

VHF Land Mobile Transceiver  
**VX-2000V**  
Service Manual

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E095390A

**VERTEX STANDARD CO., LTD.**  
4-8-8 Nakameguro, Meguro-Ku, Tokyo 153-8644, Japan

**VERTEX STANDARD**

**US Headquarters**

10900 Walker Street, Cypress, CA 90630, U.S.A.

**International Division**

8350 N.W. 52nd Terrace, Suite 201, Miami, FL 33166, U.S.A.

**YAESU EUROPE B.V.**

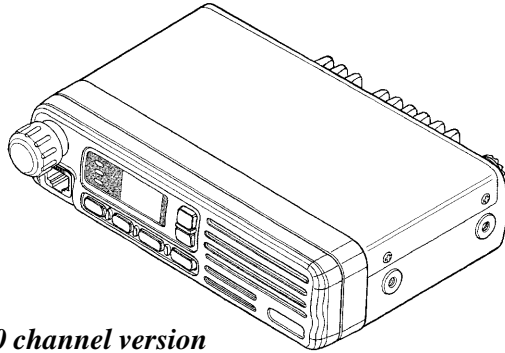
P.O. Box 75525, 1118 ZN Schiphol, The Netherlands

**YAESU UK LTD.**

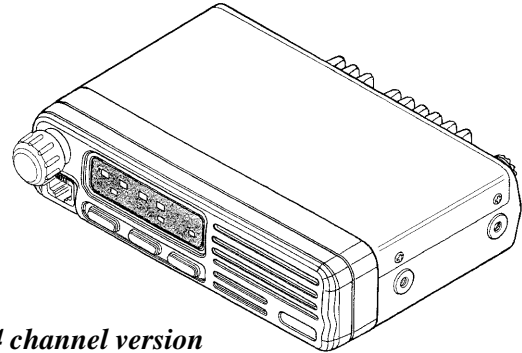
Unit 12, Sun Valley Business Park, Winnall Close  
Winchester, Hampshire, SO23 0LB, U.K.

**VERTEX STANDARD HK LTD.**

Unit 5, 20/F., Seaview Centre, 139-141 Hoi Bun Road,  
Kwun Tong, Kowloon, Hong Kong



*40 channel version*



*4 channel version*

### **Introduction**

This manual provides technical information necessary for servicing the VX-2000V VHF Land Mobile transceiver.

The VX-2000V is carefully designed to allow the knowledgeable operator to make nearly all adjustments required for various station conditions, modes and operator preferences simply from the controls on the panels, without opening the case of the transceiver. The VX-2000V Operating Manual describes these adjustments, plus certain internal settings.

Servicing this equipment requires expertise in handling surface mount chip components. Attempts by non-qualified persons to service this equipment may result in permanent damage not covered by warranty.

For the major circuit boards, each side of the board is identified by the type of the majority of components installed on that side.

In most cases one side has only chip components, and the other has either a mixture of both chip and lead components (trimmers, coils, electrolytic capacitors, packaged ICs, etc.), or lead components only.

While we believe the technical information in this manual is correct, Vertex Standard assumes no liability for damage that may occur as a result of typographical or other errors that may be present. Your cooperation in pointing out any inconsistencies in the technical information would be appreciated. Vertex Standard reserves the right to make changes in this transceiver and the alignment procedures, in the interest of technological improvement, without notification of the owners.

## **Contents**

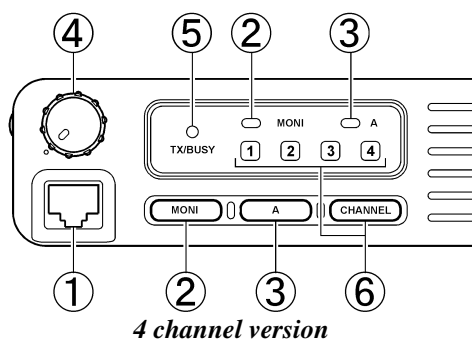
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### **Board Unit (Schematics, Layouts & Parts)**

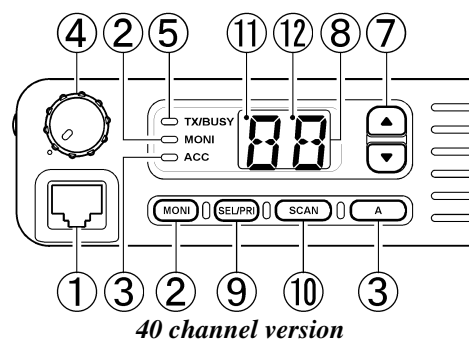
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# Operating Manual Reprint

## CONTROLS & CONNECTORS



4 channel version



40 channel version

### ① Microphone Jack

Connect the microphone plug to this jack.

### ② MONI Button & Indicator

This button selects the “squelch” (receiver mute) mode. When the yellow indicator is off, “tone” or “coded” squelch is active. When the indicator glows steadily, only “noise squelch” is active, and any signal present on the channel will be heard. When the indicator is *blinking*, the squelch is disabled, and background noise will be heard if no signal is present.

### ③ A Button & Indicator

This button is provided for an ACCESSORY function such as HIGH/LOW POWER selection, “TALK-AROUND”, or “CALL ALERT” functions. The green “A” indicator will be illuminated when this function is active.

### ④ VOLUME and POWER On/OFF Knob

This knob adjusts the receiver volume, and turns the radio off when turned all the way to the *left* into the click-stop.

### ⑤ TX/BUSY Indicator Lamp

This lamp *blinks* red when the channel is busy, and *glows steadily* red during transmission. Do not transmit when this indicator is blinking, as a courtesy to other users of the channel.

*The following item is unique to the 4-channel radio versions:*

### ⑥ CHANNEL Numbered Indicators & Button

Press the **CHANNEL** button to select the operating channel; the channel number currently in use will light up on the display panel.

*The following items are unique to the 40-channel radio versions:*

### ⑦ CHANNEL Selector Buttons (▲) and (▼)

Push one of these keys to select the operating channel, as shown on the display.

### ⑧ Numeric Channel Display

This display area shows the channel number and priority-channel/scan status.

### ⑨ SEL/PRI Button

This button is used to select a channel for “Priority” monitoring, and is used together with the **SCAN** button to select the desired scanning mode.

### ⑩ SCAN Button

This button is used to activate scanning, to select or remove channels on the scanning list, and (together with the **SEL/PRI** button) to select scanning mode.

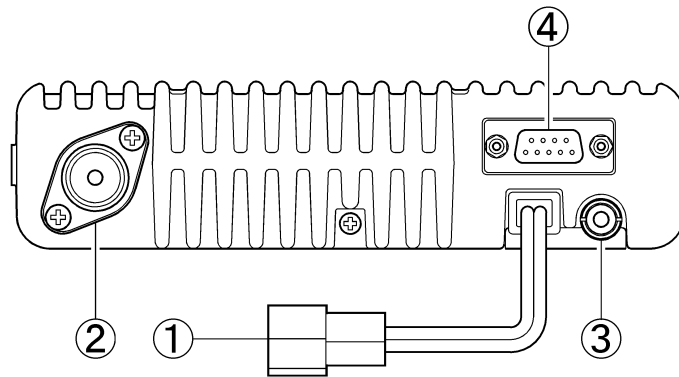
### P Indicator

⑪ This small dot indicates Priority Channel status (described later).

### E Indicator

⑫ This small dot indicates Scanning on/off status (described later).

## REAR (Heatsink)



- ① **13.6V DC Cable Pigtail w/Connector**  
The supplied DC power cable must be affixed to this 2-pin connector.
- ② **Antenna Socket**  
The 50-ohm coaxial feedline to the antenna must be connected here, using a “UHF” type (PL-259) plug.
- ③ **External Speaker Jack**  
An external loudspeaker may be connected to this 2-contact, 3.5-mm miniature phone jack.
- ④ **DSUB 9-Pin Data Connector**  
External Transmit Audio input, **PTT (Push To Talk)**, Squelch, and Receive Audio output signals may be obtained from this connector for use with accessories such as a data transmission/reception modem, etc.

# Operating Manual Reprint

## OPERATION

### Power ON/OFF

Turn the **VOLUME/POWER** knob clockwise to turn on the radio. The active display and channel indicators will become illuminated, indicating the status of the radio. The channel indicated will be the same one on which you were operating when the radio was last turned off.

### Setting the Channel

*In 4-channel versions*, press the **CHANNEL** button to change channels.

*In 40-channel versions*, the display will show either a channel number or a Scan Mode indicator (**Sc**, **Ur**, **SP** or **UP**). If a Scan Mode indicator is displayed, press the **SCAN** button momentarily so that a channel number is displayed; then press either the **UP** (▲) or **DOWN** (▼) button to change channels.

### Setting the Volume

Rotate the **VOLUME/POWER** knob clockwise to increase the volume level. If no signal is present on which to adjust the volume level, push and hold in the **MONI** button for two seconds; the yellow “**MONI**” indicator will blink, and either background noise or a voice signal will be heard. You may now adjust the **VOLUME/POWER** knob for a comfortable listening level. When you are done, press the **MONI** button momentarily to return to silent monitoring.

### Transmitting

To transmit, wait until the “**TX/BUSY**” indicator is off (this indicates that the channel is not in use). Then press the **PTT** (Push-To-Talk) switch on the side of the microphone; while holding in the **PTT** switch, speak in a normal voice level across the face of the microphone. During transmission, the red “**TX/BUSY**” indicator will glow steadily. When you are done transmitting, release the **PTT** switch; the VX-2000 will revert to the “receive” mode.

*The remaining instructions apply to 40-channel transceiver versions only*

#### Special Transmitter Functions

If your VX-2000 is programmed for *Busy Channel Lock-Out*, the transmitter will not activate when the **PTT** switch is pressed unless the “**TX/BUSY**” indicator is *off* (so as to prevent interference to other users of the same channel).

If the selected channel has been programmed for *Automatic Time-Out*, you must limit the length of your transmissions. While transmitting with this feature activated, a “*beep*” will sound ten seconds before the timer expires, and then another “*beep*” sound as the timer expires: the “**TX/BUSY**” indicator will shut off, and transmission will cease. Release the **PTT** switch, listen for a moment, then press **PTT** again to resume transmission. This feature prevents interference to other users caused by a microphone which accidentally is stuck in the “transmit” position (wedged between seats of a car, etc.).

### Scanning

To activate scanning on your radio, first place the microphone in its hanger. Now press the **SCAN** button momentarily. The radio will scan in one of four available Scan Modes (detailed below), and will halt when a signal is received which contains the correct code to open your squelch. Scanning will resume automatically either after a preset interval of a few seconds, or after the other station stops transmitting (depending on how your radio was programmed).

The four Scan Modes, and their corresponding displays, are:

Display	Scanning function
<b>Sc</b>	Scan all channels
<b>Ur</b>	Scan only user-selected channels
<b>SP</b>	Monitor one channel plus dealer-designated Priority Channel(s)
<b>UP</b>	Scan user-selected channels plus uer-designated Priority Channel(s)

The user-selected channels for the **Ur** and **UP** Scan Modes are ones you can set up yourself, as described at the right. The “Priority” channels are those on which signals will take priority over signals received on other channels; that is, if a signal appears on a Priority Channel while another appears on a non-priority channel, the Priority Channel signal will be heard, and not the other.

Up to two of the installed channels may be designated by your Dealer as pre-programmed Priority Channels for the **SP** mode (the radio will not indicate which they are), and you can additionally program any two channels as “User Priorities” for the **UP** mode. In the **SP** mode, the non-priority channel will be the last one displayed.

When a Scan Mode is displayed, you can select another by pressing the **SEL/PRI** button repeatedly (the display will cycle through the above selections). Note that the radio will not scan if the microphone is not in its hanger.



## USER PROGRAMMABLE CHANNEL SELECTIONS

You can program a list of channels to be scanned, and up to two channels to be monitored on a "priority" basis. Your selections will be maintained in memory until you change or delete them.

Setting of these channels involves two small "Dot" indicators at the top of the channel display field. The Dot to the left of the first *digit* is the "P" (Priority) indicator, while the Dot to the left of the *second* digit is the "E" (Enable for Scanning) indicator.

To create or modify the Scan and Priority selections, first turn the radio off. Now press and hold in the **SCAN** button while you turn the transceiver back on; continue to hold the **SCAN** button in for two seconds after the radio has come on, then you may release it.

Now press the **UP** (▲) or **DOWN** (▼) button repeatedly, and note whether or not the "E" (right dot) or "P" (left) dots appear on any of your channels. If a dot appears by any channel, it means that it has been designated as either a Scan-Enabled or Priority channel, respectively.

To enable or disable a channel from the User Scan list, press the **SEL/PRI** button *momentarily*. The "E" dot will appear or disappear, as appropriate.

To change the Priority Channels, first cancel *both* by selecting *either*, and then pressing the **SEL/PRI** button *momentarily*. Now select the channel you wish to designate as the 1st Priority Chan-

nel, and *hold in* the **SEL/PRI** button for 2 seconds, until a beep sounds and the "P" indicator *blinks*. If you wish to designate a 2nd Priority Channel, move to that channel, and again hold in the **SEL/PRI** button for 2 seconds; this time, the "P" indicator will glow, but will not blink.

If you have deleted a channel from Priority status, you must re-enable it for *scanning* if you want it to be included on your Scan List. Press the **SEL/PRI** button *momentarily* to do this.

### Coded Squelch - the MONI Button

Your transceiver may be programmed so that when the microphone is removed from its hanger, coded squelch is defeated, and you can hear any signal on the channel (the yellow "MONI" indicator will be lit). You can get the same result, without lifting the microphone, by pressing the **MONI** button *momentarily*. To avoid listening to unnecessary chatter, keep the microphone in its hanger, and press the **MONI** button when necessary to turn the yellow indicator off (unless you want to listen to other calls on the channel).

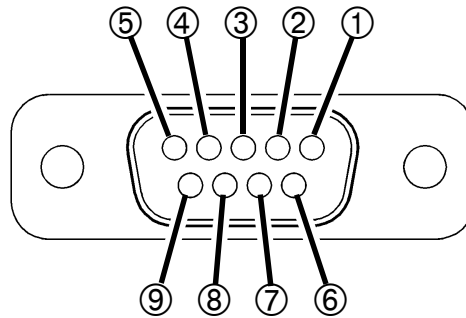
Holding the **MONI** button in for two seconds defeats both the coded squelch and noise squelch, so background noise can be heard (the "MONI" indicator will blink in this case). Press the **MONI** button *momentarily* to return the yellow indicator to its previous state (either off or steadily on).

## OPTIONAL ACCESSORIES

<b>CE-20</b>	Programming Software (for IBM PC/compatibles only)
<b>VPL-1</b>	Programming Cable
<b>T9101411</b>	Radio-to-Radio Cloning Connection Cable
<b>FP-1025A</b>	Heavy-Duty (20A) AC Power Supply
<b>MD-11A8J</b>	Desktop Microphone
<b>MH-600D</b>	DTMF Back-lit Microphone w/Autodial
<b>MLS-100</b>	External Loudspeaker
<b>LF-1</b>	DC Line Filter
<b>VTM-20</b>	VX-Trunk II Trunking Mobile Logic Board
<b>F2D-4A/B</b>	2-Tone Decoder Unit
<b>FTE-18</b>	ANI Unit

# Operating Manual Reprint

## J1003 DSUB 9-Pin Data Connector Pin Assignment



① **SQ**: Squelch Signal Output

Carrier In: Active High (5 V / 47 k $\Omega$ )

② **RX\_AUD\_OUT**: Received Audio Output (Two choices available)

②-1 De-Emphasized Audio Output: 100 mV / 10 k $\Omega$

This output level's default state is fixed at the factory by having no jumper at JP1003 and soldering the jumper at JP1002 on the MAIN Unit.

②-2 Flat / Unmuted Audio Output: 250 mV / 10 k $\Omega$

(Unsolder the jumper at JP1002 and solder a jumper at JP1003 on the MAIN Unit to activate ②-2)

③ **EXT\_MIC**: External MIC Audio Input (Two choices available)

③-1 Pre-Emphasized / IDC / Splatter Filtered Audio Input: 2.5 mV / 600  $\Omega$

This input is fixed at the factory by attaching capacitor C1254 across JP1005 and soldering a jumper at JP1004 on the MAIN Unit.

③-2 Flat (Non-Pre-Emphasized) Audio Input: 650 mV / 10 k $\Omega$

(Remove the jumper at JP1004 and solder a jumper across JP1005 on the MAIN Unit to activate ③-2)

④ **Not Used**

⑤ **GND**: Ground

⑥ **A\_OUTPUT**: Accessory Output (Two choices available)

⑥-1 Not Used

This is the default setting at the factory (no jumper across JP1001 on the MAIN Unit).

⑥-2 Accessory Output: Open Collector Output

"A" Lamp ON: Low, "A" Lamp OFF: Open

Maximum voltage: 13.8 V, Maximum sink current 5 mA  
(Solder a jumper at JP1001 on the MAIN Unit to activate ⑥-2)

⑦ **PTT**: External PTT Signal input

GND: TX, Open: RX

⑧ **5 V**

Switched and regulated DC 5 V output for supplying power to an accessory.

Maximum output current is 50 mA.

⑨ **Not Used**

## General

<b>Frequency Range</b> (version):	134 ~160 or 148 ~ 174 MHz (VHF vers. A/C, respectively)
<b>No. of Channels &amp; Spacing:</b>	4 or 40 channels 25-kHz, 12.5-kHz spacing
<b>Modes of Emission:</b>	16K0F3E ,11K0F3E
<b>Frequency Stability:</b>	±0.00025%
<b>Antenna Requirements:</b>	50 ohms, unbalanced (SO-239 socket)
<b>Voltage Requirements:</b>	11.8 V to 15.6 V DC, negative ground
<b>Current Consumption</b> (approx.):	250 mA Stby, 200 mA Rx, 6.5 A Tx
<b>Operating Temperature Range:</b>	−30 °C to +60 °C (−22 °F to +140 °F)
<b>Size</b> (WHD, approx.):	160 × 40 × 105 mm (6¼ × 1½ × 4¼ inches)
<b>Weight</b> (approx.):	0.85 kg (1.9 lbs.)

## Receiver

<b>Receiver Circuit Type:</b>	Double-Conversion Superheterodyne
<b>Intermediate Frequencies:</b>	17.7 MHz , and 450 kHz (all models)
<b>Sensitivity:</b>	0.2/0.25 µV for 12-dB SINAD 0.3/0.35 µV for 20 dB NQ
<b>Hum &amp; Noise Ratio:</b>	Better than 45 dB for 25-kHz/step, Better than 40 dB for 12.5-kHz/step
<b>Adjacent Channel Selectivity:</b>	>70 dB for 25-kHz/step, >60 dB for 12.5-kHz/step
<b>Intermodulation Distortion:</b>	Better than 65 dB
<b>Spurious Rejection:</b>	Better than 65 dB
<b>External Audio Output Power:</b>	5 watts into 4 ohms with <10% THD

## Transmitter

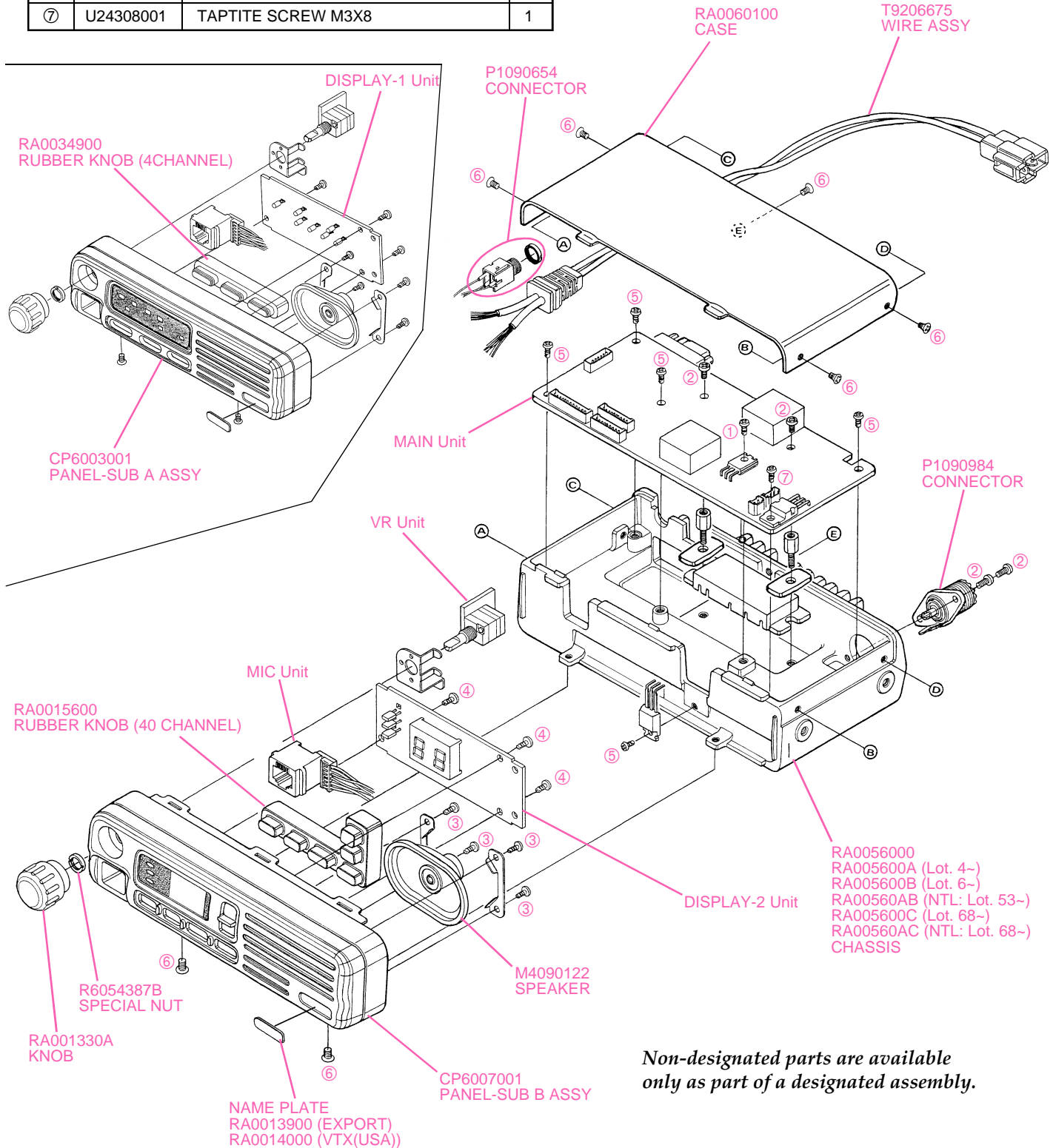
<b>Power Output:</b>	25/5 watts (high/low, programmable)
<b>Modulation Type/Deviation:</b>	Frequency Modulation, ±5 kHz (±2.5 kHz )
<b>Hum &amp; Noise Ratio:</b>	Better than 45 dB for 25-kHz/step, Better than 40 dB for 12.5-kHz/step
<b>Modulation Distortion:</b>	Less than 5%
<b>Spurious Emissions:</b>	Better than 65 dB (below carrier)
<b>Microphone Impedance:</b>	600 ohms

*Specifications are subject to change without notice or obligation.*

# Exploded View & Miscellaneous Parts

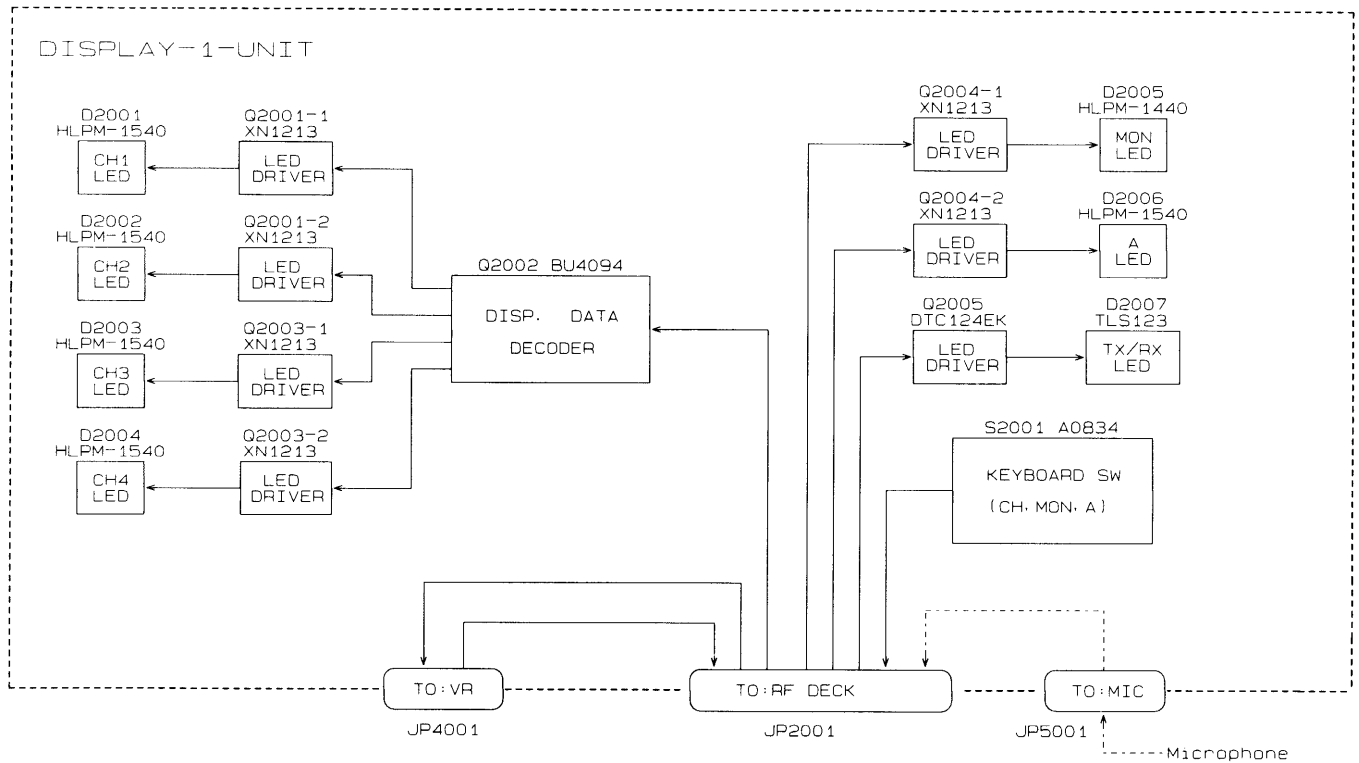
REF.	VXSTD P/N	Description	Qty.
①	U24208001	TAPTITE SCREW M2.6X8 (Lot. 1~5)	1
	U20208001	BINDING HEAD SCREW M2.6X8 (Lot. 6~)	1
②	U20306002	BINDING HEAD SCREW M3X6NI	4
③	U23205001	TAPTITE SCREW M2.6X5	4
④	U23206001	TAPTITE SCREW M2.6X6	3
⑤	U24306002	TAPTITE SCREW M3X6NI	5
⑥	U31206007	OVAL HEAD SCREW M2.6X6B	7
⑦	U24308001	TAPTITE SCREW M3X8	1

VXSTD P/N	Description	Qty.
Q0000062	FUSE 10A	2
T9021810	DC CABLE	1

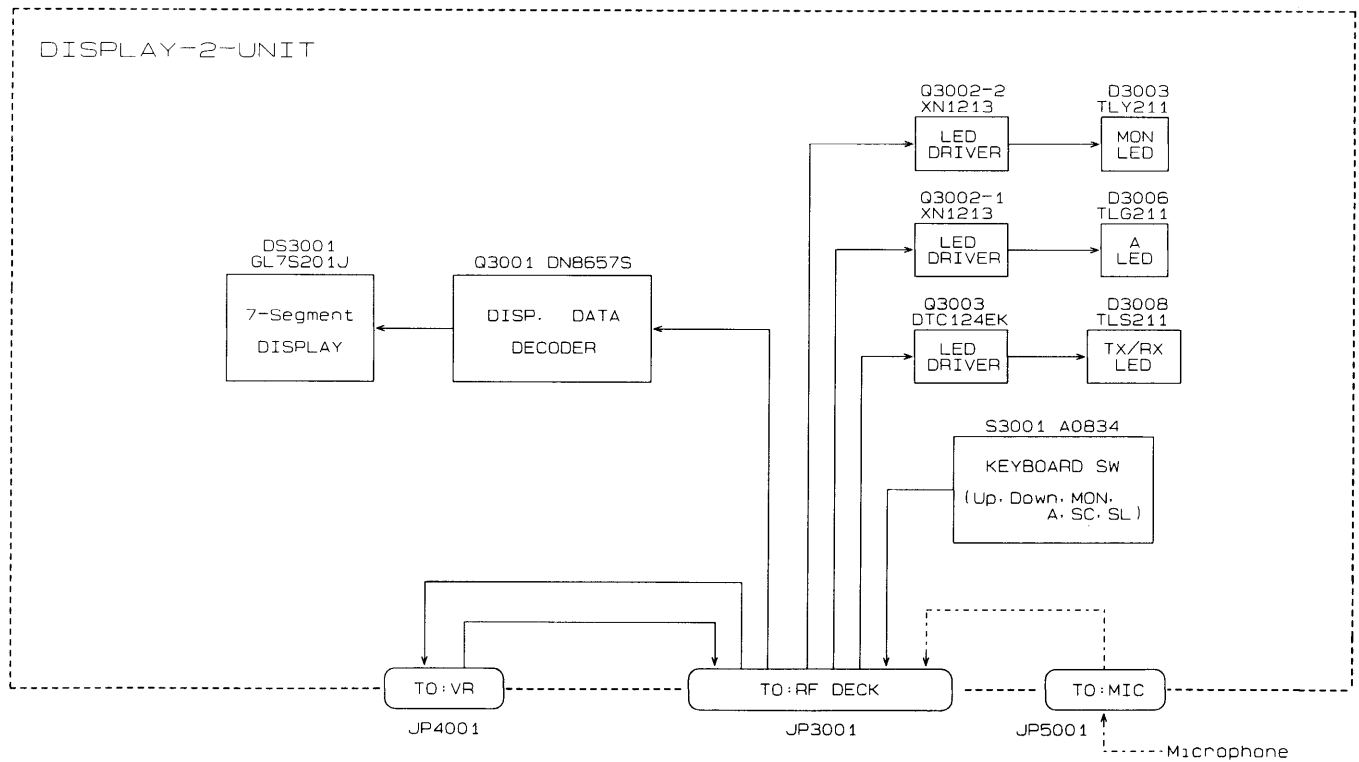


*Non-designated parts are available only as part of a designated assembly.*

## VX-2000V 4ch Front Panel Block Diagram



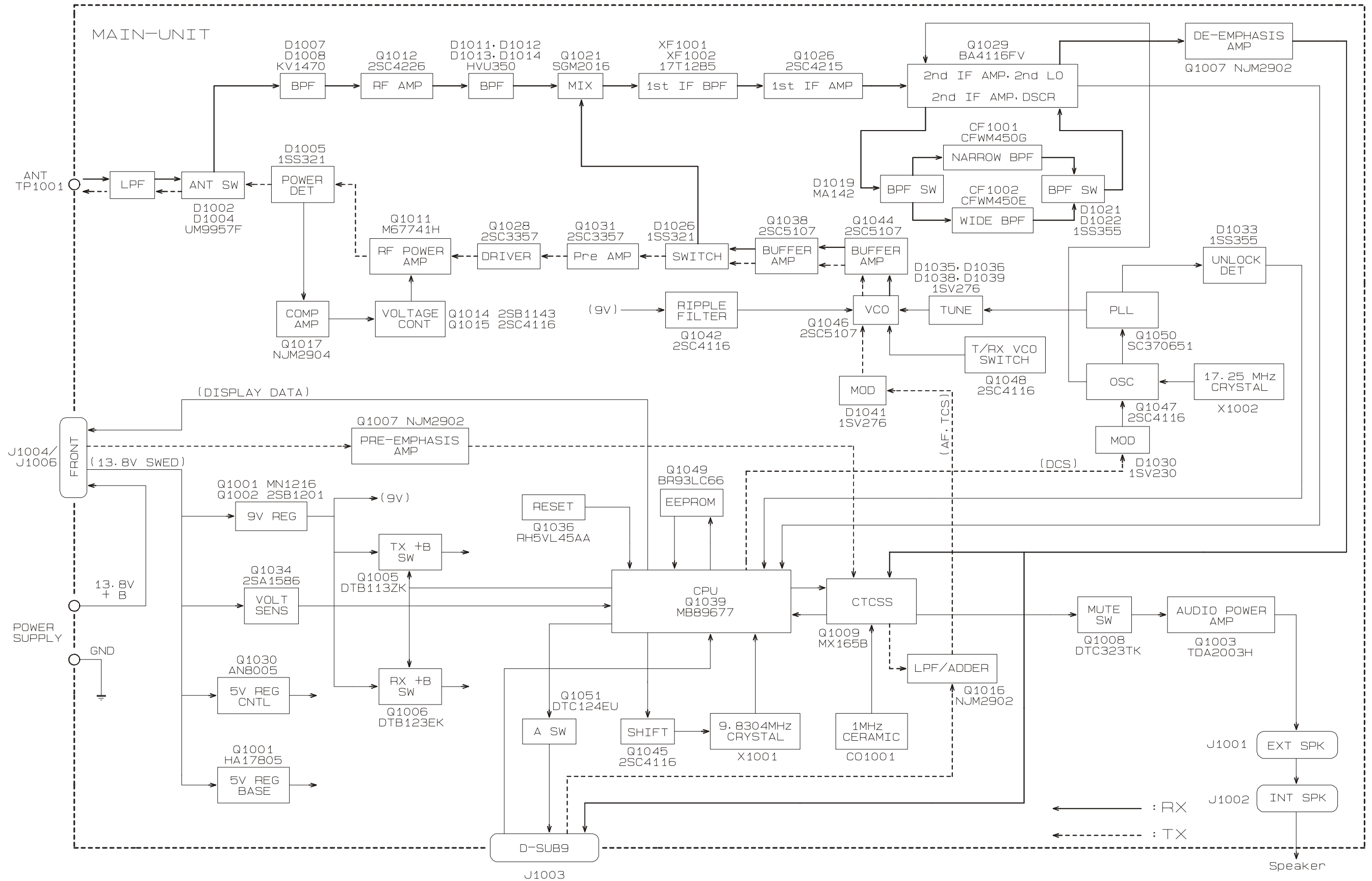
## VX-2000V 40ch Front Panel Block Diagram



## *Block Diagram*

*Note:*

VX-2000V Main Unit Block Diagram

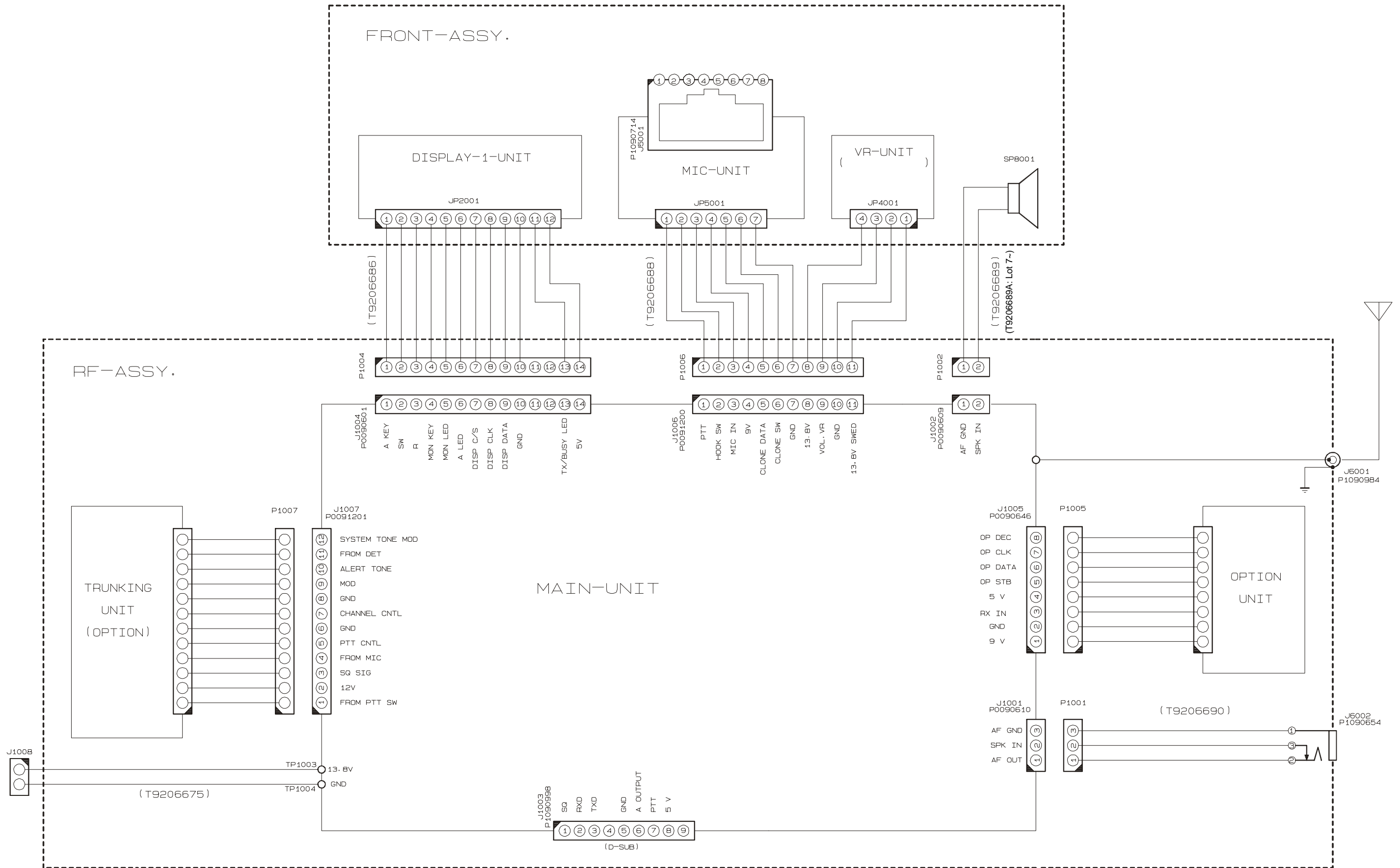


## *Block Diagram*

*Note:*

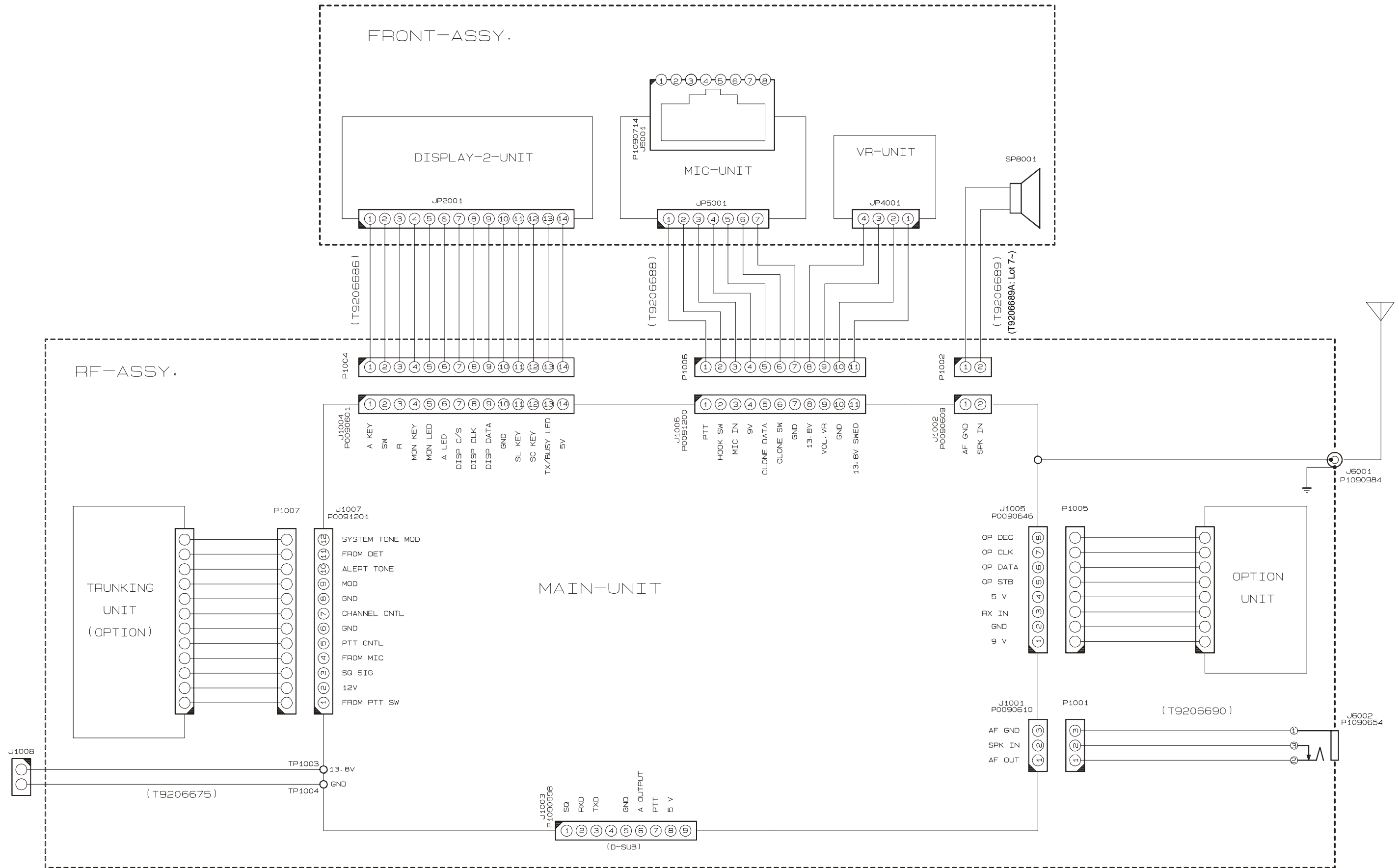


VX-2000V 4ch Front Interconnection Diagram



# Interconnection Diagram

## VX-2000V 40ch Front Interconnection Diagram



### Receive Signal Path

Incoming RF energy from the antenna jack is delivered to the MAIN Unit, and passes through a low-pass filter consisting of coils L1001, L1002, L1004, and L1006, capacitors C1002, C1006, C1009, C1017, C1019, C1022, C1041, and C1046, and switching diodes D1002 (**UM9957F**) and D1006 (**RLS135**), then delivered to the receiver front end.

The RF energy then enters a varactor-tuned bandpass filter, consisting of coils L1008, L1010, L1011, L1013, L1014, T1001, and T1002, capacitors C1045, C1052, C1054, C1057, C1058, C1069, C1072, C1073, C1091, C1092, C1093, C1094, C1096, C1097, C1100, C1101, C1105, C1106, C1109, and C1110, plus diodes D1007/1008 (both **KV1470**) and D1011~1014 (all **HVU350**). After bandpass filtering, the in-band RF signals are amplified by RF preamplifier Q1012 (**2SC4226**), then delivered to the first mixer stage.

Buffered output from the VCO is amplified by Q1038 (**2SC5107**), providing a pure local signal between 130.3 and 156.3 MHz for injection to the first mixer, Q1021 (**SGM2016**). The resulting 17.7 MHz first IF then passes through monolithic crystal filter XF1001, which strips away all but the desired signal, and the signal is then amplified by Q1026 (**2SC4215Y**). The amplified first IF signal is then applied to FM subsystem IC Q1029 (**BA4116FV**), which contains the second mixer, a limiter amplifier, and a noise amplifier.

The second local oscillator signal is generated by PLL reference/2nd LO transistor Q1047 (**2SC4116GR**), using the 17.25 MHz oscillator crystal X1002 as a reference. This signal is mixed with the 17.7 MHz local at Q1029, producing a 450 kHz second IF. The second IF signal then passes through ceramic filter CF1001

(**CFWM450G**) or CF1002 (**CFWM450E**) to strip away unwanted mixer products, and then is applied to the limiter amplifier in Q1029, which removes any amplitude variations in the 450 kHz IF. Speech detection by CD1001 (**CDBM450C24T**) is then performed, converting the second IF into an audio signal.

Detected audio from Q1029 is amplified by Q1017-1 (**NJM2904V**) and then applied to the de-emphasis network, consisting of capacitors C1084/C1089, resistors R1038/R1049, and Q1007-4 (**NJM2902V**). The de-emphasized audio is then applied to CTCSS subsystem IC Q1009 (**MX165BDW**), which contains the Tx/Rx audio filter, CTCSS decoder and CTCSS encoder; if a CTCSS tone is present on the incoming signal, it is removed by the high-pass audio filter in Q1009. The processed signal then passes through the audio mute gate Q1008 (**DTC323TK**) and the volume control, then enters the audio power amplifier Q1003 (**TDA2003H**), which provides up to 2 Watts of audio power to the external speaker jack.

### Squelch Control

The squelch circuitry consists of a noise amplifier, bandpass filter, and noise detector within Q1029, plus control circuitry within microprocessor Q1039 (**MB89677**).

When no carrier is received, noise at the output of the detector stage in Q1029 is amplified, bandpass filtered, and detected by Q1029. The resulting DC squelch control voltage is passed to pin 33 of microprocessor Q1039. With no carrier being received, pin 33 remains low, signaling pin 5 of Q1039 to keep the green "BUSY" LED off, and simultaneously signaling pin 19 of Q1039 to command audio mute gate Q1008 to block received audio.

## *Circuit Description*

When a carrier appears at the discriminator, noise is removed from the output, causing pin 33 of Q1039 to go "high," in turn causing the "BUSY" LED and audio output lines to turn on. The microprocessor then checks for CTCSS information. If CTCSS decode is not activated, or if CTCSS decode is activated and a signal carrying a matching tone is received, the microprocessor allows audio to pass through AF mute gate Q1008 and audio amplifier Q1003 to the speaker.

### *Transmit Signal Path*

Speech input from the microphone is delivered to the MAIN Unit, where it passes through the pre-emphasis network (R1015 and C1031). The pre-emphasized speech signal proceeds through the AF high-pass filter at Q1009, then is applied to the IDC (Instantaneous Deviation Control) at Q1016-3 (**NJM2902V**), with deviation level being set by potentiometer VR1001. The audio then passes to a splatter filter in sections 1 and 4 of Q1016, which filters out high-frequency components which could result in over-deviation.

The processed audio is mixed with the CTCSS tone (if activated) generated by CTCSS subsystem IC Q1009, then delivered to D1041 (**1SV276**) for frequency modulation of the PLL carrier (at the transmitting frequency) up to  $\pm 5$  kHz from the unmodulated carrier frequency.

The modulated signal from the VCO, Q1046 (**2SC5107**), is buffered by Q1038 and Q1044 (both **2SC5107**). The low-level transmit signal is then amplified by Q1028 and Q1031 (both **2SC3357**), then applied to the final amplifier, Q1101 (**M67741H**), providing 25 Watts of transmitter power. The transmit signal then passes through the antenna switch, D1003/D1004 (both **UM9957F**) and low-pass filter (which suppresses harmonic spurious radiation) before delivery to the antenna jack.

### *Automatic Transmitter Power Control*

RF output from the final amplifier is sampled by C1039 and C1051 and rectified by D1005 (**1SS321**). The resulting DC voltage is fed through Automatic Power Controller Q1014 (**2SB1143S**), Q1015 (**2SC4116GR**), and Q1017-2 to effect control of the gain of transmitter PA Q1011. The microprocessor, Q1039, issues commands for setting "HIGH" or "LOW" power output.

### *Transmit Inhibit*

When the transmit PLL is unlocked, pin 2 of PLL IC Q1050 (**SC370651F**) goes to logic "low" level. The resulting DC unlock control voltage switches off the Tx inhibit switch Q1022 (**IMZ1**), which interrupts the supply voltage to the transmitter PA, Q1011, thus disabling the transmitter.

### *Spurious Suppression*

Generation of spurious products by the transmitter is minimized by the fundamental carrier frequency being equal to the final transmitting frequency, modulated directly in the transmit VCO. Additional harmonic suppression is provided by a low-pass filter consisting of L1001, L1002, L1007, C1002, C1006, C1009, C1017, C1019, C1036, and C1053, resulting in more than 60 dB of harmonic suppression prior to delivery of the RF signal to the antenna jack.

### *PLL Frequency Synthesizer*

The Phase-Locked Loop (PLL) circuitry on the MAIN Unit includes VCO Q1046, VCO buffer Q1044, and PLL subsystem IC Q1050, which includes a reference divider, serial-to-parallel data latch, programmable divider, phase comparator, and charge pump.

Stability of the reference oscillator, Q1047, is maintained by a regulated 5 Volt supply, which includes Q1001 (**MM1216EN**), Q1002

(**2SB1201STP-FA**), Q1040 (**2SC4116GR**), and D1029 (**02CZ5.6Y**), with temperature compensation provided by thermistors TH1003/TH1004 and capacitors associated with the 17.25 MHz reference crystal, X1002.

In the receive mode, VCO Q1046 oscillates between 130.3 and 156.3 MHz, according to the transceiver version and the programmed receiving frequency. The VCO output is buffered by Q1044, and applied to the prescaler section of Q1050. There the VCO signal is divided by 64 or 65, according to a control signal from the data latch section of Q1050, before being applied to the programmable divider section of Q1050. The data latch section of Q1050 also receives serial dividing data from the microprocessor, Q1039, which causes the pre-divided VCO signal to be further divided in the programmable divider section, depending on the desired receive frequency, so as to produce either a 5.0 kHz or 6.25 kHz derivative of the current VCO frequency.

Meanwhile, the reference divider section of Q1050 divides the 17.25 MHz crystal reference frequency by 3450 (or 2760) to produce the 5 kHz (or 6.25 kHz) loop reference (respectively). The 5 kHz (or 6.25 kHz) signal from the programmable divider (derived from the VCO) and that derived from the reference oscillator are applied to the phase detector section of Q1050, which produces a pulsed output with pulse duration depending on the phase difference between these input signals. The pulse train is filtered to DC and returned to varactors D1035/D1036/D1038/D1039 (all **1SV276**).

Changes in the level of the DC voltage applied to the varactors affect the reactance in the tank circuit of the VCO, changing the oscillating fre-

quency of the VCO according to the phase difference between the signals derived from the VCO and the crystal reference oscillator. The VCO is thus phase-locked to the crystal reference oscillator. The output of the VCO is then delivered to the first mixer via buffer amplifier Q1051.

For transmission, the VCO Q1046 oscillates between 134 and 174 MHz, according to the model version and the programmed transmit frequency. The remainder of the PLL circuitry is shared with the receiver section. However, the dividing data from the microprocessor is such that the VCO frequency is at the actual transmitting frequency (rather than being offset by the IF, as in the receiving case). Also, the VCO is modulated by the speech audio applied to D1041 (**1SV276**), as described previously.

Receive and transmit buses select which VCO is made active via Q1048 (**DTC124EU**). FET Q1043 (**2SK880GR**) buffers the VCV line for application to the tracking bandpass filters in the receiver front end.

### *Push-To-Talk (PTT) Transmit Activation*

The PTT switch on the microphone is connected to pin 24 of microprocessor Q1039, such that when the PTT switch is closed, pin 24 of Q1039 goes low. This signals the microprocessor's pin 35 to activate the Tx/Rx controller Q1004 (**IMH6**), which in turn disables the receiver by disconnecting the 9 Volt supply bus at Q1006 (**DTB123EK**) to the receiver front end, FM subsystem IC, and receiver VCO circuitry. At the same time, Q1005 (**DTB123YK**) activates the Tx 9 Volt supply line to enable the transmitter.

# *Circuit Description*

## *Channel Selection & Display*

### *(4-channel version)*

The **CHANNEL** button on the front panel causes microprocessor Q1039 to select the operating frequency and CTCSS frequency data from serial EEPROM Q1049 (**BR93LC66RF**). The operating frequency data is in the form of PLL dividing ratios, which are passed to the PLL IC on the MAIN Unit via strobe, data, and clock outputs on pins 43, 42, and 41 respectively. The channel digit display data from the microprocessor is strobed by pin 46 to display latch Q2002 (**BU4094BCFV**) on the DISPLAY-1 Unit, which decodes the data and drives the four channel LEDs and the function indicator LEDs.

## *Channel Selection & Display*

### *(40-channel version)*

The **UP** and **DOWN** buttons on the front panel cause microprocessor Q1039 to select the operating frequency and CTCSS frequency data from serial EEPROM Q1049. The operating frequency data is in the form of PLL dividing ratios, which are passed to the PLL IC on the MAIN Unit via strobe, data, and clock outputs on pins 43, 42, and 41 respectively. The channel digit display data from the microprocessor is strobed by pin 46 to display latch Q3001 (**DN8657S**) on the DISPLAY-2 Unit, which decodes the data and drives the two 7-segment LEDs and the function indicator LEDs.

The VX-2000 is carefully aligned at the factory for the specified performance across the designed frequency range. Realignment should, therefore, not be necessary except in the event of a component failure, or when altering the frequency range (“version”).

The following procedures cover the sometimes-critical and tedious adjustments that are not normally required once the transceiver has left the factory. However, if damage has occurred and some parts subsequently are replaced, alignment may be required in order to restore the original alignment. If a sudden problem occurs during otherwise normal operation, it is likely due to part failure, and realignment should be performed only after the faulty component has been replaced.

All component replacement and service should be performed only by an authorized Vertex representative, or the warranty policy may be voided. Vertex service technicians are experienced with the circuitry, and are fully equipped for part replacement and alignment. When any repairs are completed, Vertex service technicians perform comprehensive performance checks to ensure that total transceiver system performance complies with each and every specification for this product.

Those who undertake any of the following alignment procedures are cautioned to proceed at their own risk. Problems caused by unauthorized attempts at realignment are not covered by the warranty policy covering this transceiver. Also, Vertex reserves the right to change circuits and alignment procedures, in the interest of improved performance, without notifying owners.

Under no circumstances should any alignment be attempted unless the normal function and operation of the radio are fully understood, the cause

of the malfunction has been clearly pinpointed and any/all faulty components replaced, and realignment determined to be absolutely necessary.

## **Required Test Equipment**

The following test equipment (and thorough familiarity with its correct use) is necessary for complete realignment. Correction of problems caused by misalignment resulting from the use of improper test equipment is not covered by our warranty policy.

While most steps do not require all the test equipment listed, the interactions of some adjustments may require that more complex adjustments be performed afterwards. Do not, therefore, attempt to perform only a single step unless it is clearly isolated electrically from all other steps. Have all test equipment ready before beginning, and follow all of the steps in a section in the order presented.

- RF Signal Generator with calibrated output to 200 MHz
- Deviation Meter (linear detector)
- In-line Wattmeter with 5% accuracy at 200 MHz
- 50- $\Omega$  Dummy Load with a power rating of 50 W at 200 MHz
- Regulated DC Power Supply, adjustable from 10 V to 17 V DC at 10 A
- Frequency Counter with 0.2 ppm accuracy at 200 MHz
- AF Signal Generator
- DC Voltmeter, high impedance
- SINAD Meter
- IBM PC<sup>®</sup>/compatible computer with Microsoft Windows<sup>®</sup> v3.1 (or later) installed
- Vertex VPL-1 Connection Cable and CE-20 Channel Programming Diskette
- VHF Sampling Coupler

# Alignment

## Alignment Preparation & Precautions

Before beginning alignment, connect the transceiver to the PC using the VPL-1 Connection Cable, and upload the current frequency data from the customer's radio to the computer; save this information to disk so that it can be downloaded to the radio again after alignment is completed.

Next, refer to the label at the rear of the bottom cover of the radio to determine its "version" (frequency range); using the CE-20 software, program the four "Test" simplex channels shown in the table below, as appropriate for the radio version you are working with:

Channel #	Version "A"	Version "C"
1	134.000 MHz	148.000 MHz
2	147.000 MHz	161.000 MHz
3	160.000 MHz	174.000 MHz
4	160.000 MHz	174.000 MHz

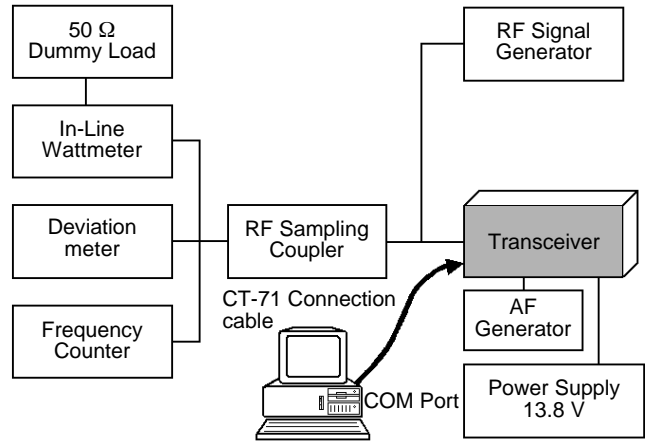
Download this data to the transceiver under test.

**Note:** When alignment is finished, you may wish to save these alignment channels as a disk file for future service work. Make certain to re-load the original channel data (uploaded from the radio prior to servicing) into the transceiver, and complete a final performance check, before returning the equipment to the customer.

A 50-Ω dummy load and in-line wattmeter must be connected to the rear-panel antenna jack in all procedures which require transmission. Correct alignment is not possible without a resistive 50-Ω termination for the transmitter.

Be certain that your power supply delivers 13.8 VDC, as measured directly at the radio's DC input plug, during transmitter tests. Any voltage drop in the cable, or due to the loading on the power supply, must be compensated to 13.8 VDC for accurate alignment.

After completing one alignment step, read the following step to determine whether or not the



Alignment Setup

same test equipment will be required. If not, remove the test equipment (except dummy load and wattmeter) before proceeding.

Correct alignment requires that the ambient temperature be the same as that of the transceiver, and that this temperature be held constant between 68°F and 86°F (20°C and 30°C). When the transceiver is brought into the shop from hot or cold air, it should be allowed time to come to room temperature before alignment is attempted. All test equipment should similarly be thoroughly warmed up.

Whenever possible, alignments should be performed with oscillator shields and circuit boards firmly affixed in place.

**Note:** Signal levels in dB referred to in these alignment procedures are based on  $0 \text{ dB}\mu = 0.5 \mu\text{V}$  (closed circuit).

Connect the test equipment as shown in the pictorial above.

## PLL VCV (Varactor Control Voltage)

### Performance Check

- Connect the DC voltmeter between test point TP1033 on the MAIN Unit and chassis ground.
- Set the transceiver to channel 3, and confirm that the reading is about 4.5V.



- ❑ Now select channel 1, and confirm that the reading changes to about 1.0V for Version A, or 0.8V for Version C.
- ❑ Again select channel 3. Key the transmitter, and confirm that the voltmeter reading is approximately 4.5V.
- ❑ Once more select channel 1 and again key the transmitter. Confirm that the voltmeter reading is approximately 1.0V for Version A, and at least 1.0V for Version C.

## PLL Reference Frequency

- ❑ With the wattmeter, dummy load, and frequency counter connected to the antenna jack, select channel 2.
- ❑ Key the transmitter, and adjust TC1001 on the MAIN Unit, if necessary, so that the counter frequency is within 200 Hz of 147.000.00 MHz for version A, or 161.000.00 MHz for version C.

## Transmitter Output Power

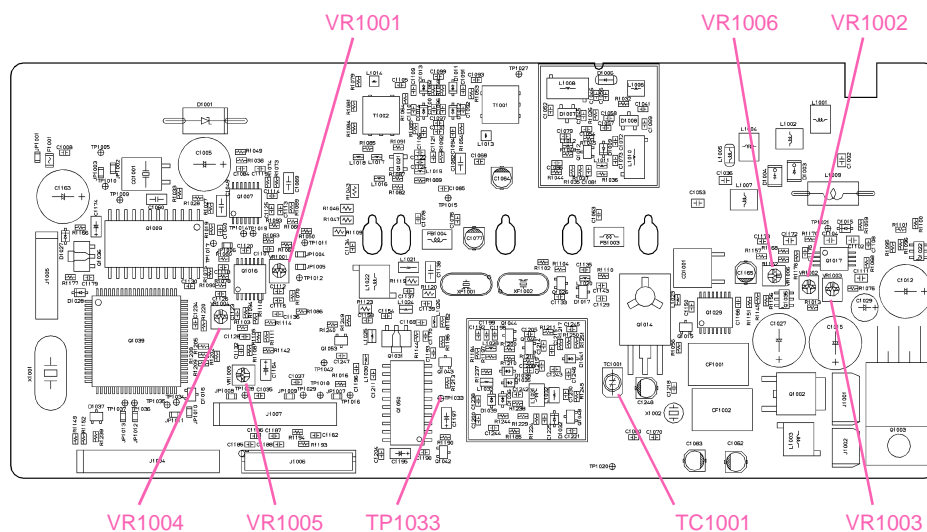
- ❑ Preset trimmer potentiometer VR1002 (MAIN Unit) fully clockwise.
- ❑ Select (Band center) channel 2. Key the transmitter, and confirm that at least 30 Watts of power output is measured. Now select chan-

nels 1 and 3, and confirm that 30 Watts of RF power is present on the band edge channels.

- ❑ Using the computer, re-program channel 1 for "LOW" power output, and download this data to the transceiver.
- ❑ Select channel 2, and adjust ("HIGH" power) potentiometer VR1002 for 25 Watts of RF power.
- ❑ Select channel 2, and adjust ("LOW" power) potentiometer VR1003 for 5 Watts of RF power.

## Transmitter Deviation

- ❑ Select channel 2, and adjust the AF generator's attenuator so as to deliver 25 mV output at 1 kHz to the microphone jack.
- ❑ Key the transmitter, and adjust VR1001 (MAIN Unit) for  $\pm 4.3$  kHz deviation as measured on the deviation meter (tolerance: 100 Hz).
- ❑ On the computer, re-program channel 2 to enable a 100 Hz CTCSS (encode) tone, and download this data to the transceiver.
- ❑ Reduce the AF generator's output to zero. Key the transmitter, and adjust VR1004 (MAIN Unit) for  $\pm 800$  Hz deviation on the CTCSS tone (within 100 Hz).
- ❑ On the computer, re-program channel 2 to en-



MAIN Unit Alignment Points

## *Alignment*

able DCS code 627 (encode), and download this data to the transceiver.

- With the AF generator still set to zero, key the transmitter, and adjust VR1005 (MAIN Unit) for  $\pm 900$  Hz deviation on the DCS signal (within 100 Hz).

### *Receiver Squelch Threshold*

- Set the transceiver to channel 2. Set the RF signal generator to the same frequency (147.000 for version A, 161.000 MHz for version C). Set the signal generator's output to  $-8$  dB $\mu$ .
- Adjust VR1006 (MAIN Unit) clockwise until the squelch just closes, and then counterclockwise until the squelch just opens.
- Turn off the signal generator, and confirm that the squelch again closes when the RF input signal disappears.

### *Restore Original Channel Data*

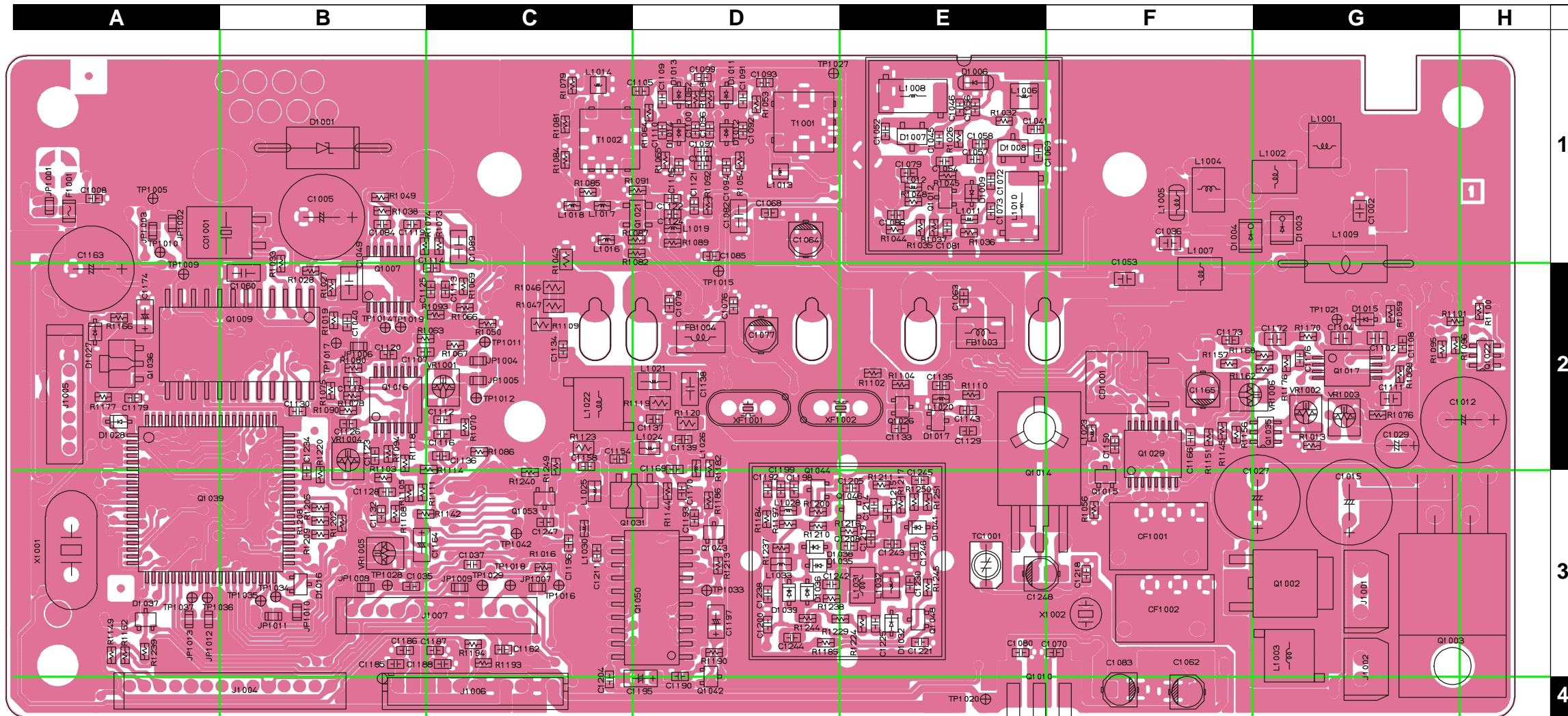
- When all alignment steps have been completed, re-load the original channel data from your computer's disk, and download it to the transceiver.



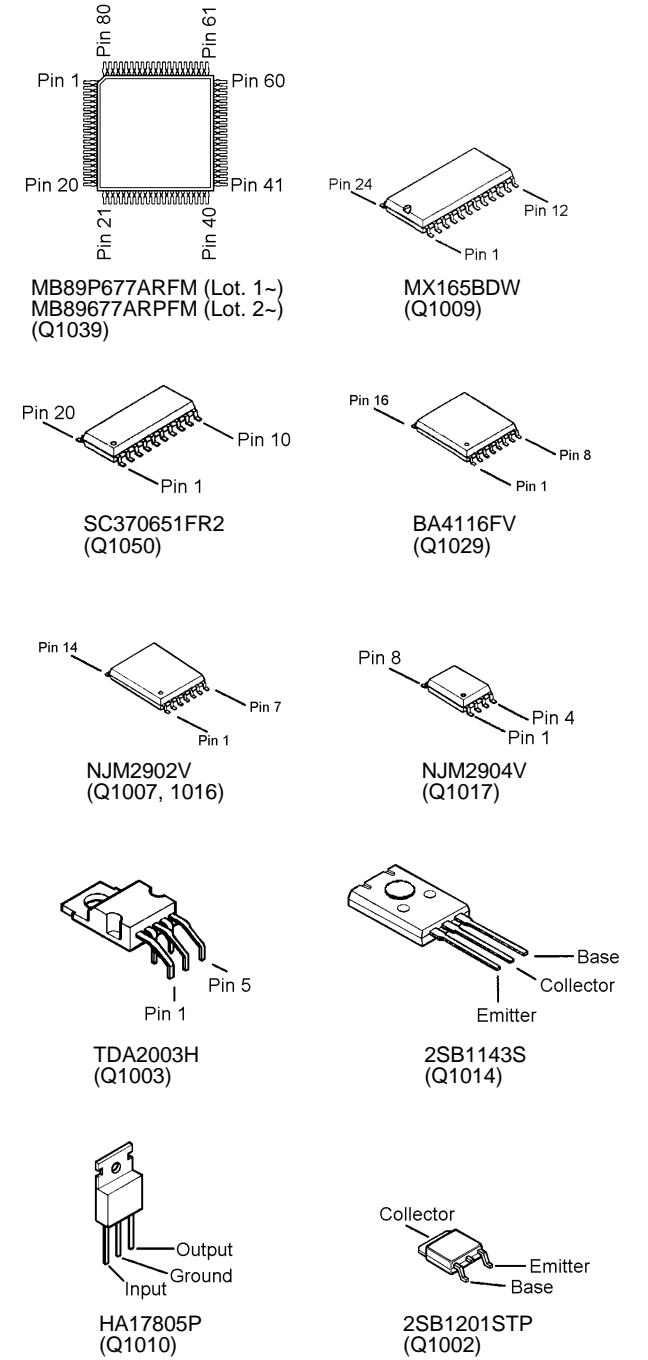
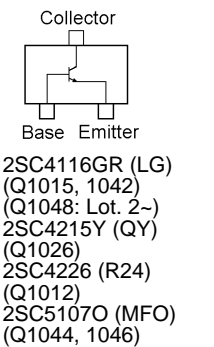
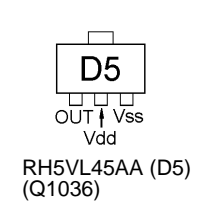
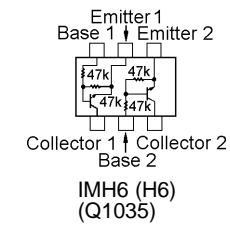
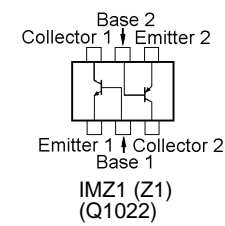
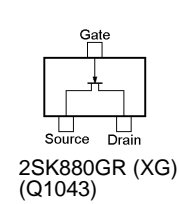
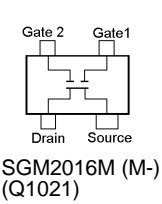
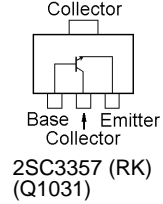
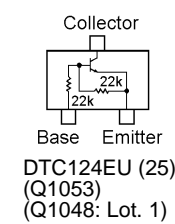
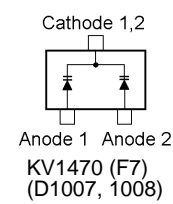
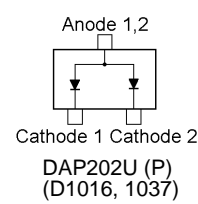
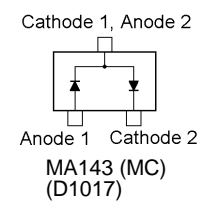
***MAIN Unit (Lot. 1~)***

***Note:***

Parts Layout

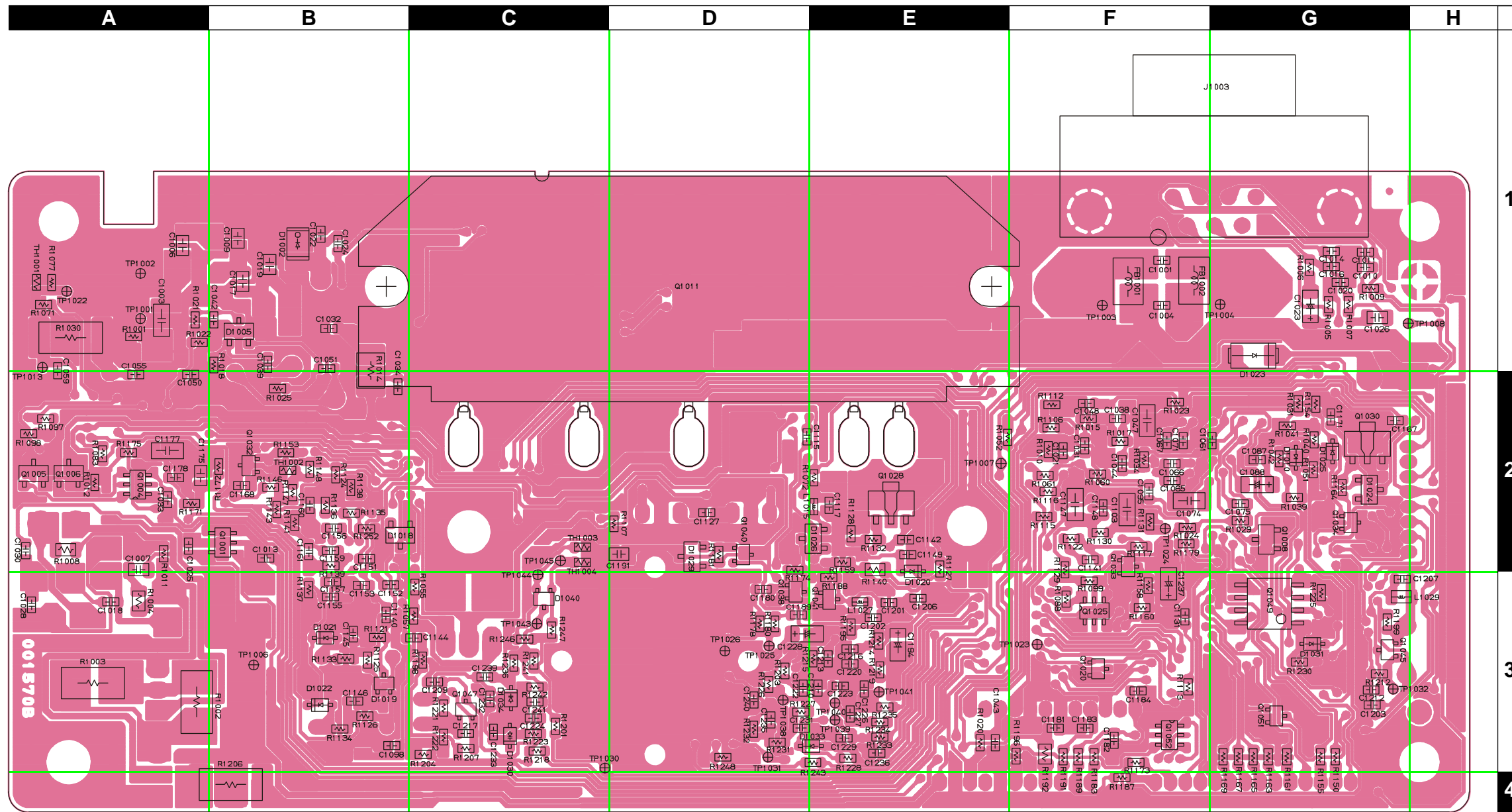


Side A

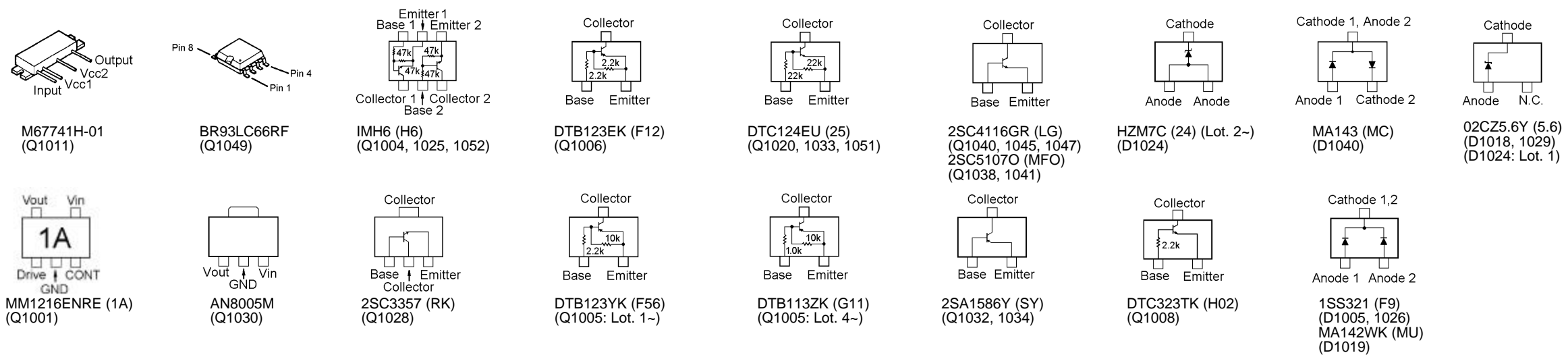




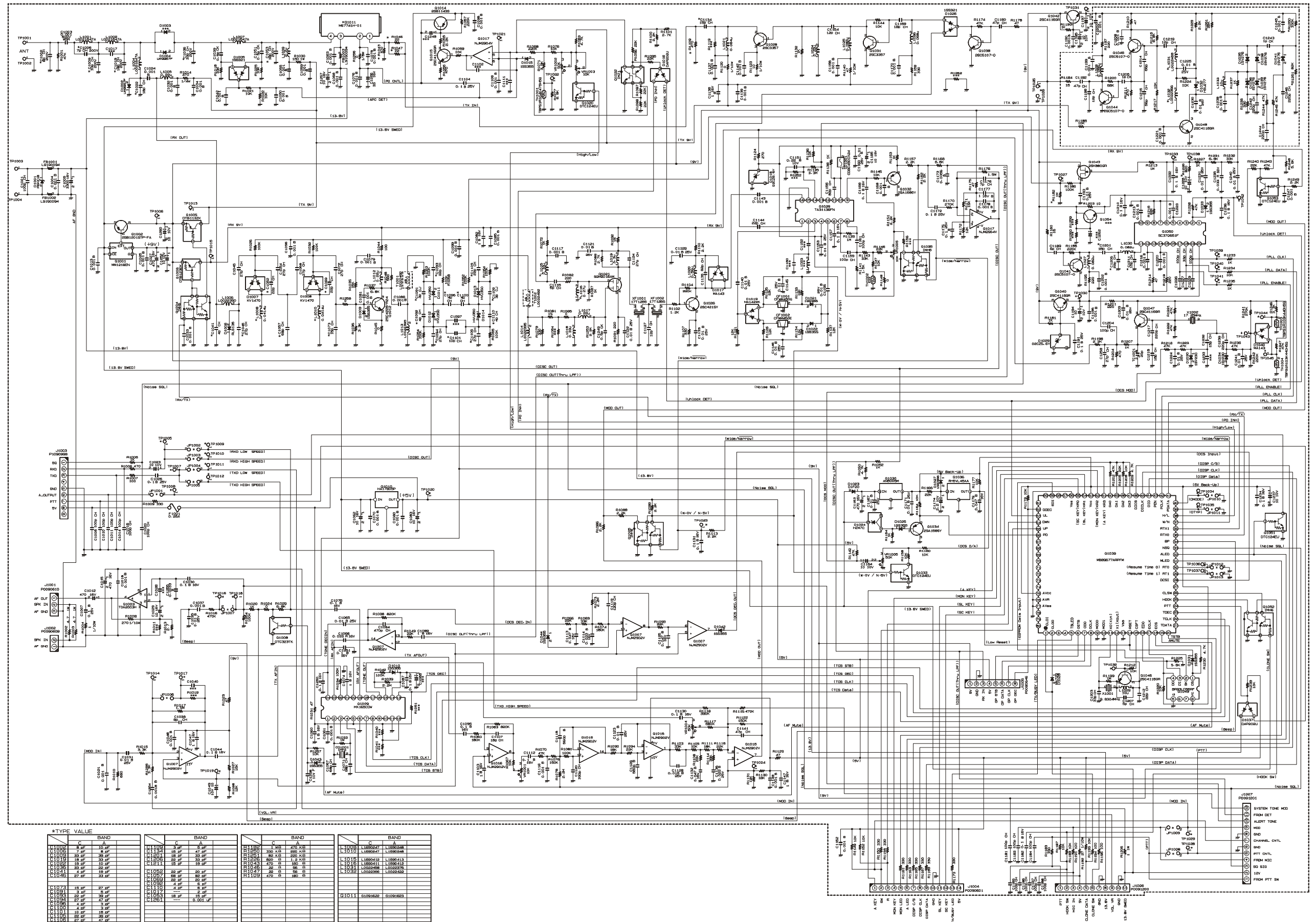
MAIN Unit (Lot. 1~)



Side B



Circuit Diagram



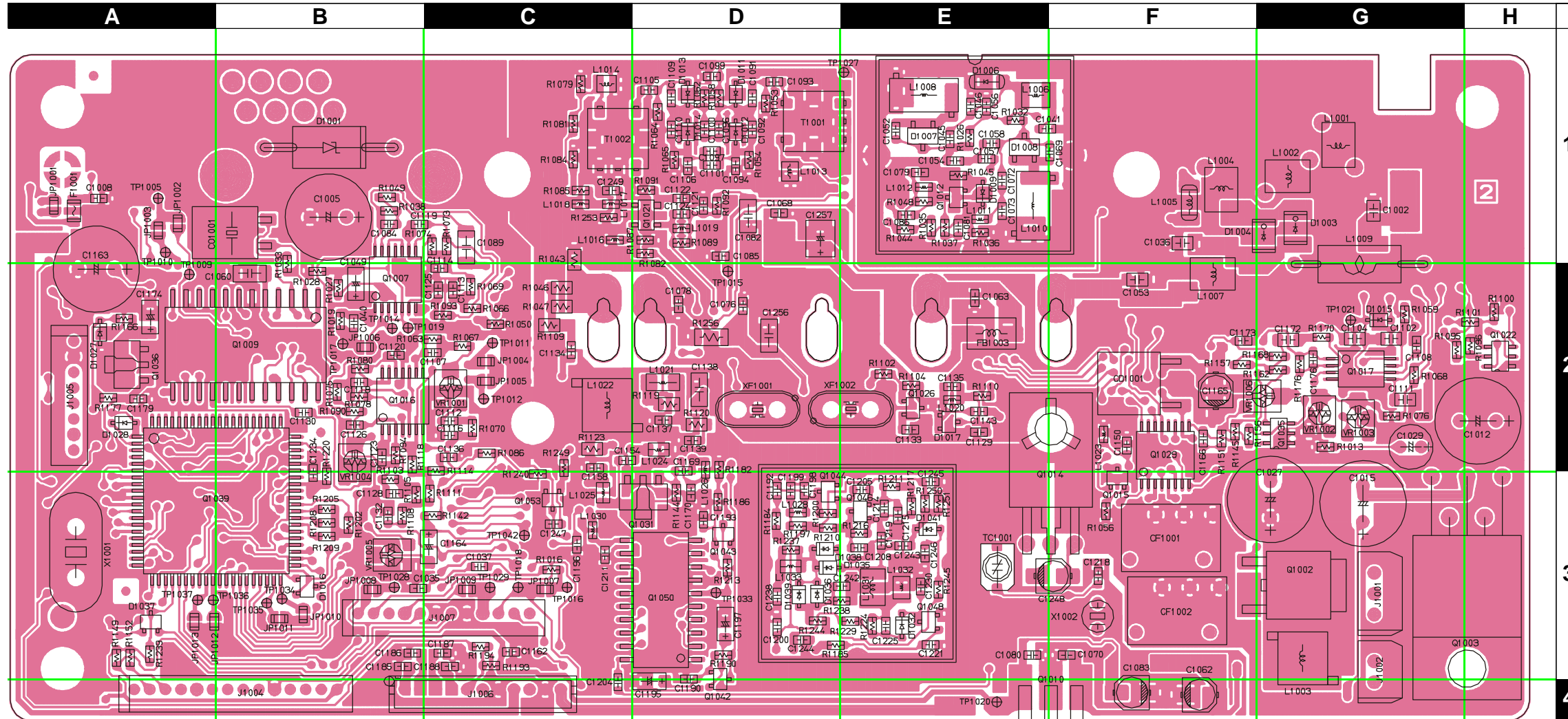
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C1002	100PF	C1012	100PF
C1003	100PF	C1013	100PF
C1004	100PF	C1014	100PF
C1005	100PF	C1015	100PF
C1006	100PF	C1016	100PF
C1007	100PF	C1017	100PF
C1008	100PF	C1018	100PF
C1009	100PF	C1019	100PF
C1010	100PF	C1020	100PF
C1011	100PF	C1021	100PF
C1012	100PF	C1022	100PF
C1013	100PF	C1023	100PF
C1014	100PF	C1024	100PF
C1015	100PF	C1025	100PF
C1016	100PF	C1026	100PF
C1017	100PF	C1027	100PF
C1018	100PF	C1028	100PF
C1019	100PF	C1029	100PF
C1020	100PF	C1030	100PF

***MAIN Unit (Lot. 5~)***

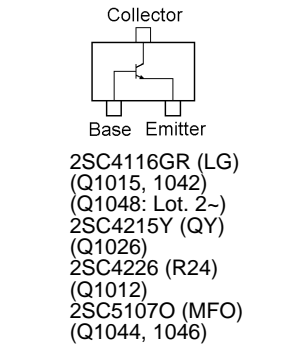
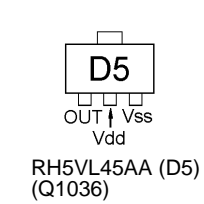
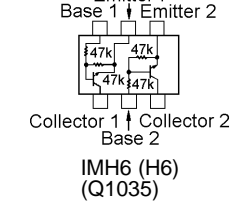
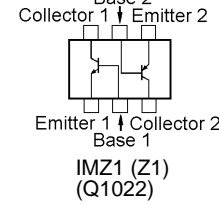
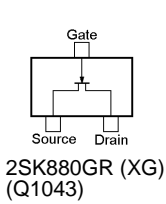
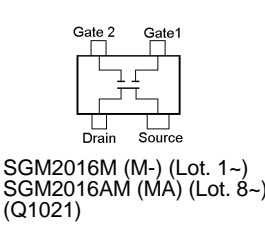
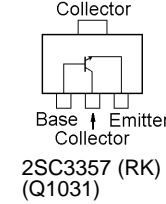
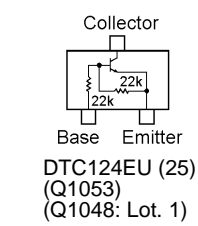
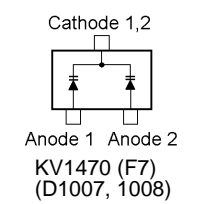
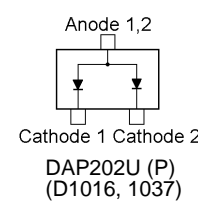
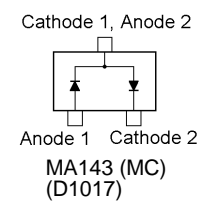
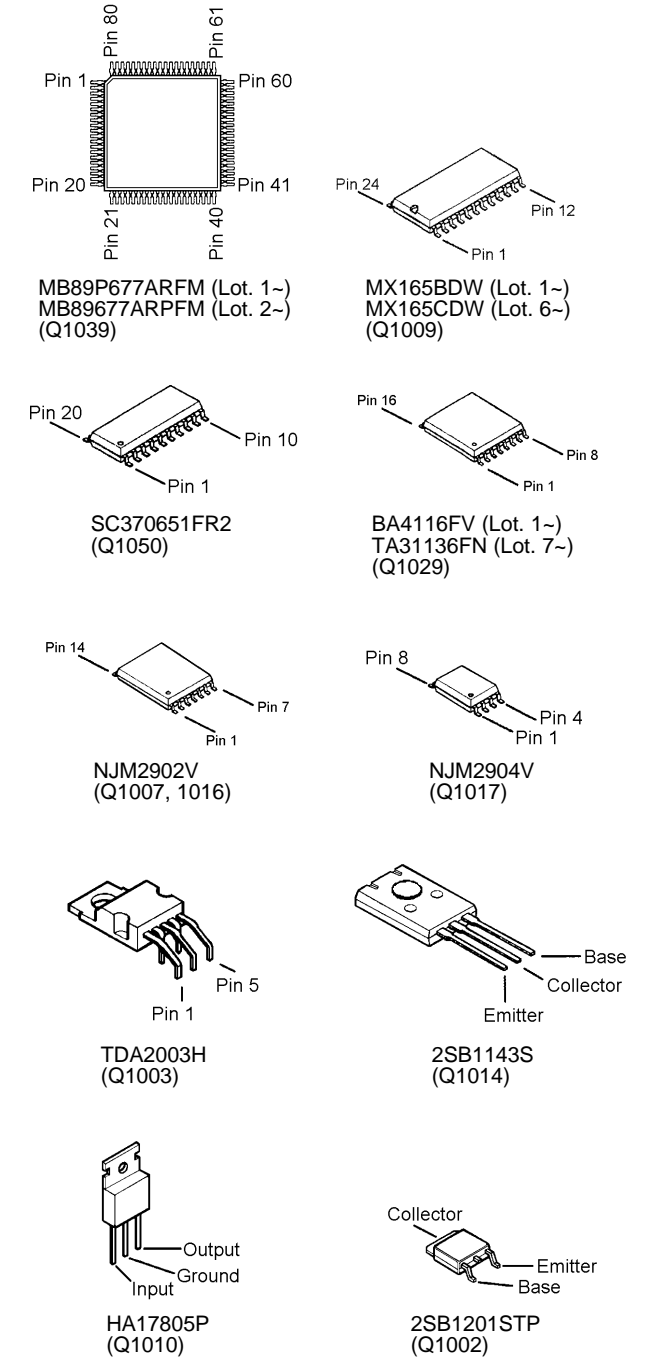
***Note:***



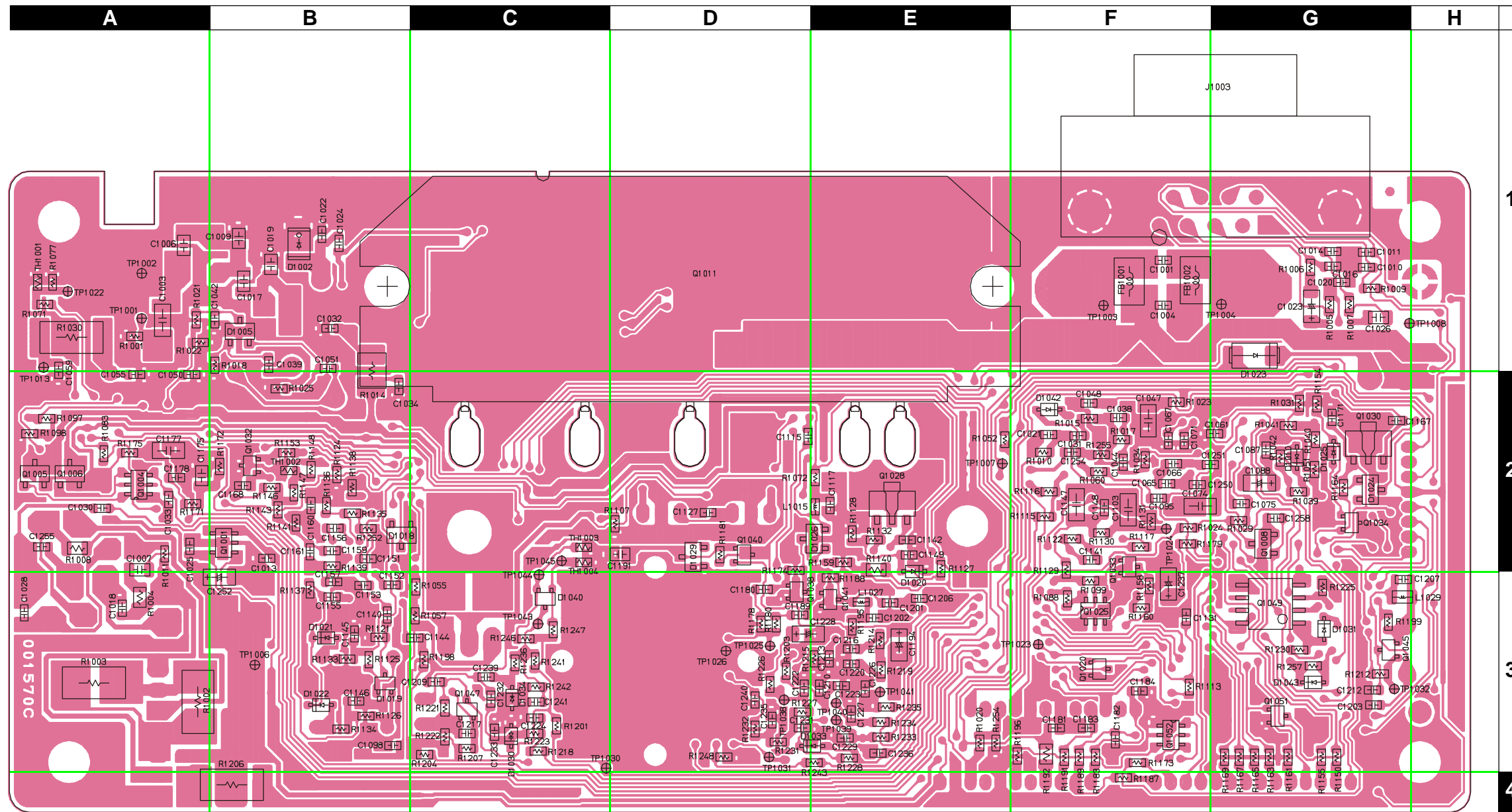
Parts Layout



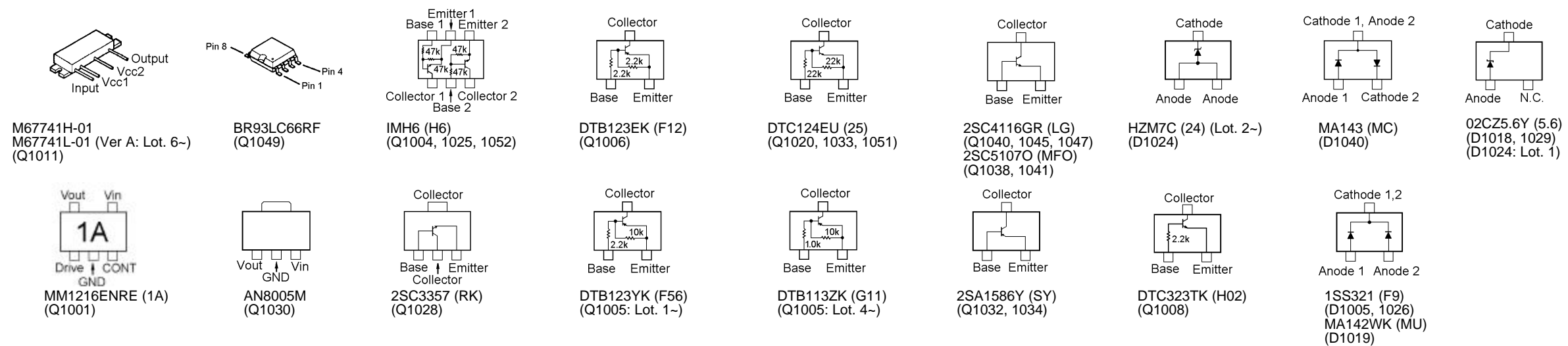
Side A



MAIN Unit (Lot. 5~)

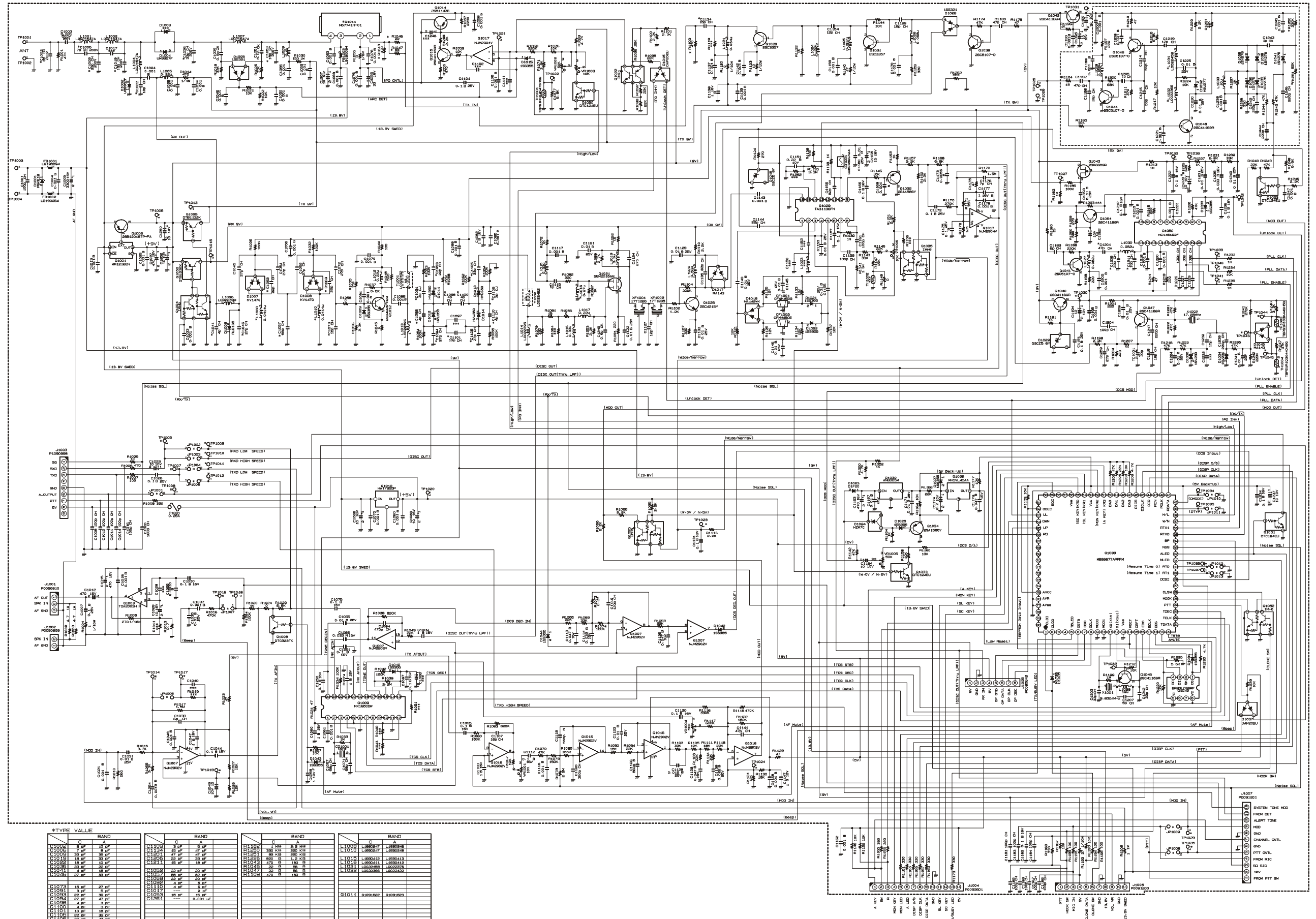


Side B





Circuit Diagram

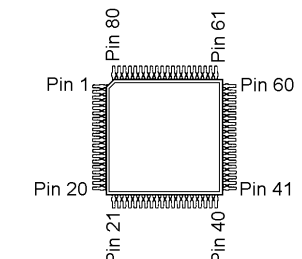
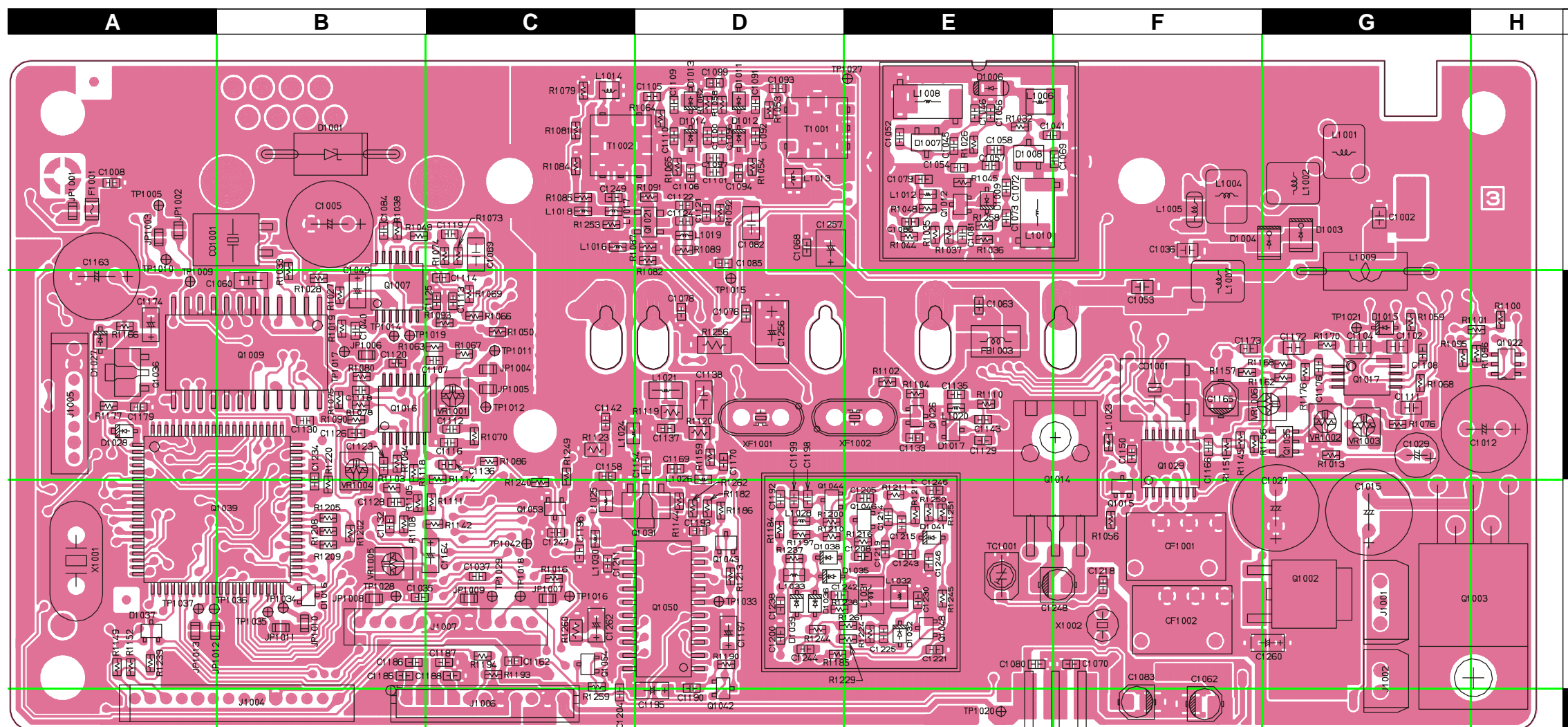


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C1005	100PF	100PF	C1006	100PF	100PF	C1007	100PF	100PF	C1008	100PF	100PF
C1009	100PF	100PF	C1010	100PF	100PF	C1011	100PF	100PF	C1012	100PF	100PF
C1013	100PF	100PF	C1014	100PF	100PF	C1015	100PF	100PF	C1016	100PF	100PF
C1017	100PF	100PF	C1018	100PF	100PF	C1019	100PF	100PF	C1020	100PF	100PF
C1021	100PF	100PF	C1022	100PF	100PF	C1023	100PF	100PF	C1024	100PF	100PF
C1025	100PF	100PF	C1026	100PF	100PF	C1027	100PF	100PF	C1028	100PF	100PF
C1029	100PF	100PF	C1030	100PF	100PF	C1031	100PF	100PF	C1032	100PF	100PF
C1033	100PF	100PF	C1034	100PF	100PF	C1035	100PF	100PF	C1036	100PF	100PF
C1037	100PF	100PF	C1038	100PF	100PF	C1039	100PF	100PF	C1040	100PF	100PF
C1041	100PF	100PF	C1042	100PF	100PF	C1043	100PF	100PF	C1044	100PF	100PF
C1045	100PF	100PF	C1046	100PF	100PF	C1047	100PF	100PF	C1048	100PF	100PF
C1049	100PF	100PF	C1050	100PF	100PF	C1051	100PF	100PF	C1052	100PF	100PF
C1053	100PF	100PF	C1054	100PF	100PF	C1055	100PF	100PF	C1056	100PF	100PF
C1057	100PF	100PF	C1058	100PF	100PF	C1059	100PF	100PF	C1060	100PF	100PF
C1061	100PF	100PF	C1062	100PF	100PF	C1063	100PF	100PF	C1064	100PF	100PF
C1065	100PF	100PF	C1066	100PF	100PF	C1067	100PF	100PF	C1068	100PF	100PF
C1069	100PF	100PF	C1070	100PF	100PF	C1071	100PF	100PF	C1072	100PF	100PF
C1073	100PF	100PF	C1074	100PF	100PF	C1075	100PF	100PF	C1076	100PF	100PF
C1077	100PF	100PF	C1078	100PF	100PF	C1079	100PF	100PF	C1080	100PF	100PF
C1081	100PF	100PF	C1082	100PF	100PF	C1083	100PF	100PF	C1084	100PF	100PF
C1085	100PF	100PF	C1086	100PF	100PF	C1087	100PF	100PF	C1088	100PF	100PF
C1089	100PF	100PF	C1090	100PF	100PF	C1091	100PF	100PF	C1092	100PF	100PF
C1093	100PF	100PF	C1094	100PF	100PF	C1095	100PF	100PF	C1096	100PF	100PF
C1097	100PF	100PF	C1098	100PF	100PF	C1099	100PF	100PF	C1100	100PF	100PF
C1101	100PF	100PF	C1102	100PF	100PF	C1103	100PF	100PF	C1104	100PF	100PF
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C1137	100PF	100PF	C1138	100PF	100PF	C1139	100PF	100PF	C1140	100PF	100PF
C1141	100PF	100PF	C1142	100PF	100PF	C1143	100PF	100PF	C1144	100PF	100PF
C1145	100PF	100PF	C1146	100PF	100PF	C1147	100PF	100PF	C1148	100PF	100PF
C1149	100PF	100PF	C1150	100PF	100PF	C1151	100PF	100PF	C1152	100PF	100PF
C1153	100PF	100PF	C1154	100PF	100PF	C1155	100PF	100PF	C1156	100PF	100PF
C1157	100PF	100PF	C1158	100PF	100PF	C1159	100PF	100PF	C1160	100PF	100PF
C1161	100PF	100PF	C1162	100PF	100PF	C1163	100PF	100PF	C1164	100PF	100PF
C1165	100PF	100PF	C1166	100PF	100PF	C1167	100PF	100PF	C1168	100PF	100PF
C1169	100PF	100PF	C1170	100PF	100PF	C1171	100PF	100PF	C1172	100PF	100PF
C1173	100PF	100PF	C1174	100PF	100PF	C1175	100PF	100PF	C1176	100PF	100PF
C1177	100PF	100PF	C1178	100PF	100PF	C1179	100PF	100PF	C1180	100PF	100PF
C1181	100PF	100PF	C1182	100PF	100PF	C1183	100PF	100PF	C1184	100PF	100PF
C1185	100PF	100PF	C1186	100PF	100PF	C1187	100PF	100PF	C1188	100PF	100PF
C1189	100PF	100PF	C1190	100PF	100PF	C1191	100PF	100PF	C1192	100PF	100PF
C1193	100PF	100PF	C1194	100PF	100PF	C1195	100PF	100PF	C1196	100PF	100PF
C1197	100PF	100PF	C1198	100PF	100PF	C1199	100PF	100PF	C1200	100PF	100PF

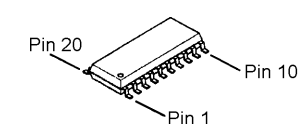
***MAIN Unit (Lot. 19~)***

***Note:***

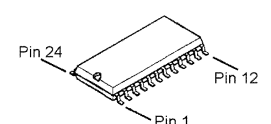
Parts Layout



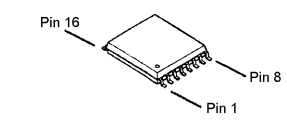
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 MB89677ARPFM (Lot. 2~)  
 MB89P677APFM (NTL: Lot. 53~)  
 MB89677ARPFM (EXP, STANDARD, VTX: Lot. 53~)  
 (Q1039)



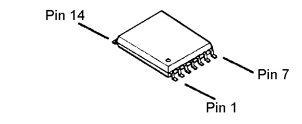
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 MC145193FR2 (Lot. 41~)  
 (Q1050)



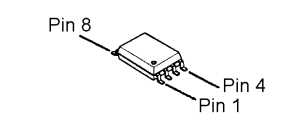
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 (Q1009)



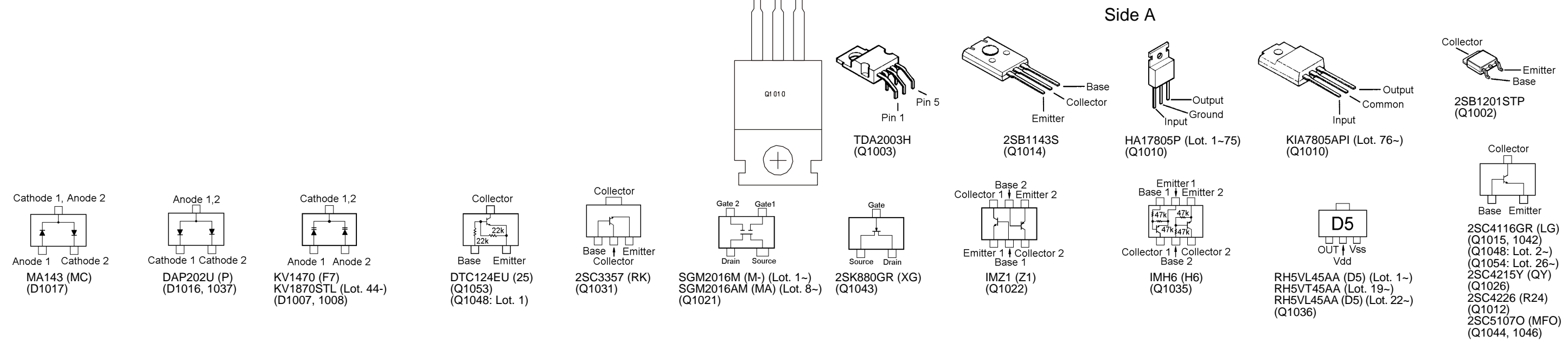
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 TA31136FN (Lot. 7~)  
 (Q1029)



NJM2902V  
 (Q1007, 1016)

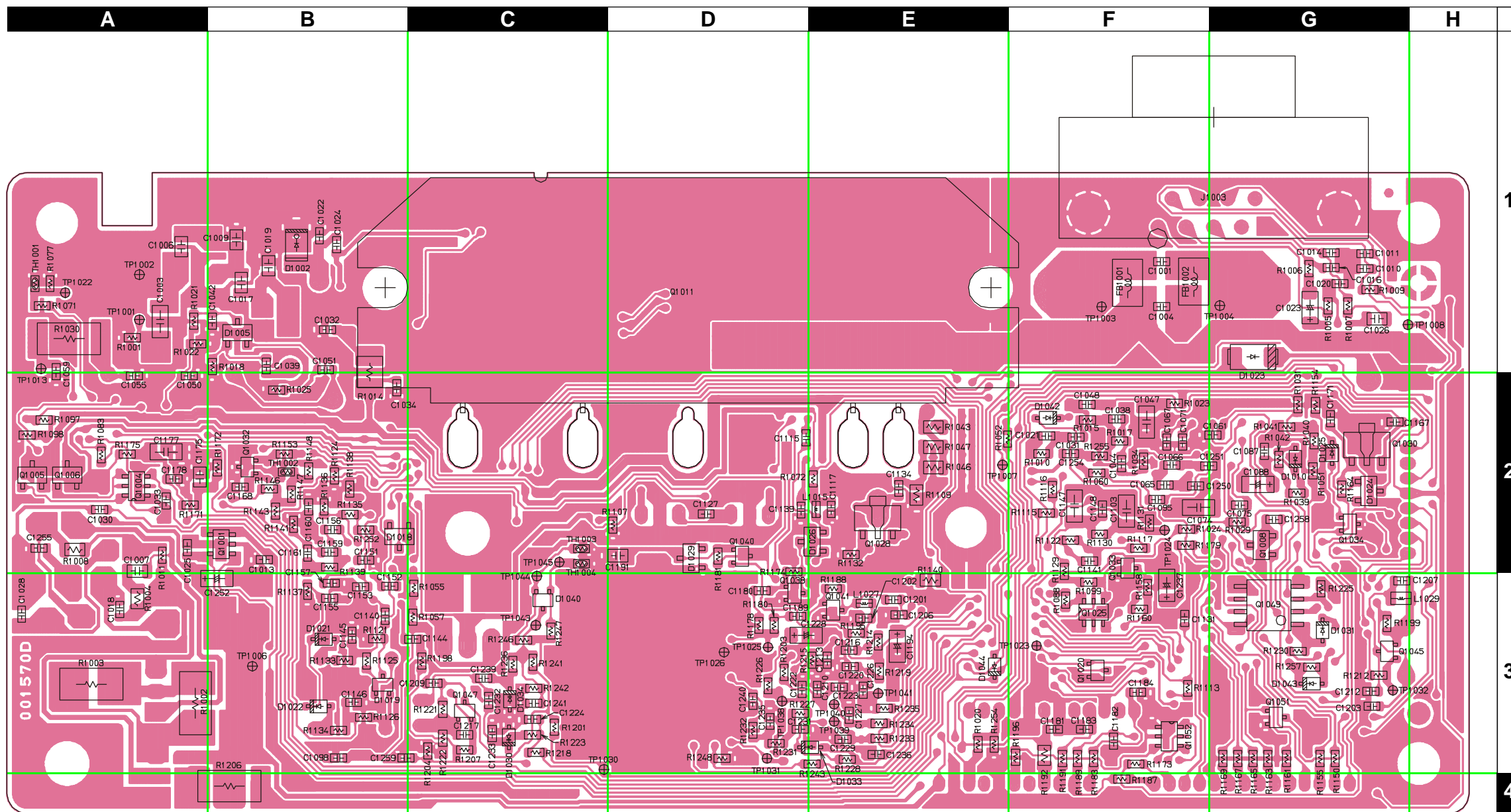


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 (Q1017)

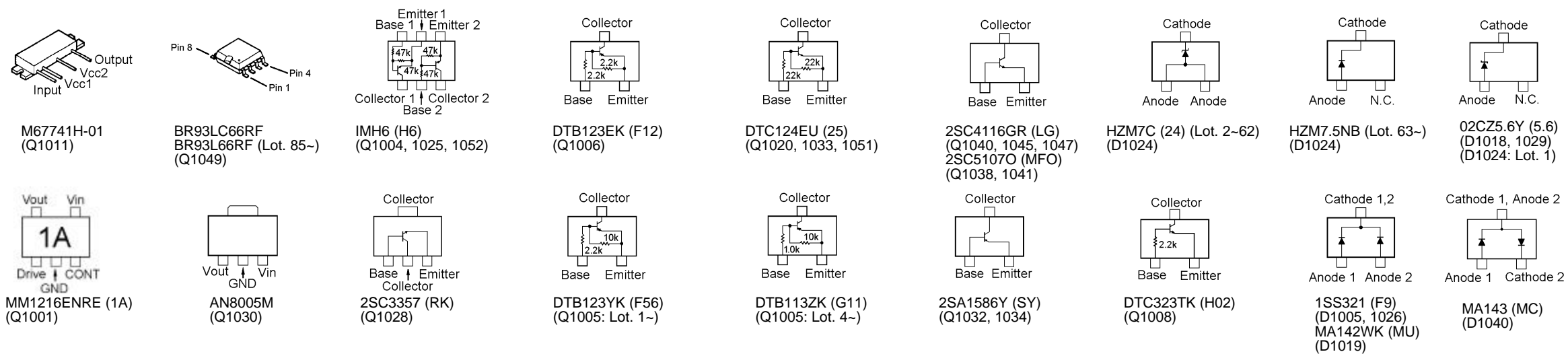




MAIN Unit (Lot. 19~)



Side B



## Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY	ADR.
*** MAIN UNIT ***											
	PCB with Components					CB0370001	TYPE C	1-			
	PCB with Components					CB0370002	TYPE A	6-			
	Printed Circuit Board					FR001570B		1-			
	Printed Circuit Board					FR001570C		5-			
	Printed Circuit Board					FR001570D		19-			
C 1001	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B		f1
C 1002	CHIP CAP.	8pF	200V	CH	GRM40CH080D200PT	K22230214		1-5	A		G1
C 1002	CHIP CAP.	10pF	200V	CH	GRM40CH100D200PT	K22230216	VERSION A	6-	A		G1
C 1002	CHIP CAP.	8pF	200V	CH	GRM40CH080D200PT	K22230214	VERSION C	6-	A		G1
C 1003	CHIP CAP.	0.001uF	500V	W5R	CF316W5R102K500AT	K22271802		1-	B		a1
C 1004	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		f1
C 1005	AL.ELECTRO.CAP.	470uF	16V		RE3-16V471M 470UF	K40129066		1-	A		B1
C 1005	AL.ELECTRO.CAP.	3300uF	16V		RE3-16V332M 3300UF	K40129065		18-	A		B1
C 1006	CHIP CAP.	7pF	200V	CH	GRM40CH070D200PT	K22230213		1-5	B		a1
C 1006	CHIP CAP.	8pF	200V	CH	GRM40CH080D200PT	K22230214	VERSION A	6-	B		a1
C 1006	CHIP CAP.	7pF	200V	CH	GRM40CH070D200PT	K22230213	VERSION C	6-	B		a1
C 1007	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811		1-	B		a2
C 1008	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	A		A1
C 1009	CHIP CAP.	33pF	200V	CH	GRM40CH330J200PT	K22230222		1-5	B		b1
C 1009	CHIP CAP.	39pF	200V	CH	GRM40CH390J200PT	K22230223	VERSION A	6-	B		b1
C 1009	CHIP CAP.	33pF	200V	CH	GRM40CH330J200PT	K22230222	VERSION C	6-	B		b1
C 1010	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B		g1
C 1011	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B		g1
C 1012	AL.ELECTRO.CAP.	470uF	16V		RE3-16V471M 470UF	K40129066		1-	A		H2
C 1013	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		b2
C 1014	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B		g1
C 1015	AL.ELECTRO.CAP.	470uF	16V		RE3-16V471M 470UF	K40129066		1-	A		G3
C 1016	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B		g1
C 1017	CHIP CAP.	2pF	200V	CH	GRM40CH020C200PT	K22230206	VERSION A	6-	B		b1
C 1018	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		a3
C 1019	CHIP CAP.	18pF	200V	CH	GRM40CH180J200PT	K22230219		1-5	B		b1
C 1019	CHIP CAP.	33pF	200V	CH	GRM40CH330J200PT	K22230222	VERSION A	6-	B		b1
C 1019	CHIP CAP.	18pF	200V	CH	GRM40CH180J200PT	K22230219	VERSION C	6-	B		b1
C 1020	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B		g1
C 1021	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		f2
C 1022	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217		1-5	B		b1
C 1022	CHIP CAP.	10pF	50V	CH	GRM39CH100C50PT	K22174248	VERSION A	6-	B		b1
C 1022	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217	VERSION C	6-	B		b1
C 1023	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		1-	B		g1
C 1024	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		b1
C 1025	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		a2
C 1026	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811		1-	B		g1
C 1027	AL.ELECTRO.CAP.	470uF	16V		RE3-16V471M 470UF	K40129066		1-	A		G3
C 1029	AL.ELECTRO.CAP.	10uF	16V		RC2-16V100M(4X7)	K40129012		1-	A		G2
C 1030	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B		a2
C 1031	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B		f2
C 1032	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		b1
C 1033	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		a2
C 1034	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B		b2
C 1035	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A		B3
C 1036	CHIP CAP.	33pF	200V	CH	GRM40CH330J200PT	K22230222		1-5	A		F1
C 1036	CHIP CAP.	22pF	200V	CH	GRM40CH220J200PT	K22230220	VERSION A	6-	A		F1
C 1036	CHIP CAP.	33pF	200V	CH	GRM40CH330J200PT	K22230222	VERSION C	6-	A		F1
C 1037	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A		C3
C 1038	CHIP CAP.	6pF	50V	CH	GRM39CH060D50PT	K22174207		1-	B		f2
C 1039	CHIP CAP.	0.5pF	50V	CK	GRM39CK0R5C50PT	K22174201		1-	B		b1
C 1040	CHIP CAP.	6pF	50V	CH	GRM39CH060D50PT	K22174207		1-3	A		B2
C 1041	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205		1-5	A		E1
C 1041	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217	VERSION A	6-	A		E1

# MAIN Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE.	LAY ADR.
C 1041	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205	VERSION C	6-	A	E1
C 1042	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	B	b1
C 1044	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	f2
C 1045	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		1-	A	E1
C 1046	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		1-5	A	E1
C 1046	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223	VERSION A	6-	A	E1
C 1046	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221	VERSION C	6-	A	E1
C 1047	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	B	f2
C 1048	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	f2
C 1049	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1	A	B2
C 1049	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		2-	A	B2
C 1050	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	B	a2
C 1051	CHIP CAP.	0.5pF	50V	CK	GRM39CK0R5C50PT	K22174201		1-	B	b1
C 1052	CHIP CAP.	20pF	50V	CH	GRM39CH200J50PT	K22174218		1-6	A	E1
C 1052	CHIP CAP.	20pF	50V	CH	GRM39CH200J50PT	K22174218	VERSION A	7-	A	E1
C 1052	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219	VERSION C	7-	A	E1
C 1053	CHIP CAP.	18pF	200V	CH	GRM40CH180J200PT	K22230219		1-5	A	F2
C 1053	CHIP CAP.	15pF	200V	CH	GRM40CH150J200PT	K22230218	VERSION A	6-	A	F2
C 1053	CHIP CAP.	18pF	200V	CH	GRM40CH180J200PT	K22230219	VERSION C	6-	A	F2
C 1054	CHIP CAP.	30pF	50V	CH	GRM39CH300J50PT	K22174222		1-5	A	E1
C 1054	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221	VERSION A	6	A	E1
C 1054	CHIP CAP.	30pF	50V	CH	GRM39CH300J50PT	K22174222	VERSION C	6	A	E1
C 1054	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		7-	A	E1
C 1055	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	B	a2
C 1056	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	A	E1
C 1057	CHIP CAP.	82pF	50V	CH	GRM39CH820J50PT	K22174233		1-6	A	E1
C 1057	CHIP CAP.	82pF	50V	CH	GRM39CH820J50PT	K22174233	VERSION A	7-	A	E1
C 1057	CHIP CAP.	68pF	50V	CH	GRM39CH680J50PT	K22174231	VERSION C	7-	A	E1
C 1058	CHIP CAP.	30pF	50V	CH	GRM39CH300J50PT	K22174222		1-5	A	E1
C 1058	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221	VERSION A	6	A	E1
C 1058	CHIP CAP.	30pF	50V	CH	GRM39CH300J50PT	K22174222	VERSION C	6	A	E1
C 1058	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		7-	A	E1
C 1059	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	B	a1
C 1060	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	A	B2
C 1061	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	g2
C 1062	AL.ELECTRO.CAP.	10uF	16V		ECEV1CS100SR	K48120001		1-	A	F4
C 1063	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	E2
C 1065	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803		1-85	B	f2
C 1066	CHIP CAP.	0.033uF	16V	R	GRM39R333K16PT	K22124801		1-	B	f2
C 1067	CHIP CAP.	68pF	50V	CH	GRM39CH680J50PT	K22174231		1-	B	f2
C 1067	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243		43-	B	f2
C 1068	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	A	D1
C 1069	CHIP CAP.	20pF	50V	CH	GRM39CH200J50PT	K22174218		1-6	A	E1
C 1069	CHIP CAP.	20pF	50V	CH	GRM39CH200J50PT	K22174218	VERSION A	7-	A	E1
C 1069	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219	VERSION C	7-	A	E1
C 1070	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	F3
C 1071	CHIP CAP.	68pF	50V	CH	GRM39CH680J50PT	K22174231		1-	B	f2
C 1071	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243		43-	B	f2
C 1072	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		1-	A	E1
C 1073	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223		1-5	A	E1
C 1073	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221	VERSION A	6-	A	E1
C 1073	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223	VERSION C	6	A	E1
C 1073	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215	VERSION C	7-	A	E1
C 1074	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	B	f2
C 1075	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	g2
C 1076	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	A	D2
C 1078	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	D2
C 1079	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	A	E1
C 1080	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	E3
C 1081	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	A	E1



REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
C 1082	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	A	D1
C 1083	AL.ELECTRO.CAP.	10uF	16V		ECEV1CS100SR	K48120001		1-	A	F4
C 1084	CHIP CAP.	470pF	50V	CH	GRM39CH471J50PT	K22174249		1-	A	B1
C 1085	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	D1
C 1086	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	A	E1
C 1087	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	g2
C 1089	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	A	C1
C 1091	CHIP CAP.	2pF	50V	CK	GRM39CK020C50PT	K22174203		1-5	A	D1
C 1091	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206	VERSION A	6-	A	D1
C 1091	CHIP CAP.	2pF	50V	CK	GRM39CK020C50PT	K22174203	VERSION C	6	A	D1
C 1091	CHIP CAP.	3pF	50V	CJ	GRM39CJ030C50PT	K22174204	VERSION C	7-	A	D1
C 1092	CHIP CAP.	6pF	50V	CH	GRM39CH060D50PT	K22174207		1-6	A	D1
C 1092	CHIP CAP.	6pF	50V	CH	GRM39CH060D50PT	K22174207	VERSION A	7-	A	D1
C 1092	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205	VERSION C	7-	A	D1
C 1093	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219		1-5	A	D1
C 1093	CHIP CAP.	39pF	50V	CH	GRM39CH390J50PT	K22174225	VERSION A	6-	A	D1
C 1093	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219	VERSION C	6-	A	D1
C 1094	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		1-5	A	D1
C 1094	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227	VERSION A	6-	A	D1
C 1094	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221	VERSION C	6-	A	D1
C 1095	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	f2
C 1096	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205		1-5	A	D1
C 1096	CHIP CAP.	3pF	50V	CJ	GRM39CJ030C50PT	K22174204	VERSION A	6-	A	D1
C 1096	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205	VERSION C	6-	A	D1
C 1098	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	b3
C 1099	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	A	D1
C 1100	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205		1-5	A	D1
C 1100	CHIP CAP.	3pF	50V	CJ	GRM39CJ030C50PT	K22174204	VERSION A	6-	A	D1
C 1100	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205	VERSION C	6-	A	D1
C 1101	CHIP CAP.	10pF	50V	CH	GRM39CH100D50PT	K22174211		1-5	A	D1
C 1101	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217	VERSION A	6-	A	D1
C 1101	CHIP CAP.	10pF	50V	CH	GRM39CH100D50PT	K22174211	VERSION C	6-	A	D1
C 1103	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	B	f2
C 1104	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811		1-	A	G2
C 1105	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219		1-5	A	D1
C 1105	CHIP CAP.	39pF	50V	CH	GRM39CH390J50PT	K22174225	VERSION A	6-	A	D1
C 1105	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219	VERSION C	6-	A	D1
C 1106	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		1-5	A	D1
C 1106	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227	VERSION A	6-	A	D1
C 1106	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221	VERSION C	6-	A	D1
C 1107	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217		1-	A	C2
C 1108	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	G2
C 1109	CHIP CAP.	2pF	50V	CK	GRM39CK020C50PT	K22174203		1-5	A	D1
C 1109	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206	VERSION A	6-	A	D1
C 1109	CHIP CAP.	2pF	50V	CK	GRM39CK020C50PT	K22174203	VERSION C	6	A	D1
C 1109	CHIP CAP.	3pF	50V	CJ	GRM39CJ030C50PT	K22174204	VERSION C	7-	A	D1
C 1110	CHIP CAP.	6pF	50V	CH	GRM39CH060D50PT	K22174207		1-6	A	D1
C 1110	CHIP CAP.	6pF	50V	CH	GRM39CH060D50PT	K22174207	VERSION A	7-	A	D1
C 1110	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205	VERSION C	7-	A	D1
C 1112	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	A	C2
C 1113	CHIP CAP.	0.047uF	16V	B	GRM39B473K16PT	K22124804		1-	A	C2
C 1114	CHIP CAP.	0.033uF	16V	B	ECJ1VB1C333K	K22129515		1-	A	C2
C 1115	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206		1-	B	d2
C 1116	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	C2
C 1117	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	e2
C 1118	CHIP CAP.	560pF	50V	B	GRM39B561M50PT	K22174806		1-	A	B2
C 1119	CHIP CAP.	120pF	50V	CH	GRM39CH121J50PT	K22174237		1-	A	C1
C 1120	CHIP CAP.	390pF	50V	CH	GRM39CH391J50PT	K22174255		1-	A	B2
C 1121	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A	D1
C 1122	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A	D1

# MAIN Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE.	LAY ADR.
C 1123	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A	B2
C 1124	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		1-	A	D1
C 1125	CHIP CAP.	0.047uF	16V	B	GRM39B473K16PT	K22124804		1-	A	C2
C 1126	CHIP CAP.	560pF	50V	B	GRM39B561M50PT	K22174806		1-	A	B2
C 1127	CHIP CAP.	12pF	50V	CH	GRM39CH120J50PT	K22174213		1-	B	d2
C 1128	CHIP CAP.	0.015uF	25V	B	GRM39B153K25PT	K22144805		1-	A	B3
C 1129	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A	E2
C 1130	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	A	B2
C 1131	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	f3
C 1132	CHIP CAP.	0.047uF	16V	B	GRM39B473K16PT	K22124804		1-	A	B3
C 1133	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A	E2
C 1134	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215		1	B	e2
C 1134	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215		2-5	B	e2
C 1134	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227	VERSION A	6-	B	e2
C 1134	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215	VERSION C	6-	B	e2
C 1135	CHIP CAP.	82pF	50V	CH	GRM39CH820J50PT	K22174233		1-	A	E2
C 1136	CHIP CAP.	0.022uF	25V	B	GRM39B223K25PT	K22144807		1-	A	C2
C 1137	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	D2
C 1138	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	A	D2
C 1139	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	d2
C 1140	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	b3
C 1141	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227		1-	B	f2
C 1142	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	C2
C 1143	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809		1-	A	E2
C 1144	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219		1-	B	c3
C 1145	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	b3
C 1146	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	b3
C 1147	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	B	f2
C 1148	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	f2
C 1151	CHIP CAP.	0.033uF	16V	R	GRM39B333K16PT	K22124801		1-	B	b2
C 1151	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		4-	B	b2
C 1151	CHIP CAP.	0.22uF	10V	B	GRM39B224K10PT	K22104801		7-	B	b2
C 1153	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	b3
C 1154	CHIP CAP.	12pF	50V	CH	GRM39CH120J50PT	K22174213		1-	A	D2
C 1155	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	b3
C 1156	CHIP CAP.	82pF	50V	CH	GRM39CH820J50PT	K22174233		1-	B	b2
C 1157	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	b3
C 1158	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	C2
C 1159	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B	b2
C 1160	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	b2
C 1161	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B	b2
C 1162	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	C3
C 1163	AL.ELECTRO.CAP.	470uF	16V		RE3-16V471M 470UF	K40129066		1-	A	A2
C 1164	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		1-	A	C3
C 1165	AL.ELECTRO.CAP.	10uF	16V		ECEV1CS100SR	K48120001		1-	A	F2
C 1166	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	A	F2
C 1167	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	g2
C 1168	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	b2
C 1169	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217		1-	A	D2
C 1170	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	D2
C 1171	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	g2
C 1172	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811		1-	A	G2
C 1173	CHIP CAP.	0.0056uF	50V	B	ECJ1VB1H562K	K22179623		1-	A	F2
C 1174	CHIP TA.CAP.	2.2uF	10V		TESVA1A225M1-8R	K78100021		1-	A	A2
C 1175	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811		1-	B	a2
C 1176	CHIP CAP.	7pF	50V	CH	GRM39CH070D50PT	K22174208		1-	A	G2
C 1177	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	B	a2
C 1178	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	a2
C 1179	CHIP CAP.	0.047uF	16V	B	GRM39B473K16PT	K22124804		1-	A	A2
C 1180	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227		1-	B	d3

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
C 1181	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B	f3
C 1182	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	f3
C 1183	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B	f3
C 1184	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B	f3
C 1185	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	A	B3
C 1186	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	A	B3
C 1187	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	A	C3
C 1188	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	A	C3
C 1189	CHIP CAP.	6pF	50V	CH	GRM39CH060D50PT	K22174207		1-	B	d3
C 1190	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	D4
C 1191	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811		1-	B	d2
C 1192	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227		1-	A	D3
C 1193	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A	D3
C 1194	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		1-	B	e3
C 1195	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		1-	A	D4
C 1196	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	C3
C 1197	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		1-	A	D3
C 1198	CHIP CAP.	12pF	50V	CH	GRM39CH120J50PT	K22174213		1-	A	D3
C 1199	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	D3
C 1200	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	D3
C 1201	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217		1-5	B	e3
C 1201	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223	VERSION A	6-	B	e3
C 1201	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227	VERSION A	26-	B	e3
C 1201	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217	VERSION C	6-	B	e3
C 1201	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227	VERSION C	26-	B	e3
C 1202	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	e3
C 1203	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223		1-	B	g3
C 1204	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	A	C4
C 1205	CHIP CAP.	1pF	50V	CK	GRM39CK010C50PT	K22174202		1-	A	E3
C 1206	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219		1-5	B	e3
C 1206	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223	VERSION A	6-	B	e3
C 1206	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219	VERSION C	6-	B	e3
C 1207	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206		1-	B	g3
C 1208	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	E3
C 1209	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	c3
C 1210	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	e3
C 1211	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215		1-5	A	C3
C 1211	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217	VERSION A	6-	A	C3
C 1211	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215	VERSION C	6-	A	C3
C 1212	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219		1-	B	g3
C 1213	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	e3
C 1214	CHIP CAP.	56pF	50V	CH	GRM39CH560J50PT	K22174229		1-	A	E3
C 1215	CHIP CAP.	56pF	50V	CH	GRM39CH560J50PT	K22174229		1-	A	E3
C 1216	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	e3
C 1217	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243		1-	B	c3
C 1218	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217		1-	A	F3
C 1219	CHIP CAP.	12pF	50V	CH	GRM39CH120J50PT	K22174213		1-	A	E3
C 1220	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	e3
C 1221	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	E3
C 1222	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	d3
C 1223	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	B	e3
C 1224	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	c3
C 1225	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A	E3
C 1226	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B	e3
C 1227	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223		1-	B	e3
C 1228	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		1-	B	d3
C 1229	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		1-	B	e3
C 1230	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	A	E3
C 1231	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803		1-	B	d3
C 1232	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215		1-	B	c3

# MAIN Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE.	LAY ADR.
C 1234	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	A	B3
C 1235	CHIP CAP.	0.033uF	16V	R	GRM39R333K16PT	K22124801		1-	B	d3
C 1236	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	e3
C 1237	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		1-	B	f3
C 1238	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	D3
C 1239	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243		1-	B	c3
C 1240	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	d3
C 1241	CHIP CAP.	0.01uF	25V	B	GRM39B103M25PT	K22144802		1-	B	c3
C 1242	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243		1-	A	D3
C 1243	CHIP CAP.	1pF	50V	CK	GRM39CK010C50PT	K22174202		1-	A	E3
C 1244	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243		1-	A	D3
C 1245	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	E3
C 1246	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243		1-	A	E3
C 1247	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821		1-	A	C3
C 1248	AL.ELECTRO.CAP.	10uF	16V		ECEV1CS100SR	K48120001		1-18	A	F3
C 1249	CHIP CAP.	0.5pF	50V	CK	GRM39CK0R5C50PT	K22174201		1-	A	C1
C 1250	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811		1-	B	f2
C 1250	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		5-	B	f2
C 1251	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		1-	B	g2
C 1252	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		1-	B	b3
C 1254	CHIP CAP.	0.0027uF	50V	B	GRM39B272M50PT	K22174814		1-	B	f2
C 1254	CHIP CAP.	0.0018uF	50V	B	GRM39B182M50PT	K22174812		5-	B	f2
C 1255	CHIP CAP.	0.0033uF	50V	B	GRM39B332M50PT	K22174815		1-	B	a2
C 1256	CHIP CAP.	1uF	16V	B	GRM42-6B105K16NPT	K22121803		1-	A	D2
C 1256	CHIP TA.CAP.	33uF	16V		TEMSVC1C336M12R	K78120033		19-	A	D2
C 1257	CHIP TA.CAP.	10uF	16V		TEMSVB21C106M-8R	K78120025		1-	A	D1
C 1258	CHIP CAP.	1uF	10V	F	GRM39F105Z10PT	K22105001		5-	B	g2
C 1259	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221	VERSION A	6	B	b3
C 1259	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221		7-	B	b3
C 1260	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		6-	A	G3
C 1261	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821	VERSION A	6-18		
C 1262	CHIP TA.CAP.	10uF	10V		TEMSVA1A106M-8R	K78100028		26-	A	C3
CD1001	CERAMIC DISC				CDBM450C24T	H7901060		1-	A	F2
CD1001	CERAMIC DISC				CDBC450CX24-TC	H7901340		19-	A	F2
CF1001	CERAMIC FILTER				CFWM450G	H3900435		1-	A	F3
CF1002	CERAMIC FILTER				CFWM450E	H3900466		1-	A	F3
CO1001	CERAMIC OSC	1MHz			KBR-1000YTR17	H7900840		1-	A	B1
CO1001	CERAMIC OSC	1MHz			KBR-1000YTR17	H7900840		19-	A	B1
CO1001	CERAMIC OSC	1MHz			CSB1000J221T	H7900550		40-	A	B1
D 1001	SURGE ABSORBER				P6KE18	Q9000534		1-	A	B1
D 1001	SURGE ABSORBER				P6KA18	Q9000721		7-	A	B1
D 1002	DIODE				UM9957F/TR	G2070562		1-	B	b1
D 1004	DIODE				UM9957F/TR	G2070562		1-	A	G1
D 1005	DIODE				1SS321 TE85R	G2070076		1-	B	b1
D 1006	DIODE				RLS135 TE-11	G2070128		1-	A	E1
D 1007	DIODE				KV1470-TR00	G2070318		1-	A	E1
D 1007	DIODE				KV1470-TL00	G2070680		6-	A	E1
D 1007	DIODE				KV1470-TL00	G2070680		29-	A	E1
D 1007	DIODE				KV1870STL	G2070832		44-	A	E1
D 1008	DIODE				KV1470-TR00	G2070318		1-	A	E1
D 1008	DIODE				KV1470-TL00	G2070680		6-	A	E1
D 1008	DIODE				KV1470-TL00	G2070680		29-	A	E1
D 1008	DIODE				KV1870STL	G2070832		44-	A	E1
D 1009	DIODE				1SS355 TE-17	G2070470		1-	A	E1
D 1010	DIODE				1SS355 TE-17	G2070470		1-	B	g2
D 1011	DIODE				HVU350TRF	G2070380		1-	A	D1
D 1012	DIODE				HVU350TRF	G2070380		1-	A	D1
D 1013	DIODE				HVU350TRF	G2070380		1-	A	D1
D 1014	DIODE				HVU350TRF	G2070380		1-	A	D1
D 1015	DIODE				1SS355 TE-17	G2070470		1-	A	G2

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
D 1016	DIODE				DAP202U T106	G2070160		1-	A	B3
D 1017	DIODE				MA143-(TX)	G2070536		1-	A	E2
D 1018	DIODE				02CZ5.6Y TE85R	G2070300		1-	B	b2
D 1019	DIODE				MA142WK-(TX)	G2070534		1-	B	b3
D 1021	DIODE				1SS355 TE-17	G2070470		1-	B	b3
D 1022	DIODE				1SS355 TE-17	G2070470		1-	B	b3
D 1023	DIODE				D1F20-4063	G2070474		1-	B	g1
D 1024	DIODE				02CZ5.6Y TE85R	G2070300		1	B	g2
D 1024	DIODE				HZM7C-TR	G2070070		2-	B	g2
D 1024	DIODE				HZM7.5NB2 TR	G2070864		63-	B	g2
D 1025	DIODE				1SS355 TE-17	G2070470		1-	B	g2
D 1026	DIODE				1SS321 TE85R	G2070076		1-	B	e2
D 1027	DIODE				1SS355 TE-17	G2070470		1-	A	A2
D 1028	DIODE				MA729-(TX)	G2070320		1-	A	A2
D 1029	DIODE				02CZ5.6Y TE85R	G2070300		1-	B	d2
D 1030	DIODE				1SV230 TPH3	G2070126		1-	B	c3
D 1031	DIODE				1SS355 TE-17	G2070470		1-	B	g3
D 1032	DIODE				HSU277TRF	G2070118		1-	A	E3
D 1033	DIODE				1SS355 TE-17	G2070470		1-	B	e3
D 1034	DIODE				1SV230 TPH3	G2070126		1-	B	c3
D 1035	DIODE				1SV276(TPH3)	G2070420		1-	A	D3
D 1036	DIODE				1SV276(TPH3)	G2070420		1-	A	D3
D 1037	DIODE				DAP202U T106	G2070160		1-	A	A3
D 1038	DIODE				1SV276(TPH3)	G2070420		1-	A	D3
D 1039	DIODE				1SV276(TPH3)	G2070420		1-	A	D3
D 1040	DIODE				MA143-(TX)	G2070536		1-	B	c3
D 1041	DIODE				1SV276(TPH3)	G2070420		1-	A	E3
D 1042	DIODE				1SS270	G2090408		1-	B	f2
D 1042	DIODE				1SS355 TE-17	G2070470		5-	B	f2
D 1043	DIODE				1SS355 TE-17	G2070470		5-	B	g3
D 1044	DIODE				1SS270	G2090408		5-	B	e3
D 1044	DIODE				1SS355 TE-17	G2070470		19-	B	e3
F 1001	CHIP FUSE	0.25A			F0805B0R25FWTR	Q0000072		1-	A	A1
F 1001	CHIP FUSE	0.25A			TF20N0.25TE	Q0000100		26-	A	A1
FB1001	FERRITE BEADS				SMB304729	L9190094		1-	B	f1
FB1002	FERRITE BEADS				SMB304729	L9190094		1-	B	f1
FB1003	FERRITE BEADS				SMB304729	L9190094		1-	A	E2
J 1001	CONNECTOR				SB20-03WS	P0090610		1-	A	G3
J 1002	CONNECTOR				SB20-02WS	P0090609		1-	A	G4
J 1003	CONNECTOR				AE0031-00	P1090998		1-	B	g1
J 1004	CONNECTOR				IL-Y-14P-S15T2-E	P0090601		1-	A	A4
J 1005	CONNECTOR				IL-Y-8P-S15T2-EF	P0090646		1-	A	A2
J 1006	CONNECTOR				B11B-ZR	P0091200		1-	A	B4
J 1007	CONNECTOR				IL-Y-12P-S15T2-EF	P0091201		1-	A	B3
L 1001	COIL A1				3.5T3.5D0.8UEW R	L0021647A		1-	A	G1
L 1002	COIL A1				3.5T3.5D0.8UEW R	L0021647A		1-	A	G1
L 1004	COIL A1				3.5T3.5D0.8UEW R	L0021647A		1-	A	F1
L 1005	CHIP COIL	0.22uH			LER015TR22M	L1690111		1-	A	F1
L 1006	COIL				E2 0.35-1.6-7T-L	L0022390		1-	A	E1
L 1007	COIL A1				3.5T3.5D0.8UEW R	L0021647A		1-	A	F1
L 1008	M.RFC	0.0414uH			36CS 656LZ-08K=P3	L1690247		1-5	A	E1
L 1008	M.RFC	0.0498uH			36CS 656LZ-09K=P3	L1690248	VERSION A	6-	A	E1
L 1008	M.RFC	0.0414uH			36CS 656LZ-08K=P3	L1690247	VERSION C	6-	A	E1
L 1009	M.RFC	2.2uH			LAL04NA2R2M	L1190319		1-	A	G2
L 1010	M.RFC	0.0414uH			36CS 656LZ-08K=P3	L1690247		1-5	A	E1
L 1010	M.RFC	0.0498uH			36CS 656LZ-09K=P3	L1690248	VERSION A	6-	A	E1
L 1010	M.RFC	0.0414uH			36CS 656LZ-08K=P3	L1690247	VERSION C	6-	A	E1
L 1011	M.RFC	0.047uH			HK1608 47NJ-T	L1690524		1-5		
L 1011	M.RFC	0.047uH			HK1608 47NJ-T	L1690524	VERSION C	6		
L 1012	M.RFC	0.22uH			LK1608 R22K-T	L1690410		1-	A	E1

# MAIN Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	SIDE.	LAY ADR.
L 1013	COIL				E2 0.28-1.0-4.5T-R	L0022395		1-	A D1
L 1014	COIL				E2 0.28-1.0-4.5T-R	L0022395		1-	A C1
L 1015	M.RFC	0.33uH			LK1608 R33K-T	L1690412		1-5	B e2
L 1015	M.RFC	0.39uH			LK1608 R39K-T	L1690413	VERSION A	6-	B e2
L 1015	M.RFC	0.33uH			LK1608 R33K-T	L1690412	VERSION C	6-	B e2
L 1016	M.RFC	0.27uH			LK1608 R27K-T	L1690411		1-5	A C1
L 1016	M.RFC	0.33uH			LK1608 R33K-T	L1690412	VERSION A	6-	A C1
L 1016	M.RFC	0.27uH			LK1608 R27K-T	L1690411	VERSION C	6-	A C1
L 1017	M.RFC	0.22uH			LK1608 R22K-T	L1690410		1-	A C1
L 1018	M.RFC	0.33uH			LK1608 R33K-T	L1690412		1-	A C1
L 1019	M.RFC	3.3uH			LK1608 3R3K-T	L1690686		1-	A D1
L 1020	M.RFC	0.56uH			LK1608 R56K-T	L1690415		1-	A E2
L 1021	CHIP COIL	0.084uH			LQN1A84NJ04	L1690259		1	A D2
L 1021	CHIP COIL	0.084uH			LQN1A84NJ04	L1690259		2-	A D2
L 1024	M.RFC	0.22uH			LK2125 R22K-T	L1690311		1-	A C2
L 1025	M.RFC	0.082uH			HK2125 82NK-T	L1690388		1-	A C3
L 1026	M.RFC	0.068uH			HK1608 68NJ-T	L1690526		1-	A D3
L 1027	M.RFC	0.082uH			HK1608 82NJ-T	L1690527		1-	B e3
L 1028	M.RFC	0.056uH			HK1608 56NJ-T	L1690525		1-	A D3
L 1029	M.RFC	10uH			LK2125 100K-T	L1690331		1-	B g3
L 1030	M.RFC	0.082uH			HK1608 82NJ-T	L1690527		1-	A C3
L 1031	COIL				E2 0.35-1.6-8T-L	L0022458		1-5	A E3
L 1031	COIL				E2 0.3-1.7-8T-L	L0022376	VERSION A	6-	A E3
L 1031	COIL				E2 0.35-1.6-8T-L	L0022458	VERSION C	6-	A E3
L 1032	COIL				E2 0.28-1.0-6T-R	L0022366		1-5	A E3
L 1032	COIL				E2 0.28-1.0-7TR	L0022422	VERSION A	6-	A E3
L 1032	COIL				E2 0.28-1.0-6T-R	L0022366	VERSION C	6-	A E3
L 1033	M.RFC	10uH			LK2125 100K-T	L1690331		1-	A D3
Q 1001	IC				MM1216ENRE	G1092432		1-	B b2
Q 1002	TRANSISTOR				2SB1201S-TL	G3070195		1-	A G3
Q 1003	IC				TDA2003H	G1090815		1-	A H3
Q 1004	TRANSISTOR				IMH6A T108	G3070066		1-	B a2
Q 1005	TRANSISTOR				DTB123YK T146	G3070156		1-	B a2
Q 1005	TRANSISTOR				DTB113ZK T146	G3070103		4-	B a2
Q 1006	TRANSISTOR				DTB123EK T146	G3070022		1-	B a2
Q 1007	IC				NJM2902V-TE1	G1091679		1-	A B2
Q 1008	TRANSISTOR				DTC323TK T146	G3070042		1-	B g2
Q 1009	IC				MX165BDW-TR	G1092175		1-	A B2
Q 1009	IC				MX165CDW-TR	G1092775		6-	A B2
Q 1010	IC				HA17805P	G1090936		1-	A F4
Q 1010	IC				KIA7805API	G1093163		76-	A F4
Q 1011	IC				M67741H-01	G1091622		1-5	B e1
Q 1011	IC				M67741L-01	G1091623	VERSION A	6-	B e1
Q 1011	IC				M67741H-01	G1091622	VERSION C	6-	B e1
Q 1012	TRANSISTOR				2SC4226-T2B R24	G3342267D		1-	A E1
Q 1014	TRANSISTOR				2SB1143S	G3211430S		1-	A F2
Q 1015	TRANSISTOR				2SC4116GR TE85R	G3341167G		1-	A F3
Q 1016	IC				NJM2902V-TE1	G1091679		1-	A B2
Q 1017	IC				NJM2904V-TE1	G1091677		1-	A G2
Q 1020	TRANSISTOR				DTC124EU T106	G3070045		1-	B f3
Q 1021	FET				SGM2016M-T7	G4070005		1-	A D1
Q 1021	FET				SGM2016AM-T7	G4070012		8-	A D1
Q 1022	TRANSISTOR				IMZ1 T108	G3070025		1-	A H2
Q 1025	TRANSISTOR				IMH6A T108	G3070066		1-	B f3
Q 1026	TRANSISTOR				2SC4215Y TE85R	G3342157Y		1-	A E2
Q 1028	TRANSISTOR				2SC3357-T2	G3333577		1-	B e2
Q 1029	IC				BA4116FV-E2	G1092616		1-	A F2
Q 1029	IC				TA31136FN(EL)	G1091605		7-	A F2
Q 1030	IC				AN8005M-(E1)	G1091454		1-	B g2
Q 1031	TRANSISTOR				2SC3357-T2	G3333577		1-	A D3

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
Q 1032	TRANSISTOR				2SA1586Y TE85R	G3115867Y		1-	B	b2
Q 1033	TRANSISTOR				DTC124EU T106	G3070045		1-	B	f2
Q 1034	TRANSISTOR				2SA1586Y TE85R	G3115867Y		1-	B	g2
Q 1035	TRANSISTOR				IMH6A T108	G3070066		1-	A	G2
Q 1036	IC				RH5VL45AA-T1	G1090966		1-	A	A2
Q 1036	IC				RH5VT45AA-T1	G1093215		19-	A	A2
Q 1036	IC				RH5VL45AA-T1	G1090966		22-	A	A2
Q 1038	TRANSISTOR				2SC5107-O(TE85R)	G3351077O		1-	B	d3
Q 1039	IC				MB89P677APFM	×		1	A	A3
Q 1039	IC				MB89677ARPFM-G-161-BND	×		2-	A	A3
Q 1039	IC				MB89677ARPFM-G-163-BND	×		6-	A	A3
Q 1039	IC				MB89677ARPFM-G-181-BND	×		15-52	A	A3
Q 1039	IC				MB89P677APFM		DST:NTL	53-	A	A3
Q 1039	IC				MB89677ARPFM-G-181-BND	×	EXPORT	53-	A	A3
Q 1039	IC				MB89677ARPFM-G-181-BND	×	STANDARD	53-	A	A3
Q 1039	IC				MB89677ARPFM-G-181-BND	×	VTX(USA)	53-	A	A3
Q 1040	TRANSISTOR				2SC4116GR TE85R	G3341167G		1-	B	d2
Q 1041	TRANSISTOR				2SC5107-O(TE85R)	G3351077O		1-	B	e3
Q 1042	TRANSISTOR				2SC4116GR TE85R	G3341167G		1-	A	D4
Q 1043	FET				2SK880GR TE85R	G3808807G		1-	A	D3
Q 1044	TRANSISTOR				2SC5107-O(TE85R)	G3351077O		1-	A	D3
Q 1045	TRANSISTOR				2SC4116GR TE85R	G3341167G		1-	B	g3
Q 1046	TRANSISTOR				2SC5107-O(TE85R)	G3351077O		1-	A	E3
Q 1047	TRANSISTOR				2SC4116GR TE85R	G3341167G		1-	B	c3
Q 1048	TRANSISTOR				DTC124EU T106	G3070045		1	A	E3
Q 1048	TRANSISTOR				2SC4116GR TE85R	G3341167G		2-	A	E3
Q 1049	IC				BR93LC66RF-E2	G1092006		1-	B	g3
Q 1049	IC				BR93L66RF-WE2	G1093912		85-	B	g3
Q 1050	IC				SC370651FR2	G1091937		1-	A	D3
Q 1050	IC				MC145192FR2	G1092017		26-	A	D3
Q 1050	IC				MC145193FR2	G1093424		41-	A	D3
Q 1051	TRANSISTOR				DTC124EU T106	G3070045		1-	B	g3
Q 1052	TRANSISTOR				IMH6A T108	G3070066		1-	B	f3
Q 1053	TRANSISTOR				DTC124EU T106	G3070045		1-	A	C3
Q 1054	TRANSISTOR				2SC4116GR TE85R	G3341167G		26-	A	C3
R 1001	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	a1
R 1002	CHIP RES.	4.7	1W	5%	RMC1 4R7JTE	J24305479		1-	B	a3
R 1003	CHIP RES.	4.7	1W	5%	RMC1 4R7JTE	J24305479		1-	B	a3
R 1004	CHIP RES.	1	1/10W	5%	RMC1/10T 1R0J	J24205010		1-	B	a3
R 1005	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	g1
R 1006	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471		1-	B	g1
R 1007	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101		1-	B	g1
R 1008	CHIP RES.	270	1/10W	5%	RMC1/10T 271J	J24205271		1-	B	a2
R 1009	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	g1
R 1010	CHIP RES.	560	1/16W	5%	RMC1/16 561JATP	J24185561		1-	B	f2
R 1011	CHIP RES.	2.7	1/16W	5%	RMC1/16 2R7JATP	J24185279		1-3	B	a2
R 1013	CHIP RES.	2.7	1/16W	5%	RMC1/16 2R7JATP	J24185279		4-	A	G2
R 1014	CHIP RES.	470	1/4W	5%	RMC1/4 471JATP	J24245471		1-	B	b1
R 1015	CHIP RES.	3.3k	1/16W	5%	RMC1/16 332JATP	J24185332		1-	B	f2
R 1016	CHIP RES.	470k	1/16W	5%	RMC1/16 474JATP	J24185474		1-	A	C3
R 1017	CHIP RES.	1.5M	1/16W	5%	RMC1/16 155JATP	J24185155		1-	B	f2
R 1018	CHIP RES.	33k	1/16W	5%	RMC1/16 333JATP	J24185333		1-	B	b1
R 1019	CHIP RES.	2.2M	1/16W	5%	RMC1/16 225JATP	J24185225		1-3	A	B2
R 1020	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	e3
R 1021	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	a1
R 1022	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	a1
R 1023	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470		1-	B	f2
R 1024	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		1-	B	f2
R 1025	CHIP RES.	33k	1/16W	5%	RMC1/16 333JATP	J24185333		1-	B	b2
R 1026	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	E1

\* Please contact VERTEX STANDARD.

# MAIN Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE.	LAY ADR.
R 1027	CHIP RES.	15k	1/16W	5%	RMC1/16 153JATP	J24185153		1-	A	B2
R 1028	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	A	B2
R 1029	CHIP RES.	6.8k	1/16W	5%	RMC1/16 682JATP	J24185682		1-	B	g2
R 1030	CHIP RES.	150	1W	5%	RMC1 151JTE	J24305151		1-	B	a1
R 1031	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470		1-	B	g2
R 1032	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	E1
R 1033	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105		1-	A	B2
R 1034	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	B	f2
R 1035	CHIP RES.	15k	1/16W	5%	RMC1/16 153JATP	J24185153		1-	A	E1
R 1036	CHIP RES.	3.3k	1/16W	5%	RMC1/16 332JATP	J24185332		1-	A	E1
R 1037	CHIP RES.	6.8k	1/16W	5%	RMC1/16 682JATP	J24185682		1-	A	E1
R 1038	CHIP RES.	820k	1/16W	5%	RMC1/16 824JATP	J24185824		1-	A	B1
R 1039	CHIP RES.	2.2M	1/16W	5%	RMC1/16 225JATP	J24185225		1-	B	g2
R 1039	CHIP RES.	560k	1/16W	5%	RMC1/16 564JATP	J24185564		86-	B	g2
R 1042	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	B	g2
R 1042	CHIP RES.	680k	1/16W	5%	RMC1/16 684JATP	J24185684		86-	B	g2
R 1043	CHIP RES.	330	1/10W	5%	RMC1/10T 331J	J24205331		1	B	e2
R 1043	CHIP RES.	470	1/10W	5%	RMC1/10T 471J	J24205471		2-5	B	e2
R 1043	CHIP RES.	180	1/10W	5%	RMC1/10T 181J	J24205181	VERSION A	6-	B	e2
R 1043	CHIP RES.	470	1/10W	5%	RMC1/10T 471J	J24205471	VERSION C	6-	B	e2
R 1044	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101		1-	A	E1
R 1045	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		1-	A	E1
R 1046	CHIP RES.	33	1/10W	5%	RMC1/10T 330J	J24205330		1	B	e2
R 1046	CHIP RES.	22	1/10W	5%	RMC1/10T 220J	J24205220		2-5	B	e2
R 1046	CHIP RES.	56	1/10W	5%	RMC1/10T 560J	J24205560	VERSION A	6-	B	e2
R 1046	CHIP RES.	22	1/10W	5%	RMC1/10T 220J	J24205220	VERSION C	6-	B	e2
R 1047	CHIP RES.	33	1/10W	5%	RMC1/10T 330J	J24205330		1	B	e2
R 1047	CHIP RES.	22	1/10W	5%	RMC1/10T 220J	J24205220		2-5	B	e2
R 1047	CHIP RES.	56	1/10W	5%	RMC1/10T 560J	J24205560	VERSION A	6-	B	e2
R 1047	CHIP RES.	22	1/10W	5%	RMC1/10T 220J	J24205220	VERSION C	6-	B	e2
R 1048	CHIP RES.	560	1/16W	5%	RMC1/16 561JATP	J24185561		1-	A	E1
R 1049	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	B1
R 1050	CHIP RES.	4.7k	1/16W	5%	RMC1/16 472JATP	J24185472		1-	A	C2
R 1052	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	e2
R 1053	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	D1
R 1054	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	D1
R 1055	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	B	c3
R 1056	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471		1-	A	F3
R 1057	CHIP RES.	220k	1/16W	5%	RMC1/16 224JATP	J24185224		1-	B	c3
R 1058	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	D1
R 1059	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	G2
R 1060	CHIP RES.	180k	1/16W	5%	RMC1/16 184JATP	J24185184		1-	B	f2
R 1062	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	D1
R 1063	CHIP RES.	820k	1/16W	5%	RMC1/16 824JATP	J24185824		1-	A	C2
R 1064	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	D1
R 1065	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	D1
R 1066	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	C2
R 1067	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	C2
R 1068	CHIP RES.	220k	1/16W	5%	RMC1/16 224JATP	J24185224		1-	A	G2
R 1069	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1	A	C2
R 1069	CHIP RES.	33k	1/16W	5%	RMC1/16 333JATP	J24185333		2-	A	C2
R 1070	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	A	C2
R 1071	CHIP RES.	3.9k	1/16W	5%	RMC1/16 392JATP	J24185392		1-	B	a1
R 1072	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221		1-	B	e2
R 1072	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		5-	B	e2
R 1073	CHIP RES.	2.2M	1/16W	5%	RMC1/16 225JATP	J24185225		1-	A	C1
R 1074	CHIP RES.	180k	1/16W	5%	RMC1/16 184JATP	J24185184		1-	A	C1
R 1075	CHIP RES.	150k	1/16W	5%	RMC1/16 154JATP	J24185154		1-	A	B2
R 1076	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	G2
R 1077	CHIP RES.	6.8k	1/16W	5%	RMC1/16 682JATP	J24185682		1-	B	a1



REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
R 1078	CHIP RES.	2.2M	1/16W	5%	RMC1/16 225JATP	J24185225		1-	A	B2
R 1079	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	A	C1
R 1080	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	B2
R 1081	CHIP RES.	15	1/16W	5%	RMC1/16 150JATP	J24185150		1-	A	C1
R 1082	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221		1-	A	D1
R 1083	CHIP RES.	4.7k	1/16W	5%	RMC1/16 472JATP	J24185472		1-	B	a2
R 1085	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		1-	A	C1
R 1086	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	A	C2
R 1087	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	A	D1
R 1088	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	B	f3
R 1089	CHIP RES.	2.7k	1/16W	5%	RMC1/16 272JATP	J24185272		1-	A	D1
R 1090	CHIP RES.	18k	1/16W	5%	RMC1/16 183JATP	J24185183		1-	A	B2
R 1091	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221		1-	A	D1
R 1092	CHIP RES.	15	1/16W	5%	RMC1/16 150JATP	J24185150		1-	A	D1
R 1093	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	C2
R 1094	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	B2
R 1095	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	G2
R 1096	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	H2
R 1097	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	B	a2
R 1098	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	B	a2
R 1099	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	B	f3
R 1100	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	A	H2
R 1101	CHIP RES.	2.7k	1/16W	5%	RMC1/16 272JATP	J24185272		1-	A	H2
R 1102	CHIP RES.	1.2k	1/16W	5%	RMC1/16 122JATP	J24185122		1-	A	E2
R 1103	CHIP RES.	33k	1/16W	5%	RMC1/16 333JATP	J24185333		1-	A	B3
R 1104	CHIP RES.	220k	1/16W	5%	RMC1/16 224JATP	J24185224		1-	A	E2
R 1105	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	B3
R 1106	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-4		
R 1107	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	d2
R 1108	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	B3
R 1109	CHIP RES.	330	1/10W	5%	RMC1/10T 331J	J24205331		1	B	e2
R 1109	CHIP RES.	470	1/10W	5%	RMC1/10T 471J	J24205471		2-5	B	e2
R 1109	CHIP RES.	180	1/10W	5%	RMC1/10T 181J	J24205181	VERSION A	6-	B	e2
R 1109	CHIP RES.	470	1/10W	5%	RMC1/10T 471J	J24205471	VERSION C	6-	B	e2
R 1110	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	A	E2
R 1111	CHIP RES.	18k	1/16W	5%	RMC1/16 183JATP	J24185183		1-	A	C3
R 1112	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-4		
R 1113	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	B	f3
R 1114	CHIP RES.	39k	1/16W	5%	RMC1/16 393JATP	J24185393		1-	A	C3
R 1115	CHIP RES.	470k	1/16W	5%	RMC1/16 474JATP	J24185474		1-	B	f2
R 1115	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		86-	B	f2
R 1116	CHIP RES.	390k	1/16W	5%	RMC1/16 394JATP	J24185394		1-	B	f2
R 1117	CHIP RES.	680k	1/16W	5%	RMC1/16 684JATP	J24185684		1-	B	f2
R 1118	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	B2
R 1119	CHIP RES.	180	1/10W	5%	RMC1/10T 181J	J24205181		41-42	A	D2
R 1120	CHIP RES.	22	1/10W	5%	RMC1/10T 220J	J24205220		1	A	D2
R 1120	CHIP RES.	0	1/10W	5%	RMC1/10T 000J	J24205000		2-	A	D2
R 1121	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	B	b3
R 1122	CHIP RES.	150k	1/16W	5%	RMC1/16 154JATP	J24185154		1-	B	f2
R 1123	CHIP RES.	22	1/10W	5%	RMC1/10T 220J	J24205220		1	A	C2
R 1123	CHIP RES.	10	1/10W	5%	RMC1/10T 100J	J24205100		2-	A	C2
R 1124	CHIP RES.	270	1/16W	5%	RMC1/16 271JATP	J24185271		1-	B	b2
R 1125	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	B	b3
R 1126	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	B	b3
R 1128	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		1-18		
R 1129	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470		1-	B	f2
R 1130	CHIP RES.	18k	1/16W	5%	RMC1/16 183JATP	J24185183		1-	B	f2
R 1131	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	B	f2
R 1132	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	e2
R 1133	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	B	b3

# MAIN Unit

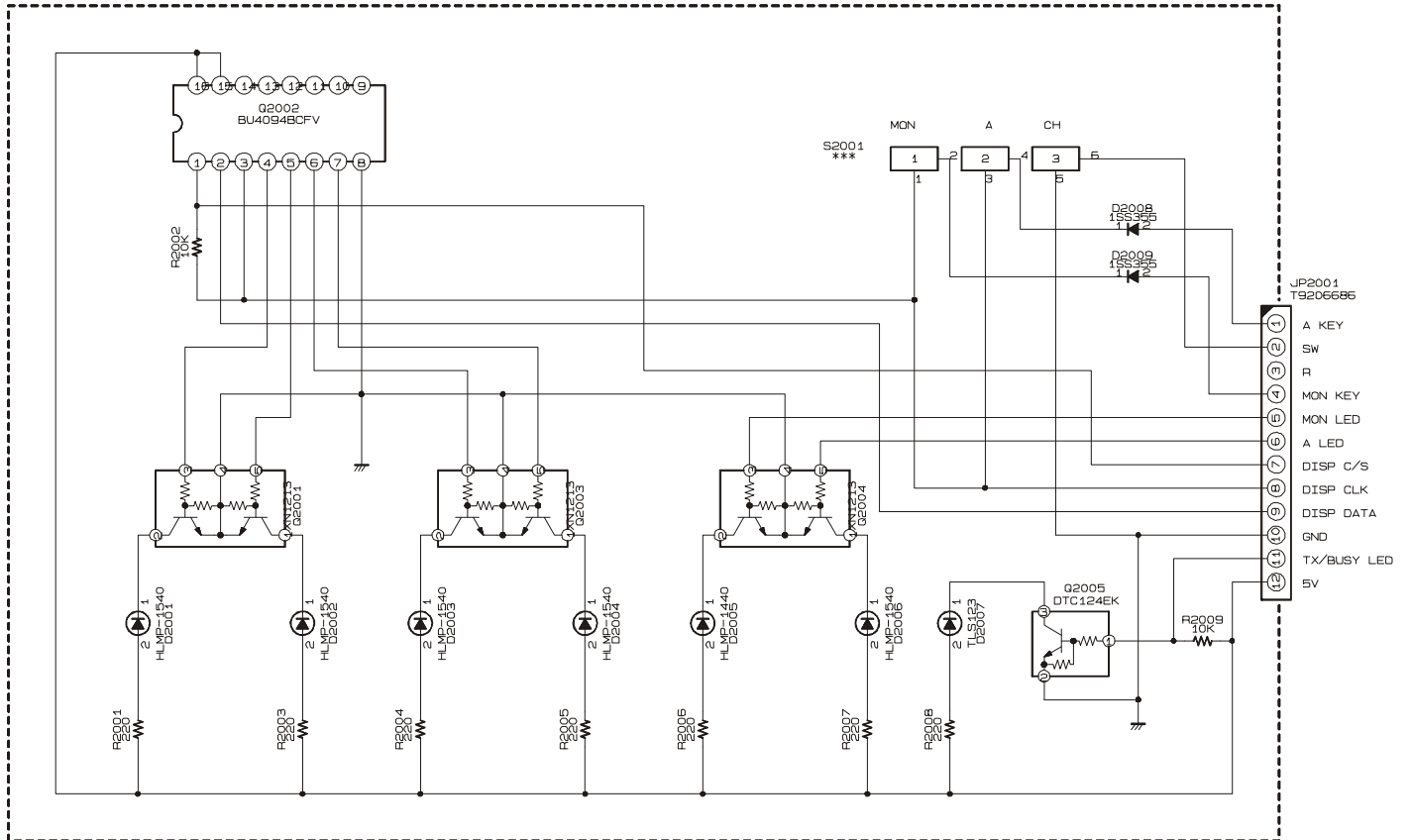
REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE.	LAY ADR.
R 1134	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	B	b3
R 1135	CHIP RES.	1.8M	1/16W	5%	RMC1/16 185JATP	J24185185		1-	B	b2
R 1135	CHIP RES.	3.3M	1/16W	5%	RMC1/16 335JATP	J24185335		5-	B	b2
R 1136	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	b2
R 1137	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	B	b3
R 1138	CHIP RES.	820	1/16W	5%	RMC1/16 821JATP	J24185821		1-	B	b2
R 1138	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		7-	B	b2
R 1139	CHIP RES.	680k	1/16W	5%	RMC1/16 684JATP	J24185684		1-	B	b2
R 1139	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105		7-	B	b2
R 1140	CHIP RES.	47	1/10W	5%	RMC1/10T 470J	J24205470		1-	B	e3
R 1141	CHIP RES.	1.5k	1/16W	5%	RMC1/16 152JATP	J24185152		1-	B	b2
R 1142	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	A	C3
R 1143	CHIP RES.	33k	1/16W	5%	RMC1/16 333JATP	J24185333		1-	B	b2
R 1144	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	D3
R 1145	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	F2
R 1146	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	B	b2
R 1147	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	b2
R 1148	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		1-	B	b2
R 1149	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	A3
R 1150	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	g3
R 1151	CHIP RES.	4.7k	1/16W	5%	RMC1/16 472JATP	J24185472		1-	A	F2
R 1151	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		7-	A	F2
R 1152	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	A3
R 1153	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	b2
R 1154	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	g2
R 1155	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	g3
R 1157	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	A	F2
R 1158	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	f3
R 1159	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	A	D2
R 1160	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	f3
R 1161	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	g3
R 1162	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	A	G2
R 1163	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	g3
R 1164	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	g2
R 1165	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	g3
R 1166	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	A2
R 1167	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	g3
R 1168	CHIP RES.	6.8k	1/16W	5%	RMC1/16 682JATP	J24185682		1-	A	G2
R 1169	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	g3
R 1170	CHIP RES.	270k	1/16W	5%	RMC1/16 274JATP	J24185274		1-	A	G2
R 1171	CHIP RES.	15k	1/16W	5%	RMC1/16 153JATP	J24185153		1-	B	a2
R 1172	CHIP RES.	12k	1/16W	5%	RMC1/16 123JATP	J24185123		1-	B	b2
R 1173	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	f3
R 1174	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	d2
R 1175	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470		1-	B	a2
R 1176	CHIP RES.	1.5M	1/16W	5%	RMC1/16 155JATP	J24185155		1-	A	G2
R 1177	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	A2
R 1178	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470		1-	B	d3
R 1179	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	f2
R 1180	CHIP RES.	15	1/16W	5%	RMC1/16 150JATP	J24185150		1-	B	d3
R 1181	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	d2
R 1182	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105		1-5	A	D3
R 1182	CHIP RES.	470k	1/16W	5%	RMC1/16 474JATP	J24185474	VERSION A	6-	A	D3
R 1182	CHIP RES.	2.2M	1/16W	5%	RMC1/16 225JATP	J24185225	VERSION A	26-	A	D3
R 1182	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105	VERSION C	6-	A	D3
R 1183	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		1-	B	f3
R 1184	CHIP RES.	15	1/16W	5%	RMC1/16 150JATP	J24185150		1-	A	D3
R 1185	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1	A	D3
R 1185	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		2-	A	D3
R 1186	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	A	D3

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
R 1187	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	f4
R 1188	CHIP RES.	220k	1/16W	5%	RMC1/16 224JATP	J24185224		1-	B	e3
R 1188	CHIP RES.	68k	1/16W	5%	RMC1/16 683JATP	J24185683		43-	B	e3
R 1189	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	f3
R 1190	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	D3
R 1190	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		19-	A	D3
R 1191	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101		1-	B	f3
R 1192	CHIP RES.	27	1/10W	5%	RMC1/10T 270J	J24205270		1-	B	f3
R 1193	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	C3
R 1194	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101		1-	A	C3
R 1195	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221		1-	B	e3
R 1196	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101		1-	B	f3
R 1197	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221		1-	A	D3
R 1198	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	B	c3
R 1199	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105		1-	B	g3
R 1200	CHIP RES.	68k	1/16W	5%	RMC1/16 683JATP	J24185683		1-	A	D3
R 1201	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221		1-	B	c3
R 1202	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	A	B3
R 1203	CHIP RES.	10	1/16W	5%	RMC1/16 100JATP	J24185100		1-25	B	d3
R 1204	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471		1-	B	c3
R 1205	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	B3
R 1206	CHIP RES.	1	1W	5%	RMC1 1R0JTE	J24305010		1-	B	b4
R 1207	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	c3
R 1208	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	B3
R 1209	CHIP RES.	4.7k	1/16W	5%	RMC1/16 472JATP	J24185472		1-	A	B3
R 1210	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470		1-	A	D3
R 1211	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471		1-	A	E3
R 1212	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	g3
R 1213	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105		1-	A	D3
R 1214	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470		1-	B	e3
R 1215	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	B	e3
R 1215	CHIP RES.	2.7k	1/16W	5%	RMC1/16 272JATP	J24185272		41-	B	e3
R 1216	CHIP RES.	6.8k	1/16W	5%	RMC1/16 682JATP	J24185682		1-	A	E3
R 1217	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	E3
R 1218	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	c3
R 1219	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221		1-	B	e3
R 1220	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	B3
R 1221	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	c3
R 1222	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	c3
R 1223	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	c3
R 1224	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	E3
R 1225	CHIP RES.	5.6k	1/16W	5%	RMC1/16 562JATP	J24185562		1-	B	g3
R 1226	CHIP RES.	820	1/16W	5%	RMC1/16 821JATP	J24185821		1-5	B	d3
R 1226	CHIP RES.	1.2k	1/16W	5%	RMC1/16 122JATP	J24185122	VERSION A	6-	B	d3
R 1226	CHIP RES.	820	1/16W	5%	RMC1/16 821JATP	J24185821	VERSION C	6-	B	d3
R 1227	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	d3
R 1228	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	e3
R 1229	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	A	E3
R 1230	CHIP RES.	4.7k	1/16W	5%	RMC1/16 472JATP	J24185472		1-	B	g3
R 1231	CHIP RES.	6.8k	1/16W	5%	RMC1/16 682JATP	J24185682		1-	B	d3
R 1232	CHIP RES.	33k	1/16W	5%	RMC1/16 333JATP	J24185333		1-	B	d3
R 1233	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	e3
R 1234	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	B	e3
R 1235	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	B	e3
R 1236	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	c3
R 1237	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-	A	D3
R 1238	CHIP RES.	390	1/16W	5%	RMC1/16 391JATP	J24185391		1-	A	D3
R 1238	CHIP RES.	270	1/16W	5%	RMC1/16 271JATP	J24185271		3-	A	D3
R 1238	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331		5-	A	D3
R 1239	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-	A	A3

# MAIN Unit

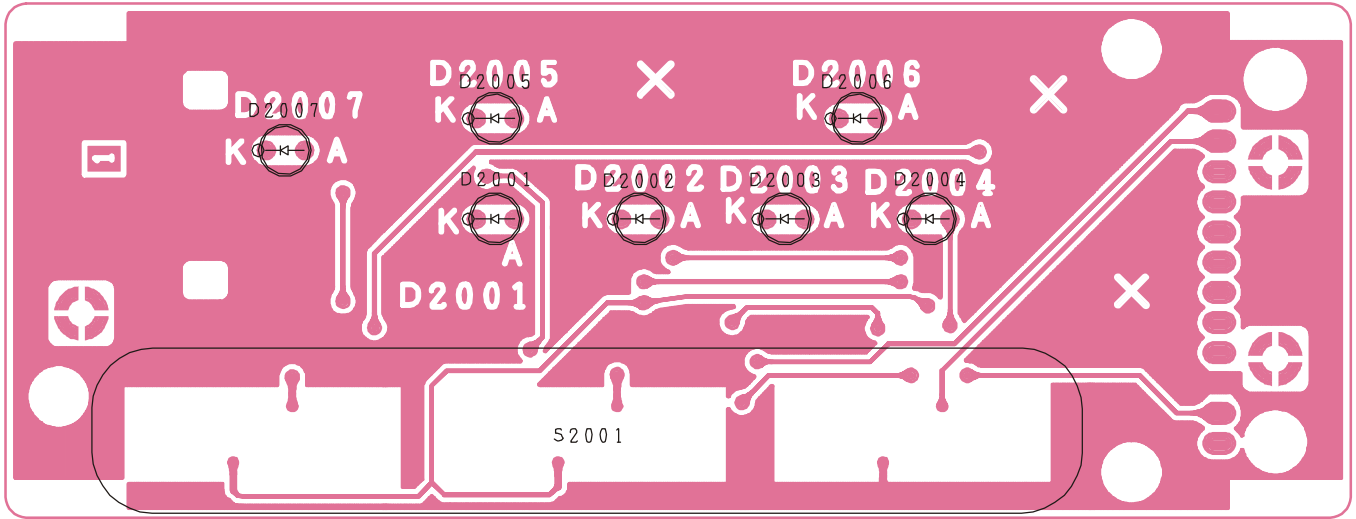
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R 1240	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		1-	A	C3
R 1241	CHIP RES.	270k	1/16W	5%	RMC1/16 274JATP	J24185274		1-	B	c3
R 1242	CHIP RES.	220k	1/16W	5%	RMC1/16 224JATP	J24185224		1-	B	c3
R 1243	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	B	e3
R 1244	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	A	D3
R 1245	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-	A	E3
R 1246	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	B	c3
R 1246	CHIP RES.	3.3k	1/16W	5%	RMC1/16 332JATP	J24185332		4-	B	c3
R 1247	CHIP RES.	56k	1/16W	5%	RMC1/16 563JATP	J24185563		1-	B	c3
R 1247	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		4-	B	c3
R 1248	CHIP RES.	5.6k	1/16W	5%	RMC1/16 562JATP	J24185562		1-	B	d3
R 1249	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	A	C2
R 1250	CHIP RES.	330k	1/16W	5%	RMC1/16 334JATP	J24185334		1-5	A	E3
R 1250	CHIP RES.	220k	1/16W	5%	RMC1/16 224JATP	J24185224	VERSION A	6-	A	E3
R 1250	CHIP RES.	330k	1/16W	5%	RMC1/16 334JATP	J24185334	VERSION C	6-	A	E3
R 1251	CHIP RES.	82k	1/16W	5%	RMC1/16 823JATP	J24185823		1-5	A	E3
R 1251	CHIP RES.	220k	1/16W	5%	RMC1/16 224JATP	J24185224	VERSION A	6-	A	E3
R 1251	CHIP RES.	82k	1/16W	5%	RMC1/16 823JATP	J24185823	VERSION C	6-	A	E3
R 1253	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-	A	C1
R 1254	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-	B	e3
R 1255	CARBON FILM RES.	3.3k	1/6W	5%	RD16PJ332 3.3K	J01225332		1-	B	f2
R 1255	CHIP RES.	3.3k	1/16W	5%	RMC1/16 332JATP	J24185332		5-	B	f2
R 1256	CHIP RES.	0	1/8W	5%	RMC1/8T 000J	J24215000		1-	A	D2
R 1257	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-1	B	g3
R 1257	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		5-	B	g3
R 1258	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	VERSION A	6	A	E1
R 1258	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		7-	A	E1
R 1259	CHIP RES.	270	1/16W	5%	RMC1/16 271JATP	J24185271		26-	A	C3
R 1260	CHIP RES.	680	1/10W	5%	RMC1/10T 681J	J24205681		26-	A	C3
R 1261	CHIP RES.	22k	1/16W	5%	RMC1/16 223JATP	J24185223		41-	A	E3
R 1262	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		41-	A	D3
R 1263	CHIP RES.	33k	1/16W	5%	RMC1/16 333JATP	J24185333		86-		
T 1001	COIL 05RF	100MHz			100M M5-N1 R12-S804Y	L0022492		1-	A	D1
T 1002	COIL 05RF	100MHz			100M M5-N1 R12-S804Y	L0022492		1-	A	C1
TC1001	TRIMMER CAP.	20pF			ECR-KN020E61X	K91000213		1-	A	E3
TH1001	THERMISTOR				TBPS1R104K475H5Q	G9090069		1-	B	a1
TH1003	THERMISTOR				TBPS1R103K440H5Q	G9090067		1-	B	c2
TH1004	THERMISTOR				TBPS1R103K440H5Q	G9090067		1-	B	c2
VR1001	POT.	10k			EVN-5ESX50B14	J51811103		1-	A	C2
VR1002	POT.	50k			EVN-5ESX50B54	J51811503		1-	A	G2
VR1003	POT.	10k			EVN-5ESX50B14	J51811103		1-	A	G2
VR1004	POT.	50k			EVN-5ESX50B54	J51811503		1-	A	B2
VR1005	POT.	50k			EVN-5ESX50B54	J51811503		1-	A	B3
VR1006	POT.	10k			EVN-5ESX50B14	J51811103		1-	A	G2
X 1001	XTAL LP-3.5.2S	9.8304MHz			9.8304MHZ	H0103148		1-	A	A3
X 1002	XTAL CA-301M	17.25MHz			17.25MHZ	H0103107		1-	A	F3
XF1001	XTAL FILTER				17T12B5	H1102273		1-	A	D2
XF1002	XTAL FILTER				17T12B5	H1102273		1-	A	D2
	SHIELD CASE					RA0060200		1-		

## Circuit Diagram

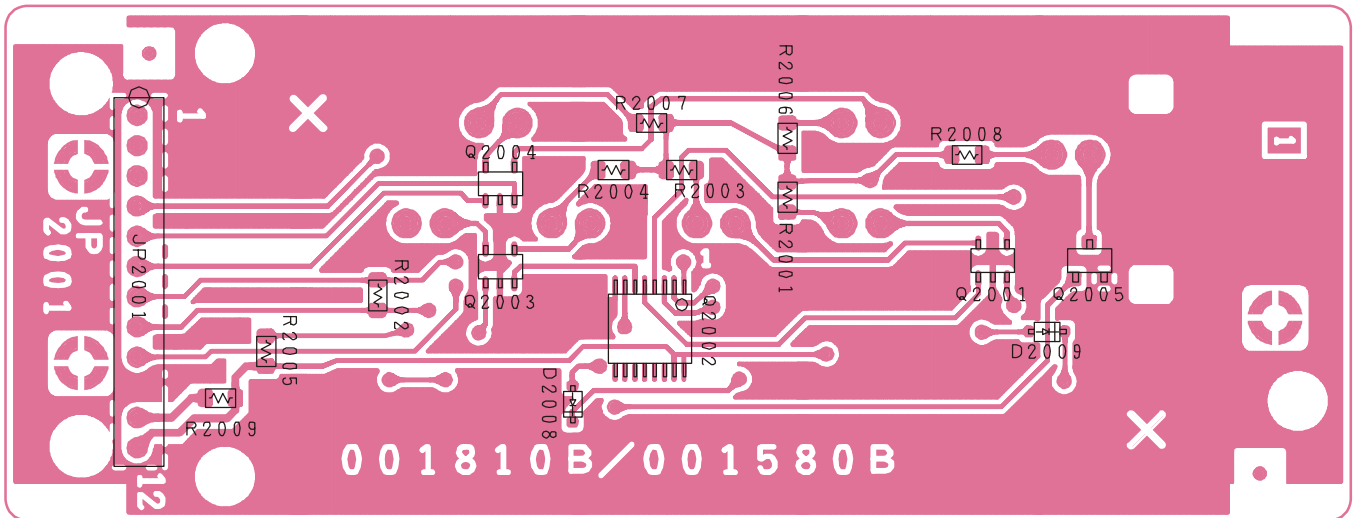


# Display-1 Unit

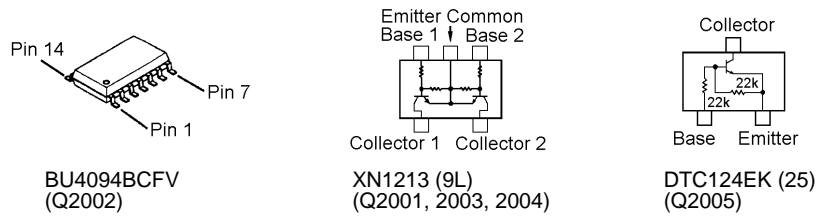
## Parts Layout



Side A



Side B



# Display-1 Unit

## Parts List

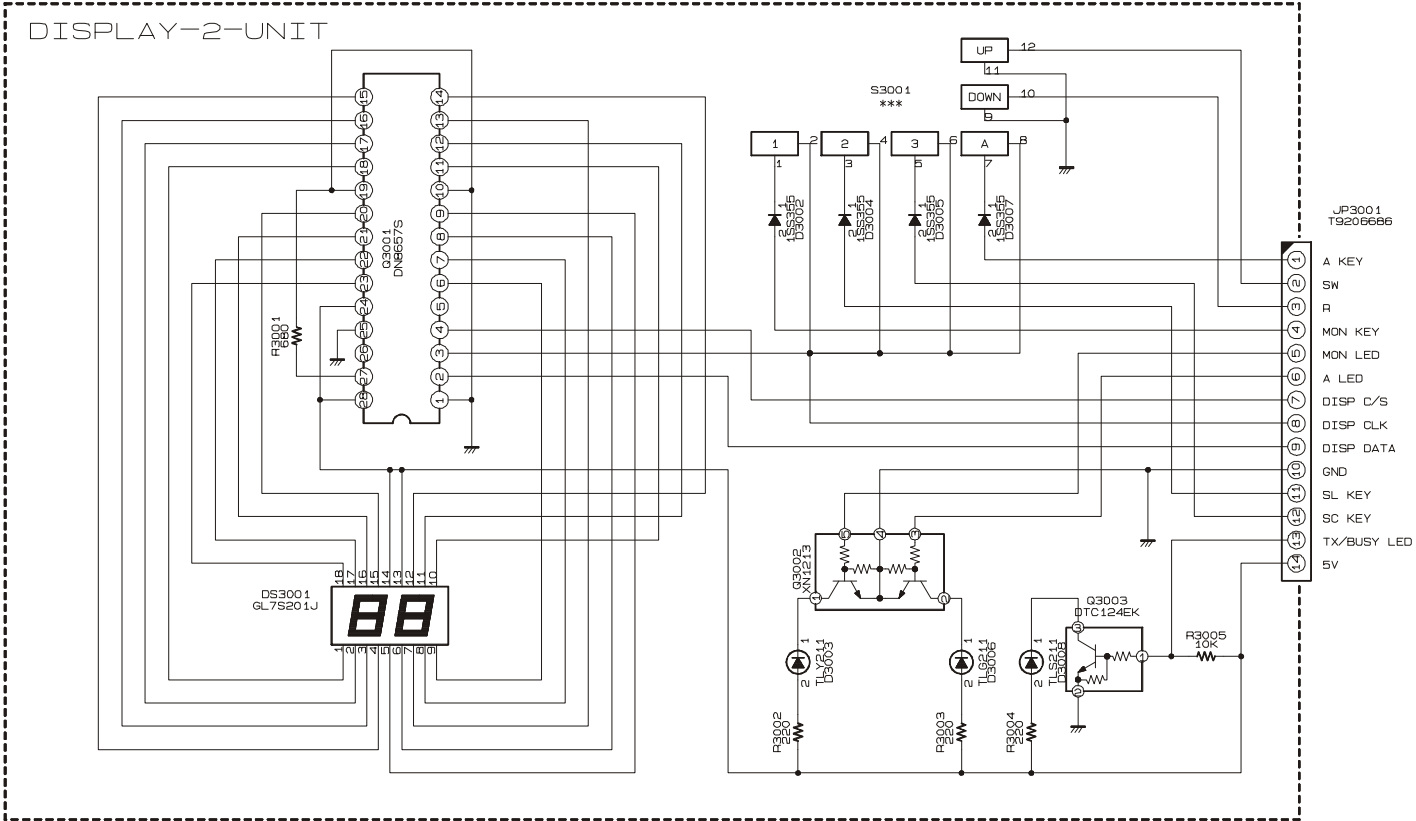
REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
*** DISPLAY-1 UNIT ***										
PCB with Components						CB0382001				
Printed Circuit Board						FR001580B				
D 2001	LED				HLMP-1540	G2090696		1-	A	
D 2002	LED				HLMP-1540	G2090696		1-	A	
D 2003	LED				HLMP-1540	G2090696		1-	A	
D 2004	LED				HLMP-1540	G2090696		1-	A	
D 2005	LED				HLMP-1440	G2090695		1-	A	
D 2006	LED				HLMP-1540	G2090696		1-	A	
D 2007	LED				TLS123	G2090703		1-	A	
D 2008	DIODE				1SS355 TE-17	G2070470		1-	B	
D 2009	DIODE				1SS355 TE-17	G2070470		1-	B	
JP2001	WIRE ASSY				A0953+	T9206686		1-		
Q 2001	TRANSISTOR				XN1213-(TX)	G3070194		1-	B	
Q 2002	IC				BU4094BCFV-E1	G1092128		1-	B	
Q 2002	IC				BU4094BCFV-E2	G1093527		58-	B	
Q 2003	TRANSISTOR				XN1213-(TX)	G3070194		1-	B	
Q 2004	TRANSISTOR				XN1213-(TX)	G3070194		1-	B	
Q 2005	TRANSISTOR				DTC124EK T146	G3070034		1-	B	
R 2001	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 2002	CHIP RES.	10k	1/10W	5%	RMC1/10T 103J	J24205103		1-	B	
R 2003	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 2004	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 2005	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 2006	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 2007	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 2008	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 2009	CHIP RES.	10k	1/10W	5%	RMC1/10T 103J	J24205103		1-	B	

## *Display-1 Unit*

*Note:*

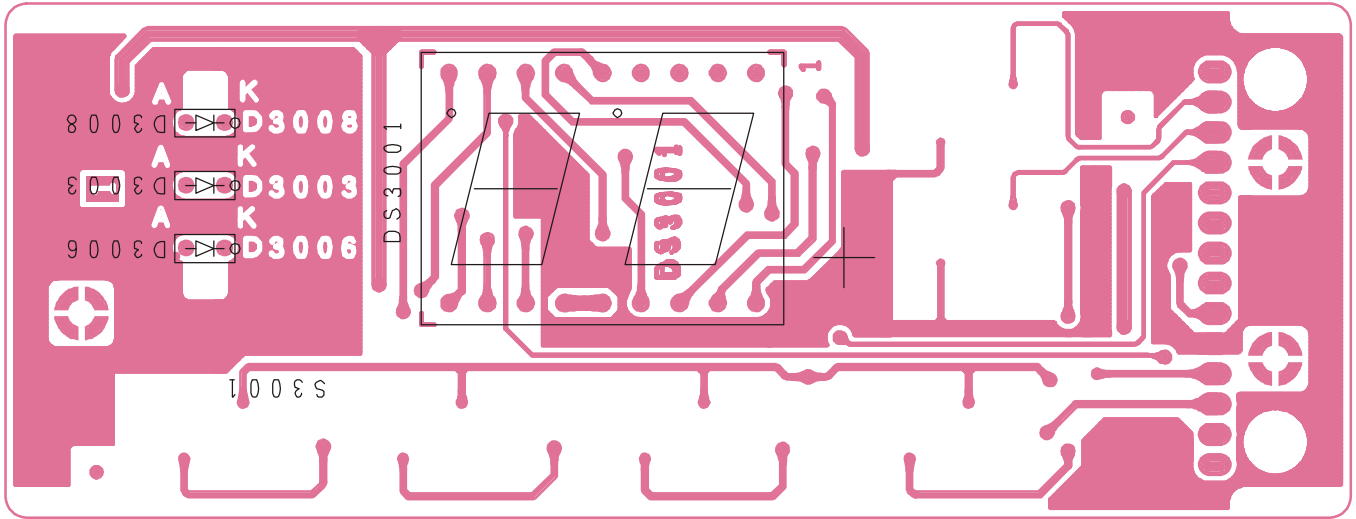


Circuit Diagram

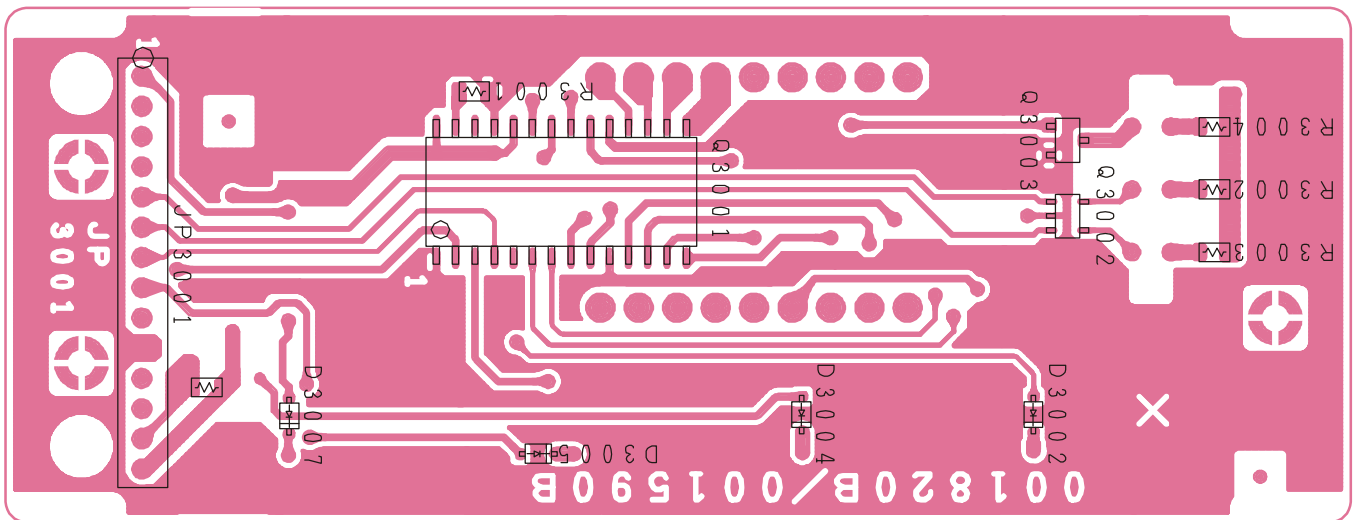


# Display-2 Unit

## Parts Layout



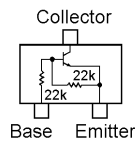
Side A



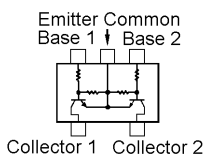
Side B



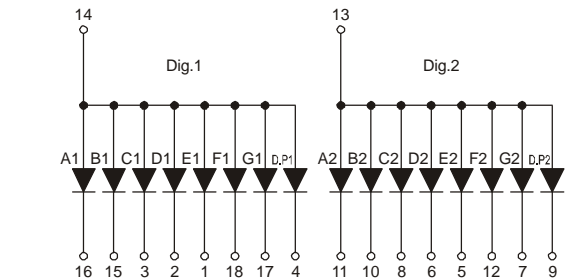
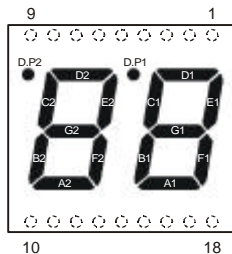
DN8657S (Q3001)



DTC124EK (25) (Q3003)



XN1213 (9L) (Q3002)



DS3001 7-Segment LCD Display

# Display-2 Unit

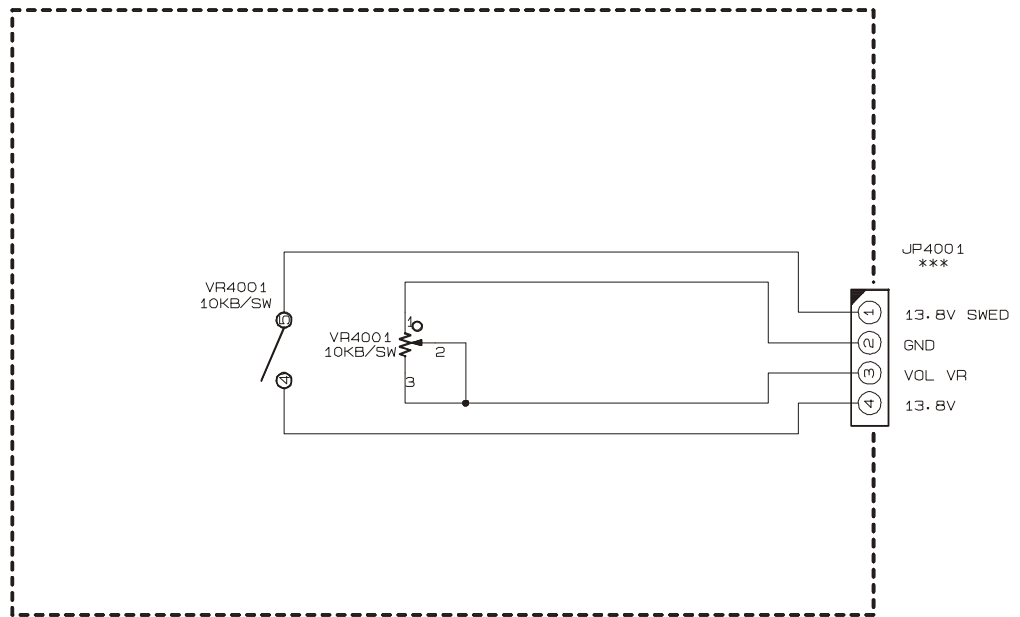
## Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
*** DISPLAY-2 UNIT ***										
PCB with Components						CB0383001				
Printed Circuit Board						FR001590B				
D 3002	DIODE				1SS355 TE-17	G2070470		1-	B	
D 3003	LED				TLY211	G2090637		1-	A	
D 3004	DIODE				1SS355 TE-17	G2070470		1-	B	
D 3005	DIODE				1SS355 TE-17	G2070470		1-	B	
D 3006	LED				TLG211	G2090343		1-	A	
D 3007	DIODE				1SS355 TE-17	G2070470		1-	B	
D 3008	LED				TLS211	G2090704		1-	A	
DS3001	LED				GL7S201J	G2090488		1-	A	
JP3001	WIRE ASSY				A0953+	T9206687		1-		
Q 3001	IC				DN8657S-T1	G1092688		1-	B	
Q 3002	TRANSISTOR				XN1213-(TX)	G3070194		1-	B	
Q 3003	TRANSISTOR				DTC124EK T146	G3070034		1-	B	
R 3001	CHIP RES.	680	1/10W	5%	RMC1/10T 681J	J24205681		1-	B	
R 3002	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 3003	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 3004	CHIP RES.	220	1/10W	5%	RMC1/10T 221J	J24205221		1-	B	
R 3005	CHIP RES.	10k	1/10W	5%	RMC1/10T 103J	J24205103		1-	B	

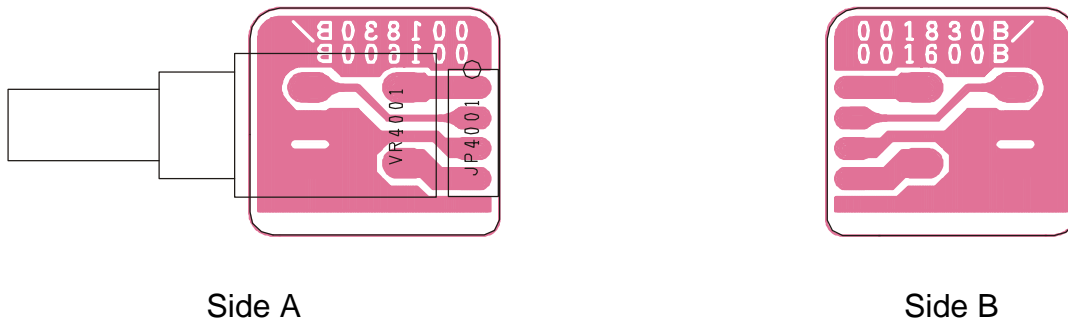
## *Display-2 Unit*

*Note:*

## Circuit Diagram



## Parts Layout

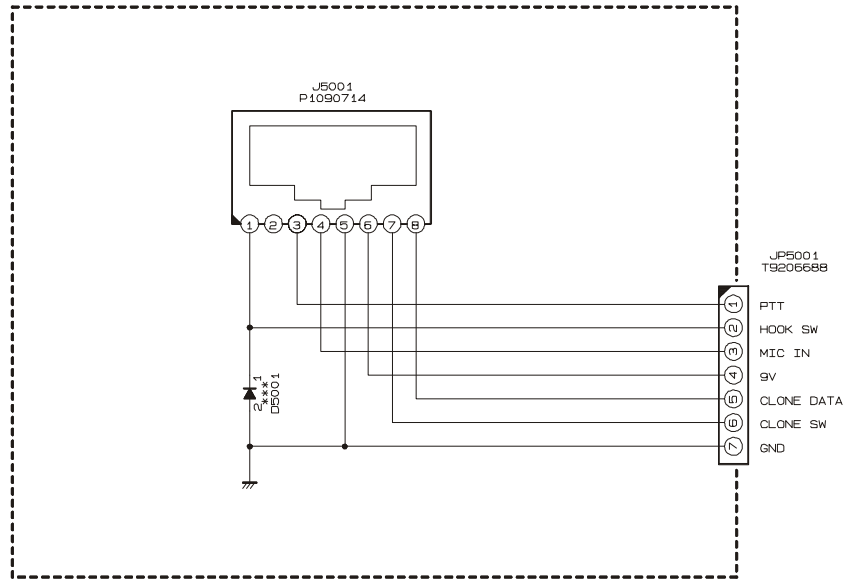


## Parts List

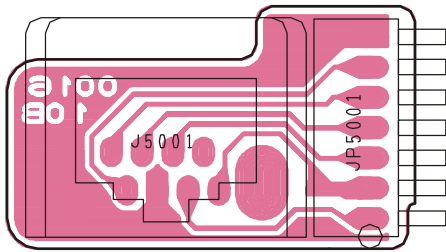
REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE	LAY ADR.
*** VR UNIT ***										
	PCB with Components					CB0384001				
	Printed Circuit Board					FR001600B				
VR4001	POT.				RK0971111 10KB/SW	J60800228		1-		

# MIC Unit

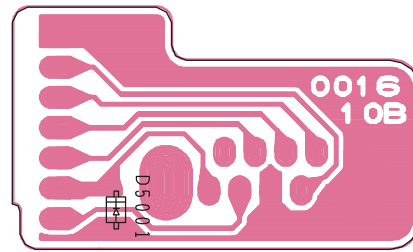
## Circuit Diagram



## Parts Layout



Side A



Side B

## Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT.	SIDE.	LAY ADR.
*** MIC UNIT ***										
	PCB with Components					CB0384001				
	Printed Circuit Board					FR001600B				
J 5001	CONNECTOR				R41-2509H	P1090714		1-		
JP5001	WIRE ASSY				A0953+	T9206688		1-		



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