

## 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

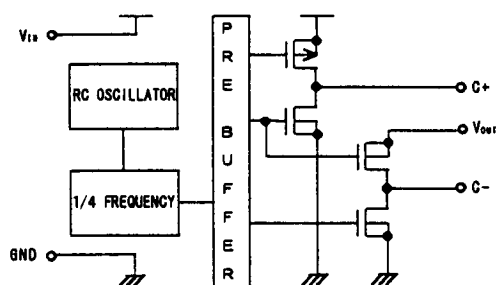
- Input Voltage : 1.5 to 5.5V
- Switching Frequency : fsw = 7.5k, 75k, 150kHz
- Low Output Resistance : 100Ω MAX. (C version, C = 1μF, V<sub>DD</sub> = 3V / T.B.D.)
- Low Operating Current : 100μA MAX. (A version)
- C-MOS Technology
- Package Outline : MTP-5

### ■ LINE-UP TABLE

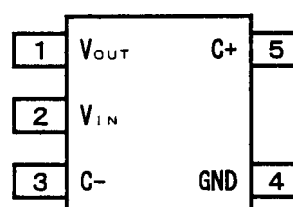
TYPE NO.	Switching Frequency	Supply Current	Output Resistance
NJU7665A	7.5kHz (typ.)	75μA (typ.)	0.75kΩ (typ.)
NJU7665B	75kHz (typ.)	0.75mA (typ.)	75kΩ (typ.)
NJU7665C	150kHz (typ.)	1.5mA (typ.)	75kΩ (typ.)*

\* : T. B. D.

### ■ BLOCK DIAGRAM



### ■ PIN CONFIGURATION



### ■ TERMINAL DESCRIPTION

Terminal No.	Symbol	Function
1	V <sub>OUT</sub>	Output Voltage
2	V <sub>IN</sub>	Power Supply Terminal
3	C <sup>-</sup>	Charge Pump Capacitor (-) Connecting Terminal
4	GND	Ground Terminal
5	C <sup>+</sup>	Charge Pump Capacitor (+) Connecting Terminal

# NJU7665 Series

## ■ ABSOLUTE MAXIMUM RATINGS

(T<sub>a</sub> = 25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Supply Voltage	V <sub>IN</sub>	-0.3 to 6.0	V
Power Dissipation	P <sub>D</sub>	200	mW
Operating Temperature	T <sub>opr</sub>	-40 to + 85	°C
Storage Temperature	T <sub>stg</sub>	-55 to +125	°C

Note1) Decoupling capacitor should be connected between V<sub>IN</sub> and GND due to the stabilized operation for the IC.

## ■ ELECTRICAL CHARACTERISTICS

A version

(V<sub>IN</sub> = 3.0V, C1 = C2 = 1μF, T<sub>a</sub> = 25°C)

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I <sub>IN</sub>	RL = ∞	-	75	100	μA
Input Supply Voltage	V <sub>IN</sub>	-40 °C ≤ Ta ≤ 85°C	1.5	-	5.5	V
Output Resistance	R <sub>OUT</sub>	I <sub>OUT</sub> = 500μA	-	0.75	1.0	kΩ
Oscillation Frequency	F <sub>O</sub>		5.2	7.5	9.8	kHz
Power Conversion Rate	P <sub>EF</sub>	RL = 500kΩ	-	90	-	%
Voltage Conversion Rate	V <sub>EF</sub>	RL = ∞	90	99.3	-	%

B version

(V<sub>IN</sub> = 3.0V, C1 = C2 = 1μF, T<sub>a</sub> = 25°C)

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I <sub>IN</sub>	RL = ∞	-	0.75	1.0	mA
Input Supply Voltage	V <sub>IN</sub>	-40 °C ≤ Ta ≤ 85°C	1.5	-	5.5	V
Output Resistance	R <sub>OUT</sub>	I <sub>OUT</sub> = 5mA	-	75	100	Ω
Oscillation Frequency	F <sub>O</sub>		52	75	98	kHz
Power Conversion Rate	P <sub>EF</sub>	RL = 500kΩ	-	90	-	%
Voltage Conversion Rate	V <sub>EF</sub>	RL = ∞	90	99.3	-	%

C version

(V<sub>IN</sub> = 3.0V, C1 = C2 = 1μF, T<sub>a</sub> = 25°C)

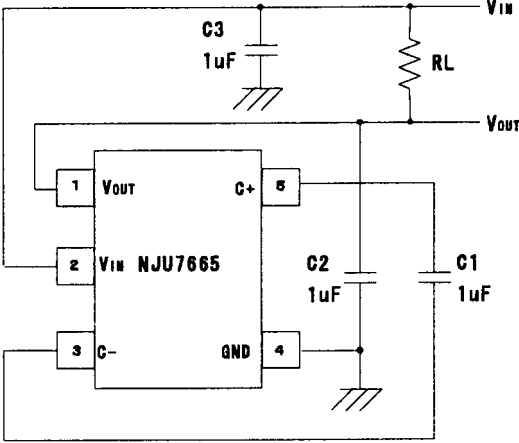
PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Current	I <sub>IN</sub>	RL = ∞	-	1.5	2.0	mA
Input Supply Voltage	V <sub>IN</sub>	-40 °C ≤ Ta ≤ 85°C	1.5	-	5.5	V
Output Resistance	R <sub>OUT</sub>	I <sub>OUT</sub> = 10mA	-	75*	100*	Ω
Oscillation Frequency	F <sub>O</sub>		105	150	195	kHz
Power Conversion Rate	P <sub>EF</sub>	RL = 500kΩ	-	90	-	%
Voltage Conversion Rate	V <sub>EF</sub>	RL = ∞	90	99.3	-	%

NOTE2) Please minimize the wiring impedance of C+, C- terminals due to the power conversion rate.

\*) T. B. D.

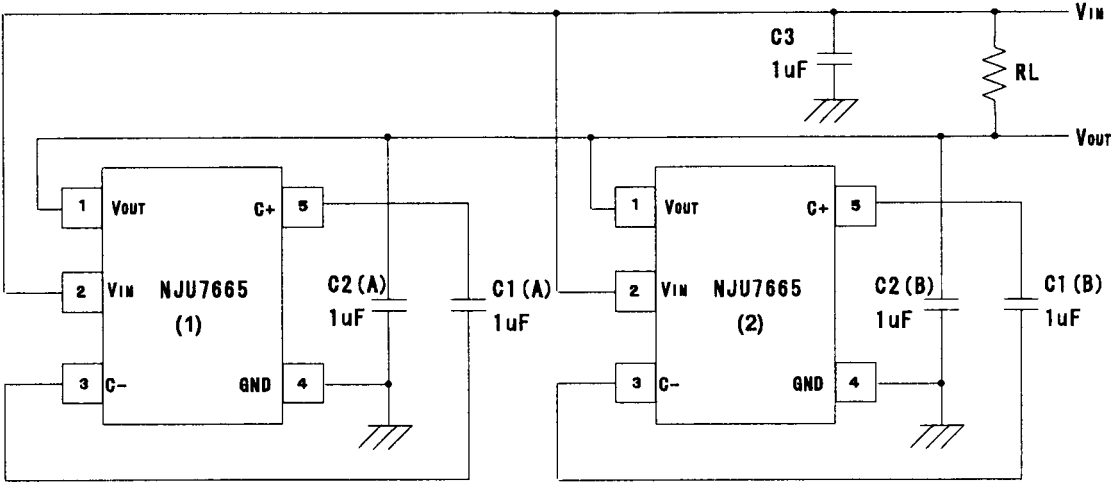
## APPLICATION CIRCUIT

### 1. Negative Voltage Output Circuit



### 2. Parallel Connection Circuit

The following circuit reduce the output impedance.



[CAUTION]  
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