

PRELIMINARY

SMALL PACKAGE VOLTAGE INVERTER

■ GENERAL DESCRIPTION

The NJU7665 series is a voltage inverter incorporated RC oscillator, pre-buffer and power-MOS, which generates a polarity-converted negative voltage from +1.5V to +5.5V.

The switching frequency is fixed by internal RC oscillator and the following line-up of 3 version are available to select.

The NJU7665 series is in MTP-5 package and it is suitable for battery use items and other portable items.

■ PACKAGE OUTLINE



NJU7665XF

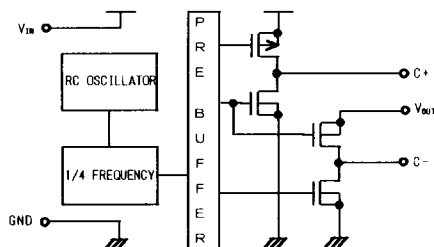
■ FEATURES

- Input Voltage : 1.5~5.5V
- Switching Frequency : $f_{sw}=7.5k, 70k, 140kHz$
- Low Output Resistance : 75Ω MAX. (C version, $C=1\mu F, V_{DD}=3V$)
- Low Operating Current : $100\mu A$ MAX. (A version)
- C-MOS Technology
- Package Outline : MTP-5

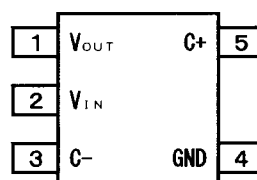
■ LINE-UP TABLE

TYPE NO.	Switching Frequency	Supply Current	Output Resistance
NJU7665A	7.5kHz (typ.)	$25\mu A$ (typ.)	$0.2k\Omega$ (typ.)
NJU7665B	70kHz (typ.)	$0.15mA$ (typ.)	75Ω (typ.)
NJU7665C	140kHz (typ.)	$0.7mA$ (typ.)	60Ω (typ.)

■ BLOCK DIAGRAM



■ PIN CONFIGURATION



■ TERMINAL DESCRIPTION

Terminal No.	Symbol	Function
1	V_{OUT}	Output Voltage
2	V_{IN}	Power Supply Terminal
3	C-	Charge Pump Capacitor (-) Connecting Terminal
4	GND	Ground Terminal
5	C+	Charge Pump Capacitor (+) Connecting Terminal

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■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage	V _{IN}	-0.3~6.0	V
Power Dissipation	P _D	200	mW
Operating Temperature	T _{opr}	- 40 ~ + 85	°C
Storage Temperature	T _{stg}	- 55 ~ +125	°C

NOTE 1) Decoupling capacitor should be connected between V_{IN} and GND due to the stabilized operation for the IC.

■ ELECTRICAL CHARACTERISTICS

A version

(V_{IN}=3.0V, C1=C2=1 μF, Ta=25°C)

PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Supply Current	I _{IN}	RL=∞	—	25	100	μA
Input Supply Voltage	V _{IN}	-40°C ≤ Ta ≤ 85°C	1.5	—	5.5	V
Output Resistance	R _{OUT}	I _{OUT} =500μA	—	0.2	1.0	kΩ
Oscillation Frequency	F _O		4.5	7.5	10.5	kHz
Power Conversion Rate	P _{EF}	RL=500kΩ	—	90	—	%
Voltage Conversion Rate	V _{EF}	RL=∞	98	99.3	—	%

B version

(V_{IN}=3.0V, C1=C2=1 μF, Ta=25°C)

PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Supply Current	I _{IN}	RL=∞	—	0.15	0.65	mA
Input Supply Voltage	V _{IN}	-40°C ≤ Ta ≤ 85°C	1.5	—	5.5	V
Output Resistance	R _{OUT}	I _{OUT} =5mA	—	75	100	Ω
Oscillation Frequency	F _O		40	70	100	kHz
Power Conversion Rate	P _{EF}	RL=500kΩ	—	90	—	%
Voltage Conversion Rate	V _{EF}	RL=∞	98	99.3	—	%

C version

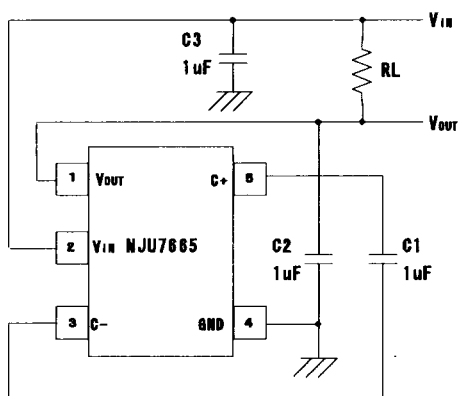
(V_{IN}=3.0V, C1=C2=1 μF, Ta=25°C)

PARAMETER	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT
Supply Current	I _{IN}	RL=∞	—	0.7	1.4	mA
Input Supply Voltage	V _{IN}	-40°C ≤ Ta ≤ 85°C	1.5	—	5.5	V
Output Resistance	R _{OUT}	I _{OUT} =10mA	—	60	75	Ω
Oscillation Frequency	F _O		90	140	200	kHz
Power Conversion Rate	P _{EF}	RL=500kΩ	—	90	—	%
Voltage Conversion Rate	V _{EF}	RL=∞	98	99.3	—	%

NOTE 2) Please minimize the wiring impedance of C+, C- terminals due to the power conversion rate.

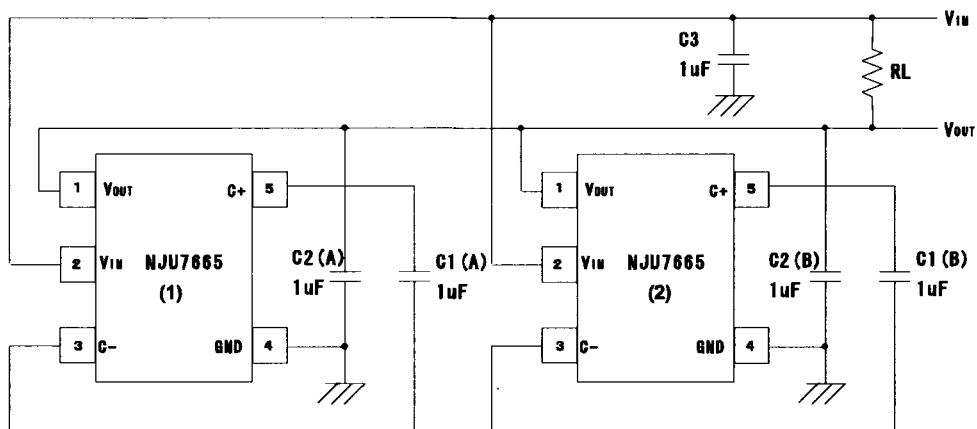
■ APPLICATION CIRCUITS

1. Negative Voltage Output Circuit



2. Parallel Connection Circuit

The following circuit reduce the output impedance.



NJU7665 Series

MEMO

[CAUTION]

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