

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
ICL7660 1.5V to 10.0V
- Easy to Use - Requires Only 2 External Non-Critical Passive Components

Pin Description

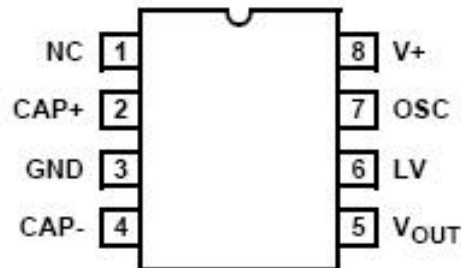
Name	Pin#	Function
NC	1	
CAP+	2	"+" Capacitor Plate
GND	3	Ground
CAP-	4	"-" Capacitor Plate
V _{OUT}	5	Output Voltage
LV	6	Low Supply Voltage
OSC	7	Oscillator
V+	8	Supply Voltage

Applications

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

DIP SOP 8

TOP VIEW



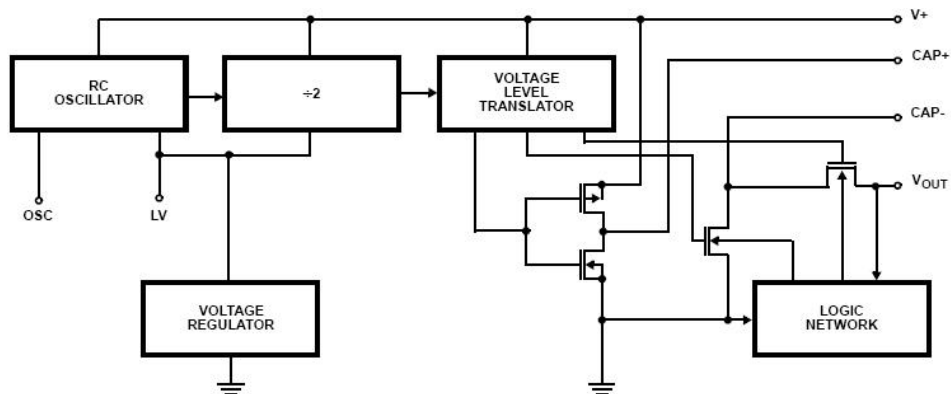
Absolute Maximum Ratings

Supply Voltage
 ICL7660. +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 20µA 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	µA
Supply Voltage Range - Lo	VL+	MIN ≤ T _A ≤ MAX, R _L = 10kΩ, LV to GND	1.5	-	3.5	V
Supply Voltage Range - Hi	VL+	MIN ≤ T _A ≤ MAX, R _L = 10kΩ, 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 ≤ T _A ≤ 70°C	-	-	120	
		V+ = 2V, I _{OUT} = 3mA, LV to GND, 0°C ≤ T _A ≤ 70°C	-	-	300	
Oscillator Frequency	f _{OSC}		8	-	18	kHz
Power Efficiency	P _{EF}	R _L = 5kΩ	95	98	-	%
Voltage Conversion Efficiency	V _{OUT EF}	R _L = ∞	97	99.9	-	%
Oscillator Impedance	Z _{OSC}	V+ = 2V	-	1.0	-	MΩ
		V+ = 5V	-	100	-	kΩ

Functional Block Diagram



TYPICAL APPLICATION CIRCUITS

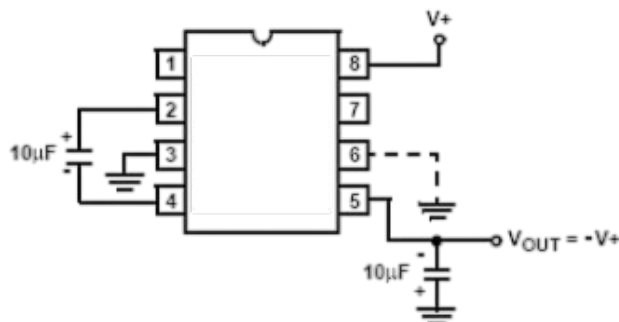


FIGURE 1. SIMPLE NEGATIVE CONVERTER

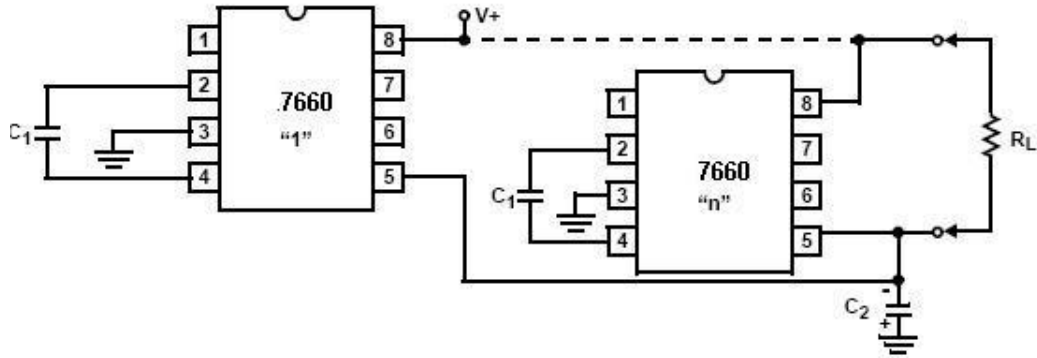


FIGURE 2. PARALLELING DEVICES

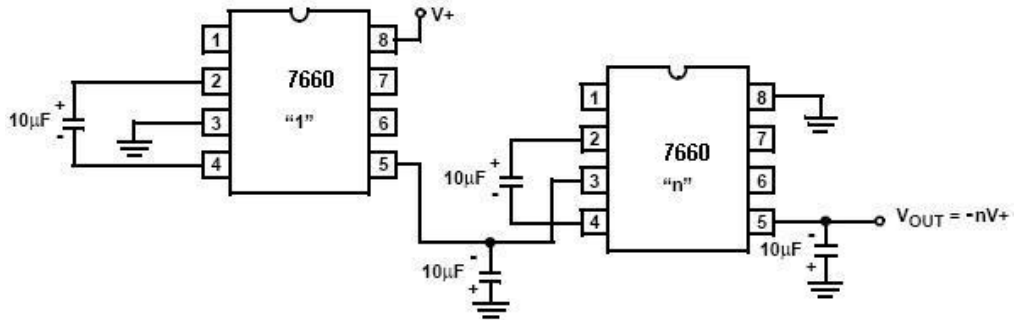


FIGURE 3. CASCADING DEVICES FOR INCREASED OUTPUT VOLTAGE

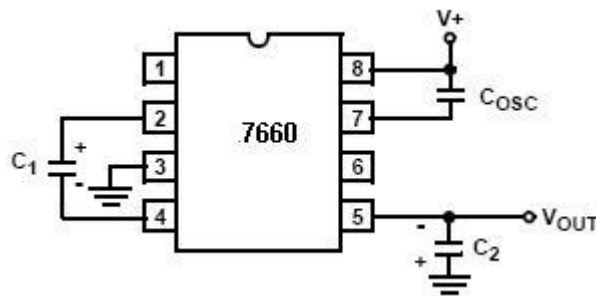


FIGURE 4. LOWERING OSCILLATOR FREQUENCY

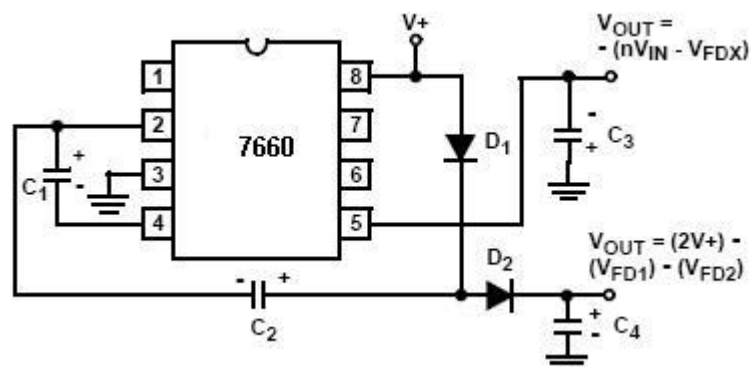


FIGURE 5. COMBINED NEGATIVE VOLTAGE CONVERTER AND POSITIVE DOUBLER

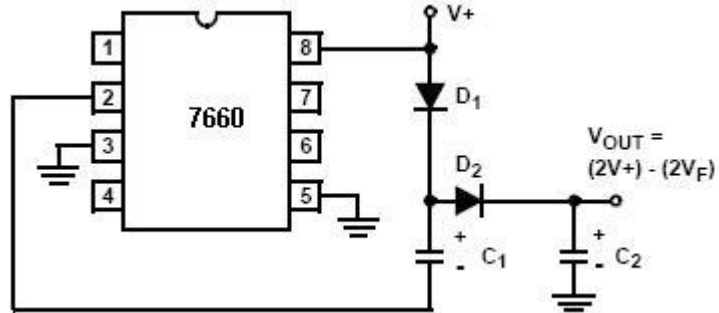


FIGURE 6. POSITIVE VOLT DOUBLER

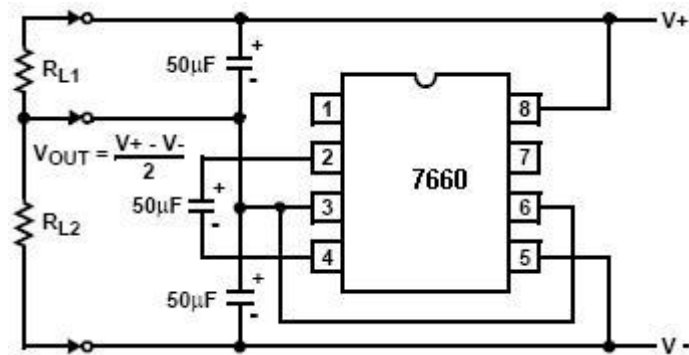
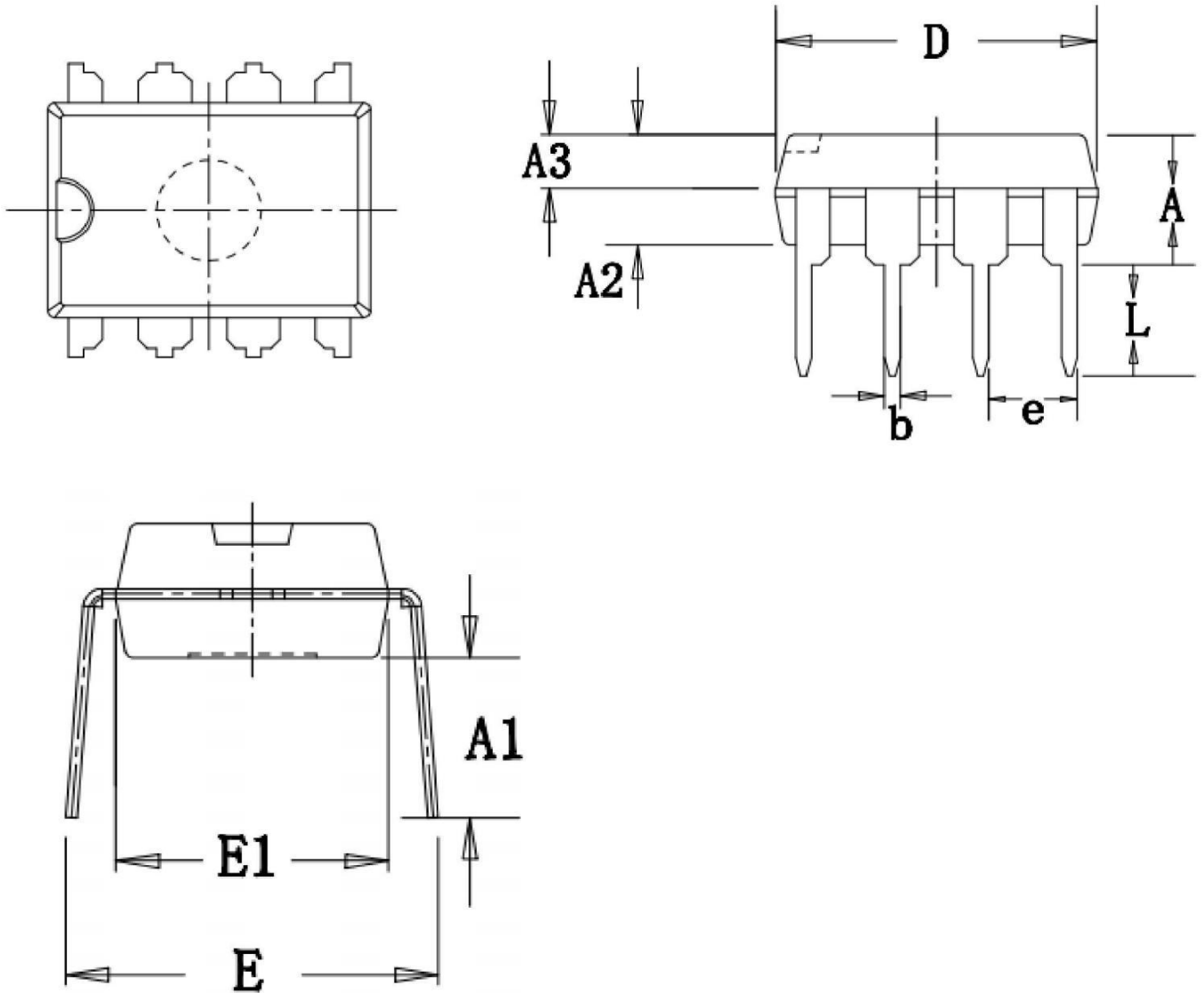


FIGURE 7. SPLITTING A SUPPLY IN HALF

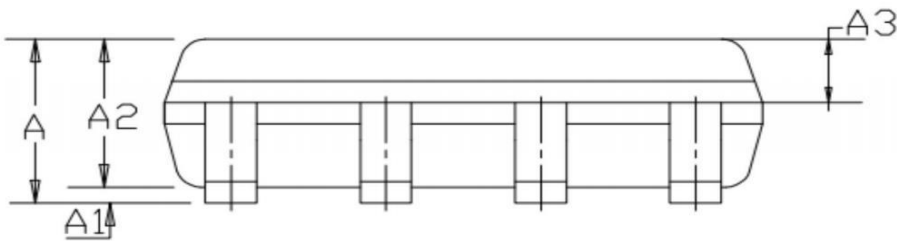
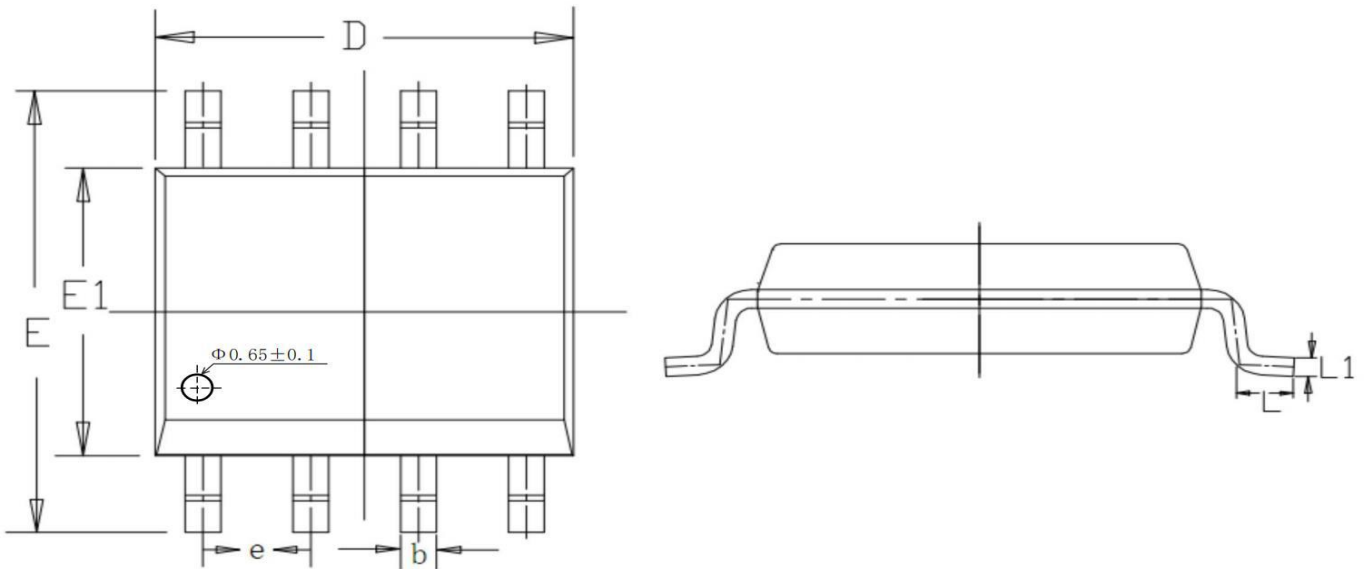
DIP8封装外形图



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	-

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