STANDARD HORIZON

Floating Marine Transceiver with GPS

HX851

SERVICE MANUAL

EM031N95D

Specifications

General

Frequency Range:	TX: 156.025 MHz - 157.425 MHz
	RX: 156.050 MHz - 163.275MHz
Channel Spacing:	25 kHz
Frequency Stability:	±10 ppm (–4 °F to +140 °F [–20 °C to +60 °C])
Emission Type:	16K0G3E for Voice, 16K0G2B for DSC
Antenna Impedance:	50 Ω
Supply Voltage:	7.4V DC, Negative Ground (Battery Terminal)
Current Consumption:	330 mA (Receive)
	100 mA (Standby, GPS On)
	60 mA (Standby, GPS Off)
	1.6 A / 1.6 A / 1.0 A / 0.7 A (TX: 6W / 5 W / 2.5W / 1W)
Operating Temperature:	–4 °F to +140 °F (–20 °C to +60 °C)
NMEA Input:	GLL, GGA, and RMC
NMEA Output:	DSC, DSE, GLL, GGA, GSA, GSV, and RMC
Case Size (W x H x D):	2.46" x 5.57" x 1.77" (62.5 x 141.5 x 45 mm) (w/o knob & antenna)
Weight:	11.8 oz (335 g) w/ FNB-V99LI, belt clip & antenna

Transmitter

RF Power Output:	6 W / 5 W / 2.5 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: 47.25 MHz
	2nd: 450 kHz
Sensitivity:	0.25 μV for 12 dB SINAD
Adjacent Channel Selectivity:	70 dB typical
Intermodulation:	70 dB typical
Ham & Noise Ratio:	40 dB
Selectivity:	12 kHz / 25 kHz (–6 dB / –60 dB)
AF Output (Internal SP):	700 mW @16 Ω for 10 % THD (@7.4 V)

GPS

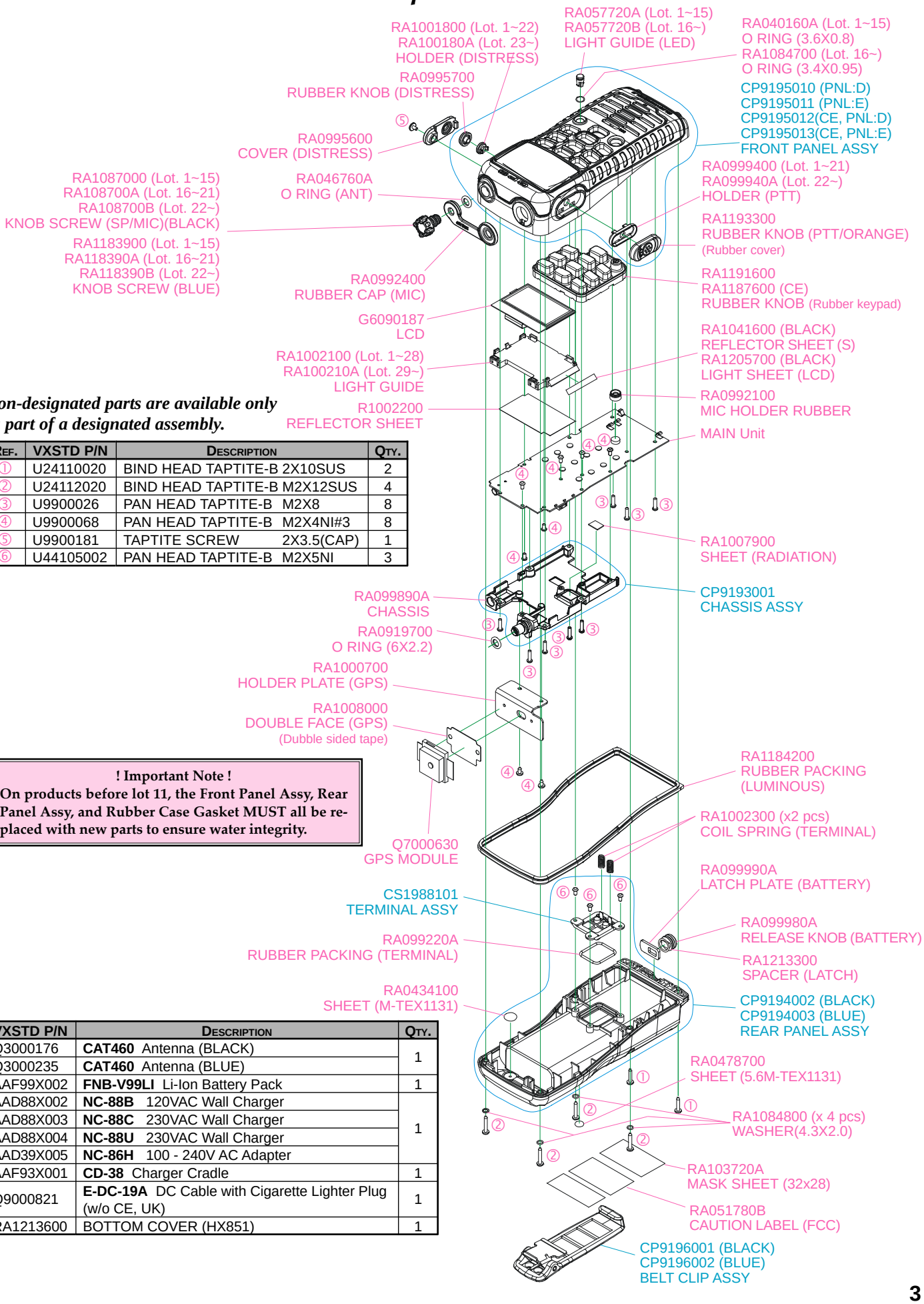
Receiver Channels:	12 channels
Sensitivity:	Less than –130 dBm
Time to First Fix:	1 min typical (@Cold Start)
	40 sec typical (@Warm Start)
Geodetic Datum:	WGS84

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

Important Note

This transceiver 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.

Exploded View & Miscellaneous Parts



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

Ref.	VXSTD P/N	Description	Qty.
①	U24110020	BIND HEAD TAPTITE-B 2X10SUS	2
②	U24112020	BIND HEAD TAPTITE-B M2X12SUS	4
③	U9900026	PAN HEAD TAPTITE-B M2X8	8
④	U9900068	PAN HEAD TAPTITE-B M2X4NI#3	8
⑤	U9900181	TAPTITE SCREW 2X3.5(CAP)	1
⑥	U44105002	PAN HEAD TAPTITE-B M2X5NI	3

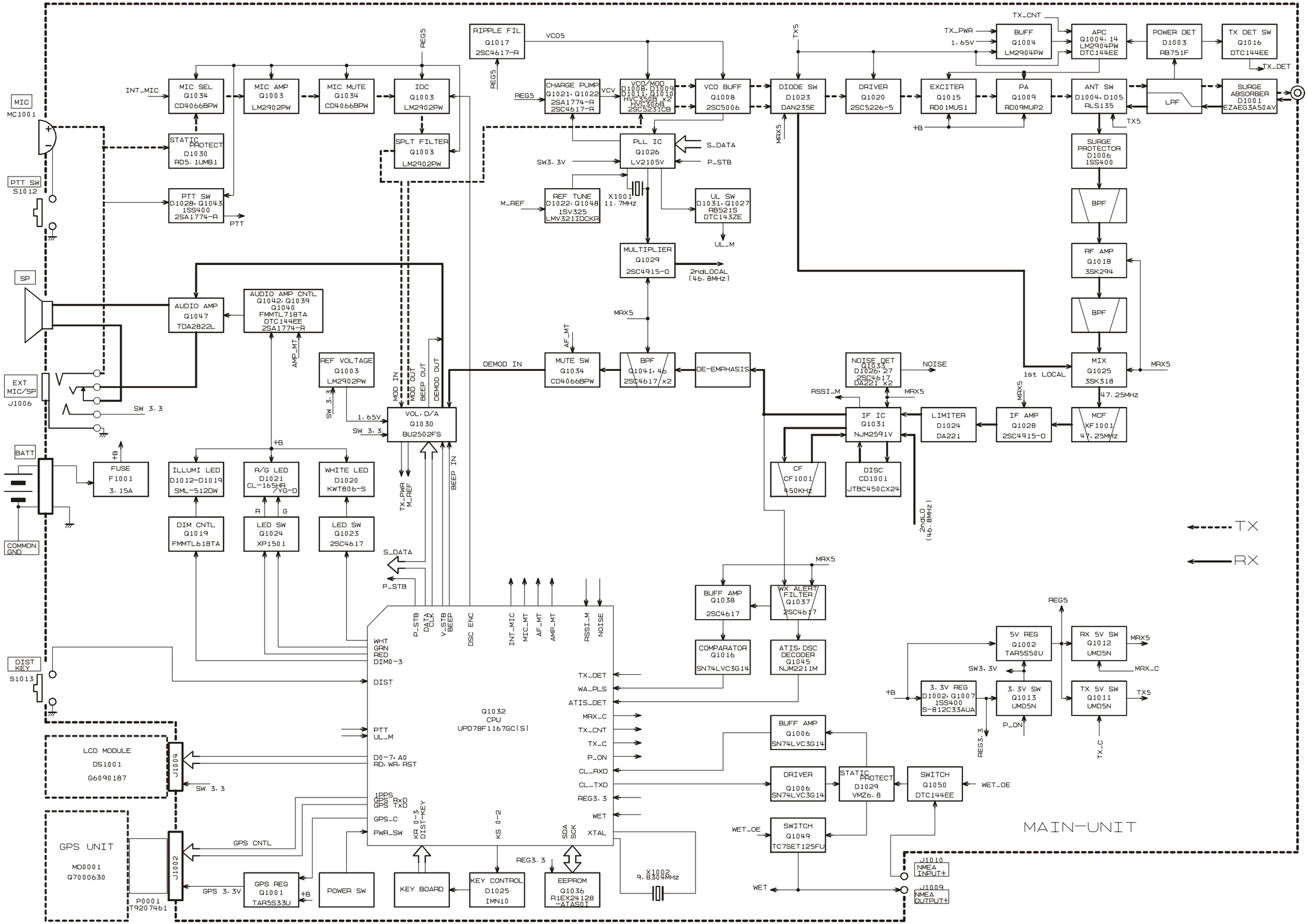
! Important Note !
On products before lot 11, the Front Panel Assy, Rear Panel Assy, and Rubber Case Gasket MUST all be replaced with new parts to ensure water integrity.

VXSTD P/N	Description	Qty.
Q3000176	**CAT460** Antenna (BLACK)	1
Q3000235	**CAT460** Antenna (BLUE)	
AAF99X002	**FNB-V99LI** Li-Ion Battery Pack	1
AAD88X002	**NC-88B** 120VAC Wall Charger	1
AAD88X003	**NC-88C** 230VAC Wall Charger	
AAD88X004	**NC-88U** 230VAC Wall Charger	
AAD39X005	**NC-86H** 100 - 240V AC Adapter	
AAF93X001	**CD-38** Charger Cradle	1
Q9000821	**E-DC-19A** DC Cable with Cigarette Lighter Plug (w/o CE, UK)	1
RA1213600	BOTTOM COVER (HX851)	1

Exploded View & Miscellaneous Parts

Note

Block Diagram



Block Diagram

Note

1. Receive Signal Path

Incoming RF from the antenna jack is delivered to the Main Unit and passes through a low-pass filter consisting of coils L1001, L1002, & L1003 and capacitors C1001, C1004, C1011, C1013, & C1018 to the antenna switching diodes **D1004** & **D1005** (both **RLS135**), and enter a high-pass filter consisting of coils L1011 & L1013 and capacitors C1056, C1059, C1062, C1067, & C1074.

Signals within the frequency range of the transceiver are amplified by **Q1018** (**3SK294**) and enter a band-pass filter consisting of coils L1019, L1020, & L1021 and capacitors C1110, C1114, C1290, C1116, C1117, C1291, C1119, C1120, & C1122 to remove unwanted signals, before first mixing by **Q1025** (**3SK318**).

Buffered output from the VCO is amplified by **Q1008** (**2SC5008**) to provide a pure first local signal between 203.300 and 210.525 MHz for injection to the first mixer **Q1025** (**3SK318**).

The 47.25 MHz first mixer product then passes through monolithic crystal filter **XF1001** (**7050M 47.25S13A**) to strip away all but the desired signal, which is then amplified by **Q1028** (**2SC4915**). The amplified first IF signal is applied to FM IF subsystem IC **Q1031** (**NJM2591V**), 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** (11.7 MHz). The 11.7 MHz reference signal is quadrupled by **Q1029** (**2SC4915**), then delivered to mixer section of **Q1031** (**NJM2591V**) which produce the 450 kHz second IF mixed with the first IF signal.

The second IF then passes through the ceramic filter **CF1001** (**LTWC450F**) to strip away unwanted mixer products, and is then applied to the limited amplifier in **Q1031** (**NJM2591V**), which removes amplitude variations in the 450 kHz IF, before detection of the speech by the ceramic discriminator **CD1001** (**JTM450CX24**).

2. Audio Amplifier

The demodulated audio signal from the **Q1031** (**NJM2591V**) passes through a de-emphasis network, a high-pass filter **Q1046** (**2SC4617-R**), and a low-pass filter **Q1041** (**2SC4617-R**). Then passes through the audio volume control section of the D/A IC **Q1030** (**BU2502FS**) and audio mute switch **Q1034** (**CD4066BPW**) to the audio power amplifier **Q1047** (**TDA2822L**), providing up to 700 mW of audio power to the 16-ohm loudspeaker.

3. Squelch Control

When no carrier received, noise at the output of the detector stage in **Q1031** (**NJM2591V**) passes through a band-pass filter consisting of resistors R1160 & R1165 and capacitors C1208 & C1211 to the buffer amplifier **Q1033** (**2SC4617-R**), then rectified by **D1026** and **D1027** (both **DA221**).

The resulting DC squelch control voltage is passed to pin 78 of the microprocessor **Q1032** (**µPD78F1167GC**). If no carrier is received, this signal causes pin 99 of **Q1032** (**µPD78F1167GC**) to go "low" and activates the audio mute switch **Q1034** (**CD4066BPW**). Thus, the microprocessor blocks output from the audio amplifier, and silences the receiver, while no signal is being received (and during transmission, as well).

When a carrier appears at the discriminator, noise is removed from the output, causing pin 78 of the microprocessor **Q1032** (**µPD78F1167GC**) to go "low", this signal causes pin 99 of **Q1032** (**µPD78F1167GC**) to go "high" and diables the audio mute switch **Q1034** (**CD4066BPW**), thus allowing audio to pass through the audio amplifier **Q1047** (**TDA2822L**) to the loudspeaker.

4. Transmit Signal Path

The speech input from the microphone **MC1001** passes through the microphone select switch **Q1034** (**CD4066BPW**) to the audio amplifier section of **Q1003** (**LM2902PW**) which adjusts the microphone gain. The speech signal passes through the IDC section and low-pass filter of **Q1003** (**LM2902PW**).

The filtered audio signal is applied to **Q1030** (**BU2502FS**) which adjusts the modulation to the optimum level, then is applied to varactor diode **D1011** (**HVC306B**) which frequency modulates the VCO **Q1010** (**2SC5231**).

The modulated signal from the VCO **Q1010** (**2SC5231**) is buffered by **Q1008** (**2SC5006**). The low-level transmit signal is then passes through the TX switching diode **D1023** (**DAN235E**) to the driver amplifier **Q1020** (**2SC5226**), exciter amplifier **Q1015** (**RD01MUS1**), then amplified transmit signal is applied to the final amplifier **Q1009** (**RD09MUS2**) up to 6.0 watts output power.

The transmit signal passes through the antenna switch **D1004** (**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 **Q1009** (**RD09MUS2**) is sampled by C1009 and C1020, and rectified by **D1003** (**RB751F**). The resulting DC is compared with the power control voltage from the RF power controller section of the D/A IC **Q1030** (**BU2502FS**) by **Q1004** (**LM2904PW**). As a result, the compared output voltage controls the bias level of the exciter amplifier **Q1015** (**RD01MUS1**) and final amplifier **Q1009** (**RD09MUS2**), for control of the power output.

4-2 Spurious Suppression

Generation of spurious products by the transmitter is minimized by the fundamental carrier frequency being equal to final transmitting frequency, modulated directly in the VCO **Q1010** (**2SC5231**). Additional harmonic suppression is provided by a low-pass filter consisting of coils L1001, L1002, & L1003 and capacitors C1001, C1004, C1011, C1013, & C1018, resulting in more than 60 dB of harmonic suppression prior to delivery to the antenna.

5. PLL Frequency Synthesizer

The PLL circuitry on the Main Unit consists of VCO **Q1010** (**2SC5231**), VCO buffer **Q1008** (**2SC5006**), PLL subsystem IC **Q1026** (**LV2105V**), which contains a reference divider, serial-to-parallel data latch, programmable divider, phase comparator, & charge pump, and crystal **X1001** (11.7 MHz) which frequency stability is ±10 ppm at –20 °C to +60 °C.

While receiving, VCO **Q1010** (**2SC5231**) oscillates between 203.300 and 210.525 MHz according to the receiving frequency. The VCO output is buffered by **Q1008** (**2SC5006**), then applied to the prescaler section of **Q1026** (**LV2105V**). There the VCO signal is divided according to a control signal from the data latch section of **Q1026** (**LV2105V**), before being sent to the programmable divider section of **Q1026** (**LV2105V**).

The data latch section of **Q1026** (**LV2105V**) also receives serial dividing data from the microprocessor **Q1032** (**µPD78F1167GC**), 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 12.5 kHz derivative of the current VCO frequency.

Meanwhile, the reference divider sections of **Q1026** (**LV2105V**) divides the crystal **X1001** (11.7 MHz) by 936 to produce the 12.5 kHz loops reference (respectively).

The 12.5 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 **Q1026** (**LV2105V**), which produces a pulsed output with pulse duration depending on the phase difference between the input signals. This pulse train is delivered to the charge pump **Q1021** (**2SA1774**) and **Q1022** (**2SC4617-R**), then filtered to DC and returned to the Varactor **D1008** and **D1009** (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 **Q1010** (**2SC5231**) after buffering by **Q1008** (**2SC5006**), is applied to the first mixer as described previously.

For transmission, the VCO **Q1010** (**2SC5231**) oscillates between 156.025 and 157.425 MHz according to the 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 **D1011** (**HVC306B**), as described previously.

6. DSC Encoder/Decoder

6-1 Encoder

The microprocessor **Q1032** (**µPD78F1167GC**) encodes the DSC (Digital Selective Calling) signals. This signal is input into the IDC section of **Q1003** (**LM2902PW**).

The processes of DSC transmitting are the same as voice modulation.

6-2 Decoder

The received DSC signals on channel 70 are filtered by a low-pass filter **Q1037** (**2SC4617-R**). Then this signal is input into the FSK decoder IC **Q1045** (**NJM2211M**) to convert the analog signal into the digital code. Microprocessor **Q1032** (**µPD78F1167GC**) watches the digital code and is computing the DSC.

7. 1050 Hz Weather Alert Decoder

A portion of the signal from an FM IF subsystem IC **Q1031** (**NJM2591V**) passes through a low-pass filter **Q1037** (**2SC4617-R**) to the amplifier **Q1038** (**2SC4617-R**). The amplified signal is delivered to the Schmitt Inverter IC **Q1016** (**SN74LVC3G14DCT**) to obtain the weather alert tone pulse. The microprocessor **Q1032** (**µPD78F1167GC**) watches this pulse to count the weather alert tone frequency.

8. Miscellaneous Circuits

8-1 MPU

Operation is controlled by a microprocessor **Q1032** (**µPD78F1167GC**). This microprocessor uses a 9.8304 MHz crystal X1002 for the system clock. This microprocessor includes a reset circuit.

8-2 EEPROM

The EEPROM **Q1036** (**BR24L64F-W**) retains TX and RX data for all memory channels, prescaler dividing, IF frequency, local oscillator injection side, and reference oscillator data.

8-3 PTT circuit

The PTT switch for the internal microphone is connected to pin 5 of microprocessor **Q1032** (**µPD78F1167GC**), so that when the PTT switch is closed, pin 5 of **Q1032** (**µPD78F1167GC**) goes "low". The microprocessor **Q1032** (**µPD78F1167GC**) disables the receiver by disabling the 5 V supply bus at **Q1012** (**UMD5N**) to the front-end and FM IF subsystem IC **Q1031** (**NJM2591V**). At the same time, **Q1011** (**UMD5N**) activate the transmit 5 V supply line to enable the transmitter.

Note

The **HX851** has been carefully aligned at the factory for the specified performance across the VHF 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
- ❒ Deviation Meter (linear detector)
- ❒ AF Millivoltmeter
- ❒ SINAD Meter
- ❒ Inline Wattmeter with 5% accuracy at 200 MHz
- ❒ Regulated DC Power Supply: adjustable from 6 to 10 VDC, 2A
- ❒ 50-ohm Non-reactive Dummy Load: 10W at 200 MHz
- ❒ Frequency Counter: >0.1 ppm accuracy at 200 MHz
- ❒ AF Signal Generator
- ❒ DC Voltmeter: high impedance
- ❒ VHF Sampling Coupler
- ❒ AF Dummy Load: 8 ohm, 2W
- ❒ Oscilloscope
- ❒ Spectrum Analyzer
- ❒ IBM® PC/compatible computer with Microsoft® Windows® 2000, XP, or Vista
- ❒ Standard Horizon HX851 Alignment Program 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 and 30 °C (68 ~ 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.

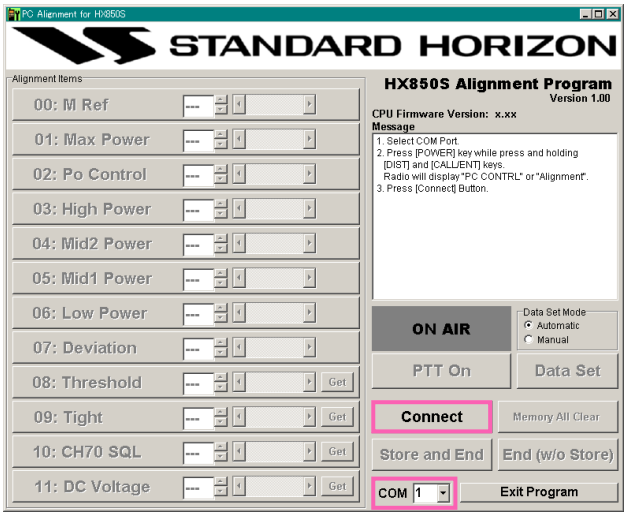
Note: Signal levels in dB referred to in this procedure are based on 0 dBμ = 0.5 μV(closed circuit).

Alignment

Before Alignment

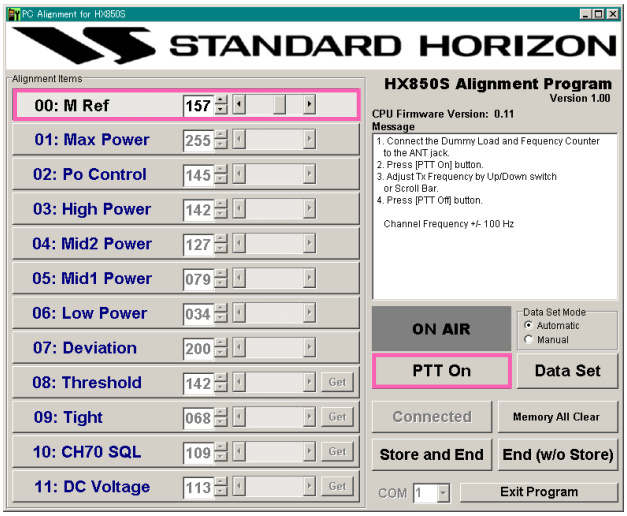
- ❒ Install the HX851 Alignment Program to your computer.
- ❒ Set up the test equipment as shown below, and set the DC Power Supply voltage to 8.0 V.
- ❒ Execute the HX851 Alignment Program.
- ❒ Select the COM port number which is connected to the HX851 Alignment Jig.
- ❒ Press and hold in the [**DISTRESS**] key and [**CALL**(**ENT**)**MENU**] key while turning the transceiver on to enter the Alignment Mode.

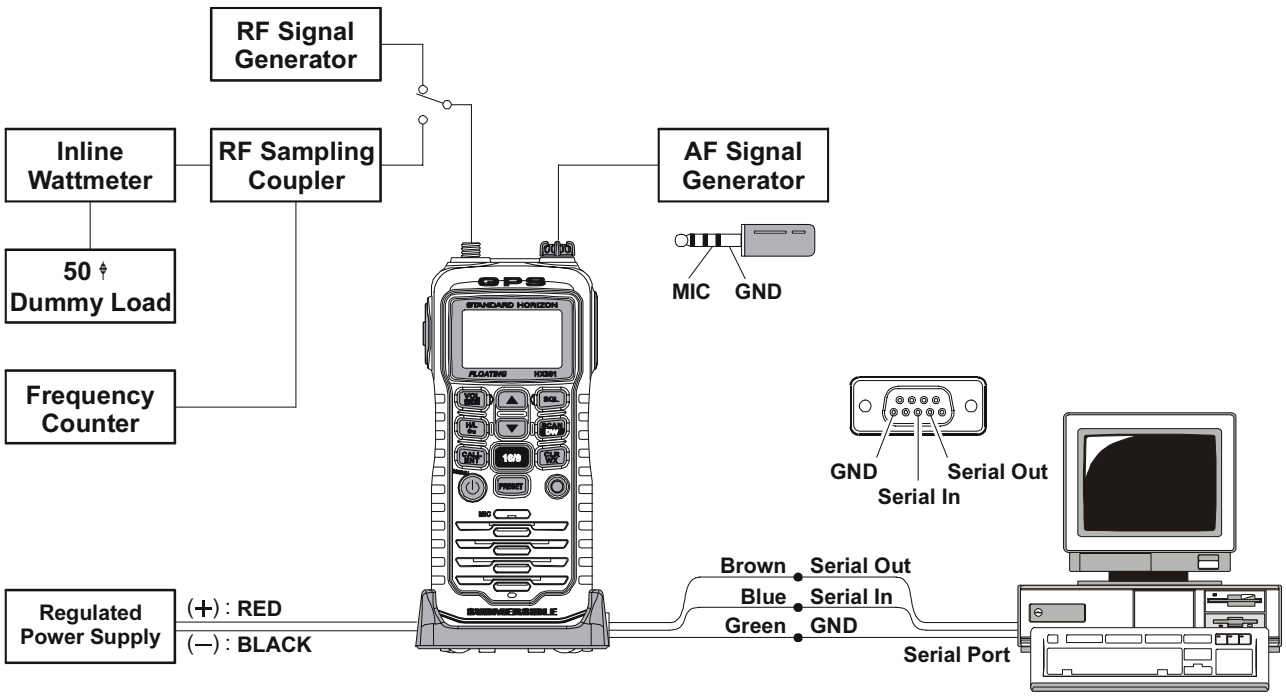
- ❒ Click the left mouse button on the [**Connect**] button of the HX851 Alignment Program.



00: PLL Reference Frequency

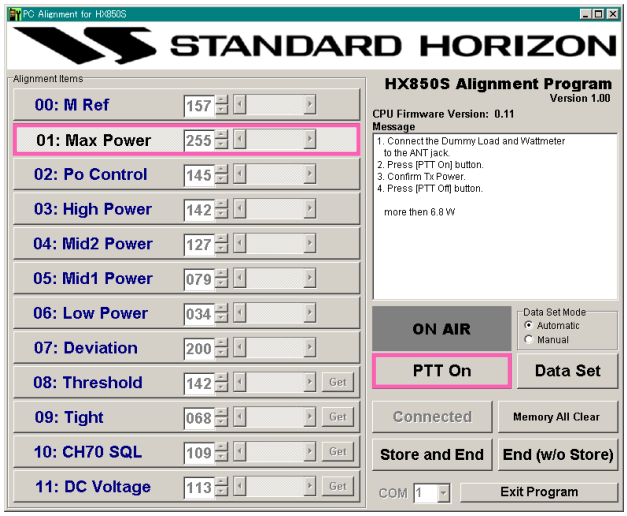
- ❒ Click the left mouse button on the [**00: M Ref**] button. The transceiver now is in the PLL Reference Frequency Alignment Mode.
- ❒ Click the left mouse button on the [**PTT On**] button.
- ❒ Click the [▲] / [▼] button (or Move the Slide Bar), if necessary, until the frequency Counter displays transmit frequency ±100 Hz.
- ❒ Click the left mouse button on the [**PTT Off**] button, then click the left mouse button on the [**00: M Ref**] button to exit the PLL Reference Frequency Alignment Mode.





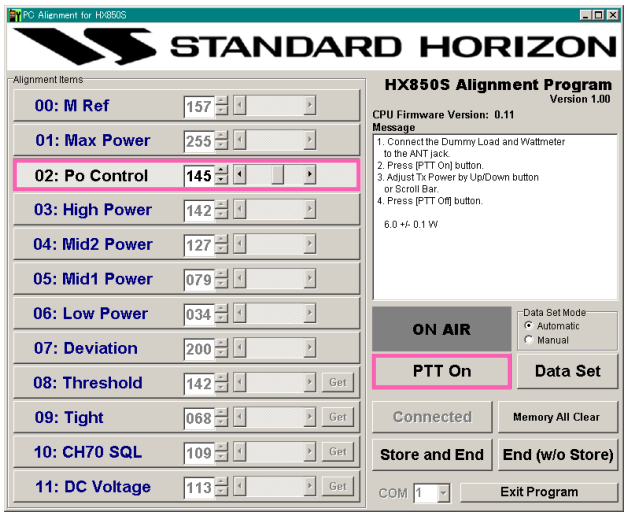
01: Transmitter Maximum Output Power

- ❒ Click the left mouse button on the [**01: Max Power**] button. The transceiver now is in the Transmitter Maximum Output Power Confirmation Mode.
- ❒ Click the left mouse button on the [**PTT On**] button.
- ❒ Confirm that the Wattmeter displays more than 6.8 W.
- ❒ Click the left mouse button on the [**PTT Off**] button, then click the left mouse button on the [**01: Max Power**] button to exit the Transmitter Maximum Output Power Confirmation Mode.



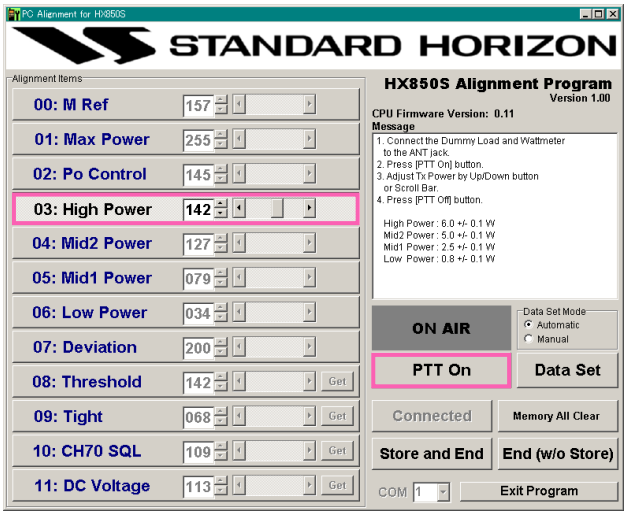
02: Transmitter Power Output

- ❒ Click the left mouse button on the [**02: Po Control**] button. The transceiver now is in the Transmitter Maximum Output Power Alignment Mode.
- ❒ Click the left mouse button on the [**PTT On**] button.
- ❒ Click the [▲] / [▼] button (or Move the Slide Bar), if necessary, until the Wattmeter displays 6.0 W ±0.1 W.
- ❒ Click the left mouse button on the [**PTT Off**] button, then click the left mouse button on the [**02: Po Control**] button to exit the Transmitter Maximum Output Power Alignment.



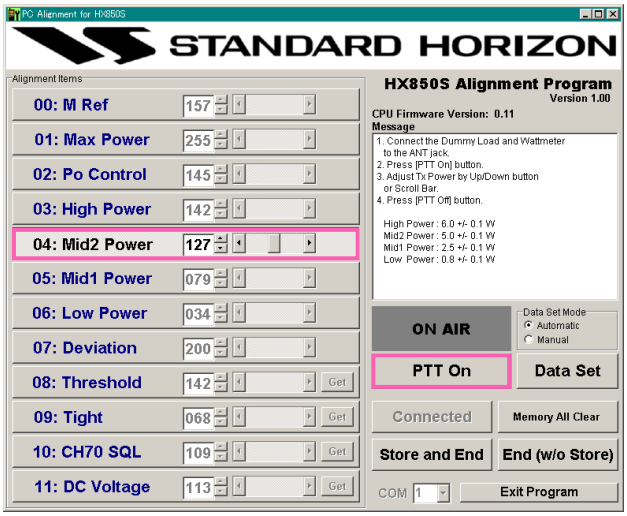
03: Transmitter Power Output (High)

- ❒ Click the left mouse button on the [**03: High Power**] button. The transceiver now is in the Transmitter High Power Output Alignment Mode.
- ❒ Click the left mouse button on the [**PTT On**] button.
- ❒ Click the [▲] / [▼] button (or Move the Slide Bar), if necessary, until the Wattmeter displays 6.0 W ±0.1 W.
- ❒ Click the left mouse button on the [**PTT Off**] button, then click the left mouse button on the [**03: High Power**] button to exit the the Transmitter High Power Output Alignment Mode.



04: Transmitter Power Output (Mid2)

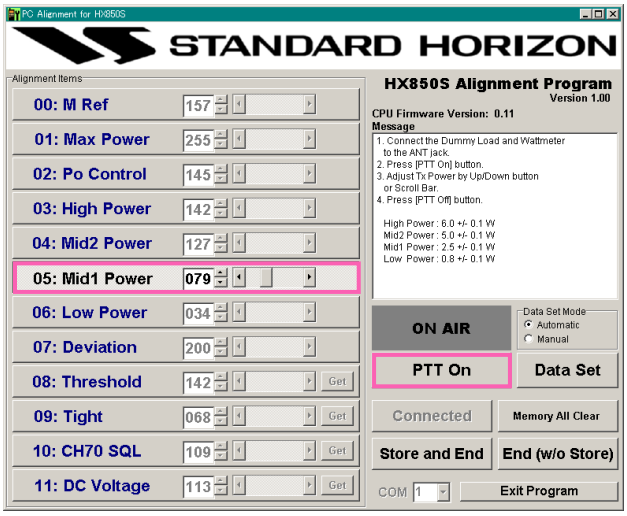
- ❒ Click the left mouse button on the [**04: Mid2 Power**] button. The transceiver now is in the Transmitter Mid2 Power Output Alignment Mode.
- ❒ Click the left mouse button on the [**PTT On**] button.
- ❒ Click the [▲] / [▼] button (or Move the Slide Bar), if necessary, until the Wattmeter displays 5.0 W ±0.1 W.
- ❒ Click the left mouse button on the [**PTT Off**] button, then click the left mouse button on the [**04: Mid2 Power**] button to exit the the Transmitter Mid2 Power Output Alignment Mode.



Alignment

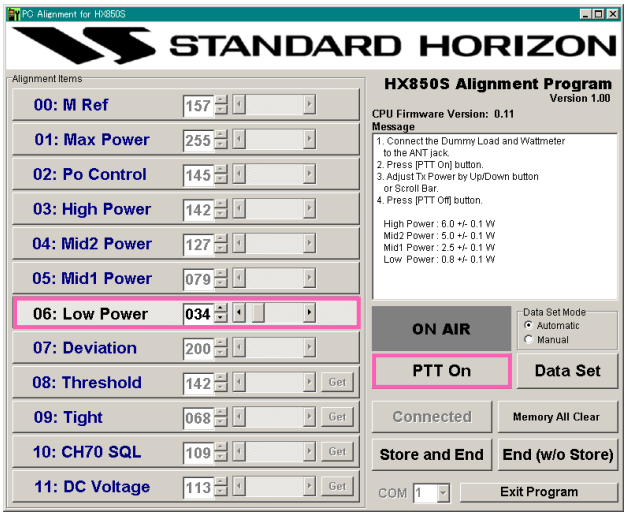
05: Transmitter Power Output (Mid1)

- ❒ Click the left mouse button on the [**05: Mid1 Power**] button. The transceiver now is in the Transmitter Mid1 Power Output Alignment Mode.
- ❒ Click the left mouse button on the [**PTT On**] button.
- ❒ Click the [▲] / [▼] button (or Move the Slide Bar), if necessary, until the Wattmeter displays 2.5 W ±0.1 W.
- ❒ Click the left mouse button on the [**PTT Off**] button, then click the left mouse button on the [**05: Mid1 Power**] button to exit the the Transmitter Mid1 Power Output Alignment Mode.



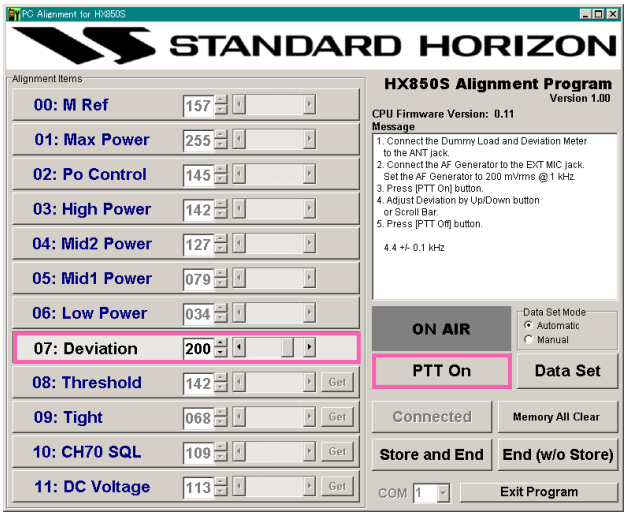
06: Transmitter Power Output (Low)

- ❒ Click the left mouse button on the [**06: Low Power**] button. The transceiver now is in the Transmitter Low Power Output Alignment Mode.
- ❒ Click the left mouse button on the [**PTT On**] button.
- ❒ Click the [▲] / [▼] button (or Move the Slide Bar), if necessary, until the Wattmeter displays 0.8 W ±0.1 W.
- ❒ Click the left mouse button on the [**PTT Off**] button, then click the left mouse button on the [**06: Low Power**] button to exit the the Transmitter Low Power Output Alignment Mode.



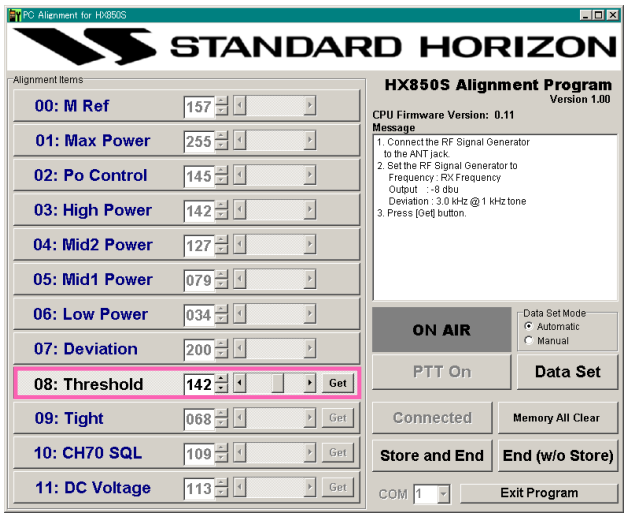
07: Transmitter Modulation

- ❒ Set the AF Generator output to 200 mV rms @ 1 kHz tone.
- ❒ Click the left mouse button on the [**07: Deviation**] button. The transceiver now is in the Transmitter Modulation Alignment Mode.
- ❒ Click the left mouse button on the [**PTT On**] button.
- ❒ Click the [▲] / [▼] button (or Move the Slide Bar), if necessary, until the deviation to 4.4 kHz (±0.1 kHz).
- ❒ Click the left mouse button on the [**PTT Off**] button, then click the left mouse button on the [**07: Deviation**] button to exit the the Transmitter Modulation Alignment Mode.



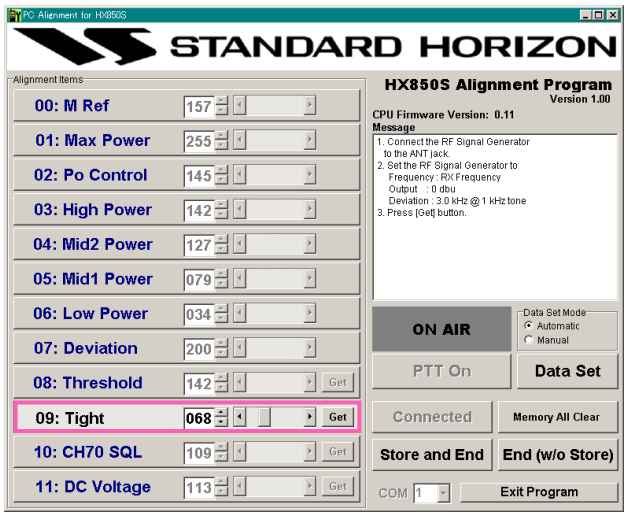
08: Squelch Threshold Adjustment

- ❒ Set the RF signal generator output to channel frequency, at a level of –8 dBµ with ±3.0 kHz deviation with a 1 kHz audio tone.
- ❒ Click the left mouse button on the [**08: Threshold**] button. The transceiver now is in the Squelch Threshold Alignment Mode.
- ❒ Press the [**Get**] key to read the Squelch Threshold data.
- ❒ Click the left mouse button on the [**08: Threshold**] button to exit the the Squelch Threshold Alignment Mode.



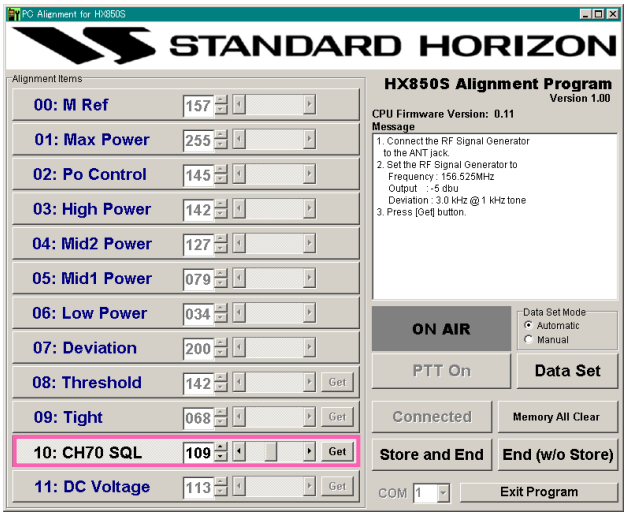
09: Squelch Tight Adjustment

- ❒ Set the RF signal generator output to channel frequency, at a level of 0 dBµ with ±3.0 kHz deviation with a 1 kHz audio tone.
- ❒ Click the left mouse button on the [**09: Tight**] button. The transceiver now is in the Squelch Tight Alignment Mode.
- ❒ Press the [**Get**] key to read the Squelch Tight data.
- ❒ Click the left mouse button on the [**08: Tight**] button to exit the the Squelch Tight Alignment Mode.



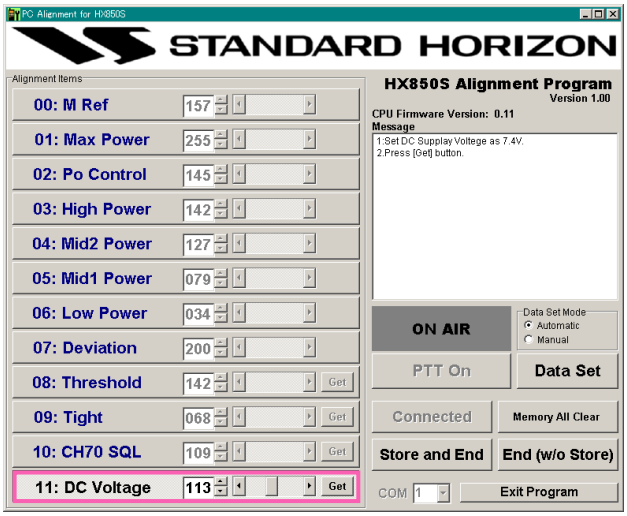
10: CH70 Squelch Threshold Adjustment

- ❒ Set the RF signal generator output to 156.525 MHz, at a level of –5 dBµ with ±3.0 kHz deviation with a 1 kHz audio tone.
- ❒ Click the left mouse button on the [**10: CH70 SQL**] button. The transceiver now is in the CH70 Squelch Threshold Alignment Mode.
- ❒ Press the [**Get**] key to read the Squelch Tight data.
- ❒ Click the left mouse button on the [**10: CH70 SQL**] button to exit the the CH70 Squelch Threshold Alignment Mode.



11: DC Voltmeter

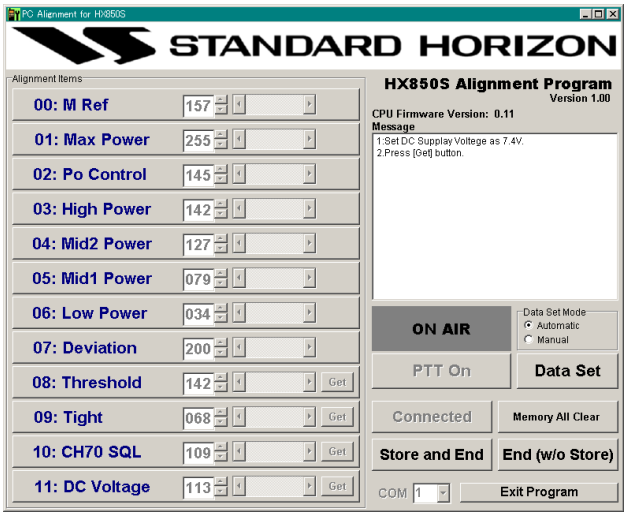
- ❒ Reduce the DC power supply voltage to 7.4 V.
- ❒ Click the left mouse button on the [**11: DC Voltage**] button. The transceiver now is in the DC Voltmeter Alignment Mode.
- ❒ Press the [**Get**] key to read the Squelch Tight data.
- ❒ Click the left mouse button on the [**10: CH70 SQL**] button to exit the the DC Voltmeter Alignment Mode.



Alignment

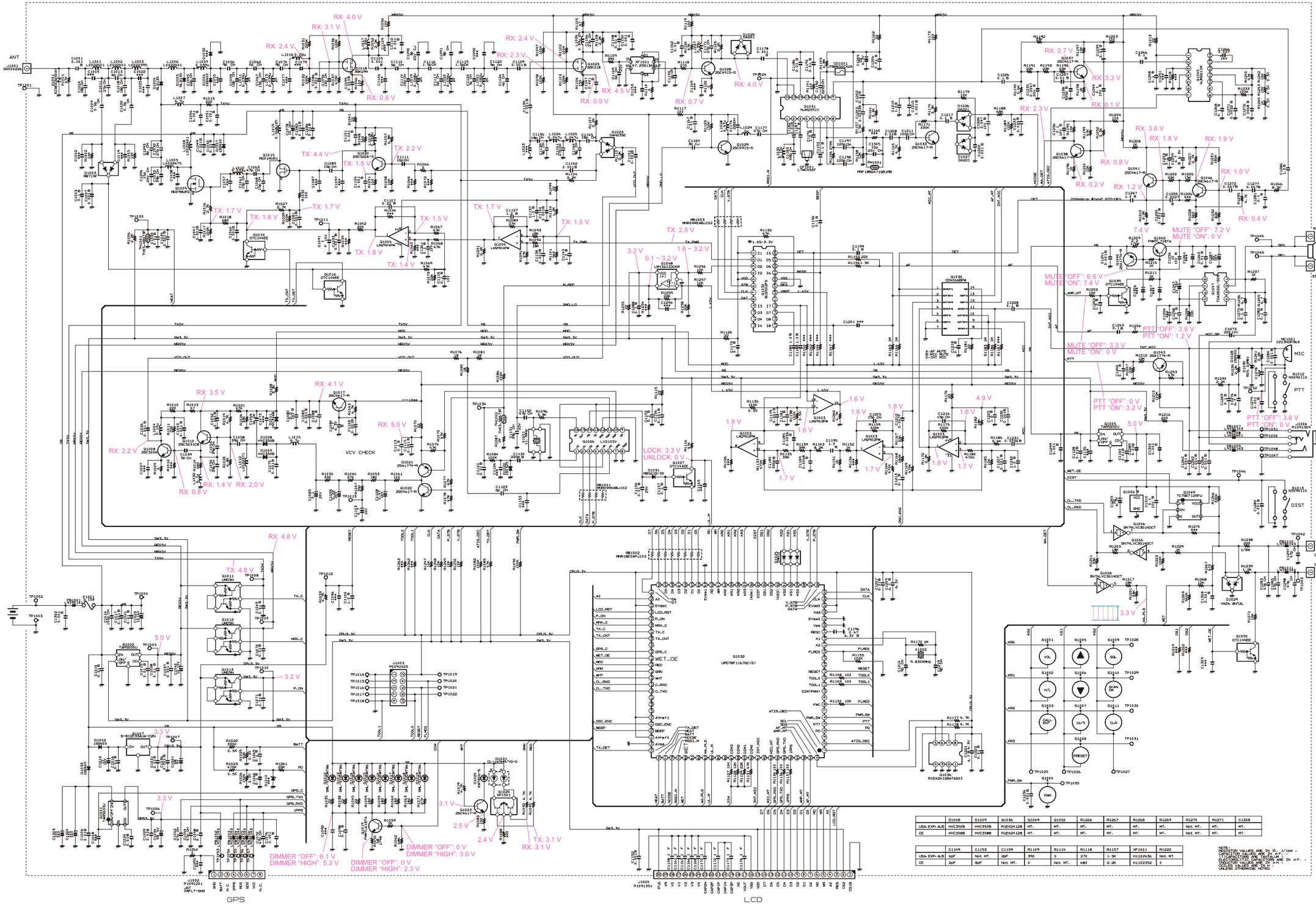
Exit from the Alignment Mode

- ❒ Click the left mouse button on the [**Store and End**] button to save the new setting(s) and turn off the transceiver.
- ❒ Click the left mouse button on the [**Exit Program**] button to close the HX851 Alignment Program.



MAIN Unit

Circuit Diagram



	D1008	D1009	Q1036	Q1049	Q1050	R1266	R1267	R1268	R1269	R1270	R1271	C1308
USA EXP, AUS	HVC350B	HVC350B	RJE4K212B	MT.	MT.	MT.	MT.	MT.	MT.	Not MT.	MT.	MT.
CE	HVC358B	HVC358B	RJE4K212B	MT.	MT.	MT.	MT.	MT.	MT.	Not MT.	MT.	MT.

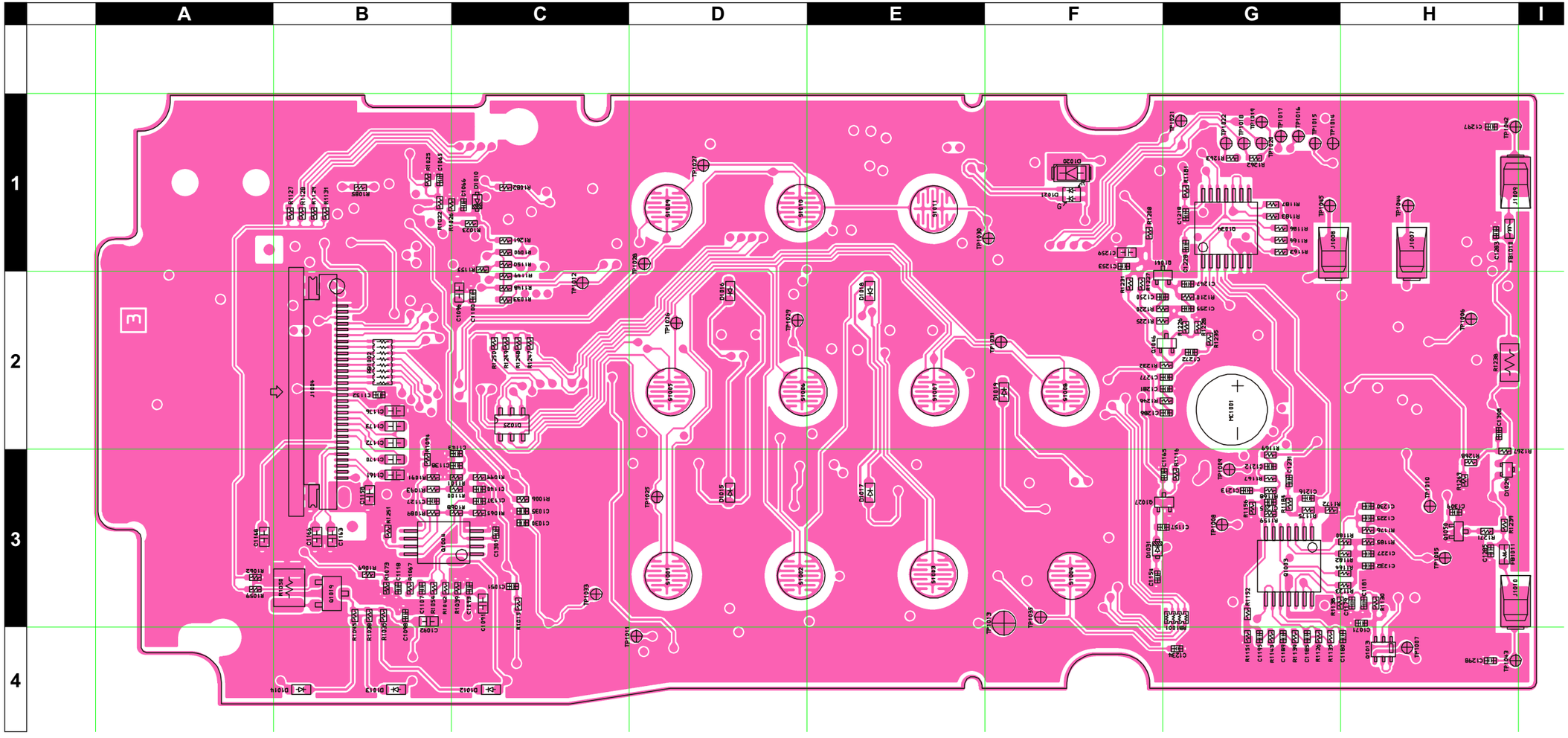
	C1104	C1153	C1159	R1109	R1114	R1118	R1157	XF1001	R1222
USA EXP, AUS	bpF	Not MT.	2pF	3kΩ	0	270	1.5K	H11B2436	Not MT.
CE	2pF	8pF	Not MT.	0	Not MT.	680	2.2K	H11B2352	0

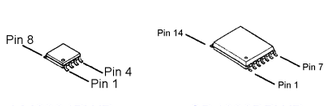
NOTE:
RESISTOR VALUES ARE IN Ω , 1/16W ;
CAPACITOR VALUES ARE IN mF ;
ELECTROLYTIC CAPACITANCE ARE IN mF ;
INDUCTOR VALUES ARE IN mH ;
DIODES VALUES ARE IN ;
UNLESS OTHERWISE NOTED.

MAIN Unit

Note

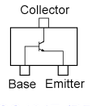
Parts Layout (Side A)



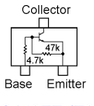


LM2904PWR
(Q1004)

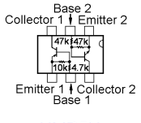
CD4066BPWR
(Q1034)
LM2902PWR
(Q1003)



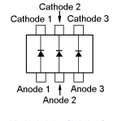
2SC4617 (BR)
(Q1041, 1046)
FMMTL618
(Q1019)



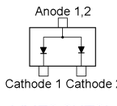
DTC143ZE (E23)
(Q1027)



UMD5N
(Q1013)



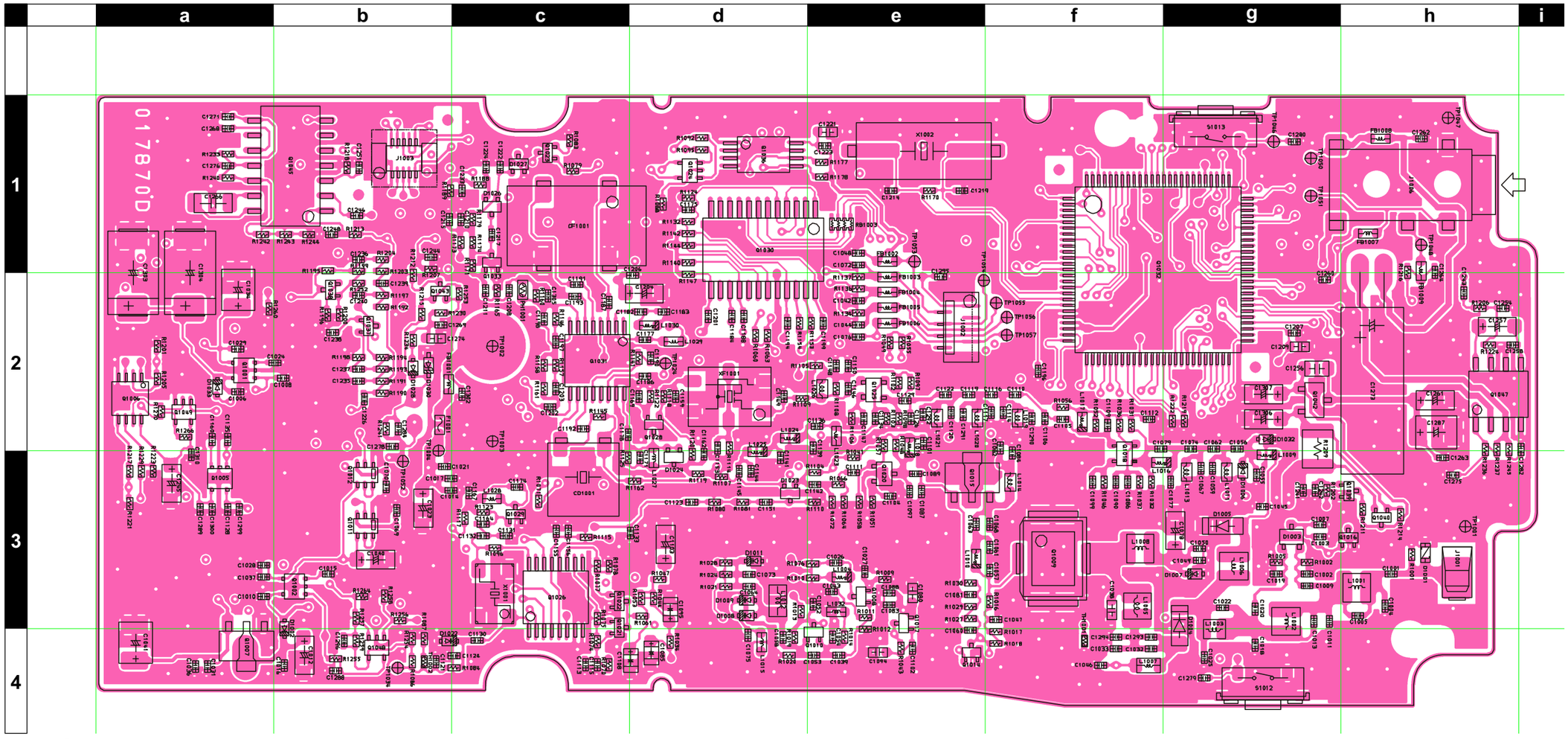
IMN10 (N10)
(D1025)

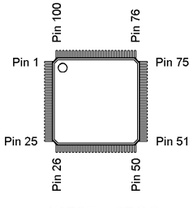


VMZ6.8NT2L
(D1029)

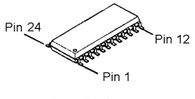
MAIN Unit

Parts Layout (Side B)

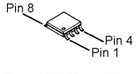




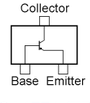
UPD78F1167GC
(Q1032)



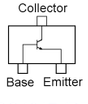
BU2502FS
(Q1030)



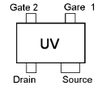
SN74LVC3G14DCTR
(Q1006)



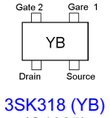
2SA1774 (FR)
(Q1021, 1040, 1043)
FMMTL718TA
(Q1042)



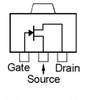
2SC4617 (BR)
(Q1017, 1022, 1023, 1033, 1037, 1038)
2SC4915 (QY)
(Q1028, 1029)
2SC5006 (24)
(Q1008)
2SC5226 (R22)
(Q1020)
2SC5231 (C9)
(Q1020)



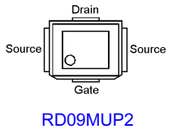
3SK294 (UV)
(Q1018)



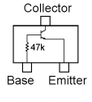
3SK318 (YB)
(Q1025)



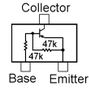
RD01MUS1
(Q1015)



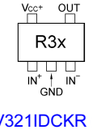
RD09MUP2
(Q1009)



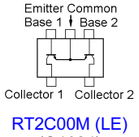
DTC144TE (96)
(Q1035)



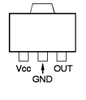
RT1N441U (N3)
(Q1014, 1016, 1039)



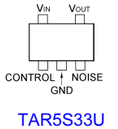
LMV321IDCKR (R3x)
(Q1048)



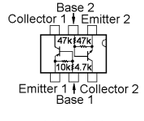
RT2C00M (LE)
(Q1024)



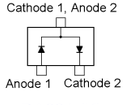
S-812C33AUA
(Q1007)



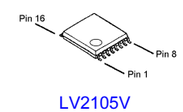
TAR5S33U
(Q1001)
TAR5S50U
(Q1002, 1005)



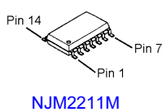
UMD5N
(Q1011, 1012)



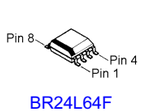
DA221 (K)
(D1024, 1026, 1027)



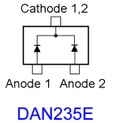
LV2105V
(Q1026)
NJM2591V
(Q1031)



NJM2211M
(Q1045)



BR24L64F
(Q1036)
TDA2822D013TR
(Q1047)



DAN235E
(D1023)
RB715F
(D1003)

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	PCB with Components					CB4300002	UAS (BLACK)			
						CB4300003	EXPORT (BLACK)			
						CB4300004	AUSTRALIA (BLACK)			
						CB4300006	EUROPE (BLACK)			
						CB4300007	UK (BLACK)			
						CB4300009	UAS (BLUE)			
						CB4300010	EXPORT (BLUE)			
						CB4300011	AUSTRALIA (BLUE)			
						CB4300012	EUROPE (BLUE)			
						CB4300013	UK (BLUE)			
	Printed Circuit Board					FR017870D		1-		
C 1001	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	h3
C 1003	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	g3
C 1004	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	h3
C 1005	CHIP CAP.	1.5pF	50V	CK	GRM1554C1H1R5CZ01D	K22178203	W/ CE LABEL	29-	B	h3
C 1006	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a2
C 1007	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g3
C 1009	CHIP CAP.	0.5pF	50V	CK	UMK105CK0R5CV-F	K22178247		1-	B	g3
C 1010	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a3
C 1011	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	g3
C 1012	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	B	b4
C 1013	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208		1-	B	g3
C 1014	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238		1-	B	b3
C 1015	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b3
C 1016	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b4
C 1017	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b3
C 1018	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-28	B	g4
C 1018	CHIP CAP.	22pF	50V	CH	UMK105CH220JV-F	K22178266	W/ CE LABEL	29-	B	g4
C 1018	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218	W/O CE LABEL	29-	B	g4
C 1020	CHIP CAP.	0.5pF	50V	CK	UMK105CK0R5CV-F	K22178247		1-	B	g3
C 1021	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b3
C 1023	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	B	b3
C 1024	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a2
C 1026	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1028	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a3
C 1029	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a2
C 1030	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A	C3
C 1031	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a4
C 1032	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	f4
C 1033	CHIP CAP.	39pF	50V	CH	GRM1552C1H390JZ01D	K22178226		1-	B	f4
C 1034	CHIP TA.CAP.	68uF			TEESVB20G686M8R	K78060033		1-	B	a2
C 1035	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1036	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	a4
C 1037	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	a3
C 1039	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209		1-	B	e4
C 1040	CHIP TA.CAP.	10uF	10V		TEESVA1A106M8R	K78100028		1-	B	b3
C 1041	CHIP TA.CAP.	68uF			TEESVB20G686M8R	K78060033		1-	B	a4
C 1042	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230		1-	B	e2
C 1043	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1044	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230		1-	B	e2
C 1045	CHIP CAP.	22pF	50V	CH	UMK105CH220JV-F	K22178266		1-	B	g3
C 1046	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f4
C 1047	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f3
C 1048	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	e1
C 1049	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g3
C 1050	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	g3
C 1051	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1052	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1053	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228		1-	B	e4
C 1054	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228		1-	B	e4
C 1056	CHIP CAP.	9pF	50V	CH	GRM1552C1H9R0DZ01D	K22178211		1-	B	g2
C 1058	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228		1-	B	d4
C 1059	CHIP CAP.	12pF	25V	CH	TMK105CH120J-F	K22148216		1-	B	g3
C 1060	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1061	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	f3
C 1062	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208		1-	B	g2
C 1063	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	B	e3
C 1064	CHIP CAP.	1pF	25V	CK	TMK105CK010C-F	K22148205		1-	B	d3
C 1065	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	B1
C 1066	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	C1
C 1067	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	g3
C 1068	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	f3
C 1069	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b3

MAIN Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1070	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b3
C 1071	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A	H3
C 1072	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230		1-	B	e1
C 1074	CHIP CAP.	9pF	50V	CH	GRM1552C1H9R0DZ01D	K22178211		1-	B	g2
C 1075	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	d4
C 1076	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e2
C 1078	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	B	g3
C 1080	CHIP CAP.	2.2uF	10V	B	GRM188B31A225KE18D	K22104805		1-	B	e3
C 1081	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1082	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f2
C 1083	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1084	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	f3
C 1085	CHIP TA.CAP.	0.1uF	20V		TMCP1D104MTRF	K78130067		1-	B	d4
C 1086	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f3
C 1088	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	e3
C 1089	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	e3
C 1090	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214		1-	B	f3
C 1091	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	C3
C 1093	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1094	CHIP CAP.	4.7uF	6.3V	B	C1608JB0J475KT	K22084804		1-	B	e4
C 1095	CHIP TA.CAP.	0.22uF	20V		TMCP1D224MTRF	K78130069		1-	B	d3
C 1098	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	B3
C 1099	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f3
C 1100	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	C2
C 1101	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e2
C 1102	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e4
C 1103	CHIP TA.CAP.	4.7uF	16V		TEESVA1C475M8R	K78120031		1-	B	d3
C 1104	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1105	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f2
C 1107	CHIP CAP.	0.22uF	10V	B	GRM155B31A224KE18D	K22108808		1-	A	B3
C 1108	CHIP TA.CAP.	0.47uF	16V		TEESVSP1C474M8R	K78120035		1-	B	c4
C 1110	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209		1-	B	f2
C 1111	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214		1-	B	e3
C 1112	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	f2
C 1113	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	c4
C 1114	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214		1-	B	f2
C 1115	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c4
C 1116	CHIP CAP.	1.5pF	50V	CK	GRM1554C1H1R5CZ01D	K22178203		1-	B	f2
C 1117	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210		1-	B	f2
C 1118	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	B3
C 1119	CHIP CAP.	1.5pF	50V	CK	GRM1554C1H1R5CZ01D	K22178203		1-	B	e2
C 1120	CHIP CAP.	7pF	25V	CH	TMK105CH070D-F	K22148211		1-	B	e2
C 1121	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b4
C 1122	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209		1-	B	e2
C 1123	CHIP CAP.	5pF	25V	CH	TMK105CH050C-F	K22148209		1-	B	d3
C 1126	CHIP CAP.	4pF	25V	CH	TMK105CH040C-F	K22148208		1-	B	e2
C 1127	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	B3
C 1128	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a3
C 1129	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e2
C 1130	CHIP CAP.	220pF	50V	B	UMK105B221KW-F	K22178821		1-	B	c4
C 1131	CHIP CAP.	39pF	25V	CH	TMK105CH390J-F	K22148228		1-	B	c3
C 1132	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	B	c3
C 1134	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e2
C 1136	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	e2
C 1137	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	C3
C 1138	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1139	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	e2
C 1140	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	C3
C 1141	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	d3
C 1142	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e3
C 1143	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	C3
C 1144	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	d3
C 1145	CHIP CAP.	18pF	50V	CH	GRM1552C1H180JZ01D	K22178218		1-	B	d3
C 1146	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	e2
C 1147	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e2
C 1148	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	e2
C 1149	CHIP CAP.	2pF	50V	CK	GRM1554C1H2R0CZ01D	K22178204	W/ CE LABEL	1-	B	d2
C 1149	CHIP CAP.	6pF	25V	CH	TMK105CH060D-F	K22148210	W/O CE LABEL	1-	B	d2
C 1150	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	e2
C 1151	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	d3
C 1152	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	B2
C 1153	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210	W/ CE LABEL	1-	B	d2
C 1154	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	A	F3

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1155	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	c3
C 1156	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c3
C 1157	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	F3
C 1158	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	B3
C 1159	CHIP CAP.	2pF	50V	CK	GRM1554C1H2R0CZ01D	K22178204	W/O CE LABEL	1-	B	d2
C 1160	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a2
C 1161	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	B3
C 1162	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d3
C 1163	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	B3
C 1164	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207		1-	B	c3
C 1166	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	B3
C 1167	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	c3
C 1168	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	A3
C 1170	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	B3
C 1171	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	d3
C 1172	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	B2
C 1173	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	B2
C 1174	CHIP CAP.	22pF	50V	CH	UMK105CH220JV-F	K22178266		1-	B	c3
C 1175	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	d1
C 1176	CHIP CAP.	1uF	10V	F	GRM188F11A105ZA01D	K22105001		1-	A	B2
C 1177	CHIP CAP.	27pF	50V	CH	GRM1552C1H270JZ01D	K22178222		1-	B	d2
C 1178	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c2
C 1179	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	H3
C 1180	CHIP CAP.	330pF	50V	B	UMK105B331KW-F	K22178823		1-	A	G4
C 1181	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	H3
C 1182	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d2
C 1183	CHIP CAP.	68pF	25V	CH	TMK105CH680J-F	K22148234		1-	B	d2
C 1184	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	d2
C 1185	CHIP CAP.	0.0056uF	25V	B	TMK105B562KW-F	K22148832		1-	A	G4
C 1186	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d2
C 1187	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	c2
C 1188	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	d2
C 1189	CHIP CAP.	0.0068uF	25V	B	TMK105B682KW-F	K22148833		1-	A	G4
C 1190	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d2
C 1191	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	c2
C 1192	CHIP CAP.	220pF	25V	CH	TMK105CH221JV-F	K22148246		1-	B	c2
C 1193	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	c2
C 1194	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	d2
C 1195	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	G4
C 1196	CHIP CAP.	0.47uF	6.3V	B	GRM155B30J474KE18D	K22088802		1-	B	f2
C 1197	CHIP CAP.	120pF	50V	CH	UMK105CH121JV-F	K22178284		1-	B	c2
C 1198	CHIP CAP.	120pF	50V	CH	UMK105CH121JV-F	K22178284		1-	B	c2
C 1199	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	e2
C 1202	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	c2
C 1203	CHIP CAP.	0.0033uF	50V	B	UMK105B332KW-F	K22178835		1-	B	c2
C 1204	CHIP TA.CAP.	22uF	6.3V		TEESVA0J226M8R	K78080047		1-	B	d2
C 1205	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	A	G3
C 1206	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	d2
C 1207	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	g2
C 1208	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	c2
C 1209	CHIP CAP.	4.7uF	6.3V	B	C1608JB0J475KT	K22084804		1-	B	g2
C 1210	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	c1
C 1211	CHIP CAP.	100pF	25V	CH	TMK105CH101J-F	K22148238		1-	B	c2
C 1212	CHIP CAP.	0.047uF	16V	F	GRM155F11C473ZA01D	K22129004		1-	A	G3
C 1213	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	G3
C 1214	CHIP CAP.	9pF	50V	CH	GRM1552C1H9R0DZ01D	K22178211		1-	B	e1
C 1215	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b1
C 1216	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	A	G3
C 1217	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	c1
C 1218	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	G1
C 1219	CHIP CAP.	9pF	50V	CH	GRM1552C1H9R0DZ01D	K22178211		1-	B	e1
C 1221	CHIP CAP.	4.7uF	6.3V	B	C1608JB0J475KT	K22084804		1-	B	e1
C 1222	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c1
C 1223	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	e1
C 1224	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	B	c1
C 1225	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	H3
C 1226	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b2
C 1227	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	H3
C 1228	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	G1
C 1230	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	H3
C 1231	CHIP CAP.	0.0056uF	25V	B	TMK105B562KW-F	K22148832		1-	A	G3
C 1232	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	H3
C 1233	CHIP CAP.	0.033uF	10V	B	GRM155B11A333KA01D	K22108803		1-	B	c1

MAIN Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
C 1234	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	G4
C 1235	CHIP CAP.	0.0047uF	25V	B	TMK105B472KW-F	K22148831		1-	B	b2
C 1236	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1237	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b2
C 1238	CHIP CAP.	820pF	50V	B	UMK105B821KW-F	K22178828		1-	B	b2
C 1239	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	b2
C 1240	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b2
C 1241	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g3
C 1242	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	B	g3
C 1243	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h2
C 1244	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1245	CHIP TA.CAP.	22uF	6.3V		TEESVA0J226M8R	K78080047		1-	B	a3
C 1246	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1247	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	G2
C 1248	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b1
C 1250	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	A	F2
C 1253	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	F1
C 1255	CHIP CAP.	0.0027uF	50V	B	UMK105B272KW-F	K22178834		1-	A	G2
C 1256	CHIP CAP.	10uF	10V	B	GRM21BB31A106KE18L	K22100808		1-	B	g2
C 1257	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-	B	h2
C 1258	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h2
C 1259	CHIP CAP.	4.7uF	6.3V	B	C1608JB0J475KT	K22084804		1-	A	F1
C 1260	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g2
C 1262	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	h1
C 1263	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	h3
C 1264	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	h1
C 1266	FILM CAP.	0.027uF	16V		ECHU1C273JX5	K57120041		1-	B	a1
C 1268	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	a1
C 1269	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b2
C 1271	CHIP CAP.	0.0022uF	25V	B	TMK105B222K-F	K22148824		1-	B	a1
C 1272	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	A	G2
C 1273	AL.ELECTRO.CAP.	220uF	10V		ESMG100ELL221ME11S	K40109027		1-	B	h1
C 1274	CHIP CAP.	4.7uF	6.3V	B	JMK107BJ475MA-T	K22084803		1-	B	b2
C 1275	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h3
C 1276	CHIP CAP.	0.0068uF	25V	B	TMK105B682KW-F	K22148833		1-	B	a1
C 1277	CHIP CAP.	0.047uF	10V	B	GRM155B11A473KA01D	K22108801		1-	A	G2
C 1279	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g4
C 1280	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	g1
C 1281	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	G2
C 1282	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	h2
C 1283	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	A	H1
C 1284	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	b2
C 1285	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	A	H3
C 1286	CHIP CAP.	1uF	6.3V	B	GRM155B30J105KE18D	K22088803		1-	A	G2
C 1287	CHIP TA.CAP.	22uF	16V		TEESVB21C226M8R	K78120028		1-	B	h2
C 1288	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	b4
C 1289	CHIP CAP.	0.01uF	25V	B	GRM155B11E103KA01D	K22148834		1-	B	a3
C 1290	CHIP CAP.	3pF	25V	CJ	TMK105CJ030C-F	K22148207		1-	B	f2
C 1291	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	e2
C 1293	CHIP CAP.	8pF	50V	CH	GRM1552C1H8R0DZ01D	K22178210		1-	B	f4
C 1294	CHIP CAP.	15pF	25V	CH	TMK105CH150J-F	K22148218		1-	B	f4
C 1297	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	A	H1
C 1298	CHIP CAP.	47pF	50V	CH	GRM1552C1H470JZ01D	K22178228		1-	A	H4
C 1299	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	a3
C 1300	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	a3
C 1301	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	A	C3
C 1302	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809		1-	B	c2
C 1303	CHIP TA.CAP.	100uF	16V		TEESVD1C107M12R	K78120059		1-	B	a1
C 1304	CHIP TA.CAP.	100uF	16V		TEESVD1C107M12R	K78120059		1-	B	a1
C 1305	CHIP CAP.	10pF	25V	CH	TMK105CH100D-F	K22148214		1-	B	c2
C 1308	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809	AUSTRALIA	1-	A	H2
C 1308	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809	EUROPE	1-	A	H2
C 1308	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809	EXPORT	1-	A	H2
C 1308	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809	UK	1-	A	H2
C 1308	CHIP CAP.	0.001uF	50V	B	GRM155B11H102KA01D	K22178809	USA	1-	A	H2
C 1310	CHIP CAP.	0.1uF	10V	B	GRM155B11A104KA01D	K22108802		1-	B	a3
CD1001	CERAMIC DISC				JTBM450CX24	H7901530		1-	B	c3
CF1001	CERAMIC FILTER				LTWC450F	H3900563		1-	B	c1
D 1001	SURGE ABSORBER				EZAEG3A50AV	Q9000867		1-	B	h3
D 1002	DIODE				1SS400 TE61	G2070634		1-	B	b3
D 1003	DIODE				RB715F T106	G2070752		1-	B	g3
D 1004	DIODE				RLS135 TE-11	G2070128		1-	B	g3
D 1005	DIODE				RLS135 TE-11	G2070128		1-	B	g3

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
D 1006	DIODE				1SS400 TE61	G2070634		1-	B	g3
D 1007	DIODE				1SS400 TE61	G2070634		1-	B	g3
D 1008	DIODE				HVC358B TRF-E	G2070590	W/ CE LABEL	1-	B	d3
D 1008	DIODE				HVC350B-TRF-E	G2070596	W/O CE LABEL	1-	B	d3
D 1009	DIODE				HVC358B TRF-E	G2070590	W/ CE LABEL	1-	B	d3
D 1009	DIODE				HVC350B-TRF-E	G2070596	W/O CE LABEL	1-	B	d3
D 1011	DIODE				HVC306B TRU-E	G2070918		1-	B	d3
D 1012	LED				SML-512DWT86	G2071116		1-	A	C4
D 1013	LED				SML-512DWT86	G2071116		1-	A	B4
D 1014	LED				SML-512DWT86	G2071116		1-	A	B4
D 1015	LED				SML-512DWT86	G2071116		1-	A	D3
D 1016	LED				SML-512DWT86	G2071116		1-	A	D2
D 1017	LED				SML-512DWT86	G2071116		1-	A	E3
D 1018	LED				SML-512DWT86	G2071116		1-	A	E2
D 1019	LED				SML-512DWT86	G2071116		1-	A	F2
D 1020	LED				KWT806-S	G2071290		1-	A	F1
D 1021	LED				CL-165HR/YG-D-T	G2070860		1-	A	F1
D 1022	DIODE				1SV325(TPH3.F)	G2070848		1-	B	b4
D 1023	DIODE				DAN235E TL	G2070612		1-	B	d3
D 1024	DIODE				DA221 TL	G2070178		1-	B	d3
D 1025	DIODE				IMN10 T108	G2070078		1-	A	C2
D 1026	DIODE				DA221 TL	G2070178		1-	B	c1
D 1027	DIODE				DA221 TL	G2070178		1-	B	c1
D 1028	DIODE				1SS400 TE61	G2070634		1-	B	b2
D 1029	DIODE				VMZ6.8NT2L	G2071222		1-	A	H3
D 1030	DIODE				RD5.1UMB1-T1	G2070538		1-	B	b2
D 1031	DIODE				RB521S-30 TE61	G2070642		1-	A	F3
D 1033	DIODE				1SS400 TE61	G2070634		1-	B	a2
DS1001	LCD				BTG13264F-FBWB-N-G-A00	G6090187		1-		
F 1001	CHIP FUSE	3.15A			FHC16 322ADTP	Q0000118		1-	B	b2
FB1001	FERRITE BEADS				BLM18PG330SN1D	L9190141		1-	B	b2
FB1002	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	B	e1
FB1003	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	B	e2
FB1004	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	B	e2
FB1005	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	B	e2
FB1006	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	B	e2
FB1007	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	B	h1
FB1008	FERRITE BEADS				BLM18PG600SN1D	L1690601		1-	B	h1
FB1009	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	B	h1
FB1010	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	A	H1
FB1011	FERRITE BEADS				BLM18BD601SN1D	L9190143		1-	A	H3
J 1001	SHIELD FINGER				3525 3100103	S5000226		1-	B	h3
J 1002	CONNECTOR				08FLT-SM2-TB(LF)(SN)	P1091201		1-	B	e2
J 1003	CONNECTOR				AXK6F10545YJ	P0091423		1-	B	b1
J 1004	CONNECTOR				F0501WR-S-30PDB1	P1091351		1-	A	B2
J 1006	CONNECTOR				MJC-046-C1-3.5-T	P1091309		1-	B	h1
J 1007	SHIELD FINGER				3525 3100103	S5000226		1-	A	H1
J 1008	SHIELD FINGER				3525 3100103	S5000226		1-	A	G1
J 1009	SHIELD FINGER				3525 3100103	S5000226		1-	A	H1
J 1010	SHIELD FINGER				3525 3100103	S5000226		1-	A	H3
J 1011	CONTACT				OG-503040	S5000243	W/ CE LABEL	34-		
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	COIL				E2 0.28-1.0-4.5T-R	L0022395		1-	B	g3
L 1004	M.RFC	0.15uH			HK1608 R15J-T	L1690938		1-	B	e3
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			LK2125 4R7K-T	L1690327		1-	B	f4
L 1008	COIL				E2 0.25-1.9-6.5T-L	L0022401		1-	B	f3
L 1009	M.RFC	0.039uH			HK1608 39NJ-T	L1690523		1-	B	g3
L 1010	M.RFC	0.033uH			HK1608 33NJ-T	L1690522		1-	B	e3
L 1011	M.RFC	0.039uH		2%	C1608CB-39NG-RF	L1691039		1-	B	g3
L 1012	COIL				E2 0.3-0.9-7T-R	L0022371		1-	B	d3
L 1013	M.RFC	0.039uH		2%	C1608CB-39NG-RF	L1691039		1-	B	g3
L 1014	M.RFC	0.068uH		2%	C1608CB-68NG-RF	L1691042		1-	B	f3
L 1015	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		1-	B	d4
L 1016	M.RFC	0.22uH			HK1608 R22J-T	L1690940		1-	B	f3
L 1017	M.RFC	0.22uH			HK1608 R22J-T	L1690940		1-	B	f2
L 1018	M.RFC	0.068uH			HK1608 68NJ-T	L1690526		1-	B	e2
L 1019	M.RFC	0.068uH		2%	C1608CB-68NG-RF	L1691042		1-	B	f2
L 1020	M.RFC	0.056uH		2%	C1608CB-56NG-RF	L1691041		1-	B	e2
L 1021	M.RFC	0.082uH		2%	C1608CB-82NG-RF	L1691044		1-	B	e2
L 1024	M.RFC	0.047uH			HK1608 47NJ-T	L1690524		1-	B	d2

MAIN Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
L 1025	M.RFC	0.047uH			HK1608 47NJ-T	L1690524		1-	B	d2
L 1026	M.RFC	0.39uH		2%	C1608CB-R39G-RF	L1691107		1-	B	e2
L 1027	M.RFC	0.39uH			LK1608 R39K-T	L1690413		1-	B	d3
L 1028	M.RFC	0.47uH			LK1608 R47K-T	L1690414		1-	B	c3
L 1029	M.RFC	1uH			LK1608 1R0K-T	L1690687		1-	B	d2
L 1030	M.RFC	0.15uH			HK1608 R15J-T	L1690938		1-	B	d2
L 1032	M.RFC	4.7uH			LK1608 4R7K-T	L1690688		1-	B	e3
MC1001	MICROPHONE ELEMENT				CZ034HP363	M3290044		1-	A	G2
PH1001	POSISTOR				PRF18BG471QB5RB	G9090174		1-	B	c2
Q 1001	IC				TAR5S33U(TE85L.F)	G1094549		1-	B	a2
Q 1002	IC				TAR5S50U(TE85L.F)	G1094097		1-	B	b3
Q 1003	IC				LM2902PWR	G1094009		1-	A	G3
Q 1004	IC				LM2904PWR	G1094010		1-	A	B3
Q 1005	IC				TAR5S50U(TE85L.F)	G1094097		1-	B	a3
Q 1006	IC				SN74LVC3G14DCTR	G1094258		1-	B	a2
Q 1007	IC				S-812C33AUA-C2N-T2G	G1094056		1-	B	a4
Q 1008	TRANSISTOR				2SC5006-T1	G3350068		1-	B	e3
Q 1009	FET				RD09MUP2(TAPE)	G3070367		1-	B	f3
Q 1010	TRANSISTOR				2SC5231C8-TL	G3352318H		1-	B	e4
Q 1011	TRANSISTOR				UMD5N TR	G3070343		1-	B	b3
Q 1012	TRANSISTOR				UMD5N TR	G3070343		1-	B	b3
Q 1013	TRANSISTOR				UMD5N TR	G3070343		1-	A	H4
Q 1014	TRANSISTOR				DTC144EE TL	G3070075		1-	B	e4
Q 1015	FET				RD01MUS1-T113	G3070321		1-	B	e3
Q 1016	TRANSISTOR				DTC144EE TL	G3070075		1-	B	h3
Q 1017	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	e3
Q 1018	FET				3SK294(TE85L)	G4802948		1-	B	f3
Q 1019	TRANSISTOR				FMMTL618TA	G3070334		1-	A	B3
Q 1020	TRANSISTOR				2SC5226-5-TL	G3352268E		1-	B	e3
Q 1021	TRANSISTOR				2SA1774 TL R	G3117748R		1-	B	c3
Q 1022	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	c3
Q 1023	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	c1
Q 1024	TRANSISTOR				XP1501-(TX)	G3070143		1-	B	d1
Q 1025	FET				3SK318 TL	G4803188		1-	B	e2
Q 1026	IC				LV2105V-TLM	G1093191		1-	B	c3
Q 1027	TRANSISTOR				DTC143ZE TL	G3070102		1-	A	F3
Q 1028	TRANSISTOR				2SC4915-O(TE85L.F)	G3349158O		1-	B	d2
Q 1029	TRANSISTOR				2SC4915-O(TE85L.F)	G3349158O		1-	B	c3
Q 1030	IC				BU2502FS-E2	G1094524		1-	B	d1
Q 1031	IC				NJM2591V-TE1	G1094024		1-	B	c2
Q 1032	IC				UPD78F1167GC(S)-UEU-AX	G1094605		1-	B	f1
Q 1033	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	c1
Q 1034	IC				CD4066BPWR	G1093865		1-	A	G1
Q 1036	IC				R1EX24128ATAS0I		AUSTRALIA	1-	B	d1
Q 1036	IC				R1EX24128ATAS0I		EUROPE	1-	B	d1
Q 1036	IC				R1EX24128ATAS0I		EXPORT	1-	B	d1
Q 1036	IC				R1EX24128ATAS0I		UK	1-	B	d1
Q 1036	IC				R1EX24128ATAS0I		USA	1-	B	d1
Q 1037	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	b2
Q 1038	TRANSISTOR				2SC4617 TL R	G3346178R		1-	B	b2
Q 1039	TRANSISTOR				DTC144EE TL	G3070075		1-	B	h3
Q 1040	TRANSISTOR				2SA1774 TL R	G3117748R		1-	B	h3
Q 1041	TRANSISTOR				2SC4617 TL R	G3346178R		1-	A	F2
Q 1042	TRANSISTOR				FMMTL718TA	G3070335		1-	B	g2
Q 1043	TRANSISTOR				2SA1774 TL R	G3117748R		1-	B	b2
Q 1045	IC				NJM2211M-TE1	G1092943		1-	B	b1
Q 1046	TRANSISTOR				2SC4617 TL R	G3346178R		1-	A	G2
Q 1047	IC				TDA2822L-S08-R	G1094497		1-	B	h2
Q 1048	IC				LMV321IDCKR	G1093969		1-	B	b4
Q 1049	IC				TC7SET125FU(TE85L.F)	G1094750	AUSTRALIA	1-	B	a2
Q 1049	IC				TC7SET125FU(TE85L.F)	G1094750	EUROPE	1-	B	a2
Q 1049	IC				TC7SET125FU(TE85L.F)	G1094750	EXPORT	1-	B	a2
Q 1049	IC				TC7SET125FU(TE85L.F)	G1094750	UK	1-	B	a2
Q 1049	IC				TC7SET125FU(TE85L.F)	G1094750	USA	1-	B	a2
Q 1050	TRANSISTOR				DTC144EE TL	G3070075	AUSTRALIA	1-	A	H3
Q 1050	TRANSISTOR				DTC144EE TL	G3070075	EUROPE	1-	A	H3
Q 1050	TRANSISTOR				DTC144EE TL	G3070075	EXPORT	1-	A	H3
Q 1050	TRANSISTOR				DTC144EE TL	G3070075	UK	1-	A	H3
Q 1050	TRANSISTOR				DTC144EE TL	G3070075	USA	1-	A	H3
R 1001	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	h3
R 1002	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	g3
R 1005	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	g3
R 1006	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	A	C3

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1009	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	e3
R 1010	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	B	e3
R 1011	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	e3
R 1013	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009		1-	B	d3
R 1013	CHIP RES.	47	1/16W	0.5%	RR0510R-470-D	J24189087		29-	B	d3
R 1014	CHIP RES.	680	1/16W	5%	RMC1/16S 681JTH	J24189023		1-	B	e4
R 1014	CHIP RES.	680	1/16W	0.5%	RR0510P-681-D	J24189115		29-	B	e4
R 1015	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	A	C3
R 1016	CHIP RES.	2.7k	1/16W	5%	RMC1/16S 272JTH	J24189030		1-	B	f3
R 1017	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	f4
R 1018	CHIP RES.	680	1/16W	5%	RMC1/16S 681JTH	J24189023		1-	B	f4
R 1019	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	d4
R 1019	CHIP RES.	4.7k	1/16W	0.5%	RR0510P-472-D	J24189135		29-	B	d4
R 1020	CHIP RES.	6.8k	1/16W	5%	RMC1/16S 682JTH	J24189035		1-	B	d4
R 1020	CHIP RES.	6.8k	1/16W	0.5%	RR0510P-682-D	J24189139		29-	B	d4
R 1021	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d3
R 1022	CHIP RES.	330k	1/16W	0.5%	MCR01MZPD3303	J24189330		1-	A	B1
R 1023	CHIP RES.	470k	1/16W	0.5%	MCR01MZPD4703	J24189332		1-	A	C1
R 1024	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		1-	B	d3
R 1025	CHIP RES.	82k	1/16W	0.5%	MCR01MZPD8202	J24189385		1-	A	B1
R 1026	CHIP RES.	150k	1/16W	0.5%	MCR01MZPD1503	J24189328		1-	A	B1
R 1027	CHIP RES.	2.7k	1/16W	5%	RMC1/16S 272JTH	J24189030		1-	B	e3
R 1028	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		1-	B	d3
R 1029	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	e3
R 1030	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	e3
R 1031	CHIP RES.	220k	1/16W	5%	RMC1/16S 224JTH	J24189053		1-	B	f2
R 1032	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	f3
R 1033	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	A	C2
R 1034	CHIP RES.	330	1/16W	5%	RMC1/16S 331JTH	J24189019		1-	B	d4
R 1035	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	B3
R 1036	CHIP RES.	120k	1/16W	5%	RMC1/16S 124JTH	J24189050		1-	B	f2
R 1037	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	B	f3
R 1038	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	B3
R 1041	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	e3
R 1042	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	A	B3
R 1043	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	e4
R 1044	CHIP RES.	270	1/16W	5%	RMC1/16S 271JTH	J24189018		1-	B	d3
R 1045	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	B3
R 1046	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	f3
R 1047	CHIP RES.	390	1/16W	5%	RMC1/16S 391JTH	J24189020		1-	B	d3
R 1048	CHIP RES.	560	1/16W	5%	RMC1/16S 561JTH	J24189022		1-	B	e2
R 1049	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	e2
R 1050	CHIP RES.	68	1/4W	5%	RMC1/4 680JATP	J24245680		1-	A	B3
R 1051	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	e3
R 1052	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	f2
R 1053	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	d3
R 1055	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	e2
R 1056	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	f2
R 1057	CHIP RES.	6.8k	1/16W	5%	RMC1/16S 682JTH	J24189035		1-	B	e2
R 1058	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	e3
R 1059	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	A	A3
R 1060	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	d2
R 1061	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	d3
R 1061	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021		30-	B	d3
R 1062	CHIP RES.	68k	1/16W	5%	RMC1/16S 683JTH	J24189047		1-	A	A3
R 1063	CHIP RES.	180	1/16W	5%	RMC1/16S 181JTH	J24189016		1-	B	d2
R 1066	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	e3
R 1067	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	B3
R 1068	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	C3
R 1069	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	B3
R 1070	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	c4
R 1071	CHIP RES.	270	1/16W	5%	RMC1/16S 271JTH	J24189018		1-	B	c3
R 1073	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	A	B3
R 1074	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	c4
R 1075	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	c3
R 1075	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		30-	B	c3
R 1076	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004		1-	B	e3
R 1077	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	c3
R 1077	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		30-	B	c3
R 1078	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	c3
R 1079	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	c1
R 1080	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004		1-	B	d3
R 1081	CHIP RES.	18	1/16W	5%	RMC1/16S 180JTH	J24189004		1-	B	d3

MAIN Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1082	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	A	C1
R 1083	CHIP RES.	150	1/16W	5%	RMC1/16S 151JTH	J24189015		1-	B	c1
R 1084	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	b4
R 1085	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	B1
R 1086	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	b4
R 1087	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		1-	B	b4
R 1088	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	B	d1
R 1089	CHIP RES.	27k	1/16W	5%	RMC1/16S 273JTH	J24189042		1-	A	B3
R 1090	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	A	C1
R 1091	CHIP RES.	27k	1/16W	5%	RMC1/16S 273JTH	J24189042		1-	A	B3
R 1092	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	d1
R 1093	CHIP RES.	18k	1/16W	5%	RMC1/16S 183JTH	J24189040		1-	A	B3
R 1094	CHIP RES.	18k	1/16W	5%	RMC1/16S 183JTH	J24189040		1-	A	B3
R 1095	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	d1
R 1096	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		1-	B	c3
R 1097	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	e2
R 1098	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	e2
R 1099	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	C3
R 1100	CHIP RES.	1.2k	1/16W	5%	RMC1/16S 122JTH	J24189026		1-	A	C3
R 1101	CHIP RES.	560	1/16W	5%	RMC1/16S 561JTH	J24189022		1-	A	C3
R 1102	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	e2
R 1103	CHIP RES.	120k	1/16W	5%	RMC1/16S 124JTH	J24189050		1-	B	e2
R 1104	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	e3
R 1105	CHIP RES.	47	1/16W	5%	RMC1/16S 470JTH	J24189009		1-	B	e2
R 1106	CHIP RES.	150	1/16W	5%	RMC1/16S 151JTH	J24189015		1-	B	e2
R 1107	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	d3
R 1108	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	e2
R 1109	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070	W/ CE LABEL	1-	B	d2
R 1109	CHIP RES.	390	1/16W	5%	RMC1/16S 391JTH	J24189020	W/O CE LABEL	1-	B	d2
R 1110	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	e3
R 1114	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070	W/O CE LABEL	1-	B	d2
R 1115	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	c3
R 1116	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	G3
R 1117	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	c3
R 1118	CHIP RES.	680	1/16W	5%	RMC1/16S 681JTH	J24189023	W/ CE LABEL	1-	B	d2
R 1118	CHIP RES.	270	1/16W	5%	RMC1/16S 271JTH	J24189018	W/O CE LABEL	1-	B	d2
R 1119	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	d3
R 1120	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d3
R 1122	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	d2
R 1123	CHIP RES.	150k	1/16W	5%	RMC1/16S 154JTH	J24189051		1-	B	c3
R 1124	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	d1
R 1125	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	c3
R 1127	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	B1
R 1128	CHIP RES.	12k	1/16W	5%	RMC1/16S 123JTH	J24189038		1-	A	B1
R 1129	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	A	B1
R 1130	CHIP RES.	100k	1/16W	0.5%	MCR01MZPD1003	J24189386		1-	A	H3
R 1131	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	A	B1
R 1132	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	d1
R 1133	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	A	H3
R 1134	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	e2
R 1135	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		1-	A	G4
R 1136	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	e2
R 1137	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	e2
R 1138	CHIP RES.	100k	1/16W	0.5%	MCR01MZPD1003	J24189386		1-	A	G3
R 1139	CHIP RES.	39k	1/16W	5%	RMC1/16S 393JTH	J24189044		1-	A	G4
R 1141	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	d2
R 1143	CHIP RES.	8.2k	1/16W	5%	RMC1/16S 822JTH	J24189036		1-	A	G4
R 1145	CHIP RES.	6.8k	1/16W	5%	RMC1/16S 682JTH	J24189035		1-	B	c2
R 1146	CHIP RES.	270k	1/16W	5%	RMC1/16S 274JTH	J24189054		1-	B	c2
R 1148	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	A	C2
R 1149	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	A	C2
R 1150	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	C1
R 1151	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	A	G4
R 1152	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	A	G3
R 1153	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	B	e2
R 1154	CHIP RES.	1.5k	1/16W	5%	RMC1/16S 152JTH	J24189027		1-	B	d2
R 1155	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	A	C1
R 1157	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029	W/ CE LABEL	1-	B	c2
R 1157	CHIP RES.	1.5k	1/16W	5%	RMC1/16S 152JTH	J24189027	W/O CE LABEL	1-	B	c2
R 1158	CHIP RES.	12k	1/16W	5%	RMC1/16S 123JTH	J24189038		1-	B	c2
R 1159	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	A	G3
R 1161	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		1-	B	c2
R 1162	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	d3

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1163	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		1-	A	G1
R 1164	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	A	H3
R 1165	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	c2
R 1166	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		1-	A	G1
R 1167	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		1-	A	G3
R 1168	CHIP RES.	180k	1/16W	5%	RMC1/16S 184JTH	J24189052		1-	A	G3
R 1169	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	A	G3
R 1170	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		1-	B	e1
R 1171	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	B	c1
R 1172	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	A	G3
R 1173	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	c1
R 1174	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		1-	B	c1
R 1175	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055		1-	A	G3
R 1176	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	H3
R 1177	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	e1
R 1178	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	e1
R 1179	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	c1
R 1180	CHIP RES.	470k	1/16W	5%	RMC1/16S 474JTH	J24189057		1-	A	H3
R 1181	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	A	G1
R 1182	CHIP RES.	18k	1/16W	5%	RMC1/16S 183JTH	J24189040		1-	A	H3
R 1183	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		1-	A	G1
R 1184	CHIP RES.	5.6k	1/16W	5%	RMC1/16S 562JTH	J24189034		1-	A	G3
R 1185	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	H3
R 1186	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061		1-	A	G1
R 1188	CHIP RES.	68k	1/16W	5%	RMC1/16S 683JTH	J24189047		1-	B	c1
R 1189	CHIP RES.	120k	1/16W	5%	RMC1/16S 124JTH	J24189050		1-	B	b1
R 1190	CHIP RES.	5.6k	1/16W	5%	RMC1/16S 562JTH	J24189034		1-	B	b2
R 1191	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	b2
R 1192	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		1-	B	b2
R 1193	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	b2
R 1194	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	b2
R 1195	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	b1
R 1196	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	b2
R 1197	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		1-	B	b2
R 1198	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	b2
R 1199	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	b1
R 1200	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	b2
R 1201	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		1-	B	a2
R 1202	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	g3
R 1203	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	b1
R 1204	CHIP RES.	100	1/16W	5%	RMC1/16S 101JTH	J24189013		1-	B	b1
R 1205	CHIP RES.	18k	1/16W	5%	RMC1/16S 183JTH	J24189040		1-	B	a2
R 1206	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	h2
R 1207	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	b1
R 1208	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	A	F1
R 1209	CHIP RES.	2.2	1/4W	5%	RMC1/4 2R2JATP	J24245229		1-	B	g2
R 1210	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	A	G2
R 1211	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	h3
R 1212	CHIP RES.	12k	1/16W	5%	RMC1/16S 123JTH	J24189038		1-	B	b2
R 1213	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	b1
R 1214	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	h3
R 1215	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	b2
R 1216	CHIP RES.	220	1/16W	5%	RMC1/16S 221JTH	J24189017		1-	B	h1
R 1217	CHIP RES.	18k	1/16W	5%	RMC1/16S 183JTH	J24189040		1-	B	a3
R 1220	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	A	F2
R 1221	CHIP RES.	33k	1/16W	5%	RMC1/16S 333JTH	J24189043		1-	B	a3
R 1222	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070	W/ CE LABEL	1-	B	g2
R 1223	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	a3
R 1224	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	h2
R 1225	CHIP RES.	15k	1/16W	5%	RMC1/16S 153JTH	J24189039		1-	A	F2
R 1227	CHIP RES.	2.7k	1/16W	5%	RMC1/16S 272JTH	J24189030		1-	A	F2
R 1228	CHIP RES.	560	1/16W	5%	RMC1/16S 561JTH	J24189022		1-	A	G2
R 1229	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	a3
R 1230	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	b2
R 1231	CHIP RES.	180k	1/16W	5%	RMC1/16S 184JTH	J24189052		1-	A	F2
R 1232	CHIP RES.	82k	1/16W	5%	RMC1/16S 823JTH	J24189048		1-	A	G2
R 1233	CHIP RES.	100k	1/16W	5%	RMC1/16S 104JTH	J24189049		1-	B	a1
R 1234	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	b2
R 1235	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	A	G2
R 1236	CHIP RES.	4.7	1/16W	5%	RMC1/16S 4R7JTH	J24189066		1-	B	h2
R 1237	CHIP RES.	1k	1/16W	5%	RMC1/16S 102JTH	J24189025		1-	B	h2
R 1238	CHIP RES.	220	1/8W	5%	RMC1/8T 221J	J24215221		1-	A	H2
R 1239	CHIP RES.	1.2k	1/16W	5%	RMC1/16S 122JTH	J24189026		1-	A	H3

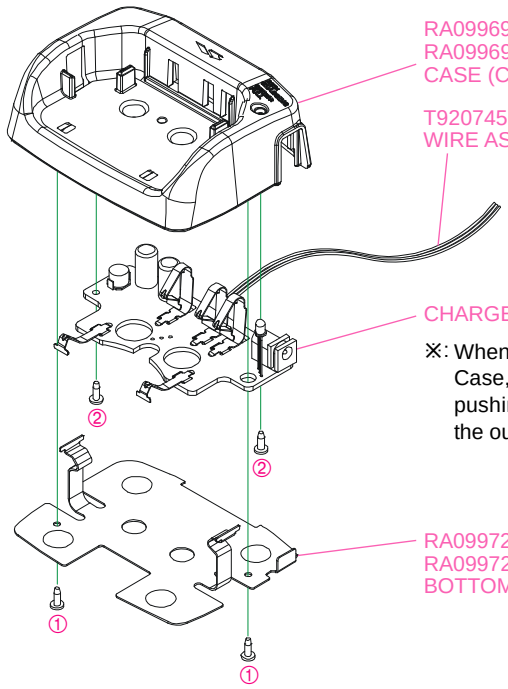
MAIN Unit

Parts List

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
R 1240	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	a1
R 1241	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	B	b2
R 1242	CHIP RES.	10k	1/16W	0.5%	MCR01MZPD1002	J24189374		1-	B	a1
R 1243	CHIP RES.	10k	1/16W	0.5%	MCR01MZPD1002	J24189374		1-	B	b1
R 1244	CHIP RES.	1k	1/16W	0.5%	MCR01MZPD1001	J24189362		1-	B	b1
R 1245	CHIP RES.	4.7	1/16W	5%	RMC1/16S 4R7JTH	J24189066		1-	B	h2
R 1246	CHIP RES.	8.2k	1/16W	5%	RMC1/16S 822JTH	J24189036		1-	A	G2
R 1247	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	C2
R 1248	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	C2
R 1249	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	C2
R 1250	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	A	C2
R 1251	CHIP RES.	2.2k	1/16W	5%	RMC1/16S 222JTH	J24189029		1-	A	B3
R 1252	CHIP RES.	3.3k	1/16W	5%	RMC1/16S 332JTH	J24189031		1-	B	b2
R 1253	CHIP RES.	47k	1/16W	5%	RMC1/16S 473JTH	J24189045		1-	B	c2
R 1255	CHIP RES.	22	1/16W	5%	RMC1/16S 220JTH	J24189005		1-	B	b4
R 1256	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	b3
R 1257	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037		1-	B	b3
R 1258	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	b3
R 1259	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	B	b4
R 1260	CHIP RES.	0	1/16W	5%	RMC1/16S JPTH	J24189070		1-	B	a2
R 1261	CHIP RES.	22k	1/16W	5%	RMC1/16S 223JTH	J24189041		1-	A	C1
R 1264	CHIP RES.	4.7k	1/16W	5%	RMC1/16S 472JTH	J24189033		1-	B	b3
R 1266	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055	AUSTRALIA	1-	B	a2
R 1266	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055	EUROPE	1-	B	a2
R 1266	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055	EXPORT	1-	B	a2
R 1266	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055	UK	1-	B	a2
R 1266	CHIP RES.	330k	1/16W	5%	RMC1/16S 334JTH	J24189055	USA	1-	B	a2
R 1267	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021	AUSTRALIA	1-	A	H3
R 1267	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021	EUROPE	1-	A	H3
R 1267	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021	EXPORT	1-	A	H3
R 1267	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021	UK	1-	A	H3
R 1267	CHIP RES.	470	1/16W	5%	RMC1/16S 471JTH	J24189021	USA	1-	A	H3
R 1268	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	AUSTRALIA	1-	A	H3
R 1268	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	EUROPE	1-	A	H3
R 1268	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	EXPORT	1-	A	H3
R 1268	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	UK	1-	A	H3
R 1268	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	USA	1-	A	H3
R 1269	CHIP RES.	560k	1/16W	5%	RMC1/16S 564JTH	J24189058	AUSTRALIA	1-	A	H3
R 1269	CHIP RES.	560k	1/16W	5%	RMC1/16S 564JTH	J24189058	EUROPE	1-	A	H3
R 1269	CHIP RES.	560k	1/16W	5%	RMC1/16S 564JTH	J24189058	EXPORT	1-	A	H3
R 1269	CHIP RES.	560k	1/16W	5%	RMC1/16S 564JTH	J24189058	UK	1-	A	H3
R 1269	CHIP RES.	560k	1/16W	5%	RMC1/16S 564JTH	J24189058	USA	1-	A	H3
R 1271	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	AUSTRALIA	1-	A	H3
R 1271	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	EUROPE	1-	A	H3
R 1271	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	EXPORT	1-	A	H3
R 1271	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	UK	1-	A	H3
R 1271	CHIP RES.	10k	1/16W	5%	RMC1/16S 103JTH	J24189037	USA	1-	A	H3
RB1001	BLOCK RES.				MNR04M0ABJ102	J42900039		1-	A	G3
RB1002	BLOCK RES.				MNR18E0APJ103	J42900033		1-	A	B2
RB1003	BLOCK RES.				MNR04M0ABJ102	J42900039		1-	B	e1
S 1012	TACT SWITCH				SKQTLA	N5090110		1-	B	g4
S 1013	TACT SWITCH				SKQTLA	N5090110		1-	B	g1
TH1001	THERMISTOR				TH05 4B473FR	G9090150		1-	B	f4
TH1002	THERMISTOR				TH05 4B473FR	G9090150		1-	B	b4
X 1001	XTAL NX5032SA	11.7MHz			11.7MHZ	H0103320		1-	B	c3
X 1002	XTAL SMD-49TA	9.8304MHz			9.8304MHZ	H0103393		1-	B	e1
XF1001	XTAL FILTER				MFT47R 47.25MHZ	H1102352	W/ CE LABEL	1-	B	d2
XF1001	XTAL FILTER				7050M 47.25S13A	H1102436	W/O CE LABEL	1-	B	d2
	LIGHT GUIDE				(LCD)	RA1002100		1-		
	LIGHT GUIDE				(LCD)	RA100210A		29-		
	REFLECTOR SHEET				(LCD)	RA1002200		1-		
	MIC HOLDER RUBBER					RA0992100		1-		
	REFLECTOR SHEET				(S)	RA1041600	BLACK	1-		
	LIGHT SHEET				(LCD)	RA1205700	BLUE	1-		
	LEAF SPRING					RA1096200	W/ CE LABEL	29-33		

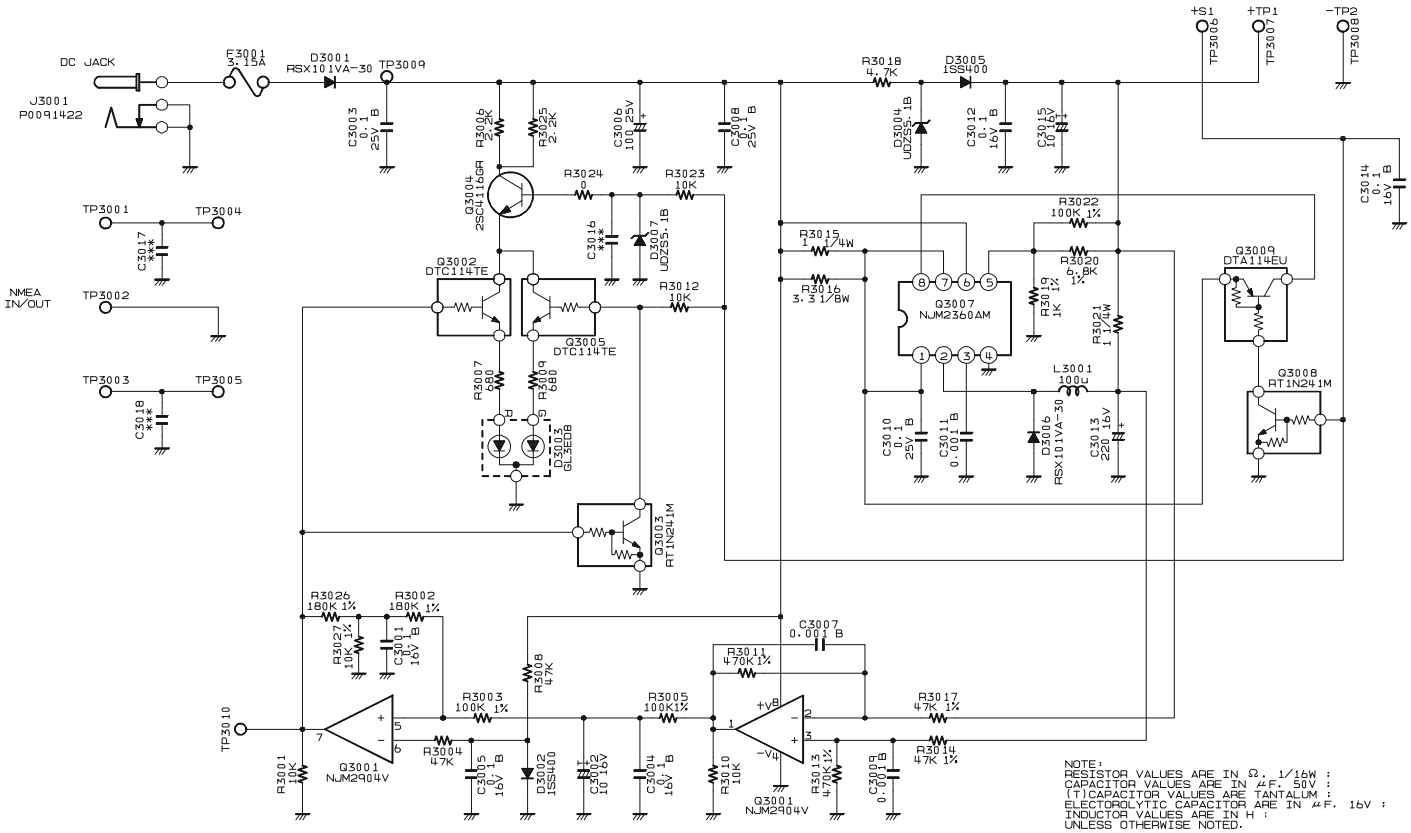
CD-38 Charger Cradle

Exploded View



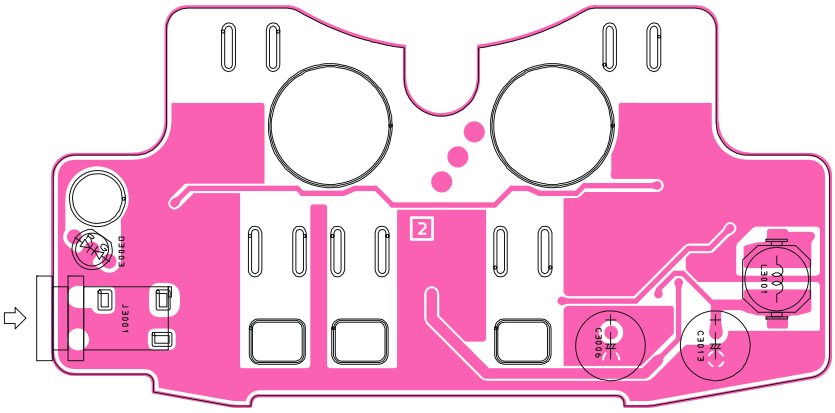
Ref.	VXSTD P/N	Description	Qty.
①	U24106020	BIND HEAD TAPTITE-BM2X6SUS	2
②	U24108020	BIND HEAD TAPTITE-BM2X8SUS	2

Circuit Diagram

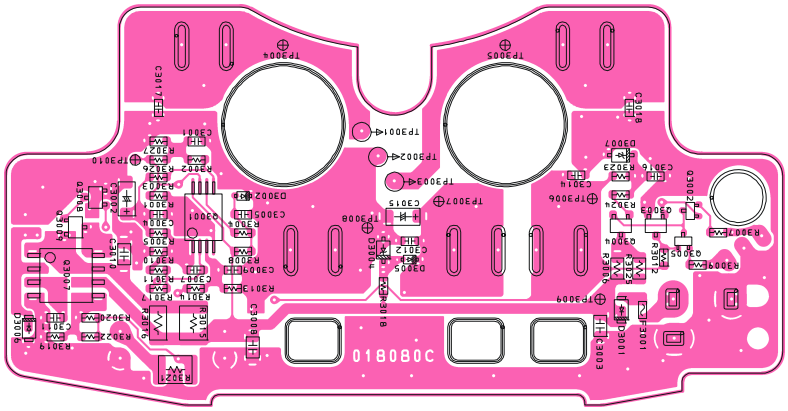


CD-38 Charger Cradle

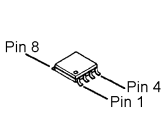
Parts Layout



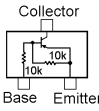
(Side A)



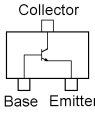
(Side B)



NJM2904V
(Q3001)

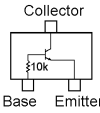


DTA114EUA
(Q3009)

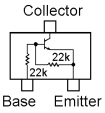


2SC4617 (BR)
(Q3004)

NJM2360AM
(Q3007)



DTC114TE (04)
(Q3002, 3005)



RT1N241M
(N2)
(Q3003, 3008)

REF	DESCRIPTION	VALUE	V/W	TOL.	MFR'S DESIG	VXSTD P/N	VERS.	LOT	SIDE	LAY ADR
	Printed Circuit Board				AAF94X000	FR0180800		1-		
C 3001	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 3002	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-		
C 3003	CHIP CAP.	0.1uF	25V	B	GRM21BB11E104KA01L	K22140811		1-		
C 3004	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 3005	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 3006	AL.ELECTRO.CAP.	100uF	25V		RE2-25V101MH3#	K40149028		1-		
C 3006	AL.ELECTRO.CAP.	100uF	25V		UVR1E101MED	K40149080		5-		
C 3007	CHIP CAP.	0.001uF	50V	B	GRM188B11H102KA01D	K22174821		1-		
C 3008	CHIP CAP.	0.1uF	25V	B	GRM21BB11E104KA01L	K22140811		1-		
C 3009	CHIP CAP.	0.001uF	50V	B	GRM188B11H102KA01D	K22174821		1-		
C 3010	CHIP CAP.	0.1uF	25V	B	GRM21BB11E104KA01L	K22140811		1-		
C 3011	CHIP CAP.	0.001uF	50V	B	GRM188B11H102KA01D	K22174821		1-		
C 3012	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 3013	AL.ELECTRO.CAP.	220uF	16V		RE3-16V221MF3#	K40129095		1-		
C 3013	AL.ELECTRO.CAP.	220uF	16V		UVR1C221MED	K40129105		5-		
C 3014	CHIP CAP.	0.1uF	16V	B	GRM188B11C104KA01D	K22124805		1-		
C 3015	CHIP TA.CAP.	10uF	16V		TEESVA1C106M8R	K78120077		1-		
D 3001	DIODE				RSX101VA-30TR	G2070984		1-		
D 3002	DIODE				1SS400 TE61	G2070634		1-		
D 3003	LED				GL3ED8	G2090640		1-		
D 3004	DIODE				UDZS TE-17 5.1B	G2070908		1-		
D 3005	DIODE				1SS400 TE61	G2070634		1-		
D 3006	DIODE				RSX101VA-30TR	G2070984		1-		
D 3007	DIODE				UDZS TE-17 5.1B	G2070908		1-		
F 3001	CHIP FUSE	3.15A			FHC16 322ADTP	Q0000118		1-		
J 3001	CONNECTOR				LGP6501-0100C	P0091422		1-		
L 3001	M.RFC	100uH			7C06N-101M	L1691231		1-		
Q 3001	IC				NJM2904V-TE1	G1091677		1-		
Q 3002	TRANSISTOR				DTC114TE TL	G3070225		1-		
Q 3003	TRANSISTOR				RT1N241M-T11-1	G3070249		1-		
Q 3003	TRANSISTOR				DTC124EU T106	G3070045		5-		
Q 3004	TRANSISTOR				2SC4116GR(TE85R.F)	G3341167G		1-		
Q 3004	TRANSISTOR				2SC4116GR(TE85L.F)	G3341168G		5-		
Q 3005	TRANSISTOR				DTC114TE TL	G3070225		1-		
Q 3007	IC				NJM2360AM-TE1	G1093076		1-		
Q 3008	TRANSISTOR				RT1N241M-T11-1	G3070249		1-		
Q 3008	TRANSISTOR				DTC124EU T106	G3070045		5-		
Q 3009	TRANSISTOR				DTA114EUA T106	G3070083		1-		
R 3001	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-		
R 3002	CHIP RES.	180k	1/16W	1%	RMC1/16 184FTP	J24183184		1-		
R 3003	CHIP RES.	100k	1/16W	1%	RMC1/16 104FTP	J24183104		1-		
R 3004	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-		
R 3005	CHIP RES.	100k	1/16W	1%	RMC1/16 104FTP	J24183104		1-		
R 3006	CHIP RES.	2.2k	1/10W	5%	RMC1/10T 222J	J24205222		1-		
R 3007	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681		1-		
R 3008	CHIP RES.	47k	1/16W	5%	RMC1/16 473JATP	J24185473		1-		
R 3009	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681		1-		
R 3010	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-		
R 3011	CHIP RES.	470k	1/16W	1%	RMC1/16 474FTP	J24183474		1-		
R 3012	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-		
R 3013	CHIP RES.	470k	1/16W	1%	RMC1/16 474FTP	J24183474		1-		
R 3014	CHIP RES.	47k	1/16W	1%	RMC1/16 473FTP	J24183473		1-		
R 3015	CHIP RES.	1	1/4W	5%	RMC1/4 1R0JATP	J24245010		1-		
R 3016	CHIP RES.	3.3	1/8W	5%	RMC1/8T 3R3J	J24215339		1-		
R 3017	CHIP RES.	47k	1/16W	1%	RMC1/16 473FTP	J24183473		1-		
R 3018	CHIP RES.	4.7k	1/16W	5%	RMC1/16 472JATP	J24185472		1-		
R 3019	CHIP RES.	1k	1/16W	1%	RMC1/16 102FTP	J24183102		1-		
R 3020	CHIP RES.	6.8k	1/16W	1%	RMC1/16 682FTP	J24183682		1-		
R 3021	CHIP RES.	1	1/4W	5%	RMC1/4 1R0JATP	J24245010		1-		
R 3022	CHIP RES.	100k	1/16W	1%	RMC1/16 104FTP	J24183104		1-		
R 3023	CHIP RES.	10k	1/16W	5%	RMC1/16 103JATP	J24185103		1-		
R 3024	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000		1-		
R 3025	CHIP RES.	2.2k	1/10W	5%	RMC1/10T 222J	J24205222		1-		
R 3026	CHIP RES.	180k	1/16W	1%	RMC1/16 184FTP	J24183184		1-		
R 3027	CHIP RES.	10k	1/16W	1%	RMC1/16 103FTP	J24183103		1-		
	TERMINAL PLATE					RA0997000		1-		
	TERMINAL PLATE					RA099700A		5-		
	TERMINAL				(GPS)	RA0997100		1-		
	LED SPACER				LH-5-14	S6000387		1-		

STANDARD HORIZON
Marine Division of VERTEX STANDARD
US Headquarters
10900 Walker Street, Cypress, CA 90630, U.S.A.