

Load Share Function

For additional power requirements, the TOS 30 series power module is also available with a parallel option. Up to five modules can be configured, in parallel, with active load sharing. To implement force load sharing, the following connections should be made:

- The share pins of all units in parallel must be connected together. The path of these connections should be as short as possible.
- All SENSE pins should be connected to the power bus at the same point. Close proximity and directness are necessary for good noise immunity.
- When choosing the number of modules required for parallel operation, take note of the fact that current sharing has some tolerance. In addition, under transient conditions such as a dynamic load change and during start-up, all converter output currents will not be equal. To allow such variation and avoid the likelihood of a converter shutting off due to an output current over load, the total capacity of the paralleled system should $\leq 75\%$ of the sum of the individual converters.
- All modules should be turned on and turn off together. This is so that all modules start up at the same time avoiding the problem of one converter sourcing current into the other leading to an over-current trip condition. To ensure that all modules start up simultaneously, the on/off pins of all paralleled converters should be tied together and the converters enabled and disabled using the on/off pin.
- A single trim resistor can be used for all of the paralleled modules. This is accomplished by tying all TRIM pins together and connecting a single resistor to GND. The value of this resistor is given by R_{TRIM} / N , where N is the number of modules paralleled, and R_{TRIM} is the trim resistor value for a single module.
- The share bus is not designed for redundant operation and the system will be non-functional upon failure of one of the unit when multiple units are in parallel. In particular, if one of the converters shuts down during operation, the other converters may also shut down due to their outputs hitting current limiting trigger point. In such a situation, unless a coordinated restart is ensured, the system may never properly restart since different converters will try to restart at different times causing an over-load condition and subsequent shutdown. This situation can be avoided by having an external output voltage monitor circuit that detects a shutdown condition and forces all converters to shutdown and restart together.
- If the current sharing function is chosen, output voltage regulation will not meet the specifications.

