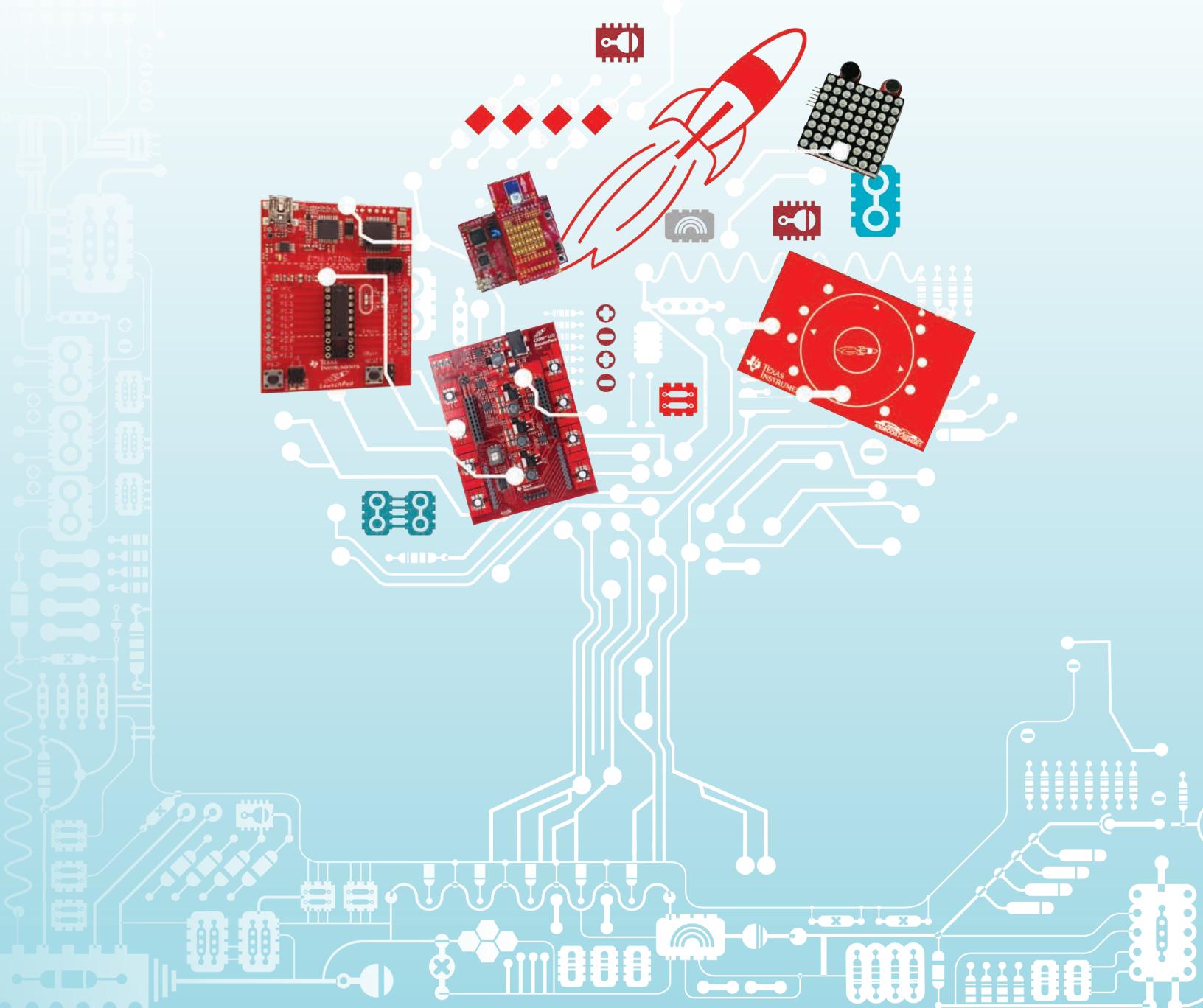


Lift-off with the LaunchPad Ecosystem



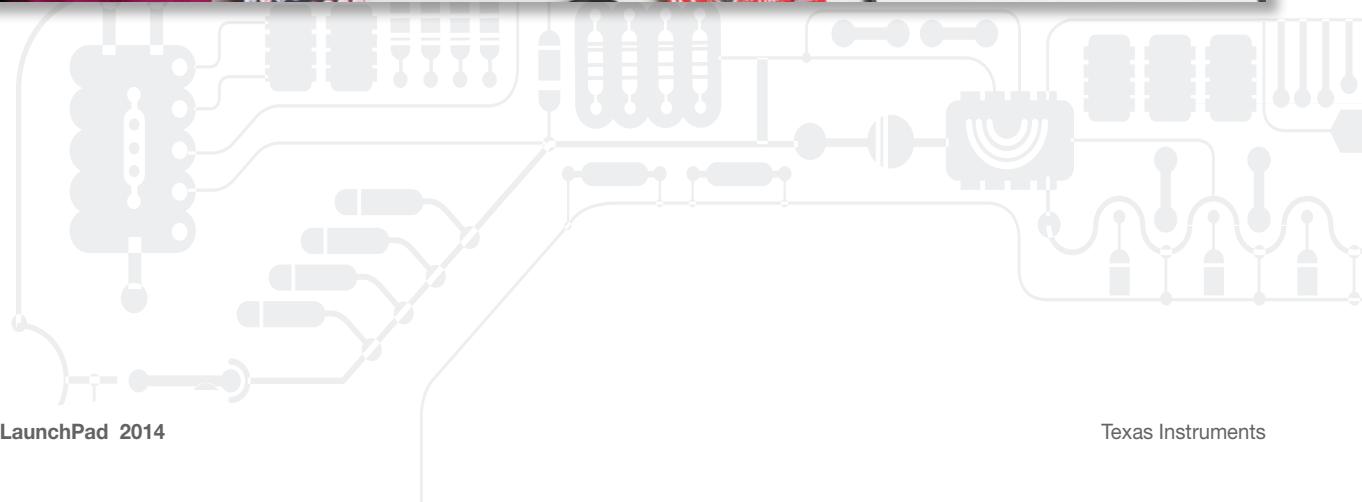
Introduction

Lift-Off with TI LaunchPad: A Microcontroller Evaluation Kit

LaunchPad is a low-cost, easy-to-use microcontroller development board from Texas Instruments.

Starting at \$9.99 USD, LaunchPad boards offer a snapshot into the world of TI's broad MCU portfolio. Use this guide to help you choose the perfect LaunchPad for your project.

Blink LEDs, spin motors, make robots and much more with easy-to-use LaunchPad kits and a variety of software options to suit your maker or developer needs.



Introducing: The LaunchPad Ecosystem!

3

1

Prepare to count down ...

Hardware:

- **LaunchPad:** Choose which LaunchPad best suits your project's needs from the variety of MCU LaunchPad kits.
 - Check them out at www.ti.com/launchpad
- **BoosterPacks:** Choose a plug-in board (or BoosterPack) to expand your project's application space.
 - Discover your options at www.ti.com/boosterpacks
 - **BYOB:** Want to make a BoosterPack of your own?
 - Find what you need to know at www.ti.com/byob



2

Take it to the next step ...

Software:

- Choose from many tools catered to your level of experience – from the community-driven, easy-to-use Energia, to the feature-rich Code Composer Studio™ Integrated Development Environment and other tools.
 - Explore more at www.ti.com/launchpadsoftware



Ready to take off?

Community and Support:

- Thousands of users worldwide are a vital part of the LaunchPad ecosystem! Join the community to share projects, code examples, ideas and resources and for technical support.
 - Find valuable information at www.e2e.ti.com and www.43oh.com



TI E2E™
Community



MSP430™ MCU LaunchPads

Ultra-Low Power

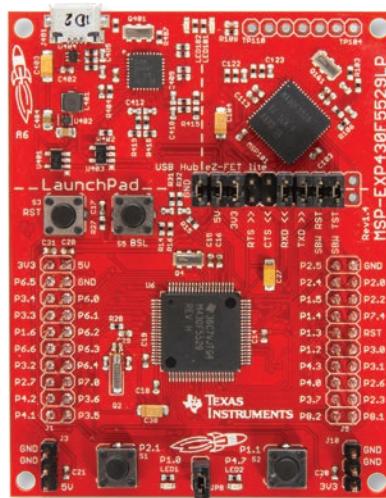
Optimized to enable battery-operated and battery-free general-purpose applications

MSP-EXP430G2



U.S. \$9.99

MSP-EXP430F5529LP



U.S. \$12.99

MSP-EXP430FR5969



U.S. \$15.99

Why this LaunchPad?

- Ultra-low power consumption
- Suited for general-purpose applications
- Easy to learn for beginners

Why this LaunchPad?

- Ultra-low power consumption
- Integrated USB (ATG) and increased memory
- Increased number of pins and peripherals

Why this LaunchPad?

- Lowest power MSP430™ MCU with ultra-low power active and standby operation
- Integrated 64 kB FRAM for fast, non-volatile memory-writes. True unified memory allows boundary-free access
- Advanced peripheral integration including a 12-bit differential SAR ADC and AES256 accelerator

Feature	MSP-EXP430G2	MSP-EXP430F5529LP	MSP-EXP430FR5969
MCU	MSP430G2553	MSP430F5529	MSP430FR5969
Speed	Up to 16 MHz	Up to 25 MHz	16 MHz
Non-volatile memory	16 kB	128 kB	64 kB FRAM
RAM	512 B	8 kB	2 kB
Timers	Two 16-bit timers	Five 16-bit timers	Five 16-bit timers
Serial communication	1 I²C, 2 SPI, 1 UART	2 I²C, 4 SPI, 2 UARTs	2 I²C, 4 SPI, 2 UARTs
ADC channels	8	16	16
BoosterPack pins	20	40	20
Energia support	 Yes	Yes	Yes
Extra features	DIP package	USB	Super cap

Connected LaunchPads

ARM®-Based MCUs with Connectivity

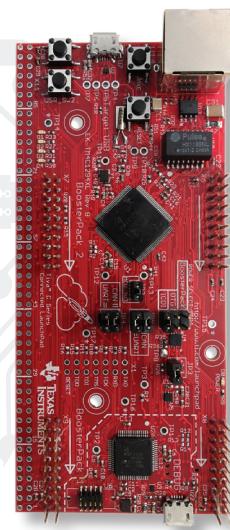
ARM Cortex®-M4-based microcontrollers with integrated connectivity options, both wired and wireless

SimpleLink™ Wi-Fi® CC3200 LaunchPad



U.S. \$29.99

EK-TM4C1294XL



U.S. \$19.99

Why this LaunchPad?

- Enables quick development of Internet of Things designs with a single-chip low-power Wi-Fi solution (Wi-Fi 802.11b/g/n standards)
- Wi-Fi network processor with integrated TCP/IP stack, HTTP server, and many other Internet protocols and programmable MCU
- Power Wi-Fi battery-operated designs for more than a year on two AA batteries
- Get started quickly, no Wi-Fi experience needed

Why this LaunchPad?

- 120-MHz ARM Cortex-M4 with floating-point (Digital Signal Control CPU)
- First in LaunchPad ecosystem to offer out-of-the-box Internet/cloud connectivity with integrated Ethernet
- First in LaunchPad ecosystem to offer two BoosterPack XL interfaces (using stackable headers)

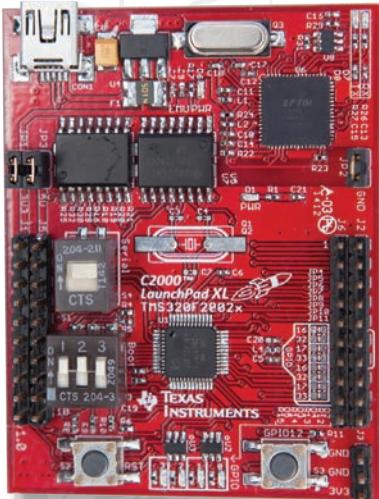
Feature	CC3200-LAUNCHXL	EK-TM4C1294XL
MCU	Wireless MCU	TM4C129
Speed	80 MHz	120 MHz
Flash	1 MB (external)	1 MB
RAM	Up to 256 kB	256 kB
EEPROM	> 8 MB	6 kB
Timers	4 general-purpose timers with 16-bit Pulse-Width Modulation (PWM)	8x 32-bit
Serial communication	1 SPI, 2 UARTs, 1 McASP Interface with support for 2 I ² S channels, 1 I ² C	10 I ² C, 8 UARTs, 4 QSPI, 2 CAN, EPI, USB
ADC channels	4x 12-bit	2x 12-bit
BoosterPack pins	Two dual-gender, 20-pin stackable headers	2x 40
Energia support	Yes	Yes
Connectivity options	Wi-Fi	Ethernet

Performance LaunchPads

High Peripheral Integration

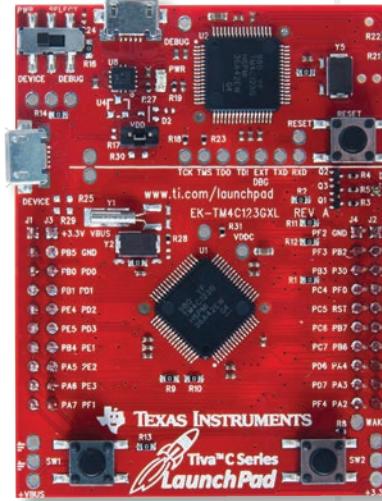
Powerful capabilities are integrated into these LaunchPad kits, featuring high-resolution timers (LAUNCHXL-F28027F) or a bevy of serial communication modules (EK-TM4C123GXL).

LAUNCHXL-F28027F



U.S. \$17.00

EK-TM4C123GXL



U.S. \$12.99

Why this LaunchPad?

- Best-suited for real-time digital control applications
- Built-in JTAG emulator, pre-loaded InstaSPIN™-FOC library on ROM
- Software library support for motor-control needs

Why this LaunchPad?

- ARM-based TI MCU with high CPU frequency and horsepower
- Highly-integrated with various serial communications modules
- Best suited for general-purpose applications

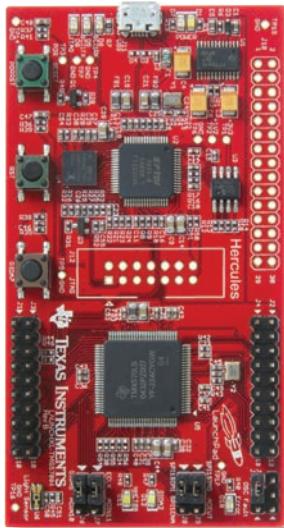
Feature	LAUNCHXL-F28027F	EK-TM4C123GXL
MCU	C2000™ Piccolo™ TMS320F28027F	TM4C123
Speed	60 MHz	80 MHz
Flash	64 kB	256 kB
RAM	10 kB	32 kB
EEPROM	N/A	2 kB
Timers	3	24
Serial communication	1 SPI, I ² C, UART	6 I ² C, 4 SPI, 8 UARTs, 2 CAN
ADC channels	13	12
BoosterPack pins	40	40
Energia support	 Yes	Yes

Hercules™ MCU LaunchPads

Safety

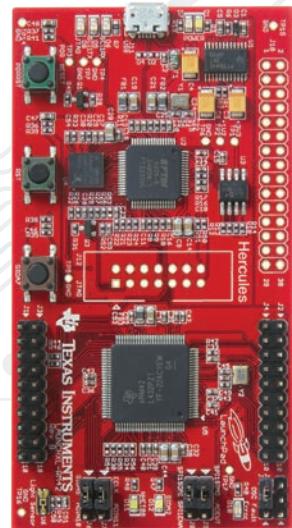
Specialized with dual ARM® Cortex®-R lock-step cores and safety features that are ideal for functional safety applications

LAUNCHXL-TMS57004



U.S. \$19.99 each

LAUNCHXL-RM42



U.S. \$19.99 each

Why this LaunchPad?

- ARM Cortex-R4 32-bit lock step cores MCU for safety-critical applications
- Features Hercules TMS570 series MCU designed specifically for safety-critical automotive and transportation applications
- MCU features integrated safety features to simplify SIL-3 and ASIL D applications

Why this LaunchPad?

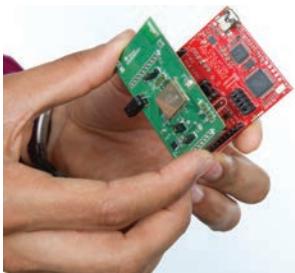
- ARM Cortex-R4 32-bit lock step cores MCU for safety-critical applications
- Features Hercules RM4 series MCU designed specifically for safety-critical medical and industrial applications
- MCU features integrated safety features to simplify SIL-3 applications

Feature	Hercules LAUNCHXL-TMS57004	Hercules LAUNCHXL-RM42L432
CPU	ARM Cortex-R4	ARM Cortex-R4
Speed	80 MHz	100 MHz
Featured MCU	TMS570 Series: Q100 qualified with temperature range: -40°C to 125°C	RM4 Series: Temperature range: -40°C to 110°C
Flash	384 kB ECC	384 kB ECC
RAM	32 kB ECC	32 kB ECC
EEPROM	16 kB ECC Flash for EEPROM emulation	16 kB ECC Flash for EEPROM emulation
ADC channels	16-ch 12-bit multi-buffered ADC	16-ch 12-bit multi-buffered ADC
Comm peripherals	Multi-buffered SPI, LIN/SCI (UART), 2x CAN (DCAN)	Multi-buffered SPI, LIN/SCI (UART), 2x CAN (DCAN)
Timers	19-pin programmable High-End Timer (N2HET), eQEP – Enhanced Quadrature Encoder Pulse Module	19-pin programmable High-End Timer (N2HET), eQEP – Enhanced Quadrature Encoder Pulse Module
Others	GIO pins	GIO pins

Plug in Your BoosterPack

Want to add more functionality to your LaunchPad project?

Enter BoosterPacks!



BoosterPacks are modular plug-in boards that fit on top of the LaunchPad baseboards. These modules introduce new functionality to the LaunchPad Kits including wireless, capacitive touch, LED lighting and more.

You can see some of the most popular BoosterPacks from third parties and TI. Buy BoosterPacks at www.ti.com/boosterpacks.

Feeling adventurous? Learn how you can make your own! Go to www.ti.com/byob to learn how to "BYOB," or Build Your Own BoosterPack.



Featured BoosterPacks

SimpleLink™ Wi-Fi® CC3100 BoosterPack CC3100BOOST



- Wireless capability by TI to implement your IoT solution
- 802.11 b/g/n
- Station, AP and Wi-Fi Direct® modes
- Price: U.S. \$19.99

CC110L-Based Sub-1GHz RF BoosterPack 430BOOST-CC110L



- CC110L RF transceiver with RF range to send and receive RF data easily
- Price: U.S. \$19.00

Educational BoosterPack MKII



- Analog joystick
- 3-axis accelerometer
- TI OPT3001 optical light sensor
- TI TMP006 temperature sensor
- Buzzer, microphone
- RGB LED
- Color LCD screen
- Price: Coming soon

Sensor Hub BoosterPack BOOSTXL-SENSHUB



- Array of on-board sensors
- Temperature sensor, light sensor, humidity sensor, accelerometer and gyro
- Price: U.S. \$49.99

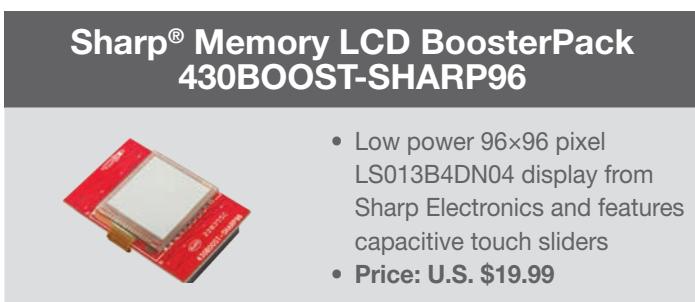
Build Your Own BoosterPack

The possibilities are endless

Can't find a BoosterPack that fits your needs? Have an amazing idea to make your own and need a helping hand? If you have a BoosterPack idea, we have the resources to help take your idea from concept to PCB to product in a few easy steps.

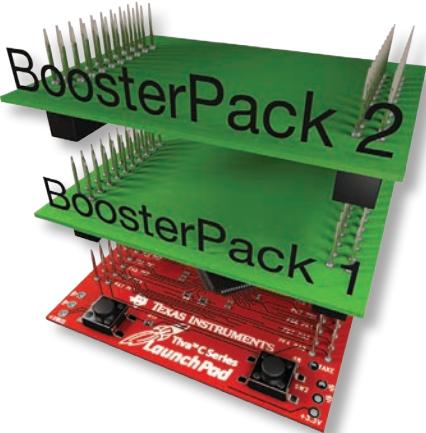
Step 1	Step 2	Step 3	Step 4	Step 5	Step 6
<p>Have an amazing BoosterPack idea?</p> <p>Get started with circuit design complying with our BoosterPack standard and incorporate the features you want on your BoosterPack using our resources.</p> <ul style="list-style-type: none">• Templates and design tools• BoosterPack standard• Design Guide	<p>Get your design reviewed by the community</p> <p>Post your idea and design to our communities for review by experts and engineers.</p> <p>43oh theknode</p> 	<p>Get a price quote for your design</p> <p>Submit your BoosterPack design to PCB manufacturers for a price quote evaluation.</p>	<p>Funding your BoosterPack design</p> <p>Put your BoosterPack design up for preorder on popular sites like Kickstarter or www.tindie.com.</p>	<p>Getting your BoosterPack built</p> <p>Got your fund? Reach out to PCB manufacturers to build your design.</p>	<p>Featuring your BoosterPack</p> <p>Once you have built your BoosterPack, send the details to TI. TI will help you in featuring the BoosterPack in the community. You are now all set to fire up your BoosterPack!</p>

Featured BoosterPacks



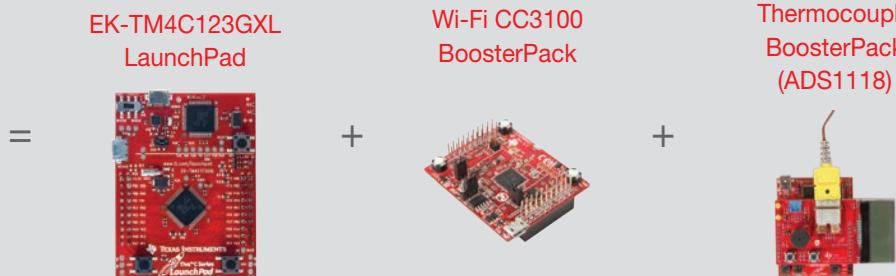
Cook up a New Invention

Stack a Pack!



LaunchPad + BoosterPack combinations enable rapid prototyping of various applications and projects. Stack BoosterPacks on top of LaunchPads to create thousands of new possibilities.

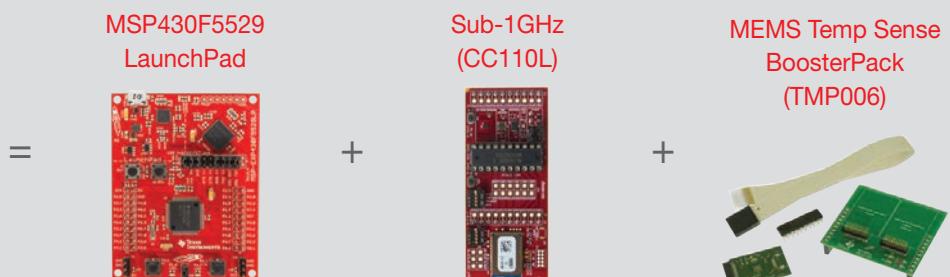
Wi-Fi®-enabled meat probe “iGrill”.
Send a tweet when the temperature exceeds threshold



Create a battery-powered NFC/RFID tag reader



Create a multi-point sub-1GHz RF wireless temperature sensor network

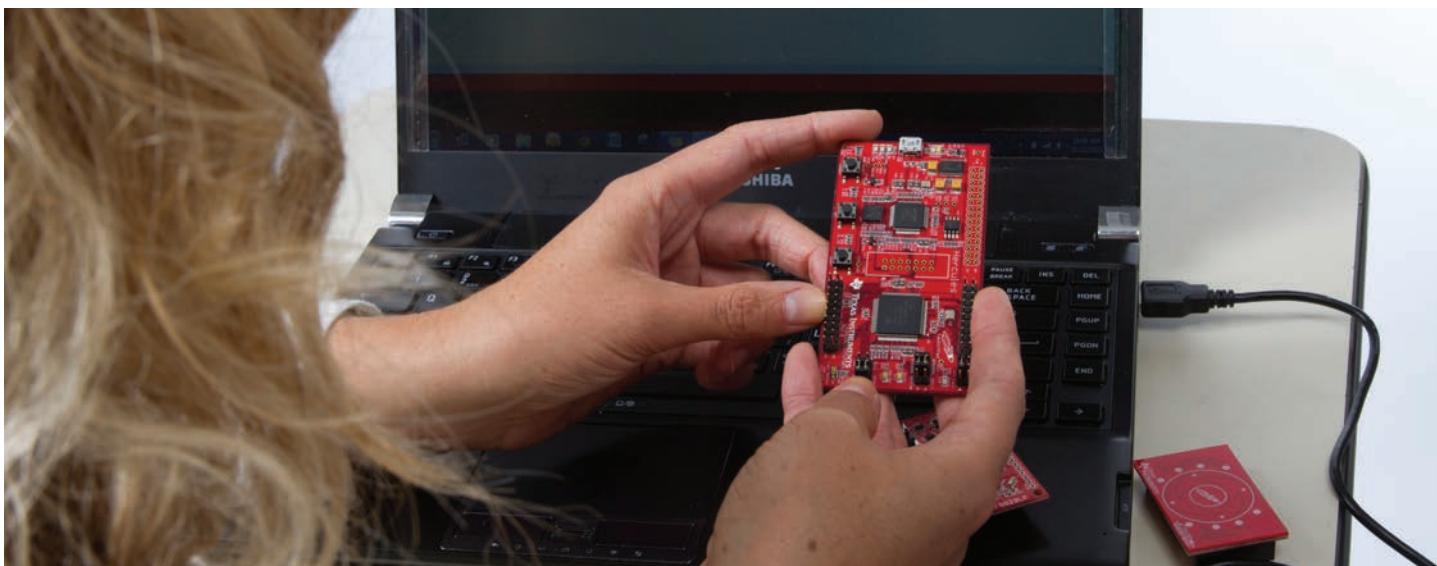


TI Microcontroller

TI Wireless

TI Analog

Choose the Software Tool for You



Beginner

Energia

- Open-source, community-driven, wiring-based Integrated Development Environment (IDE)
- Simple and easy-to-use APIs help implement your idea
- Energia's user-friendly environment is suitable for students, makers and engineers alike
- Library-support for various BoosterPacks
- www.energia.nu

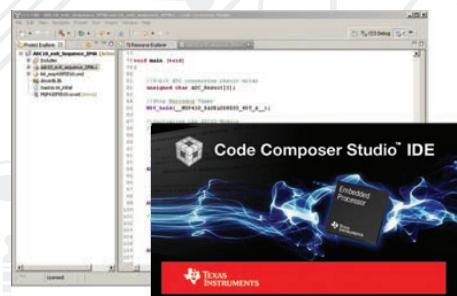


Energia

Professional

Code Composer Studio™ IDE

- Fully-integrated, feature-rich professional IDE from TI
- CCStudio IDE supports all of TI's embedded processing portfolio
- CCStudio IDE includes full-debug capability and also supports import of Energia sketches
- www.ti.com/ccs



Third-Party Tools

There are many LaunchPad ecosystem tools offered by third parties as well.

- IAR Systems
- Keil, An ARM® Company
- Mentor Embedded
- MSPGCC
- www.ti.com/launchpadsoftware



Community and Resources

Join the community!

Community

- Post queries, seek answers or gain advice regarding your LaunchPad project
- Share ideas and resources to join the DIY-spirit of makers
- Posting your projects online? Be sure to tag: **#tilaunchpad**
 - And check out www.ti.com/launchpadprojects for LaunchPad-related projects and ideas



**TI E2E™
Community**

e2e.ti.com



www.43oh.com

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Europe, Middle East, and Africa

Phone

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New Zealand	0800-446-934
Philippines	1-800-765-7404
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In some cases, TI components may be promoted specifically to facilitate safety-related applications. With such components, TI's goal is to help enable customers to design and create their own end-product solutions that meet applicable functional safety standards and requirements. Nonetheless, such components are subject to these terms.

No TI components are authorized for use in FDA Class III (or similar life-critical medical equipment) unless authorized officers of the parties have executed a special agreement specifically governing such use.

Only those TI components which TI has specifically designated as military grade or "enhanced plastic" are designed and intended for use in military/aerospace applications or environments. Buyer acknowledges and agrees that any military or aerospace use of TI components which have **not** been so designated is solely at the Buyer's risk, and that Buyer is solely responsible for compliance with all legal and regulatory requirements in connection with such use.

TI has specifically designated certain components as meeting ISO/TS16949 requirements, mainly for automotive use. In any case of use of non-designated products, TI will not be responsible for any failure to meet ISO/TS16949.

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DLP® Products	www.dlp.com	Consumer Electronics	www.ti.com/consumer-apps
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