Vertex Standard

Air Band Transceiver

VXA-210

Service Manual

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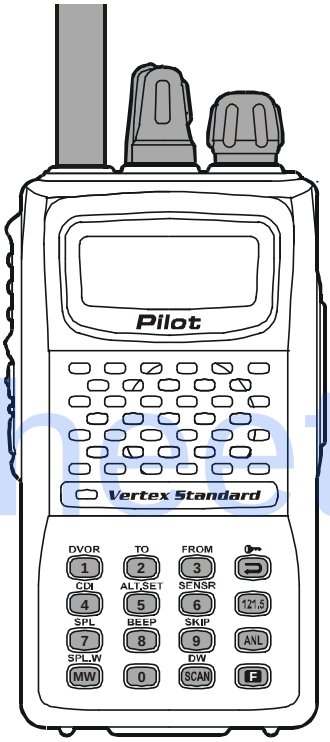


Datasheet.Live

Pilot

The Vertex Standard **VXA-210** ***Pilot*** is a compact, stylish, solid hand-held transceiver providing communication (transmit and receive) capability on the International Aircraft Communication Band ("**COM**" band: 118 ~ 136.975 MHz), and it additionally provides VOR and CDI navigation features on the "**NAV**" band (108 ~ 117.975 MHz).

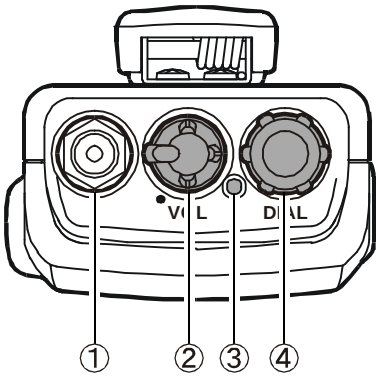
The **VXA-210** includes Temperature display with our exclusive Omni-Glow™ display back-light for minimal degradation of your night vision, NOAA weather band monitoring, 8-character Alpha/Numeric Display, 50 Memory Channels, and 100 "Book Memory" Channels. And the optional Barometric Pressure Unit (**SU-1**) provides readout of barometric pressure, altitude, and density altitude.

The following pages describe the Controls & Connectors, Accessories & Options, and Specification of the **VXA-210**. With proper care and operation, the transceiver will provide many years of reliable communications.

Contents

Operating Manual Reprint 2
Specifications 6
Installation of the SU-1 7
CE41 Programming Software 8
Exploded View & Miscellaneous Parts 9
Block Diagram 10
Circuit Description 11
Alignment 13
Board Unit (Schematics, Layouts & Parts) 17
Main Unit 17
Contact Unit 31
VR Unit 32
SW Unit 33

CONTROLS & CONNECTORS

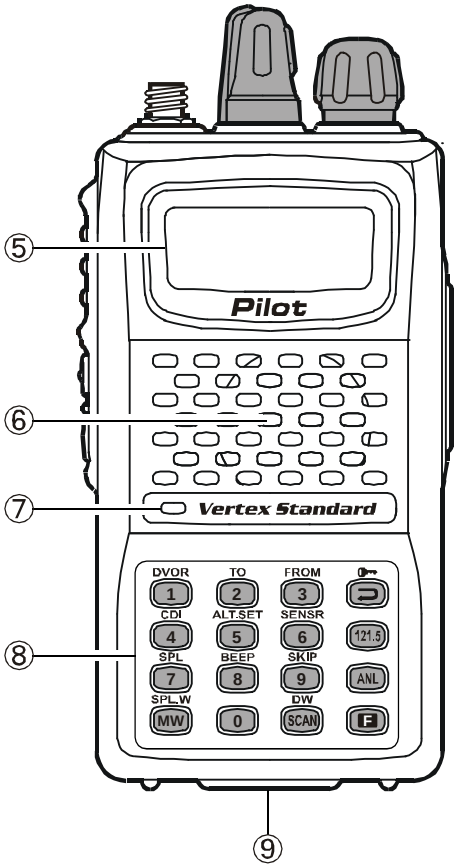


① Antenna Jack
This SMA jack accepts the supplied flexible antenna, or another antenna designed to provide 50 Ω impedance on the Aircraft Communication Band.

② **POWER/VOLUME** Knob
Turn this control clockwise to turn the radio on and to increase the volume. Counterclockwise rotation into the click-stop will turn the radio off.

③ **BUSY/TX** Indicator Lamp
This lamp glows **green** when a signal is being received and **red** when transmitting.

④ **DIAL** Selector Knob
This 20-position detended rotary switch tunes the operating frequency or selects the memory channels.
Pressing this knob downward momentarily selects the tuning methods among the **VFO** (Variable Frequency Oscillator), **MR** (Memory Recall), **BOOK** (Pre-Programmed Memories), and **WX** (Weather Channel Memories) mode.
Note: The **WX** mode is available in the USA version only.



⑤ LCD (Liquid Crystal Display)
The display shows the selected operating conditions as indicated on the next page.

⑥ Loudspeaker
The internal speaker is located in this position.

⑦ Microphone
Speak across this opening in a normal voice level while pressing the **PTT** switch, to transmit.

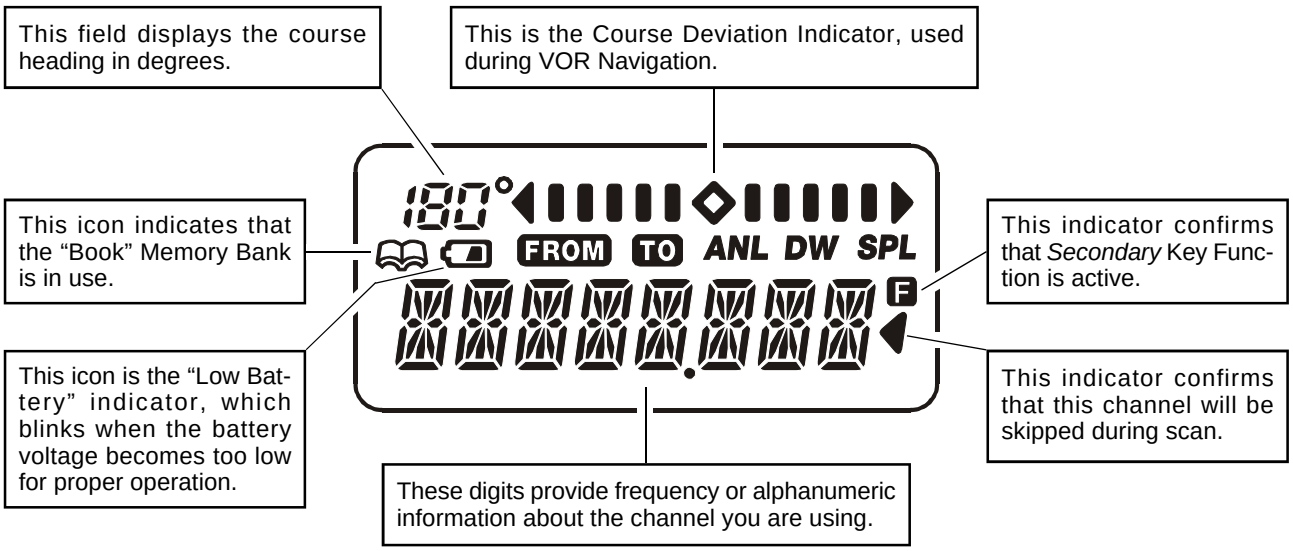
⑧ Keypad
Several keys have dual functions.

The *primary* functions are labeled on the key top (activated by simply pressing the key momentarily), while the *secondary* functions are labeled in yellow above the top edge of the key (activated by pressing the [**F**] key first, then the indicated key).

These functions are described in detail on next page.

⑨ Battery Pack Latch
Open this latch for battery removal.

LCD Display



FROM
This icon is used during VOR navigation, to indicate that the displayed information is based on a course *from* the VOR station.

TO
This icon is used during VOR navigation, to indicate that the displayed information is based on a course *to* the VOR station.

ANL
This indicator confirms that the Automatic Noise Limiter is activated.

DW
This indicator confirms that Dual Watch is active.

SPL
This indicator confirms that the “Split” (Duplex) mode is activated during VOR operation.

Keypad

	DVOR 1	TO 2	FROM 3	
Primary Function (Press Key)	Frequency Entry Digit 1	Frequency Entry Digit 2	Frequency Entry Digit 3	Selects Memory Display Type
Secondary Function (Press F +)	Activates DVOR mode	Selects “TO” VOR mode	Selects “FROM” VOR mode	Locks the Keypad
	CDI 4	ALT.SET 5	SENSR 6	121.5
Primary Function (Press Key)	Frequency Entry Digit 4	Frequency Entry Digit 5	Frequency Entry Digit 6	**Selects Emergency Channel (121.5 MHz)**
Secondary Function (Press F +)	Activates Course Deviation Indicator mode	Activates the Altimeter Set function	Activates the Sensor Function	None
	SPL 7	BEEP 8	SKIP 9	ANL
Primary Function (Press Key)	Frequency Entry Digit 7	Frequency Entry Digit 8	Frequency Entry Digit 9	Activates Automatic Noise Limiter
Secondary Function (Press F +)	Activates Split (Duplex) mode	On/Off Switch for Keypad Beeper	Allows Skipping of Channel during Scan	None
	SPL.W MW	0	DW SCAN	F
Primary Function (Press Key)	Memory “Write” Command	Frequency Entry Digit 0	Activates Scanning	Activates “Secondary” Key mode
Secondary Function (Press F +)	Split-Memory “Write” Command	None	Activates Dual Watch	None

CONTROLS & CONNECTORS

⑩ PTT (PUSH TO TALK) Switch

Press this button to transmit when you are operating in the "**COM**" band. Release this button to return to the "RECEIVE" mode.

⑪ MONITOR Switch

This button may be pressed to "open" the squelch manually, allowing you to listen for very weak signals. Press and hold this button for 2 seconds to "open" the squelch continuously. Press this button again to resume normal (quiet) monitoring.

⑫ LAMP Switch

Press this switch momentarily to activate the back-lighting lamp for the display. Press and hold this switch for 2 seconds to activate the back-lighting lamp continuously. To turn the lamp off, press this switch again. The **LAMP** switch may be configured in several ways via the Menu.

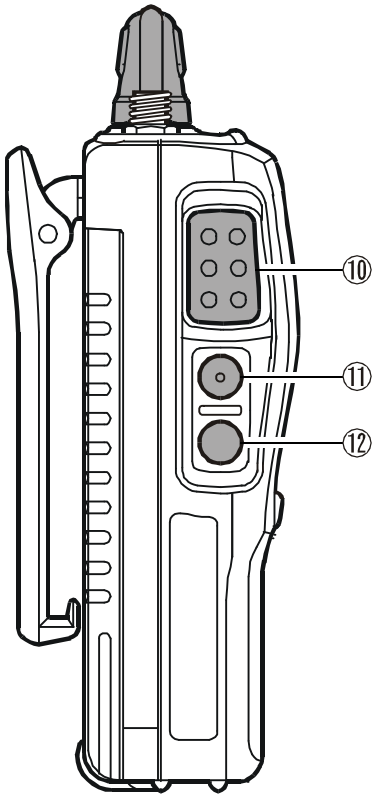
⑬ MIC/EAR Jack

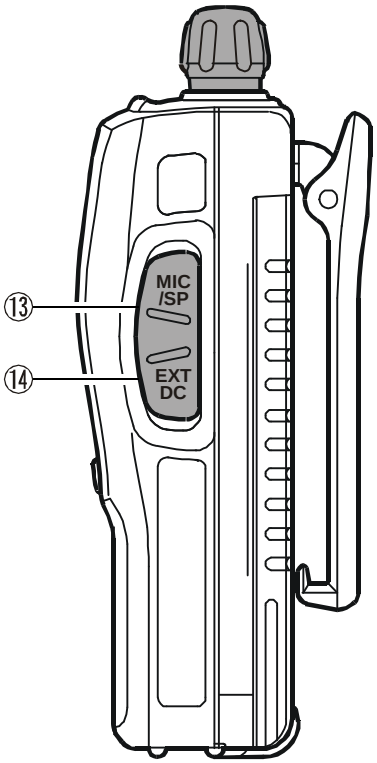
You may connect the supplied **CT-60** Headset Cable or the (optional) **MH-44A4B** Speaker/Microphone to this jack.

Never connect any Speaker/Microphone that is not recommended by the manufacturer. Because these jack connections are unique, using a Speaker/Microphone that is not specified by Vertex Standard may damage the VXA-210. Accessories for the Vertex Standard Amateur or Vertex Standard Commercial radios will not work with the VXA-210.

⑭ EXT DC Jack

When an external 12-Volt DC power source is available, you may connect the (optional) **E-DC-5B** External DC Cable here. ***Do not connect any wire to this jack if that wire is connected directly to a 28-Volt DC source***. Connecting the **VXA-210** directly to a source which exceeds 15.0 Volts DC will result in damage to the unit.





Field Programming Mode

The **VXA-210**'s Book Memories also allow the user to store, label, and recall channel frequencies which you may want to use frequently while the **VXA-210** is in the Field Programming mode.

Memory Storage into the Book Memory

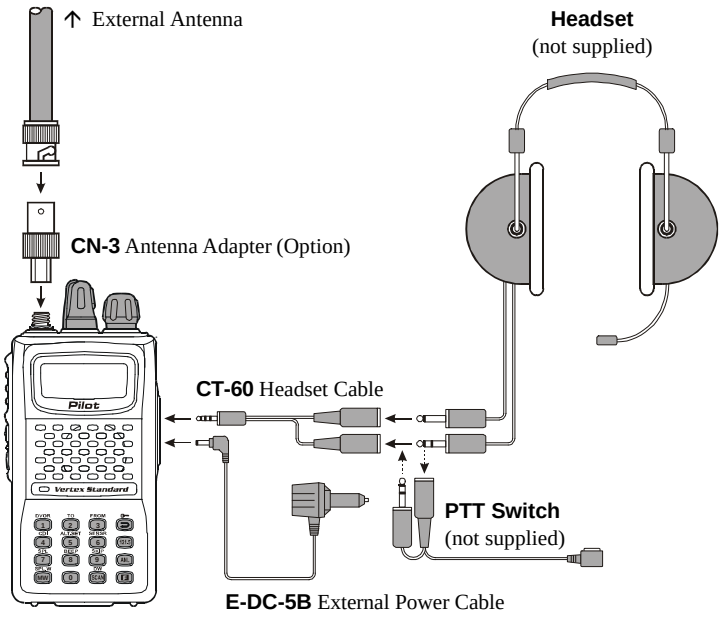
- ❒ Press and hold the **PTT** and **LAMP** switches while turning the radio on, to activate the Field Programming Mode.
- ❒ Select the desired frequency to be stored in the Book Memory.
- ❒ Press and hold the [**MW(SPL.W)**] key for 2 seconds. The display will indicate "**BOOK-**" and a channel number will blink on the LCD.
- ❒ Within five seconds of pressing the [**MW(SPL.W)**] key, rotate the **DIAL** selector knob to select the desired memory channel number for storage.
- ❒ Now press and hold in the [**MW(SPL.W)**] key for 2 seconds; you will now see "-------" on the LCD. To attach an alpha/numeric name (label) to the memory, proceed to the next step; otherwise press and hold the [**MW(SPL.W)**] key for 2 seconds to save the entry and exit.
- ❒ To label a memory with an alpha/numeric name, the next step is to use the **DIAL** selector knob to select any of the 48 available characters (including letters, numbers, and special symbols). When the desired first character appears, press down on the **DIAL** selector knob momentarily to move on to the next character.
- ❒ Select succeeding characters in the same manner, pressing down on the **DIAL** selector knob momentarily after each selection.
- ❒ After entering the entire name (eight characters maximum), press the [**MW(SPL.W)**] key for 2 seconds to save all data for the channel.
- ❒ Turn the radio off, then turn the radio back on again to begin normal operation.

Accessories & Options

Supplied Accessories

Ni-Cd Battery Pack (7.2V, 700mAh)	**FNB-64**
Overnight Desktop Charger	**NC-77B/C/U**※
Helical Antenna	**ATV-7**
Headset Cable	**CT-60**
Operating Manual	
Warranty Card	

※: *"**B**" suffix is for use with 120 VAC,*
*"**C**" suffix is for use with 230-240 VAC, or*
*"**U**" suffix is for use with 230 VAC.*



Available Options

MH-44A4B	Speaker Microphone
FNB-V57	Ni-Cd Battery Pack (7.2V, 1100mAh)
FBA-25	Alkaline Battery Case
VAC-800	Desktop Rapid Charger
E-DC-5B	External Power Cable
SU-1	Barometric Pressure Sensor Unit
CN-3	Antenna Adapter (SMA to BNC)

Availability of accessories may vary. Some accessories are supplied as standard per local requirements, while others may be unavailable in some regions. Consult your Vertex Standard Dealer for details regarding these and any newly-available options.

Connection of any non-Vertex Standard-approved accessory, should it cause damage, may void the Limited Warranty on this apparatus.

Specifications

General

Frequency Range:	TX: 118.000 - 136.975 MHz, RX: 108.000 - 136.975 MHz, Weather Channels (WX-01 - WX-10: USA version only)
Channel Spacing:	25 kHz
Emission Type:	TX: AM, RX: AM & FM (FM: for receiving the Weather Channels, USA version only)
Supply Voltage:	6.0 - 15.0 VDC
Current Consumption (approx.):	10 µA (power off), 30 mA (battery saver on, saver ratio 1:5) 65 mA (squelch on), 190 mA (receive), 1 A (transmit 1.5 W Carrier)
Temperature Range:	+14 °F to + 140 °F (–10 °C to +60 °C)
Case Size (WxHxD):	2.3 x 4.3 x 1.2 inch (58 x 109 x 30 mm) w/FNB-64
Weight (approx.):	12.2 oz (345 grams) with FNB-64, antenna, and belt clip

Receiver

Circuit Type:	Double-conversion superheterodyne
IFs:	35.4 MHz & 450 kHz
Sensitivity:	<0.8 µV (for 6 dB S/N with 1 kHz, 30 % modulation)
Selectivity:	>8 kHz/–6 dB
Adjacent CH. Selectivity:	<25 kHz/–60 dB
AF Output (@7.2 V):	0.4 W @ 8 Ohms, 10 % THD

Transmitter

Power Output (@ 7.2 V):	5 W (PEP), 1.5 W (Carrier Power)
Frequency Stability:	Better than ±10 ppm (+14 °F to + 140 °F [–10 °C to +60 °C])
Modulation System:	Low Level Amplitude Modulation
Spurious Emission:	> 60 dB below carrier
Int. Microphone Type:	Condenser
Ext. Mic. Impedance:	150 Ohms

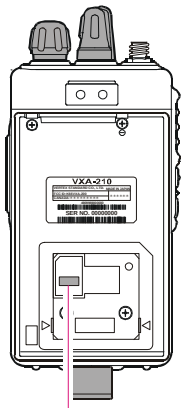
Specifications are subject to change without notice or obligation.

1. Make sure that the transceiver is off. Remove the hard or soft case, if used.
2. Remove the two screws affixing the belt clip and remove the belt clip, then remove the battery pack.
3. Locate the connector for the **SU-1** under the "Caution" label in the battery compartment on the back of the radio, just carefully peel off the "Caution" label.
4. Remove the small Rubber Cushion from the "Caution" label. Keep this Rubber Cushion for future use, because this Rubber Cushion must be replaced on the connector board of the transceiver if you remove the **SU-1** from the transceiver. We recommend that this Rubber Cushion be put on the bottom of the **SU-1**.
5. Align the connector on the **SU-1** with the transceiver's connector and gently press the unit into place.
6. Affix the "Caution" label, and replace the battery and the belt clip.
7. Installation is now complete.

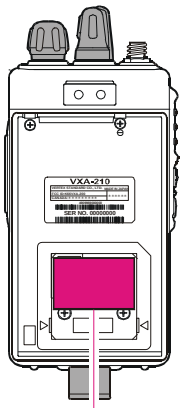
Important Note

The Barometric pressure/Altitude feature of the optional **SU-1** are designed to be supplemental aids for the information of the user, and are not intended to be a substitute for accurate, calibrated Barometer or Altimeter devices used for navigation critical to personal safety.

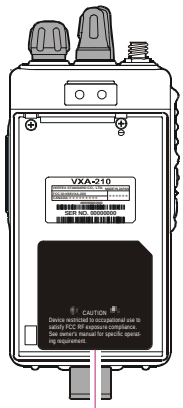
Peel off the CAUTION Label



Connector



Press the **SU-1**



Affix the CAUTION Label

CE41 Programming Software

CE41 Programming Software Instructions

With the **CE41** programming Software you can quickly and easily program the features and memories of the Vertex Standard **VXA-210** heavy duty air band transceiver from your personal computer. The **CE41** Programming Software allows custom memory files to be stored, saved, merged, and edited for convenience when planning a journey. In the event of an accidental memory failure, transceiver memory and configuration data may be re-loaded in a matter of minutes.

The **CE41** Programming Software diskette contains the following files:

- **CE41.EXE** - The executable programming software;
- **CE41.HLP** - The "Help" file used with the main program; and
- **CE41.CFG** - The "Configuration" file for the main program.

Before connecting the **VXA-210** for programming, turn off both the computer and the **VXA-210**. Now connect the **CT-42A** PC Programming Cable to the computer's serial port and the **VXA-210** as shown in the illustration. *Then* it will be safe to restart the computer; turning off the equipment during interconnection avoids damage to the electronics caused by voltage spikes.

Insert the distribution diskette into your 3½" drive (after booting DOS), and make a copy of the diskette; use the distribution diskette for archive purposes, and use the disk copy for programming.

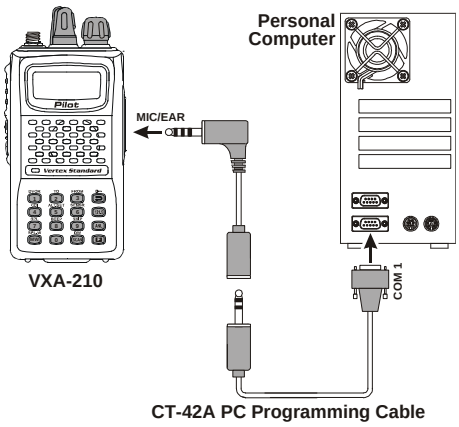
Place the **CE41** (copy) diskette into your 3½" drive (usually "Drive A"), and log onto this drive by typing **A:[ENTER]**. At this point, you may make a directory for the **CE41** software, if you like, according to standard DOS procedures (using the "**MKDIR**" command). Load the contents of the **CE41** diskette into this directory, using the "**COPY**" command (e.g. **COPY A:*.* C:**\ [directory name]).

Now type **CE41** [**ENTER**] to start the program. The introductory screen will appear, and you may press any key to enter the main screen, as shown below.

Choose the "Help" contents option from the program's Menu for assistance with program operation.

Important Note!

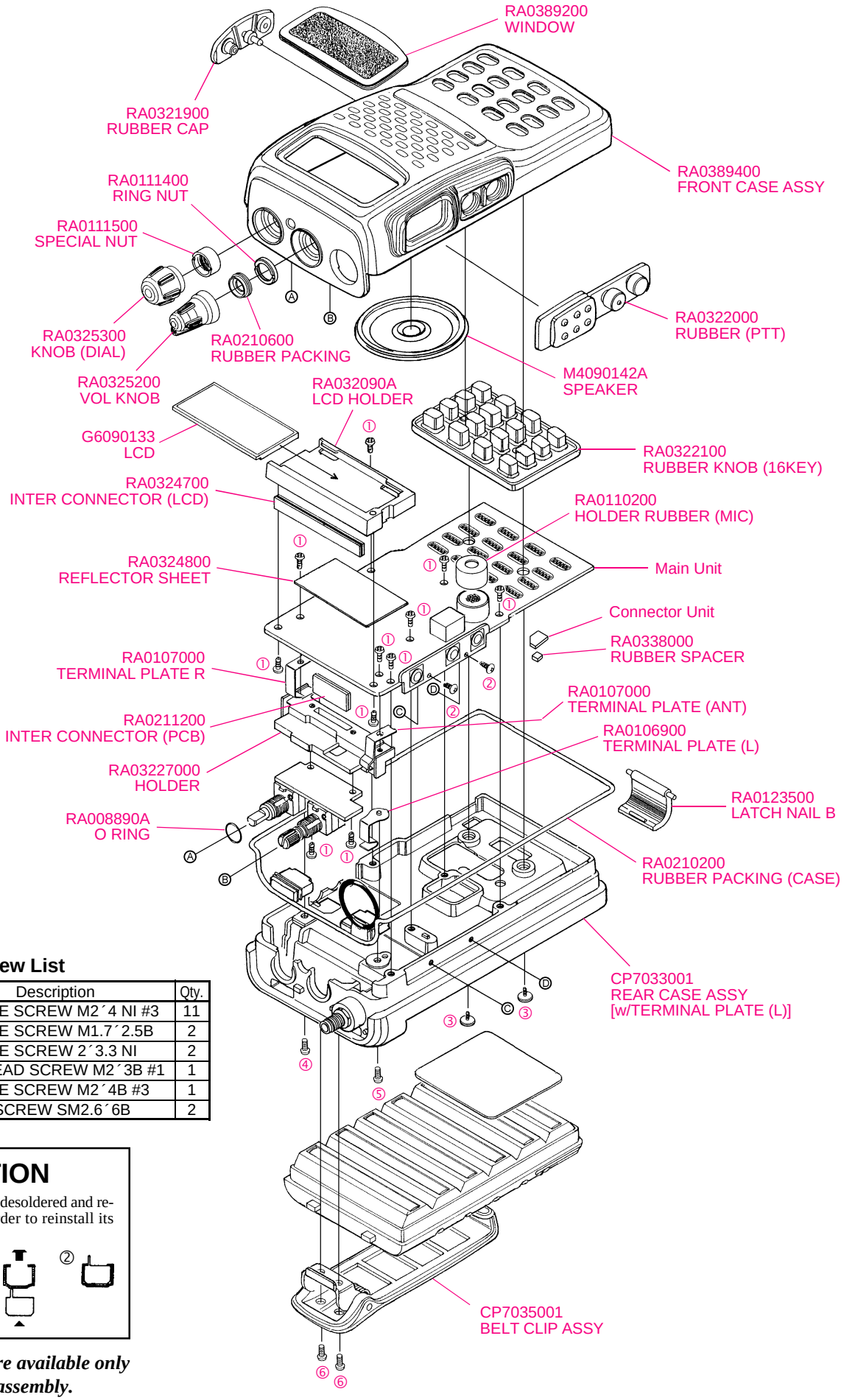
Do not work directly with the **CE41** programming diskette. Make a copy of it and use the copy when programming the **VXA-210**. Keep it and the original distribution diskette in a safe place in case you need to make another copy of it later.



CE41 Programming Setup

CE41 Main Screen

Exploded View & Miscellaneous Parts



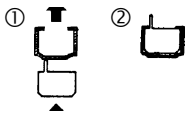
Screw List

No.	VXSTD P/N	Description	Qty.
①	U9900068	TAPTITE SCREW M2´4 NI #3	11
②	U9900086	TAPTITE SCREW M1.7´2.5B	2
③	U9900063	TAPTITE SCREW 2´3.3 NI	2
④	U07230107	PAN HEAD SCREW M2´3B #1	1
⑤	U9900051	TAPTITE SCREW M2´4B #3	1
⑥	U02206007	SEMS SCREW SM2.6´6B	2

⚠ CAUTION

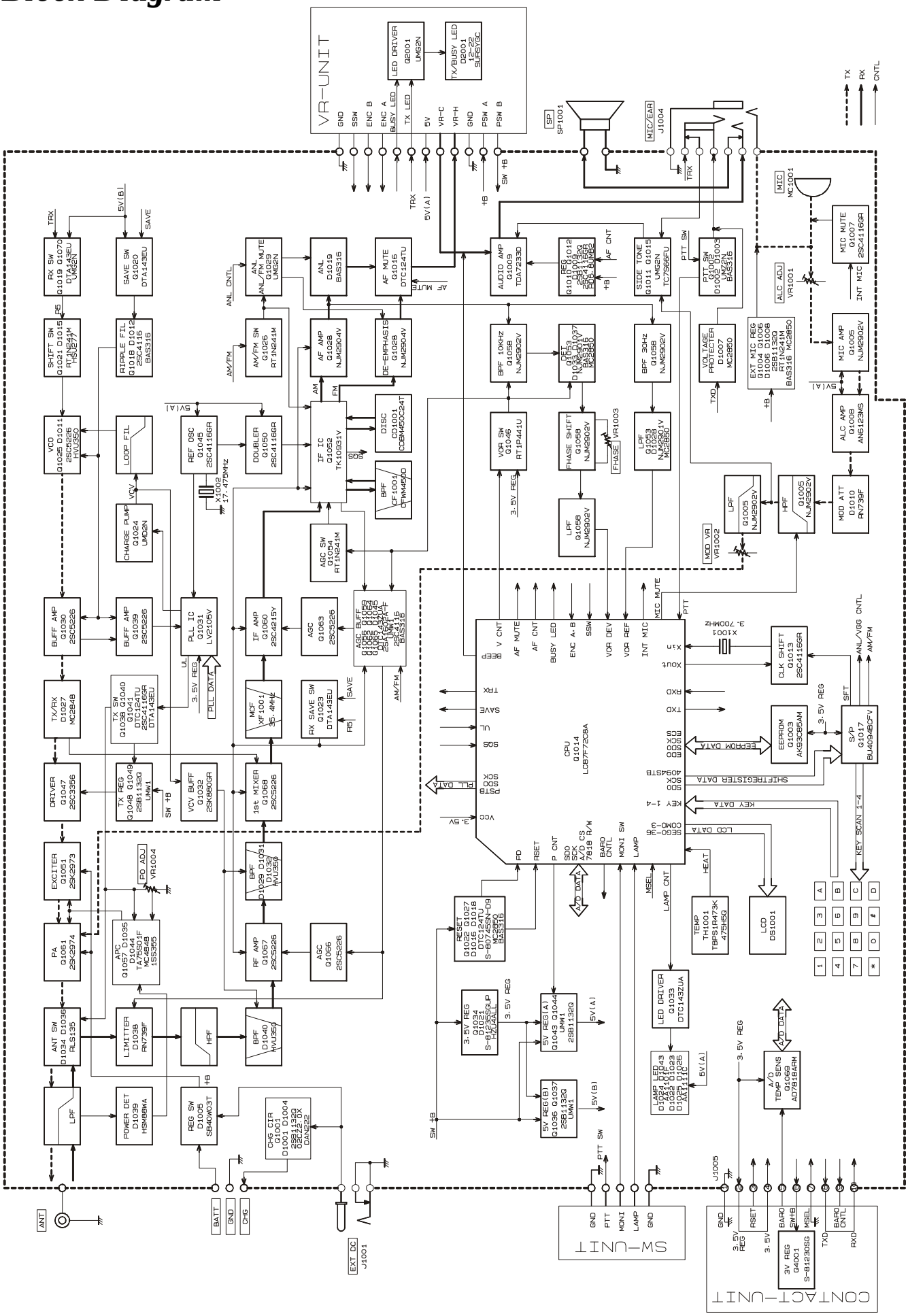
The mic element must be desoldered and removed from the PCB on order to reinstall its protective rubber cover.

Therefore, be careful not to remove this cover unless mic element replacement is necessary.



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

Block Diagram



Receive Signal Path

Incoming RF from the antenna jack is passed through a low-pass filter and high-pass filter consisting of coils L1023, L1024, L1025, L1039, L1030 & L1031, capacitors C1260, C1266, C1267, C1269, C1270, C1272, C1273, C1274, C1276, C1278 & C1281 and antenna switching diodes **D1034** and **D1036** (both **RLS135**) to the receiver front end section.

Signals within the frequency range of the transceiver is applied to the receiver front end which contains RF amplifier **Q1067** (**2SC5226**) and varactor-tuned band-pass filter consisting of coils L1012, L1014, L1018, L1019, L1027 & L1028, capacitors C1209, C1211, C1212, C1217, C1221, C1225, C1228, C1236 & C1275, and diodes **D1029**, **D1031**, **D1032** & **D1040** (all **HVU350**), then applied to the 1st mixer **Q1068** (**2SC5226**).

Buffered output from the VCO is amplified by **Q1030** (**2SC5226**) to provide a pure 1st local signal between 143.4 and 172.4 MHz for injection to the 1st mixer. The 35.4 MHz 1st mixer product then passes through monolithic crystal filter **XF1001** (**35S15A**, 7.5 kHz BW) which strips away all but the desired signal, which is then amplified by mixer postamp **Q1060** (**2SC4215Y**).

The amplified 1st IF signal is applied to the AM/FM IF subsystem IC **Q1052** (**TK10931V**), which contains the 2nd mixer, 2nd local oscillator, limiter amplifier, noise amplifier and AM/FM detector.

A 2nd local signal is generated by PLL reference/2nd local oscillator **Q1045** (**2SC4116GR**) from the 17.475 MHz crystal **X1002** to produce the 450 kHz 2nd IF when mixed with the 1st IF signal within **Q1052**. The 2nd IF then passes through the ceramic filter **CF1001** (**CFWM450D**) to strip away unwanted mixer products.

In the FM mode, a 2nd IF signal from the ceramic filter **CF1001** applied to the limiter amplifier section of **Q1052**, which removes amplitude variations in the 450 kHz IF before detection of the speech by the ceramic discriminator **CD1001** (**CDBM450C24**). Detected audio from **Q1052** is passed through the de-emphasis, consisting of the resistors R1102, R1105, R1111 & R1162, capacitors C1100, C1101, C1103 & C1145, and **Q1028** (**NJM2904V**), then applied to the AF amplifier **Q1028** (**NJM2904V**).

In the AM mode, detected audio from **Q1052** is passed through the audio amplifier **Q1028** (**NJM2904V**) and ANL circuit, then applied to the AF amplifier Q**Q1028** (**NJM2904V**). When impulse noise received, a portion of the AM detector output signal from the AM/FM IF subsystem **Q1028**, including pulse noise is rectified by **D1019** (**BAS316**). The resulting DC is applied to the ANL MUTE gate **Q1029** (**UMG2N**), thus reducing the pulse noises.

The processed audio signal from **Q1028** passes through the audio mute gate **Q1016** (**DTC124TU**) and the volume control to the audio power amplifier **Q1009** (**TDA72330**), providing up to 0.4 Watts to the headphone jack or 8 Ω loudspeaker.

A portion of the AF signal from the AM/FM IF subsystem **Q1052** converted into DC voltage within the IC, and then passes through the AGC amplifier **Q1059** (**2SA1602A**) and **Q1062** (**UMW1**) to the inversion amplifiers **Q1063** and **Q1066** (both **2SC5226**). These amplifier reduce the amplifier gain of the IF amplifier **Q1060** and the RF amplifier **Q1067** while receiving a strong signal

Squelch Control

When signal is received, appear the DC squelch control voltage at pin 15 of AM/FM IF subsystem **Q1052** according to the receiving signal strength. This DC is applied to pin 16 of microprocessor **Q1014**.

The DC squelch control voltage is compared with the SQL threshold level by the microprocessor **Q1014**. If the DC squelch control voltage is higher, pin 89 of **Q1014** goes high. This signal activate the AF MUTE gate **Q1016** (**DTC124TU**), thus disabling the AF audio.

Also, the microprocessor stops scanning, if active, and allows audio to pass through the AF MUTE gate **Q1016**.

Transmit Signal Path

Speech input from the microphone is passed through the microphone sensitivity potentiometer VR1001 and microphone amplifier **Q1005-3** (**NJM2904V**), then applied to the ALC amplifier **Q1008** (**AN6123MS**). The amplified speech signal is passed through the high-pass filter **Q1005-1** (**NJM2904V**) and low-pass filter **Q1005-2** (**NJM2904V**), then applied to the power amplifier **Q1061** (**2SK2973**) which AM modulate the Tx frequency with speech signal.

When using the optional headset, the SIDETONE signal from **Q1011** (**UMG2**) becomes “HIGH,” turning **Q1015** (**TC7S66FU**) on, therefore a portion of the speech signal applied to the AF power amplifier **Q1009** as a monitor signal.

The carrier signal from the VCO **Q1025** (**2SC5226**) passes through the buffer amplifier **Q1030** (**2SC5226**) and TX/RX switch **D1027** (**MC2848**), then amplified by **Q1047** (**2SC3356**) and **Q1051** (**2SK2973**), then applied to the power amplifier **Q1061** which increases the signal level up to 5 watts output power.

The transmit signal then passes through the antenna switch **D1034** (**RLS135**), and is low-pass filtered to suppress away harmonic spurious radiation before delivery to the antenna.

Circuit Description

Automatic Transmit Power Control

RF power output from the final amplifier is sampled by C1265/C1271 and is rectified by **D1039** (**HSM88WA**). The resulting DC voltage passes through the Automatic Power Controller **Q1057** (**NJU7012F**) to the APC attenuator **D1010** (**RN739F**) and final amplifier **Q1061** (**2SK2974**), so as to control the power output.

Transmit Inhibit

When the transmit PLL is unlocked, pin 14 of PLL chip **Q1031** (**LV2105V**) goes to a logic "HIGH". The resulting DC "unlock" control voltage is switches off TX inhibit switches **Q1038** (**RT1N241M**), **Q1040** (**2SC4116GR**), and **Q1041** (**DTA143EU**) to disable the supply voltage to transmitter RF amplifiers **Q1047**, 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. Additional harmonic suppression is provided by a low-pass filter consisting of L1024, L1025 & L1029 and C1260, C1266, C1267, C1272, C1273 & C1278, resulting in more than 60 dB of harmonic suppression prior to delivery of the RF signal to the antenna.

PLL Frequency Synthesizer

PLL circuitry consists of VCO **Q1025** (**2SC5226**), VCO buffer **Q1030** & **Q1039** (both **2SC5226**), and PLL subsystem IC **Q1031** (**LV2105V**), which contains a reference divider, serial-to-parallel data latch, programmable divider and phase comparator.

Stability is maintained by a regulated 3.5 V supply via **Q1044** (**2SB1132Q**) and **Q1034** (**S-81235SGUP-DQI**) which feeds the PLL reference oscillator **Q1045** (**2SC4116GR**), as well as capacitors associated with the 17.475 MHz frequency reference crystal **X1002**.

In the receive mode, VCO **Q1025** oscillates between 153.4 and 172.4 MHz. The VCO output is buffered by **Q1030** and **Q1039**, and applied to the prescaler section of **Q1031**. There the VCO signal is divided by 64 or 65, according to a control signal from the data latch section of **Q1031**, before being applied to the programmable divider section of **Q1031**. The data latch section of **Q1031** also receives serial dividing data from the microprocessor **Q1014** (**LC87F72CBA**), which causes the pre-divided VCO signal to be further divided in the programmable divider section, depending upon the desired receive frequency, so as to produce a 5 kHz derivative of the current VCO frequency.

Meanwhile, the reference divider section of **Q1031** divides the 17.475 MHz crystal reference from the reference oscillator **Q1045** by 3495 to produce the 5 kHz loop reference. The 5 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 **Q1031**, which produces a pulsed output with pulse duration depending on the phase difference between the input signals. This pulse train is filtered to DC and returned to the varactor **D1011** (**HVU350**).

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 frequency 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 **Q102**5 is buffered by **Q1030** before application to the 1st mixer, as described previously.

For transmission, the VCO **Q1025** oscillates between 118 and 137 MHz. The remainder of the PLL circuitry is shared with the receiver. However, the dividing data from the microprocessor is such that the VCO frequency is at the actual transmit frequency (rather than offset for IFs, as in the receiving case).

Receive and transmit buses select which VCO is made active by **Q1021** (**RT1N241M**). FET **Q1032** (**2SK880GR**) buffers the VCV line for application to the tracking band-pass filters in the receiver front end.

When the power saving feature is active, the microprocessor periodically signals to the PLL IC **Q1032** to conserve power, and to shorten lock-up time.

Push-To Talk Transmit Activation

The **PTT** switch on the microphone is fed through the PTT controller, **Q1002** (**UMZ2N**), to pin 35 of microprocessor **Q1014**, so that when the PTT switch is closed, pin 88 of **Q1014** goes high. This signals cut off the receiver by disabling the 5 V supply bus at **Q1019** (**DTA143EU**) which feeds the front-end, FM IF subsystem IC **Q1052**, and receiver VCO circuitry. At the same time, **Q1040** (**2SC4116GR**) and **Q1034** (**DTA143EU**) activates the transmit 5 V supply line to enable the transmitter.

VOR Circuit

When the transceiver is set in the navigation band (108.000-117.975 MHz), VOR CNTL port (pin 100 of **Q1014**) becomes "Low" turning the 3.5V supply bus **Q1046** (**RT1P441U**) ON, therefore the VOR circuit ON.

A portion of the AF signal form the AM/FM IF subsystem IC **Q1052** applied to the VOR circuit, consisting of **Q1053** (**NJM2901V**), and **Q1058** (**NJM2902V**), where it is detected a variable signal and reference signal from a VOR station. The VOR circuit sends these signals to the microprocessor **Q1014**.

Introduction

The **VXA-200** is carefully aligned at the factory for the specified performance across the Aircraft and Weather bands. Realignment should therefore not be necessary except in the event of a component failure.

The following procedures cover the adjustments that are not normally required once the transceiver has left the factory. However, if damage occurs and some parts subsequently are replaced, realignment may be required. If a sudden problem occurs during normal operation, it is likely due to component failure; realignment should not be done until after the faulty component has been replaced.

We recommend that servicing be performed only by authorized VERTEX STANDARD service technicians who are experienced with the circuitry and fully equipped for repair and alignment. If a fault is suspected, contact the dealer from whom the transceiver was purchased for instructions regarding repair. Under no circumstances should any alignment be attempted unless the normal function and operation of the transceiver are clearly understood, the cause of the malfunction has been clearly pinpointed and any faulty components replaced, and realignment determined to be absolutely necessary. Problems caused by unauthorized attempts at realignment are not covered by the warranty policy

VERTEX STANDARD reserves the right to change circuits and alignment procedures, in the interest of improved performance, without notifying owners.

The following test equipment (and familiarity with its use) is necessary for complete realignment. While most steps do not require all of the equipment listed, the interactions of some adjustments may require that more complex adjustments be performed afterwards. Do not attempt to perform only a signal 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.

Correction of problems caused by misalignment resulting from use of improper test equipment is not covered under the warranty policy.

Required Test Equipment

- ❒ Avionics Radio Tester with calibrated output level at 200 MHz
- ❒ In-line Wattmeter with 5% accuracy at 200 MHz
- ❒ 50-Ω, 10-W RF Dummy Load
- ❒ Regulated DC Power Supply adjustable from 3 to 15 VDC, 2A
- ❒ Frequency Counter: ±0.2 ppm accuracy at 200 MHz
- ❒ AF Signal Generator
- ❒ AC Voltmeter
- ❒ DC Voltmeter: high impedance
- ❒ VHF Sampling Coupler

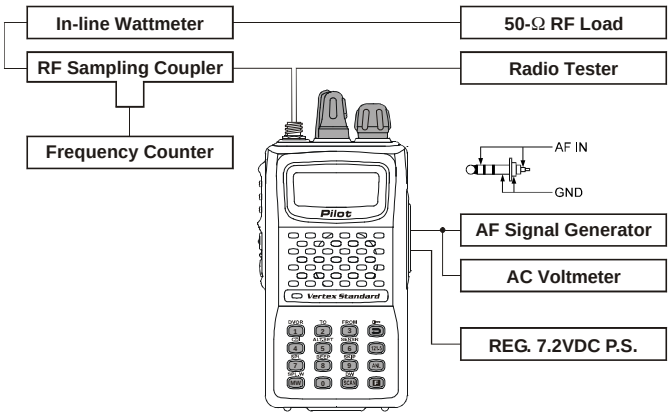
Alignment Preparation & Precautions

A 50-Ω RF load and in-line wattmeter must be connected to the main antenna jack in all procedures that call for transmission, except where specified otherwise. Correct alignment is not possible with an antenna. After completing one step, read the next step to see if the same test equipment is required. If not, remove the test equipment (except dummy load and wattmeter, if connected) before proceeding.

Correct alignment requires that the ambient temperature be the same as that of the transceiver and test equipment, and that this temperature be held constant between 20 ~ 30° C (68 ~ 86° F). When the transceiver is brought into the shop from hot or cold air, it should be allowed some time to come to room temperature before alignment. Whenever possible, alignments should be made with oscillator shields and circuit boards firmly affixed in place. Also, the test equipment must be thoroughly warmed up before beginning.

Set up the test equipment as shown below for transceiver alignment, apply 7.2 VDC power to the transceiver. Refer to the drawings for Alignment Points.

Notes: Signal levels in dB referred to in alignment are based on 0 dBμ = 0.5 μV (closed circuit).



Alignment Setup

Alignment

PLL Reference Frequency

❒ Connect the wattmeter, dummy load and frequency counter connected to the antenna jack, and tune the transceiver to 120.000 MHz.

❒ Transmit, and adjust **TC1001** on the RF Unit, if necessary, so the counter frequency is 120.000 MHz (±100 Hz).

TX Power Adjustment

❒ Connect the wattmeter and dummy load to the antenna jack, and tune the transceiver to 128.000 MHz.

❒ Transmit, and adjust **VR1004** to obtain 1.5 W RF (carrier) power indicated on the wattmeter (without audio modulation input).

TX Modulation Adjustment

❒ Connect the Radio Tester to the antenna jack, then adjust the AF generator output level for injection of 200 mV rms @ 1 kHz to the **MIC** jack. Leave the transceiver tuned to 127.500 MHz.

❒ Transmit, and adjust **VR1002** to obtain 85 % modulation (±5 %) as indicated on the Radio Tester.

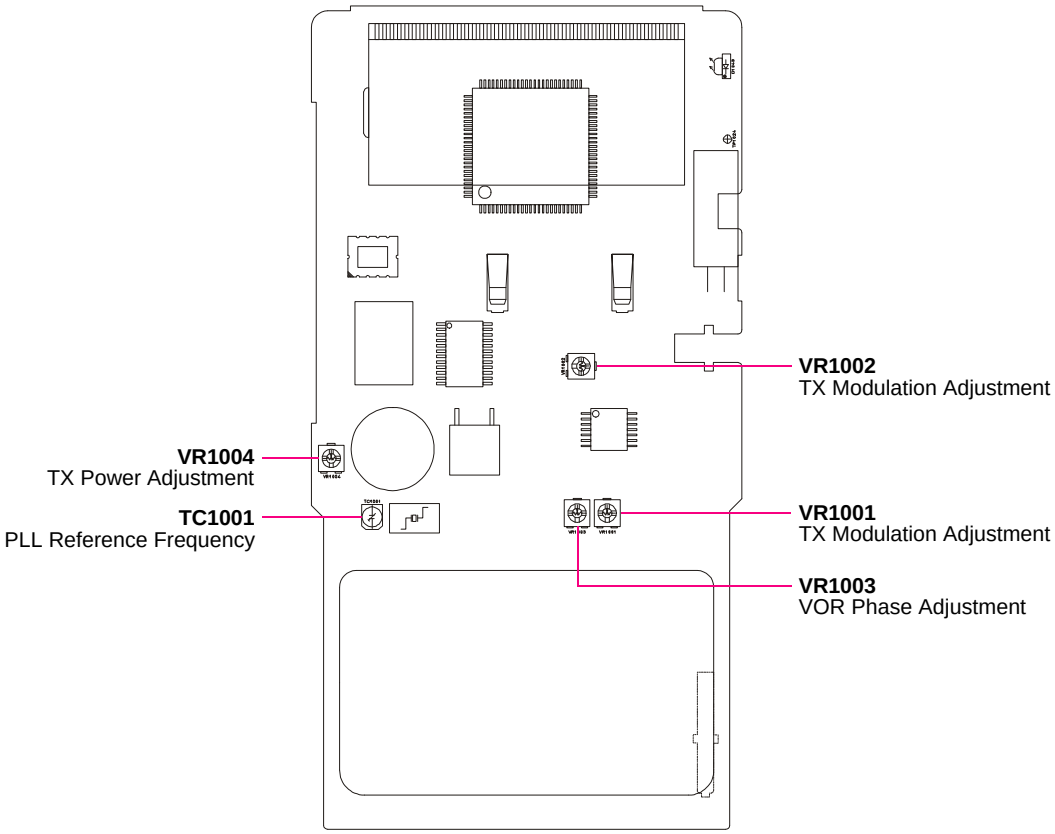
❒ Reduce the AF generator output level to 20 mV rms, then adjust **VR1001** to obtain 30 % modulation (±3 %) on the Radio Tester.

VOR Phase Adjustment

❒ Set the transceiver to 108.000 MHz, set up the "**FROM**" mode (press [**F**] + [**3**(**FROM**)] key, if necessary), and set the Avionics Radio Tester as shown below.

Frequency	108.000 MHz
Output Level	+40 dBμ
30 Hz VAR.	30 %
9.96 kHz Carrier	30 %
9.96 kHz MOD	480 Hz
DIRECT	FROM
PHASE	90°

❒ Adjust **VR1003** for 90° (±1°) on the transceiver display.



Alignment Point

Internal System Alignment Routine

This feature uses a programmed routine in the transceiver which replaces many previously-complex discrete component settings and adjustments with digitally-controlled settings via the **DIAL** selector knob. Transceiver adjustments include:

- ❍ *Squelch Hysteresis Adjustment*
- ❍ *Squelch Threshold Adjustment*
- ❍ *Squelch "Tight" Adjustment*
- ❍ *VOR Sensitivity Adjustment*
- ❍ *VOR Sensitivity Hysteresis Adjustment*

To begin, set the transceiver to 127.500 MHz, and turn the transceiver off. Then, press and holding the **LAMP** switch, **PTT** switch and the **DIAL** selector knob while turning the transceiver on.

Squelch Hysteresis Adjustment

- ❒ Press the **DIAL** selector knob, then select the squelch hysteresis level using the **DIAL** selector knob.
- ❒ Next, press the **DIAL** selector knob.
- ❒ Rotate the CHANNEL selector knob to select the next setting.

Squelch Threshold Adjustment (THSQ)

- ❒ Inject a –9 dBµ (0.35 µV) RF signal (with a standard modulation: 30 % AM modulation @ 1 kHz), then press the **DIAL** selector knob twice.
- ❒ Now rotate the **DIAL** selector knob to select the next setting.

Squelch "Tight" Adjustment (TISQ)

- ❒ Increase the RF signal level to +15 dBµ (5.6 µV), then press the **DIAL** selector knob twice.
- ❒ Now rotate the **DIAL** selector knob to select the next setting.

VOR Sensitivity Adjustment (VSTR)

- ❒ Increase the RF signal level to +8 dBµ (2.5 µV), then press the **DIAL** selector knob twice.
- ❒ Now rotate the **DIAL** selector knob to select the next setting.

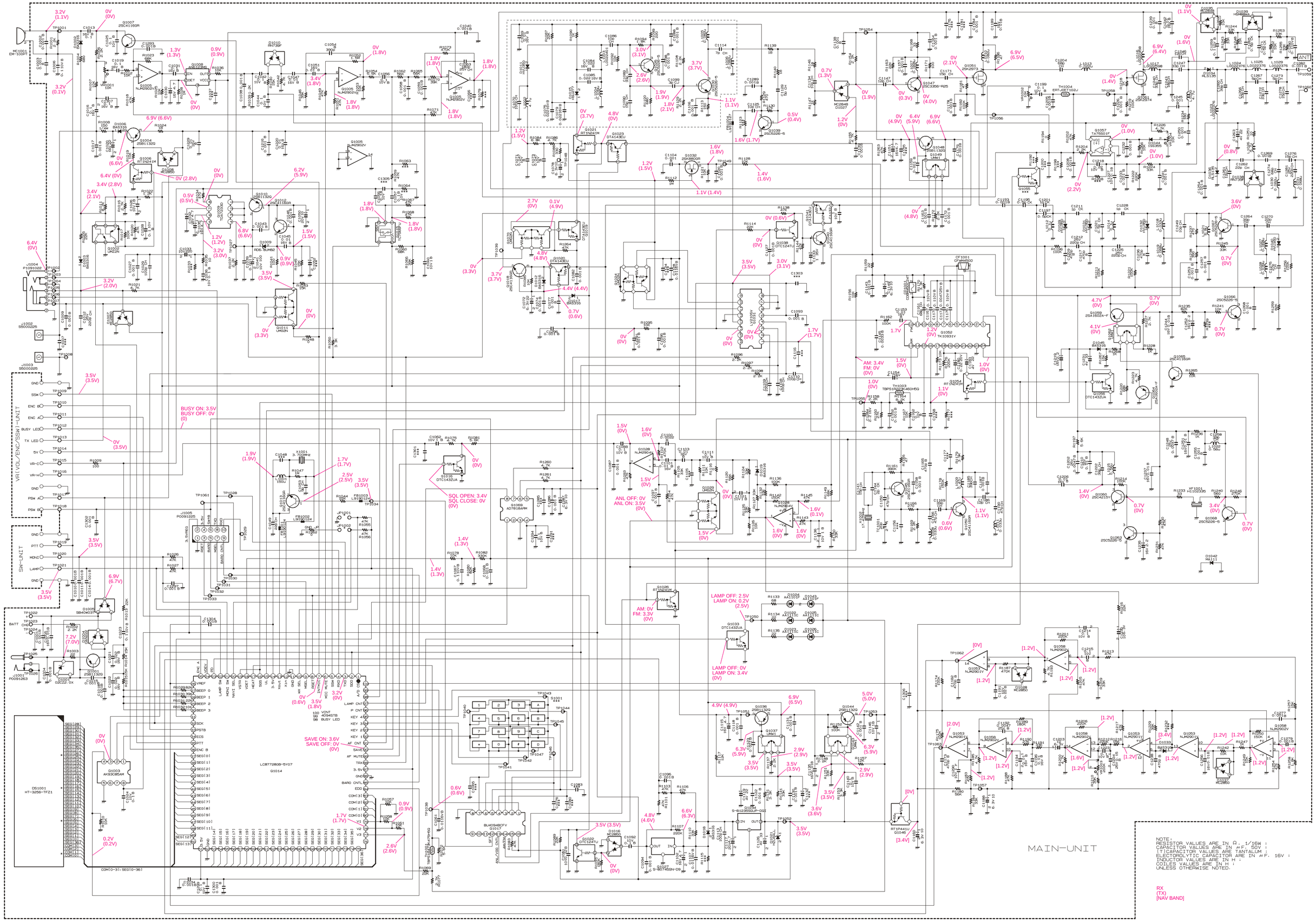
VOR Sensitivity Hysteresis Adjustment (HSVS)

- ❒ Press the **DIAL** selector knob, then select the VOR Sensitivity Hysteresis level using the **DIAL** selector knob.
- ❒ Press and hold the in the **DIAL** selector knob for 2 second to save all setting and exit.

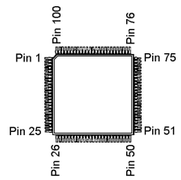
Resetting the CPU

If you are unable to gain control of the transceiver (or if you want to clear all memories and settings to their factory defaults), press and holding the **MONITOR** switch and **PTT** switch while turning the transceiver on.

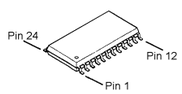
Note


VR(VOL/ENC/SSW)-UNIT
SW-UNIT
MAIN-UNIT
DS1001
HT-3256-TFZ1
LC8772808-5Y07
G1014
BATT
ANT
BUSY ON: 3.5V
BUSY OFF: 0V
(0)
SQL OPEN: 3.4V
SQL CLOSE: 0V
(0V)
ANL OFF: 0V
ANL ON: 3.5V
(0V)
AM: 0V
FM: 3.3V
(0V)
LAMP OFF: 2.5V
LAMP ON: 0.2V
(2.5V)
LAMP OFF: 0V
LAMP ON: 3.4V
(0V)
SAVE ON: 3.6V
SAVE OFF: 0V
(0V)
AM: 3.4V
FM: 0V
(0V)
NOTE:
RESISTOR VALUES ARE IN Ω, 1/16W :
CAPACITOR VALUES ARE IN μF, 50V :
(T)CAPACITOR VALUES ARE TANTALUM :
ELECTOROLYTIC CAPACITOR ARE IN μF, 16V :
INDUCTOR VALUES ARE IN H :
COILES VALUES ARE IN H :
UNLESS OTHERWISE NOTED.
RX
(TX)
[NAV BAND]

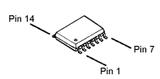
Note



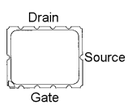
LC87F72C8A
(Q1014)



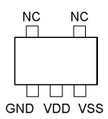
TK10931VT1
(Q1052)



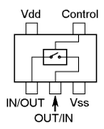
NJM2902V
(Q1005)



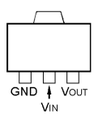
2SK2974
(Q1061)



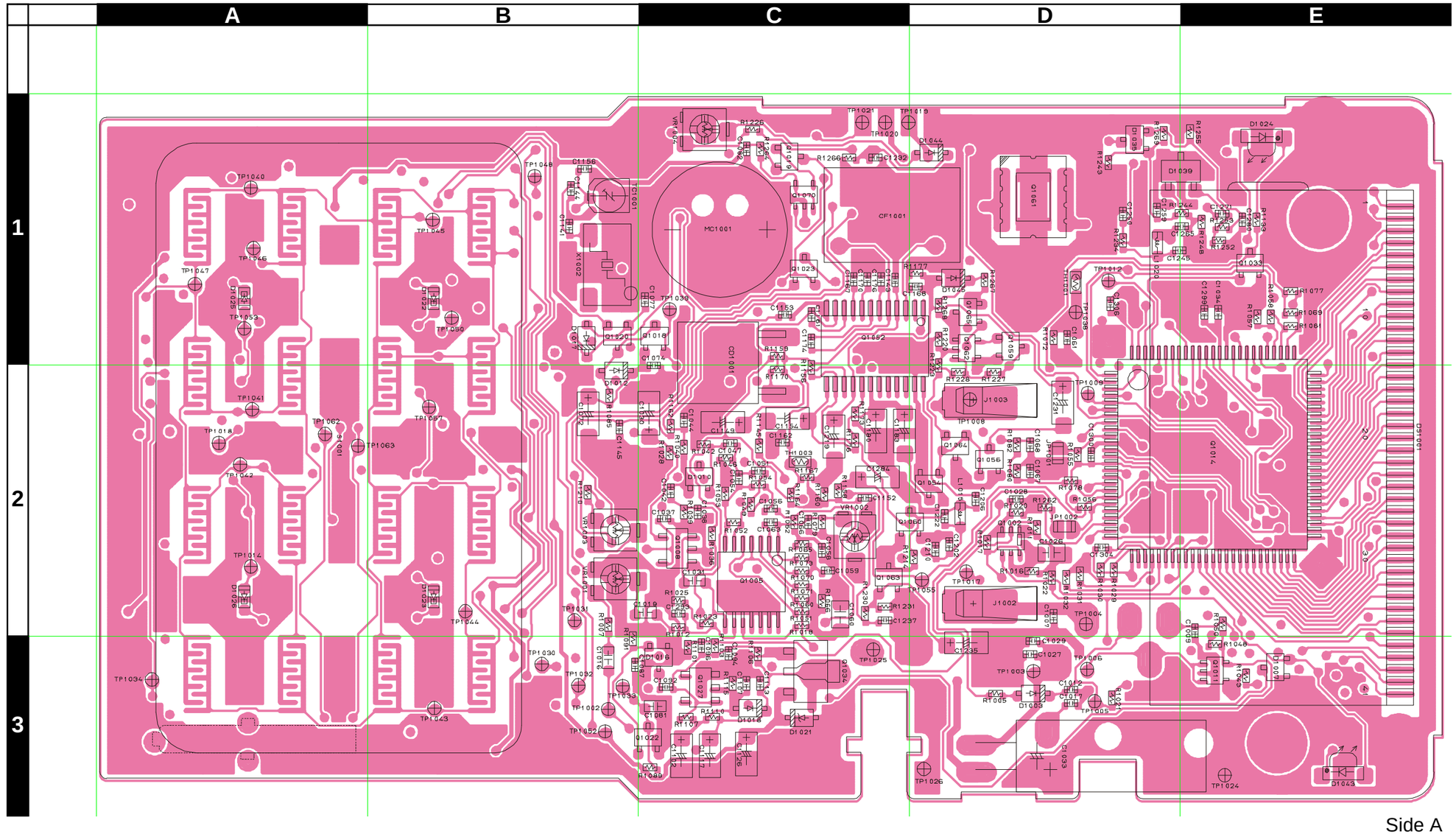
S-80745SN
(Q1027)



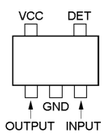
TC7S66FU
(Q1015)



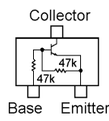
S-81235SGUP
(Q1034)



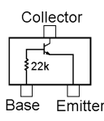
Side A



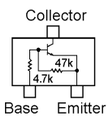
AN6123MS
(Q1008)



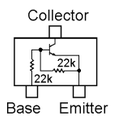
DTA143EU (23)
(Q1019, 1020,
1023)



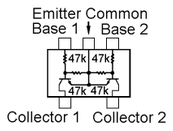
DTC124TU (05)
(Q1022)



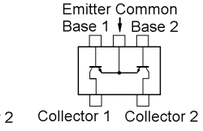
DTC143ZUA (123)
(Q1033, 1056)



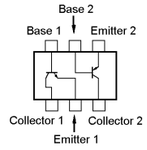
T1N241M (N2)
(Q1054)



UMG2N (G2)
(Q1011, 1070)



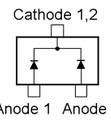
UMW1 (W1)
(Q1062)



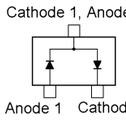
UMZ2N (Z2)
(Q1002)

2SA1602A (MF)
(Q1059, 1064)

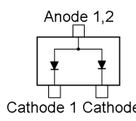
2SC4116GR (LG)
(Q1018, 1065)
2SC4215Y (QY)
(Q1060)
2SC5226 (R22)
(Q1063)



MC2848 (A6)
(D1035)



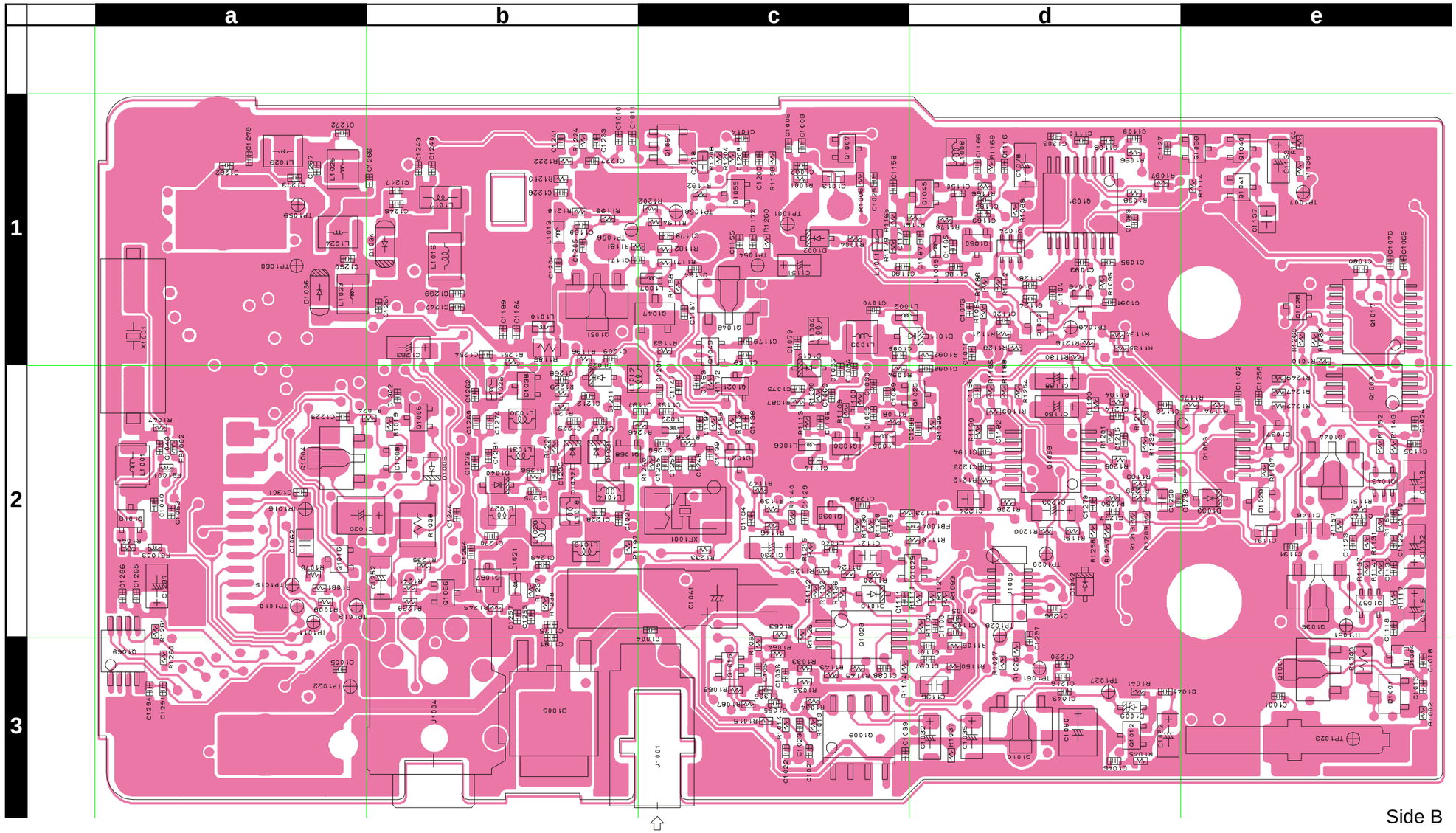
MC2850 (A7)
(D1007, 1016)
RN739F (5F)
(D1010)



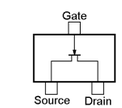
HMS88WA
(D1039)

Main Unit

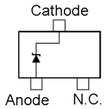
Parts Layout



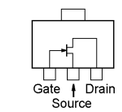
Side B



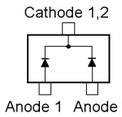
2SK880GR (XG)
(Q1032)



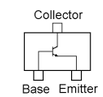
02CZ2.0X (2.0X)
(D1001)



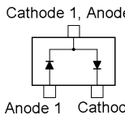
2SK2973 (K1)
(Q1051)



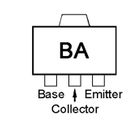
MC2848 (A6)
(D1027)



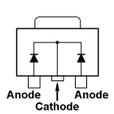
2SC3356 (R24)
(Q1047)
2SC4116GR (LG)
(Q1007, 1012, 1013, 1040, 1045, 1050)
2SC5226 (R22)
(Q1025, 1030, 1039, 1066, 1067, 1068)



DAN222 (N)
(D1004)
MC2850 (A7)
(D1008, 1028, 1037)
RN739F (5F)
(D1038)



2SB1132 (BA)
(Q1001, 1004, 1010, 1036, 1044, 1048)



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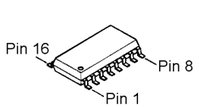

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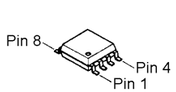

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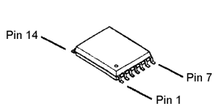
(Q1009)



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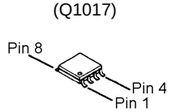
(Q1017)



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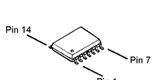
(Q1069)



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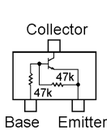
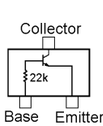
NJM2902V
(Q1058)



DTA143EU (23)
(Q1041)



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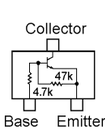
(Q1038)



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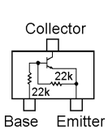
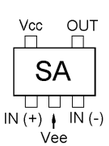
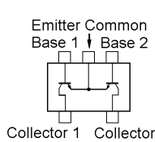
(Q1016)



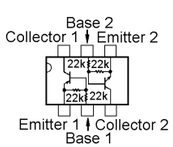
RT1N241M (N2)
(Q1006, 1021, 1026, 1046)



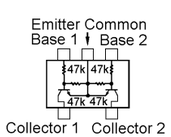
TA75S01F (SA)
(Q1057)



UMW1 (W1)
(Q1037, 1043, 1049)



UMD2N (D2)
(Q1024)



UMG2N (G2)
(Q1029)

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	PCB with Comporents (with VR Unit)					CS1740001				
	Printed Circuit Board					FR0066601				
C 1001	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e3
C 1002	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c1
C 1003	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c1
C 1004	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c3
C 1005	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	a3
C 1006	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	c1
C 1009	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	E3
C 1010	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b1
C 1011	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b1
C 1012	CHIP CAP.	220pF	25V	CH	GRM36CH221J25PT	K22148203		8-	A	D3
C 1013	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		8-	B	c1
C 1014	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c1
C 1015	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e3
C 1016	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		8-	A	B3
C 1017	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	D3
C 1018	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e3
C 1019	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		8-	A	C3
C 1020	CHIP TA.CAP.	22uF	16V		TEMSVB21C226M-8R	K78120028		8-	B	a2
C 1021	CHIP CAP.	0.022uF	16V	B	GRM36B223K16PT	K22128806		8-	B	c3
C 1022	CHIP CAP.	0.022uF	16V	B	GRM36B223K16PT	K22128806		8-	B	c3
C 1023	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	c3
C 1024	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	e2
C 1025	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	c1
C 1026	CHIP CAP.	1uF	10V	B	GRM40B105K10PT	K22100802		8-	A	D2
C 1027	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	D3
C 1028	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	D2
C 1029	CHIP CAP.	100pF	50V	CH	GRM36CH101J50PT	K22178236		8-	A	D3
C 1030	CHIP TA.CAP.	4.7uF	16V		TEMSVA1C475M-8R	K78120031		8-	A	C2
C 1031	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		8-	A	C2
C 1032	CHIP TA.CAP.	4.7uF	16V		TEMSVA1C475M-8R	K78120031		8-	B	d3
C 1033	AL.ELECTRO.CAP.	220uF	10V		SMG1AVB221M 220UF	K40109027		8-	A	D3
C 1034	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	E2
C 1035	CHIP TA.CAP.	4.7uF	16V		TEMSVA1C475M-8R	K78120031		8-	B	d3
C 1036	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	c3
C 1038	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C2
C 1039	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c3
C 1040	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1041	AL.ELECTRO.CAP.	100uF	10V		UVR1A101MDA6 100UF	K40109028		8-	B	c3
C 1042	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	C2
C 1043	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d3
C 1044	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	C2
C 1045	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	d3
C 1046	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d3
C 1047	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	A	C2
C 1049	CHIP CAP.	22pF	50V	CH	GRM36CH220J50PT	K22178220		8-	B	a2
C 1050	CHIP TA.CAP.	10uF	20V		TEMSVB21D106M-8R	K78130028		8-	B	d3
C 1051	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	A	C2
C 1053	CHIP CAP.	9pF	50V	CH	GRM36CH090D50PT	K22178211		8-	B	a2
C 1054	CHIP CAP.	390pF	50V	B	GRM36B391K50PT	K22178804		8-	A	C2
C 1055	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	c3
C 1056	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	C2
C 1057	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	c3
C 1058	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C2
C 1059	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C2
C 1060	CHIP CAP.	1uF	10V	B	GRM40B105K10PT	K22100802		8-	A	C3
C 1061	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	A	D2
C 1062	CHIP CAP.	1uF	10V	B	GRM40B105K10PT	K22100802		8-	B	a2
C 1063	CHIP CAP.	180pF	25V	CH	GRM36CH181J25PT	K22148201		8-	A	C2
C 1067	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	D2
C 1068	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	D2
C 1069	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	c2
C 1070	CHIP CAP.	100pF	50V	CH	GRM36CH101J50PT	K22178236		8-	B	c1
C 1071	CHIP CAP.	0.047uF	10V	B	GRM36B473K10PT	K22108801		8-	B	d2
C 1072	CHIP TA.CAP.	22uF	6.3V		TEMSVA0J226M-8R	K78080047		8-	A	B2
C 1073	CHIP CAP.	0.047uF	10V	B	GRM36B473K10PT	K22108801		8-	B	d1
C 1074	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C2
C 1075	CHIP CAP.	0.022uF	16V	B	GRM36B223K16PT	K22128806		8-	B	c2
C 1077	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C1
C 1078	CHIP TA.CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027		8-	B	d1
C 1079	CHIP CAP.	0.022uF	16V	B	GRM36B223K16PT	K22128806		8-	B	c2
C 1081	CHIP CAP.	0.22uF	10V	B	GRM39B224K10PT	K22104801		8-	A	C3
C 1082	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C1

Main Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1084	CHIP CAP.	0.022uF	16V	B	GRM36B223K16PT	K22128806		8-	B	c2
C 1085	CHIP CAP.	0.022uF	16V	B	GRM36B223K16PT	K22128806		8-	B	c2
C 1086	CHIP CAP.	10pF	50V	CH	GRM36CH100D50PT	K22178212		8-	B	c2
C 1087	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	B3
C 1088	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	c3
C 1089	CHIP CAP.	33pF	50V	CH	GRM36CH330J50PT	K22178224		8-	B	c2
C 1090	CHIP CAP.	15pF	50V	CH	GRM36CH150J50PT	K22178216		8-	B	c2
C 1091	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d1
C 1092	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	C3
C 1093	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d1
C 1094	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C3
C 1095	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d1
C 1096	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C3
C 1097	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d3
C 1098	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d2
C 1099	CHIP CAP.	3pF	50V	CJ	GRM36CJ030C50PT	K22178205		8-	B	c2
C 1100	CHIP CAP.	0.0022uF	50V	B	GRM36B222K50PT	K22178813		8-	B	d3
C 1101	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	d3
C 1102	CHIP TA.CAP.	4.7uF	16V		TEMSVA1C475M-8R	K78120031		8-	A	C3
C 1103	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	d3
C 1104	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d1
C 1106	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1107	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	A	C3
C 1108	CHIP CAP.	100pF	50V	CH	GRM36CH101J50PT	K22178236		8-	B	d1
C 1109	CHIP CAP.	100pF	50V	CH	GRM36CH101J50PT	K22178236		8-	B	d1
C 1110	CHIP CAP.	100pF	50V	CH	GRM36CH101J50PT	K22178236		8-	B	d1
C 1111	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	c3
C 1113	CHIP CAP.	100pF	50V	CH	GRM36CH101J50PT	K22178236		8-	A	C3
C 1114	CHIP CAP.	7pF	50V	CH	GRM36CH070D50PT	K22178209		8-	B	c2
C 1115	CHIP TA.CAP.	4.7uF	16V		TEMSVA1C475M-8R	K78120031		8-	B	e3
C 1117	CHIP TA.CAP.	4.7uF	20V		TEMSVA1D475M-8R	K78130048		8-	A	C3
C 1118	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e3
C 1119	CHIP TA.CAP.	22uF	4V		TEMSVA0G226M-8R	K78060023		8-	B	e2
C 1120	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d2
C 1121	CHIP CAP.	1uF	10V	B	GRM40B105K10PT	K22100802		8-	B	c2
C 1122	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e2
C 1123	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e2
C 1125	CHIP CAP.	10pF	50V	CH	GRM36CH100D50PT	K22178212		8-	B	c2
C 1126	CHIP TA.CAP.	33uF	4V		TEMSVA0G336M-8R	K78060036		8-	A	C3
C 1127	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d1
C 1128	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	d1
C 1129	CHIP CAP.	5pF	50V	CH	GRM36CH050C50PT	K22178207		8-	B	c2
C 1130	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e2
C 1131	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e2
C 1133	CHIP TA.CAP.	1uF	35V		TEMSVA1V105M-8R	K78160032		8-	B	e1
C 1134	CHIP CAP.	10pF	50V	CH	GRM36CH100D50PT	K22178212		8-	B	c2
C 1135	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	e2
C 1136	CHIP CAP.	1uF	10V	B	GRM40B105K10PT	K22100802		8-	B	d3
C 1137	CHIP CAP.	1uF	10V	B	GRM40B105K10PT	K22100802		8-	B	e1
C 1138	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1139	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1140	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	e2
C 1141	CHIP CAP.	15pF	50V	CH	GRM36CH150J50PT	K22178216		8-	A	B1
C 1142	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	e2
C 1143	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C1
C 1145	CHIP CAP.	0.0033uF	50V	B	GRM36B332K50PT	K22178815		8-	A	B2
C 1146	CHIP CAP.	1uF	10V	B	GRM40B105K10PT	K22100802		8-	B	e2
C 1147	CHIP CAP.	12pF	50V	CH	GRM36CH120J50PT	K22178214		8-	B	c2
C 1149	CHIP TA.CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027		8-	A	C2
C 1150	CHIP CAP.	47pF	50V	CH	GRM36CH470J50PT	K22178228		8-	B	d1
C 1151	CHIP TA.CAP.	4.7uF	16V		TEMSVA1C475M-8R	K78120031		8-	B	c1
C 1152	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C2
C 1153	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	A	C2
C 1154	CHIP TA.CAP.	4.7uF	16V		TEMSVA1C475M-8R	K78120031		8-	A	C2
C 1157	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1158	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c1
C 1159	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1160	CHIP TA.CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027		8-	B	d2
C 1161	CHIP CAP.	68pF	50V	CH	GRM36CH680J50PT	K22178232		8-	A	C2
C 1162	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	C2
C 1163	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1164	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c1
C 1165	CHIP CAP.	470pF	50V	B	GRM36B471K50PT	K22178805		8-	B	d1
C 1166	CHIP CAP.	47pF	50V	CH	GRM36CH470J50PT	K22178228		8-	B	d1

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1167	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	C1
C 1169	CHIP CAP.	39pF	50V	CH	GRM36CH390J50PT	K22178226		8-	B	d1
C 1170	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	C1
C 1171	CHIP CAP.	15pF	50V	CH	GRM36CH150J50PT	K22178216		8-	B	b1
C 1172	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c1
C 1173	CHIP CAP.	470pF	50V	B	GRM36B471K50PT	K22178805		8-	B	d2
C 1174	CHIP CAP.	0.0047uF	25V	B	GRM36B472K25PT	K22148830		8-	A	C2
C 1176	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	C1
C 1178	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c1
C 1179	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1180	CHIP TA.CAP.	0.22uF	20V		TEMSVA21D224M-8R	K78130022		8-	A	C2
C 1182	CHIP CAP.	470pF	50V	B	GRM36B471K50PT	K22178805		8-	B	e2
C 1183	CHIP TA.CAP.	22uF	4V		TEMSVA0G226M-8R	K78060023		8-	A	C2
C 1184	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b2
C 1185	CHIP CAP.	39pF	50V	CH	GRM36CH390J50PT	K22178226		8-	B	d1
C 1186	CHIP CAP.	12pF	50V	CH	GRM36CH120J50PT	K22178214		8-	B	d1
C 1187	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d1
C 1188	CHIP TA.CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027		8-	B	d2
C 1189	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	b2
C 1190	CHIP CAP.	47pF	50V	CH	GRM36CH470J50PT	K22178228		8-	B	c1
C 1191	CHIP CAP.	0.22uF	10V	B	GRM39B224K10PT	K22104801		8-	B	e2
C 1192	CHIP CAP.	0.0047uF	25V	B	GRM36B472K25PT	K22148830		8-	B	d2
C 1193	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1194	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	d2
C 1195	CHIP CAP.	0.5pF	50V	CK	GRM36CK0R5C50PT	K22178201		8-	B	c2
C 1196	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	d2
C 1197	CHIP CAP.	0.5pF	50V	CK	GRM36CK0R5C50PT	K22178201		8-	B	b2
C 1199	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	b1
C 1201	CHIP CAP.	1pF	50V	CK	GRM36CK010C50PT	K22178202		8-	B	c2
C 1202	CHIP CAP.	0.0047uF	25V	B	GRM36B472K25PT	K22148830		8-	A	D2
C 1203	CHIP TA.CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027		8-	B	d2
C 1204	CHIP CAP.	68pF	50V	CH	GRM36CH680J50PT	K22178232		8-	B	b1
C 1205	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b1
C 1206	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	A	D2
C 1208	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c1
C 1209	CHIP CAP.	470pF	50V	B	GRM36B471K50PT	K22178805		8-	B	b2
C 1210	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	A	D2
C 1211	CHIP CAP.	1pF	50V	CK	GRM36CK010C50PT	K22178202		8-	B	b2
C 1212	CHIP CAP.	220pF	25V	CH	GRM36CH221J25PT	K22148203		8-	B	b2
C 1214	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	d2
C 1215	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	d2
C 1216	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d3
C 1217	CHIP CAP.	470pF	50V	B	GRM36B471K50PT	K22178805		8-	B	b2
C 1218	CHIP CAP.	0.22uF	10V	B	GRM39B224K10PT	K22104801		8-	B	c1
C 1219	CHIP TA.CAP.	2.2uF	16V		TEMSVA1C225M-8R	K78120015		8-	A	C2
C 1220	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	d3
C 1221	CHIP CAP.	0.5pF	50V	CK	GRM36CK0R5C50PT	K22178201		8-	B	b2
C 1222	CHIP CAP.	39pF	50V	CH	GRM36CH390J50PT	K22178226		8-	A	D2
C 1223	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	d2
C 1224	CHIP CAP.	0.15uF	25V	B	GRM40B154K25PT	K22140823		8-	B	d2
C 1225	CHIP CAP.	220pF	25V	CH	GRM36CH221J25PT	K22148203		8-	B	b2
C 1226	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b1
C 1227	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	b1
C 1228	CHIP CAP.	1pF	50V	CK	GRM36CK010C50PT	K22178202		8-	B	b2
C 1229	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	a2
C 1230	CHIP TA.CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027		8-	B	c2
C 1231	CHIP TA.CAP.	33uF	4V		TEMSVA0G336M-8R	K78060036		8-	A	D2
C 1232	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C1
C 1233	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b1
C 1235	CHIP TA.CAP.	2.2uF	16V		TEMSVA1C225M-8R	K78120015		8-	A	D3
C 1236	CHIP CAP.	470pF	50V	B	GRM36B471K50PT	K22178805		8-	B	b2
C 1237	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	A	C3
C 1238	CHIP CAP.	470pF	50V	B	GRM36B471K50PT	K22178805		8-	B	d2
C 1239	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b1
C 1240	CHIP CAP.	33pF	50V	CH	GRM36CH330J50PT	K22178224		8-	B	b1
C 1241	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b1
C 1242	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	b1
C 1243	CHIP CAP.	18pF	50V	CH	GRM36CH180J50PT	K22178218		8-	B	b1
C 1244	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	b2
C 1245	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	D1
C 1246	CHIP CAP.	12pF	50V	CH	GRM36CH120J50PT	K22178214		8-	B	b1
C 1247	CHIP CAP.	33pF	50V	CH	GRM36CH330J50PT	K22178224		8-	B	b1
C 1248	CHIP CAP.	0.0047uF	25V	B	GRM36B472K25PT	K22148830		8-	B	c2
C 1249	CHIP CAP.	10pF	50V	CH	GRM36CH100D50PT	K22178212		8-	B	b2

Main Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1250	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	D1
C 1251	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	c2
C 1252	CHIP TA.CAP.	2.2uF	16V		TEMSVA1C225M-8R	K78120015		8-	B	b2
C 1253	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b3
C 1254	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b2
C 1255	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1256	CHIP CAP.	0.01uF	16V	B	GRM36B103K16PT	K22128804		8-	B	e2
C 1257	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b3
C 1258	CHIP CAP.	39pF	50V	CH	GRM36CH390J50PT	K22178226		8-	B	c2
C 1259	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	D1
C 1260	CHIP CAP.	39pF	50V	CH	GRM36CH390J50PT	K22178226		8-	B	a1
C 1261	CHIP CAP.	12pF	50V	CH	GRM36CH120J50PT	K22178214		8-	B	b1
C 1262	CHIP CAP.	22pF	50V	CH	GRM36CH220J50PT	K22178220		8-	B	b2
C 1263	CHIP TA.CAP.	22uF	4V		TEMSVA0G226M-8R	K78060023		8-	B	b2
C 1264	CHIP CAP.	39pF	50V	CH	GRM36CH390J50PT	K22178226		8-	B	b2
C 1265	CHIP CAP.	0.5pF	50V	CK	GRM36CK0R5C50PT	K22178201		8-	A	D1
C 1266	CHIP CAP.	33pF	50V	CH	GRM36CH330J50PT	K22178224		8-	B	a1
C 1267	CHIP CAP.	5pF	50V	CH	GRM36CH050C50PT	K22178207		8-	B	a1
C 1268	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b2
C 1269	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b2
C 1270	CHIP CAP.	22pF	50V	CH	GRM36CH220J50PT	K22178220		8-	B	b2
C 1271	CHIP CAP.	0.5pF	50V	CK	GRM36CK0R5C50PT	K22178201		8-	A	E1
C 1272	CHIP CAP.	33pF	50V	CH	GRM36CH330J50PT	K22178224		8-	B	a1
C 1273	CHIP CAP.	5pF	50V	CH	GRM36CH050C50PT	K22178207		8-	B	a1
C 1274	CHIP CAP.	68pF	50V	CH	GRM36CH680J50PT	K22178232		8-	B	b2
C 1275	CHIP CAP.	27pF	50V	CH	GRM36CH270J50PT	K22178222		8-	B	b2
C 1276	CHIP CAP.	15pF	50V	CH	GRM36CH150J50PT	K22178216		8-	B	b2
C 1277	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d2
C 1278	CHIP CAP.	15pF	50V	CH	GRM36CH150J50PT	K22178216		8-	B	a1
C 1279	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d2
C 1280	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	E1
C 1281	CHIP CAP.	220pF	25V	CH	GRM36CH221J25PT	K22148203		8-	B	b2
C 1282	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	a1
C 1284	CHIP TA.CAP.	2.2uF	16V		TEMSVA1C225M-8R	K78120015		8-	A	C2
C 1286	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	a3
C 1287	CHIP TA.CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027		8-	B	a3
C 1288	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d2
C 1289	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	c2
C 1290	CHIP CAP.	1uF	10V	F	GRM39F105Z10PT	K22105001		8-	B	d2
C 1293	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	C3
C 1294	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	B	a3
C 1296	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d3
C 1297	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	d3
C 1299	CHIP CAP.	0.1uF	10V	B	GRM36B104K10PT	K22108802		8-	A	E2
C 1300	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	D2
C 1302	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	b2
C 1304	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	A	D2
C 1307	CHIP CAP.	0.1uF	16V	B	GRM39B104K16PT	K22124805		8-		
CD1001	CERAMIC DISC				CDBM450C24T	H7901060		8-	A	C2
CF1001	CERAMIC FILTER				CFWM450D	H3900522		8-	A	C1
D 1001	DIODE				02CZ2.0X TE85R	G2070124		8-	B	e3
D 1002	DIODE				BAS316	G2070716		8-	B	c1
D 1003	DIODE				BAS316	G2070716		8-	A	D3
D 1004	DIODE				DAN222 TL	G2070174		8-	B	e3
D 1005	DIODE				SB40W03T-TL	G2070370		8-	B	b3
D 1006	DIODE				BAS316	G2070716		8-	B	b2
D 1007	DIODE				MC2850-T11-1	G2070704		8-	A	E3
D 1008	DIODE				MC2850-T11-1	G2070704		8-	B	b2
D 1009	DIODE				RD6.8UMB2-T1B	G2070438		8-	B	d3
D 1010	DIODE				RN739F T106	G2070626		8-	A	C2
D 1011	DIODE				HVU350TRF	G2070380		8-	B	c2
D 1012	DIODE				BAS316	G2070716		8-	A	B2
D 1015	DIODE				HSU277TRF	G2070118		8-	B	c2
D 1016	DIODE				MC2850-T11-1	G2070704		8-	A	C3
D 1017	DIODE				BAS316	G2070716		8-	A	B2
D 1018	DIODE				BAS316	G2070716		8-	A	C3
D 1019	DIODE				BAS316	G2070716		8-	B	c3
D 1021	DIODE				HZU4ALL-TR	G2070428		8-	A	C3
D 1022	LED				AA1111C-TR	G2070660		8-	A	B1
D 1023	LED				AA1111C-TR	G2070660		8-	A	B3
D 1024	LED				AA1101F-TR	G2070658		8-	A	E1
D 1025	LED				AA1111C-TR	G2070660		8-	A	A1
D 1026	LED				AA1111C-TR	G2070660		8-	A	A3
D 1027	DIODE				MC2848-T11-1	G2070694		8-	B	c2

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
D 1028	DIODE				MC2850-T11-1	G2070704		8-	B	e2
D 1029	DIODE				HVU350TRF	G2070380		8-	B	b2
D 1031	DIODE				HVU350TRF	G2070380		8-	B	b2
D 1032	DIODE				HVU350TRF	G2070380		8-	B	b2
D 1033	DIODE				BAS316	G2070716		8-	B	e2
D 1034	DIODE				RLS135 TE-11	G2070128		8-	B	b1
D 1035	DIODE				MC2848-T11-1	G2070694		8-	A	D1
D 1036	DIODE				RLS135 TE-11	G2070128		8-	B	a1
D 1037	DIODE				MC2850-T11-1	G2070704		8-	B	e2
D 1038	DIODE				RN739F T106	G2070626		8-	B	b2
D 1039	DIODE				HSM88WA TR	G2070168		8-	A	D1
D 1040	DIODE				HVU350TRF	G2070380		8-	B	b2
D 1042	DIODE				MA111-(TX)	G2070338		8-	B	d3
D 1043	LED				AA1101F-TR	G2070658		8-	A	E3
D 1044	DIODE				1SS355 TE-17	G2070470		8-	A	D1
D 1045	DIODE				BAS316	G2070716		8-	A	D1
DS1001	LCD				HT-3256-TFZ1	G6090133		8-	A	E2
FB1001	FERRITE BEADS				BK1005HM102-T	L9190124		8-	B	a2
FB1002	FERRITE BEADS				BK1005HM102-T	L9190124		8-	B	a2
FB1003	FERRITE BEADS				BK1005HM102-T	L9190124		8-	B	a2
FB1004	FERRITE BEADS				BK1005LL680-T	L9190127		8-	B	c2
J 1001	CONNECTOR				HEC3604-010110	P0091263		8-	B	c3
J 1002	SHIELD FINGER				4025 3100089	S5000225		8-	A	D3
J 1003	SHIELD FINGER				4025 3100089	S5000225		8-	A	D2
J 1004	CONNECTOR				HSJ1594-010015	P1091022		8-	B	b3
J 1005	CONNECTOR				AXK6F10335P	P0091225		8-	B	d3
L 1001	M.RFC	150uH			FLC32T-151J	L1690229		8-	B	a2
L 1002	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		8-	B	c2
L 1003	COIL				E2 0.25-1.9-6.5T-L	L0022401		8-	B	c2
L 1004	CHIP COIL	0.039uH			LQN21A39NJ04	L1690616		8-	B	c2
L 1005	M.RFC	0.082uH			HK1608 82NJ-T	L1690527		8-	B	c2
L 1006	M.RFC	0.082uH			HK1608 82NJ-T	L1690527		8-	B	c2
L 1007	M.RFC	0.068uH			HK1608 68NJ-T	L1690526		8-	B	c1
L 1008	CHIP COIL	0.033uH			LQN21A33NJ04	L1690615		8-	B	d1
L 1009	M.RFC	0.47uH			LK1608 R47K-T	L1690414		8-	B	d1
L 1010	M.RFC	0.082uH			HK1608 82NJ-T	L1690527		8-	B	b2
L 1011	M.RFC	0.033uH			HK1608 33NJ-T	L1690522		8-	B	c1
L 1012	CHIP COIL	0.1uH			LQN21AR10J04	L1690620		8-	B	b2
L 1013	M.RFC	0.022uH			HK1608 22NJ-T	L1690520		8-	B	b1
L 1014	CHIP COIL	0.1uH			LQN21AR10J04	L1690620		8-	B	b2
L 1015	M.RFC	0.56uH			LK1608 R56K-T	L1690415		8-	A	D2
L 1016	COIL				E2 0.35-1.6-8T-L	L0022458		8-	B	b1
L 1017	COIL				E2 0.28-1.0-6.5T-R-S	L0022598		8-	B	b1
L 1018	CHIP COIL	0.033uH			LQN21A33NJ04	L1690615		8-	B	b2
L 1019	CHIP COIL	0.068uH			LQN21A68NJ04	L1690605		8-	B	b2
L 1020	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		8-	A	D1
L 1021	M.RFC	6.8uH			LK1608 6R8K-T	L1690632		8-	B	b3
L 1022	M.RFC	0.56uH			LK1608 R56K-T	L1690415		8-	B	c2
L 1023	COIL				E2 0.3-1.7-8T-L	L0022376		8-	B	a1
L 1024	COIL				E2 0.3-1.7-8T-L	L0022376		8-	B	a1
L 1025	COIL				E2 0.3-1.7-8T-L	L0022376		8-	B	a1
L 1026	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		8-	B	b2
L 1027	CHIP COIL	0.068uH			LQN21A68NJ04	L1690605		8-	B	b2
L 1028	CHIP COIL	0.039uH			LQN21A39NJ04	L1690616		8-	B	b2
L 1029	COIL				E2 0.3-1.7-8T-L	L0022376		8-	B	a1
L 1030	CHIP COIL	0.082uH			LQN21A82NJ04	L1690619		8-	B	b2
L 1031	CHIP COIL	0.068uH			LQN21A68NJ04	L1690605		8-	B	b2
MC1001	MIC. ELEMENT				EM-100PT	M3290029		8-	A	C1
Q 1001	TRANSISTOR				2SB1132 T100 Q	G3211327Q		8-	B	e3
Q 1002	TRANSISTOR				UMZ2N TR	G3070117		8-	A	D2
Q 1003	IC				AK93C85AM E-1	G1092706		8-	B	e2
Q 1004	TRANSISTOR				2SB1132 T100 Q	G3211327Q		8-	B	a2
Q 1005	IC				NJM2902V-TE1	G1091679		8-	A	C3
Q 1006	TRANSISTOR				RT1N241M-T11-1	G3070249		8-	B	b2
Q 1007	TRANSISTOR				2SC4116GR TE85R	G3341167G		8-	B	c1
Q 1008	IC				AN6123MS-TXL	G1093114		8-	A	C2
Q 1009	IC				TDA7233D-TR	G1091112		8-	B	c3
Q 1010	TRANSISTOR				2SB1132 T100 Q	G3211327Q		8-	B	d3
Q 1011	TRANSISTOR				UMG2N TR	G3070088		8-	A	E3
Q 1012	TRANSISTOR				2SC4116GR TE85R	G3341167G		8-	B	d3
Q 1013	TRANSISTOR				2SC4116GR TE85R	G3341167G		8-	B	a2
Q 1014	IC				LC877280B-5Y07	G1093534		8-	A	E2
Q 1015	IC				TC7S66FU TE85R	G1092116		8-	B	c3
Q 1016	TRANSISTOR				DTC143ZUA T106	G3070188		8-	B	a2

Main Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
Q 1017	IC				BU4094BCFV-E1	G1092128		8-	B	e2
Q 1018	TRANSISTOR				2SC4116GR TE85R	G3341167G		8-	A	C2
Q 1019	TRANSISTOR				DTA143EU T106	G3070110		8-	A	C1
Q 1020	TRANSISTOR				DTA143EU T106	G3070110		8-	A	B2
Q 1021	TRANSISTOR				RT1N241M-T11-1	G3070249		8-	B	c2
Q 1022	TRANSISTOR				DTC124TU T106	G3070065		8-	A	C3
Q 1023	TRANSISTOR				DTA143EU T106	G3070110		8-	A	C1
Q 1024	TRANSISTOR				UMD2N TR	G3070076		8-	B	d1
Q 1025	TRANSISTOR				2SC5226-5-TL	G3352268E		8-	B	d2
Q 1026	TRANSISTOR				RT1N241M-T11-1	G3070249		8-	B	e1
Q 1027	IC				S-80745SN-D9-T1	G1093146		8-	A	C3
Q 1028	IC				NJM2904V-TE1	G1091677		8-	B	c3
Q 1029	TRANSISTOR				UMG2N TR	G3070088		8-	B	c2
Q 1030	TRANSISTOR				2SC5226-5-TL	G3352268E		8-	B	c2
Q 1031	IC				LV2105V-TLM	G1093191		8-	B	d1
Q 1032	FET				2SK880GR TE85R	G3808807G		8-	B	d2
Q 1033	TRANSISTOR				DTC143ZUA T106	G3070188		8-	A	E1
Q 1034	IC				S-81235SGUP-DQI-T1	G1093026		8-	A	C3
Q 1036	TRANSISTOR				2SB1132 T100 Q	G3211327Q		8-	B	e3
Q 1037	TRANSISTOR				UMW1 TR	G3070078		8-	B	e3
Q 1038	TRANSISTOR				DTC124TU T106	G3070065		8-	B	e1
Q 1039	TRANSISTOR				2SC5226-5-TL	G3352268E		8-	B	c2
Q 1040	TRANSISTOR				2SC4116GR TE85R	G3341167G		8-	B	e1
Q 1041	TRANSISTOR				DTA143EU T106	G3070110		8-	B	e1
Q 1043	TRANSISTOR				UMW1 TR	G3070078		8-	B	e2
Q 1044	TRANSISTOR				2SB1132 T100 Q	G3211327Q		8-	B	e2
Q 1045	TRANSISTOR				2SC4116GR TE85R	G3341167G		8-	B	d1
Q 1046	TRANSISTOR				RT1P441U-T11-1	G3070248		8-	B	d1
Q 1047	TRANSISTOR				2SC3356-T2B R25	G3333567E		8-	B	c2
Q 1048	TRANSISTOR				2SB1132 T100 Q	G3211327Q		8-	B	c1
Q 1049	TRANSISTOR				UMW1 TR	G3070078		8-	B	c2
Q 1050	TRANSISTOR				2SC4116GR TE85R	G3341167G		8-	B	d1
Q 1051	FET				2SK2973-T13	G3829738		8-	B	b1
Q 1052	IC				TK10931VT1	G1093013		8-	A	C2
Q 1053	IC				NJM2901V-TE1	G1092779		8-	B	e2
Q 1054	TRANSISTOR				RT1N241M-T11-1	G3070249		8-	A	D2
Q 1056	TRANSISTOR				DTC143ZUA T106	G3070188		8-	A	D2
Q 1057	IC				TA75S01F TE85R	G1091593		8-	B	c1
Q 1058	IC				NJM2902V-TE1	G1091679		8-	B	d2
Q 1059	TRANSISTOR				2SA1602A-T11-1F	G3116028F		8-	A	D2
Q 1060	TRANSISTOR				2SC4215Y TE85R	G3342157Y		8-	A	C2
Q 1061	FET				2SK2974-T11	G3829747		8-	A	D1
Q 1062	TRANSISTOR				UMW1 TR	G3070078		8-	A	D2
Q 1063	TRANSISTOR				2SC5226-5-TL	G3352268E		8-	A	C2
Q 1064	TRANSISTOR				2SA1602A-T11-1F	G3116028F		8-	A	D2
Q 1065	TRANSISTOR				2SC4116GR TE85R	G3341167G		8-	A	D2
Q 1066	TRANSISTOR				2SC5226-5-TL	G3352268E		8-	B	b3
Q 1067	TRANSISTOR				2SC5226-5-TL	G3352268E		8-	B	b2
Q 1068	TRANSISTOR				2SC5226-5-TL	G3352268E		8-	B	b2
Q 1069	IC				AD7818ARM-REEL7	G1093425		8-	B	a3
Q 1070	TRANSISTOR				UMG2N TR	G3070088		8-	A	C1
R 1001	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	c1
R 1002	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	e3
R 1003	CHIP RES.	22	1/10W	5%	RMC1/10T 220J	J24205220		8-	B	e3
R 1004	CHIP RES.	680	1/16W	5%	RMC1/16S 681JTH	J24189023		8-	B	c1
R 1005	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	A	D3
R 1006	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	c1
R 1007	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	B3
R 1008	CHIP RES.	150	1/4W	5%	RMC1/4 151JATP	J24245151		8-	B	b2
R 1009	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		8-	B	a3
R 1010	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	e2
R 1011	CHIP RES.	8.2k	1/16W	5%	RMC1/16S 822JTH	J24189036		8-	A	D2
R 1012	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	C3
R 1013	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	B	c3
R 1014	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		8-	B	c3
R 1015	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		8-	B	c3
R 1016	CHIP RES.	2.7k	1/16W	5%	RMC1/16S 272JTH	J24189030		8-	A	D2
R 1017	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	A	D2
R 1018	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C3
R 1019	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	b2
R 1020	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	D2
R 1021	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	A	D3
R 1022	CHIP RES.	1.2k	1/16W	5%	RMC1/16S 122JTH	J24189026		8-	A	D2
R 1023	CHIP RES.	68k	1/16W	5%	RMC1/16S 683JTH	J24189047		8-	A	C3

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1024	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004		8-	B	a2
R 1025	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	C3
R 1026	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d3
R 1027	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d3
R 1028	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		8-	A	C2
R 1029	CHIP RES.	82k	1/16W	5%	RMC1/16S 823JTH	J24189048		8-	A	D2
R 1030	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		8-	A	D2
R 1031	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	A	D2
R 1032	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	D2
R 1034	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021		8-	B	c3
R 1035	CHIP RES.	10	1/16W	5%	RMC1/16S 100JTH	J24189001		8-	B	c3
R 1036	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	C2
R 1037	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	d3
R 1039	CHIP RES.	1.2k	1/16W	5%	RMC1/16S 122JTH	J24189026		8-	A	C2
R 1040	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		8-	A	C2
R 1041	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		8-	B	d3
R 1042	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	A	C2
R 1043	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		8-	A	E3
R 1044	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	B	a2
R 1045	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		8-	B	d3
R 1046	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		8-	A	C2
R 1047	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		8-	B	a2
R 1048	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		8-	A	E3
R 1049	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C2
R 1050	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		8-	A	E3
R 1051	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C3
R 1052	CHIP RES.	1.5M	1/16W	5%	RMC1/16S 155JTH	J24189063		8-	A	C2
R 1053	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	C2
R 1054	CHIP RES.	5.6k	1/16W	5%	RMC1/16S 562JTH	J24189034		8-	A	C2
R 1055	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	D2
R 1056	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	D2
R 1057	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	E2
R 1058	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	E2
R 1059	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	c3
R 1060	CHIP RES.	68k	1/16W	5%	RMC1/16S 683JTH	J24189047		8-	A	C3
R 1061	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	E2
R 1062	CHIP RES.	56k	1/16W	5%	RMC1/16S 563JTH	J24189046		8-	A	C2
R 1065	CHIP RES.	56k	1/16W	5%	RMC1/16S 563JTH	J24189046		8-	A	C2
R 1066	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		8-	A	C3
R 1067	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	c3
R 1068	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	c3
R 1069	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	A	E2
R 1070	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		8-	A	C2
R 1071	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C3
R 1072	CHIP RES.	5.6k	1/16W	5%	RMC1/16S 562JTH	J24189034		8-	A	D2
R 1073	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		8-	A	C2
R 1075	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	B	a2
R 1077	CHIP RES.	2.7k	1/16W	5%	RMC1/16S 272JTH	J24189030		8-	A	E1
R 1078	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	D2
R 1080	CHIP RES.	82k	1/16W	5%	RMC1/16S 823JTH	J24189048		8-	A	D2
R 1081	CHIP RES.	5.6k	1/16W	5%	RMC1/16S 562JTH	J24189034		8-	B	a3
R 1082	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		8-	A	D2
R 1083	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	e2
R 1084	CHIP RES.	6.8k	1/16W	5%	RMC1/16S 682JTH	J24189035		8-	B	d2
R 1085	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	B2
R 1086	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	B	d1
R 1087	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	B	c2
R 1088	CHIP RES.	330	1/16W	5%	RMC1/16S 331JTH	J24189019		8-	B	d1
R 1089	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	A	C3
R 1090	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		8-	B	c2
R 1091	CHIP RES.	180k	1/16W	5%	RMC1/16S 184JTH	J24189052		8-	A	B3
R 1092	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	d2
R 1093	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d3
R 1094	CHIP RES.	1.8k	1/16W	5%	RMC1/16S 182JTH	J24189028		8-	B	c2
R 1095	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	d1
R 1096	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	d1
R 1097	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	d1
R 1098	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	d1
R 1099	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		8-	B	d2
R 1100	CHIP RES.	680	1/16W	5%	RMC1/16S 681JTH	J24189023		8-	B	c2
R 1101	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C3
R 1102	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		8-	B	d3
R 1103	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C3
R 1104	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	c3

Main Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1105	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	d3
R 1106	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C3
R 1107	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		8-	A	C3
R 1108	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	c2
R 1109	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	c2
R 1110	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	A	C3
R 1111	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	d3
R 1112	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		8-	B	d1
R 1113	CHIP RES.	150	1/16W	5%	RMC1/16S 151JTH	J24189015		8-	B	c2
R 1114	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	B	e1
R 1116	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		8-	B	c2
R 1117	CHIP RES.	12k	1/16W	5%	RMC1/16S 123JTH	J24189038		8-	B	e3
R 1120	CHIP RES.	56k	1/16W	5%	RMC1/16S 563JTH	J24189046		8-	B	c2
R 1121	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	d2
R 1124	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	c2
R 1125	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	c2
R 1126	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	c3
R 1127	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	d3
R 1128	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	d2
R 1129	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021		8-	B	c2
R 1130	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	c2
R 1131	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		8-	B	e2
R 1132	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	c3
R 1133	CHIP RES.	68	1/16W	5%	RMC1/16S 680JTH	J24189011		8-	A	E1
R 1134	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		8-	B	d2
R 1135	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		8-	B	d2
R 1136	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	c3
R 1137	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	e2
R 1138	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	e1
R 1139	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004		8-	B	c2
R 1140	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004		8-	B	c2
R 1141	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	e2
R 1142	CHIP RES.	150k	1/16W	5%	RMC1/16S 154JTH	J24189051		8-	B	c3
R 1143	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	c3
R 1144	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	e1
R 1145	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C2
R 1146	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004		8-	B	c2
R 1147	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		8-	B	c2
R 1148	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	e2
R 1149	CHIP RES.	68k	1/16W	5%	RMC1/16S 683JTH	J24189047		8-	B	c3
R 1150	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	d3
R 1151	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	e2
R 1152	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	e2
R 1153	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		8-	B	e2
R 1154	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	c2
R 1155	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	B	c2
R 1156	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	C2
R 1157	CHIP RES.	12k	1/16W	5%	RMC1/16S 123JTH	J24189038		8-	B	e2
R 1158	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	A	C2
R 1159	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		8-	A	C2
R 1160	CHIP RES.	27k	1/16W	5%	RMC1/16S 273JTH	J24189042		8-	A	C2
R 1161	CHIP RES.	390k	1/16W	5%	RMC1/16S 394JTH	J24189056		8-	B	d1
R 1162	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	A	C2
R 1163	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	B	c2
R 1164	CHIP RES.	8.2k	1/16W	5%	RMC1/16S 822JTH	J24189036		8-	A	C2
R 1165	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009		8-	B	c1
R 1166	CHIP RES.	270	1/16W	5%	RMC1/16S 271JTH	J24189018		8-	B	d1
R 1167	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	C2
R 1168	CHIP RES.	33	1/16W	5%	RMC1/16S 330JTH	J24189007		8-	B	c1
R 1169	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	d1
R 1170	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		8-	A	C2
R 1171	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		8-	B	c1
R 1172	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	c2
R 1173	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	C2
R 1174	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	e2
R 1175	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	e2
R 1176	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		8-	A	C2
R 1178	CHIP RES.	150k	1/16W	5%	RMC1/16S 154JTH	J24189051		8-	B	d1
R 1179	CHIP RES.	3.9k	1/16W	5%	RMC1/16S 392JTH	J24189032		8-	B	c1
R 1180	CHIP RES.	56k	1/16W	5%	RMC1/16S 563JTH	J24189046		8-	B	d2
R 1181	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009		8-	B	b1
R 1182	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	c1
R 1183	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d2
R 1184	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	d2

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1185	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	B	d2
R 1186	CHIP RES.	47	1/10W	5%	RMC1/10T 470J	J24205470		8-	B	b2
R 1187	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		8-	B	e2
R 1188	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d2
R 1189	CHIP RES.	180k	1/16W	5%	RMC1/16S 184JTH	J24189052		8-	B	d2
R 1190	CHIP RES.	27k	1/16W	5%	RMC1/16S 273JTH	J24189042		8-	B	d2
R 1191	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	d2
R 1193	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	B	d2
R 1194	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		8-	B	c1
R 1196	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	b2
R 1197	CHIP RES.	5.6k	1/16W	5%	RMC1/16S 562JTH	J24189034		8-	B	b2
R 1200	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	B	d2
R 1201	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		8-	B	d2
R 1202	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	c1
R 1204	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		8-	B	c1
R 1205	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d2
R 1206	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		8-	B	d2
R 1209	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	d2
R 1210	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		8-	A	B2
R 1211	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	b2
R 1212	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		8-	B	d2
R 1213	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d2
R 1214	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	A	D2
R 1215	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		8-	B	c2
R 1216	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		8-	B	d2
R 1217	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d2
R 1218	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		8-	B	b1
R 1219	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	b1
R 1220	CHIP RES.	68k	1/16W	5%	RMC1/16S 683JTH	J24189047		8-	A	D2
R 1221	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	b2
R 1222	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		8-	B	b1
R 1223	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	A	D2
R 1224	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	b1
R 1226	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	A	C1
R 1227	CHIP RES.	2.7k	1/16W	5%	RMC1/16S 272JTH	J24189030		8-	A	D2
R 1228	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		8-	A	D2
R 1229	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		8-	B	d2
R 1230	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C3
R 1231	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C3
R 1233	CHIP RES.	33	1/16W	5%	RMC1/16S 330JTH	J24189007		8-	B	c2
R 1234	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		8-	A	D1
R 1235	CHIP RES.	82k	1/16W	5%	RMC1/16S 823JTH	J24189048		8-	B	b2
R 1236	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		8-	B	c2
R 1237	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021		8-	B	b3
R 1238	CHIP RES.	390	1/16W	5%	RMC1/16S 391JTH	J24189020		8-	B	b3
R 1240	CHIP RES.	560	1/16W	5%	RMC1/16S 561JTH	J24189022		8-	B	c2
R 1241	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	b3
R 1242	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	e2
R 1243	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	A	D1
R 1244	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	A	D1
R 1245	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	B	b3
R 1246	CHIP RES.	270k	1/16W	5%	RMC1/16S 274JTH	J24189054		8-	B	b2
R 1247	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		8-	B	e2
R 1248	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	E1
R 1249	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	e2
R 1250	CHIP RES.	150k	1/16W	5%	RMC1/16S 154JTH	J24189051		8-	B	d2
R 1251	CHIP RES.	10	1/16W	5%	RMC1/16S 100JTH	J24189001		8-	B	b2
R 1252	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	E1
R 1253	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	A	E1
R 1254	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	d2
R 1255	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		8-	A	E1
R 1256	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		8-	B	b2
R 1257	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		8-	B	d2
R 1258	CHIP RES.	1.8k	1/16W	5%	RMC1/16S 182JTH	J24189028		8-	B	d2
R 1259	CHIP RES.	82k	1/16W	5%	RMC1/16S 823JTH	J24189048		8-	B	b2
R 1260	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	B	a3
R 1261	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		8-	B	a3
R 1262	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		8-	A	D2
R 1263	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	B	c1
R 1264	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		8-	A	C1
R 1265	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	B	e2
R 1266	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	C1
R 1267	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		8-	A	D1
R 1268	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		8-	A	D1

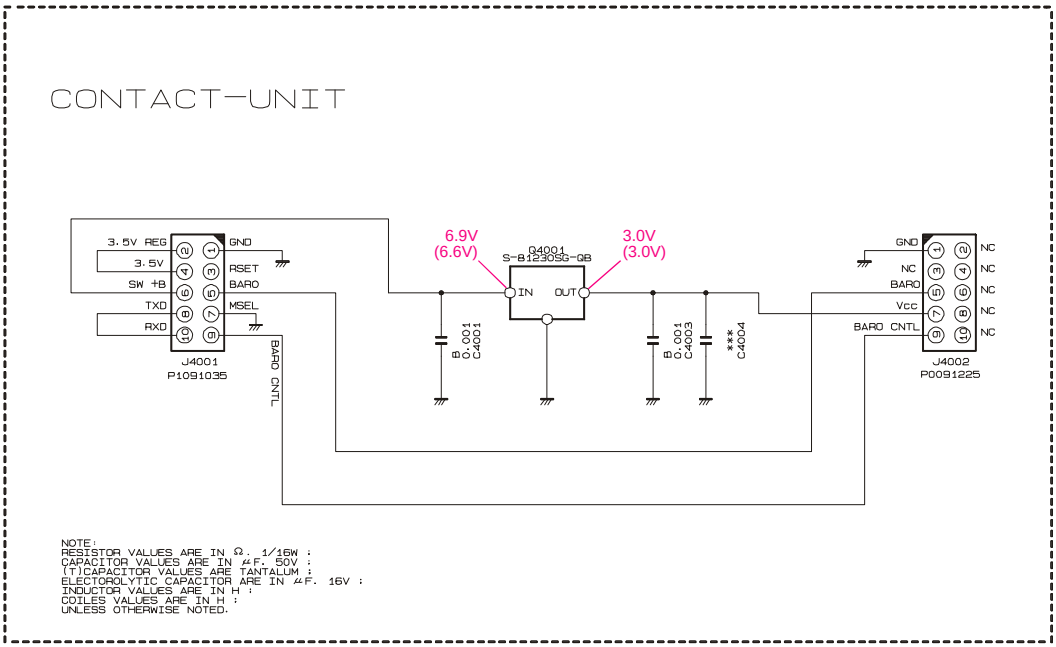
Main Unit

Parts List

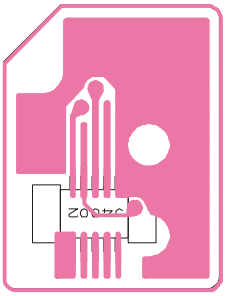
REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1269	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		8-	A	D1
TC1001	TRIMMER CAP.	20pF			CTZ2S-20C-W2-P	K91000216		8-	A	B1
TH1001	THERMISTOR				TBPS1R473K475H5Q	G9090068		8-	A	D1
TH1003	THERMISTOR				TBPS1R223K460H5Q	G9090085		8-	A	C2
TH1004	THERMISTOR				ERTJ0ET102J	G9090131		8-		
VR1001	POT.	10k			POZ3AN-1-103N-T00	J51820103		8-	A	B2
VR1002	POT.	10k			POZ3AN-1-103N-T00	J51820103		8-	A	C2
VR1003	POT.	200k			POZ3AN-1-204N-T00	J51820204		8-	A	B2
VR1004	POT.	10k			POZ3AN-1-103N-T00	J51820103		8-	A	C1
X 1001	XTAL SX-1319	3.7MHz			3.700MHZ	H0103256		8-	B	a2
X 1002	XTAL TOP-B	17.475MHz			17.475MHZ	H0103231		8-	A	B1
XF1001	XTAL FILTER				35S15A	H1102335		8-	B	c2
	HOLDER					RA0322700		8-		
	INTER CONNECTOR				(PCB)	RA0211200		8-		
	TERMINAL PLATE				(ANT)	RA0322800		8-		
	TERMINAL PLATE R					RA0107000		8-		
	TERMINAL PLATE					RA0210700		8-		
	LCD HOLDER					RA032090A		8-		
	INTER CONNECTOR				(LCD)	RA0324700		8-		
	REFLECTOR SHEET					RA0324800		8-		
	HOLDER RUBBER				(MIC)	RA0110200		8-		
	LEAF SPRING					R0132100		8-		

Contact Unit

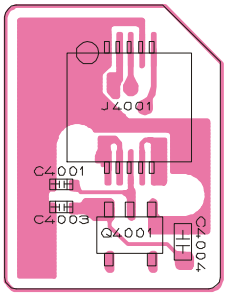
Circuit Diagram



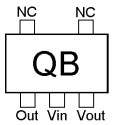
Parts Layout



Side A



Side B



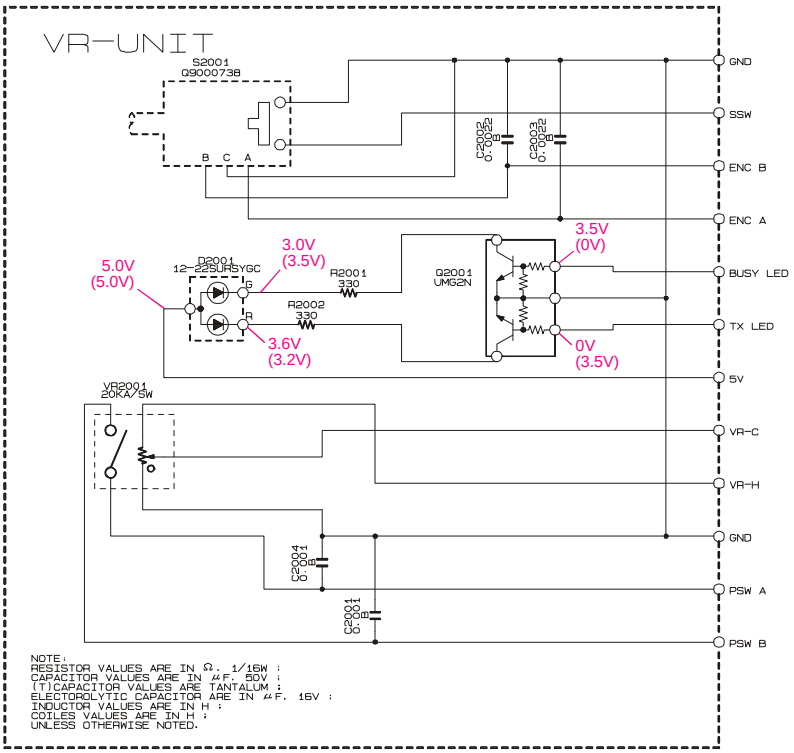
S-81230SG (QB)
(Q4001)

Parts List

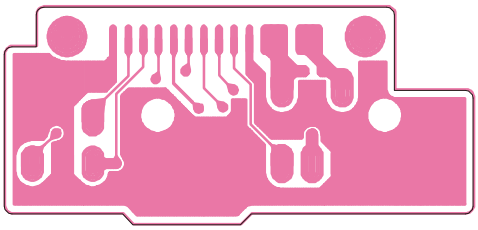
REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	PCB with Components					CB1485001				
	Printed Cirsuit Board					FR0069700		8-		
C 4001	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	
C 4003	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	
J 4001	CONNECTOR				AXK5F10535P	P1091035		8-	B	
J 4002	CONNECTOR				AXK6F10335P	P0091225		8-	A	
Q 4001	IC				S-81230SG-QB-T1	G1091826		8-	B	

VR Unit

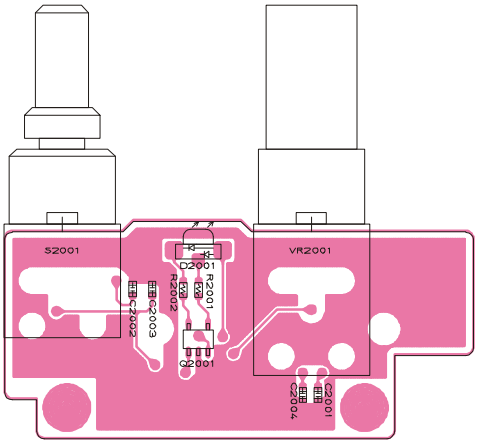
Circuit Diagram



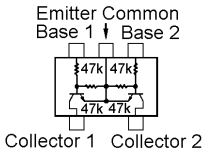
Parts Layout



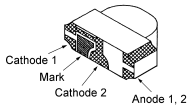
Side A



Side B



UMG2N (G2)
(Q2001)



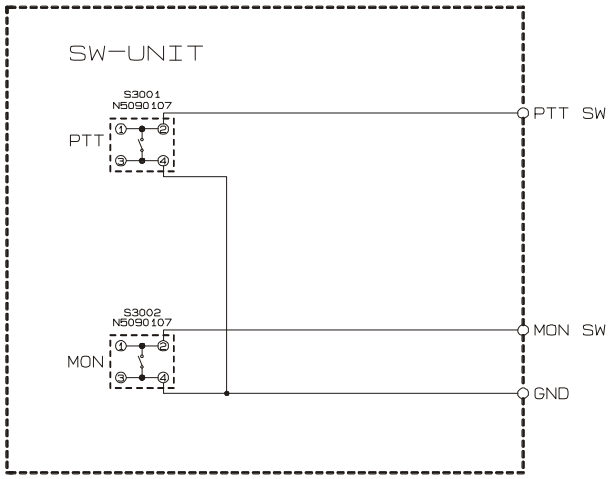
12-22SURSYGC/
S530-A2/TR8
(D2001)

Parts List

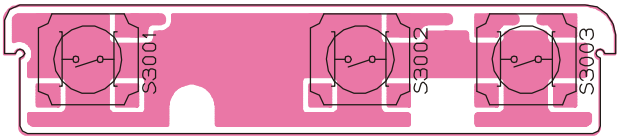
REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	PCB with Comporments					CB1483001				
	Printed Circuit Board					FR006680A		8-		
C 2001	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	
C 2002	CHIP CAP.	0.0022uF	50V	B	GRM36B222K50PT	K22178813		8-	B	
C 2003	CHIP CAP.	0.0022uF	50V	B	GRM36B222K50PT	K22178813		8-	B	
C 2004	CHIP CAP.	0.001uF	50V	B	GRM36B102K50PT	K22178809		8-	B	
D 2001	LED				12-22SURSYGC/S530-A2/TR8	G2070810		8-	B	
Q 2001	TRANSISTOR				UMG2N TR	G3070088		8-	B	
R 2001	CHIP RES.	330	1/16W	5%	RMC1/16S 331JTH	J24189019		8-	B	
R 2002	CHIP RES.	330	1/16W	5%	RMC1/16S 331JTH	J24189019		8-	B	
S 2001	ROTARY ENCODER				TP70N17AE20	Q9000738		8-	B	
VR2001	POT.				TP76N00N 20KA/SW	J60800236		8-	B	

SW Unit

Parts Layout



Parts Layout



Side A

Side B

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	PCB with Components					CB1484001				
	Printed Circuit Board					FR002650B		8-		
S 3001	TACT SWITCH				SOP-114HST R66-5374	N5090107		8-	A	
S 3002	TACT SWITCH				SOP-114HST R66-5374	N5090107		8-	A	
S 3003	TACT SWITCH				SOP-114HST R66-5374	N5090107		8-	A	
	MYLAR SHEET					RA011720A		8-		

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