TC2682
TC2683
TC2684

Input Supply Bypassing

The V_{IN} input should be capacitively bypassed to reduce AC impedance and minimize noise effects due to the internal switching in the device. It is recommended that a large value capacitor (at least equal to C1) be connected from V_{IN} to GND for optimal circuit performance.

Inverting Voltage Doubler

The most common application for the TC2682/2683/2684 devices is the inverting voltage doubler (Figure 2). This application uses three external capacitors: C1, C2, and C_{OUT} (NOTE: a power supply bypass capacitor is recommended). The output is equal to $-2V_{IN}$ plus any voltage drops due to loading. Refer to Tables 1 and 2 for capacitor selection guidelines.
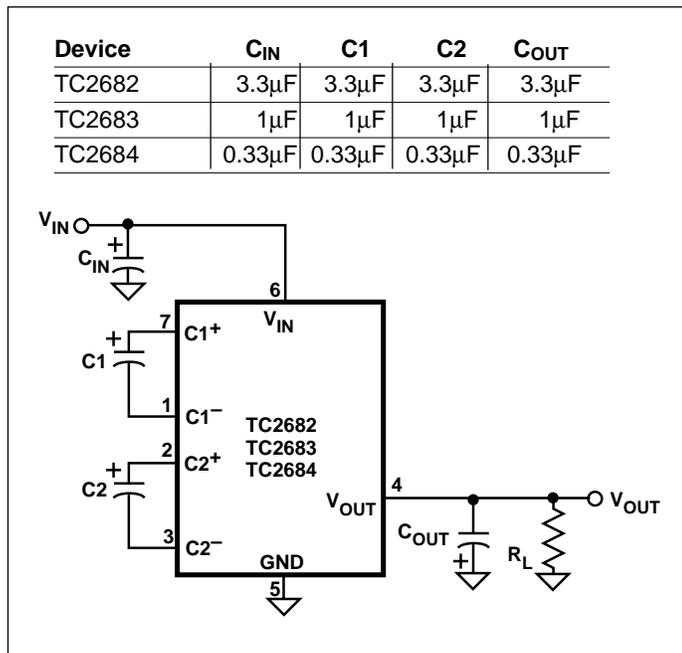

Device	C_{IN}	C1	C2	C_{OUT}
TC2682	3.3µF	3.3µF	3.3µF	3.3µF
TC2683	1µF	1µF	1µF	1µF
TC2684	0.33µF	0.33µF	0.33µF	0.33µF

Figure 2. Dual Voltage Inverter Test Circuit

Layout Considerations

As with any switching power supply circuit, good layout practice is recommended. Mount components as close together as possible to minimize stray inductance and capacitance. Also use a large ground plane to minimize noise leakage into other circuitry.

TC2682 DEMO Card

The TC2682 DEMO Card is a 2.0" x 2.0" card containing both a TC2682 and a TC682 that allow the user to compare the operation of each approach for generating a –2X function. Each circuit is fully assembled with the required external capacitors along with variable load resistors that allow the user to vary the output load current of each stage. For convenience, several test points and jumpers are available for measuring various voltages and currents on the demo board.

Figure 3 is a schematic of the TC2682 DEMO Card, and Figure 4 shows the assembly drawing and artwork for the board. Table 3 lists the voltages that are monitored by the test points and Table 4 lists the currents that can be measured using the jumpers.

Table 3. TC2682 DEMO Card Test Points

TEST POINT	VOLTAGE MEASUREMENT
TP1	V_{IN} [+1.8V TO +5V]
TP2	GROUND
TP3	GROUND
TP4	TC682 (U1) SUPPLY VOLTAGE
TP5	TC682 (U1) OUTPUT VOLTAGE [V_{OUT1}]
TP6	TC2682 (U2) SUPPLY VOLTAGE
TP7	TC2682 (U2) OUTPUT VOLTAGE [V_{OUT2}]

Table 4. TC2682 DEMO Card Jumpers

JUMPER	CURRENT MEASUREMNT
J1	TC682 (U1) QUIESCENT CURRENT
J2	TC2682 (U2) QUIESCENT CURRENT
J3	TC682 (U1) V_{OUT1} LOAD CURRENT
J4	TC2682 (U2) V_{OUT2} LOAD CURRENT