

### Battery-Free Energy Storage System

In its quest to develop and commercialize a battery-free energy storage system with extended runtime, Active Power Inc. (Austin, Texas) has produced a prototype system that delivers 80 kW of output for 15 min. This 20-kWh energy storage device represents the second of five product development milestones set by the company earlier this year. The new prototype doubles the energy output of the prototype announced in March, which provided 40 kW for 15 min.

Active Power, a manufacturer of flywheel-based energy storage devices and UPSs, has declined to specify the exact mechanism by which its prototype system achieves long-term energy storage. The company's current flywheel-based products provide sec-

onds rather than minutes of energy storage for ride-through in backup power applications.

Although cryptic about the underlying technology and whether it is flywheel-based, Active Power has indicated the performance goals for its battery-free energy storage system. The product is being developed to replace the type of battery cabinet found in 100-kVA UPSs offering 5 min to 30 min of runtime. Consequently, the energy storage system is being developed to offer performance characteristics, footprint and cost similar to that of existing battery cabinets. These benefits will come with levels of reliability, operating life and durability over temperature significantly greater than batteries can offer.

The company's basic flywheel product, CleanSource DC, generates

250 kW for 15 sec, which translates to about 1 kWh of energy storage.

Over the remainder of 2004, Active Power will pursue the three additional milestones announced earlier this year. These include two third-quarter events—the delivery of a prototype system capable of generating 10 kW for 2 hr and the unveiling of extended runtime technology publicly. In the fourth quarter, the company plans to ship its first alpha units to customers.

Active Power's extended runtime product is initially slated to replace lead-acid batteries in the 3-phase UPS market below 100 kVA, which is said to be approximately 45% of the overall \$2 billion 3-phase UPS market. Follow-on versions of this technology platform will be directed toward the low-power telecommunications sec-

tor, where power requirements in the 5-kW to 25-kW range are common and where runtimes may be measured in hours rather than minutes.

For more information, visit [www.activepower.com](http://www.activepower.com).

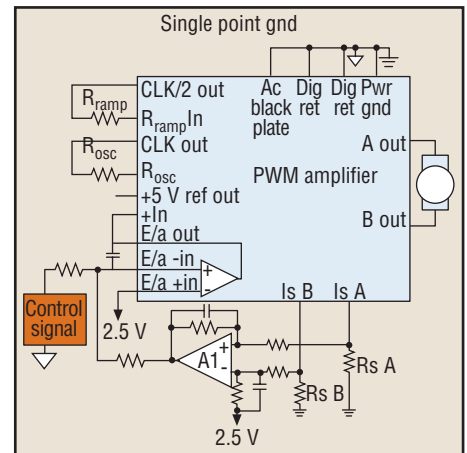
## PWM Amplifiers Integrate Motor Drive Functions

From Apex Microtechnology (Tucson, Ariz.), two PWM amplifiers offered in open-frame, nonhermetic packages integrate a number of features useful in high-power motor drives. The MSA240 and MSA260 include an oscillator, comparator, error amplifier, current limit comparators and a full-bridge output. The error amplifier also can be used as a differential amplifier on the input to allow interface with most motor control chip sets. In addition, the MSA240

and MSA260 are designed as full bridge, 4-quadrant PWM amplifiers to allow the amplifier to transition smoothly through 0 V for applications requiring deceleration and position control.

Both PWM amplifiers are rated for 20-A output. The MSA240 operates with a motor voltage supply up to 100 V and delivers up to 2000 W of continuous output. The MSA260 operates on supplies up to 450 V, while providing up to 9000 W of output. Other features include a user-defined switching frequency up to 50 kHz and—in the MSA260—IGBTs on the outputs for high efficiency at higher operating voltages. The amplifiers come in 58-pin DIP-style packages measuring 2.83 in. × 3.69 in. × 0.26 in.

Samples of the amplifiers and an evaluation kit are available. In quan-



*A typical application, the MSA240 PWM amplifier requires just a few external components to complete a motor torque controller.*

ties of 100, unit pricing is \$67 for the MSA240 and \$99.70 for the MSA260.

For more information, visit [www.apexmicrotech.com](http://www.apexmicrotech.com).

### Power Chipset Addresses AdvancedTCA Standard

ON Semiconductor's new comprehensive power solution—a chipset comprised of 10 devices—meets the emerging Advanced Telecom Computing Architecture (AdvancedTCA) established by the PCI Industrial Computer Manufacturers Group (PICMG). The chipset includes high-performance ORing diodes to enable ultrafast switchover to redundant power supplies with high efficiency, hot-swap ICs that deliver maximum protection against board failure, and a broad selection of dc-dc converters.

The NIS5101 SMART HotPlug is a hot swap protection IC for -48 V backplanes. Offered in an SPAK package, it has an adjustable current limit with no external power shunt required, undervoltage and overvoltage lockouts, an on-chip power MOSFET and a unique temperature-sensing capability. Coupled with the NUD3048 FET switch, they control the -48-V to 12-V isolated bus converter.

The NIS6111 ORing diode and NIS6201 floating charge pump enable ORing of the two -48 V inputs. They deliver the function of a diode with the low forward-voltage drop of a power MOSFET, enable ultrahigh-speed switching and allow the use of external MOSFETs for increased current handling capability. The NCP1561 push-pull/half-bridge controller incorporates all features required for high-density dc-dc conversion from the 48-V rail. Included on-chip are a high voltage start-up circuit, undervoltage shutdown, current limiting and soft-start.

The NCP5331 2-phase buck controller is for generating low-voltage, high-current output. It features enhanced  $V^2$  control methodology, internal gate drivers, adjustable switching frequency of up to 600 kHz and 0.8% precision reference. The NCP5425 dual synchronous buck controller is highly flexible with internal gate drivers that provide two

independent outputs or one high current output. This controller offers adjustable switching frequency up to 750 kHz and a  $\pm 1\%$  0.8-V reference. The NTD60N02R, NTD30N02 and NTD85N02R MOSFETS offer high power efficiency and low  $R_{DS(on)}$ .

For more information, visit [www.onsemi.com](http://www.onsemi.com).

### Crimp-style Contacts Handle Higher Currents

Tyco Electronics' Enhanced Type III+ high-current signal contacts offer increased current handling capability versus that of standard Type III+ contacts. These crimp-style contacts are for use in Tyco Electronics' circular plastic connectors (CPC), M Series connectors and METRIMATE connectors, and certain competitive connectors.

Compared to standard contacts, Enhanced Type III+ offer an additional 8 A of current carrying capacity for a single contact under identical testing conditions. This represents a 47% increase in current carrying capacity, allowing engineers to more efficiently package power into existing connector housings without compromising temperature rise (T-rise).

In some cases, Enhanced Type III+ contacts may allow engineers to use a smaller connector housing, effectively improving power density. For example, when using the standard Type III+ contacts in a 100% loaded 23-37 housing, a net current rating of 6.4 A per contact is allowed (assuming a 30°C T-rise). With the Enhanced Type III+ contacts in an identical 23-37 housing, a net current rating of 8 A per contact is possible with a 30°C T-rise.

Enhanced Type III+ contacts are copper nickel alloy with gold or tin plating. The size sixteen contacts are rated at 250 Vac, 25 A with a 30°C temperature rise when using 14 AWG wire.

For more information, visit [www.tycoelectronics.com](http://www.tycoelectronics.com). **PETech**

