

LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DISCRIPTION

NJU7757/58 is a low dropout voltage regulator with ON/OFF control.

Advanced CMOS technology achieves low quiescent current.

SC-82AB package and 0.1uF small output capacitor make the NJU7757/58 suitable for space conscious applications.

NJU7758 features shunt switch which improves turn off response of output voltage when ON/OFF control is used.

■ PACKAGE OUTLINE

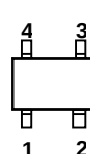


NJU7757/58F4

■ FEATURES

- Low Quiescent Current $I_q=20\mu A$ typ. ($I_o=0mA$)
- Output capacitor with 0.1uF ceramic capacitor
- Output Current $I_o(max.)=100mA$
- High Precision Output $V_o\pm 1.0\%$
- Low Dropout Voltage 0.15V typ. ($I_o=60mA$, $V_o=3V$ version)
- With ON/OFF Control (Active High)
- With Output Shunt Switch Only NJU7758
- Internal Short Circuit Current Limit
- CMOS Technology
- Package Outline SC-82AB

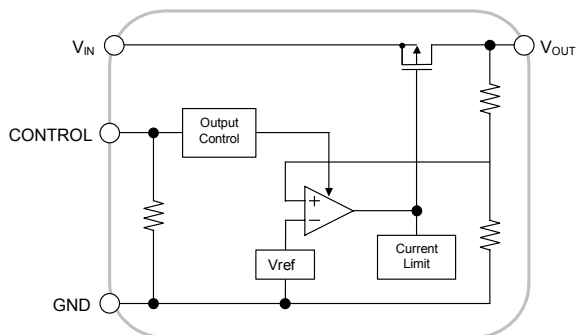
■ PIN CONFIGURATION



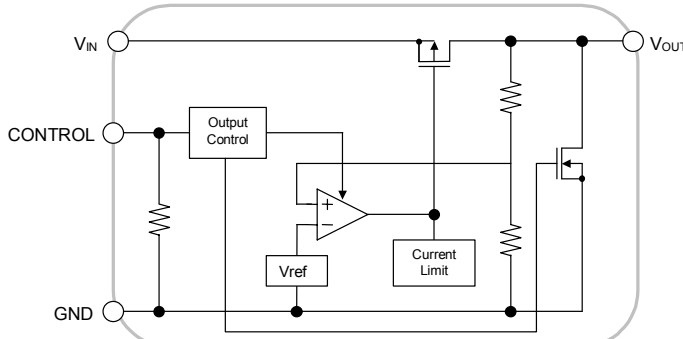
- PIN FUNCTION
- 1. CONTROL
 - 2. GND
 - 3. V_{OUT}
 - 4. V_{IN}

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■ EQUIVALENT CIRCUIT



NJU7757



NJU7758

■ OUTPUT VOLTAGE RANK LIST

DEVICE NAME	V_{OUT}	DEVICE NAME	V_{OUT}
NJU775*F4-15	1.5V	NJU775*F4-28	2.8V
NJU775*F4-18	1.8V	NJU775*F4-03	3.0V
NJU775*F4-21	2.1V	NJU775*F4-32	3.2V
NJU775*F4-22	2.2V	NJU775*F4-33	3.3V
NJU775*F4-24	2.4V	NJU775*F4-05	5.0V
NJU775*F4-25	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	250(*2)	mW
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +125	°C
Output Sink Current at OFF-state(*3)	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): This maximum rating is applied to NJU7758.

■ Operating voltage

$V_{IN}=+2.3 \sim +9V$ (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}		-	-	6	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	$\Delta V_O/\Delta V_{IN}$	$V_{IN}=V_O+1V \sim V_O+6V$ ($V_O<3.0V$) $V_{IN}=V_O+1V \sim 9.0V$ ($V_O\geq 3.0V$), $I_O=30mA$	-	-	0.20	%/V
Load Regulation	$\Delta V_O/\Delta I_O$	$I_O=0 \sim 100mA$	-	-	0.03	%/mA
Dropout Voltage(*5)	ΔV_{I-O}	$I_O=60mA$	$2.1V \leq V_O \leq 2.4V$	-	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	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_O=10mA$, $V_O=3V$ 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	$V_{CONT(OFF)}$		-	-	0.3	V
Pull-down Resistance at OFF-state(*4)	$R_{O(OFF)}$	$V_{CONT}=0V$, $V_O=3.0V$ Version	-	150	-	Ω

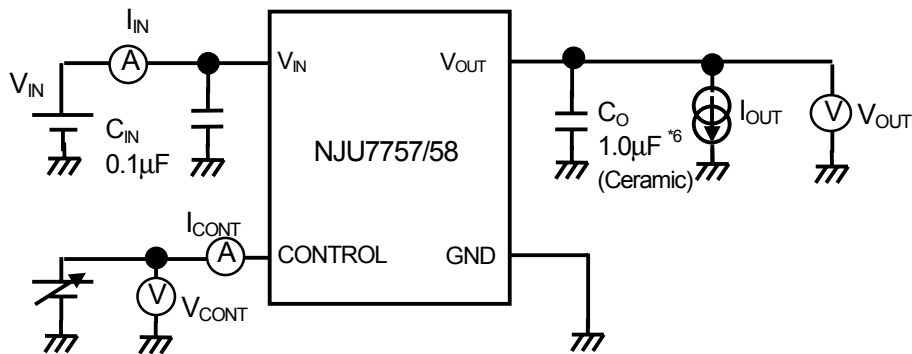
(*4) This electrical characteristics is applied to NJU7758.

(*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.

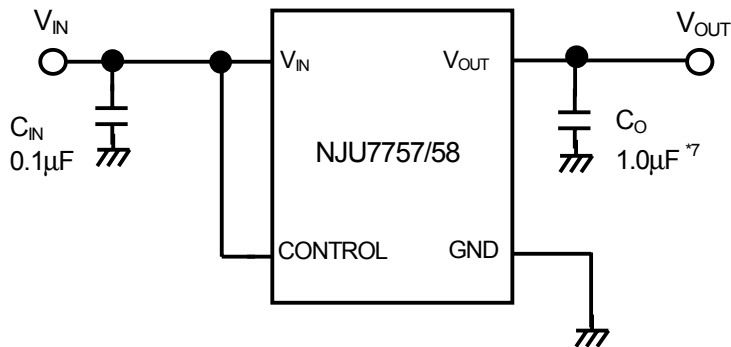
■ TEST CIRCUIT



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

■ TYPICAL APPLICATION

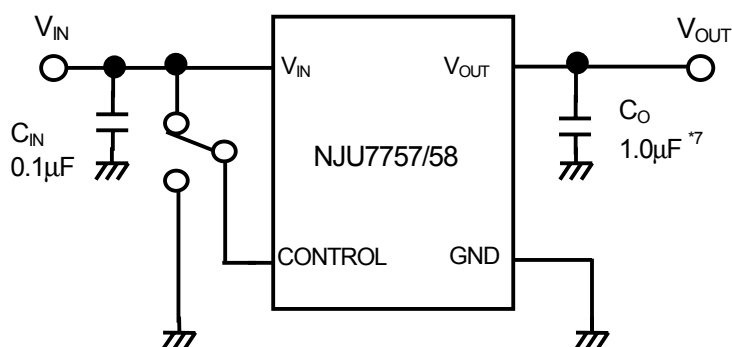
① In case that ON/OFF Control is not required:



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

Connect control terminal to V_{IN} terminal.

② In use of ON/OFF Control

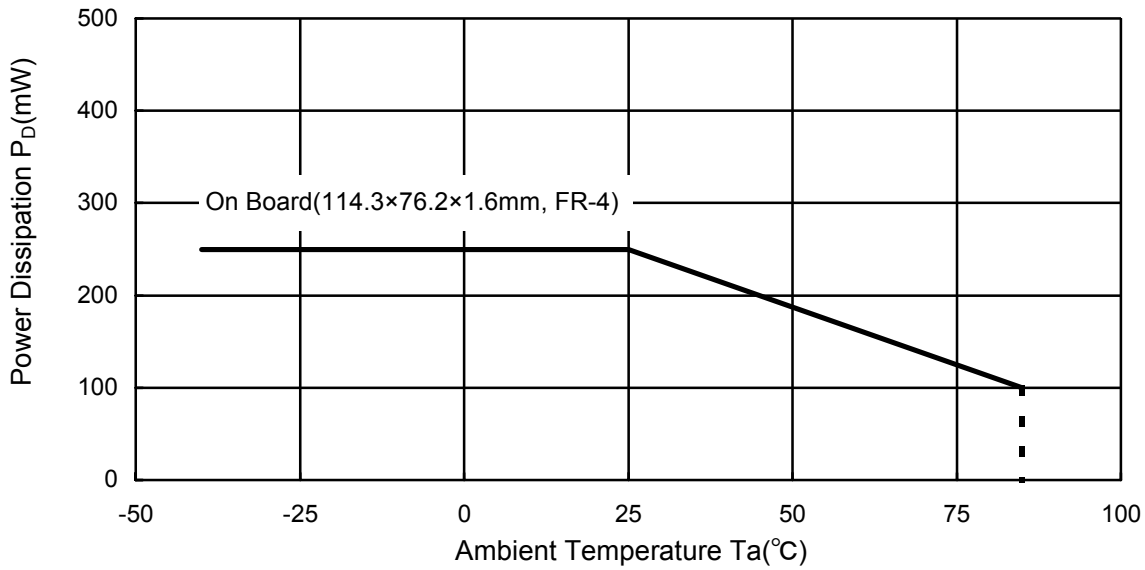


*7 : $V_O \leq 2.0V$ version, $C_O = 2.2\mu F$

State of control terminal:

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

NJU7757/58F4 Power Dissipation (Topr=-40~+85°C,Tj=125°C)



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