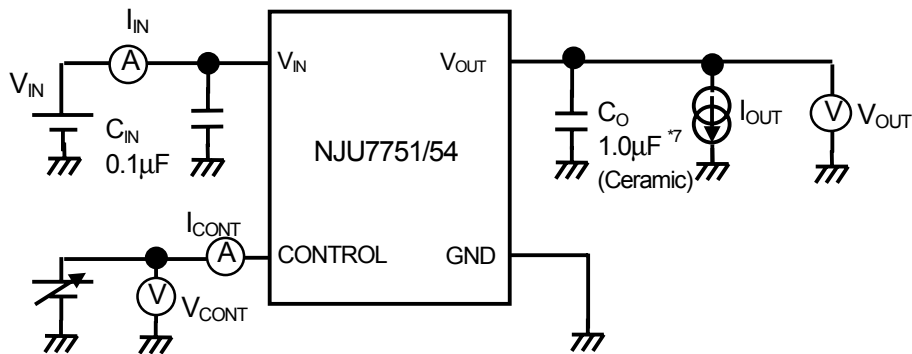
(*5): The output voltage excludes under 2.1V.

(*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.

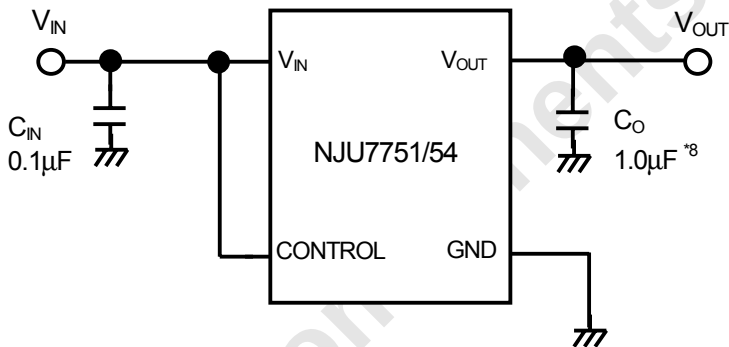
■ TEST CIRCUIT



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

■ TYPICAL APPLICATION

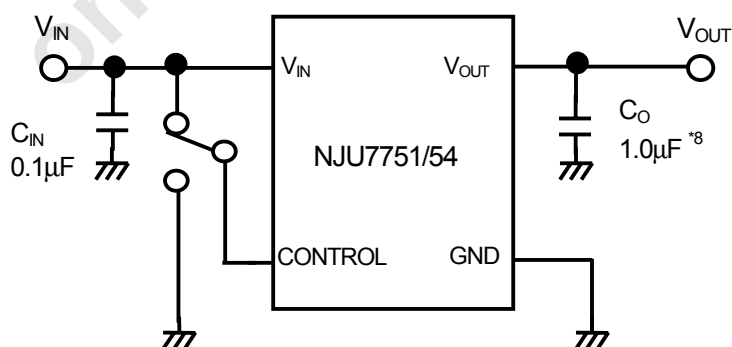
① In case that ON/OFF Control is not required:



*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

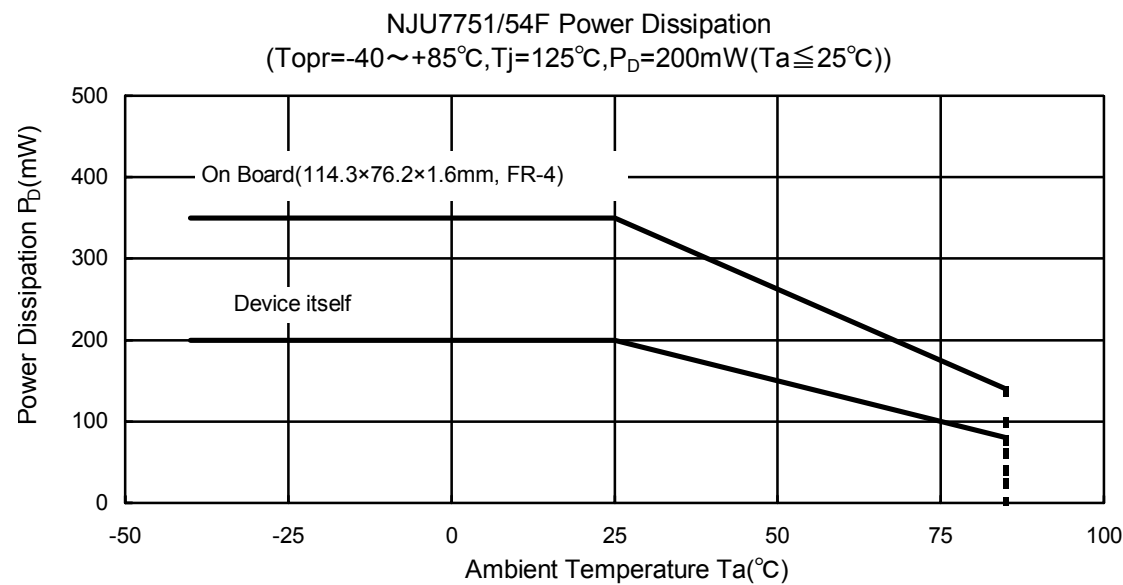


*8 : $V_O \leq 2.0V$ version, $C_O = 2.2\mu F$

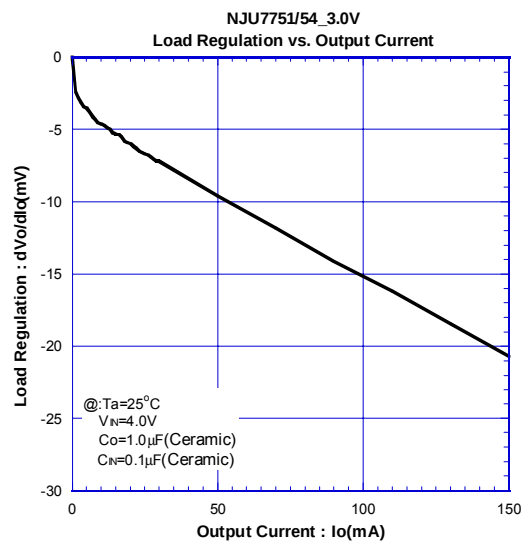
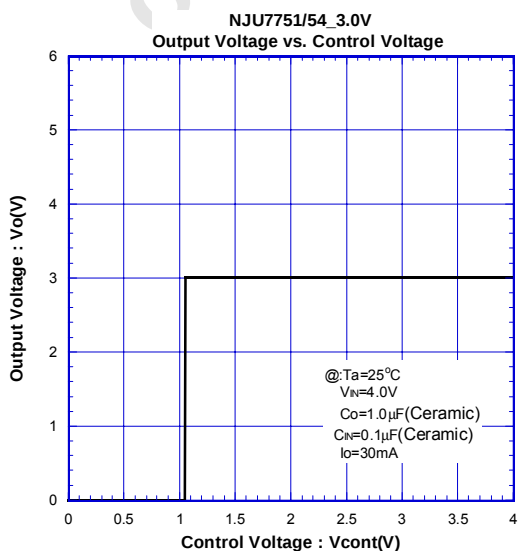
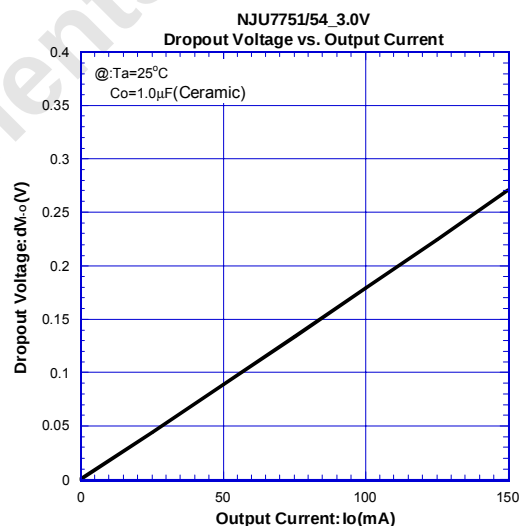
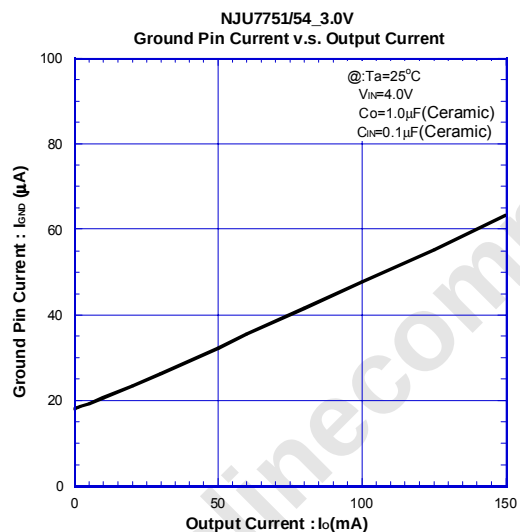
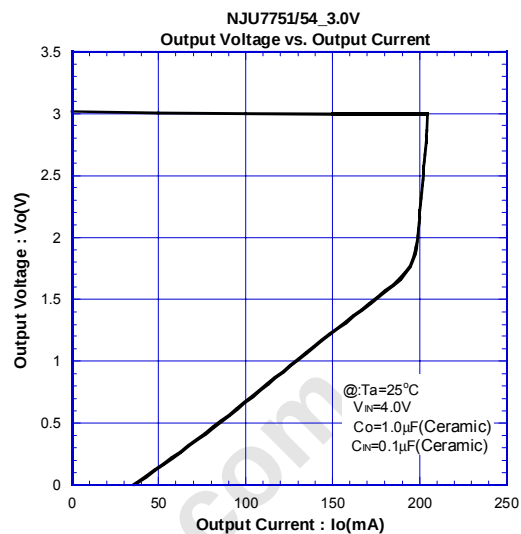
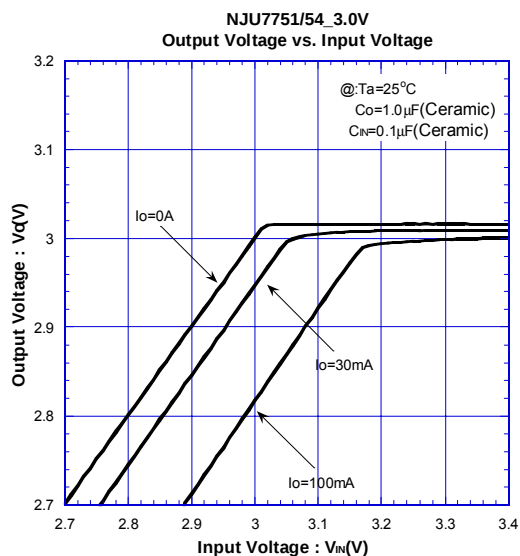
State of control terminal:

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

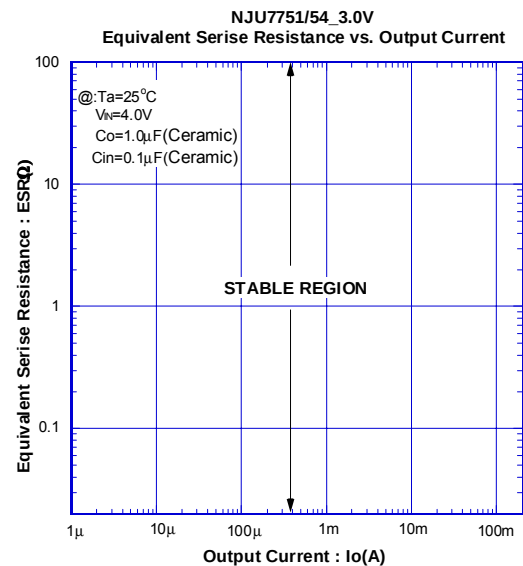
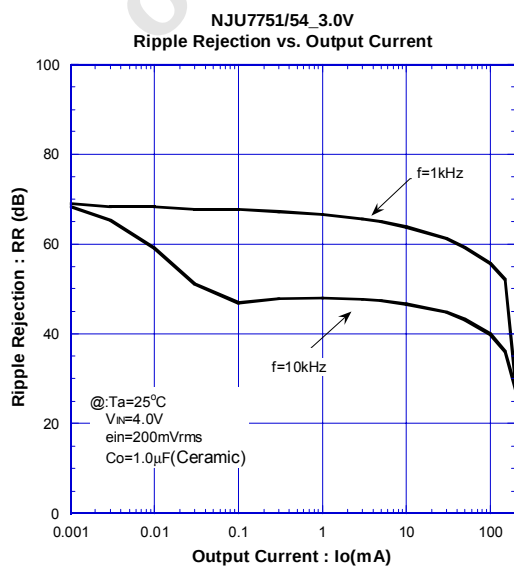
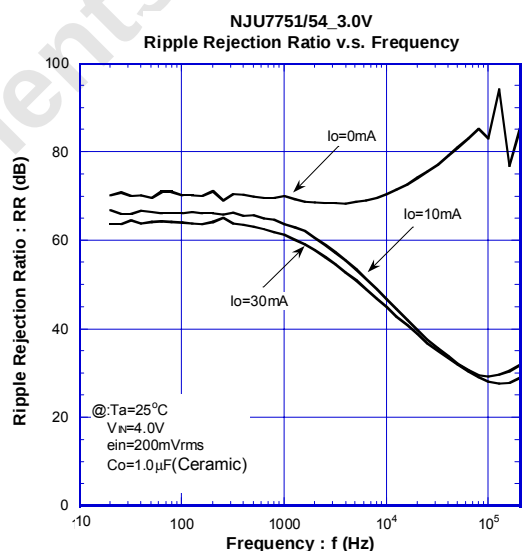
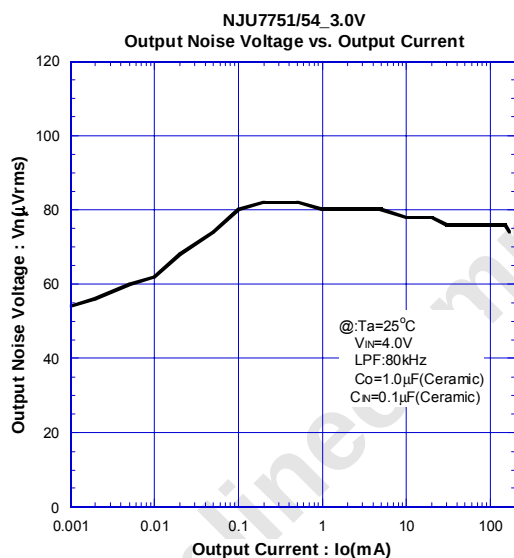
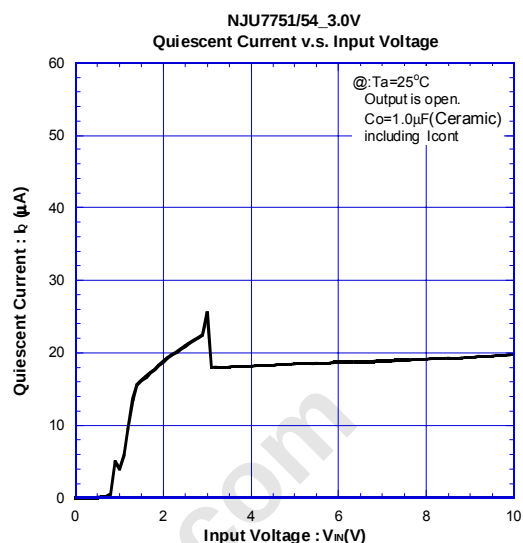
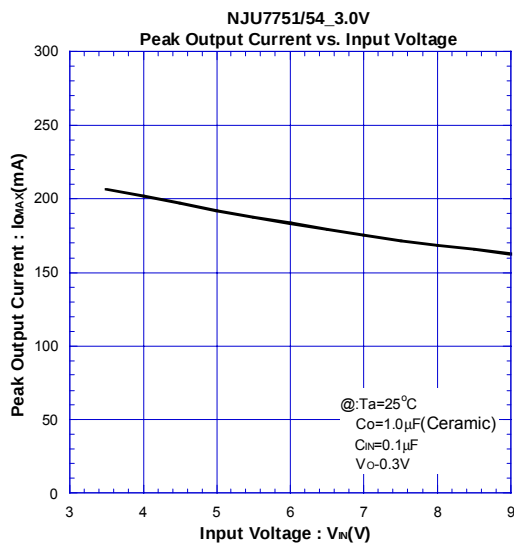
■ POWER DISSIPATION vs. AMBIENT TEMPERATURE



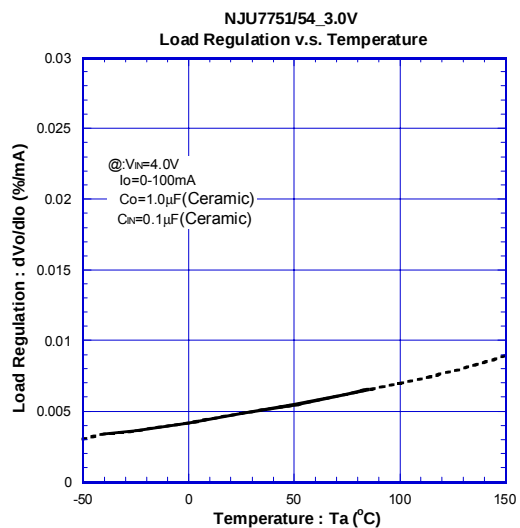
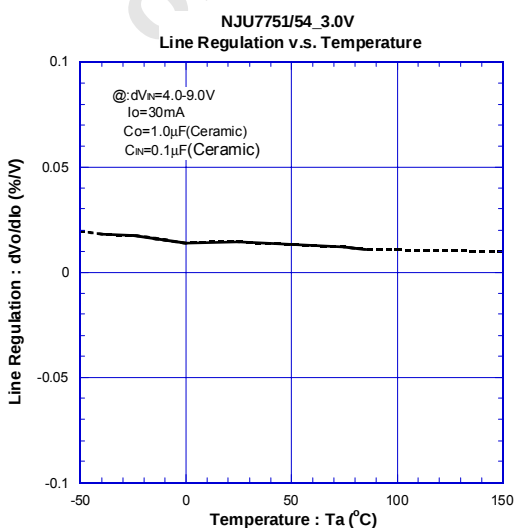
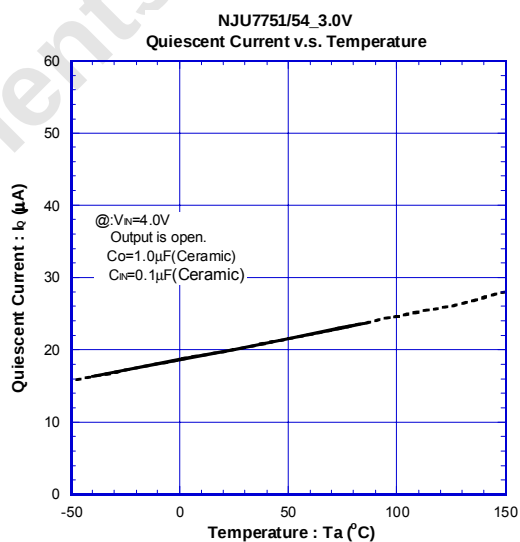
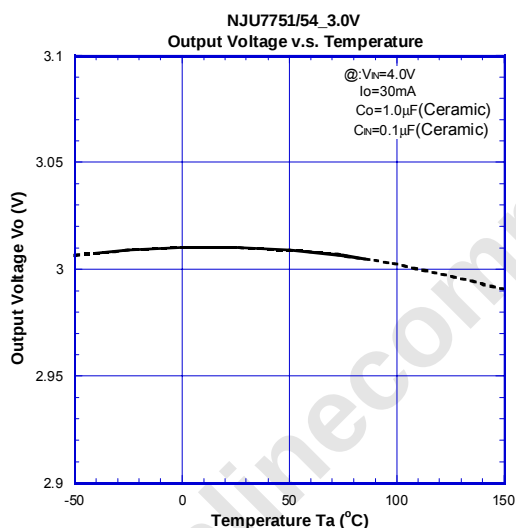
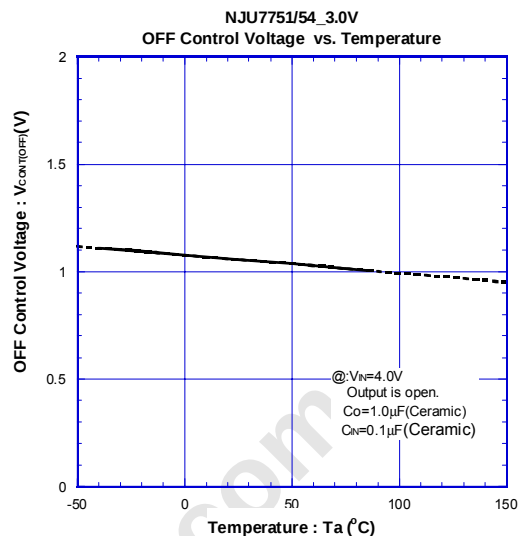
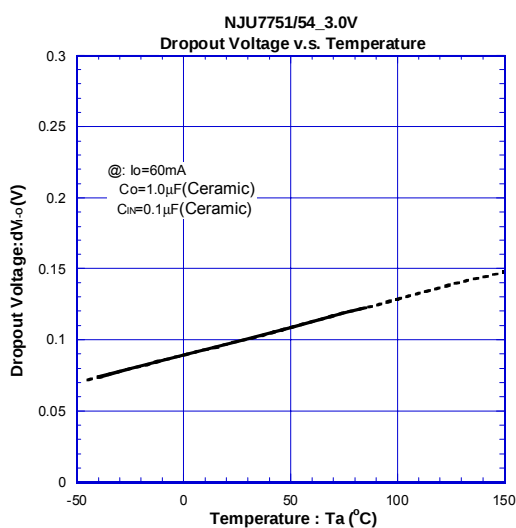
ELECTRICAL CHARACTERISTICS



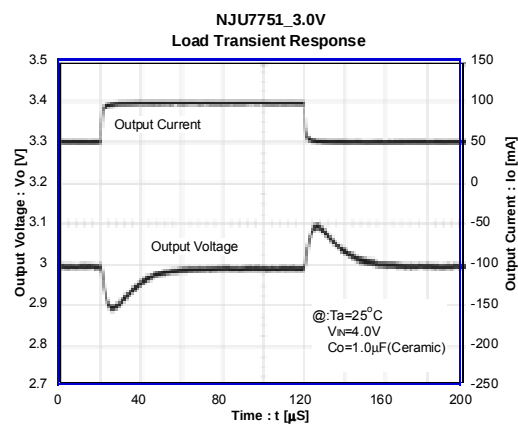
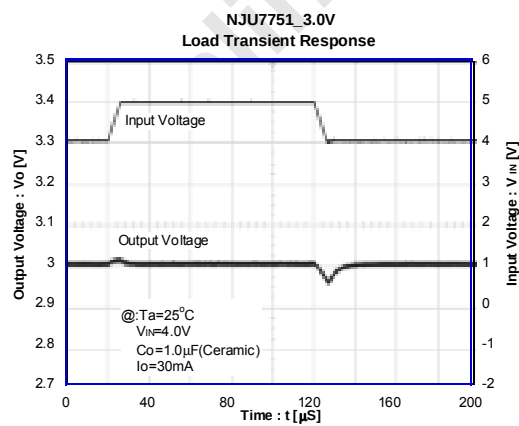
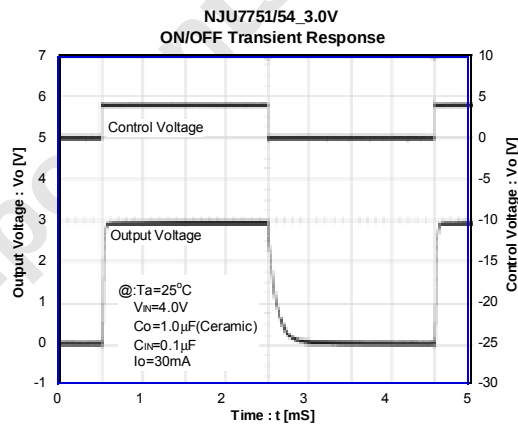
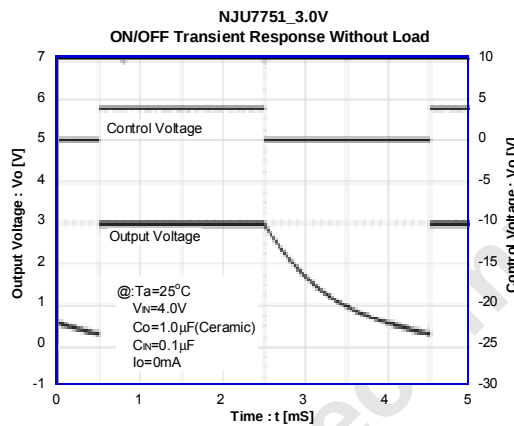
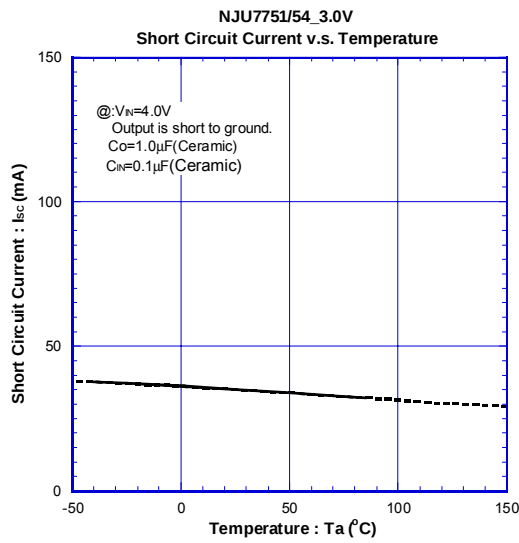
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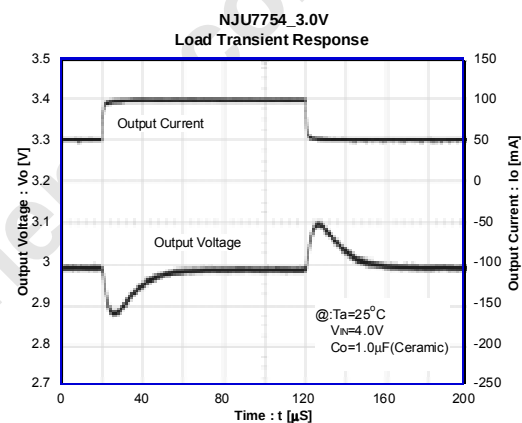
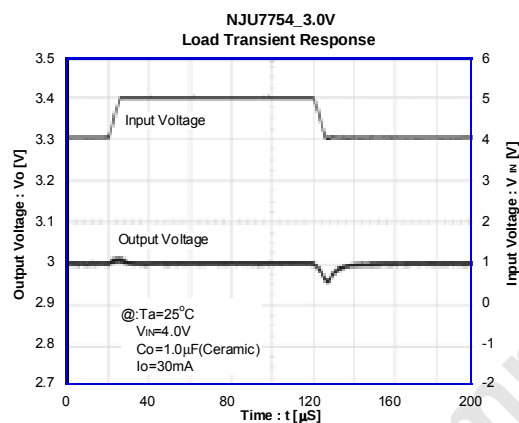
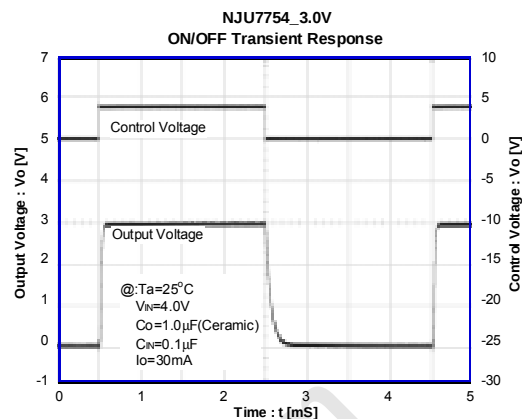
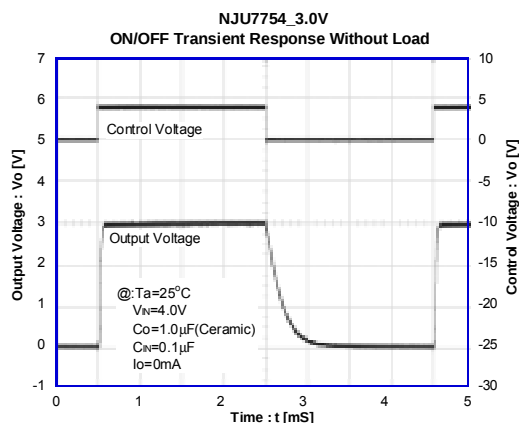
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