

BoosterPack Ecosystem



TMP006 Infrared MEMS temperature sensor
BoosterPack
- I²C-based temperature sensor can read surface temperature without making contact
- Can enable real-time readings or datalogging



Sub-GHz RF BoosterPack
- CC110L RF transceiver
- Great RF range!
- Includes 2x RF BoosterPacks
- Prototyping area
- Send & Receive RF data easily

» See them all @ ti.com/boosterpacks

Software Tools



Energia
A simple open-source & community-driven code editor.

Easy-to-use functions for blinking LEDs, buzzing buzzers & sensing sensors.
» www.energia.nu



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

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Disclaimer: www.ti.com/lit/sszz027

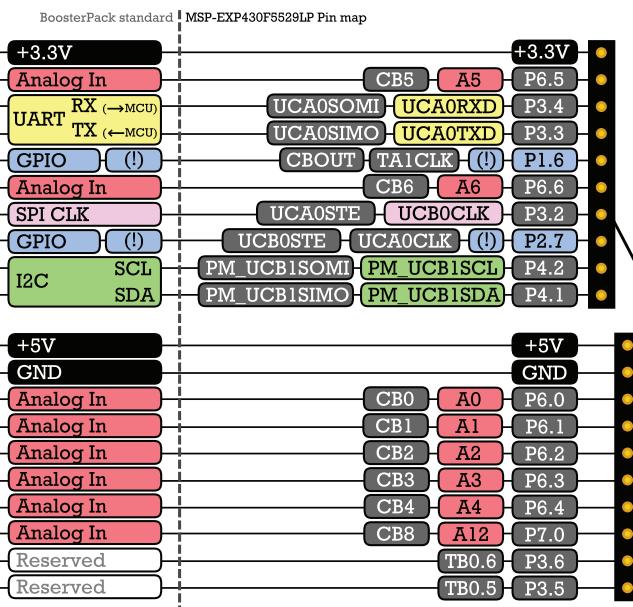
Below are the pins exposed @ the MSP-EXP430F5529LP BoosterPack connector.

Also shown are functions that map with the BoosterPack pinout standard. Refer to the MSP430F5529 Datasheet for additional details.

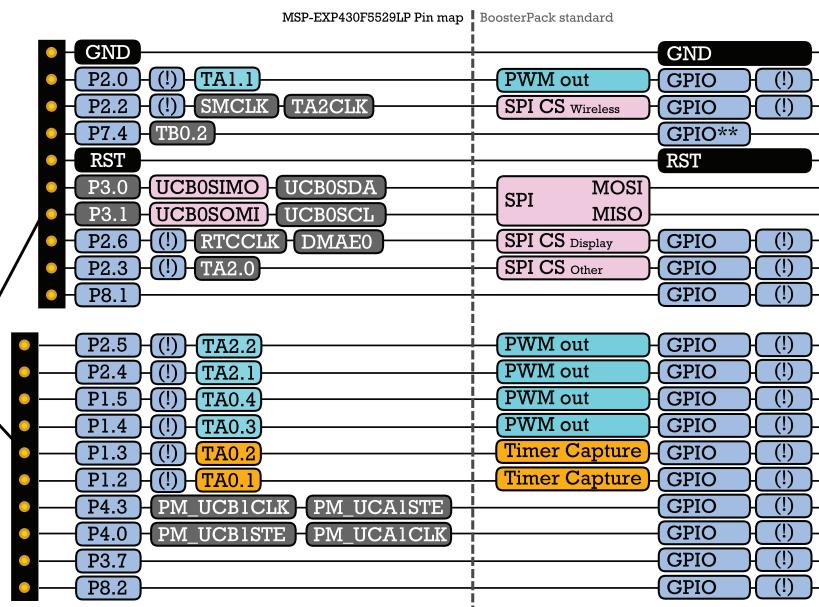
NOTE: Some LaunchPads & BoosterPacks do not 100% comply with the standard, so please check your specific LaunchPad to ensure pin compatibility.

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

** Some LaunchPads do not have a GPIO here. De-prioritize this pin when making a BoosterPack.

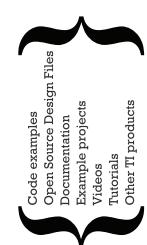


MSP-EXP430F5529LP



Resources @ ti.com/launchpad

Code examples
Open Source Design Files
Documentation
Example projects
Videos
Tutorials
Other TI products

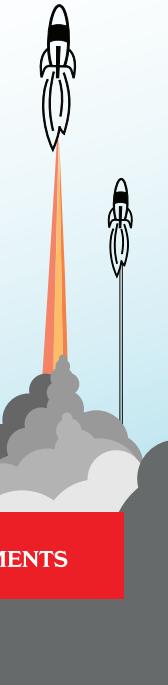


Meet the
MSP430F5529

LaunchPad Evaluation Kit

Part Number: MSP-EXP430F5529LP

TEXAS INSTRUMENTS



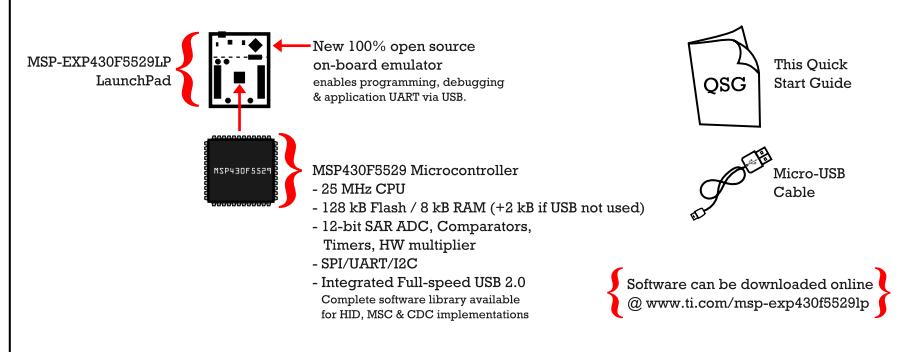
A closer look at your new LaunchPad

Featured microcontroller: MSP430F5529

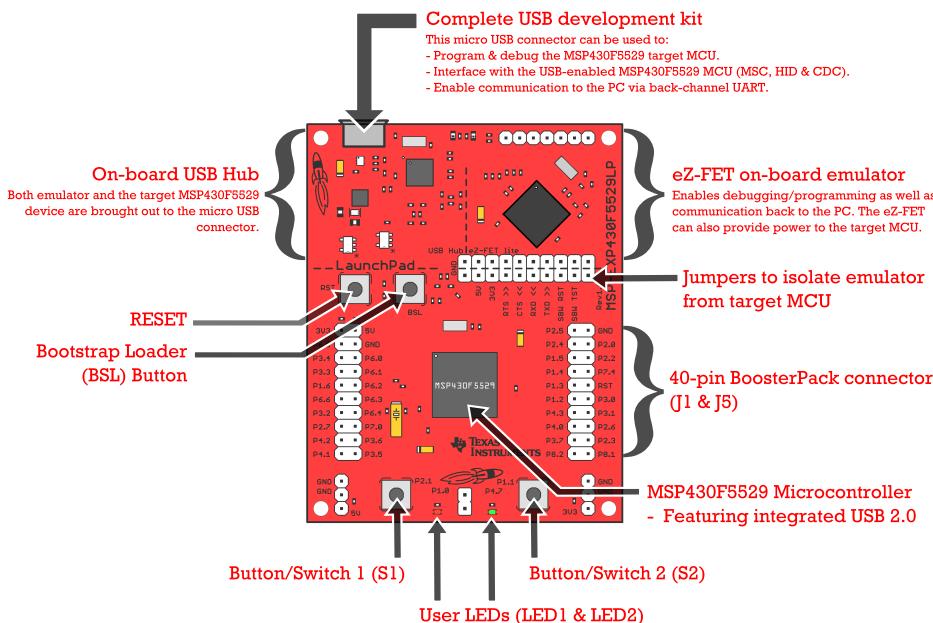
This LaunchPad is great for...

- General purpose applications due to its 25MHz CPU, integrated Full-speed USB 2.0 & analog/digital integration
- Battery-operated applications thanks to it's low-power capabilities
- Beginners & experienced developers alike thanks to it's multiple points of entry into software development (Energia for beginners & industrial-grade tools like CCS or IAR for more advanced development)

What comes in the box?



MSP-EXP430F5529LP Overview



Let's get started!

See the unboxing & demo video for this LaunchPad
@ ti.com/msp-exp430f5529lp

The out-of-box demo:

The MSP-EXP430F5529LP LaunchPad features an MSP430F5529 device that is pre-loaded with some demo functionality.

1. Connecting the hardware

Connect the LaunchPad using the included USB cable to a computer. If prompted, let it install necessary software.

2. The Demo Application

When connected to your computer, the device enumerates on the computer as a composite USB device to demonstrate 2 USB implementations.

MSC (Mass Storage Class) Hard drive

When plugged in over USB, the LaunchPad enumerates as a Mass Storage Class device. The LaunchPad shows up as a removable disk ("F5529LP") on the computer and contains several files on FAT volume.

- Button1.txt = "Hello World"
- Button2.txt = This contains ASCII art of the LaunchPad "Rocket" logo
- MSP430_USB_LaunchPad.url
- ReadMe.txt

HID (Human Interface Device) Keyboard

The LaunchPad also enumerates as a HID Keyboard. By pressing S1 or S2 button on your LaunchPad, the text stored in the Button1 and Button2.txt files will be sent to your computer as "keystrokes." Open up a text editor to see the incoming characters! You can personalize the pre-set character strings by simply editing the Button1 and Button2.txt files. This demo is limited to 2048 characters in each txt file.

3. Finding USB resources

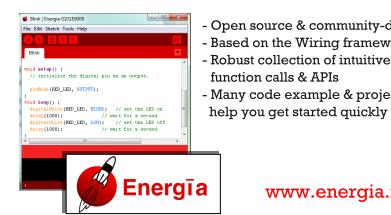
The MSP430F5529 device is supported by a robust USB development ecosystem, which includes open source APIs for MSC, HID & CDC USB implementations. Also, a GUI-based USB descriptor tool is available, which can help you generate your USB drivers to ease your development! You can find more at www.ti.com/msp430usbdevpack

Where do I go next?

This LaunchPad provides multiple-points of entry in terms of software development. You can use a friendlier code editing tool, such as the open source, community-made Energia, or a full-fledged industrial-grade development environment like Code Composer Studio.

Energia

A wonderful community-driven, open-source code editor that provides a simple & friendly development environment.



www.energia.nu

Professional Tools

Professional development tools are also available and provide advanced capabilities like full debug support enabling you to set breakpoints, watch variables, step through your code & more.

Code Composer Studio™ IDE



www.ti.com/ccs

IAR Embedded Workbench®



www.ti.com/iar

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1. *Delivery:* TI delivers TI evaluation boards, kits, or modules, including any accompanying demonstration software, components, and/or documentation which may be provided together or separately (collectively, an "EVM" or "EVMs") to the User ("User") in accordance with the terms set forth herein. User's acceptance of the EVM is expressly subject to the following terms.
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 - 2.3 TI's sole liability shall be at its option to repair or replace EVMs that fail to conform to the warranty set forth above, or credit User's account for such EVM. TI's liability under this warranty shall be limited to EVMs that are returned during the warranty period to the address designated by TI and that are determined by TI not to conform to such warranty. If TI elects to repair or replace such EVM, TI shall have a reasonable time to repair such EVM or provide replacements. Repaired EVMs shall be warranted for the remainder of the original warranty period. Replaced EVMs shall be warranted for a new full ninety (90) day warranty period.

WARNING

Evaluation Kits 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 shall operate the Evaluation Kit within TI's recommended guidelines and any applicable legal or environmental requirements as well as reasonable and customary safeguards. Failure to set up and/or operate the Evaluation Kit within TI's recommended guidelines may result in personal injury or death or property damage. Proper set up entails following TI's instructions for electrical ratings of interface circuits such as input, output and electrical loads.

NOTE:

EXPOSURE TO ELECTROSTATIC DISCHARGE (ESD) MAY CAUSE DEGRADATION OR FAILURE OF THE EVALUATION KIT; TI RECOMMENDS STORAGE OF THE EVALUATION KIT IN A PROTECTIVE ESD BAG.

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.

3.1.2 For EVMs annotated as FCC – FEDERAL COMMUNICATIONS COMMISSION Part 15 Compliant:

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

3.3 Japan

- 3.3.1 *Notice for EVMs delivered in Japan:* Please see http://www.tij.co.jp/lsts/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。
http://www.tij.co.jp/lsts/ti_ja/general/eStore/notice_01.page

- 3.3.2 *Notice for Users of EVMs Considered "Radio Frequency Products" in Japan:* EVMs entering Japan may not be certified by TI as conforming to Technical Regulations of Radio Law of Japan.

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.

4 *EVM Use Restrictions and Warnings:*

- 4.1 EVMS ARE NOT FOR USE IN FUNCTIONAL SAFETY AND/OR SAFETY CRITICAL EVALUATIONS, INCLUDING BUT NOT LIMITED TO EVALUATIONS OF LIFE SUPPORT APPLICATIONS.
 - 4.2 User must read and apply the user guide and other available documentation provided by TI regarding the EVM prior to handling or using the EVM, including without limitation any warning or restriction notices. The notices contain important safety information related to, for example, temperatures and voltages.
 - 4.3 *Safety-Related Warnings and Restrictions:*
 - 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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