VOLTAGE CONVERTER

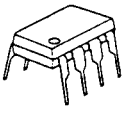
■ GENERAL DESCRIPTION

The NJU7662 is a voltage converter incorporated CR-oscillator, voltage-level-shifter and power-MOS, which generates a polarity-converted negative voltage or twofold voltage of an operating voltage ranging from +4.5 to +20.0V.

The application circuit of negative voltage converter requires only two capacitors, and positive twofold voltage converter requires two capacitors, two resisters and one diode as external components.

The oscillation frequency of the internal oscillator is 10kHz and the negative voltage converter (on no-load condition) achieves extremely high-efficiency voltage conversion rate of 99.9%.

■ PACKAGE OUTLINE



NJU7662D

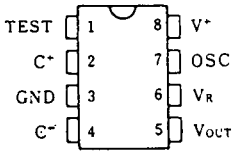


NJU7662M

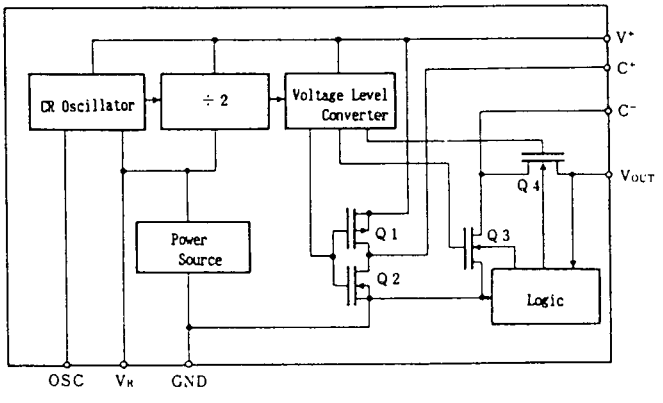
■ FEATURES

- Polarity-converted Negative Voltage Output
- Twofold Positive Voltage Output
- Operating Voltage --- +4.5 to +20.0 V
- High-efficiency Voltage Conversion Rate -- 99.9%
  (No-load, Negative Voltage Converter)
- High-efficiency Power Conversion Rate -- 96%
  (Negative Voltage Converter)
- Cascade Connection Available
  2N-1 times voltage outputs for negative voltage
  2N times voltage outputs for positive voltage
- Few External Components
  --- 2 Capacitors (Negative Voltage Converter)
  --- 2 Capacitors, 2 Resistors and 1 Diode
  (Positive Voltage Converter)
- Package Outline DIP/DMP 8
- C-MOS Technology

■ PIN CONFIGURATION

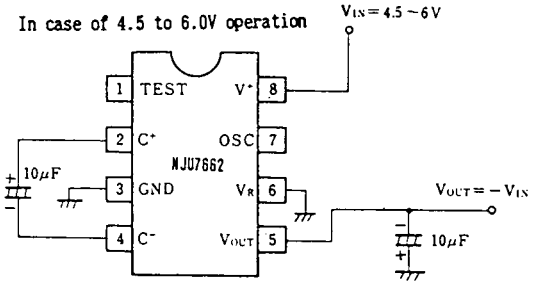


■ BLOCK DIAGRAM

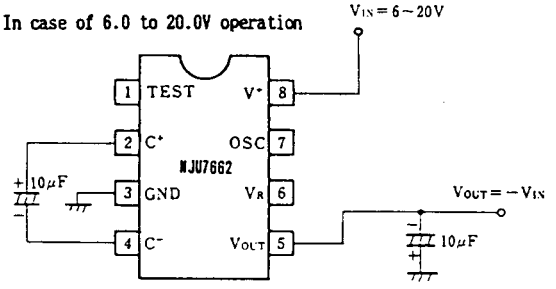


■ APPLICATION CIRCUITS

(1-1) NEGATIVE VOLTAGE OUTPUT

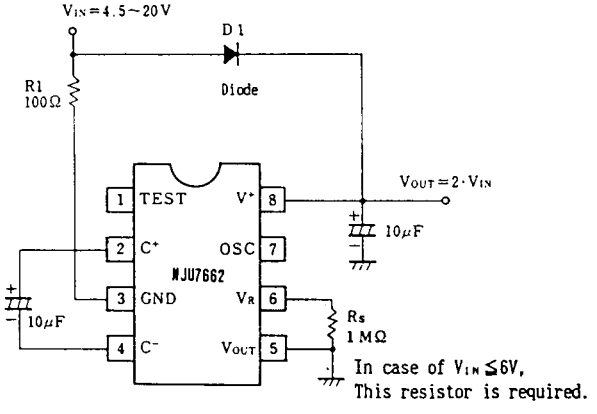


(1-2) NEGATIVE VOLTAGE OUTPUT



(*1) No. 6 Terminal must connect to GND or Open
according to the operating voltage as follows;
V+<6V --- Connect to GND
V+≧6V --- OPEN

(2) TWOFOLD VOLTAGE OUTPUT



In the twofold voltage application,
R1, Rs and D1 are required for start-up.

■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V^+	22	V
Input Voltage	V_{IN}	$-0.3 \sim V^+ +0.3$ @$V^+ < 7$ $V^+ -7 \sim V^+ +0.3$ @$V^+ \geq 7$	V
Output Short		CONTINUITY @$V^+ < 5.5$	V
Power Dissipation	P_D	500 (DIP) 300 (DMP)	mW
Operating Temperature Range	Topr	-20 ~ + 70	°C
Storage Temperature Range	Tstg	-65 ~ +150	°C

■ ELECTRICAL CHARACTERISTICS

(Ta=25°C, V^+=15V, C_{OSC}=0)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNIT
Operating Current	I^+1	$R_L=\infty$, V_R=OPEN			250	600	uA
	I^+2	V+=5V, $R_L=\infty$, V_R=GND			20	150	
Operating Voltage	V^+HI	-20°C≦Ta≦70°C,	V_R=OPEN	3.0		10.0	V
	V^+LO	R_L=10kΩ	V_R=GND	4.5		6	
Output Resistance (*Note 1)	R_O1	Iout=20mA, Ta=25°C			60	100	Ω
		V_R=OPEN, -20°C≦Ta≦70°C			70	120	
	R_O2	V^+=5V, Iout=3mA, Ta=25°C			125	200	
		V_R=GND, -20°C≦Ta≦70°C			150	250	
Oscillation Frequency	F_O				10		kHz
Power Conversion Rate	P_{EF}	R_L=2kΩ		93	96		%
Voltage Conversion Rate	V_{EF}	$R_L=\infty$		97	99.9		%
Oscillation Terminal Input Current	$I_{OSC}1$	V^+=15V, (V_{OSC}=8~15V)			4.0		uA
	$I_{OSC}2$	V^+=5V, (V_{OSC}=0~5)			0.5		

*Note 1 The twofold positive converter needs 100 ohms series resistance on the power source terminal, therefore the output impedance increases to 200 ohms.