



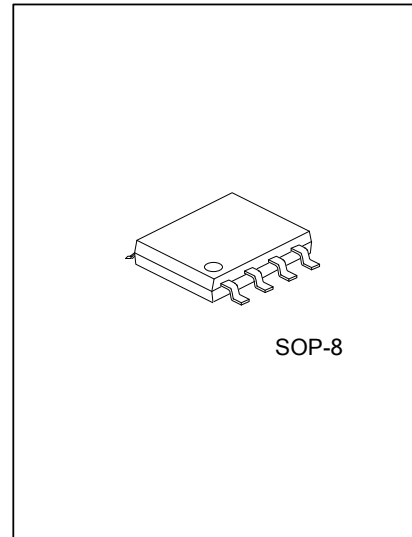
### CHARGE PUMP DC-DC VOLTAGE CONVERTER

#### ■ DESCRIPTION

**ME7660** is a charge pump DC-DC voltage converter using AL-gate CMOS technology and optimization design. It converts a +1.5V to +10V input to a corresponding -1.5V to -10V output using only two external capacitors, eliminating inductors and their associated cost, size and EMI. The on-board oscillator operates at a nominal frequency of 10KHZ. Operation below 10 KHZ (for lower supply current applications) is possible by connecting an external capacitor from OSC to ground.

#### ■ FEATURES

- \* Converts +5V Logic supply to  $\pm 5V$
- \* Wide input voltage range: 1.5V~10V
- \* Efficient voltage conversion: 99.9%
- \* Good power efficiency: 98%
- \* Low power supply: 50uA@5Vin
- \* Only two external capacitors required
- \* Compatible with RS232 negative power supply standard
- \* No Dx diode needed for high voltage operation



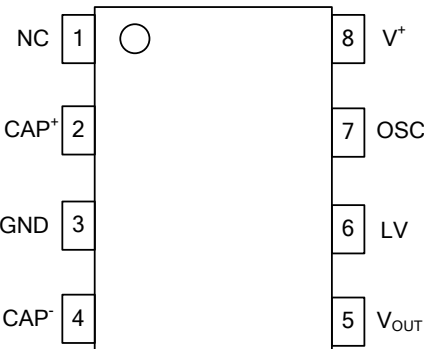
SOP-8

#### ■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
ME7660L-SO8-R	ME7660G-SO8-R	SOP-8	Tape Reel
ME7660L-SO8-T	ME7660G-SO8-T	SOP-8	Tube

<p>ME7660L-SO8-R</p> <ul style="list-style-type: none"><li>(1) Packing Type</li><li>(2) Package Type</li><li>(3) Lead Free</li></ul>	<p>(1) R: Tape Reel, T: Tube</p> <p>(2) S08: SOP-8</p> <p>(3) G: Halogen Free, L: Lead Free</p>
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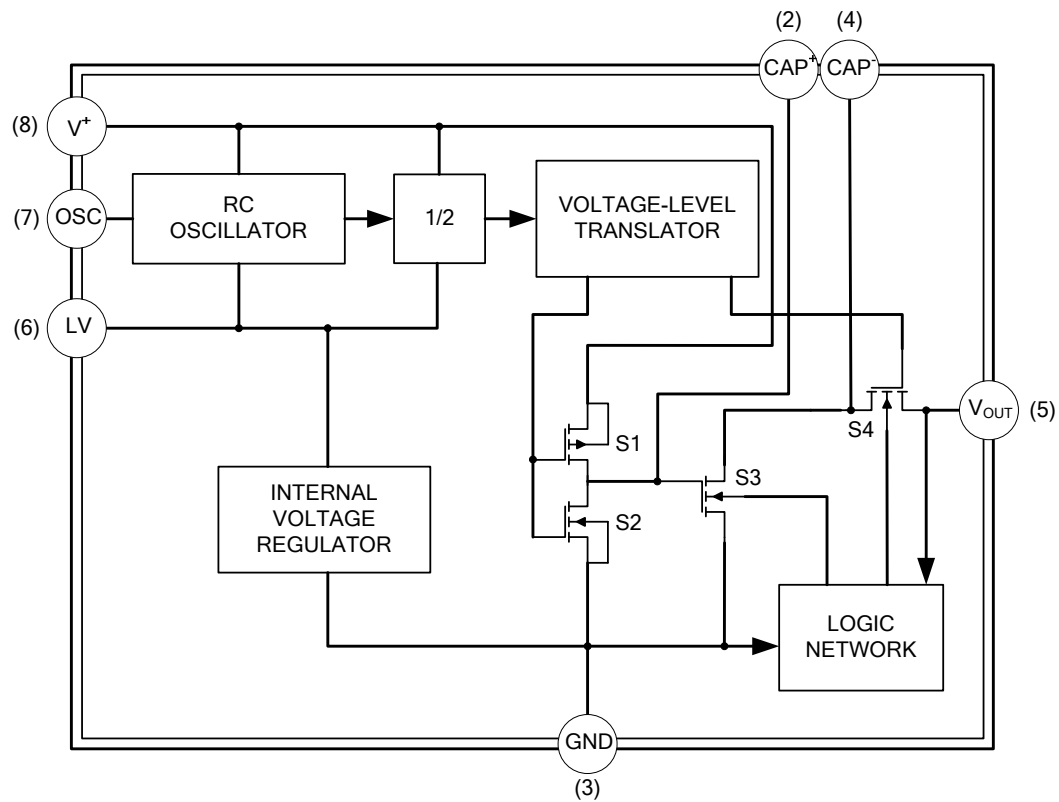
PIN CONFIGURATION



PIN DESCRIPTION

PIN NO.	SYMBOL	DESCRIPTION
1	NC	No connection
2	CAP <sup>+</sup>	Connection external capacitor (+) pin
3	GND	Ground Pin
4	CAP <sup>-</sup>	Connection external capacitor (-) pin
5	V <sub>OUT</sub>	Voltage output pin
6	LV	Low voltage selection pin
7	OSC	Connecting oscillation capacitor pin
8	V <sup>+</sup>	Power supply pin

## ■ BLOCK DIAGRAM



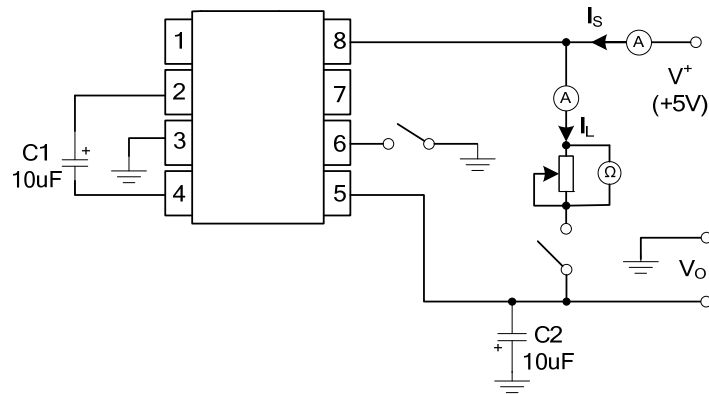
## ■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		$V_{IN}$	10.5	V
LV and OSC Inputs Voltage	$V^+ < 5.5V$	$V_{LX}$	$-0.3 \sim (V^+ + 0.3)$	V
	$V^+ > 5.5V$	$V_{OSC}$	$(V^+ - 5.5) \sim (V^+ + 0.3)$	V
Power Dissipation( $T_A \leq 75^\circ C$ )		$P_D$	470	mW
Current Into LV	$V^+ > 3.5V$	$I_{LV}$	20	$\mu A$
Operating Temperature		$T_{OPR}$	$-40 \sim +85$	$^\circ C$
Storage Temperature		$T_{STG}$	$-65 \sim +150$	$^\circ C$

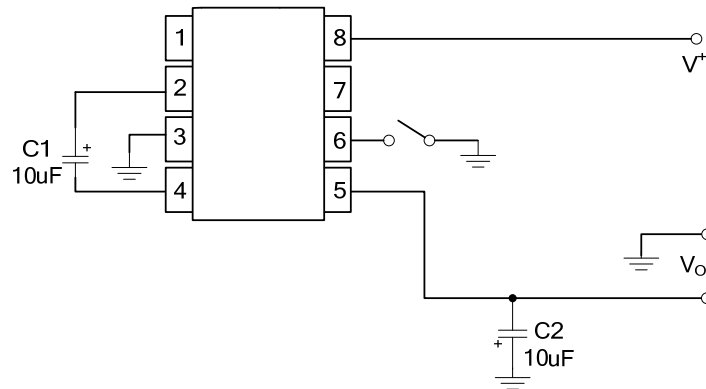
■ ELECTRICAL CHARACTERISTICS ( $V^+ = 5V, C_{OSC} = 0$ )

PARAMETER		SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Current		$I^+$	$R_L = \infty$		60	120	$\mu A$
Supply Voltage	High	$V^+_H$	LV Open	3		10	V
	Low	$V^+_L$	LV to GND	1.5		4	V
Output Resistance		$R_{OUT}$	$I_{OUT} = 20mA, T_A = 25^\circ C$		110		$\Omega$
			$I_{OUT} = 3mA, V^+ = 2V, T_A = 25^\circ C$		220		$\Omega$
Oscillator Frequency		$F_{OSC}$	Pin 7 open		10		kHz
Power Efficiency		$P_{EFF}$	$R_L = 5k\Omega$	90	98		%
Voltage Conversion Efficiency		$V_{EFF}$	$R_L = \infty$	98	99.9		%

### ■ TESTING CIRCUIT



### ■ TYPICAL APPLICATION CIRCUIT



Above figure is the basic application circuit to provide a negative supply from -1.5V ~ -10V while a positive supply from +1.5V ~ +10V is available. When  $V^+ = +5V$ , the output resistance is about 100Ω; The output voltage is -4V while the load current is 10mA.

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