

XL7660 SOP8
XD7660 DIP8

CMOS Voltage Converters

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The XD/XL7660 are monolithic CMOS power supply circuits which offer unique performance advantages over previously available devices. The XD/XL7660 performs supply voltage conversions from positive to negative for an input range of +1.5V to +10.0V resulting in complementary output voltages of -1.5V to -10.0V.

Only 2 noncritical external capacitors are needed for the charge pump and charge reservoir functions.

The XD/XL7660 can also be connected to function as voltage doublers and will generate output voltages up to +18.6V with a +10V input.

Contained on the chip are a series DC supply regulator, RC oscillator, voltage level translator, and four output power MOS switches. A unique logic element senses the most negative voltage in the device and ensures that the output N-Channel switch source-substrate junctions are not forward biased. This assures latchup free operation. The oscillator, when unloaded, oscillates at a nominal frequency of 10kHz for an input supply voltage of 5.0V. This frequency can be lowered by the addition of an external capacitor to the "OSC" terminal, or the oscillator may be overdriven by an external clock.

The "LV" terminal may be tied to GROUND to bypass the internal series regulator and improve low voltage (LV) operation. At medium to high voltages (+3.5V to +10.0V), the LV pin is left floating to prevent device latchup.

Features

- Simple Conversion of +5V Logic Supply to \pm 5V Supplies
- Simple Voltage Multiplication ($V_{OUT} = (-) nV_{IN}$)
- Typical Open Circuit Voltage Conversion Efficiency 99.9%
- Typical Power Efficiency 98%
- Wide Operating Voltage Range
 - XD/XL7660 1.5V to 10.0V
- Easy to Use - Requires Only 2 External Non-Critical Passive Components

Pin Description

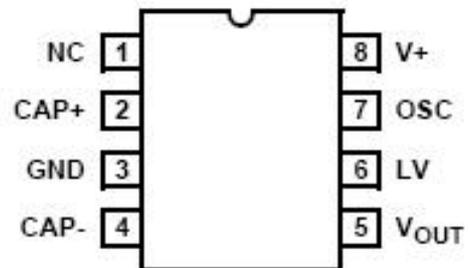
Name	Pin#	Function
NC	1	
CAP+	2	"+" Capacitor Plate
GND	3	Ground
CAP-	4	"-" Capacitor Plate
V _{OUT}	5	Output Voltage
LV	6	Low Supply Voltage
OSC	7	Oscillator
V+	8	Supply Voltage

Applications

- On Board Negative Supply for Dynamic RAMs
- Localized μ Processor (8080 Type) Negative Supplies
- Inexpensive Negative Supplies
- Data Acquisition Systems

DIP SOP 8

TOP VIEW



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Absolute Maximum Ratings

Supply Voltage

XD/XL7660. +10.5V

LV and OSC Input Voltage -0.3V to (V+ +0.3V) for V+ < 5.5V

(V+ -5.5V) to (V+ +0.3V) for V+ > 5.5V

Current into LV 20 μ A for V+ > 3.5V

Temperature Range. -40°C to 85°C

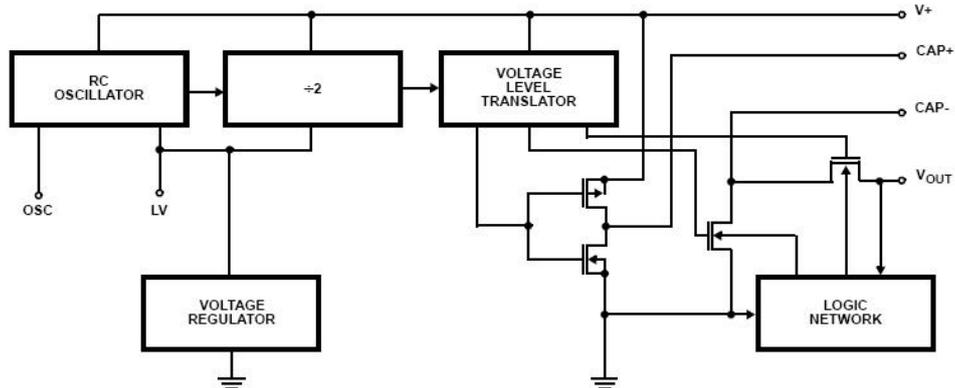
Thermal Resistance, θ_{JA} (°C/W). 150

Maximum Storage Temperature Range. -65°C to 150°C

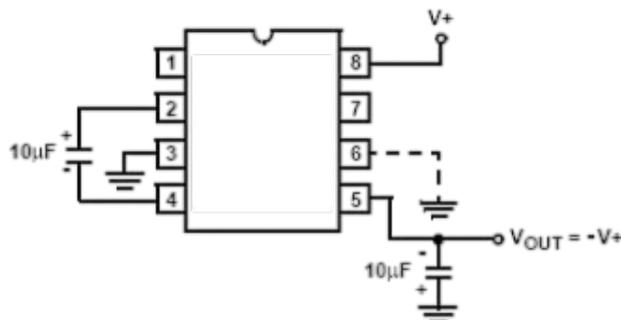
Electrical Characteristics (V+ = 5V, T_A = 25°C, C_{OSC} = 0, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Supply Current	I+	R _L = ∞	-	170	500	μ A
Supply Voltage Range - Lo	VL+	MIN \leq T _A \leq MAX, R _L = 10k Ω , LV to GND	1.5	-	3.5	V
Supply Voltage Range - Hi	VL+	MIN \leq T _A \leq MAX, R _L = 10k Ω , LV to Open	3.0	-	10.0	V
Output Source Resistans	R _{OUT}	I _{OUT} = 20mA, T _A = 25°C	-	55	100	Ω
		I _{OUT} = 20mA, 0°C \leq T _A \leq 70°C	-	-	120	
		V+ = 2V, I _{OUT} = 3mA, LV to GND, 0°C \leq T _A \leq 70°C	-	-	300	
Oscillator Frequency	f _{OSC}		8	-	18	kHz
Power Efficiency	P _{EF}	R _L = 5k Ω	95	98	-	%
Voltage Conversion Efficiency	V _{OUT EF}	R _L = ∞	97	99.9	-	%
Oscillator Impedance	Z _{OSC}	V+ = 2V	-	1.0	-	M Ω
		V+ = 5V	-	100	-	k Ω

Functional Block Diagram



TYPICAL APPLICATION CIRCUITS



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FIGURE 1. SIMPLE NEGATIVE CONVERTER

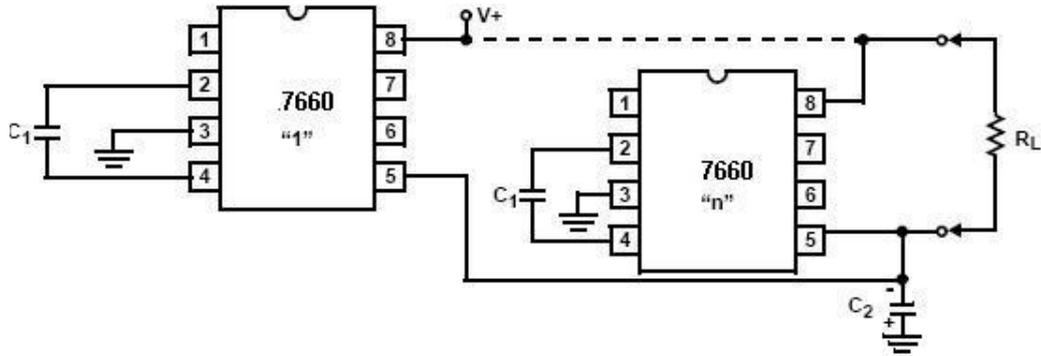


FIGURE 2. PARALLELING DEVICES

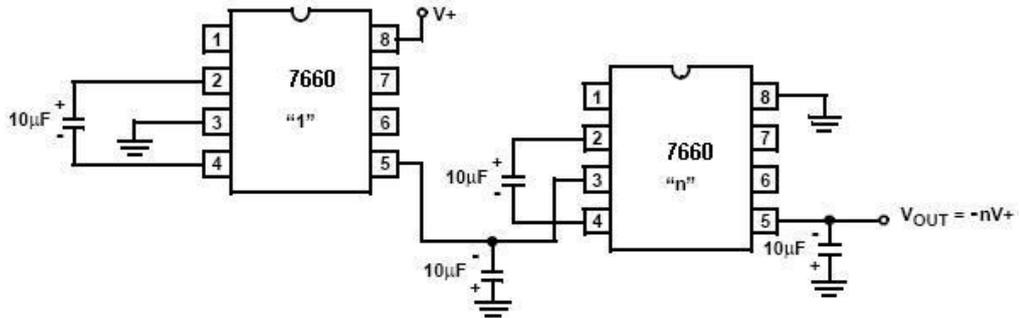


FIGURE 3. CASCADING DEVICES FOR INCREASED OUTPUT VOLTAGE

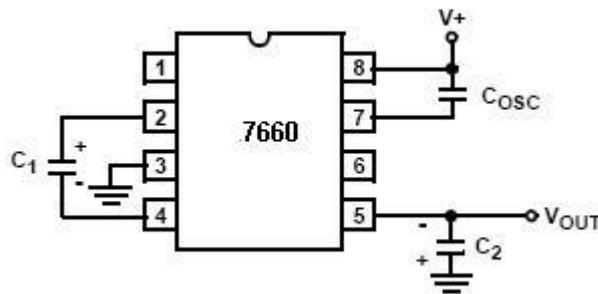
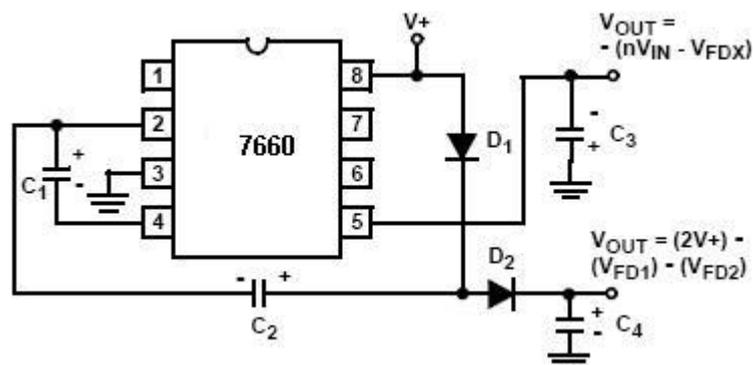


FIGURE 4. LOWERING OSCILLATOR FREQUENCY



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FIGURE 5. COMBINED NEGATIVE VOLTAGE CONVERTER AND POSITIVE DOUBLER

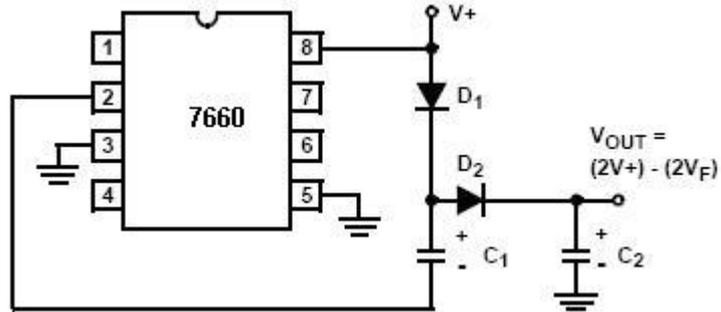


FIGURE 6. POSITIVE VOLT DOUBLER

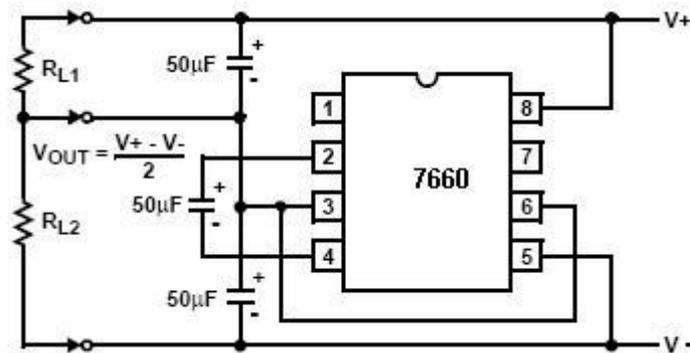
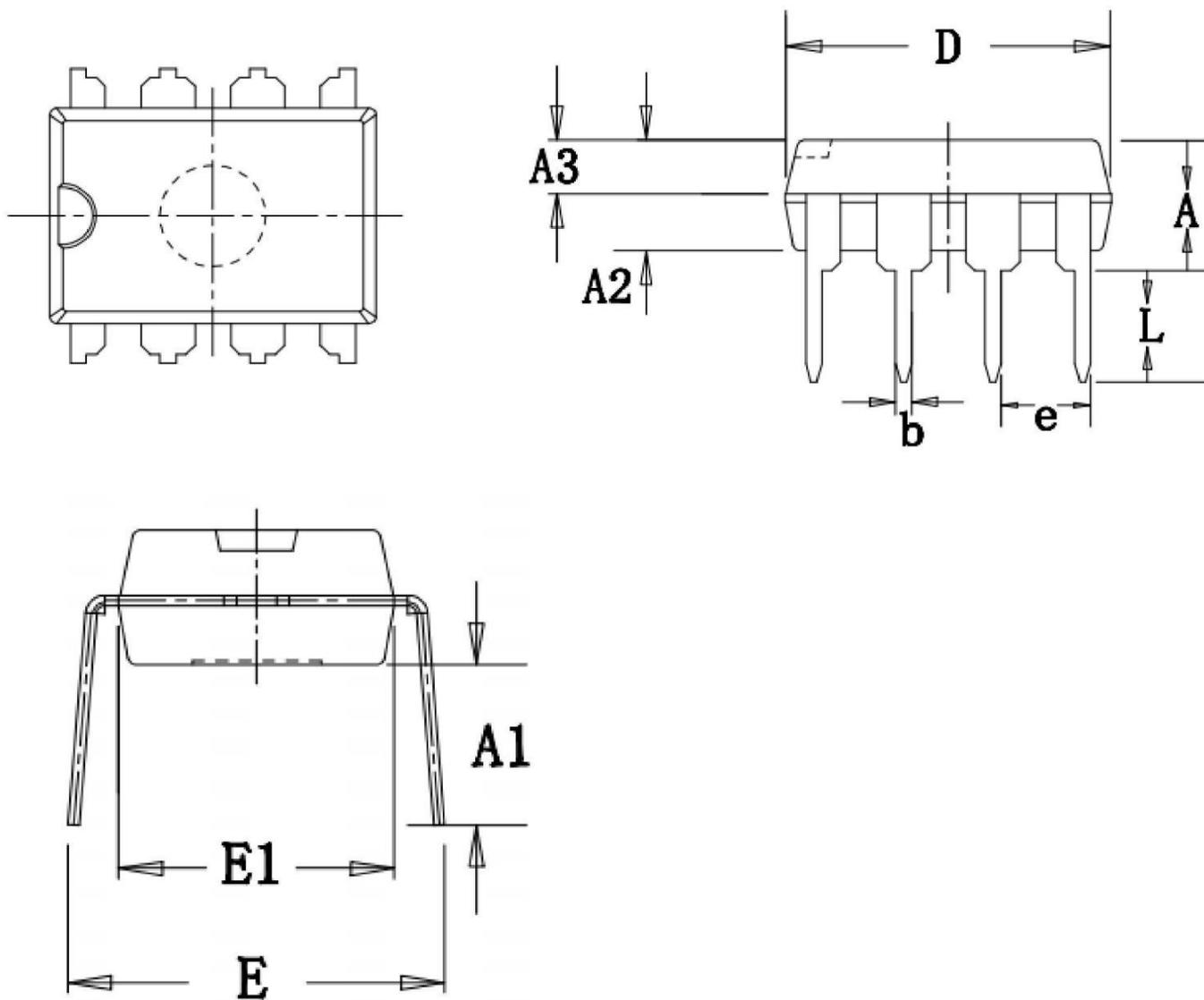


FIGURE 7. SPLITTING A SUPPLY IN HALF

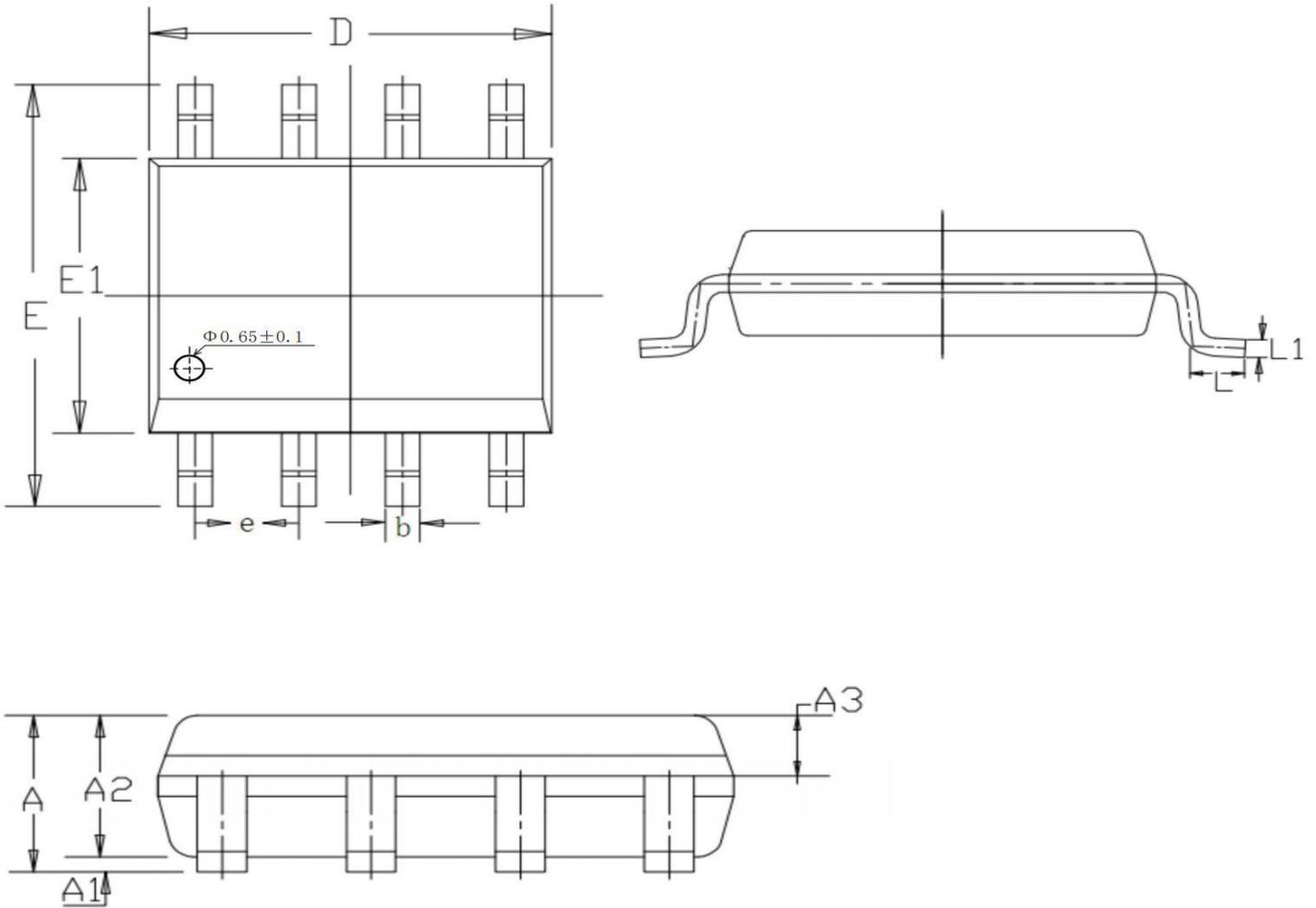
DIP8封装外形图



单位:mm

	MIN	NOM	MAX
A	3.600	3.800	4.000
A1(站高)	3.786	3.886	3.986
A2(厚度)	3.200	3.300	3.400
A3	1.550	1.600	1.650
b	0.440	—	0.490
e(脚间距)	2.510	2.540	2.570
D(长度)	9.150	9.250	9.350
E(跨度)	7.800	8.500	9.200
E1(宽度)	6.280	6.380	6.480
L(脚长)	3.000	—	—

SOP8封装外形图



单位: mm

	MIN	NOM	MAX
A	1.450	1.550	1.650
A1(站高)	0.100	0.150	0.200
A2(厚度)	1.300	1.400	1.500
A3	0.600	0.650	0.700
b	0.380	-	0.510
e(脚间距)	1.240	1.270	1.300
D(长度)	4.800	4.900	5.000
E(跨度)	5.800	6.000	6.200
E1(宽度)	3.800	3.900	4.000
L(脚长)	0.450	0.600	0.750
L1	-	0.25BSC	-

以上信息仅供参考. 如需帮助联系客服人员. 谢谢 XINLUDA