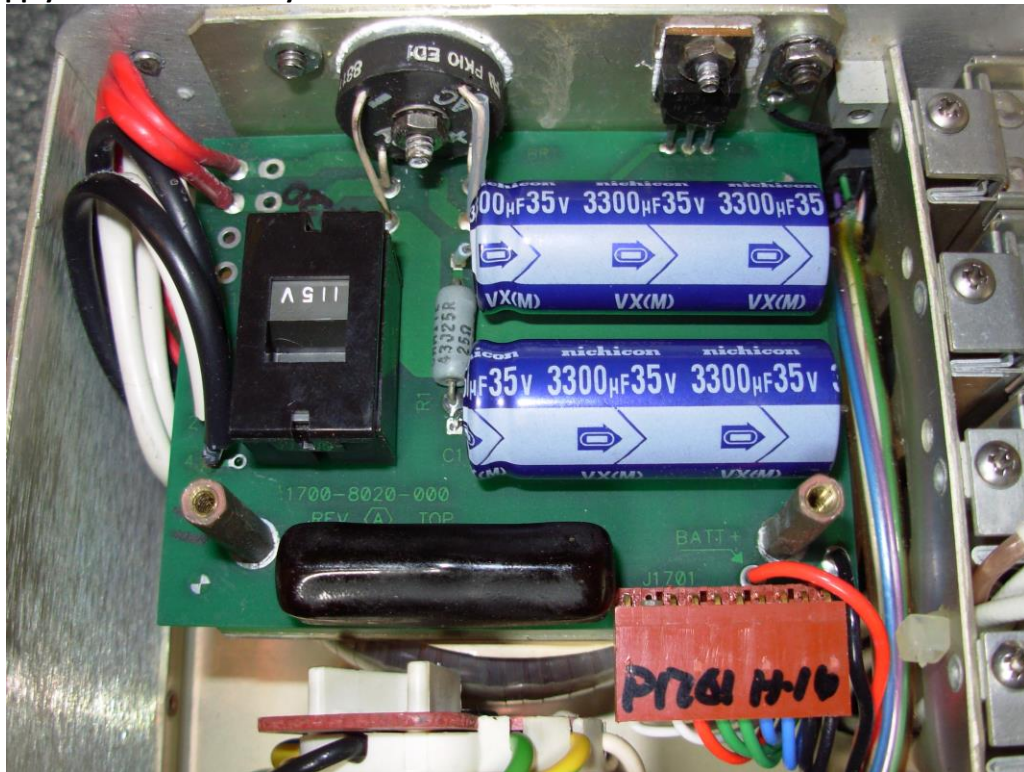


# IFR 1200A/S Electrolytic Capacitor Parts List

By: Alex, KD6VPH

**Preface:** This guide was put together to aid in renewal of the electrolytic capacitors in your IFR 1200A/S. This guide should not be interpreted as stating that all the electrolytic capacitors in your 1200A/S need renewal! At the very least, you should renew ALL electrolytic capacitors in your IFR 1200A/S power supply; they are, or soon will be, leaking. During the renewal process it is very important to clean and remove any boric acid that may have leaked out- use a Q-tip and 90% Isopropyl Alcohol. Electrolytic capacitor replacement is easily accomplished using a de-soldering station such as a Hakko 472D, JBC 1D, Weller WR3000, etc. but not absolutely necessary.

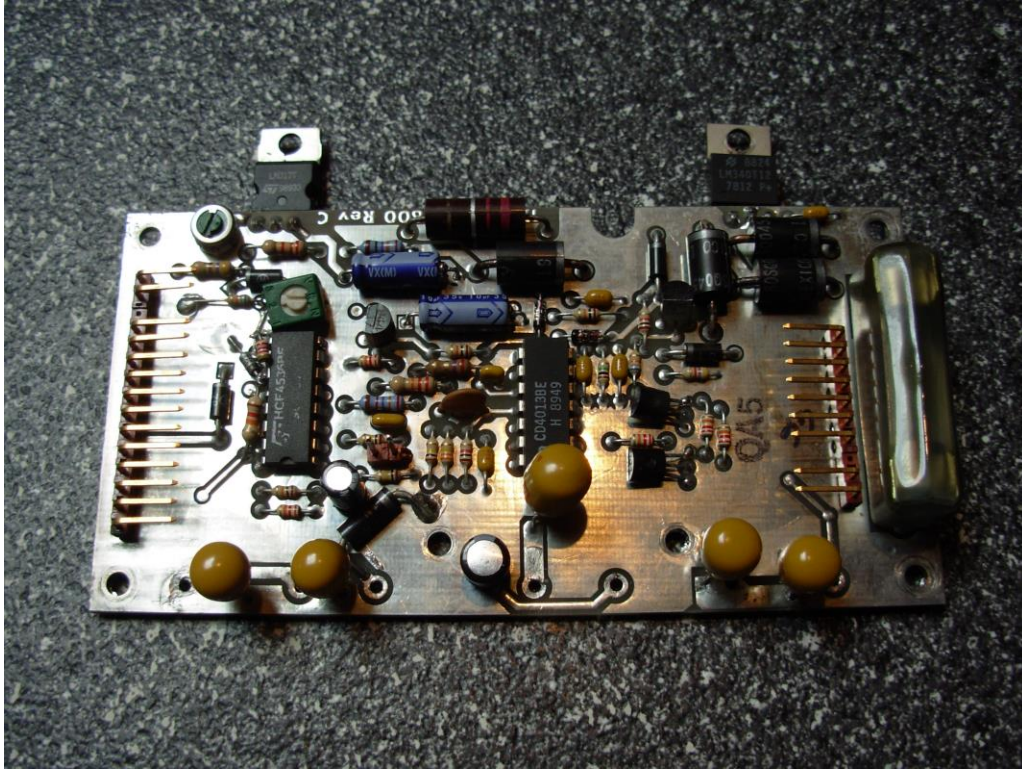
## Line Supply PC Board Assembly



The following replacement capacitors as listed are much smaller in diameter than the originals.

C1, C2- 3300uF, 35V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1V332MCD  
Digikey Part #493-14425-ND  
Quantity on Board: 2

### Battery Charger Board (7010-6123-800 Rev C)



Battery Charger Board removal is much easier, and with less chance of damage to traces, using a de-soldering tool (i.e. Hakko 472D, JBC 1D, Weller WR3000, etc...).

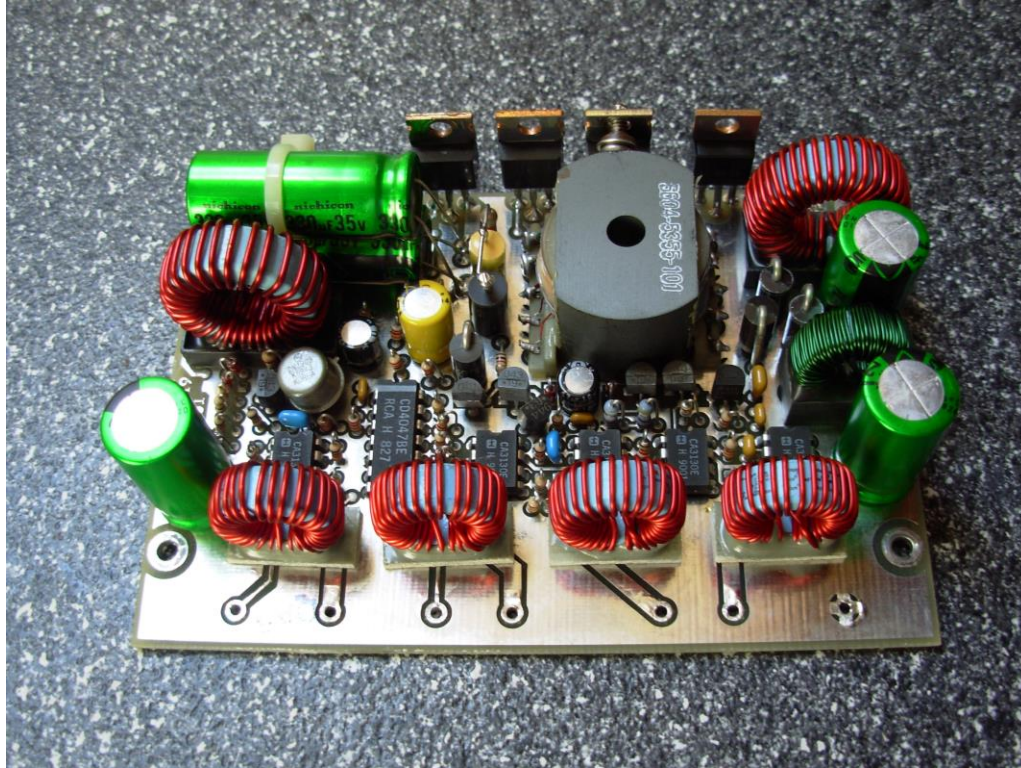
C1, C9- 10uF, 35V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1V100MAD  
Digikey Part Number: 493-14419-ND  
Quantity in Assembly: 2

C8- 1uF, 50V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: URS1H010MDD1TD  
Digikey Part Number: 493-11473-1-ND  
Quantity in Assembly: 1

C16- 10uF, 50V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Panasonic  
Replacement Part Number: ECE-A1HKS100B  
Digikey Part Number: P19588CT-ND  
Quantity in Assembly: 1



### Inverter Supply PC Board Assembly (1700-6123-900 Rev D)



The following information with regard to the power supply pertains to the IFR 1200S with serial number 4491 and later, IFR 1200A with serial number 1449 and later, as well as any IFR 1200SRA. IFR 1200 S/A models with serial numbers previous to those listed use an older design power supply and are not covered in this document.

Power supply disassembly is much easier and with less chance of damage to traces using a de-soldering tool (i.e. Hakko 472D, JBC 1D, Weller WR3000, etc...). It is not necessary to remove the Battery Charger Board from the through-hole caps to renew the electrolytic capacitors located on the Inverter Supply PC Board inside the supply housing. All capacitors in the power supply were upgraded to 105 deg C rating.

C3, C4- 330uF, 35V, 20%, Radial Lead, 105 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: UPM1V331MPD1TD

Digikey Part Number: 493-12024-1-ND

Quantity in Assembly: 2

C8, C9, C14- 330uF, 25V, 20%, Radial Lead, 105 deg

Replacement Manufacturer: Nichicon

Replacement Part Number- UPM1E33MPD6TD

Digikey Part Number: 493-11837-1-ND

Quantity in Assembly: 3

C 1, C17- 47uF, 10V, 20%, Radial Lead, 105 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: UMF1A470MDD1TP

Digikey Part Number: 493-10218-1-ND

Quantity in Assembly: 2

\*\*\*Some power supplies used 47uF, 10V, 47uF, 16V, or 47uF, 25V; 47uF, 16V is recommended\*\*\*

C1, C17- 47uF, 16V, 20%, Radial Lead, 105 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: UMF1C470MDD1TP

Digikey Part Number: 493-10223-1-ND

Quantity in Assembly: 2

\*\*\*Some power supplies used 47uF, 10V, 47uF, 16V, or 47uF, 25V; 47uF, 16V is recommended\*\*\*

C11- 10uF, 50V, 20%, Radial Lead, 105 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: UPM1H100MDD1TD

Digikey Part Number: 493-11389-1-ND

Quantity in Assembly: 1

### **Disassembly of the Inverter Supply**

To remove Inverter Supply PC Board from steel housing first remove the 4 nuts and washers from regulators (Qty 4) and remove the 3 screws with insulators from each regulator- you will NOT be able to remove one of the screws due to an interference fit from the transformer located behind it.

After removal of the 4 nuts which are secured to the regulator heat sink, de-solder the 7 feed-thru caps from PCB and then remove the 4 standoffs from the corners of the Inverter Supply PC Board. After de-soldering the feed-thru caps from the Inverter Supply PC Board and removing the standoffs you can gently tilt out the PCB from the steel housing tilting upwards from the side of the feed-thru capacitors. Please note that there is no need to remove the feed-thru caps.

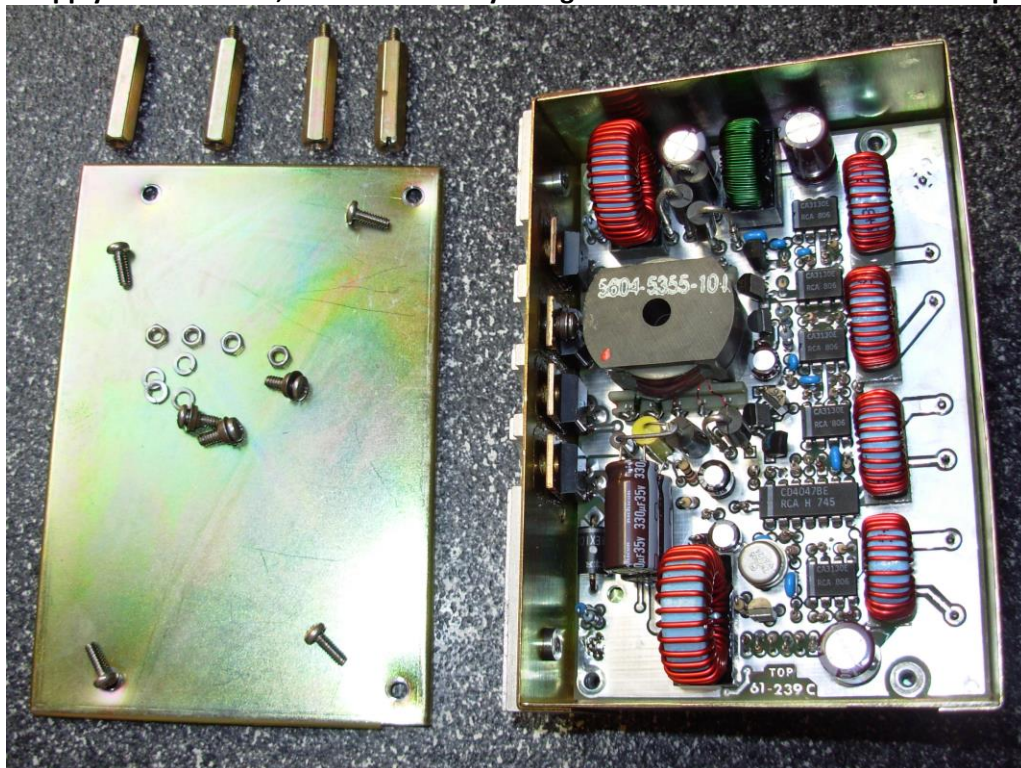
After removing electrolytic capacitors from the Inverter Supply PC Board clean all areas with Isopropyl Alcohol 90% or greater. You will not be able to use a zip-tie to secure the two piggy-backed 330uF, 35V, radial lead electrolytic capacitors- I recommend using clear silicone sealant or hot glue to secure the electrolytic capacitors together.



Inverter Supply with attached battery charger board removed from IFR 1200S

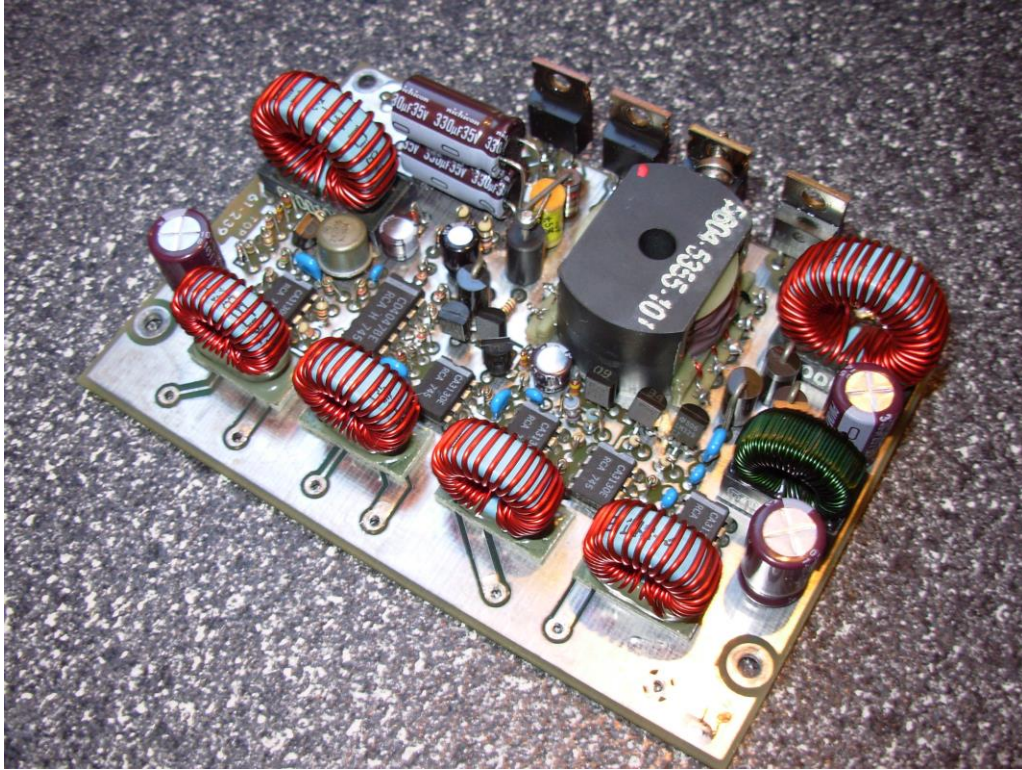


Inverter Supply disassembled; note that battery charger board can be left attached to top side





**Inverter Supply board removed from enclosure with electrolytic capacitors renewed**



**Scope Control PC Board Assembly (7010-5130-200 Rev G)**

It is not necessary to remove the CRT from its chassis- you need only remove the entire CRT assembly from the chassis of the 1200S. To remove the entire CRT chassis from the chassis of the IFR 1200S you will need to remove the knobs from the "VERT POS", "INT", "FOCUS", "HORIZ POS" "VERTICAL" and "HORIZONTAL", and remove the nuts and washers from the "INT" and "FOCUS" potentiometer shafts as well as loosen the two screws holding the CRT chassis assembly to the main chassis of the IFR 1200S. You can then lift the entire CRT assembly chassis from the chassis of the 1200S.







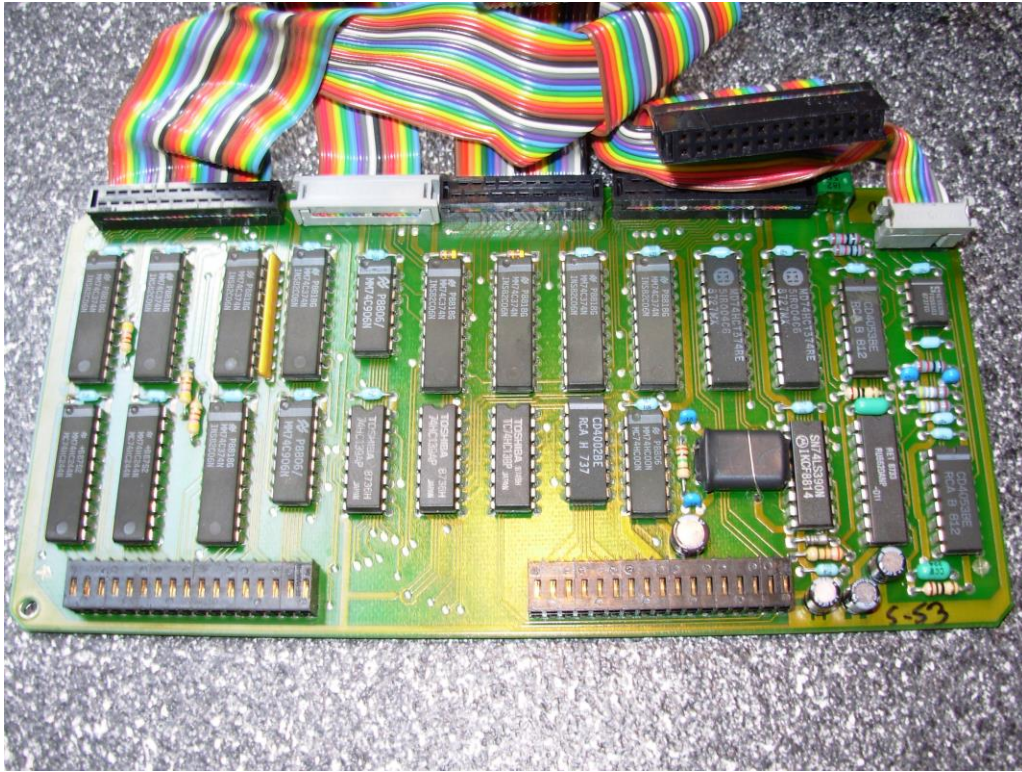
C4, C5- 330uF, 16V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1C331MAD  
Digikey Part Number: 493-16277-ND  
Quantity in Assembly: 2

\*\*\*If Nichicon listed above is not available then Vishay below can be used\*\*\*

C4, C5- 330uF, 16V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Vishay  
Replacement Part Number: MAL202135331E3  
Digikey Part Number: 4020PHCT-ND  
Quantity in Assembly: 2



### Interface PC Board (1700-7720-300)



C28 - 47uF, 10V, 20%, Radial Lead, 105 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: UMF1A470MDD1TP

Digikey Part Number: 493-10218-1-ND

Quantity in Assembly: 1

C21, C27, C29 - 10uF, 25V, 20%, Radial Lead, 85 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: USA1E100MDD

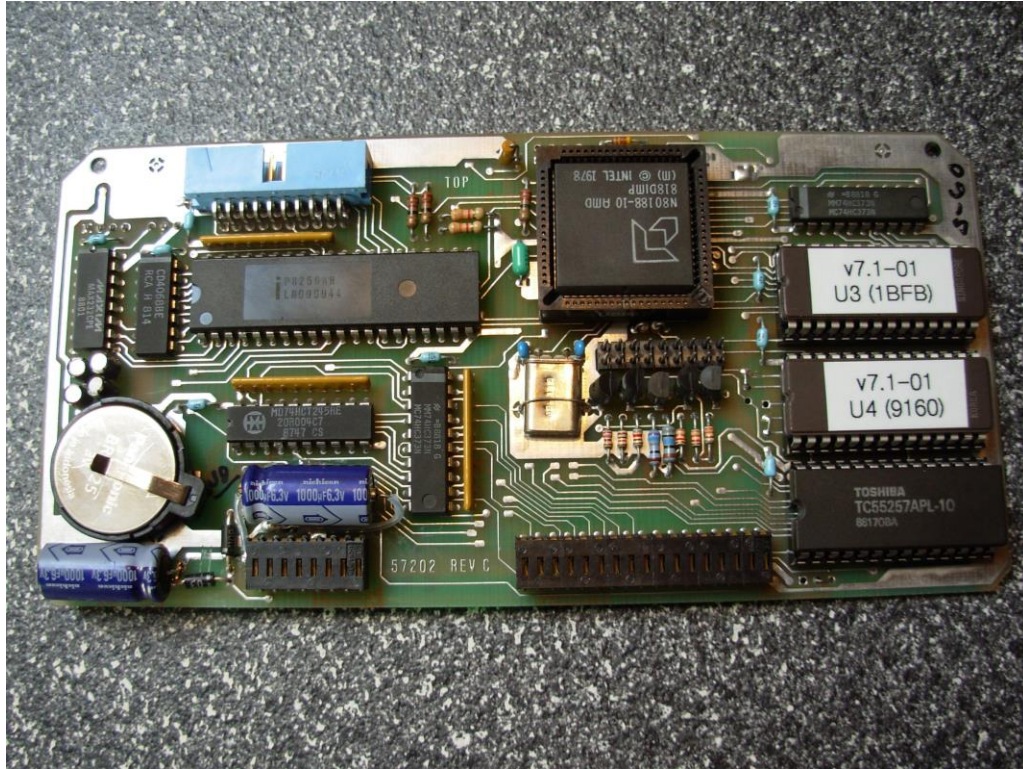
Digikey Part Number: 493-15968-ND

Quantity in Assembly: 3

### Processor PC Board (7010-5720-200 Rev C)

Remove memory backup battery before performing work on Processor PC Board.

After work is performed on the Processor PC Board, re-install memory backup battery and reinstall the card. Upon power up the IFR 1200S will display "Checksum Error", this is normal, and a simple power cycle of the unit off and then back on will clear the checksum error.



C14, C15, C16, C17- 4.7uF, 20%, Radial Lead, 105 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: UMV1V4R7MFD1TP

Digikey Part Number: 493-10317-1-ND

Quantity in Assembly: 4

C4, C19- 1000uF, 6.3V, 20%, Axial Lead, 85 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: TVX0J102MCD

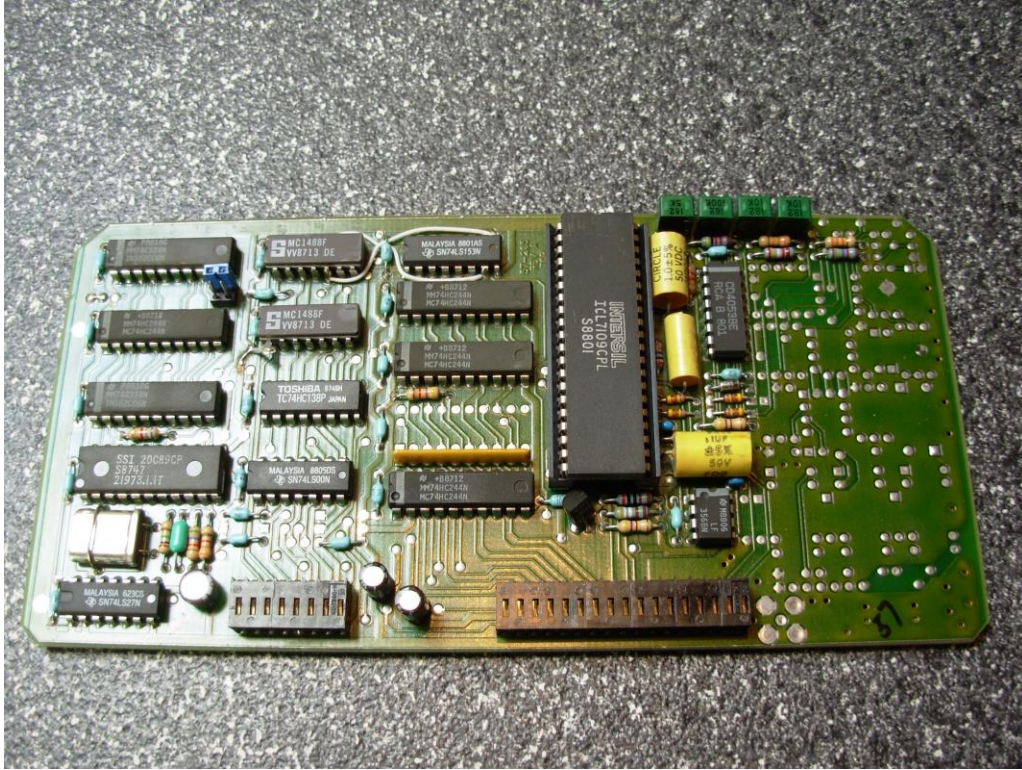
Digikey Part Number: 493-14798-ND

Quantity in Assembly: 2



### DVM/IO PC Board Assembly Standard Board (7010-5720-500 Rev A)

The Option 10 DVM/IO PC Board with DVM and DTMF uses the same capacitors as listed below.



C41- 47uF, 10V, 20%, Radial Lead, 105 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: UMF1A470MDD1TP

Digikey Part Number: 493-10218-1-ND

Quantity in Assembly: 1

C42, C43- 47uF, 25V, 20%, Radial Lead, 85 deg

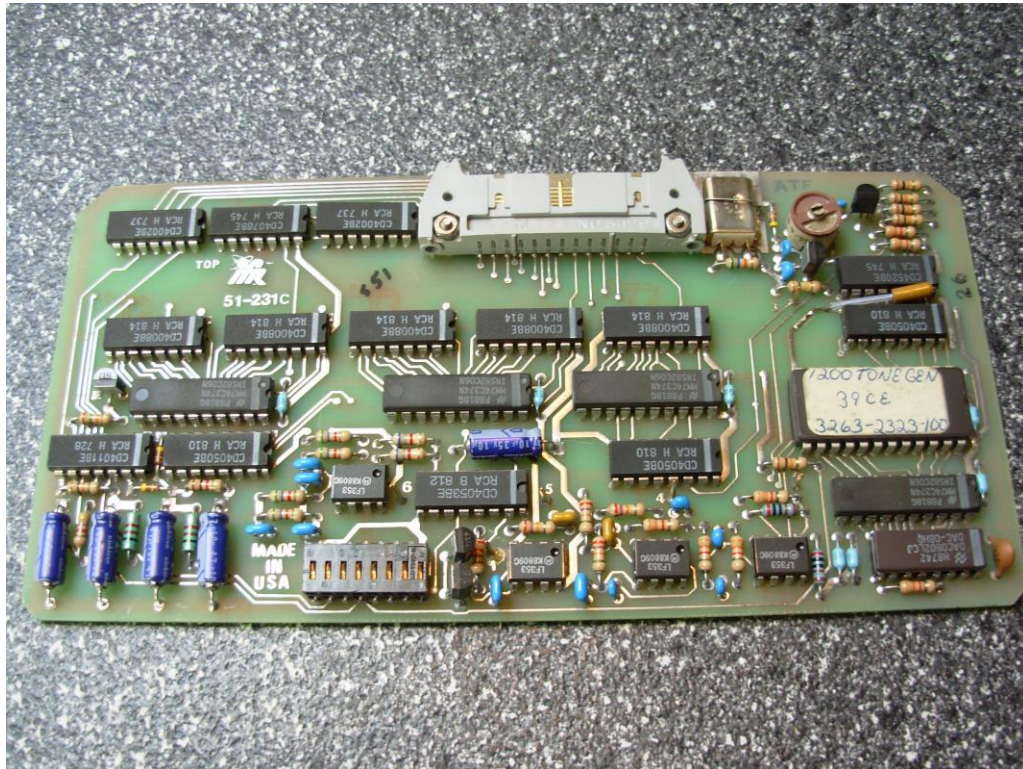
Replacement Manufacturer: Nichicon

Replacement Part Number: URS1E470MDD1TD

Digikey Part Number: 493-11510-1-ND

Quantity in Assembly: 2

**Function Generator PC Board (7010-5123-100 Rev C)**

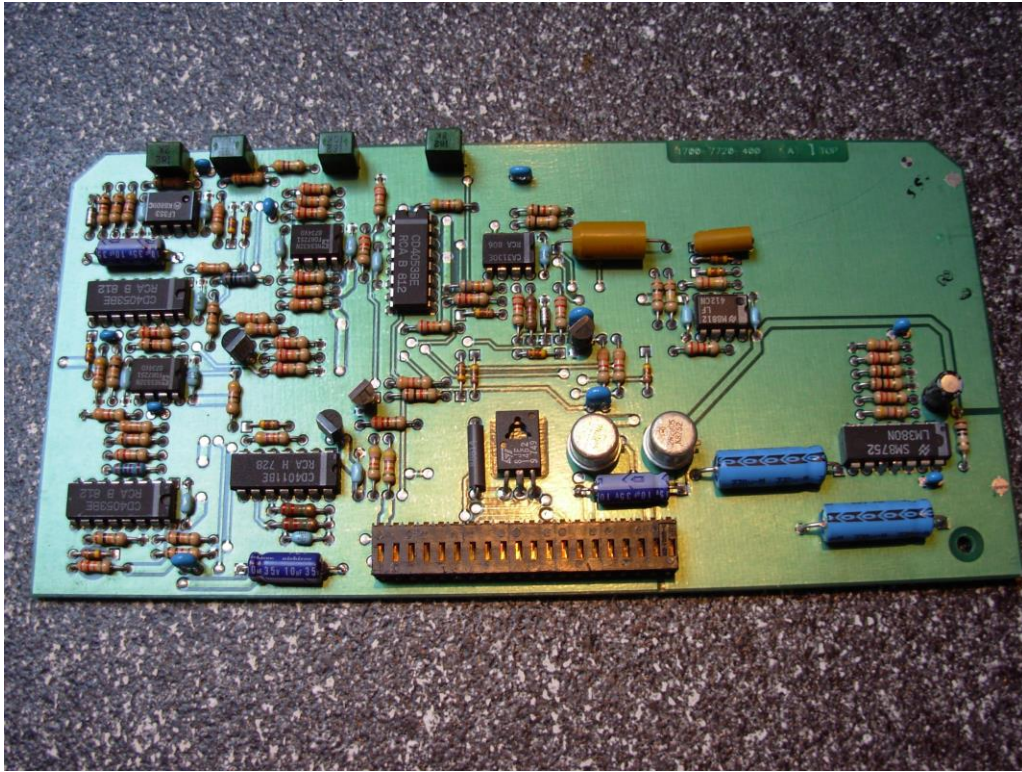


C4, C23, C24- 47uF, 10V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1A470MAD  
Digikey Part Number: 493-14808-ND  
Quantity in Assembly: 3

C11, C22- 10uF, 35V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1V100MAD  
Digikey Part Number: 493-14419-ND  
Quantity in Assembly: 2



## Generate Audio PC Board Assembly (1700-7720-400)



C3- 1uF, 50V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: URS1H010MDD1TD  
Digikey Part Number: 493-11473-1-ND  
Quantity in Assembly: 1

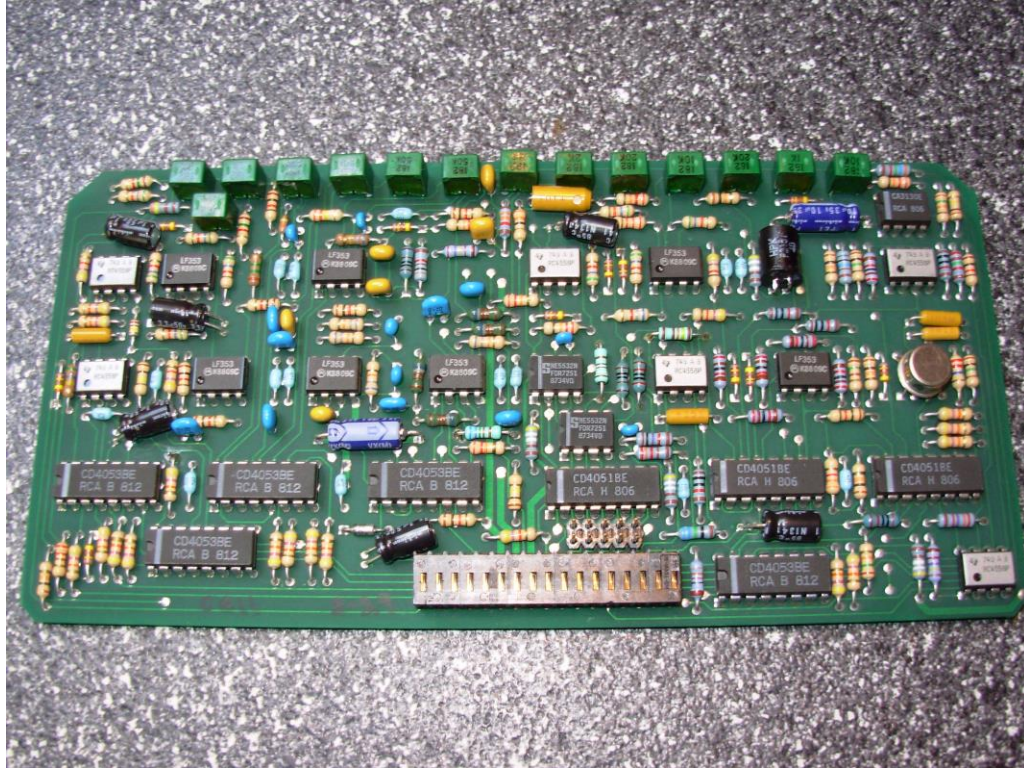
C1, C19- 330uF, 16V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1C331MAD  
Digikey Part Number: 493-16277-ND  
Quantity in Assembly: 2

\*\*\*If Nichicon listed above is not available then Vishay below can be used\*\*\*

C1, C19- 330uF, 16V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Vishay  
Replacement Part Number: MAL202135331E3  
Digikey Part Number: 4020PHCT-ND  
Quantity in Assembly: 2

C5, C8, C13- 10uF, 35V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1V100MAD  
Digikey Part Number: 493-14419-ND  
Quantity in Assembly: 3

**Receive Audio PC Board Assembly (7010-7720-200 Rev B)**



C1, C4, C44- 1uF, 50V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: URS1H010MDD1TD  
Digikey Part Number: 493-11473-1-ND  
Quantity in Assembly: 3

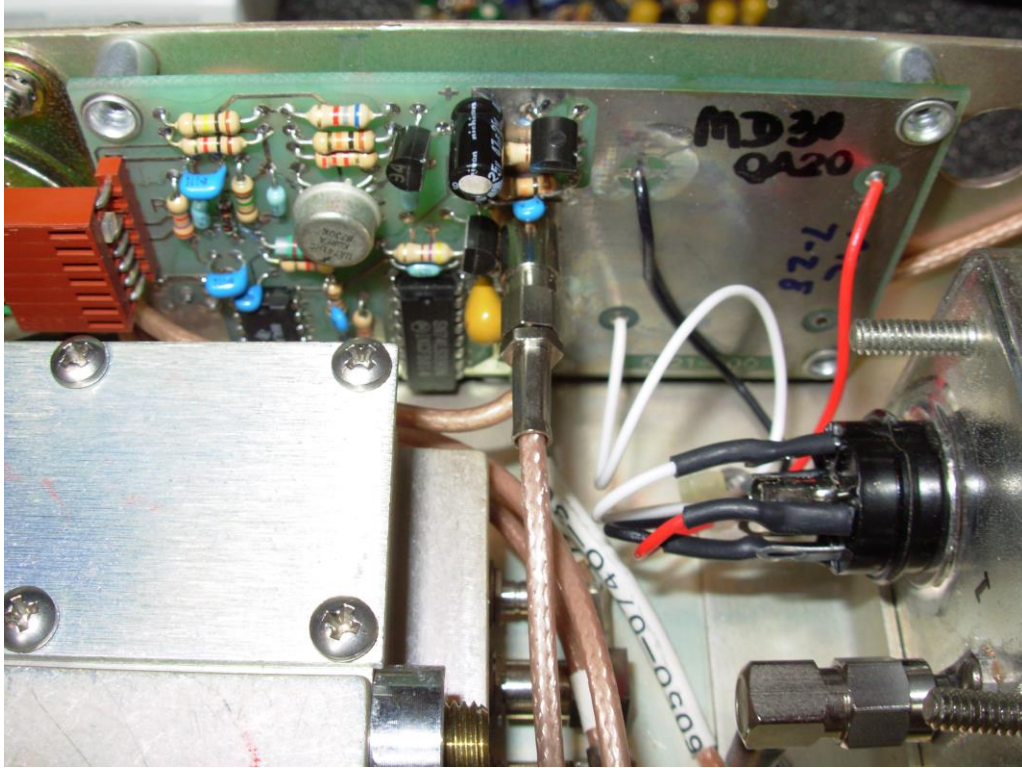
C10, C11, C29- 3.3uF, 50V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: URS1H3R3MDD1TD  
Digikey Part Number: 493-11476-1-ND  
Quantity in Assembly: 3

C43, C45- 10uF, 35V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1V100MAD  
Digikey Part Number: 493-14419-ND  
Quantity in Assembly: 2



**Frequency Standard PC Board 0.2ppm Oscillator (7010-5121-700)**

The 0.05 and 0.5ppm Oscillator PC Board use the same capacitor as listed below.



C10- 47uF, 25V, 20%, Radial Lead, 85 deg

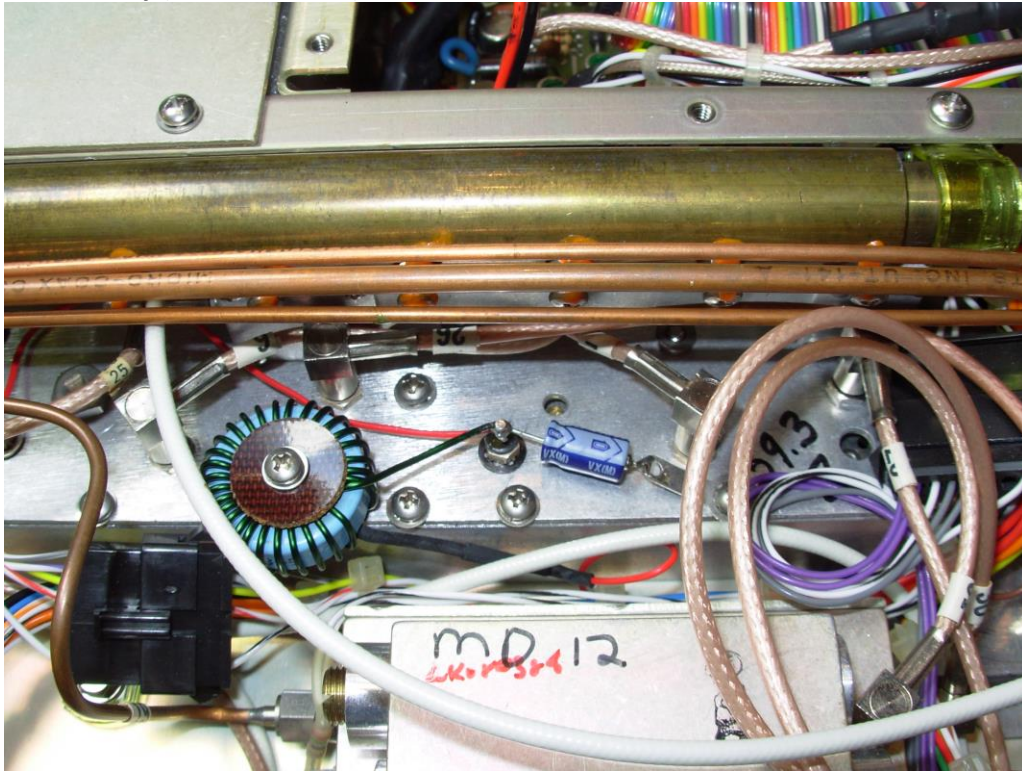
Replacement Manufacturer: Nichicon

Replacement Part Number: URS1E470MDD1TD

Digikey Part Number: 493-11510-1-ND

Quantity in Assembly: 1

**Dual VCO Assembly (7005-5144-000)**



C1- 47uF, 25V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1E470MAD  
Digikey Part Number: 493-14405-ND  
Quantity in Assembly: 1

**Display PC Board Assembly (7010-5131-200)**

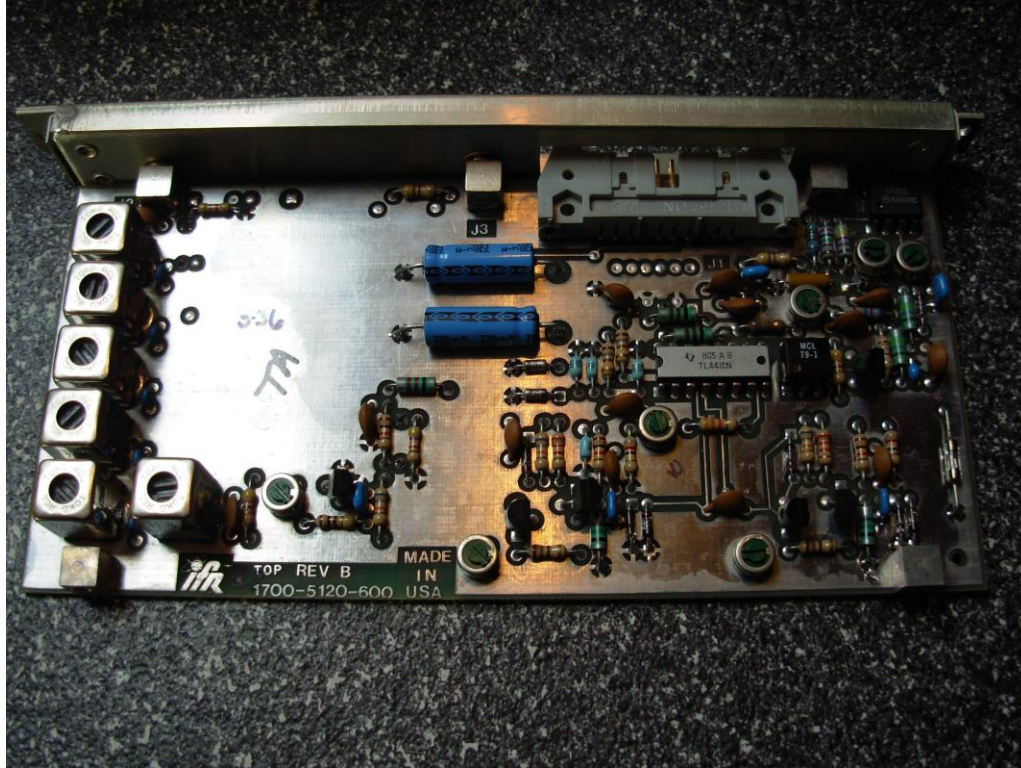
C3- 47uF, 10V, 20%, Radial Lead, 105 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: UMF1A470MDD1TP  
Digikey Part Number: 493-10218-1-ND  
Quantity in Assembly: 1

C10, C11- 10uF, 35V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1V100MAD  
Digikey Part Number: 493-14419-ND  
Quantity in Assembly: 2

C7- 47uF, 25V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1E470MAD  
Digikey Part Number: 493-14405-ND  
Quantity in Assembly: 1



**Analyzer Log Amp PC Board Assembly (1700-5120-600 Rev B)**

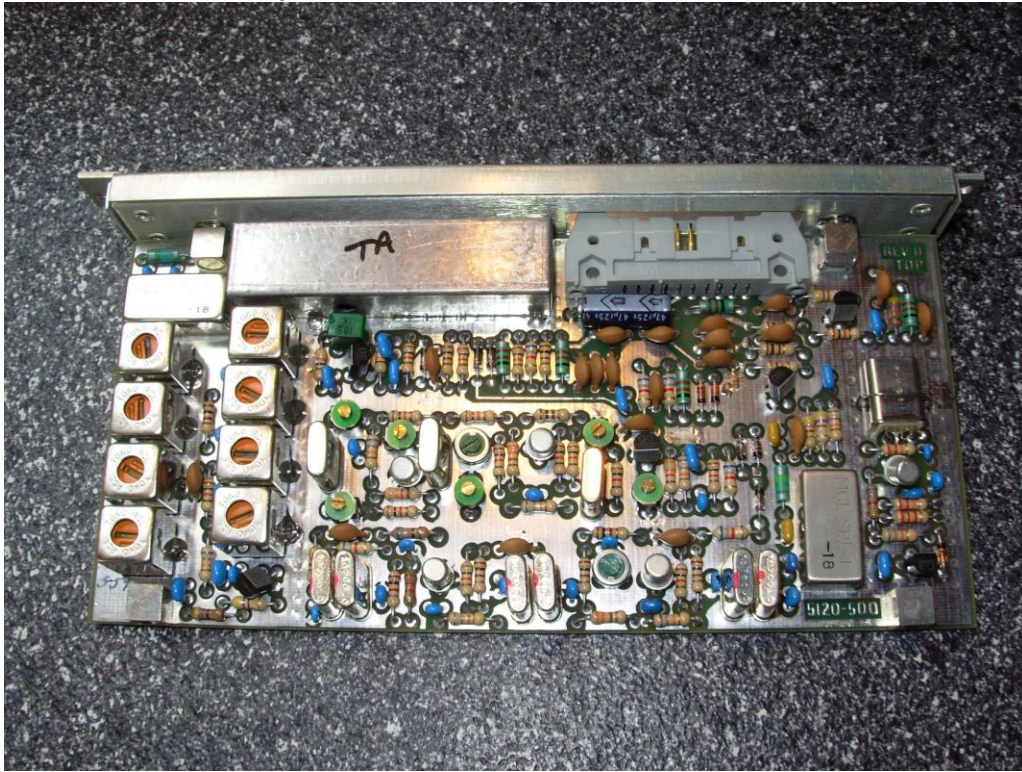


C12, C13- 330uF, 16V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1C331MAD  
Digikey Part Number: 493-16277-ND  
Quantity in Assembly: 2

\*\*\*If Nichicon listed above is not available then Vishay below can be used\*\*\*

C12, C13- 330uF, 16V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Vishay  
Replacement Part Number: MAL202135331E3  
Digikey Part Number: 4020PHCT-ND  
Quantity in Assembly: 2

**Analyzer IF PC Board Assembly (1700-5120-500 Rev D)**



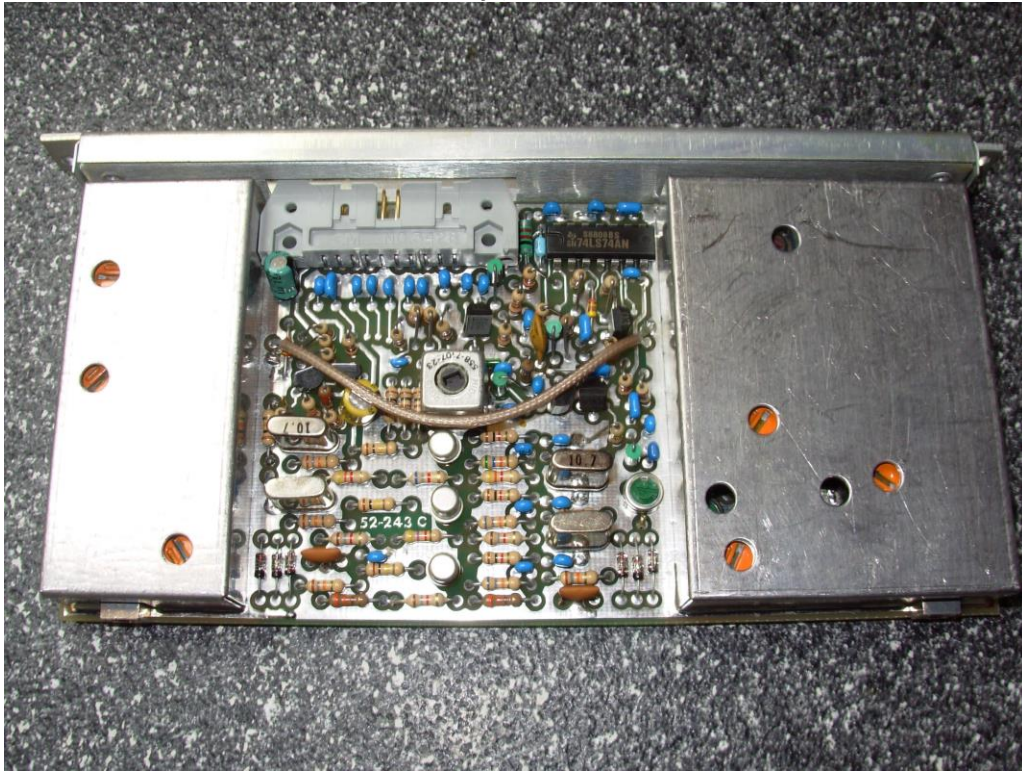
C50- 47uF, 25V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1E470MAD  
Digikey Part Number: 493-14405-ND  
Quantity in Assembly: 1

**Analyzer RF PC Board Assembly (1700-5120-401 Rev A)**

No Electrolytic Capacitors are Located in this Module



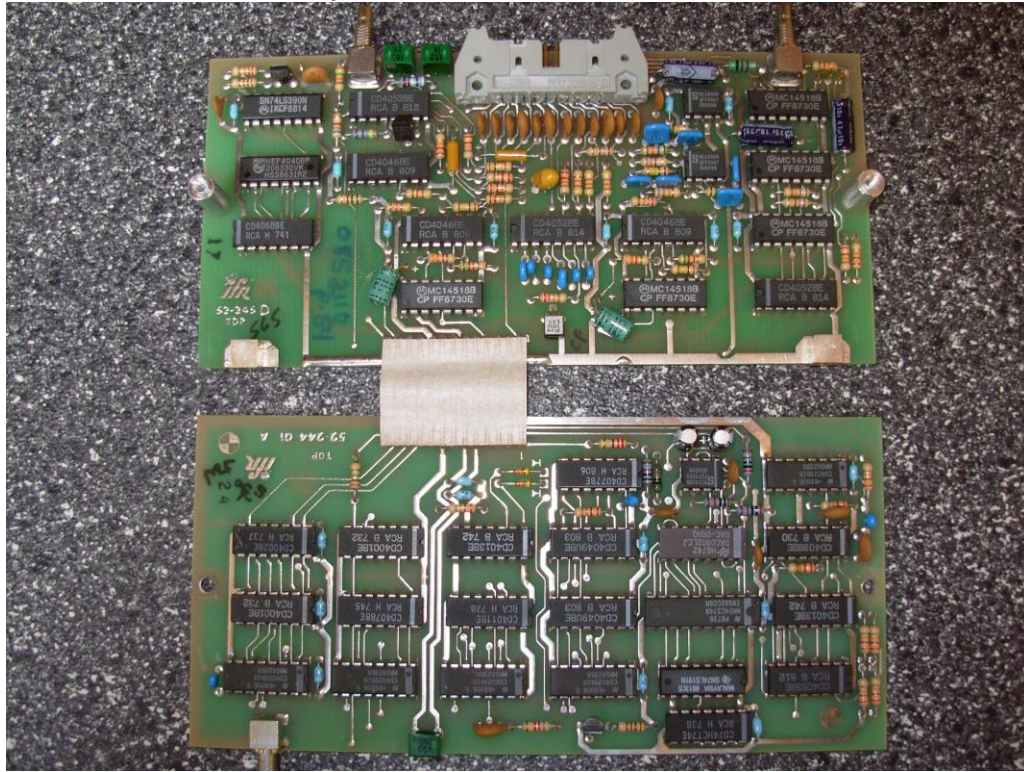
**10.7MHz Generate/Receive PC Board Assembly (7010-5224-300 Rev C)**



C46, C50- 10uF, 25V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: USA1E100MDD  
Digikey Part Number: 493-15968-ND  
Quantity in Assembly: 2  
\*\*\*C50 is located under the J4304/J4303 RF Shield\*\*\*

C76- 47uF, 10V, 20%, Radial Lead, 105 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: UMF1A470MDD1TP  
Digikey Part Number: 493-10218-1-ND  
Quantity in Assembly: 1

# Digital Counter PC Board Assembly (7010-5224-401 Rev A and 7010-5224-500 Rev D)



C9, C20- 3.3uF, 50V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: URS1H3R3MDD1TD  
Digikey Part Number: 493-11476-1-ND  
Quantity in Assembly: 2

C31, C34- 10uF, 25V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: USA1E100MDD  
Digikey Part Number: 493-15968-ND  
Quantity in Assembly: 2

C1, C3- 10uF, 35V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1V100MAD  
Digikey Part Number: 493-14419-ND  
Quantity in Assembly: 2

C11- 47uF, 10V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX1A470MAD  
Digikey Part Number: 493-14808-ND  
Quantity in Assembly: 1



### Duplex/Tracker PC Board Assembly (7010-7020-300 Rev C)

Due to the large ground-plane on this board removal of the electrolytic capacitors on this board is somewhat difficult.



C33, C35- 1uF, 50V, 20%, Radial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: URS1H010MDD1TD  
Digikey Part Number: 493-11473-1-ND  
Quantity in Assembly: 2

C67, C84- 47uF, 16V, 20%, Radial Lead, 105 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: UMF1C470MDD1TP  
Digikey Part Number: 493-10223-1-ND  
Quantity in Assembly: 2

C82- 47uF, 10V, 20%, Radial Lead, 105 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: UMF1A470MDD1TP  
Digikey Part Number: 493-10218-1-ND  
Quantity in Assembly: 1

C70- 1000uF, 6.3V, 20%, Axial Lead, 85 deg  
Replacement Manufacturer: Nichicon  
Replacement Part Number: TVX0J102MCD  
Digikey Part Number: 493-14798-ND  
Quantity in Assembly: 1

**Low Loop PC Board (Not Pictured)**

C26 - 1uF, 50V, 20%, Radial Lead, 85 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: URS1H010MDD1TD

Digikey Part Number: 493-11473-1-ND

Quantity in Assembly: 1

C22, C23 -47uF, 10V, 20%, Axial Lead, 85 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: TVX1A470MAD

Digikey Part Number: 493-14808-ND

Quantity in Assembly: 2

C21, C53 - 10uF, 35V, 20%, Axial Lead, 85 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: TVX1V100MAD

Digikey Part Number: 493-14419-ND

Quantity in Assembly: 2

**High Loop PC Board (Not Pictured)**

\*\*\*17 Pin Header, Double Decker Boards \*\*\*

C20 - 10uF, 50V, 20%, Radial Lead, 85 deg

Replacement Manufacturer: Panasonic

Replacement Part Number: ECE-A1HKS100B

Digikey Part Number: P19588CT-ND

Quantity in Assembly: 1

C1, C39, C40, C41, C42, C43 - 10uF, 35V, 20%, Axial Lead, 85 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: TVX1V100MAD

Digikey Part Number: 493-14419-ND

Quantity in Assembly: 6

C7 -47uF, 10V, 20%, Axial Lead, 85 deg

Replacement Manufacturer: Nichicon

Replacement Part Number: TVX1A470MAD

Digikey Part Number: 493-14808-ND

Quantity in Assembly: 1