

C-MOS STEP-UP
SWITCHING REGULATOR

PRELIMINARY

■ GENERAL DESCRIPTION

The NJU7262 series is a C-MOS step-up switching regulator which contains accurate voltage reference, error amplifier, CR oscillator, control circuit, switching transistor, diode and resistor.

The operating clock is prepared on-chip or is available to input from external, and the stand-by function is effective for low power consumption.

The regulation voltage is fixed by internal circuits and the following line-up of different output voltages version are available.

This series is suitable for portable equipment's or battery operated items because of its small packaged outline, low operating voltage and current.

■ PACKAGE OUTLINE



NJU7262MXX



NJU7262VXX

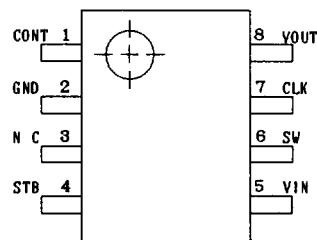


NJU7262RXX

■ FEATURES

- Low Operating Voltage (1.0V min.)
- Low Operating Current (5.0 μ A typ./ $V_{OUT}=3.0V$)
- Low Stand-by Current (0.2 μ A max./ $V_{OUT}=3.0V$)
- High Precision Output Voltage ($\pm 3\%$ max.)
- Wide Operating Voltage Range
- External/Internal Clock Select Function
- Stand-by Function
- CR Oscillator On-chip
- Diode On-chip
- Package Outline DMP-8/SSOP-8/VSP-8
- C-MOS Technology

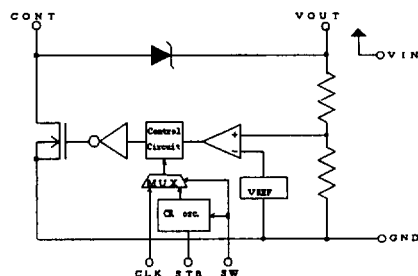
■ EQUIVALENT CIRCUIT



■ LINE-UP

Output Voltage (V)	Package		
	DMP-8	SSOP-8	VSP-8
3.0	NJU7662M30	NJU7662V30	NJU7662R30
5.0	NJU7662M50	NJU7662V50	NJU7662R50

■ EQUIVALENT CIRCUIT



■ TERMINAL DESCRIPTION

No.	Term. Name	I/O	F U N C T I O N
1	CONT	I	External Inductor Connect Terminal
2	GND	POWER	Power Source(GND)
3	NC	-	Non Connect
4	STB	I	Strobe Terminal : "H" or OPEN ... Normal Operation (step-up) "L" ... Stand-By Operation
5	VIN	POWER	Power Source(+)
6	SW	I	External/Internal Clock Select Terminal "H" or OPEN ... Internal Oscillation "L" ... External Clock Input (When "L" level is input, Internal oscillation is stopped)
7	CLK	I	External Clock Input Terminal
8	VOUT	O	Step-up Output Terminal



■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V _{IN}	10	V
CONT Input Voltage	V _{CONT}	GND-0.3 ≤ V _{CONT} ≤ 10	V
STB, SW, CLK Input Voltage	V _i	GND-0.3 ≤ V _i ≤ V _{IN}	V
Output Voltage	V _{OUT}	GND-0.3 ≤ V _{OUT} ≤ 10	V
Power Dissipation	P _D	(DMP-8) 300 (SSOP-8) 250 (VSP-8) 320	mW
Operating Temperature Range	Topr	- 25 ~ + 75	°C
Storage Temperature Range	Tstg	- 40 ~ +125	°C

Note) Decoupling capacitor should be connected between V_{IN} and GND due to the stabilized operation for this IC.

■ ELECTRICAL CHARACTERISTICS

+3V Version

(Ta=25°C)

PARAMETER	SYMBOL		CONDITION	N O R M			UNIT	MEASUREMENT CIRCUIT
				MIN.	TYP.	MAX.		
Input Voltage	V _{IN}			—	—	5.0	V	1
Start Voltage	V _{START}		NO LOAD	—	—	1.0	V	1
Oscillator Freq.	f _{OSC}		V _{IN} =1.5V	20	30	50	KHz	2
Output Voltage	V _{OUT}		V _{IN} =1.5V, I _{OUT} =20mA	2.91	3.0	3.09	V	1
Input Stability	ΔV _{OUT1}		V _{IN} =1.5~2.0V I _{OUT} =20mA	—	30	100	mV	1
Load Stability	ΔV _{OUT2}		V _{IN} =1.5V I _{OUT} =10μA~25mA	—	30	100	mV	1
Operating Current	I _{SS}		V _{IN} =V _{STB} =1.5V, NO LOAD	—	5.0	10	μA	3
Stand-by Current	I _o		V _{IN} =V _{SW} =1.5V, V _{STB} =V _{CLK} =0V, NO LOAD	—	—	0.2	μA	4
Switching Current	I _{sl}		V _{DS} =0.2V	—	250	—	mA	—
STB Terminal	H level	V _{STBH}	V _{IN} =1.5V	1.0	—	—	V	5
Input Voltage	L level	V _{STBL}	V _{IN} =1.5V	—	—	0.4	V	5
SW Terminal	H level	V _{SWH}	V _{IN} =1.5V	1.0	—	—	V	6
Input Voltage	L level	V _{SWL}	V _{IN} =1.5V	—	—	0.4	V	6
CLK Terminal	H level	V _{CLKH}	V _{IN} =1.5V	1.0	—	—	V	7
Input Voltage	L level	V _{CLKL}	V _{IN} =1.5V	—	—	0.4	V	7
STB Terminal Input Current	H level	I _{STBH1}	V _{IN} =1.5V, V _{STB} =1.0V	—	15	30	μA	8
		I _{STBH2}	V _{IN} =1.5V, V _{STB} =1.5V	—	0.1	—	μA	8
	L level	I _{STBL1}	V _{IN} =1.5V, V _{STB} =0.4V	—	15	30	μA	8
		I _{STBL2}	V _{IN} =1.5V, V _{STB} =0V	—	0.1	—	μA	8
SW Terminal Input Current	H level	I _{SWH}	V _{IN} =1.5V, V _{SW} =V _{IN}	—	0.1	—	μA	8
	L level	I _{SWL}	V _{IN} =1.5V, V _{SW} =0V	—	10	30	μA	8
CLK Terminal Input Current	H level	I _{CLKH}	V _{IN} =1.5V, V _{CLK} =V _{IN}	—	10	30	μA	8
	L level	I _{CLKL}	V _{IN} =1.5V, V _{CLK} =0V	—	0.1	—	μA	8

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+5V VERSION

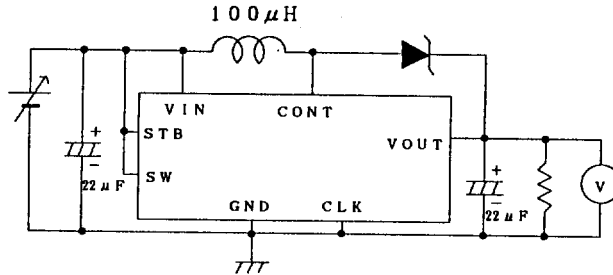
(Ta=25°C)

PARAMETER	SYMBOL		CONDITION	N O R M			UNIT	MEASUREMENT CIRCUIT
				MIN.	TYP.	MAX.		
Input Voltage	V_{IN}			—	—	5.0	V	1
Start Voltage	V_{START}		NO LOAD	—	—	1.0	V	1
Oscillator Freq.	f_{OSC}		$V_{IN}=3.0V$	20	30	50	KHz	2
Output Voltage	V_{OUT}		$V_{IN}=3.0V, I_{OUT}=20mA$	4.85	5.0	5.15	V	1
Input Stability	ΔV_{OUT1}		$V_{IN}=2.0\sim 3.0V$ $I_{OUT}=20mA$	—	30	100	mV	1
Load Stability	ΔV_{OUT2}		$V_{IN}=3.0V$ $I_{OUT}=10\mu A\sim 25mA$	—	30	100	mV	1
Operating Current	I_{SS}		$V_{IN}=V_{STB}=3.0V, NO\ LOAD$	—	5	15	μA	3
Stand-by Current	I_o		$V_{IN}=V_{SW}=3.0V,$ $V_{STB}=V_{CLK}=0V, NO\ LOAD$	—	—	0.2	μA	4
Switching Current	I_{s1}		$V_{DS}=0.2V$	—	250	—	mA	—
STB Terminal	H level	V_{STBH}	$V_{IN}=3.0V$	2.4	—	—	V	5
Input Voltage	L level	V_{STBL}	$V_{IN}=3.0V$	—	—	0.4	V	5
SW Terminal	H level	V_{SWH}	$V_{IN}=3.0V$	2.4	—	—	V	6
Input Voltage	L level	V_{SWL}	$V_{IN}=3.0V$	—	—	0.4	V	6
CLK Terminal	H level	V_{CLKH}	$V_{IN}=3.0V$	2.4	—	—	V	7
Input Voltage	L level	V_{CLKL}	$V_{IN}=3.0V$	—	—	0.4	V	7
STB Terminal Input Current	H level	I_{STBH1}	$V_{IN}=3.0V, V_{STB}=2.4V$	—	50	100	μA	8
		I_{STBH2}	$V_{IN}=3.0V, V_{STB}=3.0V$	—	0.1	—	μA	8
	L level	I_{STBL}	$V_{IN}=3.0V, V_{STB}=0.4V$	—	50	100	μA	8
		I_{STBL2}	$V_{IN}=3.0V, V_{STB}=0V$	—	0.1	—	μA	8
SW Terminal Input Current	H level	I_{SWH}	$V_{IN}=3.0V, V_{SW}=V_{IN}$	—	0.1	—	μA	8
	L level	I_{SWL}	$V_{IN}=3.0V, V_{SW}=0V$	—	10	30	μA	8
CLK Terminal Input Current	H level	I_{CLKH}	$V_{IN}=3.0V, V_{CLK}=V_{IN}$	—	10	30	μA	8
	L level	I_{CLKL}	$V_{IN}=3.0V, V_{CLK}=0V$	—	0.1	—	μA	8



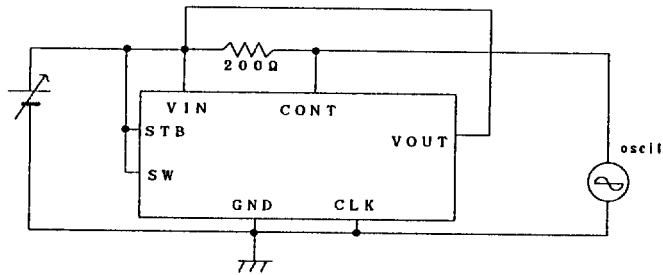
■ MEASUREMENT CIRCUIT 1

(1)



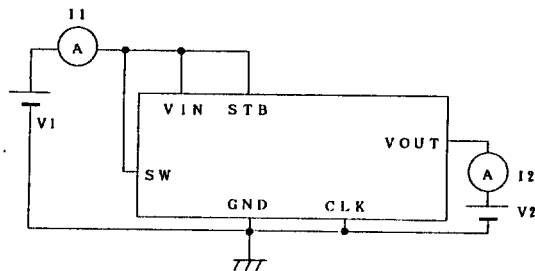
External Diode Type : "D1NS4" provided by SHINDENGEN
($I_F=1A$, $V_F=0.55V$)

(2)



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(3)



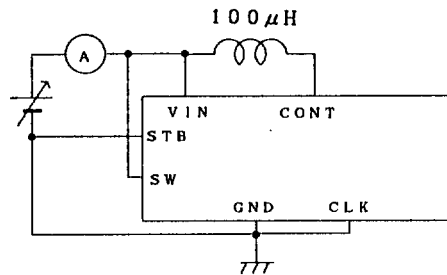
$$I_{ss} = I_1 + I_2 \times \frac{V_{OUT}}{V_2}$$

Under the condition of $V_2=V_{OUT} + 1.0V$

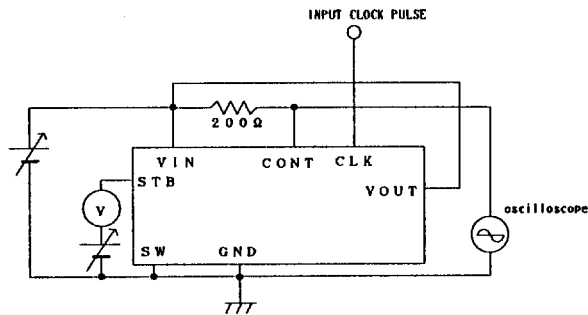


MEASUREMENT CIRCUIT 2

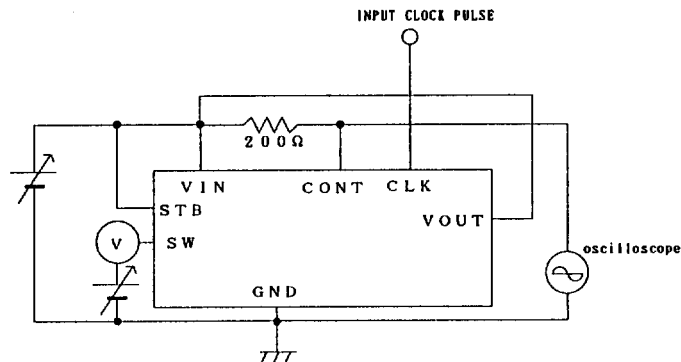
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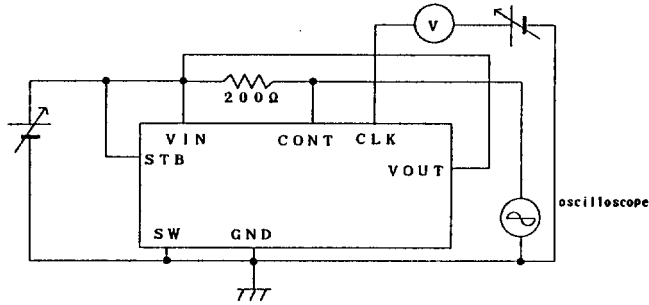
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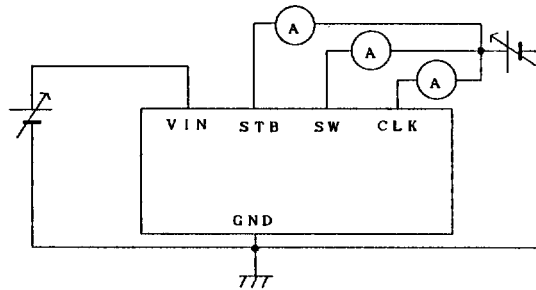


■ MEASUREMENT CIRCUIT 3

(7)



(8)



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■ APPLICATION CIRCUIT

