

Piccolo™ MCU High Voltage Digital Power Supply Developer's Kits



Cost-efficiently speed design time with kits featuring bridged and bridgeless power factor correction AC/DC, resonant LLC and phase shifted full bridge DC/DC topologies implemented with one low cost MCU

The new Piccolo™-based High Voltage Digital Power Developer's Kits from Texas Instruments bring real-time communications and control capabilities to high efficiency, high power design topologies for cost sensitive designs. Coupled with an industry leading software package, the kits represent an out-of-the-box development environment capable of supporting components and voltage levels designers encounter when working with these topologies.

Each kit includes a dedicated software package pre-loaded for the specific topology supported by the kit, offering a jump-start to the evaluation environment. Also included are graphical tools allowing experimentation without

loading a development environment, further reducing start up time.

All four kits are supported in the controlSUITE™ software system developed for C2000™ MCUs to significantly reduce development time allowing designers to focus on product differentiators rather than basics. controlSUITE software includes unique, optimized libraries for the C2000 devices including building blocks and drivers for digital power supply designs. These kits also include an isolated JTAG via integrated USB interface integrated, eliminating the requirement of an external emulator, reducing development costs.

The Piccolo F28027* controlCARD

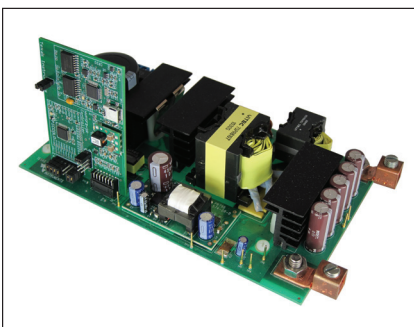
Key Features

- High voltage kits featuring 85-240VAC inputs for AC/DC topologies and 400VDC inputs for DC/DC topologies
- Bridged and bridgeless power factor correction AC/DC architectures
- Phase shifted full bridge with peak current mode control
- Resonant LLC with synchronous rectification
- Piccolo F28027* controlCARD based EVM
- Onboard isolated JTAG eliminating the need for an external emulator
- High performance TI analog devices used to complete drive stages
- GUI quick-start software and controlSUITE software

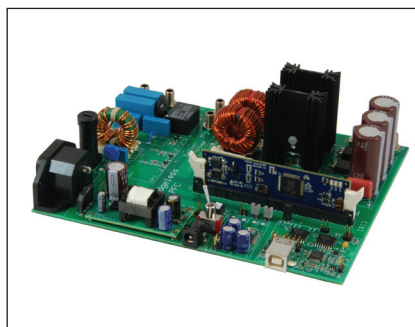
included with each kit is ideally suited for digital power supply designs. Running at up to 60 MHz, the Piccolo F28035 MCU features dual internal oscillators, up to 128KB of flash memory, a 12-bit 4.6MSPS ADC, high resolution ePWM outputs, and the control law accelerator (CLA). The CLA is an integrated independent, floating-point coprocessor designed to run control algorithms without any CPU involvement.

For more information on C2000 devices and tools please visit www.ti.com/c2000

* TMDSHVBLPFC ships with F28035 controlCARD



▲ Phase Shifted Full Bridge



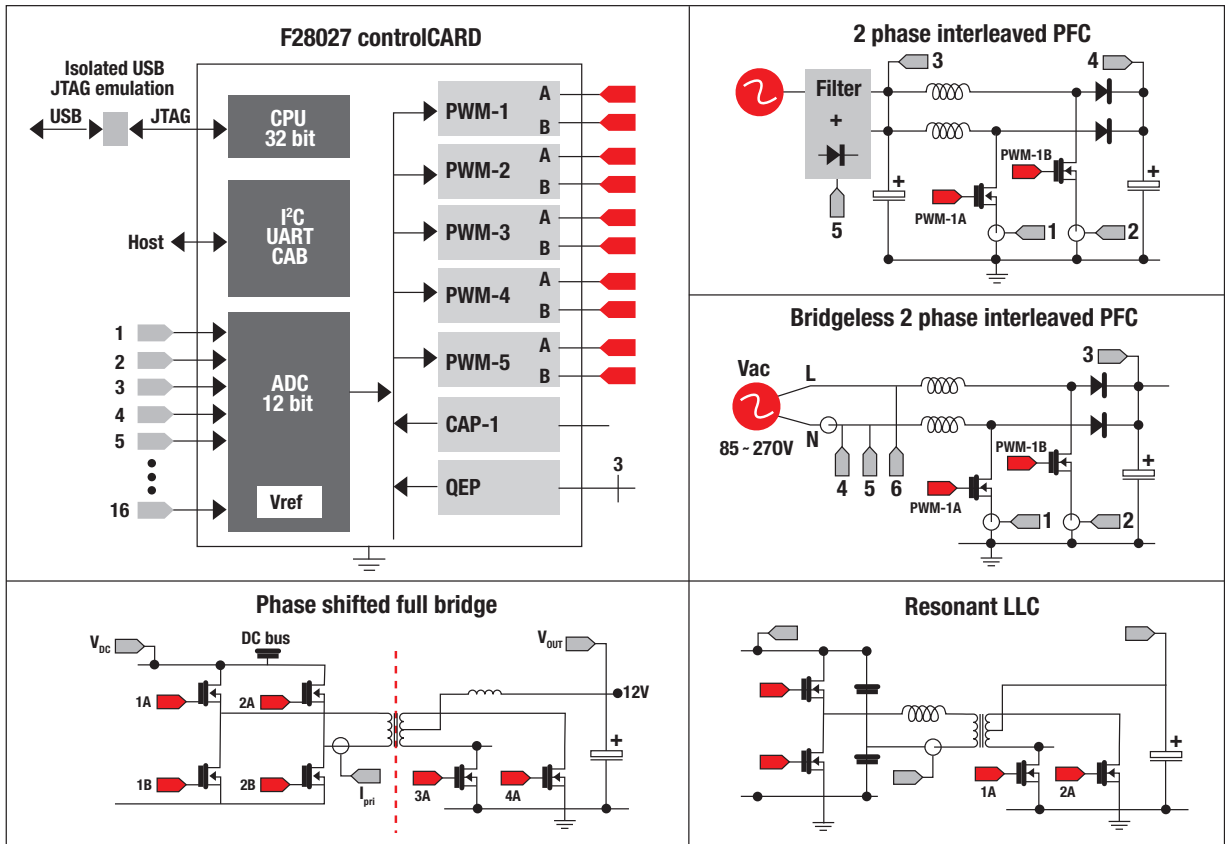
▲ Bridgeless PFC

Conversion stage	Kit topology	Input	Output	Control techniques
AC/DC	Bridgeless interleaved PFC	90-260VDC	400VDC @360W	- Linear and non-linear PFC control - Voltage and current loop gain control - Auto compensation - Current trip level protection
AC/DC	2 Phase interleaved PFC	90-260VAC	400VDC@360W	- Voltage and current loop gain control - Auto-compensation control - Current trip level protection
DC/DC	Phase shifted full bridge	400VDC	12VDC @600W	- Peak current mode control with slope compensation - Voltage mode - OVP, UVP, OCP
DC/DC	Resonant LLC	400VDC	12VDC @300W	- Zero voltage switching mode - Zero current switching mode - Frequency modulation voltage mode control - Burst mode control - OVP, UVP, OCP

Specifications subject to change without notification.

Software, documentation, hardware schematics, etc. can be downloaded at www.ti.com/c2000

System mapping diagrams



Pre - Developed Application Libraries for C2000

Digital power math algorithms

- Control 2P/2Z
- Control 3P/3Z
- Inverse Square
- Exponential Moving Avg.
- Current Command

Digital power hardware drivers

- Single Channel Buck
- High Resolution Buck
- Multi-Phase Interleaved
- MP Balanced Interleaved
- Half-H Bridge
- 2 Phase Interleaved PFC
- ZVS Full Bridge

Please visit www.ti.com/controlsuite for most current list.

Important Notice: The products and services of Texas Instruments Incorporated and its subsidiaries described herein are sold subject to TI's standard terms and conditions of sale. Customers are advised to obtain the most current and complete information about TI products and services before placing orders. TI assumes no liability for applications assistance, customer's applications or product designs, software performance, or infringement of patents. The publication of information regarding any other company's products or services does not constitute TI's approval, warranty or endorsement thereof.

The platform bar, Piccolo, controlSUITE and C2000 are trademarks of Texas Instruments.

All other trademarks are the property of their respective owners.

© 2011 Texas Instruments Incorporated



A122010

SPRT605

IMPORTANT NOTICE

Texas Instruments Incorporated and its subsidiaries (TI) reserve the right to make corrections, modifications, enhancements, improvements, and other changes to its products and services at any time and to discontinue any product or service without notice. Customers should obtain the latest relevant information before placing orders and should verify that such information is current and complete. All products are sold subject to TI's terms and conditions of sale supplied at the time of order acknowledgment.

TI warrants performance of its hardware products to the specifications applicable at the time of sale in accordance with TI's standard warranty. Testing and other quality control techniques are used to the extent TI deems necessary to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

TI assumes no liability for applications assistance or customer product design. Customers are responsible for their products and applications using TI components. To minimize the risks associated with customer products and applications, customers should provide adequate design and operating safeguards.

TI does not warrant or represent that any license, either express or implied, is granted under any TI patent right, copyright, mask work right, or other TI intellectual property right relating to any combination, machine, or process in which TI products or services are used. Information published by TI regarding third-party products or services does not constitute a license from TI to use such products or services or a warranty or endorsement thereof. Use of such information may require a license from a third party under the patents or other intellectual property of the third party, or a license from TI under the patents or other intellectual property of TI.

Reproduction of TI information in TI data books or data sheets is permissible only if reproduction is without alteration and is accompanied by all associated warranties, conditions, limitations, and notices. Reproduction of this information with alteration is an unfair and deceptive business practice. TI is not responsible or liable for such altered documentation. Information of third parties may be subject to additional restrictions.

Resale of TI products or services with statements different from or beyond the parameters stated by TI for that product or service voids all express and any implied warranties for the associated TI product or service and is an unfair and deceptive business practice. TI is not responsible or liable for any such statements.

TI products are not authorized for use in safety-critical applications (such as life support) where a failure of the TI product would reasonably be expected to cause severe personal injury or death, unless officers of the parties have executed an agreement specifically governing such use. Buyers represent that they have all necessary expertise in the safety and regulatory ramifications of their applications, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of TI products in such safety-critical applications, notwithstanding any applications-related information or support that may be provided by TI. Further, Buyers must fully indemnify TI and its representatives against any damages arising out of the use of TI products in such safety-critical applications.

TI products are neither designed nor intended for use in military/aerospace applications or environments unless the TI products are specifically designated by TI as military-grade or "enhanced plastic." Only products designated by TI as military-grade meet military specifications. Buyers acknowledge and agree that any such use of TI products which TI has not designated as military-grade is solely at the Buyer's risk, and that they are solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI products are neither designed nor intended for use in automotive applications or environments unless the specific TI products are designated by TI as compliant with ISO/TS 16949 requirements. Buyers acknowledge and agree that, if they use any non-designated products in automotive applications, TI will not be responsible for any failure to meet such requirements.

Following are URLs where you can obtain information on other Texas Instruments products and application solutions:

Products

Audio	www.ti.com/audio
Amplifiers	amplifier.ti.com
Data Converters	dataconverter.ti.com
DLP® Products	www.dlp.com
DSP	dsp.ti.com
Clocks and Timers	www.ti.com/clocks
Interface	interface.ti.com
Logic	logic.ti.com
Power Mgmt	power.ti.com
Microcontrollers	microcontroller.ti.com
RFID	www.ti-rfid.com
RF/IF and ZigBee® Solutions	www.ti.com/lprf

Applications

Communications and Telecom	www.ti.com/communications
Computers and Peripherals	www.ti.com/computers
Consumer Electronics	www.ti.com/consumer-apps
Energy and Lighting	www.ti.com/energy
Industrial	www.ti.com/industrial
Medical	www.ti.com/medical
Security	www.ti.com/security
Space, Avionics and Defense	www.ti.com/space-avionics-defense
Transportation and Automotive	www.ti.com/automotive
Video and Imaging	www.ti.com/video
Wireless	www.ti.com/wireless-apps

TI E2E Community Home Page

e2e.ti.com

Mailing Address: Texas Instruments, Post Office Box 655303, Dallas, Texas 75265
Copyright © 2011, Texas Instruments Incorporated