

VOLTAGE DETECTOR

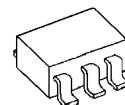
■ GENERAL DESCRIPTION

The NJU7700/01 is a high precision and low quiescent current voltage detector.

The detection voltage is internally fixed with an accuracy of 1.0%.

NJU7700 is Nch. Open Drain and NJU7701 is a C-MOS output type.

■ PACKAGE OUTLINE



NJU7700/01F

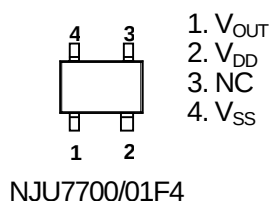
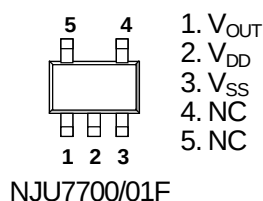


NJU7700/01F4
(Under Development)

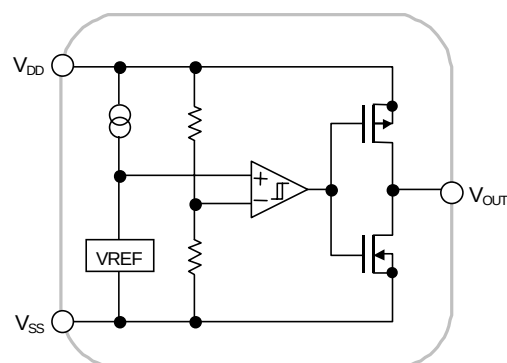
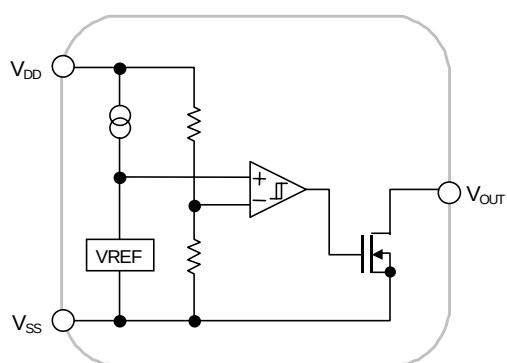
■ FEATURES

- High Precision Detection Voltage $\pm 1.0\%$
- Low Quiescent Current $0.8\mu\text{A typ. (VDET=3V version)}$
- Detection Voltage Range $1.3\sim 6.0\text{V}(0.1\text{V Step})$
- Output Configuration
NJU7700: Nch. Open Drain type
NJU7701: C-MOS Output type
- CMOS Technology
- Package Outline
SOT-23-5 : NJU7700/01F
SC-82AB : NJU7700/01F4

■ PIN CONFIGURATION



■ EQUIVALENT CIRCUIT



NJU7700/01

■ DETECTION VOLTAGE RANK LIST

Device Name	V _{DET}	Device Name	V _{DET}	Device Name	V _{DET}	Device Name	V _{DET}
NJU7700/01F13	1.3V	NJU7700/01F23	2.3V	NJU7700/01F34	3.4V	NJU7700/01F44	4.4V
NJU7700/01F15	1.5V	NJU7700/01F25	2.5V	NJU7700/01F35	3.5V	NJU7700/01F45	4.5V
NJU7700/01F17	1.7V	NJU7700/01F27	2.7V	NJU7700/01F36	3.6V	NJU7700/01F47	4.7V
NJU7700/01F19	1.9V	NJU7700/01F28	2.8V	NJU7700/01F38	3.8V	NJU7700/01F55	5.5V
NJU7700/01F02	2.0V	NJU7700/01F03	3.0V	NJU7700/01F04	4.0V	NJU7700/01F06	6.0V
NJU7700/01F21	2.1V	NJU7700/01F31	3.1V	NJU7700/01F42	4.2V		
NJU7700/01F22	2.2V	NJU7700/01F33	3.3V	NJU7700/01F43	4.3V		

Device Name	V _{DET}
NJU7700/01F4-13	1.3V
NJU7700/01F4-27	2.7V
NJU7700/01F4-42	4.2V
NJU7700/01F4-45	4.5V
NJU7700/01F4-06	6.0V

F4 : Under Development

■ NJU7700

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS		UNIT
Input Voltage	V _{DD}	+10		V
Output Voltage	V _{OUT}	V _{SS} -0.3~+10		V
Output Current	I _{OUT}	50		mA
Power Dissipation	P _D	F : SOT-23-5	200	mW
		F4 : SC-82AB	TBD	
Operating Temperature	Topr	-40 ~ +85		°C
Storage Temperature	Tstg	-40 ~ +125		°C

■ ELECTRICAL CHARACTERISTICS

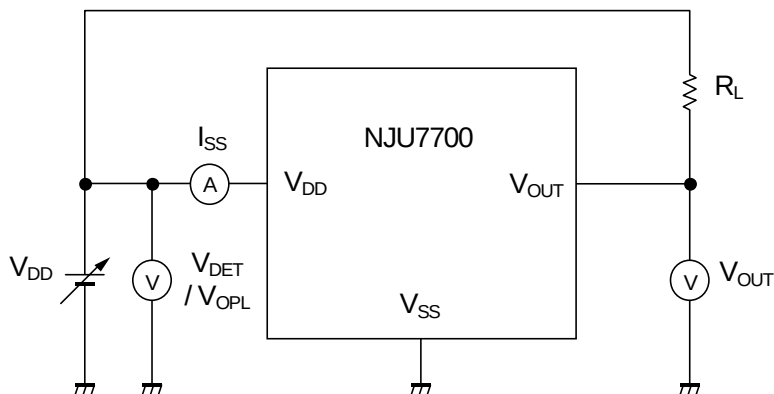
(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Detection Voltage	V _{DET}			-1.0%	—	+1.0%	V
Hysteresis Voltage	V _{HYS}			V _{DET} ×0.03	V _{DET} ×0.05	V _{DET} ×0.08	V
Quiescent Current	I _{SS}	V _{DD} =V _{DET} +1V	V _{DET} =1.3V~1.7V Version	—	0.5	1.0	μA
			V _{DET} =1.8V~6.0V Version	—	0.8	1.6	μA
Output Current	I _{OUT}	Nch, V _{DS} =0.5V	V _{DD} =1.2V	0.75	2.0	—	mA
			V _{DD} =2.4V (≥2.7V Version)	4.5	7.0	—	mA
Output Leak Current	I _{LEAK}	V _{DD} =V _{OUT} =9V		—	—	0.1	μA
Detection Voltage Temperature Coefficient	Δ V _{DET} / ΔTa	Ta=0 ~ +85°C		—	±100	—	ppm/°C
Operating Voltage (*note 1)	V _{DD}	R _L =100kΩ		0.8	—	9	V

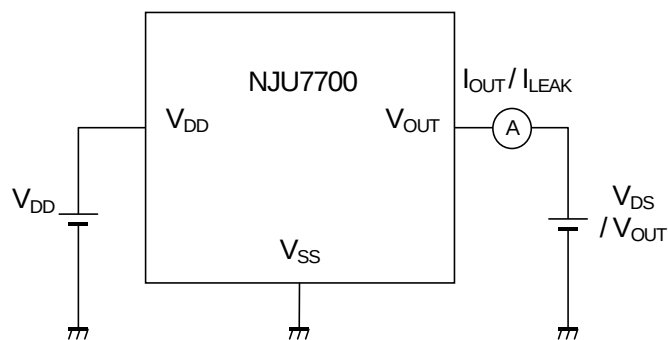
(*note 1): The minimum Operating Voltage(V_{OPL}) indicates the same value of the output voltage(V_{OUT}) on condition that V_{OUT} becomes 10% or less of the input voltage(V_{DD}).

■ TEST CIRCUIT

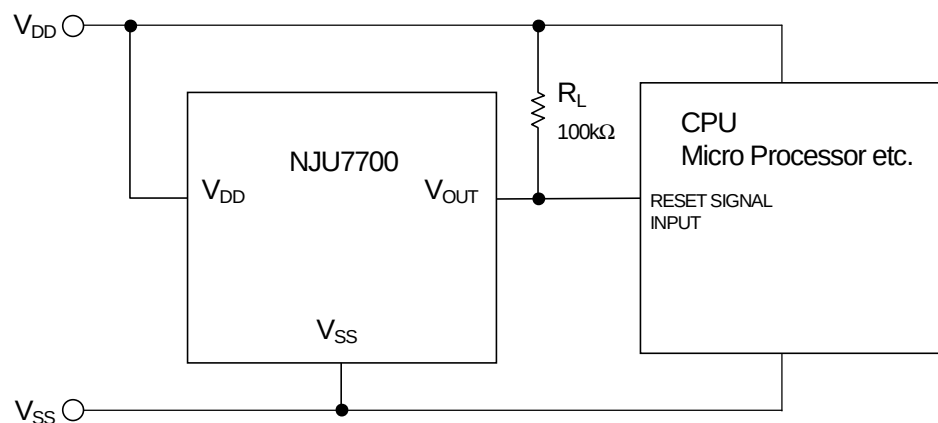
① COMMON TEST CIRCUIT



② OUTPUT CURRENT/OUTPUT LEAK CURRENT TEST CIRCUIT



■ TYPICAL APPLICATION



NJU7700/01

■ NJU7701

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS		UNIT
Input Voltage	V_{DD}	+10		V
Output Voltage	V_{OUT}	$V_{SS}-0.3 \sim V_{DD}+0.3$		V
Output Current	I_{OUT}	50		mA
Power Dissipation	P_D	F : SOT-23-5	200	mW
		F4 : SC-82AB	TBD	
Operating Temperature	Topr	-40 ~ +85		°C
Storage Temperature	Tstg	-40 ~ +125		°C

■ ELECTRICAL CHARACTERISTICS

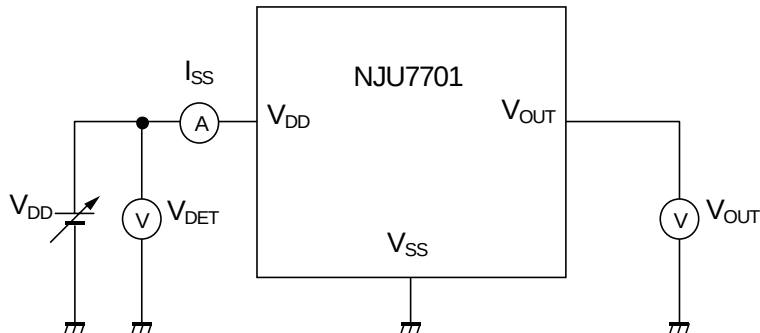
(Ta=25°C)

PARAMETER	SYMBOL	TEST CONDITION		MIN.	TYP.	MAX.	UNIT
Detection Voltage	V_{DET}			-1.0%	—	+1.0%	V
Hysteresis Voltage	V_{HYS}			$V_{DET} \times 0.03$	$V_{DET} \times 0.05$	$V_{DET} \times 0.08$	V
Quiescent Current	I_{SS}	$V_{DD}=V_{DET}+1V$	$V_{DET}=1.3V \sim 1.7V$ Version	—	0.5	1.0	μA
			$V_{DET}=1.8V \sim 6.0V$ Version	—	0.8	1.6	μA
Output Current	I_{OUT}	Nch, $V_{DS}=0.5V$	$V_{DD}=1.2V$	0.75	2.0	—	mA
			$V_{DD}=2.4V$ ($\geq 2.7V$ Version)	4.5	7.0	—	mA
		Pch, $V_{DS}=0.5V$	$V_{DD}=4.8V$ ($\leq 3.9V$ Version)	2.0	3.5	—	mA
			$V_{DD}=6.0V$ (4.0V~5.6V Version)	2.5	4.0	—	mA
			$V_{DD}=8.4V$ ($\geq 5.7V$ Version)	3.0	5.0	—	mA
Detection Voltage Temperature Coefficient	$\Delta V_{DET} / \Delta Ta$	Ta=0 ~ +85°C		—	± 100	—	ppm/°C
Operating Voltage (*note 1)	V_{DD}	$R_L=100k\Omega$		0.8	—	9	V

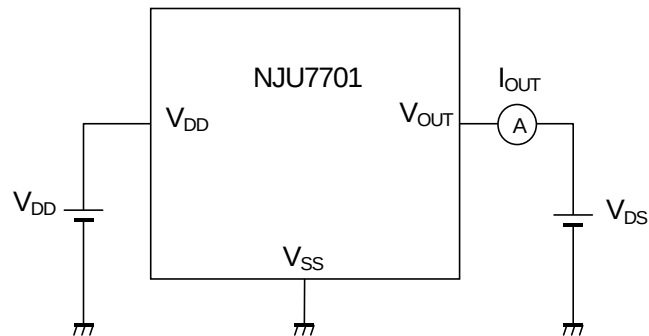
(*note 2): The minimum Operating Voltage(V_{OPL}) indicates the same value of the output voltage(V_{OUT}) on condition that V_{OUT} becomes 10% or less of the input voltage(V_{DD}).

■ TEST CIRCUIT

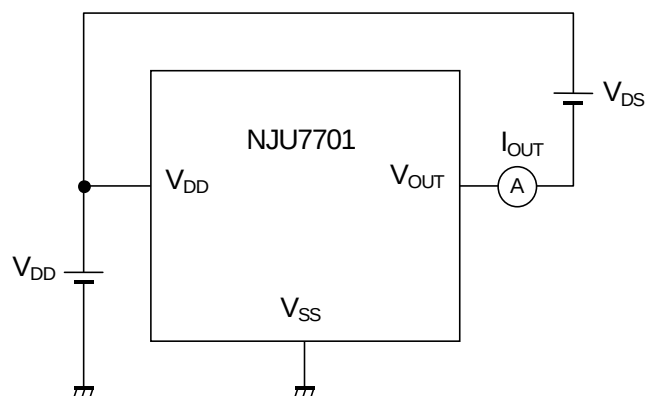
① COMMON TEST CIRCUIT



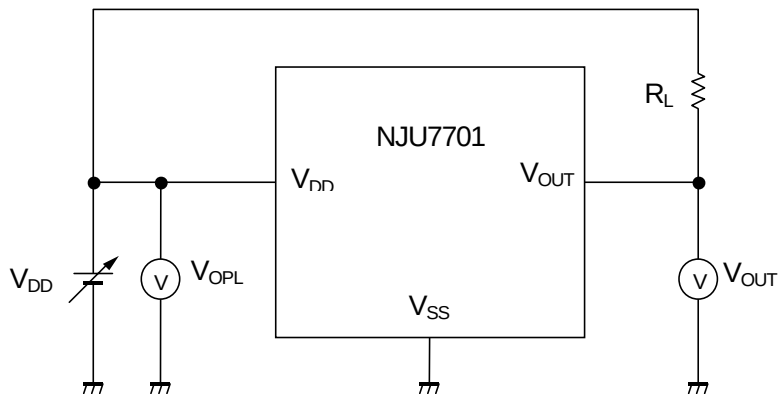
② Nch OUTPUT CURRENT TEST CIRCUIT



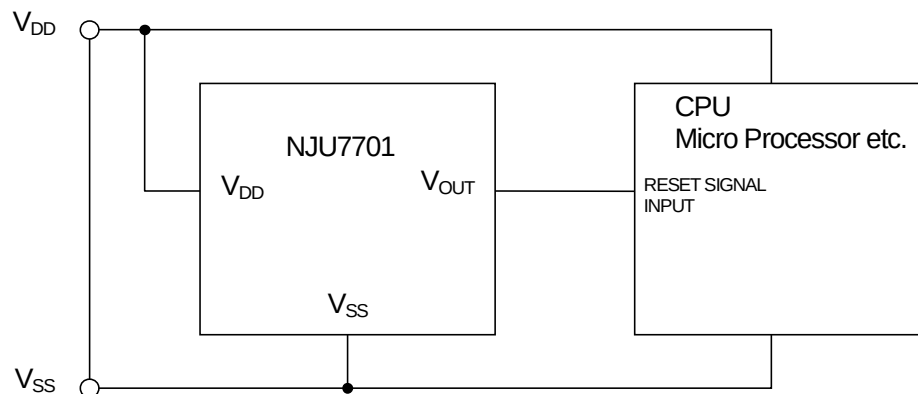
③ Pch OUTPUT CURRENT TEST CIRCUIT



④ MINIMUM OPERATING VOLTAGE TEST CIRCUIT



■ TYPICAL APPLICATION



[CAUTION]
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