2ch LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJU7254 is a 2ch low dropout voltage regulator with ON/OFF control. Advanced C-MOS technology achieves high ripple rejection and low quiescent current.

SOT-23-6 package, 100mA×2ch output current and 1.0μF small capacitor make NJU7254 suitable for space conscious applications.

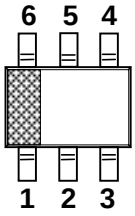
■ PACKAGE OUTLINE

NJU7254F1

■ FEATURES

- High Ripple Rejection 65dB typ. (f=1kHz,Vo=3V Version)
- Low Quiescent Current 18μA /ch(typ.), 30μA /total (typ.)
- Output capacitor with 1.0μF ceramic capacitor
- Output Current Io(max.)=100mA ×2ch
- High Precision Output Vo±1.0%
- Low Dropout Voltage 0.09V typ. (Io=60mA, Vo=3V Version)
- ON/OFF Control (Each ch.)
- Internal Short Circuit Current Limit
- C-MOS technology
- Package Outline SOT-23-6

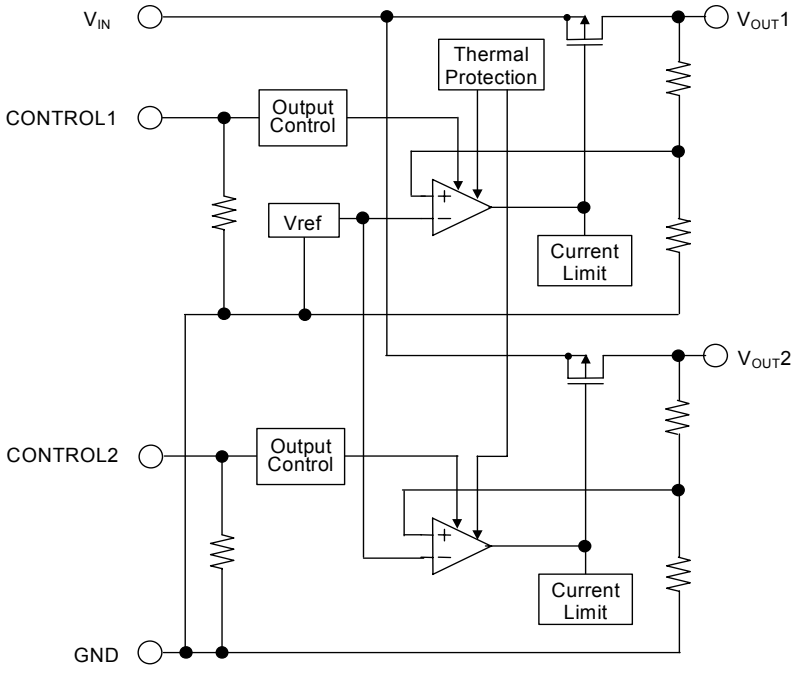
■ PIN CONFIGURATION



NJU7254F1

PIN FUNCTION
1. $V_{OUT}2$
2. GND
3. $V_{OUT}1$
4. CONTROL1
5. V_{IN}
6. CONTROL2

■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE RANK LIST

Device Name	V_{OUT}	
	CH1	CH2
NJU7254F1-2121	2.1V	2.1V
NJU7254F1-0303	3.0V	3.0V
NJU7254F1-0521	5.0V	2.1V

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS		UNIT
Input Voltage	V_{IN}	+9		V
Control Voltage	V_{CONT}	+9(*1)		V
Power Dissipation	P_D	SOT-23-6	200(*2)	mW
			400(*3)	
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): Device itself.

(*3): Mounted on glass epoxy board based on EIA/JEDEC. (114.3x76.2x1.6mm: 2Layers)

■ Operating voltage

V_{IN}=+2.3 ~ +8V (In case of Vo<2.1V version)

■ ELECTRICAL CHARACTERISTICS ($V_{IN}=V_O+1V$(*4), C_{IN}=0.1µF, C_O=1.0µF(Vo≤2.0V : Co=2.2µF), Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Output Voltage	Vo	Io=30mA		-1.0%	–	+1.0%	V
Input Voltage	V_{IN}			–	–	8	V
Quiescent Current 1	I_{Q1}	$V_{CONT1}=V_{IN}$, V_{CONT2}=0V or V_{CONT1}=0V, $V_{CONT2}=V_{IN}$, Io=0mA, Include I_{CONT}		–	18	35	µA
Quiescent Current 2	I_{Q2}	$V_{CONT1}=V_{CONT2}=V_{IN}$, Io=0mA, Include I_{CONT}		–	30	60	µA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	$V_{CONT1}=V_{CONT2}$=0V		–	0.1	1	µA
Output Current	Io	Vo-0.1V (Vo≤2.0V Version) Vo-0.3V (Vo≥2.1V Version)		100	–	–	mA
Short Circuit Limit	I_{LIM}	Vo=0V		–	40	–	mA
Line Regulation	$\Delta Vo/\Delta V_{IN}$	V_{IN}=Vo+1V~Vo+6V (Vo<2.0V Version) V_{IN}=Vo+1V~8.0V (Vo≥2.0V Version), Io=30mA		–	–	0.20	%/V
Load Regulation	$\Delta Vo/\Delta Io$	Io=0~100mA		–	–	0.03	%/mA
Dropout Voltage	ΔV_{I-O}	Io=60mA	2.1V≤Vo≤2.4V	–	0.11	0.16	V
			2.5V≤Vo≤2.7V	–	0.10	0.15	V
			2.8V≤Vo≤3.3V	–	0.09	0.14	V
			3.4V≤Vo≤5.0V	–	0.07	0.12	V
Average Temperature Coefficient of Output Voltage	$\Delta Vo/\Delta Ta$	Ta=0~85°C, Io=10mA		–	±100	–	ppm/°C
Output Noise Voltage	V_{NO1}	f=10Hz ~ 80kHz,Io=0mA,Vo=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	$V_{CONT(OFF)}$			–	–	0.3	V

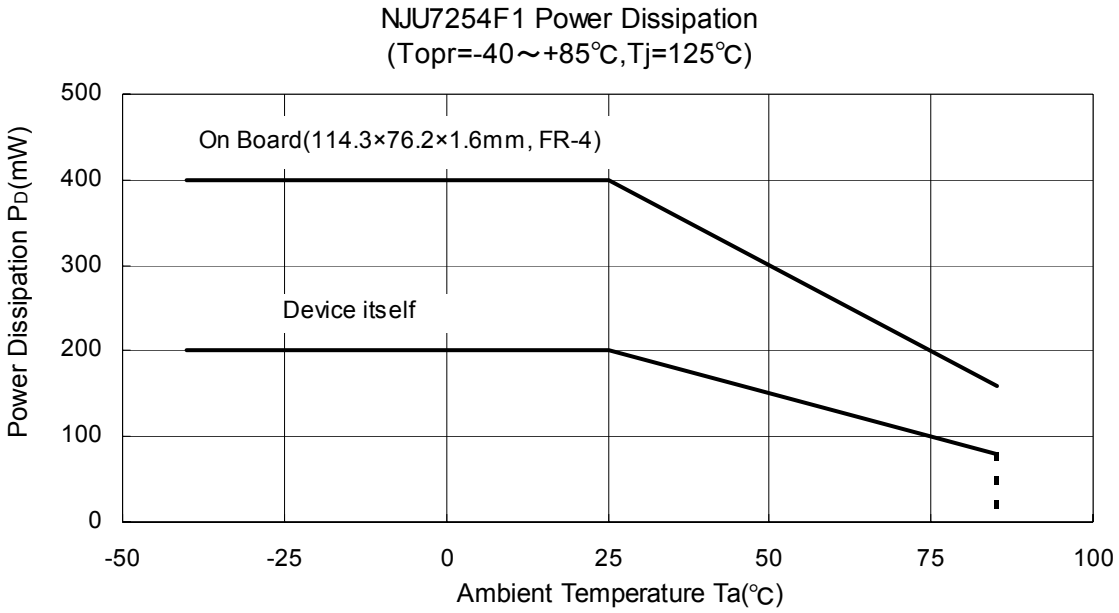
(*4) : V_{IN} =Vo+1V means add 1V to higher output voltage.

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

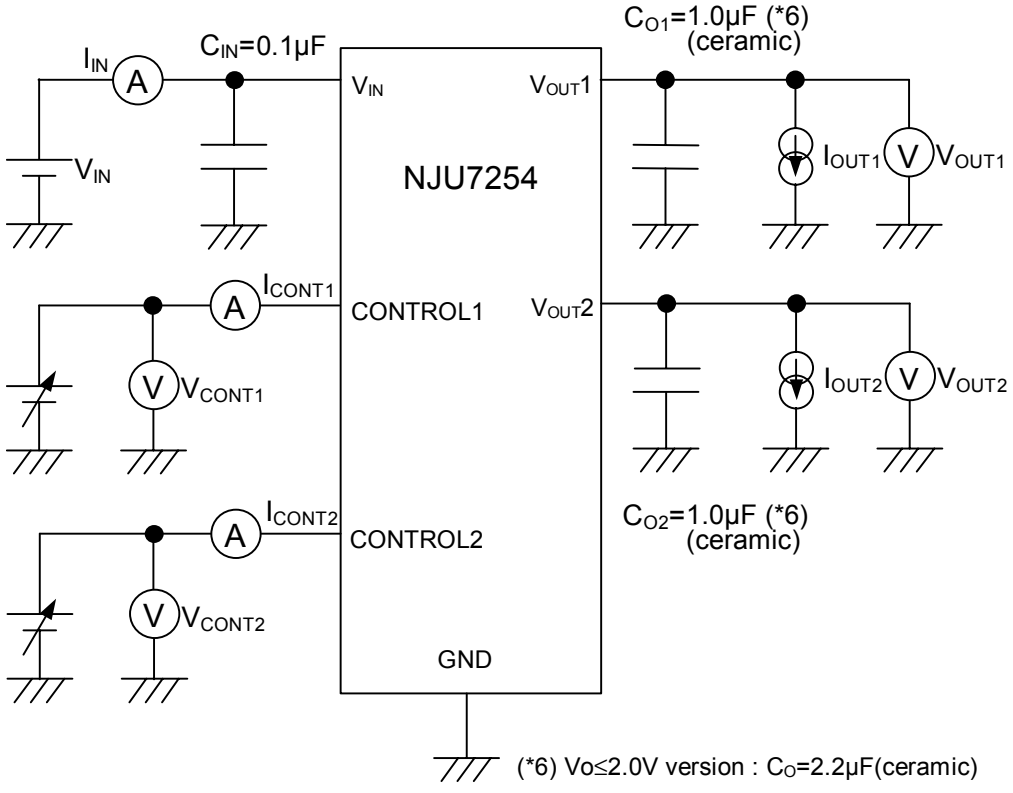
The above specification is a common specification for all voltages.

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

■ POWER DISSIPATION vs. AMBIENT TEMPERATURE

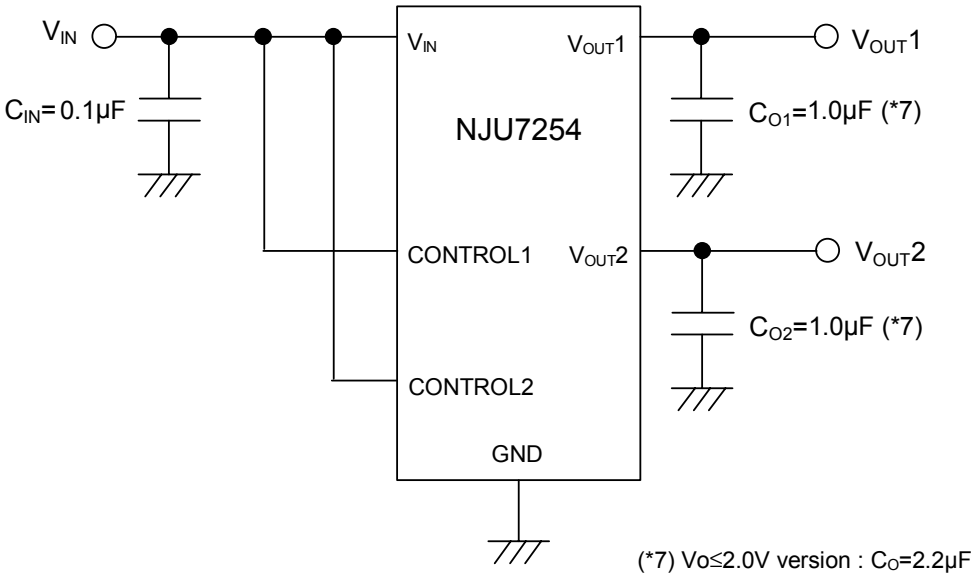


■ TEST CIRCUIT



■ TYPICAL APPLICATION

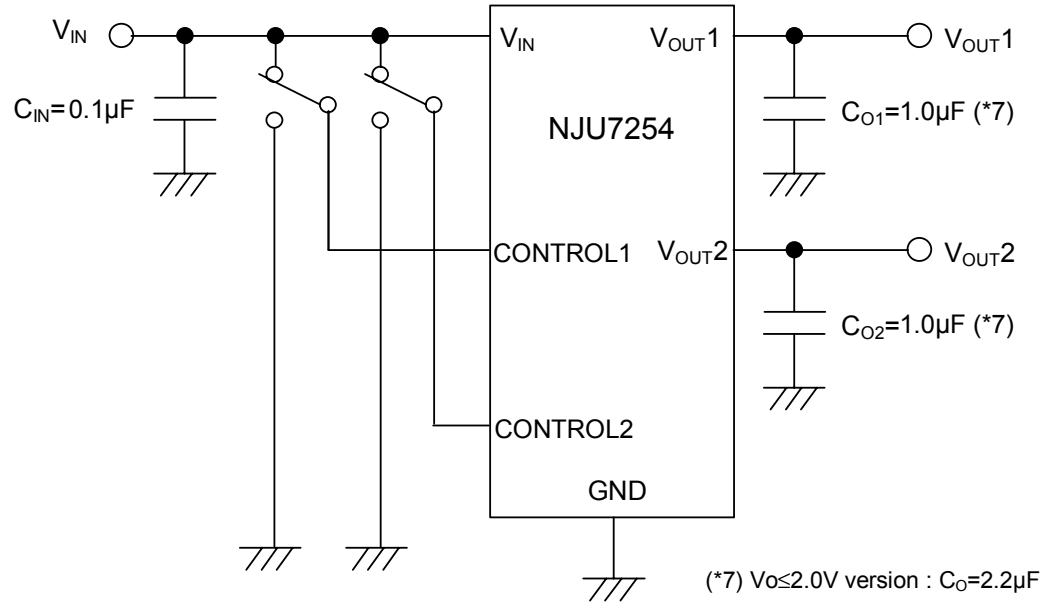
① In case that ON/OFF Control is not required:



(*7) Vo≤2.0V version : C_O=2.2µF

Connect control terminal to V_{IN} terminal.

② In use of ON/OFF Control



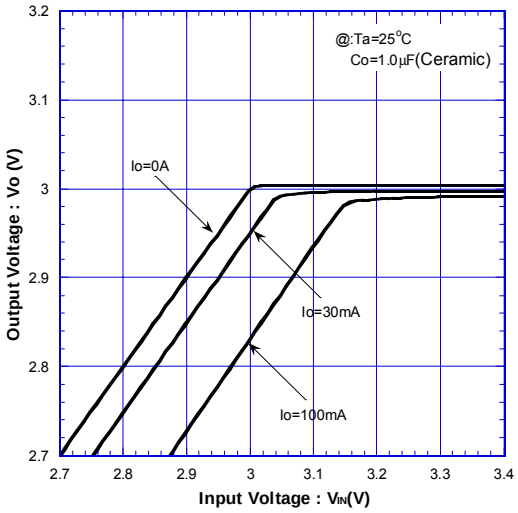
(*7) Vo≤2.0V version : C_O=2.2µF

State of control terminal:

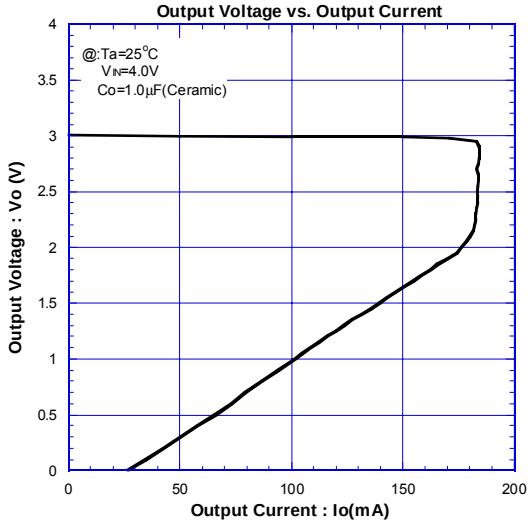
- "H" → output is enabled.
- "L" or "open" → output is disabled.

■ TYPICAL CHARACTERISTICS

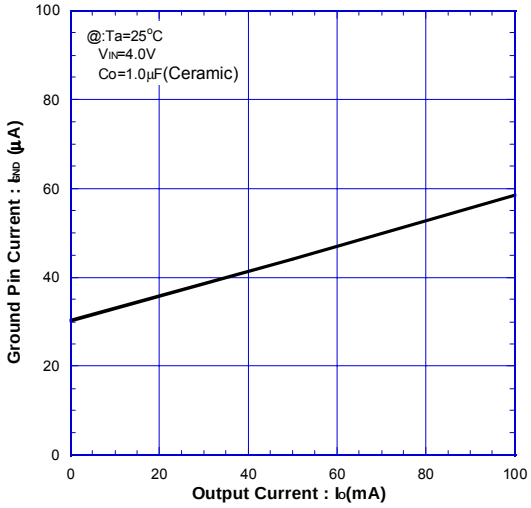
NJU7254-3.0V_
Output Voltage vs. Input Voltage



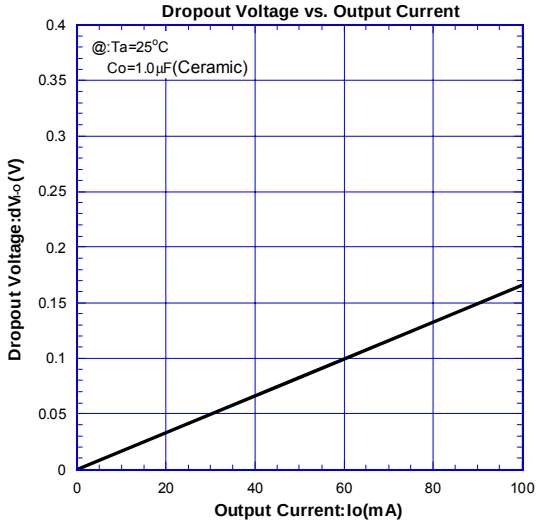
NJU7254-3.0V
Output Voltage vs. Output Current



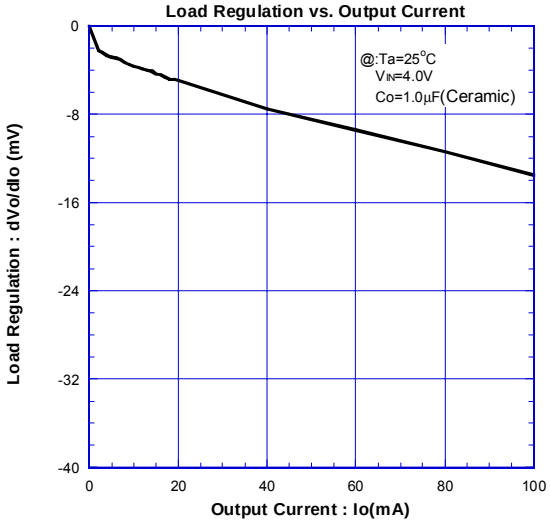
NJU7254-3.0V
Ground Pin Current v.s. Output Current



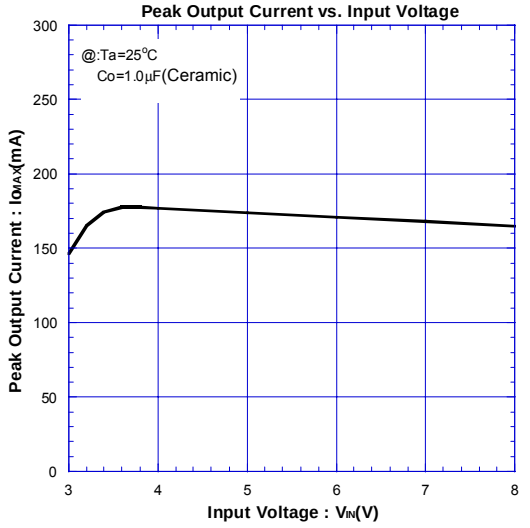
NJU7254-3.0V
Dropout Voltage vs. Output Current



NJU7254-3.0V
Load Regulation vs. Output Current

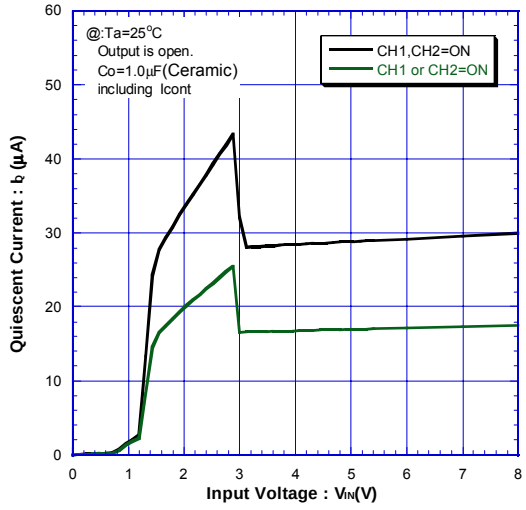


NJU7254-3.0V
Peak Output Current vs. Input Voltage

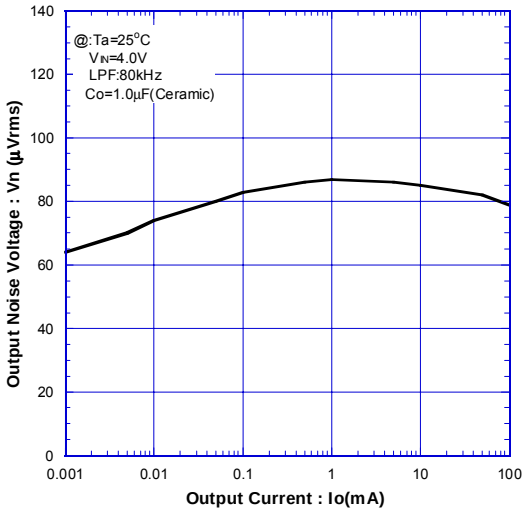


■ TYPICAL CHARACTERISTICS

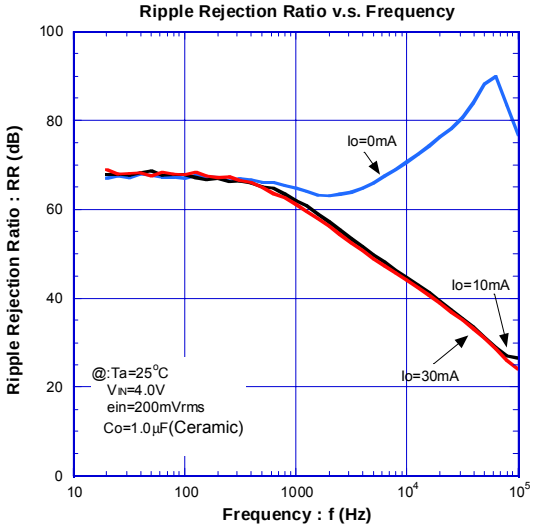
NJU7254-3.0V
Quiescent Current v.s. Input Voltage



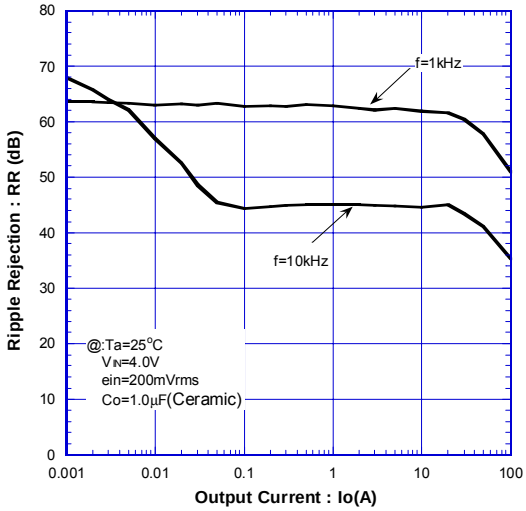
NJU7254-3.0V
Output Noise Voltage vs. Output Current



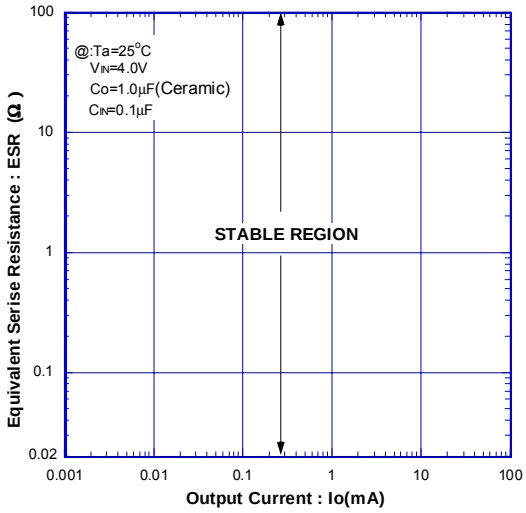
NJU7254-3.0V
Ripple Rejection Ratio v.s. Frequency



NJU7254-3.0V
Ripple Rejection vs. Output Current

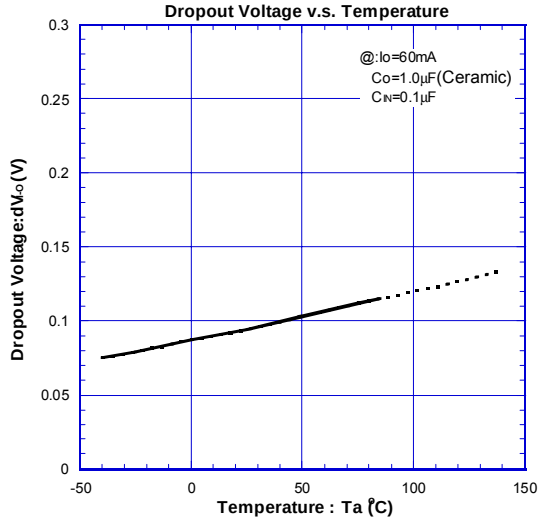


NJU7254_3.0V
Equivalent Serise Resistance vs. Output Current

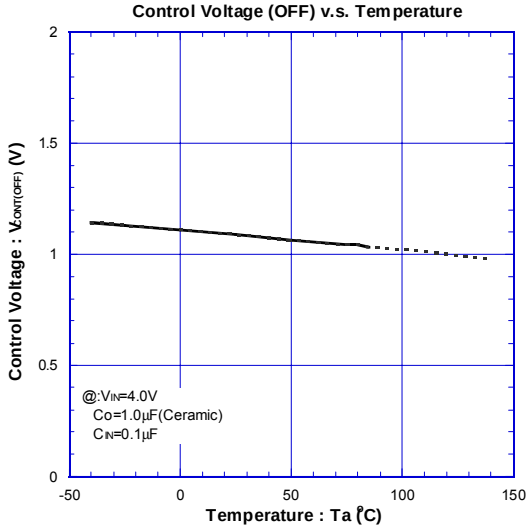


■ TYPICAL CHARACTERISTICS

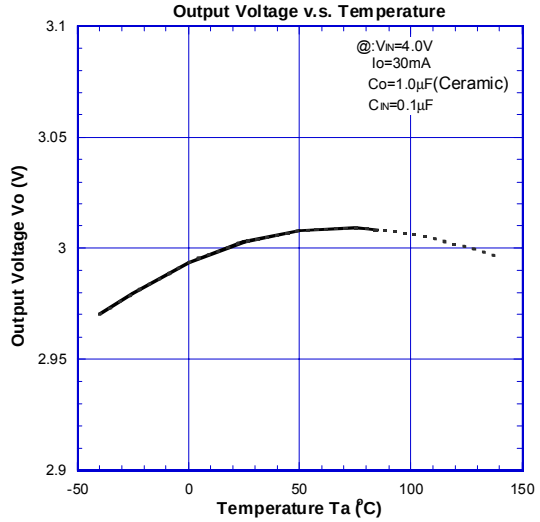
NJU7254-3.0V
Dropout Voltage v.s. Temperature



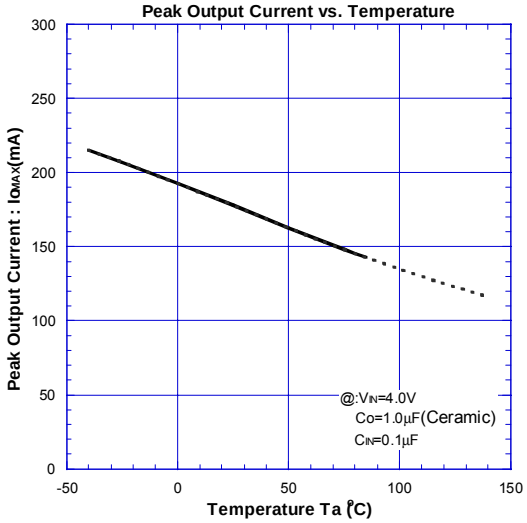
NJU7254-3.0V
Control Voltage (OFF) v.s. Temperature



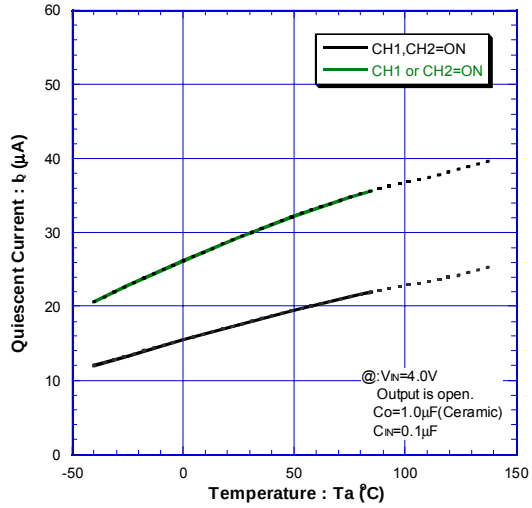
NJU7254-3.0V
Output Voltage v.s. Temperature



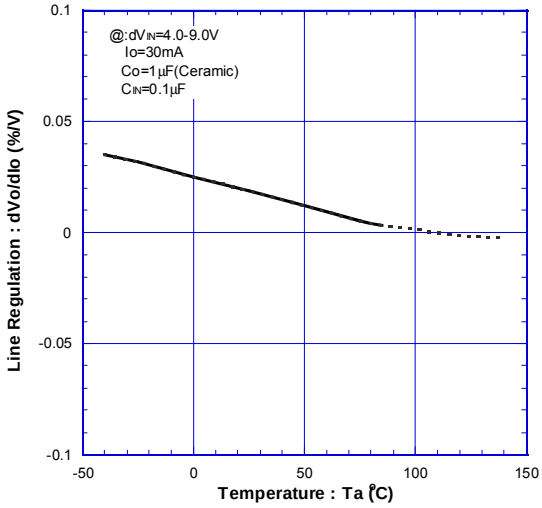
NJU7254-3.0V
Peak Output Current vs. Temperature



NJU7254-3.0V
Quiescent Current v.s. Temperature

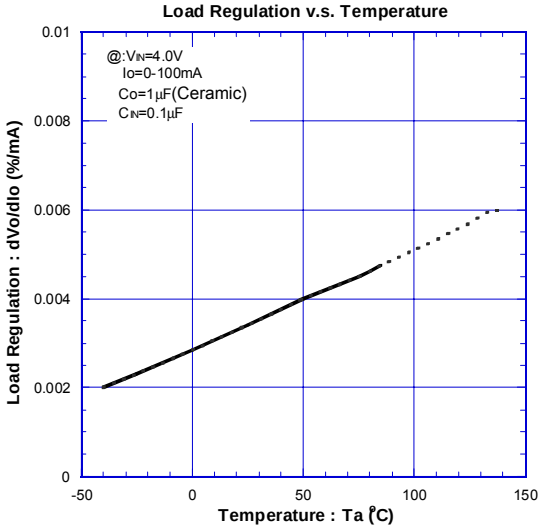


NJU7254-3.0V
Line Regulation v.s. Temperature

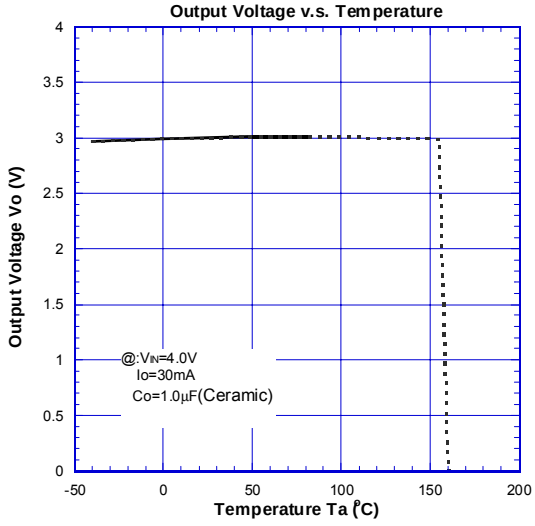


■ TYPICAL CHARACTERISTICS

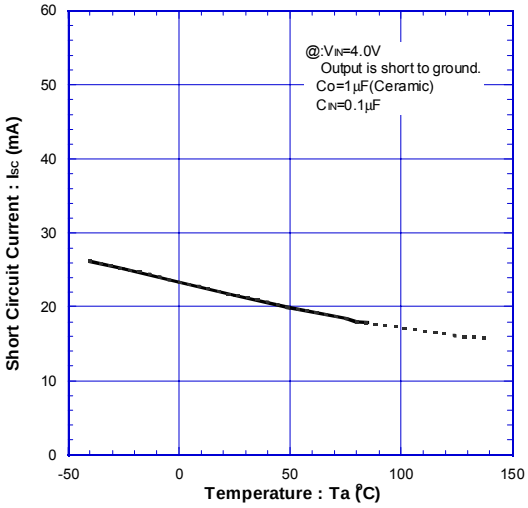
NJU7254-3.0V
Load Regulation v.s. Temperature



NJU7254-3.0V
Output Voltage v.s. Temperature

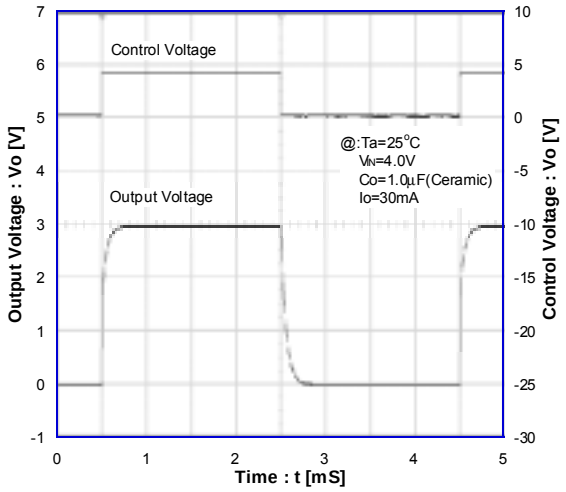


NJU7254-3.0V
Short Circuit Current v.s. Temperature

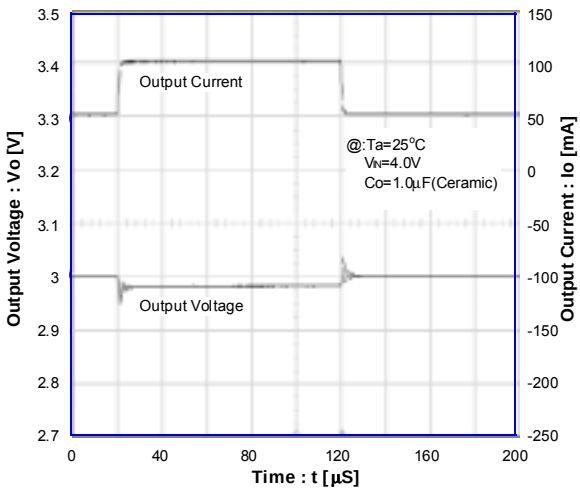


■ TYPICAL CHARACTERISTICS

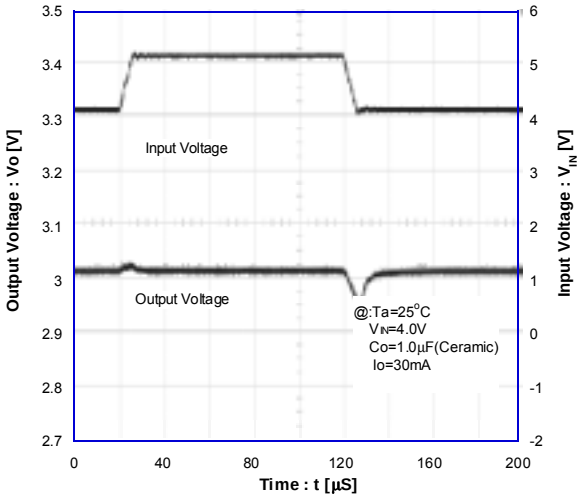
NJU7254_3.0V
ON/OFF Transient Response



NJU7254_3.0V
Load Transient Response



NJU7254_3.0V
Line Transient Response



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