



SDR Cube Transceiver Online Assembly Guide

Detailed construction notes for building and testing each of the SDR Cube kit modules

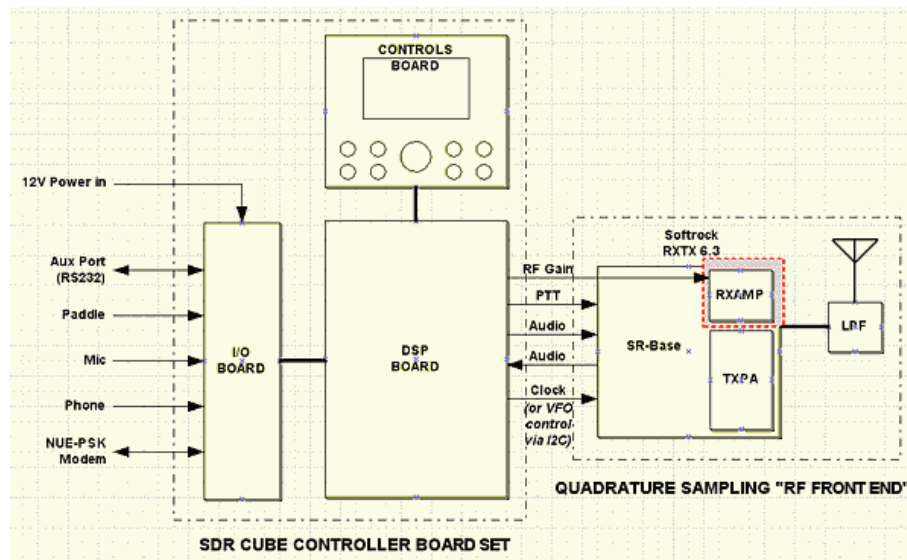
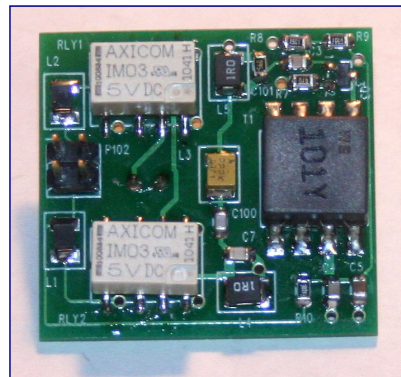
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Building the RXAMP Board

... (Section version 1.0a)

What Is It?

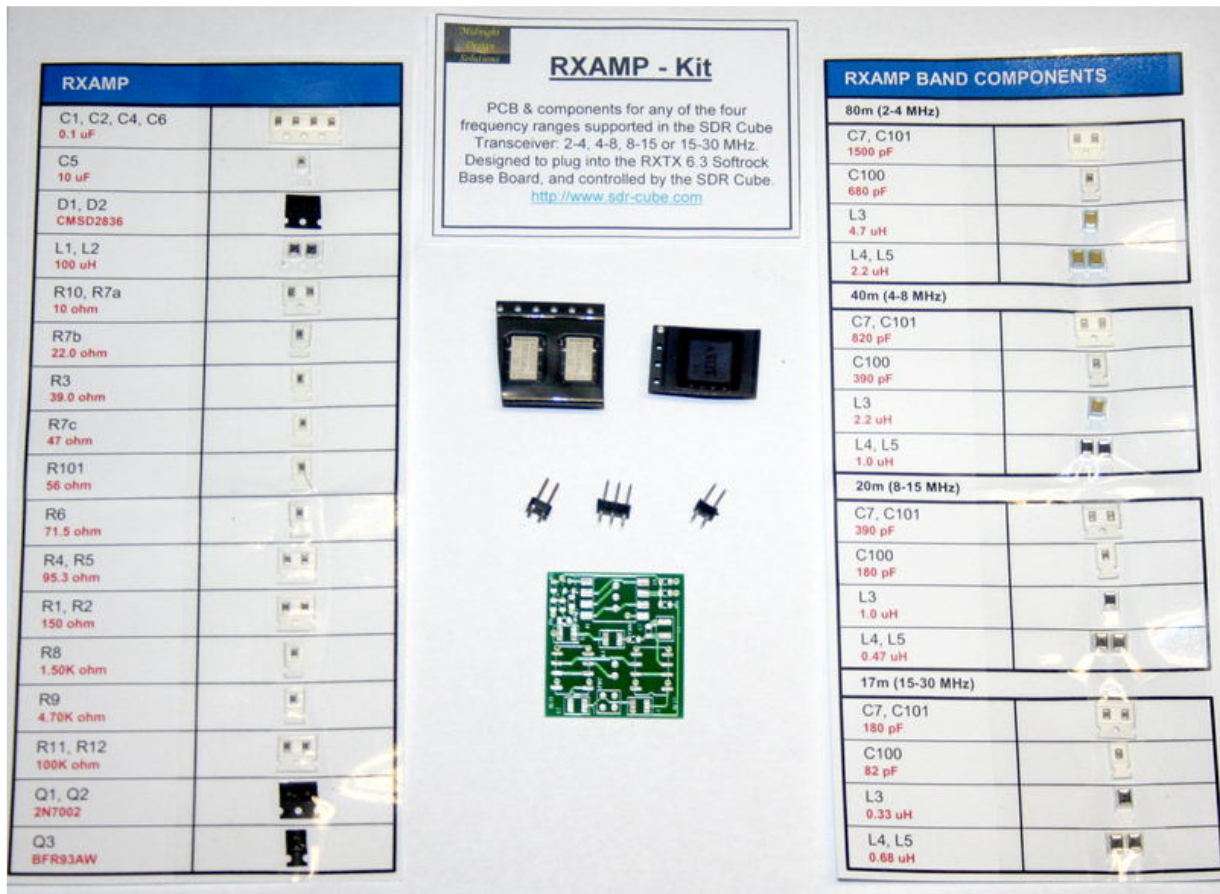
The "Rx Amp" is a higher-performance plug-in module that replaces the standard RX BPF plug-in provided when the Softrock RXTX 6.3 was previously available on the market. To help make the Softrock perform better, we used a different bandpass filter, a pair of relay-controlled attenuator pads, and a 20 dB amplifier. With the RXAMP, greater front end sensitivity is able to be achieved, with greater user control over the wide-ranging signal levels encountered in a communications radio.

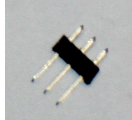




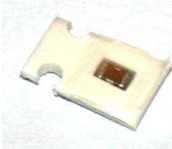


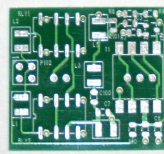
CONSTRUCTION STEPS

STEP 1: Inventory the supplied parts

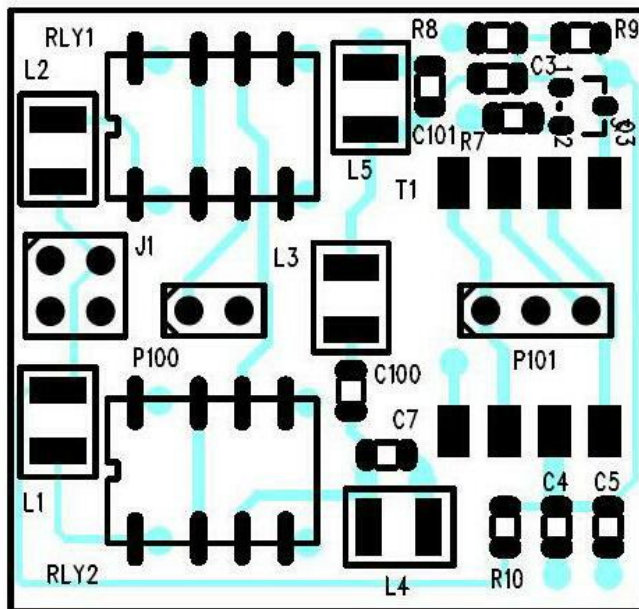
Check to make sure you received the RXAMP Kit bag and all the components that are pictured below. (Click on any photo to see a larger image.)

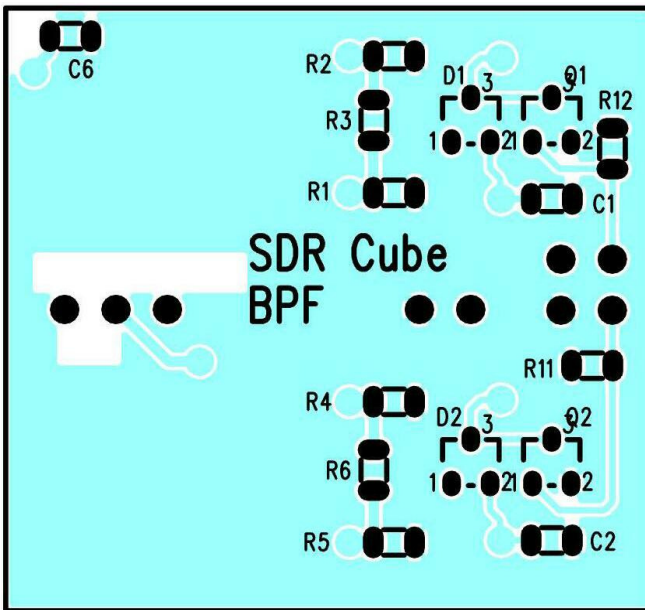


| Designator | QTY | Description | Source |
|--------------|-----|----------------------|---|
| Loose | | | |
| P101 | 1 | Pinheader, 0.1", 1x3 |  |
| P1 | 1 | Pinheader, 0.1", 2x2 |  |
| P100 | 1 | Pinheader, 0.1", 1x2 | |

| | | | |
|------------|---|--------------------------------------|---|
| | | |  |
| C3 | 1 | Capacitor, .1uF, X7R, 0805 SMT |  |
| RLY1, RLY2 | 2 | Relay, DPDT, SMT, 5V (Axicom IM03GR) |  |
| T1 | 1 | Common Mode Transformer |  |
| PCB-RXAMP | 1 | PCB, RXAMP |  |

PARTS LAYOUT diagrams for the RXAMP Board ...



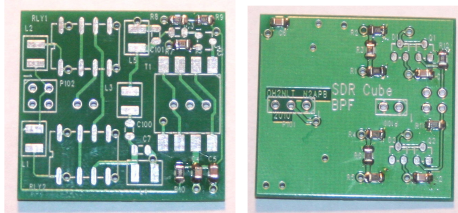


STEP 2: Install the surface mount capacitors and resistors from the SMT Card.

Using the order of the parts as listed on the SMT card as a guide, and the Parts Layout diagrams above (and on the board's silkscreen) as a guide, first attach the capacitors to their respective pads ...

C1, C2, C4, C6

C5 ... This 10 uF capacitor has no polarity. It can be installed in either direction.



STEP 3: Install the surface mount resistor R7, based desired gain

Emitter resistor R7 determines gain of the RF amplifier. Lowest value (10 ohms) = more gain, better for higher bands (~10m). Mid value (22 ohms) better for mid bands (~20m). Higher value (47 ohms) = less gain, better for low bands (~40m). Select as desired for memory segments you intend on using the RXAMP with ...

R7a (10 ohms) ... or ... R7b (22 ohms) ... or ... R7c (47 ohms)

STEP 4: Install the rest of the surface mount resistors

R10

R3 (39 ohms)

R101 ... **NOTE:** This resistor is missing from the pc board layout. Save it for mounting on top of C101 when you get to the Band-Specific section below.

R6 ...

R4, R5

R1, R2

R8

R9

R11, R12

STEP 5: Install the SMD diodes

D1, D2

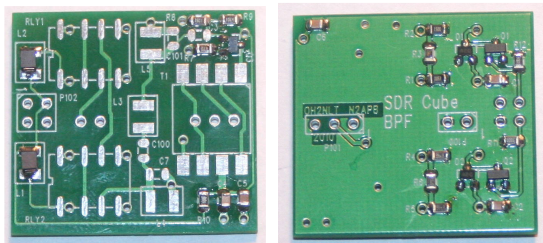
STEP 6: Install the SMD chokes

L1, L2

STEP 7: Install the transistors

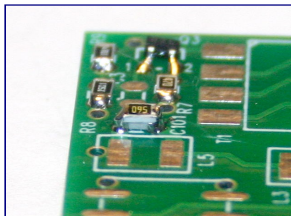
Q1, Q2

Q3



STEP 8: Install the Band-specific SMDs

C101 ... **NOTE:** This is the component on top of which you will be "piggy-back mounting" the R101 resistor mentioned above. See the photos below to see how this is easily done ...

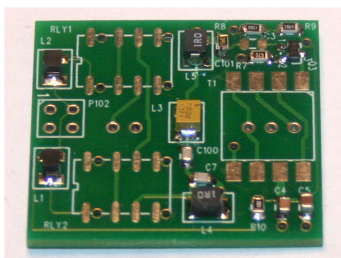


C7

C100

L3

L4, L5



STEP 9: Install the attenuator relays RLY1 and RLY2

Be careful to mount these relays in the right direction. "Pin 1" is on the end marked with the dark bar (actually it's very small bold lettering). And if you look closely at the pins, there is a larger gap that should of course match up with the pads for the device.

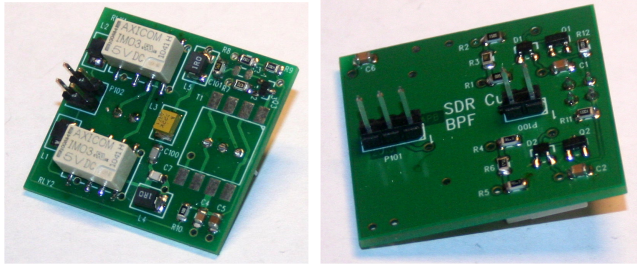
RLY1, RL2

STEP 10: Install the pinheader connectors

P101 ... 1x3 ... Mount on the bottom of the board. **NOTE:** Snip off the leads on the top of the board as low as possible to allow T1 to mount flat over top these pads.

P1 ...2x2 ... Mount on the top of the board

P100 ... 1x2 ... Mount on the bottom of the board.

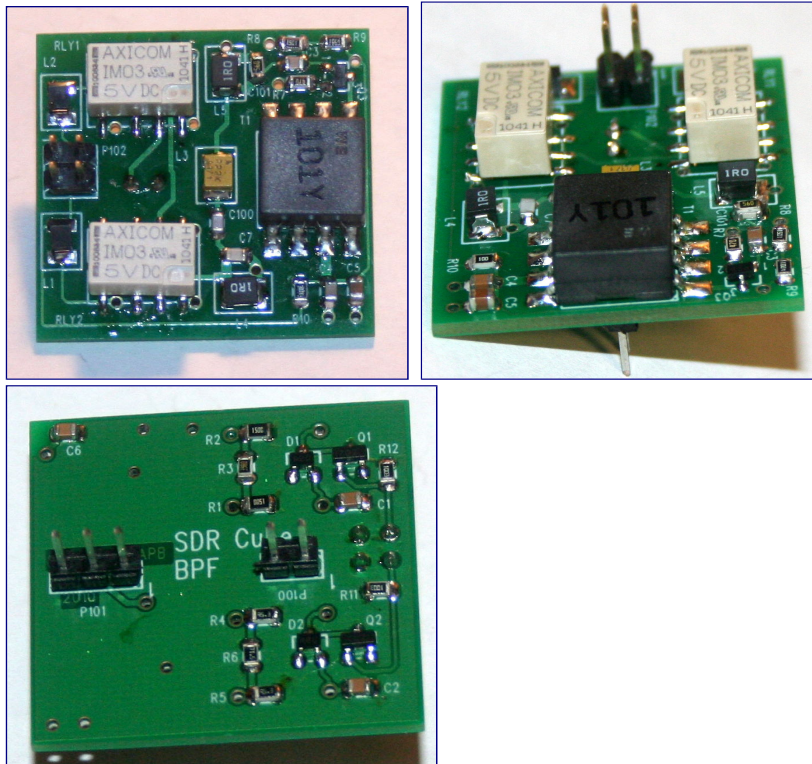


STEP 11: Install the common mode transformer T1

T1 ... Pin 1 is noted with small "WE" letters in one corner, but the device is symmetrical and may actually be installed in either orientation.

STEP 12: Install the separate SMT capacitor C3

C3 ... This is the SMT part missing from the SMT card and included loose in the parts bag.



The RXAMP Board is complete! Set it aside and next move on to building the X-LPF Board.

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