HX7661-S/HX7661-P
CMOS Voltage Converters

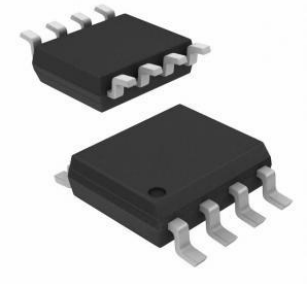
The HX7661-S/HX7661-P is a monolithic charge pump voltage inverter designed to convert a positive voltage in the range of +4.5V to +20V into the corresponding negative voltage of -4.5V to -20V. Compared to previous implementations of charge pump voltage inverters, the HX7661-S/HX7661-P offers superior performance by combining low quiescent current with high efficiency. It integrates an oscillator, control circuitry, and 4 power MOS switches on-chip, requiring only two low-cost capacitors as external components.

FEATURES

- +4.5V to +20V Supply to -4.5V to -20V Output
- Cascaded Voltage Multiplication (Vout =-n×V+)
- 99.7%Typical Open Circuit Conversion Efficiency
- Requires Only 2 External Capacitors
- Pin Compatible with the HX7661-S/HX7661-P

APPLICATIONS

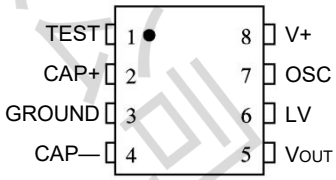
- Inexpensive Negative Supplies
- Data Acquisition Systems
- Up to -20V for Op Amps,and Other Linear Circuits
- Supply Splitter,Vout =Vs/2 RS-232 Power Supplies



SOP-8

DIP-8

PIN ASSIGNMENT



ABSOLUTE MAXIMUM RATINGS		
Symbol	**Limit**	**Unit**
V+TO GND	-0.3 +22	V
Oscillator Input to GND(Note 1)		
V-<12V	-0.3 V++0.3	V
V+>12V	V+-12.3 V++0.3V	V
Power Dissipation (Note 2)		
Plastic DIP	300	mW
SO	500	mW
TO-99	500	mW
CERDIP	500	mW
Operating Temperature Ranges		
Commercial	0 to +70	℃
Extended	-40 to +85	℃
Military	-55 to +125	℃
Storage Temperature	-65 to +160	℃
Lead Temperature	+300	℃

ELECTRICAL CHARACTERISTICS							
PARAMETER	**SYMBOL**	**CONDITIONS**		**MIN**	**TYP**	**MAX**	**UNITS**
Supply Voltage Range-Lo	V+L	RL=10k2,LV=GND	55℃<TA<+125℃	4.5		11	V
Supply Voltage Range-Hi	V+H	RL=10k2,LV=Open	40℃<T <+85℃	9		20	
			55℃< +125℃	9		16.5	
Supply Current	I+	RL=o,LV=Open	TA=+25℃		0.25	0.60	mA
			0°C<TA<+70℃		0.30	0.85	
			55℃<TA<+125C		0.40	1.0	
Output Source Resistance	Ro	lo =20mA,LV =Open	TA=+25℃		60	100	Ω
			0℃<TA<+70°C		70	120	
			55°℃<TA<+125℃		90	150	
Supply Current	I+	V+=5V, RL=oo,LV=GND	TA=+25℃		20	150	μA
			0℃<TA<+70℃		25	200	
			-55℃<TA<+125C		30	250	
Output Source Resistance	Ro	V+=5V, lo =3mA, LV =GND	TA=+25℃		125	200	Ω
			0℃<TA<+70℃		150	250	
			-55℃<TA<+125℃		200	350	
Oscillator Frequency	fosc				10		kHz
Power Efficiency	Peff	RL=2kQ	TA=+25℃	93	96		%
			Min<TA<Max	90	95		
Voltage Conversion Efficiency	VoEf	RL=∞	Min<TA<Max	97	99.9		%
Oscillator Sink or Source Current	Iosc	V+=5V(Vosc =OV to +5V)			0.5		μA
		V+=15V(Vosc=+5V to+15V)			4.0		

Notes

a. Connecting any terminal to voltages greater than V+or less than ground may cause destructive latchup.It is recommended that no input from sources operating from external supplies be applied prior to power-up of the HX7661-S/HX7661-P.
b. Derate linearly above +50*C by 5.5mW/℃
c.Pin 1 is a test pin and is not connected in normal use.

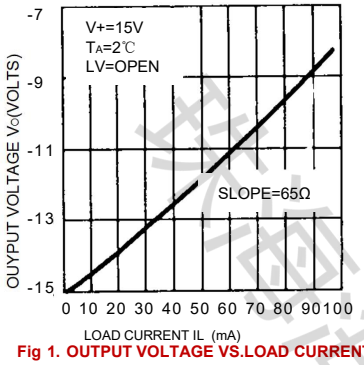


Fig 1. OUTPUT VOLTAGE VS.LOAD CURRENT

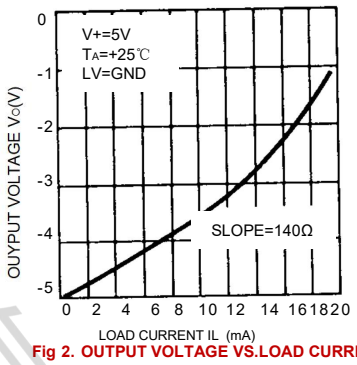


Fig 2. OUTPUT VOLTAGE VS.LOAD CURRENT

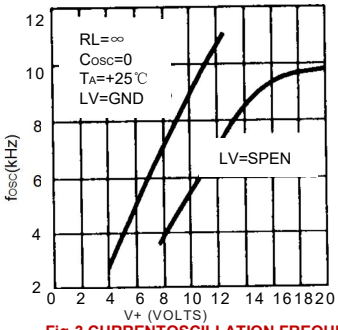


Fig 3.CURRENTOSCILLATION FREQUENCY Vs.SUPPLY VOLTAGE

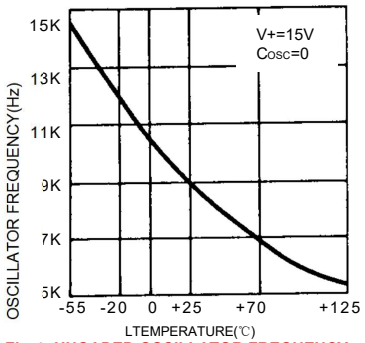


Fig 4. UNOADED OSCILLATOR FREQUENCY vs. TEMPERATURE

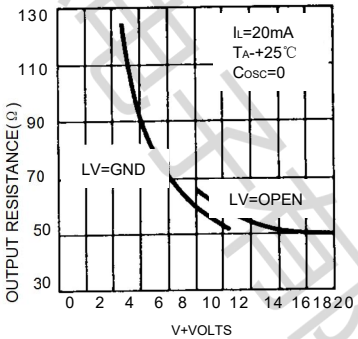


Fig 5. OUTPUT SOURCE RESLSTANCE vs. SUPPLY VOLTAGE

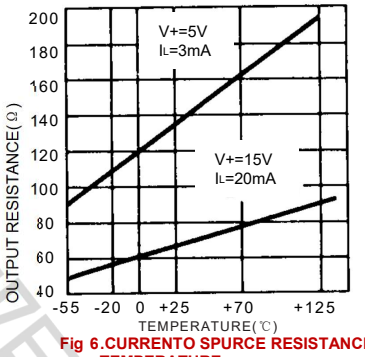


Fig 6.CURRENTO SPURCE RESISTANCE vs. TEMPERATURE

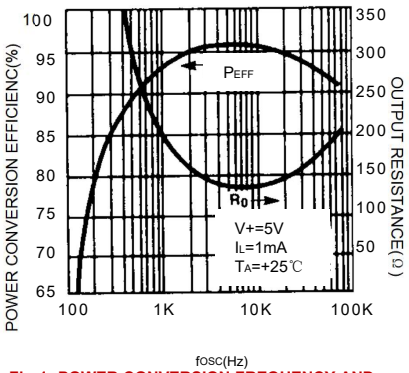


Fig 1. POWER CONVERSION FREQUENCY AND OUTPUT RESISTANCE vs. OSCILLATOR FREQUENCY

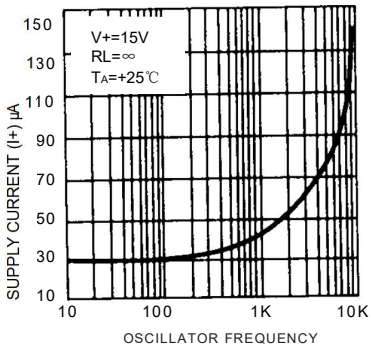


Fig 8. SUPPLY CURRENT vs. OSCILLATOR FREQUENCY

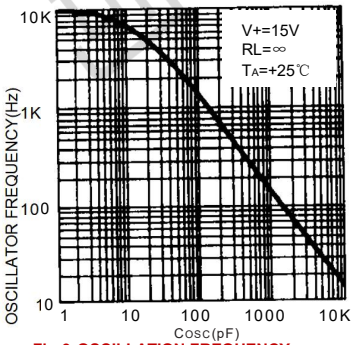
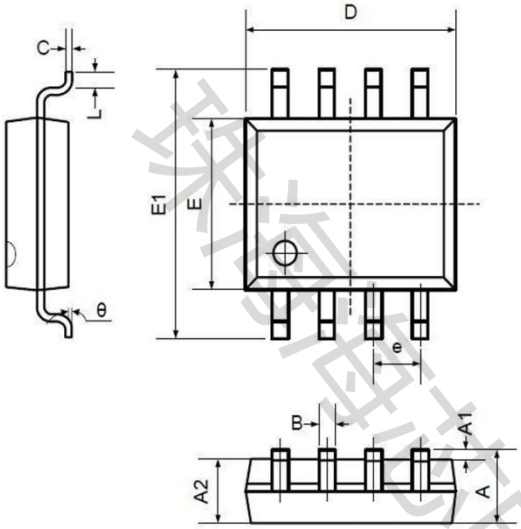


Fig 9.OSCILLATION FREQUENCY vs. EXTERNAL OSCILLATOR CAPACITANCE

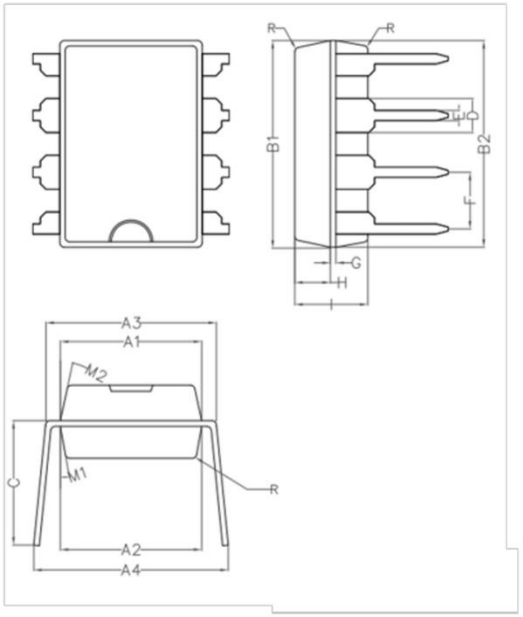
Package Information

SOP8 (Package Outline Dimensions)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
B	0.330	0.510	0.013	0.020
C	0.190	0.250	0.007	0.010
D	4.780	5.000	0.188	0.197
E	3.800	4.000	0.150	0.157
E1	5.800	6.300	0.228	0.248
e	1.270TYP		0.050TYP	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

DIP8 (Package Outline Dimensions)



Symbol	Min	Non	Max
A1	6.28	6.33	6.38
A2	6.33	6.38	6.43
A3	7.52	7.62	7.72
A4	7.80	8.40	9.00
B1	9.15	9.20	9.25
B2	9.20	9.25	9.30
C		5.57	
D		1.52	
E	0.43	0.45	0.47
F		2.54	
G		0.25	
H	1.54	1.59	1.64
I	3.22	3.27	3.32
R		0.20	
M1	9°	10°	11°
M2	11°	12°	13°

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