Keywords: charge pump, voltage doubler, tripler, low current applications, op amp, LCD circuit

APPLICATION NOTE 297

Tripler Converts 5V to 15V

Aug 17, 2000

Abstract: This application note shows how to configure the MAX1683 to triple the input voltage for low-current applications while minimizing voltage drop.

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By configuring a charge-pump voltage doubler as a tripler, you can readily derive 15V from 5V. A 15V rail is useful for powering op amps, LCD-bias circuits, and other low-current applications.

The connections in **Figure 1** configure the MAX1683 voltage doubler as a tripler. The no-load output voltage of the circuit is approximately $3V_{IN} - 2V_D$, where V_D is the voltage drop across one diode. Use Schottky diodes as shown to minimize VD and its effect on output voltage.

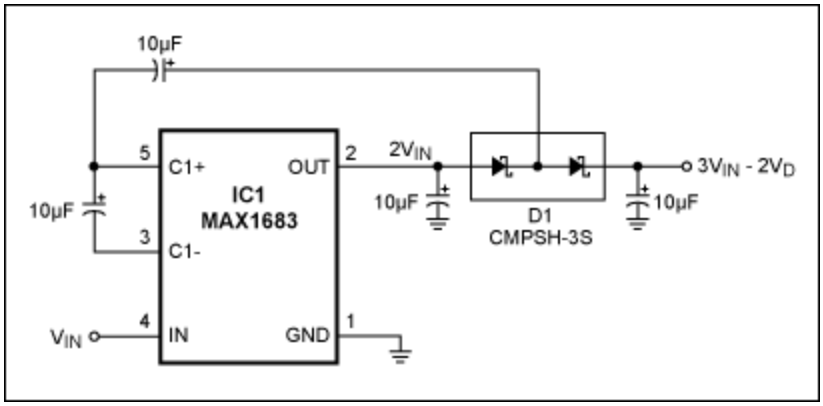

Figure 1. This circuit (almost) triples the input voltage for low-current applications.

Because the circuit's finite output impedance causes the output voltage to drop with load current (**Figure 2**), a practical limit for load current is approximately 30mA.

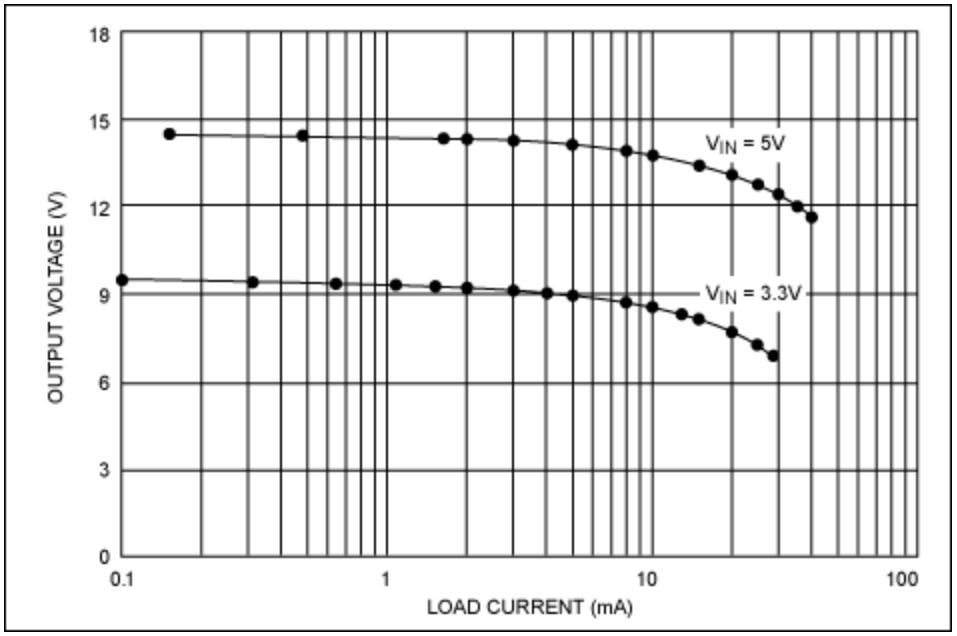

Figure 2. Finite output impedance causes a decline in voltage with increasing load current.

Related Parts		
MAX1683	Switched-Capacitor Voltage Doublers	Free Samples

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