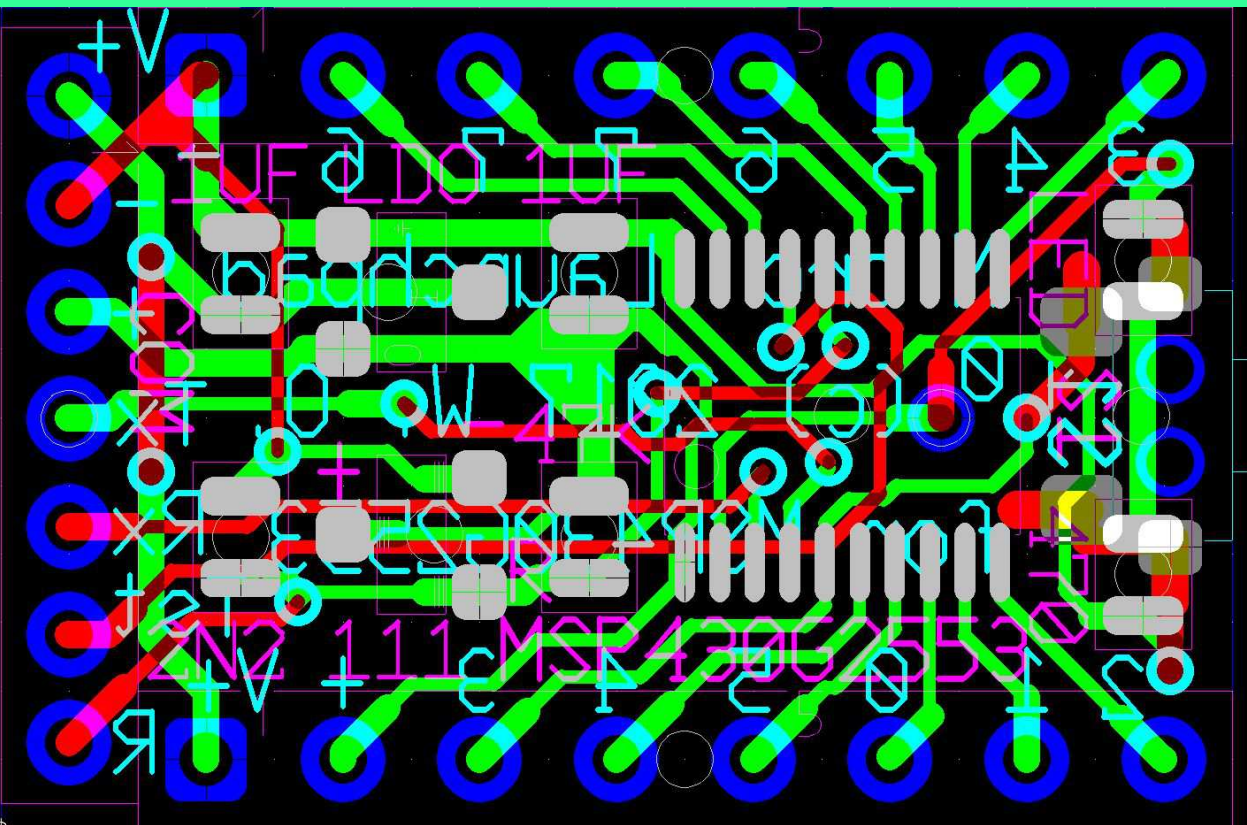
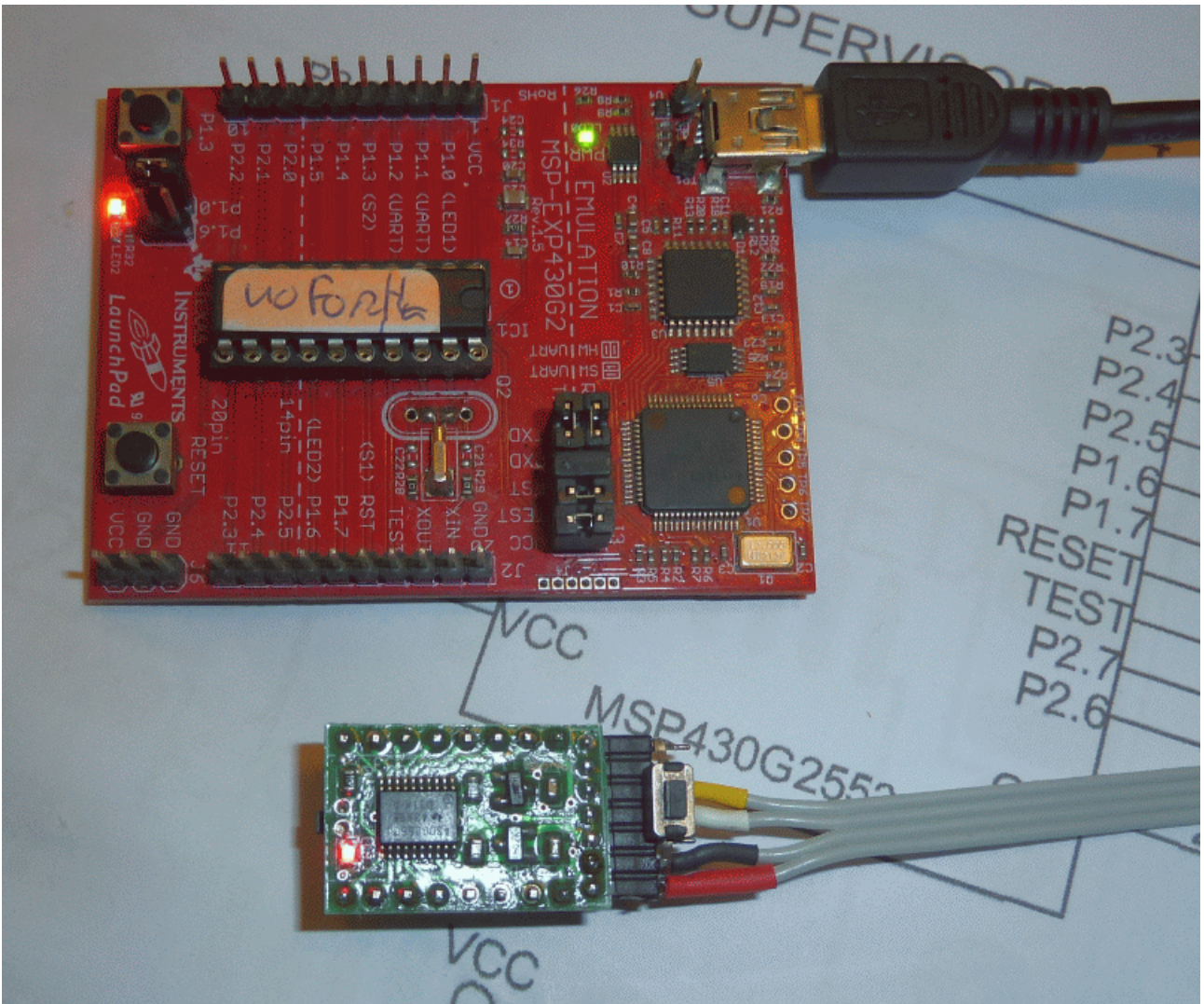


Micro Launchpad for MSP430G2553 Construction guide

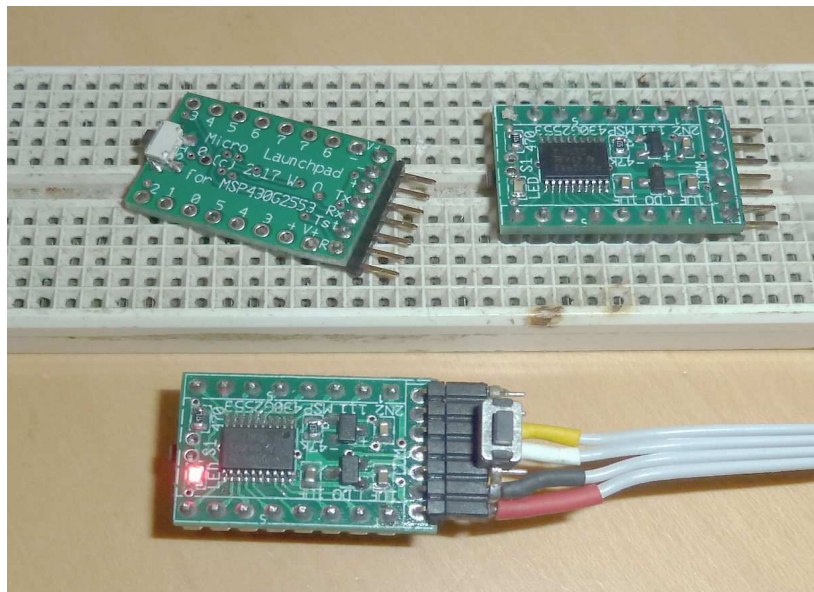


Size: 23,4 x 15.25mm

Micro Launchpad vsn 1.00

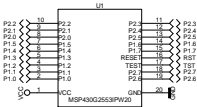
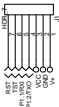


Micro Launchpad vs MSP430EXPG2



MLP different views

ONE LED, 1 SWITCH, 3V3 LDO, VOLTAGE SUPERVISOR 2V4 TO 3V

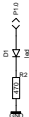
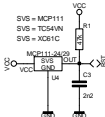
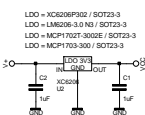


MICRO LAUNCHPAD VSN 1.0

ABOUT THE VOLTAGE V4

THE XC6206 & LMG206 ARE WORKING FROM 3.3 VOLT TO 6 VOLT
 THE MCP1702 WORKS FROM 3.3 VOLT TO 11 VOLT,
 THE MCP1703 WORKS FROM 3.3 VOLT TO 16 VOLT

- LDO = XC6206P302 / SOT23-3
- LDO = LMG206-3.0 N3 / SOT23-3
- LDO = MCP1702T-3002E / SOT23-3
- LDO = MCP1703-300 / SOT23-3

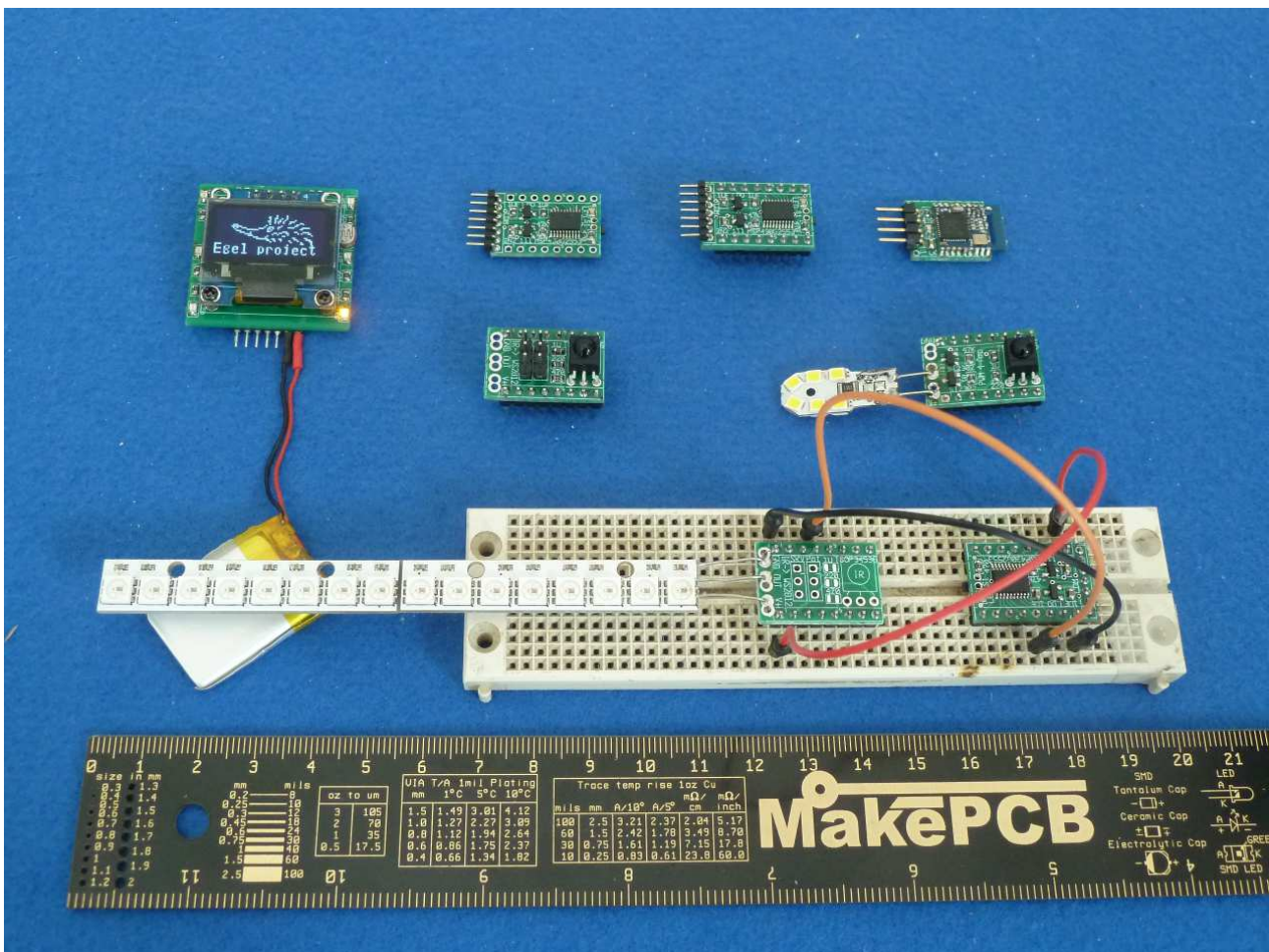




Micro Launchpad vsn 1.0, bill of materials

Count Component

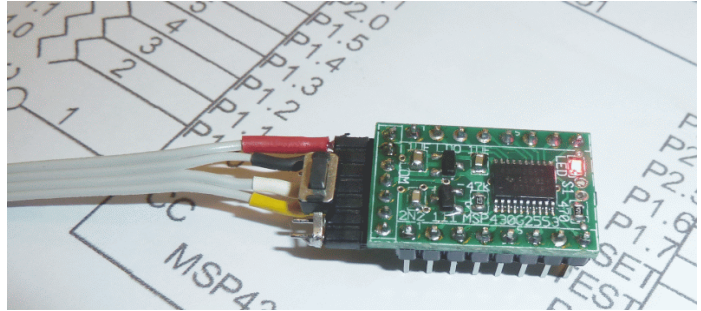
- 1 0603 – 47 Kohm “473”
- 1 0603 – 470 Ohm “471”
- 2 0603 -- 1 μ F
- 1 0603 – 2.2 nF
- 1 0603 – Led (Red or Green)
- 1 SOT23-3 MCP111-24 or MCP111-29
- 1 SOT23-3 MCP1703-3302E
- 1 MSP430G2553IPW20
- 1 SMD push button switch G72
- 2 .1” 8x1 male header
- 1 2mm 7x1 angle male header



Size of MLP, extension boards & noForth button

The Micro Launchpad consists of the following components:

- USB RS232/Power cable
- One circuit board
- Mini breadboard
- A lot of connectors
- Bag with loose (SMD) parts
- SMD processor MSP430G2553-IPW20
- One pushbutton
- A few wires



Used solder paste (flow control agent or flux):

<http://www.reichelt.de/Flux-Solder-Paste/ULF-10/3/index.html?&ACTION=3&LA=2&ARTICLE=98664&GROUPID=4132&artnr=ULF+10>
<https://www.conrad.nl/nl/soldeervloeimiddel-stannol-loetfett-100-g-inhoud-100-g-f-sw-21-826102.html>
<https://www.conrad.nl/nl/soldeer pasta-stannol-165018-inhoud-50-g-f-sw-26-588206.html>

Soldering of SMD components:

Use a clean solder iron of about 40 Watt.

The tip of the solder iron may be a little blunt, like a small screwdriver.

Use a well lighted loupe. A strong reading glasses or two weaker ones worn over each other does wonders too.

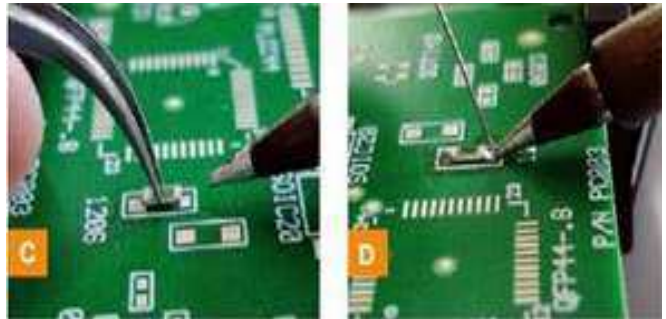
Use enough solder paste or an other kind of flux, place the right component (take care) and center it. Do a drop of solder on the tip.

Its is usefull to have a little longer nails. With your nail you may fix the part to the board. If the part moves try it again and again until it succeeds.

Then put the tip with solder on it to the first pad.

You see the solder flow from the tip to the component.

See this video: <https://www.youtube.com/watch?v=fqHleZjTaH8>



Assembly

On the board are mostly SMD components.

Look carefully to the drawings for a correct placement.

- 1) Solder first all SMD components.
- 2) Always do all components of the same type and value.
SMD parts tend to look all the same!
Do the resistors first, then the capacitors.
- 3) Next the SVS (MCP-111, etc), the led, then the LDO (MCP1702, etc).
- 4) The last SMD parts are the MSP430G2553-IPW20 and the switch S1.
- 5) Finally the header strips, mount the lower parts first, etc.

Remove all remaining flux from the print with alcohol.

Do a final optical check for solder errors and correct possible problems.

Use an MSP-EXP430G2 to flash the "noForth" software to the MPU.

Connect the wires from the USB cable to the COM-connector:

+ = red, 0 = black, TX = white and RX = green.

Take care here, finally connect the USB-plug to the PC.

The PC loads the correct driver (PL2303TA Prolific driver).

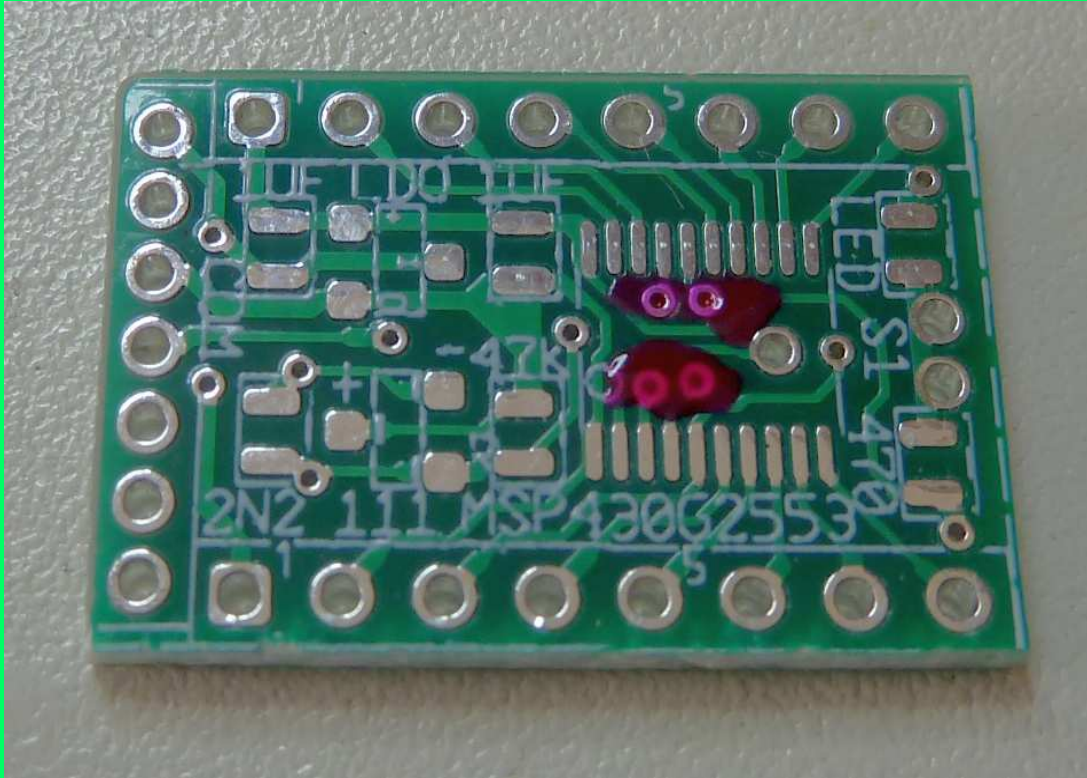
Then start a standard terminal program like Teraterm or Coolterm.

Select the correct RS232 connection & baudrate and type enter.

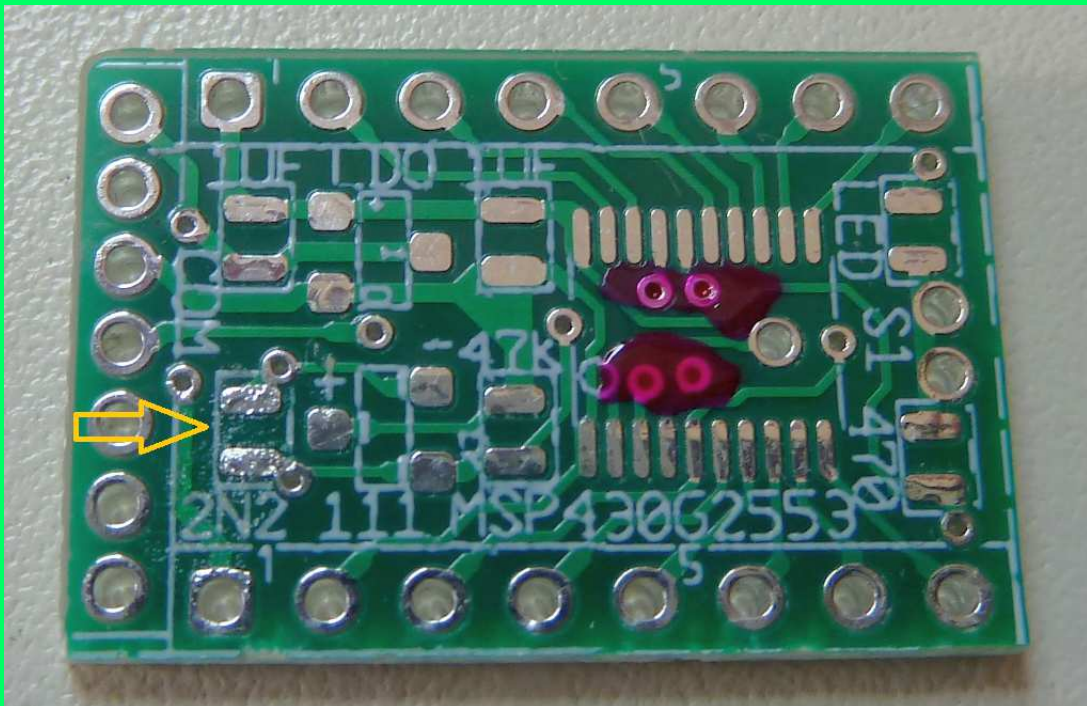
When all works fine noForth answers with OK. Now type COLD and the startup message should appear.

Good luck.

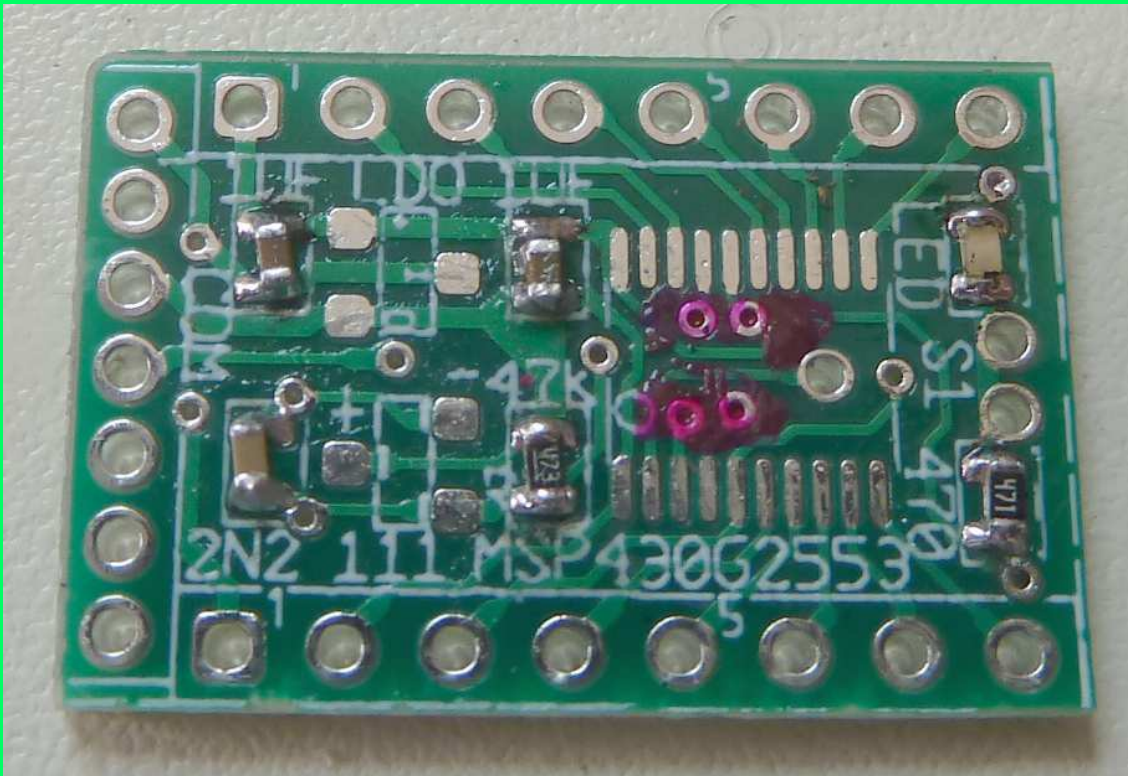
Micro Launchpad building plan step by step



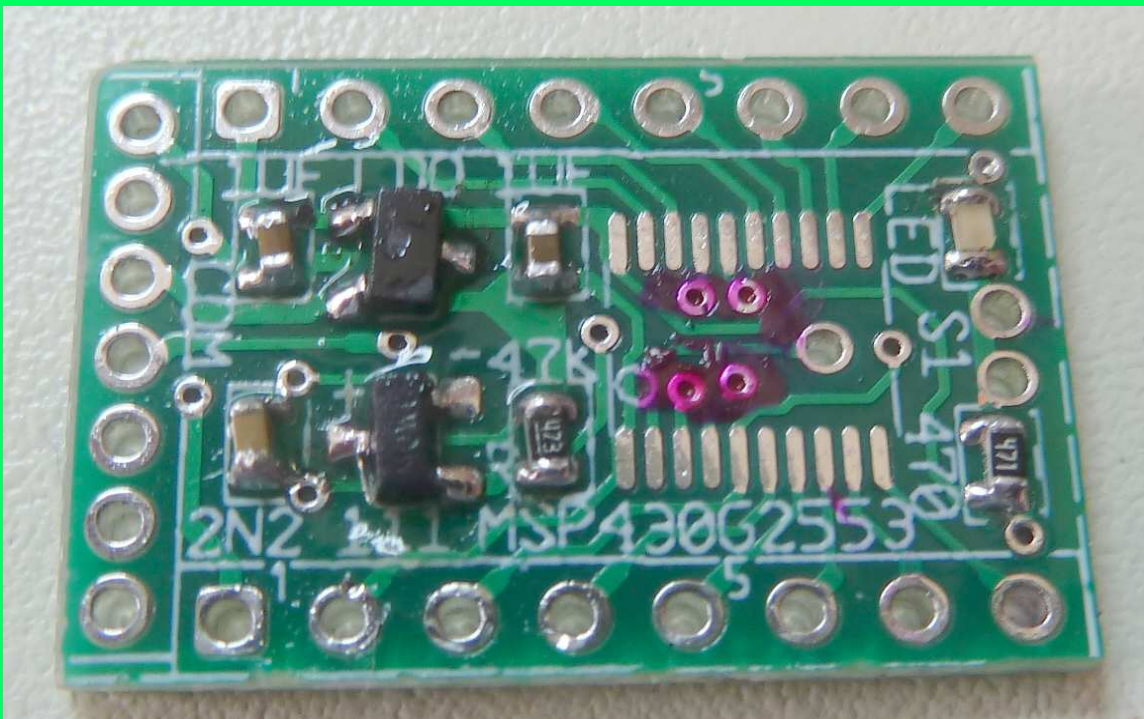
Step 1 - Isolate via's with nail polish.



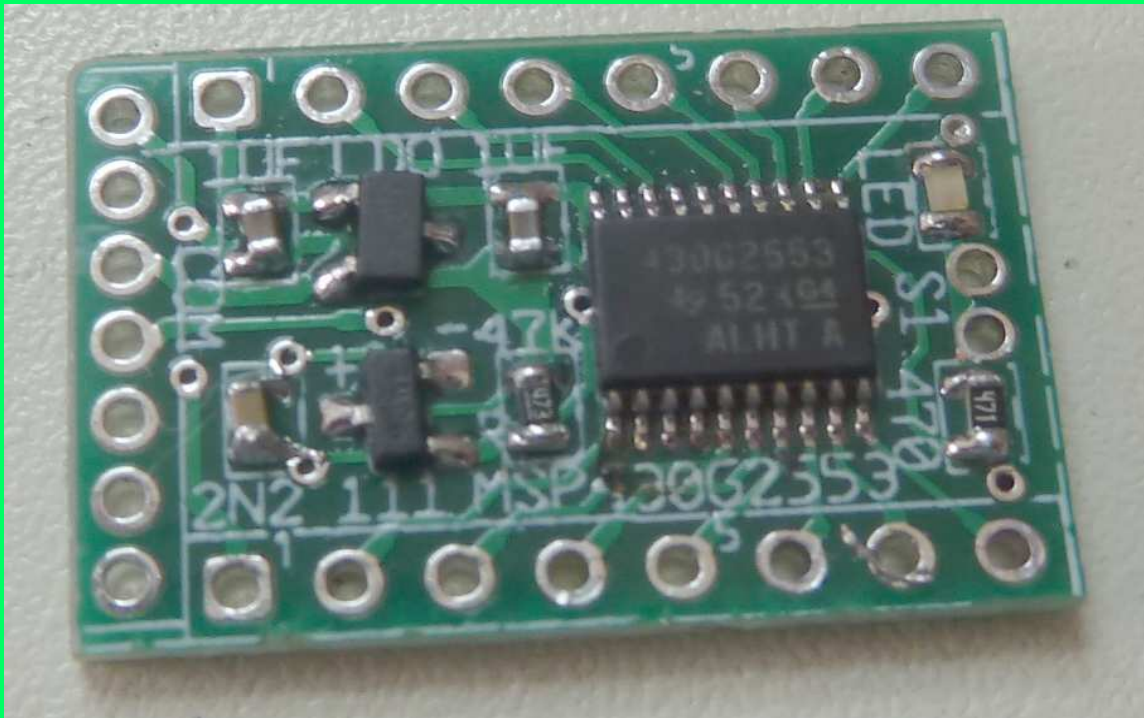
Step 2 – Add flux for the first component, see arrow.



Step 3 – Solder all the passive parts one by one.
Do not forget to add flux first!



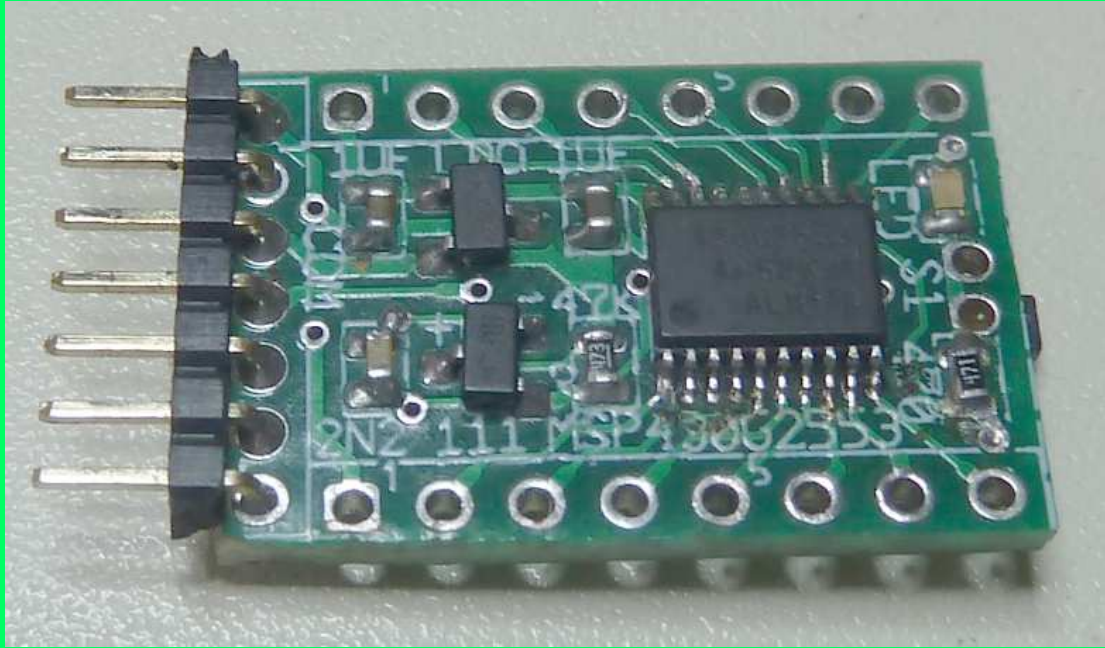
Step 4 – Solder the SVS and LDO now, then clean the board with alcohol.



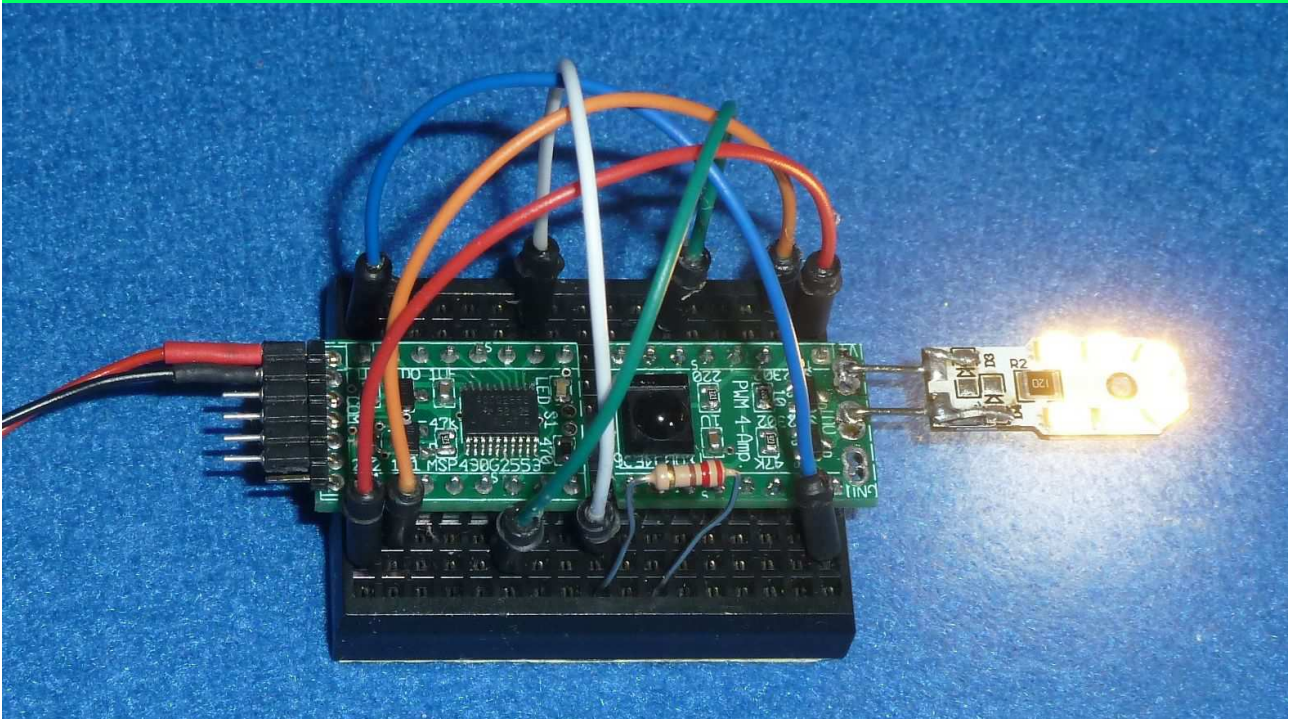
Step 5 - Then solder the MSP430G2553, align it carefully. Then solder one corner pin first. Align a second time and solder all the other pins with one large drop of solder. Clean the board again.



Step 6 – Flip board and solder the switch S1.

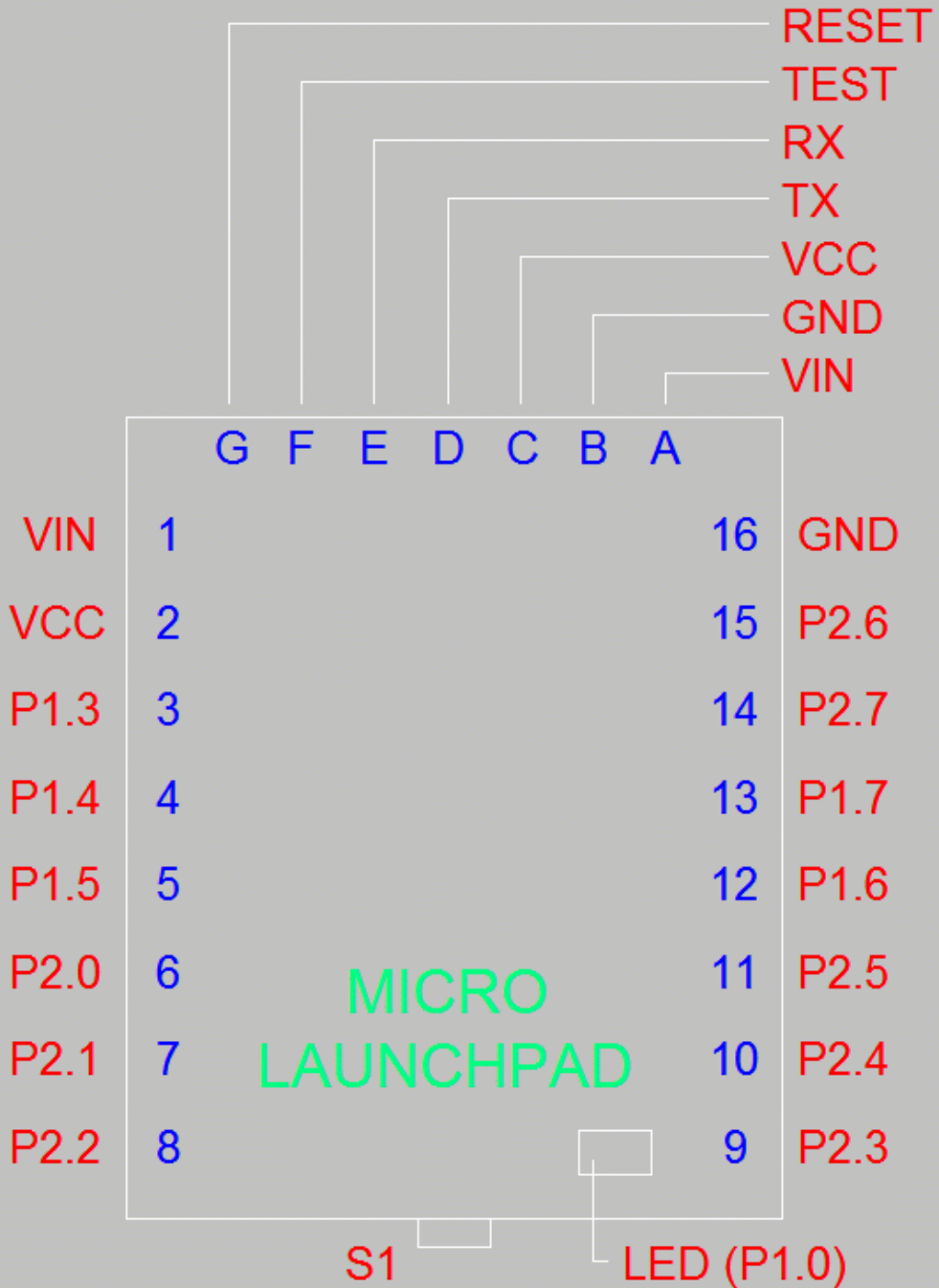


Step 7 – Finally solder the 7 pins 2mm male header strip.
The board is now ready to be programmed and tested.
The remaining holes may be fitted with two 8 pins male header strips.
They also can be used to stack I/O boards like the dimmer below!

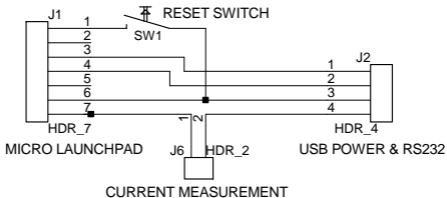


Micro Launchpad used as IR remote controlled led lamp dimmer.

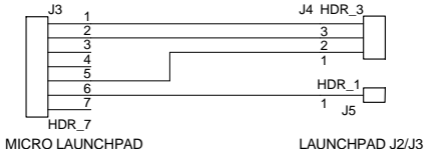
Micro MSP430 launchpad module connections



MICRO LAUNCHPAD INTERFACE BOARD



MICRO LAUNCHPAD PROGRAMMING CABLE



Low ESR Cap.Compatible Positive Voltage Regulators

■ GENERAL DESCRIPTION

The XC6206 series are highly precise, low power consumption, 3 terminal, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage.

The XC6206 consists of a current limiter circuit, a driver transistor, a precision reference voltage and an error correction circuit. The series is compatible with low ESR ceramic capacitors. The current limiter's foldback circuit operates as a short circuit protection as well as the output current limiter for the output pin.

Output voltages are internally by laser trimming technologies. It is selectable in 0.1V increments within a range of 1.2V to 5.0V.

SOT-23, SOT-89, TO-92 and USP-6B packages are available.

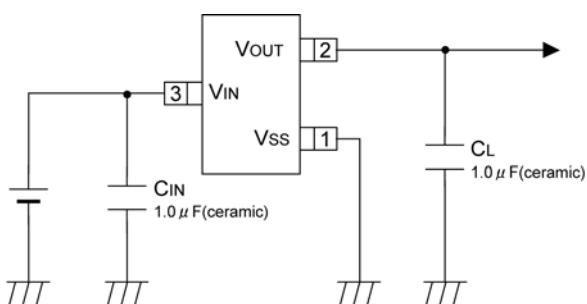
■ APPLICATIONS

- Smart phones / Mobile phones
- Portable game consoles
- Digital still cameras / Camcorders
- Digital audio equipments
- Reference voltage sources
- Multi-function power supplies

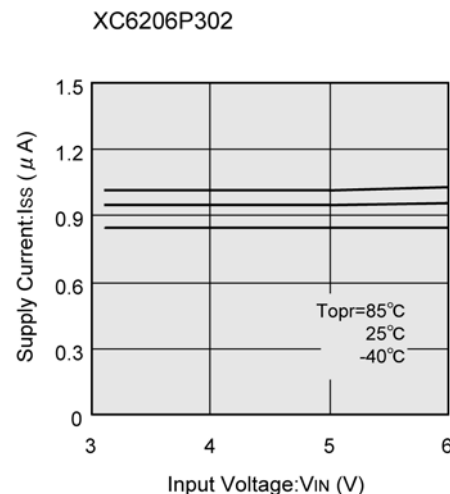
■ FEATURES

Maximum Output Current	: 200mA (3.0V type)
Dropout Voltage	: 250mV @ 100mA (3.0V type)
Maximum Operating Voltage	: 6.0V
Output Voltage Range	: 1.2V ~ 5.0V (0.1V increments)
Highly Accurate	: $\pm 2\%$ @ $V_{OUT} \geq 1.5V$ $+30mV$ @ $V_{OUT} < 1.5V$ $(\pm 1\% @ V_{OUT} \geq 2.0V)$
Low Power Consumption	: 1.0 μ A (TYP.)
Low ESR Capacitor	: Ceramic capacitor compatible
Protection	: Current Limit Circuit Built-in
Operating Ambient Temperature	: -40°C ~ +85°C
Packages	: SOT-23 SOT-89 TO-92 USP-6B
Environmentally Friendly	: EU RoHS Compliant, Pb Free

■ TYPICAL APPLICATION CIRCUIT



■ TYPICAL PERFORMANCE CHARACTERISTICS



250 mA, 16V, Low Quiescent Current LDO Regulator

Features:

- 2.0 μ A Typical Quiescent Current
- Input Operating Voltage Range: 2.7V to 16.0V
- 250 mA Output Current for Output Voltages \geq 2.5V
- 200 mA Output Current for Output Voltages $<$ 2.5V
- Low Dropout Voltage, 625 mV typical @ 250 mA for $V_R = 2.8V$
- 0.4% Typical Output Voltage Tolerance
- Standard Output Voltage Options:
 - 1.2V, 1.5V, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V, 4.0V, 5.0V
- Output Voltage Range: 1.2V to 5.5V in 0.1V Increments (50 mV increments available upon request)
- Stable with 1.0 μ F to 22 μ F Ceramic Output Capacitance
- Short-Circuit Protection
- Overtemperature Protection

Applications:

- Battery-Powered Devices
- Battery-Powered Alarm Circuits
- Smoke Detectors
- CO² Detectors
- Pagers and Cellular Phones
- Smart Battery Packs
- Low Quiescent Current Voltage Reference
- PDAs
- Digital Cameras
- Microcontroller Power
- Solar-Powered Instruments
- Consumer Products
- Battery-Powered Data Loggers

Related Literature:

- AN765, "Using Microchip's Micropower LDOs", DS00765, Microchip Technology Inc., 2002
- AN766, "Pin-Compatible CMOS Upgrades to Bipolar LDOs", DS00766, Microchip Technology Inc., 2002
- AN792, "A Method to Determine How Much Power a SOT23 Can Dissipate in an Application", DS00792, Microchip Technology Inc., 2001

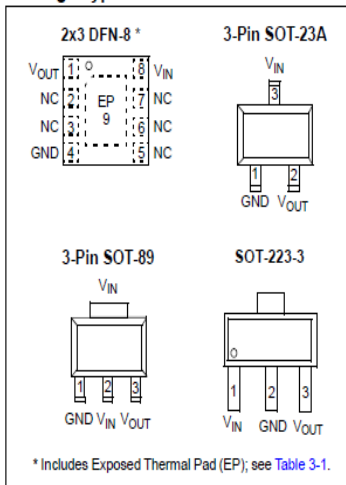
Description:

The MCP1703 is a family of CMOS low dropout (LDO) voltage regulators that can deliver up to 250 mA of current while consuming only 2.0 μ A of quiescent current (typical). The input operating range is specified from 2.7V to 16.0V, making it an ideal choice for two to six primary cell battery-powered applications, 9V alkaline and one or two cell Li-Ion-powered applications.

The MCP1703 is capable of delivering 250 mA with only 625 mV (typical) of input to output voltage differential ($V_{OUT} = 2.8V$). The output voltage tolerance of the MCP1703 is typically $\pm 0.4\%$ at $+25^\circ\text{C}$ and $\pm 3\%$ maximum over the operating junction temperature range of -40°C to $+125^\circ\text{C}$. Line regulation is $\pm 0.1\%$ typical at $+25^\circ\text{C}$.

Output voltages available for the MCP1703 range from 1.2V to 5.5V. The LDO output is stable when using only 1 μ F of output capacitance. Ceramic, tantalum, or aluminum electrolytic capacitors can all be used for input and output. Overcurrent limit and overtemperature shutdown provide a robust solution for any application. Package options include the SOT-223-3, SOT-23A, 2x3 DFN-8, and SOT-89-3.

Package Types



Micropower Voltage Detector

Features

- Ultra-low supply current: 1.75 μ A (max.)
- Precision monitoring options of:
 - 1.90V, 2.32V, 2.63V, 2.90V, 2.93V, 3.08V, 4.38V and 4.63V
- Resets microcontroller in a power-loss event
- Active-low V_{OUT} pin:
 - **MCP111** active-low, open-drain
 - **MCP112** active-low, push-pull
- Available in SOT23-3, TO-92, SC-70 and SOT-89-3 packages
- Temperature Range:
 - Extended: -40°C to +125°C (except MCP1XX-195)
 - Industrial: -40°C to +85°C (MCP1XX-195 only)
- Pb-free devices

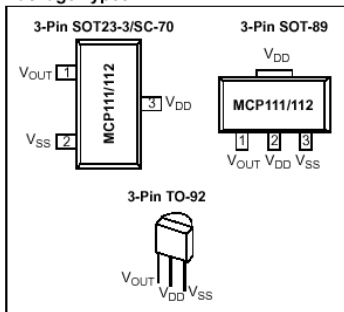
Applications

- Critical Microcontroller and Microprocessor Power-Monitoring Applications
- Computers
- Intelligent Instruments
- Portable Battery-Powered Equipment

Description

The MCP111/112 are voltage-detecting devices designed to keep a microcontroller in reset until the system voltage has stabilized at the appropriate level for reliable system operation. These devices also operate as protection from brown-out conditions when the system supply voltage drops below the specified threshold voltage level. Eight different trip voltages are available.

Package Types



Block Diagram

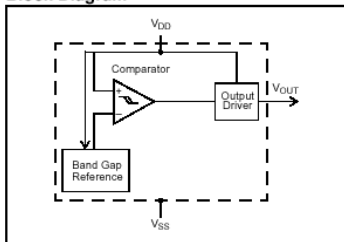


TABLE 1: DEVICE FEATURES

Device	Output		Reset Delay (typ)	Package Pin Out (Pin # 1, 2, 3)	Comment
	Type	Pull-up Resistor			
MCP111	Open-drain	External	No	V_{OUT}, V_{SS}, V_{DD}	
MCP112	Push-pull	No	No	V_{OUT}, V_{SS}, V_{DD}	
MCP102	Push-pull	No	120 ms	$\overline{RST}, V_{DD}, V_{SS}$	See MCP102/103/121/131 Data Sheet (DS21906)
MCP103	Push-pull	No	120 ms	$V_{SS}, \overline{RST}, V_{DD}$	See MCP102/103/121/131 Data Sheet (DS21906)
MCP121	Open-drain	External	120 ms	$\overline{RST}, V_{DD}, V_{SS}$	See MCP102/103/121/131 Data Sheet (DS21906)
MCP131	Open-Drain	Internal (~95 k Ω)	120 ms	$\overline{RST}, V_{DD}, V_{SS}$	See MCP102/103/121/131 Data Sheet (DS21906)

