

Comparing the MicroVerter® UV and UV-164 Families

Introduction

The MicroVerter UV-164 family is the second generation of the MicroVerter (UV) family. It represents a technology upgrade and was specifically designed so its features and specifications are the same or improved from the original family. Because of the many similarities between the two designs, replacing an original UV Series product with a second generation UV-164 product is relatively easy and may simply be a drop in. This application note highlights the differences that should be considered.

Higher Efficiency - More Output Power

The UV-164 Series has 25% higher output current ratings and power output than the original UV models. Higher conversion efficiencies than the original designs allow the UV-164 units to produce higher output power and dissipate less heat than the original UV series products. The UV-164 family was designed to have the same or lower power dissipation at full load and maximum temperature than the original designs. This allows a given application to upgrade its power capabilities by nearly 25% without any changes to the cooling system for the module(s), or alternatively, if the loading is not changed, to enjoy a significant decrease in the temperature rise of the module. This could translate into increased reliability levels or expanded ambient temperature range for the system.

As an example, let's look at a system that uses a UV300-15 module with 180W or 12A load. -1 shows that the unit will be operating at an efficiency of about 82% and that the power dissipation at maximum baseplate temperature (100°C) is about 40W. Dropping in a UV300-15-164LF model and operating at 12A load yields an efficiency over 86% and a power loss of less than 30W. That is an instant 10W savings that will result in much cooler operating temperatures. Alternatively, an expansion card or other system enhancement could be considered whereby the load was increased to 16A, resulting once again in a power loss of 40W. That's a 33% increase in output power by simply dropping in the UV-164 unit.

In order to provide more power the maximum current of the module was increased. Current handling capability of conductors, connectors, fuses, and chokes that could see the higher input or output currents in normal or fault conditions should be reviewed.

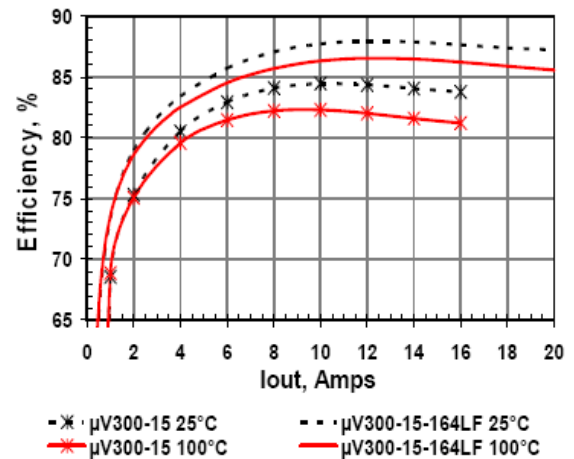
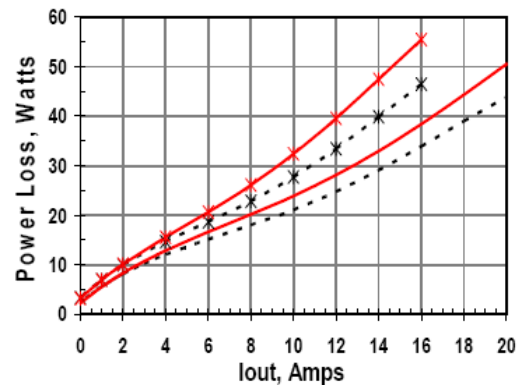


Figure 27a Efficiency and Loss comparison of UV300-15 and UV300-15-164LF models.

Identical Footprint

The UV-164 family is physically identical to the original MicroVerter family on all external dimensions and sizes. The new models have the same footprint and mounting features as the originals and can be dropped into existing designs without any modifications to the existing footprint or mounting features. In order for the UV-164 be compatible with both lead free applications and applications excluding pure tin finishes, gold over nickel plating replaces the original fused tin finish of the first generation product.

Identical Trimming

The UV-164 family has the same trim function and interface as the original UV products. All of the trim resistor equations used for the original family are valid for the new family. Existing designs that use the trim feature can continue to use the same trim resistor values with the new UV-164 family.

No Output Good

The UV-164 products do not include the Output Good signal as standard (see *Figure 27b*). This feature has been omitted because of low demand. Customers interested in an Output Good signal please contact the factory regarding the availability of this option.

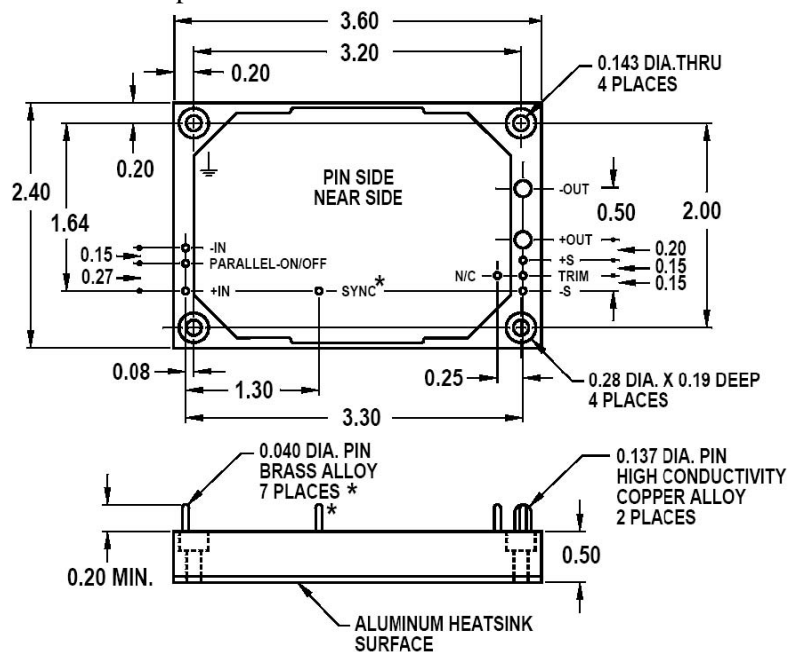
Figure 27b Outline drawing for the UV300-164LF series of modules. The UV300 Series Output Good pin is internally unconnected (N/C) in the UV300-164LF series

ROHS Compliance

The UV-300-164LF Series (300V input) are lead free and fully compliant with the European RoHS directive. The UV24-164 and UV48-164 models are “5/6” RoHS compliant and are intended for systems claiming the “Network Infrastructure Equipment” (lead in solder) exemption. They are assembled using a standard tin-lead solder reflow process

Paralleling Old and New Families

While both the original and new MicroVerter families have paralleling features they are not necessarily compatible with each other. Placing a unit from the new family and a unit from the original family together in a paralleled system may not produce the desired results. In addition, unit-to-unit consistency of performance for such a combination is not guaranteed. Any application that must rely on paralleling old and new models should verify the performance is acceptable for each set of modules.



NOTE:
Pin finish is gold over nickel, JESD97
2nd level interconnect category e4.
* 8 places when ordering sync option.
Location of optional sync pin shown.