

How to Maximize Efficiency in Your Power Control Application



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I'm excited to share with you that TI has just released to production the first package option in the new Piccolo™ F28004x microcontroller (MCU) series. What's great about the new F28004x MCU is that it takes all of the amazing performance and peripheral improvements of the flagship Delfino™ F2837x MCU and makes them available in a Piccolo product, with optimized performance, smaller memory and packages, and lower prices.



We optimized the F28004x for power control applications, which is the core business for C2000™ MCUs. This means:

- 100MHz performance, with a 100MHz parallel improved control law accelerator (CLA) option.
- Floating-point unit, trigonometric math unit and Viterbi complex-unit performance accelerators.
- 256KB and 128KB flash memory options.
- 100KB of full-speed random access memory (RAM).
- Flexible timers: fourth-generation enhanced pulse-width modulator (ePWM) modules with 150 ps resolution, complex waveform generation and synchronization capability.
- Three high-performance analog-to-digital converters (ADCs) with a post-processing block, programmable gain amplifiers and a flexible comparator subsystem.

All at an attractive price point starting at US\$4.85 in 1,000-unit quantities.

Thanks to the latest process technology, F28004x MCUs use 60% less active power than the equivalent F2806x series. New features include:

- An optional DC/DC converter for >70% less active power.
- A new fast serial interface to enable >200Mbps transfers and lower costs for communications over isolation boundaries.

- Flexible boot modes to reduce or eliminate the use of boot-mode pins.
- An embedded real-time analysis and diagnostic (ERAD) unit to enhance debugging and in-system analysis capability.

[Table 1](#) lists the configuration options for the F28004x.

Table 1. Piccolo F28004x Configurations

| Piccolo F28004x | Flash | CLA | Extras |
|--------------------------|-------|-----|---|
| F280049C | 256KB | Yes | InstaSPIN-FOC™ motor control solutions and the configurable logic block (CLB) |
| F280049 | 256KB | Yes | – |
| F280045 | 256KB | No | – |
| F280041C | 128KB | No | InstaSPIN-FOC and motor control solutions and the CLB |
| F280041 | 128KB | No | – |

Future software releases will enable extra features for [InstaSPIN-FOC™](#) motor control solutions and the CLB.

64-pin [samples](#) of the superset F280049C and evaluation modules ([EVMS](#)) are available. TI will announce 100-pin low-profile quad flat pack (LQFP) production shortly, followed by automotive-qualified versions of the 100-pin and 64-pin. The 56-pin production will follow late next year.

Additional Resources

- Read more about the new [Piccolo F28004x series](#).

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