

## LOW DROPOUT VOLTAGE REGULATOR

### ■ GENERAL DISCRPTION

NJU7747/48 is a low dropout voltage regulator with ON/OFF control.

Advanced CMOS technology achieves ultra low quiescent current.

SC-82AB package and 0.1 $\mu$ F small output capacitor make the NJU7747/48 suitable for space conscious applications.

NJU7748 features shunt switch which improves turn off response of output voltage when ON/OFF control is used.

### ■ PACKAGE OUTLINE

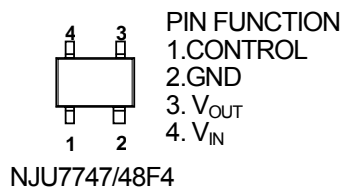


NJU7747/48F

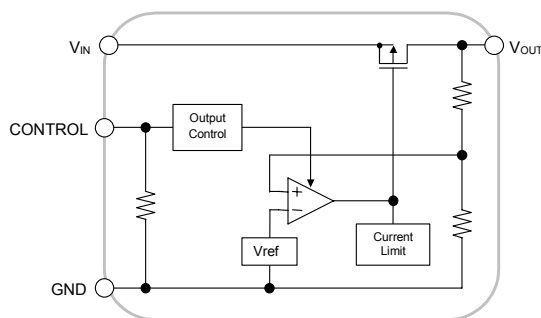
### ■ FEATURES

- Ultra Low quiescent Current  $I_q=1.5\mu\text{A typ.}(I_o=0\text{mA})$
- Output capacitor with 0.1 $\mu\text{F}$  ceramic capacitor
- Output Current  $I_o(\text{max.})=100\text{mA}$
- High Precision Output  $V_o\pm 1.0\%$
- Low Dropout Voltage 0.17V typ. ( $I_o=40\text{mA}$ ,  $V_o=3\text{V}$  version)
- With ON/OFF Control (Active High)
- With Output Shunt Switch Only NJU7748
- Internal Short Circuit Current Limit
- CMOS Technology
- Package Outline SC-82AB

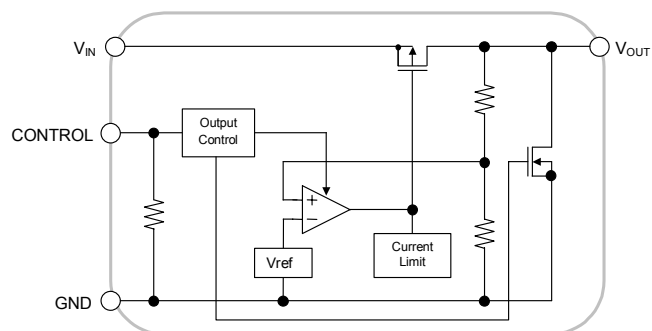
### ■ PIN CONFIGURATION



### ■ EQUIVALENT CIRCUIT



NJU7747



NJU7748

# NJU7747/48

## ■ OUTPUT VOLTAGE RANK LIST (\* : Under Development)

DEVICE NAME	V <sub>OUT</sub>	DEVICE NAME	V <sub>OUT</sub>
NJU774*F4-15	1.5V	NJU774*F4-28	2.8V
NJU774*F4-18	1.8V	NJU774*F4-03	3.0V
NJU774*F4-19	1.9V	NJU774*F4-33	3.3V
NJU774*F4-02	2.0V	(*) NJU774*F4-37	3.7V
NJU774*F4-25	2.5V	NJU774*F4-05	5.0V
NJU774*F4-27	2.7V		

## ■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V <sub>IN</sub>	+10	V
Control Voltage	V <sub>CONT</sub>	+10(*1)	V
Power Dissipation	P <sub>D</sub>	250(*2)	mW
Operating Temperature	T <sub>opr</sub>	-40 ~ +85	°C
Storage Temperature	T <sub>stg</sub>	-40 ~ +125	°C
Output Sink Current at OFF-state(*3)	I <sub>O</sub>	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): This maximum rating is applied to NJU7748.

## ■ ELECTRICAL CHARACTERISTICS (V<sub>IN</sub>=V<sub>O</sub>+1V, C<sub>IN</sub>=0.1μF, C<sub>O</sub>=0.1μF, Ta=25°C)

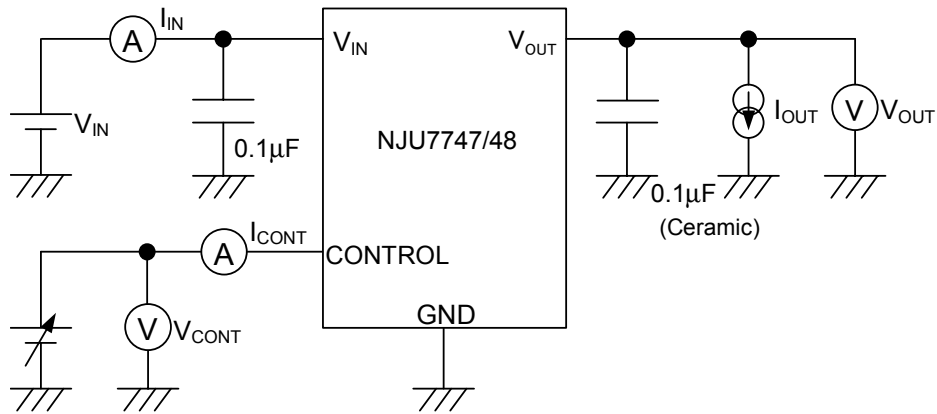
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Output Voltage	V <sub>O</sub>	I <sub>O</sub> =30mA	-1.0%	-	+1.0%	V	
Input Voltage	V <sub>IN</sub>		-	-	6	V	
Quiescent Current	I <sub>Q</sub>	I <sub>O</sub> =0mA, V <sub>CONT</sub> =V <sub>IN</sub> , Except I <sub>CONT</sub>	-	1.5	3.5	μA	
Quiescent Current at Control OFF	I <sub>Q(OFF)</sub>	V <sub>CONT</sub> =0V	-	0.1	1	μA	
Output Current	I <sub>O</sub>	V <sub>O</sub> -0.3V	100	-	-	mA	
Short Circuit Limit	I <sub>LIM</sub>	V <sub>O</sub> =0V	-	25	-	mA	
Line Regulation	ΔV <sub>O</sub> /ΔV <sub>IN</sub>	V <sub>IN</sub> =V <sub>O</sub> +1V-V <sub>O</sub> +6.0V(V <sub>O</sub> <3.0V) V <sub>IN</sub> =V <sub>O</sub> +1V-9.0V(V <sub>O</sub> ≥3.0V), I <sub>O</sub> =30mA	-	-	0.30	%/V	
Load Regulation	ΔV <sub>O</sub> /ΔV <sub>O</sub>	I <sub>O</sub> =0~100mA	-	-	0.15	%/mA	
Dropout Voltage	ΔV <sub>I-O</sub>	I <sub>O</sub> =40mA	1.5V≤V <sub>O</sub> ≤2.0V	-	0.19	0.60	V
		I <sub>O</sub> =60mA	2.0V≤V <sub>O</sub> ≤2.4V	-	0.19	0.29	V
			2.5V≤V <sub>O</sub> ≤2.7V	-	0.18	0.27	V
			2.8V≤V <sub>O</sub> ≤3.3V	-	0.17	0.26	V
			3.4V≤V <sub>O</sub> ≤5.0V	-	0.16	0.24	V
Average Temperature Coefficient of Output Voltage	ΔV <sub>O</sub> /ΔTa	Ta=0~85°C, I <sub>O</sub> =10mA	-	±100	-	ppm/°C	
Pull-down Resistance	R <sub>CONT</sub>		2	5	10	MΩ	
Control Voltage for ON-State	V <sub>CONT(ON)</sub>		1.6	-	V <sub>IN</sub>	V	
Control Voltage for OFF-State	V <sub>CONT(OFF)</sub>		0	-	0.3	V	
Pull-down Resistance at OFF-state(*4)	R <sub>O(OFF)</sub>	V <sub>CONT</sub> =0V (V <sub>O</sub> =3.0V Version)	-	300	-	Ω	

(\*4) This electrical characteristics is applied to NJU7748.

The above specification is a common specification for all voltages.

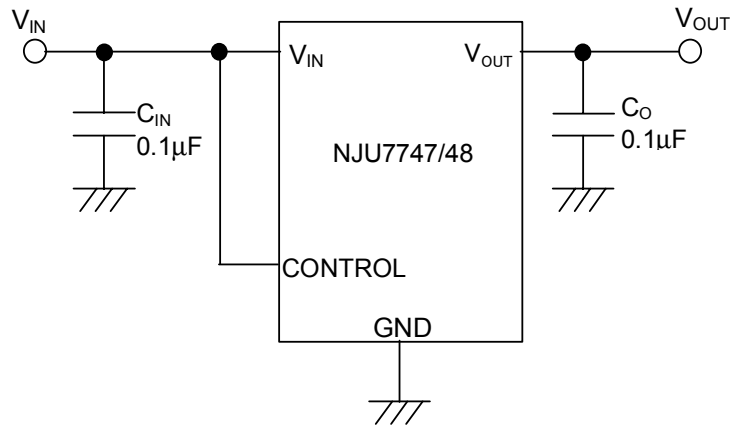
Therefore, it may be different from the individual specification for a specific output Voltage.

## ■ TEST CIRCUIT



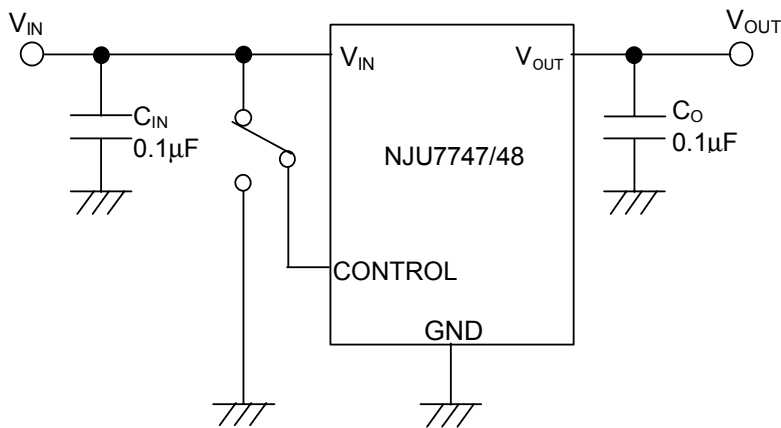
## ■ TYPICAL APPLICATION

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



Connect control terminal to  $V_{IN}$  terminal.

② In use of ON/OFF Control

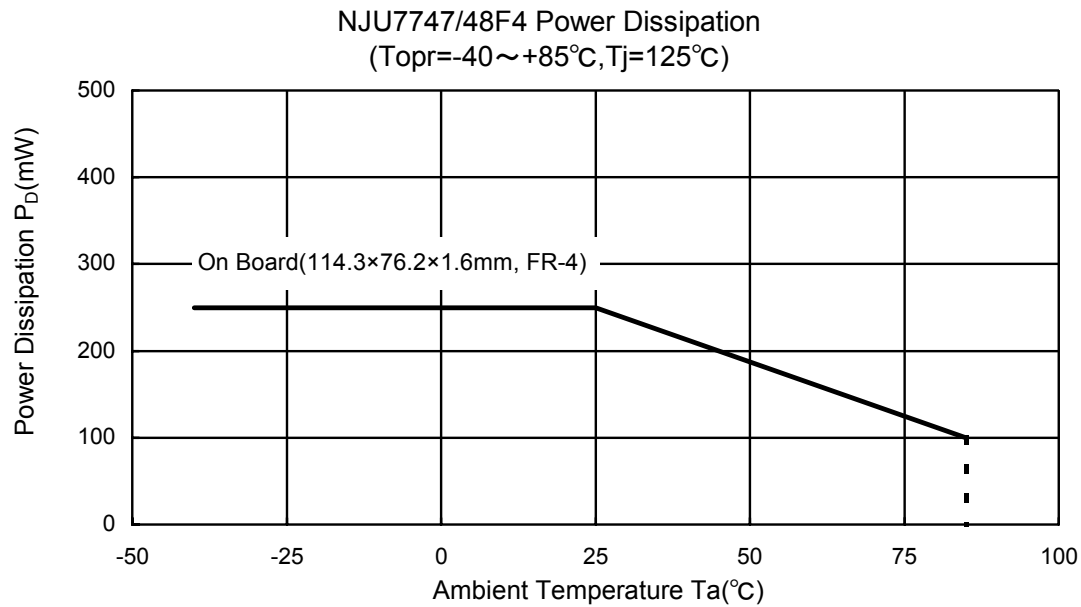


State of control terminal:

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

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## POWER DISSIPATION vs. AMBIENT TEMPERATURE



**[CAUTION]**

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