CB 40-CHANNEL TRANSCEIVER
TRC-419
Catalog Number: 21-1512

CUSTOM MANUFACTURED FOR RADIO SHACK, A DIVISION OF TANDY CORPORATION
CONTENTS

SPECIFICATIONS ............................................................................. 3
BLOCK DIAGRAM ........................................................................... 5
ALIGNMENT INSTRUCTIONS ................................................................. 6
CHANNEL FREQUENCY GENERATION TABLE .................................... 12
TROUBLESHOOTING ........................................................................ 13
PRINTED CIRCUIT BOARD (TOP/BOTTOM VIEWS) ................................ 14
WIRING DIAGRAM ............................................................................ 17
EXPLODED VIEW/DISASSEMBLY ....................................................... 18
EXPLODED VIEW PARTS LIST ............................................................. 19
ELECTRICAL PARTS LIST ................................................................. 21
SEMICONDUCTOR LEAD IDENTIFICATION AND IC INTERNAL
DIAGRAM .......................................................................................... 30
SEMICONDUCTOR VOLTAGE CHART ................................................... 34
SCHEMATIC DIAGRAM ................................................................. 36

COPYRIGHT 1987. TANDY CORPORATION
ALL RIGHTS RESERVED.
REALISTIC IS A REGISTERED TRADEMARK OF TANDY CORPORATION.
SPECIFICATIONS

GENERAL

Description
Transmitter ............................................ Crystal controlled PLL synthesizer, amplitude modulation
Receiver ........................................... Crystal controlled double conversion, superheterodyne system
Communicating frequencies ........................................... 40 CB channels (26.965 to 27.406 MHz)
Voltage operation .......................................................... 12 - 16V DC
(negative only ground )
Temperature and Humidity range ......................................... -22° F to + 140° F (-30°C to +60°C) and 10% to 90%
Transmitter/Receiver switching ........................................... Electrical

STANDARD TEST CONDITIONS

Battery supply voltage ........................................................ 13.8V DC
Modulation ................................................................. 1000 Hz, 30%
Receiver output power ......................................................... 500mW at external SP
Receiver output impedance ..................................................... 8 ohms, non-inductive
Ant. load impedance of transmitter ........................................... 50 ohms, non-inductive
Ambient conditions
   Temperature ........................................................... 63° F to 73° F (17° C to 23° C)
   Humidity ................................................................. 40% to 70%

TRANSMITTER

<table>
<thead>
<tr>
<th>Description</th>
<th>Nominal</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF power output</td>
<td>4.0 watts</td>
<td>3.6 - 4.4 watts</td>
</tr>
<tr>
<td>Antenna spurious emission</td>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>Modulation capability (positive/negative)</td>
<td>+90%/−90%</td>
<td>+80%/−80%</td>
</tr>
<tr>
<td>AMC Range at 1 kHz</td>
<td>40 dB</td>
<td>30 dB</td>
</tr>
<tr>
<td>Frequency accuracy</td>
<td>0.002%</td>
<td>0.005%</td>
</tr>
<tr>
<td>Spurious radiation &amp; Harmonic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signal radiation ratio from fundamental</td>
<td>−65dB</td>
<td>−60dB</td>
</tr>
<tr>
<td>Current consumption at no modulation</td>
<td>1000 mA</td>
<td>1200 mA</td>
</tr>
<tr>
<td>at 80% modulation</td>
<td>1500 mA</td>
<td>1700 mA</td>
</tr>
<tr>
<td>Envelope distortion</td>
<td>10% max. 1000 Hz, 50% mod.</td>
<td></td>
</tr>
<tr>
<td>Stability against variation of antenna impedance</td>
<td>Satisfactory when dummy antenna is varied from 40 ohms to 200 ohms.</td>
<td></td>
</tr>
</tbody>
</table>
RECEIVER

<table>
<thead>
<tr>
<th>Description</th>
<th>Nominal</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intermediate frequency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st IF</td>
<td>10.695 MHz</td>
<td></td>
</tr>
<tr>
<td>2nd IF</td>
<td>455 kHz</td>
<td></td>
</tr>
<tr>
<td>Sensitivity for 500 mW output</td>
<td>0.3μV</td>
<td>1μV</td>
</tr>
<tr>
<td>Sensitivity at 10dB S + N/N</td>
<td>0.7μV</td>
<td>1.0μV</td>
</tr>
<tr>
<td>Adjacent channel rejection</td>
<td>65dB</td>
<td>55dB</td>
</tr>
<tr>
<td>Image rejection (1st IF/2nd IF)</td>
<td>70dB</td>
<td>60dB</td>
</tr>
<tr>
<td>IF rejection ratio (1st IF/2nd IF)</td>
<td>60dB</td>
<td>45dB</td>
</tr>
<tr>
<td>Signal-to-Noise ratio</td>
<td></td>
<td></td>
</tr>
<tr>
<td>at 1 mV input</td>
<td>40dB</td>
<td>35dB</td>
</tr>
<tr>
<td>Distortion at 1 mV input,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30% mod. (500 mW out)</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td>AGC Figure of merit at 50 mV input</td>
<td>80dB</td>
<td>70dB</td>
</tr>
<tr>
<td>Power output at 1 mV Input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Undistorted (10% THD)</td>
<td>4.5W</td>
<td>4.0W</td>
</tr>
<tr>
<td>Maximum</td>
<td>6.0W</td>
<td>4.5W</td>
</tr>
<tr>
<td>Electrical fidelity compared to 1000 Hz</td>
<td>5.0</td>
<td>4.5</td>
</tr>
<tr>
<td>450 Hz</td>
<td>-4dB</td>
<td>-6±3dB</td>
</tr>
<tr>
<td>2500 Hz</td>
<td>-6dB</td>
<td>-6±3dB</td>
</tr>
<tr>
<td>Cross modulation</td>
<td>50dB</td>
<td>40dB</td>
</tr>
<tr>
<td>Squelch</td>
<td>60dB</td>
<td>60 ± 6dB</td>
</tr>
<tr>
<td>Current consumption (no signal)</td>
<td>250 mA</td>
<td>300 mA</td>
</tr>
<tr>
<td>“S” meter sensitivity to light 3th LED</td>
<td>40dB</td>
<td>40 ± 6dB</td>
</tr>
</tbody>
</table>

PUBLIC ADDRESS

<table>
<thead>
<tr>
<th>Description</th>
<th>Nominal</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>10% THD output power</td>
<td>4W</td>
<td>3.5W</td>
</tr>
<tr>
<td>Microphone sensitivity for 4W</td>
<td>5mV</td>
<td>10mV</td>
</tr>
<tr>
<td>Current drain at 10% THD power</td>
<td>1000mA</td>
<td>1200 mA</td>
</tr>
</tbody>
</table>

OTHER ITEMS

<table>
<thead>
<tr>
<th>Description</th>
<th>ORG wire: 1 Amp.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RED wire: 2 Amp.</td>
</tr>
<tr>
<td>General power requirement</td>
<td>12 – 16V DC</td>
</tr>
<tr>
<td>Dimensions</td>
<td>(H) 1-9/16” (40mm) x (W) 4-15/16” (125mm) x (D) 8-5/32” (207mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>2 lbs 10 oz (1.2kg)</td>
</tr>
</tbody>
</table>

NOTE: Nominal specs represent the design specs; all units should be able to approximate these — some will exceed and some may drop slightly below these specs. Limit specs represent the absolute worst condition which still might be considered acceptable; in no case should a unit perform to less than within any limit spec.
ALIGNMENT INSTRUCTIONS

A. PHASE LOCKED LOOP AND CPU SECTION

1. Test Equipment Required
   a. Frequency Counter
   b. DC Power Supply (13.8 Volt, 3 Amp.)
   c. DC Voltmeter
   d. Oscilloscope

NOTE: Figure 1 provides test point and alignment location information.

Alignment Location

Figure 1
## 2. Alignment Procedure

<table>
<thead>
<tr>
<th>STEP</th>
<th>SETTING</th>
<th>CONNECTION</th>
<th>ADJUST</th>
<th>ADJUST FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Frequency adjustment&lt;br&gt;MIC: Receive&lt;br&gt;Volume: Optional&lt;br&gt;Squelch: Optional&lt;br&gt;CH Selector: Optional&lt;br&gt;RF Gain: Optional</td>
<td>Frequency counter to output pin 12 of IC502 (Figure 2).</td>
<td>C514</td>
<td>10.240MHz ± 100Hz</td>
</tr>
<tr>
<td>2.</td>
<td>RX VCO voltage adjustment&lt;br&gt;MIC: Receive&lt;br&gt;Volume: Optional&lt;br&gt;Squelch: Turn Clockwise&lt;br&gt;CH Selector: 1&lt;br&gt;RF Gain: Optional</td>
<td>Connect DC voltmeter between R532 and R533 (Figure 3).</td>
<td>L501</td>
<td>1.5V</td>
</tr>
<tr>
<td>3.</td>
<td>TX VCO voltage adjustment&lt;br&gt;MIC: Transmit&lt;br&gt;Volume: Optional&lt;br&gt;Squelch: Optional&lt;br&gt;CH Selector: 1&lt;br&gt;RF Gain: Optional</td>
<td>Connect DC voltmeter between R523 and R533 (Figure 3).</td>
<td>L501</td>
<td>Indication on DC voltmeter must be 1.0-2.0 Volt. If DC voltmeter does not indicate 1.0-2.0 volt, readjust L501.</td>
</tr>
<tr>
<td>4.</td>
<td>CPU IC Voltage check&lt;br&gt;MIC: Receive&lt;br&gt;Volume: Optional&lt;br&gt;Squelch: Optional&lt;br&gt;CH Selector: Optional&lt;br&gt;RF Gain: Optional</td>
<td>Connect DC voltmeter to pin 2 of IC501.</td>
<td></td>
<td>Indication on DC voltmeter must be 4.5-5.0 volt.</td>
</tr>
<tr>
<td>5.</td>
<td>CPU frequency check&lt;br&gt;MIC: Receive&lt;br&gt;Volume: Optional&lt;br&gt;Squelch: Optional&lt;br&gt;CH Selector: Optional&lt;br&gt;RF Gain: Optional</td>
<td>Connect oscilloscope to pin 16 of IC501 (Figure 4).</td>
<td></td>
<td>Check for 300-400kHz of triangle waveform as Figure 4.</td>
</tr>
</tbody>
</table>

---

**Figure 2**

**Figure 3**

**Figure 4**
B. TRANSMITTER SECTION

1. Test Equipment Required
   a. RF Powermeter
   b. 50 ohm load (non-inductive)
   c. RF Attenuator
   d. Oscilloscope
   e. Audio Generator
   f. DC Power supply (13.8 Volt, 3 Amp.)
   g. Spectrum Analyzer
   h. Frequency Counter
   i. Coupler

2. Alignment procedure

<table>
<thead>
<tr>
<th>STEP</th>
<th>SETTING</th>
<th>CONNECTION</th>
<th>ADJUST</th>
<th>ADJUST FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RF Driver stage</td>
<td>Connect SSVM to base of Q302 (Figure 5).</td>
<td>L301</td>
<td>Adjust for maximum indication on RF SSVM.</td>
</tr>
<tr>
<td></td>
<td>MIC: Transmit</td>
<td></td>
<td>L302</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Squelch: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH Selector: 19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RF Gain: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>RF Power stage</td>
<td>Connect dummy load and RF power meter to the EXT-ANT. Jack on the set.</td>
<td>L303</td>
<td>Adjust for maximum indication on RF power meter (4 watts).</td>
</tr>
<tr>
<td></td>
<td>MIC: Transmit</td>
<td></td>
<td>L304</td>
<td>If indication is not in 4 watts range, go back to step 1 and readjust L303, L304, L305, L306.</td>
</tr>
<tr>
<td></td>
<td>Squelch: Optional</td>
<td></td>
<td>L305</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume: Optional</td>
<td></td>
<td>L306</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH Selector: 19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RF Gain: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Modulation adjustment</td>
<td>Connect audio generator (1kHz) to pin 4 of microphone connector (Figure 7).</td>
<td>RV202</td>
<td>Check for proper modulation pattern on the oscilloscope.</td>
</tr>
<tr>
<td></td>
<td>MIC: Transmit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Squelch: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH Selector: 19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RF Gain: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Second harmonic check</td>
<td>Connect RF power meter with dummy load and spectrum analyzer through coupler/-40dB attenuator to EXT-ANT. Jack on the set (Figure 9).</td>
<td></td>
<td>At no modulation, compare the level of fundamental frequency to the level of harmonic frequency. Suppression of the 2nd harmonic frequency level must be lower than -60dB. Check for the other channels.</td>
</tr>
<tr>
<td></td>
<td>MIC: Transmit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Squelch: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CH Selector: 19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RF Gain: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Frequency check</td>
<td>Connect dummy load and frequency counter through coupler to RF power meter.</td>
<td>C514</td>
<td>Make sure that the indication of the transmitter frequency is 27.185MHz ± 300Hz on the frequency counter.</td>
</tr>
<tr>
<td></td>
<td>MIC: Transmit</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Squelch: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Channel selector: 19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>RF Gain: Optional</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STEP</td>
<td>SETTING</td>
<td>CONNECTION</td>
<td>ADJUST</td>
<td>ADJUST FOR</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
<td>------------</td>
<td>--------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| 6    | TX Power LED adjustment  
   MIC: Transmit  
   Volume: Optional  
   Squelch: Optional  
   Channel Selector:  
   RF Gain: Optional | Connect dummy load and frequency counter through coupler to RF power meter. Connect RF power meter to EXT-ANT. jack on the set (Figure 6). | RV301 | Adjust so that 3rd LED light up at 4 watts RF output power. |
C. RECEIVER SECTION

1. Test Equipment Required
   a. RF signal Generator
   b. SSVM
   c. Distortion Meter
   d. Power Supply

2. Alignment procedure

<table>
<thead>
<tr>
<th>STEP</th>
<th>SETTING</th>
<th>CONNECTION</th>
<th>ADJUST</th>
<th>ADJUST FOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>MIC: Receive&lt;br&gt;Volume: Fully clockwise&lt;br&gt;Squelch: Turn to counterclockwise&lt;br&gt;CH Selector: 19&lt;br&gt;RF Gain: Fully clockwise&lt;br&gt;SSG: 27.185MHz, 1kHz 1μV 30% Mod.</td>
<td>Connect RF signal generator to EXT-ANT. Jack. Connect SSVM and distortion meter across EXT. speaker jack with 8 ohm dummy load (Figure 10).</td>
<td>L101&lt;br&gt;L102&lt;br&gt;L103&lt;br&gt;L104&lt;br&gt;L105</td>
<td>Adjust for maximum indication on SSVM.&lt;br&gt;Reduce output from RF SG until the audio output becomes about 500mW (2V).</td>
</tr>
<tr>
<td>2</td>
<td>MIC: Receive&lt;br&gt;SSG: 27.185MHz 1kHz 1mV 80% Mod.&lt;br&gt;Squelch: Turn to counterclockwise&lt;br&gt;RF Gain: Fully clockwise&lt;br&gt;CH Selector: 19&lt;br&gt;Volume: 500mW (2V)</td>
<td>Connect RF Signal generator to EXT-ANT. Jack. Connect SSVM and distortion meter across EXT. speaker jack with 8 ohm dummy load (Figure 10).</td>
<td>L104</td>
<td>Adjust for minimum indication on distortion meter.</td>
</tr>
<tr>
<td>3</td>
<td>Squelch adjustment&lt;br&gt;MIC: Receive&lt;br&gt;SSG: 27.185MHz, 1kHz 1mV 30% Mod.&lt;br&gt;Squelch: Clockwise&lt;br&gt;CH Selector: 19&lt;br&gt;Volume: 500mW (2V)&lt;br&gt;RF Gain: Fully clockwise</td>
<td>Connect RF signal generator to EXT-ANT. Jack. Connect SSVM and distortion meter across EXT. speaker jack with 8 ohm dummy load (Figure 10).</td>
<td>RV201</td>
<td>Adjust RV201 until the Audio output just appeared.</td>
</tr>
<tr>
<td>4</td>
<td>RF Signal meter adjustment&lt;br&gt;MIC: Receive&lt;br&gt;SSG: 27.185MHz, 1kHz 100μV 30% Mod.&lt;br&gt;Squelch: Fully counterclockwise&lt;br&gt;Volume: 500mW (2V)&lt;br&gt;RF Gain: Fully clockwise</td>
<td>Connect RF signal generator to EXT-ANT. Jack. Connect SSVM and distortion meter across the EXT. speaker jack with 8 ohm dummy load. (Figure 10).</td>
<td>RV101</td>
<td>Adjust so that the 3rd LED on the S/RF meter light up.</td>
</tr>
</tbody>
</table>
# CHANNEL FREQUENCY GENERATION TABLE

**RECEIVE**

VCO FREQUENCY = N x 5 (kHz)

**TRANSMIT**

VCO FREQUENCY = N x 2.5 (kHz)

TRANSMIT FREQUENCY = VCO FREQUENCY x 2

<table>
<thead>
<tr>
<th>CHANNEL</th>
<th>BCD INPUT TO IC-1</th>
<th>RECEIVE</th>
<th>TRANSMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D1 (1F) D2 (1A)</td>
<td>N</td>
<td>VCO FREQUENCY (MHz)</td>
</tr>
<tr>
<td>1</td>
<td>1 1 1 1 0 1 1 1</td>
<td>3254</td>
<td>16.27</td>
</tr>
<tr>
<td>2</td>
<td>1 0 0 0 0 1 1 1</td>
<td>3256</td>
<td>16.28</td>
</tr>
<tr>
<td>3</td>
<td>1 0 0 1 0 1 1 1</td>
<td>3258</td>
<td>16.29</td>
</tr>
<tr>
<td>4</td>
<td>0 1 0 1 0 1 1 1</td>
<td>3262</td>
<td>16.31</td>
</tr>
<tr>
<td>5</td>
<td>0 0 0 1 1 1 1 1</td>
<td>3264</td>
<td>16.32</td>
</tr>
<tr>
<td>6</td>
<td>0 0 0 0 1 1 1 1</td>
<td>3266</td>
<td>16.33</td>
</tr>
<tr>
<td>7</td>
<td>0 0 0 1 0 0 1 1</td>
<td>3268</td>
<td>16.34</td>
</tr>
<tr>
<td>8</td>
<td>0 0 0 0 0 0 0 1</td>
<td>3272</td>
<td>16.36</td>
</tr>
<tr>
<td>9</td>
<td>0 0 0 0 0 1 1 1</td>
<td>3274</td>
<td>16.37</td>
</tr>
<tr>
<td>10</td>
<td>0 0 0 0 1 0 0 1</td>
<td>3276</td>
<td>16.38</td>
</tr>
<tr>
<td>11</td>
<td>1 1 1 1 0 0 1 1</td>
<td>3278</td>
<td>16.39</td>
</tr>
<tr>
<td>12</td>
<td>1 0 0 0 1 1 1 1</td>
<td>3282</td>
<td>16.41</td>
</tr>
<tr>
<td>13</td>
<td>1 0 0 1 0 0 1 1</td>
<td>3284</td>
<td>16.42</td>
</tr>
<tr>
<td>14</td>
<td>0 1 0 1 0 0 1 1</td>
<td>3286</td>
<td>16.43</td>
</tr>
<tr>
<td>15</td>
<td>0 0 0 1 0 0 1 1</td>
<td>3288</td>
<td>16.44</td>
</tr>
<tr>
<td>16</td>
<td>0 0 0 0 1 0 1 0</td>
<td>3292</td>
<td>16.46</td>
</tr>
<tr>
<td>17</td>
<td>0 0 1 1 0 0 1 1</td>
<td>3294</td>
<td>16.47</td>
</tr>
<tr>
<td>18</td>
<td>0 0 0 0 0 0 0 1</td>
<td>3296</td>
<td>16.48</td>
</tr>
<tr>
<td>19</td>
<td>0 0 0 0 1 0 0 1</td>
<td>3298</td>
<td>16.49</td>
</tr>
<tr>
<td>20</td>
<td>0 0 0 1 0 0 1 0</td>
<td>3302</td>
<td>16.51</td>
</tr>
<tr>
<td>21</td>
<td>1 1 1 1 0 1 0 1</td>
<td>3304</td>
<td>16.52</td>
</tr>
<tr>
<td>22</td>
<td>1 0 0 0 1 0 1 0</td>
<td>3306</td>
<td>16.53</td>
</tr>
<tr>
<td>23</td>
<td>1 0 0 1 0 0 1 0</td>
<td>3312</td>
<td>16.56</td>
</tr>
<tr>
<td>24</td>
<td>0 1 0 1 0 1 0 1</td>
<td>3308</td>
<td>16.54</td>
</tr>
<tr>
<td>25</td>
<td>0 0 0 1 1 1 0 1</td>
<td>3310</td>
<td>16.55</td>
</tr>
<tr>
<td>26</td>
<td>0 0 0 0 1 1 1 1</td>
<td>3314</td>
<td>16.57</td>
</tr>
<tr>
<td>27</td>
<td>0 0 1 1 0 1 0 1</td>
<td>3316</td>
<td>16.58</td>
</tr>
<tr>
<td>28</td>
<td>0 0 0 0 0 0 1 0</td>
<td>3318</td>
<td>16.59</td>
</tr>
<tr>
<td>29</td>
<td>0 0 0 0 1 0 0 1</td>
<td>3320</td>
<td>16.60</td>
</tr>
<tr>
<td>30</td>
<td>0 0 0 1 0 0 0 0</td>
<td>3322</td>
<td>16.61</td>
</tr>
<tr>
<td>31</td>
<td>1 1 1 1 0 0 0 0</td>
<td>3324</td>
<td>16.62</td>
</tr>
<tr>
<td>32</td>
<td>1 0 0 0 0 0 0 1</td>
<td>3326</td>
<td>16.63</td>
</tr>
<tr>
<td>33</td>
<td>1 0 0 1 0 0 0 1</td>
<td>3328</td>
<td>16.64</td>
</tr>
<tr>
<td>34</td>
<td>0 1 0 1 0 0 0 0</td>
<td>3330</td>
<td>16.65</td>
</tr>
<tr>
<td>35</td>
<td>0 0 0 1 1 0 0 0</td>
<td>3332</td>
<td>16.66</td>
</tr>
<tr>
<td>36</td>
<td>0 0 0 0 1 0 0 0</td>
<td>3334</td>
<td>16.67</td>
</tr>
<tr>
<td>37</td>
<td>0 0 1 1 0 0 0 0</td>
<td>3336</td>
<td>16.68</td>
</tr>
<tr>
<td>38</td>
<td>0 0 0 0 0 0 0 0</td>
<td>3338</td>
<td>16.69</td>
</tr>
<tr>
<td>39</td>
<td>0 0 0 0 1 0 0 0</td>
<td>3340</td>
<td>16.70</td>
</tr>
<tr>
<td>40</td>
<td>0 0 1 0 0 0 0 1</td>
<td>3342</td>
<td>16.71</td>
</tr>
<tr>
<td>SYMPTOM</td>
<td>PROBABLE CAUSE</td>
<td>REMEDY</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>----------------------------</td>
<td></td>
</tr>
<tr>
<td>Unit does not work at all</td>
<td>1. Defective power switch VR102</td>
<td>1. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Blown fuse</td>
<td>2. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Broken DC power cord</td>
<td>3. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Defective IC501 or IC502</td>
<td>4. Replace</td>
<td></td>
</tr>
<tr>
<td>No output from speaker at all</td>
<td>1. Defective external speaker Jack</td>
<td>1. Repair or Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Poor connection on microphone connector</td>
<td>2. Repair or Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Defective push switch on microphone</td>
<td>3. Repair or Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Defective internal speaker</td>
<td>4. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Defective D112, VR101, VR102, RV201 IC201 or other components</td>
<td>5. Replace the defective components</td>
<td></td>
</tr>
<tr>
<td>No noise on speaker</td>
<td>1. Measure all the voltage of Q101 Q102, Q103, Q104, 105, 106, 107 and IC201</td>
<td>1. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>with voltage chart on the page 20</td>
<td>2. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Defective squelch circuit components (RV201, VR201, IC201, Q203 Q204, Q205, Q507, Q508)</td>
<td>3. Replace</td>
<td></td>
</tr>
<tr>
<td>Squelch does not work</td>
<td>1. Defective VR201, RV201, Q203, Q204, Q205, Q507, Q508</td>
<td>1. Replace defective components</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Improperly adjusted RV201</td>
<td>2. Readjust</td>
<td></td>
</tr>
<tr>
<td>No modulation</td>
<td>1. Defective microphone</td>
<td>1. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Poor Audio output and defective modulation microphone amplifier components</td>
<td>2. Replace the defective component(s)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(Q201, Q202, IC201)</td>
<td>3. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Defective microphone connector component</td>
<td>4. Replace the defective component(s)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Defective ALC Circuit (Q206, Q207, Q208, D204, D205)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LED meter does not work</td>
<td>1. Defective D303, D304, D305, D306</td>
<td>1. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Defective IC301</td>
<td>2. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Defective D302, RV301</td>
<td>3. Replace</td>
<td></td>
</tr>
<tr>
<td>LED Display does not work</td>
<td>1. Defective orange wire fuse</td>
<td>1. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Defective LED501, IC501</td>
<td>2. Replace</td>
<td></td>
</tr>
<tr>
<td>P.A does not work</td>
<td>1. Defective VR201</td>
<td>1. Replace</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Defective Q501, D505</td>
<td>2. Replace</td>
<td></td>
</tr>
<tr>
<td>Channel selector does not work</td>
<td>1. Defective IC501, SW509</td>
<td>1. Replace</td>
<td></td>
</tr>
<tr>
<td>Memory function does not work</td>
<td>1. Defective SW501, SW502, SQ503, SQ504, SW505, SW506, SW507</td>
<td>1. Replace the defective component(s)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Defective D501, D502, D503, D504</td>
<td>2. Replace the defective component(s)</td>
<td></td>
</tr>
</tbody>
</table>
MAIN PCB (BOTTOM VIEW)
LED DISPLAY & SW PCB
TOP VIEW

BOTTOM VIEW

16
<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>RS Location</th>
<th>Mfr’s Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Upper Cover</td>
<td>Z-1243</td>
<td>715-700</td>
</tr>
<tr>
<td>2</td>
<td>Bottom Cover</td>
<td>Z-1354</td>
<td>715-710</td>
</tr>
<tr>
<td>3</td>
<td>Holder - Speaker Mounting</td>
<td></td>
<td>730-015</td>
</tr>
<tr>
<td>4</td>
<td>Cap - Speaker</td>
<td></td>
<td>830-043</td>
</tr>
<tr>
<td>5</td>
<td>Felt - Speaker</td>
<td></td>
<td>900-203</td>
</tr>
<tr>
<td>6</td>
<td>Felt Strip - Escutcheon</td>
<td></td>
<td>901-226</td>
</tr>
<tr>
<td>7</td>
<td>Felt Strip</td>
<td></td>
<td>904-000</td>
</tr>
<tr>
<td>8</td>
<td>(+) Tapping Screw, B,H 3 x 8 BLK</td>
<td></td>
<td>623-104</td>
</tr>
<tr>
<td>9</td>
<td>(+) Tapping Screw, B,H 3 x 6 BLK</td>
<td></td>
<td>633-082</td>
</tr>
<tr>
<td>10</td>
<td>Escutcheon, BLK</td>
<td></td>
<td>800-990</td>
</tr>
<tr>
<td>11</td>
<td>Lens</td>
<td></td>
<td>813-250</td>
</tr>
<tr>
<td>12</td>
<td>Knob (Control)</td>
<td></td>
<td>820-102</td>
</tr>
<tr>
<td>13</td>
<td>Knob (Channel)</td>
<td></td>
<td>820-111</td>
</tr>
<tr>
<td>14</td>
<td>Knob (MEM)</td>
<td></td>
<td>823-970</td>
</tr>
<tr>
<td>15</td>
<td>Knob (M1)</td>
<td></td>
<td>823-971</td>
</tr>
<tr>
<td>16</td>
<td>Knob (M2)</td>
<td></td>
<td>823-972</td>
</tr>
<tr>
<td>17</td>
<td>Knob (M3)</td>
<td></td>
<td>823-973</td>
</tr>
<tr>
<td>18</td>
<td>Knob (M4)</td>
<td></td>
<td>823-974</td>
</tr>
<tr>
<td>19</td>
<td>Knob (M5)</td>
<td></td>
<td>823-975</td>
</tr>
<tr>
<td>20</td>
<td>Knob (M6)</td>
<td></td>
<td>823-976</td>
</tr>
<tr>
<td>21</td>
<td>Knob (CH-9)</td>
<td></td>
<td>823-980</td>
</tr>
<tr>
<td>22</td>
<td>Spring</td>
<td></td>
<td>880-730</td>
</tr>
<tr>
<td>23</td>
<td>(+) Machine Screw, F.H M3 x 6</td>
<td></td>
<td>613-183</td>
</tr>
<tr>
<td>24</td>
<td>Main Body</td>
<td></td>
<td>701-470</td>
</tr>
<tr>
<td>25</td>
<td>Front Body</td>
<td></td>
<td>701-550</td>
</tr>
<tr>
<td>26</td>
<td>Shield Plate</td>
<td></td>
<td>770-390</td>
</tr>
<tr>
<td>27</td>
<td>Name Plate</td>
<td></td>
<td>793-910</td>
</tr>
<tr>
<td>28</td>
<td>Sponge</td>
<td></td>
<td>893-110</td>
</tr>
<tr>
<td>29</td>
<td>Insulation Ring</td>
<td></td>
<td>900-504</td>
</tr>
<tr>
<td>30</td>
<td>(+) Machine Screw (P.H) M3 x 4</td>
<td></td>
<td>613-004</td>
</tr>
<tr>
<td>31</td>
<td>(+) Machine Screw (P.H) M3 x 5</td>
<td></td>
<td>613-022</td>
</tr>
<tr>
<td>32</td>
<td>(+) Machine Screw (B.H) M3 x 10</td>
<td></td>
<td>613-332</td>
</tr>
<tr>
<td>33</td>
<td>Washer Flat</td>
<td></td>
<td>660-572</td>
</tr>
<tr>
<td>34</td>
<td>Rivet Blind</td>
<td></td>
<td>670-025</td>
</tr>
<tr>
<td>35</td>
<td>Main P.C.B.</td>
<td></td>
<td>401-072-H</td>
</tr>
<tr>
<td>M1</td>
<td>ANT Receptacle</td>
<td>J-0843</td>
<td>992-440</td>
</tr>
<tr>
<td>M2</td>
<td>Bushing</td>
<td>HC-3805</td>
<td>441-004-5</td>
</tr>
<tr>
<td>M3</td>
<td>Cord Stopper</td>
<td></td>
<td>750-765</td>
</tr>
<tr>
<td>M4</td>
<td>Heat Sink</td>
<td></td>
<td>760-704</td>
</tr>
<tr>
<td>M5</td>
<td>Holder (ANT Mounting)</td>
<td></td>
<td>731-790</td>
</tr>
<tr>
<td>M6</td>
<td>Insulation Plate</td>
<td></td>
<td>902-050</td>
</tr>
<tr>
<td>M7</td>
<td>Mica</td>
<td>HC-3816</td>
<td>440-004-0</td>
</tr>
<tr>
<td>M8</td>
<td>Nut</td>
<td></td>
<td>651-024</td>
</tr>
<tr>
<td>M9</td>
<td>(+) Machine Screw (BH) M3 x 8</td>
<td></td>
<td>613-305</td>
</tr>
<tr>
<td>M10</td>
<td>5 pin Socket</td>
<td>J-7648</td>
<td>992-486</td>
</tr>
<tr>
<td>M11</td>
<td>Tapping Screw (BH) 3 x 5 - 2S</td>
<td></td>
<td>623-238</td>
</tr>
<tr>
<td>M12</td>
<td>Shield Plate 90 x 25 x 0.3</td>
<td></td>
<td>770-336</td>
</tr>
<tr>
<td>M13</td>
<td>Shield Plate 26 x 17 x 0.3</td>
<td>HC-3806</td>
<td>770-390</td>
</tr>
<tr>
<td>M14</td>
<td>Washer</td>
<td></td>
<td>662-305</td>
</tr>
<tr>
<td>M15</td>
<td>Jack, Earphone</td>
<td>J-1545</td>
<td>420-707-6</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Description</td>
<td>RS Location</td>
<td>Mfr's Part No.</td>
</tr>
<tr>
<td>----------</td>
<td>-------------------------------------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>P1</td>
<td>Securing Screw</td>
<td></td>
<td>600-060</td>
</tr>
<tr>
<td>P2</td>
<td>Bracket (MIC)</td>
<td></td>
<td>720-094</td>
</tr>
<tr>
<td>P3</td>
<td>Bracket (SET)</td>
<td></td>
<td>722-750</td>
</tr>
<tr>
<td>P4</td>
<td>(+) Tapping Screw (B.H) 3.5 x 10</td>
<td></td>
<td>624-066</td>
</tr>
<tr>
<td>P5</td>
<td>(+) Tapping Screw (T.H) 5 x 12</td>
<td></td>
<td>625-007</td>
</tr>
<tr>
<td>P6</td>
<td>Washer-Rubber</td>
<td></td>
<td>660-138</td>
</tr>
<tr>
<td>P7</td>
<td>Washer-Lock M3.5</td>
<td></td>
<td>664-411</td>
</tr>
<tr>
<td>P8</td>
<td>Washer-Lock M5</td>
<td></td>
<td>664-518</td>
</tr>
<tr>
<td>Q304</td>
<td>KTC2075</td>
<td>2SC-2075</td>
<td>202-057-5</td>
</tr>
<tr>
<td>SP-1</td>
<td>Speaker 3&quot; 8 ohm 2W</td>
<td>SP-5396</td>
<td>420-102-9</td>
</tr>
<tr>
<td>VR101</td>
<td>Without/SW, B50K ohm ± 20%</td>
<td>P-8073</td>
<td>450-601-2</td>
</tr>
<tr>
<td>VR102</td>
<td>With/OFF-ON SW, A50K ohm ± 20%</td>
<td>P-8074</td>
<td>450-602-3</td>
</tr>
<tr>
<td>VR201</td>
<td>With/DPDT SW, B10K ohm ± 20%</td>
<td>P-8075</td>
<td>450-403-0</td>
</tr>
</tbody>
</table>
# ELECTRICAL PARTS LIST

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>RS Location</th>
<th>Mfr’s Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAIN P.C.B ASS’Y</td>
<td>XB-1695</td>
<td>501-43M-P</td>
<td></td>
</tr>
</tbody>
</table>

## CAPACITORS

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>RS Location</th>
<th>Mfr’s Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C101</td>
<td>Ceramic 0.01μF 50kV +80%–20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C102</td>
<td>Ceramic 0.022μF 50kV +80%–20%</td>
<td></td>
<td>130-207-1</td>
</tr>
<tr>
<td>C103</td>
<td>Elect 10μF 16kV ±20%</td>
<td></td>
<td>101-012-7</td>
</tr>
<tr>
<td>C104</td>
<td>Ceramic 0.0047μF 50kV ±80%/–20%</td>
<td></td>
<td>130-402-0</td>
</tr>
<tr>
<td>C105</td>
<td>Elect 22μF 16kV ±20%</td>
<td></td>
<td>102-210-4</td>
</tr>
<tr>
<td>C106</td>
<td>Ceramic 0.01μF 50kV SL ±80%/–20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C107</td>
<td>Ceramic 22μF 50kV ±10%</td>
<td></td>
<td>132-201-5</td>
</tr>
<tr>
<td>C108</td>
<td>Ceramic 0.001μF 50kV ±90%/–20%</td>
<td></td>
<td>130-101-8</td>
</tr>
<tr>
<td>C109</td>
<td>Ceramic 0.01μF 50kV ±80%/–20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C110</td>
<td>Not Used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C111</td>
<td>Ceramic 0.022μF 50kV ±80%/–20%</td>
<td></td>
<td>130-207-1</td>
</tr>
<tr>
<td>C112-C113</td>
<td>Ceramic 0.01μF 50kV ±80%/–20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C114</td>
<td>Ceramic 0.047μF 50kV ±20%</td>
<td></td>
<td>130-405-3</td>
</tr>
<tr>
<td>C115</td>
<td>Elect 0.47μF 50kV ±20%</td>
<td></td>
<td>100-405-4</td>
</tr>
<tr>
<td>C116-C117</td>
<td>Ceramic 0.01μF 50kV ±80%/–20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C118</td>
<td>Ceramic 0.047μF 50kV ±20%</td>
<td></td>
<td>130-405-3</td>
</tr>
<tr>
<td>C119-C120</td>
<td>Elect 10μF 16kV ±20%</td>
<td></td>
<td>101-012-7</td>
</tr>
<tr>
<td>C121</td>
<td>Ceramic 0.047μF 50kV ±20%</td>
<td></td>
<td>130-405-3</td>
</tr>
<tr>
<td>C122</td>
<td>Ceramic 0.022μF 50kV ±80%/–20%</td>
<td></td>
<td>130-207-1</td>
</tr>
<tr>
<td>C123</td>
<td>Ceramic 10μF (NPO) 50kV ±10%</td>
<td>CF-1902</td>
<td>131-011-5</td>
</tr>
<tr>
<td>C124</td>
<td>Ceramic 0.022μF 50kV ±80%/–20%</td>
<td></td>
<td>130-207-1</td>
</tr>
<tr>
<td>C125</td>
<td>Ceramic 0.01μF 50kV ±80%/–20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C126</td>
<td>M.P. 0.022μF 50kV ±5%</td>
<td></td>
<td>192-203-5</td>
</tr>
<tr>
<td>C127</td>
<td>Ceramic 0.001μF 50kV ±80%/–20%</td>
<td></td>
<td>130-101-8</td>
</tr>
<tr>
<td>C128</td>
<td>M.P. 0.047μF 50kV ±5%</td>
<td></td>
<td>194-702-9</td>
</tr>
<tr>
<td>C129</td>
<td>Ceramic 2μF 50kV ±10%</td>
<td></td>
<td>132-003-3</td>
</tr>
<tr>
<td>C130</td>
<td>Elect 0.47μF 50kV ±10%</td>
<td></td>
<td>100-405-4</td>
</tr>
<tr>
<td>C131</td>
<td>M.P. 0.047μF 50kV ±5%</td>
<td></td>
<td>194-702-9</td>
</tr>
<tr>
<td>C132</td>
<td>Ceramic 5μF 50kV ±10%</td>
<td></td>
<td>135-005-0</td>
</tr>
<tr>
<td>C133</td>
<td>M.P. 0.047μF 50kV ±5%</td>
<td></td>
<td>194-702-9</td>
</tr>
<tr>
<td>C134</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C135</td>
<td>Elect 10μF 16kV ±20%</td>
<td></td>
<td>101-012-7</td>
</tr>
<tr>
<td>C136</td>
<td>M.P. 0.01μF 50kV ±10%</td>
<td></td>
<td>191-004-7</td>
</tr>
<tr>
<td>C137</td>
<td>Ceramic 0.01μF 50kV ±80%/–20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C138</td>
<td>Elect 4.7μF 50kV ±80%/–20%</td>
<td></td>
<td>104-707-7</td>
</tr>
<tr>
<td>C139</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C140</td>
<td>M.P. 0.001μF 50kV ±5%</td>
<td></td>
<td>191-002-5</td>
</tr>
<tr>
<td>C141</td>
<td>Elect 1μF 50kV ±20%</td>
<td></td>
<td>101-006-2</td>
</tr>
<tr>
<td>C142</td>
<td>M.P. 0.047μF 50kV ±5%</td>
<td></td>
<td>194-702-9</td>
</tr>
<tr>
<td>C143</td>
<td>M.P. 0.0082μF 50kV ±10%</td>
<td></td>
<td>198-201-3</td>
</tr>
<tr>
<td>C200</td>
<td>M.P. 0.022μF 50kV ±10%</td>
<td></td>
<td>192-203-5</td>
</tr>
<tr>
<td>C201</td>
<td>M.P. 0.0047μF 50kV ±5%</td>
<td></td>
<td>194-701-8</td>
</tr>
<tr>
<td>C202</td>
<td>Elect 1μF 50kV ±20%</td>
<td></td>
<td>101-006-2</td>
</tr>
<tr>
<td>C203</td>
<td>M.P. 0.01μF 50kV ±5%</td>
<td></td>
<td>191-004-9</td>
</tr>
<tr>
<td>C204</td>
<td>Elect 47μF 16kV ±20%</td>
<td></td>
<td>104-712-1</td>
</tr>
<tr>
<td>C205</td>
<td>Elect 10μF 16kV ±20%</td>
<td></td>
<td>101-012-7</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Description</td>
<td>RS Location</td>
<td>Mfr's Part No.</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>C206</td>
<td>M.P. 0.022µF 50WV ±5%</td>
<td></td>
<td>192-203-5</td>
</tr>
<tr>
<td>C207</td>
<td>M.P. 0.015µF 50WV ±5%</td>
<td></td>
<td>191-504-2</td>
</tr>
<tr>
<td>C208-C209</td>
<td>M.P. 0.022µF 50WV ±5%</td>
<td></td>
<td>192-203-5</td>
</tr>
<tr>
<td>C210</td>
<td>M.P. 0.022µF 50WV ±5%</td>
<td></td>
<td>192-201-3</td>
</tr>
<tr>
<td>C211</td>
<td>Tantal 3.3µF 16WV ±20%</td>
<td></td>
<td>143-301-0</td>
</tr>
<tr>
<td>C212</td>
<td>Ceramic 68pF 50WV ±10%</td>
<td></td>
<td>136-801-7</td>
</tr>
<tr>
<td>C213</td>
<td>Ceramic 150pF 50WV ±10%</td>
<td></td>
<td>131-503-3</td>
</tr>
<tr>
<td>C214</td>
<td>Elect 47µF 10WV ±20%</td>
<td></td>
<td>104-711-0</td>
</tr>
<tr>
<td>C215</td>
<td>M.P. 0.068µF 50WV ±10%</td>
<td></td>
<td>196-803-7</td>
</tr>
<tr>
<td>C216</td>
<td>Elect 47µF 16WV ±20%</td>
<td></td>
<td>104-712-1</td>
</tr>
<tr>
<td>C217</td>
<td>Ceramic 220pF 50WV ±10%</td>
<td></td>
<td>132-204-8</td>
</tr>
<tr>
<td>C218</td>
<td>M.P. 0.068µF 50WV ±10%</td>
<td></td>
<td>196-803-7</td>
</tr>
<tr>
<td>C219-C220</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C221</td>
<td>Elect 220µF 16WV ±10%</td>
<td></td>
<td>102-242-3</td>
</tr>
<tr>
<td>C222</td>
<td>Elect 1000µF 16WV ±20%</td>
<td></td>
<td>101-048-0</td>
</tr>
<tr>
<td>C223</td>
<td>Elect 100µF 16WV ±20%</td>
<td></td>
<td>101-022-6</td>
</tr>
<tr>
<td>C224</td>
<td>Ceramic 0.001µF 50WV +80%/-20%</td>
<td></td>
<td>130-101-8</td>
</tr>
<tr>
<td>C225</td>
<td>Elect 33µF 16WV ±20%</td>
<td></td>
<td>103-313-9</td>
</tr>
<tr>
<td>C226</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C227</td>
<td>Elect 100µF 16WV ±20%</td>
<td></td>
<td>101-022-6</td>
</tr>
<tr>
<td>C228</td>
<td>Elect 10µF 16WV ±20%</td>
<td></td>
<td>101-012-7</td>
</tr>
<tr>
<td>C229</td>
<td>Elect 47µF 16WV ±20%</td>
<td></td>
<td>104-712-1</td>
</tr>
<tr>
<td>C230</td>
<td>Ceramic 0.047µF 50WV ±20%</td>
<td></td>
<td>130-405-3</td>
</tr>
<tr>
<td>C231</td>
<td>Ceramic 0.001µF 50WV +80%/-20%</td>
<td></td>
<td>130-101-3</td>
</tr>
<tr>
<td>C232</td>
<td>Elect 100µF 16WV ±20%</td>
<td></td>
<td>101-022-6</td>
</tr>
<tr>
<td>C233-C234</td>
<td>Ceramic 0.001µF 50WV +80%/-20%</td>
<td></td>
<td>130-101-8</td>
</tr>
<tr>
<td>C235</td>
<td>Ceramic 0.01µF 50WV +80%/-20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C236</td>
<td>Elect 1µF 50WV ±20%</td>
<td></td>
<td>101-006-2</td>
</tr>
<tr>
<td>C237</td>
<td>Elect 1µF 16WV ±20%</td>
<td></td>
<td>101-006-2</td>
</tr>
<tr>
<td>C301</td>
<td>Ceramic 0.01µF 50WV +80%/-20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C302</td>
<td>Ceramic 4pF (NPO) 50WV ±10%</td>
<td>CF-1950</td>
<td>134-006-6</td>
</tr>
<tr>
<td>C303</td>
<td>Ceramic 100pF (NPO) 50WV ±10%</td>
<td>CF-1424</td>
<td>131-015-9</td>
</tr>
<tr>
<td>C304</td>
<td>Ceramic 0.01µF 50WV +80%/-20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C305</td>
<td>Ceramic 0.047µF 50WV +80%/-20%</td>
<td></td>
<td>130-405-3</td>
</tr>
<tr>
<td>C306</td>
<td>Ceramic 100pF (NPO) 50WV ±10%</td>
<td>CF-1424</td>
<td>131-015-9</td>
</tr>
<tr>
<td>C307</td>
<td>Ceramic 330pF 50WV ±10%</td>
<td></td>
<td>133-302-8</td>
</tr>
<tr>
<td>C308</td>
<td>Ceramic 0.01µF 50WV +80%/-20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C309-C310</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C311</td>
<td>Ceramic 60pF (NPO) 50WV ±10%</td>
<td>CF-7442</td>
<td>136-002-2</td>
</tr>
<tr>
<td>C312</td>
<td>Ceramic 220pF (NPO) 50WV ±10%</td>
<td>CF-1485</td>
<td>132-214-9</td>
</tr>
<tr>
<td>C313</td>
<td>Ceramic 60pF (NPO) 50WV ±10%</td>
<td>CF-7442</td>
<td>136-002-2</td>
</tr>
<tr>
<td>C314</td>
<td>Mica 100pF 50WV ±5%</td>
<td></td>
<td>161-005-9</td>
</tr>
<tr>
<td>C315</td>
<td>Ceramic 0.01µF 50WV +80%/-20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C316</td>
<td>Mica 100pF 50WV ±10%</td>
<td></td>
<td>161-005-9</td>
</tr>
<tr>
<td>C317</td>
<td>Mica 270pF 50WV ±10%</td>
<td></td>
<td>162-702-0</td>
</tr>
<tr>
<td>C318</td>
<td>Ceramic 1.5pF 50WV ±10%</td>
<td></td>
<td>131-506-6</td>
</tr>
<tr>
<td>C319</td>
<td>Elect 10pF 16WV ±20%</td>
<td></td>
<td>101-012-7</td>
</tr>
<tr>
<td>C320</td>
<td>Not used</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C321</td>
<td>Ceramic 0.01µF 50WV +80%/-20%</td>
<td></td>
<td>130-102-9</td>
</tr>
<tr>
<td>C322</td>
<td>Mica 270pF 50WV ±10%</td>
<td></td>
<td>162-702-0</td>
</tr>
<tr>
<td>C323</td>
<td>Capacitor Mica 150pF 50WV ±10%</td>
<td></td>
<td>161-502-1</td>
</tr>
<tr>
<td>C500</td>
<td>Elect 10µF 16WV ±20%</td>
<td></td>
<td>101-012-7</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Description</td>
<td>RS Location</td>
<td>Mfr’s Part No.</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>C501</td>
<td>Ceramic 180pF 50VW ± 10%</td>
<td>131-802-3</td>
<td></td>
</tr>
<tr>
<td>C502</td>
<td>Tantal 0.1µF 50VW ± 20%</td>
<td>140-106-6</td>
<td></td>
</tr>
<tr>
<td>C503</td>
<td>Elect 33µF 17VW ± 20%</td>
<td>103-313-9</td>
<td></td>
</tr>
<tr>
<td>C504</td>
<td>Ceramic 0.01µF 50VW +80%/-20%</td>
<td>130-102-9</td>
<td></td>
</tr>
<tr>
<td>C505</td>
<td>Ceramic 0.047µF 50VW ± 20%</td>
<td>130-405-3</td>
<td></td>
</tr>
<tr>
<td>C506</td>
<td>Capacitor Ceramic 0.01µF 50VW +80%/-20%</td>
<td>130-102-9</td>
<td></td>
</tr>
<tr>
<td>C507</td>
<td>Ceramic 15pF 50VW +80%/-20%</td>
<td>131-501-1</td>
<td></td>
</tr>
<tr>
<td>C508</td>
<td>Ceramic 6pF 50VW ± 10%</td>
<td>136-001-1</td>
<td></td>
</tr>
<tr>
<td>C509-C510</td>
<td>Nout used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C511</td>
<td>Tantal 1µF 16VW ± 20%</td>
<td>141-008-6</td>
<td></td>
</tr>
<tr>
<td>C512</td>
<td>Mica 56pF 50VW ± 5%</td>
<td>165-601-7</td>
<td></td>
</tr>
<tr>
<td>C513</td>
<td>Mica 47pF 50VW ± 5%</td>
<td>164-701-9</td>
<td></td>
</tr>
<tr>
<td>C514</td>
<td>Trimmer 20pF T203R200E</td>
<td>C-1444</td>
<td></td>
</tr>
<tr>
<td>C515</td>
<td>M.P 0.047µF 50VW ± 5%</td>
<td>194-701-8</td>
<td></td>
</tr>
<tr>
<td>C516</td>
<td>Mica 35pF 50VW ± 5%</td>
<td>163-501-0</td>
<td></td>
</tr>
<tr>
<td>C517</td>
<td>Elect 2.2µF 50VW ± 20%</td>
<td>102-207-2</td>
<td></td>
</tr>
<tr>
<td>C518</td>
<td>Ceramic 0.01µF 50VW +80%/-20%</td>
<td>130-102-9</td>
<td></td>
</tr>
<tr>
<td>C519</td>
<td>Elect 1µF 50VW ± 20%</td>
<td>101-006-2</td>
<td></td>
</tr>
<tr>
<td>C520</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C521</td>
<td>Elect 220µF 16VW ± 20%</td>
<td>102-223-6</td>
<td></td>
</tr>
<tr>
<td>C522</td>
<td>Elect 47µF 16VW ± 20%</td>
<td>104-712-1</td>
<td></td>
</tr>
<tr>
<td>C523-C524</td>
<td>Ceramic 0.01µF 50VW +80%/-20%</td>
<td>130-102-9</td>
<td></td>
</tr>
<tr>
<td>C525</td>
<td>Ceramic 0.047µF 50VW ± 20%</td>
<td>130-405-3</td>
<td></td>
</tr>
<tr>
<td>C526</td>
<td>Ceramic 18pF 50VW ± 10%</td>
<td>131-801-2</td>
<td></td>
</tr>
<tr>
<td>C527</td>
<td>Ceramic 22pF 50VW ± 10%</td>
<td>132-201-5</td>
<td></td>
</tr>
<tr>
<td>C528</td>
<td>Ceramic 39pF 50VW ± 10%</td>
<td>133-901-9</td>
<td></td>
</tr>
<tr>
<td>C529</td>
<td>Ceramic 0.0047µF 50VW +80%/-20%</td>
<td>130-402-0</td>
<td></td>
</tr>
<tr>
<td>C530</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C531</td>
<td>Ceramic 27pF 50VW ± 10%</td>
<td>132-701-0</td>
<td></td>
</tr>
<tr>
<td>C532</td>
<td>Ceramic 33pF 50VW ± 10%</td>
<td>133-310-7</td>
<td></td>
</tr>
<tr>
<td>C533</td>
<td>Ceramic 220µF 50VW ± 10%</td>
<td>132-204-8</td>
<td></td>
</tr>
<tr>
<td>C534</td>
<td>Elect 120pF 50VW ± 10%</td>
<td>131-202-1</td>
<td></td>
</tr>
<tr>
<td>C535</td>
<td>Elect 68µF 10VW ± 20%</td>
<td>106-811-7</td>
<td></td>
</tr>
<tr>
<td>C536</td>
<td>Elect 10µF 16VW ± 20%</td>
<td>101-012-7</td>
<td></td>
</tr>
<tr>
<td>C537</td>
<td>Ceramic 0.01µF 50VW +80%/-20%</td>
<td>130-102-9</td>
<td></td>
</tr>
<tr>
<td>C538-C541</td>
<td>M.P 0.0022µF 50VW ± 5%</td>
<td>192-201-3</td>
<td></td>
</tr>
<tr>
<td>C601-C602</td>
<td>Capacitor Ceramic 0.01µF 50VW +80%/-20%</td>
<td>130-101-3</td>
<td></td>
</tr>
<tr>
<td>C603</td>
<td>Elect 1000µF 16VW ± 20%</td>
<td>101-047-9</td>
<td></td>
</tr>
<tr>
<td>C604-C605</td>
<td>Ceramic 0.01µF 50VW +80%/-20%</td>
<td>130-102-9</td>
<td></td>
</tr>
</tbody>
</table>

### COILS

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>RS Location</th>
<th>Mfr’s Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>L101</td>
<td>27MHz, RX ANT.</td>
<td>CA-1337</td>
<td>320-380-2</td>
</tr>
<tr>
<td>L102</td>
<td>27MHz, RF AMP (RX)</td>
<td>CA-9047</td>
<td>320-315-4</td>
</tr>
<tr>
<td>L103</td>
<td>10.6MHz, RF 1st MIXER (RX)</td>
<td>CA-9048</td>
<td>320-316-5</td>
</tr>
<tr>
<td>L104</td>
<td>IFT 455kHz—A</td>
<td>CA-9049</td>
<td>320-154-5</td>
</tr>
<tr>
<td>L105</td>
<td>IFT 455kHz—B</td>
<td>CA-9050</td>
<td>320-155-6</td>
</tr>
<tr>
<td>L301-L302</td>
<td>27MHz, RF PRE AMP A (TX)</td>
<td>CA-9517</td>
<td>320-318-7</td>
</tr>
<tr>
<td>L303</td>
<td>27MHz, RF PRE AMP B (TX)</td>
<td>CA-9518</td>
<td>320-319-8</td>
</tr>
<tr>
<td>L304</td>
<td>27MHz, PRE AMP B (TX)</td>
<td>CA-9519</td>
<td>320-320-8</td>
</tr>
<tr>
<td>L305</td>
<td>AM, TX ANT, 27MHz B</td>
<td>CA-9514</td>
<td>320-033-9</td>
</tr>
<tr>
<td>L306</td>
<td>AM, IFT 27MHz, TX ANT</td>
<td>CA-9515</td>
<td>320-034-0</td>
</tr>
<tr>
<td>L307</td>
<td>AM, TX ANT, 27MHz A</td>
<td>CA-9513</td>
<td>320-032-8</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Description</td>
<td>RS Location</td>
<td>Mfr’s Part No.</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------------------------------------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>L501</td>
<td>VCO</td>
<td>CA-9516</td>
<td>320-317-6</td>
</tr>
<tr>
<td>RFC101</td>
<td>Choke 100μH Mold Type, Filter</td>
<td>CB-2583</td>
<td>310-096-3</td>
</tr>
<tr>
<td>RFC102</td>
<td>Inductor 200μH PC Type, Filter</td>
<td>CB-2682</td>
<td>310-136-6</td>
</tr>
<tr>
<td>RFC201-RFC202</td>
<td>RF Choke 0.8μH, Spring</td>
<td>CB-2680</td>
<td>310-072-1</td>
</tr>
<tr>
<td>RFC301</td>
<td>Choke, 1μH, Bobbin</td>
<td>CB-2676</td>
<td>310-025-9</td>
</tr>
<tr>
<td>RFC302</td>
<td>Inductor, 6.8μH, Mold Type</td>
<td>CB-2679</td>
<td>310-121-2</td>
</tr>
<tr>
<td>RFC303</td>
<td>Not used</td>
<td>CB-2108</td>
<td>310-066-5</td>
</tr>
<tr>
<td>RFC304</td>
<td>RF Choke, 0.5μH, Spring</td>
<td>CB-2679</td>
<td>310-121-2</td>
</tr>
<tr>
<td>RFC501</td>
<td>Inductor, 6.8μH, Mold Type</td>
<td>CB-2583</td>
<td>310-096-3</td>
</tr>
<tr>
<td>RFC502</td>
<td>Choke, 100μH, Mold Type</td>
<td>CB-2677</td>
<td>310-034-7</td>
</tr>
<tr>
<td>RFC503</td>
<td>RF Choke, 20μH, Core</td>
<td>CB-2677</td>
<td>310-034-7</td>
</tr>
<tr>
<td>RFC601</td>
<td>RF Choke, 20μH, Core</td>
<td>CB-2677</td>
<td>310-034-7</td>
</tr>
</tbody>
</table>

**CRYSTAL**

| X1             | 10.240MHz, HC-18/U                                 | CX-2010     | 260-003-3      |

**DIODES**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>RS Location</th>
<th>Mfr’s Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>D101-D102</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D103</td>
<td>GE0A90, Silicon</td>
<td>DX-0576</td>
<td>244-003-7</td>
</tr>
<tr>
<td>D104-D107</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D111</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D112</td>
<td>GE0A90, Silicon</td>
<td>DX-0576</td>
<td>244-003-7</td>
</tr>
<tr>
<td>D113-D115</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D201-D202</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D203</td>
<td>1N4002, Silicon</td>
<td>DX-0206</td>
<td>245-001-0</td>
</tr>
<tr>
<td>D204-D206</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D301-D302</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D501-D505</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D506</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D507</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D508</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D509-D510</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D511</td>
<td>Varicap, MV2209</td>
<td>DX-1167</td>
<td>242-002-6</td>
</tr>
<tr>
<td>D512</td>
<td>Zener, UZ9.1B</td>
<td>DX-1978</td>
<td>241-020-7</td>
</tr>
<tr>
<td>D513-D514</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D515</td>
<td>Zener silicon, UZ5.1B 500mA</td>
<td>DX-2241</td>
<td>241-046-1</td>
</tr>
<tr>
<td>D516-D517</td>
<td>1S2473, Silicon</td>
<td>DX-0684</td>
<td>243-004-3</td>
</tr>
<tr>
<td>D601</td>
<td>1N4002, Silicon</td>
<td>DX-0206</td>
<td>245-001-01</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Description</td>
<td>RS Location</td>
<td>Mfr’s Part No.</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>CF1</td>
<td>Ceramic, 10.7MJ</td>
<td>C-1442</td>
<td>270-010-2</td>
</tr>
<tr>
<td>CF2</td>
<td>Ceramic, CFU 455HT</td>
<td>C-1579</td>
<td>270-006-9</td>
</tr>
<tr>
<td>IC201</td>
<td>KIA2717AP, Audio</td>
<td>MX-4938</td>
<td>222-006-4</td>
</tr>
<tr>
<td>IC301</td>
<td>TL489CP, LED Driver</td>
<td>MX-6453</td>
<td>235-001-7</td>
</tr>
<tr>
<td>IC501</td>
<td>LC6526C-3220, CPU</td>
<td>MX-7599</td>
<td>224-060-2</td>
</tr>
<tr>
<td>IC502</td>
<td>LC7132, PLL</td>
<td>MX-6057</td>
<td>224-021-7</td>
</tr>
<tr>
<td>R100</td>
<td>8.2k ohm</td>
<td></td>
<td>002-182-8</td>
</tr>
<tr>
<td>R101</td>
<td>330 ohm</td>
<td></td>
<td>002-331-9</td>
</tr>
<tr>
<td>R102</td>
<td>330 ohm</td>
<td></td>
<td>002-331-9</td>
</tr>
<tr>
<td>R103</td>
<td>390 ohm</td>
<td></td>
<td>002-391-3</td>
</tr>
<tr>
<td>R104</td>
<td>1k ohm</td>
<td></td>
<td>002-102-9</td>
</tr>
<tr>
<td>R105</td>
<td>4.7k ohm</td>
<td></td>
<td>002-472-3</td>
</tr>
<tr>
<td>R106</td>
<td>270 ohm</td>
<td></td>
<td>002-271-8</td>
</tr>
<tr>
<td>R107</td>
<td>33k ohm</td>
<td></td>
<td>002-333-1</td>
</tr>
<tr>
<td>R108</td>
<td>18 ohm</td>
<td></td>
<td>002-180-9</td>
</tr>
<tr>
<td>R109-R110</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R111</td>
<td>18k ohm</td>
<td></td>
<td>002-183-2</td>
</tr>
<tr>
<td>R112</td>
<td>100 ohm</td>
<td></td>
<td>002-101-8</td>
</tr>
<tr>
<td>R113</td>
<td>10k ohm</td>
<td></td>
<td>002-103-0</td>
</tr>
<tr>
<td>R114</td>
<td>20k ohm</td>
<td></td>
<td>002-203-7</td>
</tr>
<tr>
<td>R115</td>
<td>220 ohm</td>
<td></td>
<td>002-221-3</td>
</tr>
<tr>
<td>R116</td>
<td>470 ohm</td>
<td></td>
<td>002-471-2</td>
</tr>
<tr>
<td>R117</td>
<td>22k ohm</td>
<td></td>
<td>002-223-5</td>
</tr>
<tr>
<td>R118</td>
<td>100 ohm</td>
<td></td>
<td>002-101-8</td>
</tr>
<tr>
<td>R119</td>
<td>100k ohm</td>
<td></td>
<td>002-104-1</td>
</tr>
<tr>
<td>R120-R121</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R122</td>
<td>470 ohm</td>
<td></td>
<td>002-411-2</td>
</tr>
<tr>
<td>R123</td>
<td>1k ohm</td>
<td></td>
<td>002-102-9</td>
</tr>
<tr>
<td>R124</td>
<td>10k ohm</td>
<td></td>
<td>002-103-0</td>
</tr>
<tr>
<td>R125</td>
<td>470 ohm</td>
<td></td>
<td>002-471-2</td>
</tr>
<tr>
<td>R126</td>
<td>1k ohm</td>
<td></td>
<td>002-102-9</td>
</tr>
<tr>
<td>R127</td>
<td>10k ohm</td>
<td></td>
<td>002-103-0</td>
</tr>
<tr>
<td>R128</td>
<td>2.7k ohm</td>
<td></td>
<td>002-272-9</td>
</tr>
<tr>
<td>R129-R130</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R131</td>
<td>220 ohm</td>
<td></td>
<td>002-221-3</td>
</tr>
<tr>
<td>R132</td>
<td>47 ohm</td>
<td></td>
<td>002-470-1</td>
</tr>
<tr>
<td>R133</td>
<td>8.2k ohm</td>
<td></td>
<td>002-822-6</td>
</tr>
<tr>
<td>R134</td>
<td>1M ohm</td>
<td></td>
<td>002-105-2</td>
</tr>
<tr>
<td>R135</td>
<td>68k ohm</td>
<td></td>
<td>002-683-7</td>
</tr>
<tr>
<td>R136</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R137</td>
<td>120k ohm</td>
<td></td>
<td>002-124-9</td>
</tr>
<tr>
<td>R138</td>
<td>100k ohm</td>
<td></td>
<td>002-104-1</td>
</tr>
<tr>
<td>R139-R140</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R141</td>
<td>20k ohm</td>
<td></td>
<td>002-203-7</td>
</tr>
<tr>
<td>R142</td>
<td>6.8k ohm</td>
<td></td>
<td>002-682-6</td>
</tr>
<tr>
<td>R143</td>
<td>470k ohm</td>
<td></td>
<td>002-474-5</td>
</tr>
</tbody>
</table>

RESISTORS

All resistors are carbon film, 1/16W ± 5%. Unless otherwise specified.
<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>RS Location</th>
<th>Mfr's Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>R144</td>
<td>47k ohm</td>
<td></td>
<td>002-473-4</td>
</tr>
<tr>
<td>R145</td>
<td>68k ohm</td>
<td></td>
<td>002-683-7</td>
</tr>
<tr>
<td>R146</td>
<td>4.7k ohm</td>
<td></td>
<td>002-472-3</td>
</tr>
<tr>
<td>R147</td>
<td>22k ohm</td>
<td></td>
<td>002-223-5</td>
</tr>
<tr>
<td>R148</td>
<td>33k ohm</td>
<td></td>
<td>002-333-1</td>
</tr>
<tr>
<td>R149</td>
<td>47k ohm</td>
<td></td>
<td>002-473-4</td>
</tr>
<tr>
<td>R150</td>
<td>1k ohm</td>
<td></td>
<td>002-102-9</td>
</tr>
<tr>
<td>R201</td>
<td>3.3k ohm</td>
<td></td>
<td>002-332-0</td>
</tr>
<tr>
<td>R202</td>
<td>1k ohm</td>
<td></td>
<td>002-102-9</td>
</tr>
<tr>
<td>R203</td>
<td>470k ohm</td>
<td></td>
<td>002-471-2</td>
</tr>
<tr>
<td>R204</td>
<td>820k ohm</td>
<td></td>
<td>002-824-8</td>
</tr>
<tr>
<td>R205</td>
<td>3.3k ohm</td>
<td></td>
<td>002-332-0</td>
</tr>
<tr>
<td>R206</td>
<td>220 ohm</td>
<td></td>
<td>002-221-3</td>
</tr>
<tr>
<td>R207-R208</td>
<td>8.2k ohm</td>
<td></td>
<td>002-822-6</td>
</tr>
<tr>
<td>R209</td>
<td>27k ohm</td>
<td></td>
<td>002-273-0</td>
</tr>
<tr>
<td>R210</td>
<td>1M ohm</td>
<td></td>
<td>002-105-2</td>
</tr>
<tr>
<td>R211</td>
<td>5.6k ohm</td>
<td></td>
<td>002-562-1</td>
</tr>
<tr>
<td>R212</td>
<td>47 ohm</td>
<td></td>
<td>002-470-1</td>
</tr>
<tr>
<td>R213</td>
<td>1 ohm</td>
<td></td>
<td>002-109-6</td>
</tr>
<tr>
<td>R214</td>
<td>22k ohm</td>
<td></td>
<td>002-223-5</td>
</tr>
<tr>
<td>R215</td>
<td>1.8k ohm</td>
<td></td>
<td>002-182-1</td>
</tr>
<tr>
<td>R216</td>
<td>470k ohm</td>
<td></td>
<td>002-474-5</td>
</tr>
<tr>
<td>R217</td>
<td>2.7k ohm</td>
<td></td>
<td>002-272-9</td>
</tr>
<tr>
<td>R218</td>
<td>100k ohm</td>
<td></td>
<td>002-104-1</td>
</tr>
<tr>
<td>R219</td>
<td>3.9k ohm</td>
<td></td>
<td>002-392-9</td>
</tr>
<tr>
<td>R220-R221</td>
<td>1k ohm</td>
<td></td>
<td>002-102-9</td>
</tr>
<tr>
<td>R222</td>
<td>47 ohm</td>
<td></td>
<td>002-470-1</td>
</tr>
<tr>
<td>R223</td>
<td>220 ohm</td>
<td></td>
<td>002-221-3</td>
</tr>
<tr>
<td>R224</td>
<td>4.7k ohm</td>
<td></td>
<td>002-472-3</td>
</tr>
<tr>
<td>R225</td>
<td>10k ohm</td>
<td></td>
<td>002-103-0</td>
</tr>
<tr>
<td>R226</td>
<td>4.7k ohm</td>
<td></td>
<td>002-472-3</td>
</tr>
<tr>
<td>R227</td>
<td>8.2k ohm</td>
<td></td>
<td>002-822-6</td>
</tr>
<tr>
<td>R228</td>
<td>10k ohm</td>
<td></td>
<td>002-103-0</td>
</tr>
<tr>
<td>R229-R230</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R231</td>
<td>330 ohm</td>
<td></td>
<td>002-331-9</td>
</tr>
<tr>
<td>R232</td>
<td>2.2k ohm</td>
<td></td>
<td>002-222-4</td>
</tr>
<tr>
<td>R233</td>
<td>22k ohm</td>
<td></td>
<td>002-223-5</td>
</tr>
<tr>
<td>R234</td>
<td>Metal Oxide 22 ohm 2W ±5%</td>
<td>019-220-0</td>
<td></td>
</tr>
<tr>
<td>R235</td>
<td>Carbon Film 33k ohm 1/2W ±5%</td>
<td>002-333-1</td>
<td></td>
</tr>
<tr>
<td>R301</td>
<td>390 ohm</td>
<td></td>
<td>002-391-3</td>
</tr>
<tr>
<td>R302</td>
<td>150k ohm</td>
<td></td>
<td>002-154-6</td>
</tr>
<tr>
<td>R303-R305</td>
<td>4.7k ohm</td>
<td></td>
<td>002-472-3</td>
</tr>
<tr>
<td>R306</td>
<td>68 ohm</td>
<td></td>
<td>002-680-4</td>
</tr>
<tr>
<td>R307</td>
<td>100 ohm</td>
<td></td>
<td>002-101-8</td>
</tr>
<tr>
<td>R308</td>
<td>1k ohm</td>
<td></td>
<td>002-102-9</td>
</tr>
<tr>
<td>R309-R310</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R311</td>
<td>100 ohm</td>
<td></td>
<td>002-101-8</td>
</tr>
<tr>
<td>R312</td>
<td>3.3 ohm</td>
<td></td>
<td>002-339-7</td>
</tr>
<tr>
<td>R313</td>
<td>Carbon Film 10 ohm 1W ±5%</td>
<td>018-100-0</td>
<td></td>
</tr>
<tr>
<td>R314</td>
<td>1.2k ohm</td>
<td></td>
<td>002-122-7</td>
</tr>
<tr>
<td>R315</td>
<td>1k ohm</td>
<td></td>
<td>002-102-9</td>
</tr>
<tr>
<td>R316</td>
<td>150 ohm</td>
<td></td>
<td>002-151-3</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Description</td>
<td>RS Location</td>
<td>Mfr's Part No.</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>R317-R320</td>
<td>1.5k ohm</td>
<td>002-152-4</td>
<td></td>
</tr>
<tr>
<td>R321</td>
<td>Carbon Film 4.7k ohm 1/2W ± 5%</td>
<td>012-472-6</td>
<td></td>
</tr>
<tr>
<td>R501-R514</td>
<td>2.2k ohm</td>
<td>002-222-4</td>
<td></td>
</tr>
<tr>
<td>R515-R518</td>
<td>15k ohm</td>
<td>002-153-5</td>
<td></td>
</tr>
<tr>
<td>R519</td>
<td>3.3k ohm</td>
<td>002-332-0</td>
<td></td>
</tr>
<tr>
<td>R520</td>
<td>8.2k ohm</td>
<td>002-822-6</td>
<td></td>
</tr>
<tr>
<td>R521</td>
<td>10k ohm</td>
<td>002-103-0</td>
<td></td>
</tr>
<tr>
<td>R522-R524</td>
<td>56k ohm</td>
<td>002-563-2</td>
<td></td>
</tr>
<tr>
<td>R525</td>
<td>22 ohm</td>
<td>002-220-2</td>
<td></td>
</tr>
<tr>
<td>R526</td>
<td>470 ohm</td>
<td>002-471-2</td>
<td></td>
</tr>
<tr>
<td>R527</td>
<td>10k ohm 1/17W ± 5%</td>
<td>002-103-0</td>
<td></td>
</tr>
<tr>
<td>R528</td>
<td>33k ohm</td>
<td>002-333-1</td>
<td></td>
</tr>
<tr>
<td>R529-R530</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R531</td>
<td>2.2k ohm</td>
<td>002-222-4</td>
<td></td>
</tr>
<tr>
<td>R532</td>
<td>82k ohm</td>
<td>002-823-7</td>
<td></td>
</tr>
<tr>
<td>R533</td>
<td>22k ohm</td>
<td>002-223-5</td>
<td></td>
</tr>
<tr>
<td>R534-R536</td>
<td>10k ohm</td>
<td>002-103-0</td>
<td></td>
</tr>
<tr>
<td>R537</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R538</td>
<td>22 ohm</td>
<td>002-220-2</td>
<td></td>
</tr>
<tr>
<td>R539-R540</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R541</td>
<td>470 ohm</td>
<td>002-471-2</td>
<td></td>
</tr>
<tr>
<td>R542</td>
<td>100 ohm</td>
<td>002-101-8</td>
<td></td>
</tr>
<tr>
<td>R543</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R544-R545</td>
<td>10k ohm</td>
<td>002-103-0</td>
<td></td>
</tr>
<tr>
<td>R546</td>
<td>4.7k ohm</td>
<td>002-472-3</td>
<td></td>
</tr>
<tr>
<td>R547</td>
<td>10k ohm</td>
<td>002-103-0</td>
<td></td>
</tr>
<tr>
<td>R548</td>
<td>47k ohm</td>
<td>002-470-1</td>
<td></td>
</tr>
<tr>
<td>R549-R550</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R551</td>
<td>820 ohm</td>
<td>002-821-5</td>
<td></td>
</tr>
<tr>
<td>R552</td>
<td>100k ohm</td>
<td>002-104-1</td>
<td></td>
</tr>
<tr>
<td>R553</td>
<td>220k ohm</td>
<td>002-224-6</td>
<td></td>
</tr>
<tr>
<td>R554-R555</td>
<td>2.7k ohm</td>
<td>002-272-9</td>
<td></td>
</tr>
<tr>
<td>R556</td>
<td>33 ohm</td>
<td>002-330-8</td>
<td></td>
</tr>
<tr>
<td>R557</td>
<td>18k ohm</td>
<td>002-183-2</td>
<td></td>
</tr>
<tr>
<td>R558</td>
<td>1M ohm</td>
<td>002-105-2</td>
<td></td>
</tr>
<tr>
<td>R559-R560</td>
<td>Not used</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R561-R562</td>
<td>18k ohm</td>
<td>002-183-2</td>
<td></td>
</tr>
<tr>
<td>R563</td>
<td>2.2M ohm</td>
<td>002-225-7</td>
<td></td>
</tr>
</tbody>
</table>

**VARIABLE RESISTORS**

<table>
<thead>
<tr>
<th>Ref. No.</th>
<th>Description</th>
<th>RS Location</th>
<th>Mfr's Part No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RV101, RV201</td>
<td>Semifixed, B20k ohm φ8, ± 25%</td>
<td>P-6989</td>
<td>061-203-0</td>
</tr>
<tr>
<td>RV202</td>
<td>Semifixed, B2k ohm, φ8, ± 25%</td>
<td>P-7557</td>
<td>061-202-9</td>
</tr>
<tr>
<td>RV301</td>
<td>Semifixed, B20k ohm, φ8, ± 25%</td>
<td>P-6989</td>
<td>061-203-0</td>
</tr>
<tr>
<td>VR101</td>
<td>Without/SW, B50k ohm ± 20%</td>
<td>P-8073</td>
<td>450-601-2</td>
</tr>
<tr>
<td>VR102</td>
<td>With/OFF-ON SW, A50k ohm ± 20%</td>
<td>P-8074</td>
<td>450-602-3</td>
</tr>
<tr>
<td>VR201</td>
<td>With/DPDT SW, B10k ohm ± 20%</td>
<td>P-8075</td>
<td>450-403-0</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Description</td>
<td>RS Location</td>
<td>Mfr’s Part No.</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
<td>-------------</td>
<td>-------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>SWITCH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SW509</td>
<td>K121 D110-5NH 312, CH Up-Down</td>
<td></td>
<td>439-005-3</td>
</tr>
<tr>
<td></td>
<td><strong>TRANSFORMERS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T201</td>
<td>Output or</td>
<td>TB-0578</td>
<td>300-115-4 or 300-022-3</td>
</tr>
<tr>
<td></td>
<td>Output</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T601</td>
<td>Choke or</td>
<td>TB-0577</td>
<td>300-116-5 or 300-008-1</td>
</tr>
<tr>
<td></td>
<td>Choke</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>TRANSISTORS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q100-Q101</td>
<td>KTA562TM(Y) PNP Silicon or MPS9468AT(T) PNP Silicon</td>
<td>1TR-0220</td>
<td>202-054-2</td>
</tr>
<tr>
<td>Q102-Q104</td>
<td>KTC1923(O) NPN Silicon or MPS9426(C) NPN Silicon</td>
<td>2SC-19230</td>
<td>202-017-8</td>
</tr>
<tr>
<td>Q105</td>
<td>KTC1923(Y) NPN Silicon or MPS9623(I) NPN Silicon</td>
<td>2SC-1923</td>
<td>202-060-7</td>
</tr>
<tr>
<td>Q106</td>
<td>KTC1923(Y) NPN Silicon or MPS9623(H) NPN Silicon</td>
<td>2SC-1923</td>
<td>202-060-7</td>
</tr>
<tr>
<td>Q107</td>
<td>KTC1815(GR) NPN Silicon or MPS9623(I) NPN Silicon</td>
<td>2SC-1815GR</td>
<td>202-023-3</td>
</tr>
<tr>
<td>Q201</td>
<td>KTC1815(GR) NPN Silicon or MPS9631(T) NPN Silicon</td>
<td>2SC-1815-GR</td>
<td>202-023-3</td>
</tr>
<tr>
<td>Q202</td>
<td>KTA1015(Y) PNP Silicon or MPS9681(T) PNP Silicon</td>
<td>2SA-1015Y</td>
<td>202-036-5</td>
</tr>
<tr>
<td>Q203-Q205</td>
<td>KTC1815(GR) NPN Silicon or MPS9634(C) NPN Silicon</td>
<td>2SC-1815GR</td>
<td>202-023-3</td>
</tr>
<tr>
<td>Q206-Q207</td>
<td>KTA1015(GR) PNP Silicon or MPS9681(T) PNP Silicon</td>
<td>2SA-1015</td>
<td>202-036-5</td>
</tr>
<tr>
<td>Q208-Q209</td>
<td>KTC1815(GR) NPN Silicon or MPS9634(C) NPN Silicon</td>
<td>2SC-1815GR</td>
<td>202-023-3</td>
</tr>
<tr>
<td>Q301-Q302</td>
<td>KTC1923(O) NPN Silicon or MPS9426(C) NPN Silicon</td>
<td>2SC-1923O</td>
<td>202-017-8</td>
</tr>
<tr>
<td>Q303</td>
<td>KTC2036A NPN Silicon or 2SC2314</td>
<td>2SC-2314</td>
<td>202-058-6</td>
</tr>
<tr>
<td>Q304</td>
<td>KTC2075 NPN Silicon or 2SC2078(D) NPN Silicon</td>
<td>2SC-2075</td>
<td>202-057-5</td>
</tr>
<tr>
<td>Q501</td>
<td>KTA1015(GR) PNP Silicon or MPS9681(T) PNP Silicon</td>
<td>1TR-0223</td>
<td>202-036-5</td>
</tr>
<tr>
<td>Q502</td>
<td>KTC1959(O) NPN Silicon or MPS9418(T) NPN Silicon</td>
<td>2SC-1959O</td>
<td>202-056-4</td>
</tr>
<tr>
<td>Q503</td>
<td>KTA1015(GR) PNP Silicon or MPS9681(T) PNP Silicone</td>
<td>2SA-1015</td>
<td>202-036-5</td>
</tr>
<tr>
<td>Q504-Q505</td>
<td>KTC1923(O) NPN Silicon or MPS9426(C) NPN Silicon</td>
<td>2SC-1923O</td>
<td>202-017-8</td>
</tr>
<tr>
<td>Q506-Q507</td>
<td>KTC1815(GR) NPN Silicon or MPS 9634(C) NPN Silicon</td>
<td>2SC-1815GR</td>
<td>202-023-3</td>
</tr>
<tr>
<td>Q508</td>
<td>KTA1015(GR) PNP Silicon or MPS9681(T) PNP Silicon</td>
<td>2SA-1015</td>
<td>202-036-5</td>
</tr>
<tr>
<td>Q509</td>
<td>KTC1815(GR) NPN Silicon or MPS9418(T) NPN Silicon</td>
<td>2SC-1815GR</td>
<td>202-023-3</td>
</tr>
<tr>
<td>Q510</td>
<td>KTC1815(O) NPN Silicon or MPS9631(T) NPN Silicon</td>
<td>2SC-1815O</td>
<td>202-020-0</td>
</tr>
<tr>
<td>Ref. No.</td>
<td>Description</td>
<td>RS Location</td>
<td>Mfr's Part No.</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>-------------</td>
<td>----------------</td>
</tr>
<tr>
<td>LED DISPLY &amp; SW PCB ASS'Y</td>
<td>XB-1704</td>
<td>593-006</td>
<td></td>
</tr>
<tr>
<td>LED501</td>
<td>L E D Display (RED)</td>
<td>L-2120</td>
<td>252-017-3</td>
</tr>
<tr>
<td>SW501-SW507</td>
<td>Touch EVQ-QSR-05K (Switch)</td>
<td>S-3037</td>
<td>434-003-6</td>
</tr>
<tr>
<td>SW508</td>
<td>SPH 221A (Switch)</td>
<td>S-3669</td>
<td>432-040-6</td>
</tr>
<tr>
<td>D303-D306</td>
<td>L E D Lamp, SLB26UR3HL (RED)</td>
<td>L-1833</td>
<td>251-016-7</td>
</tr>
<tr>
<td>POWER CORD ASS'Y</td>
<td></td>
<td>504-255</td>
<td></td>
</tr>
<tr>
<td>Fuse 250V/1A</td>
<td></td>
<td>280-015-0</td>
<td></td>
</tr>
<tr>
<td>Fuse 250V/2A</td>
<td></td>
<td>280-006-2</td>
<td></td>
</tr>
<tr>
<td>Power Cord 1,500m/m RED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Cord 1,500m/m ORG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Cord 1,500m/m BLK</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SEMICONDUCTOR LEAD IDENTIFICATION
AND IC INTERNAL DIAGRAM

INTEGRATED CIRCUITS

IC 201  KIA7217AP  IC 501  LC6526C  IC 502  LC7132  IC 301  TL489CP

TRANSISTORS

MPS 9623  KTA 5621  MPS 9426  2SC2314  MPS 9631  KTA 1015  KTC1923  2SC2078
MPS 9634  KTA 1015  MPS 9426  2SC2314  MPS 9681  KTC 1815  KTC1923  2SC2075
MPS 9418  KTC 1959  KTC1959  KTC 1959
MPS 9468

DIODES

IN4002  IS2473  OA90  SL826UR3HL
IN60

MV2209
IC201 KIA7217AP

DC: Decoupling
PC: Phase compensation

IC301 TL489CP
IC501 LC6526C

RAM : Data memory
F : Flag
WR : Working register
AC : Accumulator
ALU : Arithmetic and logic unit
DP : Data pointer
E : E register
CTL : Control register
OSC : Oscillator
TM : Timer
STS : Status register

ROM : Program memory
PC : Program counter
INT : Interrupt control
IR : Instruction register
I.DEC : Instruction decoder
CF,CSF : Carry flag, carry save flag
ZF,ZSF : Zero flag, zero save flag
EXTF : External interrupt request flag
TMF : Internal interrupt request flag
D1 to D8 : Program input (7 segment code)
XIN, XOUT : Amplifier for crystal oscillator
VDD, VSS : Power Supply
LM : Lock monitor output, Lock = open or 1, Unlock = "O"
P.OUT : Charge dump output
A.IN, A.OUT : Amplifier for low-pass filter
PIN : Programmable divider input
T/R : Transmission/reception change over input
   T/R = "O" — Transmission, T/R = "1" — reception
CH9 : Channel 9 select input
TEST : LSI test pin (Connected to VSS or open)
### TRANSISTOR AND IC VOLTAGE CHART

**MEASURED AT:**
1. 19CH
2. No Signal
3. No Modulation

**TRANSISTORS**

<table>
<thead>
<tr>
<th>TRANSISTOR NUMBER</th>
<th>Emitter</th>
<th></th>
<th>BASE</th>
<th></th>
<th>COLLECTOR</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RECEIVE</td>
<td>TRANSMIT</td>
<td>RECEIVE</td>
<td>TRANSMIT</td>
<td>RECEIVE</td>
<td>TRANSMIT</td>
</tr>
<tr>
<td>Q100</td>
<td>3.8</td>
<td>2.2</td>
<td>5.6</td>
<td>1.5</td>
<td>5.6</td>
<td>1.5</td>
</tr>
<tr>
<td>Q101</td>
<td>3.8</td>
<td>2.2</td>
<td>5.6</td>
<td>1.5</td>
<td>0.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Q102</td>
<td>0.1</td>
<td>0</td>
<td>0.8</td>
<td>0.45</td>
<td>6.4</td>
<td>0.82</td>
</tr>
<tr>
<td>Q103</td>
<td>0.17</td>
<td>0</td>
<td>0.85</td>
<td>0</td>
<td>13.2</td>
<td>12.66</td>
</tr>
<tr>
<td>Q104</td>
<td>0.18</td>
<td>0</td>
<td>0.8</td>
<td>0.5</td>
<td>5.54</td>
<td>0.6</td>
</tr>
<tr>
<td>Q105</td>
<td>0.23</td>
<td>0</td>
<td>0.92</td>
<td>0.41</td>
<td>5.76</td>
<td>0.82</td>
</tr>
<tr>
<td>Q106</td>
<td>0.58</td>
<td>0</td>
<td>1.3</td>
<td>0.16</td>
<td>13.47</td>
<td>12.68</td>
</tr>
<tr>
<td>Q107</td>
<td>0</td>
<td>0</td>
<td>0.32</td>
<td>0.07</td>
<td>5.51</td>
<td>1.45</td>
</tr>
<tr>
<td>Q201</td>
<td>0</td>
<td>0.82</td>
<td>0.32</td>
<td>1.47</td>
<td>0.35</td>
<td>6.4</td>
</tr>
<tr>
<td>Q202</td>
<td>13.76</td>
<td>12.8</td>
<td>13.7</td>
<td>12.08</td>
<td>0.32</td>
<td>12.77</td>
</tr>
<tr>
<td>Q203</td>
<td>0</td>
<td>0</td>
<td>0.5</td>
<td>0.37</td>
<td>0.65</td>
<td>0.05</td>
</tr>
<tr>
<td>Q204</td>
<td>0</td>
<td>0</td>
<td>0.66</td>
<td>0.66</td>
<td>0.05</td>
<td>0.06</td>
</tr>
<tr>
<td>Q205</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Q206</td>
<td>13.72</td>
<td>13.45</td>
<td>13.72</td>
<td>12.7</td>
<td>0.4</td>
<td>13.4</td>
</tr>
<tr>
<td>Q207</td>
<td>0.41</td>
<td>4.1</td>
<td>1.02</td>
<td>4.68</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Q208</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Q209</td>
<td>1.1</td>
<td>0.04</td>
<td>1.64</td>
<td>0.2</td>
<td>1.15</td>
<td>0.47</td>
</tr>
<tr>
<td>Q301</td>
<td>0</td>
<td>1.24</td>
<td>0</td>
<td>1.87</td>
<td>0</td>
<td>8.36</td>
</tr>
<tr>
<td>Q302</td>
<td>0</td>
<td>1.13</td>
<td>0</td>
<td>1.85</td>
<td>13.57</td>
<td>12.86</td>
</tr>
<tr>
<td>Q303</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13.8</td>
<td>11</td>
</tr>
<tr>
<td>Q304</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>13.8</td>
<td>11.8</td>
</tr>
<tr>
<td>Q501</td>
<td>3.24</td>
<td>3.22</td>
<td>4.6</td>
<td>4.56</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Q503</td>
<td>8.46</td>
<td>8.39</td>
<td>8.45</td>
<td>7.7</td>
<td>0</td>
<td>8.35</td>
</tr>
<tr>
<td>Q504</td>
<td>0</td>
<td>0</td>
<td>0.76</td>
<td>0.76</td>
<td>2.86</td>
<td>2.78</td>
</tr>
<tr>
<td>Q505</td>
<td>3.69</td>
<td>0.16</td>
<td>4.26</td>
<td>4.24</td>
<td>8.09</td>
<td>8.03</td>
</tr>
<tr>
<td>Q506</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0.12</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Q507</td>
<td>0</td>
<td>0</td>
<td>0.5</td>
<td>0.36</td>
<td>0.0</td>
<td>0</td>
</tr>
<tr>
<td>Q508</td>
<td>4.28</td>
<td>4.35</td>
<td>4.26</td>
<td>4.28</td>
<td>0.34</td>
<td>0.31</td>
</tr>
<tr>
<td>Q509</td>
<td>4.28</td>
<td>4.35</td>
<td>4.86</td>
<td>4.86</td>
<td>12.98</td>
<td>12.90</td>
</tr>
<tr>
<td>Q510</td>
<td>0</td>
<td>0</td>
<td>0.37</td>
<td>0.32</td>
<td>8.31</td>
<td>8.2</td>
</tr>
</tbody>
</table>

---

34
<table>
<thead>
<tr>
<th>IC</th>
<th>PIN No.</th>
<th>VOLTAGE</th>
<th>IC</th>
<th>PIN No.</th>
<th>VOLTAGE</th>
<th>IC</th>
<th>PIN No.</th>
<th>VOLTAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>RX</td>
<td>RX</td>
<td>RX</td>
<td>RX</td>
<td>RX</td>
<td>RX</td>
<td>RX</td>
</tr>
<tr>
<td>IC 201</td>
<td>1</td>
<td>13.72</td>
<td>0.25</td>
<td>1</td>
<td>12.38</td>
<td>0.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>12.54</td>
<td>0.26</td>
<td>2</td>
<td>4.27</td>
<td>0.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3.94</td>
<td>0.26</td>
<td>3</td>
<td>0.53</td>
<td>0.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>8.12</td>
<td>0.26</td>
<td>4</td>
<td>0.52</td>
<td>0.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1.47</td>
<td>1.5</td>
<td>5</td>
<td>0.51</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>3.36</td>
<td>1.5</td>
<td>6</td>
<td>0.52</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>3.38</td>
<td>1.5</td>
<td>7</td>
<td>12.28</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>1.25</td>
<td>1.5</td>
<td>8</td>
<td>12.30</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>9</td>
<td>4.24</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>6.85</td>
<td>1</td>
<td>10</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC 502</td>
<td>11</td>
<td>3.64</td>
<td>3.61</td>
<td>12</td>
<td>0.03</td>
<td>3.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>3.85</td>
<td>3.82</td>
<td>13</td>
<td>0.03</td>
<td>3.82</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>0</td>
<td>5.11</td>
<td>14</td>
<td>0</td>
<td>8.35</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>1.57</td>
<td>1.6</td>
<td>15</td>
<td>0.17</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>1.57</td>
<td>1.6</td>
<td>16</td>
<td>1.99</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>0</td>
<td>0</td>
<td>17</td>
<td>0</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>0</td>
<td>0</td>
<td>18</td>
<td>2.9</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IC 301</td>
<td>19</td>
<td>0.25</td>
<td>2.7</td>
<td>20</td>
<td>0.25</td>
<td>2.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21</td>
<td>0.25</td>
<td>2.7</td>
<td>22</td>
<td>0.26</td>
<td>2.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>12.27</td>
<td>11.95</td>
<td>24</td>
<td>0.27</td>
<td>11.95</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>25</td>
<td>0.28</td>
<td>0.27</td>
<td>26</td>
<td>0.28</td>
<td>0.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>27</td>
<td>0.28</td>
<td>0.27</td>
<td>28</td>
<td>12.25</td>
<td>0.27</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>29</td>
<td>12.21</td>
<td>0.28</td>
<td>30</td>
<td>0.29</td>
<td>0.28</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

35