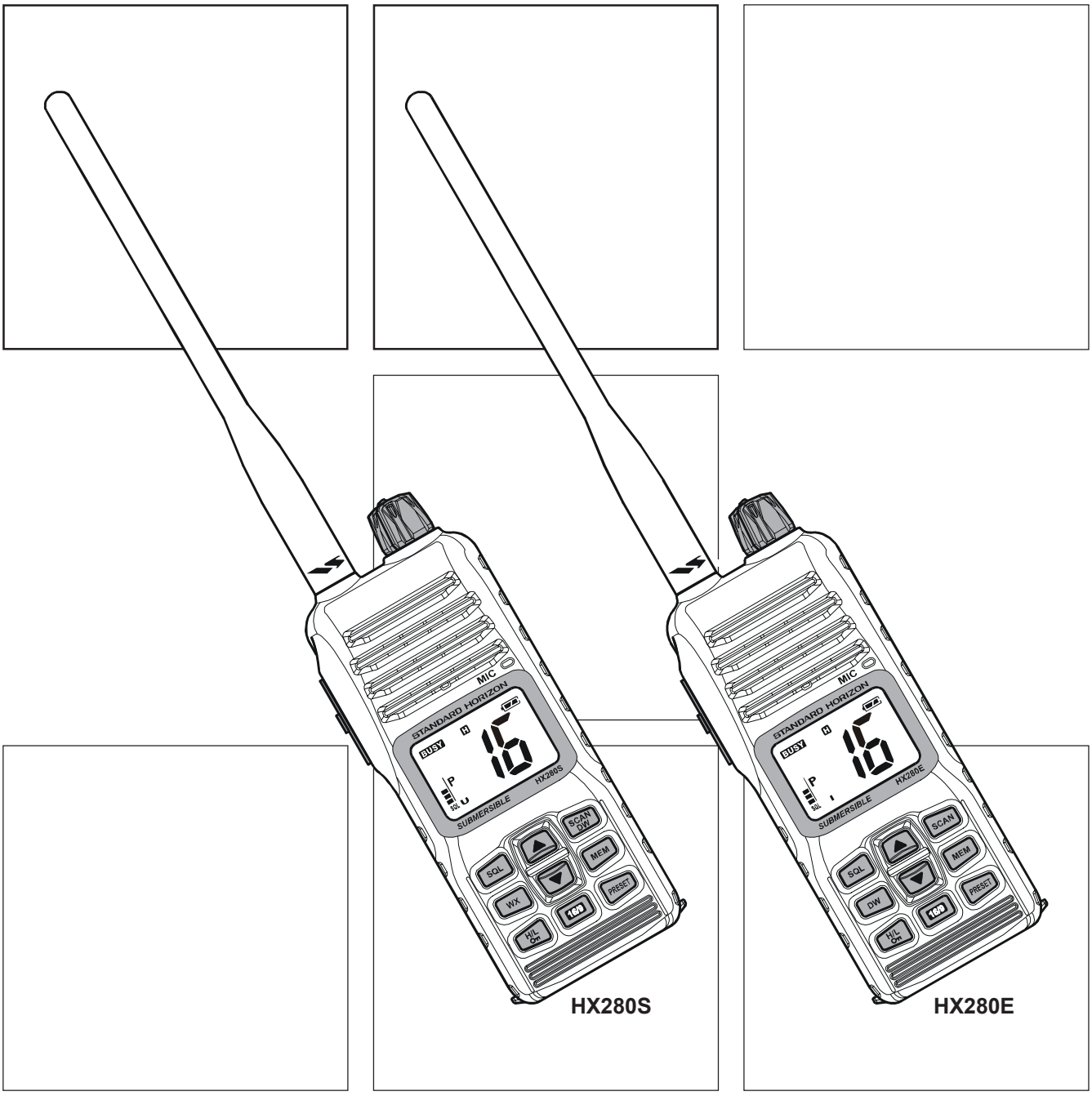
STANDARD HORIZON

VHF FM Marine Transceiver

HX280S/E

SERVICE MANUAL



HX280S HX280E

EM038N90A

Specifications (HX280S)

General

Frequency Ranges:	TX: 156.025 MHz - 157.425 MHz
	RX: 156.050 MHz - 163.275 MHz
Channel Spacing:	25 kHz
Frequency Stability:	±5 ppm (–4 °F to +140 °F [–20 °C to +60 °C])
Emission Type:	16K0G3E
Antenna Impedance:	50 Ω
Supply Voltage:	7.4V DC, Negative Ground (Battery Terminal)
Current Consumption:	320 mA (Receive, Typical at AF MAX.)
	50 mA (Standby)
	1.6 A / 0.7 A (TX: 5 W / 1W)
Operating Temperature:	–4 °F to +140 °F (–20 °C to +60 °C)
Case Size (W x H x D):	2.20″ x 5.24″ x 1.08″ (56 x 133 x 27.5 mm) w/o knob & antenna
Weight (Approx.):	10.9 oz (310 g) w/FNB-V105LI, Belt Clip, & Antenna

Transmitter

RF Power Output:	5 W / 1 W (@7.4 V)
Modulation Type:	Variable Reactance
Maximum Deviation:	±5 kHz
Spurious Emission:	–75 dBc typical
Microphone Impedance:	2 kΩ

Receiver

Circuit Type:	Double-Conversion Superheterodyne
Intermediate Frequencies:	1st: 21.7 MHz, 2nd: 450 kHz
Adjacent Channel Selectivity:	70 dB typical
Intermodulation:	68 dB typical
Hum & Noise Ratio:	40 dB typical
Sensitivity:	0.25 μV for 12 dB SINAD
Selectivity:	25 kHz (–70 dB)
AF Output (Internal SP):	700 mW @16 Ω for 10 % THD (@7.4 V)

Performance specifications are nominal, unless otherwise indicated, and are subject to change without notice.
Measured in accordance with TIA/EIA-603.

Important Note

The **HX280S** and **HX280E** was assembled using Pb (lead) free solder, based on the RoHS specification.
Only lead-free solder (Alloy Composition: Sn-3.0Ag-0.5Cu) should be used for repairs performed on this apparatus. The solder stated above utilizes the alloy composition required for compliance with the lead-free specification, and any solder with the above alloy composition may be used.

General

Frequency Ranges:	156.025 MHz - 162.000 MHz
Channel Spacing:	25 kHz
Frequency Stability:	±5 ppm (–20 °C to +60 °C)
Emission Type:	16K0G3E
Antenna Impedance:	50 Ω
Supply Voltage:	7.4V DC, Negative Ground (Battery Terminal)
Current Consumption:	320 mA (Receive, Typical at AF MAX.) 50 mA (Standby) 1.6 A / 0.7 A (TX: 5 W / 1W)
Operating Temperature:	–20 °C to +60 °C
Case Size (W x H x D):	56 x 133 x 27.5 mm (w/o knob & antenna)
Weight (Approx.):	310 g (w/FNB-V105LI, Belt Clip, & Antenna)

Transmitter

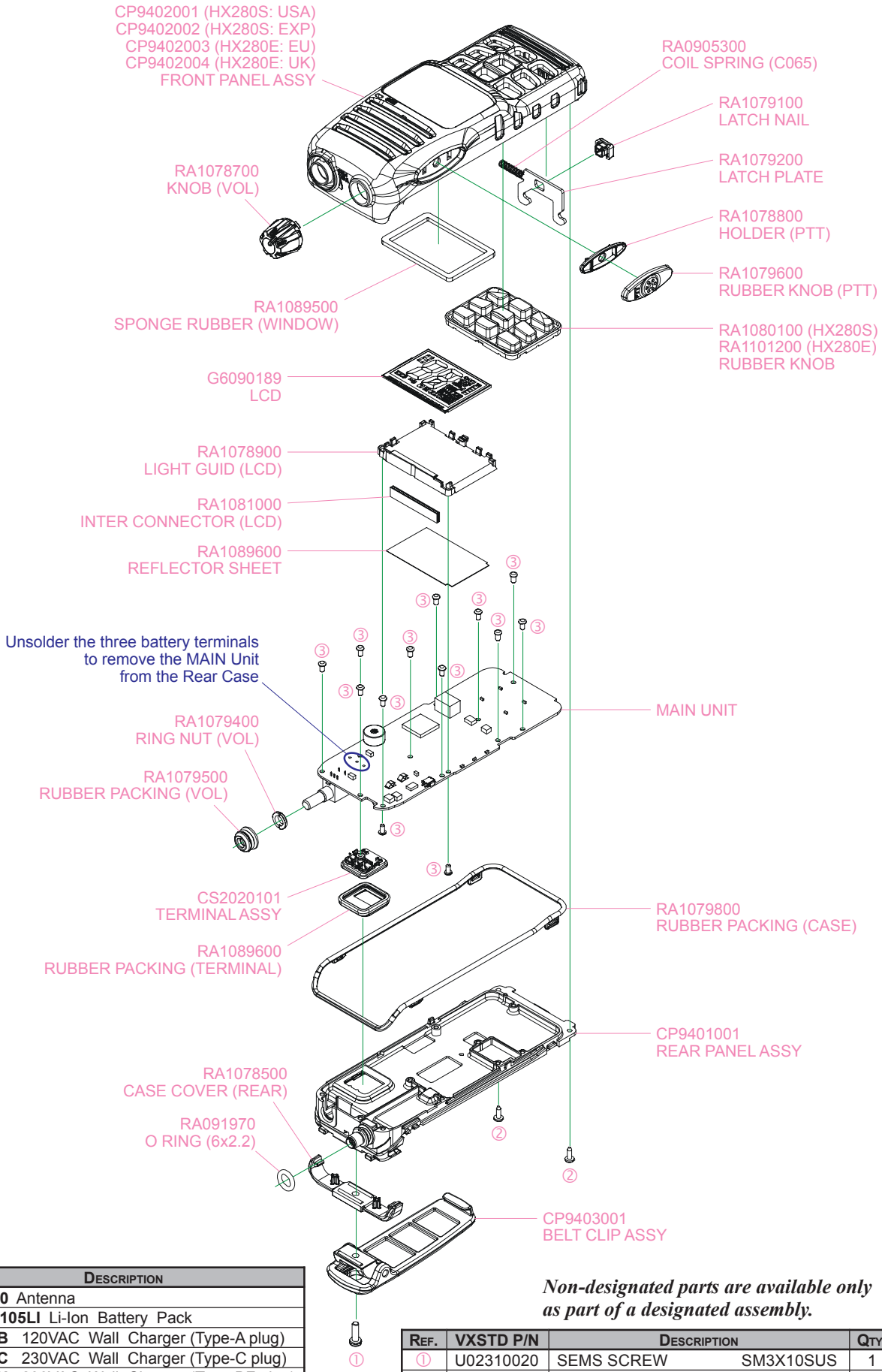
RF Power Output:	5 W / 1 W (@7.4 V)
Modulation Type:	Variable Reactance
Maximum Deviation:	±5 kHz
Spurious Emission:	Less than 0.25 μW
Microphone Impedance:	2 kΩ

Receiver

Circuit Type:	Double-Conversion Superheterodyne
Intermediate Frequencies:	1st: 21.7 MHz, 2nd: 450 kHz
Adjacent Channel Selectivity:	70 dB
Intermodulation:	68 dB
Hum & Noise Ratio:	40 dB
Sensitivity:	1 μV for 20 dB SINAD
Selectivity:	25 kHz (–70 dB)
AF Output (Internal SP):	700 mW @16 Ω for 10 % THD (@7.4 V)

Performance specifications are nominal, unless otherwise indicated, and are subject to change without notice.
Measured in accordance with EN301 178-2, EN300 698-3, EN301 843-2, EN60950-1

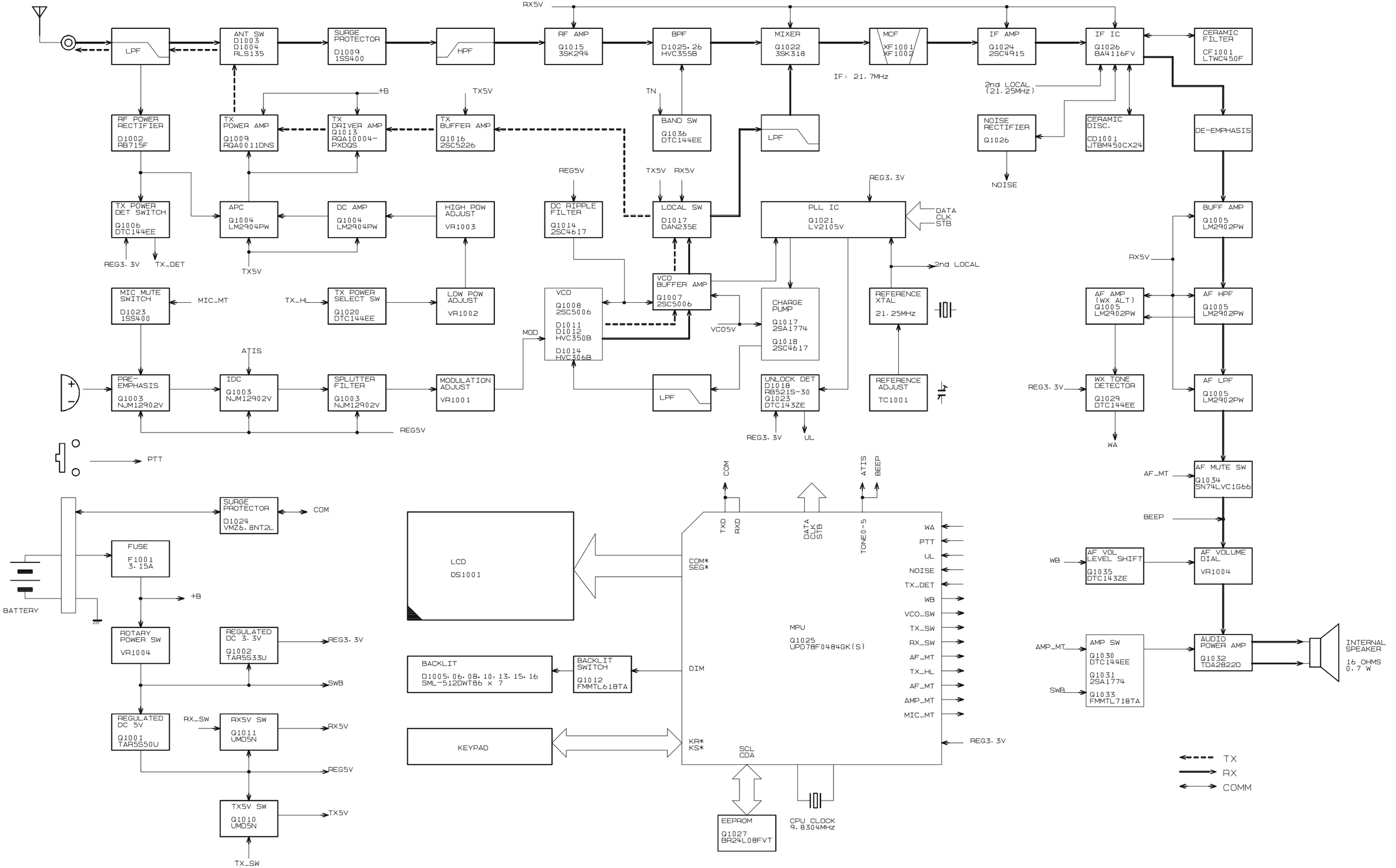
Exploded View & Miscellaneous Parts



VXSTD P/N	Description
Q3000176	**CAT460** Antenna
AAG43X001	**FNB-V105LI** Li-Ion Battery Pack
Q9500142	**NC-90B** 120VAC Wall Charger (Type-A plug)
Q9500143	**NC-90C** 230VAC Wall Charger (Type-C plug)
Q9500144	**NC-90U** 230VAC Wall Charger (Type-BF plug)
CB4777001	**CD-46** Charger Cradle

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

Ref.	VXSTD P/N	Description	Qty.
①	U02310020	SEMS SCREW SM3X10SUS	1
②	U24106020	BIND HEAD TAPTITE-B M2X6SUS	2
③	U9900068	PAN HEAD TAPTITE-B M2X4NI#3	13


RX5V
LPF
ANT SW
D1003
D1004
RLS135
SURGE PROTECTOR
D1009
1SS400
HPF
RF AMP
Q1015
3SK294
BPF
D1025, 26
HVC355B
MIXER
Q1022
3SK318
MCF
XF1001
XF1002
IF: 21.7MHz
IF AMP
Q1024
2SC4915
IF IC
Q1026
BA4116FV
CERAMIC FILTER
CF1001
LTWC450F
2nd LOCAL
(21.25MHz)
NOISE RECTIFIER
Q1026
NOISE
CERAMIC DISC.
CD1001
JTBM450CX24
DE-EMPHASIS
RF POWER RECTIFIER
D1002
RB715F
+B
TX5V
TX POWER AMP
Q1009
RQA0011DNS
TX DRIVER AMP
Q1013
RQA10004-PXDQS
TX BUFFER AMP
Q1016
2SC5226
TN
BAND SW
Q1036
DTC144EE
LPF
REG5V
TX5V
RX5V
DC RIPPLE FILTER
Q1014
2SC4617
LOCAL SW
D1017
DAN235E
REG3.3V
PLL IC
Q1021
LV2105V
DATA
CLK
STB
TX POWER DET SWITCH
Q1006
DTC144EE
REG3.3V
TX_DET
APC
Q1004
LM2904PW
DC AMP
Q1004
LM2904PW
HIGH POW ADJUST
VR1003
2nd LOCAL
BUFF AMP
Q1005
LM2902PW
RX5V
MIC MUTE SWITCH
D1023
1SS400
MIC_MT
TX_HL
TX POWER SELECT SW
Q1020
DTC144EE
LOW POW ADJUST
VR1002
VCO
Q1008
2SC5006
D1011
D1012
HVC350B
D1014
HVC306B
MOD
VCO BUFFER AMP
Q1007
2SC5006
VCO5V
CHARGE PUMP
Q1017
2SA1774
Q1018
2SC4617
REFERENCE XTAL
21.25MHz
AF AMP
(WX ALT)
Q1005
LM2902PW
AF HPF
Q1005
LM2902PW
ATIS
PRE-EMPHASIS
Q1003
NJM12902V
IDC
Q1003
NJM12902V
SPLUTTER FILTER
Q1003
NJM12902V
MODULATION ADJUST
VR1001
LPF
UNLOCK DET
D1018
RB521S-30
Q1023
DTC143ZE
REFERENCE ADJUST
TC1001
REG3.3V
UL
WX TONE DETECTOR
Q1029
DTC144EE
REG3.3V
WA
AF LPF
Q1005
LM2902PW
REG5V
PTT
SURGE PROTECTOR
D1024
VMZ6.8NT2L
COM
FUSE
F1001
3.15A
BATTERY
+B
ROTARY POWER SW
VR1004
REGULATED DC 3.3V
Q1002
TAR5S33U
REG3.3V
SWB
REGULATED DC 5V
Q1001
TAR5S50U
RX_SW
RX5V SW
Q1011
UMD5N
RX5V
REG5V
TX5V SW
Q1010
UMD5N
TX5V
TX_SW
LCD
DS1001
COM*
SEG*
DIM
KR*
KS*
KEYPAD
SCL
CDA
EEPROM
Q1027
BR24L08FVT
CPU CLOCK
9.8304MHz
MPU
Q1025
UPD78F0484GK(S)
TXD
RXD
DATA
CLK
STB
TONE0-5
COM
ATIS
BEEP
WA
PTT
UL
NOISE
TX_DET
WB
VCO_SW
TX_SW
RX_SW
AF_MT
TX_HL
AF_MT
AMP_MT
MIC_MT
REG3.3V
BACKLIT
D1005, 06, 08, 10, 13, 15, 16
SML-512DWT86 x 7
BACKLIT SWITCH
Q1012
FMMTL618TA
AF_MT
AF MUTE SW
Q1034
SN74LVC1G66
BEEP
WB
AF VOL LEVEL SHIFT
Q1035
DTC143ZE
AF VOLUME DIAL
VR1004
AMP_MT
AMP SW
Q1030
DTC144EE
Q1031
2SA1774
SWB
Q1033
FMMTL718TA
AUDIO POWER AMP
Q1032
TDA2822D
INTERNAL SPEAKER
16 OHMS
0.7 W
TX
RX
COMM

Note

1. Receive Signal Path

Incoming RF from the antenna jack passes through a low-pass filter consisting of coils L1001, L1002, & L1004, capacitors C1005, C1014, C1015, & C1019, and antenna switching diode **D1004** (**RLS135**).

Signals within the frequency range of the transceiver enter a band-pass filter consisting of coils L1013 and L1016, capacitors C1060, C1064, and C1067, then amplified by Q1015 and enter a Varactor-tuned band-pass filter consisting of coils L1021 & L1022, capacitors C1106, C1107, C1108, C1120, & C1221, and diodes **D1025** & **D1026** (both **HVC355B**), before first mixing by **Q1022** (**3SK318**).

Buffered output from the VCO is amplified by **Q1007** (**2SC5006**) to provide a pure first local signal between 134.35 and 141.575 MHz for injection to the first mixer **Q1022** (**3SK318**).

The 21.7 MHz first mixer product then passes through monolithic crystal filter XF1001/XF1002 to strip away all but the desired signal, which is then amplified by **Q1024** (**2SC4915**). The amplified first IF signal is applied to FM IF subsystem IC **Q1026** (**BA4116FV**), which contains the second mixer, second local oscillator, limited amplifier, noise amplifier, and RSSI amplifier.

A second local signal is produced from the PLL reference/second local oscillator of X1001 (21.25 MHz). The 21.25 MHz reference signal is delivered to mixer section of FM IF subsystem IC **Q1026** (**BA4116FV**) which produce the 450 kHz second IF mixed with the first IF signal.

The second IF then passes through the ceramic filter CF1001 to strip away unwanted mixer products, and is then applied to the limited amplifier in the FM IF subsystem IC **Q1026** (**BA4116FV**), which removes amplitude variations in the 450kHz IF, before detection of the speech by the ceramic discriminator CD1001.

2. Audio Amplifier

The demodulated audio signal from the **Q1026** (**BA4116FV**) passes through a band-pass filter and High-pass filter, then applied to the de-emphasis of **Q1005** (**LM2902PWR**). Then passes through the audio mute switch **Q1034** (**SN74LVC1G66DCKR**), the audio volume VR1004 and the audio power amplifier **Q1032** (**TDA2822**) pin 7, providing up to 700 mW of audio power to the 16-ohm loudspeaker.

3. Squelch Control

The squelch circuitry consists of a noise amplifier and band-pass filter and noise detector within **Q1026** (**BA4116FV**). When no carrier received, noise at the output of the detector stage in **Q1026** (**BA4116FV**) is amplified and band-pass filtered by the noise amplifier section of **Q1026** (**BA4116FV**) and the network between pins 7 and 8, and then rectified by detection circuit in **Q1026** (**BA4116FV**).

The resulting DC squelch control voltage is passed to pin 64 of the microprocessor **Q1025** (**UPD78F0484GK**). If no carrier is received, this signal causes pin 38 of **Q1025** (**UPD78F0484GK**) to go low and pin 67 to go high. Pin 67 signals of **Q1025** (**UPD78F0484GK**) to disable the supply voltage to the audio amplifier **Q1032** (**TDA2822**).

Thus, the microprocessor blocks output from the audio amplifier, and silences the receiver, while no signal is being received (and during transmission, as well).

4. Transmit Signal Path

The speech input from the microphone MC1001 passes through the audio amplifier **Q1003** (**NJM12902V**), which is adjusted the microphone gain. The speech signal passes through pre-emphasis circuit to **Q1003** (**NJM12902V**), which contains the IDC, and low-pass filter. Then passes through VR1001 which allows manual adjustment of the transmitter deviation level.

The filtered audio signal is applied to varactor diode **D1014** (**HVC306B**), which frequency modulates the VCO **Q1008** (**2SC5006**).

The modulated signal from the VCO **Q1008** (**2SC5006**) is buffered by **Q1007** (**2SC5006**). The low-level transmit signal is then passes through the TX switching diode **D1017** (**DAN235E**) to the buffer amplifier **Q1016** (**2SC5226**), driver amplifier **Q1013** (**RQA0004PXDQS**), then amplified transmit signal is applied to the final amplifier **Q1009** (**RQA0011DNS**) up to 5.0 watts output power.

The transmit signal then passes through the antenna switch **D1003** (**RLS135**) and is low-pass filtered to suppress harmonic spurious radiation before delivery to the antenna.

Circuit Description

4-1 Automatic Transmit Power Control

Current from the final amplifier is sampled by C1011 & C1022, and R1004 & R1008, and is rectified by **D1002** (**RB715F**). The resulting DC is fed back through **Q1004** (**LM2904PWR**) to the drive amplifier **Q1013** (**RQA0004PXDQS**) and final amplifier **Q1009** (**RQA0011DNS**), for control of the power output.

When the microprocessor selects "High" or "Low" power levels, pin 66 of **Q1025** (**UPD78F0484GK**) to go low at "High" power selected or pin 66 of **Q1025** (**UPD78F0484GK**) to go high at "Low" power selected.

5. PLL Frequency Synthesizer

The PLL circuitry on the Main Unit consists of VCO **Q1008** (**2SC5006**), VCO buffer **Q1007** (**2SC5006**), PLL subsystem IC **Q1021** (**LV2105V**), which contains a reference divider, serial-to-parallel data latch, programmable divider, phase comparator and charge pump, and crystal X1001 which frequency stability is ±5 ppm @ –20 °C to +60 °C.

While receiving, VCO **Q1008** (**2SC5006**) oscillates between 134.35 and 141.575 MHz according to the transceiver version and the programmed receiving frequency. The VCO output is buffered by **Q1007** (**2SC5006**), then applied to the prescaler section of **Q1021** (**LV2105V**). There the VCO signal is divided by 64 or 65, according to a control signal from the data latch section of **Q1021** (**LV2105V**), before being sent to the programmable divider section of **Q1021** (**LV2105V**).

The data latch section of **Q1021** (**LV2105V**) also receives serial dividing data from the microprocessor Q1025, 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 25.0 kHz derivative of the current VCO frequency.

Meanwhile, the reference divider sections of **Q1021** (**LV2105V**) divides the 21.25 MHz crystal reference from the reference oscillator section of**Q1021** (**LV2105V**), by 850 to produce the 25.0 kHz loops reference.

The 25.0 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 **Q1021** (**LV2105V**), 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** and **D1012** (both **HVC350B**).

Changes in the level of the DC voltage applied to the Varactor, affecting the reference in the tank circuit 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 **Q1008** (**2SC5006**) after buffering by **Q1007** (**2SC5006**) is applied to the first mixer as described previously.

For transmission, the VCO **Q1008** (**2SC5006**) oscillates between 156.025 and 157.425 MHz according to the model version and programmed transmit frequency. 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). Also, the VCO is modulated by the speech audio applied to **D1014** (**HVC306B**), as described previously.

6. Miscellaneous Circuits

Push-To-Talk Transmit Activation

When the PTT switch on the Main Unit is closed, pin 72 of **Q1025** (**UPD78F0484GK**) goes low. This signal disables the receiver by disabling the 5 V supply bus at **Q1011** (**UMD5N**) to the front-end, FM IF subsystem IC **Q1026** (**BA4116FV**).

At the same time, **Q1010** (**UMD5N**) activate the transmit 5 V supply line to enable the transmitter.

The **HX280S/E** has been carefully aligned at the factory for the specified performance across the marine band.

Realignment should therefore not be necessary except in the event of a component failure.

All component replacement and service should be performed only by an authorized STANDARD HORIZON representative, or the warranty policy may be voided.

The following procedures cover the sometimes critical and tedious adjustments that are not normally required once the transceiver has left the factory. However, if damage occurs and some parts 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 STANDARD HORIZON service technicians who are experienced with the circuitry and fully equipped for repair and alignment. Therefore, if a fault is suspected, contact the dealer from whom the transceiver was purchased for instructions regarding repair. Authorized STANDARD HORIZON service technicians realign all circuits and make complete performance checks to ensure compliance with factory specifications after replacing any faulty components. Those who do undertake any of the following alignments are cautioned to proceed at their own risk.

Problems caused by unauthorized attempts at realignment are not covered by the warranty policy. Also, STANDARD HORIZON must reserve the right to change circuits and alignment procedures in the interest of improved performance, without notifying owners. Under no circumstances should any alignment be attempted unless the normal function and operation of the transceiver are clearly understood, the cause of the malfunction has been clearly pinpointed and any faulty components replaced, and the need for realignment determined to be absolutely necessary. The following test equipment (and thorough familiarity with its correct use) is necessary for complete realignment. Correction of problems caused by misalignment resulting from use of improper test equipment is not covered under the warranty policy. 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 single step unless it is clearly isolated electrically from all other steps. Have all test equipment ready before beginning, and follow all of the steps in a section in the order presented.

Required Test Equipment

- ❒ RF Signal Generator with calibrated output level at 200 MHz
- ❒ Frequency Counter: >0.1 ppm accuracy at 200 MHz
- ❒ AF Signal Generator
- ❒ Deviation Meter (linear detector)
- ❒ VHF Sampling Coupler
- ❒ Inline Wattmeter with 5% accuracy at 200 MHz
- ❒ 50-ohm Non-reactive Dummy Load: 10W at 200 MHz
- ❒ 7.4 VDC, 2A Regulated DC Power Supply
- ❒ IBM® PC/compatible computer with Microsoft® Windows® 2000, XP, or Vista
- ❒ Standard Horizon HX280 Service Flag Controller and Alignment Jig.

Alignment Preparation & Precautions

A dummy load and inline 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 following step to determine whether the same test equipment will be required. If not, remove the test equipment (except dummy load and wattmeter, if connected) before proceeding.

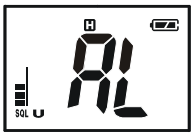
Correct alignment requires that the ambient temperature be the same as that of the transceiver and test equipment, and that this temperature be held constant between 20 °C and 30 °C (68 °F ~ 86 °F). When the transceiver is brought into the shop from hot or cold air it should be allowed some time for thermal equalization with the environment before alignment. If 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.

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

Alignment

Before Alignment

- ❒ Install the HX280 Service Flag Controller Program to your computer.
- ❒ Remove the Front Panel from the transceiver according to the following procedures:
  1) Disconnect the antenna from the transceiver.
  2) Remove the VOL knob and Battery Pack from the transceiver
  3) Remove the two screws which located at the bottom side on the battery compartment.
  4) Carefully pull out the chassis from the Front Panel. Refer to the "Exploded View" on the page 4.
- ❒ Set up the test equipment as shown below, and set the DC Power Supply voltage to 7.4 V.
- ❒ Execute the HX280 Service Flag Controller Program.
- ❒ Select the COM port number which is connected to the HX280 Alignment Jig.
- ❒ Press and hold in the [**PRESET**] key while turning the transceiver on to enter the Alignment Mode.
- ❒ Select "Alignment ON" Radio Button of the HX280 Service Flag Controller Program.
- ❒ Click the left mouse button on the [**SET**] button of the HX280 Service Flag Controller Program.

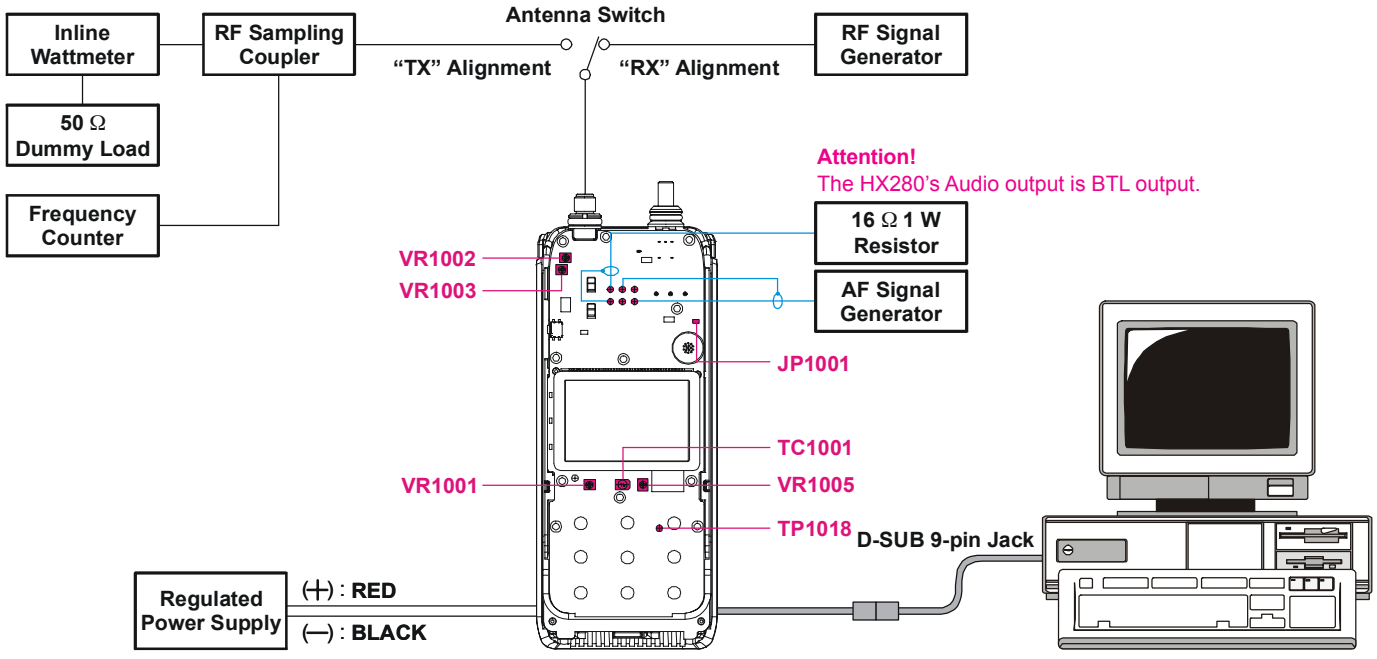


Main Reference Frequency Adjustment

- ❒ Turn the Antenna switch to the "TX Alignment" side.
- ❒ Remove the solder jumper **JP1001**.
- ❒ Set the channel to CH16.
- ❒ Use the [**H/L**] key to set the transceiver to "LOW" power.
- ❒ With the **PTT** switch pressed, adjust **TC1001** so the Frequency Counter reading is 156.800 MHz ± 100 Hz.

Transmit Power Adjustment

- ❒ Turn the Antenna switch to the "TX Alignment" side.
- ❒ Set the channel to CH16.
- ❒ Increase the DC Power Supply voltage to 8.0 V.
- ❒ Use the [**H/L**] key to set the transceiver to "HI" power.
- ❒ With the **PTT** switch pressed, adjust **VR1003** so that RF output power is 5.0 W ± 0.1 W.
- ❒ Release the **PTT** switch, then set the transceiver to "LOW" power by the [**H/L**] key.
- ❒ With the **PTT** switch pressed, adjust **VR1002** so that RF output power is 0.8 W ± 0.1 W.
- ❒ Release the **PTT** switch.
- ❒ Return the DC Power Supply voltage to 7.4 V.



HX280 Alignment Jig

TX Deviation Adjustment

- ❒ Turn the Antenna switch to the "TX Alignment" side.
- ❒ Confirm that the solder jumper **JP1001** is removed.
- ❒ Set the AF Signal Generator output to 200 mVrms at 1 kHz.
- ❒ Set the channel to CH16.
- ❒ With the **PTT** switch pressed, adjust **VR1001** so that the maximum deviation is 4.4 kHz ± 0.1 kHz.
- ❒ Release the **PTT** switch.
- ❒ Solder the jumper **JP1001**.

Squelch Level Adjustment

- ❒ Turn the Antenna switch to the "RX Alignment" side.
- ❒ Set the channel to CH16.
- ❒ Set the RF Signal Generator output to 156.800 MHz, at a level of +0 dBμ (HX280S) or +3 dBμ (HX280E), ±3.0 kHz deviation with a 1 kHz audio tone.
- ❒ Connect the DC voltmeter to **TP1018**, adjust **VR1005** so that DC voltmeter reading is 0.2 V ± 0.02 V (HX280S) or 0.45 V ± 0.02 V (HX280E).

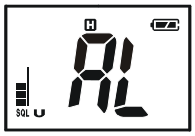
Software Alignment/Confirmation Mode

Overview of Software Alignment Mode

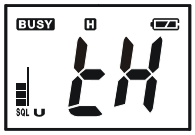
- ❒ The "Software Alignment Mode" has been build in the microprocessor in order to adjust and confirm the performance of transceiver.
- ❒ The purpose is to adjust transceiver simply and to confirm the performance of transceiver smoothly.

Starting Software Alignment Mode

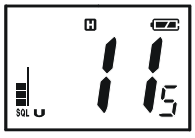
- ❒ Set the channel to CH16, then turn the **VOL** knob counter clockwise to turn off the radio.
- ❒ Turn the Antenna switch to the "RX Alignment" side.
- ❒ Turn the **VOL** knob clockwise to turn on the radio while press and holding the [**PRESET**] keys. The LCD will be shown the Alignment mode "**AL**".



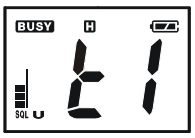
- ❒ Press the [**SCAN**] key. Then the LCD will be shown the Alignment Item (1st Item is Threshold "**tH**").



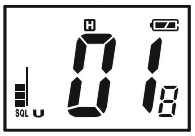
- ❒ Set the RF Signal Generator output to 156.800 MHz, at a level of –8 dBμ (HX280S) or –6 dBμ (HX280E), ±3.0 kHz deviation with a 1 kHz audio tone.
- ❒ Press the [**PRESET**] key to record a threshold level.
- ❒ Press the [**MEM**] key to save the new setting.



- ❒ Press the [**SCAN**] key to recall the Alignment Item "**tl** (TIGHT)".



- ❒ Set the RF Signal Generator output to 156.800 MHz, at a level of +0 dBμ (HX280S) or +3 dBμ (HX280E), ±3.0 kHz deviation with a 1 kHz audio tone.
- ❒ Press the [**PRESET**] key to record a tight level.



- ❒ Press the [**MEM**] key to save the new setting.

This completes the Software Alignment Mode. To save all settings and exit, press and hold the [**16/9**] key for one second. Then turn off the transceiver.

After Alignment

- ❒ Execute the HX280 Service Flag Controller Program again.
- ❒ Select the COM port number which is connected to the HX280 Alignment Jig.
- ❒ Press and hold in the [**PRESET**] key while turning the transceiver on to enter the Alignment Mode.
- ❒ Select "Alignment OFF" Radio Button of HX280 Service Flag Controller Program.

- ❒ Click the left mouse button on the [**SET**] button of the HX280 Service Flag Controller Program.
- ❒ Turn off the transceiver.
- ❒ Assemble the transceiver while being carefully so that Rubber Packing does not protrude from a Front Case. ***Important Note: To ensure the radio is water proof, make sure the gasket is installed on the chassis correctly and is not pinched when inserted into the front case.***

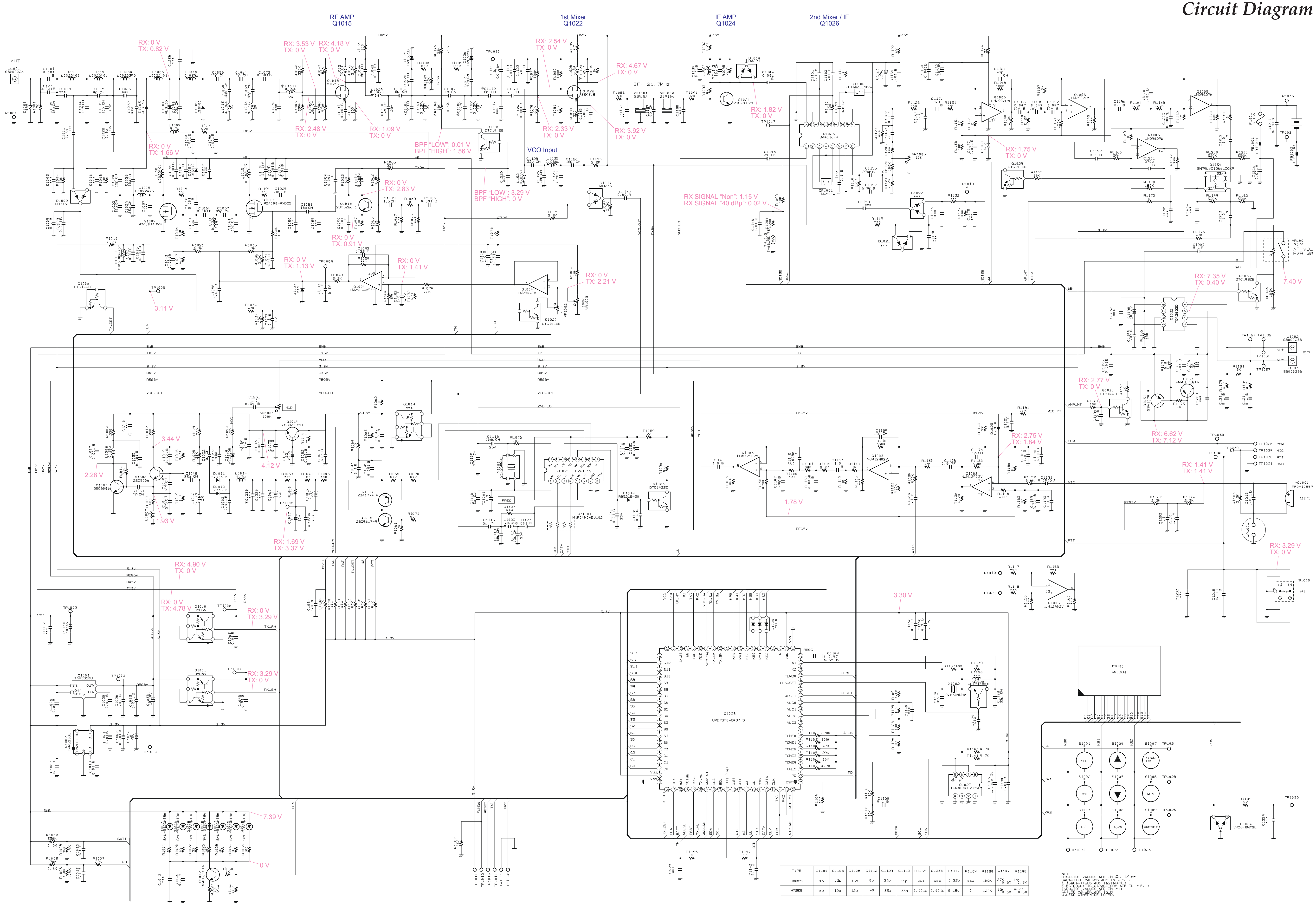
NOTICE

Do not touch the Alignment Item "**dC**".

Note

MAIN Unit

Circuit Diagram



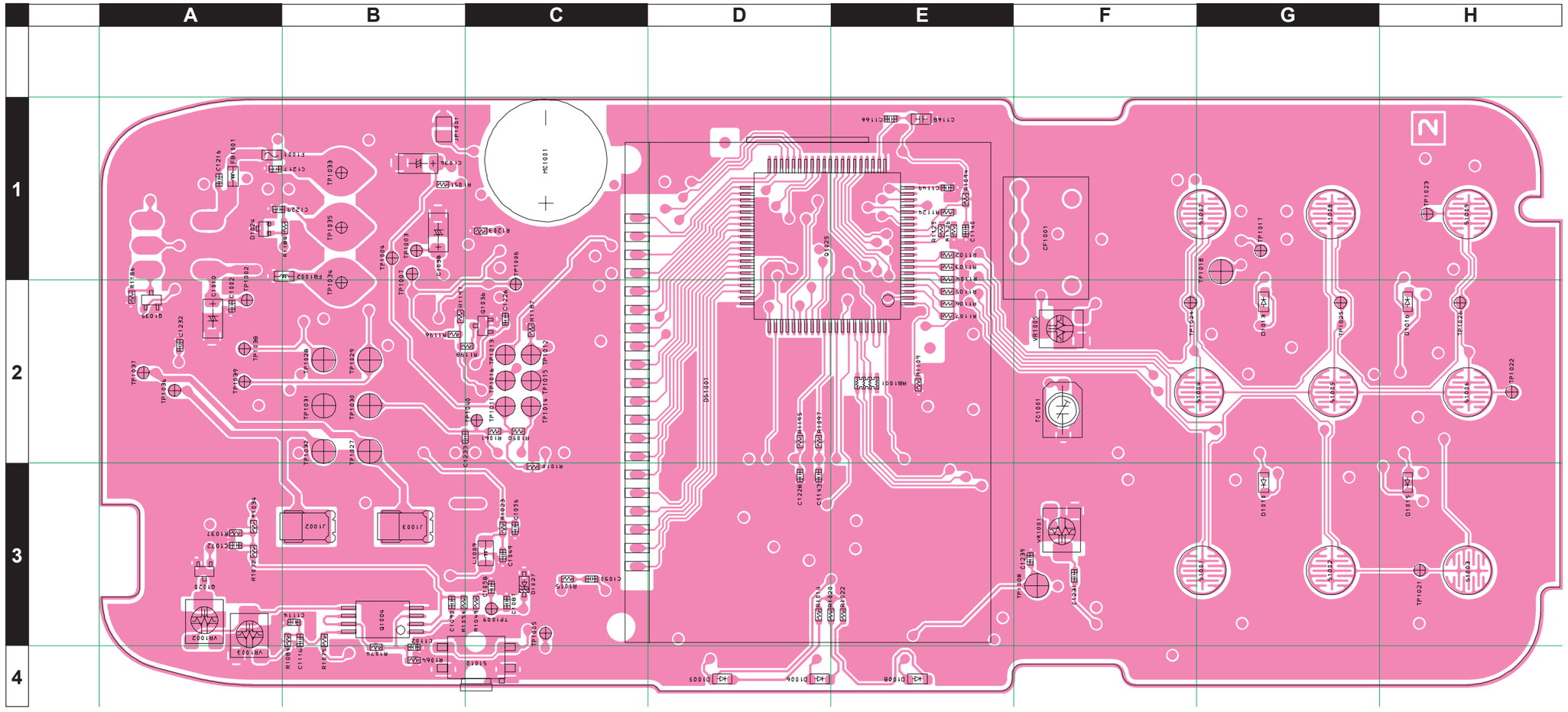
TYPE	C1100	C1106	C1108	C1112	C1129	C1142	C1235	C1236	L1017	R1109	R1120	R1197	R1198
HX280S	4p	13p	13p	8p	27p	15p	***	***	0.22u	***	100K	27K 0.5%	15K 0.5%
HX280E	6p	12p	12p	4p	33p	33p	0.001u	0.001u	0.18u	0	120K	15K 0.5%	4.7K 0.5%

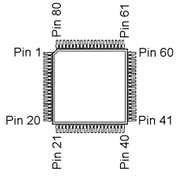
NOTE:
RESISTOR VALUES ARE IN Ω, 1/16W :
CAPACITOR VALUES ARE IN μF :
(T)CAPACITORS ARE TANTALUM :
ELECTOROLYTIC CAPACITORS ARE IN μF :
INDUCTOR VALUES ARE IN μH :
COILES VALUES ARE IN H :
UNLESS OTHERWISE NOTED.

MAIN Unit

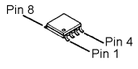
Note

Parts Layout (Side A)





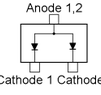
μPD78F0484GK
(Q1025)



LM2904PWR
(Q1004)

DTC143ZE (E23)
(Q1035)

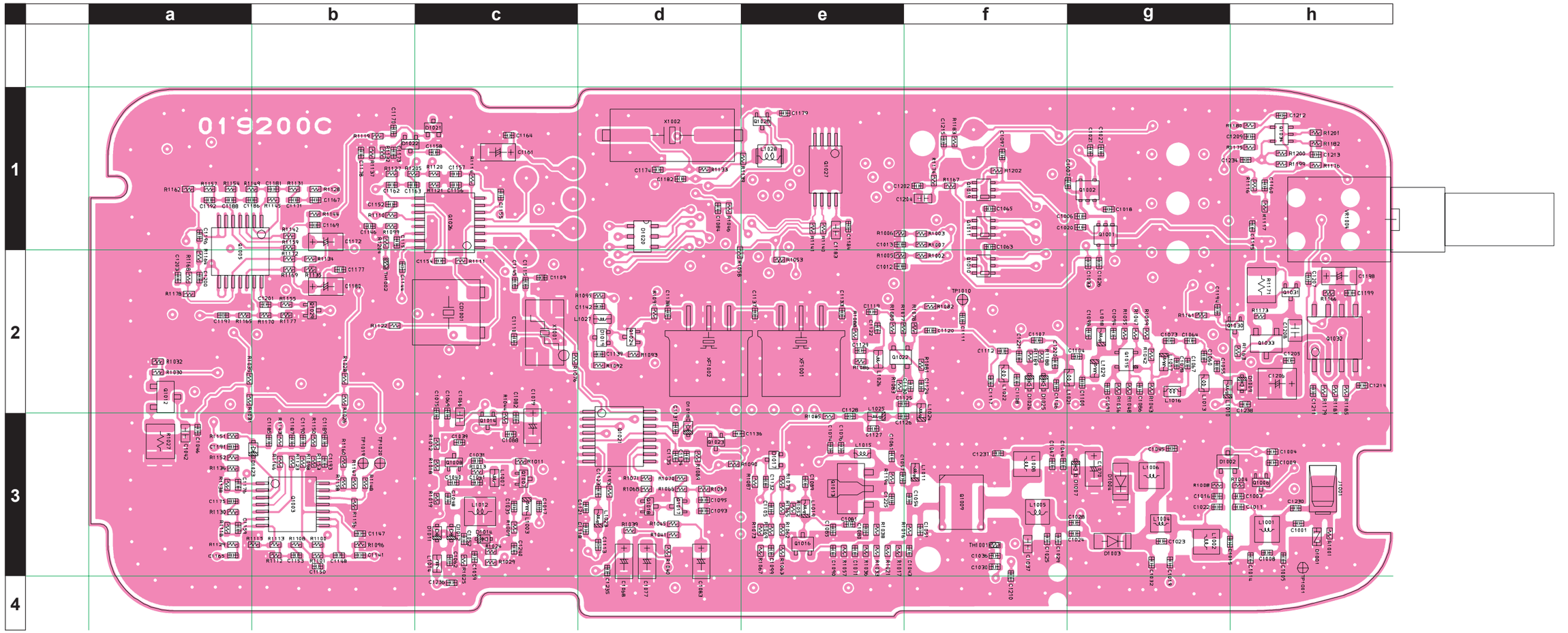
DTC144EE (26)
(Q1020, 1036)

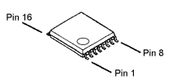


VMZ6.8NT2L (6C)
(D1024)

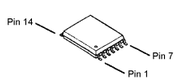
MAIN Unit

Parts Layout (Side B)

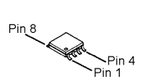




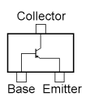
BA4116FV
(Q1026)
LV2105V
(Q1021)



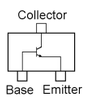
LM2902PWR
(Q1005)
NJM12902V
(Q1003)



BR24L08FVT
(Q1027)

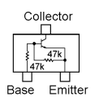


2SA1774 (FR)
(Q1017, 1031)
FMMTL718TA
(Q1033)

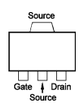


2SC4617 (BR)
(Q1014, 1018)
2SC4915 (QY)
(Q1024)
2SC5006 (24)
(Q1007, 1008)
2SC5226 (R22)
(Q1016)

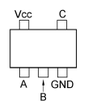
3SK294 (UV)
(Q1022)
3SK318 (YB)
(Q1022)



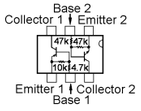
DTC144EE (26)
(Q1006, 1029, 1030)



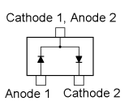
RQA0004PXDQS (PX)
(Q1013)



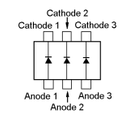
SN74LVC1G66
(Q1034)



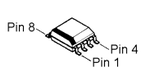
UMD5N
(Q1010, 1011)



DA221 (K)
(D1019)



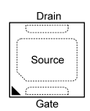
IMN10 (N10)
(D1020)



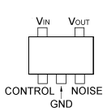
TDA2822D013TR
(Q1032)

DTC143ZE (E23)
(Q1023)

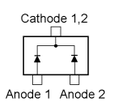
FMMTL618TA (L68)
(Q1012)



RQA0011DNS
(Q1009)



TAR5S33U
(Q1002)
TAR5S50U
(Q1001)



DAN235E
(D1017)
RB715F (3D)
(D1002)

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	PCB with Components (No adjustment. Requires the adjustment for use.)					CB4645001 CB4645002	HX280S HX280E			
	Printed Circuit Board					FR019200C		1-		
C 1001	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	h3
C 1004	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h3
C 1005	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	h3
C 1006	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g1
C 1007	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f1
C 1009	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	h3
C 1010	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	A	A2
C 1011	CHIP CAP.	0.5pF	50V	CK	UMK105CK0R5CV-F	K22178247		1-	B	h3
C 1012	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	e2
C 1013	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	e1
C 1014	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	h3
C 1015	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208		1-	B	g3
C 1017	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c3
C 1018	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	g1
C 1019	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214		1-	B	g3
C 1020	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	g1
C 1021	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	g1
C 1022	CHIP CAP.	0.5pF	50V	CK	UMK105CK0R5CV-F	K22178247		1-	B	g3
C 1024	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	g3
C 1025	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	f3
C 1026	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	g2
C 1027	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g1
C 1028	CHIP CAP.	56pF	50V	CH	GRM1552C1H560JD01D	K22178230		1-	B	g3
C 1029	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224		1-	B	f3
C 1030	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f3
C 1031	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209		1-	B	c3
C 1033	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g2
C 1034	CHIP TA.CAP.	10uF	10V		TEESVA1A106M8R	K78100028		1-	A	B1
C 1035	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c3
C 1036	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f3
C 1038	CHIP TA.CAP.	10uF	10V		TEESVA1A106M8R	K78100028		1-	A	B1
C 1039	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c3
C 1040	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	c3
C 1041	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	c3
C 1043	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f3
C 1044	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f3
C 1045	CHIP CAP.	22pF	50V	CH	UMK105CH220JV-F	K22178266		1-	B	g3
C 1046	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	a3
C 1047	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f3
C 1048	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224		1-	B	c3
C 1049	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1050	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1052	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205		1-	B	c3
C 1054	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f3
C 1055	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	g2
C 1056	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1057	CHIP CAP.	82pF	50V	CH	GRM1552C1H820JD01D	K22178234		1-	B	e3
C 1058	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1060	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	g2
C 1061	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	e3
C 1062	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c3
C 1063	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f1
C 1064	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	g2
C 1065	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f1
C 1066	CHIP CAP.	2.2uF	10V	B	GRM188B31A225KE18D	K22104805		1-	B	c3
C 1067	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224		1-	B	g2
C 1068	CHIP TA.CAP.	0.1uF	35V		TEESVA1V104M8R	K78160025		1-	B	d3
C 1069	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c2
C 1070	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	B	g3
C 1071	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1072	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	A3
C 1073	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g2
C 1074	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1075	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	c2
C 1076	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	e3
C 1077	CHIP TA.CAP.	10uF	10V		TEESVA1A106M8R	K78100028		1-	B	d3
C 1079	CHIP TA.CAP.	22uF	6.3V		TEESVA0J226M8R	K78080047		1-	B	c3
C 1081	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	e3
C 1082	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c3
C 1083	CHIP TA.CAP.	0.47uF	35V		TEESVA1V474M8R	K78160029		1-	B	d3

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.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	d1
C 1086	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214		1-	B	g2
C 1087	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	C3
C 1088	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	c3
C 1089	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1090	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1091	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g2
C 1092	CHIP CAP.	0.22uF	10V	B	GRM155B31A224KE18D	K22108808		1-	A	B3
C 1093	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	d3
C 1094	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	g2
C 1095	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	d3
C 1097	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f1
C 1098	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g2
C 1099	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214		1-	B	e3
C 1100	CHIP CAP.	6pF	50V	CH	GRM1552C1H6R0DZ01D	K22178208	HX280E	1-	B	g2
C 1100	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208	HX280S	1-	B	g2
C 1102	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	B3
C 1104	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	g2
C 1105	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1106	CHIP CAP.	12pF	25V	CH	TMK105CH120J-F	K22148216	HX280E	1-	B	f2
C 1106	CHIP CAP.	13pF	50V	CH	UMK105CH130JV-F	K22178261	HX280S	1-	B	f2
C 1107	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205		1-	B	f2
C 1108	CHIP CAP.	12pF	25V	CH	TMK105CH120J-F	K22148216	HX280E	1-	B	f2
C 1108	CHIP CAP.	13pF	50V	CH	UMK105CH130JV-F	K22178261	HX280S	1-	B	f2
C 1109	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	c2
C 1110	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207		1-	B	c2
C 1111	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205		1-	B	f2
C 1112	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208	HX280E	1-	B	f2
C 1112	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210	HX280S	1-	B	f2
C 1113	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209		1-	B	d3
C 1114	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	B3
C 1115	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238		1-	B	c2
C 1116	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	B3
C 1118	CHIP CAP.	68pF	50V	CH	GRM1552C1H680JZ01D	K22178232		1-	B	d3
C 1119	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	e2
C 1120	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f2
C 1121	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	d3
C 1122	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e2
C 1123	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	d3
C 1124	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f2
C 1125	CHIP CAP.	22pF	50V	CH	UMK105CH220JV-F	K22178266		1-	B	e2
C 1126	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	e3
C 1127	CHIP CAP.	22pF	50V	CH	UMK105CH220JV-F	K22178266		1-	B	e3
C 1128	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	e3
C 1129	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224	HX280E	1-	B	e2
C 1129	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222	HX280S	1-	B	e2
C 1130	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f2
C 1131	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d3
C 1132	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1134	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	d3
C 1135	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	d3
C 1136	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	d3
C 1137	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	e2
C 1139	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d2
C 1141	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	b3
C 1142	CHIP CAP.	33pF	50V	CH	GRM1552C1H330JZ01D	K22178224	HX280E	1-	B	d2
C 1142	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218	HX280S	1-	B	d2
C 1143	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	D3
C 1144	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b2
C 1145	CHIP CAP.	2pF	50V	CK	GRM1554C1H2R0CZ01D	K22178204		1-	B	c2
C 1146	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b1
C 1147	CHIP CAP.	330pF	50V	B	UMK105B331KW-F	K22178823		1-	B	b3
C 1148	CHIP CAP.	0.0056uF	25V	B	TMK105B562KW-F	K22148832		1-	B	b3
C 1149	CHIP CAP.	0.47uF	6.3V	B	GRM155B30J474KE18D	K22088802		1-	A	E1
C 1150	CHIP CAP.	0.0068uF	25V	B	TMK105B682KW-F	K22148833		1-	B	b3
C 1151	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1152	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b1
C 1153	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	b3
C 1154	CHIP CAP.	82pF	50V	CH	GRM1552C1H820JD01D	K22178234		1-	B	c2
C 1155	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	c1
C 1156	CHIP CAP.	270pF	50V	B	UMK105B271KW-F	K22178822		1-	B	c1
C 1157	CHIP CAP.	270pF	50V	B	UMK105B271KW-F	K22178822		1-	B	c1
C 1159	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	a3

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1160	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h1
C 1161	CHIP TA.CAP.	22uF	6.3V		TEESVA0J226M8R	K78080047		1-	B	c1
C 1162	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1163	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b1
C 1164	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	c1
C 1165	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	a3
C 1166	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A	E1
C 1167	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1168	CHIP CAP.	4.7uF	6.3V	B	C1608JB0J475KT	K22084804		1-	A	E1
C 1169	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b1
C 1171	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1172	CHIP TA.CAP.	10uF	10V		TEESVA1A106M8R	K78100028		1-	B	b1
C 1174	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	d1
C 1175	CHIP CAP.	0.047uF	16V	F	GRM155F11C473ZA01D	K22129004		1-	B	a3
C 1176	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	a3
C 1177	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b2
C 1180	CHIP TA.CAP.	4.7uF	16V		TEESVA1C475M8R	K78120031		1-	B	b2
C 1181	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	B	b1
C 1182	CHIP CAP.	22pF	50V	CH	UMK105CH220JV-F	K22178266		1-	B	d1
C 1183	CHIP CAP.	4.7uF	6.3V	B	C1608JB0J475KT	K22084804		1-	B	e1
C 1184	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	e1
C 1185	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b3
C 1186	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	B	a1
C 1187	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	b3
C 1188	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	B	a1
C 1189	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b3
C 1190	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b3
C 1191	CHIP CAP.	0.0056uF	25V	B	TMK105B562KW-F	K22148832		1-	B	a3
C 1192	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	B	a1
C 1193	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	b3
C 1194	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	g2
C 1195	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	h1
C 1196	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	a1
C 1197	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	a2
C 1198	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	B	h2
C 1199	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	h2
C 1200	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a2
C 1201	CHIP CAP.	270pF	50V	B	UMK105B271KW-F	K22178822		1-	B	b2
C 1202	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	f1
C 1203	CHIP CAP.	0.0047uF	50V	B	GRM155B11H472KA01D	K22178838		1-	B	a2
C 1204	CHIP CAP.	4.7uF	6.3V	B	JMK107BJ475MA-T	K22084803		1-	B	f1
C 1205	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	h2
C 1206	CHIP TA.CAP.	22uF	16V		TEESVB21C226M8R	K78120028		1-	B	h2
C 1207	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h2
C 1210	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f3
C 1211	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h2
C 1212	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	h1
C 1213	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	h1
C 1214	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h2
C 1215	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f1
C 1216	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	A1
C 1217	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	A1
C 1220	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	B	f2
C 1221	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	B	f2
C 1225	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1230	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	h3
C 1231	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	F3
C 1235	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809	HX280E	1-	B	d3
C 1236	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809	HX280E	1-	B	c4
CD1001	CERAMIC DISC				JTBM450CX24	H7901530		1-	B	c2
CF1001	CERAMIC FILTER				LTM450FW	H3900572		1-	A	F2
D 1002	DIODE				RB715F T106	G2070752		1-	B	g3
D 1003	DIODE				RLS135 TE-11	G2070128		1-	B	g3
D 1004	DIODE				RLS135 TE-11	G2070128		1-	B	g3
D 1005	LED				SML-512DWT86	G2071116		1-	A	D4
D 1006	LED				SML-512DWT86	G2071116		1-	A	D4
D 1007	DIODE				1SS400 TE61	G2070634		1-	B	g3
D 1008	LED				SML-512DWT86	G2071116		1-	A	E4
D 1009	DIODE				1SS400 TE61	G2070634		1-	B	h2
D 1010	LED				SML-512DWT86	G2071116		1-	A	G3
D 1011	DIODE				HVC350B-TRF-E	G2070596		1-	B	c3
D 1012	DIODE				HVC350B-TRF-E	G2070596		1-	B	c3
D 1013	LED				SML-512DWT86	G2071116		1-	A	G2

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
D 1014	DIODE				HVC306B TRU-E	G2070918		1-	B	c3
D 1015	LED				SML-512DWT86	G2071116		1-	A	H3
D 1016	LED				SML-512DWT86	G2071116		1-	A	H2
D 1017	DIODE				DAN235E TL	G2070612		1-	B	e3
D 1018	DIODE				RB521S-30 TE61	G2070642		1-	B	d3
D 1019	DIODE				DA221 TL	G2070178		1-	B	d2
D 1020	DIODE				IMN10 T108	G2070078		1-	B	d1
D 1023	DIODE				1SS400 TE61	G2070634		1-	B	a3
D 1024	DIODE				VMZ6.8NT2L	G2071222		1-	A	A1
D 1025	DIODE				HVC355B TRF-E	G2070588		1-	B	f2
D 1026	DIODE				HVC355B TRF-E	G2070588		1-	B	f2
DS1001	LCD				AM038N	G6090189		1-	A	D2
F 1001	CHIP FUSE	3.15A			FHC16 322ADTP	Q0000118		1-	A	A1
FB1001	FERRITE BEADS				BLM18PG330SN1D	L9190141		1-	A	A1
FB1002	FERRITE BEADS				BLM18PG330SN1D	L9190141		1-	A	A1
J 1001	SHIELD FINGER				3525 3100103	S5000226		1-	B	h3
J 1002	SHIELD FINGER				1674954-1	S5000255		1-	A	B3
J 1003	SHIELD FINGER				1674954-1	S5000255		1-	A	B3
L 1001	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	h3
L 1002	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	g3
L 1003	M.RFC	0.15uH			HK1608 R15J-T	L1690938		1-	B	c3
L 1004	COIL				E2 0.28-1.0-4.5T-R	L0022395		1-	B	g3
L 1005	COIL				E2 0.4-1.5-4T-L	L0022475		1-	B	f3
L 1006	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	g3
L 1007	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		1-	B	c3
L 1008	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	f3
L 1009	M.RFC	4.7uH			LK2125 4R7K-T	L1690327		1-	A	C3
L 1010	M.RFC	0.039uH			HK1608 39NJ-T	L1690523		1-	B	g2
L 1011	M.RFC	0.022uH			HK1608 22NJ-T	L1690520		1-	B	f3
L 1012	CHIP COIL	0.033uH		2%	C2520C-33NG	L1691288		1-	B	c3
L 1013	M.RFC	0.082uH		2%	C1608CB-82NG-RF	L1691044		1-	B	g2
L 1014	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		1-	B	c3
L 1015	M.RFC	0.068uH		2%	C1608CB-68NG-RF	L1691042		1-	B	e3
L 1016	M.RFC	0.056uH		2%	C1608CB-56NG-RF	L1691041		1-	B	g2
L 1017	M.RFC	0.18uH		2%	C1608CB-R18G-RF	L1691102	HX280E	1-	B	g2
L 1017	M.RFC	0.22uH		2%	C1608CB-R22G-RF	L1691103	HX280S	1-	B	g2
L 1018	M.RFC	0.1uH			HK1608 R10J-T	L1690528		1-	B	g2
L 1019	M.RFC	0.068uH			HK1608 68NJ-T	L1690526		1-	B	e3
L 1021	M.RFC	0.039uH		2%	C1608CB-39NG-RF	L1691039		1-	B	g2
L 1022	M.RFC	0.039uH		2%	C1608CB-39NG-RF	L1691039		1-	B	f2
L 1023	M.RFC	0.082uH			HK1608 82NJ-T	L1690527		1-	B	d3
L 1024	M.RFC	0.056uH			HK1608 56NJ-T	L1690525		1-	B	f2
L 1025	M.RFC	0.056uH			HK1608 56NJ-T	L1690525		1-	B	e3
L 1026	M.RFC	1.5uH			LK1608 1R5K-T	L1690846		1-	B	e2
L 1027	M.RFC	1.5uH			LK1608 1R5K-T	L1690846		1-	B	d2
L 1029	M.RFC	0.047uH			HK1608 47NJ-T	L1690524		1-	B	g2
MC1001	MIC. ELEMENT				PF0-1055P	M3290045		1-	A	C1
Q 1001	IC				TAR5S50U(TE85L.F)	G1094097		1-	B	g1
Q 1002	IC				TAR5S33U(TE85L.F)	G1094549		1-	B	g1
Q 1003	IC				NJM12902V-TE1	G1093592		1-	B	b3
Q 1004	IC				LM2904PWR	G1094010		1-	A	B3
Q 1005	IC				LM2902PWR	G1094009		1-	B	a1
Q 1006	TRANSISTOR				DTC144EE TL	G3070075		1-	B	h3
Q 1007	TRANSISTOR				2SC5006-T1	G3350068		1-	B	c3
Q 1008	TRANSISTOR				2SC5006-T1	G3350068		1-	B	c3
Q 1009	FET				RQA0011DNS	G3070392		1-	B	f3
Q 1010	TRANSISTOR				UMD5N TR	G3070343		1-	B	f2
Q 1011	TRANSISTOR				UMD5N TR	G3070343		1-	B	f1
Q 1012	TRANSISTOR				FMMTL618TA	G3070334		1-	B	a2
Q 1013	FET				RQA0004PXDQS	G3070391		1-	B	e3
Q 1014	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	c3
Q 1015	FET				3SK294(TE85L)	G4802948		1-	B	g2
Q 1016	TRANSISTOR				2SC5226-5-TL	G3352268E		1-	B	e3
Q 1017	TRANSISTOR				2SA1774 TL R	G3117748R		1-	B	d3
Q 1018	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	d3
Q 1020	TRANSISTOR				DTC144EE TL	G3070075		1-	A	A3
Q 1021	IC				LV2105V-TLM	G1093191		1-	B	d3
Q 1022	FET				3SK318 TL	G4803188		1-	B	e2
Q 1023	TRANSISTOR				DTC143ZE TL	G3070102		1-	B	d3
Q 1024	TRANSISTOR				2SC4915-O(TE85L.F)	G3349158O		1-	B	d2
Q 1025	IC				UPD78F0484GK(S)	※		1-	A	D1
Q 1026	IC				BA4116FV-E2	G1092616		1-	B	c1
Q 1027	IC				BR24L08FVT-W(TAPE)	G1094519		1-	B	e1

※: Please contact Vertex Standard

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
Q 1029	TRANSISTOR				DTC144EE TL	G3070075		1-	B	b2
Q 1030	TRANSISTOR				DTC144EE TL	G3070075		1-	B	h2
Q 1031	TRANSISTOR				2SA1774 TL R	G3117748R		1-	B	h2
Q 1032	IC				TDA2822D013TR	G1091542		1-	B	h2
Q 1033	TRANSISTOR				FMMTL718TA	G3070335		1-	B	h2
Q 1034	IC				SN74LVC1G66DCKR	G1094046		1-	B	h1
Q 1035	TRANSISTOR				DTC143ZE TL	G3070102		1-	A	A2
Q 1036	TRANSISTOR				DTC144EE TL	G3070075		1-	A	C2
R 1001	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	h3
R 1002	CHIP RES.	330k	1/16W	0.5%	MCR01MZPD3303	J24189330		1-	B	f2
R 1003	CHIP RES.	470k	1/16W	0.5%	MCR01MZPD4703	J24189332		1-	B	f1
R 1004	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	h3
R 1005	CHIP RES.	82k	1/16W	0.5%	MCR01MZPD8202	J24189385		1-	B	e2
R 1006	CHIP RES.	150k	1/16W	0.5%	MCR01MZPD1503	J24189328		1-	B	e1
R 1007	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	f1
R 1008	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	g3
R 1009	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	B	c3
R 1010	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	A	C3
R 1011	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	c3
R 1012	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	B	c3
R 1013	CHIP RES.	680	1/16W	5%	RMC1/16S 681JTH	J24189023		1-	B	c3
R 1014	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	D3
R 1015	CHIP RES.	330	1/16W	5%	RMC1/16S 331JTH	J24189019		1-	A	C3
R 1016	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	f3
R 1017	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	e3
R 1018	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	c3
R 1019	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	c3
R 1020	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	D3
R 1021	CHIP RES.	2.7k	1/16W	5%	RMC1/16S 272JTH	J24189030		1-	B	e3
R 1022	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	E3
R 1023	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	A	C3
R 1024	CHIP RES.	56k	1/16W	5%	RMC1/16S 563JTH	J24189046		1-	B	c3
R 1025	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		1-	B	c3
R 1026	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	b2
R 1027	CHIP RES.	68	1/4W	5%	RMC1/4 680JATP	J24245680		1-	B	a3
R 1028	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	b2
R 1029	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		1-	B	c3
R 1030	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	a2
R 1031	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	a2
R 1032	CHIP RES.	68k	1/16W	5%	RMC1/16S 683JTH	J24189047		1-	B	a2
R 1033	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	e3
R 1034	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	A3
R 1035	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	a2
R 1036	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	e3
R 1037	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	A	A3
R 1038	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	e3
R 1039	CHIP RES.	330	1/16W	5%	RMC1/16S 331JTH	J24189019		1-	B	d3
R 1040	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021		1-	B	d3
R 1041	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	d3
R 1042	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		1-	B	g2
R 1043	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	g2
R 1044	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	c3
R 1045	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	d3
R 1046	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	d1
R 1047	CHIP RES.	82k	1/16W	5%	RMC1/16S 823JTH	J24189048		1-	B	g2
R 1048	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	B	g2
R 1049	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	A	C3
R 1052	CHIP RES.	330	1/16W	5%	RMC1/16S 331JTH	J24189019		1-	B	e3
R 1053	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	e2
R 1055	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	g2
R 1056	CHIP RES.	150	1/16W	5%	RMC1/16S 151JTH	J24189015		1-	B	g2
R 1057	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	e3
R 1058	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d2
R 1059	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	g2
R 1060	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	d3
R 1061	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	C2
R 1062	CHIP RES.	6.8k	1/16W	5%	RMC1/16S 682JTH	J24189035		1-	B	e3
R 1063	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	e3
R 1064	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		1-	A	B4
R 1065	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	B	e3
R 1066	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d3
R 1068	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d3
R 1069	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	e3

MAIN Unit

Parts List

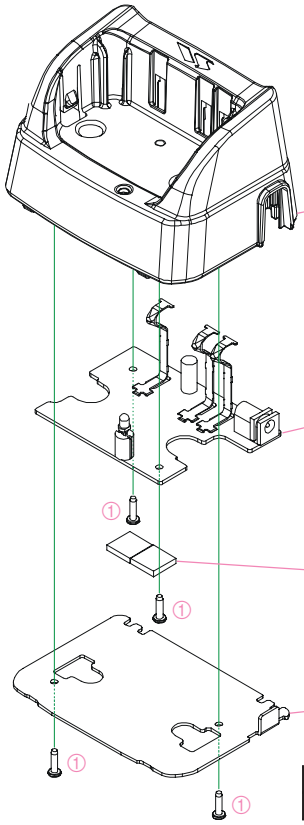
REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1070	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d3
R 1071	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d3
R 1072	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	A3
R 1074	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	A	B3
R 1075	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	B3
R 1076	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	c2
R 1077	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	e2
R 1078	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	f2
R 1079	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	e3
R 1080	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	e2
R 1081	CHIP RES.	120k	1/16W	5%	RMC1/16S 124JTH	J24189050		1-	B	f2
R 1082	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009		1-	B	f2
R 1083	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	B	e2
R 1084	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	B3
R 1085	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	e3
R 1086	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	e2
R 1087	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	e3
R 1088	CHIP RES.	820	1/16W	5%	RMC1/16S 821JTH	J24189024		1-	B	e2
R 1089	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	d3
R 1090	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d3
R 1091	CHIP RES.	820	1/16W	5%	RMC1/16S 821JTH	J24189024		1-	B	d2
R 1092	CHIP RES.	1.2k	1/16W	5%	RMC1/16S 122JTH	J24189026		1-	B	d2
R 1093	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d2
R 1094	CHIP RES.	1.8k	1/16W	5%	RMC1/16S 182JTH	J24189028		1-	A	E1
R 1095	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	d2
R 1097	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	A	D2
R 1098	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	B	b3
R 1099	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	b1
R 1100	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		1-	B	b3
R 1101	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		1-	B	b3
R 1102	CHIP RES.	220k	1/16W	0.5%	MCR01MZPD2203	J24189389		1-	A	E1
R 1103	CHIP RES.	100k	1/16W	0.5%	MCR01MZPD1003	J24189386		1-	A	E1
R 1104	CHIP RES.	47k	1/16W	0.5%	MCR01MZPD4702	J24189382		1-	A	E1
R 1105	CHIP RES.	22k	1/16W	0.5%	MCR01MZPD2202	J24189378		1-	A	E2
R 1106	CHIP RES.	10k	1/16W	0.5%	MCR01MZPD1002	J24189374		1-	A	E2
R 1107	CHIP RES.	4.7k	1/16W	0.5%	MCR01MZPD4701	J24189370		1-	A	E2
R 1108	CHIP RES.	8.2k	1/16W	5%	RMC1/16S 822JTH	J24189036		1-	B	b3
R 1109	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070	HX280E	1-	A	E2
R 1110	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	b1
R 1111	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	c2
R 1112	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	b3
R 1113	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	b3
R 1114	CHIP RES.	150k	1/16W	5%	RMC1/16S 154JTH	J24189051		1-	B	c1
R 1116	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	h1
R 1117	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	h1
R 1118	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	a3
R 1120	CHIP RES.	120k	1/16W	5%	RMC1/16S 124JTH	J24189050	HX280E	1-	B	c1
R 1120	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049	HX280S	1-	B	c1
R 1121	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	c1
R 1122	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	b2
R 1123	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	B	b3
R 1124	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	E1
R 1125	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	E1
R 1126	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	E1
R 1128	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		1-	B	b1
R 1129	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	B	a3
R 1130	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		1-	B	a3
R 1131	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		1-	B	b1
R 1134	CHIP RES.	18k	1/16W	5%	RMC1/16S 183JTH	J24189040		1-	B	b2
R 1135	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	b2
R 1136	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	a3
R 1138	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	a3
R 1139	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	e1
R 1140	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	e1
R 1141	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	e1
R 1142	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	b1
R 1143	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	b3
R 1144	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	b1
R 1145	CHIP RES.	180k	1/16W	5%	RMC1/16S 184JTH	J24189052		1-	B	b1
R 1146	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	B	b3
R 1149	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	a1
R 1150	CHIP RES.	18k	1/16W	5%	RMC1/16S 183JTH	J24189040		1-	B	b3
R 1151	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	a3

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1152	CHIP RES.	5.6k	1/16W	5%	RMC1/16S 562JTH	J24189034		1-	B	a3
R 1153	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	b3
R 1154	CHIP RES.	8.2k	1/16W	5%	RMC1/16S 822JTH	J24189036		1-	B	a1
R 1155	CHIP RES.	18k	1/16W	5%	RMC1/16S 183JTH	J24189040		1-	B	b2
R 1157	CHIP RES.	1.5k	1/16W	5%	RMC1/16S 152JTH	J24189027		1-	B	a1
R 1159	CHIP RES.	150k	1/16W	5%	RMC1/16S 154JTH	J24189051		1-	B	b1
R 1161	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	g2
R 1163	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	h2
R 1164	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	a2
R 1165	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		1-	B	a2
R 1166	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	h2
R 1167	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	f1
R 1168	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	a2
R 1169	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	b2
R 1170	CHIP RES.	180k	1/16W	5%	RMC1/16S 184JTH	J24189052		1-	B	b2
R 1171	CHIP RES.	2.2	1/4W	5%	RMC1/4 2R2JATP	J24245229		1-	B	h2
R 1172	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		1-	B	b2
R 1173	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	h2
R 1174	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	f1
R 1175	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	h1
R 1176	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	h1
R 1179	CHIP RES.	4.7	1/16W	5%	RMC1/16S 4R7JTH	J24189066		1-	B	h2
R 1180	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	h1
R 1181	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	h2
R 1182	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	h1
R 1183	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	f1
R 1184	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	A1
R 1185	CHIP RES.	4.7	1/16W	5%	RMC1/16S 4R7JTH	J24189066		1-	B	h2
R 1186	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	A	A2
R 1187	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	C2
R 1188	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	f2
R 1189	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	f2
R 1194	CHIP RES.	330	1/16W	5%	RMC1/16S 331JTH	J24189019		1-	B	e3
R 1195	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	A	D2
R 1196	CHIP RES.	33k	1/16W	0.5%	MCR01MZPD3302	J24189380		1-	A	B2
R 1197	CHIP RES.	15k	1/16W	0.5%	MCR01MZPD1502	J24189376	HX280E	1-	A	B2
R 1197	CHIP RES.	27k	1/16W	0.5%	MCR01MZPD2702	J24189379	HX280S	1-	A	B2
R 1198	CHIP RES.	4.7k	1/16W	0.5%	MCR01MZPD4701	J24189370	HX280E	1-	A	B2
R 1198	CHIP RES.	15k	1/16W	0.5%	MCR01MZPD1502	J24189376	HX280S	1-	A	B2
R 1199	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	h1
R 1200	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	h1
R 1201	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	h1
R 1202	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	f1
R 1204	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		1-	B	b1
RB1001	BLOCK RES.				MNR04M0ABJ102	J42900039		1-	A	E2
S 1010	TACT SWITCH				PT-036-B2S-T	N5090158		1-	A	C4
TC1001	TRIMMER CAP.	10pF			ECR-KN010C61X	K91000226		1-	A	F2
TH1001	THERMISTOR				TH05 4B473FR	G9090150		1-	B	f3
TH1002	THERMISTOR				TH05 4B473FR	G9090150		1-	B	b2
VR1001	POT.	100k			EVN-5ESX50B15	J51811104		1-	A	F3
VR1002	POT.	50k			EVN-5ESX50B54	J51811503		1-	A	A3
VR1003	POT.	100k			EVN-5ESX50B15	J51811104		1-	A	A3
VR1004	POT.				WH8011AK-1 A20K 15/5	J60800300		1-	B	h1
VR1005	POT.	10k			EVN-5ESX50B14	J51811103		1-	A	F2
X 1001	XTAL S-6	21.25MHz			21.250MHZ	H0103315		1-	B	c2
X 1002	XTAL HC-49/SS-SMD	9.8304MHz			9.8304MHZ	H0103382		1-	B	d1
XF1001	XTAL FILTER				21.700MHZ	H1102395		1-	B	e2
XF1002	XTAL FILTER				21.700MHZ	H1102395		1-	B	d2
	INTER CONNECTOR				(LCD)	RA1081000		1-		
	LIGHT GUIDE				(LCD)	RA1078900		1-		
	REFLECTOR SHEET					RA1089600		1-		
	MIC HOLDER RUBBER					RA1080000		1-		

Note

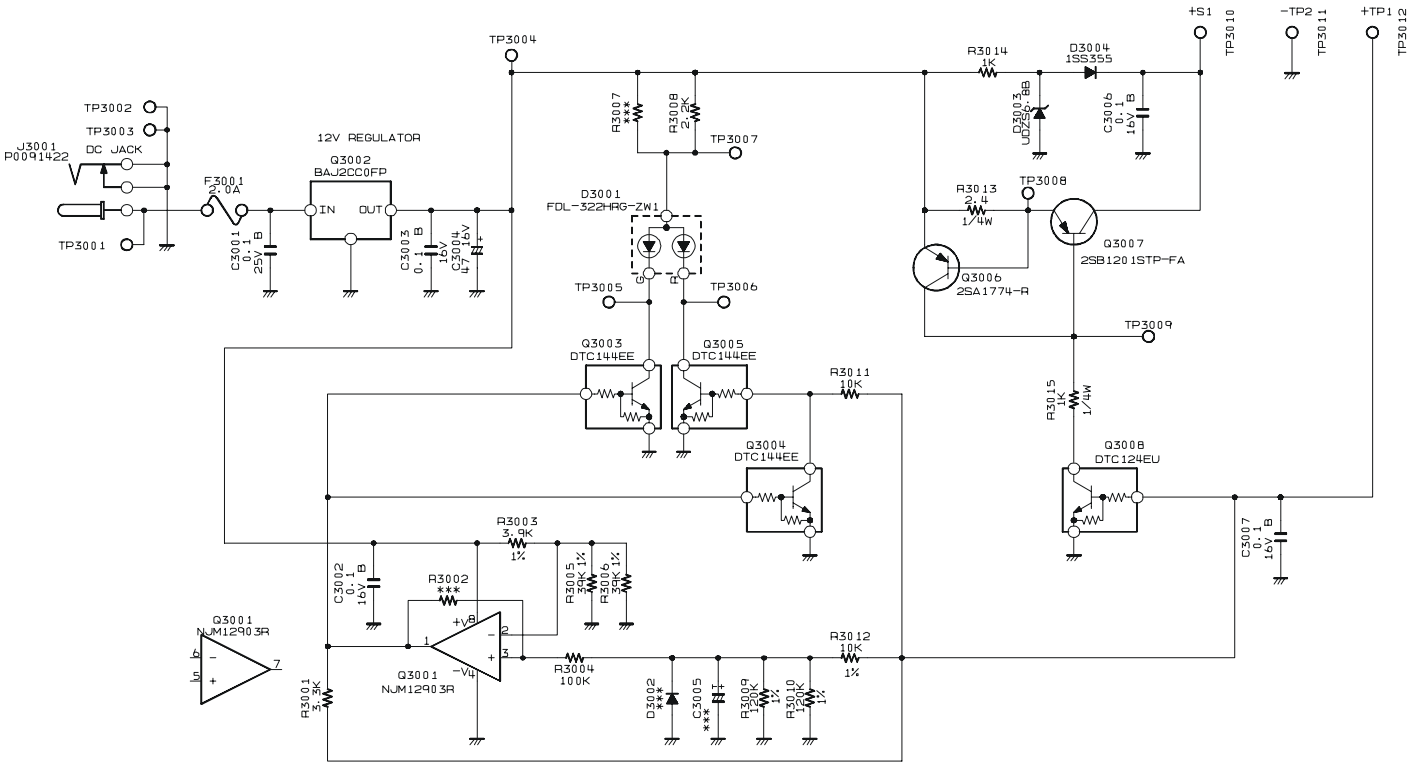
CD-46 Charger Cradle

Exploded View



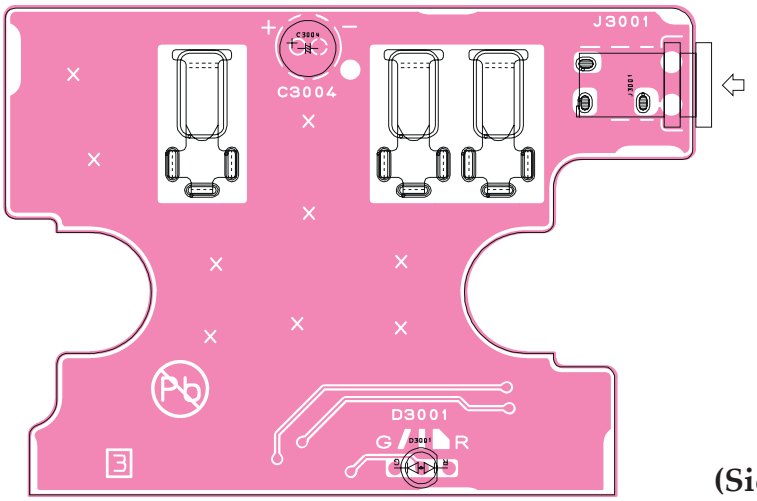
Ref.	VXSTD P/N	Description	Qty.
①	U23108020	BIND HEAD TAPTITE-P 2X8SUS	4

Circuit Diagram

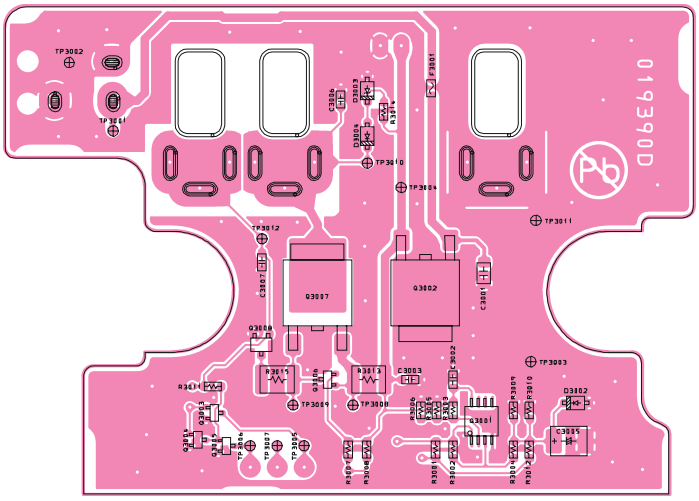


CD-46 Charger Cradle

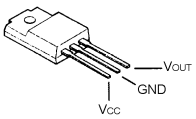
Parts Layout



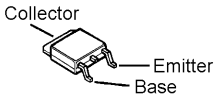
(Side A)



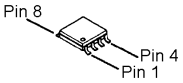
(Side B)



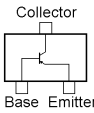
BAJ2CC0FP
(Q3002)



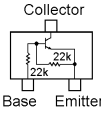
2SB1201S
(Q3007)



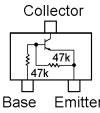
NJM12903R
(Q3001)



2SA1774 (FR)
(Q3006)



DTC124EU (25)
(Q3008)



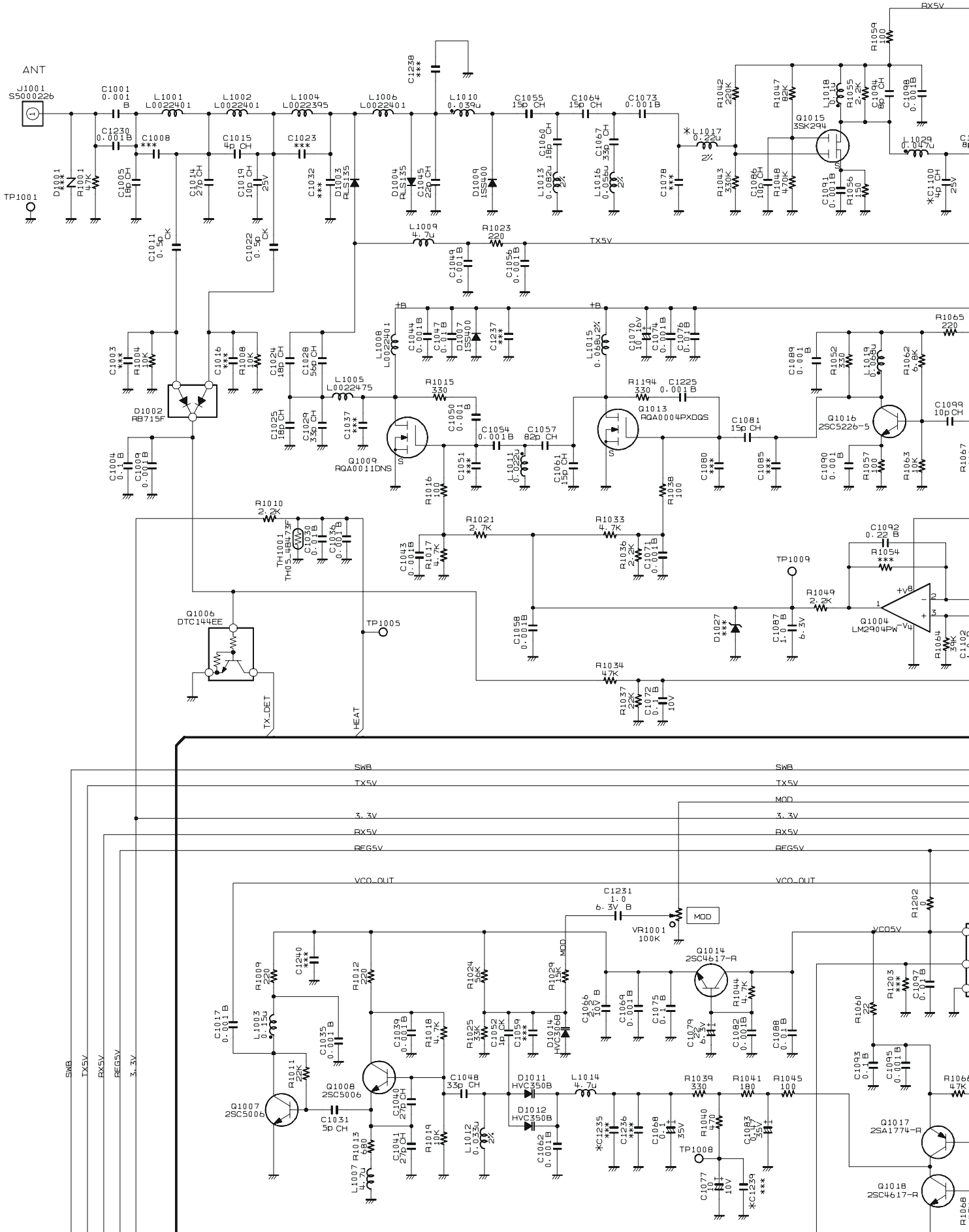
DTC144EE (26)
(Q3003, 3004, 3005)

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	Printed Circuit Board					FR019300D		1-		
C 3001	CHIP CAP.	0.1uF	25V	B	GRM21BB11E104KA01L	K22140811		1-		
C 3002	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 3003	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 3004	AL.ELECTRO.CAP.	47uF	16V		UVR1C470MDD	K40129107		1-		
C 3006	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 3007	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
D 3001	LED				FDL-322HRG-ZW1-CA	G2090810		1-		
D 3003	DIODE				UDZS TE-17 6.8B	G2070888		1-		
D 3004	DIODE				1SS355 TE-17	G2070470		1-		
F 3001	CHIP FUSE	2A			FCC16 202ADTP	Q0000147		1-		
J 3001	CONNECTOR				LGP6501-0100C	P0091422		1-		
Q 3001	IC				NJM12903R-TE1	G1093336		1-		
Q 3002	IC				BAJ2CC0FP	G1094174		1-		
Q 3003	TRANSISTOR				DTC144EE TL	G3070075		1-		
Q 3004	TRANSISTOR				DTC144EE TL	G3070075		1-		
Q 3005	TRANSISTOR				DTC144EE TL	G3070075		1-		
Q 3006	TRANSISTOR				2SA1774 TL R	G3117748R		1-		
Q 3007	TRANSISTOR				2SB1201S-TL	G3070195		1-		
Q 3008	TRANSISTOR				DTC124EU T106	G3070045		1-		
R 3001	CHIP RES.	3.3k	1/16W	5%	RMC1/16 332JATP	J24185332		1-		
R 3003	CHIP RES.	3.9k	1/16W	1%	RMC1/16 392FTP	J24183392		1-		
R 3004	CHIP RES.	100k	1/16W	5%	RMC1/16 104JATP	J24185104		1-		
R 3005	CHIP RES.	39k	1/16W	1%	RMC1/16 393FTP	J24183393		1-		
R 3006	CHIP RES.	39k	1/16W	1%	RMC1/16 393FTP	J24183393		1-		
R 3008	CHIP RES.	2.2k	1/16W	5%	RMC1/16 222JATP	J24185222		1-		
R 3009	CHIP RES.	120k	1/16W	1%	RMC1/16 124FTP	J24183124		1-		
R 3010	CHIP RES.	120k	1/16W	1%	RMC1/16 124FTP	J24183124		1-		
R 3011	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-		
R 3012	CHIP RES.	10k	1/16W	1%	RMC1/16 103FTP	J24183103		1-		
R 3013	CHIP RES.	2.4	1/4W	5%	RMC1/4 2R4JTE	J24245249		1-		
R 3014	CHIP RES.	1k	1/16W	5%	RMC1/16 102JATP	J24185102		1-		
R 3015	CHIP RES.	1k	1/4W	5%	RMC1/4 102JATP	J24245102		1-		
Z 3001	TERMINAL				(CHRG)	RA0769800		1-		

Note

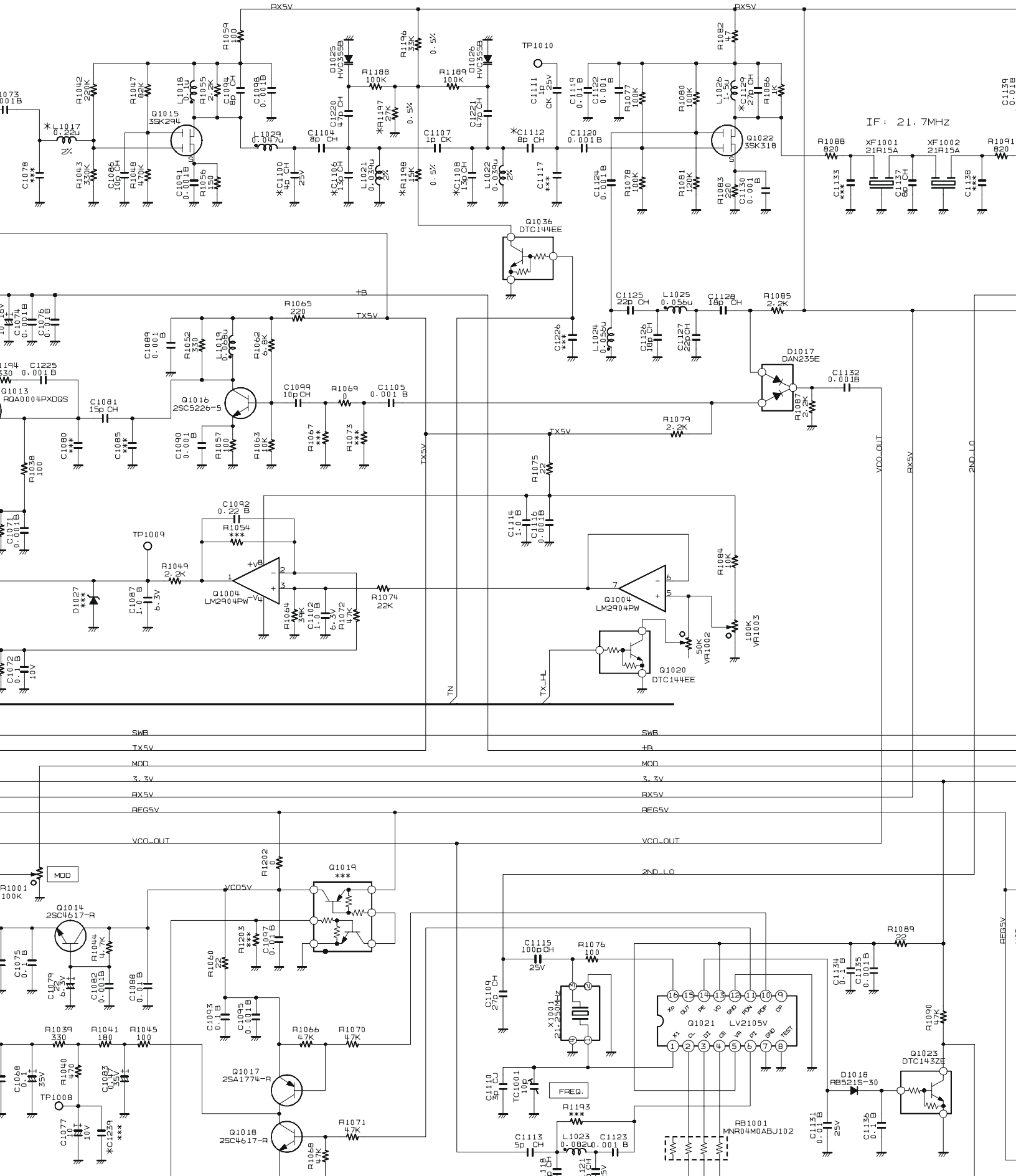
HX280S/E Main Unit Circuit Diagram

1	2	3	4
5	6	7	8



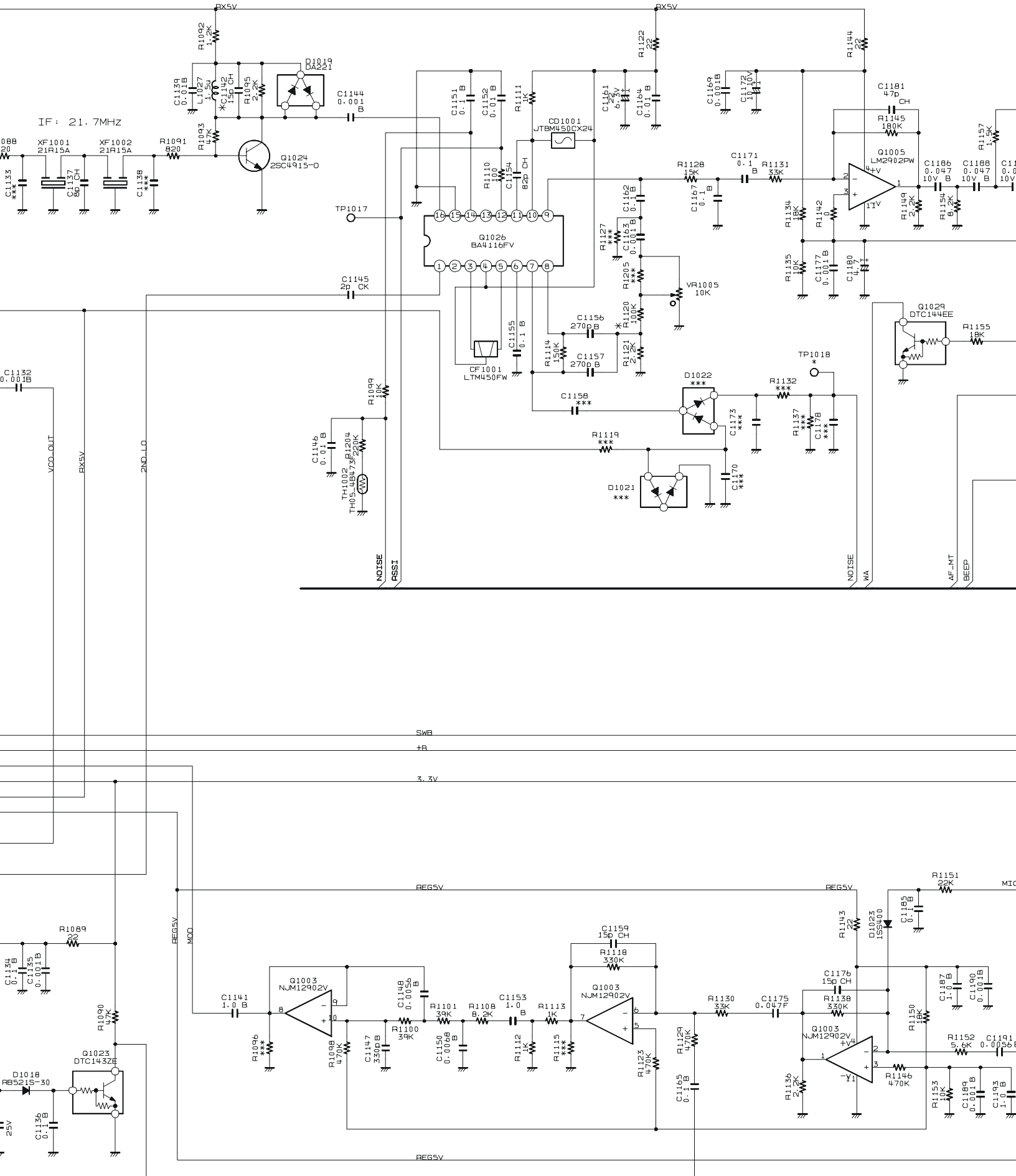
HX280S/E Main Unit Circuit Diagram

1	2	3	4
5	6	7	8



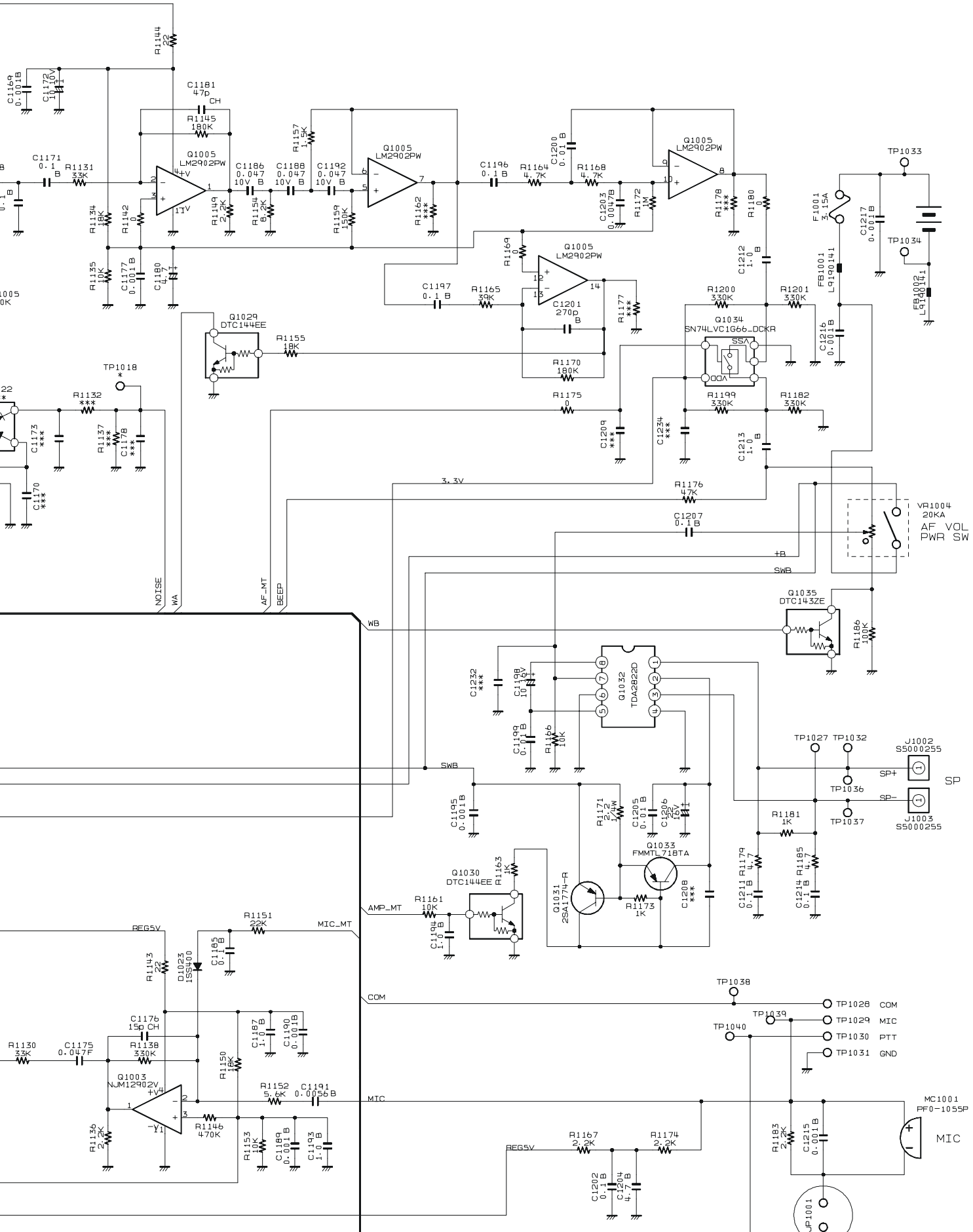
HX280S/E Main Unit
Circuit Diagram

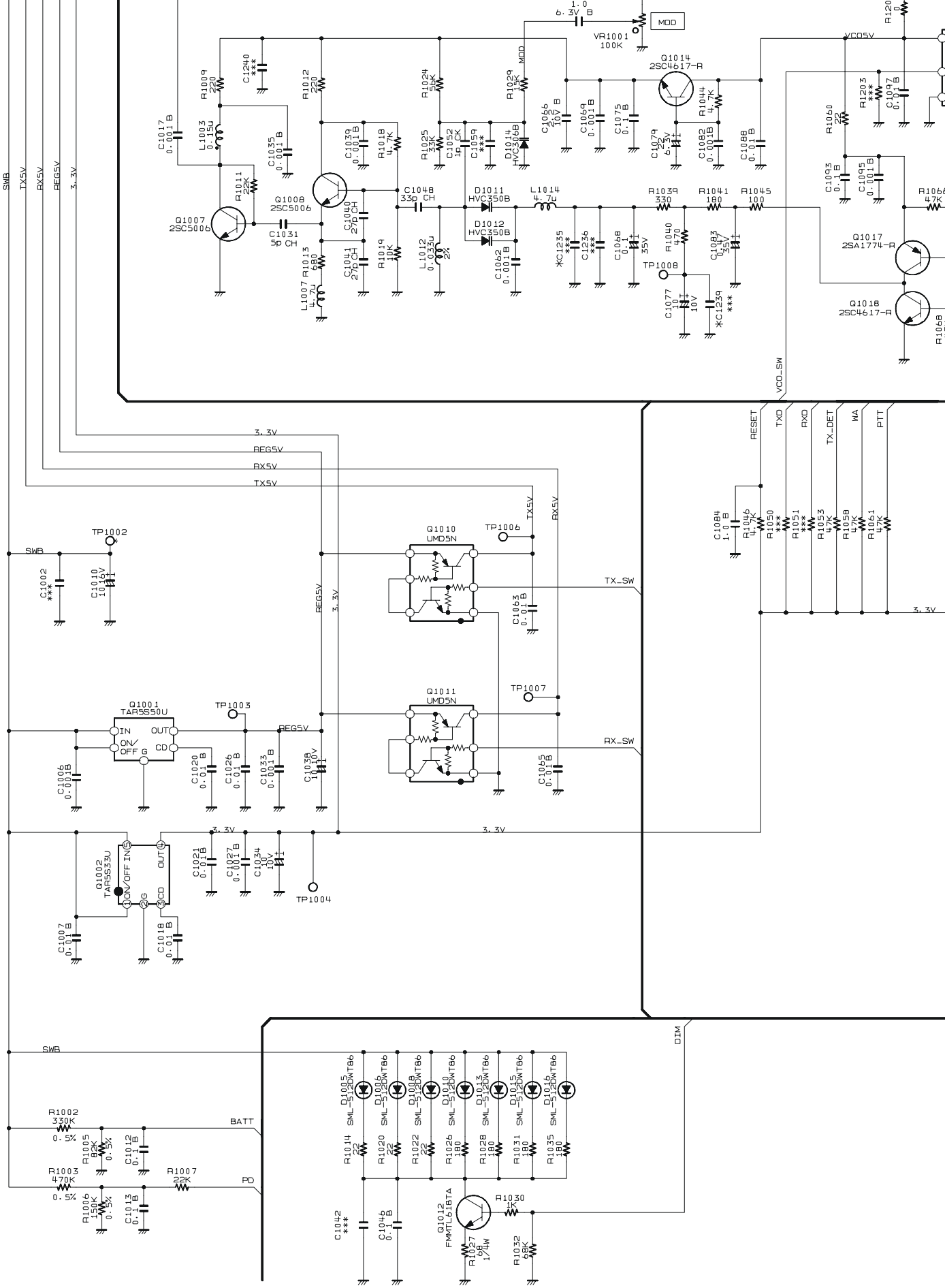
1	2	3	4
5	6	7	8



HX280S/E Main Unit
Circuit Diagram

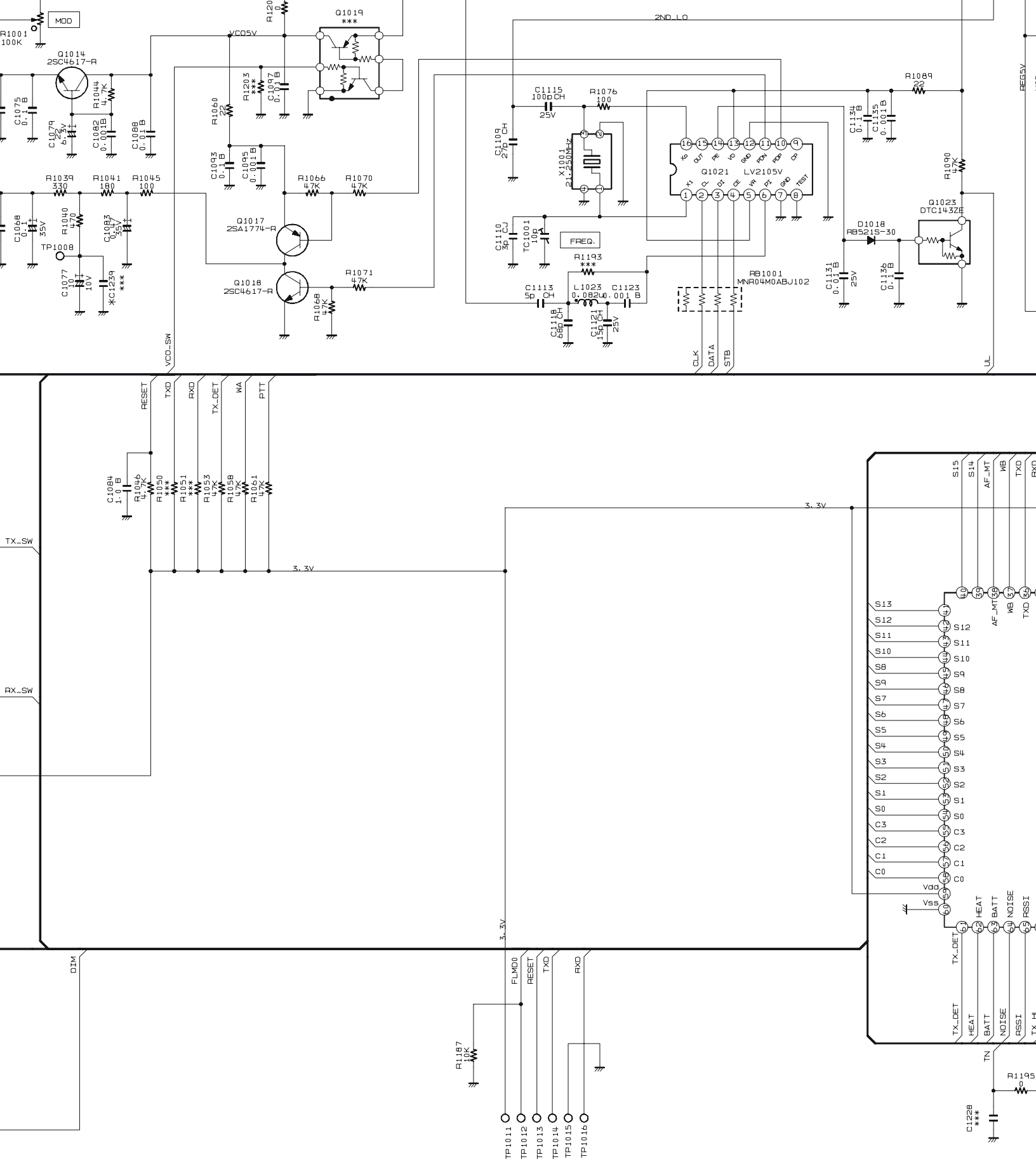
1	2	3	4
5	6	7	8





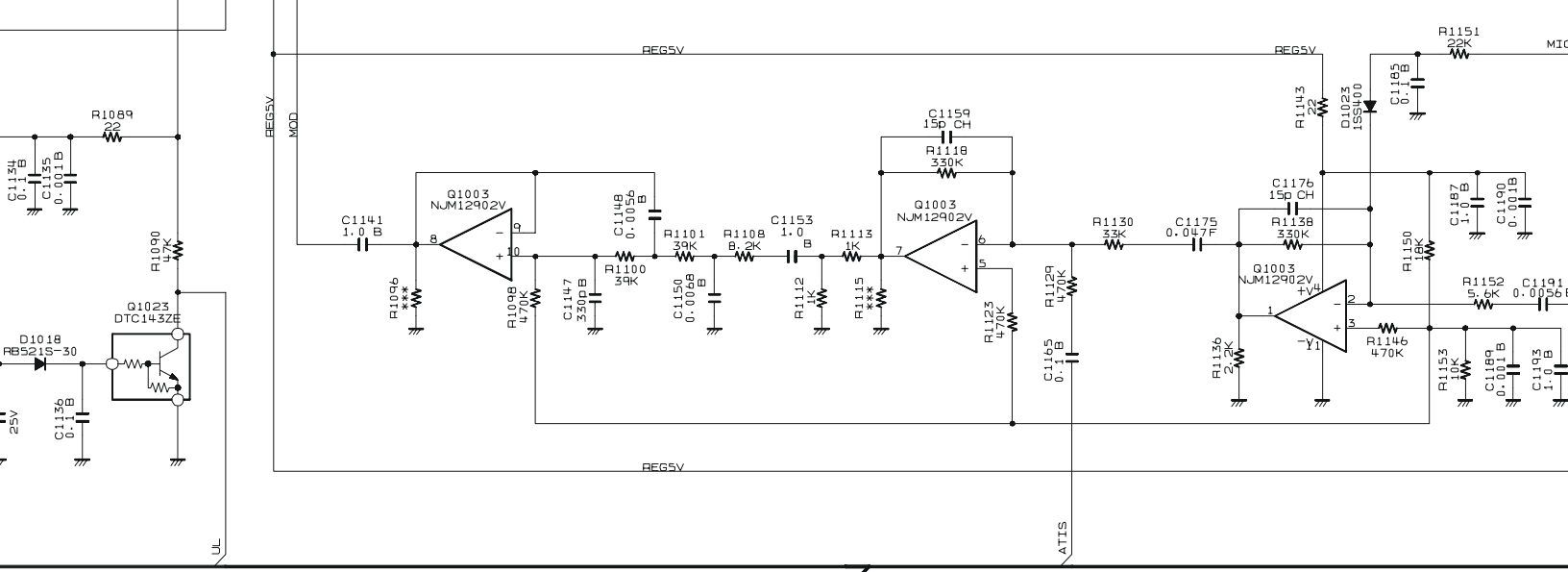
HX280S/E Main Unit
Circuit Diagram

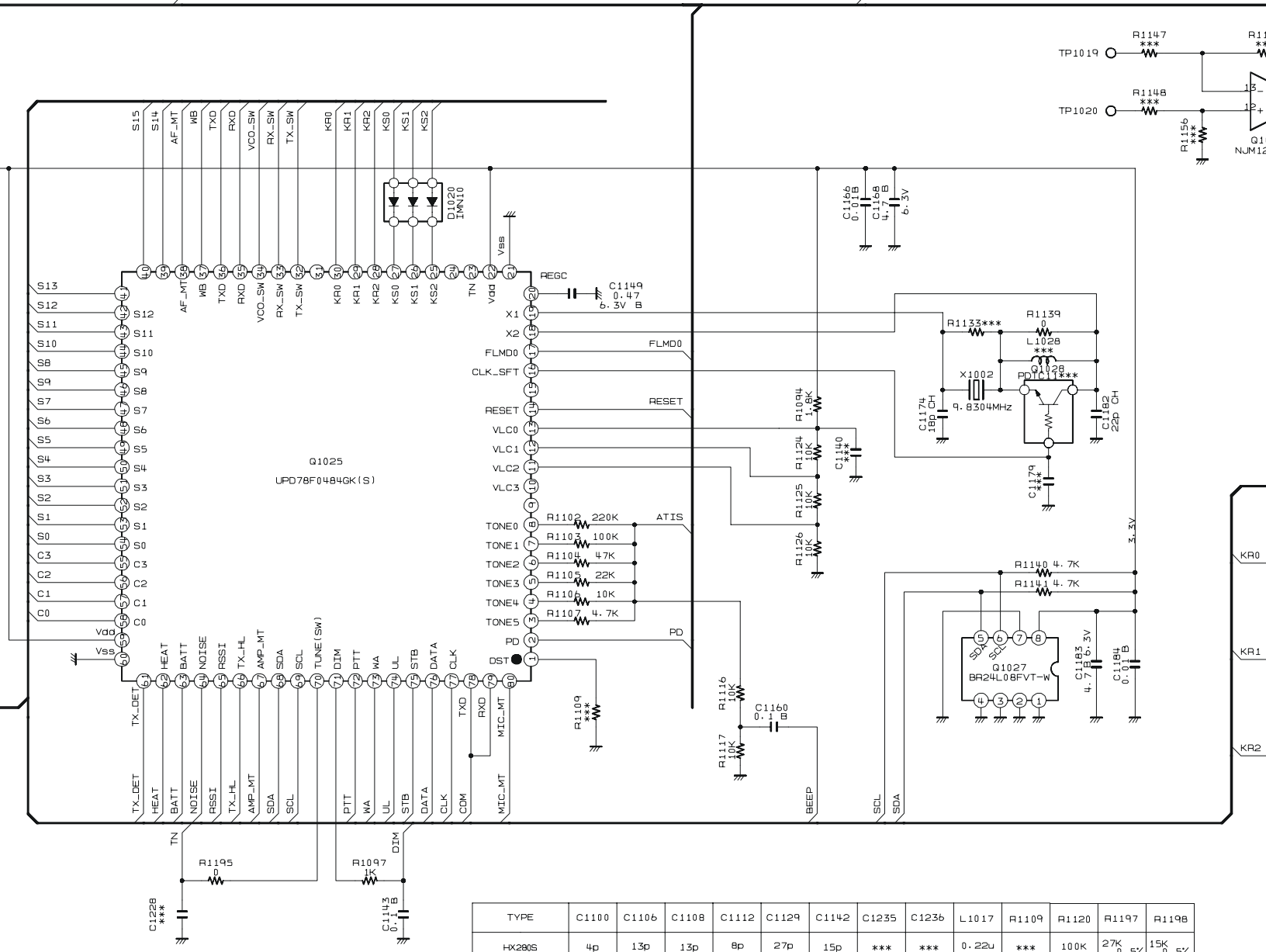
1	2	3	4
5	6	7	8



HX280S/E Main Unit
Circuit Diagram

1	2	3	4
5	6	7	8

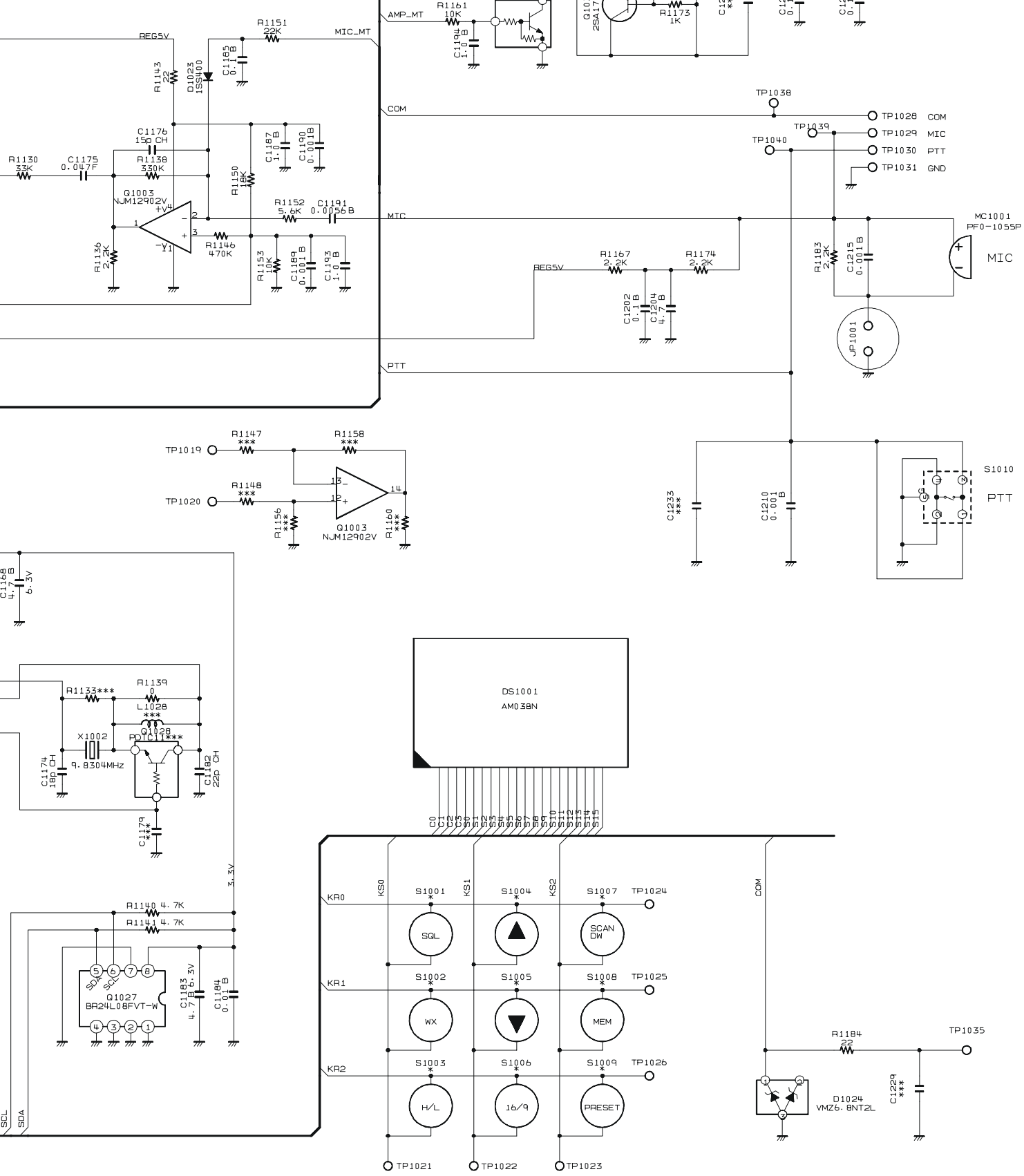




TYPE	C1100	C1106	C1108	C1112	C1129	C1142	C1235	C1236	L1017	R1109	R1120	R1197	R1198
HX280S	4p	13p	13p	8p	27p	15p	***	***	0.22u	***	100K	27K 0.5%	15K 0.5%
HX280E	6p	12p	12p	4p	33p	33p	0.001u	0.001u	0.18u	0	120K	15K 0.5%	4.7K 0.5%

HX280S/E Main Unit
Circuit Diagram

1	2	3	4
5	6	7	8



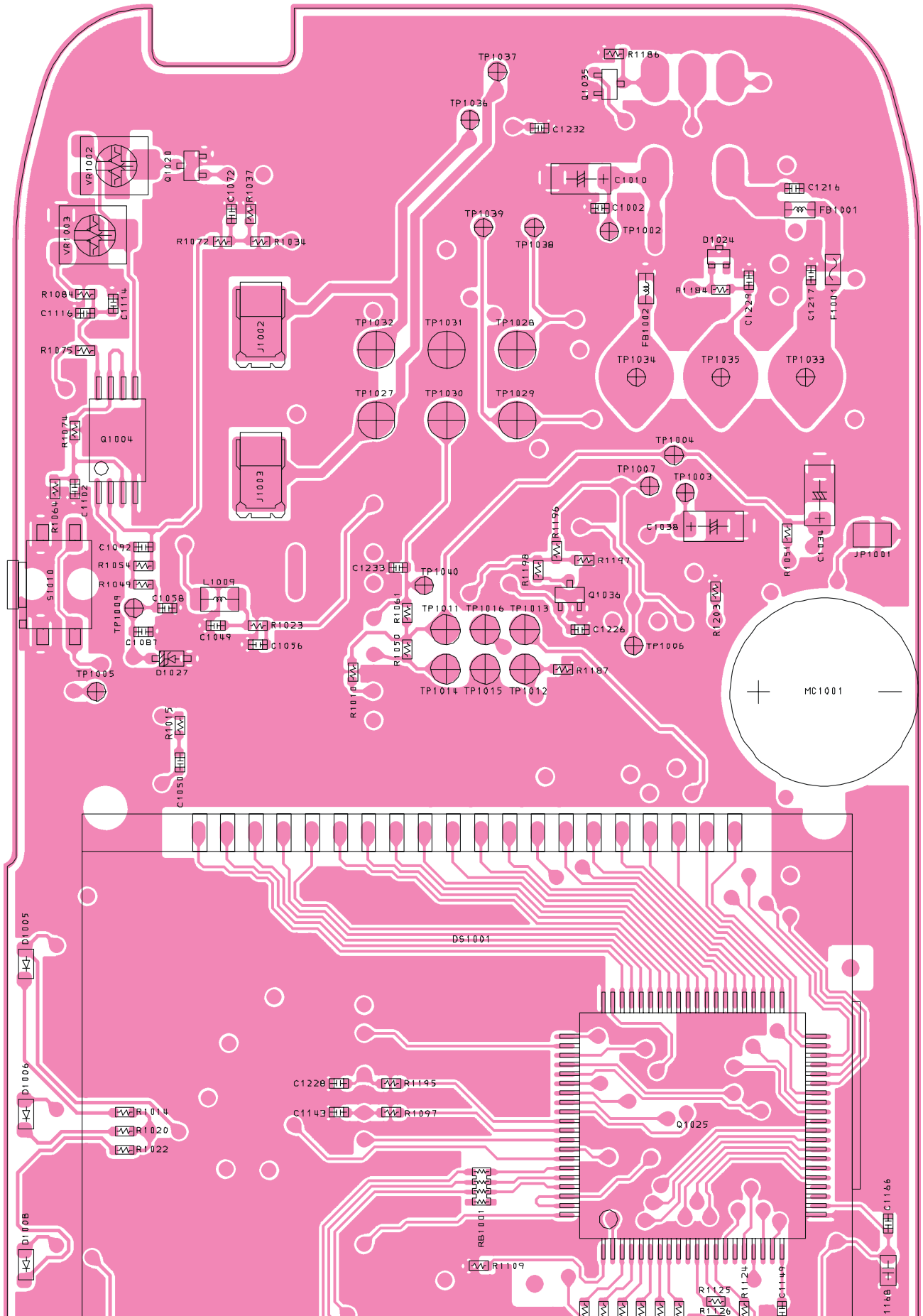
1235	C1236	L1017	R1109	R1120	R1197	R1198
***	***	0.22u	***	100K	27K 0.5%	15K 0.5%
001u	0.001u	0.18u	0	120K	15K 0.5%	4.7K 0.5%

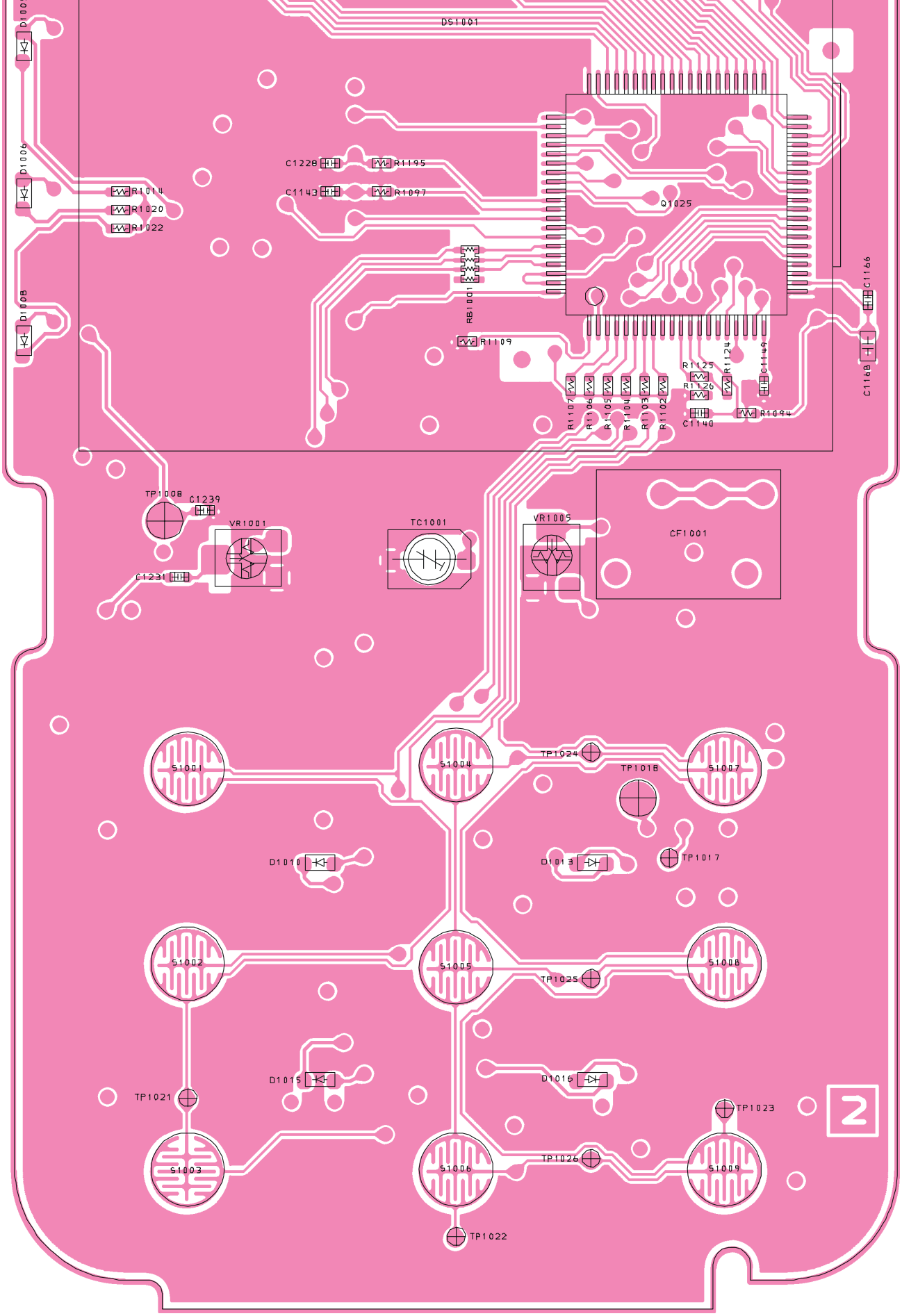
NOTE:
RESISTOR VALUES ARE IN Ω. 1/16W :
CAPACITOR VALUES ARE IN μF. :
(T)CAPACITORS ARE TANTALUM :
ELECTORLYTIC CAPACITORS ARE IN μF. :
INDUCTOR VALUES ARE IN μH :
COILES VALUES ARE IN H :
UNLESS OTHERWISE NOTED.

HX280S/E Main Unit
Circuit Diagram

HX280S/E Main Unit (Side “A”)
Parts Layout

1
2



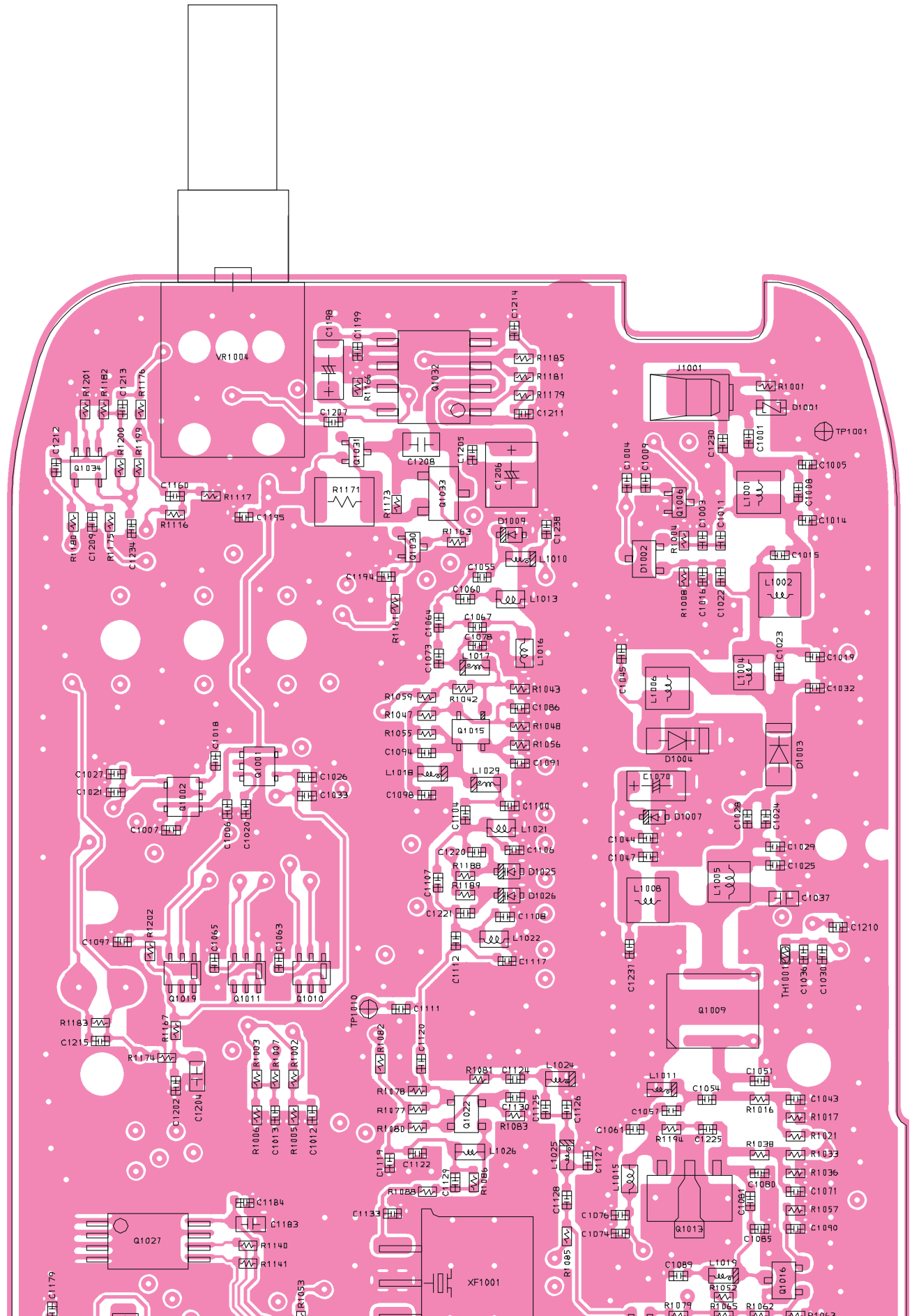


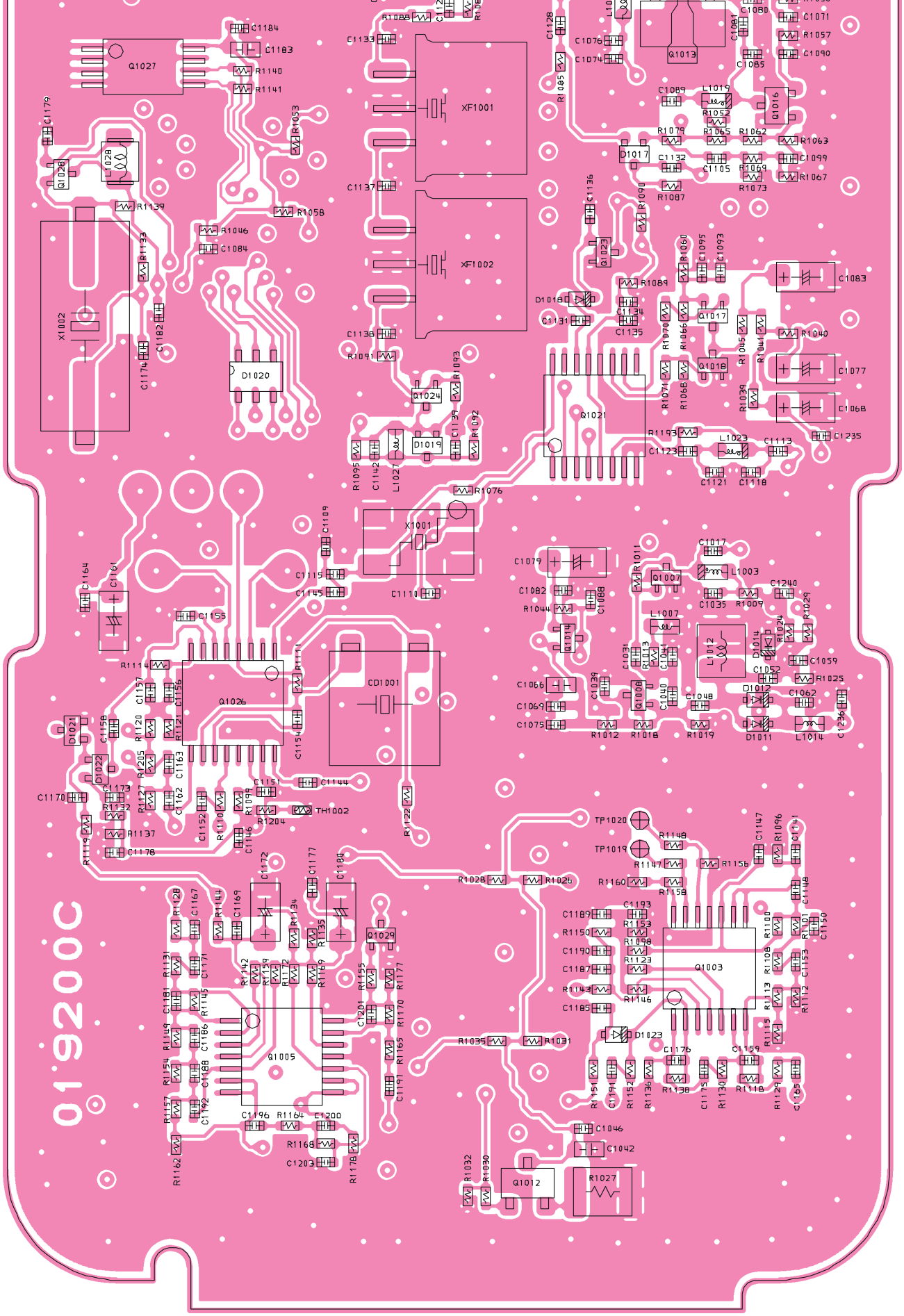
HX280S/E Main Unit (Side "A")
Parts Layout

1
2

HX280S/E Main Unit (Side “B”)
Parts Layout

1
2





HX280S/E Main Unit (Side "B")
Parts Layout

1
2

STANDARD HORIZON

Marine Division of VERTEX STANDARD

US Headquarters

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