

COTS DC-DC Converters And EMI Filters Feature Wide Input Range And Advanced Packaging

VPT's VXR series of dc-dc converters and EMI filters represent the company's most-advanced offering of its extensive line of high-reliability COTS dc-dc converters and accessory products. The dc-dc converters are available in models ranging from 7 to 100 W with a wide continuous input voltage range of 9 to 60 V dc—an industry best for high-rel COTS dc-dc converters, according to VPT—and transient operation from 6 to 80 V dc. The VXR series is optimized for a broad range of applications, from military ground vehicles to commercial and military aircraft, including the unique power needs of unmanned aerial and ground systems (see the figure.)

To achieve this wide input range without sacrificing efficiency, the company developed a new synchronous rectification topology. This series is also the first to use a new control loop design that achieves fast transient response without optoisolators.

Meanwhile, with introduction of the VXR series, the company continues to expand its use of its advanced epoxy packaging. This proprietary encapsulation incorporates EMI shielding and dual-sided thermal conduction, yet is fully compatible with high-volume manufacturing processes including wave solder, cleaning solvents, high-pressure sprays and aqueous wash. (For more on the benefits of this packaging, see "[Epoxy Encapsulated Package Streamlines Assembly Of High-Rel DC-DC Converters In Customer's Applications](#)" in the October 2014 issue of How2Power Today.) While this epoxy packaging been offered previously for the VPT250 and as an option for some COTS products, the VXR series is the first full line of COTS products offered exclusively in the epoxy packaging.

Nevertheless, it's the electrical performance of the VXR series converters that is most notable.

"The VXR series of products is reliability and efficiency focused, utilizing a low-noise, fixed-frequency wide-input-voltage-range topology," said Jeremy Ferrell, VPT's manager of Standard Product Engineering. "We achieved this high efficiency over a wide input voltage range with a proprietary precision-controlled synchronous rectification topology. The high efficiency design in-turn reduces the thermal management requirements. We also incorporated a proprietary control loop design that provides a fast transient response without the use of optoisolators."

Ferrell added, "For customers with noise-sensitive applications, we developed the VXR EMI filter series with current ratings from 2 to 20 A that were specifically designed to meet specific MIL-STD-461 and DO-160 conditions when used with our VXR series dc-dc converters."

The VXR series dc-dc converters and EMI filters are available for immediate sale. Individual unit prices begin at \$100 in volume quantities. Additional information on the VXR series and specific product datasheets can be found at www.vptpower.com.



Figure. Available in models ranging from 7 to 100 W with a continuous input voltage range from 9 to 60 V dc and transient operation from 6 to 80 V dc, the VXR series of dc-dc converters is optimized for a broad range of applications from military ground vehicles to commercial and military aircraft. These modules feature EMI shielding and dual-sided thermal conduction within epoxy encapsulated packaging that is fully compatible with high-volume manufacturing processes.