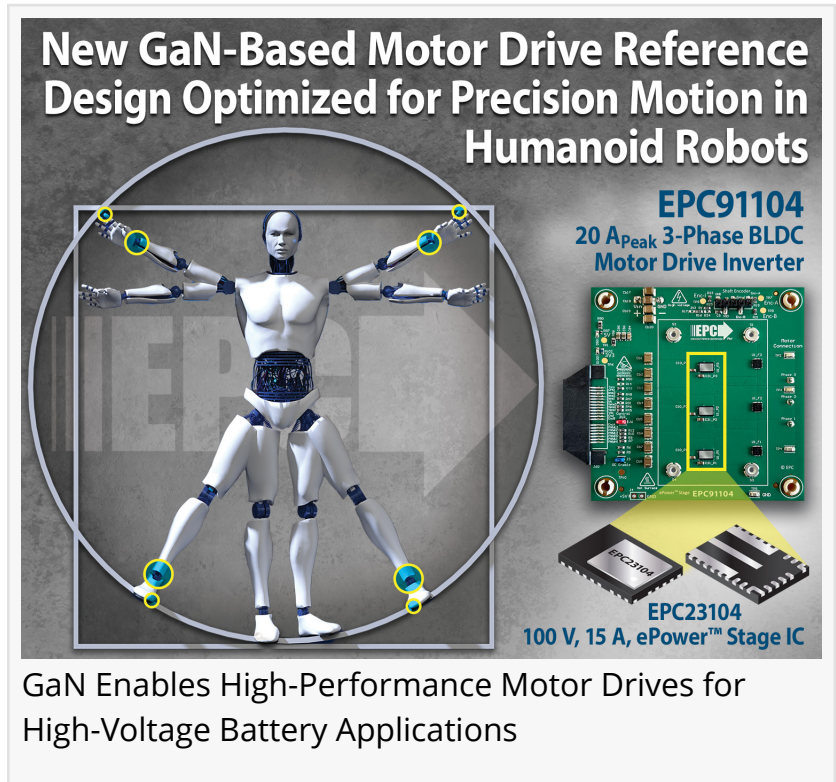


New GaN-Based Motor Drive Reference Design Optimized for Precision Motion in Humanoid Robots

The EPC91104 provides a versatile reference design, with optimized PCB layout, for wide input voltage range motor drive applications

EL SEGUNDO, CA, UNITED STATES, January 21, 2025 /EINPresswire.com/ -- Efficient Power Conversion Corporation (EPC), the world leader in enhancement-mode gallium nitride (eGaN®) power devices announces the launch of the [EPC91104](#), a high-performance 3-phase BLDC motor drive inverter reference design. This innovative design is ideal for powering compact, precision motors in humanoid robots, such as those used for wrist, finger, and toe movements.



New GaN-Based Motor Drive Reference Design Optimized for Precision Motion in Humanoid Robots

EPC91104
20 A Peak 3-Phase BLDC Motor Drive Inverter

EPC23104
100 V, 15 A, ePower™ Stage IC

GaN Enables High-Performance Motor Drives for High-Voltage Battery Applications

Tailored for Humanoid Robotics and Beyond

The EPC91104 evaluation board uses the EPC23104 ePower™ Stage IC, offering a maximum RDS(on) of 11 mΩ and supporting DC bus voltages up to 80 V. The design supports up to 14 Apk steady-state and 20 Apk pulsed current, ensuring reliable performance for humanoid robot applications that require fine motor control and precision.

Key Features of the EPC91104:

- **Wide Voltage Range:** Operates between 14 V and 80 V, accommodating a variety of battery systems.
- **Compact Design:** Suitable for space-constrained robotics.
- **Advanced Protection:** Includes overcurrent and input undervoltage protection, ensuring reliability in demanding applications.



Humanoid robots demand motors with precision and compactness, and the EPC91104 is specifically designed to meet those needs for applications like small joint actuation,”

Alex Lidow, CEO of EPC

- **Optimized Efficiency:** Low-distortion switching reduces torque ripple and motor noise.

“Humanoid robots demand motors with precision and compactness, and the EPC91104 is specifically designed to meet those needs for applications like small joint actuation,” said Alex Lidow, CEO of EPC.

EPC9176 for Higher Power Applications

For higher-current requirements, such as elbow and knee

motors in humanoid robots, EPC offers the EPC9176 board in the same family. With enhanced current capacity, the EPC9176 complements the EPC91104 to cover a full range of motor drive applications in humanoid robotics.

Ready for Development

The EPC91104 is compatible with controller boards from leading manufacturers, including Microchip, Texas Instruments, STMicroelectronics, and Renesas, offering engineers flexibility in development. It is equipped with comprehensive sensing and protection features, ensuring rapid prototyping and testing.

Price and Availability

The EPC91104 reference design boards are priced at \$780.00.

The EPC23104 is priced at \$2.50/ea in 3Ku reels.

Reference design boards and devices are available for immediate delivery from Digi-Key at <https://www.digikey.com/en/supplier-centers/epc>

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