Low Dropout Voltage Regulator with Reset

■ GENERAL DISCRIPTION

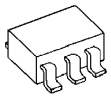
The NJU7276 is a low drop out voltage regulator with input-monitor reset function with internal fixed delay.

Advanced CMOS technology achieves ultra low current consumption and high accuracy.

It delivers up to 5V/100mA output power with the maximum input voltage of 9V.

The NJU7276 suitable for MPU applications.

■ PACKAGE OUTLINE

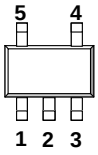


NJU7276F

■ FEATURES

- Ultra Low Quiescent Current Iq=3.5μA typ. (Io=0mA)
- Output Voltage Accuracy Vo = ±1.0%
- Reset Voltage Accuracy V_{RT} = ±1.0%
- Input Voltage Monitor type
- Delay Time(Built-in Fixed Type) 50ms /100ms /200ms
- Output Current Io(max.)=100mA
- Output capacitor with 0.1uF ceramic capacitor
- Nch Open Drain Output
- Internal Short Circuit Current Limit
- CMOS Technology
- Package Outline SOT-23-5

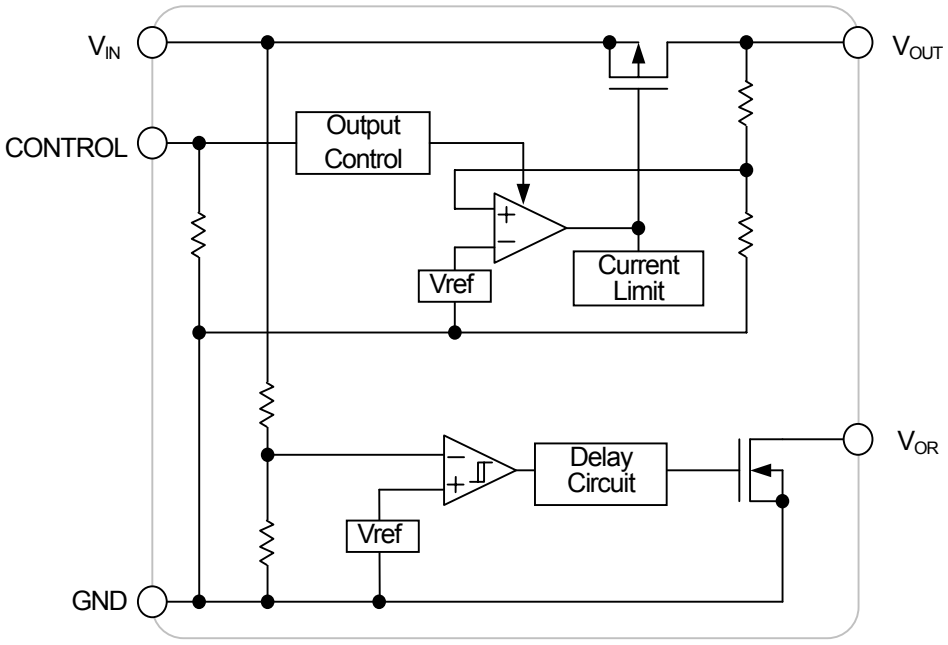
■ PIN CONFIGURATION



1.V_{IN}
2.GND
3.CONT
4.V_{OR}
5.V_{OUT}

NJU7276F

■ EQUIVALENT CIRCUIT



■ OUTPUT VOLTAGE/ DETECTION VOLTAGE

Device Name	Output	Detection	Delay Time
NJU7276F1502A2	1.5V	2.0V	100ms
NJU7276F3342A2	3.3V	4.2V	100ms
NJU7276F0555A2	5.0V	5.5V	100ms

Output voltage options available : 1.5 ~ 5.0V (0.1V step)
Detection voltage options available : 2.0 ~ 6.0V (0.1V step)

■ ABSOLUTE MAXIMUM RATINGS (Ta=25˚C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	+11	V
Control Voltage	V_{CONT}	+11	V
V_{OR} Pin Output Voltage	V_{OR}	GND -0.3 ~ +11	V
V_{OR} Pin Output Current	I_{OR}	50	mA
Power Dissipation	P_D	200(*1) 350(*2)	mW
Operating Temperature Range	Topr	-40 ~ +85	˚C
Storage Temperature	Tstg	-40 ~ +125	˚C

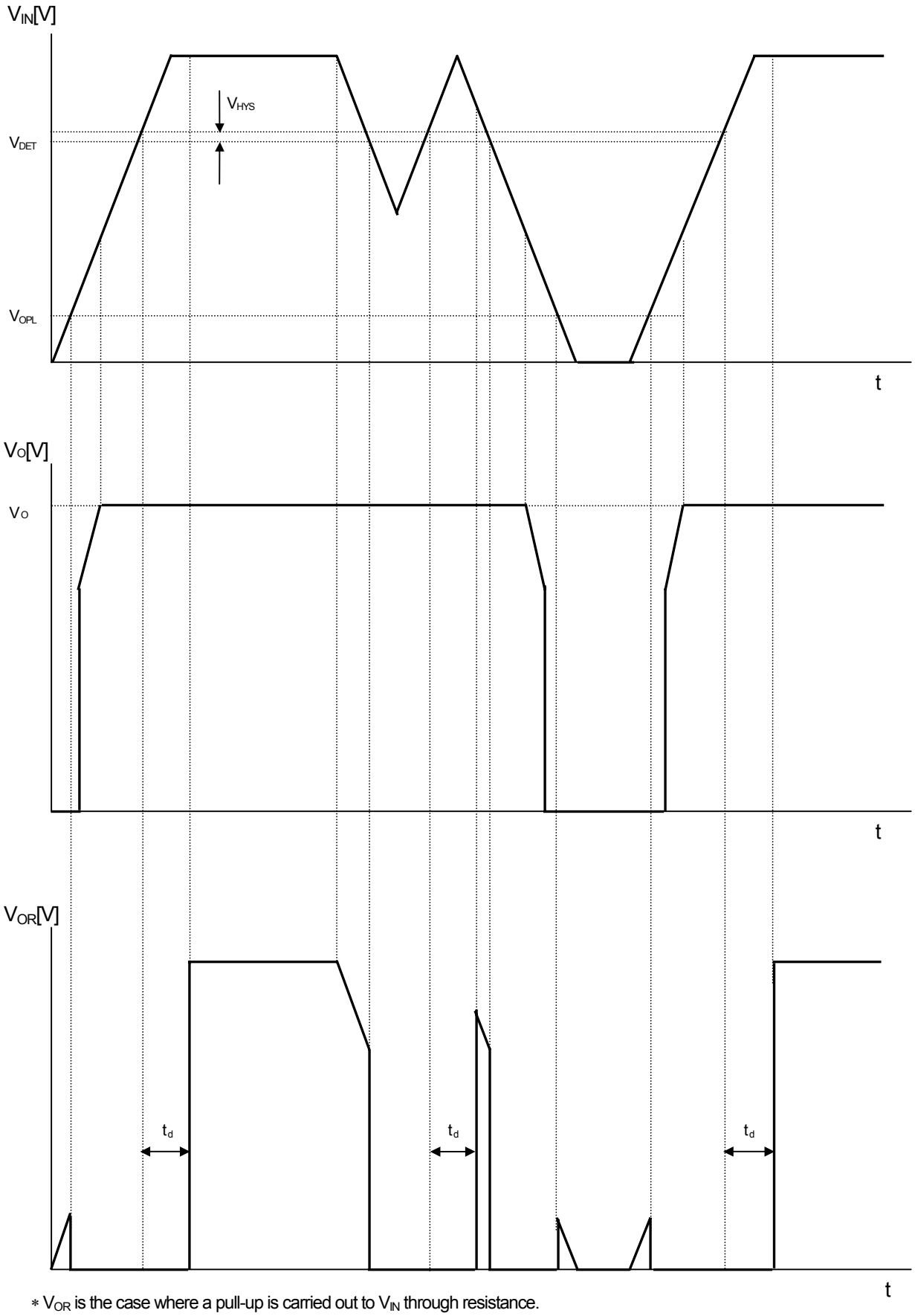
(*1): Device itself
(*2): Mounted on glass epoxy board based on EIA/JEDEC. (114.3x76.2x1.6mm: 2Layers)

■ ELECTRICAL CHARACTERISTICS (V_{IN}=Vo+1V, C_{IN}=0.1µF, C_O=0.1µF, Ta=25˚C)

PARAMETER	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
General Characteristics							
Quiescent Current	I_Q	V_{IN}=Vo+2V, V_{CONT}=V_{IN}, I_O=0mA		-	3.5	8.2	µA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	V_{IN}=Vo+2V, V_{CONT}=0V, I_O=0mA		-	1.3	2.2	µA
Regulator Block							
Output Voltage	V_O	I_O=30mA		-1.0%	-	+1.0%	V
Output Current	I_O	V_O - 0.3V		100	-	-	mA
Line Regulation	$\Delta V_O/\Delta V_{IN}$	V_{IN}=V_O+1V ~ V_O+6V(V_O<3.0V) V_{IN}=V_O+1V ~ 9V(V_O≥3.0V) I_O=30mA		-	-	0.3	%/V
Load Regulation	$\Delta V_O/\Delta I_O$	I_O=0 ~ 100mA		-	-	0.15	%/mA
Output Voltage Temperature Coefficient	$\Delta V_O/\Delta Ta$	Ta=0 ~ 85˚C, I_O=10mA		-	±100	-	ppm/˚C
Control Voltage for ON-State	$V_{CONT(ON)}$			1.6	-	V_{IN}	V
Control Voltage for OFF-State	$V_{CONT(OFF)}$			0	-	0.3	V
Pull-down Resistance	R_{CONT}			2	5	10	MΩ
Short Circuit Limit	I_{LIM}	V_O=0V		-	25	-	mA
Input Voltage	V_{IN}			-	-	9	V
Dropout Voltage	ΔV_{I-O}	I_O=40mA	1.5V≤V_O≤2.0V	-	0.19	0.60	V
		I_O=60mA	2.1V≤V_O≤2.4V	-	0.19	0.29	V
			2.5V≤V_O≤2.7V	-	0.18	0.27	V
			2.8V≤V_O≤3.3V	-	0.17	0.26	V
			3.4V≤V_O≤5.0V	-	0.16	0.24	V
			5.1V≤V_O≤6.0V	-	0.15	0.22	V
Reset Block							
Detection Voltage	V_{DET}			-1.0%	-	+1.0%	V
Hysteresis Voltage	V_{HYS}			70	90	130	mV
V_{OR} Pin Output Current	I_{OR}	Nch, V_{DS}=0.5V, V_{CONT}=0V	V_{IN}=1.2V	0.75	2.00	-	mA
			V_{IN}=2.4V (V_{DET}≥2.7V)	4.50	7.00	-	mA
Output Leak Current	I_{LEAK}	V_{IN}=V_{OR}=V_{CONT}=9V		-	-	0.1	µA
Detection Voltage Temperature Coefficient	$\Delta V_{DET}/\Delta Ta$	Ta=0 ~ 85˚C		-	±100	-	ppm/˚C
Delay Time	td	V_{IN}= V_{DET} +1V	NJU7276xxxxx1	42.5	50.0	57.5	ms
			NJU7276xxxxx2	85	100	115	ms
			NJU7276xxxxx3	170	200	230	ms
Operating Voltage(*3)	V_{OPL}	R_L=100kΩ		-	-	0.8	V

(*3): The value condition that V_{OR} become 10% or less of the input voltage(V_{IN}).

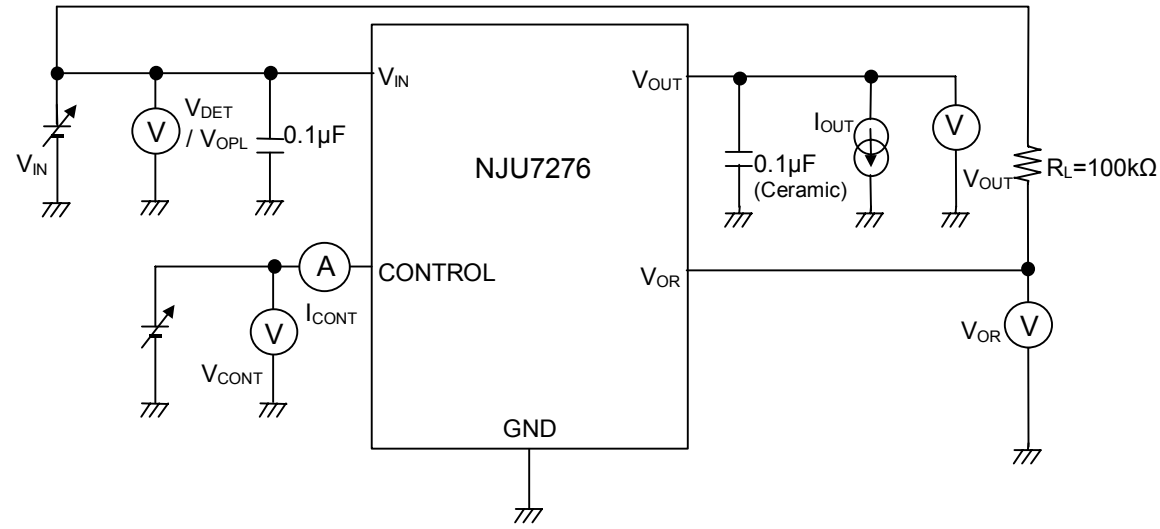
■ TIMING CHART



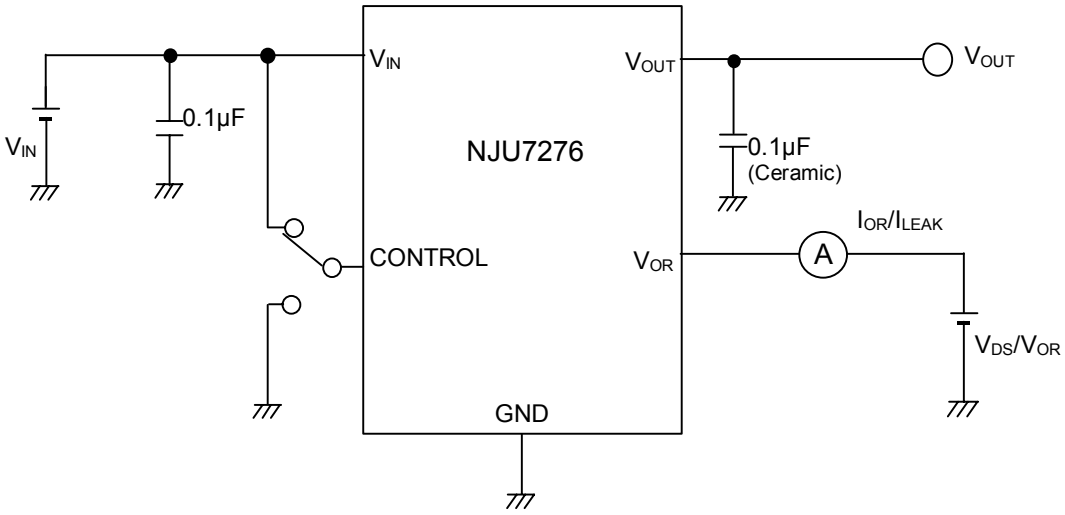
∗ V_{OR} is the case where a pull-up is carried out to V_{IN} through resistance.

■ TEST CIRCUIT

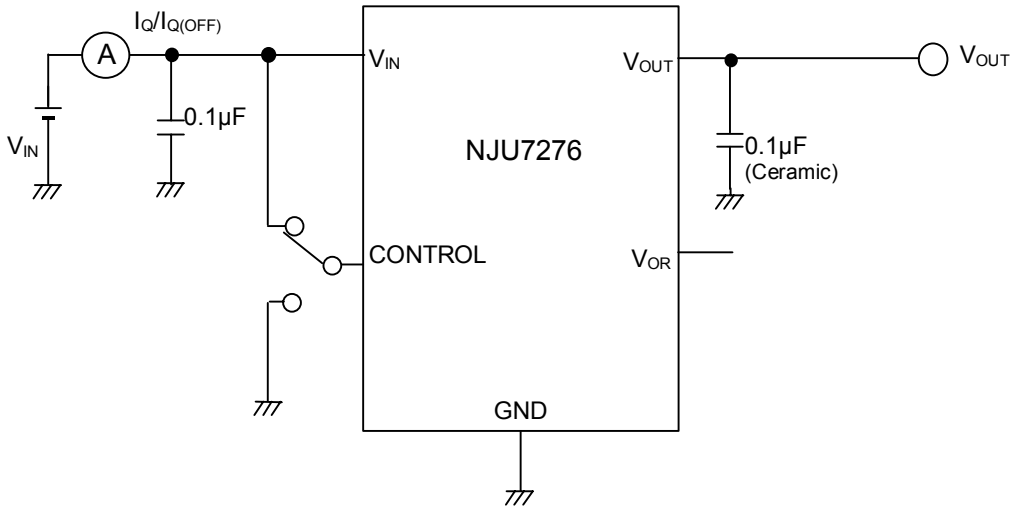
① COMMON TEST CIRCUIT



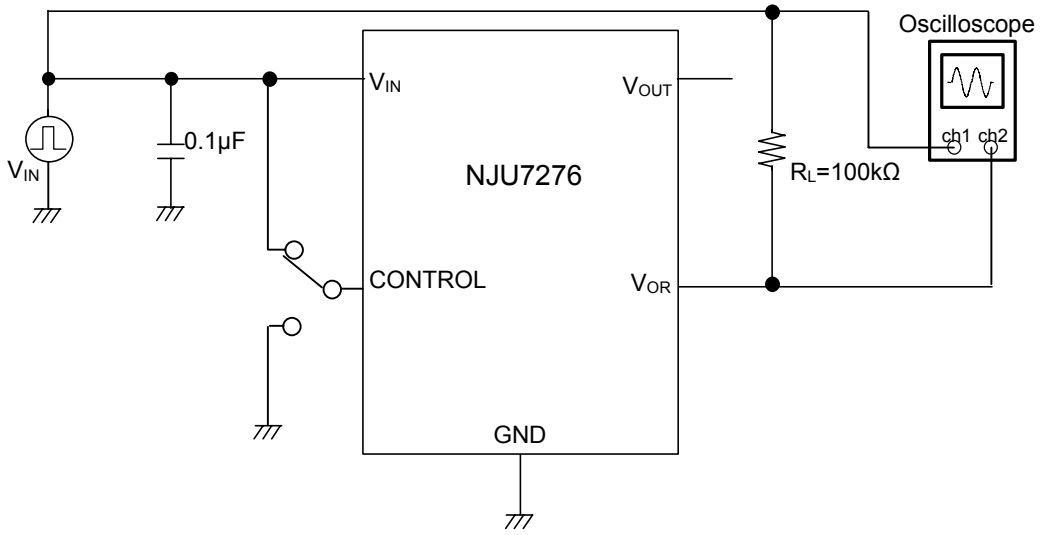
② OUTPUT CURRENT/OUTPUT LEAK CURRENT TEST CIRCUIT



③ QUIESCENT CURRENT TEST CIRCUIT

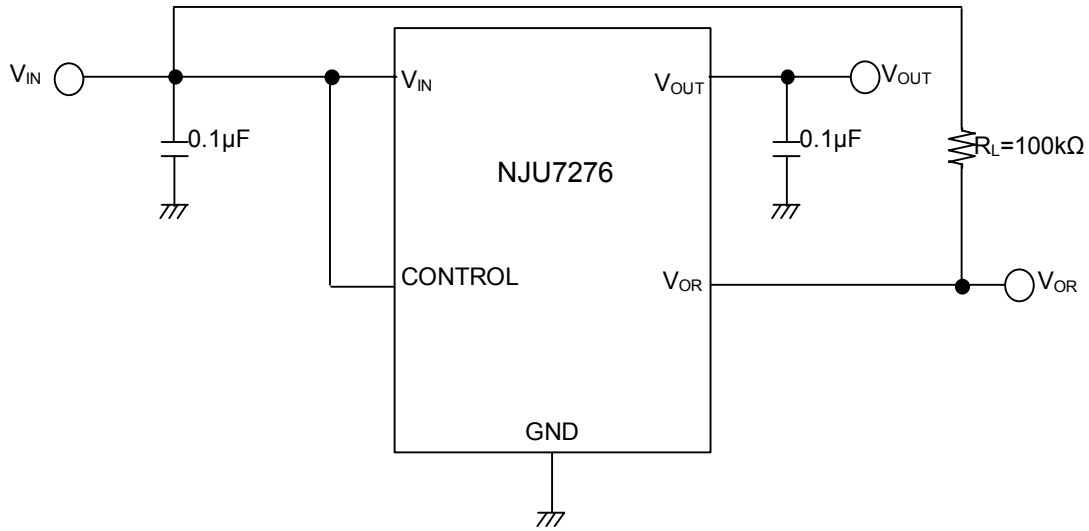


④ DELAY TIME TEST CIRCUIT



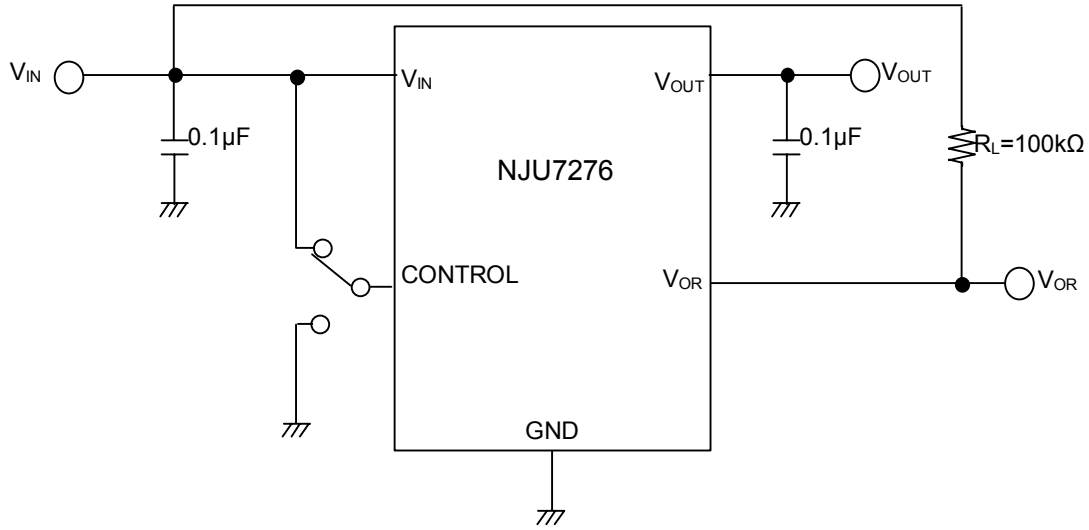
■ TYPICAL APPLICATION

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.