Elecraft K3 Schematics

This document contains the schematics for the Elecraft K3 Transceiver and its internal options. The schematics are preceded by a Block Diagram for context.

The schematics are ordered as the basic K3/10, then various options.

BLOCK DIAGRAM

K3/10

RF Board Main module
Band Stop Filter 1st IF rejection
Mixer High dynamic range 1st mixer
Crystal Filter Roofing filter
KIO3 I/O module
KANT3 Antenna Connector if no KPA3 installed
KNB3 Pre-IF Noise Blanker
KREF3 Reference oscillator, Tx mixer/Filter, Rx 2nd Mixer
KSYN3 Synthesizer
Front Panel Control logic
DSP Digital Signal Processing
DSP LPF Optional retrofit for earlier DSP boards
10-watt PA Low power amplifier

OPTIONS

KBPF3 General Coverage Receiver Bandpass Filters
KXV3 Transverter Interface and Receive Antenna Switching
KXV3A Transverter Interface and Rx Ant Switch w/K144XV Support
KAT3 100-watt Antenna Tuner
DVR Digital Voice Record/Playback
KPAIO3 Part of 100-watt PA
KPA3 Part of 100-watt PA
AuxDSP Part of KRX3 Second Receiver
KRX3 Part of KRX3 Second Receiver
K144XV Internal 2m Module

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Elecraft
Bandstop Filter

Bob Friess
Rev X0
1/25/2007
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Elecraft

KR MIXER

W. Burdick

Page 1 of 1

C:\Projects\K3\Schematics\KR MixerRevXC.sch - Sheet1
### NOTES:

1. This PCB can be used to assemble a discrete 5-pole filter, or as a carrier for filter modules (INRAD, etc.).
2. CC and CD are used with a filter module (FL1). All other components are only used for constructing a discrete filter.
3. X1-X5 can be either 2- or 3-lead HC49/U types. Grounding pads are provided for both.

<table>
<thead>
<tr>
<th>Fc</th>
<th>Zin/out</th>
<th>BW @ -6 dB</th>
<th>C1,C8</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>C6</th>
<th>C7</th>
<th>CA,CB</th>
<th>L1</th>
<th>L2</th>
<th>Crystal p/n, Inductor Windings, Notes</th>
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<tbody>
<tr>
<td>8.215 MHz</td>
<td>500 Ω</td>
<td>200 Hz</td>
<td>120 pF</td>
<td>2700 pF</td>
<td>620 pF</td>
<td>1000 pF</td>
<td>1000 pF</td>
<td>620 pF</td>
<td>2700 pF</td>
<td>0 pF</td>
<td>2.8 µH</td>
<td>E660027</td>
<td></td>
</tr>
<tr>
<td>8.215 MHz</td>
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<td>250 Hz</td>
<td>150 pF</td>
<td>750 pF</td>
<td>750 pF</td>
<td>750 pF</td>
<td>750 pF</td>
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<td>2.3 µH</td>
<td>E660027</td>
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<tr>
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<td>500 Hz</td>
<td>120 pF</td>
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<td>390 pF</td>
<td>390 pF</td>
<td>470 pF</td>
<td>390 pF</td>
<td>0 pF</td>
<td>2.8 µH</td>
<td>E660027; L1, L2 = 24 T #28 on T30-2</td>
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<td></td>
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<tr>
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<td>500 Ω</td>
<td>1000 Hz</td>
<td>63 pF</td>
<td>180 pF</td>
<td>240 pF</td>
<td>240 pF</td>
<td>180 pF</td>
<td>240 pF</td>
<td>0 pF</td>
<td>3.9 µH</td>
<td>E660027</td>
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<td></td>
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<tr>
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<td>500 Ω</td>
<td>2700 Hz</td>
<td>0 pF</td>
<td>110 pF</td>
<td>47 pF</td>
<td>68 pF</td>
<td>68 pF</td>
<td>51 pF</td>
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<td>0 pF</td>
<td>short</td>
<td>E660032</td>
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<td>3000 Hz</td>
<td>0 pF</td>
<td>51 pF</td>
<td>51 pF</td>
<td>51 pF</td>
<td>51 pF</td>
<td>51 pF</td>
<td>0 pF</td>
<td>short</td>
<td>E660032 (4-crystal filter w/1dB ripple; X5 = short)</td>
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<tr>
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<td>47 pF</td>
<td>62 pF</td>
<td>47 pF</td>
<td>62 pF</td>
<td>0 pF</td>
<td>short</td>
<td>E660032 (4-crystal filter w/0.5 dB ripple; X5 = short)</td>
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<tr>
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<td>6000 Hz</td>
<td>0 pF</td>
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<td>47 pF</td>
<td>62 pF</td>
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<td>16 µH</td>
<td>X1, X3, X5 = E660027; X2, X4 = E660032</td>
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<td></td>
</tr>
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</table>

*E660027: 8.214 MHz +/- 200 Hz; Lm = 25 mH +/- 2 mH; C0 < 4 pF, Q > 100 K
E660032: 8.2125 MHz +/- 200 Hz; Lm = 25 mH +/- 2 mH; C0 < 4 pF, Q > 100 K

For CW bandwidths, X1-X5 must be hand-selected to 10 Hz, and for SSB bandwidths, 50 Hz.
This resistor sets gain of mic preamp.
NOTES:
1. All parts are through-hole.
3. = mounted on bottom side of PCB.
Elecraft K3: Front Panel

Title

NOTES: PCB Revision B

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Title

Elecraft K3: Front Panel

Size A Document Number 2004070601

Date: Tuesday, November 24, 2009 Sheet 1 of 7
NOTES:

- R54 sets LCD driver current.
- R57 sets LCD drive frequency.
- LCD pinout is Rev F.
- U2 K[0..4] to use separable vias to ground for debug/development.
- PCB Revision B
- 2004070601 B.1
- Elecraft K3: Front Panel - LCD
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Tuesday, November 24, 2009
NOTES: Controls are dual pots.
Regulators U3 and U5 SOT-223.

NOTES:

PCB Revision B

PCB K3: Front Panel - Power and RTC

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Tuesday, November 24, 2009

Title

Size Document Number Rev Date: Sheet

Elecraft K3: Front Panel - Power and RTC
T1: BT bifilar on FT50-43
T2: IOT bifilar on FT50-61 with I7 link
L1, L8, L9, 28T on FT37-43
R11 may be 12 or 18 ohms for gain adj
NOTE: K1-K8 are shown in the RESET position.
All relays are mounted on the back side of the PCB.

Appendix B
NOTES:

1. KXV3-1 and -2 modules are soldered together via right-angle male connectors at J/P41A/C.

2. K1 and K2 are DPDT relays shown in RESET position.

3. W1 and W2 on the RF board must be removed or cut when the KXV3 is installed.

4. W4 must be installed on the RF board when the KXV3 is installed (between RF-P86 and KXV3-P87).

3.6VDC ~ 1.0 mW

RF Detector

KXV3: Main

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Wednesday, June 16, 2010
NOTES:
1. KXV3-1 and -2 modules are soldered together via right-angle male connectors at J/P41A/C.
2. K1 - K3 are DPDT relays shown in RESET position.
3. 5VDC ~ 1.0 mW

RF Detector

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K1-K19 are shown in the RESET position.

- Parts mounted on the bottom of the PC board. In addition to these, all relays are on the bottom.