Power Considerations for the Micha range of Linear Over-Voltage Limiters.

The Linear OVL functions by using one or two high power MOSFETs in series with the output which create a variable resistance and thus control the output voltage seen by the load. The capability of the OVL is limited by the power dissipation of the MOSFETs which is easily determined as the factor of Volts dropped x Amps passed.

Calculation

The current OVL 15A and the OVL 30A have maximum power capacities at an ambient of 50℃ of 90W and 180 W respectively. The power to be dissipated through the Mosfet and heatsink is calculated as **(Vin - Vout) x I** , and this must not exceed the rated capacity.

Example 1: Vin = 58.0V; Vout = 52.8V; I = 25A
= (58.0 - 52.8) x 25
= 130W

Example 2: Vin = 14.8V; Vout = 13.2V; I = 20A
= (14.8 - 13.2) x 20
= 32W

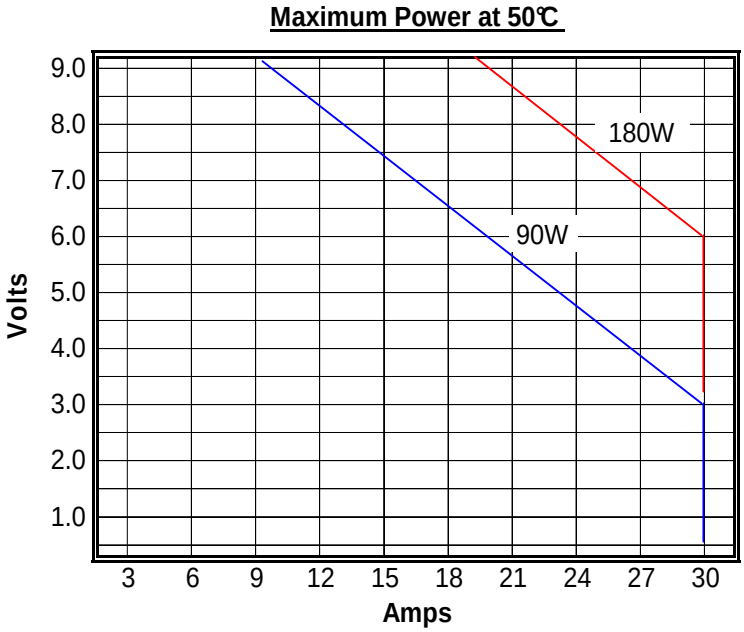

Figure 1: Maximum Power at 50℃

Note: The maximum allowable steady current passed through either unit is 30A.

The heatsinks have a temperature co-efficient of 0.35℃/W and this must also be taken into consideration. We recommend an absolute maximum heatsink working temperature of 80℃ and it may be necessary to de-rate the OVL because of this.

To calculate the expected temperature rise in ℃, the formula is **W x 0.35**. As the OVL 30A consists of two separate MOSFETs and heatsinks, each rated at 90W, the total power can be expected to be shared evenly between the two.

Example 1: Vin = 58.0V; Vout = 52.8V; I = 25A Total power = 130W
Using an OVL 30 with two heatsinks:
(130/2) x 0.35 = 22.75℃ above ambient.

Example 2: Vin = 14.8V; Vout = 13.2V; I = 20A Total power = 32W
Using an OVL 15A with single heatsink:
32 x 0.35 = 11.2℃ above ambient.

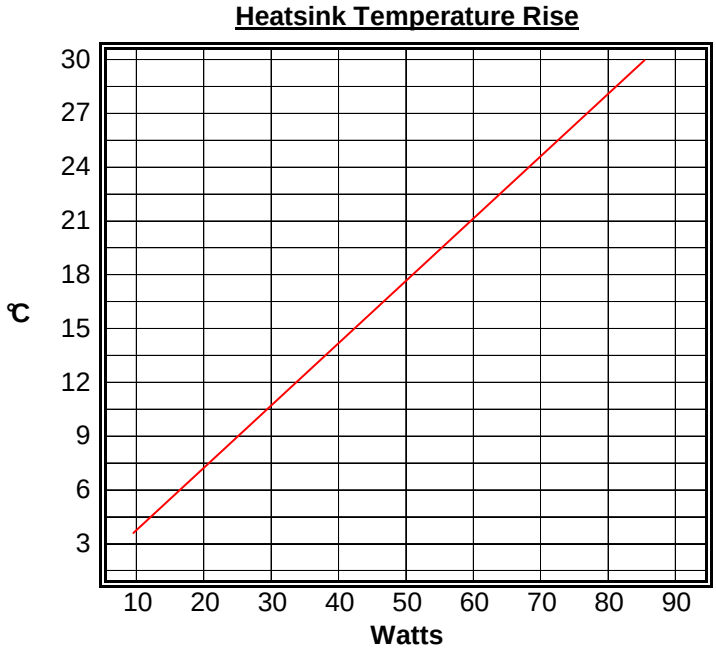

Figure 2: Expected heatsink temperature rise above ambient.

Short excursions above the maximum ratings are allowable and the OVL 15A and OVL 30A can be configured to handle short term overloads - please refer to the OVL manual for further details.