

## Is it possible to parallel LT8490 and LT8705?

It is possible to increase the power level by adding one or more LT8705 in parallel with the LT8490. Using the Master-Slave method for load sharing, the LT8490 is designated the Master and the LT8705 is the Slave. The Master operates as normal while the Slave is operating in output current limit mode with the current limit controlled by the output current of the Master. To set the LT8705 in output current limit mode, either connect its FBOUT pin to GND or select the divider for 5% higher voltage than the intended maximum charge voltage. The LT8490 will control the charge voltage.

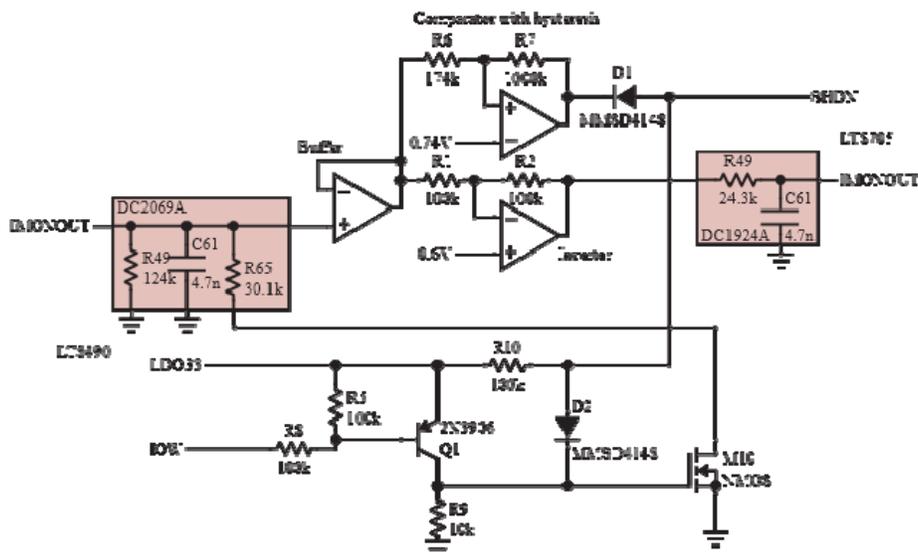
The IMONOUT signal from the LT8490 is buffered by and inverted. The IMONOUT termination resistor for the LT8705 (R49 on DC1924A) is connected to the output of this inverted current sense signal. If the LT8490 has no output current its IMONOUT signal is zero and the inverted signal is close to the IMONOUT threshold. This means that the IMONOUT pin of the LT8705 will be at the current limit threshold even if the output current is practically zero. When the load increases so that IMONOUT of the LT8490 increases, the current limit of the Slave will increase with the same amount and load sharing is achieved.

We also have to consider that the LT8490 switches the IOW pin from LOW state to High Impedance to reduce the charge current in Stage 0 (see the LT8490 data sheet for explanation). This means that the gain of the current measurement signal IMONOUT changes as the LT8490 changes between Stage 0 and Stage 1, which would cause trouble with load sharing in Stage 0 (trickle charge mode).

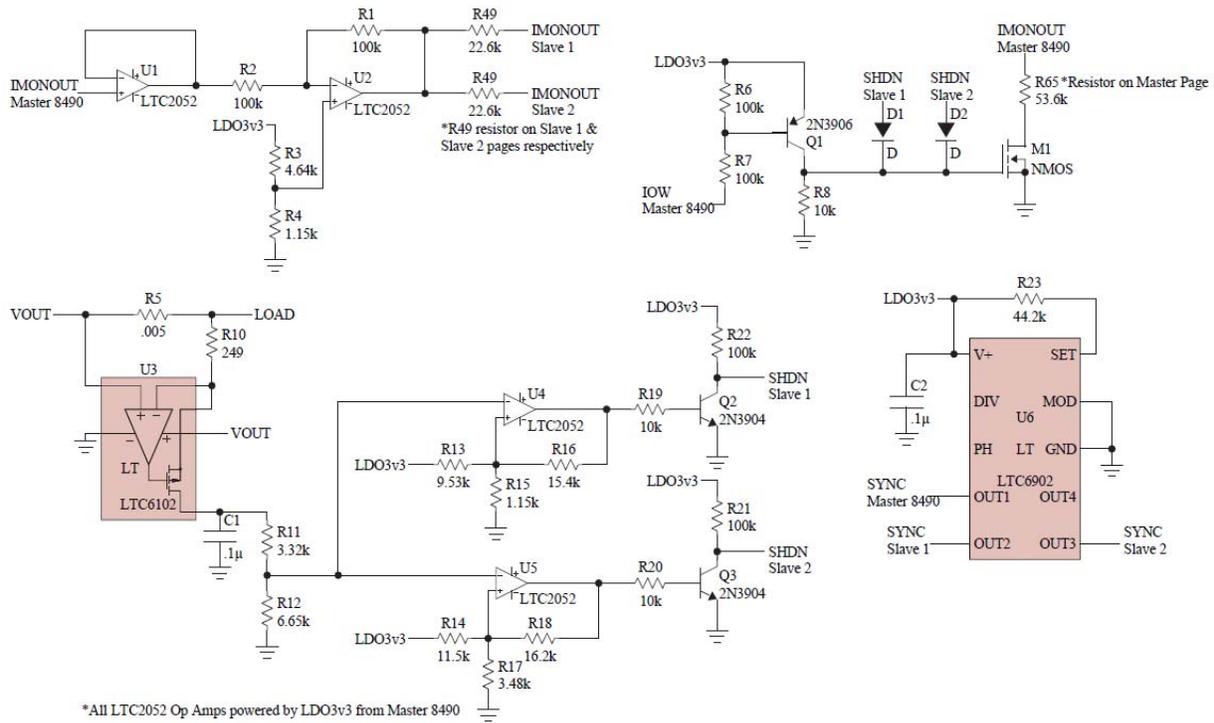
One workaround is to shut off the parallel LT8705 circuit when IOW goes high impedance. Because the current level is low in Mode 0 (Trickle charge mode) there is really no need to keep the LT8705 running. The circuit is shown below.

To synchronize the two converters, connect LT8490 CLKOUT to LT8705 SYNC pin through a 100ohm resistor.

R49, C61 and R65 to the left are part of the existing DC2069A demo circuit while R49 and C61 to the right are part of the existing DC1924A demo circuit.



## STAGE CONTROL AND CLOCK CIRCUITRY



The circuit above shows how to add two LT705 power stages as slaves in parallel with one LT8490. This circuit is using an additional output current sense resistor to measure total charge current. Two comparators U4 and U5 will turn on one and then the other slave as output current increases. This results in a good efficiency over the load range.

## I don't need the buck-boost function - Can I remove some of the MOSFETs?

No, the circuit will not function as intended if all four MOSFETs are not included.