

LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

The NJU7777 is a 150mA output low dropout voltage regulator with ON/OFF control.

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

Small packaging and 1 μ F small decoupling capacitor make the NJU7777 suitable for space conscious applications.

■ PACKAGE OUTLINE

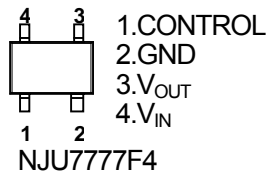


NJU7777F4

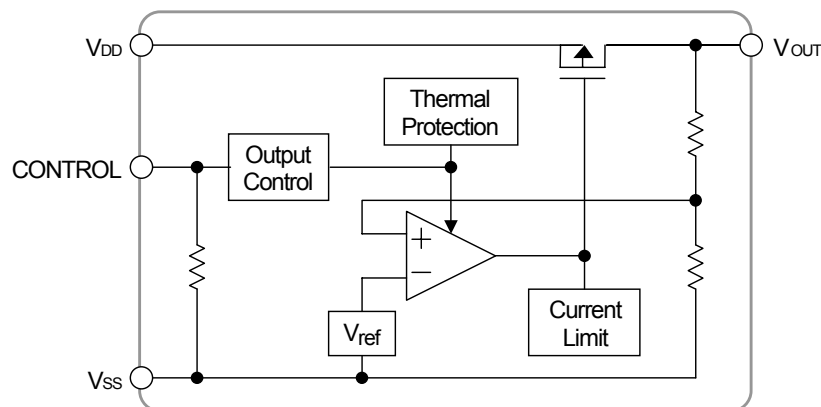
■ FEATURES

- High Ripple Rejection 65dB typ. (f=1kHz,Vo=3.0V version)
- Low quiescent Current Iq=18 μ A (Io=0mA)
- Output Current Io(max.)=150mA
- High Precision Output Vo \pm 1.0%
- Output capacitor with 1.0 μ F ceramic capacitor (Vo \geq 2.1V version)
- Low Dropout Voltage 0.13V typ. (Io=100mA,Vo=3.0V)
- ON/OFF Control
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- CMOS Technology
- Package Outline SC-82AB

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT



NJU7777

■ OUTPUT VOLTAGE RANK LIST

Device Name	V _{OUT}	Device Name	V _{OUT}
NJU7777F4-15	1.5V	NJU7777F4-33	3.3V
NJU7777F4-18	1.8V	NJU7777F4-05	5.0V
NJU7777F4-21	2.1V		
NJU7777F4-24	2.4V		
NJU7777F4-03	3.0V		

■ 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	250(*2)	mW
Operating Temperature	T _{opr}	-40 ~ +85	°C
Storage Temperature	T _{stg}	-40 ~ +125	°C

(*1) : When input voltage is less than +9V, 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)

■ Operating voltage

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

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

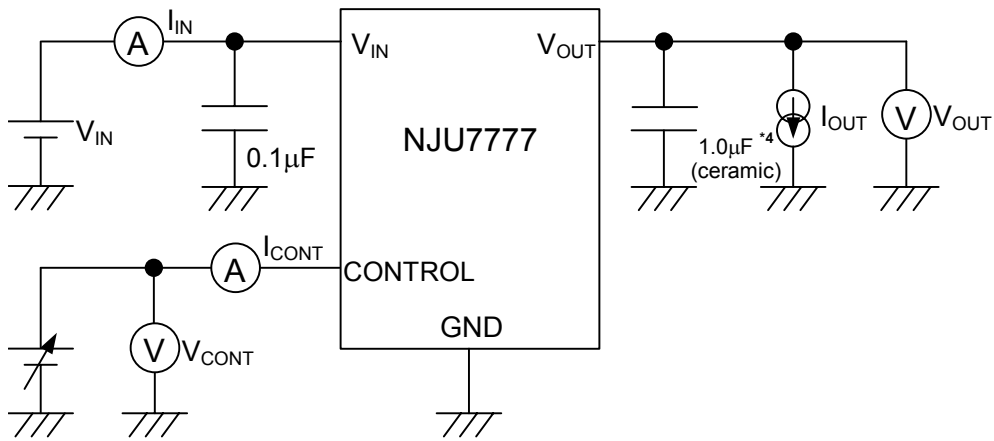
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V _o	I _o =30mA	-1.0%	-	+1.0%	V	
Input Voltage	V _{IN}		2.3	-	8	V	
Quiescent Current	I _Q	I _o =0mA, V _{CONT} =V _{IN}	-	18	35	μA	
Quiescent Current at Control OFF	I _{Q(OFF)}	V _{CONT} =0V	-	0.1	1.0	μA	
Output Current	I _o	V _o -0.1V (Vo≤2.0V Version) V _o -0.3V (Vo≥2.1V Version)	150	-	-	mA	
Short Current Limit	I _{LIM}	V _o =0V	-	40	-	mA	
Line Regulation	ΔV _o /ΔV _{IN}	V _{IN} =Vo+1V ~ Vo+6.0V (Vo<2.0V Version) V _{IN} =Vo+1V ~ 8.0V (Vo≥2.0V Version), I _o =30mA	-	-	0.20	%/V	
Load Regulation	ΔV _o /ΔI _o	I _o =0 ~ 100mA	-	-	0.03	%/mA	
Dropout Voltage(*3)	ΔV _{I-O}	I _o =100mA	2.1V≤Vo≤2.4V	-	0.17	0.22	V
			2.5V≤Vo≤2.7V	-	0.15	0.20	V
			2.8V≤Vo≤3.3V	-	0.13	0.18	V
			3.4V≤Vo≤5.0V	-	0.11	0.16	V
Ripple Rejection	RR	e _{in} =200mVrms, f=1kHz, I _o =10mA, Vo=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 =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	

(*3): Except output voltage less than 2.1V.

The above specification is a common specification for all output voltages.

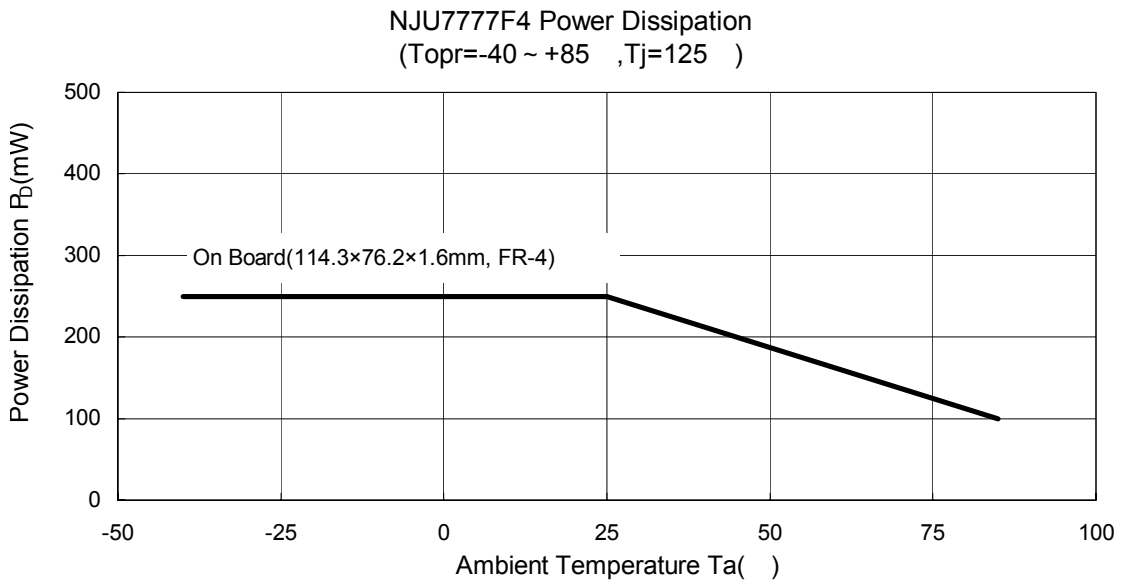
Therefore, it may be different from the individual specification for a specific output voltage.

TEST CIRCUIT



*4 $V_o \leq 2.0V$ version: $C_o = 2.2\mu F$ (ceramic)

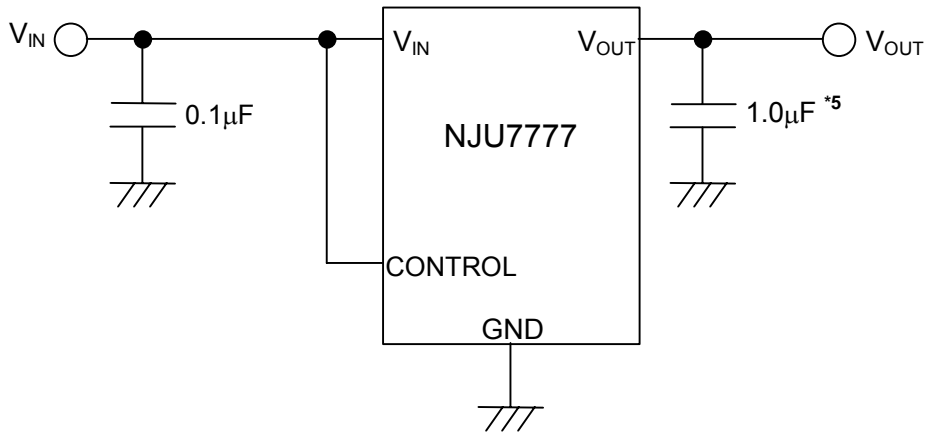
POWER DISSIPATION vs. AMBIENT TEMPERATURE



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■ TYPICAL APPLICATION

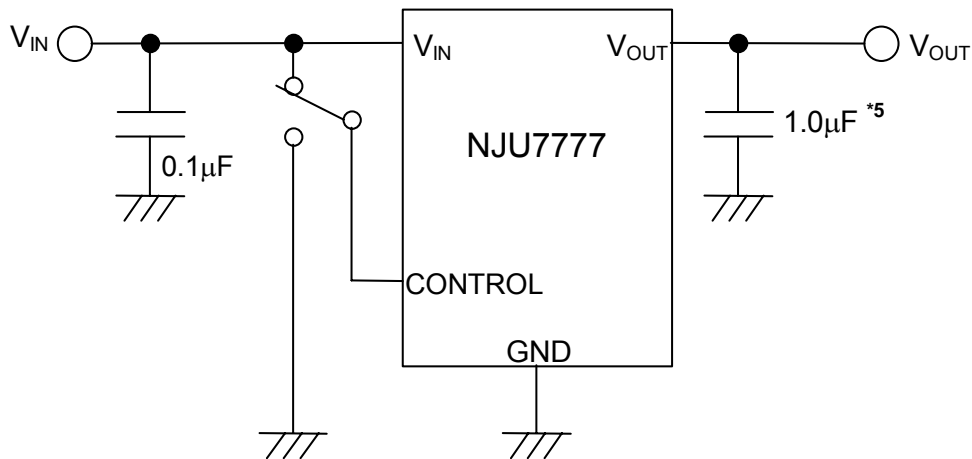
① In case that ON/OFF Control is not required:



*5 $V_o \leq 2.0\text{V}$ version: $C_o = 2.2\mu\text{F}$

Connect control terminal to V_{IN} terminal.

② In use of ON/OFF Control

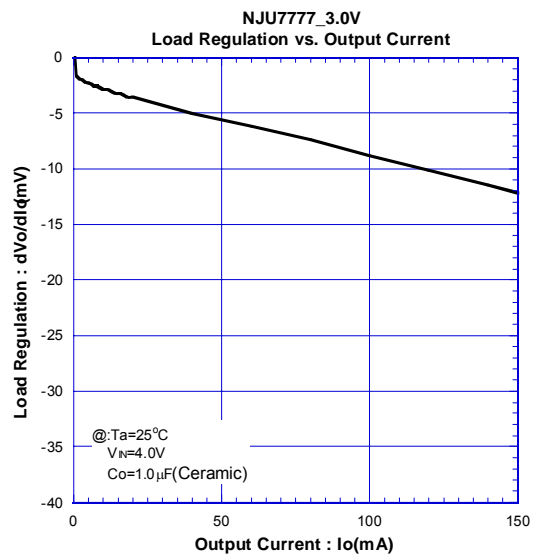
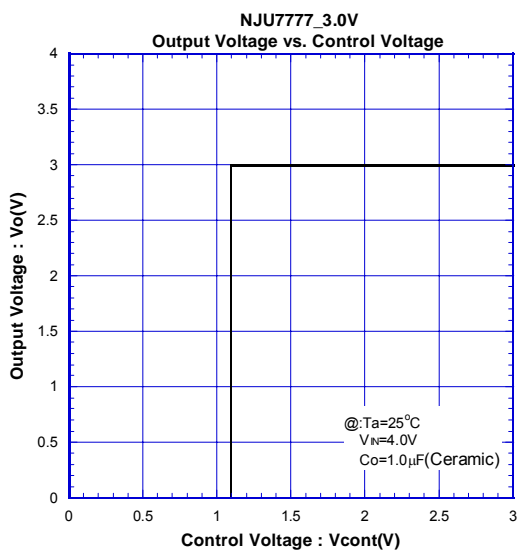
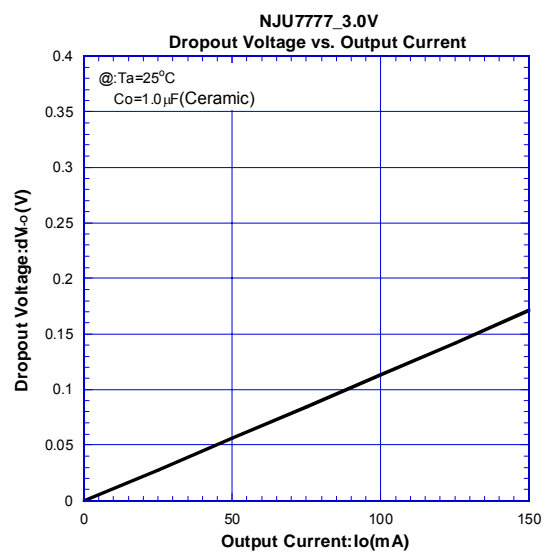
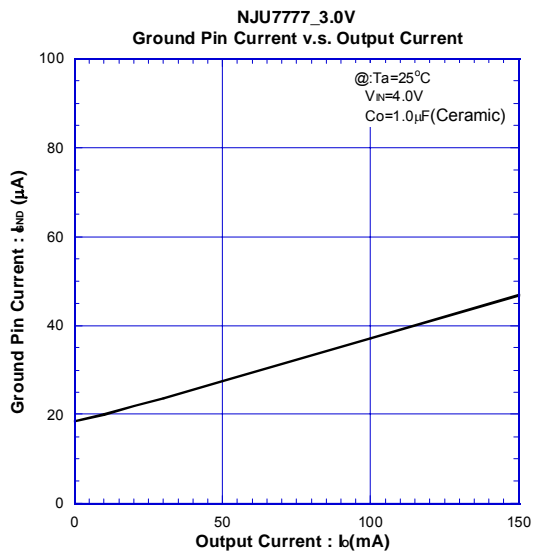
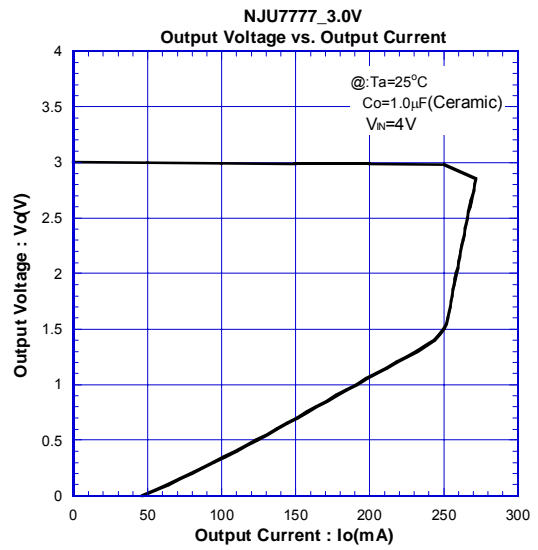
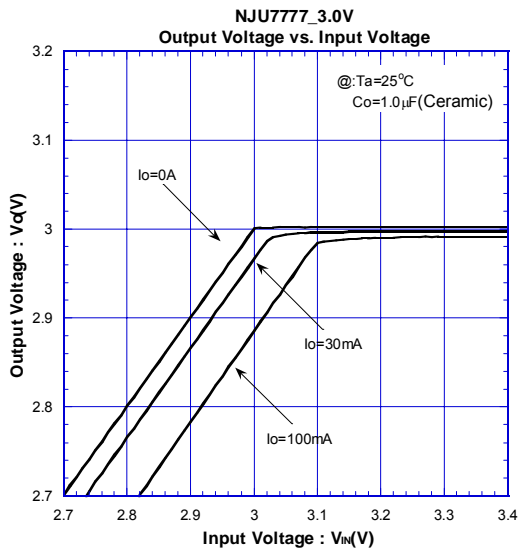


*5 $V_o \leq 2.0\text{V}$ version: $C_o = 2.2\mu\text{F}$

State of control terminal:

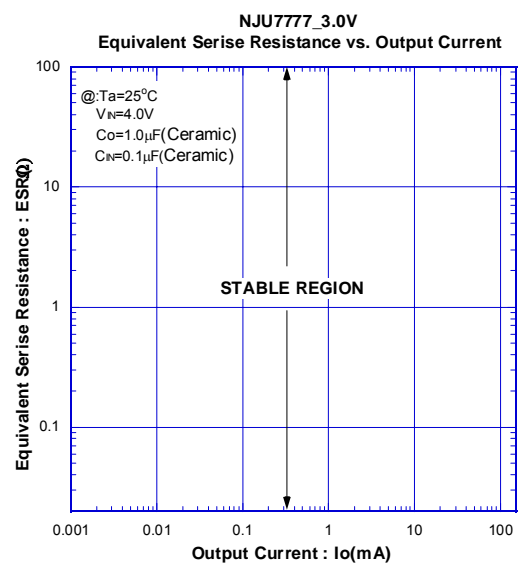
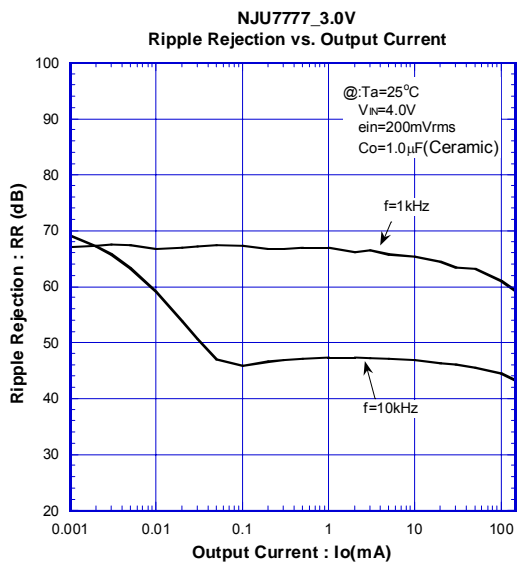
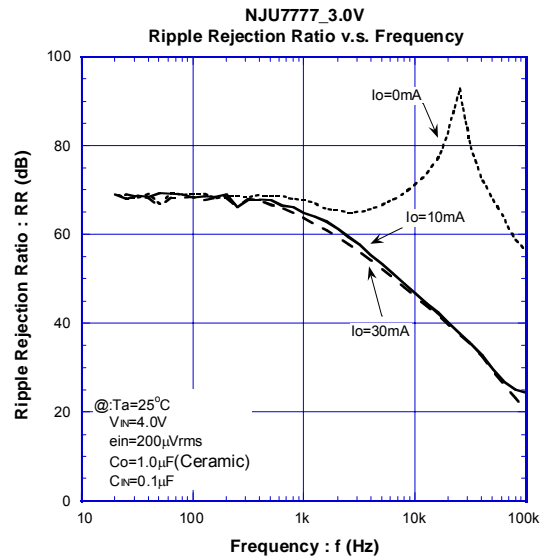
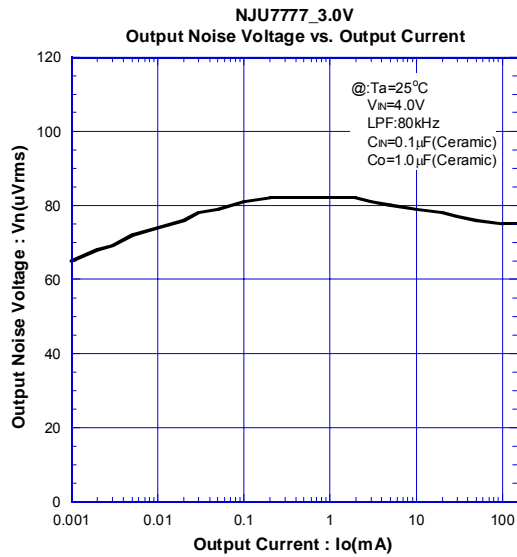
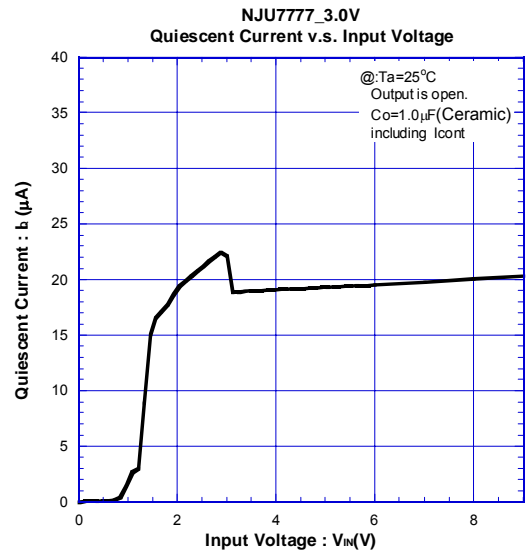
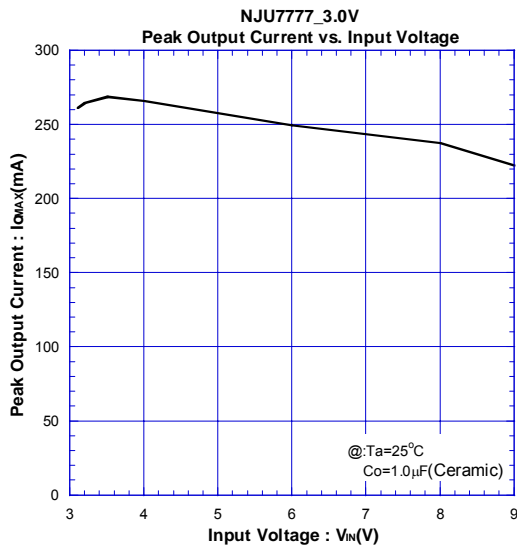
- "H" → output is enabled.
- "L" or "open" → output is disabled.

■ TYPICAL CHARACTERISTICS

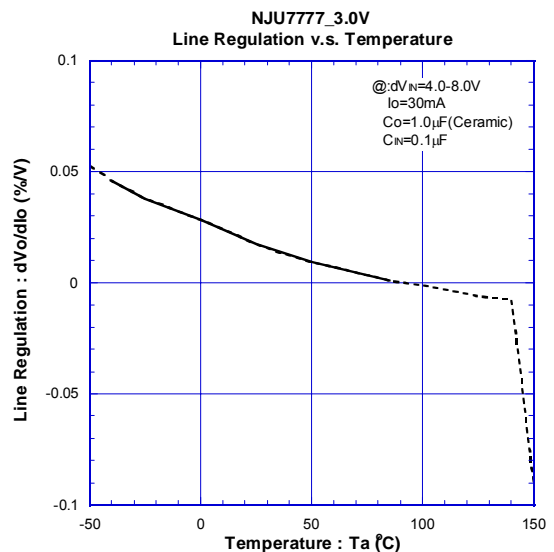
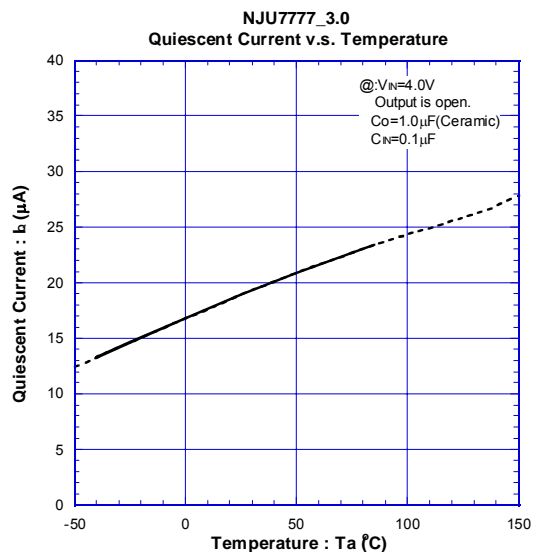
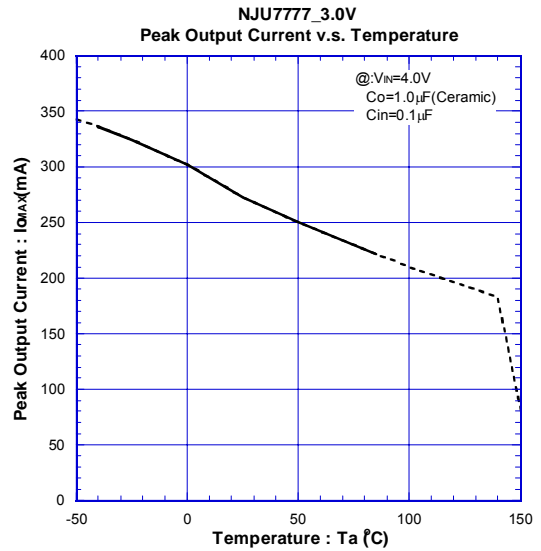
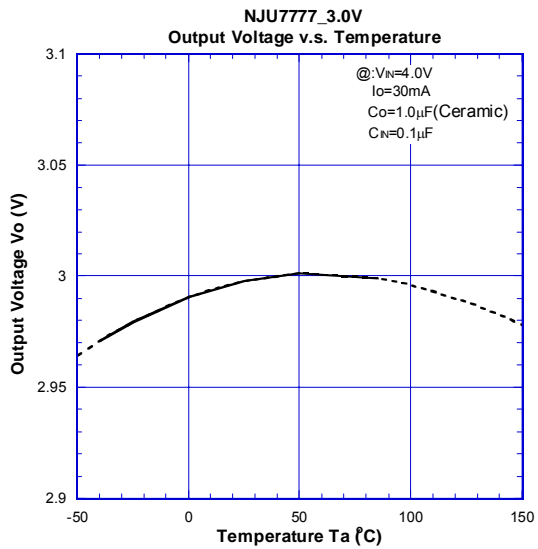
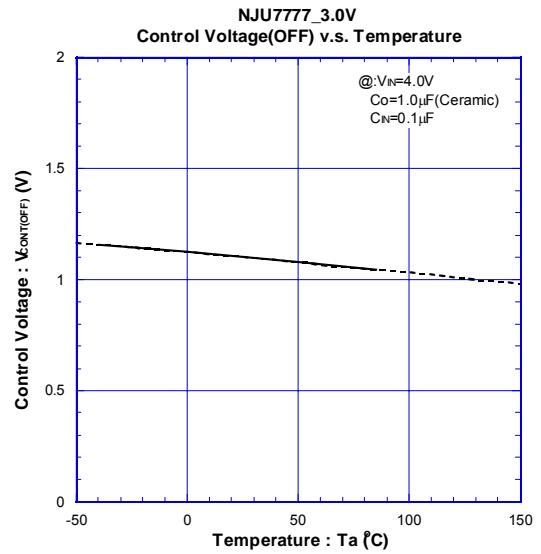
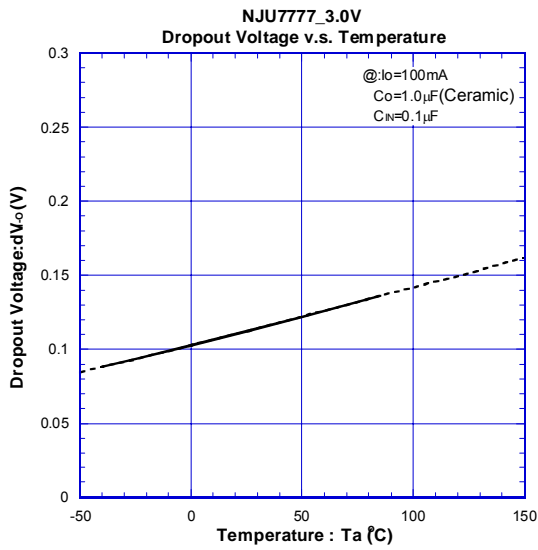


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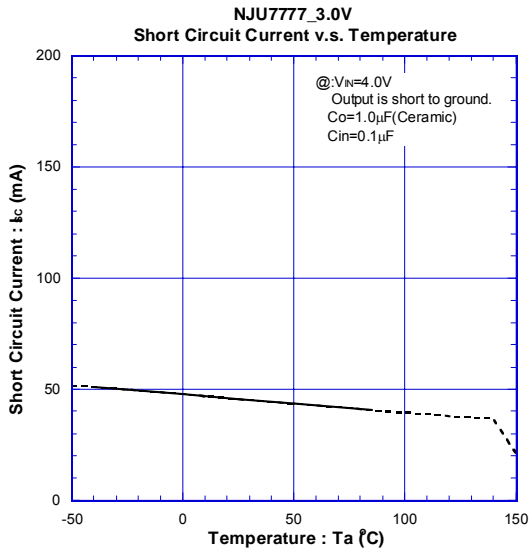
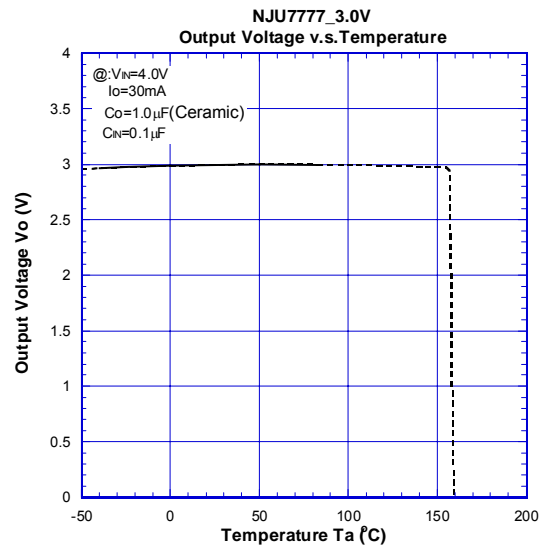
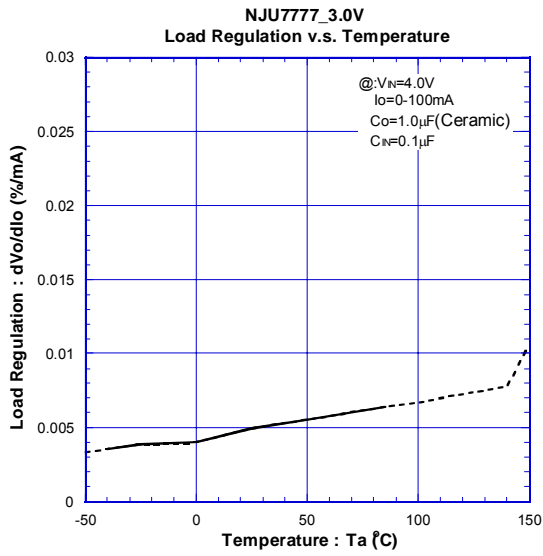
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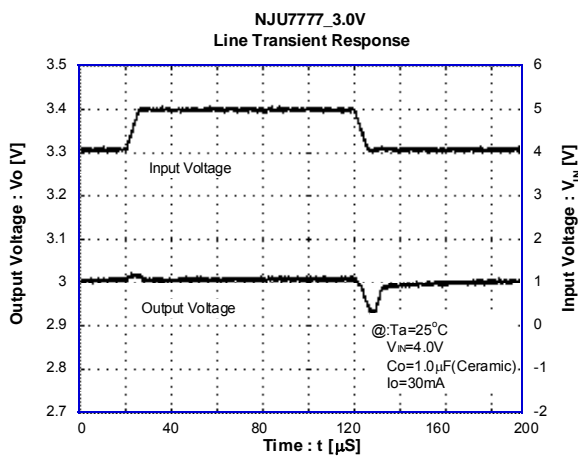
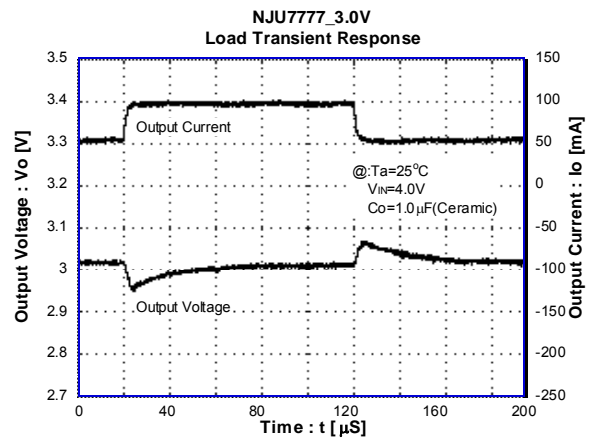
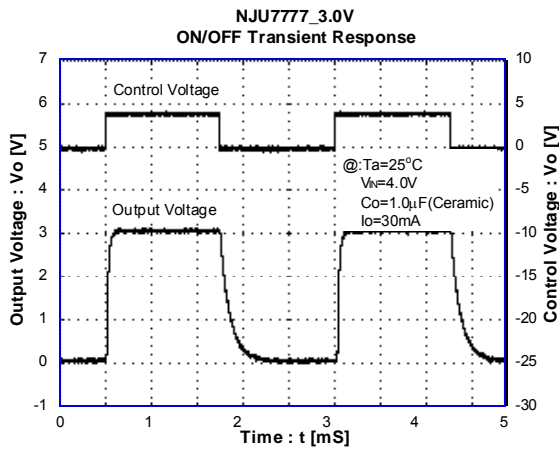
■ TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



■ TYPICAL CHARACTERISTICS



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