

Low-Cost ICs Provide Advanced Velocity Control Of Servo Motors

New members of the company's Juno Motion IC family, [Performance Motion Devices'](#) Juno Velocity Control ICs are providing advanced velocity control of three-phase brushless dc and dc brush motors. According to the company, Juno Velocity Control ICs represent a price-to-performance breakthrough with features such as PI (proportional, integral) velocity loop control, programmable velocity estimation, dual biquad filtering, shunt regulation, deadband filtering, FOC (field oriented control), and more, yet are offered for just \$23 in quantity (see the figure).

Juno Velocity Control ICs are well suited for a wide variety of applications including spindle control, centrifuges, peristaltic pumps, laboratory automation, packaging automation and more. They are available in a 64-pin TQFP package measuring 12 mm x 12 mm and operate at 3.3 V.

"To satisfy the call for greater efficiency, smoother motion, and less heat generation, older BLDC motor control approaches are giving way to sophisticated algorithm-based techniques. Our design philosophy for the Juno IC family was to bring a new generation of intelligent capabilities to today's spindle, pump, vehicle, and centrifuge control applications. The response has been incredible, and it shows that dedicated ICs executing advanced algorithms is the path forward for next generation motor control" states Chuck Lewin, founder and CEO of PMD.

Features of these ICs include:

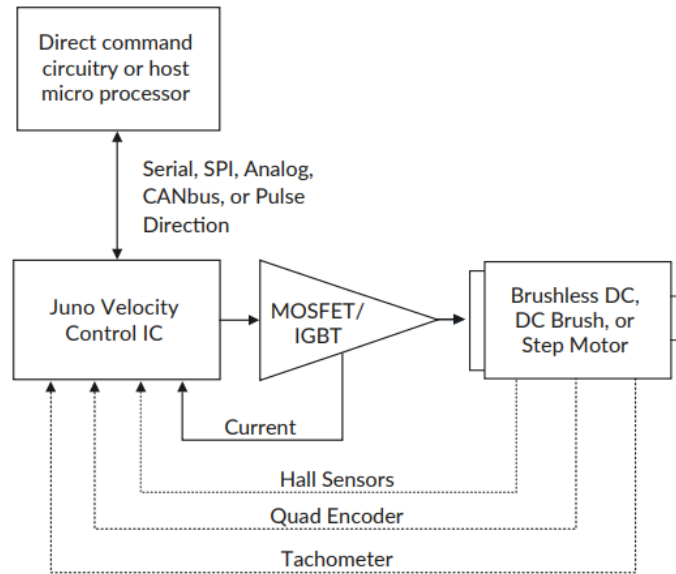
- Three-phase brushless dc and dc brush control
- Cascaded velocity loop, current loop control
- Field oriented control
- High/low switching bridge amplifier control signals
- Leg current sensing for minimum noise
- Torque mapping
- Performance trace with filtering enables adaptive control
- Long term motor and gear train performance monitoring.

According to PMD's Pam Gazley, these devices are distinguished by their extensive feature set.

"Most motor control ICs, even ones that provide dedicated velocity control, have very few features such as FOC, performance trace, biquad filters, deadband filters, shunt controller, and NVRAM storage. As a matter of fact, we are not aware of any ICs that offer half of these features." says Gazley.

She adds "Many of these new features stem from the fact that Juno provides algorithm-based control of motors versus other products which use fixed dedicated circuitry. We believe Juno ICs are at the forefront of what is likely to be a wave of products that add special CPU engines executing intelligent control algorithms to the existing fixed hardware control circuits presently found in most motor control ICs."

All Juno Velocity Control ICs are available immediately and are priced from \$23 depending on motor type controlled and quantity. Juno Developer Kits start at \$195. For more information on Juno Velocity and Torque ICs, visit pmdcorp.com/juno.



(a)

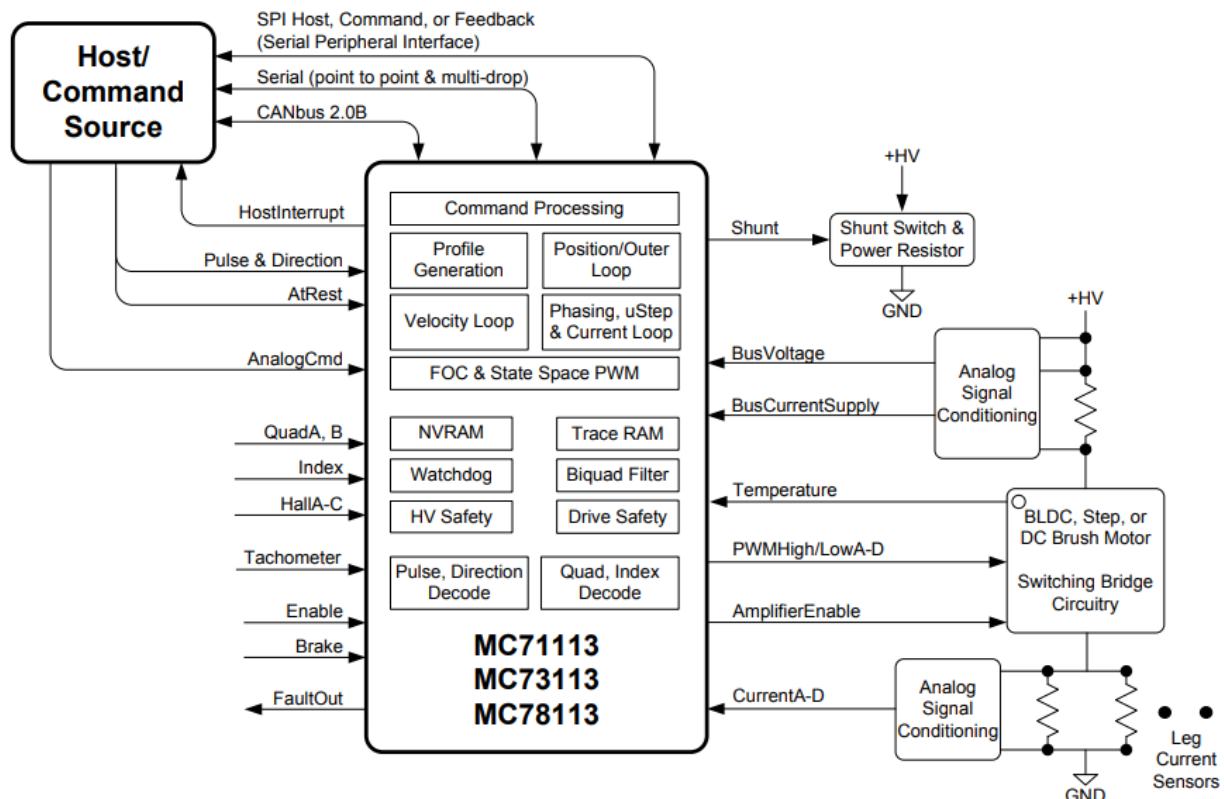


Figure. The Juno Velocity Control ICs are said to offer a price-to-performance breakthrough with features such as PI velocity loop control, programmable velocity estimation, dual biquad filtering, shunt regulation, deadband filtering, field oriented control, and more, yet are priced at only \$23 in quantity. A high-level configuration diagram (a) and a more detailed block diagram (b) are shown here.