Meet the
TMS320F28379D LaunchPad™ Development Kit
Part Number: LAUNCHXL-F28379D

Resources
ti.com/launchpad

LAUNCHXL-F28379D Pin map

BoosterPack Ecosystem
Motor Drive Booster Packs
- BOOSTXL-DRV8301 and BOOSTXL-DRV8305
- 24 V, 10 A and 45 V, 15 A
- Integrated Three-Phase Motor Drivers

BUCKCONV Booster Pack
- Experiment with switching power
- Supported by PowerSuite
- On-board Buck Converter and Active Load

Software Tools
DesignDRIVE
Create designs for industrial drives applications
Support for various motor types, sensing technologies, encoder standards, and communications networks
>> www.ti.com/DESIGNDRIVE

Professional Software Tools
LaunchPad is also supported by professional IDEs that provide industrial-grade features and full debug capability. Set breakpoints, watch variables & more with LaunchPad.

www.ti.com/ccs

Below are the pins available on the BoosterPack connector
Also shown are functions that map with the BoosterPack standard.
* Note that to comply with the I2C channels of the BoosterPack standard, a software-emulated I2C must be used.
** Some LaunchPads do not 100% comply with the standard, please check your LaunchPad to ensure compatibility

(*) Denotes I/O pins that are interrupt-capable.

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Disclaimer: www.ti.com/lit/SPRUI73

www&ti&comMboosterpacks
A closer look at your new LaunchPad™ Development Kit

**Featured microcontroller: TMS320F28379D**

This LaunchPad is great for...
- Evaluation of motor control algorithms, including encoder and sensorless based torque, velocity, and servo position control
- Experimentation with power conversion control including DC-AC, AC-DC, DC-DC, and MPPT algorithms
- Industrial sensing and interface
- Digital Signal Processing, sensing, and capture applications including radar, doppler, infrared, and time-of-flight

### What comes in the box?

- XDS100v2 On-Board Debug Probe
  - Enables programming, debugging, & application update via USB while protecting your PC with electrical isolation
- TMS320F28379D Microcontroller
  - Dual 200 MHz 28x Core
  - Dual 200 MHz Real-time control co-processors (CLA)
  - 1MB Flash and 2048KB RAM
  - Viterbi, Complex Math, CRC Accelerator (VCU)
  - Trigonometric Math Unit (TMU)
- 16 HRPWM Outputs with 150 ps edge control
- 4 ADCs with selectable 16-bit/12-bit operation
- 8 windowed comparators with 12-bit DAC references
- Serial Communications Peripherals
  - SCI, SPI, I2C
  - CAN, McBSP, USB
- What comes in the box
  - V&ypin BoosterPack Connectors
  - J1, J2, J3, and J4
  - Power - User LEDs
  - JP3
  - 40-pin BoosterPack Connectors
  - TMS320F28379D Microcontroller
  - JP1
  - Optional SMA Jacks
  - J19 and J20
  - Power Jumpers
  - JP4 and JP5
  - High Density EMIF Connector
  - Bottom (J9)
  - On-Board 5V Enable jumper
  - JP3
  - CAN Interface w/ Transceiver
  - J12
  - Dual 5V Quadrature Interfaces
  - J14 and J15

### Out-of-box Demo

1. **Connecting to the Computer**
   Connect the LaunchPad to a computer using the included mini-USB cable. Two green power LEDs (D1/D4) should illuminate. The XDS100v2 drivers are needed for proper operation of the LaunchPad. Drivers are available at ti.com/xds100driver or can be installed with an IDE such as Code Composer Studio™.

2. **Running the Out-of-box Demo**
   When connected to your computer, the LaunchPad will power up and blink the red and blue LEDs for approximately three seconds. After the LEDs complete blinking, the LaunchPad enters into an ADC sample mode.
   
   **ADC Sample Mode**
   This demo samples ADCIN14 (BoosterPack header pin 23) at a rate of once per second and transmits the data back to the PC.
   
   - If the sample is below mid-scale (1.5V/2048) the red LED (D9) will light.
   - Conversely, if the sample is above mid-scale the blue LED (D10) will light.

   Sample data is also sent serially to the PC through the USB cable using a virtual COM port. The data can be viewed in a terminal using these settings:
   - Baud: 115200
   - Data: 8
   - Parity: None
   - Stop Bit: 1

### Feature Spotlight

**LaunchPad**

- TI’s software tools make it easy to get started building your control application.

**controlSUITE™**

- controlSUITE for C2000™ microcontrollers is a cohesive set of software infrastructure and software tools designed to minimize software development time. From device-specific drivers and support software to complete system examples in sophisticated system applications, controlSUITE provides libraries and examples at every stage of development and evaluation. Go beyond simple code snippets - jump start your real-time system with real-world software.

**DesignDRIVETM**

- The DesignDRIVE platform combines software solutions with DesignDRIVE Development Kits to make it easy to develop and evaluate solutions for many industrial drive and servo topologies. DesignDRIVE offers support for a wide variety of motor types, sensing technologies, position sensors and communications networks, including specific examples for vector control of motors, incorporating current, speed and position loops, to help developers jumpstart their evaluation and development.

- The Position Manager solutions included with the DesignDrive platform are now also included as part of the C2000 controlSUITE™ package and they support the leading analog and digital position sensors such as Resolver, SIN/COS, QEP, BiSS-C and EnDat2.2. The DesignDRIVE Development Kit serves as a common platform showcasing new industrial drives projects from TI that will be delivered via future controlSUITE releases. Get started with DesignDRIVE Software
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3 Regulatory Notices:

3.1 United States

3.1.1 Notice applicable to EVMs not FCC-Approved:

FCC NOTICE: This kit is designed to allow product developers to evaluate electronic components, circuitry, or software associated with the kit to determine whether to incorporate such items in a finished product and software developers to write software applications for use with the end product. This kit is not a finished product and when assembled may not be resold or otherwise marketed unless all required FCC equipment authorizations are first obtained. Operation is subject to the condition that this product not cause harmful interference to licensed radio stations and that this product accept harmful interference. Unless the assembled kit is designed to operate under part 15, part 18 or part 95 of this chapter, the operator of the kit must operate under the authority of an FCC license holder or must secure an experimental authorization under part 5 of this chapter.

CAUTION
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Interference Statement for Class A EVM devices

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
FCC Interference Statement for Class B EVM devices

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3.2 Canada

3.2.1 For EVMs issued with an Industry Canada Certificate of Conformance to RSS-210 or RSS-247

Concerning EVMs Including Radio Transmitters:

This device complies with Industry Canada license-exempt RSSs. Operation is subject to the following two conditions:

1. this device may not cause interference, and
2. this device must accept any interference, including interference that may cause undesired operation of the device.

Concernant les EVMs avec appareils radio:

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Concerning EVMs Including Detachable Antennas:

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication. This radio transmitter has been approved by Industry Canada to operate with the antenna types listed in the user guide with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

Concernant les EVMs avec antennes détachables

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante. Le présent émetteur radio a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés dans le manuel d'usage et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

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3.3.1 Notice for EVMs delivered in Japan: Please see http://www.tij.co.jp/llds/ti_ja/general/eStore/notice_01.page 日本国内に輸入される評価用キット、ボードについては、次のところをご覧ください。
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If User uses EVMs in Japan, not certified to Technical Regulations of Radio Law of Japan, User is required to follow the instructions set forth by Radio Law of Japan, which includes, but is not limited to, the instructions below with respect to EVMs (which for the avoidance of doubt are stated strictly for convenience and should be verified by User):

1. Use EVMs in a shielded room or any other test facility as defined in the notification #173 issued by Ministry of Internal Affairs and Communications on March 28, 2006, based on Sub-section 1.1 of Article 6 of the Ministry's Rule for Enforcement of Radio Law of Japan,
2. Use EVMs only after User obtains the license of Test Radio Station as provided in Radio Law of Japan with respect to EVMs, or
3. Use of EVMs only after User obtains the Technical Regulations Conformity Certification as provided in Radio Law of Japan with respect to EVMs. Also, do not transfer EVMs, unless User gives the same notice above to the transferee. Please note that if User does not follow the instructions above, User will be subject to penalties of Radio Law of Japan.
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3.4 European Union
3.4.1 For EVMs subject to EU Directive 2014/30/EU (Electromagnetic Compatibility Directive):

This is a class A product intended for use in environments other than domestic environments that are connected to a low-voltage power-supply network that supplies buildings used for domestic purposes. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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4.3.1 User shall operate the EVM within TI’s recommended specifications and environmental considerations stated in the user guide, other available documentation provided by TI, and any other applicable requirements and employ reasonable and customary safeguards. Exceeding the specified performance ratings and specifications (including but not limited to input and output voltage, current, power, and environmental ranges) for the EVM may cause personal injury or death, or property damage. If there are questions concerning performance ratings and specifications, User should contact a TI field representative prior to connecting interface electronics including input power and intended loads. Any loads applied outside of the specified output range may also result in unintended and/or inaccurate operation and/or possible permanent damage to the EVM and/or interface electronics. Please consult the EVM user guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative. During normal operation, even with the inputs and outputs kept within the specified allowable ranges, some circuit components may have elevated case temperatures. These components include but are not limited to linear regulators, switching transistors, pass transistors, current sense resistors, and heat sinks, which can be identified using the information in the associated documentation. When working with the EVM, please be aware that the EVM may become very warm.
4.3.2 EVMs are intended solely for use by technically qualified, professional electronics experts who are familiar with the dangers and application risks associated with handling electrical mechanical components, systems, and subsystems. User assumes all responsibility and liability for proper and safe handling and use of the EVM by User or its employees, affiliates, contractors or designees. User assumes all responsibility and liability to ensure that any interfaces (electronic and/or mechanical) between the EVM and any human body are designed with suitable isolation and means to safely limit accessible leakage currents to minimize the risk of electrical shock hazard. User assumes all responsibility and liability for any improper or unsafe handling or use of the EVM by User or its employees, affiliates, contractors or designees.
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